APPENDIX G
GEOTECHNICAL REPORT

LGC Valley, Inc.

Geotechnical Consulting

GEOLOGIC AND GEOTECHNICAL ENGINEERING INVESTIGATION, PROPOSED COMMERCIAL DEVELOPMENT, NORTHWEST OF 13TH AND ARCH STREETS, CITY OF SANTA CLARITA, CALIFORNIA

Dated: September 10, 2021

Project No. 213015-01

Prepared For:

LA RAILROAD 93, LLC
C/O Blackhall Studios
1415 Constitution Road SE
Atlanta, Georgia, 30316

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LGC Valley, Inc.

Geotechnical Consulting

September 10, 2021 Project No. 213015-01

Attention: Mr. Jeff Weber
LA Railroad 93, LLC
c/o Blackhall Studios
1415 Constitution Road SE
Atlanta Georgia 30316

Subject: ***Geologic and Geotechnical Engineering Investigation, Proposed Commercial Development, Northwest of 13th and Arch Streets, City of Santa Clarita, California***

In accordance with your request, LGC Valley, Inc. (LGC) has performed a geologic and geotechnical engineering investigation at the subject site. The purpose of the investigation was to provide geologic and geotechnical engineering data and provide a review of the data with respect to the proposed commercial development. Preliminary percolation testing for future stormwater infiltration systems was also performed.

Prior work performed at the subject site by LGC (2015) and Geotechnologies (2004) are shown on the Geotechnical Maps and the logs of excavations and laboratory testing results are included herein; this data was also considered and utilized to evaluated the proposed development for this report.

If you have any questions regarding our report, please contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LGC VALLEY, INC.

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Senior Project Geologist

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Principal Engineer

SMB/BIH/dc

Distribution: (1) Addressee

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1.0 INTRODUCTION

1.1 Purpose and Scope of Services

The main purpose of this report is to review the current development plan in light of the current field investigation and provide geologic and geotechnical engineering interpretations, conclusions and recommendations. Percolation for stormwater infiltration was also performed.

Our scope of services for preparation of this document included:

- Review of geotechnical reports, geologic maps and other documents relevant to the site (Appendix A, References).
- Perform a site visit to evaluate the existing condition and notify underground service alert so that existing utilities could be located.
- Utilized a dozer to obtain access across erosion gullies and create access roads to excavation locations.
- Perform a subsurface investigation including the excavation and logging of fourteen hollow-stem auger borings. Logs of the borings are presented in Appendix B, and their approximate locations are depicted on the Geotechnical Map (Plate 1). The excavations were logged under the supervision of a geologist from our firm.
- Perform 10 CPT soundings, 3 with seismic shear wave velocities. This data is presented in Appendix D.
- Perform percolation testing at four locations for stormwater infiltration system designs.
- Perform detailed reconnaissance mapping of the northern hillside.
- Perform geologic and engineering review of existing data.
- Prepare this report presenting our geologic and geotechnical findings, conclusions, opinions and recommendations with respect to the proposed development.

1.2 Engineer-of-Record

LGC has previously reviewed the information presented in the geotechnical reports prepared by Geotechnologies, Inc., (References) with respect to the subject site and has previously accepted responsibility as geotechnical engineer-of-record, and concurs with the prior information, conclusions, and recommendations, except where modified herein.

1.3 Site Description

The subject site is located northwest of 13th and Arch Streets in the Newhall area of the City of Santa Clarita, California. The site consists of the following APN's: 2834-001-014, 2834-001-015, 2834-004-045, 2834-005-041, 2834-006-041, 2834-007-045, 2834-008-039, 2834-010-043, 2834-011-021, 2834-012-023, 2834-013-041, 2834-014-043, 2834-015-021, 2834-022-067, 2834-021-134, 2834-017-021, 2834-4003-044, 2834-002-046 and 2834-016-041.

The subject site is approximately rectangular in shape, occupies roughly 93 acres northwest of 12th and 13th Streets in the Newhall area of the City of Santa Clarita, California. The site is bound on the west-northwest by the Union Pacific Railroad tracks and Railroad Avenue, on the east-northeast by vacant property owned by the Metropolitan Water District, on the north by an existing residential development and on the south by 12th and 13th streets (see Site Location Map, Figure 1).

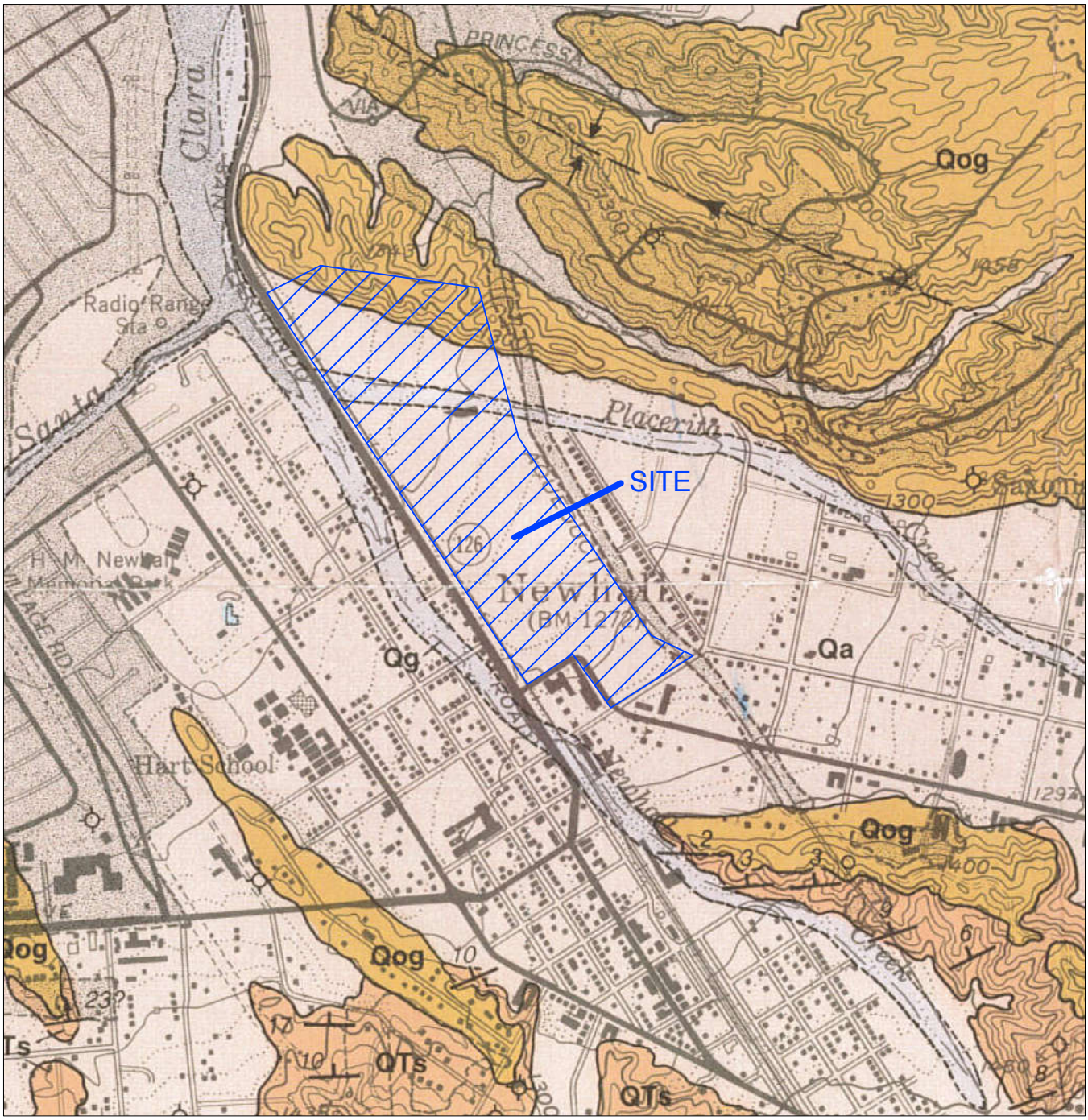
The site is currently vacant and has previously been used for parking, outdoor events, movie sets and fire department helicopter landings. Vegetation consists of native grasses, chaparral and several Oak trees. The topography of the site gently slopes toward the northwest from 12th Street to Placerita Creek approximately elevations 1258 to 1220, respectively. The north side of Placerita Creek consists of steeply ascending hillside terrain which reaches an approximate elevation of 1340.

Placerita Creek traverses the northern portion of the site from generally the southeast toward the northwest. Placerita Creek on the eastern properties is confined within a graded channel that is approximately 30 feet wide. On site, Placerita Creek widens to approximately 300 feet (active portion) then narrows to approximately 75 feet wide in order to exit the site beneath the railroad tracks and Railroad Avenue bridges to the west.

Additionally, to the east, the Metropolitan Water District property contains the Foothill Feeder which is an approximately 16-foot diameter concrete pipeline that feeds water from Castaic Lake south to the Joseph Jensen Water Treatment Plant in the San Fernando Valley. This pipeline was constructed in 1968 (Dudek, 2017).

A sewer line crosses the property approximately 140 to 280 feet south of Placerita Creek, the tentative plans indicate that it will be removed and reconnected at another location. Manholes can be seen crossing the site and depths indicated on the plans range from five to ten feet to the invert elevation. All fill associated with the utility line should be removed.

An 8-inch diameter water line crosses the property from Railroad Avenue to the existing development east of the Metropolitan Water District property. A second water line was identified and located in the field by the Underground Service Alert personnel along the southern bank of Placerita Creek.



Newhall Quadrangle, Dibblee, 1996

N

Project Name	Newhall Development Partners
Project No.	213015-01
Eng. / Geol.	ACR/SMB
Scale	NTS
Date	September 2021

LGC

SITE LOCATION MAP
LA Railroad 93
Blackhall Studios
City of Santa Clarita
California

FIGURE 1

1.4 Proposed Project

According to the site development plan prepared by Alliance Land Planning & Engineering, Inc., dated May 18, 2021, the proposed development of the site will include studio stages, 2 and 3-story office buildings, a 4-story parking structure, multiple support buildings (i.e. café, wash stations, equipment building and cafeteria), large parking areas in the northern portion of the site, north of Placerita Creek, and within the Metropolitan Water District property along the eastern portion of the site and south of Placerita Creek. Interior streets are planned along with a bridge over Placerita Creek. Once bridge plans are provided, bridge design recommendations/seismic design can be provided. A stormwater infiltration basin is planned in the northwest corner of the site and we understand that underground ADS units are also planned beneath the streets within the site. Retaining walls ranging from 2 to 9.5 feet in height are planned along portions of the perimeter of the site in addition to a 12-foot high perimeter fence.

Based on these preliminary site plan, it appears that minor grading of cuts and fills are planned. A cut slope at the northeast corner of the site is planned to an approximate height of 90 feet at gradients of 3:1 and 4:1 (horizontal:vertical; h:v).

1.5 Site History

Geotechnologies, Inc. performed prior work on the property in 2004 (see References). Locations of borings and pertinent laboratory test data are included herein.

LGC performed a field investigation in 2015 (see References) to supplement Geotechnologies, Inc. work to provide recommendations for a residential development. Backhoe test pits and percolation testing was performed. Logs of test pits are provided herein. In 2020, a report was prepared for the Tentative Tract Map 74723.

1.6 Subsurface Investigation and Laboratory Testing

Our subsurface investigation was performed between July 28th and August 20th of 2021 and consisted of the excavation of 14 hollow-stem auger borings (LGC-B1 through LGC-B14), 4 percolation borings (Perc 1 through Perc 4), and 10 CPT soundings (CPT-A through CPT-J) 3 with seismic readings at various depths. The geotechnical borings were extended to depths ranging from approximately 31 to 51.5 feet below the existing site grades. Percolation borings were extended to depths ranging from 9 to 20 feet below the existing site grades. CPT soundings were planned from 50 to 110 feet in depth; however, refusal was encountered in multiple locations across the site. Therefore, CPT soundings were extended to depths ranging from 15 to 98 feet below the existing site grades. The approximate locations of the excavations are shown on the Geotechnical Maps (Plates 1A and 1B).

Previous subsurface investigations were performed by Geotechnologies (2004) and consisted of ten hollow stem auger borings (B-1 through B-10). The borings were extended to depths ranging from approximately 20 to 50 feet below the existing site grades. The approximate locations of the borings are shown on the Exploration Location Map (Plates 1A and 1B).

Previous subsurface investigations were performed by LGC (2015) and consisted of ten backhoe test pits (TP-1 through TP-10). The test pits ranged from 4 to 17 feet in depth below the existing site grades. The approximate locations of the test pits are shown on the Exploration Location Map (Plates 1A and 1B). During the current subsurface investigation, representative bulk and relatively undisturbed samples were collected for laboratory testing. Laboratory testing was performed by EGLAB, Inc. (EGL). Laboratory testing was performed on representative soil samples and included moisture and density tests, maximum density and optimum moisture content, expansion index, consolidation, direct shear, corrosivity, Atterberg Limits, sieve analysis, and R-Value testing. A summary of the test procedures and printouts of the laboratory test results are presented in Appendix C. The moisture and density test results are presented on the boring logs included in Appendix B.

The previous subsurface investigation by (Geotechnologies) consisted of collecting undisturbed samples and performing testing on the representative soil samples including moisture density tests, direct shear, consolidation, maximum density and optimum moisture, expansion, and sulfate testing. Printouts of the laboratory test results are presented in Appendix C.

The previous subsurface investigation by (LGC) consisted of collecting disturbed samples and performing testing on the representative soil samples including corrosion testing. Printouts of the laboratory test results are presented in Appendix C.

2.0 GEOLOGIC CONDITIONS

2.1 Regional Geology

The site is located within the southeastern portion of the Newhall (7 ½-minute) quadrangle in the Newhall area of the City of Santa Clarita, California. The site vicinity lies in the Transverse Ranges geomorphic province of California. West-trending valleys and ridges, reflecting a parallel series of anticlines, synclines, and reverse faults characterize this province. This structure and geomorphology is generally considered to be the result of south-directed compression caused by right lateral, strike-slip movement on the "Big Bend" segment of the San Andreas Fault (CGS, 1997; Revised 2001).

2.2 Site-Specific Geology

The site is underlain by artificial fill (uncertified), alluvium, older alluvium and Pacoima Formation Bedrock. A brief description of each unit is as follows:

2.2.1 Artificial Fill – Undocumented (af)

The site has been tilled for weed abatement and resulting artificial fill ranges in depth from three inches to two feet. Roads have been created with asphalt and gravel. We understand that a sewer line and an 8" diameter water main cross the property at depths of up to 15 feet and one additional water line crosses the property (one water line is shown on the plan and one has not been located); therefore, fill associated with backfill of these utilities is anticipated. All undocumented fills should be removed and replaced as compacted fill. (Note: No artificial fill has been mapped on the Geotechnical Maps.) The anticipated remedial removal depths for the removal of the two known utility lines is shown on Plates 1A and 1B.

2.2.2 Talus/Slopewash (Qsw)

Talus is rock fragments lying at the base of a steep slope. Slopewash is soil and rock material that has moved down slope via gravity assisted by running water that is not confined to channels. The material along the lower portion of the northern ridge poses a rock fall hazard. Mitigation measures will be discussed/provided herein. Remedial removals of the slopewash material is recommended underlying the proposed walls along the toe of the northern slope.

2.2.3 Alluvium (Qal)

Alluvial soils are present across most of the site. In general, the alluvium consists of silty fine to coarse sands, gravels and cobble zones. Silt and clay layers are present but minor. The surficial alluvium will require removal and recompaction to depths of 4 to 8 feet below the existing grades.

2.2.4 Older Alluvium (Qoal)

Older alluvial soils are present in southern portion of the site. These deposits are yellow to reddish brown silty and clayey gravels and cobbles that are tightly packed and very dense. The upper few feet of older alluvial soils in the southern portion of the site are loose, dry, and weathered. Older alluvium below the upper few feet is competent for the support and placement of additional fill and structural loads. The surficial older alluvium will require remedial removals to a depth of 4-feet below the existing grades.

2.2.5 Pacoima Formation (Qp)

According to the Division of Mines and Geology Open-File Report 82-2, the northern ridge consists of Pacoima Formation which is characterized by unconsolidated sands, gravels and cobbles. Detailed mapping of this ridge was performed by this office to identify whether fine-grained, clay or weak layers were present. No clay beds or weak layers were found.

2.3 Geologic Structure

The alluvial soils onsite are relatively horizontally stratified with minor cross-bedding features typical of stream deposits. The northern ridge, consisting of Pacoima Formation yielded horizontal bedding or bedding dipping toward the northwest (into slope) at less than 10 degrees. The bedrock is generally massive with crude bedding. Channel deposits of cobbles and boulders were mapped.

2.4 Groundwater

Groundwater was not encountered in any excavations on site to a depth of 98 feet. Historic high groundwater is greater than 65 feet (CGS, 1997) and is not anticipate to
be encountered or have an affect on the site during site grading.

2.5 Surface Water

Based on our review of local maps and site reconnaissance, sheet flow is currently toward the northwest and southwest toward Placerita Creek. Surface water runoff relative to project design is the purview of the project civil engineer but is anticipate being directed away from planned structures and into approved drainage devices, where necessary.

2.6 Seismicity, Faulting and Related Effects

2.6.1 Seismicity

The main seismic parameters to be considered when discussing the potential for earthquake-induced damage onsite are the distances to the causative faults, earthquake magnitudes, and expected ground accelerations. We have performed site-specific analysis based on these seismic parameters for the site and the onsite geologic conditions. The results of our analysis are discussed in terms of the potential seismic events that could be produced by the maximum probable earthquakes. A maximum probable earthquake is the maximum earthquake likely to occur given the known tectonic framework. The Holser and San Gabriel Faults are within two miles of the site.

2.6.2 Seismic Design Criteria

The site seismic characteristics for the project were reevaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2019 CBC. Representative site coordinates for the project site of Latitude 34.3875º and Longitude -118.5312º were utilized in our analyses. The maximum considered earthquake (MCE) spectral response accelerations (SMS and SM1) and adjusted design spectral response acceleration parameters (SDS and SD1) for Site Class D are provided in the following table.

Table 1 - Seismic Design Parameters	
Selected Parameters from 2019 CBC, Section 1613 - Earthquake Loads	**Seismic Design Values**
Site Class (per Chapter 20 of ASCE 7)	D
Risk-Targeted Spectral Acceleration for Short Periods (S_S)	2.411g
Risk-Targeted Spectral Accelerations for 1-Second Periods (S_1)	0.82g
Site Coefficient F_a [per CBC Table 1613.2.3(1)]	1.0
Site Coefficient F_v [per CBC Table 1613.2.3(2)]	1.7
Site Modified Spectral Acceleration for Short Periods (S_{MS}) [Note: $S_{MS} = F_aS_S$]	2.411g
Site Modified Spectral Acceleration for 1-Second Periods (S_{M1}) [Note: $S_{M1} = F_vS_1$]	1.394g
Design Spectral Acceleration for Short Periods (S_{DS}) [Note: $S_{DS} = (^2/_3)S_{MS}$]	1.607g
Design Spectral Acceleration for 1-Second Periods (S_{D1}) [Note: $S_{D1} = (^2/_3)S_{M1}$]	0.929g
Seismic Design Category (per CBC Section 1613.2.5)	D

Section 1803.5.12 of the 2019 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake ground motions, Peak Ground Acceleration (PGA) should be used for the geotechnical evaluations. The PGAM for the site is equal to 1.122g (USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2).

A deaggregation of the PGA based on a 2,475-year average return period indicates that an earthquake magnitude of 6.82 at a distance of approximately 7.99 km (4.96 mi) from the site would contribute the most to this ground motion (USGS, 2014).

At locations CPT-F, CPT-G & CPT-I, shear wave measurements were obtained at various depths. 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. Shear wave velocity readings ranged from 771 to 995 ft/sec. Based on these results, site classification falls within the Site Class D - Stiff Soil range. The results of the shear wave measurements are included in Appendix D.

2.6.3 Faulting

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 1997); therefore, there are no known active or potentially active faults onsite.

The possibility of damage due to ground rupture from earthquake fault rupture is considered nil since active faults are not known to cross the site. However, the site is in proximity of active faults (Holser, San Gabriel, and San Fernando) which are capable of producing significant ground shaking.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the southern California region include shallow ground rupture, soil liquefaction, and seismically induced settlements, seiches and tsunamis.

In general, these secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The major active fault that could produce these secondary effects is the San Fernando Fault located approximately 7.5 km south of the site. Other active faults that may result in shaking to the site include the Holser, San Gabriel, Santa Susana and San Andreas Fault, among others. A discussion of these secondary seismic effects are provided in the following sections.

2.6.4 Shallow Ground Rupture

Shallow ground rupture due to active faulting is not likely to occur on site due to the distance from likely seismic events. Therefore, this phenomenon is not considered a significant hazard, although it is a possibility at any site.

2.6.5 Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Liquefaction is typified by a buildup of pore-water pressure in the affected soil layer to a point where a total loss of shear strength occurs, causing the soil to behave as a liquid. Studies indicate that saturated, loose to medium dense, near surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential.

The subject site is *not* located in a State of California Seismic Hazard Zone for liquefaction (CGS, 1998). Based on the depth to the historic high groundwater in the area of the proposed development; it is our opinion that the potential for liquefaction impacting the majority of the site is very low.

2.6.6 Seismically Induced Dry Sand Settlement

During a strong seismic event, seismically induced settlement can occur within loose to moderately dense, dry or saturated granular soil. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement.

Based on the encountered soils, blow counts, and soil densities, the potential for seismically induced dry sand settlements considering the removals recommended herein is estimated to be less than 1.5-inches. Differential settlement resulting from seismic loading is generally assumed to be one-half of the total seismically induced settlement over a distance of 30 feet. Consequently, the estimated differential settlement that should be considered in site development is up to approximately 1-inch. The graphical output of our analysis and methodology are included in Appendix G of this report and the estimated settlements are provided in Table 2.

Table 2

Summary of Estimated Seismically Induced Settlements

M=6.82 PGA = 1.02	Total Estimated Seismically Induced Settlement (in)
LGC-B1	0.23
LGC-B2	0.81
LGC-B5	0.86
LGC-B6	1.48
LGC-B10	1.35
LGC-B11	1.43
LGC-B12	1.08

The above estimated liquefaction settlements consider a minimum of 4 to 10 feet of removal and compaction of the onsite alluvial soils.

2.6.7 Seiches and Tsunamis

A seiche is a standing wave in an enclosed or partially enclosed body of water propagated by earthquake waves. Tsunamis are large ocean waves or series of waves generated by displacement of a large volume of water. The site is not in close proximity to body of water or near the ocean; therefore, the hazard associated with seiches and tsunamis is considered low.

2.7 Slope Stability

The subject site is located in a State of California Seismic Hazard Zone for Seismically Induced Landslide Hazard (CGS, 1998). Pseudo-static or seismic stability analysis was performed for the proposed graded slope condition and adjacent natural hillside area, to determine the safety factors against seismically induced landslide hazard. Adequate safety factors were determined in conformance with current minimum requirements.

Two Cross Sections (A-A' and B-B) were developed to evaluate the proposed cuts to the northern ridge in the northeast portion of the site and native slope. The planned cut slope will be 90 feet high at 3:1 to 4:1 (h:v) gradients. Section A-A' was prepared though the proposed cut slope and includes a proposed 8 to 9 foot retaining wall and Section B-B' was prepared through the native slope to analyze the native slope condition.

The cross-sections are presented on Plate 2, while the approximate locations of the cross-sections utilized in our global slope stability analysis are shown on the Geotechnical Map (Plate 1B) and incorporated into the slope stability analysis presented as Appendix F.

Slope stability analyses were conducted using the computer program Slope W. The Bishop's Method was used to analyze rotational failure modes. A coefficient of horizontal acceleration of 0.15g (FS of 1.1) was used to evaluate the pseudostatic stability analyses.

Slope stability analyses performed on Sections A-A' and B-B' indicated factors-of-safety of at least 1.5 and 1.0 for static and seismic slope stability, respectively. The methodology and results of the slope stability analysis are included in Appendix F.

The native slope along the northern ridge of the site consists of Pacoima Formation Bedrock. Based on field mapping, bedding of the slope was crude/massive and was found to be generally horizontal to dipping into slope at angles of less than 10 degrees. The native slope along the northern portion of the property has performed well over the years with no evidence of landslides or failures. The western portion of the native ridge exposes a steep topographic expression at a cobble and boulder layer that may be subject to rockfall; therefore, we recommend a debris fence to catch the cobbles and boulders that may dislodge from the slope. The location of the debris fence is shown on the Geotechnical Map, Plate 1B.

Shear strengths utilized in our analysis were developed based on representative direct shear testing of the onsite soils/bedrock, from the collected samples. LGC reviewed the current laboratory testing and determined the shear strength parameters and concur with these results. The shear strength parameters used in slope stability calculations are summarized in Appendix F, Table F-1.

2.8 Laboratory Testing

Laboratory testing of the onsite soils was performed on representative samples obtained from the borings and included moisture and density tests, maximum density and optimum moisture content, expansion index, consolidation, direct shear, corrosivity, Atterberg Limits, sieve analysis, and R-Value testing. Laboratory testing was performed by EGLAB, Inc. (EGL). LGC has reviewed the laboratory test data, procedures and results provided by EGL with respect to the subject site and concurs with and accepts responsibility as geotechnical engineer-of-record for their work (laboratory testing). A discussion of the tests performed, and printout of the laboratory test results are presented in Appendix C. The moisture and density test results are presented on the boring logs in Appendix B. These results should be confirmed at the completion of site grading.

Based on the results of previous laboratory testing within the vicinity of the project site, the near-surface soils are anticipated to have a very low expansion potential. However, current testing indicates potential for medium expansion. Expansion index testing should be confirmed at the completion of rough grading.

Corrosivity testing indicates that the onsite soils have a negligible sulfate exposure to concrete and are moderately corrosive to steel.

LGC has tested one sample in 2021 and two samples in 2015 for corrosion suites (pH, chloride content, sulfate content and minimum resistivity) were performed on representative samples of the onsite soils. The results indicate pH values of 7.59, 7.30 and 7.24, chloride contents of 85 and 225 parts-per-million (ppm), sulfate contents of 0.011, 0.001 and 0.002 % by weight, and minimum resistivity's of 1,000, 6,500 and 5,500 ohm-centimeters. Test results are provided in Appendix C.

These results should be confirmed at the completion of site grading.

2.9 Percolation Testing

Percolation testing was performed at four locations across the site. Percolation test holes were excavated with a hollow stem auger on July 28th and August 16th of 2021. Upon completion of drilling, pea gravel was placed at the bottom of the borings to prevent scour during addition of water. A 2-inch diameter PVC pipe was installed and the annular space around the pipe was backfilled with clean sand to prevent caving during percolation testing. A slotted pipe was installed at the section of boring intended for percolation testing. The Los Angeles County Guideline for Geotechnical Investigation and Reporting Low Impact Development Stormwater Infiltration (GS200.1, dated June 30, 2017) was used for the percolation procedures. All test holes were presaturated for one hour.

One location was within the proposed basin to determine preliminary percolation rates. Preliminary testing was performed utilizing the boring method to develop preliminary percolation rates for use in the design. However, based on the County guidelines, due to the size of the basin a large-scale constant head test must be performed. At this time the large-scale constant head percolation test is not feasible to be performed, due to the lack of site access across the creek, the magnitude of the excavation to the bottom of the basin that would be needed, and the lack of a large amount of constant water. The test will likely not be performed until after the completion of grading or possibly during grading.

The other three percolation test sites were located where proposed ADS underground units are planned. Preliminary elevations to the bottoms of these units were given to us by Alliance. The approximate locations of the percolation borings are shown on the Geotechnical Maps (Plates 1A and 1B) and the logs of the borings are included in Appendix B.

The percolation test was conducted by filling the hole with clear water and measuring the water drop with a sounder to determine the standard time interval. The hole was refilled and measured eight times or until a stabilized rate was established. See Percolation Test Data Sheets in Appendix E.

PERC 1, in the proposed basin, percolated too fast; therefore, a constant head or high flow rate test must be performed. Since it is a large basin (greater than 500,000 gallons) a constant head test must be performed anyway. The magnitude of the excavation, amount of water needed for this test, and the limited access to the area prevents us from performing this test at this time. Based on the preliminary test results interpolated for one hour, the non-corrected percolation rate is 373.3 in/hr. Correction (reduction) factors were applied to the tested percolation values to represent long-term performance of the infiltration BMP. These include, according to the guidelines, $RF_t = 2$ for boring percolation test, $RF_v = 2$ for site variability, and $RF_s = 3$ for long-term siltation. Therefore, the RF, reduction factor, equals RF_t x RF_v x $RF_s = 12$. The design infiltration rate is the measured percolation rate divided by the correction (reduction) factor. The design percolation rate for PERC 1 is 373.3/12 = **31.1 inches per hour.**

Percolation test results are provided in inches per hour. Correction (reduction) factors were applied to the tested percolation values to represent long-term performance of the infiltration BMP. These include, according to the guidelines, $RF_t = 2$ for boring percolation test, $RF_v = 2$ for site variability, and $RF_s = 3$ for long-term siltation. Therefore, the RF, reduction factor, equals RF_t x RF_v x $RF_s = 12$. The design infiltration rate is the measured percolation rate divided by the correction (reduction) factor. The design percolation rate for PERC 2 is 136.7/12 = **11.39 inches per hour**; Perc 3 is 298.32/12 = **24.86 inches per hour**; and PERC 4 is 451.28/12 = **37.61 inches per hour**.

3.0 CONCLUSIONS

Based on our work and review of the site plan, it is our conclusion that the site development proposed on the attached Geotechnical Maps (Plates 1A and 1B) is feasible from a geotechnical standpoint, provided the following recommendations included in this report are incorporated into the project plans and specifications, and followed during site grading and construction.

Our geotechnical conclusions are as follows:

- The site is within the City of Santa Clarita and thus is subject to the Specifications and Guidelines set by the City.
- The site consists predominantly of silty sandy and gravelly soils with lesser proportions of clay. Local cobbles and boulders are also on site and may require special handling.
- Engineered fill shall meet the requirements of 90 percent relative compaction.
- Remedial removals are anticipated to range from 4 to 15 feet, as shown on the attached Geotechnical Maps (Plates 1A and 1B).
- No groundwater was encountered at the site and historic high groundwater is identified to be greater than 65 feet. Groundwater is not anticipated to affect site grading operations.
- Active or potentially active faults are not known to exist on the site.
- The Peak Ground Acceleration due to a maximum probable earthquake (Santa Susana Fault Zone) is estimated to be 1.12g.
- No known oil fields or oil wells (active or abandoned) were identified within the subject site during our review.
- Proposed graded slopes and native slope are considered globally stable as designed. The western portion of the native ridge exposes a steep topographic expression at a cobble and boulder layer that may be subject to rockfall; therefore, we recommend a debris fence to catch the cobbles and boulders that may dislodge from the slope. The location of the debris fence is shown on the Geotechnical Map, Plate 1B.
- Laboratory test results of the onsite soils indicate soil expansion potential ranging from very low to medium; however, we anticipate the as graded condition to have a very low to low expansion potential.
- Laboratory test results of the onsite soils indicate negligible potential for soluble sulfate attack on concrete, and is considered moderately corrosive to ferrous metals.
- Laboratory test results of the onsite soils indicate a negligible potential of hydro-collapse.
- From a geotechnical perspective, the existing onsite soils are suitable for use as fill, provided they are relatively free from rocks (larger than 8 inches in maximum dimension), construction debris, and organic material.
- An existing sewer line crosses the proposed development and should be relocated.
- An existing 8-inch diameter water line is known to cross the property and a second water line was indicated by the City personnel that were onsite for clearance for Underground Service Alert. The site plan shows one water line but not the second.
- Subdrains are not anticipated to be needed at the site.

Our percolation Testing conclusions are as follows:

- Suitable percolation rates have been established (see calculation sheets, Appendix B).
- Based on the results of our percolation testing, shallow on-site soils at the subject site are considered to be suitable for water infiltration provided the system meets the guidelines for proper infiltration with regard to setbacks from buildings, property lines and groundwater levels.
- Groundwater was not encountered to a maximum explored depth of 98 feet below the existing grade within the subject site, and is not considered a concern for shallow site stormwater infiltration design. No storm water infiltration should be allowed to encroach within 10 vertical feet of the anticipated groundwater level.
- There is no historic high groundwater at the site. Groundwater is greater than 65 feet in depth. Mounding of groundwater surface is not an issue.
- There are no bedrock barriers at depth that will affect the migration of the storm water infiltration.
- Based on data presented in this report for percolation rate of representative onsite soils, it is our opinion that the adjusted percolation rate for the underlying sediments ranges from **11.39 to 37.61 inches per hour**. The site soils are considered suitable for stormwater infiltration.
- The basin area has very fast percolation rates and must have a constant head test performed once water and access are available more readily.
- Any proposed stormwater treatment system should be setback a minimum of 10 feet from the property line.
- Any water infiltration of stormwater runoff is not anticipated to adversely impact soil structure interaction, provided that the percolation area is setback a minimum of 10 feet from any building or wall foundations.
- Grassy swales shall be located a minimum of 10 feet from any building and property line and should drain a minimum of 2% gradient with no check damns. Where check dams are constructed, the swale shall have the same setbacks from building and property lines as other infiltration facilities.
- Provided that the percolation area is setback a minimum of 10 feet from any building or wall foundations horizontally or vertically; proposed foundations will not be adversely impacted from expansive soils.
- The infiltration facility shall be designed to overflow to the street in the event that the drainage capacity is exceeded or in case of future failure to adequately infiltrate.
- Based upon the relative density of the on-site soils as encountered during the previous site investigation, any water infiltration from a proposed storm water system is not anticipated to result in settlement or hydro-collapse to the soils underlying the site and therefore will not negatively impact any adjacent structures or improvements.
- The proper use and maintenance of the drainage systems are critical to maintain the useful design life per the guidelines set forth by the drain manufacturer.

4.0 RECOMMENDATIONS

4.1 Site Earthwork

We recommend that earthwork onsite be performed in accordance with the recommendations herein, the City of Santa Clarita grading Requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix H. In case of conflict, the recommendations in the following sections shall supersede those included as part of Appendix H.

4.1.1 Site Preparation

Prior to grading of areas to receive structural fill or engineered structures, all ground surfaces should be cleared of obstructions, any existing debris and stripped of vegetation. Heavy vegetation and debris should be removed and properly disposed of offsite. All debris from any demolition activities at the site should also be removed and disposed off-site. Holes or depressions resulting from the removal of buried obstructions should be replaced with compacted fill.

Following remedial removals, areas to receive fill should be scarified to a minimum depth of 6 inches, brought to a near-optimum moisture condition, and re-compacted to at least 90 percent relative compaction (based on American Standard of Testing and Materials [ASTM] Test Method D1557).

4.1.2 Removal and Recompaction

As discussed in Section 2.2, the upper one to two feet of surface materials have been tilled and therefore considered fill. The proposed site is underlain by unsuitable soils, which may settle under the addition of water, surcharge of fill and/or foundation loads. Therefore, compressible materials, within areas planned to support the proposed building structures, should be excavated to competent material and replaced with compacted fill soils. We anticipate removals/overexcavation on the site to range from approximately 4 to 15 feet below existing grade or to provide a minimum of 3 feet of newly compacted fill below the footing bottom elevations, whichever is deeper. However, localized, deeper removals should be anticipated where deemed necessary by the geotechnical consultant based on observations during grading. Removal bottoms should be scarified to a minimum depth of 6 inches, brought to at least optimum-moisture content, and recompacted. The fill prism beneath the building footings should extend downward at a 1:1 (horizontal to vertical) slope from the outside edge of the footing bottoms. The removals should extend a minimum of 5 feet beyond the building perimeters. In general, the intent of the remedial removals is to remove all undocumented fills, and unsuitable alluvium. Remedial removal depths across the site are shown on the attached Plates 1A and 1B. Removals along the perimeters of the site for proposed perimeter walls/retaining walls will require slot cutting if sloped excavations are not possible.

Based on the current site investigation, groundwater was not encountered to the maximum explored depth of 98 feet below the existing grade within the subject site. Groundwater is not anticipated to be encountered during site excavation.

4.1.3 Shrinkage/Bulking and Subsidence

Based on the site soils, bulking is not anticipated at the site. The preliminary estimated shrinkage/bulking for site bedrock is considered to be 0 percent. The preliminary estimated shrinkage factors of 25 percent for slopewash, 5 percent for Older Alluvium, and 5 to 15 percent for the alluvium and undocumented fill may be used for consideration of earthwork calculations. These are preliminary rough estimates which will vary with depth of removal, stripping losses, field conditions at the time of grading, etc.

4.1.4 Temporary Stability of Removal Excavations

Temporary excavations maybe cut vertically up to five feet. Excavations over five feet should be slot-cut, shored, or cut to a 1:1 (h:v) slope gradient. Surface water should be diverted away from the exposed cut, and not be allowed to pond on top of the excavations. Temporary cuts should not be left open for an extended period of time. Planned temporary conditions should be reviewed by the geotechnical consultant of record in order to reduce the potential for sidewall failure. The geotechnical consultant may provide recommendations for controlling the length of sidewall exposed.

Where sufficient space is not available for sloped cuts directly adjacent to existing structures or improvements the cut shall be performed by the A-B-C slot method as outlined below.

1. The banks of the excavation shall be made at 1H:1V or a combination of vertical cut and a 1H :1V.
2. Vertical cuts, not exceeding 8 feet in width are made in the locations of the first slot "A".
3. Back-fill and compact the first slot.
4. The second adjacent slot, "B" is excavated.
5. Back-fill and compact the second slot.
6. Then the third slot "C" is excavated.
7. Back-fill and compact the third slot.
8. Repeat the above steps until all the required excavations are performed adjacent to the existing improvements.

4.1.5 Fill Placement and Compaction

From a geotechnical perspective, the onsite soils are suitable for use as compacted fill, provided they are screened of rocks greater than 8 inches in maximum dimension, organic material, and construction debris. Areas prepared to receive structural fill and/or other surface improvements should be scarified to a minimum depth of 6 inches, brought to at least optimum-moisture content, and recompacted to at least 90 percent relative compaction (based on ASTM Test Method D1557). The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts generally not exceeding 8 inches in loose thickness. Placement and compaction of fill should be performed in accordance with local grading ordinances under the observation and testing of the geotechnical consultant.

If possible, import soils to be used as fill shall be essentially free from organic matter and other deleterious substances, and should contain no materials over 8 inches in maximum dimension, have a very low to low expansion potential (i.e Expansion Index ranging from 0 to 50), and negligible sulfate content. Representative samples of the desired import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing grading begins so that its suitability can be determined, and appropriate tests performed.

4.1.6 Trench Backfill and Compaction

The onsite soils may generally be suitable as trench backfill provided they are screened of rocks and other material over 6 inches in diameter and organic matter. Trench backfill should be compacted in uniform lifts (generally not exceeding 8 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (per ASTM Test Method D1557).

If trenches are shallow and the use of conventional equipment may result in damage to the utilities; clean sand, having sand equivalent (SE) of 30 or greater, should be used to bed and shade the utilities. Sand backfill should be densified. The densification may be accomplished by jetting or flooding and then tamping to ensure adequate compaction. A representative from LGC should observe, probe, and test the backfill to verify compliance with the project specifications.

4.2 Foundation Selection

4.2.1 General

Recommendations for foundation design and construction are presented herein. When the structural loads for the proposed structures are known they should be provided to our office to verify the recommendations provided. The three foundations recommended for the proposed structures are: (1) Conventional foundations; (2) Post-Tension foundations; or (3) Mat Slabs. Preliminary Recommendations for deepened foundations are also included for support of the planned bridge.

Based on the anticipated site geotechnical conditions, the site is considered suitable for the support of the anticipated structures using a conventional, post-tensioned, or mat slab-on-grade foundation system for very low to low expansion potential (0-50 Expansion Index).

The information and recommendations presented in this section are not meant to supersede design by the project structural engineer or civil engineer specializing in the structural design nor impede those recommendations by a corrosion consultant. Should conflict arise, modifications to the foundation design provided herein can be provided.

4.2.2 Bearing Capacity

Shallow foundations may be designed for a maximum allowable bearing capacity of 2,000 lb/ft^2 (gross), for continuous footings a minimum of 12 inches wide and 12 inches deep, and spread footings 24 inches wide and 12 inches deep, into certified compacted fill or competent alluvium. A factor of safety greater than 3 was used in evaluating the above bearing capacity value. This value maybe increased by 250 psf for each additional foot in depth and 100 psf for each additional foot of width to a maximum value of 3,000 psf.

Lateral forces on footings may be resisted by passive earth resistance and friction at the bottom of the footing. Foundations may be designed for a coefficient of friction of 0.35, and a passive earth pressure of 250 lb/ft^2/ft. The passive earth pressure incorporates a factor of safety of greater than 1.5.

All footing excavations should be cut square and level as much as possible, and should be free of sloughed materials including sand, rocks and gravel, and trash debris. Subgrade soils should be pre-moistened for the assumed vey low to low expansion potential (to be confirmed at the end of grading). These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only.

Bearing values indicated above are for total dead loads and frequently applied live loads. The above vertical bearing may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces.

4.2.3 Conventional Foundations

Continuous conventional footings should have minimum widths of 12 inches, 15 inches or 18 inches for one-story, two-story or three-story structures, respectively. Individual column footings should have a minimum width of 24 inches. Conventional foundations should be designed considering an effective plasticity index of 20.

Footings for proposed structures should have minimum depths (below lowest adjacent finish grade) of 18 inches and 12 inches for exterior and interior footings, respectively.

The subgrade should be moisture-conditioned and proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.

The underslab vapor/moisture retarder (i.e. an equivalent capillary break method) may consist of a minimum 15-mil thick moisture/vapor barrier (or equivalent) in conformance with ASTM E 1745 Class A material, placed in general conformance with ASTM E1643, underlain by a minimum 2-inch of sand, as needed. The sand layer requirements above the vapor barrier are the purview of the foundation engineer/structural engineer, and should be provided in accordance with ACI Publication 302 “Guide for Concrete Floor and Slab Construction”. These recommendations must be confirmed (and/or altered) by the foundation engineer, based upon the performance expectations of the foundation. Ultimately, the design of the moisture retarder system and recommendations for concrete placement and concrete mix design, which will address bleeding, shrinkage, and curling are the purview of the foundation engineer, in consideration of the project requirements provided by the architect and developer. The underslab vapor/moisture retarder described above is considered a suitable alternative in accordance with the Capillary Break Section 4.505.2.1 of the CALGreen code.

Subgrade soils should be pre-saturated to optimum moisture content to a depth of 12 inches for a very low expansion potential. Expansion index testing should be performed at the end of grading for confirmation. The minimum thickness of the floor slabs should be at least 4.5 inches, and joints should be provided per usual practice.

4.2.4 Post-Tension Foundations

Based on the anticipated site geotechnical conditions, the site may be considered suitable for the support of the anticipated structures using a post-tensioned slab-on-grade foundation system, for the anticipated very low to low expansive soils. The following section summaries our recommendations for the foundation system.

Table 3 contains the geotechnical recommendations for the construction of PT slab on grade foundations. The structural engineer should design the foundation system based on these parameters including the foundation settlement as indicated in the following section to the allowable deflection criteria determined by the structural engineer/architect.

Table 3
Preliminary Geotechnical Parameters for Post-Tensioned Foundation Design

Parameter	Value
Expansion Classification:	Very Low to Low Expansion
Thornthwaite Moisture Index (From Figure 3.3):	-20
Constant Soil Suction (From Figure 3.4):	PF 3.6
Center Lift Edge moisture variation distance (from Figure 3.6), e_m: Center lift, y_m:	Very Low to Low 9.0 feet 0.3 inches
Edge Lift Edge moisture variation distance (from Figure 3.6), e_m: Edge lift, y_m:	Very Low to Low 5.2 feet 0.7 inches
Soluble Sulfate Content for Design of Concrete Mix in Contact with Site Soils in Accordance with American Concrete Institute standard 318, Section 4.3:	Negligible Exposure
Corrosivity of Earth Materials to Ferrous Metals:	Moderately Corrosive
Modulus of Subgrade Reaction, k (assuming presaturation as indicated below):	100 pci (very low to low)
Additional Recommendations: 1. Presaturate slab subgrade to at least 1.2 times optimum moisture, to minimum depths of 12 inches below ground surface. 2. Install a 15-mil moisture/vapor barrier in direct contact with the concrete (unless superseded by the Structural/Post-tension engineer*) with minimum 1 inches of sand below the barrier. 3. Minimum perimeter foundation embedment below finish grade for moisture cut off should be 12 inches. 4. Minimum slab thickness should be 5 inches.	

* The above sand and Visqueen recommendations are traditionally included with geotechnical foundation recommendations although they are generally not a major factor influencing the geotechnical performance of the foundation. The sand and Visqueen requirements are the purview of the foundation engineer/corrosion engineer (in accordance with ACI Publication 302 "Guide for Concrete Floor and Slab Construction") and the homebuilder to ensure that the concrete cures more evenly than it would otherwise, is protected from corrosive environments, and moisture penetration of through the floor is acceptable to future homeowners. Therefore, the above recommendations may be superseded by the requirements of the previously mentioned parties.

4.2.5 Mat Foundations

Mat foundations can be used for support of proposed buildings. An allowable soil bearing pressure of 1,000 psf may be used for the design of the mat at the surface under the slab area. The allowable bearing value is for total dead loads and frequently applied live loads and may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces. A coefficient of vertical subgrade reaction, k, of 100 pounds per cubic inch (pci) may be used to evaluate the pressure distribution beneath the mat foundation. The magnitude of total and differential settlements of the mat foundation will be a function of the structural design and stiffness of the mat.

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. Foundations may be designed for a coefficient of friction of 0.35. Minimum perimeter footing embedment provided in the previous sections maybe reduced for the mat slab design.

Coordination with the structural engineer will be required in order to ensure structural loads are adequately distributed throughout the mat foundation to avoid localized stress concentrations resulting in potential settlement. The foundation plan should be reviewed by LGC to confirm preliminary estimated total and differential static settlements.

4.2.6 Deepened Foundations (CIDH Piles)

The allowable axial capacities of 24 and 30-inch diameter cast-in-place friction piles are provided on Figures B-1 and B-2. The skin friction in the upper 10 feet below design grade should be neglected. End bearing should be neglected. Fixity may be taken at five feet into competent material. The lateral resistance may be taken as 250 psf per foot of depth to a maximum allowable passive pressure of 2,500 psf and the lateral sliding may be taken as 0.35. The lateral resistance in the upper 5 feet should be neglected. The passive earth pressure may be increased by 100 percent for isolated piles. Piles with spacing greater than 3 times of pile diameter can be considered as isolated piles. Based on the competent native bedrock encountered, it is our opinion that the surrounding foundation materials will furnish adequate lateral support for the caissons. These recommendations should be reevaluated once the design for the bridge is available.

The installation of caissons is critical to ensure successful performance of the foundations. Extreme care in drilling, placement of steel and concrete will be essential to the quality of the caissons. If a flight auger is used for drilling, it will be necessary to drill the bottom 2 feet with a bucket auger to achieve adequate cleanout of loose or disturbed soils. Alternative methods for cleanout will be considered and should be approved by the geotechnical consultant. Concrete placement by pumping and tremie tube starting from the bottom of the pile boring is recommended. Concrete placement should be continuous. Prior to steel and concrete placement, excavations should be inspected and approved by the geotechnical consultant.

4.2.7 Foundation Settlement

Based on our current understanding of the project, the results of the site investigations and the recommended remedial grading with shallow foundations embedded into compacted fills with the recommended removals, we estimate the post-construction settlement of the site to be less than 1-inch with a differential settlement of approximately less than ½ -inch in 30 feet for shallow foundations. Post-construction settlement should also include an estimated total seismic settlement of differential seismic settlement up to 1.75 inches and a differential seismic settlement of 0.9 inches.

Settlement for deepened foundations is estimated the post-construction settlement of the site to be less than 1-inch with a differential settlement of approximately less than ½ -inch in 30 feet.

The estimated settlements provided herein should be reevaluated once foundation loads/types are made available, as appropriate.

4.3 Lateral Earth Pressures and Retaining Wall Design Considerations

The following lateral earth pressures may be used for the design of any future site retaining walls (if any). We recommend low expansive soils for retaining wall backfill if no onsite soils fit the required minimum parameters (SE >30). The recommended lateral pressures for approved soils (expansion index less than 30 per U.B.C. 18-I-B) for level or sloping backfill are presented on the table below. The recommended lateral pressures for clean sand or approved select soils for level or sloping backfill are presented on the following Table 4.

Table 4
Lateral Earth Pressures for Retaining Walls

Conditions	Equivalent Fluid Weight (pcf)		
	Level Backfill	**2:1 Backfill Sloping Upwards**	**Seismic Earth Pressure (pcf) ***
	Approved Select Material	**Approved Select Material**	
Active	31	45	17
At-Rest	50	72	27
Passive	250	-	-

* For walls with greater than 6-feet in backfill height, the above seismic earth pressure should be added to the static pressures given in the table above. This dynamic pressure should be added to the pressures given in Table 3 and considered as a triangular distribution with the resultant acting at 1/3H in relation to the base of the retaining wall footing (where H is the retained height). The aforementioned incremental seismic load was determined in general accordance with LA County Administrative Manual S004.0 for determining earth pressures as a result of seismic events.

Embedded structural walls should be designed for lateral earth pressures exerted on them. The magnitude of these pressures depends on the amount of deformation that the wall can yield under load. If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for "active" pressure. If the wall cannot yield under the applied load, the shear strength of the soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for "at-rest" conditions. If a structure moves toward the soils, the resulting resistance developed by the soil is the "passive" resistance.

For design purposes, the recommended equivalent fluid pressure for each case for walls founded above the static groundwater and backfilled with low expansive onsite or import soils is provided in the table above. The equivalent fluid pressure values assume free-draining conditions. The backfill soils should be compacted to at least 90 percent relative compaction. The walls should be constructed and backfilled as soon as possible after backcut excavation. Prolonged exposure of backcut slopes may result in some localized slope instability. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Surcharge loading effects from any adjacent structures should be evaluated by the geotechnical and structural engineers. Surcharge loading on retaining walls should be considered when any loads are located within a 1:1 (horizontal to vertical) projection from the base of the retaining wall and should be added to the applicable lateral earth pressures. Where applicable, a minimum uniform lateral pressure of 100 psf should be added to the appropriate lateral earth pressures to account for typical vehicle traffic loading.

All retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. The outlet pipe should be sloped to drain to a suitable outlet. Typical wall drainage design is shown on the attached Figure 3. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is generally a white crystalline powder (discoloration) that results when water, which contains soluble salts, migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

For sliding resistance, the friction coefficient of 0.35 may be used at the concrete and soil interface. Wall footings should be designed in accordance with structural considerations. The passive resistance value may be increased by one-third when considering loads of short duration such as wind or seismic loads. For short term loading (i.e. seismic) the allowable bearing capacity may be increased by one-third for seismic loading.

Shallow foundations recommendations and bearing capacities should be designed per Section 4.2.2. All excavations should be made in accordance with Cal OSHA. Excavation safety is the sole responsibility of the contractor.

4.4 Pavement Recommendations

Based on an R-value of 35, and assumed Traffic Indices (TI's) of 5, 6 and 7, we recommend the following minimum pavement sections (Table 5). The R-value should be confirmed during the concluding stages of grading, and the final pavement section should be designed accordingly. TI's for the streets within the subject project site should be obtained from the appropriate regulatory agency or calculated by a traffic engineer. Final pavement sections should be confirmed by the project civil engineer based upon the project traffic index and the City of Santa Clarita minimum requirements, as necessary.

TABLE 5
Recommended Minimum Pavement Sections

Traffic Index	5	6	7
Asphalt Concrete (in.)	3.5	4	5
Aggregate Base (in.)	5	6	7

Portland Cement Concrete Pavement (PCCP) may be designed using a minimum of 8-inches of Portland cement concrete over 8-inches of compacted aggregate base. The modulus of rupture of the concrete should be a minimum of 500 pounds per square inch (psi) at 28 days. Contraction joints should be placed at maximum 10-foot spacing. Where the outer edge of a concrete pavement connects to an asphalt pavement, the concrete slab should be thickened by 50 percent at a taper not to exceed a slope of 1 in 10.

The aggregate base material should conform to the specifications for Crushed Miscellaneous Base or Crushed Aggregate Base (Standard Specifications for Public Works Construction). The base material should be compacted to achieve a minimum relative compaction of 95 percent. The subgrade should achieve a minimum relative compaction of 90 percent through the upper 12 inches. Base and subgrade materials should be moisture-conditioned to relatively uniform moisture content at or slightly over optimum.

4.5 Corrosivity to Concrete and Metal

The National Association of Corrosion Engineers (NACE) defines corrosion as "a deterioration of a substance or its properties because of a reaction with its environment." From a geotechnical viewpoint, the "environment" is the prevailing foundation soils and the "substances" are the reinforced concrete foundations or various buried metallic elements such as rebar, piles, pipes, etc., which are in direct contact with or within close vicinity of the foundation soil.

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates and/or pH values of less than 5.5. ACI Criteria (ACI 318R-08 Table 4.3.1), provides specific guidelines for the concrete mix design when the soluble sulfate content of the soils exceeds 0.1 percent by weight or 1,000 ppm. The minimum amount of chloride ions in the soil environment that are corrosive to steel, either in the form of reinforcement protected by concrete cover, or plain steel substructures such as steel pipes or piles, is 500 ppm per California Test 532.

Based on finish grade soil testing, the onsite soils are classified as having a negligible sulfate exposure condition in accordance with ACI 318R-08 Table 4.3.1. Concrete in contact with onsite soils should be designed in accordance with ACI 318R-08 Table 4.3.1 for the negligible category. It is also our opinion that onsite soils should be considered moderately corrosive to buried metals.

4.6 Nonstructural Concrete Flatwork

Concrete flatwork (such as trash enclosure, walkways, etc.) have a high potential for cracking due to changes in soil volume related to soil-moisture fluctuations because these slabs are typically much thinner than foundation slabs and are not reinforced with the same dynamic as foundation elements. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in the following table. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints, but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

Table 6

Nonstructural Concrete Flatwork

	Concrete Flatwork Pedestrian Use	PCC Paving @ Trash Enclosure
Minimum Thickness (in.)	4	8
Presaturation	Presoak to 12 inches	Presoak to 12 inches
Reinforcement	Welded Wire Mesh 6x6 6/6 (or equivalent)	No. 3 at 18 inches on centers
Crack Control	Saw cut or deep tool joint to a minimum of 1/4 the concrete thickness	Saw cut or deep tool joint to a minimum of 1/4 the concrete thickness
Subgrade Compaction	90% Relative Compaction in Upper 12”	95% Relative Compaction in Upper 12”

4.7 Control of Surface Water and Drainage Control

Positive drainage of surface water away from structures is very important. No water should be allowed to pond adjacent to buildings. Positive drainage may be accomplished by providing drainage away from buildings at a gradient of at least 2 percent for a distance of at least 5 feet, and further maintained by a swale or drainage path at a gradient of at least 1 percent. Where necessary, drainage paths may be shortened by use of area drains and collector pipes.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.8 Construction Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC.

Construction observation and testing should also be performed by the geotechnical consultant during future grading, excavations, backfill of utility trenches, preparation of pavement subgrade and placement of aggregate base, foundation or retaining wall construction or when an unusual soil condition is encountered at the site. Grading plans, foundation plans, and final project drawings should be reviewed by this office prior to construction.

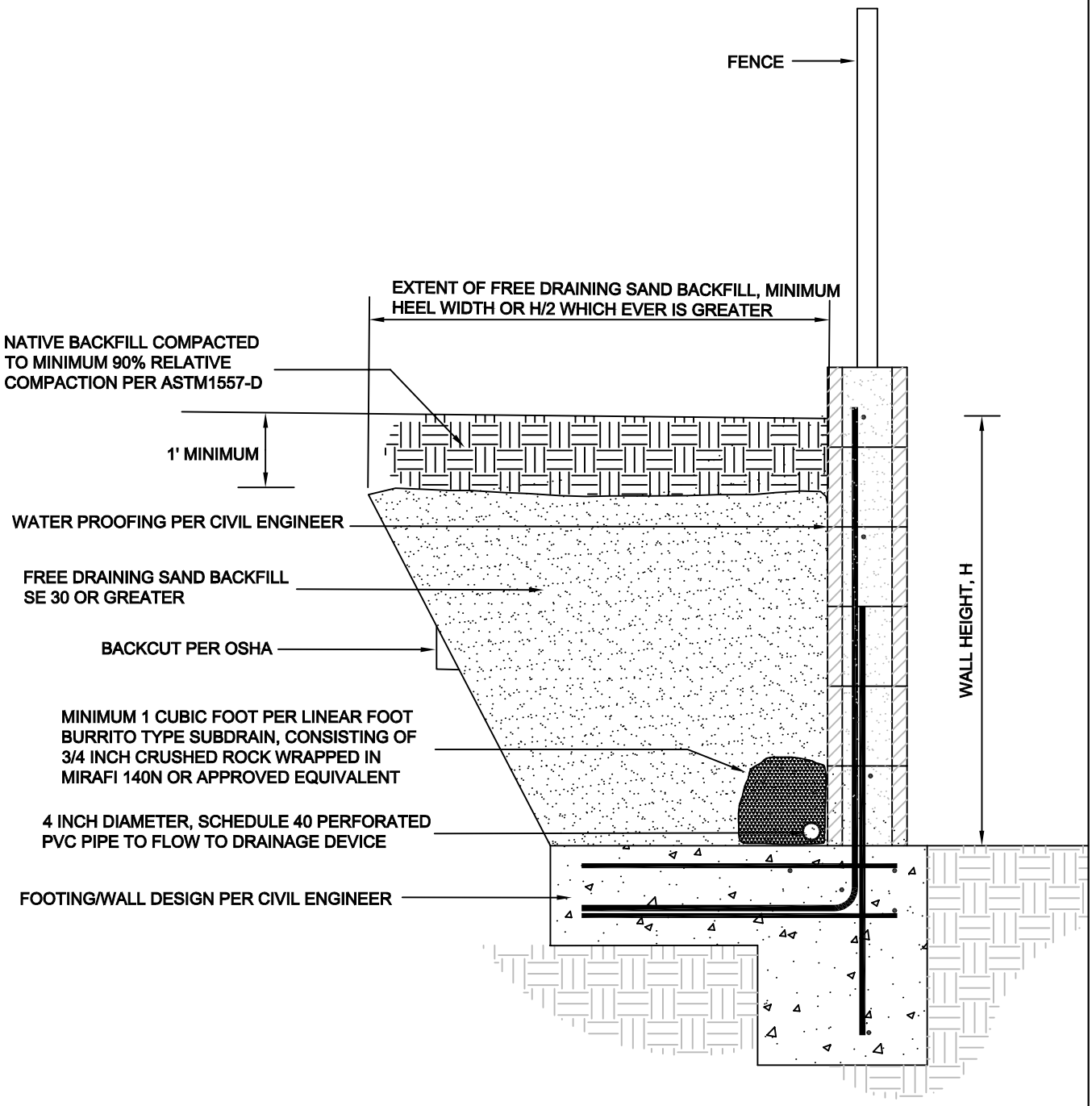
5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions revealed by excavation may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project soils engineer and geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.



LGC

Figure 2: Retaining Wall Detail, Sand Backfill

Project Name	LA Railroad 93 - Blackhall
Project No.	213015-01
Eng. / Geol.	ACR/SMB
Scale	n/a
Date	September 2021

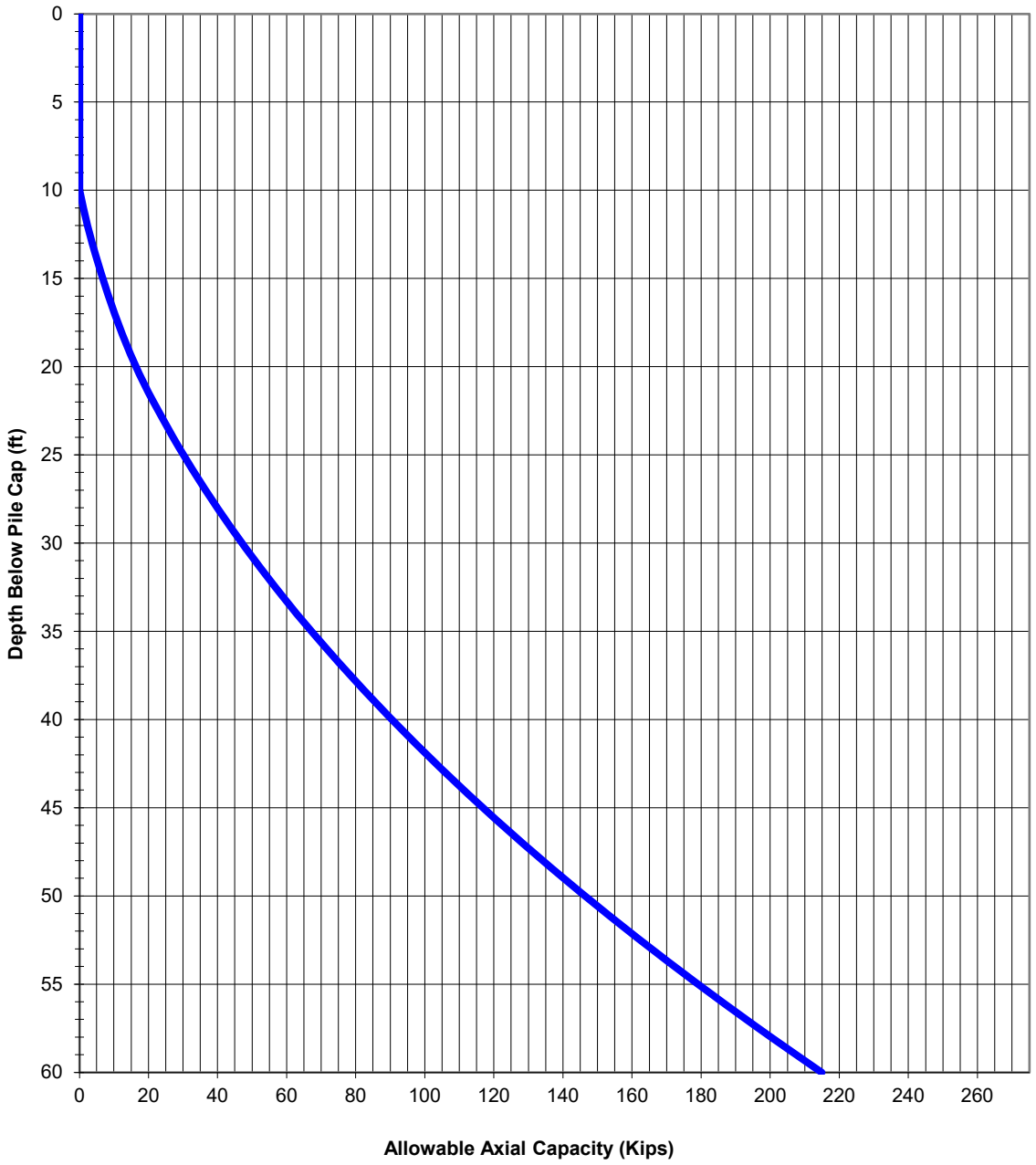


Figure B-1

LGC

Allowable Axial Compressive Capacity for 24" Diameter CIDH Piles

Project Number:	213015-01
Date:	Sep-21

LA Railroad 93

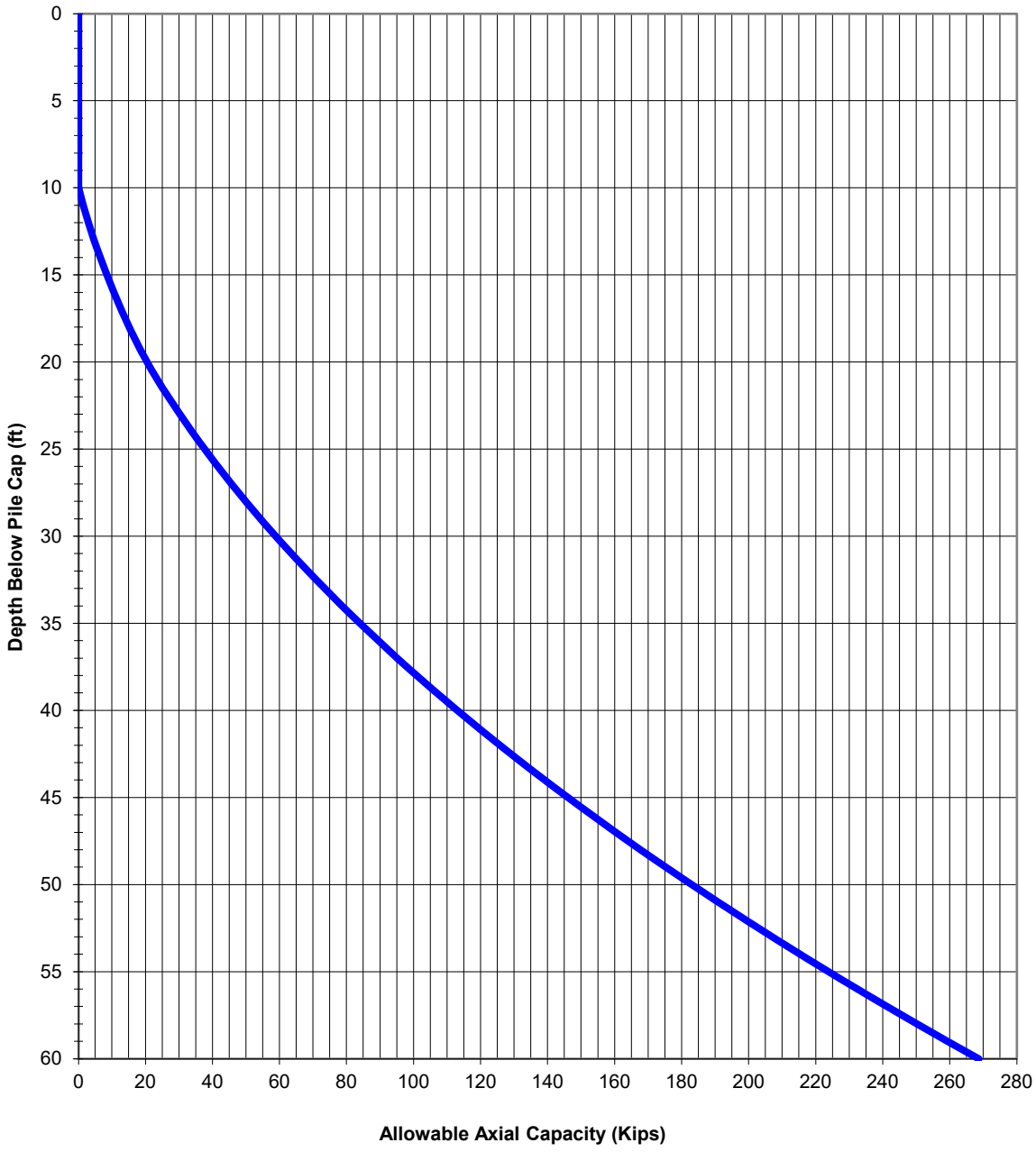


Figure B-2

LGC

Allowable Axial Compressive Capacity for 30" Diameter CIDH Piles

Project Number:	213015-01
Date:	Sep-21

LA Railroad 93

HALL STUDIOS-SANTA CLARITA
SITE DEVELOPMENT PLAN
LIMINARY GRADING/DRAINAGE PLAN)
5/18/21

EXPLANATION

Qsw	Slopewash
Qal	Alluvium
Qoal	Older Alluvium
Qp	Pacoima Formation
LGC-B14	LGC Boring
CPT-J	CPT Sounding, (S)=Seismic
B-10	Borings By Geotechnologies
TP-8	LGC Test Pit (2015)
	Horizontal Bedding
<10°	Bedding attitude
	Geologic Contact, approx.
C C'	Cross Section
15'	Approximate Depth of Removal
	Approximate Limits of Removal

PROJECT ADDRESS: VACANT LAND 95± ACRES, NE CORNER OF RAILROAD AVE. & 13TH ST., SANTA CLARITA, CA 91321

OWNER: LA RAILROAD 93, LLC, C/O BLACKHALL STUDIOS, 1415 CONSTITUTION ROAD SE, ATLANTA, GA 30316, (949) 955-3565, ATTN: JEFF WEBER

SECTION A-A
NOT TO SCALE

SCALE: 1"=60'

Geotechnical Map
Blackhall Studios
City of Santa Clarita, California

PLATE 1A

LGC Valley, Inc.
28202 Constellation Road, Valencia, CA 91355
TEL (661) 702-6474 FAX (661) 702-6475

PROJECT NAME	LA Railroad 93
PROJECT NO.	21301-01
ENG. / GEOL	ACR / SMB
SCALE	1" = 60'
DATE	September 2021

BLACKHALL STUDIOS-SANTA CLA

SITE DEVELOPMENT PLAN
(PRELIMINARY GRADING/DRAINAGE PLAN)
5/18/21

VICINITY MAP
NOT TO SCALE

LEGEND:
- TRACT BOUNDARY
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED DAYLIGHT LINE
- EXISTING PARCEL LINE
- PROPOSED LOTLINE
- PROPOSED RIGHT OF WAY
- EXISTING RIGHT OF WAY
- PROPOSED CURB
- EXISTING CURB
- PROPOSED STORM DRAIN (PRIVATE)
- EXISTING STORM DRAIN
- PROPOSED SEWER (PRIVATE)
- EXISTING SEWER
- PROPOSED WATER
- EXISTING WATER
- PROPOSED FIRE
- EXISTING FIRE
- PROPOSED GAS LINE
- EXISTING GAS LINE
- PROPOSED JOINT TRENCH
- EXISTING JOINT TRENCH
- PROPOSED FIRE HYDRANT
- UNDERGROUND ADS WATER QUALITY TREATMENT UNIT
- ELECTRICAL TRANSFORMER
- TRASH ENCLOSURE

Qp
Qsw
Qal
Existing Cut Slope
Cobbles/Boulders
Debris Fence
Remove Qsw beneath Retaining Wall
Removals extend beneath Retaining Wall
Slot Cuts
LGC-B8
LGC-B7
LGC-B14
LGC-B13
LGC-B11
LGC-B10
LGC-B12
LGC-B6
PERC 1
PERC 2
PERC 3
CPT-E
CPT-F(S)
CPT-I(S)
CPT-J
CPT-D
B-1
B-2
B-3
B-4
B-5
B-6
TP-8
TP-4
TP-7
TP-6
A
A'
B
B'
TRACT BOUNDARY
PROP. CLASS I BIKE TRAIL
PROP. MWD ACCESS ROAD IMPROVEMENT
BLACKHALL STUDIOS PROPERTY
MAINT. ACCESS TURNAROUND
12' HIGH PERIMETER WALL
12' HIGH PERIMETER FENCE
POTENTIAL BASE CAMP TRAILER PARKING
BASE CAMP 16 STALLS
STRIPED ISLAND (TYP.)
PROP. BRIDGE
REGULATORY FLOODWAY LIMIT
MAINTENANCE ACCESS ROAD
PROP. NEW WATER ALIGNMENT
CDFW JURISDICTIONAL LIMIT
PROP. NEW SEWER ALIGNMENT
PLACERITA CREEK
EXIST. 8" ACP WATER
EXIST. 10' WIDE SEWER EASEMENT TO BE QUITCLAIMED
EXIST. 15' WIDE SEWER EASEMENT TO REMAIN
WQT BASIN 1219.0 WS 1209.0 FG
DEBRIS BASIN
LOW FLOW SPLITTER
SPLITTER MANHOLE
UNDERGROUND ADS WQT UNIT
SUPPORT BLDG 2 STORIES BLDG. 21
STAGE A BLDG. 19 1237.7 FF 1229.0 PAD
STAGE B BLDG. 15 1233.7 FF 1232.5 PAD
STAGE B BLDG. 16 1233.7 FF 1232.5 PAD
STAGE B BLDG. 17 1233.7 FF 1232.5 PAD
STAGE B BLDG. 18 1233.7 FF 1232.5 PAD
STAGE B BLDG. 11 1234.7 FF 1234.0 PAD
STAGE B BLDG. 12 1233.7 FF 1233.0 PAD
STAGE C BLDG. 19 1237.7 FF 1229.0 PAD
STAGE D BLDG. 7 1239.7 FF 1238.0 PAD
STAGE D BLDG. 8 1239.7 FF 1238.0 PAD
STAGE D BLDG. 9 1237.7 FF 1237.0 PAD
OAK #14 TO REMAIN
OAK #15 TO REMAIN
OAK #16 TO REMAIN
OAK #3 (X) TO BE REMOVED
OAK #4 (X) TO BE REMOVED
OAK #5 (X) TO BE REMOVED
OAK #6 (X) TO BE ENCROACHED
EXIST. 18" VCP SEWER PER PC 03-08 TO BE REMOVED
EXIST. 6" ACP WATER TO BE REMOVED
EXIST. 8" SEWER TO BE RELOCATED
PROP. 42" SD PER MTD XXXX (CITY MAINTAINED)
4'-6" HIGH RET. WALL
6'-8" HIGH RET. WALL
2'-4" HIGH RET. WALL
EXISTING R/W
RAILROAD AVENUE
EXIST. CATV
EXIST. 2" GAS

ALLIANCE LAND PLANNING & ENGINEERING INC.
3200 EMBARCADERO, SUITE 220, OXNARD, CA 93036
TEL (805) 485-8888 FAX (805) 485-8858
23161 MILL CREEK DRIVE, SUITE 100, LAGUNA HILLS, CA 92653
TEL (949) 768-0768
CIVIL ENGINEERING • LAND PLANNING • NELSON DESIGN • SURVEYING

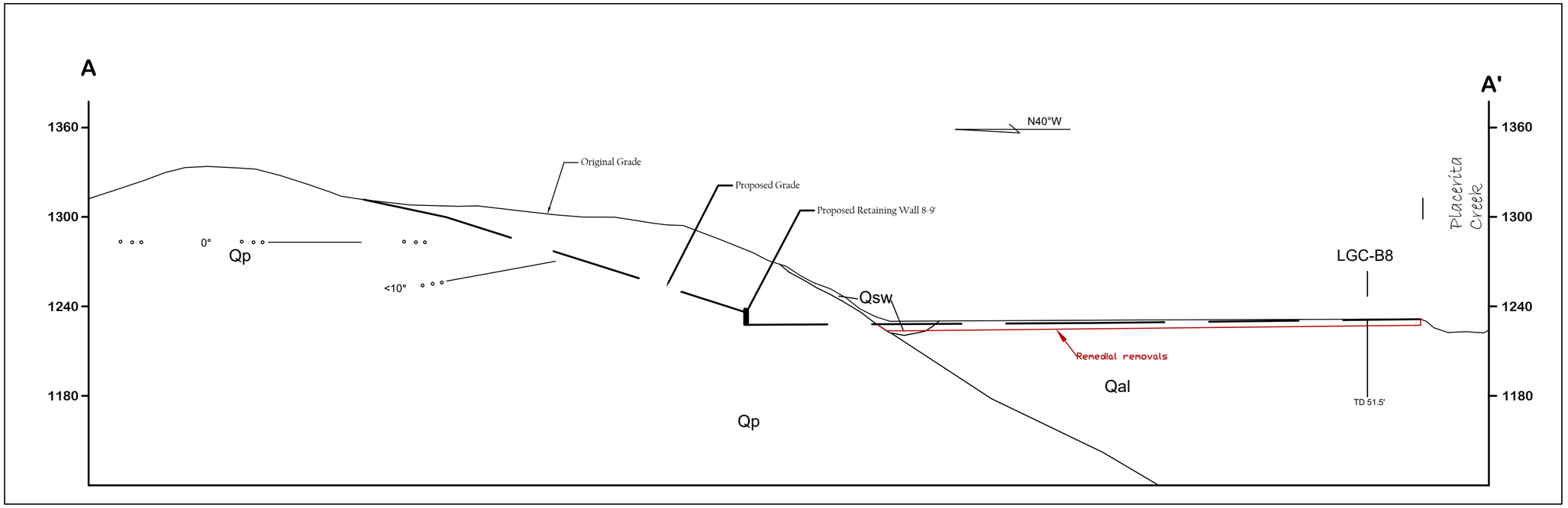
I:\CAD\2020\SITE DEVELOPMENT\2020_OVERALL_SITE_DEV_PLAN.dwg

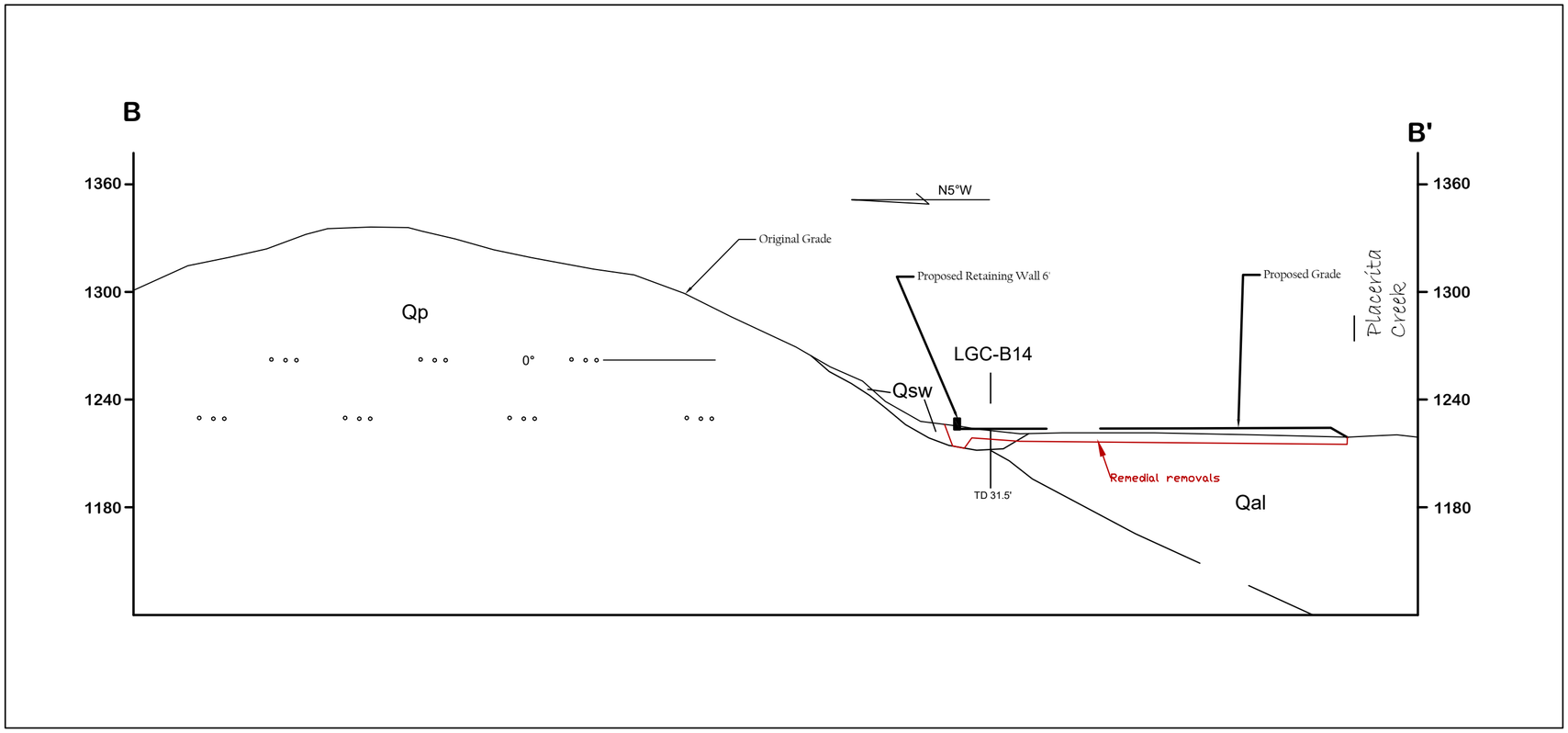
Geotechnical Map
Blackhall Studios
City of Santa Clarita, California

PLATE 1B

LGC Valley, Inc.
28202 Constellation Road
Valencia, CA 91355
TEL (661) 702-6474 FAX (661) 702-6475

PROJECT NAME	LA Railroad 93
PROJECT NO.	213015-01
ENG. / GEOL.	ACS / SMB
SCALE	1" = 60'
DATE	September 2021





Geotechnical Cross Sections
Blackhall Studios
City of Santa Clarita, California

PLATE 2

LGC Valley, Inc.
28532 Constellation Road
Valencia, CA 91355
TEL. (661) 702-8474 FAX (661) 702-8475

PROJECT NAME	LA Railroad 93
PROJECT NO.	213015-01
ENG. / GEOL.	ACR / SMB
SCALE	1" = 60'
DATE	September 2021

5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions revealed by excavation may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project soils engineer and geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

APPENDIX A

References

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Geotechnical Boring Log LGC-B1

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-A**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0						SM/ML	**Alluvium (Qal):** Gray brown, silty very fine SAND/sandy SILT, dry, loose, few rounded pebbles	
			1	5 7 8	100.0	4.6			
	5		2	7 9 12	106.2	7.5	SC	Brown, clayey SAND, damp, medium dense	
			3	9 31 43	131.2	4.3	CL	**Older Alluvium (Qoal):** Olive brown, sandy CLAY w/gravel, damp, hard Bulk sample 7-10'	COR MAX
	10		4	12 29 37			SP	Yellow brown, fine to coarse SAND w/gravel, damp, very dense	
	15		5	8 15 24			ML	Light brown, sandy SILT, damp, hard, iron staining, carbon flecks,	
	20		6	44 50/6"			SC/SM	Yellow brown, clayey/silty SAND, moist, very dense, pebbles	
	25		7	10 14 27			ML	Yellow brown, clayey SILT, moist, hard	
	30								

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GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B1

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-A**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	14 22 50/4"			SM/ML	Yellow brown, fine to coarse SAND, reddish brown clayey SAND and gray SILT, damp, very dense/hard	
								TD 31.5'	
	35							No Groundwater	
	40								
	45								
	50								
	55								
	60								

LGC

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Geotechnical Boring Log LGC-B2

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-B**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	0						ML	**Alluvium (Qal):** Yellow brown, sandy SILT w/gravel, dry, very stiff, pebbles, friable	
			1	7 11 14					
	5		2	4 5 9	85.1	6.7	ML	Yellow brown, SILT, dry, stiff, friable	
			3	5 9 12	98.2	4.3	ML	Yellow brown, fine sandy SILT, dry, very stiff	SA
	10		4	6 8 11	91.1	6.6	ML	Yellow brown, SILT, dry-damp, very stiff, carbonate veining, carbon flecks, minor iron staining	CN
	15		5	8 12 14	108.5	5.7	ML	Yellow brown, slightly clayey SILT, damp, very stiff, minor carbonate	
								Older Alluvium (Qoal):	
	20		6	21 50/4"			SP	Yellow brown, fine to coarse SAND, moist, very dense, gravels	
	25		7	16 50/6"			SP	Yellow brown, fine to coarse SAND w/gravel, moist, very dense	
	30								

LGC

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GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B2

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-B**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	21 26 29			SP	Yellow brown, fine to coarse SAND, moist, very dense, gravels	
								TD 31.5' No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

LGC

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GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B3

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-C**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0						GP	**Older Alluvium (Qoal):** Light yellow brown, gravelly SAND, dry, very dense, possible cobbles	
			1	38 50/5"					
	5		2	45 50/6"			GP	Light yellow brown, gravelly SAND, dry, very dense, possible cobbles	
			3	35 38 40	110.9	5.3		Yellow brown, silty fine to coarse SAND w/gravel,dry, very dense	
	10		4	28 35 50/5"			SM	Yellow brown, silty fine to coarse SAND w/gravel,dry, very dense Bulk sample 10-15'	
	15		5	19 27 30			SM	Yellow brown, silty fine to coarse SAND w/gravel,dry, very dense	
	20		6	50/5"				No Sample Recovery	
	25		7	33 20 35			CL	Yellow brown, silty/sandy CLAY, moist, hard	
	30								

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Geotechnical Boring Log LGC-B3

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-C**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	50/3"				No Sample Recovery	
								TD 31.5'	
								No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

LGC

LGC VALLEY, INC.
GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B4

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-D**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: LF Sampled By: LF	Type of Test
	0							**Older Alluvium (Qoal):**	
			1	9 20 23			SM	Light brown, silty SAND, dry, medium dense, angular grantic cobble fragments	
	5		2	12 15 17	109.9	5.5	SC	Brown, clayey SAND, moist, medium dense, subrounded cobbles, gravel	CN
			3	50/0"				No Sample Recovery	
	10		4	50/4"				No Sample Recovery	
	15		5	50/0"				No Sample Recovery	
	20		6	26 38 43			SM	Yellow brown, silty fine to coarse SAND, moist, very dense, gravels, cobbles	
	25		7	27 50/6"			SM	Yellow brown, silty fine to coarse SAND, moist, very dense, gravels, cobbles	
	30								

LGC

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Geotechnical Boring Log LGC-B4

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-D**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: LF Sampled By: LF	Type of Test
	30			17 36 50/6"			SM	Yellow brown, silty fine to coarse SAND, moist, very dense, subangular gravels	
								TD 31.5' No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

LGC

LGC VALLEY, INC.
GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B5

Date: 7-28-201	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-E**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
	0						ML	**Alluvium (Qal):** Light brown-olive, sandy SILT, dry, stiff, roots, pores	
			1	6 10 12	109.0	0.9	SM	Light gray brown, slightly silty coarse SAND w/gravel, dry, medium dense, Bulk sample 2-5'	RV
	5		2	16 17 21	111.0	1.5	SM	Light gray brown, slightly silty coarse SAND w/gravel, dry, medium dense,	
			3	5 6 10			SM/SC	Brown, clayey/silty SAND w/gravel, damp, medium dense.	CN
	10		4	10 11 15	111.9	10.0	SP	Brown, fine to medium SAND, damp, medium dense	SA
	15		5	7 8 17			SM/GP	Dark brown, silty SAND (top 2/3 sample), Gray, gravelly SAND, damp, medium dense, carbonate	
								Older Alluvium (Qoal): Increased gravel, harder drilling	
	20		6	43 50/3"			SP	Yellow brown, fine to coarse SAND, damp, very dense	
	25		7	50/5"			SP	Yellow brown to gray, fine to coarse SAND w/gravel, damp, very dense	
	30								

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Geotechnical Boring Log LGC-B5

Date: 7/28/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-E**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
	30		8	37 50/3"				No Sample Recovery, broken sampler	
								TD 31' No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

LGC

LGC VALLEY, INC.
GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B6

Date: 8/11/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-F**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**Alluvium (Qal):**	
			1	4 5 5			SP	Yellow brown, fine to coarse SAND, dry, loose	
	5		2	8 12 14			SP	No rings in sampler, same as above	
			3	4 7 9	107.8	2.1	ML/CL	Brown, clayey/sandy SILT, moist, very stiff	
	10		4	3 4 4	106.4	10.0	SP/SC	Interlayered, brown, fine SAND and Clayey fine SAND moist, medium dense	
	15		5	3 4 4			SM	Brown, silty fine SAND, moist, loose, minor coarse sand fraction	SA
	20		6	8 9 10	104.3	15.1	SM/ML	Brown, silty SAND and sandy SILT, moist, medium dense, very stiff	
	25		7	10 14 16			SP	Yellow brown, fine to coarse SAND, moist, medium dense	
	30								

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LGC VALLEY, INC.
GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B6

Date: 8/11/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-F**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	8 12 18			ML	Brown, SILT, moist, very stiff, minor carbonate	
	35		9	4 4 9			ML	Brown, SILT, moist, very stiff, minor carbonate	
	40		10	15 50/5"			SP	Yellow brown, fine to coarse SAND w/gravels and cobbles, moist very dense	
	45		11	13 17 21			SM	Gray brown, fine to coarse SAND, moist, dense, gravels and minor SILT	
	50		12	17 50/5"			ML/CL	Yellow brown, sandy/clayey SILT, moist, hard	
	55							TD 51' No Groundwater	
	60								

LGC VALLEY, INC.
GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B7

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-G**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	0							**Alluvium (Qal):**	
			1	12 17 18			SM	Light gray, silty fine to coarse SAND w/gravels, dry, loose to medium dense, cobbles	
	5		2	9 10 15	115.3	1.4	SP	Yellow brown, fine to medium SAND, dry, medium dense, few gravels	SA
			3	7 9 11			SP	Yellow brown, fine to medium SAND, dry, medium dense, few gravels	CN
	10		4	6 11 14			SM	Brown, silty fine to coarse SAND, moist, medium dense, gravels	DS
	15		5	4 6 7	---	3.1	SW/SM	Brown, silty fine to coarse SAND, moist, medium dense, few pebbles	SA
	20		6	12 18 21			SM	Brown, silty fine to coarse SAND, moist, medium dense	DS
	25		7	6 8 8			SM	Brown, silty fine to coarse SAND, moist, medium dense	
	30								

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GEOTECHNICAL CONSULTING

Geotechnical Boring Log LGC-B7

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-G**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		8	38 50/5"			SM	Gray, silty fine SAND w/cobbles, damp, dense (rock in tip of sampler)	
	35		9	5 18 24			SP	Gray, fine to coarse SAND, damp, dense	
	40		10	19 26 38			SM	Yellow brown, silty fine to coarse SAND, moist dense, gravels	
	45		11	4 4 5			ML/SC	Yellowish brown, very sandy SILT/Clayey SAND, moist, stiff	SA
	50		12	14 18 19	119.8	2.7	SM/ML	Brown, very silty fine SAND/sandy SILT, moist, dense/very stiff	
								TD 51.5' No Groundwater	
	55								
	60								

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Geotechnical Boring Log LGC-B8

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-H**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**Alluvium (Qal):**	
			1	8 13 19			SM	Light yellow brown, silty fine to coarse SAND w/gravel, dry, medium dense	
	5		2	15 16 18			SM	Light yellow brown, silty fine to coarse SAND w/gravel, dry, medium dense	
			3	7 9 11			SW	Yellow brown, fine to coarse SAND w/gravel, damp, medium dense	SA
	10		4	8 12 17			SP	Yellow brown, fine to coarse SAND w/gravel, damp, medium dense	CN
								Coarse SAND	
	15		5	11 13 13			SM	Yellow brown, silty fine SAND, moist, medium dense	CN DS
								Coarse SAND	
	20		6	6 7 11			SW	Yellow brown, fine to coarse SAND, damp-moist, medium dense	SA
	25		7	21 30 42			SP	Yellow brown, coarse SAND w/gravel, moist, very dense	
	30								

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Geotechnical Boring Log LGC-B8

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-H**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	8 15 30			SM	Yellow brown, slightly silty, fine to coarse SAND, moist, dense	
	35		9	27 50/4"			SP	Yellow brown, fine to coarse SAND, moist, very dense, gravels and cobbles (sampled through cobble)	
	40		10	4 11 19			SM	Yellow brown, silty fine to coarse SAND w/gravel, moist, dense	
	45		11	31 50/5"			SM	Yellow brown, silty fine to coarse SAND w/gravel, moist, very dense	
	50		12	18 23 50/4"			SM	Yellow brown, slightly silty, fine to coarse SAND w/gravel, moist, very dense	
	55							TD 51.5' No Groundwater	
	60								

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Geotechnical Boring Log LGC-B9

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-I**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	0						SM	**Alluvium (Qal):** Gray brown, silty fine to coarse SAND, dry, loose, medium dense	
			1	8 9 11					
	5		2	12 9 24	109.1	2.1	SP	Yellow brown, fine to coarse SAND, moist, medium dense	
			3	4 4 8	106.1	16.1	CL	Yellow brown, sandy silty CLAY, moist, loose to medium dense	SA
	10		4	7 9 9	109.6	4.9	SM/SC	Yellow brown, silty fine to coarse SAND, moist, medium dense	CN
	15		5	2 2 3			ML	Brown, clayey SILT, moist, medium stiff	
								Older Alluvium (Qoal):	
	20		6	28 35 40			GP	Brown, sandy GRAVEL, moist, very dense, cobbles	
	25		7	19 27 30			SM	Brown, silty fine SAND, moist, very dense	
	30								

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Geotechnical Boring Log LGC-B9

Date: 8/3/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-I**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	18 22 30			SC	Brown, clayey fine SAND, moist, very dense	
								TD 31.5' No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

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Geotechnical Boring Log LGC-B10

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-J**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	0						SM/ML	**Alluvium (Qal):** Yellow brown, silty fine SAND/sandy SILT, dry, loose-medium dense, porous	
			1	4 6 10					
	5		2	6 10 10	101.2	6.1	ML	Yellow brown, sandy SILT, dry, stiff, rootlets	
			3	6 10 15	116.3	4.6	ML	Yellow brown, fine sandy SILT, damp, very stiff	
	10		4	10 10 11	120.5	2.0	SW/SM	Yellow brown, fine to coarse SAND, damp, medium dense	SA
	15		5	15 22 23	109.5	15.0	SM	Yellow brown, silty fine to coarse SAND w/gravel, damp, medium dense	
	20		6	5 3 4			ML/CL	Yellow brown, sandy/clayey SILT, moist, medium stiff	
	25		7	24 35 37			SP	Yellow brown, silty fine to coarse SAND w/gravel, moist, very dense	
	30								

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Geotechnical Boring Log LGC-B10

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-J**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	12 15 20			SM	Yellow brown, silty fine to coarse SAND w/gravel, moist, very dense	
								TD 31.5'	
	35							No Groundwater	
	40								
	45								
	50								
	55								
	60								

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Geotechnical Boring Log LGC-B11

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-K**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	0						SM	**Alluvium (Qal):** Gray, silty fine SAND, dry, loose	
			1	3 4 5					
	5		2	4 8 8			SM	Gray brown, silty fine SAND, damp, loose	
			3	8 8 12	108.0	3.1	SM/ML	Gray brown, silty fine SAND and layers of sandy SILT, damp, medium dense/stiff, carbonate veining within SILT	
	10		4	5 7 9	79.1	15.9	SM/ML	Brown, silty fine to coarse SAND, damp, medium dense, SILT layer with iron staining and blocky fracture	
	15		5	16 19 22	108.6	2.3	SM	Gray, slightly silty, fine to coarse SAND, damp, dense, mostly coarse sand fraction	
	20		6	8 10 13			SW/SM	Gray brown, silty fine to coarse SAND, damp, dense	SA
	25		7	11 15 17			ML	Yellow brown, fine sandy SILT, damp, stiff, carbonate flecks	
	30								

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Geotechnical Boring Log LGC-B11

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-K**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	5 7 10			ML	Yellow brown, fine sandy SILT, damp, stiff, carbonate flecks	
								TD 31.5'	
	35							No Groundwater	
	40								
	45								
	50								
	55								
	60								

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Geotechnical Boring Log LGC-B12

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-L**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0						SM	**Alluvium (Qal):** Gray brown, silty fine to coarse SAND, dry, loose	
			1	4 5 6					
	5		2	7 8 8			SM	Gray brown, slightly silty, fine to coarse SAND, damp, medium dense	
			3	7 9 13	109.2	4.0	SW/SM	Yellow brown, silty fine to coarse SAND, moist, medium dense, angular gravels	SA
	10		4	12 17 23	116.9	3.3	SM	Yellow brown, silty fine to coarse SAND, moist, dense	
	15		5	10 10 12			SW/SM	Gray brown, silty fine to coarse SAND, moist, medium dense	SA
	20		6	12 25 29	112.4	2.7		Gray brown, silty fine to coarse SAND, moist, dense, angular gravels	
	25		7	8 12 17			SM	Gray brown, silty fine to coarse SAND, moist, dense, angular gravels	
	30								

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Geotechnical Boring Log LGC-B12

Date: 8/17/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-L**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	7 7 9			SM	Gray brown, silty fine to coarse SAND, moist, dense, angular gravels	
	35							TD 31.5' No Groundwater	
	40								
	45								
	50								
	55								
	60								

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Geotechnical Boring Log LGC-B13

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-M**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0						SM	**Alluvium (Qal):** Gray brown, silty fine to coarse SAND, dry, loose	
			1	6 6 9					
	5		2	7 11 13	102.3	6.2	SM	Gray brown, slightly silty, fine to coarse SAND, damp, medium dense	
			3					(Driller missed sample)	
	10		4	5 7 15	113.7	6.1	SM	Yellow brown, silty fine SAND, damp, medium dense	
	15		5	5 9 10			SW/SM	Yellow brown, silty fine to coarse SAND, damp, medium dense	SA
	20		6	15 28 50			SP	Yellow brown, coarse SAND, moist, very dense, rounded gravels	
	25		7	5 9 11			SM	Yellow brown, silty fine to coarse SAND, moist, medium dense	
	30								

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Geotechnical Boring Log LGC-B13

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: HS-M**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		8	15 50/6"			SM/ML	Yellow brown, silty fine to coarse SAND, moist, medium dense, lower half of sample is yellow brown, SILT, moist, hard	
								TD 31.5'	
								No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

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Geotechnical Boring Log LGC-B14

Date: 8/20/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location:**

Logged By: SMB

Sampled By: SMB

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0		1	5 7 7			SM/ML	**Slopewash (Qsw):** Brown, silty fine SAND/sandy SILT, dry, loose, gravels, cobbles	
			2	5 7 7					
			3	10 11 15				Sample No. 3 no recovery	
	5		4	13 15 27				Sample No. 4 only recovered rock in tip of sampler	
			5	5 10 17			SM	Light brown, silty fine SAND, damp, medium dense	
			6	20 50	120.8	5.3		becomes very dense	
	10		7	7 11 17				**Pacoima Formation (Qp):**	
			8	13 19 50/5"				Reddish brown, SANDSTONE, moist, poorly consolidated, silty, medium grained	DS
			9	20 26 30				Light brown, SANDSTONE, moist, poorly consolidated, embedded rounded gravels	
			10	37 50/4"	118.3	8.1			
	15		11	21 29 50				Orange brown, SANDSTONE, moist, poorly consolidated, fine to coarse grained	
			12	71/6"	112.1	4.4			
			13	32 31 35					
	20		14	54/6"	108.5	7.1		Orange brown, SANDSTONE, moist, poorly consolidated, fine to coarse grained	
			15	19 33 45				Bulk sample 20-25'	MAX, RDS
			16	63/6"	106.8	5.2			DS
	25		17	19 36 40					
			18	50/4"	113.9	3.5		Orange brown, SANDSTONE, moist, poorly consolidated, fine to coarse grained	
			19	19 21 25					
	30		20	54/6"	110.8	5.0		Sample No. 20 mostly slough	DS

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Geotechnical Boring Log LGC-B14

Date: 8/20/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig: Hollow Stem**
Drive Weight: 140lbs	**Drop: 30"** **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location:**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By: SMB	Type of Test
	30		21	29 35 42				Orange brown, SANDSTONE, moist, poorly consolidated, fine to coarse grained	
								TD 31.5'	
								No Groundwater	
	35								
	40								
	45								
	50								
	55								
	60								

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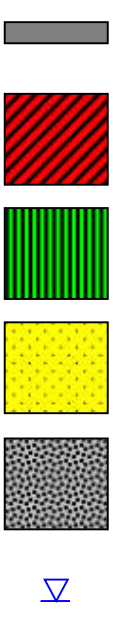
Key to Boring Logs



ASPHALT CONCRETE

CLAY

SILT

SAND

GRAVEL/COBBLES

APPROXIMATE GROUNDWATER LEVEL

Laboratory Test Symbols

Symbol	Laboratory Test
SA	Sieve Analysis
H	Hydrometer Analysis
SHA	Sieve & Hydrometer Analysis
-200	Percent Passing #200 Sieve
AL	Atterberg Limits
MAX	Maximum Density
DS	Undisturbed Direct Shear
RDS	Remolded Direct Shear
TRI	Triaxial Shear
EI	Expansion Index
P	Permeability
CN	Consolidation
COL	Collapse
UC	Unconfined Compression
S	Sulfate Content
pHR	pH & Resistivity
COR	Corrosion Suite (pH, Resistivity, Chloride, Sulfate)
RV	R-Value

Geotechnical Boring Log PERC 1

Date: 8/16/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem, LAR
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: BASIN**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By:	Type of Test
	0						SM	**Alluvium (Qal):** Yellow brown, silty fine to coarse SAND, dry, loose	
	5						SP	Yellow brown, fine to coarse SAND, damp, loose to medium dense	
	10							TD 10' No Groundwater Boring set for percolation well with a 2-inch diameter slotted section of pipe in the lower 5 feet and solid in upper 5 feet. Casing surrounded by coarse sand.	
	15								
	20								
	25								
	30								

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Geotechnical Boring Log PERC 2

Date: 7/28/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem,
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: North ADS Unit**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By:	Type of Test
	0						SM	**Alluvium (Qal):** Gray brown, silty fine to coarse SAND, dry, loose	
	5						SM	Gray brown, silty, fine to coarse SAND, damp, loose to medium dense	
	10						SM	Yellow brown, silty, fine to coarse SAND, moist, medium dense	
	15							TD 10' No Groundwater Boring set for percolation well with a 2-inch diameter slotted section of pipe in the lower 5 feet and solid in upper 5 feet. Casing surrounded by coarse sand.	
	20								
	25								
	30								

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Geotechnical Boring Log PERC 3

Date: 7/28/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem,
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: Mid ADS Unit**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By:	Type of Test
	0						ML	**Alluvium (Qal):** Yellow brown, sandy SILT, dry, loose	
	5						SM/ML	Yellow brown, sandy SILT/silty SAND, damp, stiff/medium dense	
	10						SM	Yellow brown, silty, fine to coarse SAND, damp, medium dense	
	15							TD 13' No Groundwater Boring set for percolation well with a 2-inch diameter slotted section of pipe in the lower 8-13 feet and solid in upper 8 feet. Casing surrounded by coarse sand.	
	20								
	25								
	30								

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Geotechnical Boring Log PERC 4

Date: 7/28/2021	**Page:**
Project Name: LA Railroad 93	**Project Number: 213015-01**
Drilling Company: Choice	**Type of Rig:** Hollow Stem,
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole:	**Hole Location: Entry ADS Unit**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: SMB Sampled By:	Type of Test
	0						ML	**Alluvium (Qal):** Yellow brown, sandy SILT, dry, loose	
	5						SM/ML	Yellow brown, sandy SILT/silty SAND, damp, stiff/medium dense	
							SM	Yellow brown, silty, fine to coarse SAND, damp, medium dense	
	10								
	15						SM	Yellow brown, silty, fine to coarse SAND, moist, medium dense	
	20							TD 20' No Groundwater	
	25							Boring set for percolation well with a 2-inch diameter slotted section of pipe in the lower 15 to 20 feet and solid in upper 15 feet. Casing surrounded by coarse sand.	
	30								

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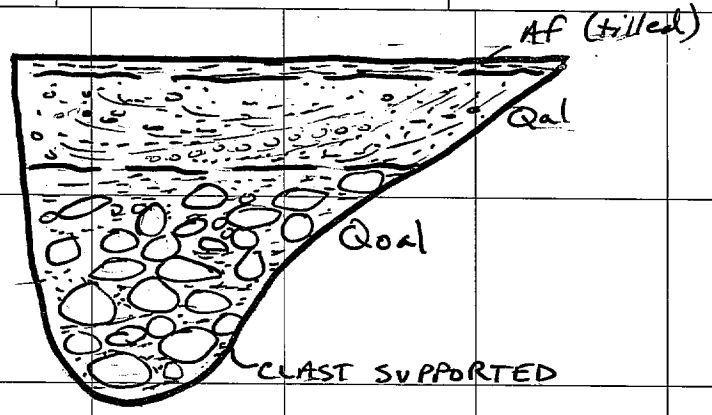
LOG OF TRENCH: TP-1

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES
Project Number:	153020-01	Elevation:		
Equipment:	Backhoe	Location/Grid:	Southern portion of site, near Oak tree	

GEOLOGIC ATTITUDES	DATE: 7-22-15	DESCRIPTION:	GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-0.5' **Fill (Af):** Gray brown, sandy SILT, dry, loose, (tilled surface)		Af	ML			
	0.5-3' **Alluvium (Qal):** Gray brown, silty SAND with gravel, dry, loose, roots		Qal	SM			
	3-9' **Older Alluvium (Qoal):** Reddish brown, Clayey GRAVEL and COBBLES, dry, dense, less clay with depth more sandy, tightly packed cobbles (rounded).		Qoal	GP			
	(Percolation Test @ 5')						

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N40W

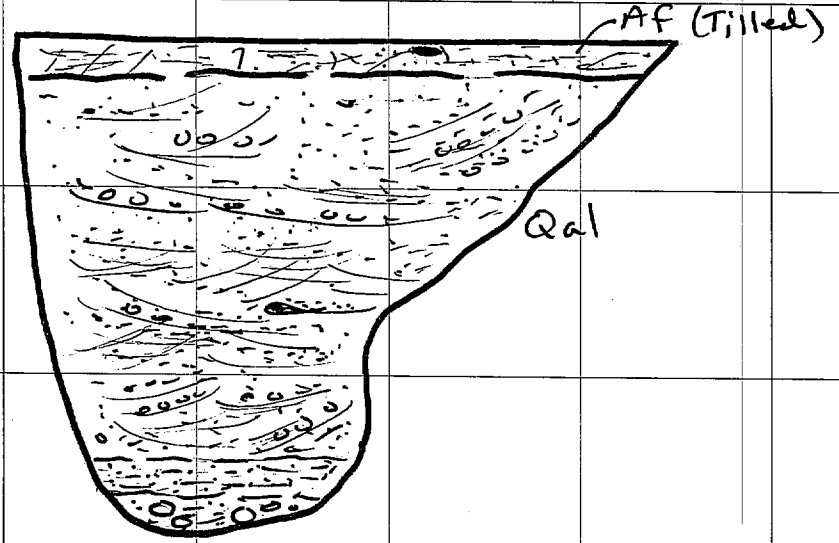


Total Depth = 9' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-2

Project Name:	Devco Santa Clarita		Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01		Elevation:					
Equipment:	Backhoe		Location/Grid:	Northeast portion, near Oak tree				
GEOLOGIC ATTITUDES	DATE:	7-22-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-1' **Fill (Af):** Brown, sandy SILT, dry, loose, rootlets, bottle cap, (tilled surface)				Af	ML			
	1-11' **Alluvium (Qal):** Gray brown, silty SAND with gravel, dry, loose to medium dense, few cobbles (3" diameter), roots, cross-bedded stream deposits				Qal	SW-SM			
	@11-12' Brown, sandy SILT, damp, firm, visible pinhole pores, tiny rootlets				Qal	ML			
	@12-13' Gray brown, fine to coarse SAND with gravel and cobbles, dry, medium dense, to dense				Qal	SW			
	(Percolation Test @ 5')								

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N40W

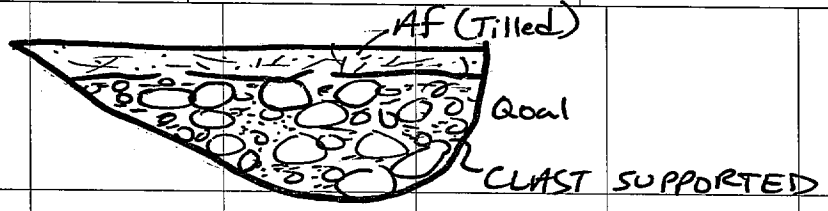


Total Depth = 13' Feet
No Ground Water Encountered
Backfilled: 7-22-15

LOG OF TRENCH: TP-3

Project Name:	Devco Santa Clarita		Logged by:	SMB	ENGINEERING PROPERTIES				
Project Number:	153020-01		Elevation:						
Equipment:	Backhoe		Location/Grid:	Southern portion of site, near Oak tree					
GEOLOGIC ATTITUDES	DATE:	7-22-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-1' **Fill (Af):** Gray brown, sandy SILT, dry, loose, (tilled surface)				Af	ML			
	1-4' **Older Alluvium (Qoal):** Reddish brown, Clayey/sandy, GRAVEL and COBBLES, dry, dense, tightly packed cobbles (rounded).				Qoal	GP			

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N30W

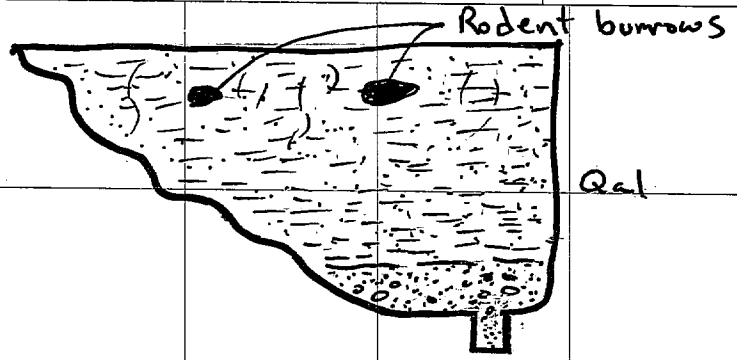


Total Depth = 4' Feet
No Ground Water Encountered
Backfilled: 7-22-15

LOG OF TRENCH: TP-4

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01	Elevation:					
Equipment:	Backhoe	Location/Grid:	Central-SE of two Oak trees				
GEOLOGIC ATTITUDES	DATE: 7-22-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-6' **Alluvium (Qal):** Brown, sandy SILT, dry, loose to firm, very porous, roots, rodent burrows in upper 2 feet.			Qal	ML			
	@6-7' Gray brown, fine to coarse SAND with gravel, dry, medium dense to dense			Qal	SW			
	(Percolation Test @ 7')							

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N70W

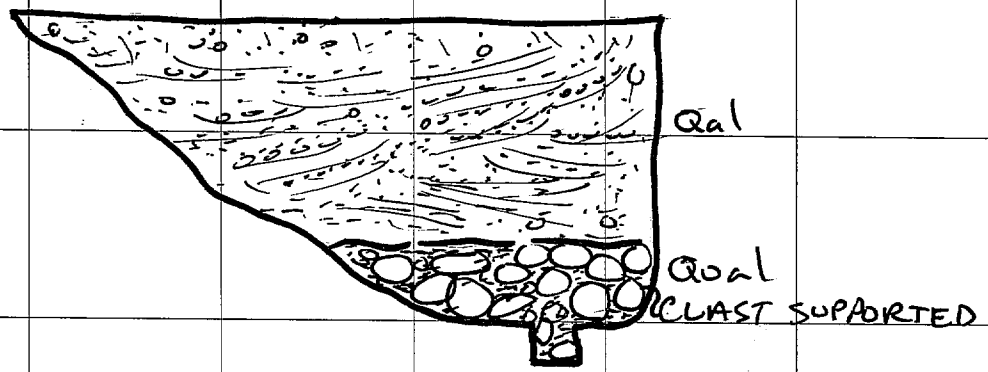


Total Depth = 7' Feet
No Ground Water Encountered
Backfilled: 7-22-15

LOG OF TRENCH: TP-5

Project Name:	Devco Santa Clarita		Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01		Elevation:					
Equipment:	Backhoe		Location/Grid:	Southwest site near Oak tree				
GEOLOGIC ATTITUDES	DATE:	7-22-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-6' **Alluvium (Qal):** Light brown, fine to coarse SAND with gravel, dry, loose to medium dense, cross-bedded stream deposits				Qal	SW			
	6-8' **Older Alluvium (Qoal):** Reddish brown, silty/clayey COBBLES, dry, dense, hard				Qoal	GC			
	(Percolation Test @ 8')								

GRAPHICAL REPRESENTATION:	SCALE: 1" = 5'	SURFACE SLOPE: Planar	TREND: N65E



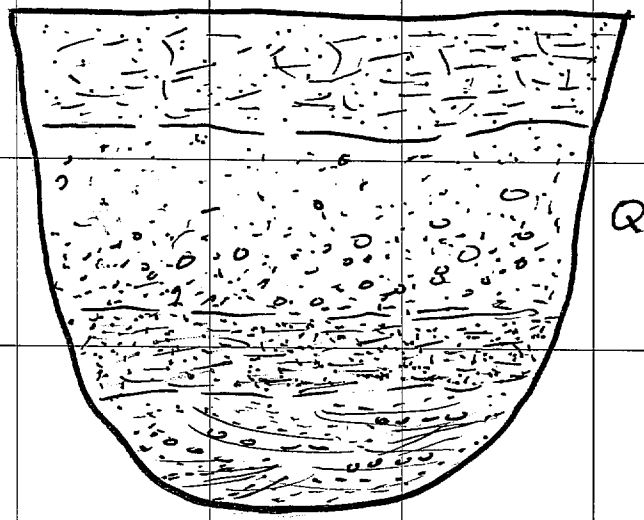
Total Depth = 8' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-6

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES
Project Number:	153020-01	Elevation:		
Equipment:	Backhoe	Location/Grid:	West Central Portion	

GEOLOGIC ATTITUDES	DATE: 7-23-15	DESCRIPTION:	GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
		0-3' **Alluvium (Qal):** Light brown, very silty fine SAND, dry, loose, porous	Qal	SM			
		@3-8' Brown to slightly orange, fine to coarse SAND, few gravel, dry loose to medium dense	Qal	SW			
		@8-10' Dark brown, silty fine SAND, moist, dense	Qal	SM			
		10-13' Gray brown, fine to coarse SAND, damp, dense, cross-bedded stream deposits	Qal	SW			

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N35W



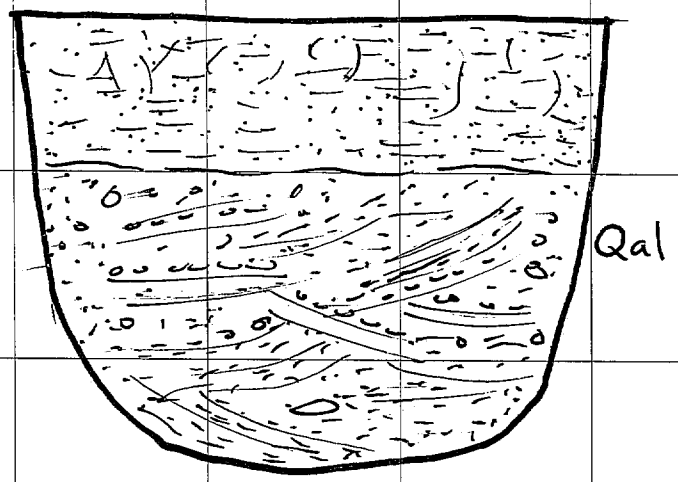
Total Depth = 13' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-7

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01	Elevation:					
Equipment:	Backhoe	Location/Grid:	West Central Portion				

GEOLOGIC ATTITUDES	DATE: 7-23-15	DESCRIPTION:	GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
		0-4' **Alluvium (Qal):** Light brown, very silty fine SAND, dry, loose, porous, roots	Qal	SM			
		@4-12' Gray brown, fine to coarse SAND with gravel, damp, dense, cross-bedded stream deposits, subrounded to rounded clasts	Qal	SW			

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N40E

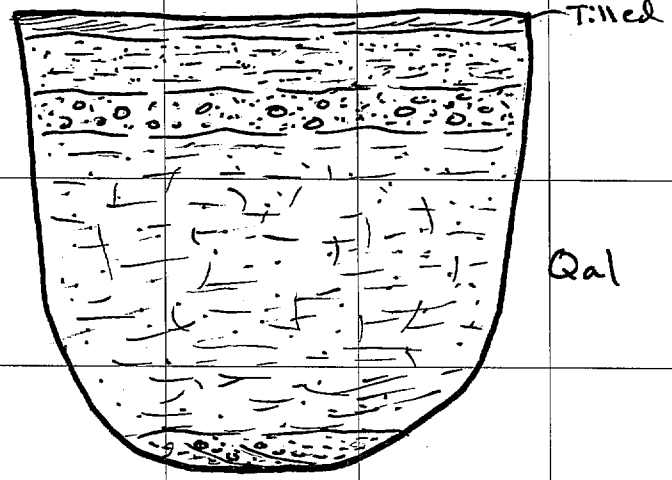


Total Depth = 12' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-8

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01	Elevation:					
Equipment:	Backhoe	Location/Grid:	Northern Portion of Proposed Dev.				
GEOLOGIC ATTITUDES	DATE: 7-23-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-2' **Alluvium (Qal):** Brown, silty fine SAND with gravel, dry, loose, porous, roots, upper 8" tilled			Qal	SM			
	@2-3' Light brown, fine to coarse SAND with gravel, dry, loose to medium dense			Qal	SW			
	@3-11' Brown, fine sandy, SILT, dry to damp, visible pinhole pores, roothairs			Qal	ML			
	@11-12' Gray brown, fine to coarse SAND with gravel, dry, dense, cross bedded river deposits			Qal	SW			

GRAPHICAL REPRESENTATION:	SCALE: 1" = 5'	SURFACE SLOPE: Planar	TREND: E-W



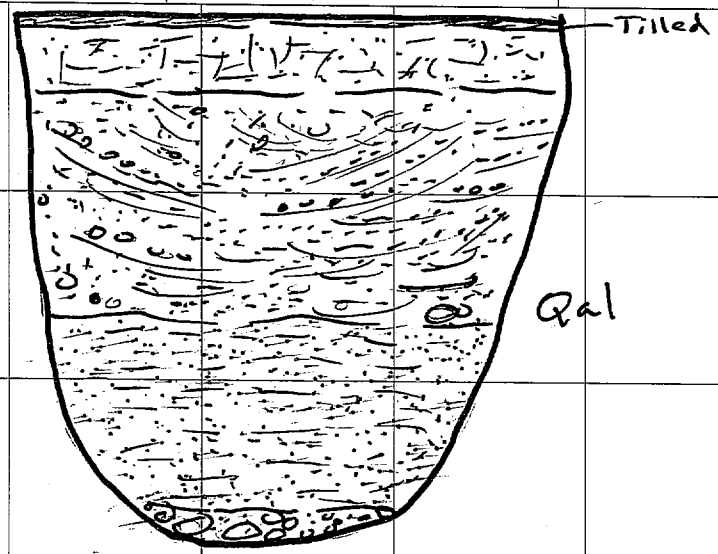
Total Depth = 12' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-9

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES
Project Number:	153020-01	Elevation:		
Equipment:	Backhoe	Location/Grid:	Northern Portion of Proposed Dev.	

GEOLOGIC ATTITUDES	DATE: 7-23-15	DESCRIPTION:	GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
		0-2' **Alluvium (Qal):** Brown, silty fine SAND with gravel, dry, loose, porous, roots, upper 3" tilled	Qal	SM			
		@2-8' Light brown, fine to coarse SAND with gravel, dry, loose to medium dense	Qal	SW			
		@8-13' Brown, silty, fine SAND, moist, dense, no visible pores	Qal	SM			
		@13-14' Gray brown, fine to coarse SAND with gravel and cobbles, damp, dense	Qal	SW			

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N50E

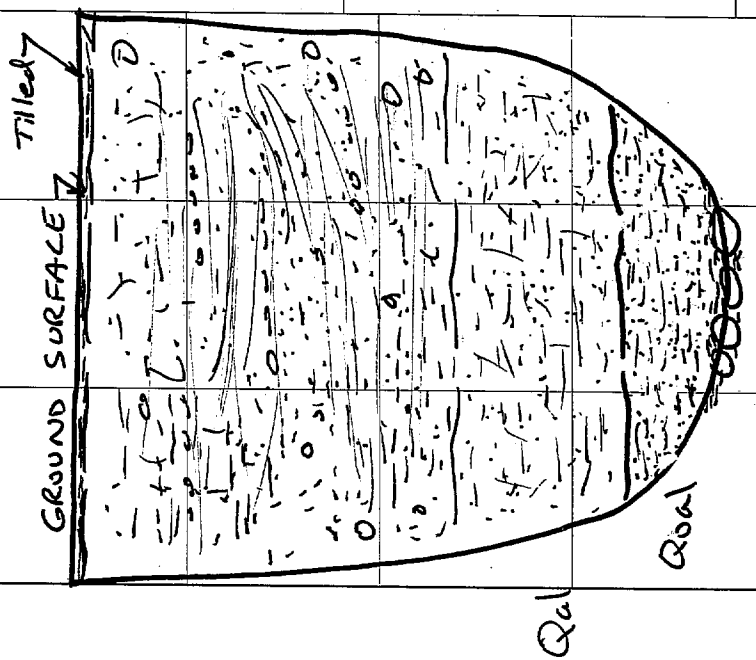


Total Depth = 14' Feet
No Ground Water Encountered
Backfilled: 7-23-15

LOG OF TRENCH: TP-10

Project Name:	Devco Santa Clarita	Logged by:	SMB	ENGINEERING PROPERTIES			
Project Number:	153020-01	Elevation:					
Equipment:	Backhoe	Location/Grid:	Southern Portion of Site				
GEOLOGIC ATTITUDES	DATE: 7-23-15	DESCRIPTION:		GEOLOGIC UNIT	USCS	Sample No.	Moisture (%)	Density (pcf)
	0-10' **Alluvium (Qal):** Brown, silty fine SAND with gravel, dry, loose, porous, roots, upper 3" tilled			Qal	SM			
	@10-14.5' Brown, fine sandy SILT/silty very fine SAND, damp, stiff to dense, tiny rootlet holes with carbonate lining			Qal	ML-SM			
	14.5-17' **Older Alluvium (Qoal):** Reddish brown, silty, fine SAND/fine sandy SILT, damp, dense, white roothairs with carbonate lining rootlet holes			Qal	SM-ML			
	@17' Reddish brown, sandy SILT with COBBLES, damp, dense			Qal	GM			

GRAPHICAL REPRESENTATION: SCALE: 1" = 5' SURFACE SLOPE: Planar TREND: N50E



Total Depth = 17' Feet
No Ground Water Encountered
Backfilled: 7-23-15

BORING LOG NUMBER 1

Drilling Date: 05/28/04 **Elevation: 1224.8'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt and Weeds
				0 --		FILL: Silty Sand, light brown, dry, loose to medium dense, fine to coarse grained, some roots
				1 --		
2	16	7.0	93.9	2 --		
				3 --	SM	Silty Sand, light brown, moist, medium dense, fine to coarse grained, trace of gravel
				4 --		
5	11	9.0	SPT	5 --		brown, moist to very moist
				6 --		
7	32	8.5	120.6	7 --		
				8 --		
				9 --		
10	16	9.2	SPT	10 --	SP	Sand, brown, moist, medium dense, trace of gravel
				11 --		
				12 --		
12½	35	18.4	114.8	13 --	SM	Silty Sand, dark brown, moist, dense, fine to coarse grained, trace of gravel
				14 --		
15	71	2.8	SPT	15 --	SW	Sand, light brown to brown, moist, dense, trace of gravel
				16 --		
				17 --		
17½	30 50/6"	2.7	108.9	18 --		
				19 --		
20	45	2.9	SPT	20 --		
				21 --		
				22 --		
22½	35	12.2	114.1	23 --	SM	Silty Sand, brown, moist, medium dense to dense, fine to coarse grained
				24 --		
25	25	2.8	SPT	25 --	SW	Sand, brown, moist, medium dense
				26 --		trace of clay
				27 --		
27½	27 50/6"	6.0	108.9	28 --		very dense, no clay
				29 --		
30	40 50/6"	3.8	SPT	30 --		

BORING LOG NUMBER 1

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				31 --		
				32 --		
32½	45 50/5"	3.8	119.6	33 --	SM	Silty Sand, brown, moist, very dense, medium to coarse grained
				34 --		
35	40 50/6"	3.3	SPT	35 --		
				36 --		
				37 --		
37½	25 50/6"	3.4	107.7	38 --		
				39 --		
40	50/2"	2.1	SPT	40 --		
				41 --		
				42 --		
42½	100/11"	2.8	111.1	43 --	SW	Sand, brown, moist, very dense, medium to coarse grained
				44 --		
45	50/6"	5.3	SPT	45 --		
				46 --		
				47 --		
47½	100/8"	5.0	114.8	48 --		
				49 --		
50	50/6"	3.3	SPT	50 --		Total depth: 50 feet No Water Fill to 2 feet
				51 --		
				52 --		
				53 --		NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual
				54 --		
				55 --		Used 8-inch diameter Hollow-Stem Auger 140-lb. Slide Hammer, 30-inch drop Modified California Sampler used unless otherwise noted
				56 --		
				57 --		SPT=Standard Penetration Test
				58 --		
				59 --		
				60 --		

BORING LOG NUMBER 2

Drilling Date: 05/28/04 **Elevation: 1218.4'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt and Weeds
				0		FILL: Silty Sand, light brown, dry, medium dense, fine to coarse grained
1	34	2.4	122.7	1		
				2	SW	Sand, light brown, slightly moist, medium dense
3	10	13.6	112.7	3		
				4		brown
5	15	9.8	105.6	5	SM	Silty Sand, brown, moist, medium dense, fine to coarse grained
				6	SW	Sand, brown, moist, medium dense
7	34	2.4	111.1	7		light brown, dense
				8		
				9		
10	34	2.5	106.1	10		
				11		
				12		
				13		
				14		
15	57	8.1	107.5	15		
				16		
				17		
				18		
				19		
20	63	3.9	118.2	20		trace of gravel
				21		
				22		
				23		
				24		
25	47	13.8	114.4	25	SM	Silty Sand, brown, moist, medium dense, fine to coarse grained
				26		
				27		
				28		
				29		
30	36 50/6"	2.6	110.0	30	SW	Sand, light brown, moist, very dense
						Total depth: 30 feet, No Water, Fill to 1½ feet

BORING LOG NUMBER 3

Drilling Date: 05/28/04 **Elevation: 1231.9'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0 --		FILL: Silty Sand, light brown, dry, medium dense, fine to coarse grained
				1 --		
2	26	2.7	101.1	2 --	SM	Silty Sand light brown, dry, medium dense, fine to coarse grained
				3 --		
				4 --		
5	16	1.8	110.9	5 --	SW	Sand, light brown, moist, medium dense
				6 --	SM	Silty Sand, brown, moist, medium dense, fine to coarse grained
7	10	2.1	115.9	7 --	SW	Sand, light brown, moist, medium dense
				8 --	SM	Silty Sand, brown, moist, medium dense, fine to medium grained
				9 --		
10	16	7.1	113.2	10 --		fine to coarse grained
				11 --		
				12 --		
				13 --		
				14 --		
15	18	10.8	105.5	15 --		
				16 --		
				17 --		
				18 --		
				19 --		
20	43	13.2	104.8	20 --		Total depth: 20 feet No Water Fill to 2 feet
				21 --		
				22 --		
				23 --		
				24 --		
				25 --		
				26 --		
				27 --		
				28 --		
				29 --		
				30 --		

BORING LOG NUMBER 4

Drilling Date: 05/28/04 **Elevation: 1225.3'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt and Weeds
				0 --		FILL: Silty Sand, light to medium brown, dry to slightly moist, fine to coarse grained, some roots
				1 --		
2	28	8.7	95.4	2 --	SM	Silty Sand, grayish-brown, slight moist, medium dense, fine to medium grained
				3 --		
				4 --		
5	32	5.4	98.5	5 --		fine to coarse grained
				6 --		
7	75	8.7	110.8	7 --		light brown, fine to medium grained
				8 --		
				9 --		
10	35	5.6	106.8	10 --		light brown to brown, fine to coarse grained
				11 --		
				12 --		
				13 --		
				14 --		
15	30	30.4	94.4	15 --		brown, moist, trace of clay
				16 --		
				17 --		
				18 --		
				19 --		
20	50	7.0	113.2	20 --		moist, no clay
				21 --		
				22 --		
				23 --		
				24 --		
25	30 50/6"	2.4	114.8	25 --	SW	Sand, light brown, slightly moist, very dense
				26 --		
				27 --		
				28 --		
				29 --		
30	30 50/5"	1.9	115.5	30 --		Total depth: 30 feet; No Water; Fill to 2 feet

BORING LOG NUMBER 5

Drilling Date: 05/28/04 **Elevation: 1233.8'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0		FILL: Silty Sand, light brown, medium dense, fine to coarse grained
				1		
2	15	3.0	99.6	2	SM	Silty Sand, grayish-brown, slightly moist, medium dense, fine to coarse grained
				3		
				4		
5	32	2.8	110.7	5		
				6		
7	29	1.1	114.2	7	SW	Sand, light brown, slightly moist, medium dense
				8	SM	Silty Sand, brown, moist, medium dense, fine to coarse grained
				9		
10	39	5.6	108.9	10		fine to medium grained
				11		
				12		
				13		
				14		
15	51	11.5	117.2	15		moist to very moist
				16		
				17		
				18		
				19	SW	Sand, light brown, slightly moist, dense
20	55	2.6	133.4	20		Total depth: 20 feet No Water Fill to 2 feet
				21		
				22		
				23		
				24		
				25		
				26		
				27		
				28		
				29		
				30		

BORING LOG NUMBER 6

Drilling Date: 05/28/04 **Elevation: 1228.4'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt and Weeds
				0 --		FILL: Silty Sand, light brown, dry, medium dense, fine to coarse grained
				1 --		
2	22	2.4	104.1	2 --	SM	Silty Sand, light brown, slightly moist, medium dense, fine to coarse grained
				3 --		
				4 --		
5	51	1.3	124.5	5 --	SW	Sand, brown, slightly moist, dense, trace of gravel
				6 --		
7	36	1.4	127.1	7 --		some gravel
				8 --		
				9 --		
10	63	1.0	120.3	10 --		brown to dark brown
				11 --		
				12 --		
				13 --		
				14 --		
15	33	2.4	113.1	15 --		
				16 --		
				17 --		
				18 --		
				19 --		
20	62	2.8	117.0	20 --		Total depth: 20 feet No Water Fill to 2 feet
				21 --		
				22 --		
				23 --		
				24 --		
				25 --		
				26 --		
				27 --		
				28 --		
				29 --		
				30 --		

BORING LOG NUMBER 7

Drilling Date: 05/29/04 **Elevation: 1248.6'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0		FILL: Silty Sand, light brown, dry, medium dense, fine to coarse grained
1	28	2.1	113.1	1	SW	Sand, brown, slightly moist, medium dense
				2		
3	60	3.0	115.6	3		dense to very dense
				4		
5	44	2.6	113.5	5		dense
				6		
7	50	2.7	115.1	7		
				8		
				9		
10	13	8.9	102.1	10		
				11	SM	Silty Sand, brown, moist, medium dense, fine to medium grained
				12		
				13		
				14		
15	17	12.4	108.1	15	SW	Sand, brown, moist, dense
				16		
				17		
				18		
				19	SM	Silty Sand, brown, moist, dense, fine to medium grained
20	65	8.9	132.9	20		Total depth: 20 feet No Water Fill to 1 foot
				21		
				22		
				23		
				24		
				25		
				26		
				27		
				28		
				29		
				30		

BORING LOG NUMBER 8

Drilling Date: 05/27/04 **Elevation: 1242.3'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0 --		FILL: Silty Sand, light brown, slightly moist, medium dense, fine to coarse grained
				1 --		
2	14	16.1	92.2	2 --		
					SW	Sand, light brown, moist, medium dense
				3 --	SM	Silty Sand, brown, moist, medium dense, fine to medium grained
				4 --		
5	60	9.6	SPT	5 --		
				6 --		
7	100/2"	No Recovery		7 --		very dense
				8 --		
				9 --		
10	35 50/6"	3.1	SPT	10 --	SW	Sand, brown, slightly moist, very dense
				11 --		
12½	22 50/6"	15.3	116.7	12 --	SM	Silty Sand, brown, moist, very dense, fine to medium grained
				13 --		
				14 --		
15	55 50/5"	16.7	SPT	15 --		
				16 --		
17½	100/6"	11.7	112.8	17 --		
				18 --		
				19 --		
20	30 50/6"	8.4	SPT	20 --	SP	Sand, brown, slightly moist, very dense, fine to medium grained
				21 --		
				22 --		
22½	35 50/3"	12.1	109.6	23 --	SM	Silty Sand, brown, moist, very dense, fine to medium grained
				24 --		
25	50/2"	4.2	SPT	25 --	SW	Sand, gray, slightly moist, very dense
				26 --		
				27 --		
27½	100/6"	8.5	128.3	28 --	SM	Silty Sand, reddish-brown, moist, very dense, fine to coarse grained, trace of gravel
				29 --		
30	25 50/4"	3.9	SPT	30 --		brown, no gravel

BORING LOG NUMBER 8

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				31		
				32		
32½	100/5"	14.6	121.8	33		orange brown
				34		
35	50/5"	11.1	SPT	35		
				36		
				37		
37½	100/5"	3.8	109.6	38	SW	Sand, yellowish-brown, slightly moist, very dense
				39		
40	50/5"	4.6	SPT	40		
				41		
				42		
42½	100/5"	16.2	117.4	43	SM	Silty Sand, brown, moist, very dense, fine to coarse grained
				44		
45	50/4"	3.3	SPT	45	SW	Sand, yellowish-brown, slightly moist, very dense
				46		
				47		
47½	100/6"	12.7	124.7	48	SM	Silty Sand, brown, moist, very dense, fine to coarse grained
				49		
50	25 50/6"	16.0	SPT	50		Total depth: 50 feet No Water Fill to 2 feet
				51		
				52		
				53		
				54		
				55		
				56		
				57		
				58		
				59		
				60		

BORING LOG NUMBER 9

Drilling Date: 05/27/04 **Elevation: 1251.6'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0		FILL: Silty Sand, light brown, medium dense, fine to coarse grained
				1		
2	27	3.9	113.9	2		moist
				3	SW	Sand, brown, slightly moist, medium dense
				4		
5	23/6"	No Recovery		5		
				6		
7	70	4.5	113.5	7		Sand, brown, slightly moist, dense to very dense
				8		
				9		
				10		
10	30	3.3	119.0	11	SM	Silty Sand, brown, moist, medium dense, fine to coarse grained
				12		
				13		
				14		
15	21	15.9	113.5	15		brown to reddish-brown
				16		
				17		
				18		
				19		
20	40 50/5"	9.6	123.8	20	SP	Sand, brown, moist, very dense, fine to coarse grained
				21		Total depth: 20 feet No Water Fill to 2½ feet
				22		
				23		
				24		
				25		
				26		
				27		
				28		
				29		
				30		

BORING LOG NUMBER 10

Drilling Date: 05/27/04 **Elevation: 1255.6'**

Project: File No. 18648 **Casden Company**

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Dirt
				0		FILL: Silty Sand, light brown, dry, medium dense, fine to coarse grained
1	30 50/5"	7.7	108.7	1	SM	Silty Sand, brown, moist, dense, fine to medium grained
				2	SW	Sand, brown, slightly moist, very dense, some gravel
3	100/12"	3.8	122.3	3		trace of Silt, some gravel
				4		
5	63	19.6	111.4	5	SM	Silty Sand, brown, moist, very dense, fine to coarse grained, some gravel
				6		
7	100/7"	15.9	101.6	7	SM	Silty Sand, olive brown and brown, moist, very dense, fine to medium grained
				8		
				9		
10	60 50/6"	14.2	116.2	10		moist to very moist
				11		
				12		
				13		
				14		
15	22 50/4"	17.6	117.3	15		brown, trace of clay
				16	SW	Sand, brown, moist, very dense, fine to coarse grained
				17		
				18		
				19		
20	100/6"	10.6	129.4	20		trace of gravel
				21		
				22		
				23		
				24		
25	30 50/5"	4.3	106.6	25	SW	Sand, yellowish-brown, moist, very dense
				26		
				27		
				28		
				29	SM	Silty Sand, brown, moist, dense, fine to medium grained
30	45 50/2"	19.3	115.4	30		Total depth: 30 feet; No Water; Fill to 1 foot

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was directed towards providing quantitative data relating to the relevant engineering properties of the soils. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Soil Classification: Soils were classified according the Unified Soil Classification System (USCS) in accordance with ASTM Test Methods D2487 and D2488. This system uses relies on the Atterberg Limits and grain size distribution of a soil. The soil classifications (or group symbol) are shown on the laboratory test data, and boring logs.

Grain Size Distribution: Representative samples were dried, weighed, and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve. The portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D422 (CTM 202). Grain size distribution curves are attached in this appendix as Figures C1 through C14.

Soluble Sulfates: The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios.

Sample Location	Sample Description	Sulfate Content (%)	Sulfate Exposure
LGC-B1 @ 7-10’	Olive brown, sandy CLAY, few gravel	0.011	Negligible

Chloride Content: Chloride content was tested in accordance with Caltrans Test Method (CTM) 422. The results are presented below:

Sample Location	Chloride Content, ppm
LGC-B1 @ 7-10’	225

Consolidation: Consolidation tests were performed on selected, relatively undisturbed ring samples (Modified ASTM Test Method D2435). Samples (2.42 inches in diameter and 1 inch in height) were placed in a consolidometer and increasing loads were applied. The samples were allowed to consolidate under “double drainage” and total deformation for each loading step was recorded. The percent consolidation for each load step was recorded as the ratio of the amount of vertical compression to the original sample height. The consolidation pressure curves are presented in this appendix. The results are presented on Figures C15 through C21.

Direct Shear: Direct shear tests were performed on selected remolded and/or undisturbed samples, which were soaked for a minimum of 24 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a motor-driven, strain-controlled, direct-shear testing apparatus at a strain rate of less than 0.001 to 0.5 inch per minute (depending upon the soil type). The test results are presented in this appendix as Figures C22 through C28.

Expansion Index: The expansion potential of selected samples were evaluated by the Expansion Index Test, U.B.C. Standard No. 18-2 and/or ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below:

Sample Location	Sample Description	Compacted Dry Density (pcf)	Expansion Index	Expansion Potential
LGC-B1 @ 7-10’	Olive brown, sandy CLAY, few gravel	125.5	82	Medium

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on relatively undisturbed samples obtained from the test borings and/or trenches. The results of these tests are presented in the boring and/or trench logs. Where applicable, only moisture content was determined from undisturbed or disturbed samples.

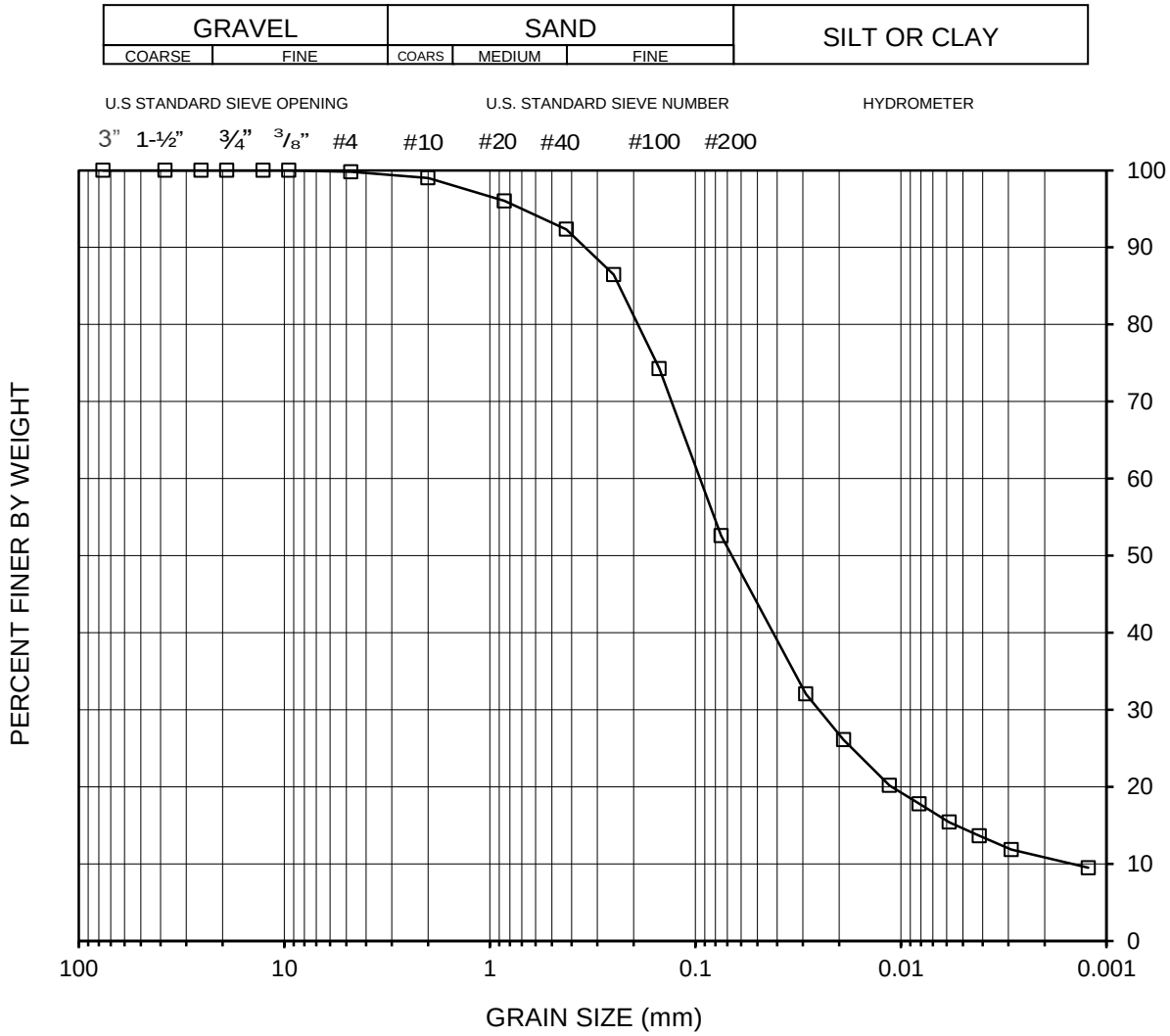
Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented on the logs and in graphical format in this appendix as Figures C29 and C30.

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The electrical resistivity of a soil is a measure of its resistance to the flow of electrical current. As a results of soil’s resistivity decreases corrosivity increases. The results are presented in the table below:

Sample Location	Sample Description	pH	Minimum Resistivity (ohms-cm)
LGC-B1 @ 7-10’	Olive brown, sandy CLAY, few gravel	7.59	1,000

R-Value: The resistance R-value was determined by the ASTM D2844 for base, subbase, and basement soils. The samples were prepared and exudation pressure and R-value were determined. The graphically determined R-value at exudation pressure of 300 psi is reported in this appendix as Figures C31 and C32. These results were used for pavement design purposes.

Sample Number	Sample Location	R-Value
Bulk B1	LGC-B5 @ 0-5’	53



SYMBOL	BORING No.	SAMPLE No.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-2	3	7.5	Ring	ML	N/A	N/A

Clay	14.6%
Gravel / Sand	47.4%
Silt	38.0%

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GRAINSIZE DISTRIBUTION CURVE

9/3/21 (ASTM D422) FIGURE

SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-5	4	10.0	Ring	SM	N/A	N/A

Gravel:	0.3%
Sand:	76.5%
Fine:	23.2%

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EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE

SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-6	5	15.0	Bag	SM	N/A	N/A

Gravel:	4.3%
Sand:	65.3%
Fine:	30.4%

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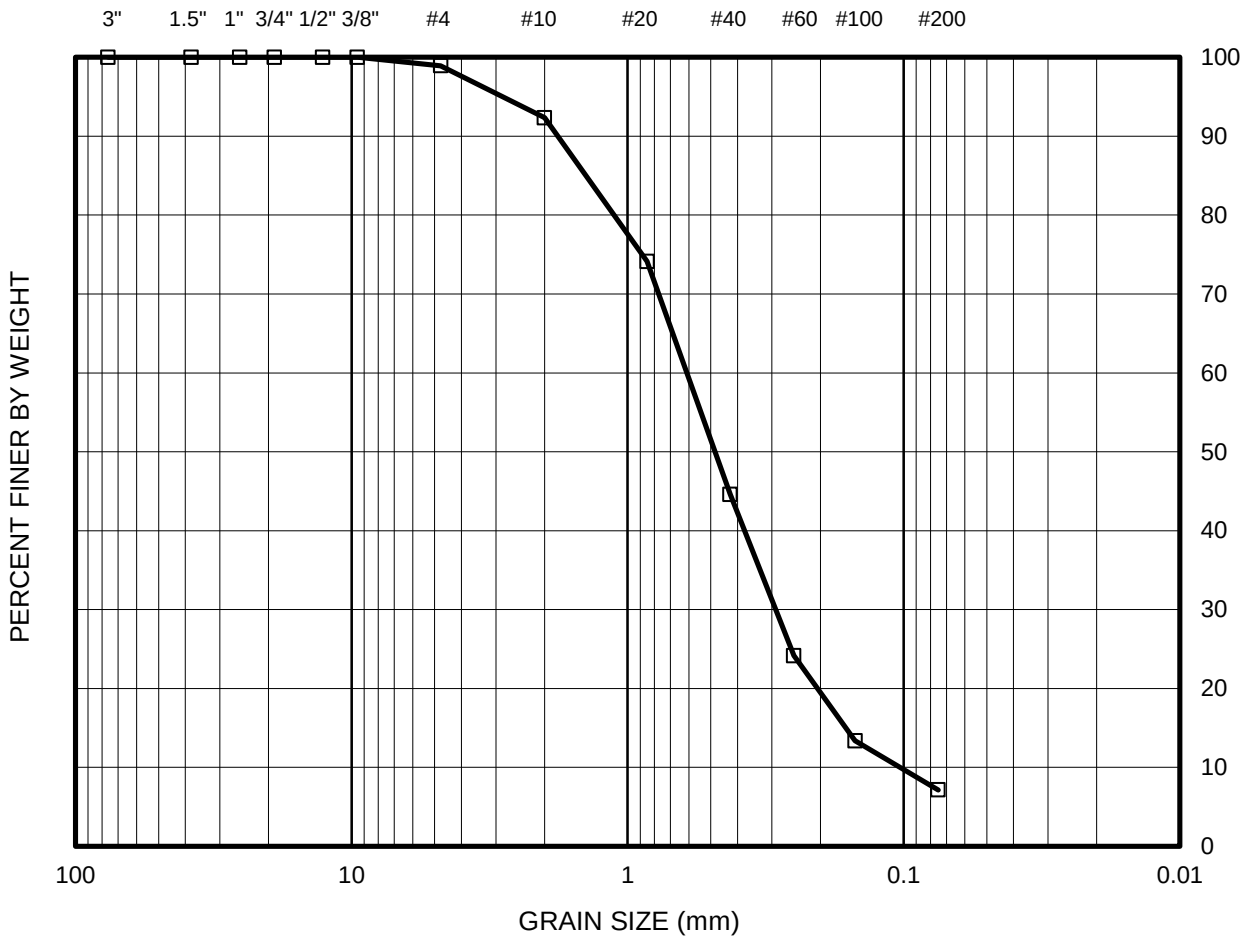
GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

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



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-7	2	5.0	Ring	SP-SM	N/A	N/A

Gravel:	1.1%
Sand:	91.8%
Fine:	7.1%

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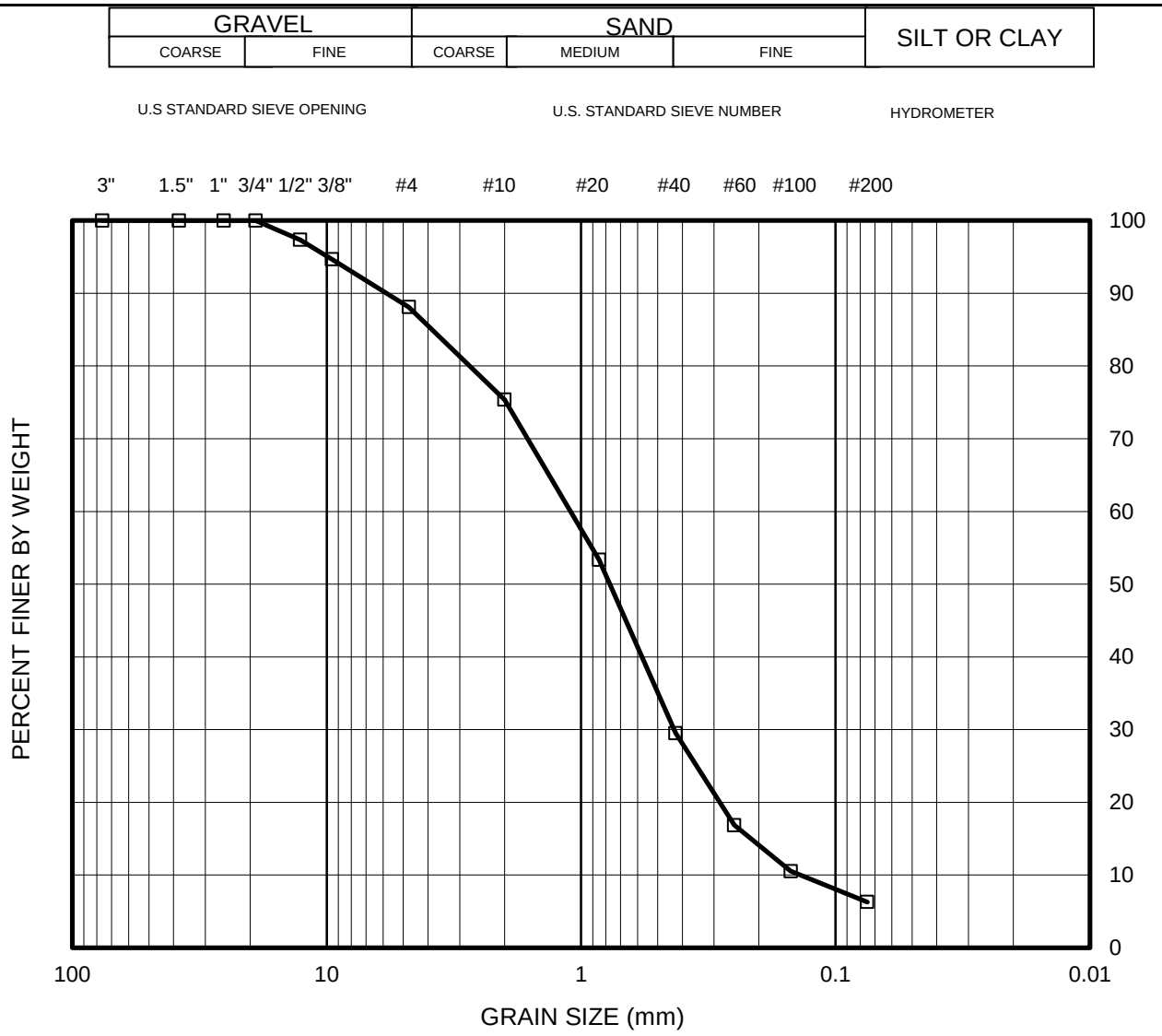
GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-7	5	15.0	Bag	SW-SM	N/A	N/A

Gravel:	11.9%
Sand:	81.8%
Fine:	6.3%

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GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE

SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-7	11	45.0	Bag	SC	N/A	N/A

Gravel:	1.9%
Sand:	59.6%
Fine:	38.5%

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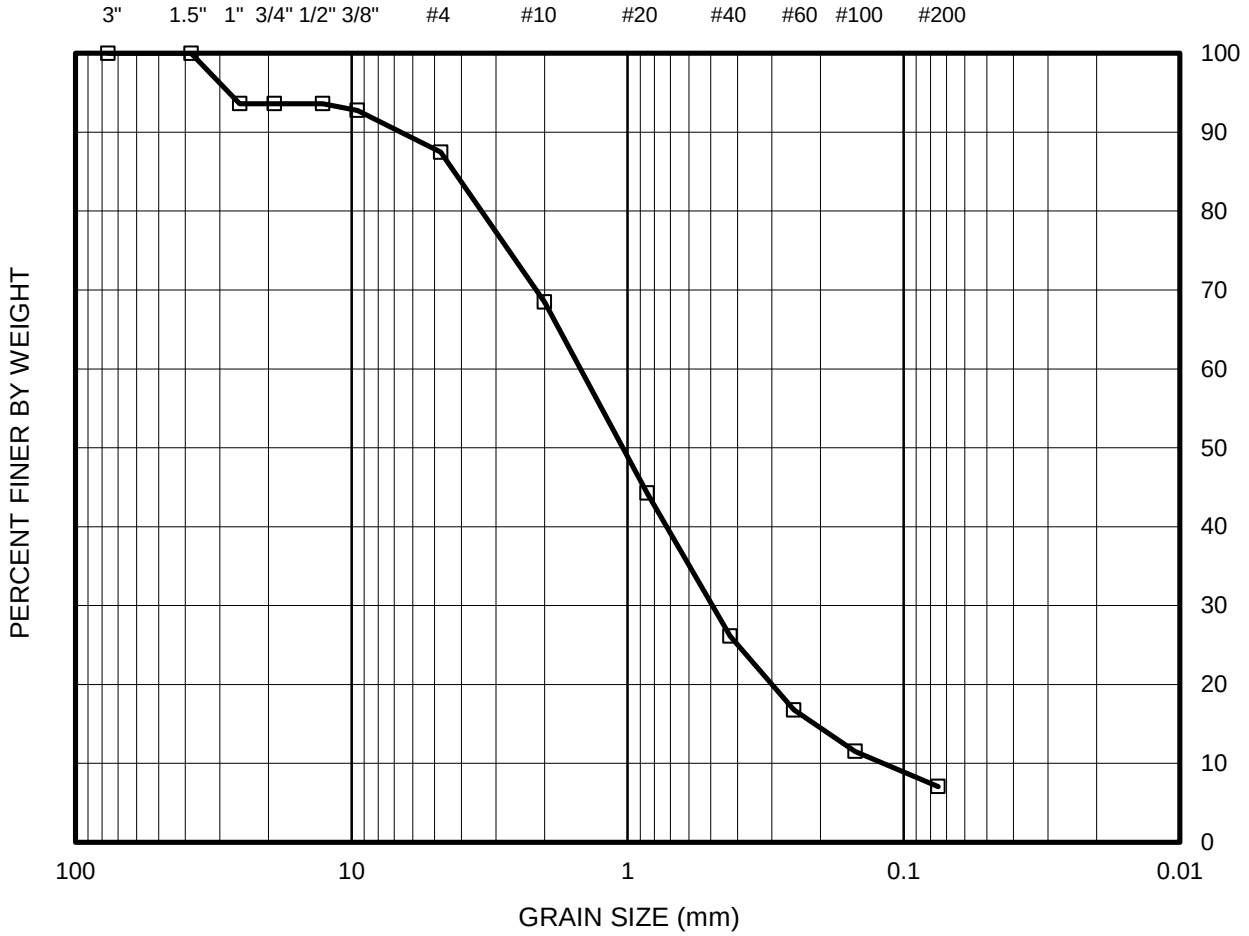
Client Job No.: 213015-01
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

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



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-8	3	7.5	Ring	SW-SM	N/A	N/A

Gravel:	12.5%
Sand:	80.4%
Fine:	7.1%

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Client Name: LGC Valley, Inc.
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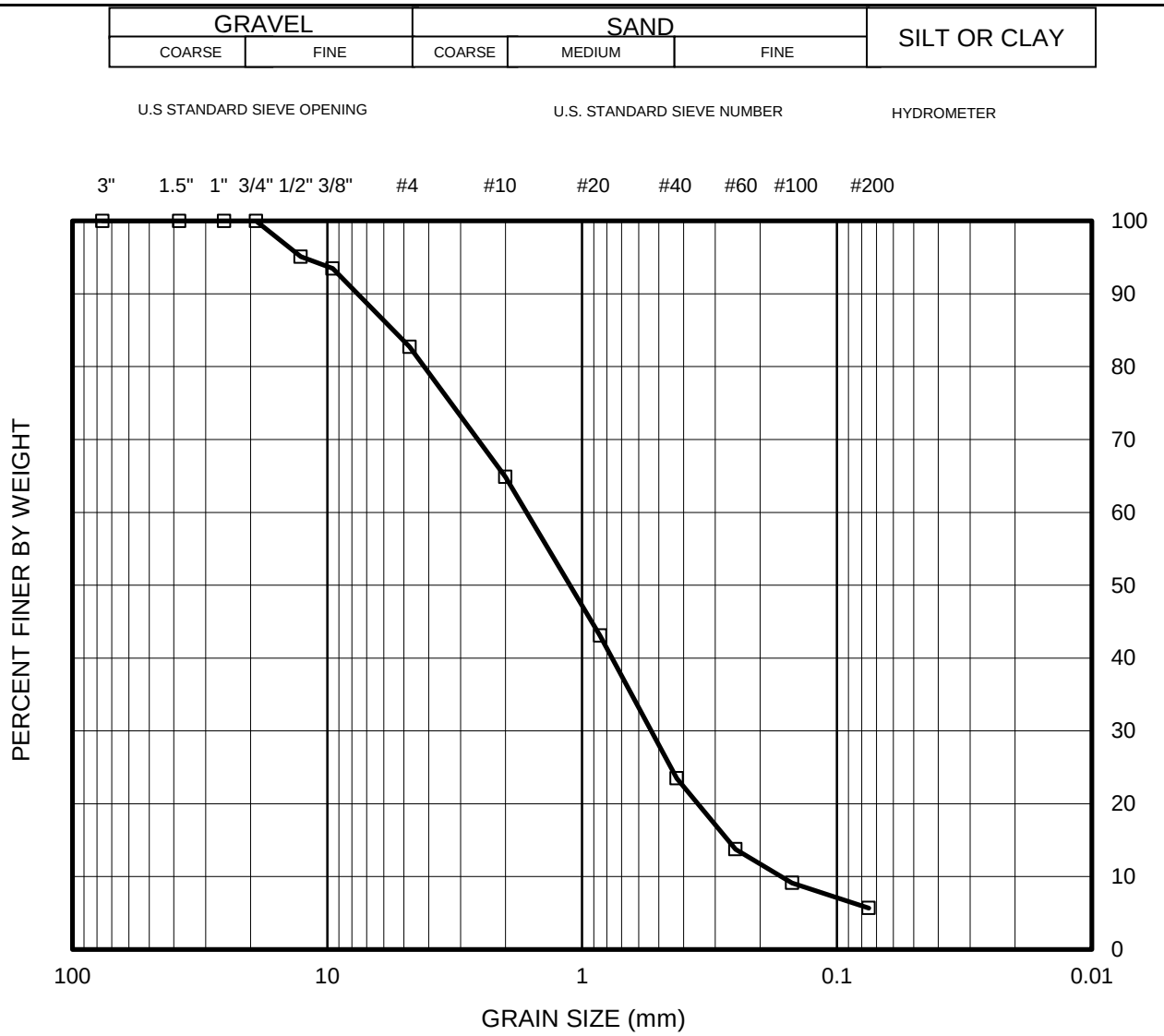
GRAIN SIZE DISTRIBUTION CURVE
(ASTM D422)

09/03/21

FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-8	6	20.0	Bag	SW-SM	N/A	N/A

Gravel:	17.3%
Sand:	77.0%
Fine:	5.7%

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GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE

GRAVEL		SAND			SILT OR CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	

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

SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
☐	B-9	3	7.5	Ring	CL	N/A	N/A

Gravel:	2.5%
Sand:	46.4%
Fine:	51.1%

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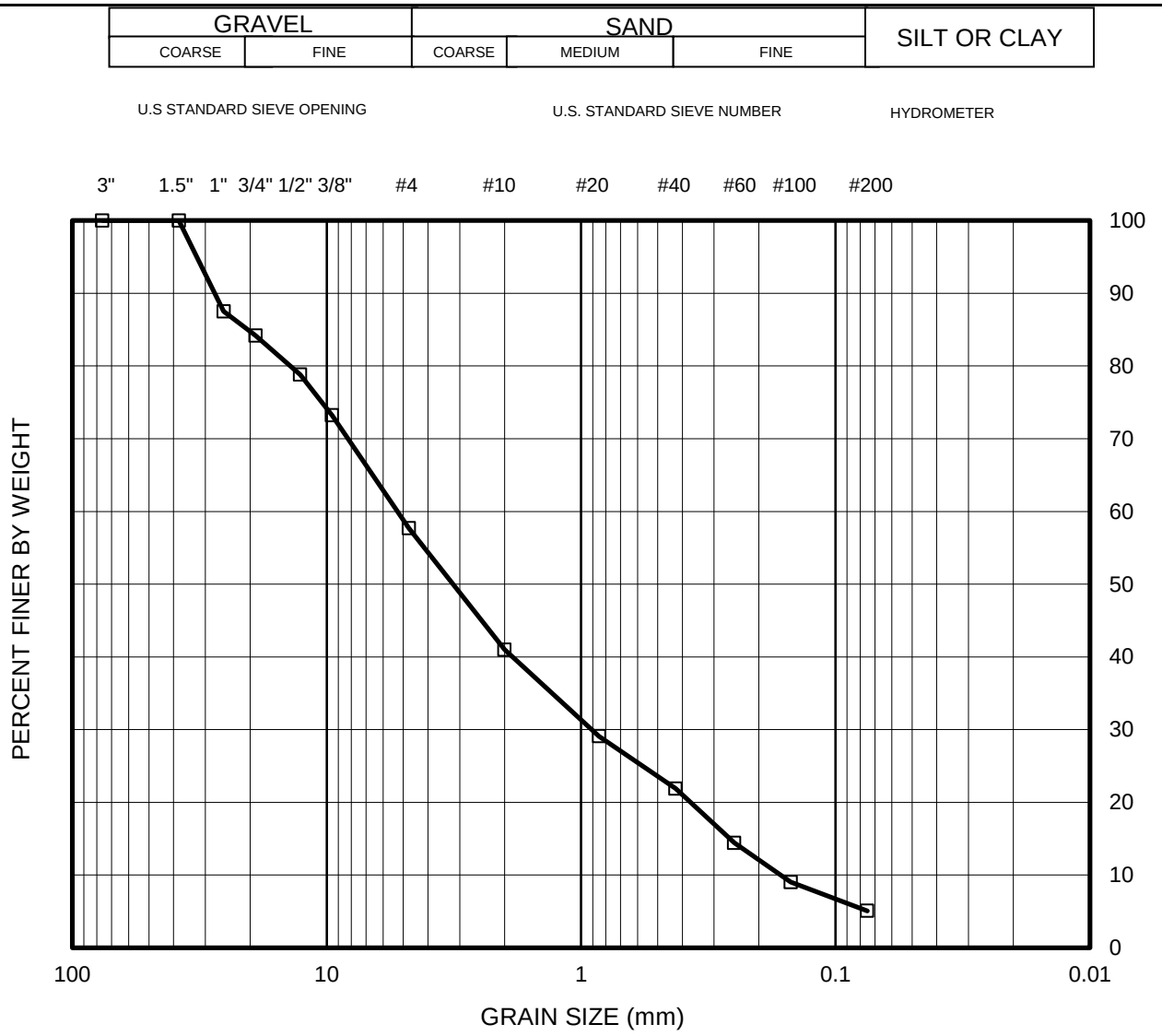
GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-10	4	10.0	Ring	SW-SM	N/A	N/A

Gravel:	42.3%
Sand:	52.6%
Fine:	5.1%

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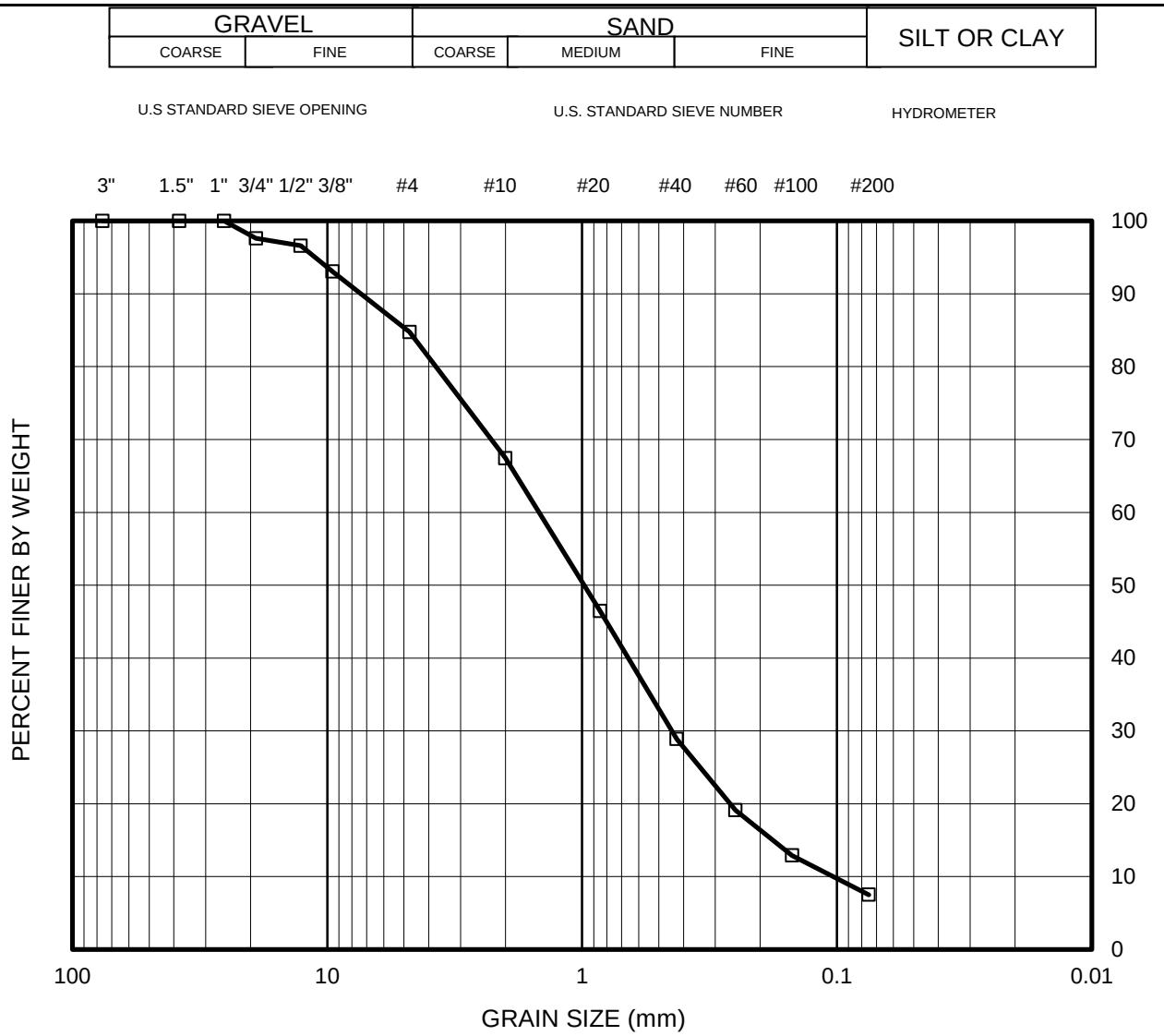
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-11	6	20.0	Bag	SW-SM	N/A	N/A

Gravel:	15.2%
Sand:	77.3%
Fine:	7.5%

EGLAB, INC.

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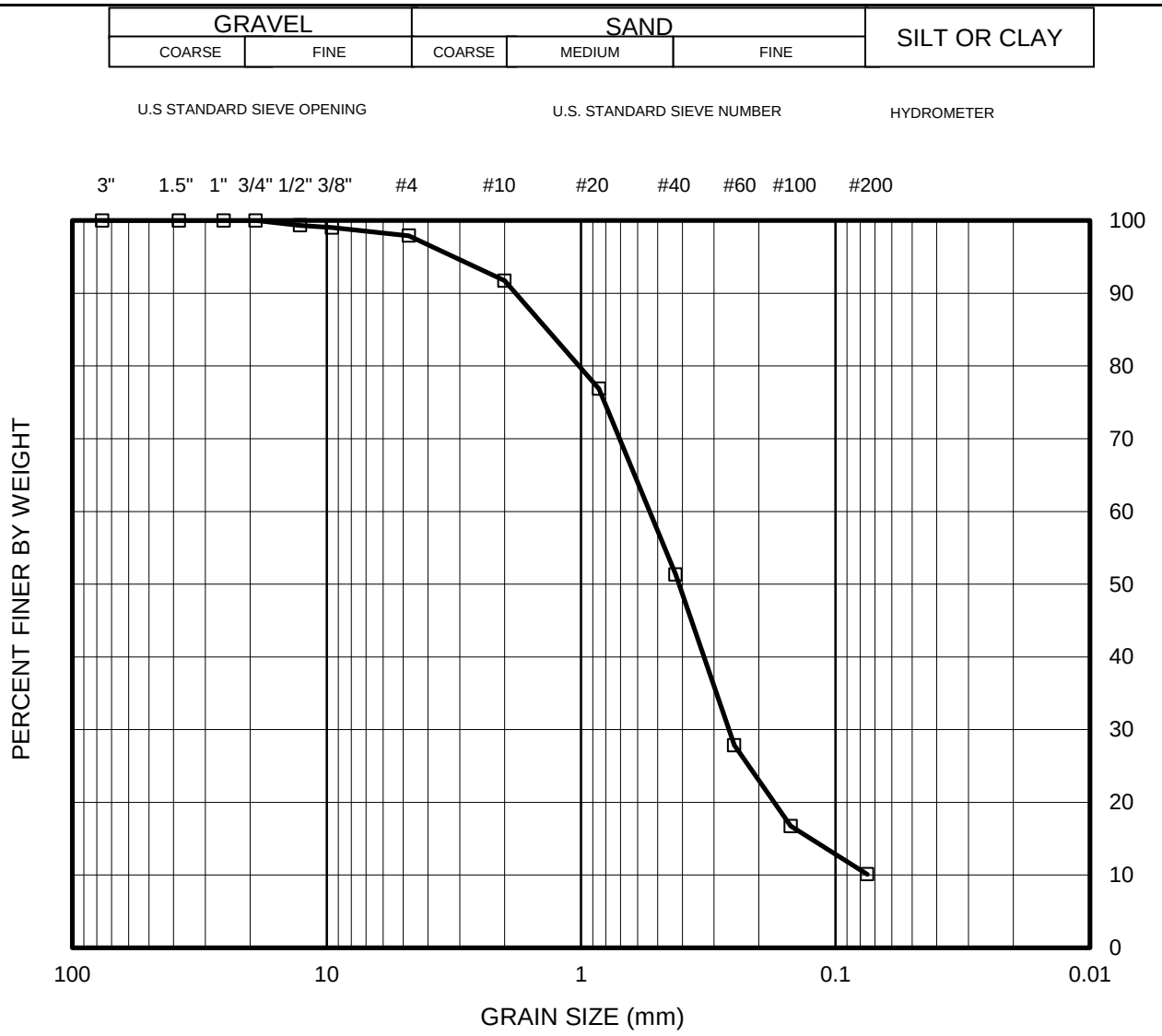
Client Job No.: 213015-01
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-12	3	7.5	Ring	SW-SM	N/A	N/A

Gravel:	2.1%
Sand:	87.8%
Fine:	10.1%

EGLAB, INC.

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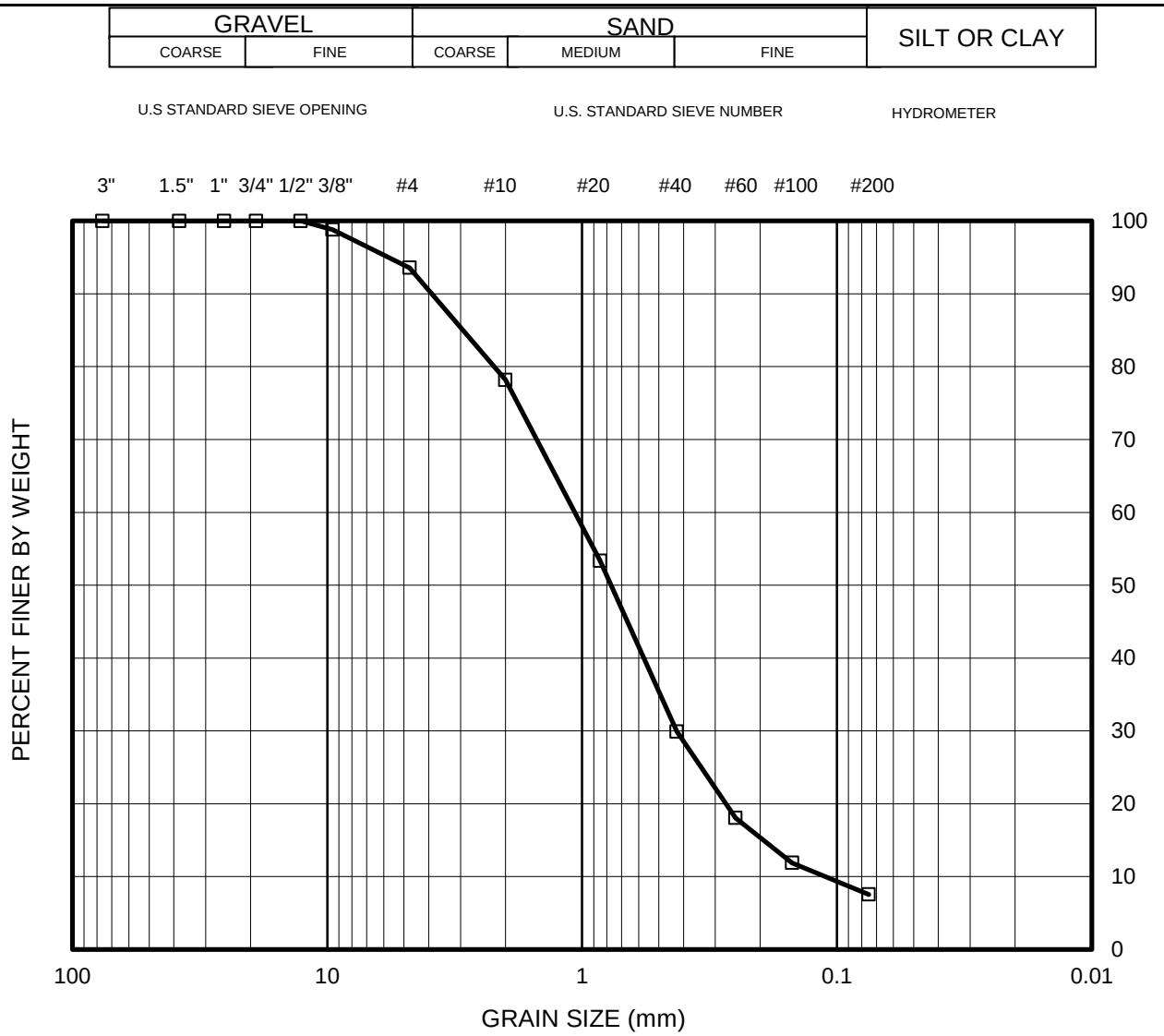
Client Job No.: 213015-01
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-12	5	15.0	Bag	SW-SM	N/A	N/A

Gravel:	6.4%
Sand:	86.0%
Fine:	7.6%

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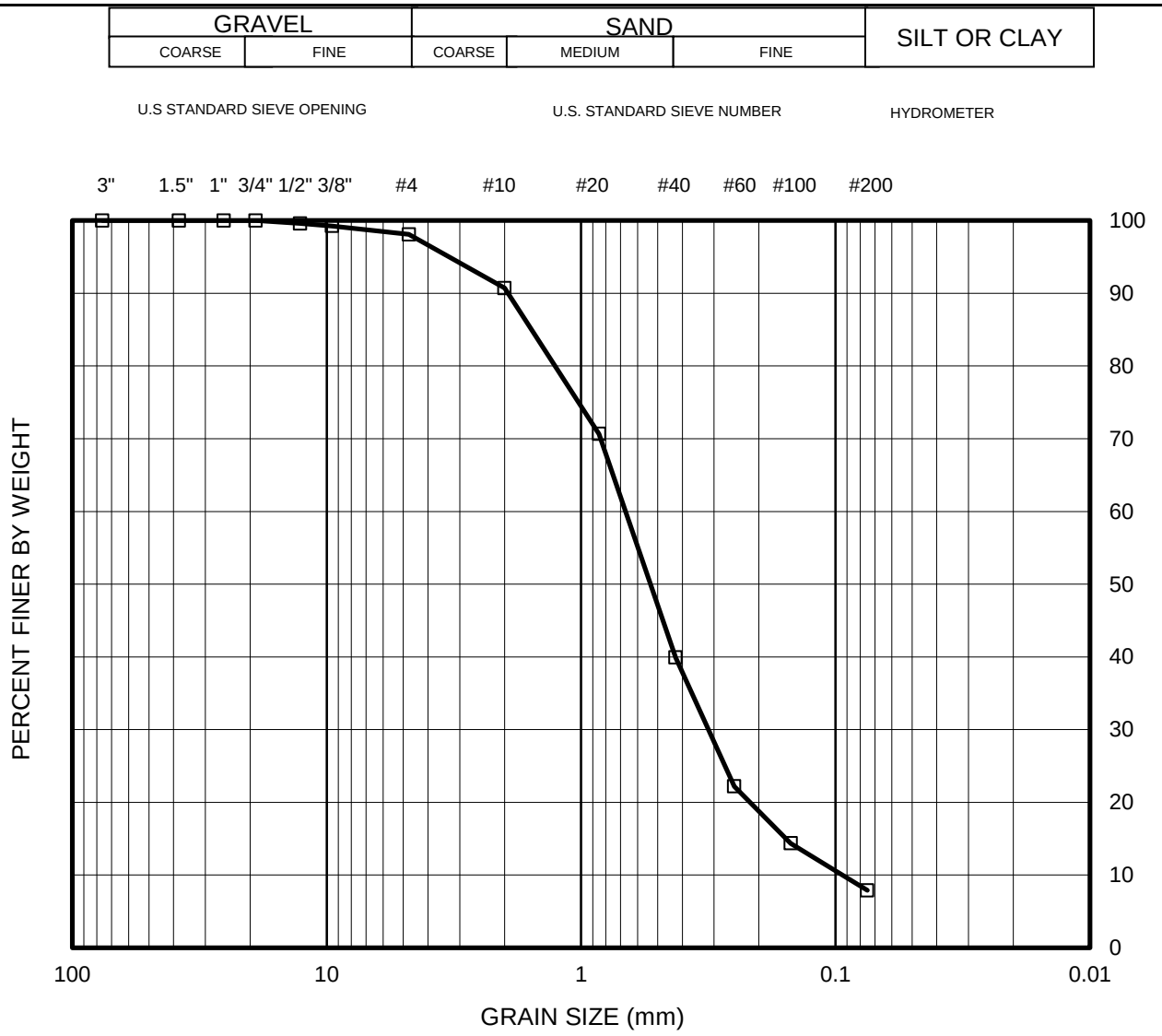
Client Job No.: 213015-01
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	LIQUID LIMIT	PLASTICITY INDEX
□	B-13	5	15.0	Bag	SW-SM	N/A	N/A

Gravel:	1.9%
Sand:	90.2%
Fine:	7.9%

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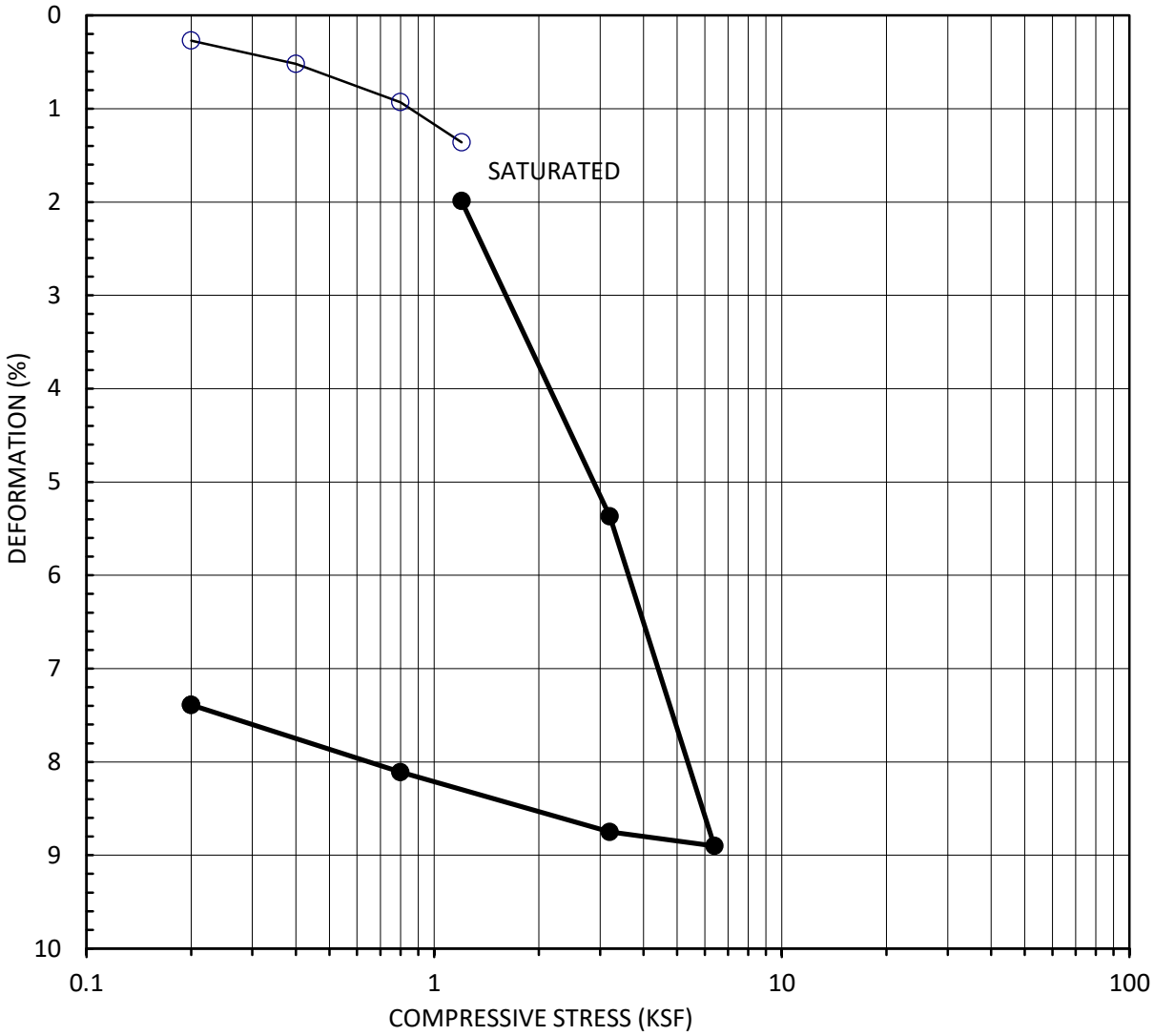
Client Job No.: 213015-01
Client Name: LGC Valley, Inc.
EGLAB Project No.: 21-059-015

GRAIN SIZE DISTRIBUTION CURVE

09/03/21 (ASTM D422) FIGURE



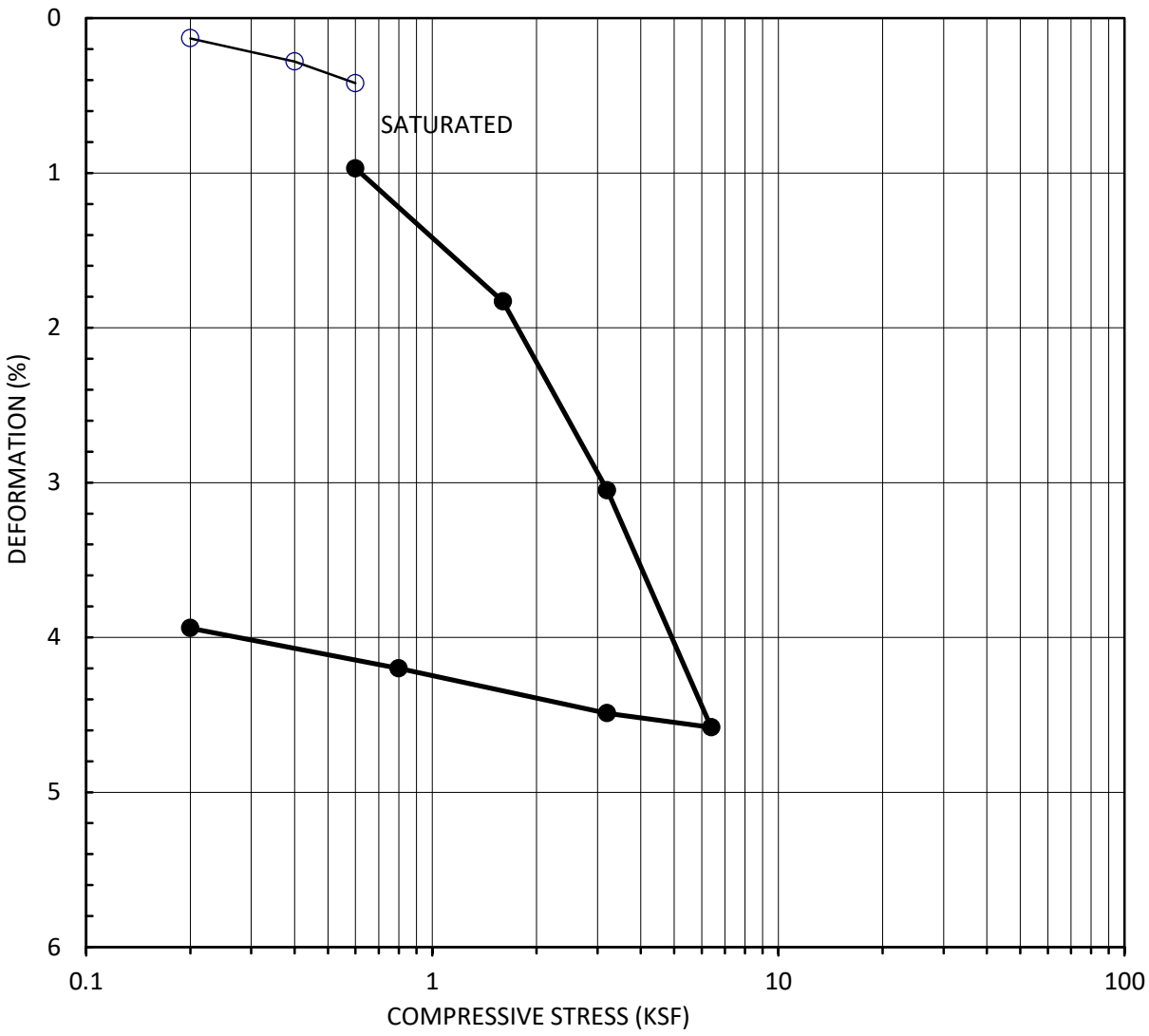
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-2	4	10.0	ML	6.6	91.0	0.851

EGLAB, INC.

Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-4	2	5.0	SC	5.5	111.8	0.507

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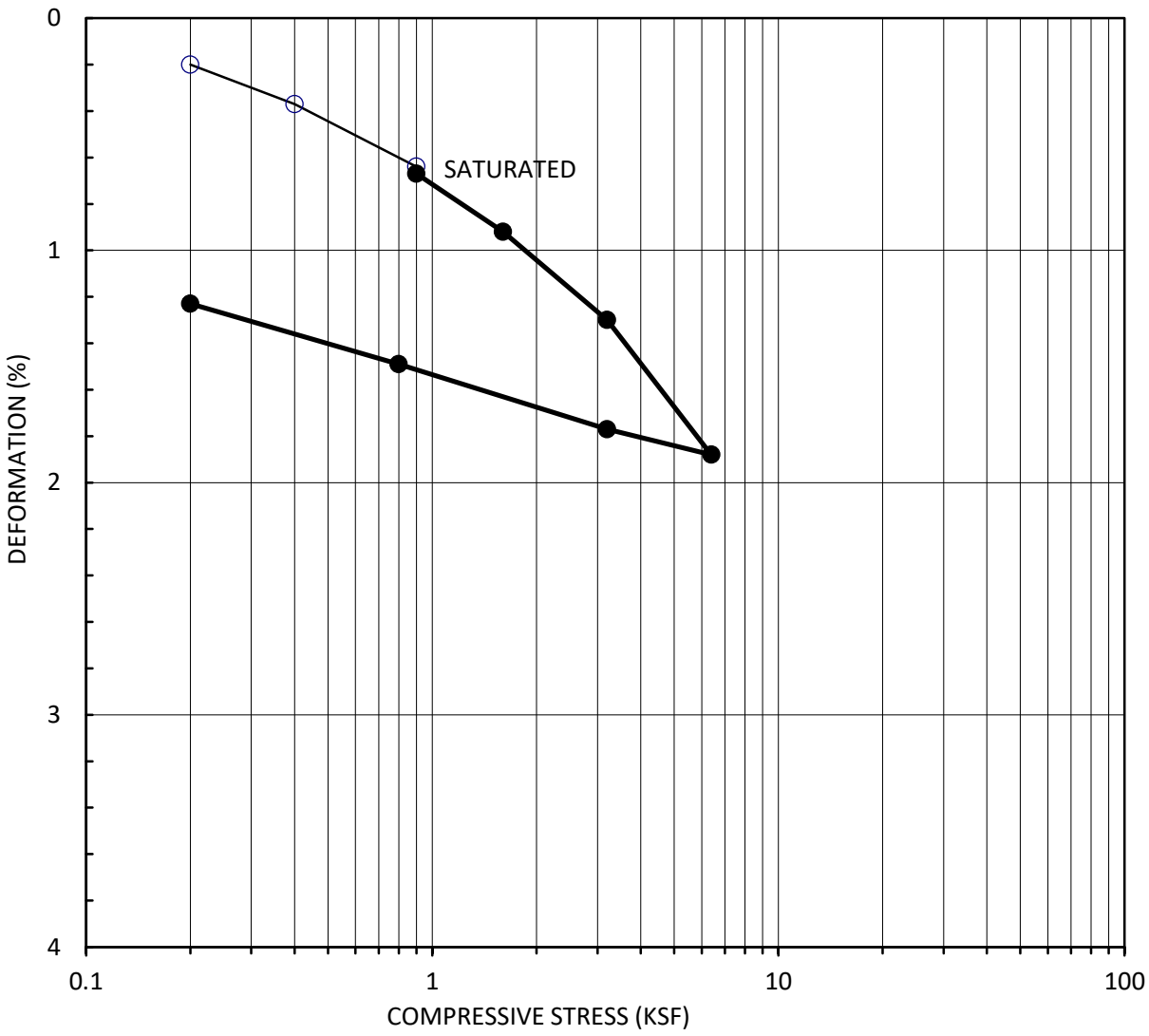
Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-5	3	7.5	SM	5.5	119.0	0.416

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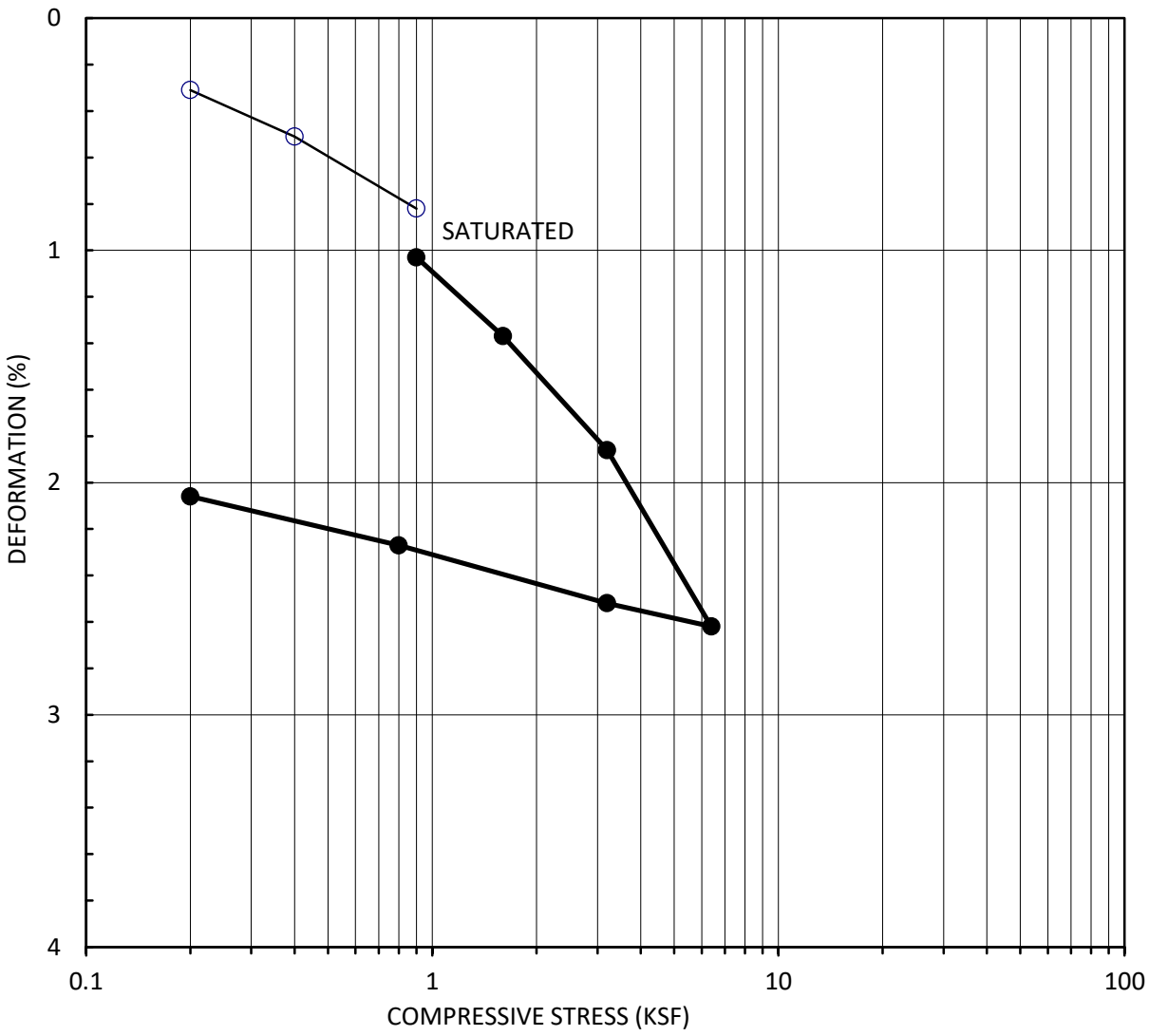
Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



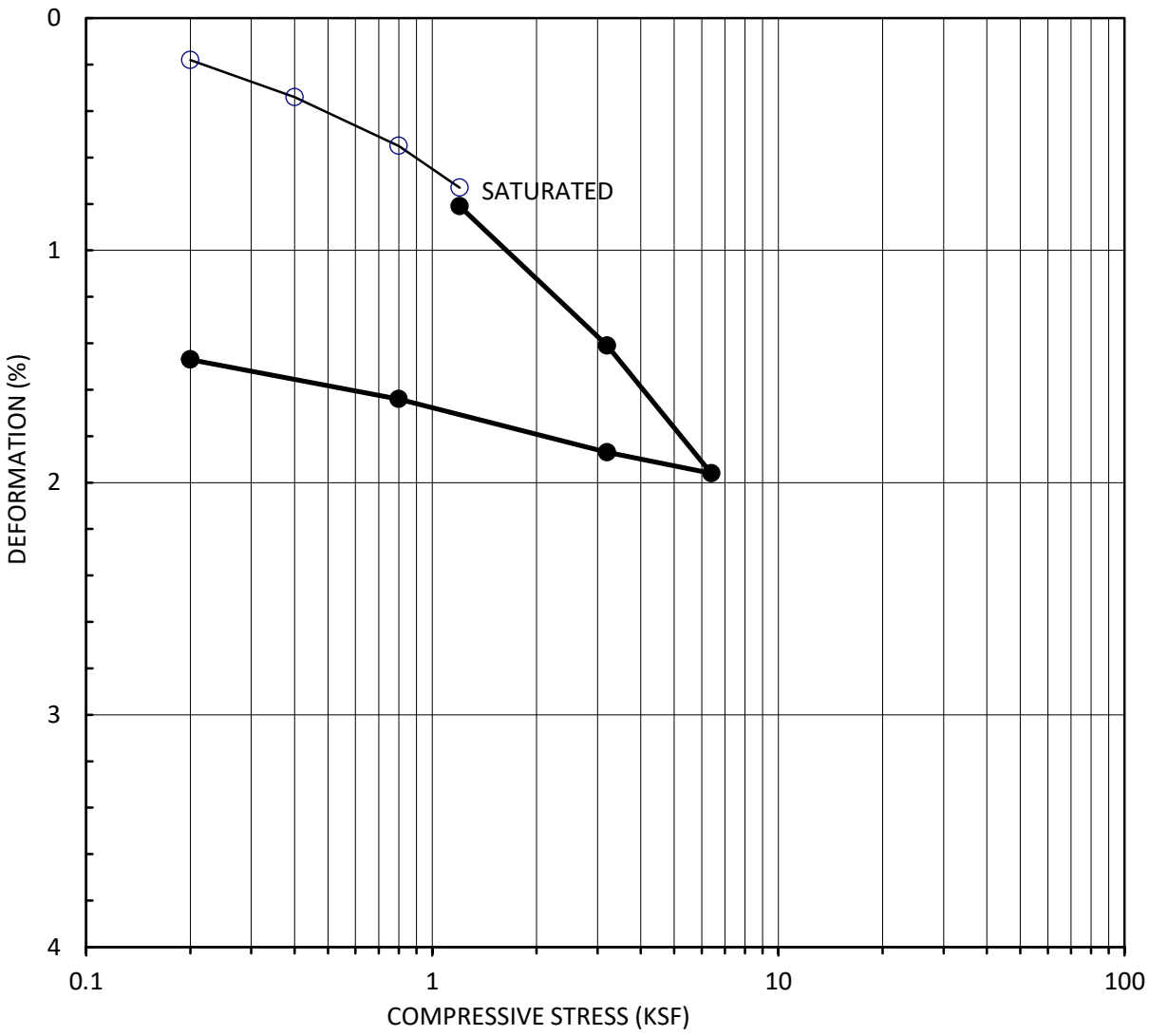
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-7	3	7.5	SP-SM	3.3	108.6	0.551

EGLAB, INC.

Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



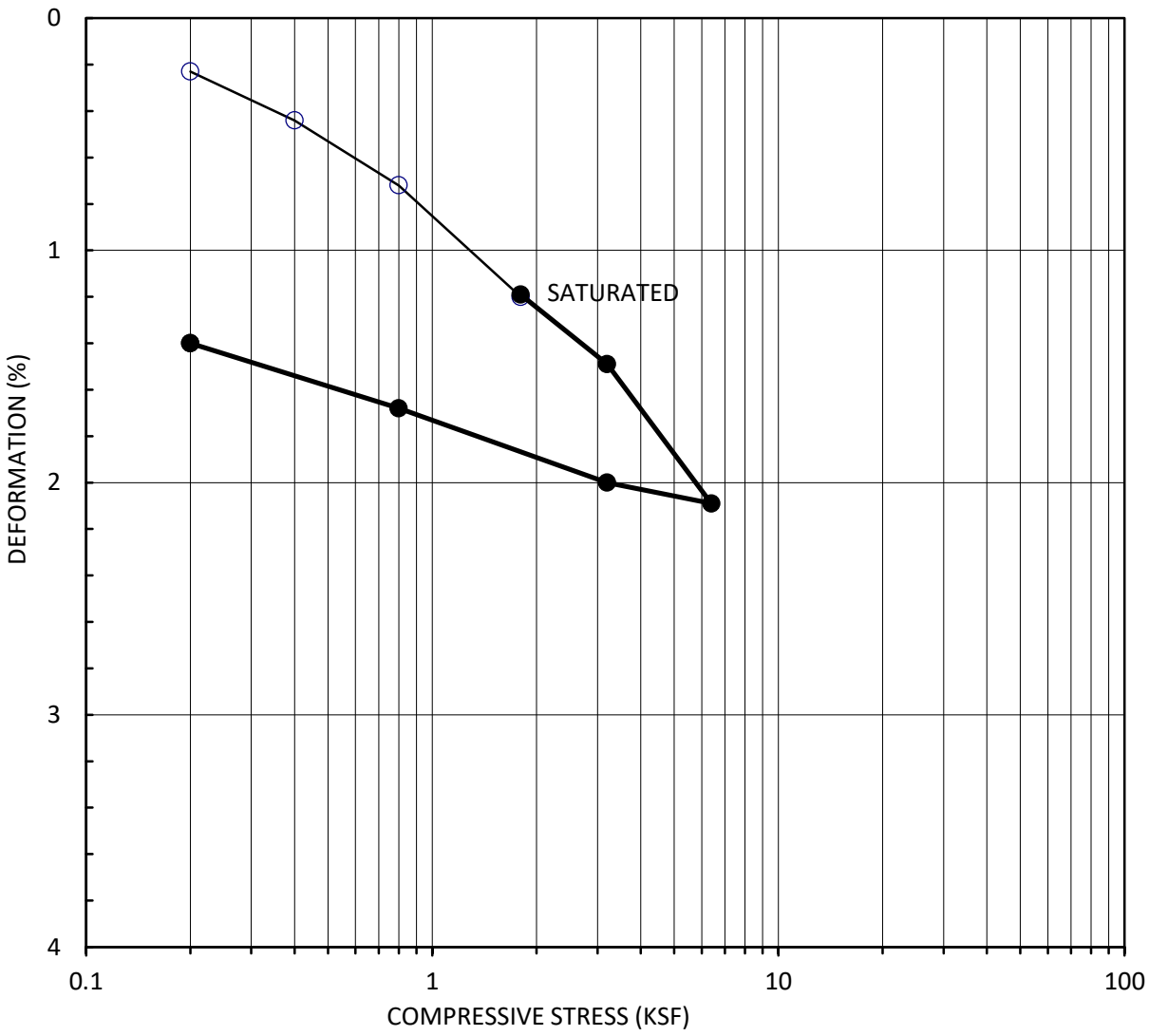
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-8	4	10.0	SP	1.8	102.7	0.640

EGLAB, INC.

Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



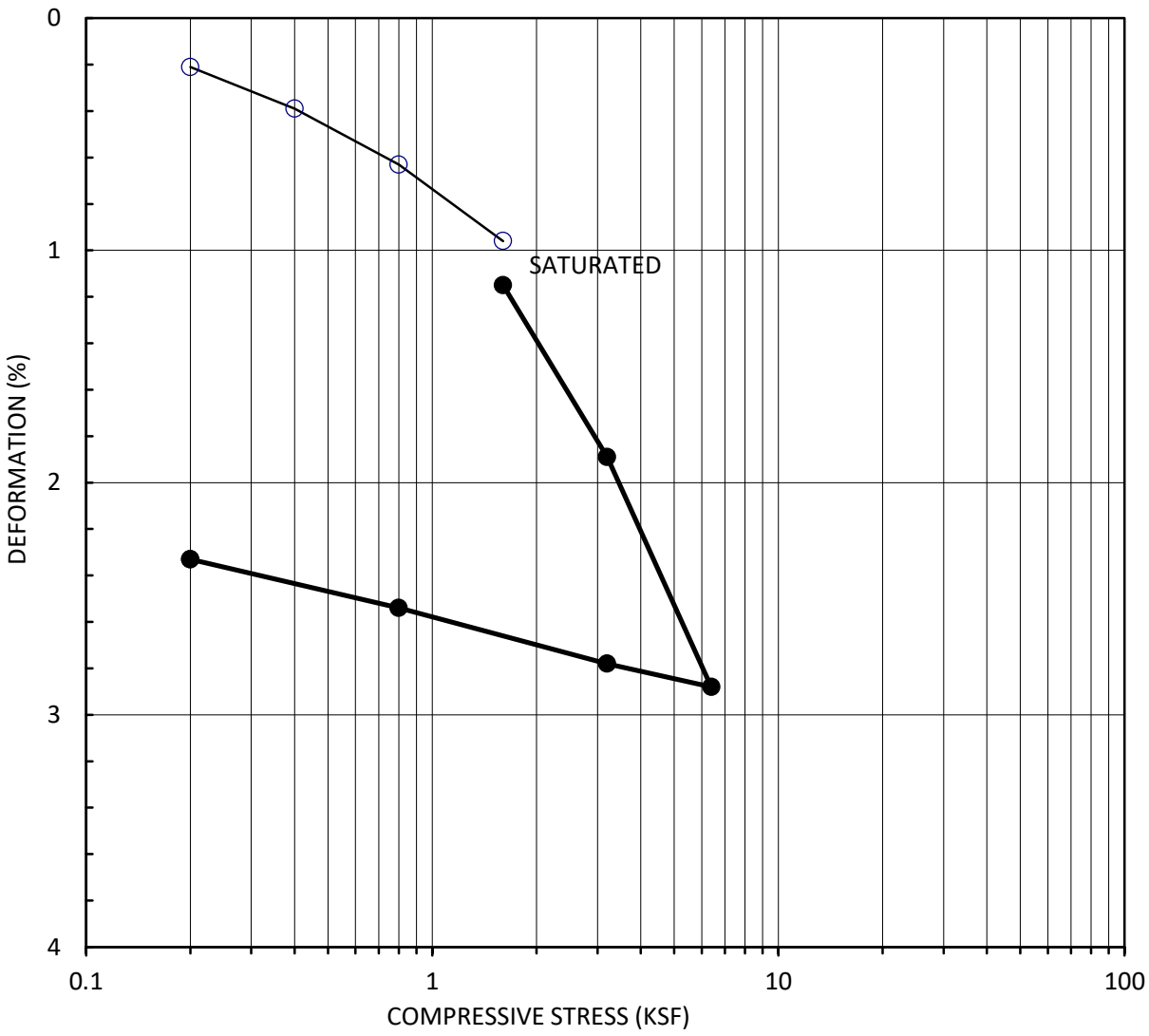
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-8	5	15.0	SM	12.1	114.6	0.470

EGLAB, INC.

Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



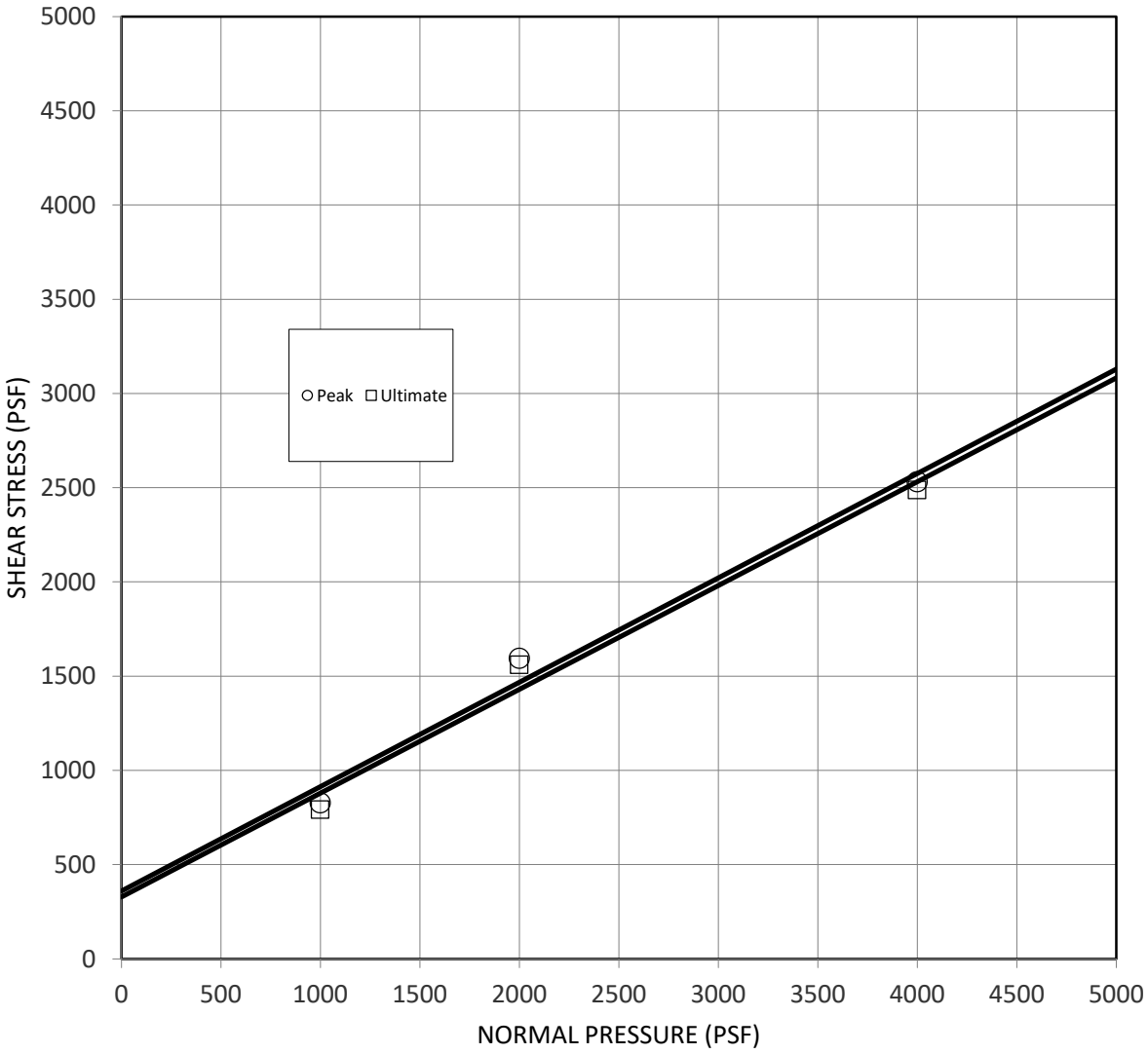
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-9	4	10.0	SM	4.9	112.2	0.501

EGLAB, INC.

Project Name: LA Railrod 93
Client: LGC Valley, Inc.
Job No.: 213015-01
EGLAB Project No.: 21-059-015

CONSOLIDATION

09/21 (ASTM D2435) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-7	4	10.0	Ring	SC-SM	○	360	29
					□	328	29

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1000	7.3	18.0	112.2	97
2000	7.3	17.3	113.7	97
4000	7.3	18.0	116.5	100

EGLAB, INC.

Project Name: LA Railroad 93

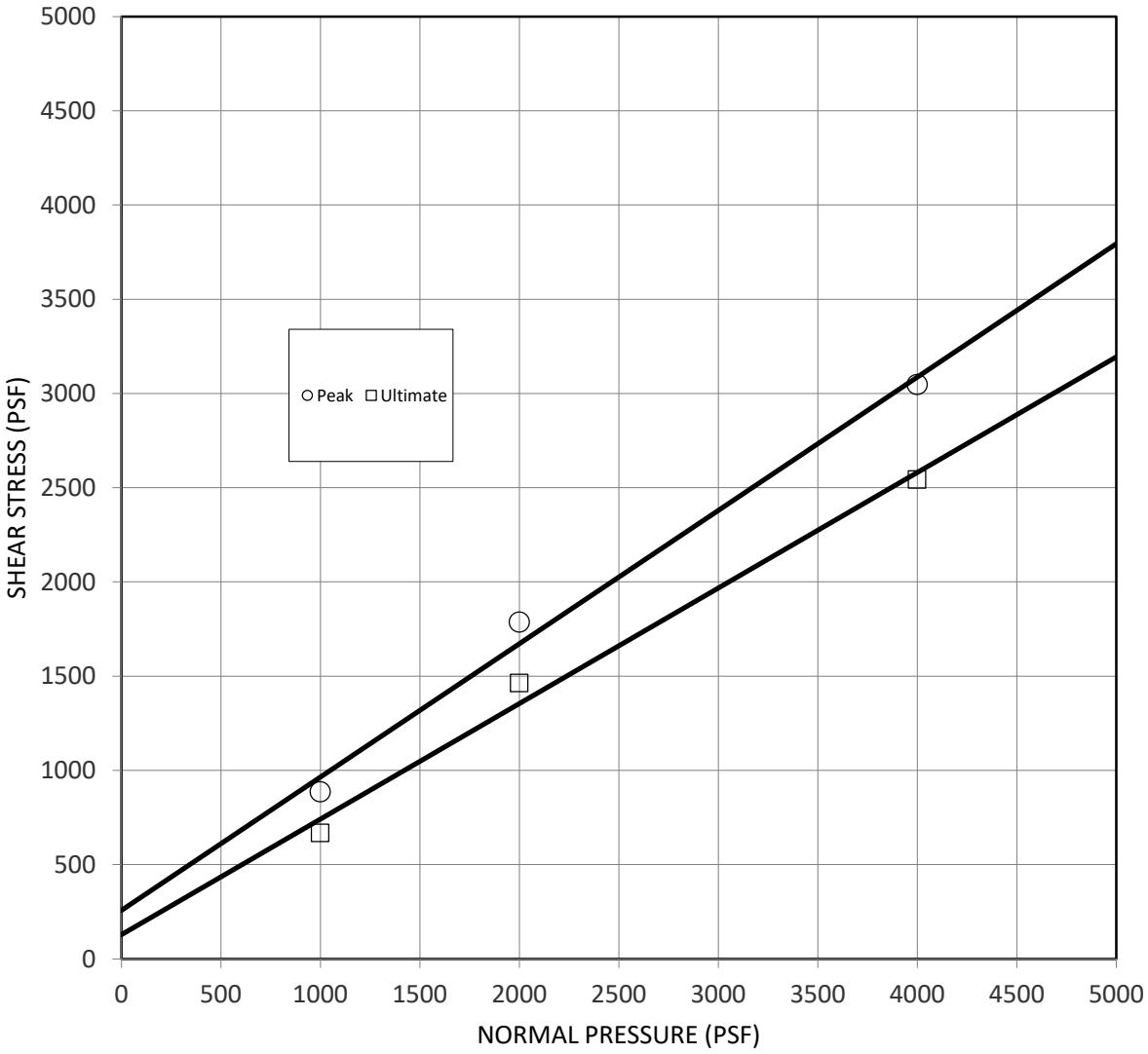
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-7	6	20.0	Ring	SW-SM	○	258	35
					□	128	32

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1000	4.4	17.7	110.3	91
2000	4.4	17.2	112.9	94
4000	4.4	17.0	114.0	96

EGLAB, INC.

Project Name: LA Railroad 93

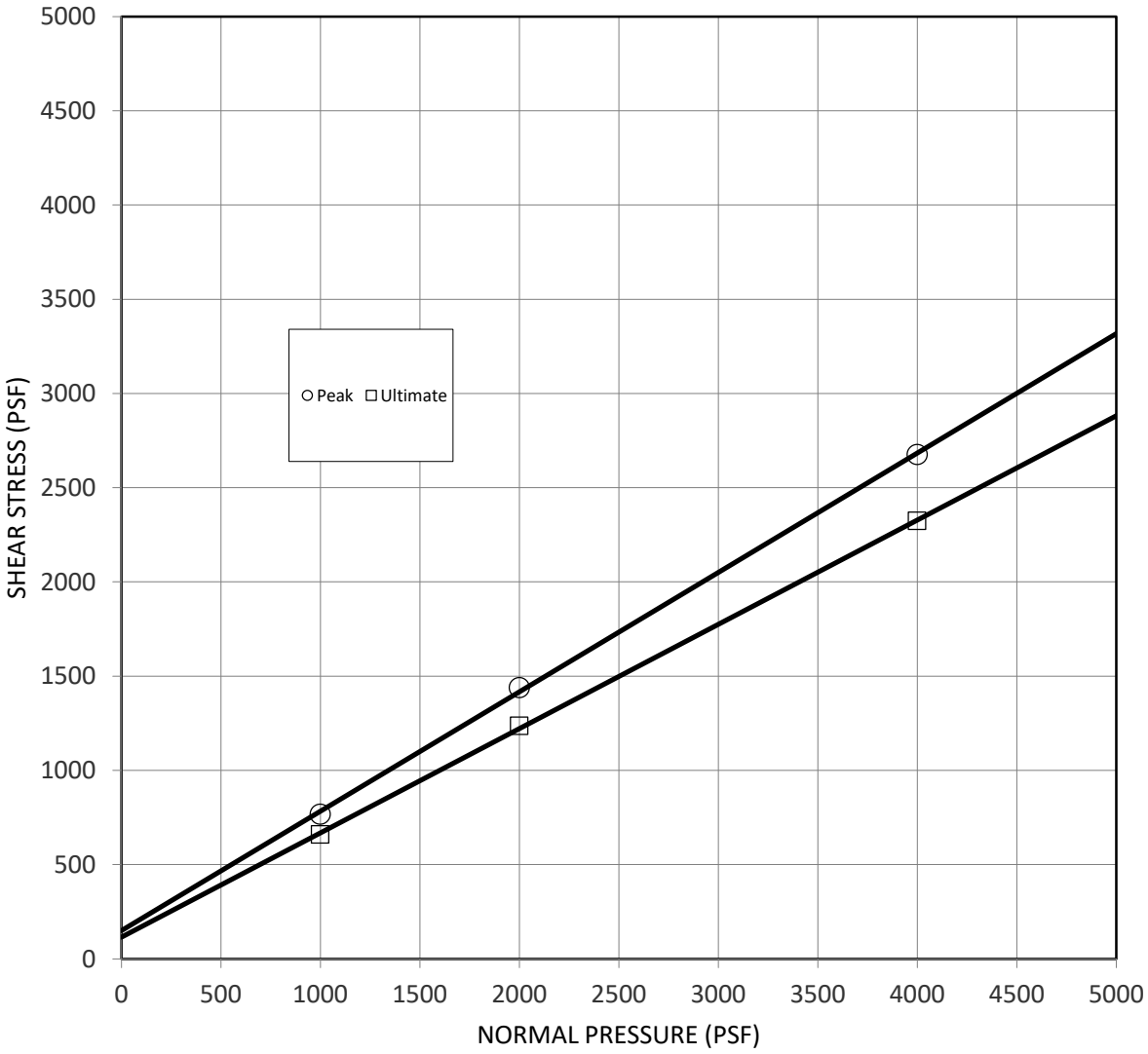
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-8	5	15.0	Ring	SM	○	150	32
					□	116	29

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1000	12.1	20.8	107.8	100
2000	12.1	20.1	111.3	100
4000	12.1	17.8	113.9	100

EGLAB, INC.

Project Name: LA Railroad 93

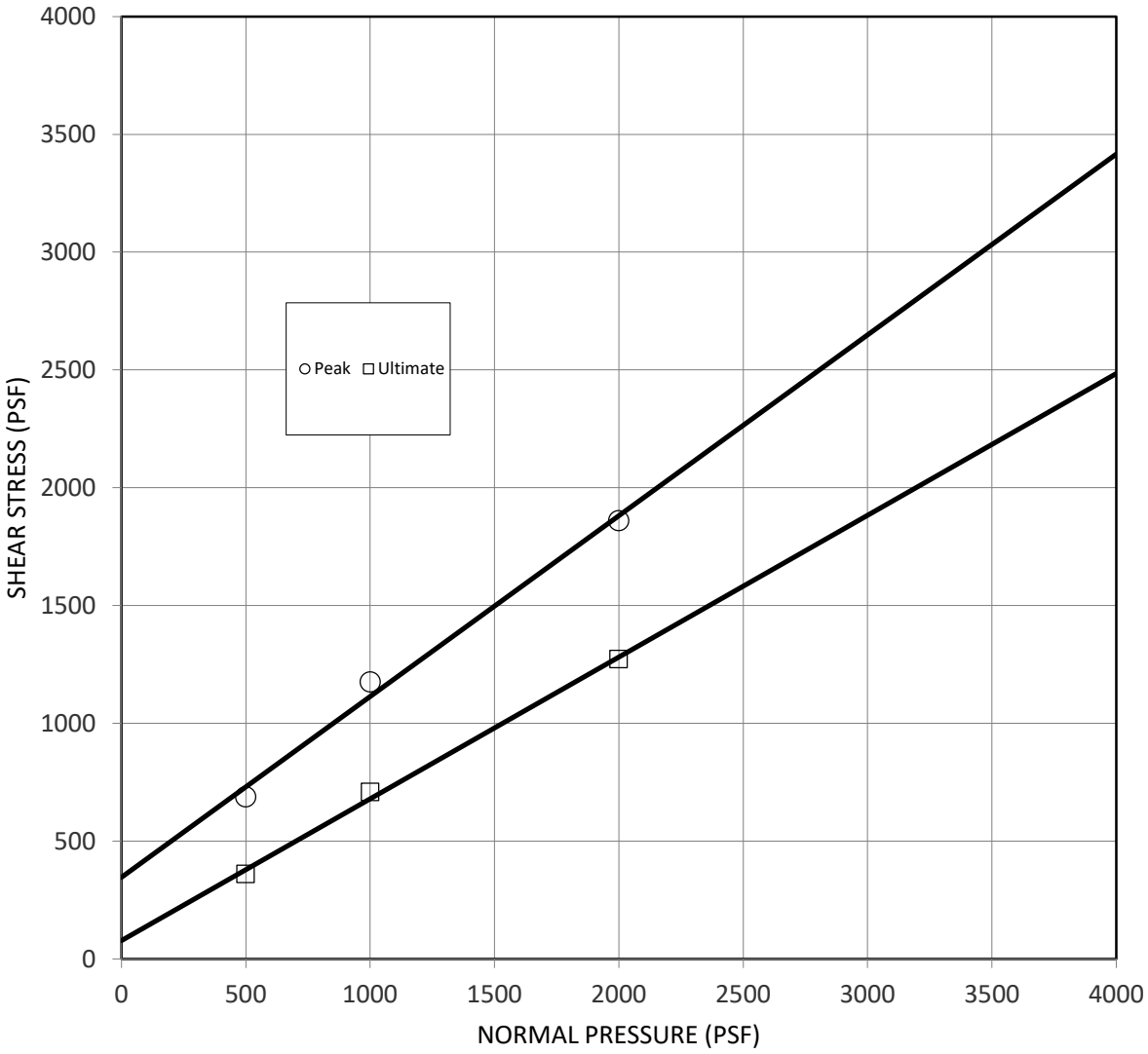
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-14	8	10.5	Ring	SP-SM	○	346	38
					□	78	31

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
500	5.3	16.6	118.2	100
1000	5.3	16.1	118.6	100
2000	5.3	15.4	119.6	100

EGLAB, INC.

Project Name: LA Railroad 93

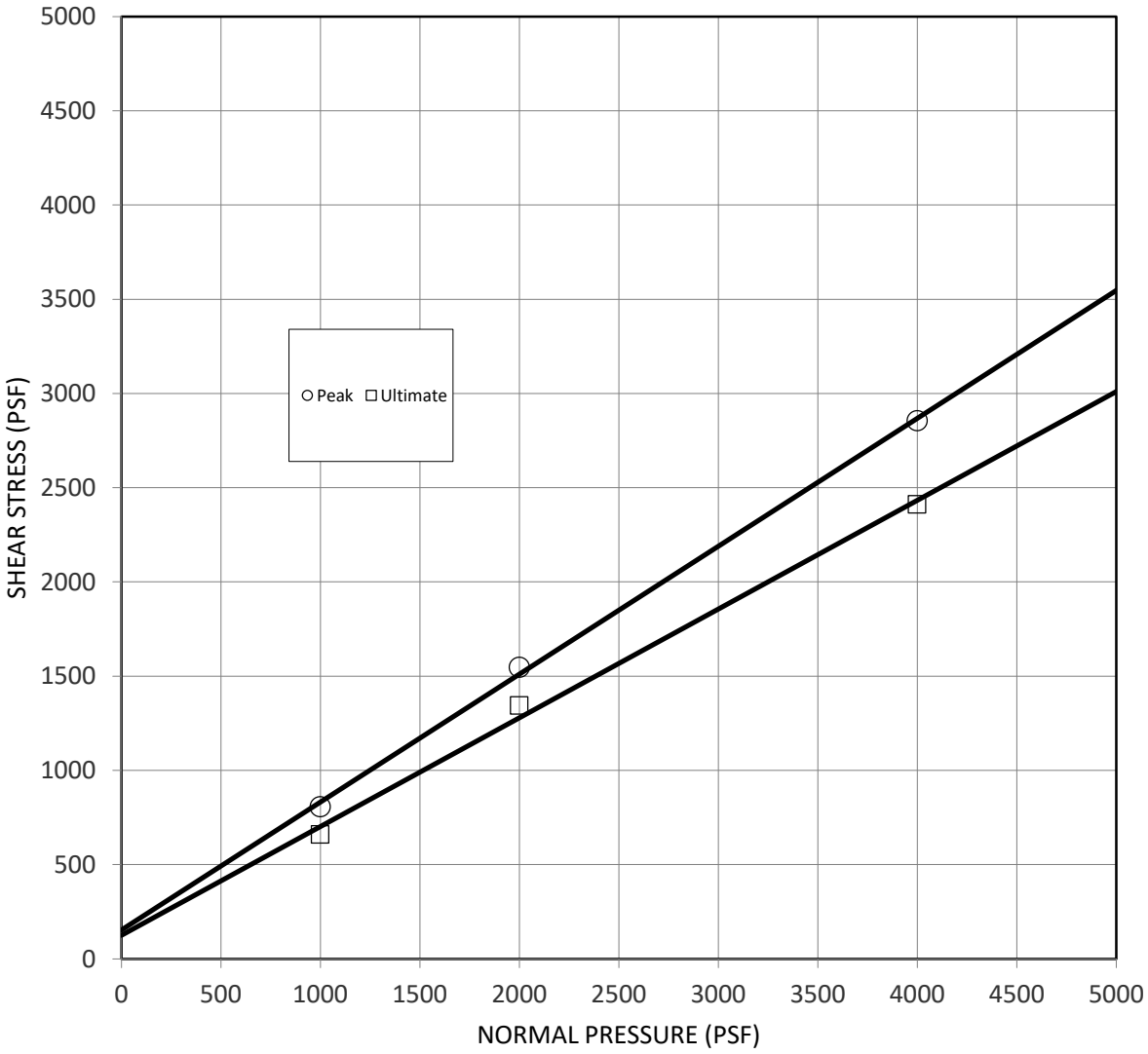
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-14	16	22.5	Ring	SM	○	154	34
					□	126	30

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1000	5.2	20.3	106.7	95
2000	5.2	19.7	107.7	95
4000	5.2	19.0	108.1	92

EGLAB, INC.

Project Name: LA Railroad 93

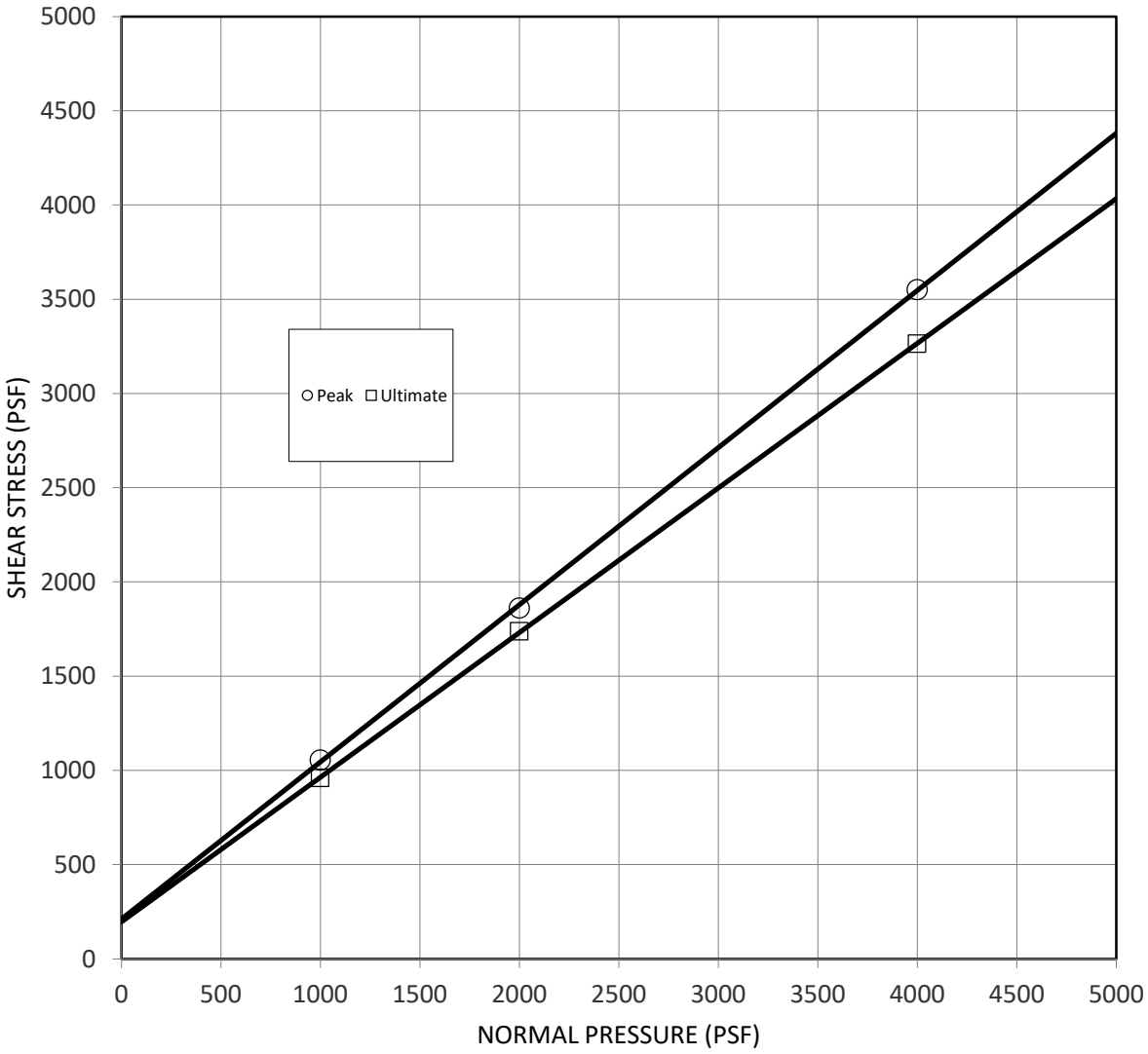
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-14	20	28.5	Ring	SW-SM	○	211	40
					□	197	37

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1000	5.0	18.6	109.2	92
2000	5.0	18.0	110.5	92
4000	5.0	16.9	112.1	91

EGLAB, INC.

Project Name: LA Railroad 93

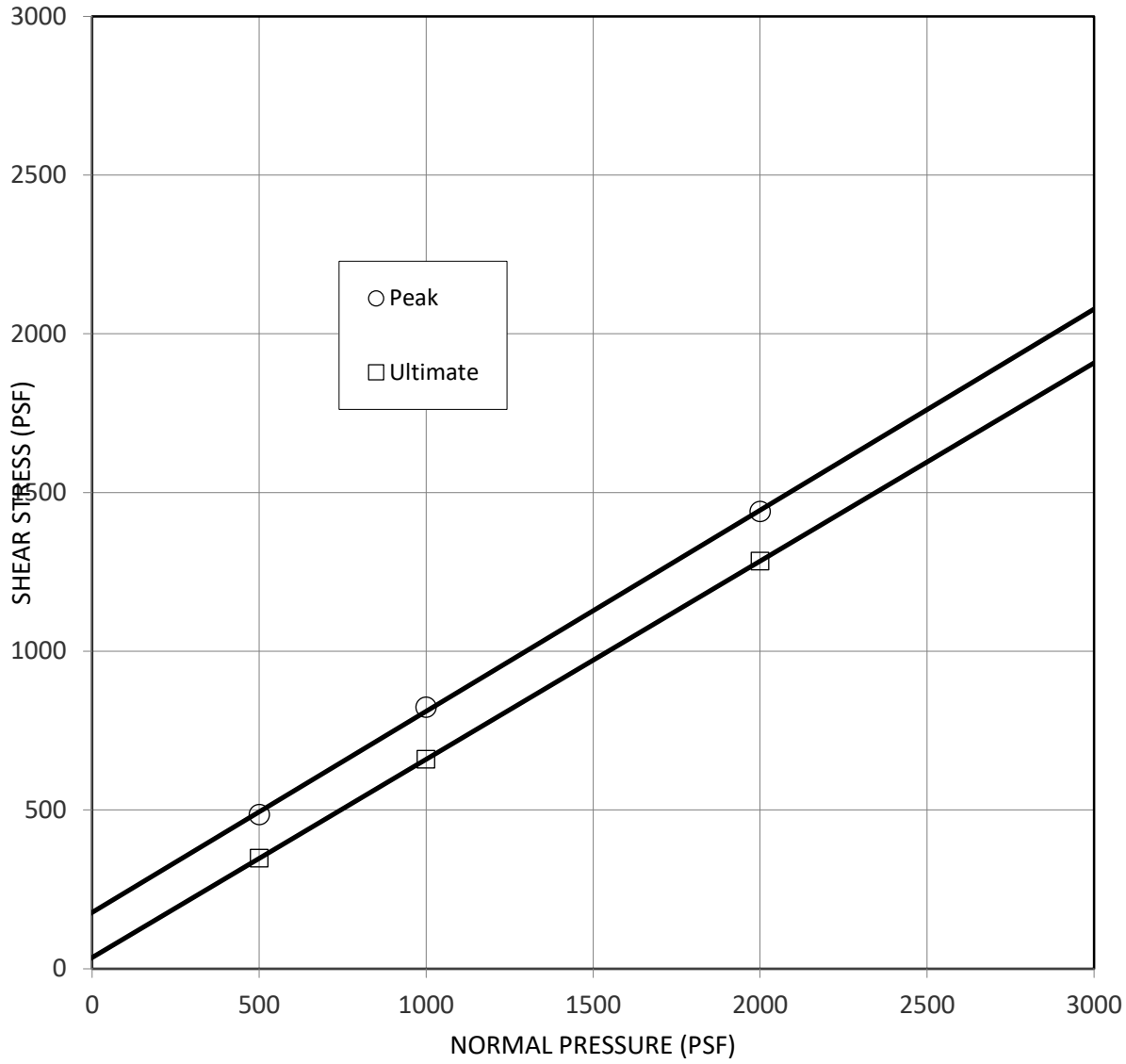
Client: LGC Valley, Inc.

Project No.: 213015-01

EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-14	Bulk	20.0-25.0	Bulk	SM	○	178	32
					□	36	32

Note: Sample was remolded to **90 %** maximum relative density and optimum moisture

Maximum Dry Density: **135.5 pcf** Optimum Moisture: **7.0 %**

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
500	7.0	14.3
1000	7.0	13.9
2000	7.0	13.5

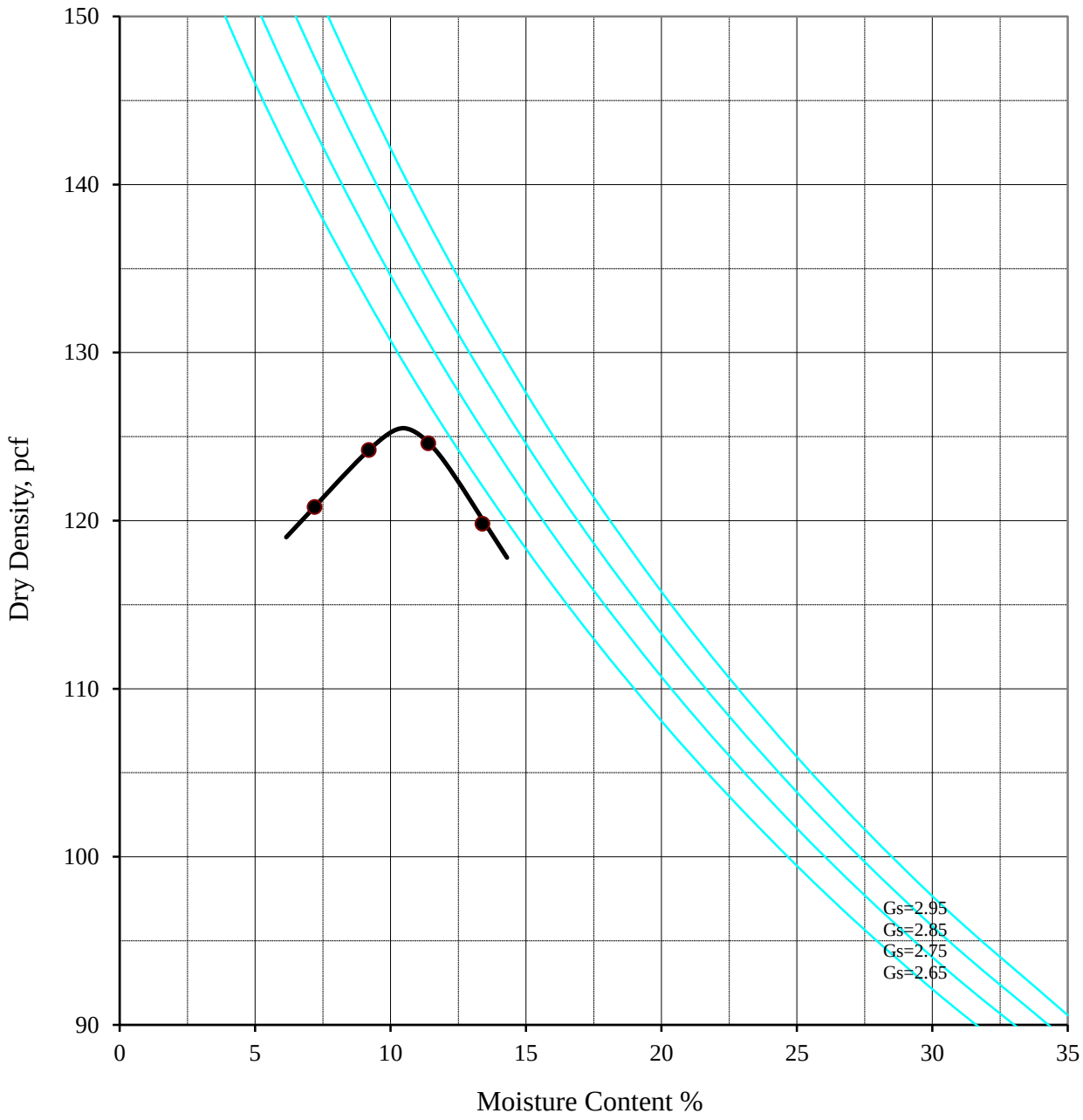
EGLAB, INC.

Project Address:
LA Railrod 93

Client: LGC Valley, Inc.
Project No.: 213015-01
EGLAB Project No.: 21-059-015

DIRECT SHEAR

09/21 (ASTM D3080) Figure



Method "A"

Maximum Dry Density = **125.5** pcf

Optimum Moisture Content = **10.5** %

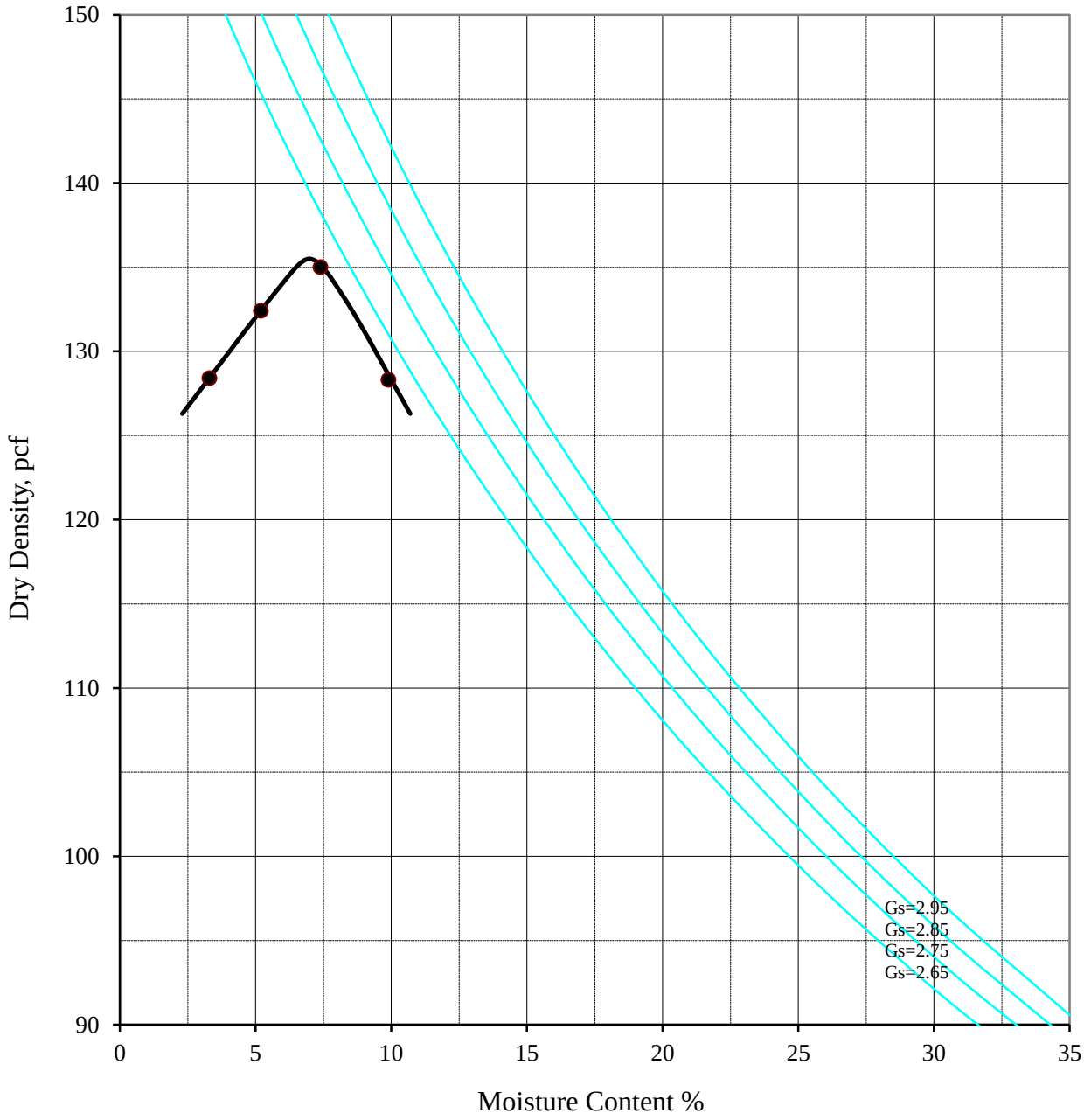
Boring No:	B-1
Sample:	Bulk-B1
Depth :	7.0-10.0 feet
Description :	Sandy clay (CL), olive brown, few gravel

EGLAB, INC.

Project Name:	LA Railroad 93
Client Name:	LGC Valley, Inc.
Job No.:	213015-01
EGLAB Project No.:	21-059-015
Date : Sep-21	Figure

Modified Proctor

(ASTM D1557)



Method "A"

Maximum Dry Density = **135.5** pcf Optimum Moisture Content = **7.0** %	Boring No: B-14 Sample: 22 Depth : 20.0-25.0 feet Description : Silty sand (SM), olive brown, few gravel and trace of clay
EGLAB, INC.	Project Name: LA Railroad 93 Client Name: LGC Valley, Inc.
Modified Proctor **(ASTM D1557)**	Job No.: 213015-01 EGLAB Project No.: 21-059-015 Date : Sep-21 Figure

Resistance R - Value Testing Results

(Cal Test 301)

Project Name:	LA Railroad 93
Job No.:	213015-01
Client:	LGC Valley, Inc.
EGLAB Project No.:	21-059-015
Test Date:	9/2/2021
Boring No.:	B-5
Sample No.:	Bulk-B1
Depth: (ft)	0-5.0
Sample Type:	Bulk
Sample Description:	Silty sand (SM), brown, few gravel and trace of clay and vegetation
Tested by:	JT
Checked by:	RJ

Test Specimen Number	1	2	3
Compaction Pressure (psi)	350	350	250
Wet Weight (gms)	1290	1280	1300
Dry Weight (gms)	1179	1179	1179
Tare Weight (gms)	0	0	0
Exudation Load (lbs.)	3583	5469	1820
Total Weight (gms)	2925	3068	3013
Mold Weight (gms)	1782	1919	1871
Sample Weight (gms)	1143	1150	1143
Sample Height (in)	2.50	2.50	2.51
Initial Expansion (in)	0.0000	0.0000	0.0000
Final Expansion (in)	0.0000	0.0002	0.0000
Expansion Pressure (psi)	0.0000	0.0606	0.0000
Ph @ 2000 lbs	67	31	102
D turns	3.52	3.21	3.89
R-Value from Exudation	50	76	27
Density (pcf)	126.6	128.3	125.1
Moisture (%)	9.4	8.6	10.3
Exudation Pressure (psi)	285	435	145
Corrected R-Value from Exudation:	50	76	27
Exudation Pressure (psi)	285	435	145

R-Value at 300 psi exudation pressure = **53**

Note:
1.24% Retained on 3/4-inch Sieve

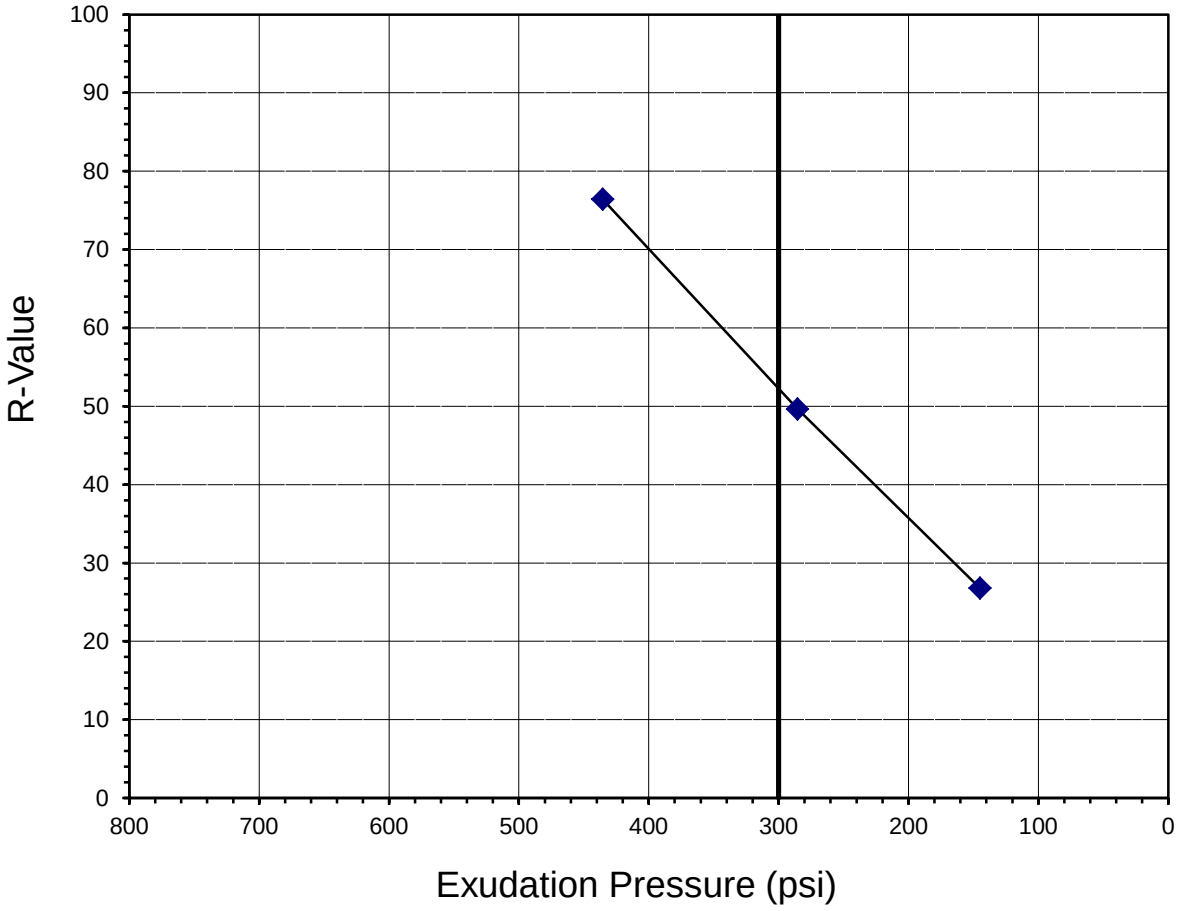
EGLAB, INC.

Project Name: LA Railroad 93
Client: LGC Valley, Inc.
Project No.: 213015-01
EGLAB Job No.: 21-059-015

R-VALUE TEST RESULTS

09/03/21

FIGURE 2



Test No.	Compaction Pressure (psi)	Density (pcf)	Moisture (%)	Expansion Pressure (psi)	Horizontal Pressure (psi) @ 160 psi	Sample Height (in)	Exudation Pressure (psi)	R-Value	R-Value Correction
1	350	126.6	9.4	0.00	67	2.50	285	50	50
2	350	128.3	8.6	0.06	31	2.50	435	76	76
3	250	125.1	10.3	0.00	102	2.51	145	27	27

Test Name and Method:
Resistance R-Value and Expansion Pressure - Cal Test 301

Boring No.: B-5
Sample No.: Bulk-B1
Depth: (ft) 0-5.0
Sample Type: Bulk
Sample Description: Silty sand (SM)
Test Date: 9/2/21

EGLAB, INC.

Project Name:
LA Railroad 93
Client: LGC Valley, Inc.
Project No.: 213015-01
EGLAB Job No.: 21-059-015

Test Results: R-Value at 300 psi
Exudation Pressure: **53**

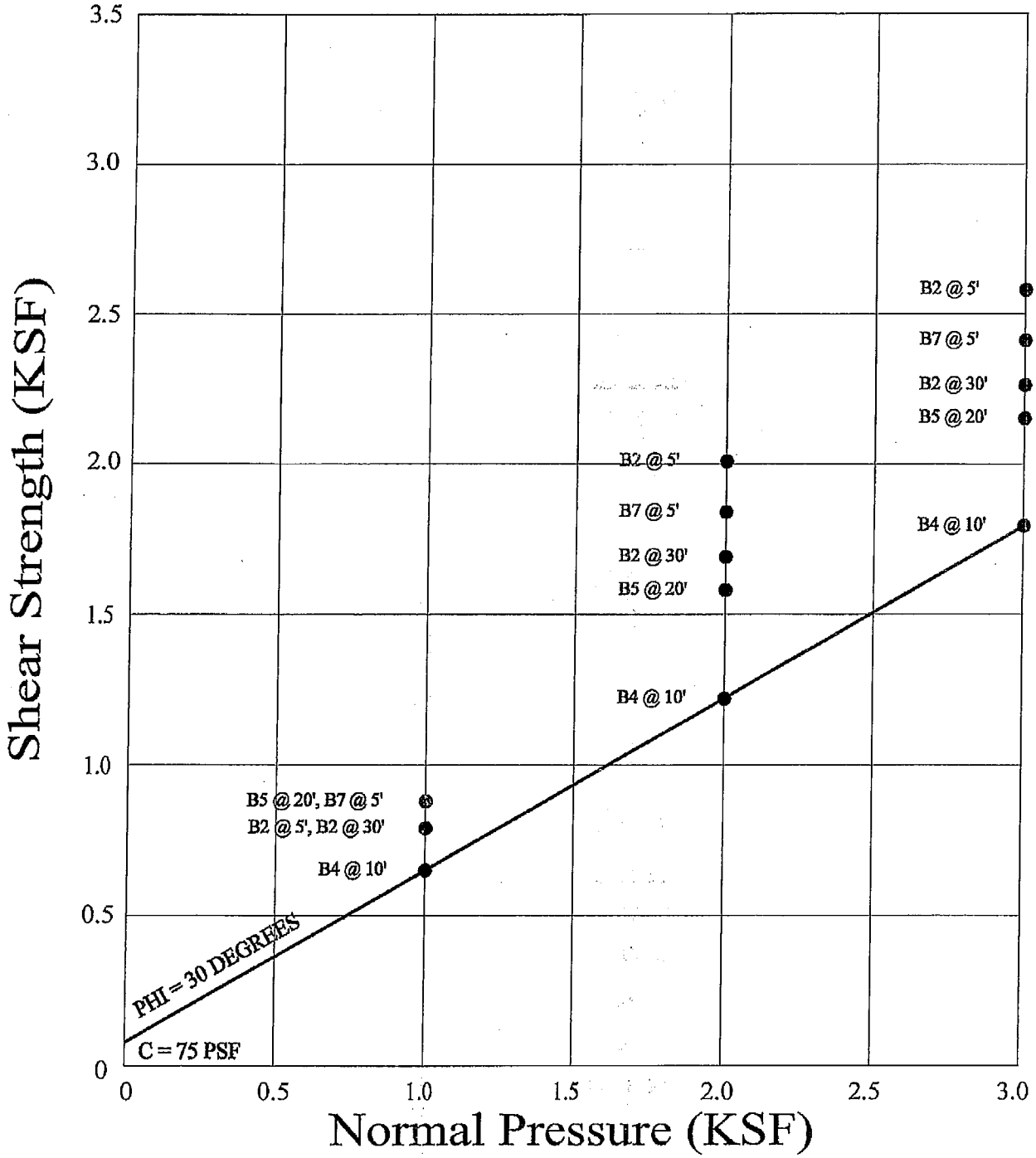
R-VALUE TEST REPORT

09/03/21

FIGURE 1

Laboratory Test Results by Geotechnologies, Inc.

Shear Test Diagrams, Plates B-1 and B-2
Consolidation Test Diagrams, Plates C-1 through C-4
Compaction/Expansion/Sulfate, Plate D



● Direct Shear, Saturated

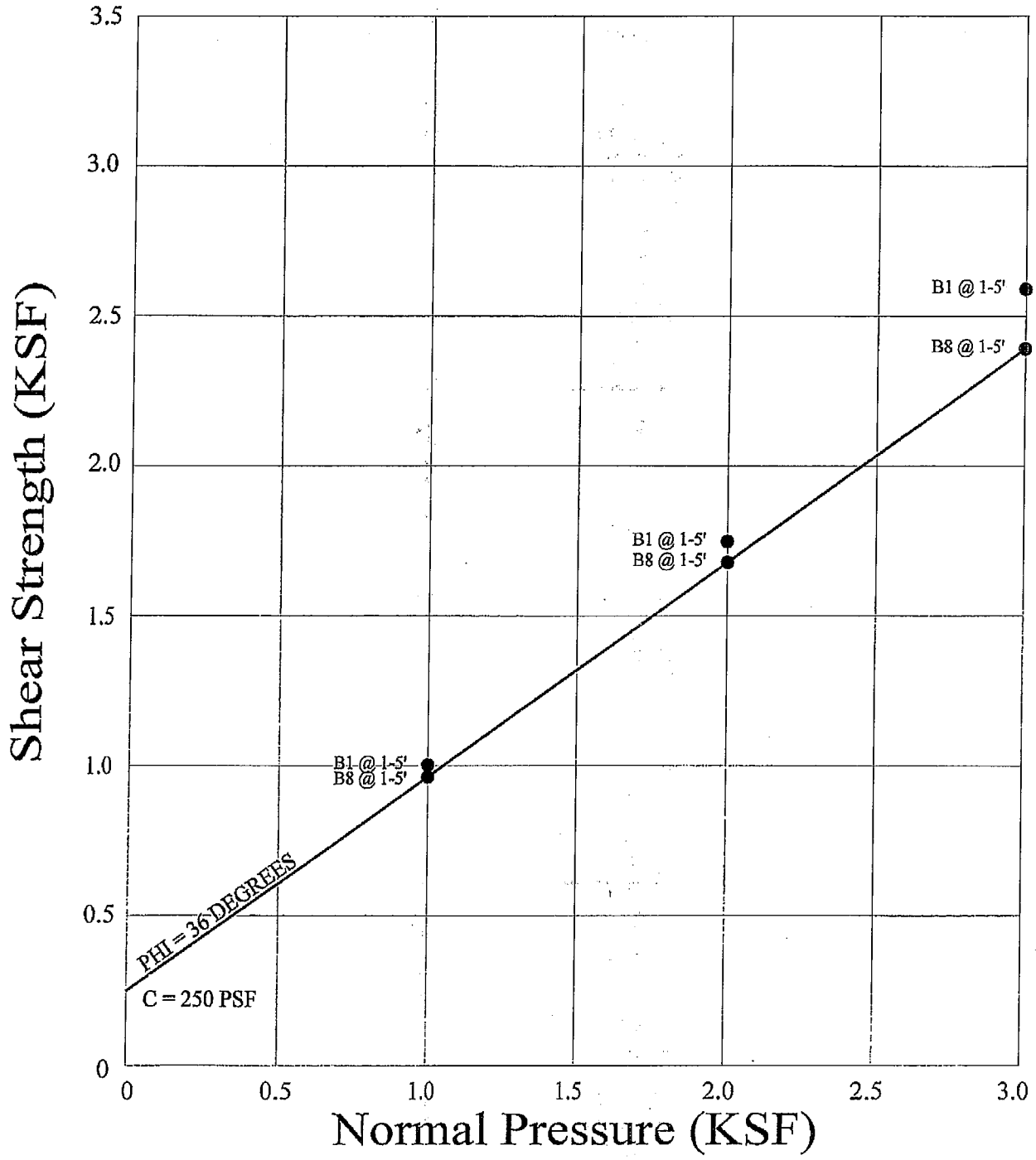
SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: B-1

BULK SAMPLE REMOLDED TO 90 PERCENT
OF THE MAXIMUM LABORATORY DENSITY



● Direct Shear, Saturated

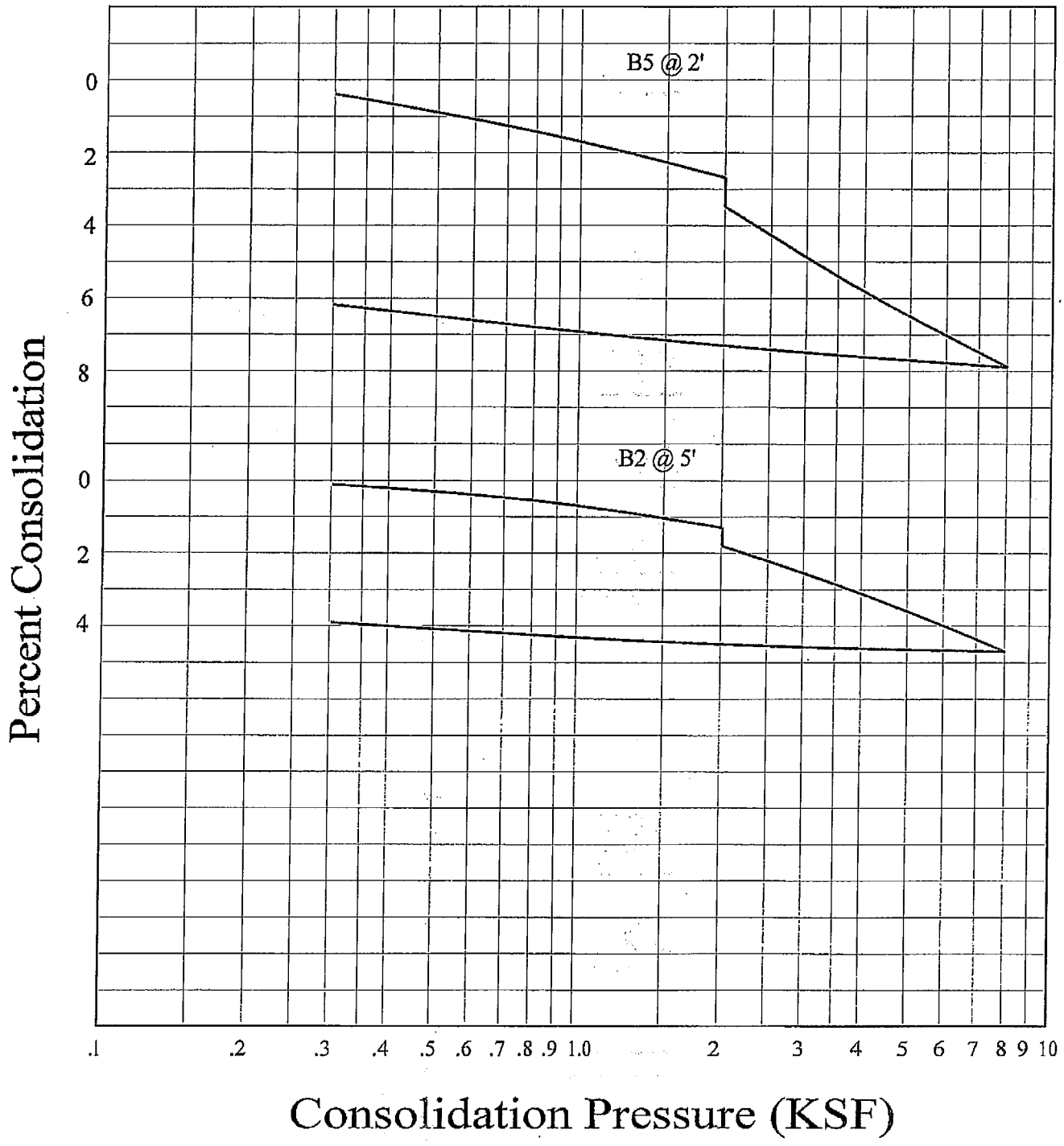
SHEAR TEST DIAGRAM

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: B-2

WATER ADDED AT 2 KSF

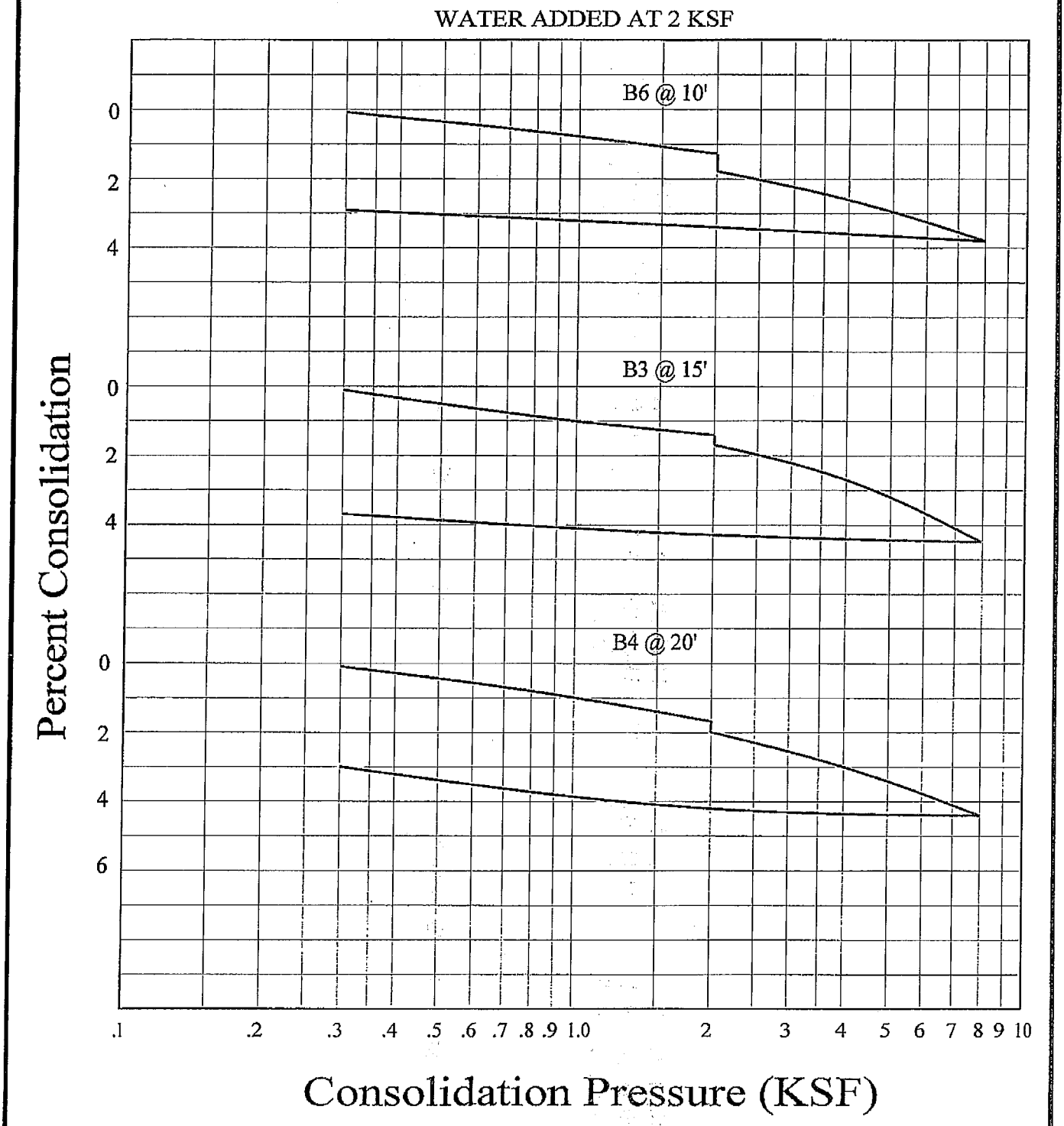


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: C-1

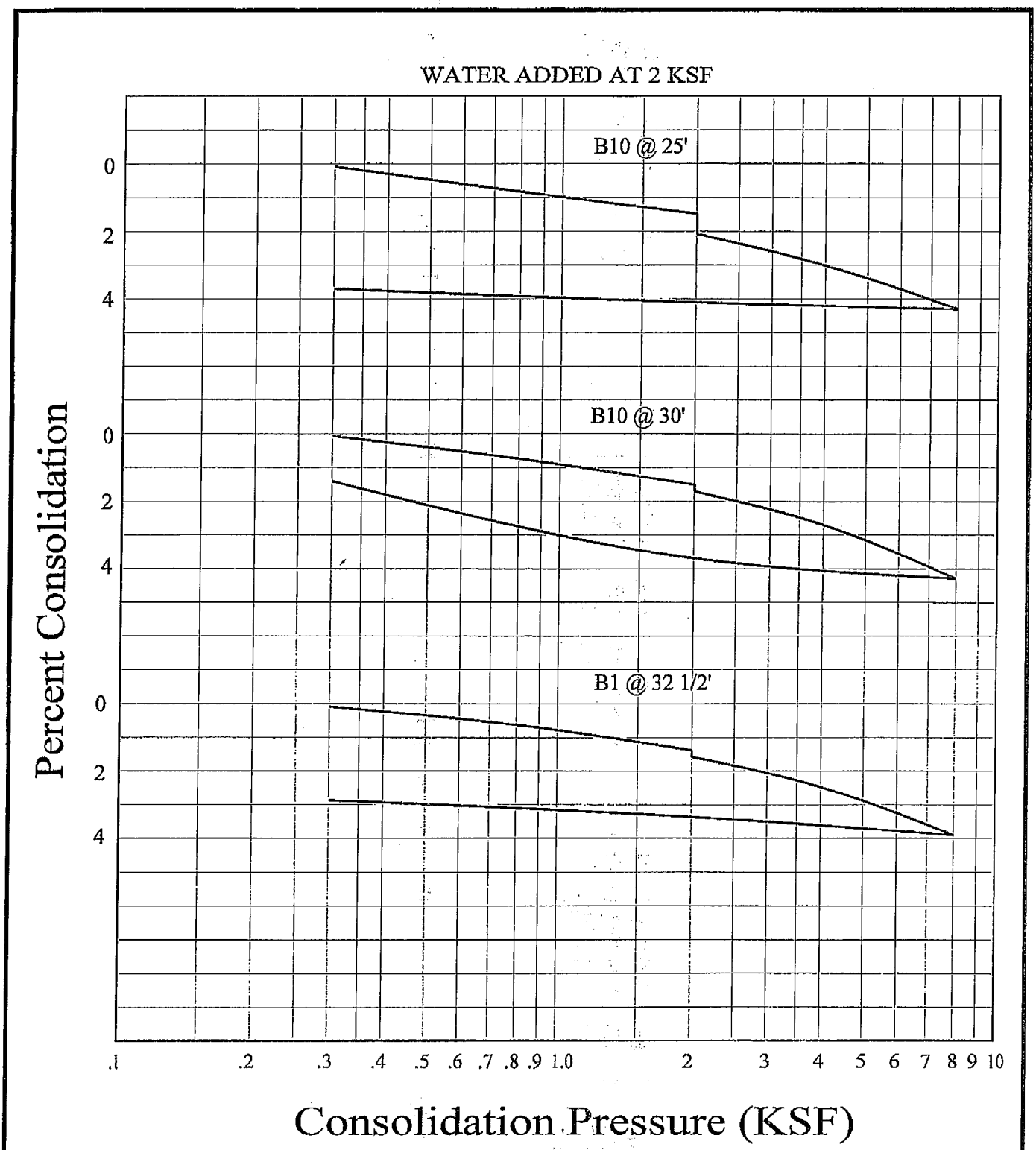


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: C-2

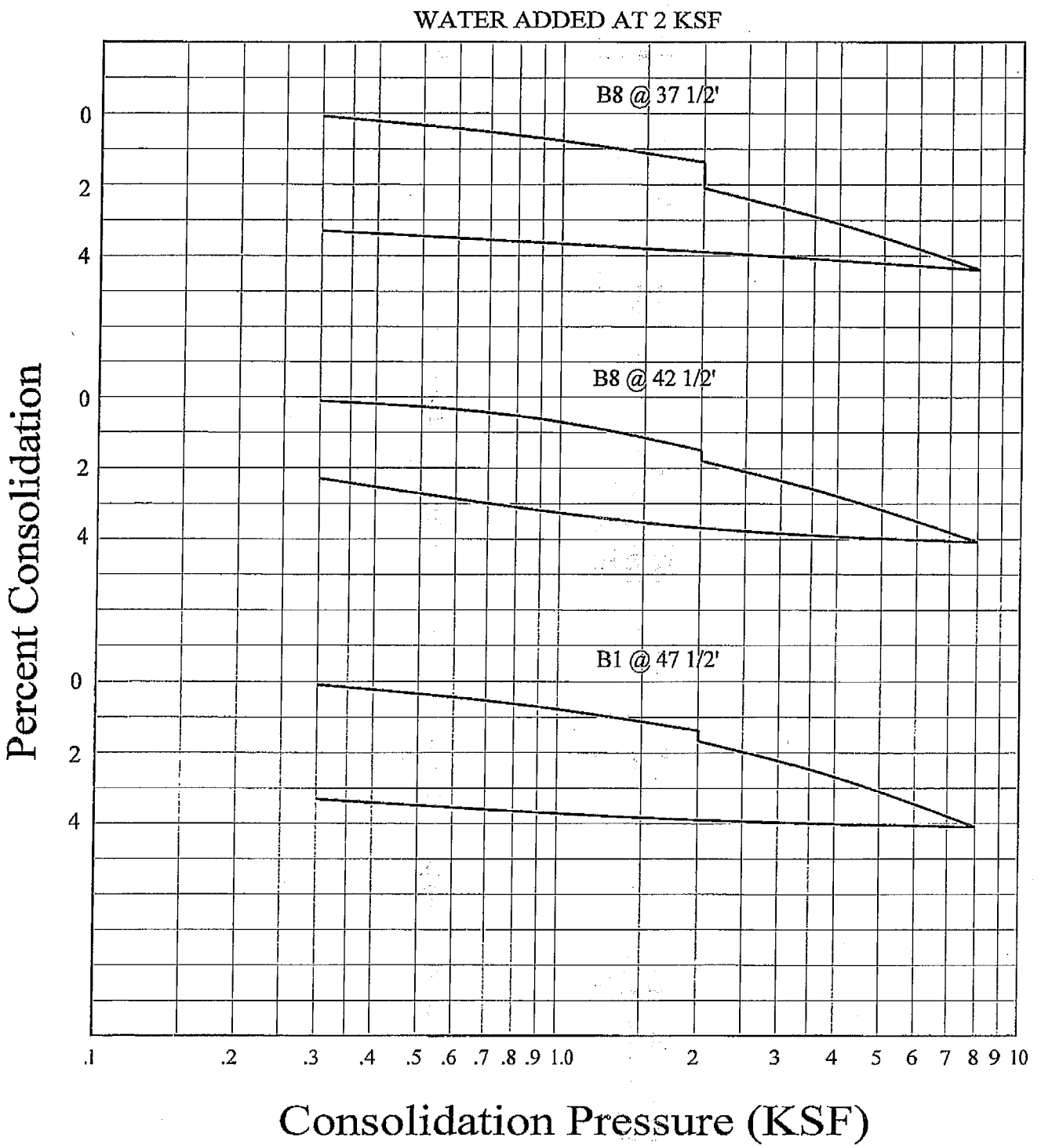


CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: C-3



CONSOLIDATION TEST

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18648-S | PLATE: C-4

ASTM D-1557

SAMPLE	B1 @ 1-5'	TP7 @ 1-2'
SOIL TYPE:	SM	SM
MAXIMUM DENSITY pcf.	138	135
OPTIMUM MOISTURE %	8	6.5

SWELL-60 POUNDS PER SQUARE FOOT

SAMPLE	B1 @ 1-5'	TP7 @ 1-2'
SOIL TYPE:	SM	SM
AIR DRY%	0.3	0.4
SATURATION%	1.0	1.1
TOTAL%	1.3	1.5
EXPANSION INDEX UBC STANDARD 18-2	5	5
EXPANSION CHARACTER	VERY LOW	VERY LOW

SULFATE CONTENT

SAMPLE	B1 @ 1-5'	TP7 @ 1-2'
SULFATE CONTENT (percentage by weight):	< 0.1	< 0.1

COMPACTION/EXPANSION/SULFATE DATA SHEET

Geotechnologies, Inc.
Consulting Geotechnical Engineers

CASDEN NEWHALL

FILE NO. 18684-S | PLATE: D

APPENDIX D

CPT DATA

SUMMARY

OF

CONE PENETRATION TEST DATA

Project:

LA Railroad 39, LLC
Santa Clarita, CA
August 16, 2021

Prepared for:

Mr. Adam Rich
LGC (LGC Valley, Inc.)
9272 Jeronimo Road, Ste 104
Irvine, CA 92618
Office (949) 297-3856

Prepared by:

KEHOE TESTING & ENGINEERING
5415 Industrial Drive
Huntington Beach, CA 92649-1518
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www.kehoetesting.com

TABLE OF CONTENTS

SUMMARY
OF
CONE PENETRATION TEST DATA

1. INTRODUCTION

This report presents the results of a Cone Penetration Test (CPT) program carried out for the LA Railroad 39, LLC project located in Santa Clarita, California. The work was performed by Kehoe Testing & Engineering (KTE) on August 16, 2021. The scope of work was performed as directed by LGC (LGC Valley, Inc.) personnel.

2. SUMMARY OF FIELD WORK

The fieldwork consisted of performing CPT soundings at 12 locations to determine the soil lithology. A summary is provided in **TABLE 2.1**.

LOCATION	DEPTH OF CPT (ft)	COMMENTS/NOTES:
CPT-A	49	Refusal
CPT-B	16	Refusal
CPT-C	5	Refusal
CPT-CA	3	Refusal
CPT-CB	15	Refusal
CPT-D	50	
CPT-E	50	
CPT-F	96	Refusal
CPT-G	18	Refusal
CPT-H	15	Refusal
CPT-I	98	Refusal
CPT-J	50	

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 and recorded the following parameters at approximately 2.5 cm depth intervals:

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

At locations CPT-F, CPT-G & CPT-I, shear wave measurements were obtained at various depths. 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

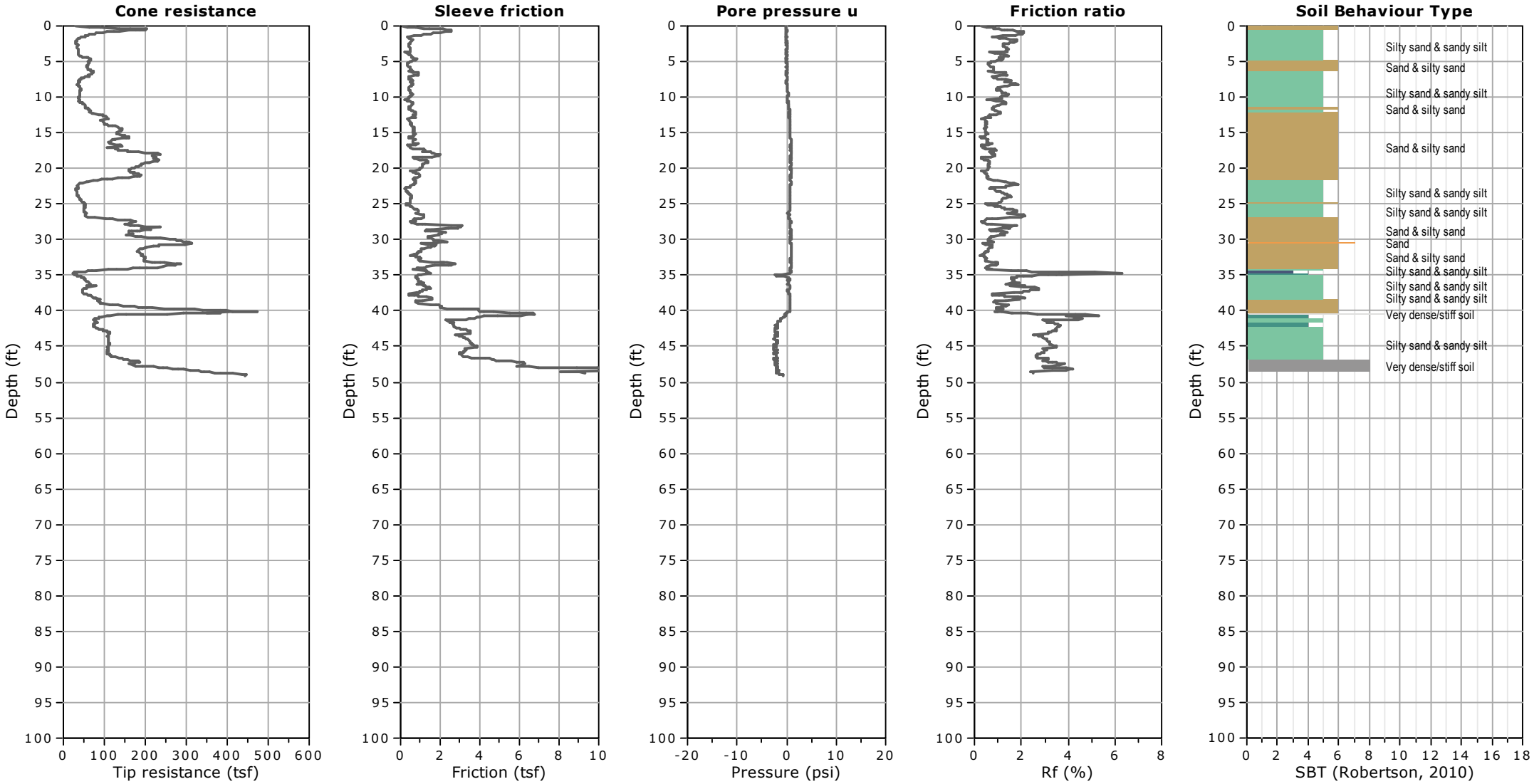
08/18/21-wt-3010-3

APPENDIX

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

Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

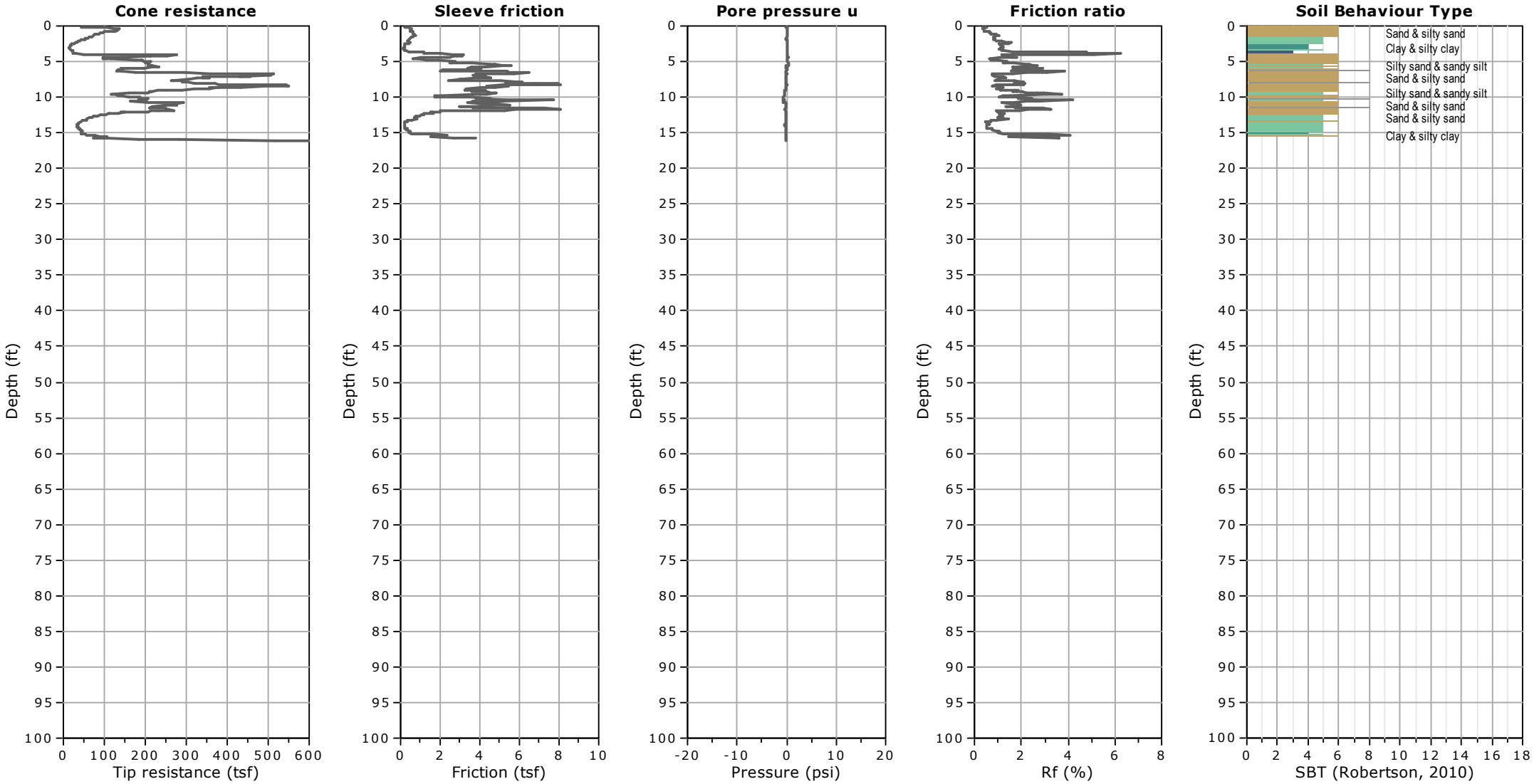
CPT-A
Total depth: 49.09 ft, Date: 8/16/2021



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

Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

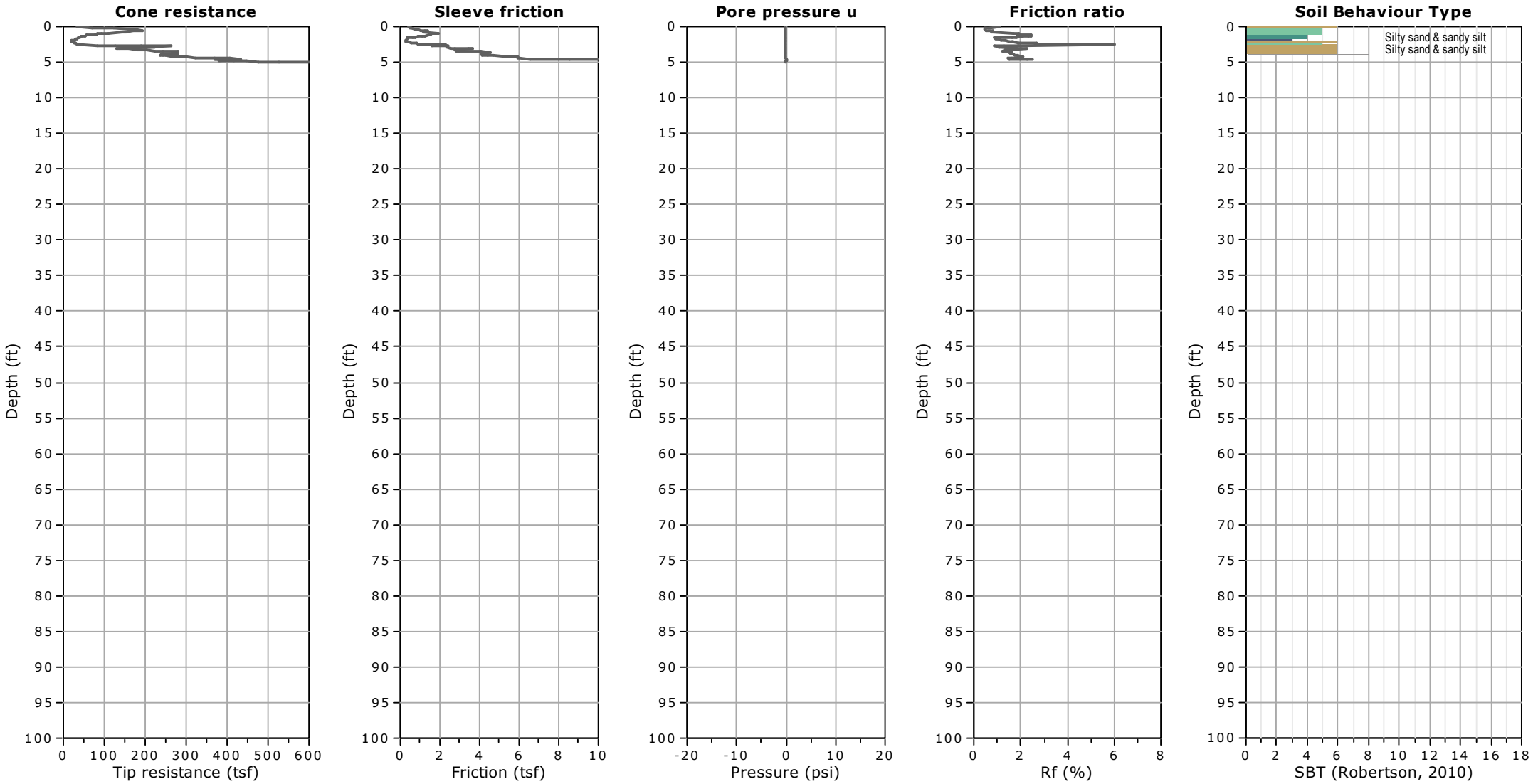
CPT-B
Total depth: 16.09 ft, Date: 8/16/2021



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

Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-C
Total depth: 5.06 ft, Date: 8/16/2021



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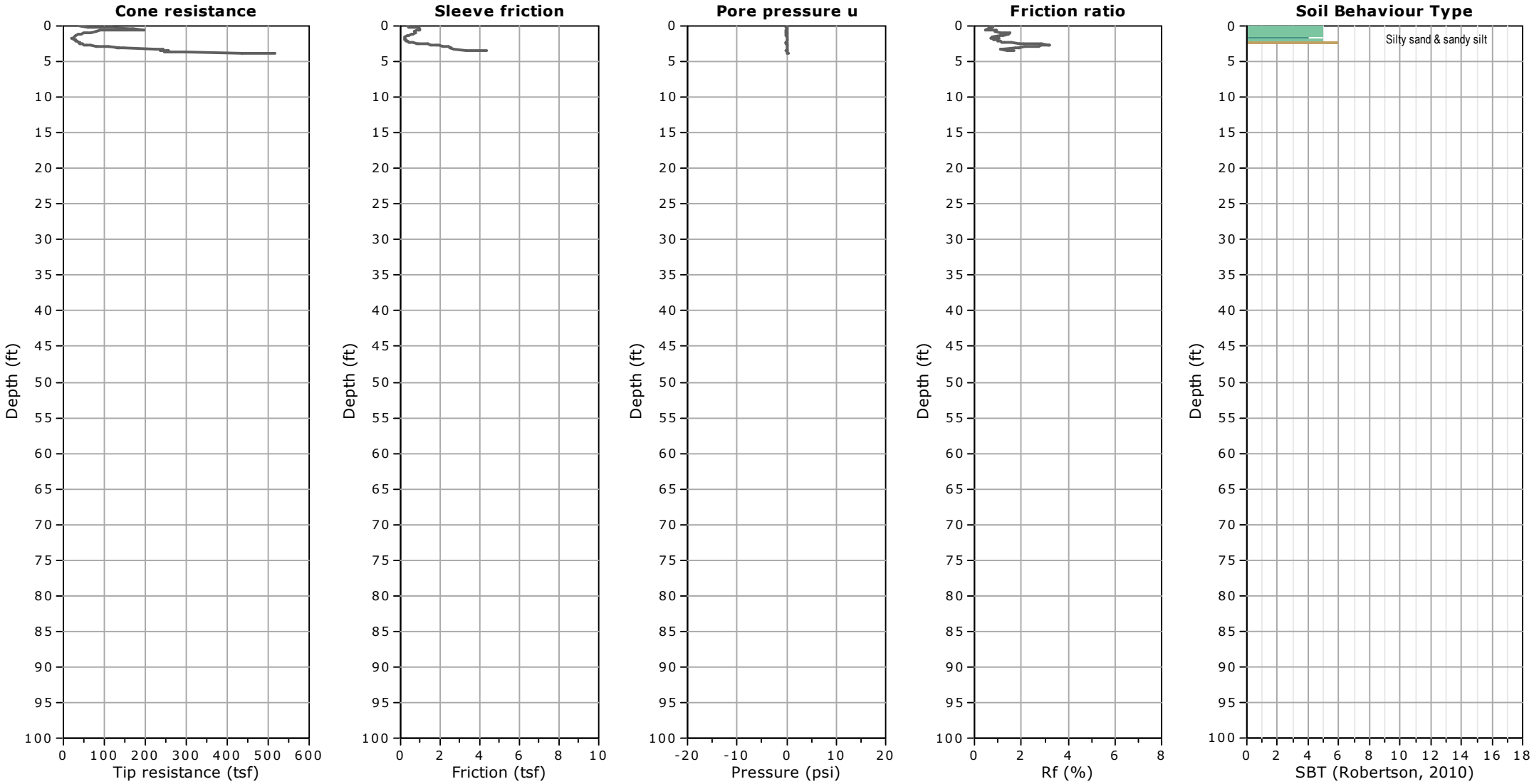
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-CA
Total depth: 3.82 ft, Date: 8/16/2021



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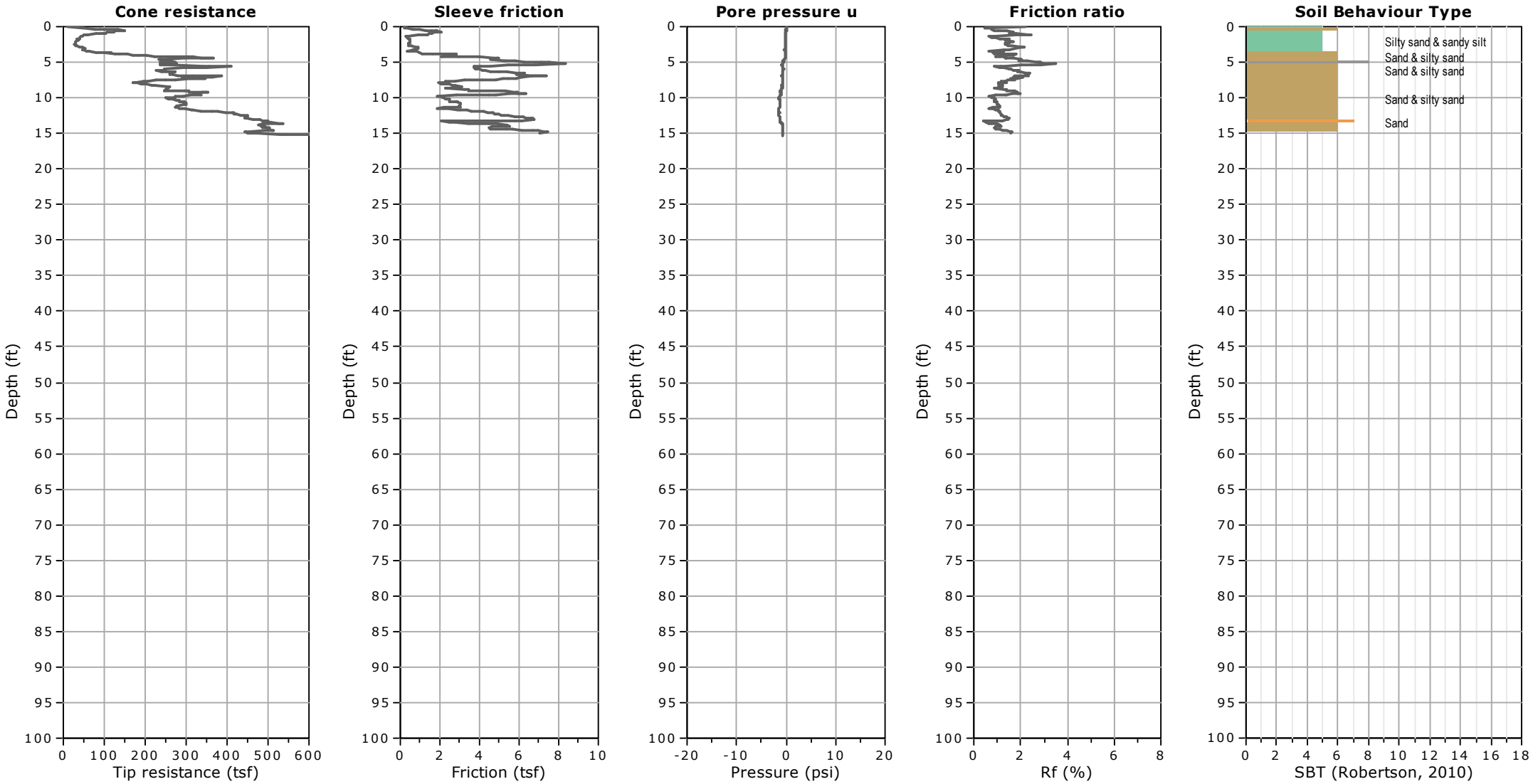
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-CB
Total depth: 15.29 ft, Date: 8/16/2021



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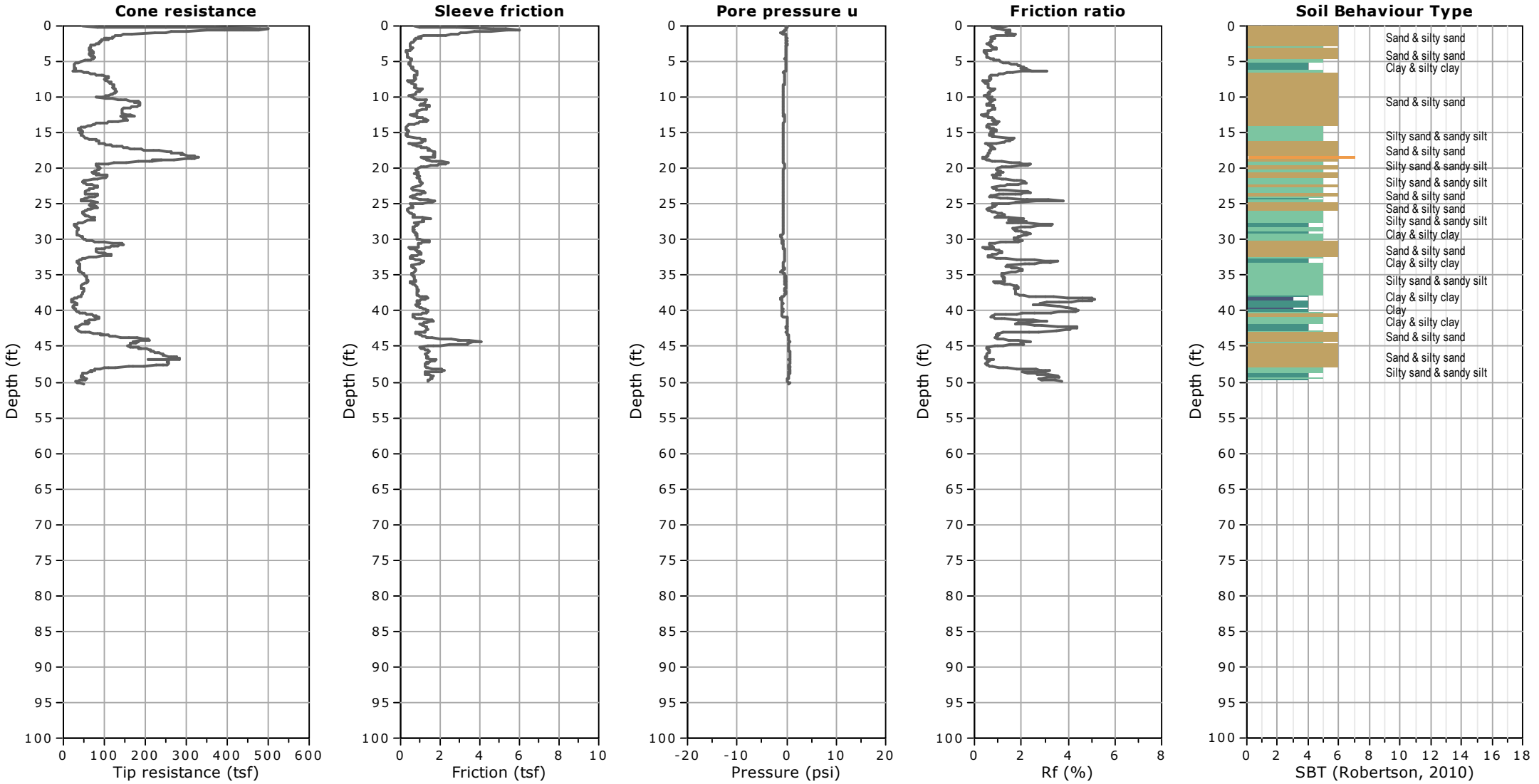
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-D
Total depth: 50.23 ft, Date: 8/16/2021



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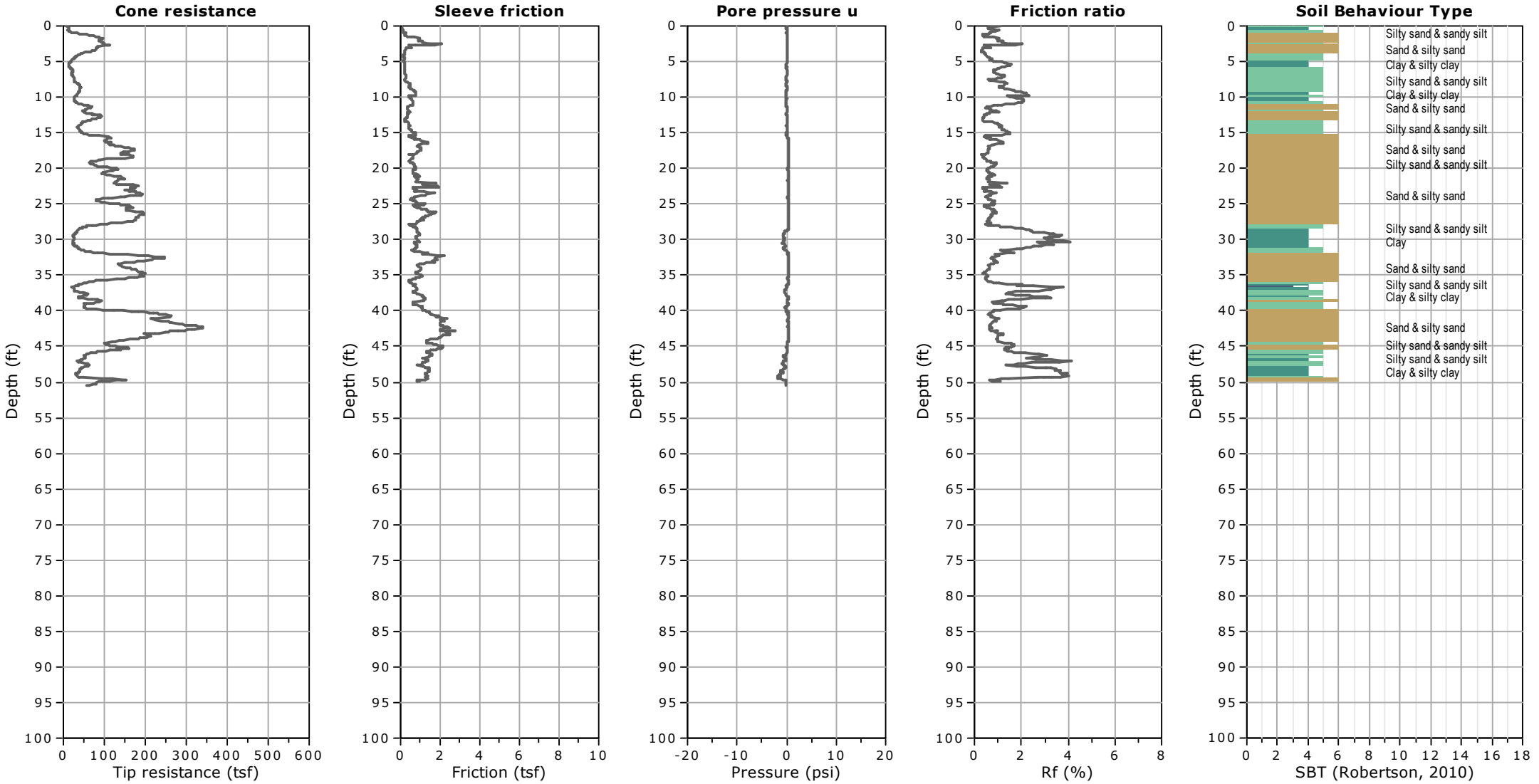
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-E
Total depth: 50.42 ft, Date: 8/16/2021



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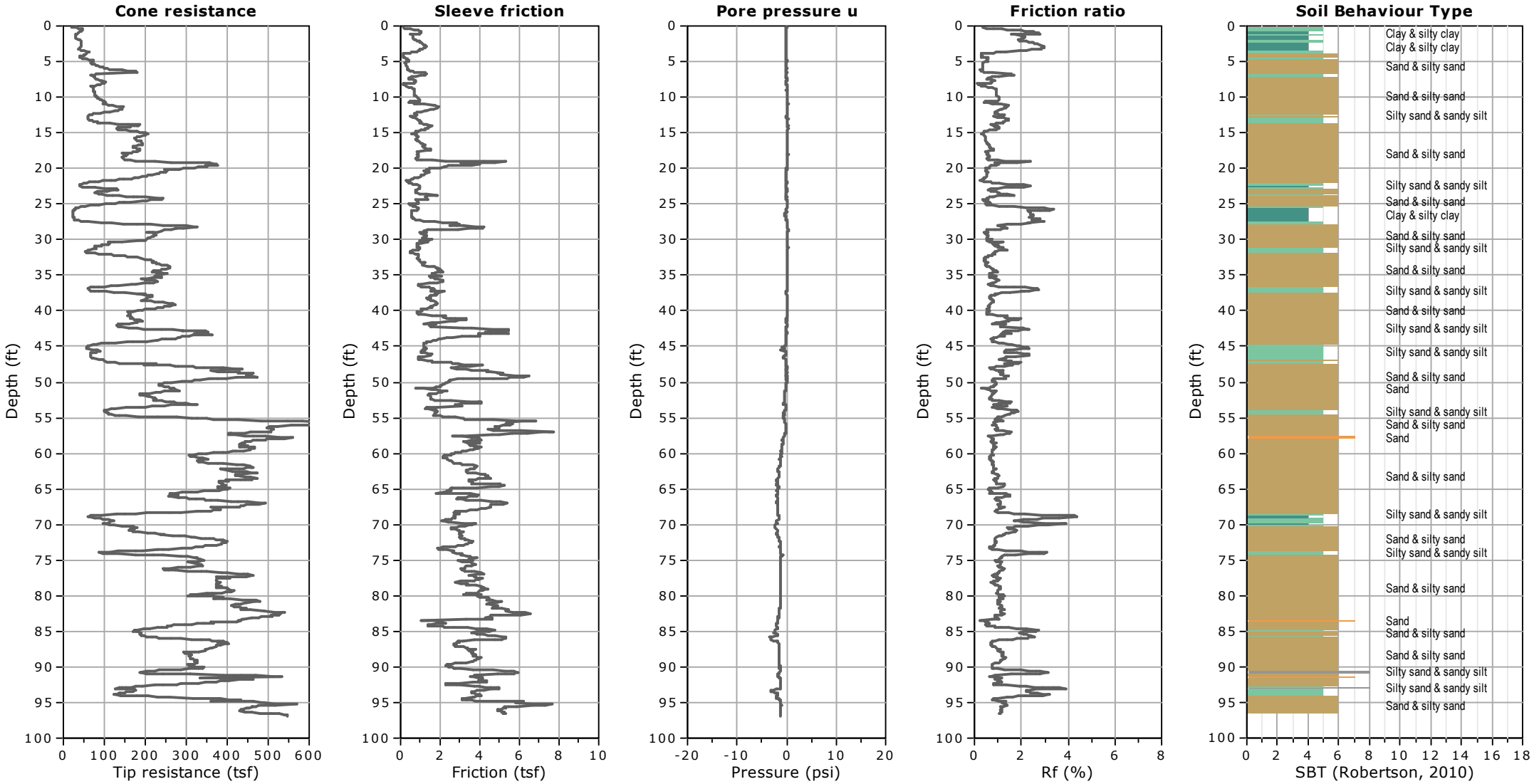
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-F
Total depth: 96.89 ft, Date: 8/16/2021



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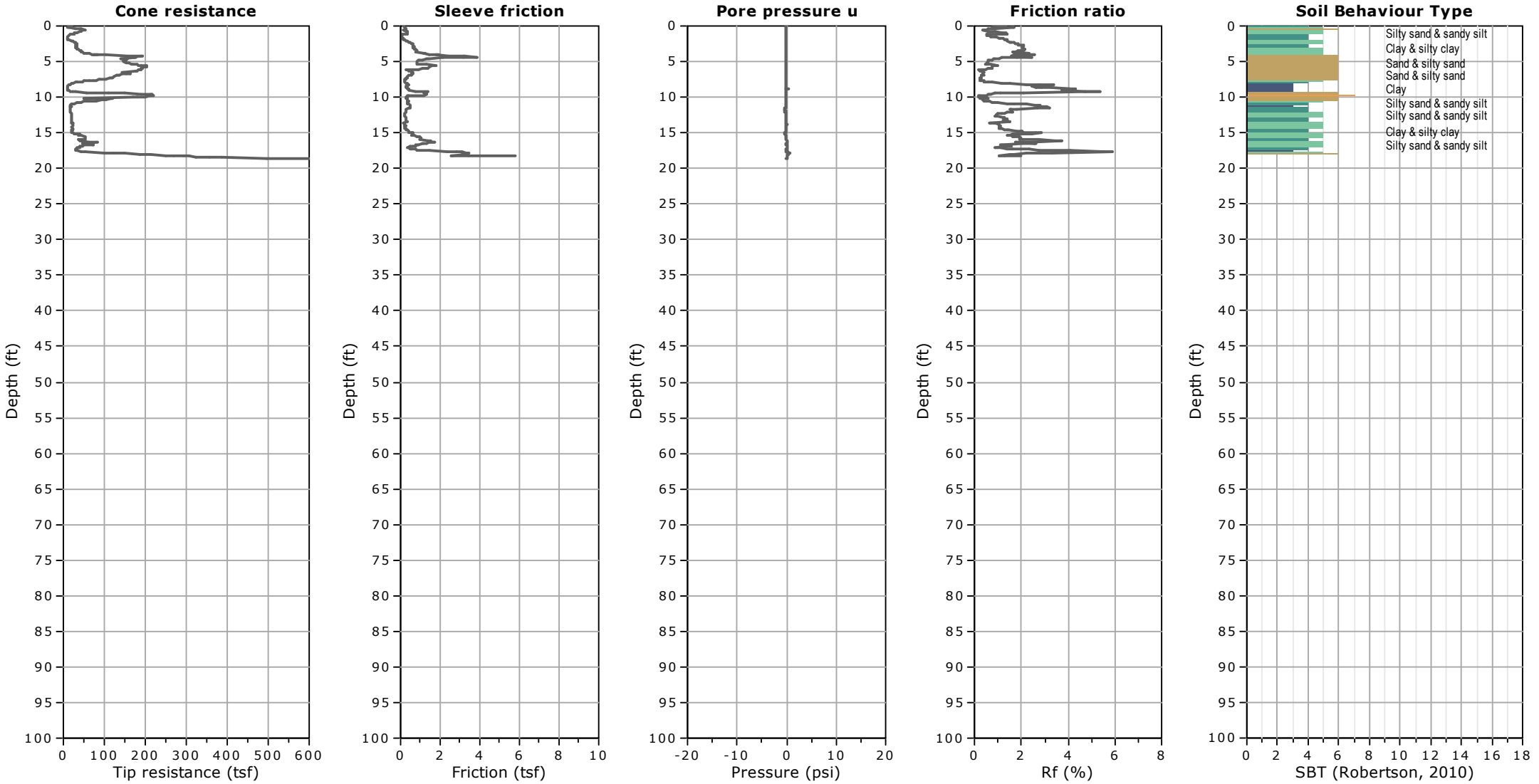
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-G
Total depth: 18.64 ft, Date: 8/16/2021



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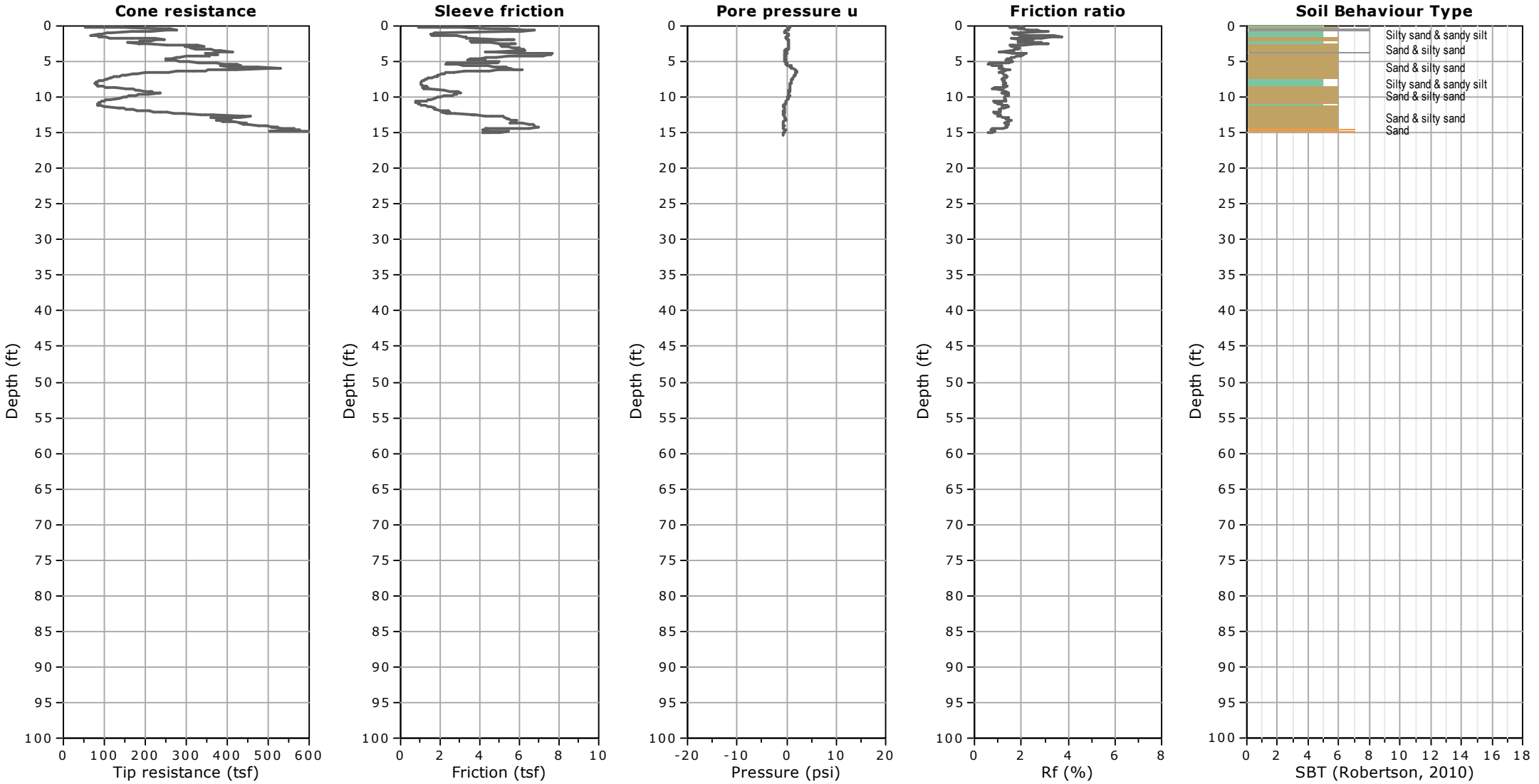
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-H
Total depth: 15.42 ft, Date: 8/16/2021



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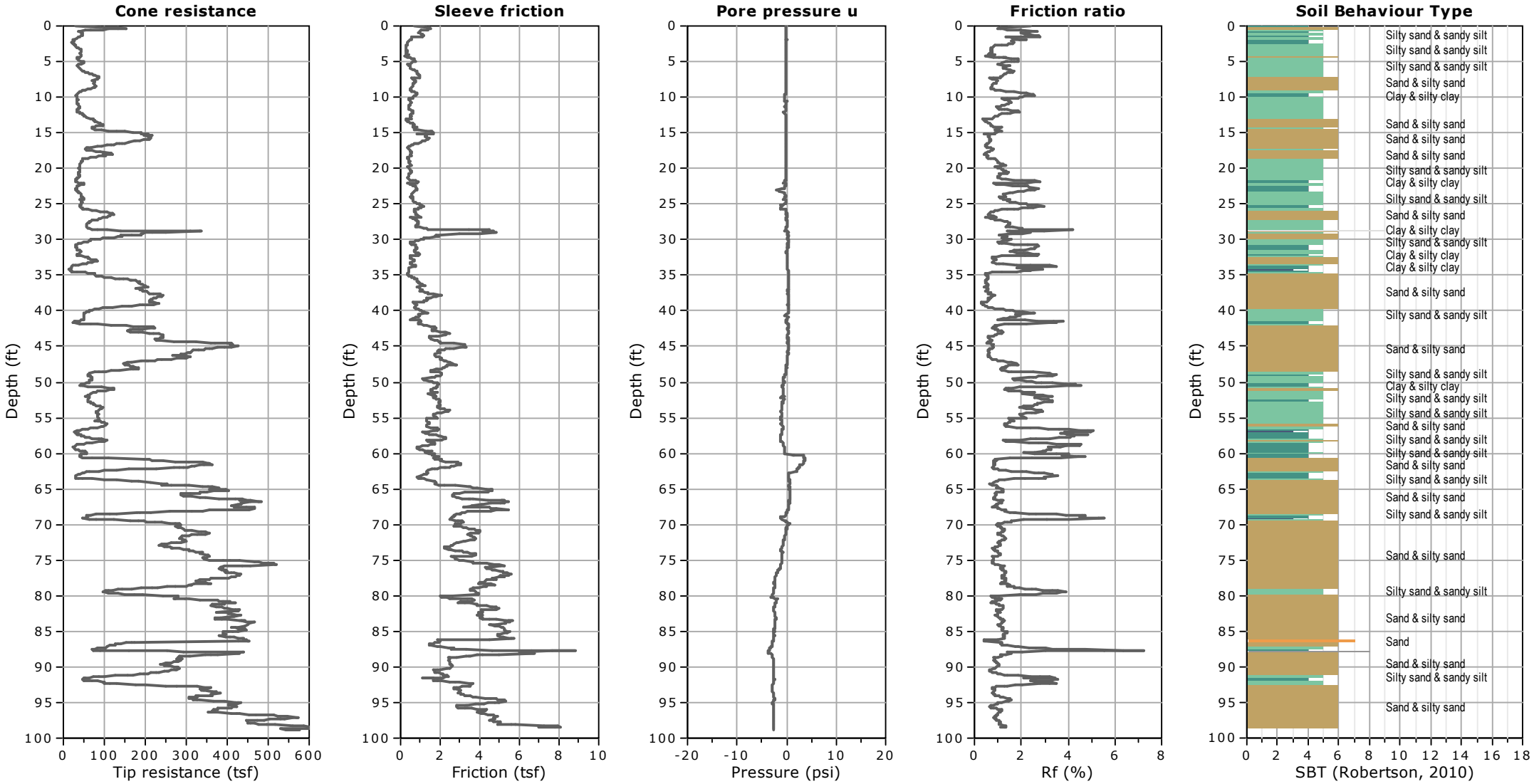
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-I
Total depth: 98.89 ft, Date: 8/16/2021



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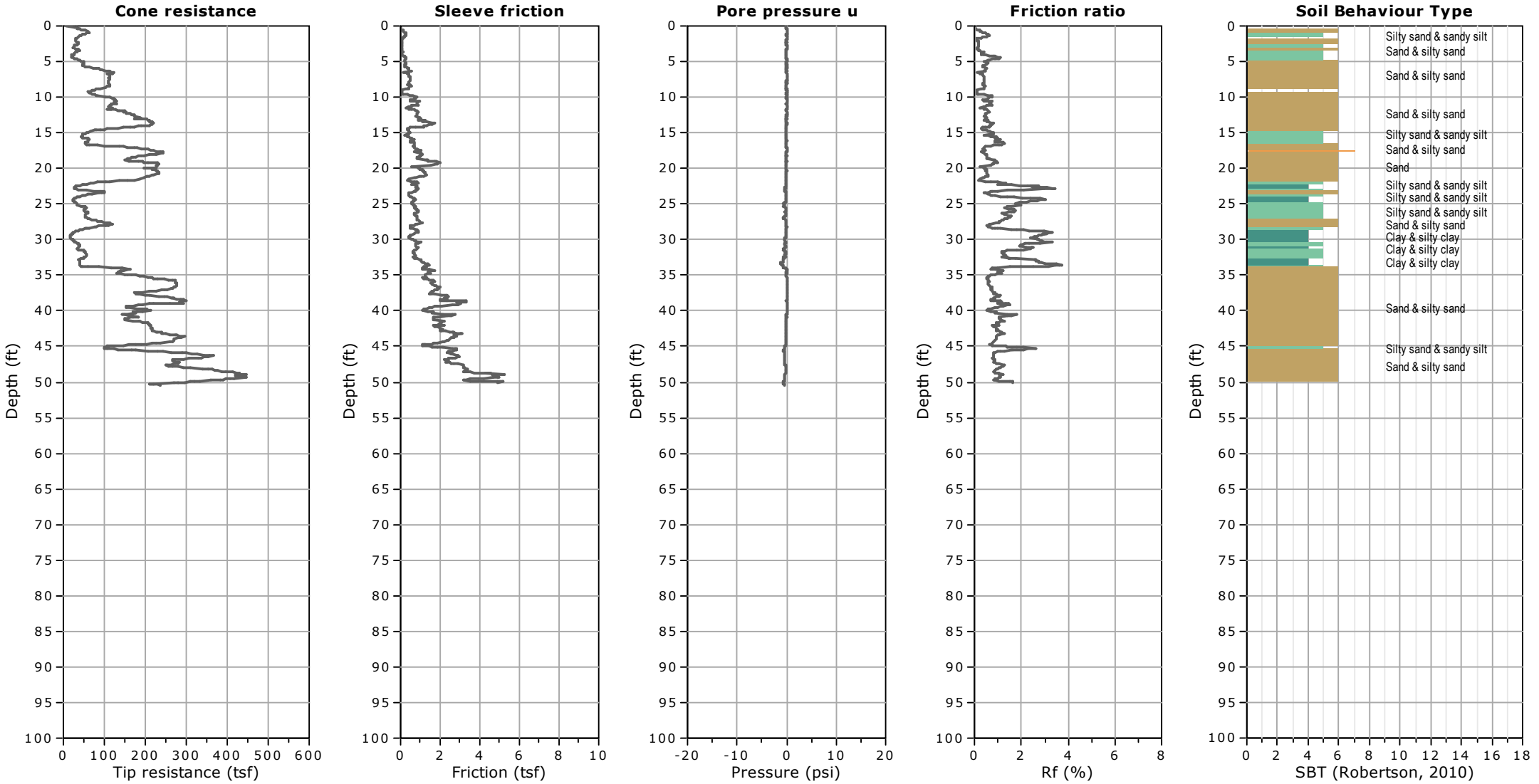
Project: **LGC / LA Railroad 39, LLC**
Location: **Santa Clarita, CA**

CPT-J
Total depth: 50.40 ft, Date: 8/16/2021



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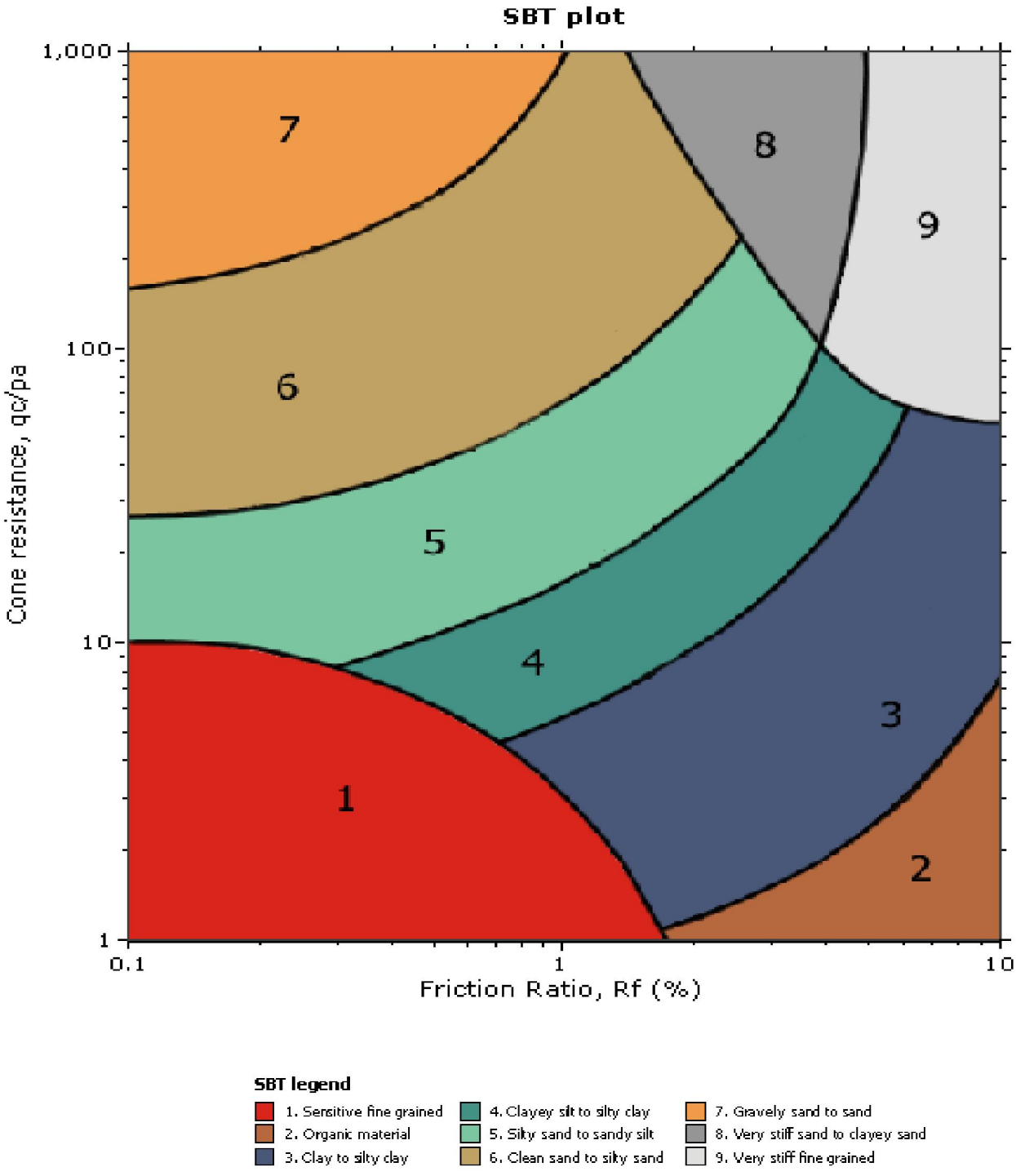

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CPT Shear Wave Measurements

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-F	25.26	24.26	24.34	31.56	771	
	50.13	49.13	49.17	57.60	854	953
	75.56	74.56	74.59	80.84	923	1094
	96.85	95.85	95.87	96.36	995	1371
CPT-G	10.10	9.10	9.32	13.48	691	
	18.60	17.60	17.71	21.60	820	1034
CPT-I	20.21	19.21	19.31	26.12	739	
	40.49	39.49	39.54	51.92	762	784
	60.14	59.14	59.17	74.24	797	880
	80.22	79.22	79.25	88.44	896	1413
	98.92	97.92	97.94	102.24	958	1355

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)

APPENDIX E

PERCOLATION TESTING

PERCOLATION TEST SHEET

Project: LA Railroad 93 Job No.: 213015-01 Date: 8/19/21

Project Location: Santa Clarita
Earth Description: Sands/Gravels
Percolation Tested by: SMB
Liquid: Clear water
Measurment Method: Sounder

Boring/Test Number: **PERC 1**
Diameter of Boring: 8" Diameter of Casing: 2"
Depth of Boring: 9'
Depth of Invert BMP: 1206/-10'
Depth of Water Table:
Depth to Initial Water Depth (d_1): 0

TIME INTERVAL STANDARD
Start Time Pre-Soak: 7:30
Start Time Standard: 8:45

Water Remaining in Boring? (Y/N): N
Standard time interval between Readings <10 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min)	Water Drop (inches)	Percolation Rate (in/hr)	Soil Description/Notes
1	9:03 9:04	2	10.8	324	Could not fill boring with water
2	9:06 9:08	2	12	360	
3	9:12 9:14	2	11.4	342	
4	9:16 9:19	3	12	240	
5	9:21 9:24	3	11.4	228	
6	9:26 9:29	3	13.2	264	
7	9:32 9:35	3	16.8	336	

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PERCOLATION TEST SHEET

Project: LA Railroad 93 Job No.: 213015-01 Date: 7/28/21

Project Location: Santa Clarita
Boring/Test Number: **PERC 2**
Earth Description: Sandy SILT/silty SAND
Diameter of Boring: 8" Diameter of Casing: 2"
Percolation Tested by: SMB
Depth of Boring: 10.17'
Liquid: Clear Water
Depth of Invert BMP: 1215/-10'
Measurment Method: Sounder
Depth of Water Table:
Depth to Initial Water Depth (d_1): 0

TIME INTERVAL STANDARD

Start Time Pre-Soak: 7:40
Water Remaining in Boring? (Y/N): Y
Start Time Standard: 9:18
Standard time interval between Readings 30 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min)	Water Drop (inches)	Percolation Rate (in/hr)	Soil Description/Notes
1	9:18 9:48	30	67.2	134.4	Gray brown, silty SAND/sandy SILT
2	9:49 10:19	30	68.52	137.04	
3	10:22 10:52	30	67.8	135.6	
4	10:53 11:23	30	68.64	137.28	
5	11:26 11:56	30	68.4	136.8	
6	11:57 12:27	30	68.4	136.8	
7	12:28 12:58	30	67.8	135.6	

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PERCOLATION TEST SHEET

Project: LA Railroad 93 Job No.: 213015-01 Date: 7/28/21

Project Location: Santa Clarita
Boring/Test Number: **PERC 3**
Earth Description: sandy SILT/silty SAND
Diameter of Boring: 8" Diameter of Casing: 2"
Percolation Tested by: SMB
Depth of Boring: 13.3'
Liquid: Clear Water
Depth of Invert BMP: 1222/-8'
Measurment Method: Sounder
Depth of Water Table:
Depth to Initial Water Depth (d_1): 0

TIME INTERVAL STANDARD

Start Time Pre-Soak: 8:00
Water Remaining in Boring? (Y/N): Y
Start Time Standard: 9:58
Standard time interval between Readings 30 min.

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min)	Water Drop (inches)	Percolation Rate (in/hr)	Soil Description/Notes
1	10:40 11:10	30	148.8	297.6	Gray brown, silty SAND/sandy SILT
2	11:12 11:42	30	149.88	299.76	
3	11:44 12:14	30	151.2	302.4	
4	12:17 12:47	30	149.28	298.56	
5	12:48 1:18	30	149.2	298.4	
6	1:20 1:50	30	149	298	

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PERCOLATION TEST SHEET

Project: LA Railroad 93 Job No.: 213015-01 Date: 8/13/21

Project Location: 213015-01
Boring/Test Number: **Perc. 4**
Earth Description: Silty SAND w/gravel
Diameter of Boring: 8" Diameter of Casing: 2"
Percolation Tested by: SMB
Depth of Boring: 20.3'
Liquid: clear water
Depth of Invert BMP: 1233/-12'
Measurment Method: Sounder
Depth of Water Table:
Depth to Initial Water Depth (d_1): 0

TIME INTERVAL STANDARD

Start Time Pre-Soak: 7:45
Water Remaining in Boring? (Y/N): N
Start Time Standard: 8:55
Standard time interval between Readings 30 min

Reading Number	Time Start/End (hh:mm)	Elapsed Time (min)	Water Drop (inches)	Percolation Rate (in/hr)	Soil Description/Notes
1	8:55 9:25	30	223.7	447.4	Silty SAND w/gravel
2	9:27 9:57	30	225.12	450.24	
3	9:59 10:29	30	225.6	451.2	
4	10:31 11:01	30	225.72	451.44	
5	11:04 11:34	30	225.6	451.2	
6	11:35 12:05	30	225.6	451.2	

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APPENDIX F

SLOPE STABILITY ANALYSES

1.0 Approach

- Slope stability analyses were conducted using the computer program Slope W. The Modified Bishop's Method was used to analyze rotational failure modes. A coefficient of horizontal acceleration, Kh of 0.15 (FS of 1.1) was used to evaluate the pseudostatic stability analyses.

2.0 Design Shear Strength

The shear strength parameters used in the slope stability analysis are presented in Table F-1.

TABLE F-1
Design Shear Strength Parameters for Slope Stability Analyses

Material	Cohesion (lb/ft^2)		Angle of Internal Friction (Degrees)		Saturated Bulk Density (lb/ft^3)
	Ultimate	Peak	Ultimate	Peak	
Engineered Fill (Af)	36	-	32	-	120
Alluvium (Qal)	116	-	29	-	120
Bedrock/Pacoima Formation (Qp)	60	300	34	35	120

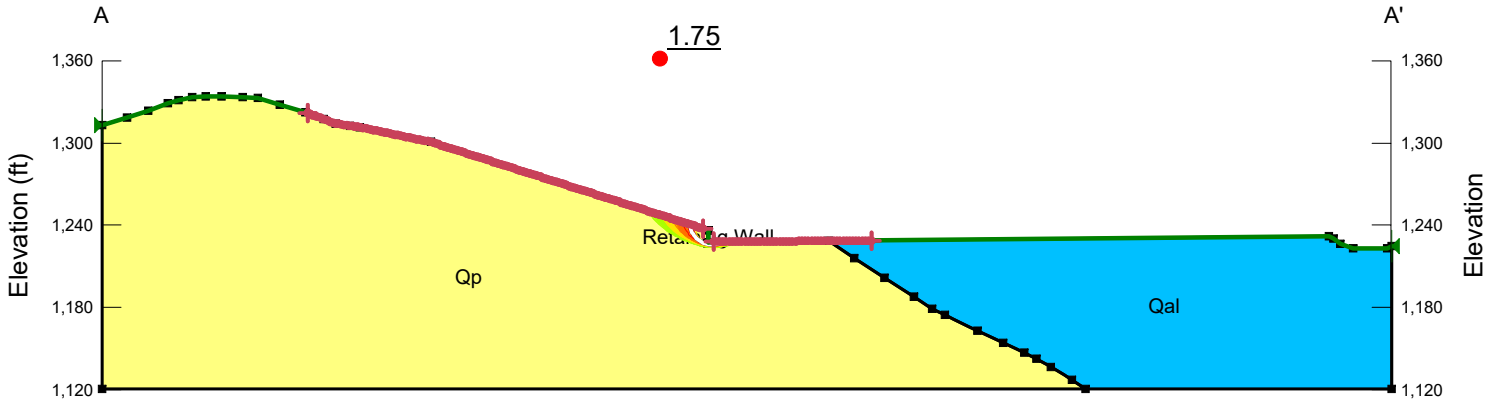
TABLE F-2
Summary of Slope Stability Analyses

Cross-Section	Condition	Factor of Safety	Remarks
A-A'	Global-Below Retaining Wall, Static	1.75	Modified Bishop Method
A-A'	Global-Below Retaining Wall, Pseudostatic	2.37	Modified Bishop Method
A-A'	Global-Above Retaining Wall, Static	2.37	Modified Bishop Method
A-A'	Global-Above Retaining Wall, Pseudostatic	2.06	Modified Bishop Method
B-B'	Global Stability, Static	1.53	Modified Bishop Method
B-B'	Global Stability, Pseudostatic	1.47	Modified Bishop Method

LA 93 Section A-A'.gsz 09/13/2021 08:57:30 AM

LA 93 Section A-A'.gsz

1 - Rotational Static Below Wall
Horz Seismic Coef.: 0



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf

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28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

1 - Rotational Static Below Wall

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 481
Date: 09/13/2021
Time: 08:57:30 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section A-A'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:57:40 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Below Wall

Kind: SLOPE/W
Method: Bishop
Settings
- PWP Conditions from: (none)
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °
Phi-B: 0 °

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (149.94438, 1,321.6418) ft
Left-Zone Right Coordinate: (438.2579, 1,237.5871) ft
Left-Zone Increment: 150
Right Type: Range
Right-Zone Left Coordinate: (445.89381, 1,227.8006) ft
Right-Zone Right Coordinate: (561.4567, 1,228.822) ft
Right-Zone Increment: 50
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.3562, 1,313.0099) ft
Right Coordinate: (940.35902, 1,224.8594) ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y

Point 1	940.35902 ft	1,224.8594 ft
Point 2	940.35902 ft	1,120.7768 ft
Point 3	0.3562 ft	1,120.7768 ft
Point 4	0.3562 ft	1,313.0099 ft
Point 5	18.18545 ft	1,318.1983 ft
Point 6	33.75067 ft	1,323.6487 ft
Point 7	48.00568 ft	1,328.9943 ft
Point 8	55.8669 ft	1,331.1955 ft
Point 9	65.56241 ft	1,333.6063 ft
Point 10	75.54295 ft	1,333.9771 ft
Point 11	87.34672 ft	1,333.9771 ft
Point 12	102.51974 ft	1,333.2117 ft
Point 13	113.59466 ft	1,332.615 ft
Point 14	130.02441 ft	1,328.1034 ft
Point 15	148.73412 ft	1,322.0765 ft
Point 16	161.57411 ft	1,317.4645 ft
Point 17	170.32627 ft	1,314.1104 ft
Point 18	181.01753 ft	1,312.5906 ft
Point 19	188.30226 ft	1,311.4376 ft
Point 20	240.02909 ft	1,300.5891 ft
Point 21	441.80964 ft	1,236.4583 ft
Point 22	441.80964 ft	1,227.7645 ft
Point 23	894.82508 ft	1,231.7685 ft
Point 24	898.36263 ft	1,230.5457 ft
Point 25	903.21038 ft	1,226.3967 ft
Point 26	912.51283 ft	1,223.0775 ft
Point 27	937.31935 ft	1,223.0775 ft
Point 28	529.97782 ft	1,228.5438 ft
Point 29	548.71302 ft	1,216.0897 ft
Point 30	570.81178 ft	1,201.6338 ft
Point 31	592.03707 ft	1,187.833 ft
Point 32	605.66319 ft	1,179.011 ft
Point 33	614.61625 ft	1,174.5563 ft
Point 34	638.50562 ft	1,163.1575 ft
Point 35	657.19786 ft	1,153.9861 ft
Point 36	672.39622 ft	1,146.9547 ft
Point 37	681.21825 ft	1,142.5437 ft
Point 38	691.74355 ft	1,136.5604 ft
Point 39	707.24763 ft	1,127.2143 ft
Point 40	717.51154 ft	1,120.7768 ft
Point 41	442.25941 ft	1,236.4583 ft
Point 42	442.30278 ft	1,227.7689 ft
Point 43	442.30278 ft	1,226.2523 ft
Point 44	441.80862 ft	1,226.2523 ft

Regions

	Material	Points
Region 1	Qp	21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,4,3,40,39,38,37,36,35,34,33,32,31,30,29,28,
Region 2	Qal	28,29,30,31,32,33,34,35,36,37,38,39,40,2,1,27,26,25,24,23
Region 3	Retaining Wall	21,22,44,43,42,41

Slip Results

Slip Surfaces Analysed: 84827 of 123216 converged

Current Slip Surface

Slip Surface: 118,383
Factor of Safety: 1.75
Volume: 129.56595 ft³
Weight: 15,693.251 lbf
Resisting Moment: 200,747.08 lbf·ft
Activating Moment: 114,578.55 lbf·ft
Slip Rank: 1 of 123,216 slip surfaces
Exit: (452.82758, 1,227.8619) ft
Entry: (428.70364, 1,240.6237) ft
Radius: 16.385597 ft
Center: (445.00724, 1,242.2609) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	429.11317 ft	1,238.7629 ft	0 psf	19.355542 psf	13.055478 psf	60 psf	0 psf	Qp
Slice 2	429.93223 ft	1,235.9273 ft	0 psf	228.01174 psf	153.79586 psf	60 psf	0 psf	Qp
Slice 3	430.75129 ft	1,234.226 ft	0 psf	374.78269 psf	252.79412 psf	60 psf	0 psf	Qp
Slice 4	431.57035 ft	1,232.9108 ft	0 psf	495.05269 psf	333.91726 psf	60 psf	0 psf	Qp
Slice 5	432.38941 ft	1,231.827 ft	0 psf	597.40602 psf	402.95545 psf	60 psf	0 psf	Qp
Slice 6	433.20847 ft	1,230.9062 ft	0 psf	686.09977 psf	462.78014 psf	60 psf	0 psf	Qp
Slice 7	434.02754 ft	1,230.1106 ft	0 psf	763.68247 psf	515.11033 psf	60 psf	0 psf	Qp
Slice 8	434.8466 ft	1,229.4166 ft	0 psf	831.83599 psf	561.08046 psf	60 psf	0 psf	Qp
Slice 9	435.66566 ft	1,228.8082 ft	0 psf	891.73912 psf	601.48563 psf	60 psf	0 psf	Qp
Slice 10	436.48472 ft	1,228.2743 ft	0 psf	944.25155 psf	636.90571 psf	60 psf	0 psf	Qp
Slice 11	437.30378 ft	1,227.8065 ft	0 psf	990.01695 psf	667.77487 psf	60 psf	0 psf	Qp

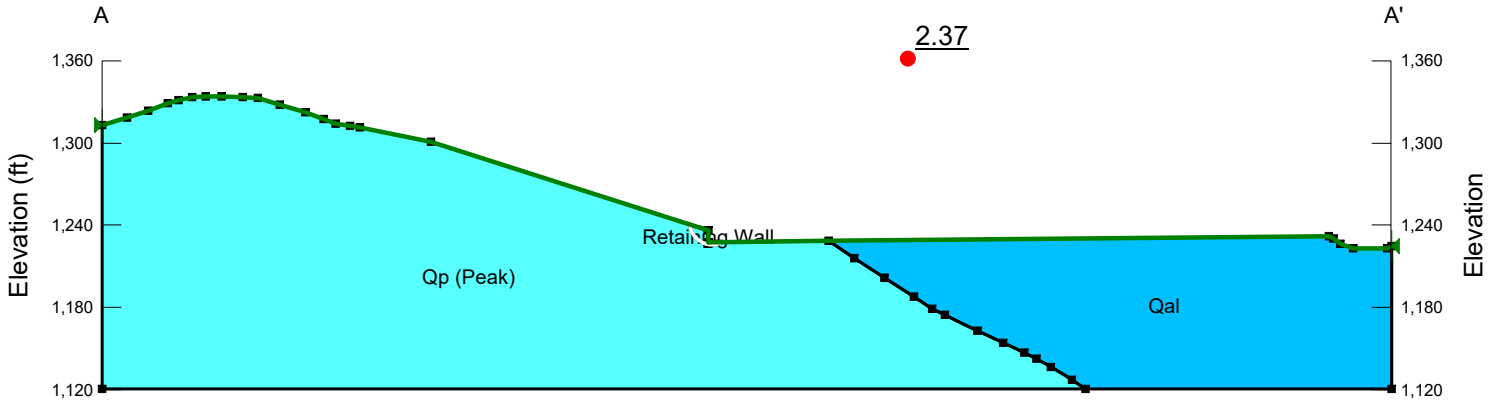
1 - Rotational Static Below Wall file:///C:/Users/ARich/Dropbox/LA%20Railroad%2093%20-%20Blackh...

Slice 12	438.12284 ft	1,227.3985 ft	0 psf	1,029.525 psf	694.42341 psf	60 psf	0 psf	Qp
Slice 13	438.9419 ft	1,227.0456 ft	0 psf	1,063.1509 psf	717.10433 psf	60 psf	0 psf	Qp
Slice 14	439.76097 ft	1,226.7439 ft	0 psf	1,091.1807 psf	736.01064 psf	60 psf	0 psf	Qp
Slice 15	440.58003 ft	1,226.4904 ft	0 psf	1,113.829 psf	751.28717 psf	60 psf	0 psf	Qp
Slice 16	441.3996 ft	1,226.2829 ft	0 psf	1,131.2586 psf	763.04357 psf	60 psf	0 psf	Qp
Slice 17	442.03452 ft	1,226.1488 ft	0 psf	1,435.6741 psf	968.37441 psf	60 psf	0 psf	Qp
Slice 18	442.28109 ft	1,226.1037 ft	0 psf	837.23059 psf	564.71916 psf	60 psf	0 psf	Qp
Slice 19	442.70758 ft	1,226.0426 ft	0 psf	192.3218 psf	129.72269 psf	60 psf	0 psf	Qp
Slice 20	443.51718 ft	1,225.9482 ft	0 psf	209.34074 psf	141.20211 psf	60 psf	0 psf	Qp
Slice 21	444.32678 ft	1,225.8944 ft	0 psf	222.13343 psf	149.83089 psf	60 psf	0 psf	Qp
Slice 22	445.13638 ft	1,225.8808 ft	0 psf	230.54203 psf	155.50256 psf	60 psf	0 psf	Qp
Slice 23	445.94598 ft	1,225.9072 ft	0 psf	234.36752 psf	158.08289 psf	60 psf	0 psf	Qp
Slice 24	446.75558 ft	1,225.9739 ft	0 psf	233.36125 psf	157.40415 psf	60 psf	0 psf	Qp
Slice 25	447.56518 ft	1,226.0814 ft	0 psf	227.21344 psf	153.2574 psf	60 psf	0 psf	Qp
Slice 26	448.37478 ft	1,226.2304 ft	0 psf	215.53745 psf	145.38185 psf	60 psf	0 psf	Qp
Slice 27	449.18438 ft	1,226.4222 ft	0 psf	197.84776 psf	133.45 psf	60 psf	0 psf	Qp
Slice 28	449.99398 ft	1,226.6583 ft	0 psf	173.52853 psf	117.04647 psf	60 psf	0 psf	Qp
Slice 29	450.80358 ft	1,226.9409 ft	0 psf	141.78751 psf	95.636882 psf	60 psf	0 psf	Qp
Slice 30	451.61318 ft	1,227.2724 ft	0 psf	101.58647 psf	68.520939 psf	60 psf	0 psf	Qp
Slice 31	452.42278 ft	1,227.6564 ft	0 psf	51.53226 psf	34.758948 psf	60 psf	0 psf	Qp

LA 93 Section A-A'.gsz 09/13/2021 08:57:30 AM

LA 93 Section A-A'.gsz

1 - Rotational Pseudostatic Below Wall
Horz Seismic Coef.: 0.15



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp (Peak)
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf

LGC Valley, Inc
GEOTECHNICAL CONSULTING
28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

1 - Rotational Pseudostatic Below Wall

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 481
Date: 09/13/2021
Time: 08:57:30 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section A-A'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:57:42 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudostatic Below Wall

Kind: SLOPE/W
Parent: 1 - Rotational Static Below Wall
Method: Bishop
Settings
- PWP Conditions from: (none)
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Critical Slip Surfaces from Other
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf

Qp (Peak)

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °
Phi-B: 0 °

Slip Surface Limits

Left Coordinate: (0.3562, 1,313.0099) ft
Right Coordinate: (940.35902, 1,224.8594) ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	940.35902 ft	1,224.8594 ft
Point 2	940.35902 ft	1,120.7768 ft
Point 3	0.3562 ft	1,120.7768 ft
Point 4	0.3562 ft	1,313.0099 ft
Point 5	18.18545 ft	1,318.1983 ft
Point 6	33.75067 ft	1,323.6487 ft
Point 7	48.00568 ft	1,328.9943 ft
Point 8	55.8669 ft	1,331.1955 ft
Point 9	65.56241 ft	1,333.6063 ft
Point 10	75.54295 ft	1,333.9771 ft
Point 11	87.34672 ft	1,333.9771 ft
Point 12	102.51974 ft	1,333.2117 ft

Point 13	113.59466 ft	1,332.615 ft
Point 14	130.02441 ft	1,328.1034 ft
Point 15	148.73412 ft	1,322.0765 ft
Point 16	161.57411 ft	1,317.4645 ft
Point 17	170.32627 ft	1,314.1104 ft
Point 18	181.01753 ft	1,312.5906 ft
Point 19	188.30226 ft	1,311.4376 ft
Point 20	240.02909 ft	1,300.5891 ft
Point 21	441.80964 ft	1,236.4583 ft
Point 22	441.80964 ft	1,227.7645 ft
Point 23	894.82508 ft	1,231.7685 ft
Point 24	898.36263 ft	1,230.5457 ft
Point 25	903.21038 ft	1,226.3967 ft
Point 26	912.51283 ft	1,223.0775 ft
Point 27	937.31935 ft	1,223.0775 ft
Point 28	529.97782 ft	1,228.5438 ft
Point 29	548.71302 ft	1,216.0897 ft
Point 30	570.81178 ft	1,201.6338 ft
Point 31	592.03707 ft	1,187.833 ft
Point 32	605.66319 ft	1,179.011 ft
Point 33	614.61625 ft	1,174.5563 ft
Point 34	638.50562 ft	1,163.1575 ft
Point 35	657.19786 ft	1,153.9861 ft
Point 36	672.39622 ft	1,146.9547 ft
Point 37	681.21825 ft	1,142.5437 ft
Point 38	691.74355 ft	1,136.5604 ft
Point 39	707.24763 ft	1,127.2143 ft
Point 40	717.51154 ft	1,120.7768 ft
Point 41	442.25941 ft	1,236.4583 ft
Point 42	442.30278 ft	1,227.7689 ft
Point 43	442.30278 ft	1,226.2523 ft
Point 44	441.80862 ft	1,226.2523 ft

Regions

	Material	Points
Region 1	Qp (Peak)	21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,4,3,40,39,38,37,36,35,34,33,32,31,30,29,28,
Region 2	Qal	28,29,30,31,32,33,34,35,36,37,38,39,40,2,1,27,26,25,24,23
Region 3	Retaining Wall	21,22,44,43,42,41

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 2.37
Volume: 129.56595 ft³
Weight: 15,693.251 lbf
Resisting Moment: 324,204.15 lbf·ft
Activating Moment: 136,861.65 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (452.82758, 1,227.8619) ft
Entry: (428.70364, 1,240.6237) ft
Radius: 16.385597 ft
Center: (445.00724, 1,242.2609) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	429.11317 ft	1,238.7629 ft	0 psf	-149.51747 psf	-104.69326 psf	300 psf	0 psf	Qp (Peak)
Slice 2	429.93223 ft	1,235.9273 ft	0 psf	137.23652 psf	96.094049 psf	300 psf	0 psf	Qp (Peak)
Slice 3	430.75129 ft	1,234.226 ft	0 psf	316.91695 psf	221.90764 psf	300 psf	0 psf	Qp (Peak)
Slice 4	431.57035 ft	1,232.9108 ft	0 psf	457.41677 psf	320.28667 psf	300 psf	0 psf	Qp (Peak)
Slice 5	432.38941 ft	1,231.827 ft	0 psf	573.52694 psf	401.58788 psf	300 psf	0 psf	Qp (Peak)
Slice 6	433.20847 ft	1,230.9062 ft	0 psf	672.00796 psf	470.54504 psf	300 psf	0 psf	Qp (Peak)
Slice 7	434.02754 ft	1,230.1106 ft	0 psf	756.68881 psf	529.83921 psf	300 psf	0 psf	Qp (Peak)
Slice 8	434.8466 ft	1,229.4166 ft	0 psf	829.99994 psf	581.17222 psf	300 psf	0 psf	Qp (Peak)
Slice 9	435.66566 ft	1,228.8082 ft	0 psf	893.59841 psf	625.70434 psf	300 psf	0 psf	Qp (Peak)
Slice 10	436.48472 ft	1,228.2743 ft	0 psf	948.6699 psf	664.26581 psf	300 psf	0 psf	Qp (Peak)
Slice 11	437.30378 ft	1,227.8065 ft	0 psf	996.0919 psf	697.47105 psf	300 psf	0 psf	Qp (Peak)
Slice 12	438.12284 ft	1,227.3985 ft	0 psf	1,036.529 psf	725.78543 psf	300 psf	0 psf	Qp (Peak)
Slice 13	438.9419 ft	1,227.0456 ft	0 psf	1,070.4921 psf	749.56663 psf	300 psf	0 psf	Qp (Peak)
Slice 14	439.76097 ft	1,226.7439 ft	0 psf	1,098.3764 psf	769.09146 psf	300 psf	0 psf	Qp (Peak)
Slice 15	440.58003 ft	1,226.4904 ft	0 psf	1,120.4874 psf	784.57374 psf	300 psf	0 psf	Qp (Peak)
Slice 16	441.3996 ft	1,226.2829 ft	0 psf	1,137.0649 psf	796.18144 psf	300 psf	0 psf	Qp (Peak)
Slice 17	442.03452 ft	1,226.1488 ft	0 psf	1,445.8544 psf	1,012.3982 psf	300 psf	0 psf	Qp (Peak)
Slice 18	442.28109 ft	1,226.1037 ft	0 psf	836.86101 psf	585.97639 psf	300 psf	0 psf	Qp (Peak)

Slice 19	442.70758 ft	1,226.0426 ft	0 psf	183.14295 psf	128.23807 psf	300 psf	0 psf	Qp (Peak)
Slice 20	443.51718 ft	1,225.9482 ft	0 psf	203.49858 psf	142.49124 psf	300 psf	0 psf	Qp (Peak)
Slice 21	444.32678 ft	1,225.8944 ft	0 psf	219.49043 psf	153.68886 psf	300 psf	0 psf	Qp (Peak)
Slice 22	445.13638 ft	1,225.8808 ft	0 psf	231.04352 psf	161.77841 psf	300 psf	0 psf	Qp (Peak)
Slice 23	445.94598 ft	1,225.9072 ft	0 psf	238.04807 psf	166.68306 psf	300 psf	0 psf	Qp (Peak)
Slice 24	446.75558 ft	1,225.9739 ft	0 psf	240.35524 psf	168.29855 psf	300 psf	0 psf	Qp (Peak)
Slice 25	447.56518 ft	1,226.0814 ft	0 psf	237.77086 psf	166.48895 psf	300 psf	0 psf	Qp (Peak)
Slice 26	448.37478 ft	1,226.2304 ft	0 psf	230.04685 psf	161.08054 psf	300 psf	0 psf	Qp (Peak)
Slice 27	449.18438 ft	1,226.4222 ft	0 psf	216.86912 psf	151.85339 psf	300 psf	0 psf	Qp (Peak)
Slice 28	449.99398 ft	1,226.6583 ft	0 psf	197.84051 psf	138.52941 psf	300 psf	0 psf	Qp (Peak)
Slice 29	450.80358 ft	1,226.9409 ft	0 psf	172.45646 psf	120.75531 psf	300 psf	0 psf	Qp (Peak)
Slice 30	451.61318 ft	1,227.2724 ft	0 psf	140.06942 psf	98.077662 psf	300 psf	0 psf	Qp (Peak)
Slice 31	452.42278 ft	1,227.6564 ft	0 psf	99.835153 psf	69.905327 psf	300 psf	0 psf	Qp (Peak)

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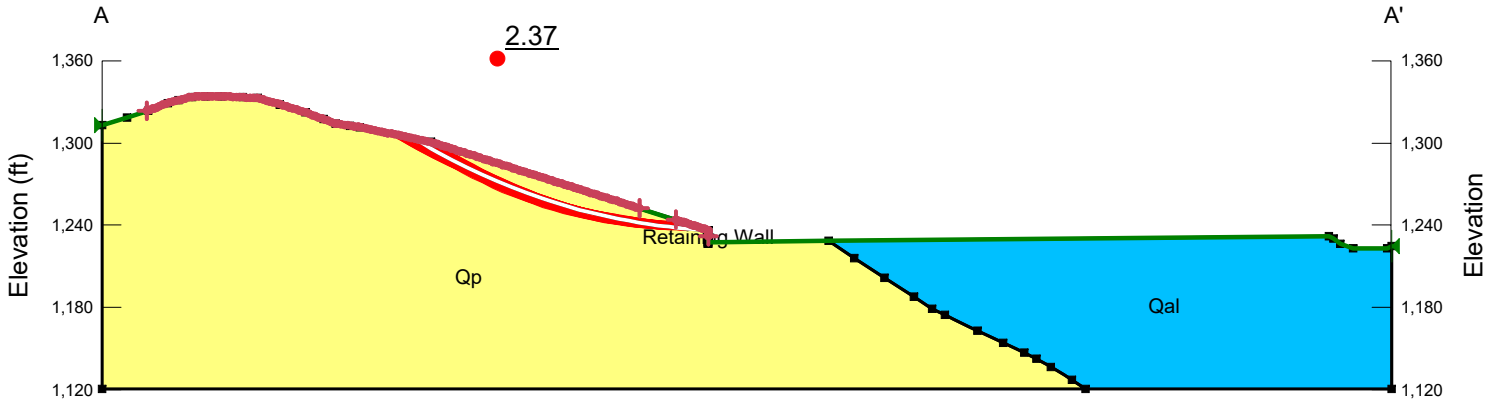
LA 93 Section A-A'.gsz

2 - Rotational Static Above Wall
Horz Seismic Coef.: 0



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf

LGC Valley, Inc
GEOTECHNICAL CONSULTING
28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

2 - Rotational Static Above Wall

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 481
Date: 09/13/2021
Time: 08:57:30 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section A-A'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:57:42 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Static Above Wall

Kind: SLOPE/W
Method: Bishop
Settings
- PWP Conditions from: (none)
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °
Phi-B: 0 °

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (32.73115, 1,323.2917) ft
Left-Zone Right Coordinate: (391.97148, 1,252.2981) ft
Left-Zone Increment: 150
Right Type: Range
Right-Zone Left Coordinate: (418.52161, 1,243.8598) ft
Right-Zone Right Coordinate: (442.28066, 1,232.2007) ft
Right-Zone Increment: 20
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.3562, 1,313.0099) ft
Right Coordinate: (940.35902, 1,224.8594) ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y

Point 1	940.35902 ft	1,224.8594 ft
Point 2	940.35902 ft	1,120.7768 ft
Point 3	0.3562 ft	1,120.7768 ft
Point 4	0.3562 ft	1,313.0099 ft
Point 5	18.18545 ft	1,318.1983 ft
Point 6	33.75067 ft	1,323.6487 ft
Point 7	48.00568 ft	1,328.9943 ft
Point 8	55.8669 ft	1,331.1955 ft
Point 9	65.56241 ft	1,333.6063 ft
Point 10	75.54295 ft	1,333.9771 ft
Point 11	87.34672 ft	1,333.9771 ft
Point 12	102.51974 ft	1,333.2117 ft
Point 13	113.59466 ft	1,332.615 ft
Point 14	130.02441 ft	1,328.1034 ft
Point 15	148.73412 ft	1,322.0765 ft
Point 16	161.57411 ft	1,317.4645 ft
Point 17	170.32627 ft	1,314.1104 ft
Point 18	181.01753 ft	1,312.5906 ft
Point 19	188.30226 ft	1,311.4376 ft
Point 20	240.02909 ft	1,300.5891 ft
Point 21	441.80964 ft	1,236.4583 ft
Point 22	441.80964 ft	1,227.7645 ft
Point 23	894.82508 ft	1,231.7685 ft
Point 24	898.36263 ft	1,230.5457 ft
Point 25	903.21038 ft	1,226.3967 ft
Point 26	912.51283 ft	1,223.0775 ft
Point 27	937.31935 ft	1,223.0775 ft
Point 28	529.97782 ft	1,228.5438 ft
Point 29	548.71302 ft	1,216.0897 ft
Point 30	570.81178 ft	1,201.6338 ft
Point 31	592.03707 ft	1,187.833 ft
Point 32	605.66319 ft	1,179.011 ft
Point 33	614.61625 ft	1,174.5563 ft
Point 34	638.50562 ft	1,163.1575 ft
Point 35	657.19786 ft	1,153.9861 ft
Point 36	672.39622 ft	1,146.9547 ft
Point 37	681.21825 ft	1,142.5437 ft
Point 38	691.74355 ft	1,136.5604 ft
Point 39	707.24763 ft	1,127.2143 ft
Point 40	717.51154 ft	1,120.7768 ft
Point 41	442.25941 ft	1,236.4583 ft
Point 42	442.30278 ft	1,227.7689 ft
Point 43	442.30278 ft	1,226.2523 ft
Point 44	441.80862 ft	1,226.2523 ft

Regions

	Material	Points
Region 1	Qp	21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,4,3,40,39,38,37,36,35,34,33,32,31,30,29,28,
Region 2	Qal	28,29,30,31,32,33,34,35,36,37,38,39,40,2,1,27,26,25,24,23
Region 3	Retaining Wall	21,22,44,43,42,41

Slip Results

Slip Surfaces Analysed: 41327 of 50736 converged

Current Slip Surface

Slip Surface: 27,491
Factor of Safety: 2.37
Volume: 2,213.8045 ft³
Weight: 265,656.54 lbf
Resisting Moment: 84,575,344 lbf·ft
Activating Moment: 35,752,558 lbf·ft
Slip Rank: 1 of 50,736 slip surfaces
Exit: (441.74176, 1,236.4799) ft
Entry: (228.27376, 1,303.0545) ft
Radius: 454.59308 ft
Center: (466.19584, 1,690.4147) ft

Slip Slices

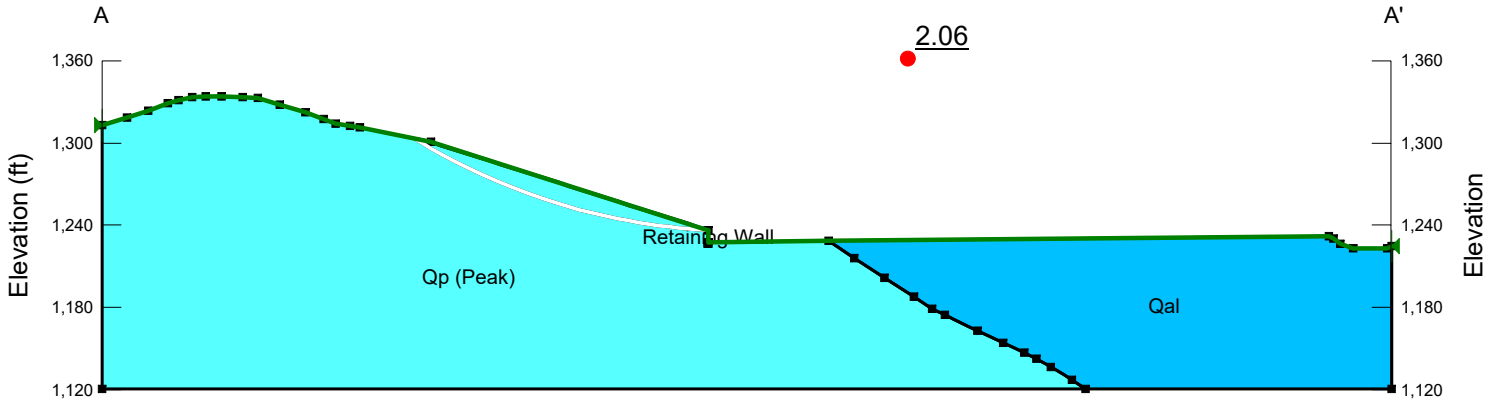
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	231.2126 ft	1,301.2799 ft	0 psf	105.7685 psf	71.341754 psf	60 psf	0 psf	Qp
Slice 2	237.09026 ft	1,297.7903 ft	0 psf	339.2132 psf	228.80219 psf	60 psf	0 psf	Qp
Slice 3	243.6311 ft	1,294.0529 ft	0 psf	546.19185 psf	368.41106 psf	60 psf	0 psf	Qp
Slice 4	250.83513 ft	1,290.0925 ft	0 psf	723.89499 psf	488.27333 psf	60 psf	0 psf	Qp
Slice 5	258.03915 ft	1,286.2994 ft	0 psf	885.98015 psf	597.60116 psf	60 psf	0 psf	Qp
Slice 6	265.24317 ft	1,282.6688 ft	0 psf	1,032.6066 psf	696.50195 psf	60 psf	0 psf	Qp
Slice 7	272.4472 ft	1,279.1965 ft	0 psf	1,163.9199 psf	785.07388 psf	60 psf	0 psf	Qp
Slice 8	279.65122 ft	1,275.8784 ft	0 psf	1,280.0521 psf	863.40608 psf	60 psf	0 psf	Qp
Slice 9	286.85525 ft	1,272.711 ft	0 psf	1,381.1224 psf	931.57885 psf	60 psf	0 psf	Qp
Slice 10	294.05927 ft	1,269.6907 ft	0 psf	1,467.2371 psf	989.66389 psf	60 psf	0 psf	Qp
Slice 11	301.26329 ft	1,266.8145 ft	0 psf	1,538.4898 psf	1,037.7245 psf	60 psf	0 psf	Qp

Slice 12	308.46732 ft	1,264.0794 ft	0 psf	1,594.9623 psf	1,075.8157 psf	60 psf	0 psf	Qp
Slice 13	315.67134 ft	1,261.4827 ft	0 psf	1,636.7241 psf	1,103.9844 psf	60 psf	0 psf	Qp
Slice 14	322.87537 ft	1,259.022 ft	0 psf	1,663.833 psf	1,122.2695 psf	60 psf	0 psf	Qp
Slice 15	330.07939 ft	1,256.6949 ft	0 psf	1,676.3351 psf	1,130.7023 psf	60 psf	0 psf	Qp
Slice 16	337.28341 ft	1,254.4992 ft	0 psf	1,674.2648 psf	1,129.3059 psf	60 psf	0 psf	Qp
Slice 17	344.48744 ft	1,252.4331 ft	0 psf	1,657.6455 psf	1,118.096 psf	60 psf	0 psf	Qp
Slice 18	351.69146 ft	1,250.4946 ft	0 psf	1,626.4888 psf	1,097.0805 psf	60 psf	0 psf	Qp
Slice 19	358.89549 ft	1,248.6821 ft	0 psf	1,580.7951 psf	1,066.2598 psf	60 psf	0 psf	Qp
Slice 20	366.09951 ft	1,246.994 ft	0 psf	1,520.5534 psf	1,025.6262 psf	60 psf	0 psf	Qp
Slice 21	373.30353 ft	1,245.429 ft	0 psf	1,445.7414 psf	975.1649 psf	60 psf	0 psf	Qp
Slice 22	380.50756 ft	1,243.9857 ft	0 psf	1,356.3251 psf	914.85283 psf	60 psf	0 psf	Qp
Slice 23	387.71158 ft	1,242.6629 ft	0 psf	1,252.2589 psf	844.65928 psf	60 psf	0 psf	Qp
Slice 24	394.91561 ft	1,241.4596 ft	0 psf	1,133.4853 psf	764.54551 psf	60 psf	0 psf	Qp
Slice 25	402.11963 ft	1,240.3749 ft	0 psf	999.93502 psf	674.46469 psf	60 psf	0 psf	Qp
Slice 26	409.32365 ft	1,239.4078 ft	0 psf	851.52616 psf	574.36165 psf	60 psf	0 psf	Qp
Slice 27	416.52768 ft	1,238.5577 ft	0 psf	688.16438 psf	464.17274 psf	60 psf	0 psf	Qp
Slice 28	423.7317 ft	1,237.8238 ft	0 psf	509.74233 psf	343.82555 psf	60 psf	0 psf	Qp
Slice 29	430.93573 ft	1,237.2056 ft	0 psf	316.13928 psf	213.23864 psf	60 psf	0 psf	Qp
Slice 30	438.13975 ft	1,236.7026 ft	0 psf	107.22064 psf	72.321233 psf	60 psf	0 psf	Qp

LA 93 Section A-A'.gsz 09/13/2021 08:57:30 AM

LA 93 Section A-A'.gsz

2 - Rotational Pseudostatic Above Wall
Horz Seismic Coef.: 0.15



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp (Peak)
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf

LGC Valley, Inc
GEOTECHNICAL CONSULTING
28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

2 - Rotational Pseudostatic Above Wall file:///C:/Users/ARich/Dropbox/LA%20Railroad%2093%20-%20Blackh...

2 - Rotational Pseudostatic Above Wall

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 481
Date: 09/13/2021
Time: 08:57:30 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section A-A'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:57:44 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Pseudostatic Above Wall

Kind: SLOPE/W
Parent: 2 - Rotational Static Above Wall
Method: Bishop
Settings
PWP Conditions from: (none)
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Left to Right
Use Passive Mode: No
Slip Surface Option: Critical Slip Surfaces from Other
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
F of S Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf

Qp (Peak)

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °
Phi-B: 0 °

Slip Surface Limits

Left Coordinate: (0.3562, 1,313.0099) ft
Right Coordinate: (940.35902, 1,224.8594) ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	940.35902 ft	1,224.8594 ft
Point 2	940.35902 ft	1,120.7768 ft
Point 3	0.3562 ft	1,120.7768 ft
Point 4	0.3562 ft	1,313.0099 ft
Point 5	18.18545 ft	1,318.1983 ft
Point 6	33.75067 ft	1,323.6487 ft
Point 7	48.00568 ft	1,328.9943 ft
Point 8	55.8669 ft	1,331.1955 ft
Point 9	65.56241 ft	1,333.6063 ft
Point 10	75.54295 ft	1,333.9771 ft
Point 11	87.34672 ft	1,333.9771 ft
Point 12	102.51974 ft	1,333.2117 ft

Point 13	113.59466 ft	1,332.615 ft
Point 14	130.02441 ft	1,328.1034 ft
Point 15	148.73412 ft	1,322.0765 ft
Point 16	161.57411 ft	1,317.4645 ft
Point 17	170.32627 ft	1,314.1104 ft
Point 18	181.01753 ft	1,312.5906 ft
Point 19	188.30226 ft	1,311.4376 ft
Point 20	240.02909 ft	1,300.5891 ft
Point 21	441.80964 ft	1,236.4583 ft
Point 22	441.80964 ft	1,227.7645 ft
Point 23	894.82508 ft	1,231.7685 ft
Point 24	898.36263 ft	1,230.5457 ft
Point 25	903.21038 ft	1,226.3967 ft
Point 26	912.51283 ft	1,223.0775 ft
Point 27	937.31935 ft	1,223.0775 ft
Point 28	529.97782 ft	1,228.5438 ft
Point 29	548.71302 ft	1,216.0897 ft
Point 30	570.81178 ft	1,201.6338 ft
Point 31	592.03707 ft	1,187.833 ft
Point 32	605.66319 ft	1,179.011 ft
Point 33	614.61625 ft	1,174.5563 ft
Point 34	638.50562 ft	1,163.1575 ft
Point 35	657.19786 ft	1,153.9861 ft
Point 36	672.39622 ft	1,146.9547 ft
Point 37	681.21825 ft	1,142.5437 ft
Point 38	691.74355 ft	1,136.5604 ft
Point 39	707.24763 ft	1,127.2143 ft
Point 40	717.51154 ft	1,120.7768 ft
Point 41	442.25941 ft	1,236.4583 ft
Point 42	442.30278 ft	1,227.7689 ft
Point 43	442.30278 ft	1,226.2523 ft
Point 44	441.80862 ft	1,226.2523 ft

Regions

	Material	Points
Region 1	Qp (Peak)	21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,4,3,40,39,38,37,36,35,34,33,32,31,30,29,28,
Region 2	Qal	28,29,30,31,32,33,34,35,36,37,38,39,40,2,1,27,26,25,24,23
Region 3	Retaining Wall	21,22,44,43,42,41

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 2.06
Volume: 2,213.8045 ft³
Weight: 265,656.54 lbf
Resisting Moment: 1.0856653e+08 lbf·ft
Activating Moment: 52,691,193 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (441.74176, 1,236.4799) ft
Entry: (228.27376, 1,303.0545) ft
Radius: 454.59308 ft
Center: (466.19584, 1,690.4147) ft

Slip Slices

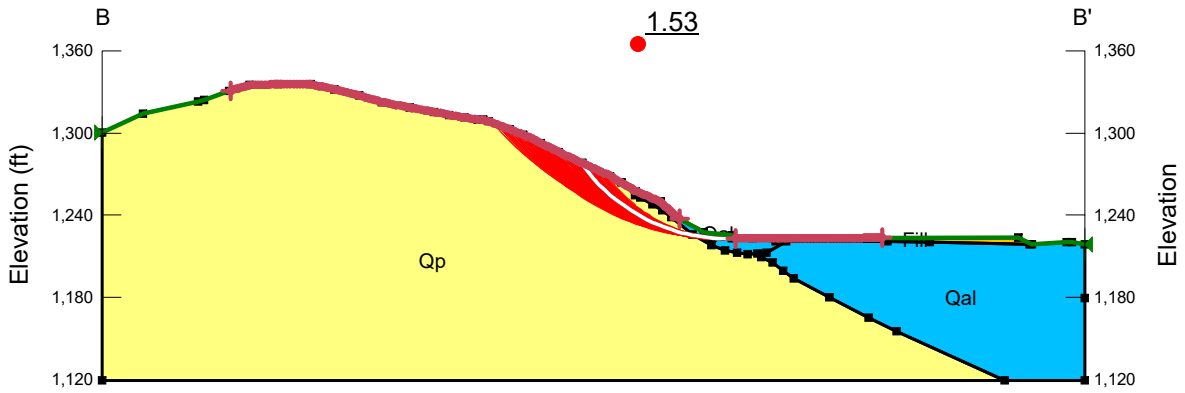
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	231.2126 ft	1,301.2799 ft	0 psf	43.215181 psf	30.259596 psf	300 psf	0 psf	Qp (Peak)
Slice 2	237.09026 ft	1,297.7903 ft	0 psf	272.3047 psf	190.6698 psf	300 psf	0 psf	Qp (Peak)
Slice 3	243.6311 ft	1,294.0529 ft	0 psf	476.15481 psf	333.40719 psf	300 psf	0 psf	Qp (Peak)
Slice 4	250.83513 ft	1,290.0925 ft	0 psf	651.9973 psf	456.53342 psf	300 psf	0 psf	Qp (Peak)
Slice 5	258.03915 ft	1,286.2994 ft	0 psf	812.86621 psf	569.17505 psf	300 psf	0 psf	Qp (Peak)
Slice 6	265.24317 ft	1,282.6688 ft	0 psf	958.87293 psf	671.41005 psf	300 psf	0 psf	Qp (Peak)
Slice 7	272.4472 ft	1,279.1965 ft	0 psf	1,090.1176 psf	763.30858 psf	300 psf	0 psf	Qp (Peak)
Slice 8	279.65122 ft	1,275.8784 ft	0 psf	1,206.6893 psf	844.93297 psf	300 psf	0 psf	Qp (Peak)
Slice 9	286.85525 ft	1,272.711 ft	0 psf	1,308.666 psf	916.33779 psf	300 psf	0 psf	Qp (Peak)
Slice 10	294.05927 ft	1,269.6907 ft	0 psf	1,396.1145 psf	977.56987 psf	300 psf	0 psf	Qp (Peak)
Slice 11	301.26329 ft	1,266.8145 ft	0 psf	1,469.0907 psf	1,028.6684 psf	300 psf	0 psf	Qp (Peak)
Slice 12	308.46732 ft	1,264.0794 ft	0 psf	1,527.6397 psf	1,069.6649 psf	300 psf	0 psf	Qp (Peak)
Slice 13	315.67134 ft	1,261.4827 ft	0 psf	1,571.7957 psf	1,100.5832 psf	300 psf	0 psf	Qp (Peak)
Slice 14	322.87537 ft	1,259.022 ft	0 psf	1,601.5818 psf	1,121.4396 psf	300 psf	0 psf	Qp (Peak)
Slice 15	330.07939 ft	1,256.6949 ft	0 psf	1,617.0105 psf	1,132.2429 psf	300 psf	0 psf	Qp (Peak)
Slice 16	337.28341 ft	1,254.4992 ft	0 psf	1,618.0833 psf	1,132.9941 psf	300 psf	0 psf	Qp (Peak)
Slice 17	344.48744 ft	1,252.4331 ft	0 psf	1,604.791 psf	1,123.6867 psf	300 psf	0 psf	Qp (Peak)
Slice 18	351.69146 ft	1,250.4946 ft	0 psf	1,577.1129 psf	1,104.3064 psf	300 psf	0 psf	Qp (Peak)

Slice 19	358.89549 ft	1,248.6821 ft	0 psf	1,535.0178 psf	1,074.831 psf	300 psf	0 psf	Qp (Peak)
Slice 20	366.09951 ft	1,246.994 ft	0 psf	1,478.4627 psf	1,035.2307 psf	300 psf	0 psf	Qp (Peak)
Slice 21	373.30353 ft	1,245.429 ft	0 psf	1,407.3934 psf	985.46749 psf	300 psf	0 psf	Qp (Peak)
Slice 22	380.50756 ft	1,243.9857 ft	0 psf	1,321.7441 psf	925.4952 psf	300 psf	0 psf	Qp (Peak)
Slice 23	387.71158 ft	1,242.6629 ft	0 psf	1,221.437 psf	855.25936 psf	300 psf	0 psf	Qp (Peak)
Slice 24	394.91561 ft	1,241.4596 ft	0 psf	1,106.3819 psf	774.69693 psf	300 psf	0 psf	Qp (Peak)
Slice 25	402.11963 ft	1,240.3749 ft	0 psf	976.47632 psf	683.73608 psf	300 psf	0 psf	Qp (Peak)
Slice 26	409.32365 ft	1,239.4078 ft	0 psf	831.60471 psf	582.29589 psf	300 psf	0 psf	Qp (Peak)
Slice 27	416.52768 ft	1,238.5577 ft	0 psf	671.6381 psf	470.28606 psf	300 psf	0 psf	Qp (Peak)
Slice 28	423.7317 ft	1,237.8238 ft	0 psf	496.4336 psf	347.60655 psf	300 psf	0 psf	Qp (Peak)
Slice 29	430.93573 ft	1,237.2056 ft	0 psf	305.83388 psf	214.14719 psf	300 psf	0 psf	Qp (Peak)
Slice 30	438.13975 ft	1,236.7026 ft	0 psf	99.666505 psf	69.787238 psf	300 psf	0 psf	Qp (Peak)

LA 93 Section B-B'.gsz 09/13/2021 08:47:27 AM

LA 93 Section B-B'.gsz

1 - Rotational Static Global
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 36 psf
Phi': 32 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °

LGC

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GEOTECHNICAL CONSULTING
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Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

1 - Rotational Static Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 490
Date: 09/13/2021
Time: 08:47:27 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section B-B'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:47:40 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Global

Kind: SLOPE/W
Method: Bishop
Settings
- PWP Conditions from: (none)
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 60 psf
Phi': 34 °
Phi-B: 0 °

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 36 psf
Phi': 32 °
Phi-B: 0 °

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (94.01822, 1,330.8811) ft
Left-Zone Right Coordinate: (421.71545, 1,237.4326) ft
Left-Zone Increment: 150
Right Type: Range
Right-Zone Left Coordinate: (462.49476, 1,222.9727) ft
Right-Zone Right Coordinate: (569.51261, 1,223.4289) ft
Right-Zone Increment: 50
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.04313, 1,300.5367) ft
Right Coordinate: (717.08884, 1,218.7486) ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	717.08884 ft	1,218.7486 ft
Point 2	717.08884 ft	1,119.3828 ft
Point 3	-0.04313 ft	1,119.3828 ft
Point 4	-0.04313 ft	1,300.5367 ft
Point 5	30.19636 ft	1,314.2152 ft
Point 6	70.18377 ft	1,322.7054 ft
Point 7	74.58605 ft	1,323.8059 ft
Point 8	92.9289 ft	1,330.5666 ft
Point 9	107.81281 ft	1,334.864 ft
Point 10	128.91195 ft	1,335.4758 ft
Point 11	152.47376 ft	1,335.4758 ft
Point 12	169.39237 ft	1,331.772 ft
Point 13	187.73522 ft	1,327.3173 ft
Point 14	204.19137 ft	1,322.3909 ft
Point 15	224.85765 ft	1,318.4603 ft
Point 16	242.32703 ft	1,315.3158 ft
Point 17	253.42008 ft	1,313.1321 ft
Point 18	264.42579 ft	1,311.3415 ft
Point 19	274.07762 ft	1,309.8566 ft
Point 20	278.08112 ft	1,309.4296 ft
Point 21	281.76415 ft	1,308.5028 ft
Point 22	297.35557 ft	1,302.5632 ft
Point 23	307.48781 ft	1,298.8509 ft
Point 24	320.10944 ft	1,292.6493 ft
Point 25	333.08045 ft	1,286.2293 ft
Point 26	350.41881 ft	1,278.0187 ft
Point 27	370.989 ft	1,268.5416 ft
Point 28	379.06859 ft	1,263.6501 ft
Point 29	676.96517 ft	1,218.8848 ft
Point 30	704.06018 ft	1,220.1426 ft
Point 31	707.88597 ft	1,220.1426 ft
Point 32	603.8995 ft	1,220.064 ft
Point 33	573.24074 ft	1,221.1122 ft
Point 34	485.19507 ft	1,212.3775 ft
Point 35	471.08854 ft	1,211.3293 ft
Point 36	463.2972 ft	1,212.8579 ft
Point 37	454.38782 ft	1,214.1681 ft
Point 38	444.5875 ft	1,218.2559 ft
Point 39	431.17101 ft	1,225.8027 ft
Point 40	415.44857 ft	1,238.5379 ft
Point 41	409.05478 ft	1,243.4643 ft
Point 42	401.92727 ft	1,247.9714 ft
Point 43	392.65103 ft	1,253.1074 ft
Point 44	388.77283 ft	1,254.5224 ft
Point 45	499.08322 ft	1,220.8501 ft
Point 46	478.42089 ft	1,211.8741 ft
Point 47	481.26446 ft	1,209.3204 ft
Point 48	489.51874 ft	1,205.3897 ft
Point 49	497.24894 ft	1,199.2755 ft
Point 50	504.58608 ft	1,193.8163 ft
Point 51	530.74647 ft	1,180.0155 ft
Point 52	559.51854 ft	1,164.9569 ft
Point 53	579.9053 ft	1,155.1565 ft
Point 54	658.72714 ft	1,119.3828 ft
Point 55	717.08884 ft	1,179.5263 ft
Point 56	491.49278 ft	1,220.8501 ft
Point 57	475.08903 ft	1,222.9727 ft
Point 58	459.78585 ft	1,222.9727 ft
Point 59	459.78585 ft	1,225.3835 ft
Point 60	439.39909 ft	1,227.4798 ft
Point 61	419.37918 ft	1,238.7475 ft
Point 62	407.48253 ft	1,249.9105 ft
Point 63	389.71618 ft	1,257.4048 ft
Point 64	668.5362 ft	1,223.9073 ft
Point 65	678.31521 ft	1,218.9475 ft

Regions

	Material	Points
Region 1	Qp	35,36,37,38,39,40,41,42,43,44,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9
Region 2	Qal	46,47,48,49,50,51,52,53,54,2,55,1,31,30,65,29,32,33,45,34
Region 3	Qal	45,56,57,58,59,60,61,62,63,28,44,43,42,41,40,39,38,37,36,35,46,34
Region 4	Fill	57,64,65,32,33,45,56

Slip Results

Slip Surfaces Analysed: 88078 of 123216 converged

Current Slip Surface

Slip Surface: 93,031
Factor of Safety: 1.53
Volume: 1,138.393 ft³
Weight: 136,607.16 lbf
Resisting Moment: 12,396,923 lbf·ft
Activating Moment: 8,079,338 lbf·ft
Slip Rank: 1 of 123,216 slip surfaces
Exit: (462.49476, 1,222.9727) ft
Entry: (349.44272, 1,278.4809) ft
Radius: 131.30192 ft
Center: (456.74865, 1,354.1488) ft

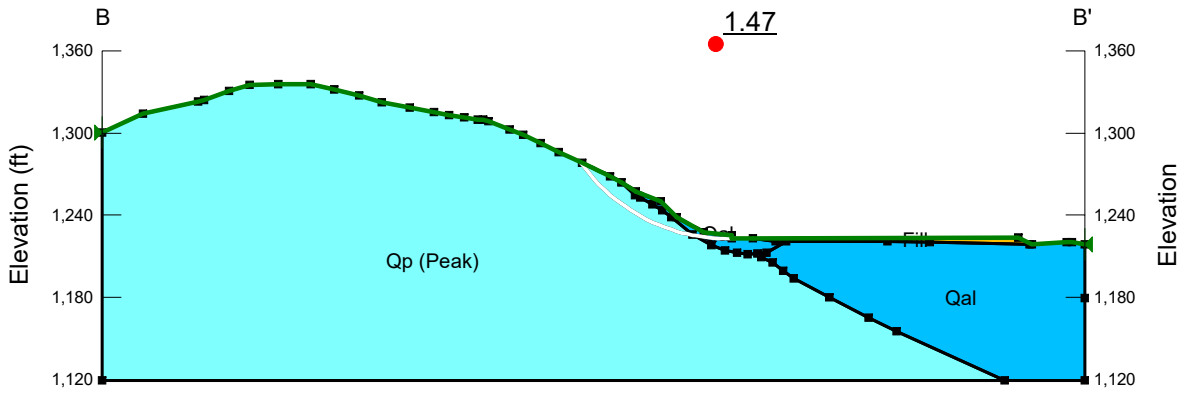
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	349.93076 ft	1,277.7981 ft	0 psf	2.0655185 psf	1.3932098 psf	60 psf	0 psf	Qp
Slice 2	352.47583 ft	1,274.4249 ft	0 psf	175.77006 psf	118.5584 psf	60 psf	0 psf	Qp
Slice 3	356.58987 ft	1,269.3061 ft	0 psf	445.84469 psf	300.72604 psf	60 psf	0 psf	Qp
Slice 4	360.70391 ft	1,264.6698 ft	0 psf	690.63513 psf	465.83928 psf	60 psf	0 psf	Qp
Slice 5	364.81794 ft	1,260.4438 ft	0 psf	911.18391 psf	614.60131 psf	60 psf	0 psf	Qp
Slice 6	368.93198 ft	1,256.5744 ft	0 psf	1,108.5346 psf	747.71604 psf	60 psf	0 psf	Qp
Slice 7	373.0089 ft	1,253.05 ft	0 psf	1,256.1006 psf	847.25056 psf	60 psf	0 psf	Qp
Slice 8	377.04869 ft	1,249.8337 ft	0 psf	1,353.4956 psf	912.94432 psf	60 psf	0 psf	Qp
Slice 9	380.68596 ft	1,247.1408 ft	0 psf	1,426.3014 psf	962.05246 psf	60 psf	0 psf	Qp
Slice 10	383.92071 ft	1,244.9128 ft	0 psf	1,478.9665 psf	997.57548 psf	60 psf	0 psf	Qp
Slice 11	387.15546 ft	1,242.8234 ft	0 psf	1,518.5636 psf	1,024.2841 psf	60 psf	0 psf	Qp
Slice 12	389.24451 ft	1,241.5296 ft	0 psf	1,538.7596 psf	1,037.9064 psf	60 psf	0 psf	Qp
Slice 13	391.18361 ft	1,240.4011 ft	0 psf	1,573.7696 psf	1,061.521 psf	60 psf	0 psf	Qp
Slice 14	394.97009 ft	1,238.3184 ft	0 psf	1,645.6418 psf	1,109.9994 psf	60 psf	0 psf	Qp
Slice 15	399.60821 ft	1,235.9603 ft	0 psf	1,715.4437 psf	1,157.0814 psf	60 psf	0 psf	Qp
Slice 16	404.7049 ft	1,233.6395 ft	0 psf	1,765.2594 psf	1,190.6825 psf	60 psf	0 psf	Qp
Slice 17	408.26866 ft	1,232.1276 ft	0 psf	1,746.8047 psf	1,178.2347 psf	60 psf	0 psf	Qp
Slice 18	410.65323 ft	1,231.216 ft	0 psf	1,623.4388 psf	1,095.0233 psf	60 psf	0 psf	Qp
Slice 19	413.85012 ft	1,230.064 ft	0 psf	1,447.1612 psf	976.12255 psf	60 psf	0 psf	Qp
Slice 20	417.41388 ft	1,228.8942 ft	0 psf	1,233.6378 psf	832.09922 psf	60 psf	0 psf	Qp
Slice 21	421.34449 ft	1,227.7266 ft	0 psf	1,058.2353 psf	713.78874 psf	60 psf	0 psf	Qp
Slice 22	425.2751 ft	1,226.6909 ft	0 psf	944.13607 psf	636.82782 psf	60 psf	0 psf	Qp
Slice 23	429.20571 ft	1,225.784 ft	0 psf	812.73846 psf	548.19901 psf	60 psf	0 psf	Qp
Slice 24	431.76828 ft	1,225.2465 ft	0 psf	719.24512 psf	485.13696 psf	60 psf	0 psf	Qp
Slice 25	434.12393 ft	1,224.8232 ft	0 psf	625.91521 psf	346.95047 psf	116 psf	0 psf	Qal
Slice 26	437.6407 ft	1,224.2569 ft	0 psf	471.80126 psf	261.52371 psf	116 psf	0 psf	Qal
Slice 27	441.43777 ft	1,223.7588 ft	0 psf	397.39484 psf	220.27956 psf	116 psf	0 psf	Qal
Slice 28	445.51512 ft	1,223.3443 ft	0 psf	403.09419 psf	223.43876 psf	116 psf	0 psf	Qal
Slice 29	449.59247 ft	1,223.058 ft	0 psf	393.76616 psf	218.26815 psf	116 psf	0 psf	Qal
Slice 30	453.66982 ft	1,222.8989 ft	0 psf	369.06017 psf	204.57339 psf	116 psf	0 psf	Qal
Slice 31	457.74717 ft	1,222.8665 ft	0 psf	328.56797 psf	182.1282 psf	116 psf	0 psf	Qal
Slice 32	461.1403 ft	1,222.9274 ft	0 psf	7.8849314 psf	4.3706888 psf	116 psf	0 psf	Qal

LA 93 Section B-B'.gsz 09/13/2021 08:47:27 AM

LA 93 Section B-B'.gsz

1 - Rotational Pseudostatic Global
Horz Seismic Coef.: 0.15



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 36 psf
Phi': 32 °

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °

Name: Qp (Peak)
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °

LGC Valley, Inc
GEOTECHNICAL CONSULTING
28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

LA Railroad 93
Santa Clarita, CA

Project No:	213015-01
Engineer:	ACR
Date:	Sept. 2021

1 - Rotational Pseudostatic Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 490
Date: 09/13/2021
Time: 08:47:27 AM
Tool Version: 10.1.0.18696
File Name: LA 93 Section B-B'.gsz
Directory: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall Studios\Slope Stability\
Last Solved Date: 09/13/2021
Last Solved Time: 08:47:40 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudostatic Global

Kind: SLOPE/W
Parent: 1 - Rotational Static Global
Method: Bishop
Settings
- PWP Conditions from: (none)
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Left to Right
- Use Passive Mode: No
- Slip Surface Option: Critical Slip Surfaces from Other
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 116 psf
Phi': 29 °
Phi-B: 0 °

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 36 psf
Phi': 32 °
Phi-B: 0 °

Qp (Peak)

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 300 psf
Phi': 35 °
Phi-B: 0 °

Slip Surface Limits

Left Coordinate: (-0.04313, 1,300.5367) ft
Right Coordinate: (717.08884, 1,218.7486) ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	717.08884 ft	1,218.7486 ft
Point 2	717.08884 ft	1,119.3828 ft
Point 3	-0.04313 ft	1,119.3828 ft
Point 4	-0.04313 ft	1,300.5367 ft
Point 5	30.19636 ft	1,314.2152 ft
Point 6	70.18377 ft	1,322.7054 ft
Point 7	74.58605 ft	1,323.8059 ft
Point 8	92.9289 ft	1,330.5666 ft
Point 9	107.81281 ft	1,334.864 ft

Point 10	128.91195 ft	1,335.4758 ft
Point 11	152.47376 ft	1,335.4758 ft
Point 12	169.39237 ft	1,331.772 ft
Point 13	187.73522 ft	1,327.3173 ft
Point 14	204.19137 ft	1,322.3909 ft
Point 15	224.85765 ft	1,318.4603 ft
Point 16	242.32703 ft	1,315.3158 ft
Point 17	253.42008 ft	1,313.1321 ft
Point 18	264.42579 ft	1,311.3415 ft
Point 19	274.07762 ft	1,309.8566 ft
Point 20	278.08112 ft	1,309.4296 ft
Point 21	281.76415 ft	1,308.5028 ft
Point 22	297.35557 ft	1,302.5632 ft
Point 23	307.48781 ft	1,298.8509 ft
Point 24	320.10944 ft	1,292.6493 ft
Point 25	333.08045 ft	1,286.2293 ft
Point 26	350.41881 ft	1,278.0187 ft
Point 27	370.989 ft	1,268.5416 ft
Point 28	379.06859 ft	1,263.6501 ft
Point 29	676.96517 ft	1,218.8848 ft
Point 30	704.06018 ft	1,220.1426 ft
Point 31	707.88597 ft	1,220.1426 ft
Point 32	603.8995 ft	1,220.064 ft
Point 33	573.24074 ft	1,221.1122 ft
Point 34	485.19507 ft	1,212.3775 ft
Point 35	471.08854 ft	1,211.3293 ft
Point 36	463.2972 ft	1,212.8579 ft
Point 37	454.38782 ft	1,214.1681 ft
Point 38	444.5875 ft	1,218.2559 ft
Point 39	431.17101 ft	1,225.8027 ft
Point 40	415.44857 ft	1,238.5379 ft
Point 41	409.05478 ft	1,243.4643 ft
Point 42	401.92727 ft	1,247.9714 ft
Point 43	392.65103 ft	1,253.1074 ft
Point 44	388.77283 ft	1,254.5224 ft
Point 45	499.08322 ft	1,220.8501 ft
Point 46	478.42089 ft	1,211.8741 ft
Point 47	481.26446 ft	1,209.3204 ft
Point 48	489.51874 ft	1,205.3897 ft
Point 49	497.24894 ft	1,199.2755 ft
Point 50	504.58608 ft	1,193.8163 ft
Point 51	530.74647 ft	1,180.0155 ft
Point 52	559.51854 ft	1,164.9569 ft
Point 53	579.9053 ft	1,155.1565 ft
Point 54	658.72714 ft	1,119.3828 ft
Point 55	717.08884 ft	1,179.5263 ft
Point 56	491.49278 ft	1,220.8501 ft

Point 57	475.08903 ft	1,222.9727 ft
Point 58	459.78585 ft	1,222.9727 ft
Point 59	459.78585 ft	1,225.3835 ft
Point 60	439.39909 ft	1,227.4798 ft
Point 61	419.37918 ft	1,238.7475 ft
Point 62	407.48253 ft	1,249.9105 ft
Point 63	389.71618 ft	1,257.4048 ft
Point 64	668.5362 ft	1,223.9073 ft
Point 65	678.31521 ft	1,218.9475 ft

Regions

	Material	Points
Region 1	Qp (Peak)	35,36,37,38,39,40,41,42,43,44,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9
Region 2	Qal	46,47,48,49,50,51,52,53,54,2,55,1,31,30,65,29,32,33,45,34
Region 3	Qal	45,56,57,58,59,60,61,62,63,28,44,43,42,41,40,39,38,37,36,35,46,34
Region 4	Fill	57,64,65,32,33,45,56

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.47
Volume: 1,138.393 ft³
Weight: 136,607.16 lbf
Resisting Moment: 15,112,945 lbf·ft
Activating Moment: 10,280,903 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (462.49476, 1,222.9727) ft
Entry: (349.44272, 1,278.4809) ft
Radius: 131.30192 ft
Center: (456.74865, 1,354.1488) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	349.93076 ft	1,277.7981 ft	0 psf	-129.33013 psf	-90.557928 psf	300 psf	0 psf	Qp (Peak)
Slice 2	352.47583 ft	1,274.4249 ft	0 psf	45.604412 psf	31.932553 psf	300 psf	0 psf	Qp (Peak)
Slice 3	356.58987 ft	1,269.3061 ft	0 psf	317.90988 psf	222.6029 psf	300 psf	0 psf	Qp (Peak)

1 - Rotational Pseudostatic Global file:///C:/Users/ARich/Dropbox/LA%20Railroad%2093%20-%20Blackh...

Slice 4	360.70391 ft	1,264.6698 ft	0 psf	565.38797 psf	395.88892 psf	300 psf	0 psf	Qp (Peak)
Slice 5	364.81794 ft	1,260.4438 ft	0 psf	789.05835 psf	552.5046 psf	300 psf	0 psf	Qp (Peak)
Slice 6	368.93198 ft	1,256.5744 ft	0 psf	989.93268 psf	693.15832 psf	300 psf	0 psf	Qp (Peak)
Slice 7	373.0089 ft	1,253.05 ft	0 psf	1,141.8163 psf	799.50836 psf	300 psf	0 psf	Qp (Peak)
Slice 8	377.04869 ft	1,249.8337 ft	0 psf	1,244.2282 psf	871.218 psf	300 psf	0 psf	Qp (Peak)
Slice 9	380.68596 ft	1,247.1408 ft	0 psf	1,321.6863 psf	925.45468 psf	300 psf	0 psf	Qp (Peak)
Slice 10	383.92071 ft	1,244.9128 ft	0 psf	1,378.5826 psf	965.29393 psf	300 psf	0 psf	Qp (Peak)
Slice 11	387.15546 ft	1,242.8234 ft	0 psf	1,422.5258 psf	996.06326 psf	300 psf	0 psf	Qp (Peak)
Slice 12	389.24451 ft	1,241.5296 ft	0 psf	1,445.5725 psf	1,012.2007 psf	300 psf	0 psf	Qp (Peak)
Slice 13	391.18361 ft	1,240.4011 ft	0 psf	1,482.9665 psf	1,038.3843 psf	300 psf	0 psf	Qp (Peak)
Slice 14	394.97009 ft	1,238.3184 ft	0 psf	1,559.4299 psf	1,091.9246 psf	300 psf	0 psf	Qp (Peak)
Slice 15	399.60821 ft	1,235.9603 ft	0 psf	1,635.073 psf	1,144.8905 psf	300 psf	0 psf	Qp (Peak)
Slice 16	404.7049 ft	1,233.6395 ft	0 psf	1,691.5738 psf	1,184.4527 psf	300 psf	0 psf	Qp (Peak)
Slice 17	408.26866 ft	1,232.1276 ft	0 psf	1,678.3224 psf	1,175.174 psf	300 psf	0 psf	Qp (Peak)
Slice 18	410.65323 ft	1,231.216 ft	0 psf	1,559.4218 psf	1,091.9189 psf	300 psf	0 psf	Qp (Peak)
Slice 19	413.85012 ft	1,230.064 ft	0 psf	1,389.0222 psf	972.60383 psf	300 psf	0 psf	Qp (Peak)
Slice 20	417.41388 ft	1,228.8942 ft	0 psf	1,181.8995 psf	827.57494 psf	300 psf	0 psf	Qp (Peak)
Slice 21	421.34449 ft	1,227.7266 ft	0 psf	1,012.7597 psf	709.14198 psf	300 psf	0 psf	Qp (Peak)
Slice 22	425.2751 ft	1,226.6909 ft	0 psf	904.25325 psf	633.16494 psf	300 psf	0 psf	Qp (Peak)
Slice 23	429.20571 ft	1,225.784 ft	0 psf	778.38454 psf	545.03072 psf	300 psf	0 psf	Qp (Peak)
Slice 24	431.76828 ft	1,225.2465 ft	0 psf	688.44356 psf	482.05337 psf	300 psf	0 psf	Qp (Peak)
Slice 25	434.12393 ft	1,224.8232 ft	0 psf	624.43784 psf	346.13155 psf	116 psf	0 psf	Qal
Slice 26	437.6407 ft	1,224.2569 ft	0 psf	470.77889 psf	260.957 psf	116 psf	0 psf	Qal
Slice 27	441.43777 ft	1,223.7588 ft	0 psf	396.66072 psf	219.87263 psf	116 psf	0 psf	Qal
Slice 28	445.51512 ft	1,223.3443 ft	0 psf	402.54647 psf	223.13515 psf	116 psf	0 psf	Qal
Slice 29	449.59247 ft	1,223.058 ft	0 psf	393.41965 psf	218.07607 psf	116 psf	0 psf	Qal
Slice 30	453.66982 ft	1,222.8989 ft	0 psf	368.91584 psf	204.49339 psf	116 psf	0 psf	Qal
Slice 31	457.74717 ft	1,222.8665 ft	0 psf	328.61197 psf	182.15259 psf	116 psf	0 psf	Qal
Slice 32	461.1403 ft	1,222.9274 ft	0 psf	7.9637964 psf	4.4144044 psf	116 psf	0 psf	Qal

APPENDIX G

SEISMIC SETTLEMENT ANALYSES

Seismic settlement analyses for the project site were performed based on the soil profiles, SPT blow counts, and laboratory data obtained from our investigation, utilizing the LiquefyPro (Version 5.2e) computer program developed by CivilTech Software.

The following parameters were considered in the analyses:

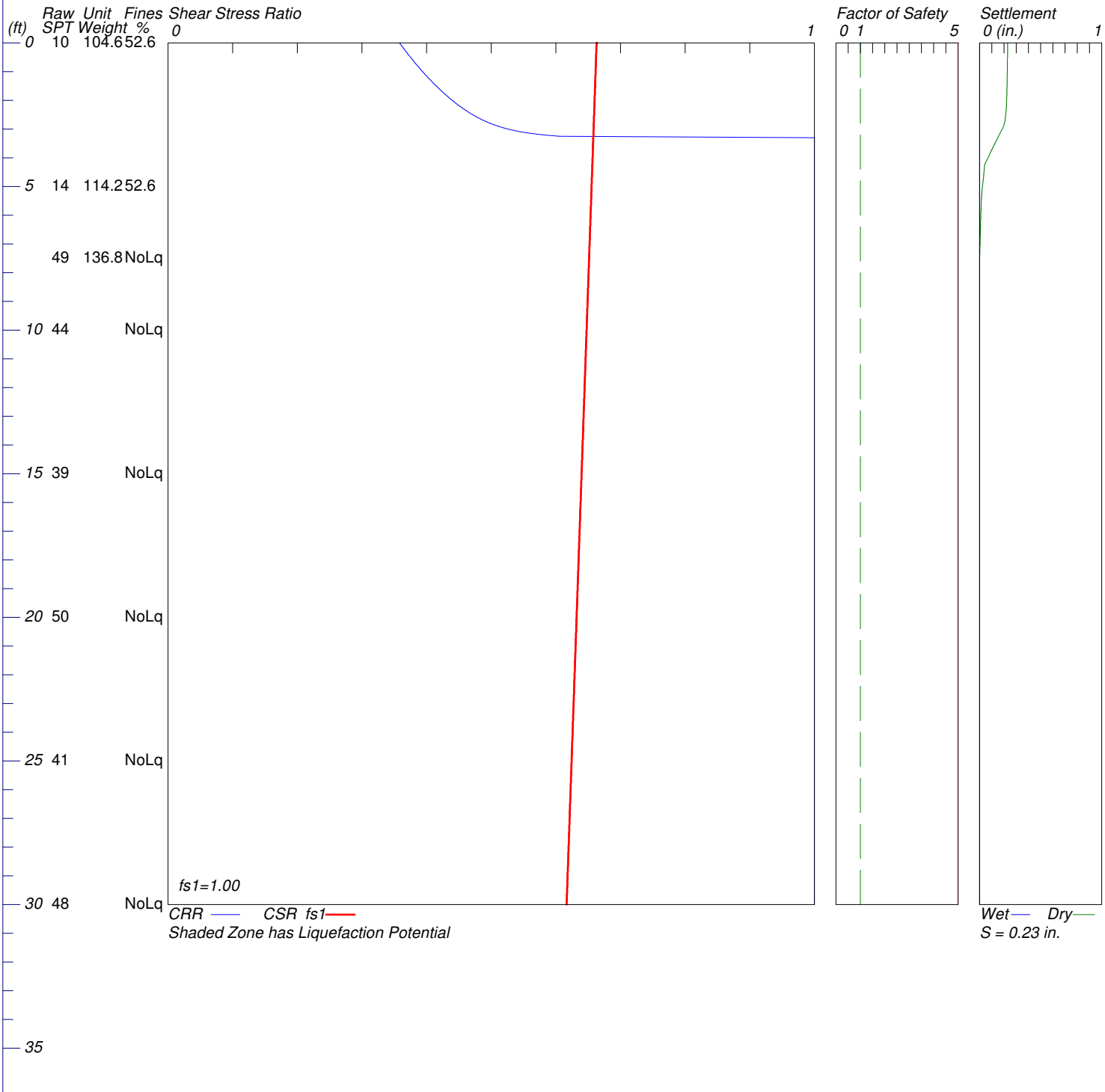
- Groundwater at a depth of 65 feet below the ground surface during a seismic event.
- Removal and re-compaction of the upper 8 to 10 feet of the site soils.
- A Peak Horizontal Ground Acceleration (PGA) of 1.02g (2% in 50 years) and a Design Earthquake Magnitude of 6.82 (2% in 50 years/mean value).
- Factor of safety of 1.0.
- Fines content and in-situ unit weights as determined from laboratory testing during this investigation.
- The hammer used for determining blow-counts for both ring and SPT sampling was an auto-trip hammer with a 140 lb weight and a 30-inch drop. Therefore, an energy correction factor (CE) of 1.3 is considered acceptable for use in the analysis.

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B1 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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                                LIQUEFACTION ANALYSIS CALCULATION SHEET

                                     Copyright by CivilTech Software
                                          www.civiltech.com
                                     (425) 453-6488  Fax (425) 453-5848


**********************************************************************************
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        Input File Name: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall
Studios\Liquefaction\LGC-B1.liq
        Title:  LA Railroad 93
        Subtitle:  213015-01

        Surface Elev.=
        Hole No.=LGC-B1
        Depth of Hole= 30.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration= 1.02 g
        Earthquake Magnitude= 6.8

 Input Data:
        Surface Elev.=
        Hole No.=LGC-B1
        Depth of Hole=30.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration=1.02 g
        Earthquake Magnitude=6.8

        Earthquake Magnitude=6.8
        2. Settlement Analysis Method: Tokimatsu / Seed
        3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
        4. Fine Correction for Settlement: During Liquefaction*
        5. Settlement Calculation in: All zones*
        6. Hammer Energy Ratio,                                    Ce = 1.3
        7. Borehole Diameter,                                          Cb= 1
        8. Sampling Method,                                         Cs= 1
        9. User request factor of safety (apply to CSR) ,   User= 1.0
           Plot one CSR curve (fs1=User)
        10. Use Curve Smoothing: Yes*
        * Recommended Options

        In-Situ Test Data:
```

Depth ft	SPT	gamma pcf	Fines %
0.0	10.0	104.6	52.6
5.0	14.0	114.2	52.6
7.5	49.0	136.8	NoLiq
10.0	44.0	136.8	NoLiq
15.0	39.0	136.8	NoLiq
20.0	50.0	136.8	NoLiq
25.0	41.0	136.8	NoLiq
30.0	48.0	136.8	NoLiq

```
Output Results:
        Settlement of saturated sands=0.00 in.
        Settlement of dry sands=0.23 in.
        Total settlement of saturated and dry sands=0.23 in.
        Differential Settlement=0.115 to 0.151 in.
```

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.36	0.66	5.00	0.00	0.23	0.23
0.05	0.36	0.66	5.00	0.00	0.23	0.23
0.10	0.36	0.66	5.00	0.00	0.23	0.23
0.15	0.36	0.66	5.00	0.00	0.23	0.23
0.20	0.36	0.66	5.00	0.00	0.23	0.23
0.25	0.37	0.66	5.00	0.00	0.23	0.23
0.30	0.37	0.66	5.00	0.00	0.23	0.23
0.35	0.37	0.66	5.00	0.00	0.23	0.23
0.40	0.37	0.66	5.00	0.00	0.23	0.23
0.45	0.37	0.66	5.00	0.00	0.23	0.23
0.50	0.38	0.66	5.00	0.00	0.23	0.23
0.55	0.38	0.66	5.00	0.00	0.23	0.23
0.60	0.38	0.66	5.00	0.00	0.23	0.23
0.65	0.38	0.66	5.00	0.00	0.23	0.23
0.70	0.38	0.66	5.00	0.00	0.23	0.23
0.75	0.38	0.66	5.00	0.00	0.23	0.23
0.80	0.39	0.66	5.00	0.00	0.23	0.23
0.85	0.39	0.66	5.00	0.00	0.23	0.23
0.90	0.39	0.66	5.00	0.00	0.23	0.23
0.95	0.39	0.66	5.00	0.00	0.23	0.23
1.00	0.39	0.66	5.00	0.00	0.23	0.23
1.05	0.40	0.66	5.00	0.00	0.23	0.23
1.10	0.40	0.66	5.00	0.00	0.23	0.23
1.15	0.40	0.66	5.00	0.00	0.23	0.23
1.20	0.40	0.66	5.00	0.00	0.23	0.23
1.25	0.40	0.66	5.00	0.00	0.23	0.23
1.30	0.41	0.66	5.00	0.00	0.23	0.23
1.35	0.41	0.66	5.00	0.00	0.23	0.23

1.40	0.41	0.66	5.00	0.00	0.23	0.23
1.45	0.41	0.66	5.00	0.00	0.22	0.22
1.50	0.42	0.66	5.00	0.00	0.22	0.22
1.55	0.42	0.66	5.00	0.00	0.22	0.22
1.60	0.42	0.66	5.00	0.00	0.22	0.22
1.65	0.42	0.66	5.00	0.00	0.22	0.22
1.70	0.42	0.66	5.00	0.00	0.22	0.22
1.75	0.43	0.66	5.00	0.00	0.22	0.22
1.80	0.43	0.66	5.00	0.00	0.22	0.22
1.85	0.43	0.66	5.00	0.00	0.22	0.22
1.90	0.43	0.66	5.00	0.00	0.22	0.22
1.95	0.44	0.66	5.00	0.00	0.22	0.22
2.00	0.44	0.66	5.00	0.00	0.22	0.22
2.05	0.44	0.66	5.00	0.00	0.22	0.22
2.10	0.45	0.66	5.00	0.00	0.22	0.22
2.15	0.45	0.66	5.00	0.00	0.22	0.22
2.20	0.45	0.66	5.00	0.00	0.22	0.22
2.25	0.45	0.66	5.00	0.00	0.22	0.22
2.30	0.46	0.66	5.00	0.00	0.22	0.22
2.35	0.46	0.66	5.00	0.00	0.22	0.22
2.40	0.46	0.66	5.00	0.00	0.22	0.22
2.45	0.47	0.66	5.00	0.00	0.22	0.22
2.50	0.47	0.66	5.00	0.00	0.21	0.21
2.55	0.48	0.66	5.00	0.00	0.21	0.21
2.60	0.48	0.66	5.00	0.00	0.21	0.21
2.65	0.48	0.66	5.00	0.00	0.21	0.21
2.70	0.49	0.66	5.00	0.00	0.21	0.21
2.75	0.49	0.66	5.00	0.00	0.21	0.21
2.80	0.50	0.66	5.00	0.00	0.20	0.20
2.85	0.50	0.66	5.00	0.00	0.20	0.20
2.90	0.51	0.66	5.00	0.00	0.20	0.20
2.95	0.52	0.66	5.00	0.00	0.19	0.19
3.00	0.53	0.66	5.00	0.00	0.19	0.19
3.05	0.54	0.66	5.00	0.00	0.18	0.18
3.10	0.55	0.66	5.00	0.00	0.17	0.17
3.15	0.56	0.66	5.00	0.00	0.17	0.17
3.20	0.58	0.66	5.00	0.00	0.16	0.16
3.25	0.61	0.66	5.00	0.00	0.16	0.16
3.30	2.55	0.66	5.00	0.00	0.15	0.15
3.35	2.55	0.66	5.00	0.00	0.14	0.14
3.40	2.55	0.66	5.00	0.00	0.14	0.14
3.45	2.55	0.66	5.00	0.00	0.13	0.13
3.50	2.55	0.66	5.00	0.00	0.13	0.13
3.55	2.55	0.66	5.00	0.00	0.12	0.12
3.60	2.55	0.66	5.00	0.00	0.11	0.11
3.65	2.55	0.66	5.00	0.00	0.11	0.11
3.70	2.55	0.66	5.00	0.00	0.10	0.10
3.75	2.55	0.66	5.00	0.00	0.10	0.10
3.80	2.55	0.66	5.00	0.00	0.09	0.09
3.85	2.55	0.66	5.00	0.00	0.09	0.09
3.90	2.55	0.66	5.00	0.00	0.08	0.08
3.95	2.55	0.66	5.00	0.00	0.07	0.07
4.00	2.55	0.66	5.00	0.00	0.07	0.07
4.05	2.55	0.66	5.00	0.00	0.06	0.06
4.10	2.55	0.66	5.00	0.00	0.06	0.06
4.15	2.55	0.66	5.00	0.00	0.05	0.05
4.20	2.55	0.66	5.00	0.00	0.05	0.05
4.25	2.55	0.66	5.00	0.00	0.04	0.04
4.30	2.55	0.66	5.00	0.00	0.04	0.04
4.35	2.55	0.66	5.00	0.00	0.04	0.04
4.40	2.55	0.66	5.00	0.00	0.04	0.04
4.45	2.55	0.66	5.00	0.00	0.04	0.04
4.50	2.55	0.66	5.00	0.00	0.04	0.04
4.55	2.55	0.66	5.00	0.00	0.03	0.03
4.60	2.55	0.66	5.00	0.00	0.03	0.03
4.65	2.55	0.66	5.00	0.00	0.03	0.03
4.70	2.55	0.66	5.00	0.00	0.03	0.03
4.75	2.55	0.66	5.00	0.00	0.03	0.03
4.80	2.55	0.66	5.00	0.00	0.03	0.03
4.85	2.55	0.66	5.00	0.00	0.03	0.03
4.90	2.55	0.66	5.00	0.00	0.03	0.03
4.95	2.55	0.66	5.00	0.00	0.02	0.02
5.00	2.55	0.66	5.00	0.00	0.02	0.02
5.05	2.55	0.66	5.00	0.00	0.02	0.02
5.10	2.55	0.66	5.00	0.00	0.02	0.02
5.15	2.55	0.66	5.00	0.00	0.02	0.02
5.20	2.55	0.65	5.00	0.00	0.02	0.02
5.25	2.55	0.65	5.00	0.00	0.02	0.02
5.30	2.55	0.65	5.00	0.00	0.02	0.02
5.35	2.55	0.65	5.00	0.00	0.02	0.02
5.40	2.55	0.65	5.00	0.00	0.02	0.02
5.45	2.55	0.65	5.00	0.00	0.01	0.01
5.50	2.55	0.65	5.00	0.00	0.01	0.01
5.55	2.55	0.65	5.00	0.00	0.01	0.01
5.60	2.55	0.65	5.00	0.00	0.01	0.01
5.65	2.55	0.65	5.00	0.00	0.01	0.01
5.70	2.55	0.65	5.00	0.00	0.01	0.01
5.75	2.55	0.65	5.00	0.00	0.01	0.01
5.80	2.55	0.65	5.00	0.00	0.01	0.01
5.85	2.55	0.65	5.00	0.00	0.01	0.01
5.90	2.55	0.65	5.00	0.00	0.01	0.01
5.95	2.55	0.65	5.00	0.00	0.01	0.01
6.00	2.55	0.65	5.00	0.00	0.01	0.01
6.05	2.55	0.65	5.00	0.00	0.01	0.01
6.10	2.55	0.65	5.00	0.00	0.01	0.01
6.15	2.55	0.65	5.00	0.00	0.01	0.01
6.20	2.55	0.65	5.00	0.00	0.01	0.01
6.25	2.55	0.65	5.00	0.00	0.01	0.01
6.30	2.55	0.65	5.00	0.00	0.01	0.01
6.35	2.55	0.65	5.00	0.00	0.01	0.01

6.40	2.55	0.65	5.00	0.00	0.01	0.01
6.45	2.55	0.65	5.00	0.00	0.01	0.01
6.50	2.55	0.65	5.00	0.00	0.01	0.01
6.55	2.55	0.65	5.00	0.00	0.01	0.01
6.60	2.55	0.65	5.00	0.00	0.01	0.01
6.65	2.55	0.65	5.00	0.00	0.01	0.01
6.70	2.55	0.65	5.00	0.00	0.01	0.01
6.75	2.55	0.65	5.00	0.00	0.00	0.00
6.80	2.55	0.65	5.00	0.00	0.00	0.00
6.85	2.55	0.65	5.00	0.00	0.00	0.00
6.90	2.55	0.65	5.00	0.00	0.00	0.00
6.95	2.55	0.65	5.00	0.00	0.00	0.00
7.00	2.55	0.65	5.00	0.00	0.00	0.00
7.05	2.55	0.65	5.00	0.00	0.00	0.00
7.10	2.55	0.65	5.00	0.00	0.00	0.00
7.15	2.55	0.65	5.00	0.00	0.00	0.00
7.20	2.55	0.65	5.00	0.00	0.00	0.00
7.25	2.55	0.65	5.00	0.00	0.00	0.00
7.30	2.55	0.65	5.00	0.00	0.00	0.00
7.35	2.55	0.65	5.00	0.00	0.00	0.00
7.40	2.55	0.65	5.00	0.00	0.00	0.00
7.45	2.55	0.65	5.00	0.00	0.00	0.00
7.50	2.00	0.65	5.00	0.00	0.00	0.00
7.55	2.00	0.65	5.00	0.00	0.00	0.00
7.60	2.00	0.65	5.00	0.00	0.00	0.00
7.65	2.00	0.65	5.00	0.00	0.00	0.00
7.70	2.00	0.65	5.00	0.00	0.00	0.00
7.75	2.00	0.65	5.00	0.00	0.00	0.00
7.80	2.00	0.65	5.00	0.00	0.00	0.00
7.85	2.00	0.65	5.00	0.00	0.00	0.00
7.90	2.00	0.65	5.00	0.00	0.00	0.00
7.95	2.00	0.65	5.00	0.00	0.00	0.00
8.00	2.00	0.65	5.00	0.00	0.00	0.00
8.05	2.00	0.65	5.00	0.00	0.00	0.00
8.10	2.00	0.65	5.00	0.00	0.00	0.00
8.15	2.00	0.65	5.00	0.00	0.00	0.00
8.20	2.00	0.65	5.00	0.00	0.00	0.00
8.25	2.00	0.65	5.00	0.00	0.00	0.00
8.30	2.00	0.65	5.00	0.00	0.00	0.00
8.35	2.00	0.65	5.00	0.00	0.00	0.00
8.40	2.00	0.65	5.00	0.00	0.00	0.00
8.45	2.00	0.65	5.00	0.00	0.00	0.00
8.50	2.00	0.65	5.00	0.00	0.00	0.00
8.55	2.00	0.65	5.00	0.00	0.00	0.00
8.60	2.00	0.65	5.00	0.00	0.00	0.00
8.65	2.00	0.65	5.00	0.00	0.00	0.00
8.70	2.00	0.65	5.00	0.00	0.00	0.00
8.75	2.00	0.65	5.00	0.00	0.00	0.00
8.80	2.00	0.65	5.00	0.00	0.00	0.00
8.85	2.00	0.65	5.00	0.00	0.00	0.00
8.90	2.00	0.65	5.00	0.00	0.00	0.00
8.95	2.00	0.65	5.00	0.00	0.00	0.00
9.00	2.00	0.65	5.00	0.00	0.00	0.00
9.05	2.00	0.65	5.00	0.00	0.00	0.00
9.10	2.00	0.65	5.00	0.00	0.00	0.00
9.15	2.00	0.65	5.00	0.00	0.00	0.00
9.20	2.00	0.65	5.00	0.00	0.00	0.00
9.25	2.00	0.65	5.00	0.00	0.00	0.00
9.30	2.00	0.65	5.00	0.00	0.00	0.00
9.35	2.00	0.65	5.00	0.00	0.00	0.00
9.40	2.00	0.65	5.00	0.00	0.00	0.00
9.45	2.00	0.65	5.00	0.00	0.00	0.00
9.50	2.00	0.65	5.00	0.00	0.00	0.00
9.55	2.00	0.65	5.00	0.00	0.00	0.00
9.60	2.00	0.65	5.00	0.00	0.00	0.00
9.65	2.00	0.65	5.00	0.00	0.00	0.00
9.70	2.00	0.65	5.00	0.00	0.00	0.00
9.75	2.00	0.65	5.00	0.00	0.00	0.00
9.80	2.00	0.65	5.00	0.00	0.00	0.00
9.85	2.00	0.65	5.00	0.00	0.00	0.00
9.90	2.00	0.65	5.00	0.00	0.00	0.00
9.95	2.00	0.65	5.00	0.00	0.00	0.00
10.00	2.00	0.65	5.00	0.00	0.00	0.00
10.05	2.00	0.65	5.00	0.00	0.00	0.00
10.10	2.00	0.65	5.00	0.00	0.00	0.00
10.15	2.00	0.65	5.00	0.00	0.00	0.00
10.20	2.00	0.65	5.00	0.00	0.00	0.00
10.25	2.00	0.65	5.00	0.00	0.00	0.00
10.30	2.00	0.65	5.00	0.00	0.00	0.00
10.35	2.00	0.65	5.00	0.00	0.00	0.00
10.40	2.00	0.65	5.00	0.00	0.00	0.00
10.45	2.00	0.65	5.00	0.00	0.00	0.00
10.50	2.00	0.65	5.00	0.00	0.00	0.00
10.55	2.00	0.65	5.00	0.00	0.00	0.00
10.60	2.00	0.65	5.00	0.00	0.00	0.00
10.65	2.00	0.65	5.00	0.00	0.00	0.00
10.70	2.00	0.65	5.00	0.00	0.00	0.00
10.75	2.00	0.65	5.00	0.00	0.00	0.00
10.80	2.00	0.65	5.00	0.00	0.00	0.00
10.85	2.00	0.65	5.00	0.00	0.00	0.00
10.90	2.00	0.65	5.00	0.00	0.00	0.00
10.95	2.00	0.65	5.00	0.00	0.00	0.00
11.00	2.00	0.65	5.00	0.00	0.00	0.00
11.05	2.00	0.65	5.00	0.00	0.00	0.00
11.10	2.00	0.65	5.00	0.00	0.00	0.00
11.15	2.00	0.65	5.00	0.00	0.00	0.00
11.20	2.00	0.65	5.00	0.00	0.00	0.00
11.25	2.00	0.65	5.00	0.00	0.00	0.00
11.30	2.00	0.65	5.00	0.00	0.00	0.00
11.35	2.00	0.65	5.00	0.00	0.00	0.00

11.40	2.00	0.65	5.00	0.00	0.00	0.00
11.45	2.00	0.65	5.00	0.00	0.00	0.00
11.50	2.00	0.65	5.00	0.00	0.00	0.00
11.55	2.00	0.65	5.00	0.00	0.00	0.00
11.60	2.00	0.65	5.00	0.00	0.00	0.00
11.65	2.00	0.64	5.00	0.00	0.00	0.00
11.70	2.00	0.64	5.00	0.00	0.00	0.00
11.75	2.00	0.64	5.00	0.00	0.00	0.00
11.80	2.00	0.64	5.00	0.00	0.00	0.00
11.85	2.00	0.64	5.00	0.00	0.00	0.00
11.90	2.00	0.64	5.00	0.00	0.00	0.00
11.95	2.00	0.64	5.00	0.00	0.00	0.00
12.00	2.00	0.64	5.00	0.00	0.00	0.00
12.05	2.00	0.64	5.00	0.00	0.00	0.00
12.10	2.00	0.64	5.00	0.00	0.00	0.00
12.15	2.00	0.64	5.00	0.00	0.00	0.00
12.20	2.00	0.64	5.00	0.00	0.00	0.00
12.25	2.00	0.64	5.00	0.00	0.00	0.00
12.30	2.00	0.64	5.00	0.00	0.00	0.00
12.35	2.00	0.64	5.00	0.00	0.00	0.00
12.40	2.00	0.64	5.00	0.00	0.00	0.00
12.45	2.00	0.64	5.00	0.00	0.00	0.00
12.50	2.00	0.64	5.00	0.00	0.00	0.00
12.55	2.00	0.64	5.00	0.00	0.00	0.00
12.60	2.00	0.64	5.00	0.00	0.00	0.00
12.65	2.00	0.64	5.00	0.00	0.00	0.00
12.70	2.00	0.64	5.00	0.00	0.00	0.00
12.75	2.00	0.64	5.00	0.00	0.00	0.00
12.80	2.00	0.64	5.00	0.00	0.00	0.00
12.85	2.00	0.64	5.00	0.00	0.00	0.00
12.90	2.00	0.64	5.00	0.00	0.00	0.00
12.95	2.00	0.64	5.00	0.00	0.00	0.00
13.00	2.00	0.64	5.00	0.00	0.00	0.00
13.05	2.00	0.64	5.00	0.00	0.00	0.00
13.10	2.00	0.64	5.00	0.00	0.00	0.00
13.15	2.00	0.64	5.00	0.00	0.00	0.00
13.20	2.00	0.64	5.00	0.00	0.00	0.00
13.25	2.00	0.64	5.00	0.00	0.00	0.00
13.30	2.00	0.64	5.00	0.00	0.00	0.00
13.35	2.00	0.64	5.00	0.00	0.00	0.00
13.40	2.00	0.64	5.00	0.00	0.00	0.00
13.45	2.00	0.64	5.00	0.00	0.00	0.00
13.50	2.00	0.64	5.00	0.00	0.00	0.00
13.55	2.00	0.64	5.00	0.00	0.00	0.00
13.60	2.00	0.64	5.00	0.00	0.00	0.00
13.65	2.00	0.64	5.00	0.00	0.00	0.00
13.70	2.00	0.64	5.00	0.00	0.00	0.00
13.75	2.00	0.64	5.00	0.00	0.00	0.00
13.80	2.00	0.64	5.00	0.00	0.00	0.00
13.85	2.00	0.64	5.00	0.00	0.00	0.00
13.90	2.00	0.64	5.00	0.00	0.00	0.00
13.95	2.00	0.64	5.00	0.00	0.00	0.00
14.00	2.00	0.64	5.00	0.00	0.00	0.00
14.05	2.00	0.64	5.00	0.00	0.00	0.00
14.10	2.00	0.64	5.00	0.00	0.00	0.00
14.15	2.00	0.64	5.00	0.00	0.00	0.00
14.20	2.00	0.64	5.00	0.00	0.00	0.00
14.25	2.00	0.64	5.00	0.00	0.00	0.00
14.30	2.00	0.64	5.00	0.00	0.00	0.00
14.35	2.00	0.64	5.00	0.00	0.00	0.00
14.40	2.00	0.64	5.00	0.00	0.00	0.00
14.45	2.00	0.64	5.00	0.00	0.00	0.00
14.50	2.00	0.64	5.00	0.00	0.00	0.00
14.55	2.00	0.64	5.00	0.00	0.00	0.00
14.60	2.00	0.64	5.00	0.00	0.00	0.00
14.65	2.00	0.64	5.00	0.00	0.00	0.00
14.70	2.00	0.64	5.00	0.00	0.00	0.00
14.75	2.00	0.64	5.00	0.00	0.00	0.00
14.80	2.00	0.64	5.00	0.00	0.00	0.00
14.85	2.00	0.64	5.00	0.00	0.00	0.00
14.90	2.00	0.64	5.00	0.00	0.00	0.00
14.95	2.00	0.64	5.00	0.00	0.00	0.00
15.00	2.00	0.64	5.00	0.00	0.00	0.00
15.05	2.00	0.64	5.00	0.00	0.00	0.00
15.10	2.00	0.64	5.00	0.00	0.00	0.00
15.15	2.00	0.64	5.00	0.00	0.00	0.00
15.20	2.00	0.64	5.00	0.00	0.00	0.00
15.25	2.00	0.64	5.00	0.00	0.00	0.00
15.30	2.00	0.64	5.00	0.00	0.00	0.00
15.35	2.00	0.64	5.00	0.00	0.00	0.00
15.40	2.00	0.64	5.00	0.00	0.00	0.00
15.45	2.00	0.64	5.00	0.00	0.00	0.00
15.50	2.00	0.64	5.00	0.00	0.00	0.00
15.55	2.00	0.64	5.00	0.00	0.00	0.00
15.60	2.00	0.64	5.00	0.00	0.00	0.00
15.65	2.00	0.64	5.00	0.00	0.00	0.00
15.70	2.00	0.64	5.00	0.00	0.00	0.00
15.75	2.00	0.64	5.00	0.00	0.00	0.00
15.80	2.00	0.64	5.00	0.00	0.00	0.00
15.85	2.00	0.64	5.00	0.00	0.00	0.00
15.90	2.00	0.64	5.00	0.00	0.00	0.00
15.95	2.00	0.64	5.00	0.00	0.00	0.00
16.00	2.00	0.64	5.00	0.00	0.00	0.00
16.05	2.00	0.64	5.00	0.00	0.00	0.00
16.10	2.00	0.64	5.00	0.00	0.00	0.00
16.15	2.00	0.64	5.00	0.00	0.00	0.00
16.20	2.00	0.64	5.00	0.00	0.00	0.00
16.25	2.00	0.64	5.00	0.00	0.00	0.00
16.30	2.00	0.64	5.00	0.00	0.00	0.00
16.35	2.00	0.64	5.00	0.00	0.00	0.00

16.40	2.00	0.64	5.00	0.00	0.00	0.00
16.45	2.00	0.64	5.00	0.00	0.00	0.00
16.50	2.00	0.64	5.00	0.00	0.00	0.00
16.55	2.00	0.64	5.00	0.00	0.00	0.00
16.60	2.00	0.64	5.00	0.00	0.00	0.00
16.65	2.00	0.64	5.00	0.00	0.00	0.00
16.70	2.00	0.64	5.00	0.00	0.00	0.00
16.75	2.00	0.64	5.00	0.00	0.00	0.00
16.80	2.00	0.64	5.00	0.00	0.00	0.00
16.85	2.00	0.64	5.00	0.00	0.00	0.00
16.90	2.00	0.64	5.00	0.00	0.00	0.00
16.95	2.00	0.64	5.00	0.00	0.00	0.00
17.00	2.00	0.64	5.00	0.00	0.00	0.00
17.05	2.00	0.64	5.00	0.00	0.00	0.00
17.10	2.00	0.64	5.00	0.00	0.00	0.00
17.15	2.00	0.64	5.00	0.00	0.00	0.00
17.20	2.00	0.64	5.00	0.00	0.00	0.00
17.25	2.00	0.64	5.00	0.00	0.00	0.00
17.30	2.00	0.64	5.00	0.00	0.00	0.00
17.35	2.00	0.64	5.00	0.00	0.00	0.00
17.40	2.00	0.64	5.00	0.00	0.00	0.00
17.45	2.00	0.64	5.00	0.00	0.00	0.00
17.50	2.00	0.64	5.00	0.00	0.00	0.00
17.55	2.00	0.64	5.00	0.00	0.00	0.00
17.60	2.00	0.64	5.00	0.00	0.00	0.00
17.65	2.00	0.64	5.00	0.00	0.00	0.00
17.70	2.00	0.64	5.00	0.00	0.00	0.00
17.75	2.00	0.64	5.00	0.00	0.00	0.00
17.80	2.00	0.64	5.00	0.00	0.00	0.00
17.85	2.00	0.64	5.00	0.00	0.00	0.00
17.90	2.00	0.64	5.00	0.00	0.00	0.00
17.95	2.00	0.64	5.00	0.00	0.00	0.00
18.00	2.00	0.64	5.00	0.00	0.00	0.00
18.05	2.00	0.64	5.00	0.00	0.00	0.00
18.10	2.00	0.64	5.00	0.00	0.00	0.00
18.15	2.00	0.63	5.00	0.00	0.00	0.00
18.20	2.00	0.63	5.00	0.00	0.00	0.00
18.25	2.00	0.63	5.00	0.00	0.00	0.00
18.30	2.00	0.63	5.00	0.00	0.00	0.00
18.35	2.00	0.63	5.00	0.00	0.00	0.00
18.40	2.00	0.63	5.00	0.00	0.00	0.00
18.45	2.00	0.63	5.00	0.00	0.00	0.00
18.50	2.00	0.63	5.00	0.00	0.00	0.00
18.55	2.00	0.63	5.00	0.00	0.00	0.00
18.60	2.00	0.63	5.00	0.00	0.00	0.00
18.65	2.00	0.63	5.00	0.00	0.00	0.00
18.70	2.00	0.63	5.00	0.00	0.00	0.00
18.75	2.00	0.63	5.00	0.00	0.00	0.00
18.80	2.00	0.63	5.00	0.00	0.00	0.00
18.85	2.00	0.63	5.00	0.00	0.00	0.00
18.90	2.00	0.63	5.00	0.00	0.00	0.00
18.95	2.00	0.63	5.00	0.00	0.00	0.00
19.00	2.00	0.63	5.00	0.00	0.00	0.00
19.05	2.00	0.63	5.00	0.00	0.00	0.00
19.10	2.00	0.63	5.00	0.00	0.00	0.00
19.15	2.00	0.63	5.00	0.00	0.00	0.00
19.20	2.00	0.63	5.00	0.00	0.00	0.00
19.25	2.00	0.63	5.00	0.00	0.00	0.00
19.30	2.00	0.63	5.00	0.00	0.00	0.00
19.35	2.00	0.63	5.00	0.00	0.00	0.00
19.40	2.00	0.63	5.00	0.00	0.00	0.00
19.45	2.00	0.63	5.00	0.00	0.00	0.00
19.50	2.00	0.63	5.00	0.00	0.00	0.00
19.55	2.00	0.63	5.00	0.00	0.00	0.00
19.60	2.00	0.63	5.00	0.00	0.00	0.00
19.65	2.00	0.63	5.00	0.00	0.00	0.00
19.70	2.00	0.63	5.00	0.00	0.00	0.00
19.75	2.00	0.63	5.00	0.00	0.00	0.00
19.80	2.00	0.63	5.00	0.00	0.00	0.00
19.85	2.00	0.63	5.00	0.00	0.00	0.00
19.90	2.00	0.63	5.00	0.00	0.00	0.00
19.95	2.00	0.63	5.00	0.00	0.00	0.00
20.00	2.00	0.63	5.00	0.00	0.00	0.00
20.05	2.00	0.63	5.00	0.00	0.00	0.00
20.10	2.00	0.63	5.00	0.00	0.00	0.00
20.15	2.00	0.63	5.00	0.00	0.00	0.00
20.20	2.00	0.63	5.00	0.00	0.00	0.00
20.25	2.00	0.63	5.00	0.00	0.00	0.00
20.30	2.00	0.63	5.00	0.00	0.00	0.00
20.35	2.00	0.63	5.00	0.00	0.00	0.00
20.40	2.00	0.63	5.00	0.00	0.00	0.00
20.45	2.00	0.63	5.00	0.00	0.00	0.00
20.50	2.00	0.63	5.00	0.00	0.00	0.00
20.55	2.00	0.63	5.00	0.00	0.00	0.00
20.60	2.00	0.63	5.00	0.00	0.00	0.00
20.65	2.00	0.63	5.00	0.00	0.00	0.00
20.70	2.00	0.63	5.00	0.00	0.00	0.00
20.75	2.00	0.63	5.00	0.00	0.00	0.00
20.80	2.00	0.63	5.00	0.00	0.00	0.00
20.85	2.00	0.63	5.00	0.00	0.00	0.00
20.90	2.00	0.63	5.00	0.00	0.00	0.00
20.95	2.00	0.63	5.00	0.00	0.00	0.00
21.00	2.00	0.63	5.00	0.00	0.00	0.00
21.05	2.00	0.63	5.00	0.00	0.00	0.00
21.10	2.00	0.63	5.00	0.00	0.00	0.00
21.15	2.00	0.63	5.00	0.00	0.00	0.00
21.20	2.00	0.63	5.00	0.00	0.00	0.00
21.25	2.00	0.63	5.00	0.00	0.00	0.00
21.30	2.00	0.63	5.00	0.00	0.00	0.00
21.35	2.00	0.63	5.00	0.00	0.00	0.00

21.40	2.00	0.63	5.00	0.00	0.00	0.00
21.45	2.00	0.63	5.00	0.00	0.00	0.00
21.50	2.00	0.63	5.00	0.00	0.00	0.00
21.55	2.00	0.63	5.00	0.00	0.00	0.00
21.60	2.00	0.63	5.00	0.00	0.00	0.00
21.65	2.00	0.63	5.00	0.00	0.00	0.00
21.70	2.00	0.63	5.00	0.00	0.00	0.00
21.75	2.00	0.63	5.00	0.00	0.00	0.00
21.80	2.00	0.63	5.00	0.00	0.00	0.00
21.85	2.00	0.63	5.00	0.00	0.00	0.00
21.90	2.00	0.63	5.00	0.00	0.00	0.00
21.95	2.00	0.63	5.00	0.00	0.00	0.00
22.00	2.00	0.63	5.00	0.00	0.00	0.00
22.05	2.00	0.63	5.00	0.00	0.00	0.00
22.10	2.00	0.63	5.00	0.00	0.00	0.00
22.15	2.00	0.63	5.00	0.00	0.00	0.00
22.20	2.00	0.63	5.00	0.00	0.00	0.00
22.25	2.00	0.63	5.00	0.00	0.00	0.00
22.30	2.00	0.63	5.00	0.00	0.00	0.00
22.35	2.00	0.63	5.00	0.00	0.00	0.00
22.40	2.00	0.63	5.00	0.00	0.00	0.00
22.45	2.00	0.63	5.00	0.00	0.00	0.00
22.50	2.00	0.63	5.00	0.00	0.00	0.00
22.55	2.00	0.63	5.00	0.00	0.00	0.00
22.60	2.00	0.63	5.00	0.00	0.00	0.00
22.65	2.00	0.63	5.00	0.00	0.00	0.00
22.70	2.00	0.63	5.00	0.00	0.00	0.00
22.75	2.00	0.63	5.00	0.00	0.00	0.00
22.80	2.00	0.63	5.00	0.00	0.00	0.00
22.85	2.00	0.63	5.00	0.00	0.00	0.00
22.90	2.00	0.63	5.00	0.00	0.00	0.00
22.95	2.00	0.63	5.00	0.00	0.00	0.00
23.00	2.00	0.63	5.00	0.00	0.00	0.00
23.05	2.00	0.63	5.00	0.00	0.00	0.00
23.10	2.00	0.63	5.00	0.00	0.00	0.00
23.15	2.00	0.63	5.00	0.00	0.00	0.00
23.20	2.00	0.63	5.00	0.00	0.00	0.00
23.25	2.00	0.63	5.00	0.00	0.00	0.00
23.30	2.00	0.63	5.00	0.00	0.00	0.00
23.35	2.00	0.63	5.00	0.00	0.00	0.00
23.40	2.00	0.63	5.00	0.00	0.00	0.00
23.45	2.00	0.63	5.00	0.00	0.00	0.00
23.50	2.00	0.63	5.00	0.00	0.00	0.00
23.55	2.00	0.63	5.00	0.00	0.00	0.00
23.60	2.00	0.63	5.00	0.00	0.00	0.00
23.65	2.00	0.63	5.00	0.00	0.00	0.00
23.70	2.00	0.63	5.00	0.00	0.00	0.00
23.75	2.00	0.63	5.00	0.00	0.00	0.00
23.80	2.00	0.63	5.00	0.00	0.00	0.00
23.85	2.00	0.63	5.00	0.00	0.00	0.00
23.90	2.00	0.63	5.00	0.00	0.00	0.00
23.95	2.00	0.63	5.00	0.00	0.00	0.00
24.00	2.00	0.63	5.00	0.00	0.00	0.00
24.05	2.00	0.63	5.00	0.00	0.00	0.00
24.10	2.00	0.63	5.00	0.00	0.00	0.00
24.15	2.00	0.63	5.00	0.00	0.00	0.00
24.20	2.00	0.63	5.00	0.00	0.00	0.00
24.25	2.00	0.63	5.00	0.00	0.00	0.00
24.30	2.00	0.63	5.00	0.00	0.00	0.00
24.35	2.00	0.63	5.00	0.00	0.00	0.00
24.40	2.00	0.63	5.00	0.00	0.00	0.00
24.45	2.00	0.63	5.00	0.00	0.00	0.00
24.50	2.00	0.63	5.00	0.00	0.00	0.00
24.55	2.00	0.63	5.00	0.00	0.00	0.00
24.60	2.00	0.62	5.00	0.00	0.00	0.00
24.65	2.00	0.62	5.00	0.00	0.00	0.00
24.70	2.00	0.62	5.00	0.00	0.00	0.00
24.75	2.00	0.62	5.00	0.00	0.00	0.00
24.80	2.00	0.62	5.00	0.00	0.00	0.00
24.85	2.00	0.62	5.00	0.00	0.00	0.00
24.90	2.00	0.62	5.00	0.00	0.00	0.00
24.95	2.00	0.62	5.00	0.00	0.00	0.00
25.00	2.00	0.62	5.00	0.00	0.00	0.00
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00
26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00

26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
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27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

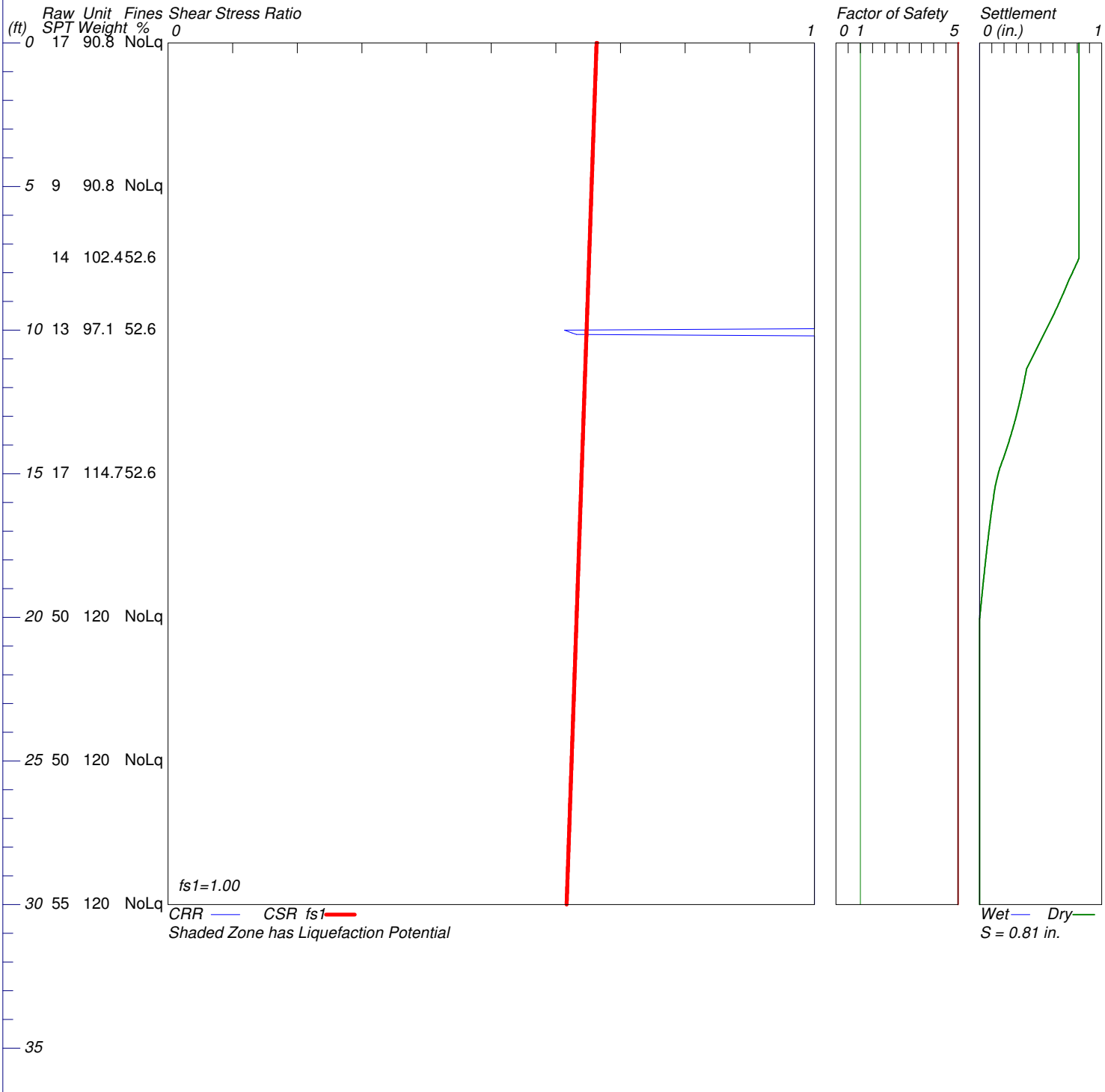
CRRm	Cyclic resistance ratio from soils
CSRfs	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
S_sat	Settlement from saturated sands
S_dry	Settlement from dry sands
S_all	Total settlement from saturated and dry sands
NoLiq	No-Liquefy Soils

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B2 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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**********************************************************************************
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                                LIQUEFACTION ANALYSIS CALCULATION SHEET

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**********************************************************************************
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        Input File Name: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall
Studios\Liquefaction\LGC-B2.liq
        Title:  LA Railroad 93
        Subtitle:  213015-01

        Surface Elev.=
        Hole No.=LGC-B2
        Depth of Hole= 30.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration= 1.02 g
        Earthquake Magnitude= 6.8

 Input Data:
        Surface Elev.=
        Hole No.=LGC-B2
        Depth of Hole=30.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration=1.02 g
        Earthquake Magnitude=6.8

        Earthquake Magnitude=6.8
        2. Settlement Analysis Method: Tokimatsu / Seed
        3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
        4. Fine Correction for Settlement: During Liquefaction*
        5. Settlement Calculation in: All zones*
        6. Hammer Energy Ratio,                                    Ce = 1.3
        7. Borehole Diameter,                                          Cb= 1
        8. Sampling Method,                                         Cs= 1
        9. User request factor of safety (apply to CSR) ,   User= 1.0
           Plot one CSR curve (fs1=User)
        10. Use Curve Smoothing: Yes*
        * Recommended Options

        In-Situ Test Data:
```

Depth ft	SPT	gamma pcf	Fines %
0.0	17.0	90.8	NoLiq
5.0	9.0	90.8	NoLiq
7.5	14.0	102.4	52.6
10.0	13.0	97.1	52.6
15.0	17.0	114.7	52.6
20.0	50.0	120.0	NoLiq
25.0	50.0	120.0	NoLiq
30.0	55.0	120.0	NoLiq

```
Output Results:
        Settlement of saturated sands=0.00 in.
        Settlement of dry sands=0.81 in.
        Total settlement of saturated and dry sands=0.81 in.
        Differential Settlement=0.407 to 0.537 in.
```

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	0.81	0.81
0.05	2.00	0.66	5.00	0.00	0.81	0.81
0.10	2.00	0.66	5.00	0.00	0.81	0.81
0.15	2.00	0.66	5.00	0.00	0.81	0.81
0.20	2.00	0.66	5.00	0.00	0.81	0.81
0.25	2.00	0.66	5.00	0.00	0.81	0.81
0.30	2.00	0.66	5.00	0.00	0.81	0.81
0.35	2.00	0.66	5.00	0.00	0.81	0.81
0.40	2.00	0.66	5.00	0.00	0.81	0.81
0.45	2.00	0.66	5.00	0.00	0.81	0.81
0.50	2.00	0.66	5.00	0.00	0.81	0.81
0.55	2.00	0.66	5.00	0.00	0.81	0.81
0.60	2.00	0.66	5.00	0.00	0.81	0.81
0.65	2.00	0.66	5.00	0.00	0.81	0.81
0.70	2.00	0.66	5.00	0.00	0.81	0.81
0.75	2.00	0.66	5.00	0.00	0.81	0.81
0.80	2.00	0.66	5.00	0.00	0.81	0.81
0.85	2.00	0.66	5.00	0.00	0.81	0.81
0.90	2.00	0.66	5.00	0.00	0.81	0.81
0.95	2.00	0.66	5.00	0.00	0.81	0.81
1.00	2.00	0.66	5.00	0.00	0.81	0.81
1.05	2.00	0.66	5.00	0.00	0.81	0.81
1.10	2.00	0.66	5.00	0.00	0.81	0.81
1.15	2.00	0.66	5.00	0.00	0.81	0.81
1.20	2.00	0.66	5.00	0.00	0.81	0.81
1.25	2.00	0.66	5.00	0.00	0.81	0.81
1.30	2.00	0.66	5.00	0.00	0.81	0.81
1.35	2.00	0.66	5.00	0.00	0.81	0.81

1.40	2.00	0.66	5.00	0.00	0.81	0.81
1.45	2.00	0.66	5.00	0.00	0.81	0.81
1.50	2.00	0.66	5.00	0.00	0.81	0.81
1.55	2.00	0.66	5.00	0.00	0.81	0.81
1.60	2.00	0.66	5.00	0.00	0.81	0.81
1.65	2.00	0.66	5.00	0.00	0.81	0.81
1.70	2.00	0.66	5.00	0.00	0.81	0.81
1.75	2.00	0.66	5.00	0.00	0.81	0.81
1.80	2.00	0.66	5.00	0.00	0.81	0.81
1.85	2.00	0.66	5.00	0.00	0.81	0.81
1.90	2.00	0.66	5.00	0.00	0.81	0.81
1.95	2.00	0.66	5.00	0.00	0.81	0.81
2.00	2.00	0.66	5.00	0.00	0.81	0.81
2.05	2.00	0.66	5.00	0.00	0.81	0.81
2.10	2.00	0.66	5.00	0.00	0.81	0.81
2.15	2.00	0.66	5.00	0.00	0.81	0.81
2.20	2.00	0.66	5.00	0.00	0.81	0.81
2.25	2.00	0.66	5.00	0.00	0.81	0.81
2.30	2.00	0.66	5.00	0.00	0.81	0.81
2.35	2.00	0.66	5.00	0.00	0.81	0.81
2.40	2.00	0.66	5.00	0.00	0.81	0.81
2.45	2.00	0.66	5.00	0.00	0.81	0.81
2.50	2.00	0.66	5.00	0.00	0.81	0.81
2.55	2.00	0.66	5.00	0.00	0.81	0.81
2.60	2.00	0.66	5.00	0.00	0.81	0.81
2.65	2.00	0.66	5.00	0.00	0.81	0.81
2.70	2.00	0.66	5.00	0.00	0.81	0.81
2.75	2.00	0.66	5.00	0.00	0.81	0.81
2.80	2.00	0.66	5.00	0.00	0.81	0.81
2.85	2.00	0.66	5.00	0.00	0.81	0.81
2.90	2.00	0.66	5.00	0.00	0.81	0.81
2.95	2.00	0.66	5.00	0.00	0.81	0.81
3.00	2.00	0.66	5.00	0.00	0.81	0.81
3.05	2.00	0.66	5.00	0.00	0.81	0.81
3.10	2.00	0.66	5.00	0.00	0.81	0.81
3.15	2.00	0.66	5.00	0.00	0.81	0.81
3.20	2.00	0.66	5.00	0.00	0.81	0.81
3.25	2.00	0.66	5.00	0.00	0.81	0.81
3.30	2.00	0.66	5.00	0.00	0.81	0.81
3.35	2.00	0.66	5.00	0.00	0.81	0.81
3.40	2.00	0.66	5.00	0.00	0.81	0.81
3.45	2.00	0.66	5.00	0.00	0.81	0.81
3.50	2.00	0.66	5.00	0.00	0.81	0.81
3.55	2.00	0.66	5.00	0.00	0.81	0.81
3.60	2.00	0.66	5.00	0.00	0.81	0.81
3.65	2.00	0.66	5.00	0.00	0.81	0.81
3.70	2.00	0.66	5.00	0.00	0.81	0.81
3.75	2.00	0.66	5.00	0.00	0.81	0.81
3.80	2.00	0.66	5.00	0.00	0.81	0.81
3.85	2.00	0.66	5.00	0.00	0.81	0.81
3.90	2.00	0.66	5.00	0.00	0.81	0.81
3.95	2.00	0.66	5.00	0.00	0.81	0.81
4.00	2.00	0.66	5.00	0.00	0.81	0.81
4.05	2.00	0.66	5.00	0.00	0.81	0.81
4.10	2.00	0.66	5.00	0.00	0.81	0.81
4.15	2.00	0.66	5.00	0.00	0.81	0.81
4.20	2.00	0.66	5.00	0.00	0.81	0.81
4.25	2.00	0.66	5.00	0.00	0.81	0.81
4.30	2.00	0.66	5.00	0.00	0.81	0.81
4.35	2.00	0.66	5.00	0.00	0.81	0.81
4.40	2.00	0.66	5.00	0.00	0.81	0.81
4.45	2.00	0.66	5.00	0.00	0.81	0.81
4.50	2.00	0.66	5.00	0.00	0.81	0.81
4.55	2.00	0.66	5.00	0.00	0.81	0.81
4.60	2.00	0.66	5.00	0.00	0.81	0.81
4.65	2.00	0.66	5.00	0.00	0.81	0.81
4.70	2.00	0.66	5.00	0.00	0.81	0.81
4.75	2.00	0.66	5.00	0.00	0.81	0.81
4.80	2.00	0.66	5.00	0.00	0.81	0.81
4.85	2.00	0.66	5.00	0.00	0.81	0.81
4.90	2.00	0.66	5.00	0.00	0.81	0.81
4.95	2.00	0.66	5.00	0.00	0.81	0.81
5.00	2.00	0.66	5.00	0.00	0.81	0.81
5.05	2.00	0.66	5.00	0.00	0.81	0.81
5.10	2.00	0.66	5.00	0.00	0.81	0.81
5.15	2.00	0.66	5.00	0.00	0.81	0.81
5.20	2.00	0.65	5.00	0.00	0.81	0.81
5.25	2.00	0.65	5.00	0.00	0.81	0.81
5.30	2.00	0.65	5.00	0.00	0.81	0.81
5.35	2.00	0.65	5.00	0.00	0.81	0.81
5.40	2.00	0.65	5.00	0.00	0.81	0.81
5.45	2.00	0.65	5.00	0.00	0.81	0.81
5.50	2.00	0.65	5.00	0.00	0.81	0.81
5.55	2.00	0.65	5.00	0.00	0.81	0.81
5.60	2.00	0.65	5.00	0.00	0.81	0.81
5.65	2.00	0.65	5.00	0.00	0.81	0.81
5.70	2.00	0.65	5.00	0.00	0.81	0.81
5.75	2.00	0.65	5.00	0.00	0.81	0.81
5.80	2.00	0.65	5.00	0.00	0.81	0.81
5.85	2.00	0.65	5.00	0.00	0.81	0.81
5.90	2.00	0.65	5.00	0.00	0.81	0.81
5.95	2.00	0.65	5.00	0.00	0.81	0.81
6.00	2.00	0.65	5.00	0.00	0.81	0.81
6.05	2.00	0.65	5.00	0.00	0.81	0.81
6.10	2.00	0.65	5.00	0.00	0.81	0.81
6.15	2.00	0.65	5.00	0.00	0.81	0.81
6.20	2.00	0.65	5.00	0.00	0.81	0.81
6.25	2.00	0.65	5.00	0.00	0.81	0.81
6.30	2.00	0.65	5.00	0.00	0.81	0.81
6.35	2.00	0.65	5.00	0.00	0.81	0.81

6.40	2.00	0.65	5.00	0.00	0.81	0.81
6.45	2.00	0.65	5.00	0.00	0.81	0.81
6.50	2.00	0.65	5.00	0.00	0.81	0.81
6.55	2.00	0.65	5.00	0.00	0.81	0.81
6.60	2.00	0.65	5.00	0.00	0.81	0.81
6.65	2.00	0.65	5.00	0.00	0.81	0.81
6.70	2.00	0.65	5.00	0.00	0.81	0.81
6.75	2.00	0.65	5.00	0.00	0.81	0.81
6.80	2.00	0.65	5.00	0.00	0.81	0.81
6.85	2.00	0.65	5.00	0.00	0.81	0.81
6.90	2.00	0.65	5.00	0.00	0.81	0.81
6.95	2.00	0.65	5.00	0.00	0.81	0.81
7.00	2.00	0.65	5.00	0.00	0.81	0.81
7.05	2.00	0.65	5.00	0.00	0.81	0.81
7.10	2.00	0.65	5.00	0.00	0.81	0.81
7.15	2.00	0.65	5.00	0.00	0.81	0.81
7.20	2.00	0.65	5.00	0.00	0.81	0.81
7.25	2.00	0.65	5.00	0.00	0.81	0.81
7.30	2.00	0.65	5.00	0.00	0.81	0.81
7.35	2.00	0.65	5.00	0.00	0.81	0.81
7.40	2.00	0.65	5.00	0.00	0.81	0.81
7.45	2.00	0.65	5.00	0.00	0.81	0.81
7.50	2.55	0.65	5.00	0.00	0.81	0.81
7.55	2.55	0.65	5.00	0.00	0.81	0.81
7.60	2.55	0.65	5.00	0.00	0.80	0.80
7.65	2.55	0.65	5.00	0.00	0.80	0.80
7.70	2.55	0.65	5.00	0.00	0.79	0.79
7.75	2.55	0.65	5.00	0.00	0.79	0.79
7.80	2.55	0.65	5.00	0.00	0.78	0.78
7.85	2.55	0.65	5.00	0.00	0.78	0.78
7.90	2.55	0.65	5.00	0.00	0.77	0.77
7.95	2.55	0.65	5.00	0.00	0.77	0.77
8.00	2.55	0.65	5.00	0.00	0.76	0.76
8.05	2.55	0.65	5.00	0.00	0.75	0.75
8.10	2.55	0.65	5.00	0.00	0.75	0.75
8.15	2.55	0.65	5.00	0.00	0.74	0.74
8.20	2.55	0.65	5.00	0.00	0.74	0.74
8.25	2.55	0.65	5.00	0.00	0.73	0.73
8.30	2.55	0.65	5.00	0.00	0.73	0.73
8.35	2.55	0.65	5.00	0.00	0.72	0.72
8.40	2.55	0.65	5.00	0.00	0.72	0.72
8.45	2.55	0.65	5.00	0.00	0.71	0.71
8.50	2.55	0.65	5.00	0.00	0.71	0.71
8.55	2.55	0.65	5.00	0.00	0.70	0.70
8.60	2.55	0.65	5.00	0.00	0.70	0.70
8.65	2.55	0.65	5.00	0.00	0.69	0.69
8.70	2.55	0.65	5.00	0.00	0.69	0.69
8.75	2.55	0.65	5.00	0.00	0.68	0.68
8.80	2.55	0.65	5.00	0.00	0.68	0.68
8.85	2.55	0.65	5.00	0.00	0.67	0.67
8.90	2.55	0.65	5.00	0.00	0.67	0.67
8.95	2.55	0.65	5.00	0.00	0.66	0.66
9.00	2.55	0.65	5.00	0.00	0.66	0.66
9.05	2.55	0.65	5.00	0.00	0.65	0.65
9.10	2.55	0.65	5.00	0.00	0.65	0.65
9.15	2.55	0.65	5.00	0.00	0.64	0.64
9.20	2.55	0.65	5.00	0.00	0.63	0.63
9.25	2.55	0.65	5.00	0.00	0.63	0.63
9.30	2.55	0.65	5.00	0.00	0.62	0.62
9.35	2.55	0.65	5.00	0.00	0.62	0.62
9.40	2.55	0.65	5.00	0.00	0.61	0.61
9.45	2.55	0.65	5.00	0.00	0.61	0.61
9.50	2.55	0.65	5.00	0.00	0.60	0.60
9.55	2.55	0.65	5.00	0.00	0.60	0.60
9.60	2.55	0.65	5.00	0.00	0.59	0.59
9.65	2.55	0.65	5.00	0.00	0.58	0.58
9.70	2.55	0.65	5.00	0.00	0.58	0.58
9.75	2.55	0.65	5.00	0.00	0.57	0.57
9.80	2.55	0.65	5.00	0.00	0.57	0.57
9.85	2.55	0.65	5.00	0.00	0.56	0.56
9.90	2.55	0.65	5.00	0.00	0.56	0.56
9.95	2.55	0.65	5.00	0.00	0.55	0.55
10.00	0.61	0.65	5.00	0.00	0.54	0.54
10.05	0.62	0.65	5.00	0.00	0.54	0.54
10.10	0.63	0.65	5.00	0.00	0.53	0.53
10.15	0.63	0.65	5.00	0.00	0.53	0.53
10.20	2.55	0.65	5.00	0.00	0.52	0.52
10.25	2.55	0.65	5.00	0.00	0.51	0.51
10.30	2.55	0.65	5.00	0.00	0.51	0.51
10.35	2.55	0.65	5.00	0.00	0.50	0.50
10.40	2.55	0.65	5.00	0.00	0.50	0.50
10.45	2.55	0.65	5.00	0.00	0.49	0.49
10.50	2.55	0.65	5.00	0.00	0.48	0.48
10.55	2.55	0.65	5.00	0.00	0.48	0.48
10.60	2.55	0.65	5.00	0.00	0.47	0.47
10.65	2.55	0.65	5.00	0.00	0.47	0.47
10.70	2.55	0.65	5.00	0.00	0.46	0.46
10.75	2.55	0.65	5.00	0.00	0.46	0.46
10.80	2.55	0.65	5.00	0.00	0.45	0.45
10.85	2.55	0.65	5.00	0.00	0.44	0.44
10.90	2.55	0.65	5.00	0.00	0.44	0.44
10.95	2.55	0.65	5.00	0.00	0.43	0.43
11.00	2.55	0.65	5.00	0.00	0.43	0.43
11.05	2.55	0.65	5.00	0.00	0.42	0.42
11.10	2.55	0.65	5.00	0.00	0.41	0.41
11.15	2.55	0.65	5.00	0.00	0.41	0.41
11.20	2.55	0.65	5.00	0.00	0.40	0.40
11.25	2.55	0.65	5.00	0.00	0.40	0.40
11.30	2.55	0.65	5.00	0.00	0.39	0.39
11.35	2.55	0.65	5.00	0.00	0.38	0.38

11.40	2.55	0.65	5.00	0.00	0.38	0.38
11.45	2.55	0.65	5.00	0.00	0.38	0.38
11.50	2.55	0.65	5.00	0.00	0.38	0.38
11.55	2.55	0.65	5.00	0.00	0.38	0.38
11.60	2.55	0.65	5.00	0.00	0.37	0.37
11.65	2.55	0.64	5.00	0.00	0.37	0.37
11.70	2.55	0.64	5.00	0.00	0.37	0.37
11.75	2.55	0.64	5.00	0.00	0.37	0.37
11.80	2.55	0.64	5.00	0.00	0.36	0.36
11.85	2.55	0.64	5.00	0.00	0.36	0.36
11.90	2.55	0.64	5.00	0.00	0.36	0.36
11.95	2.55	0.64	5.00	0.00	0.36	0.36
12.00	2.55	0.64	5.00	0.00	0.35	0.35
12.05	2.55	0.64	5.00	0.00	0.35	0.35
12.10	2.55	0.64	5.00	0.00	0.35	0.35
12.15	2.55	0.64	5.00	0.00	0.35	0.35
12.20	2.55	0.64	5.00	0.00	0.34	0.34
12.25	2.55	0.64	5.00	0.00	0.34	0.34
12.30	2.55	0.64	5.00	0.00	0.34	0.34
12.35	2.55	0.64	5.00	0.00	0.34	0.34
12.40	2.55	0.64	5.00	0.00	0.33	0.33
12.45	2.55	0.64	5.00	0.00	0.33	0.33
12.50	2.55	0.64	5.00	0.00	0.33	0.33
12.55	2.55	0.64	5.00	0.00	0.33	0.33
12.60	2.55	0.64	5.00	0.00	0.32	0.32
12.65	2.55	0.64	5.00	0.00	0.32	0.32
12.70	2.55	0.64	5.00	0.00	0.32	0.32
12.75	2.55	0.64	5.00	0.00	0.31	0.31
12.80	2.55	0.64	5.00	0.00	0.31	0.31
12.85	2.55	0.64	5.00	0.00	0.31	0.31
12.90	2.55	0.64	5.00	0.00	0.31	0.31
12.95	2.55	0.64	5.00	0.00	0.30	0.30
13.00	2.55	0.64	5.00	0.00	0.30	0.30
13.05	2.55	0.64	5.00	0.00	0.30	0.30
13.10	2.55	0.64	5.00	0.00	0.29	0.29
13.15	2.55	0.64	5.00	0.00	0.29	0.29
13.20	2.55	0.64	5.00	0.00	0.29	0.29
13.25	2.55	0.64	5.00	0.00	0.28	0.28
13.30	2.55	0.64	5.00	0.00	0.28	0.28
13.35	2.55	0.64	5.00	0.00	0.28	0.28
13.40	2.55	0.64	5.00	0.00	0.27	0.27
13.45	2.55	0.64	5.00	0.00	0.27	0.27
13.50	2.55	0.64	5.00	0.00	0.27	0.27
13.55	2.55	0.64	5.00	0.00	0.26	0.26
13.60	2.55	0.64	5.00	0.00	0.26	0.26
13.65	2.55	0.64	5.00	0.00	0.26	0.26
13.70	2.55	0.64	5.00	0.00	0.25	0.25
13.75	2.55	0.64	5.00	0.00	0.25	0.25
13.80	2.55	0.64	5.00	0.00	0.25	0.25
13.85	2.55	0.64	5.00	0.00	0.24	0.24
13.90	2.55	0.64	5.00	0.00	0.24	0.24
13.95	2.55	0.64	5.00	0.00	0.23	0.23
14.00	2.55	0.64	5.00	0.00	0.23	0.23
14.05	2.55	0.64	5.00	0.00	0.23	0.23
14.10	2.55	0.64	5.00	0.00	0.22	0.22
14.15	2.55	0.64	5.00	0.00	0.22	0.22
14.20	2.55	0.64	5.00	0.00	0.22	0.22
14.25	2.55	0.64	5.00	0.00	0.21	0.21
14.30	2.55	0.64	5.00	0.00	0.21	0.21
14.35	2.55	0.64	5.00	0.00	0.20	0.20
14.40	2.55	0.64	5.00	0.00	0.20	0.20
14.45	2.55	0.64	5.00	0.00	0.20	0.20
14.50	2.55	0.64	5.00	0.00	0.19	0.19
14.55	2.55	0.64	5.00	0.00	0.19	0.19
14.60	2.55	0.64	5.00	0.00	0.18	0.18
14.65	2.55	0.64	5.00	0.00	0.18	0.18
14.70	2.55	0.64	5.00	0.00	0.17	0.17
14.75	2.55	0.64	5.00	0.00	0.17	0.17
14.80	2.55	0.64	5.00	0.00	0.17	0.17
14.85	2.55	0.64	5.00	0.00	0.16	0.16
14.90	2.55	0.64	5.00	0.00	0.16	0.16
14.95	2.55	0.64	5.00	0.00	0.16	0.16
15.00	2.55	0.64	5.00	0.00	0.15	0.15
15.05	2.55	0.64	5.00	0.00	0.15	0.15
15.10	2.55	0.64	5.00	0.00	0.15	0.15
15.15	2.55	0.64	5.00	0.00	0.14	0.14
15.20	2.55	0.64	5.00	0.00	0.14	0.14
15.25	2.55	0.64	5.00	0.00	0.14	0.14
15.30	2.55	0.64	5.00	0.00	0.14	0.14
15.35	2.55	0.64	5.00	0.00	0.13	0.13
15.40	2.55	0.64	5.00	0.00	0.13	0.13
15.45	2.55	0.64	5.00	0.00	0.13	0.13
15.50	2.55	0.64	5.00	0.00	0.13	0.13
15.55	2.55	0.64	5.00	0.00	0.12	0.12
15.60	2.55	0.64	5.00	0.00	0.12	0.12
15.65	2.55	0.64	5.00	0.00	0.12	0.12
15.70	2.55	0.64	5.00	0.00	0.12	0.12
15.75	2.55	0.64	5.00	0.00	0.12	0.12
15.80	2.55	0.64	5.00	0.00	0.11	0.11
15.85	2.55	0.64	5.00	0.00	0.11	0.11
15.90	2.55	0.64	5.00	0.00	0.11	0.11
15.95	2.55	0.64	5.00	0.00	0.11	0.11
16.00	2.55	0.64	5.00	0.00	0.11	0.11
16.05	2.55	0.64	5.00	0.00	0.11	0.11
16.10	2.55	0.64	5.00	0.00	0.10	0.10
16.15	2.55	0.64	5.00	0.00	0.10	0.10
16.20	2.55	0.64	5.00	0.00	0.10	0.10
16.25	2.55	0.64	5.00	0.00	0.10	0.10
16.30	2.55	0.64	5.00	0.00	0.10	0.10
16.35	2.55	0.64	5.00	0.00	0.10	0.10

16.40	2.55	0.64	5.00	0.00	0.09	0.09
16.45	2.55	0.64	5.00	0.00	0.09	0.09
16.50	2.55	0.64	5.00	0.00	0.09	0.09
16.55	2.55	0.64	5.00	0.00	0.09	0.09
16.60	2.55	0.64	5.00	0.00	0.09	0.09
16.65	2.55	0.64	5.00	0.00	0.09	0.09
16.70	2.55	0.64	5.00	0.00	0.09	0.09
16.75	2.55	0.64	5.00	0.00	0.08	0.08
16.80	2.55	0.64	5.00	0.00	0.08	0.08
16.85	2.55	0.64	5.00	0.00	0.08	0.08
16.90	2.55	0.64	5.00	0.00	0.08	0.08
16.95	2.55	0.64	5.00	0.00	0.08	0.08
17.00	2.55	0.64	5.00	0.00	0.08	0.08
17.05	2.55	0.64	5.00	0.00	0.08	0.08
17.10	2.55	0.64	5.00	0.00	0.07	0.07
17.15	2.55	0.64	5.00	0.00	0.07	0.07
17.20	2.55	0.64	5.00	0.00	0.07	0.07
17.25	2.55	0.64	5.00	0.00	0.07	0.07
17.30	2.55	0.64	5.00	0.00	0.07	0.07
17.35	2.55	0.64	5.00	0.00	0.07	0.07
17.40	2.55	0.64	5.00	0.00	0.07	0.07
17.45	2.55	0.64	5.00	0.00	0.06	0.06
17.50	2.55	0.64	5.00	0.00	0.06	0.06
17.55	2.55	0.64	5.00	0.00	0.06	0.06
17.60	2.55	0.64	5.00	0.00	0.06	0.06
17.65	2.55	0.64	5.00	0.00	0.06	0.06
17.70	2.55	0.64	5.00	0.00	0.06	0.06
17.75	2.55	0.64	5.00	0.00	0.06	0.06
17.80	2.55	0.64	5.00	0.00	0.05	0.05
17.85	2.55	0.64	5.00	0.00	0.05	0.05
17.90	2.55	0.64	5.00	0.00	0.05	0.05
17.95	2.55	0.64	5.00	0.00	0.05	0.05
18.00	2.55	0.64	5.00	0.00	0.05	0.05
18.05	2.55	0.64	5.00	0.00	0.05	0.05
18.10	2.55	0.64	5.00	0.00	0.05	0.05
18.15	2.55	0.63	5.00	0.00	0.05	0.05
18.20	2.55	0.63	5.00	0.00	0.04	0.04
18.25	2.55	0.63	5.00	0.00	0.04	0.04
18.30	2.55	0.63	5.00	0.00	0.04	0.04
18.35	2.55	0.63	5.00	0.00	0.04	0.04
18.40	2.55	0.63	5.00	0.00	0.04	0.04
18.45	2.55	0.63	5.00	0.00	0.04	0.04
18.50	2.55	0.63	5.00	0.00	0.04	0.04
18.55	2.55	0.63	5.00	0.00	0.04	0.04
18.60	2.55	0.63	5.00	0.00	0.03	0.03
18.65	2.55	0.63	5.00	0.00	0.03	0.03
18.70	2.55	0.63	5.00	0.00	0.03	0.03
18.75	2.55	0.63	5.00	0.00	0.03	0.03
18.80	2.55	0.63	5.00	0.00	0.03	0.03
18.85	2.55	0.63	5.00	0.00	0.03	0.03
18.90	2.55	0.63	5.00	0.00	0.03	0.03
18.95	2.55	0.63	5.00	0.00	0.03	0.03
19.00	2.55	0.63	5.00	0.00	0.02	0.02
19.05	2.55	0.63	5.00	0.00	0.02	0.02
19.10	2.55	0.63	5.00	0.00	0.02	0.02
19.15	2.55	0.63	5.00	0.00	0.02	0.02
19.20	2.55	0.63	5.00	0.00	0.02	0.02
19.25	2.55	0.63	5.00	0.00	0.02	0.02
19.30	2.55	0.63	5.00	0.00	0.02	0.02
19.35	2.55	0.63	5.00	0.00	0.02	0.02
19.40	2.55	0.63	5.00	0.00	0.02	0.02
19.45	2.55	0.63	5.00	0.00	0.01	0.01
19.50	2.55	0.63	5.00	0.00	0.01	0.01
19.55	2.55	0.63	5.00	0.00	0.01	0.01
19.60	2.55	0.63	5.00	0.00	0.01	0.01
19.65	2.55	0.63	5.00	0.00	0.01	0.01
19.70	2.55	0.63	5.00	0.00	0.01	0.01
19.75	2.55	0.63	5.00	0.00	0.01	0.01
19.80	2.55	0.63	5.00	0.00	0.01	0.01
19.85	2.55	0.63	5.00	0.00	0.00	0.00
19.90	2.55	0.63	5.00	0.00	0.00	0.00
19.95	2.55	0.63	5.00	0.00	0.00	0.00
20.00	2.55	0.63	5.00	0.00	0.00	0.00
20.05	2.00	0.63	5.00	0.00	0.00	0.00
20.10	2.00	0.63	5.00	0.00	0.00	0.00
20.15	2.00	0.63	5.00	0.00	0.00	0.00
20.20	2.00	0.63	5.00	0.00	0.00	0.00
20.25	2.00	0.63	5.00	0.00	0.00	0.00
20.30	2.00	0.63	5.00	0.00	0.00	0.00
20.35	2.00	0.63	5.00	0.00	0.00	0.00
20.40	2.00	0.63	5.00	0.00	0.00	0.00
20.45	2.00	0.63	5.00	0.00	0.00	0.00
20.50	2.00	0.63	5.00	0.00	0.00	0.00
20.55	2.00	0.63	5.00	0.00	0.00	0.00
20.60	2.00	0.63	5.00	0.00	0.00	0.00
20.65	2.00	0.63	5.00	0.00	0.00	0.00
20.70	2.00	0.63	5.00	0.00	0.00	0.00
20.75	2.00	0.63	5.00	0.00	0.00	0.00
20.80	2.00	0.63	5.00	0.00	0.00	0.00
20.85	2.00	0.63	5.00	0.00	0.00	0.00
20.90	2.00	0.63	5.00	0.00	0.00	0.00
20.95	2.00	0.63	5.00	0.00	0.00	0.00
21.00	2.00	0.63	5.00	0.00	0.00	0.00
21.05	2.00	0.63	5.00	0.00	0.00	0.00
21.10	2.00	0.63	5.00	0.00	0.00	0.00
21.15	2.00	0.63	5.00	0.00	0.00	0.00
21.20	2.00	0.63	5.00	0.00	0.00	0.00
21.25	2.00	0.63	5.00	0.00	0.00	0.00
21.30	2.00	0.63	5.00	0.00	0.00	0.00
21.35	2.00	0.63	5.00	0.00	0.00	0.00

21.40	2.00	0.63	5.00	0.00	0.00	0.00
21.45	2.00	0.63	5.00	0.00	0.00	0.00
21.50	2.00	0.63	5.00	0.00	0.00	0.00
21.55	2.00	0.63	5.00	0.00	0.00	0.00
21.60	2.00	0.63	5.00	0.00	0.00	0.00
21.65	2.00	0.63	5.00	0.00	0.00	0.00
21.70	2.00	0.63	5.00	0.00	0.00	0.00
21.75	2.00	0.63	5.00	0.00	0.00	0.00
21.80	2.00	0.63	5.00	0.00	0.00	0.00
21.85	2.00	0.63	5.00	0.00	0.00	0.00
21.90	2.00	0.63	5.00	0.00	0.00	0.00
21.95	2.00	0.63	5.00	0.00	0.00	0.00
22.00	2.00	0.63	5.00	0.00	0.00	0.00
22.05	2.00	0.63	5.00	0.00	0.00	0.00
22.10	2.00	0.63	5.00	0.00	0.00	0.00
22.15	2.00	0.63	5.00	0.00	0.00	0.00
22.20	2.00	0.63	5.00	0.00	0.00	0.00
22.25	2.00	0.63	5.00	0.00	0.00	0.00
22.30	2.00	0.63	5.00	0.00	0.00	0.00
22.35	2.00	0.63	5.00	0.00	0.00	0.00
22.40	2.00	0.63	5.00	0.00	0.00	0.00
22.45	2.00	0.63	5.00	0.00	0.00	0.00
22.50	2.00	0.63	5.00	0.00	0.00	0.00
22.55	2.00	0.63	5.00	0.00	0.00	0.00
22.60	2.00	0.63	5.00	0.00	0.00	0.00
22.65	2.00	0.63	5.00	0.00	0.00	0.00
22.70	2.00	0.63	5.00	0.00	0.00	0.00
22.75	2.00	0.63	5.00	0.00	0.00	0.00
22.80	2.00	0.63	5.00	0.00	0.00	0.00
22.85	2.00	0.63	5.00	0.00	0.00	0.00
22.90	2.00	0.63	5.00	0.00	0.00	0.00
22.95	2.00	0.63	5.00	0.00	0.00	0.00
23.00	2.00	0.63	5.00	0.00	0.00	0.00
23.05	2.00	0.63	5.00	0.00	0.00	0.00
23.10	2.00	0.63	5.00	0.00	0.00	0.00
23.15	2.00	0.63	5.00	0.00	0.00	0.00
23.20	2.00	0.63	5.00	0.00	0.00	0.00
23.25	2.00	0.63	5.00	0.00	0.00	0.00
23.30	2.00	0.63	5.00	0.00	0.00	0.00
23.35	2.00	0.63	5.00	0.00	0.00	0.00
23.40	2.00	0.63	5.00	0.00	0.00	0.00
23.45	2.00	0.63	5.00	0.00	0.00	0.00
23.50	2.00	0.63	5.00	0.00	0.00	0.00
23.55	2.00	0.63	5.00	0.00	0.00	0.00
23.60	2.00	0.63	5.00	0.00	0.00	0.00
23.65	2.00	0.63	5.00	0.00	0.00	0.00
23.70	2.00	0.63	5.00	0.00	0.00	0.00
23.75	2.00	0.63	5.00	0.00	0.00	0.00
23.80	2.00	0.63	5.00	0.00	0.00	0.00
23.85	2.00	0.63	5.00	0.00	0.00	0.00
23.90	2.00	0.63	5.00	0.00	0.00	0.00
23.95	2.00	0.63	5.00	0.00	0.00	0.00
24.00	2.00	0.63	5.00	0.00	0.00	0.00
24.05	2.00	0.63	5.00	0.00	0.00	0.00
24.10	2.00	0.63	5.00	0.00	0.00	0.00
24.15	2.00	0.63	5.00	0.00	0.00	0.00
24.20	2.00	0.63	5.00	0.00	0.00	0.00
24.25	2.00	0.63	5.00	0.00	0.00	0.00
24.30	2.00	0.63	5.00	0.00	0.00	0.00
24.35	2.00	0.63	5.00	0.00	0.00	0.00
24.40	2.00	0.63	5.00	0.00	0.00	0.00
24.45	2.00	0.63	5.00	0.00	0.00	0.00
24.50	2.00	0.63	5.00	0.00	0.00	0.00
24.55	2.00	0.63	5.00	0.00	0.00	0.00
24.60	2.00	0.62	5.00	0.00	0.00	0.00
24.65	2.00	0.62	5.00	0.00	0.00	0.00
24.70	2.00	0.62	5.00	0.00	0.00	0.00
24.75	2.00	0.62	5.00	0.00	0.00	0.00
24.80	2.00	0.62	5.00	0.00	0.00	0.00
24.85	2.00	0.62	5.00	0.00	0.00	0.00
24.90	2.00	0.62	5.00	0.00	0.00	0.00
24.95	2.00	0.62	5.00	0.00	0.00	0.00
25.00	2.00	0.62	5.00	0.00	0.00	0.00
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00
26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00

26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
27.20	2.00	0.62	5.00	0.00	0.00	0.00
27.25	2.00	0.62	5.00	0.00	0.00	0.00
27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

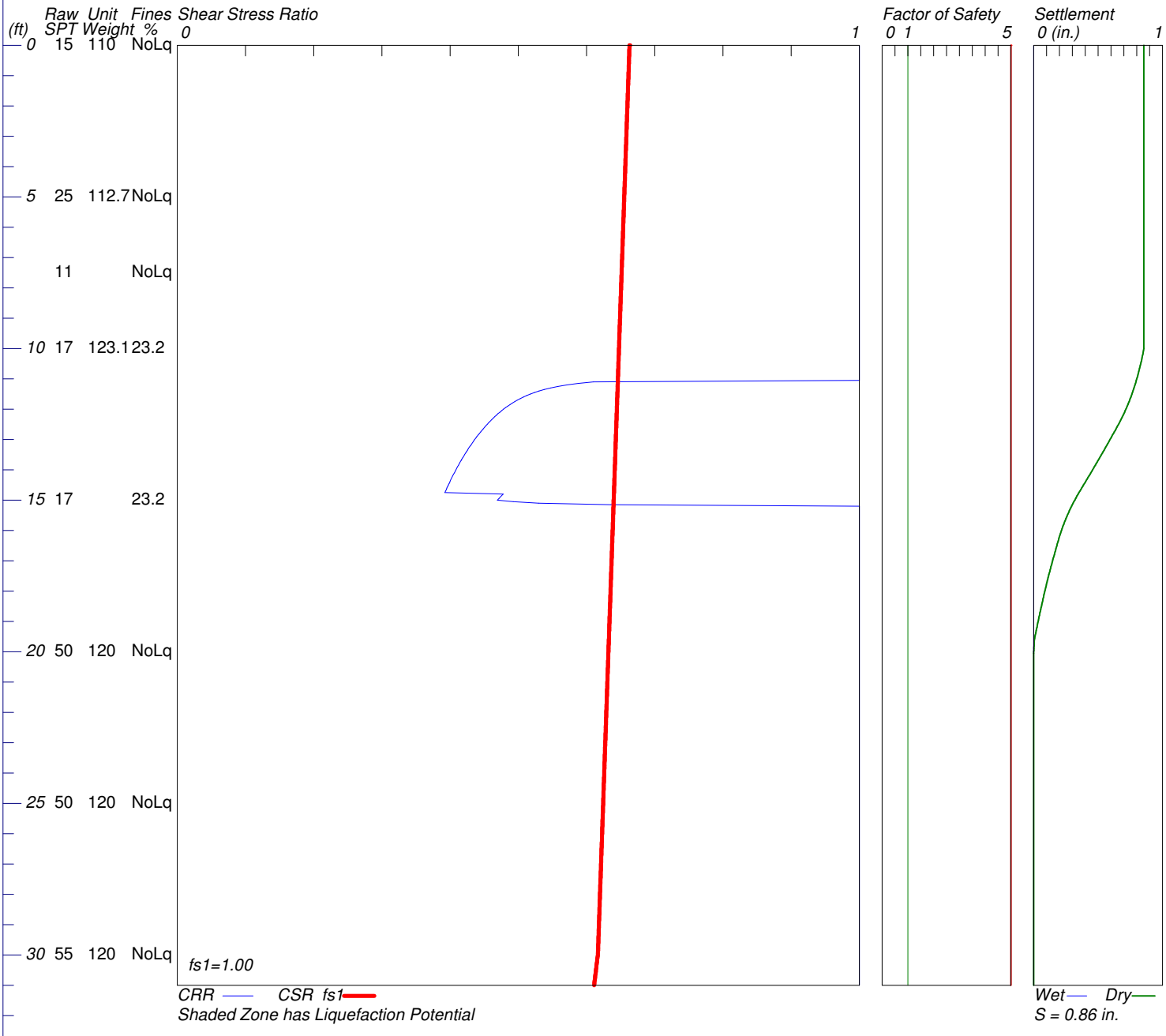
CRRm	Cyclic resistance ratio from soils
CSRfs	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
S_sat	Settlement from saturated sands
S_dry	Settlement from dry sands
S_all	Total settlement from saturated and dry sands
NoLiq	No-Liquefy Soils

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B5 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



LiquefyPro CivilTech Software USA www.civiltech.com

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********************************************************************************
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                                LIQUEFACTION ANALYSIS CALCULATION SHEET

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********************************************************************************
******************
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        Input File Name: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall
Studios\Liquefaction\LGC-B5.liq
        Title:  LA Railroad 93
        Subtitle:  213015-01

        Surface Elev.=
        Hole No.=LGC-B5
        Depth of Hole= 31.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration= 1.02 g
        Earthquake Magnitude= 6.8

 Input Data:
        Surface Elev.=
        Hole No.=LGC-B5
        Depth of Hole=31.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration=1.02 g
        Earthquake Magnitude=6.8

        Earthquake Magnitude=6.8
        2. Settlement Analysis Method: Tokimatsu / Seed
        3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
        4. Fine Correction for Settlement: During Liquefaction*
        5. Settlement Calculation in: All zones*
        6. Hammer Energy Ratio,                                    Ce = 1.3
        7. Borehole Diameter,                                         Cb= 1
        8. Sampling Method,                                        Cs= 1
        9. User request factor of safety (apply to CSR) ,   User= 1.0
           Plot one CSR curve (fs1=User)
        10. Use Curve Smoothing: Yes*
        * Recommended Options

        In-Situ Test Data:
```

Depth ft	SPT	gamma pcf	Fines %
0.0	15.0	110.0	NoLiq
5.0	25.0	112.7	NoLiq
7.5	11.0	112.7	NoLiq
10.0	17.0	123.1	23.2
15.0	17.0	123.1	23.2
20.0	50.0	120.0	NoLiq
25.0	50.0	120.0	NoLiq
30.0	55.0	120.0	NoLiq

Output Results:

Settlement of saturated sands=0.00 in.
Settlement of dry sands=0.86 in.
Total settlement of saturated and dry sands=0.86 in.
Differential Settlement=0.428 to 0.565 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	0.86	0.86
0.05	2.00	0.66	5.00	0.00	0.86	0.86
0.10	2.00	0.66	5.00	0.00	0.86	0.86
0.15	2.00	0.66	5.00	0.00	0.86	0.86
0.20	2.00	0.66	5.00	0.00	0.86	0.86
0.25	2.00	0.66	5.00	0.00	0.86	0.86
0.30	2.00	0.66	5.00	0.00	0.86	0.86
0.35	2.00	0.66	5.00	0.00	0.86	0.86
0.40	2.00	0.66	5.00	0.00	0.86	0.86
0.45	2.00	0.66	5.00	0.00	0.86	0.86
0.50	2.00	0.66	5.00	0.00	0.86	0.86
0.55	2.00	0.66	5.00	0.00	0.86	0.86
0.60	2.00	0.66	5.00	0.00	0.86	0.86
0.65	2.00	0.66	5.00	0.00	0.86	0.86
0.70	2.00	0.66	5.00	0.00	0.86	0.86
0.75	2.00	0.66	5.00	0.00	0.86	0.86
0.80	2.00	0.66	5.00	0.00	0.86	0.86
0.85	2.00	0.66	5.00	0.00	0.86	0.86
0.90	2.00	0.66	5.00	0.00	0.86	0.86
0.95	2.00	0.66	5.00	0.00	0.86	0.86
1.00	2.00	0.66	5.00	0.00	0.86	0.86
1.05	2.00	0.66	5.00	0.00	0.86	0.86
1.10	2.00	0.66	5.00	0.00	0.86	0.86
1.15	2.00	0.66	5.00	0.00	0.86	0.86
1.20	2.00	0.66	5.00	0.00	0.86	0.86
1.25	2.00	0.66	5.00	0.00	0.86	0.86
1.30	2.00	0.66	5.00	0.00	0.86	0.86
1.35	2.00	0.66	5.00	0.00	0.86	0.86

1.40	2.00	0.66	5.00	0.00	0.86	0.86
1.45	2.00	0.66	5.00	0.00	0.86	0.86
1.50	2.00	0.66	5.00	0.00	0.86	0.86
1.55	2.00	0.66	5.00	0.00	0.86	0.86
1.60	2.00	0.66	5.00	0.00	0.86	0.86
1.65	2.00	0.66	5.00	0.00	0.86	0.86
1.70	2.00	0.66	5.00	0.00	0.86	0.86
1.75	2.00	0.66	5.00	0.00	0.86	0.86
1.80	2.00	0.66	5.00	0.00	0.86	0.86
1.85	2.00	0.66	5.00	0.00	0.86	0.86
1.90	2.00	0.66	5.00	0.00	0.86	0.86
1.95	2.00	0.66	5.00	0.00	0.86	0.86
2.00	2.00	0.66	5.00	0.00	0.86	0.86
2.05	2.00	0.66	5.00	0.00	0.86	0.86
2.10	2.00	0.66	5.00	0.00	0.86	0.86
2.15	2.00	0.66	5.00	0.00	0.86	0.86
2.20	2.00	0.66	5.00	0.00	0.86	0.86
2.25	2.00	0.66	5.00	0.00	0.86	0.86
2.30	2.00	0.66	5.00	0.00	0.86	0.86
2.35	2.00	0.66	5.00	0.00	0.86	0.86
2.40	2.00	0.66	5.00	0.00	0.86	0.86
2.45	2.00	0.66	5.00	0.00	0.86	0.86
2.50	2.00	0.66	5.00	0.00	0.86	0.86
2.55	2.00	0.66	5.00	0.00	0.86	0.86
2.60	2.00	0.66	5.00	0.00	0.86	0.86
2.65	2.00	0.66	5.00	0.00	0.86	0.86
2.70	2.00	0.66	5.00	0.00	0.86	0.86
2.75	2.00	0.66	5.00	0.00	0.86	0.86
2.80	2.00	0.66	5.00	0.00	0.86	0.86
2.85	2.00	0.66	5.00	0.00	0.86	0.86
2.90	2.00	0.66	5.00	0.00	0.86	0.86
2.95	2.00	0.66	5.00	0.00	0.86	0.86
3.00	2.00	0.66	5.00	0.00	0.86	0.86
3.05	2.00	0.66	5.00	0.00	0.86	0.86
3.10	2.00	0.66	5.00	0.00	0.86	0.86
3.15	2.00	0.66	5.00	0.00	0.86	0.86
3.20	2.00	0.66	5.00	0.00	0.86	0.86
3.25	2.00	0.66	5.00	0.00	0.86	0.86
3.30	2.00	0.66	5.00	0.00	0.86	0.86
3.35	2.00	0.66	5.00	0.00	0.86	0.86
3.40	2.00	0.66	5.00	0.00	0.86	0.86
3.45	2.00	0.66	5.00	0.00	0.86	0.86
3.50	2.00	0.66	5.00	0.00	0.86	0.86
3.55	2.00	0.66	5.00	0.00	0.86	0.86
3.60	2.00	0.66	5.00	0.00	0.86	0.86
3.65	2.00	0.66	5.00	0.00	0.86	0.86
3.70	2.00	0.66	5.00	0.00	0.86	0.86
3.75	2.00	0.66	5.00	0.00	0.86	0.86
3.80	2.00	0.66	5.00	0.00	0.86	0.86
3.85	2.00	0.66	5.00	0.00	0.86	0.86
3.90	2.00	0.66	5.00	0.00	0.86	0.86
3.95	2.00	0.66	5.00	0.00	0.86	0.86
4.00	2.00	0.66	5.00	0.00	0.86	0.86
4.05	2.00	0.66	5.00	0.00	0.86	0.86
4.10	2.00	0.66	5.00	0.00	0.86	0.86
4.15	2.00	0.66	5.00	0.00	0.86	0.86
4.20	2.00	0.66	5.00	0.00	0.86	0.86
4.25	2.00	0.66	5.00	0.00	0.86	0.86
4.30	2.00	0.66	5.00	0.00	0.86	0.86
4.35	2.00	0.66	5.00	0.00	0.86	0.86
4.40	2.00	0.66	5.00	0.00	0.86	0.86
4.45	2.00	0.66	5.00	0.00	0.86	0.86
4.50	2.00	0.66	5.00	0.00	0.86	0.86
4.55	2.00	0.66	5.00	0.00	0.86	0.86
4.60	2.00	0.66	5.00	0.00	0.86	0.86
4.65	2.00	0.66	5.00	0.00	0.86	0.86
4.70	2.00	0.66	5.00	0.00	0.86	0.86
4.75	2.00	0.66	5.00	0.00	0.86	0.86
4.80	2.00	0.66	5.00	0.00	0.86	0.86
4.85	2.00	0.66	5.00	0.00	0.86	0.86
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4.95	2.00	0.66	5.00	0.00	0.86	0.86
5.00	2.00	0.66	5.00	0.00	0.86	0.86
5.05	2.00	0.66	5.00	0.00	0.86	0.86
5.10	2.00	0.66	5.00	0.00	0.86	0.86
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5.60	2.00	0.65	5.00	0.00	0.86	0.86
5.65	2.00	0.65	5.00	0.00	0.86	0.86
5.70	2.00	0.65	5.00	0.00	0.86	0.86
5.75	2.00	0.65	5.00	0.00	0.86	0.86
5.80	2.00	0.65	5.00	0.00	0.86	0.86
5.85	2.00	0.65	5.00	0.00	0.86	0.86
5.90	2.00	0.65	5.00	0.00	0.86	0.86
5.95	2.00	0.65	5.00	0.00	0.86	0.86
6.00	2.00	0.65	5.00	0.00	0.86	0.86
6.05	2.00	0.65	5.00	0.00	0.86	0.86
6.10	2.00	0.65	5.00	0.00	0.86	0.86
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6.70	2.00	0.65	5.00	0.00	0.86	0.86
6.75	2.00	0.65	5.00	0.00	0.86	0.86
6.80	2.00	0.65	5.00	0.00	0.86	0.86
6.85	2.00	0.65	5.00	0.00	0.86	0.86
6.90	2.00	0.65	5.00	0.00	0.86	0.86
6.95	2.00	0.65	5.00	0.00	0.86	0.86
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7.05	2.00	0.65	5.00	0.00	0.86	0.86
7.10	2.00	0.65	5.00	0.00	0.86	0.86
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7.20	2.00	0.65	5.00	0.00	0.86	0.86
7.25	2.00	0.65	5.00	0.00	0.86	0.86
7.30	2.00	0.65	5.00	0.00	0.86	0.86
7.35	2.00	0.65	5.00	0.00	0.86	0.86
7.40	2.00	0.65	5.00	0.00	0.86	0.86
7.45	2.00	0.65	5.00	0.00	0.86	0.86
7.50	2.00	0.65	5.00	0.00	0.86	0.86
7.55	2.00	0.65	5.00	0.00	0.86	0.86
7.60	2.00	0.65	5.00	0.00	0.86	0.86
7.65	2.00	0.65	5.00	0.00	0.86	0.86
7.70	2.00	0.65	5.00	0.00	0.86	0.86
7.75	2.00	0.65	5.00	0.00	0.86	0.86
7.80	2.00	0.65	5.00	0.00	0.86	0.86
7.85	2.00	0.65	5.00	0.00	0.86	0.86
7.90	2.00	0.65	5.00	0.00	0.86	0.86
7.95	2.00	0.65	5.00	0.00	0.86	0.86
8.00	2.00	0.65	5.00	0.00	0.86	0.86
8.05	2.00	0.65	5.00	0.00	0.86	0.86
8.10	2.00	0.65	5.00	0.00	0.86	0.86
8.15	2.00	0.65	5.00	0.00	0.86	0.86
8.20	2.00	0.65	5.00	0.00	0.86	0.86
8.25	2.00	0.65	5.00	0.00	0.86	0.86
8.30	2.00	0.65	5.00	0.00	0.86	0.86
8.35	2.00	0.65	5.00	0.00	0.86	0.86
8.40	2.00	0.65	5.00	0.00	0.86	0.86
8.45	2.00	0.65	5.00	0.00	0.86	0.86
8.50	2.00	0.65	5.00	0.00	0.86	0.86
8.55	2.00	0.65	5.00	0.00	0.86	0.86
8.60	2.00	0.65	5.00	0.00	0.86	0.86
8.65	2.00	0.65	5.00	0.00	0.86	0.86
8.70	2.00	0.65	5.00	0.00	0.86	0.86
8.75	2.00	0.65	5.00	0.00	0.86	0.86
8.80	2.00	0.65	5.00	0.00	0.86	0.86
8.85	2.00	0.65	5.00	0.00	0.86	0.86
8.90	2.00	0.65	5.00	0.00	0.86	0.86
8.95	2.00	0.65	5.00	0.00	0.86	0.86
9.00	2.00	0.65	5.00	0.00	0.86	0.86
9.05	2.00	0.65	5.00	0.00	0.86	0.86
9.10	2.00	0.65	5.00	0.00	0.86	0.86
9.15	2.00	0.65	5.00	0.00	0.86	0.86
9.20	2.00	0.65	5.00	0.00	0.86	0.86
9.25	2.00	0.65	5.00	0.00	0.86	0.86
9.30	2.00	0.65	5.00	0.00	0.86	0.86
9.35	2.00	0.65	5.00	0.00	0.86	0.86
9.40	2.00	0.65	5.00	0.00	0.86	0.86
9.45	2.00	0.65	5.00	0.00	0.86	0.86
9.50	2.00	0.65	5.00	0.00	0.86	0.86
9.55	2.00	0.65	5.00	0.00	0.86	0.86
9.60	2.00	0.65	5.00	0.00	0.86	0.86
9.65	2.00	0.65	5.00	0.00	0.86	0.86
9.70	2.00	0.65	5.00	0.00	0.86	0.86
9.75	2.00	0.65	5.00	0.00	0.86	0.86
9.80	2.00	0.65	5.00	0.00	0.86	0.86
9.85	2.00	0.65	5.00	0.00	0.86	0.86
9.90	2.00	0.65	5.00	0.00	0.86	0.86
9.95	2.00	0.65	5.00	0.00	0.86	0.86
10.00	2.55	0.65	5.00	0.00	0.86	0.86
10.05	2.55	0.65	5.00	0.00	0.85	0.85
10.10	2.55	0.65	5.00	0.00	0.85	0.85
10.15	2.55	0.65	5.00	0.00	0.85	0.85
10.20	2.55	0.65	5.00	0.00	0.85	0.85
10.25	2.55	0.65	5.00	0.00	0.84	0.84
10.30	2.55	0.65	5.00	0.00	0.84	0.84
10.35	2.55	0.65	5.00	0.00	0.84	0.84
10.40	2.55	0.65	5.00	0.00	0.84	0.84
10.45	2.55	0.65	5.00	0.00	0.83	0.83
10.50	2.55	0.65	5.00	0.00	0.83	0.83
10.55	2.55	0.65	5.00	0.00	0.83	0.83
10.60	2.55	0.65	5.00	0.00	0.83	0.83
10.65	2.55	0.65	5.00	0.00	0.82	0.82
10.70	2.55	0.65	5.00	0.00	0.82	0.82
10.75	2.55	0.65	5.00	0.00	0.82	0.82
10.80	2.55	0.65	5.00	0.00	0.81	0.81
10.85	2.55	0.65	5.00	0.00	0.81	0.81
10.90	2.55	0.65	5.00	0.00	0.81	0.81
10.95	2.55	0.65	5.00	0.00	0.80	0.80
11.00	2.55	0.65	5.00	0.00	0.80	0.80
11.05	2.55	0.65	5.00	0.00	0.80	0.80
11.10	0.61	0.65	5.00	0.00	0.79	0.79
11.15	0.59	0.65	5.00	0.00	0.79	0.79
11.20	0.57	0.65	5.00	0.00	0.79	0.79
11.25	0.56	0.65	5.00	0.00	0.78	0.78
11.30	0.55	0.65	5.00	0.00	0.78	0.78
11.35	0.54	0.65	5.00	0.00	0.77	0.77

11.40	0.53	0.65	5.00	0.00	0.77	0.77
11.45	0.52	0.65	5.00	0.00	0.77	0.77
11.50	0.52	0.65	5.00	0.00	0.76	0.76
11.55	0.51	0.65	5.00	0.00	0.76	0.76
11.60	0.51	0.65	5.00	0.00	0.75	0.75
11.65	0.50	0.64	5.00	0.00	0.75	0.75
11.70	0.50	0.64	5.00	0.00	0.74	0.74
11.75	0.49	0.64	5.00	0.00	0.74	0.74
11.80	0.49	0.64	5.00	0.00	0.74	0.74
11.85	0.49	0.64	5.00	0.00	0.73	0.73
11.90	0.48	0.64	5.00	0.00	0.73	0.73
11.95	0.48	0.64	5.00	0.00	0.72	0.72
12.00	0.48	0.64	5.00	0.00	0.72	0.72
12.05	0.48	0.64	5.00	0.00	0.71	0.71
12.10	0.47	0.64	5.00	0.00	0.71	0.71
12.15	0.47	0.64	5.00	0.00	0.70	0.70
12.20	0.47	0.64	5.00	0.00	0.69	0.69
12.25	0.47	0.64	5.00	0.00	0.69	0.69
12.30	0.46	0.64	5.00	0.00	0.68	0.68
12.35	0.46	0.64	5.00	0.00	0.68	0.68
12.40	0.46	0.64	5.00	0.00	0.67	0.67
12.45	0.46	0.64	5.00	0.00	0.66	0.66
12.50	0.45	0.64	5.00	0.00	0.66	0.66
12.55	0.45	0.64	5.00	0.00	0.65	0.65
12.60	0.45	0.64	5.00	0.00	0.65	0.65
12.65	0.45	0.64	5.00	0.00	0.64	0.64
12.70	0.45	0.64	5.00	0.00	0.63	0.63
12.75	0.44	0.64	5.00	0.00	0.63	0.63
12.80	0.44	0.64	5.00	0.00	0.62	0.62
12.85	0.44	0.64	5.00	0.00	0.61	0.61
12.90	0.44	0.64	5.00	0.00	0.61	0.61
12.95	0.44	0.64	5.00	0.00	0.60	0.60
13.00	0.44	0.64	5.00	0.00	0.59	0.59
13.05	0.43	0.64	5.00	0.00	0.59	0.59
13.10	0.43	0.64	5.00	0.00	0.58	0.58
13.15	0.43	0.64	5.00	0.00	0.57	0.57
13.20	0.43	0.64	5.00	0.00	0.57	0.57
13.25	0.43	0.64	5.00	0.00	0.56	0.56
13.30	0.43	0.64	5.00	0.00	0.55	0.55
13.35	0.43	0.64	5.00	0.00	0.55	0.55
13.40	0.42	0.64	5.00	0.00	0.54	0.54
13.45	0.42	0.64	5.00	0.00	0.53	0.53
13.50	0.42	0.64	5.00	0.00	0.53	0.53
13.55	0.42	0.64	5.00	0.00	0.52	0.52
13.60	0.42	0.64	5.00	0.00	0.51	0.51
13.65	0.42	0.64	5.00	0.00	0.51	0.51
13.70	0.42	0.64	5.00	0.00	0.50	0.50
13.75	0.41	0.64	5.00	0.00	0.49	0.49
13.80	0.41	0.64	5.00	0.00	0.48	0.48
13.85	0.41	0.64	5.00	0.00	0.48	0.48
13.90	0.41	0.64	5.00	0.00	0.47	0.47
13.95	0.41	0.64	5.00	0.00	0.46	0.46
14.00	0.41	0.64	5.00	0.00	0.46	0.46
14.05	0.41	0.64	5.00	0.00	0.45	0.45
14.10	0.41	0.64	5.00	0.00	0.44	0.44
14.15	0.40	0.64	5.00	0.00	0.44	0.44
14.20	0.40	0.64	5.00	0.00	0.43	0.43
14.25	0.40	0.64	5.00	0.00	0.42	0.42
14.30	0.40	0.64	5.00	0.00	0.42	0.42
14.35	0.40	0.64	5.00	0.00	0.41	0.41
14.40	0.40	0.64	5.00	0.00	0.40	0.40
14.45	0.40	0.64	5.00	0.00	0.39	0.39
14.50	0.40	0.64	5.00	0.00	0.39	0.39
14.55	0.40	0.64	5.00	0.00	0.38	0.38
14.60	0.40	0.64	5.00	0.00	0.37	0.37
14.65	0.39	0.64	5.00	0.00	0.37	0.37
14.70	0.39	0.64	5.00	0.00	0.36	0.36
14.75	0.39	0.64	5.00	0.00	0.35	0.35
14.80	0.48	0.64	5.00	0.00	0.34	0.34
14.85	0.48	0.64	5.00	0.00	0.34	0.34
14.90	0.47	0.64	5.00	0.00	0.33	0.33
14.95	0.47	0.64	5.00	0.00	0.33	0.33
15.00	0.47	0.64	5.00	0.00	0.32	0.32
15.05	0.49	0.64	5.00	0.00	0.31	0.31
15.10	0.53	0.64	5.00	0.00	0.31	0.31
15.15	0.64	0.64	5.00	0.00	0.30	0.30
15.20	2.55	0.64	5.00	0.00	0.29	0.29
15.25	2.55	0.64	5.00	0.00	0.29	0.29
15.30	2.55	0.64	5.00	0.00	0.28	0.28
15.35	2.55	0.64	5.00	0.00	0.28	0.28
15.40	2.55	0.64	5.00	0.00	0.27	0.27
15.45	2.55	0.64	5.00	0.00	0.27	0.27
15.50	2.55	0.64	5.00	0.00	0.26	0.26
15.55	2.55	0.64	5.00	0.00	0.26	0.26
15.60	2.55	0.64	5.00	0.00	0.25	0.25
15.65	2.55	0.64	5.00	0.00	0.25	0.25
15.70	2.55	0.64	5.00	0.00	0.24	0.24
15.75	2.55	0.64	5.00	0.00	0.24	0.24
15.80	2.55	0.64	5.00	0.00	0.23	0.23
15.85	2.55	0.64	5.00	0.00	0.23	0.23
15.90	2.55	0.64	5.00	0.00	0.22	0.22
15.95	2.55	0.64	5.00	0.00	0.22	0.22
16.00	2.55	0.64	5.00	0.00	0.22	0.22
16.05	2.55	0.64	5.00	0.00	0.21	0.21
16.10	2.55	0.64	5.00	0.00	0.21	0.21
16.15	2.55	0.64	5.00	0.00	0.20	0.20
16.20	2.55	0.64	5.00	0.00	0.20	0.20
16.25	2.55	0.64	5.00	0.00	0.20	0.20
16.30	2.55	0.64	5.00	0.00	0.19	0.19
16.35	2.55	0.64	5.00	0.00	0.19	0.19

16.40	2.55	0.64	5.00	0.00	0.19	0.19
16.45	2.55	0.64	5.00	0.00	0.18	0.18
16.50	2.55	0.64	5.00	0.00	0.18	0.18
16.55	2.55	0.64	5.00	0.00	0.18	0.18
16.60	2.55	0.64	5.00	0.00	0.17	0.17
16.65	2.55	0.64	5.00	0.00	0.17	0.17
16.70	2.55	0.64	5.00	0.00	0.17	0.17
16.75	2.55	0.64	5.00	0.00	0.16	0.16
16.80	2.55	0.64	5.00	0.00	0.16	0.16
16.85	2.55	0.64	5.00	0.00	0.16	0.16
16.90	2.55	0.64	5.00	0.00	0.15	0.15
16.95	2.55	0.64	5.00	0.00	0.15	0.15
17.00	2.55	0.64	5.00	0.00	0.15	0.15
17.05	2.55	0.64	5.00	0.00	0.14	0.14
17.10	2.55	0.64	5.00	0.00	0.14	0.14
17.15	2.55	0.64	5.00	0.00	0.14	0.14
17.20	2.55	0.64	5.00	0.00	0.13	0.13
17.25	2.55	0.64	5.00	0.00	0.13	0.13
17.30	2.55	0.64	5.00	0.00	0.13	0.13
17.35	2.55	0.64	5.00	0.00	0.12	0.12
17.40	2.55	0.64	5.00	0.00	0.12	0.12
17.45	2.55	0.64	5.00	0.00	0.12	0.12
17.50	2.55	0.64	5.00	0.00	0.12	0.12
17.55	2.55	0.64	5.00	0.00	0.11	0.11
17.60	2.55	0.64	5.00	0.00	0.11	0.11
17.65	2.55	0.64	5.00	0.00	0.11	0.11
17.70	2.55	0.64	5.00	0.00	0.10	0.10
17.75	2.55	0.64	5.00	0.00	0.10	0.10
17.80	2.55	0.64	5.00	0.00	0.10	0.10
17.85	2.55	0.64	5.00	0.00	0.10	0.10
17.90	2.55	0.64	5.00	0.00	0.09	0.09
17.95	2.55	0.64	5.00	0.00	0.09	0.09
18.00	2.55	0.64	5.00	0.00	0.09	0.09
18.05	2.55	0.64	5.00	0.00	0.08	0.08
18.10	2.55	0.64	5.00	0.00	0.08	0.08
18.15	2.55	0.63	5.00	0.00	0.08	0.08
18.20	2.55	0.63	5.00	0.00	0.08	0.08
18.25	2.55	0.63	5.00	0.00	0.07	0.07
18.30	2.55	0.63	5.00	0.00	0.07	0.07
18.35	2.55	0.63	5.00	0.00	0.07	0.07
18.40	2.55	0.63	5.00	0.00	0.07	0.07
18.45	2.55	0.63	5.00	0.00	0.06	0.06
18.50	2.55	0.63	5.00	0.00	0.06	0.06
18.55	2.55	0.63	5.00	0.00	0.06	0.06
18.60	2.55	0.63	5.00	0.00	0.05	0.05
18.65	2.55	0.63	5.00	0.00	0.05	0.05
18.70	2.55	0.63	5.00	0.00	0.05	0.05
18.75	2.55	0.63	5.00	0.00	0.05	0.05
18.80	2.55	0.63	5.00	0.00	0.04	0.04
18.85	2.55	0.63	5.00	0.00	0.04	0.04
18.90	2.55	0.63	5.00	0.00	0.04	0.04
18.95	2.55	0.63	5.00	0.00	0.04	0.04
19.00	2.55	0.63	5.00	0.00	0.03	0.03
19.05	2.55	0.63	5.00	0.00	0.03	0.03
19.10	2.55	0.63	5.00	0.00	0.03	0.03
19.15	2.55	0.63	5.00	0.00	0.03	0.03
19.20	2.55	0.63	5.00	0.00	0.02	0.02
19.25	2.55	0.63	5.00	0.00	0.02	0.02
19.30	2.55	0.63	5.00	0.00	0.02	0.02
19.35	2.55	0.63	5.00	0.00	0.02	0.02
19.40	2.55	0.63	5.00	0.00	0.01	0.01
19.45	2.55	0.63	5.00	0.00	0.01	0.01
19.50	2.55	0.63	5.00	0.00	0.01	0.01
19.55	2.55	0.63	5.00	0.00	0.01	0.01
19.60	2.55	0.63	5.00	0.00	0.01	0.01
19.65	2.55	0.63	5.00	0.00	0.00	0.00
19.70	2.55	0.63	5.00	0.00	0.00	0.00
19.75	2.55	0.63	5.00	0.00	0.00	0.00
19.80	2.55	0.63	5.00	0.00	0.00	0.00
19.85	2.55	0.63	5.00	0.00	0.00	0.00
19.90	2.55	0.63	5.00	0.00	0.00	0.00
19.95	2.55	0.63	5.00	0.00	0.00	0.00
20.00	2.55	0.63	5.00	0.00	0.00	0.00
20.05	2.00	0.63	5.00	0.00	0.00	0.00
20.10	2.00	0.63	5.00	0.00	0.00	0.00
20.15	2.00	0.63	5.00	0.00	0.00	0.00
20.20	2.00	0.63	5.00	0.00	0.00	0.00
20.25	2.00	0.63	5.00	0.00	0.00	0.00
20.30	2.00	0.63	5.00	0.00	0.00	0.00
20.35	2.00	0.63	5.00	0.00	0.00	0.00
20.40	2.00	0.63	5.00	0.00	0.00	0.00
20.45	2.00	0.63	5.00	0.00	0.00	0.00
20.50	2.00	0.63	5.00	0.00	0.00	0.00
20.55	2.00	0.63	5.00	0.00	0.00	0.00
20.60	2.00	0.63	5.00	0.00	0.00	0.00
20.65	2.00	0.63	5.00	0.00	0.00	0.00
20.70	2.00	0.63	5.00	0.00	0.00	0.00
20.75	2.00	0.63	5.00	0.00	0.00	0.00
20.80	2.00	0.63	5.00	0.00	0.00	0.00
20.85	2.00	0.63	5.00	0.00	0.00	0.00
20.90	2.00	0.63	5.00	0.00	0.00	0.00
20.95	2.00	0.63	5.00	0.00	0.00	0.00
21.00	2.00	0.63	5.00	0.00	0.00	0.00
21.05	2.00	0.63	5.00	0.00	0.00	0.00
21.10	2.00	0.63	5.00	0.00	0.00	0.00
21.15	2.00	0.63	5.00	0.00	0.00	0.00
21.20	2.00	0.63	5.00	0.00	0.00	0.00
21.25	2.00	0.63	5.00	0.00	0.00	0.00
21.30	2.00	0.63	5.00	0.00	0.00	0.00
21.35	2.00	0.63	5.00	0.00	0.00	0.00

21.40	2.00	0.63	5.00	0.00	0.00	0.00
21.45	2.00	0.63	5.00	0.00	0.00	0.00
21.50	2.00	0.63	5.00	0.00	0.00	0.00
21.55	2.00	0.63	5.00	0.00	0.00	0.00
21.60	2.00	0.63	5.00	0.00	0.00	0.00
21.65	2.00	0.63	5.00	0.00	0.00	0.00
21.70	2.00	0.63	5.00	0.00	0.00	0.00
21.75	2.00	0.63	5.00	0.00	0.00	0.00
21.80	2.00	0.63	5.00	0.00	0.00	0.00
21.85	2.00	0.63	5.00	0.00	0.00	0.00
21.90	2.00	0.63	5.00	0.00	0.00	0.00
21.95	2.00	0.63	5.00	0.00	0.00	0.00
22.00	2.00	0.63	5.00	0.00	0.00	0.00
22.05	2.00	0.63	5.00	0.00	0.00	0.00
22.10	2.00	0.63	5.00	0.00	0.00	0.00
22.15	2.00	0.63	5.00	0.00	0.00	0.00
22.20	2.00	0.63	5.00	0.00	0.00	0.00
22.25	2.00	0.63	5.00	0.00	0.00	0.00
22.30	2.00	0.63	5.00	0.00	0.00	0.00
22.35	2.00	0.63	5.00	0.00	0.00	0.00
22.40	2.00	0.63	5.00	0.00	0.00	0.00
22.45	2.00	0.63	5.00	0.00	0.00	0.00
22.50	2.00	0.63	5.00	0.00	0.00	0.00
22.55	2.00	0.63	5.00	0.00	0.00	0.00
22.60	2.00	0.63	5.00	0.00	0.00	0.00
22.65	2.00	0.63	5.00	0.00	0.00	0.00
22.70	2.00	0.63	5.00	0.00	0.00	0.00
22.75	2.00	0.63	5.00	0.00	0.00	0.00
22.80	2.00	0.63	5.00	0.00	0.00	0.00
22.85	2.00	0.63	5.00	0.00	0.00	0.00
22.90	2.00	0.63	5.00	0.00	0.00	0.00
22.95	2.00	0.63	5.00	0.00	0.00	0.00
23.00	2.00	0.63	5.00	0.00	0.00	0.00
23.05	2.00	0.63	5.00	0.00	0.00	0.00
23.10	2.00	0.63	5.00	0.00	0.00	0.00
23.15	2.00	0.63	5.00	0.00	0.00	0.00
23.20	2.00	0.63	5.00	0.00	0.00	0.00
23.25	2.00	0.63	5.00	0.00	0.00	0.00
23.30	2.00	0.63	5.00	0.00	0.00	0.00
23.35	2.00	0.63	5.00	0.00	0.00	0.00
23.40	2.00	0.63	5.00	0.00	0.00	0.00
23.45	2.00	0.63	5.00	0.00	0.00	0.00
23.50	2.00	0.63	5.00	0.00	0.00	0.00
23.55	2.00	0.63	5.00	0.00	0.00	0.00
23.60	2.00	0.63	5.00	0.00	0.00	0.00
23.65	2.00	0.63	5.00	0.00	0.00	0.00
23.70	2.00	0.63	5.00	0.00	0.00	0.00
23.75	2.00	0.63	5.00	0.00	0.00	0.00
23.80	2.00	0.63	5.00	0.00	0.00	0.00
23.85	2.00	0.63	5.00	0.00	0.00	0.00
23.90	2.00	0.63	5.00	0.00	0.00	0.00
23.95	2.00	0.63	5.00	0.00	0.00	0.00
24.00	2.00	0.63	5.00	0.00	0.00	0.00
24.05	2.00	0.63	5.00	0.00	0.00	0.00
24.10	2.00	0.63	5.00	0.00	0.00	0.00
24.15	2.00	0.63	5.00	0.00	0.00	0.00
24.20	2.00	0.63	5.00	0.00	0.00	0.00
24.25	2.00	0.63	5.00	0.00	0.00	0.00
24.30	2.00	0.63	5.00	0.00	0.00	0.00
24.35	2.00	0.63	5.00	0.00	0.00	0.00
24.40	2.00	0.63	5.00	0.00	0.00	0.00
24.45	2.00	0.63	5.00	0.00	0.00	0.00
24.50	2.00	0.63	5.00	0.00	0.00	0.00
24.55	2.00	0.63	5.00	0.00	0.00	0.00
24.60	2.00	0.62	5.00	0.00	0.00	0.00
24.65	2.00	0.62	5.00	0.00	0.00	0.00
24.70	2.00	0.62	5.00	0.00	0.00	0.00
24.75	2.00	0.62	5.00	0.00	0.00	0.00
24.80	2.00	0.62	5.00	0.00	0.00	0.00
24.85	2.00	0.62	5.00	0.00	0.00	0.00
24.90	2.00	0.62	5.00	0.00	0.00	0.00
24.95	2.00	0.62	5.00	0.00	0.00	0.00
25.00	2.00	0.62	5.00	0.00	0.00	0.00
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00
26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00

26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
27.20	2.00	0.62	5.00	0.00	0.00	0.00
27.25	2.00	0.62	5.00	0.00	0.00	0.00
27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00
30.05	2.00	0.62	5.00	0.00	0.00	0.00
30.10	2.00	0.62	5.00	0.00	0.00	0.00
30.15	2.00	0.62	5.00	0.00	0.00	0.00
30.20	2.00	0.62	5.00	0.00	0.00	0.00
30.25	2.00	0.62	5.00	0.00	0.00	0.00
30.30	2.00	0.61	5.00	0.00	0.00	0.00
30.35	2.00	0.61	5.00	0.00	0.00	0.00
30.40	2.00	0.61	5.00	0.00	0.00	0.00
30.45	2.00	0.61	5.00	0.00	0.00	0.00
30.50	2.00	0.61	5.00	0.00	0.00	0.00
30.55	2.00	0.61	5.00	0.00	0.00	0.00
30.60	2.00	0.61	5.00	0.00	0.00	0.00
30.65	2.00	0.61	5.00	0.00	0.00	0.00
30.70	2.00	0.61	5.00	0.00	0.00	0.00
30.75	2.00	0.61	5.00	0.00	0.00	0.00
30.80	2.00	0.61	5.00	0.00	0.00	0.00
30.85	2.00	0.61	5.00	0.00	0.00	0.00
30.90	2.00	0.61	5.00	0.00	0.00	0.00
30.95	2.00	0.61	5.00	0.00	0.00	0.00
31.00	2.00	0.61	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

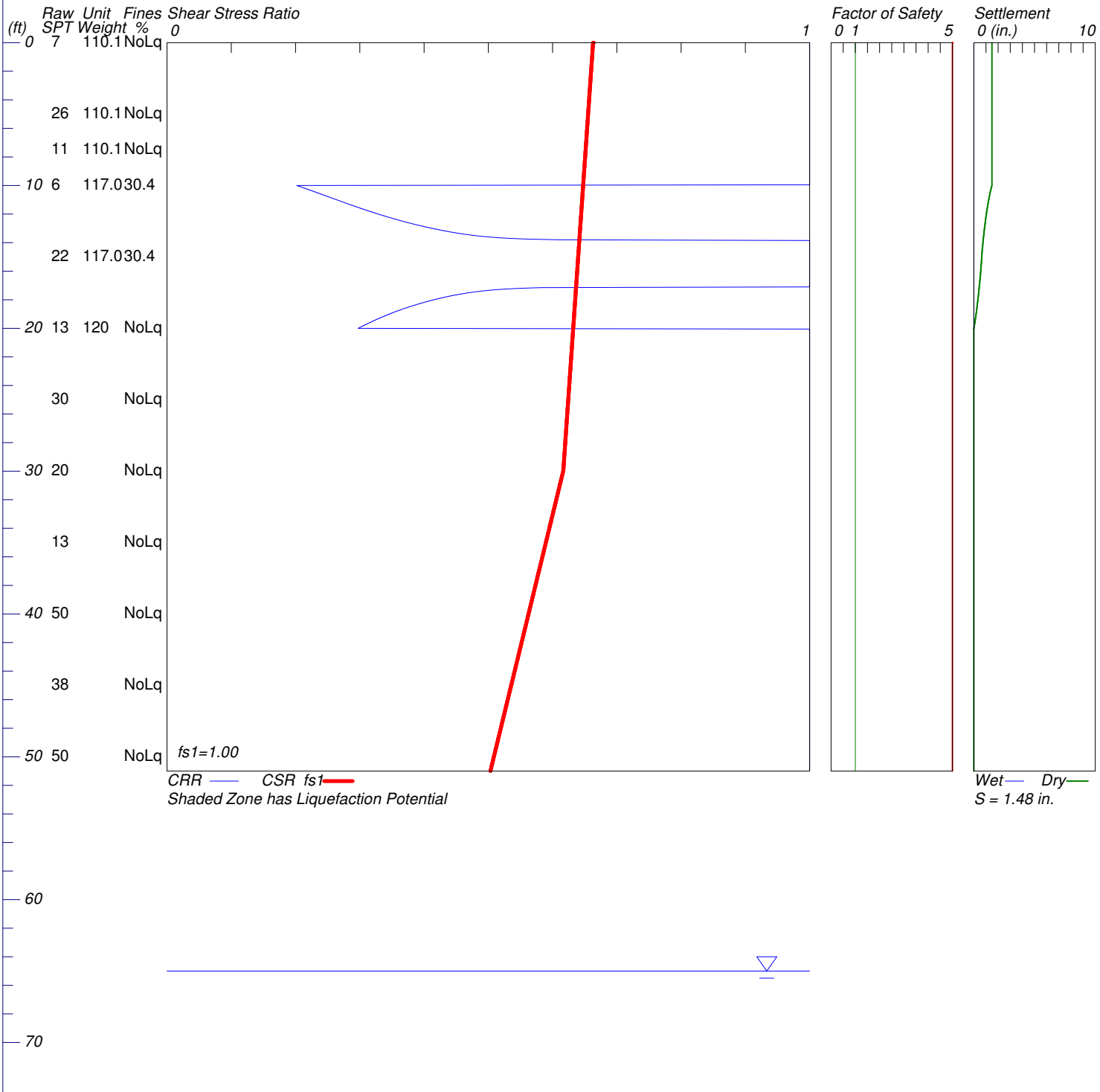
```
_____________________________________________________________________________
        CRRm            Cyclic resistance ratio from soils
        CSRfs           Cyclic stress ratio induced by a given earthquake (with user
request factor of safety)
        F.S.            Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
        S_sat           Settlement from saturated sands
        S_dry           Settlement from dry sands
        S_all           Total settlement from saturated and dry sands
        NoLiq           No-Liquefy Soils
```

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B6 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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********************************************************************************
******************
                                LIQUEFACTION ANALYSIS CALCULATION SHEET

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                                          www.civiltech.com
                                     (425) 453-6488  Fax (425) 453-5848


********************************************************************************
******************
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        Input File Name: C:\Users\adamr\Dropbox\LA Railroad 93 - Blackhall
Studios\Liquefaction\LGC-B6.liq
        Title:  LA Railroad 93
        Subtitle:  213015-01

        Surface Elev.=
        Hole No.=LGC-B6
        Depth of Hole= 51.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration= 1.02 g
        Earthquake Magnitude= 6.8

 Input Data:
        Surface Elev.=
        Hole No.=LGC-B6
        Depth of Hole=51.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration=1.02 g
        Earthquake Magnitude=6.8

        Earthquake Magnitude=6.8
        2. Settlement Analysis Method: Tokimatsu / Seed
        3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
        4. Fine Correction for Settlement: During Liquefaction*
        5. Settlement Calculation in: All zones*
        6. Hammer Energy Ratio,                                    Ce = 1.25
        7. Borehole Diameter,                                       Cb= 1
        8. Sampling Method,                                         Cs= 1
        9. User request factor of safety (apply to CSR) ,   User= 1.0
           Plot one CSR curve (fs1=User)
        10. Use Curve Smoothing: Yes*
        * Recommended Options

        In-Situ Test Data:
```

Depth ft	SPT	gamma pcf	Fines %
0.0	7.0	110.1	NoLiq
5.0	26.0	110.1	NoLiq
7.5	11.0	110.1	NoLiq
10.0	6.0	117.0	30.4
15.0	22.0	117.0	30.4
20.0	13.0	120.0	NoLiq
25.0	30.0	120.0	NoLiq
30.0	20.0	120.0	NoLiq
35.0	13.0	120.0	NoLiq
40.0	50.0	120.0	NoLiq
45.0	38.0	120.0	NoLiq
50.0	50.0	120.0	NoLiq

```
Output Results:
        Settlement of saturated sands=0.00 in.
        Settlement of dry sands=1.48 in.
        Total settlement of saturated and dry sands=1.48 in.
        Differential Settlement=0.742 to 0.980 in.
```

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	1.48	1.48
0.05	2.00	0.66	5.00	0.00	1.48	1.48
0.10	2.00	0.66	5.00	0.00	1.48	1.48
0.15	2.00	0.66	5.00	0.00	1.48	1.48
0.20	2.00	0.66	5.00	0.00	1.48	1.48
0.25	2.00	0.66	5.00	0.00	1.48	1.48
0.30	2.00	0.66	5.00	0.00	1.48	1.48
0.35	2.00	0.66	5.00	0.00	1.48	1.48
0.40	2.00	0.66	5.00	0.00	1.48	1.48
0.45	2.00	0.66	5.00	0.00	1.48	1.48
0.50	2.00	0.66	5.00	0.00	1.48	1.48
0.55	2.00	0.66	5.00	0.00	1.48	1.48
0.60	2.00	0.66	5.00	0.00	1.48	1.48
0.65	2.00	0.66	5.00	0.00	1.48	1.48
0.70	2.00	0.66	5.00	0.00	1.48	1.48
0.75	2.00	0.66	5.00	0.00	1.48	1.48
0.80	2.00	0.66	5.00	0.00	1.48	1.48
0.85	2.00	0.66	5.00	0.00	1.48	1.48
0.90	2.00	0.66	5.00	0.00	1.48	1.48
0.95	2.00	0.66	5.00	0.00	1.48	1.48
1.00	2.00	0.66	5.00	0.00	1.48	1.48
1.05	2.00	0.66	5.00	0.00	1.48	1.48
1.10	2.00	0.66	5.00	0.00	1.48	1.48
1.15	2.00	0.66	5.00	0.00	1.48	1.48

1.20	2.00	0.66	5.00	0.00	1.48	1.48
1.25	2.00	0.66	5.00	0.00	1.48	1.48
1.30	2.00	0.66	5.00	0.00	1.48	1.48
1.35	2.00	0.66	5.00	0.00	1.48	1.48
1.40	2.00	0.66	5.00	0.00	1.48	1.48
1.45	2.00	0.66	5.00	0.00	1.48	1.48
1.50	2.00	0.66	5.00	0.00	1.48	1.48
1.55	2.00	0.66	5.00	0.00	1.48	1.48
1.60	2.00	0.66	5.00	0.00	1.48	1.48
1.65	2.00	0.66	5.00	0.00	1.48	1.48
1.70	2.00	0.66	5.00	0.00	1.48	1.48
1.75	2.00	0.66	5.00	0.00	1.48	1.48
1.80	2.00	0.66	5.00	0.00	1.48	1.48
1.85	2.00	0.66	5.00	0.00	1.48	1.48
1.90	2.00	0.66	5.00	0.00	1.48	1.48
1.95	2.00	0.66	5.00	0.00	1.48	1.48
2.00	2.00	0.66	5.00	0.00	1.48	1.48
2.05	2.00	0.66	5.00	0.00	1.48	1.48
2.10	2.00	0.66	5.00	0.00	1.48	1.48
2.15	2.00	0.66	5.00	0.00	1.48	1.48
2.20	2.00	0.66	5.00	0.00	1.48	1.48
2.25	2.00	0.66	5.00	0.00	1.48	1.48
2.30	2.00	0.66	5.00	0.00	1.48	1.48
2.35	2.00	0.66	5.00	0.00	1.48	1.48
2.40	2.00	0.66	5.00	0.00	1.48	1.48
2.45	2.00	0.66	5.00	0.00	1.48	1.48
2.50	2.00	0.66	5.00	0.00	1.48	1.48
2.55	2.00	0.66	5.00	0.00	1.48	1.48
2.60	2.00	0.66	5.00	0.00	1.48	1.48
2.65	2.00	0.66	5.00	0.00	1.48	1.48
2.70	2.00	0.66	5.00	0.00	1.48	1.48
2.75	2.00	0.66	5.00	0.00	1.48	1.48
2.80	2.00	0.66	5.00	0.00	1.48	1.48
2.85	2.00	0.66	5.00	0.00	1.48	1.48
2.90	2.00	0.66	5.00	0.00	1.48	1.48
2.95	2.00	0.66	5.00	0.00	1.48	1.48
3.00	2.00	0.66	5.00	0.00	1.48	1.48
3.05	2.00	0.66	5.00	0.00	1.48	1.48
3.10	2.00	0.66	5.00	0.00	1.48	1.48
3.15	2.00	0.66	5.00	0.00	1.48	1.48
3.20	2.00	0.66	5.00	0.00	1.48	1.48
3.25	2.00	0.66	5.00	0.00	1.48	1.48
3.30	2.00	0.66	5.00	0.00	1.48	1.48
3.35	2.00	0.66	5.00	0.00	1.48	1.48
3.40	2.00	0.66	5.00	0.00	1.48	1.48
3.45	2.00	0.66	5.00	0.00	1.48	1.48
3.50	2.00	0.66	5.00	0.00	1.48	1.48
3.55	2.00	0.66	5.00	0.00	1.48	1.48
3.60	2.00	0.66	5.00	0.00	1.48	1.48
3.65	2.00	0.66	5.00	0.00	1.48	1.48
3.70	2.00	0.66	5.00	0.00	1.48	1.48
3.75	2.00	0.66	5.00	0.00	1.48	1.48
3.80	2.00	0.66	5.00	0.00	1.48	1.48
3.85	2.00	0.66	5.00	0.00	1.48	1.48
3.90	2.00	0.66	5.00	0.00	1.48	1.48
3.95	2.00	0.66	5.00	0.00	1.48	1.48
4.00	2.00	0.66	5.00	0.00	1.48	1.48
4.05	2.00	0.66	5.00	0.00	1.48	1.48
4.10	2.00	0.66	5.00	0.00	1.48	1.48
4.15	2.00	0.66	5.00	0.00	1.48	1.48
4.20	2.00	0.66	5.00	0.00	1.48	1.48
4.25	2.00	0.66	5.00	0.00	1.48	1.48
4.30	2.00	0.66	5.00	0.00	1.48	1.48
4.35	2.00	0.66	5.00	0.00	1.48	1.48
4.40	2.00	0.66	5.00	0.00	1.48	1.48
4.45	2.00	0.66	5.00	0.00	1.48	1.48
4.50	2.00	0.66	5.00	0.00	1.48	1.48
4.55	2.00	0.66	5.00	0.00	1.48	1.48
4.60	2.00	0.66	5.00	0.00	1.48	1.48
4.65	2.00	0.66	5.00	0.00	1.48	1.48
4.70	2.00	0.66	5.00	0.00	1.48	1.48
4.75	2.00	0.66	5.00	0.00	1.48	1.48
4.80	2.00	0.66	5.00	0.00	1.48	1.48
4.85	2.00	0.66	5.00	0.00	1.48	1.48
4.90	2.00	0.66	5.00	0.00	1.48	1.48
4.95	2.00	0.66	5.00	0.00	1.48	1.48
5.00	2.00	0.66	5.00	0.00	1.48	1.48
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5.25	2.00	0.65	5.00	0.00	1.48	1.48
5.30	2.00	0.65	5.00	0.00	1.48	1.48
5.35	2.00	0.65	5.00	0.00	1.48	1.48
5.40	2.00	0.65	5.00	0.00	1.48	1.48
5.45	2.00	0.65	5.00	0.00	1.48	1.48
5.50	2.00	0.65	5.00	0.00	1.48	1.48
5.55	2.00	0.65	5.00	0.00	1.48	1.48
5.60	2.00	0.65	5.00	0.00	1.48	1.48
5.65	2.00	0.65	5.00	0.00	1.48	1.48
5.70	2.00	0.65	5.00	0.00	1.48	1.48
5.75	2.00	0.65	5.00	0.00	1.48	1.48
5.80	2.00	0.65	5.00	0.00	1.48	1.48
5.85	2.00	0.65	5.00	0.00	1.48	1.48
5.90	2.00	0.65	5.00	0.00	1.48	1.48
5.95	2.00	0.65	5.00	0.00	1.48	1.48
6.00	2.00	0.65	5.00	0.00	1.48	1.48
6.05	2.00	0.65	5.00	0.00	1.48	1.48
6.10	2.00	0.65	5.00	0.00	1.48	1.48
6.15	2.00	0.65	5.00	0.00	1.48	1.48

6.20	2.00	0.65	5.00	0.00	1.48	1.48
6.25	2.00	0.65	5.00	0.00	1.48	1.48
6.30	2.00	0.65	5.00	0.00	1.48	1.48
6.35	2.00	0.65	5.00	0.00	1.48	1.48
6.40	2.00	0.65	5.00	0.00	1.48	1.48
6.45	2.00	0.65	5.00	0.00	1.48	1.48
6.50	2.00	0.65	5.00	0.00	1.48	1.48
6.55	2.00	0.65	5.00	0.00	1.48	1.48
6.60	2.00	0.65	5.00	0.00	1.48	1.48
6.65	2.00	0.65	5.00	0.00	1.48	1.48
6.70	2.00	0.65	5.00	0.00	1.48	1.48
6.75	2.00	0.65	5.00	0.00	1.48	1.48
6.80	2.00	0.65	5.00	0.00	1.48	1.48
6.85	2.00	0.65	5.00	0.00	1.48	1.48
6.90	2.00	0.65	5.00	0.00	1.48	1.48
6.95	2.00	0.65	5.00	0.00	1.48	1.48
7.00	2.00	0.65	5.00	0.00	1.48	1.48
7.05	2.00	0.65	5.00	0.00	1.48	1.48
7.10	2.00	0.65	5.00	0.00	1.48	1.48
7.15	2.00	0.65	5.00	0.00	1.48	1.48
7.20	2.00	0.65	5.00	0.00	1.48	1.48
7.25	2.00	0.65	5.00	0.00	1.48	1.48
7.30	2.00	0.65	5.00	0.00	1.48	1.48
7.35	2.00	0.65	5.00	0.00	1.48	1.48
7.40	2.00	0.65	5.00	0.00	1.48	1.48
7.45	2.00	0.65	5.00	0.00	1.48	1.48
7.50	2.00	0.65	5.00	0.00	1.48	1.48
7.55	2.00	0.65	5.00	0.00	1.48	1.48
7.60	2.00	0.65	5.00	0.00	1.48	1.48
7.65	2.00	0.65	5.00	0.00	1.48	1.48
7.70	2.00	0.65	5.00	0.00	1.48	1.48
7.75	2.00	0.65	5.00	0.00	1.48	1.48
7.80	2.00	0.65	5.00	0.00	1.48	1.48
7.85	2.00	0.65	5.00	0.00	1.48	1.48
7.90	2.00	0.65	5.00	0.00	1.48	1.48
7.95	2.00	0.65	5.00	0.00	1.48	1.48
8.00	2.00	0.65	5.00	0.00	1.48	1.48
8.05	2.00	0.65	5.00	0.00	1.48	1.48
8.10	2.00	0.65	5.00	0.00	1.48	1.48
8.15	2.00	0.65	5.00	0.00	1.48	1.48
8.20	2.00	0.65	5.00	0.00	1.48	1.48
8.25	2.00	0.65	5.00	0.00	1.48	1.48
8.30	2.00	0.65	5.00	0.00	1.48	1.48
8.35	2.00	0.65	5.00	0.00	1.48	1.48
8.40	2.00	0.65	5.00	0.00	1.48	1.48
8.45	2.00	0.65	5.00	0.00	1.48	1.48
8.50	2.00	0.65	5.00	0.00	1.48	1.48
8.55	2.00	0.65	5.00	0.00	1.48	1.48
8.60	2.00	0.65	5.00	0.00	1.48	1.48
8.65	2.00	0.65	5.00	0.00	1.48	1.48
8.70	2.00	0.65	5.00	0.00	1.48	1.48
8.75	2.00	0.65	5.00	0.00	1.48	1.48
8.80	2.00	0.65	5.00	0.00	1.48	1.48
8.85	2.00	0.65	5.00	0.00	1.48	1.48
8.90	2.00	0.65	5.00	0.00	1.48	1.48
8.95	2.00	0.65	5.00	0.00	1.48	1.48
9.00	2.00	0.65	5.00	0.00	1.48	1.48
9.05	2.00	0.65	5.00	0.00	1.48	1.48
9.10	2.00	0.65	5.00	0.00	1.48	1.48
9.15	2.00	0.65	5.00	0.00	1.48	1.48
9.20	2.00	0.65	5.00	0.00	1.48	1.48
9.25	2.00	0.65	5.00	0.00	1.48	1.48
9.30	2.00	0.65	5.00	0.00	1.48	1.48
9.35	2.00	0.65	5.00	0.00	1.48	1.48
9.40	2.00	0.65	5.00	0.00	1.48	1.48
9.45	2.00	0.65	5.00	0.00	1.48	1.48
9.50	2.00	0.65	5.00	0.00	1.48	1.48
9.55	2.00	0.65	5.00	0.00	1.48	1.48
9.60	2.00	0.65	5.00	0.00	1.48	1.48
9.65	2.00	0.65	5.00	0.00	1.48	1.48
9.70	2.00	0.65	5.00	0.00	1.48	1.48
9.75	2.00	0.65	5.00	0.00	1.48	1.48
9.80	2.00	0.65	5.00	0.00	1.48	1.48
9.85	2.00	0.65	5.00	0.00	1.48	1.48
9.90	2.00	0.65	5.00	0.00	1.48	1.48
9.95	2.00	0.65	5.00	0.00	1.48	1.48
10.00	0.20	0.65	5.00	0.00	1.48	1.48
10.05	0.21	0.65	5.00	0.00	1.47	1.47
10.10	0.21	0.65	5.00	0.00	1.45	1.45
10.15	0.21	0.65	5.00	0.00	1.44	1.44
10.20	0.21	0.65	5.00	0.00	1.42	1.42
10.25	0.22	0.65	5.00	0.00	1.41	1.41
10.30	0.22	0.65	5.00	0.00	1.40	1.40
10.35	0.22	0.65	5.00	0.00	1.38	1.38
10.40	0.23	0.65	5.00	0.00	1.37	1.37
10.45	0.23	0.65	5.00	0.00	1.36	1.36
10.50	0.23	0.65	5.00	0.00	1.34	1.34
10.55	0.24	0.65	5.00	0.00	1.33	1.33
10.60	0.24	0.65	5.00	0.00	1.32	1.32
10.65	0.24	0.65	5.00	0.00	1.30	1.30
10.70	0.25	0.65	5.00	0.00	1.29	1.29
10.75	0.25	0.65	5.00	0.00	1.28	1.28
10.80	0.25	0.65	5.00	0.00	1.27	1.27
10.85	0.25	0.65	5.00	0.00	1.26	1.26
10.90	0.26	0.65	5.00	0.00	1.25	1.25
10.95	0.26	0.65	5.00	0.00	1.23	1.23
11.00	0.26	0.65	5.00	0.00	1.22	1.22
11.05	0.27	0.65	5.00	0.00	1.21	1.21
11.10	0.27	0.65	5.00	0.00	1.20	1.20
11.15	0.27	0.65	5.00	0.00	1.19	1.19

11.20	0.28	0.65	5.00	0.00	1.18	1.18
11.25	0.28	0.65	5.00	0.00	1.17	1.17
11.30	0.28	0.65	5.00	0.00	1.16	1.16
11.35	0.29	0.65	5.00	0.00	1.15	1.15
11.40	0.29	0.65	5.00	0.00	1.14	1.14
11.45	0.29	0.65	5.00	0.00	1.13	1.13
11.50	0.30	0.65	5.00	0.00	1.12	1.12
11.55	0.30	0.65	5.00	0.00	1.11	1.11
11.60	0.30	0.65	5.00	0.00	1.10	1.10
11.65	0.30	0.64	5.00	0.00	1.09	1.09
11.70	0.31	0.64	5.00	0.00	1.08	1.08
11.75	0.31	0.64	5.00	0.00	1.07	1.07
11.80	0.31	0.64	5.00	0.00	1.07	1.07
11.85	0.32	0.64	5.00	0.00	1.06	1.06
11.90	0.32	0.64	5.00	0.00	1.05	1.05
11.95	0.33	0.64	5.00	0.00	1.04	1.04
12.00	0.33	0.64	5.00	0.00	1.03	1.03
12.05	0.33	0.64	5.00	0.00	1.02	1.02
12.10	0.34	0.64	5.00	0.00	1.01	1.01
12.15	0.34	0.64	5.00	0.00	1.01	1.01
12.20	0.34	0.64	5.00	0.00	1.00	1.00
12.25	0.35	0.64	5.00	0.00	0.99	0.99
12.30	0.35	0.64	5.00	0.00	0.98	0.98
12.35	0.35	0.64	5.00	0.00	0.97	0.97
12.40	0.36	0.64	5.00	0.00	0.97	0.97
12.45	0.36	0.64	5.00	0.00	0.96	0.96
12.50	0.37	0.64	5.00	0.00	0.95	0.95
12.55	0.37	0.64	5.00	0.00	0.94	0.94
12.60	0.38	0.64	5.00	0.00	0.93	0.93
12.65	0.38	0.64	5.00	0.00	0.93	0.93
12.70	0.38	0.64	5.00	0.00	0.92	0.92
12.75	0.39	0.64	5.00	0.00	0.91	0.91
12.80	0.39	0.64	5.00	0.00	0.91	0.91
12.85	0.40	0.64	5.00	0.00	0.90	0.90
12.90	0.40	0.64	5.00	0.00	0.89	0.89
12.95	0.41	0.64	5.00	0.00	0.88	0.88
13.00	0.41	0.64	5.00	0.00	0.88	0.88
13.05	0.42	0.64	5.00	0.00	0.87	0.87
13.10	0.42	0.64	5.00	0.00	0.86	0.86
13.15	0.43	0.64	5.00	0.00	0.86	0.86
13.20	0.43	0.64	5.00	0.00	0.85	0.85
13.25	0.44	0.64	5.00	0.00	0.84	0.84
13.30	0.45	0.64	5.00	0.00	0.84	0.84
13.35	0.45	0.64	5.00	0.00	0.83	0.83
13.40	0.46	0.64	5.00	0.00	0.82	0.82
13.45	0.47	0.64	5.00	0.00	0.82	0.82
13.50	0.48	0.64	5.00	0.00	0.81	0.81
13.55	0.49	0.64	5.00	0.00	0.80	0.80
13.60	0.50	0.64	5.00	0.00	0.80	0.80
13.65	0.51	0.64	5.00	0.00	0.79	0.79
13.70	0.53	0.64	5.00	0.00	0.79	0.79
13.75	0.56	0.64	5.00	0.00	0.78	0.78
13.80	0.61	0.64	5.00	0.00	0.77	0.77
13.85	2.55	0.64	5.00	0.00	0.77	0.77
13.90	2.55	0.64	5.00	0.00	0.76	0.76
13.95	2.55	0.64	5.00	0.00	0.76	0.76
14.00	2.55	0.64	5.00	0.00	0.75	0.75
14.05	2.55	0.64	5.00	0.00	0.74	0.74
14.10	2.55	0.64	5.00	0.00	0.74	0.74
14.15	2.55	0.64	5.00	0.00	0.73	0.73
14.20	2.55	0.64	5.00	0.00	0.73	0.73
14.25	2.55	0.64	5.00	0.00	0.72	0.72
14.30	2.55	0.64	5.00	0.00	0.72	0.72
14.35	2.55	0.64	5.00	0.00	0.71	0.71
14.40	2.55	0.64	5.00	0.00	0.71	0.71
14.45	2.55	0.64	5.00	0.00	0.70	0.70
14.50	2.55	0.64	5.00	0.00	0.70	0.70
14.55	2.55	0.64	5.00	0.00	0.69	0.69
14.60	2.55	0.64	5.00	0.00	0.68	0.68
14.65	2.55	0.64	5.00	0.00	0.68	0.68
14.70	2.55	0.64	5.00	0.00	0.67	0.67
14.75	2.55	0.64	5.00	0.00	0.67	0.67
14.80	2.55	0.64	5.00	0.00	0.66	0.66
14.85	2.55	0.64	5.00	0.00	0.66	0.66
14.90	2.55	0.64	5.00	0.00	0.66	0.66
14.95	2.55	0.64	5.00	0.00	0.65	0.65
15.00	2.55	0.64	5.00	0.00	0.65	0.65
15.05	2.55	0.64	5.00	0.00	0.65	0.65
15.10	2.55	0.64	5.00	0.00	0.64	0.64
15.15	2.55	0.64	5.00	0.00	0.64	0.64
15.20	2.55	0.64	5.00	0.00	0.64	0.64
15.25	2.55	0.64	5.00	0.00	0.63	0.63
15.30	2.55	0.64	5.00	0.00	0.63	0.63
15.35	2.55	0.64	5.00	0.00	0.62	0.62
15.40	2.55	0.64	5.00	0.00	0.62	0.62
15.45	2.55	0.64	5.00	0.00	0.61	0.61
15.50	2.55	0.64	5.00	0.00	0.61	0.61
15.55	2.55	0.64	5.00	0.00	0.61	0.61
15.60	2.55	0.64	5.00	0.00	0.60	0.60
15.65	2.55	0.64	5.00	0.00	0.60	0.60
15.70	2.55	0.64	5.00	0.00	0.59	0.59
15.75	2.55	0.64	5.00	0.00	0.59	0.59
15.80	2.55	0.64	5.00	0.00	0.58	0.58
15.85	2.55	0.64	5.00	0.00	0.58	0.58
15.90	2.55	0.64	5.00	0.00	0.57	0.57
15.95	2.55	0.64	5.00	0.00	0.57	0.57
16.00	2.55	0.64	5.00	0.00	0.56	0.56
16.05	2.55	0.64	5.00	0.00	0.56	0.56
16.10	2.55	0.64	5.00	0.00	0.55	0.55
16.15	2.55	0.64	5.00	0.00	0.55	0.55

16.20	2.55	0.64	5.00	0.00	0.54	0.54
16.25	2.55	0.64	5.00	0.00	0.54	0.54
16.30	2.55	0.64	5.00	0.00	0.53	0.53
16.35	2.55	0.64	5.00	0.00	0.53	0.53
16.40	2.55	0.64	5.00	0.00	0.52	0.52
16.45	2.55	0.64	5.00	0.00	0.52	0.52
16.50	2.55	0.64	5.00	0.00	0.51	0.51
16.55	2.55	0.64	5.00	0.00	0.51	0.51
16.60	2.55	0.64	5.00	0.00	0.50	0.50
16.65	2.55	0.64	5.00	0.00	0.50	0.50
16.70	2.55	0.64	5.00	0.00	0.49	0.49
16.75	2.55	0.64	5.00	0.00	0.49	0.49
16.80	2.55	0.64	5.00	0.00	0.48	0.48
16.85	2.55	0.64	5.00	0.00	0.47	0.47
16.90	2.55	0.64	5.00	0.00	0.47	0.47
16.95	2.55	0.64	5.00	0.00	0.46	0.46
17.00	2.55	0.64	5.00	0.00	0.46	0.46
17.05	2.55	0.64	5.00	0.00	0.45	0.45
17.10	2.55	0.64	5.00	0.00	0.45	0.45
17.15	0.58	0.64	5.00	0.00	0.44	0.44
17.20	0.55	0.64	5.00	0.00	0.43	0.43
17.25	0.53	0.64	5.00	0.00	0.43	0.43
17.30	0.51	0.64	5.00	0.00	0.42	0.42
17.35	0.50	0.64	5.00	0.00	0.42	0.42
17.40	0.49	0.64	5.00	0.00	0.41	0.41
17.45	0.48	0.64	5.00	0.00	0.40	0.40
17.50	0.47	0.64	5.00	0.00	0.40	0.40
17.55	0.46	0.64	5.00	0.00	0.39	0.39
17.60	0.46	0.64	5.00	0.00	0.38	0.38
17.65	0.45	0.64	5.00	0.00	0.38	0.38
17.70	0.44	0.64	5.00	0.00	0.37	0.37
17.75	0.44	0.64	5.00	0.00	0.36	0.36
17.80	0.43	0.64	5.00	0.00	0.36	0.36
17.85	0.43	0.64	5.00	0.00	0.35	0.35
17.90	0.42	0.64	5.00	0.00	0.34	0.34
17.95	0.42	0.64	5.00	0.00	0.34	0.34
18.00	0.42	0.64	5.00	0.00	0.33	0.33
18.05	0.41	0.64	5.00	0.00	0.32	0.32
18.10	0.41	0.64	5.00	0.00	0.32	0.32
18.15	0.40	0.63	5.00	0.00	0.31	0.31
18.20	0.40	0.63	5.00	0.00	0.30	0.30
18.25	0.39	0.63	5.00	0.00	0.30	0.30
18.30	0.39	0.63	5.00	0.00	0.29	0.29
18.35	0.39	0.63	5.00	0.00	0.28	0.28
18.40	0.38	0.63	5.00	0.00	0.27	0.27
18.45	0.38	0.63	5.00	0.00	0.27	0.27
18.50	0.38	0.63	5.00	0.00	0.26	0.26
18.55	0.37	0.63	5.00	0.00	0.25	0.25
18.60	0.37	0.63	5.00	0.00	0.25	0.25
18.65	0.37	0.63	5.00	0.00	0.24	0.24
18.70	0.36	0.63	5.00	0.00	0.23	0.23
18.75	0.36	0.63	5.00	0.00	0.22	0.22
18.80	0.36	0.63	5.00	0.00	0.21	0.21
18.85	0.35	0.63	5.00	0.00	0.21	0.21
18.90	0.35	0.63	5.00	0.00	0.20	0.20
18.95	0.35	0.63	5.00	0.00	0.19	0.19
19.00	0.35	0.63	5.00	0.00	0.18	0.18
19.05	0.34	0.63	5.00	0.00	0.18	0.18
19.10	0.34	0.63	5.00	0.00	0.17	0.17
19.15	0.34	0.63	5.00	0.00	0.16	0.16
19.20	0.34	0.63	5.00	0.00	0.15	0.15
19.25	0.33	0.63	5.00	0.00	0.14	0.14
19.30	0.33	0.63	5.00	0.00	0.13	0.13
19.35	0.33	0.63	5.00	0.00	0.13	0.13
19.40	0.32	0.63	5.00	0.00	0.12	0.12
19.45	0.32	0.63	5.00	0.00	0.11	0.11
19.50	0.32	0.63	5.00	0.00	0.10	0.10
19.55	0.32	0.63	5.00	0.00	0.09	0.09
19.60	0.32	0.63	5.00	0.00	0.08	0.08
19.65	0.31	0.63	5.00	0.00	0.07	0.07
19.70	0.31	0.63	5.00	0.00	0.06	0.06
19.75	0.31	0.63	5.00	0.00	0.06	0.06
19.80	0.31	0.63	5.00	0.00	0.05	0.05
19.85	0.30	0.63	5.00	0.00	0.04	0.04
19.90	0.30	0.63	5.00	0.00	0.03	0.03
19.95	0.30	0.63	5.00	0.00	0.02	0.02
20.00	0.30	0.63	5.00	0.00	0.01	0.01
20.05	2.00	0.63	5.00	0.00	0.00	0.00
20.10	2.00	0.63	5.00	0.00	0.00	0.00
20.15	2.00	0.63	5.00	0.00	0.00	0.00
20.20	2.00	0.63	5.00	0.00	0.00	0.00
20.25	2.00	0.63	5.00	0.00	0.00	0.00
20.30	2.00	0.63	5.00	0.00	0.00	0.00
20.35	2.00	0.63	5.00	0.00	0.00	0.00
20.40	2.00	0.63	5.00	0.00	0.00	0.00
20.45	2.00	0.63	5.00	0.00	0.00	0.00
20.50	2.00	0.63	5.00	0.00	0.00	0.00
20.55	2.00	0.63	5.00	0.00	0.00	0.00
20.60	2.00	0.63	5.00	0.00	0.00	0.00
20.65	2.00	0.63	5.00	0.00	0.00	0.00
20.70	2.00	0.63	5.00	0.00	0.00	0.00
20.75	2.00	0.63	5.00	0.00	0.00	0.00
20.80	2.00	0.63	5.00	0.00	0.00	0.00
20.85	2.00	0.63	5.00	0.00	0.00	0.00
20.90	2.00	0.63	5.00	0.00	0.00	0.00
20.95	2.00	0.63	5.00	0.00	0.00	0.00
21.00	2.00	0.63	5.00	0.00	0.00	0.00
21.05	2.00	0.63	5.00	0.00	0.00	0.00
21.10	2.00	0.63	5.00	0.00	0.00	0.00
21.15	2.00	0.63	5.00	0.00	0.00	0.00

21.20	2.00	0.63	5.00	0.00	0.00	0.00
21.25	2.00	0.63	5.00	0.00	0.00	0.00
21.30	2.00	0.63	5.00	0.00	0.00	0.00
21.35	2.00	0.63	5.00	0.00	0.00	0.00
21.40	2.00	0.63	5.00	0.00	0.00	0.00
21.45	2.00	0.63	5.00	0.00	0.00	0.00
21.50	2.00	0.63	5.00	0.00	0.00	0.00
21.55	2.00	0.63	5.00	0.00	0.00	0.00
21.60	2.00	0.63	5.00	0.00	0.00	0.00
21.65	2.00	0.63	5.00	0.00	0.00	0.00
21.70	2.00	0.63	5.00	0.00	0.00	0.00
21.75	2.00	0.63	5.00	0.00	0.00	0.00
21.80	2.00	0.63	5.00	0.00	0.00	0.00
21.85	2.00	0.63	5.00	0.00	0.00	0.00
21.90	2.00	0.63	5.00	0.00	0.00	0.00
21.95	2.00	0.63	5.00	0.00	0.00	0.00
22.00	2.00	0.63	5.00	0.00	0.00	0.00
22.05	2.00	0.63	5.00	0.00	0.00	0.00
22.10	2.00	0.63	5.00	0.00	0.00	0.00
22.15	2.00	0.63	5.00	0.00	0.00	0.00
22.20	2.00	0.63	5.00	0.00	0.00	0.00
22.25	2.00	0.63	5.00	0.00	0.00	0.00
22.30	2.00	0.63	5.00	0.00	0.00	0.00
22.35	2.00	0.63	5.00	0.00	0.00	0.00
22.40	2.00	0.63	5.00	0.00	0.00	0.00
22.45	2.00	0.63	5.00	0.00	0.00	0.00
22.50	2.00	0.63	5.00	0.00	0.00	0.00
22.55	2.00	0.63	5.00	0.00	0.00	0.00
22.60	2.00	0.63	5.00	0.00	0.00	0.00
22.65	2.00	0.63	5.00	0.00	0.00	0.00
22.70	2.00	0.63	5.00	0.00	0.00	0.00
22.75	2.00	0.63	5.00	0.00	0.00	0.00
22.80	2.00	0.63	5.00	0.00	0.00	0.00
22.85	2.00	0.63	5.00	0.00	0.00	0.00
22.90	2.00	0.63	5.00	0.00	0.00	0.00
22.95	2.00	0.63	5.00	0.00	0.00	0.00
23.00	2.00	0.63	5.00	0.00	0.00	0.00
23.05	2.00	0.63	5.00	0.00	0.00	0.00
23.10	2.00	0.63	5.00	0.00	0.00	0.00
23.15	2.00	0.63	5.00	0.00	0.00	0.00
23.20	2.00	0.63	5.00	0.00	0.00	0.00
23.25	2.00	0.63	5.00	0.00	0.00	0.00
23.30	2.00	0.63	5.00	0.00	0.00	0.00
23.35	2.00	0.63	5.00	0.00	0.00	0.00
23.40	2.00	0.63	5.00	0.00	0.00	0.00
23.45	2.00	0.63	5.00	0.00	0.00	0.00
23.50	2.00	0.63	5.00	0.00	0.00	0.00
23.55	2.00	0.63	5.00	0.00	0.00	0.00
23.60	2.00	0.63	5.00	0.00	0.00	0.00
23.65	2.00	0.63	5.00	0.00	0.00	0.00
23.70	2.00	0.63	5.00	0.00	0.00	0.00
23.75	2.00	0.63	5.00	0.00	0.00	0.00
23.80	2.00	0.63	5.00	0.00	0.00	0.00
23.85	2.00	0.63	5.00	0.00	0.00	0.00
23.90	2.00	0.63	5.00	0.00	0.00	0.00
23.95	2.00	0.63	5.00	0.00	0.00	0.00
24.00	2.00	0.63	5.00	0.00	0.00	0.00
24.05	2.00	0.63	5.00	0.00	0.00	0.00
24.10	2.00	0.63	5.00	0.00	0.00	0.00
24.15	2.00	0.63	5.00	0.00	0.00	0.00
24.20	2.00	0.63	5.00	0.00	0.00	0.00
24.25	2.00	0.63	5.00	0.00	0.00	0.00
24.30	2.00	0.63	5.00	0.00	0.00	0.00
24.35	2.00	0.63	5.00	0.00	0.00	0.00
24.40	2.00	0.63	5.00	0.00	0.00	0.00
24.45	2.00	0.63	5.00	0.00	0.00	0.00
24.50	2.00	0.63	5.00	0.00	0.00	0.00
24.55	2.00	0.63	5.00	0.00	0.00	0.00
24.60	2.00	0.62	5.00	0.00	0.00	0.00
24.65	2.00	0.62	5.00	0.00	0.00	0.00
24.70	2.00	0.62	5.00	0.00	0.00	0.00
24.75	2.00	0.62	5.00	0.00	0.00	0.00
24.80	2.00	0.62	5.00	0.00	0.00	0.00
24.85	2.00	0.62	5.00	0.00	0.00	0.00
24.90	2.00	0.62	5.00	0.00	0.00	0.00
24.95	2.00	0.62	5.00	0.00	0.00	0.00
25.00	2.00	0.62	5.00	0.00	0.00	0.00
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00

26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00
26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
27.20	2.00	0.62	5.00	0.00	0.00	0.00
27.25	2.00	0.62	5.00	0.00	0.00	0.00
27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00
30.05	2.00	0.62	5.00	0.00	0.00	0.00
30.10	2.00	0.62	5.00	0.00	0.00	0.00
30.15	2.00	0.62	5.00	0.00	0.00	0.00
30.20	2.00	0.62	5.00	0.00	0.00	0.00
30.25	2.00	0.62	5.00	0.00	0.00	0.00
30.30	2.00	0.61	5.00	0.00	0.00	0.00
30.35	2.00	0.61	5.00	0.00	0.00	0.00
30.40	2.00	0.61	5.00	0.00	0.00	0.00
30.45	2.00	0.61	5.00	0.00	0.00	0.00
30.50	2.00	0.61	5.00	0.00	0.00	0.00
30.55	2.00	0.61	5.00	0.00	0.00	0.00
30.60	2.00	0.61	5.00	0.00	0.00	0.00
30.65	2.00	0.61	5.00	0.00	0.00	0.00
30.70	2.00	0.61	5.00	0.00	0.00	0.00
30.75	2.00	0.61	5.00	0.00	0.00	0.00
30.80	2.00	0.61	5.00	0.00	0.00	0.00
30.85	2.00	0.61	5.00	0.00	0.00	0.00
30.90	2.00	0.61	5.00	0.00	0.00	0.00
30.95	2.00	0.61	5.00	0.00	0.00	0.00
31.00	2.00	0.61	5.00	0.00	0.00	0.00
31.05	2.00	0.61	5.00	0.00	0.00	0.00
31.10	2.00	0.61	5.00	0.00	0.00	0.00
31.15	2.00	0.61	5.00	0.00	0.00	0.00

31.20	2.00	0.61	5.00	0.00	0.00	0.00
31.25	2.00	0.61	5.00	0.00	0.00	0.00
31.30	2.00	0.61	5.00	0.00	0.00	0.00
31.35	2.00	0.61	5.00	0.00	0.00	0.00
31.40	2.00	0.61	5.00	0.00	0.00	0.00
31.45	2.00	0.61	5.00	0.00	0.00	0.00
31.50	2.00	0.61	5.00	0.00	0.00	0.00
31.55	2.00	0.61	5.00	0.00	0.00	0.00
31.60	2.00	0.61	5.00	0.00	0.00	0.00
31.65	2.00	0.61	5.00	0.00	0.00	0.00
31.70	2.00	0.61	5.00	0.00	0.00	0.00
31.75	2.00	0.61	5.00	0.00	0.00	0.00
31.80	2.00	0.61	5.00	0.00	0.00	0.00
31.85	2.00	0.61	5.00	0.00	0.00	0.00
31.90	2.00	0.61	5.00	0.00	0.00	0.00
31.95	2.00	0.61	5.00	0.00	0.00	0.00
32.00	2.00	0.61	5.00	0.00	0.00	0.00
32.05	2.00	0.61	5.00	0.00	0.00	0.00
32.10	2.00	0.61	5.00	0.00	0.00	0.00
32.15	2.00	0.60	5.00	0.00	0.00	0.00
32.20	2.00	0.60	5.00	0.00	0.00	0.00
32.25	2.00	0.60	5.00	0.00	0.00	0.00
32.30	2.00	0.60	5.00	0.00	0.00	0.00
32.35	2.00	0.60	5.00	0.00	0.00	0.00
32.40	2.00	0.60	5.00	0.00	0.00	0.00
32.45	2.00	0.60	5.00	0.00	0.00	0.00
32.50	2.00	0.60	5.00	0.00	0.00	0.00
32.55	2.00	0.60	5.00	0.00	0.00	0.00
32.60	2.00	0.60	5.00	0.00	0.00	0.00
32.65	2.00	0.60	5.00	0.00	0.00	0.00
32.70	2.00	0.60	5.00	0.00	0.00	0.00
32.75	2.00	0.60	5.00	0.00	0.00	0.00
32.80	2.00	0.60	5.00	0.00	0.00	0.00
32.85	2.00	0.60	5.00	0.00	0.00	0.00
32.90	2.00	0.60	5.00	0.00	0.00	0.00
32.95	2.00	0.60	5.00	0.00	0.00	0.00
33.00	2.00	0.60	5.00	0.00	0.00	0.00
33.05	2.00	0.60	5.00	0.00	0.00	0.00
33.10	2.00	0.60	5.00	0.00	0.00	0.00
33.15	2.00	0.60	5.00	0.00	0.00	0.00
33.20	2.00	0.60	5.00	0.00	0.00	0.00
33.25	2.00	0.60	5.00	0.00	0.00	0.00
33.30	2.00	0.60	5.00	0.00	0.00	0.00
33.35	2.00	0.60	5.00	0.00	0.00	0.00
33.40	2.00	0.60	5.00	0.00	0.00	0.00
33.45	2.00	0.60	5.00	0.00	0.00	0.00
33.50	2.00	0.60	5.00	0.00	0.00	0.00
33.55	2.00	0.60	5.00	0.00	0.00	0.00
33.60	2.00	0.60	5.00	0.00	0.00	0.00
33.65	2.00	0.60	5.00	0.00	0.00	0.00
33.70	2.00	0.60	5.00	0.00	0.00	0.00
33.75	2.00	0.60	5.00	0.00	0.00	0.00
33.80	2.00	0.60	5.00	0.00	0.00	0.00
33.85	2.00	0.60	5.00	0.00	0.00	0.00
33.90	2.00	0.60	5.00	0.00	0.00	0.00
33.95	2.00	0.60	5.00	0.00	0.00	0.00
34.00	2.00	0.59	5.00	0.00	0.00	0.00
34.05	2.00	0.59	5.00	0.00	0.00	0.00
34.10	2.00	0.59	5.00	0.00	0.00	0.00
34.15	2.00	0.59	5.00	0.00	0.00	0.00
34.20	2.00	0.59	5.00	0.00	0.00	0.00
34.25	2.00	0.59	5.00	0.00	0.00	0.00
34.30	2.00	0.59	5.00	0.00	0.00	0.00
34.35	2.00	0.59	5.00	0.00	0.00	0.00
34.40	2.00	0.59	5.00	0.00	0.00	0.00
34.45	2.00	0.59	5.00	0.00	0.00	0.00
34.50	2.00	0.59	5.00	0.00	0.00	0.00
34.55	2.00	0.59	5.00	0.00	0.00	0.00
34.60	2.00	0.59	5.00	0.00	0.00	0.00
34.65	2.00	0.59	5.00	0.00	0.00	0.00
34.70	2.00	0.59	5.00	0.00	0.00	0.00
34.75	2.00	0.59	5.00	0.00	0.00	0.00
34.80	2.00	0.59	5.00	0.00	0.00	0.00
34.85	2.00	0.59	5.00	0.00	0.00	0.00
34.90	2.00	0.59	5.00	0.00	0.00	0.00
34.95	2.00	0.59	5.00	0.00	0.00	0.00
35.00	2.00	0.59	5.00	0.00	0.00	0.00
35.05	2.00	0.59	5.00	0.00	0.00	0.00
35.10	2.00	0.59	5.00	0.00	0.00	0.00
35.15	2.00	0.59	5.00	0.00	0.00	0.00
35.20	2.00	0.59	5.00	0.00	0.00	0.00
35.25	2.00	0.59	5.00	0.00	0.00	0.00
35.30	2.00	0.59	5.00	0.00	0.00	0.00
35.35	2.00	0.59	5.00	0.00	0.00	0.00
35.40	2.00	0.59	5.00	0.00	0.00	0.00
35.45	2.00	0.59	5.00	0.00	0.00	0.00
35.50	2.00	0.59	5.00	0.00	0.00	0.00
35.55	2.00	0.59	5.00	0.00	0.00	0.00
35.60	2.00	0.59	5.00	0.00	0.00	0.00
35.65	2.00	0.59	5.00	0.00	0.00	0.00
35.70	2.00	0.59	5.00	0.00	0.00	0.00
35.75	2.00	0.59	5.00	0.00	0.00	0.00
35.80	2.00	0.59	5.00	0.00	0.00	0.00
35.85	2.00	0.58	5.00	0.00	0.00	0.00
35.90	2.00	0.58	5.00	0.00	0.00	0.00
35.95	2.00	0.58	5.00	0.00	0.00	0.00
36.00	2.00	0.58	5.00	0.00	0.00	0.00
36.05	2.00	0.58	5.00	0.00	0.00	0.00
36.10	2.00	0.58	5.00	0.00	0.00	0.00
36.15	2.00	0.58	5.00	0.00	0.00	0.00

36.20	2.00	0.58	5.00	0.00	0.00	0.00
36.25	2.00	0.58	5.00	0.00	0.00	0.00
36.30	2.00	0.58	5.00	0.00	0.00	0.00
36.35	2.00	0.58	5.00	0.00	0.00	0.00
36.40	2.00	0.58	5.00	0.00	0.00	0.00
36.45	2.00	0.58	5.00	0.00	0.00	0.00
36.50	2.00	0.58	5.00	0.00	0.00	0.00
36.55	2.00	0.58	5.00	0.00	0.00	0.00
36.60	2.00	0.58	5.00	0.00	0.00	0.00
36.65	2.00	0.58	5.00	0.00	0.00	0.00
36.70	2.00	0.58	5.00	0.00	0.00	0.00
36.75	2.00	0.58	5.00	0.00	0.00	0.00
36.80	2.00	0.58	5.00	0.00	0.00	0.00
36.85	2.00	0.58	5.00	0.00	0.00	0.00
36.90	2.00	0.58	5.00	0.00	0.00	0.00
36.95	2.00	0.58	5.00	0.00	0.00	0.00
37.00	2.00	0.58	5.00	0.00	0.00	0.00
37.05	2.00	0.58	5.00	0.00	0.00	0.00
37.10	2.00	0.58	5.00	0.00	0.00	0.00
37.15	2.00	0.58	5.00	0.00	0.00	0.00
37.20	2.00	0.58	5.00	0.00	0.00	0.00
37.25	2.00	0.58	5.00	0.00	0.00	0.00
37.30	2.00	0.58	5.00	0.00	0.00	0.00
37.35	2.00	0.58	5.00	0.00	0.00	0.00
37.40	2.00	0.58	5.00	0.00	0.00	0.00
37.45	2.00	0.58	5.00	0.00	0.00	0.00
37.50	2.00	0.58	5.00	0.00	0.00	0.00
37.55	2.00	0.58	5.00	0.00	0.00	0.00
37.60	2.00	0.58	5.00	0.00	0.00	0.00
37.65	2.00	0.58	5.00	0.00	0.00	0.00
37.70	2.00	0.57	5.00	0.00	0.00	0.00
37.75	2.00	0.57	5.00	0.00	0.00	0.00
37.80	2.00	0.57	5.00	0.00	0.00	0.00
37.85	2.00	0.57	5.00	0.00	0.00	0.00
37.90	2.00	0.57	5.00	0.00	0.00	0.00
37.95	2.00	0.57	5.00	0.00	0.00	0.00
38.00	2.00	0.57	5.00	0.00	0.00	0.00
38.05	2.00	0.57	5.00	0.00	0.00	0.00
38.10	2.00	0.57	5.00	0.00	0.00	0.00
38.15	2.00	0.57	5.00	0.00	0.00	0.00
38.20	2.00	0.57	5.00	0.00	0.00	0.00
38.25	2.00	0.57	5.00	0.00	0.00	0.00
38.30	2.00	0.57	5.00	0.00	0.00	0.00
38.35	2.00	0.57	5.00	0.00	0.00	0.00
38.40	2.00	0.57	5.00	0.00	0.00	0.00
38.45	2.00	0.57	5.00	0.00	0.00	0.00
38.50	2.00	0.57	5.00	0.00	0.00	0.00
38.55	2.00	0.57	5.00	0.00	0.00	0.00
38.60	2.00	0.57	5.00	0.00	0.00	0.00
38.65	2.00	0.57	5.00	0.00	0.00	0.00
38.70	2.00	0.57	5.00	0.00	0.00	0.00
38.75	2.00	0.57	5.00	0.00	0.00	0.00
38.80	2.00	0.57	5.00	0.00	0.00	0.00
38.85	2.00	0.57	5.00	0.00	0.00	0.00
38.90	2.00	0.57	5.00	0.00	0.00	0.00
38.95	2.00	0.57	5.00	0.00	0.00	0.00
39.00	2.00	0.57	5.00	0.00	0.00	0.00
39.05	2.00	0.57	5.00	0.00	0.00	0.00
39.10	2.00	0.57	5.00	0.00	0.00	0.00
39.15	2.00	0.57	5.00	0.00	0.00	0.00
39.20	2.00	0.57	5.00	0.00	0.00	0.00
39.25	2.00	0.57	5.00	0.00	0.00	0.00
39.30	2.00	0.57	5.00	0.00	0.00	0.00
39.35	2.00	0.57	5.00	0.00	0.00	0.00
39.40	2.00	0.57	5.00	0.00	0.00	0.00
39.45	2.00	0.57	5.00	0.00	0.00	0.00
39.50	2.00	0.57	5.00	0.00	0.00	0.00
39.55	2.00	0.56	5.00	0.00	0.00	0.00
39.60	2.00	0.56	5.00	0.00	0.00	0.00
39.65	2.00	0.56	5.00	0.00	0.00	0.00
39.70	2.00	0.56	5.00	0.00	0.00	0.00
39.75	2.00	0.56	5.00	0.00	0.00	0.00
39.80	2.00	0.56	5.00	0.00	0.00	0.00
39.85	2.00	0.56	5.00	0.00	0.00	0.00
39.90	2.00	0.56	5.00	0.00	0.00	0.00
39.95	2.00	0.56	5.00	0.00	0.00	0.00
40.00	2.00	0.56	5.00	0.00	0.00	0.00
40.05	2.00	0.56	5.00	0.00	0.00	0.00
40.10	2.00	0.56	5.00	0.00	0.00	0.00
40.15	2.00	0.56	5.00	0.00	0.00	0.00
40.20	2.00	0.56	5.00	0.00	0.00	0.00
40.25	2.00	0.56	5.00	0.00	0.00	0.00
40.30	2.00	0.56	5.00	0.00	0.00	0.00
40.35	2.00	0.56	5.00	0.00	0.00	0.00
40.40	2.00	0.56	5.00	0.00	0.00	0.00
40.45	2.00	0.56	5.00	0.00	0.00	0.00
40.50	2.00	0.56	5.00	0.00	0.00	0.00
40.55	2.00	0.56	5.00	0.00	0.00	0.00
40.60	2.00	0.56	5.00	0.00	0.00	0.00
40.65	2.00	0.56	5.00	0.00	0.00	0.00
40.70	2.00	0.56	5.00	0.00	0.00	0.00
40.75	2.00	0.56	5.00	0.00	0.00	0.00
40.80	2.00	0.56	5.00	0.00	0.00	0.00
40.85	2.00	0.56	5.00	0.00	0.00	0.00
40.90	2.00	0.56	5.00	0.00	0.00	0.00
40.95	2.00	0.56	5.00	0.00	0.00	0.00
41.00	2.00	0.56	5.00	0.00	0.00	0.00
41.05	2.00	0.56	5.00	0.00	0.00	0.00
41.10	2.00	0.56	5.00	0.00	0.00	0.00
41.15	2.00	0.56	5.00	0.00	0.00	0.00

41.20	2.00	0.56	5.00	0.00	0.00	0.00
41.25	2.00	0.56	5.00	0.00	0.00	0.00
41.30	2.00	0.56	5.00	0.00	0.00	0.00
41.35	2.00	0.56	5.00	0.00	0.00	0.00
41.40	2.00	0.55	5.00	0.00	0.00	0.00
41.45	2.00	0.55	5.00	0.00	0.00	0.00
41.50	2.00	0.55	5.00	0.00	0.00	0.00
41.55	2.00	0.55	5.00	0.00	0.00	0.00
41.60	2.00	0.55	5.00	0.00	0.00	0.00
41.65	2.00	0.55	5.00	0.00	0.00	0.00
41.70	2.00	0.55	5.00	0.00	0.00	0.00
41.75	2.00	0.55	5.00	0.00	0.00	0.00
41.80	2.00	0.55	5.00	0.00	0.00	0.00
41.85	2.00	0.55	5.00	0.00	0.00	0.00
41.90	2.00	0.55	5.00	0.00	0.00	0.00
41.95	2.00	0.55	5.00	0.00	0.00	0.00
42.00	2.00	0.55	5.00	0.00	0.00	0.00
42.05	2.00	0.55	5.00	0.00	0.00	0.00
42.10	2.00	0.55	5.00	0.00	0.00	0.00
42.15	2.00	0.55	5.00	0.00	0.00	0.00
42.20	2.00	0.55	5.00	0.00	0.00	0.00
42.25	2.00	0.55	5.00	0.00	0.00	0.00
42.30	2.00	0.55	5.00	0.00	0.00	0.00
42.35	2.00	0.55	5.00	0.00	0.00	0.00
42.40	2.00	0.55	5.00	0.00	0.00	0.00
42.45	2.00	0.55	5.00	0.00	0.00	0.00
42.50	2.00	0.55	5.00	0.00	0.00	0.00
42.55	2.00	0.55	5.00	0.00	0.00	0.00
42.60	2.00	0.55	5.00	0.00	0.00	0.00
42.65	2.00	0.55	5.00	0.00	0.00	0.00
42.70	2.00	0.55	5.00	0.00	0.00	0.00
42.75	2.00	0.55	5.00	0.00	0.00	0.00
42.80	2.00	0.55	5.00	0.00	0.00	0.00
42.85	2.00	0.55	5.00	0.00	0.00	0.00
42.90	2.00	0.55	5.00	0.00	0.00	0.00
42.95	2.00	0.55	5.00	0.00	0.00	0.00
43.00	2.00	0.55	5.00	0.00	0.00	0.00
43.05	2.00	0.55	5.00	0.00	0.00	0.00
43.10	2.00	0.55	5.00	0.00	0.00	0.00
43.15	2.00	0.55	5.00	0.00	0.00	0.00
43.20	2.00	0.55	5.00	0.00	0.00	0.00
43.25	2.00	0.55	5.00	0.00	0.00	0.00
43.30	2.00	0.54	5.00	0.00	0.00	0.00
43.35	2.00	0.54	5.00	0.00	0.00	0.00
43.40	2.00	0.54	5.00	0.00	0.00	0.00
43.45	2.00	0.54	5.00	0.00	0.00	0.00
43.50	2.00	0.54	5.00	0.00	0.00	0.00
43.55	2.00	0.54	5.00	0.00	0.00	0.00
43.60	2.00	0.54	5.00	0.00	0.00	0.00
43.65	2.00	0.54	5.00	0.00	0.00	0.00
43.70	2.00	0.54	5.00	0.00	0.00	0.00
43.75	2.00	0.54	5.00	0.00	0.00	0.00
43.80	2.00	0.54	5.00	0.00	0.00	0.00
43.85	2.00	0.54	5.00	0.00	0.00	0.00
43.90	2.00	0.54	5.00	0.00	0.00	0.00
43.95	2.00	0.54	5.00	0.00	0.00	0.00
44.00	2.00	0.54	5.00	0.00	0.00	0.00
44.05	2.00	0.54	5.00	0.00	0.00	0.00
44.10	2.00	0.54	5.00	0.00	0.00	0.00
44.15	2.00	0.54	5.00	0.00	0.00	0.00
44.20	2.00	0.54	5.00	0.00	0.00	0.00
44.25	2.00	0.54	5.00	0.00	0.00	0.00
44.30	2.00	0.54	5.00	0.00	0.00	0.00
44.35	2.00	0.54	5.00	0.00	0.00	0.00
44.40	2.00	0.54	5.00	0.00	0.00	0.00
44.45	2.00	0.54	5.00	0.00	0.00	0.00
44.50	2.00	0.54	5.00	0.00	0.00	0.00
44.55	2.00	0.54	5.00	0.00	0.00	0.00
44.60	2.00	0.54	5.00	0.00	0.00	0.00
44.65	2.00	0.54	5.00	0.00	0.00	0.00
44.70	2.00	0.54	5.00	0.00	0.00	0.00
44.75	2.00	0.54	5.00	0.00	0.00	0.00
44.80	2.00	0.54	5.00	0.00	0.00	0.00
44.85	2.00	0.54	5.00	0.00	0.00	0.00
44.90	2.00	0.54	5.00	0.00	0.00	0.00
44.95	2.00	0.54	5.00	0.00	0.00	0.00
45.00	2.00	0.54	5.00	0.00	0.00	0.00
45.05	2.00	0.54	5.00	0.00	0.00	0.00
45.10	2.00	0.54	5.00	0.00	0.00	0.00
45.15	2.00	0.53	5.00	0.00	0.00	0.00
45.20	2.00	0.53	5.00	0.00	0.00	0.00
45.25	2.00	0.53	5.00	0.00	0.00	0.00
45.30	2.00	0.53	5.00	0.00	0.00	0.00
45.35	2.00	0.53	5.00	0.00	0.00	0.00
45.40	2.00	0.53	5.00	0.00	0.00	0.00
45.45	2.00	0.53	5.00	0.00	0.00	0.00
45.50	2.00	0.53	5.00	0.00	0.00	0.00
45.55	2.00	0.53	5.00	0.00	0.00	0.00
45.60	2.00	0.53	5.00	0.00	0.00	0.00
45.65	2.00	0.53	5.00	0.00	0.00	0.00
45.70	2.00	0.53	5.00	0.00	0.00	0.00
45.75	2.00	0.53	5.00	0.00	0.00	0.00
45.80	2.00	0.53	5.00	0.00	0.00	0.00
45.85	2.00	0.53	5.00	0.00	0.00	0.00
45.90	2.00	0.53	5.00	0.00	0.00	0.00
45.95	2.00	0.53	5.00	0.00	0.00	0.00
46.00	2.00	0.53	5.00	0.00	0.00	0.00
46.05	2.00	0.53	5.00	0.00	0.00	0.00
46.10	2.00	0.53	5.00	0.00	0.00	0.00
46.15	2.00	0.53	5.00	0.00	0.00	0.00

46.20	2.00	0.53	5.00	0.00	0.00	0.00
46.25	2.00	0.53	5.00	0.00	0.00	0.00
46.30	2.00	0.53	5.00	0.00	0.00	0.00
46.35	2.00	0.53	5.00	0.00	0.00	0.00
46.40	2.00	0.53	5.00	0.00	0.00	0.00
46.45	2.00	0.53	5.00	0.00	0.00	0.00
46.50	2.00	0.53	5.00	0.00	0.00	0.00
46.55	2.00	0.53	5.00	0.00	0.00	0.00
46.60	2.00	0.53	5.00	0.00	0.00	0.00
46.65	2.00	0.53	5.00	0.00	0.00	0.00
46.70	2.00	0.53	5.00	0.00	0.00	0.00
46.75	2.00	0.53	5.00	0.00	0.00	0.00
46.80	2.00	0.53	5.00	0.00	0.00	0.00
46.85	2.00	0.53	5.00	0.00	0.00	0.00
46.90	2.00	0.53	5.00	0.00	0.00	0.00
46.95	2.00	0.53	5.00	0.00	0.00	0.00
47.00	2.00	0.52	5.00	0.00	0.00	0.00
47.05	2.00	0.52	5.00	0.00	0.00	0.00
47.10	2.00	0.52	5.00	0.00	0.00	0.00
47.15	2.00	0.52	5.00	0.00	0.00	0.00
47.20	2.00	0.52	5.00	0.00	0.00	0.00
47.25	2.00	0.52	5.00	0.00	0.00	0.00
47.30	2.00	0.52	5.00	0.00	0.00	0.00
47.35	2.00	0.52	5.00	0.00	0.00	0.00
47.40	2.00	0.52	5.00	0.00	0.00	0.00
47.45	2.00	0.52	5.00	0.00	0.00	0.00
47.50	2.00	0.52	5.00	0.00	0.00	0.00
47.55	2.00	0.52	5.00	0.00	0.00	0.00
47.60	2.00	0.52	5.00	0.00	0.00	0.00
47.65	2.00	0.52	5.00	0.00	0.00	0.00
47.70	2.00	0.52	5.00	0.00	0.00	0.00
47.75	2.00	0.52	5.00	0.00	0.00	0.00
47.80	2.00	0.52	5.00	0.00	0.00	0.00
47.85	2.00	0.52	5.00	0.00	0.00	0.00
47.90	2.00	0.52	5.00	0.00	0.00	0.00
47.95	2.00	0.52	5.00	0.00	0.00	0.00
48.00	2.00	0.52	5.00	0.00	0.00	0.00
48.05	2.00	0.52	5.00	0.00	0.00	0.00
48.10	2.00	0.52	5.00	0.00	0.00	0.00
48.15	2.00	0.52	5.00	0.00	0.00	0.00
48.20	2.00	0.52	5.00	0.00	0.00	0.00
48.25	2.00	0.52	5.00	0.00	0.00	0.00
48.30	2.00	0.52	5.00	0.00	0.00	0.00
48.35	2.00	0.52	5.00	0.00	0.00	0.00
48.40	2.00	0.52	5.00	0.00	0.00	0.00
48.45	2.00	0.52	5.00	0.00	0.00	0.00
48.50	2.00	0.52	5.00	0.00	0.00	0.00
48.55	2.00	0.52	5.00	0.00	0.00	0.00
48.60	2.00	0.52	5.00	0.00	0.00	0.00
48.65	2.00	0.52	5.00	0.00	0.00	0.00
48.70	2.00	0.52	5.00	0.00	0.00	0.00
48.75	2.00	0.52	5.00	0.00	0.00	0.00
48.80	2.00	0.52	5.00	0.00	0.00	0.00
48.85	2.00	0.51	5.00	0.00	0.00	0.00
48.90	2.00	0.51	5.00	0.00	0.00	0.00
48.95	2.00	0.51	5.00	0.00	0.00	0.00
49.00	2.00	0.51	5.00	0.00	0.00	0.00
49.05	2.00	0.51	5.00	0.00	0.00	0.00
49.10	2.00	0.51	5.00	0.00	0.00	0.00
49.15	2.00	0.51	5.00	0.00	0.00	0.00
49.20	2.00	0.51	5.00	0.00	0.00	0.00
49.25	2.00	0.51	5.00	0.00	0.00	0.00
49.30	2.00	0.51	5.00	0.00	0.00	0.00
49.35	2.00	0.51	5.00	0.00	0.00	0.00
49.40	2.00	0.51	5.00	0.00	0.00	0.00
49.45	2.00	0.51	5.00	0.00	0.00	0.00
49.50	2.00	0.51	5.00	0.00	0.00	0.00
49.55	2.00	0.51	5.00	0.00	0.00	0.00
49.60	2.00	0.51	5.00	0.00	0.00	0.00
49.65	2.00	0.51	5.00	0.00	0.00	0.00
49.70	2.00	0.51	5.00	0.00	0.00	0.00
49.75	2.00	0.51	5.00	0.00	0.00	0.00
49.80	2.00	0.51	5.00	0.00	0.00	0.00
49.85	2.00	0.51	5.00	0.00	0.00	0.00
49.90	2.00	0.51	5.00	0.00	0.00	0.00
49.95	2.00	0.51	5.00	0.00	0.00	0.00
50.00	2.00	0.51	5.00	0.00	0.00	0.00
50.05	2.00	0.51	5.00	0.00	0.00	0.00
50.10	2.00	0.51	5.00	0.00	0.00	0.00
50.15	2.00	0.51	5.00	0.00	0.00	0.00
50.20	2.00	0.51	5.00	0.00	0.00	0.00
50.25	2.00	0.51	5.00	0.00	0.00	0.00
50.30	2.00	0.51	5.00	0.00	0.00	0.00
50.35	2.00	0.51	5.00	0.00	0.00	0.00
50.40	2.00	0.51	5.00	0.00	0.00	0.00
50.45	2.00	0.51	5.00	0.00	0.00	0.00
50.50	2.00	0.51	5.00	0.00	0.00	0.00
50.55	2.00	0.51	5.00	0.00	0.00	0.00
50.60	2.00	0.51	5.00	0.00	0.00	0.00
50.65	2.00	0.51	5.00	0.00	0.00	0.00
50.70	2.00	0.50	5.00	0.00	0.00	0.00
50.75	2.00	0.50	5.00	0.00	0.00	0.00
50.80	2.00	0.50	5.00	0.00	0.00	0.00
50.85	2.00	0.50	5.00	0.00	0.00	0.00
50.90	2.00	0.50	5.00	0.00	0.00	0.00
50.95	2.00	0.50	5.00	0.00	0.00	0.00
51.00	2.00	0.50	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

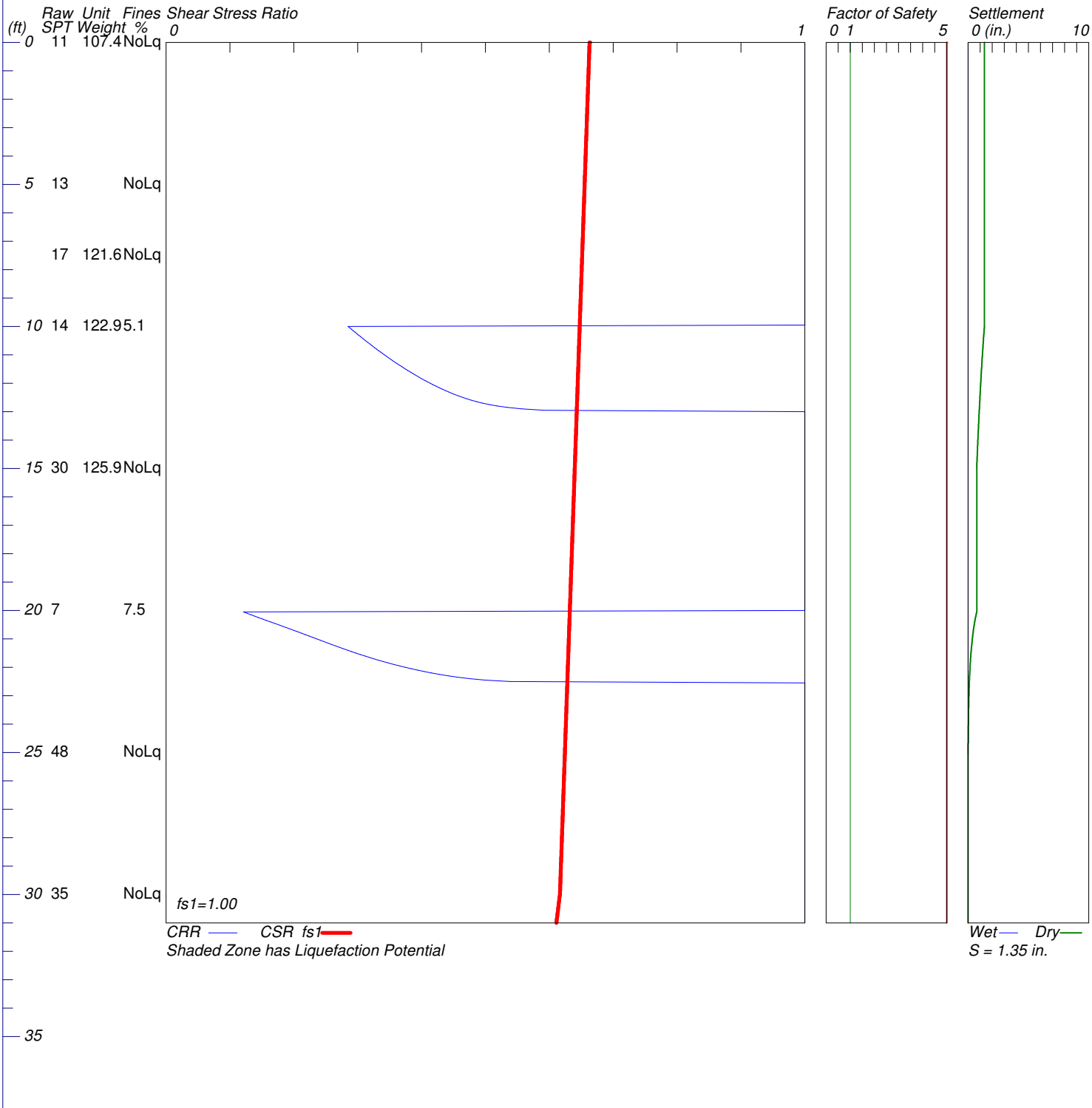
CRRm	Cyclic resistance ratio from soils
CSRfs	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
S_sat	Settlement from saturated sands
S_dry	Settlement from dry sands
S_all	Total settlement from saturated and dry sands
NoLiq	No-Liquefy Soils

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B10 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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LIQUEFACTION ANALYSIS CALCULATION SHEET

(425) 453-6488 Fax (425) 453-5848

****
****

Licensed to , 9/14/2021 11:52:46 AM

Input File Name: C:\Users\adamr\Dropbox\LA Railroad 93 - Blackhall Studios\Liquefaction\LGC-B10.liq
Title: LA Railroad 93
Subtitle: 213015-01

Surface Elev.=
Hole No.=LGC-B10
Depth of Hole= 31.0 ft
Water Table during Earthquake= 65.0 ft
Water Table during In-Situ Testing= 110.0 ft
Max. Acceleration= 1.02 g
Earthquake Magnitude= 6.8

Input Data:
Surface Elev.=
Hole No.=LGC-B10
Depth of Hole=31.0 ft
Water Table during Earthquake= 65.0 ft
Water Table during In-Situ Testing= 110.0 ft
Max. Acceleration=1.02 g
Earthquake Magnitude=6.8

Earthquake Magnitude=6.8
2. Settlement Analysis Method: Tokimatsu / Seed
3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.0
Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.0	11.0	107.4	NoLiq
5.0	13.0	107.4	NoLiq
7.5	17.0	121.6	NoLiq
10.0	14.0	122.9	5.1
15.0	30.0	125.9	NoLiq
20.0	7.0	125.9	7.5
25.0	48.0	125.9	NoLiq
30.0	35.0	125.9	NoLiq

Output Results:
Settlement of saturated sands=0.00 in.
Settlement of dry sands=1.35 in.
Total settlement of saturated and dry sands=1.35 in.
Differential Settlement=0.677 to 0.894 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	1.35	1.35
0.05	2.00	0.66	5.00	0.00	1.35	1.35
0.10	2.00	0.66	5.00	0.00	1.35	1.35
0.15	2.00	0.66	5.00	0.00	1.35	1.35
0.20	2.00	0.66	5.00	0.00	1.35	1.35
0.25	2.00	0.66	5.00	0.00	1.35	1.35
0.30	2.00	0.66	5.00	0.00	1.35	1.35
0.35	2.00	0.66	5.00	0.00	1.35	1.35
0.40	2.00	0.66	5.00	0.00	1.35	1.35
0.45	2.00	0.66	5.00	0.00	1.35	1.35
0.50	2.00	0.66	5.00	0.00	1.35	1.35
0.55	2.00	0.66	5.00	0.00	1.35	1.35
0.60	2.00	0.66	5.00	0.00	1.35	1.35
0.65	2.00	0.66	5.00	0.00	1.35	1.35
0.70	2.00	0.66	5.00	0.00	1.35	1.35
0.75	2.00	0.66	5.00	0.00	1.35	1.35
0.80	2.00	0.66	5.00	0.00	1.35	1.35
0.85	2.00	0.66	5.00	0.00	1.35	1.35
0.90	2.00	0.66	5.00	0.00	1.35	1.35
0.95	2.00	0.66	5.00	0.00	1.35	1.35
1.00	2.00	0.66	5.00	0.00	1.35	1.35
1.05	2.00	0.66	5.00	0.00	1.35	1.35
1.10	2.00	0.66	5.00	0.00	1.35	1.35
1.15	2.00	0.66	5.00	0.00	1.35	1.35
1.20	2.00	0.66	5.00	0.00	1.35	1.35
1.25	2.00	0.66	5.00	0.00	1.35	1.35
1.30	2.00	0.66	5.00	0.00	1.35	1.35
1.35	2.00	0.66	5.00	0.00	1.35	1.35

1.40	2.00	0.66	5.00	0.00	1.35	1.35
1.45	2.00	0.66	5.00	0.00	1.35	1.35
1.50	2.00	0.66	5.00	0.00	1.35	1.35
1.55	2.00	0.66	5.00	0.00	1.35	1.35
1.60	2.00	0.66	5.00	0.00	1.35	1.35
1.65	2.00	0.66	5.00	0.00	1.35	1.35
1.70	2.00	0.66	5.00	0.00	1.35	1.35
1.75	2.00	0.66	5.00	0.00	1.35	1.35
1.80	2.00	0.66	5.00	0.00	1.35	1.35
1.85	2.00	0.66	5.00	0.00	1.35	1.35
1.90	2.00	0.66	5.00	0.00	1.35	1.35
1.95	2.00	0.66	5.00	0.00	1.35	1.35
2.00	2.00	0.66	5.00	0.00	1.35	1.35
2.05	2.00	0.66	5.00	0.00	1.35	1.35
2.10	2.00	0.66	5.00	0.00	1.35	1.35
2.15	2.00	0.66	5.00	0.00	1.35	1.35
2.20	2.00	0.66	5.00	0.00	1.35	1.35
2.25	2.00	0.66	5.00	0.00	1.35	1.35
2.30	2.00	0.66	5.00	0.00	1.35	1.35
2.35	2.00	0.66	5.00	0.00	1.35	1.35
2.40	2.00	0.66	5.00	0.00	1.35	1.35
2.45	2.00	0.66	5.00	0.00	1.35	1.35
2.50	2.00	0.66	5.00	0.00	1.35	1.35
2.55	2.00	0.66	5.00	0.00	1.35	1.35
2.60	2.00	0.66	5.00	0.00	1.35	1.35
2.65	2.00	0.66	5.00	0.00	1.35	1.35
2.70	2.00	0.66	5.00	0.00	1.35	1.35
2.75	2.00	0.66	5.00	0.00	1.35	1.35
2.80	2.00	0.66	5.00	0.00	1.35	1.35
2.85	2.00	0.66	5.00	0.00	1.35	1.35
2.90	2.00	0.66	5.00	0.00	1.35	1.35
2.95	2.00	0.66	5.00	0.00	1.35	1.35
3.00	2.00	0.66	5.00	0.00	1.35	1.35
3.05	2.00	0.66	5.00	0.00	1.35	1.35
3.10	2.00	0.66	5.00	0.00	1.35	1.35
3.15	2.00	0.66	5.00	0.00	1.35	1.35
3.20	2.00	0.66	5.00	0.00	1.35	1.35
3.25	2.00	0.66	5.00	0.00	1.35	1.35
3.30	2.00	0.66	5.00	0.00	1.35	1.35
3.35	2.00	0.66	5.00	0.00	1.35	1.35
3.40	2.00	0.66	5.00	0.00	1.35	1.35
3.45	2.00	0.66	5.00	0.00	1.35	1.35
3.50	2.00	0.66	5.00	0.00	1.35	1.35
3.55	2.00	0.66	5.00	0.00	1.35	1.35
3.60	2.00	0.66	5.00	0.00	1.35	1.35
3.65	2.00	0.66	5.00	0.00	1.35	1.35
3.70	2.00	0.66	5.00	0.00	1.35	1.35
3.75	2.00	0.66	5.00	0.00	1.35	1.35
3.80	2.00	0.66	5.00	0.00	1.35	1.35
3.85	2.00	0.66	5.00	0.00	1.35	1.35
3.90	2.00	0.66	5.00	0.00	1.35	1.35
3.95	2.00	0.66	5.00	0.00	1.35	1.35
4.00	2.00	0.66	5.00	0.00	1.35	1.35
4.05	2.00	0.66	5.00	0.00	1.35	1.35
4.10	2.00	0.66	5.00	0.00	1.35	1.35
4.15	2.00	0.66	5.00	0.00	1.35	1.35
4.20	2.00	0.66	5.00	0.00	1.35	1.35
4.25	2.00	0.66	5.00	0.00	1.35	1.35
4.30	2.00	0.66	5.00	0.00	1.35	1.35
4.35	2.00	0.66	5.00	0.00	1.35	1.35
4.40	2.00	0.66	5.00	0.00	1.35	1.35
4.45	2.00	0.66	5.00	0.00	1.35	1.35
4.50	2.00	0.66	5.00	0.00	1.35	1.35
4.55	2.00	0.66	5.00	0.00	1.35	1.35
4.60	2.00	0.66	5.00	0.00	1.35	1.35
4.65	2.00	0.66	5.00	0.00	1.35	1.35
4.70	2.00	0.66	5.00	0.00	1.35	1.35
4.75	2.00	0.66	5.00	0.00	1.35	1.35
4.80	2.00	0.66	5.00	0.00	1.35	1.35
4.85	2.00	0.66	5.00	0.00	1.35	1.35
4.90	2.00	0.66	5.00	0.00	1.35	1.35
4.95	2.00	0.66	5.00	0.00	1.35	1.35
5.00	2.00	0.66	5.00	0.00	1.35	1.35
5.05	2.00	0.66	5.00	0.00	1.35	1.35
5.10	2.00	0.66	5.00	0.00	1.35	1.35
5.15	2.00	0.66	5.00	0.00	1.35	1.35
5.20	2.00	0.65	5.00	0.00	1.35	1.35
5.25	2.00	0.65	5.00	0.00	1.35	1.35
5.30	2.00	0.65	5.00	0.00	1.35	1.35
5.35	2.00	0.65	5.00	0.00	1.35	1.35
5.40	2.00	0.65	5.00	0.00	1.35	1.35
5.45	2.00	0.65	5.00	0.00	1.35	1.35
5.50	2.00	0.65	5.00	0.00	1.35	1.35
5.55	2.00	0.65	5.00	0.00	1.35	1.35
5.60	2.00	0.65	5.00	0.00	1.35	1.35
5.65	2.00	0.65	5.00	0.00	1.35	1.35
5.70	2.00	0.65	5.00	0.00	1.35	1.35
5.75	2.00	0.65	5.00	0.00	1.35	1.35
5.80	2.00	0.65	5.00	0.00	1.35	1.35
5.85	2.00	0.65	5.00	0.00	1.35	1.35
5.90	2.00	0.65	5.00	0.00	1.35	1.35
5.95	2.00	0.65	5.00	0.00	1.35	1.35
6.00	2.00	0.65	5.00	0.00	1.35	1.35
6.05	2.00	0.65	5.00	0.00	1.35	1.35
6.10	2.00	0.65	5.00	0.00	1.35	1.35
6.15	2.00	0.65	5.00	0.00	1.35	1.35
6.20	2.00	0.65	5.00	0.00	1.35	1.35
6.25	2.00	0.65	5.00	0.00	1.35	1.35
6.30	2.00	0.65	5.00	0.00	1.35	1.35
6.35	2.00	0.65	5.00	0.00	1.35	1.35

6.40	2.00	0.65	5.00	0.00	1.35	1.35
6.45	2.00	0.65	5.00	0.00	1.35	1.35
6.50	2.00	0.65	5.00	0.00	1.35	1.35
6.55	2.00	0.65	5.00	0.00	1.35	1.35
6.60	2.00	0.65	5.00	0.00	1.35	1.35
6.65	2.00	0.65	5.00	0.00	1.35	1.35
6.70	2.00	0.65	5.00	0.00	1.35	1.35
6.75	2.00	0.65	5.00	0.00	1.35	1.35
6.80	2.00	0.65	5.00	0.00	1.35	1.35
6.85	2.00	0.65	5.00	0.00	1.35	1.35
6.90	2.00	0.65	5.00	0.00	1.35	1.35
6.95	2.00	0.65	5.00	0.00	1.35	1.35
7.00	2.00	0.65	5.00	0.00	1.35	1.35
7.05	2.00	0.65	5.00	0.00	1.35	1.35
7.10	2.00	0.65	5.00	0.00	1.35	1.35
7.15	2.00	0.65	5.00	0.00	1.35	1.35
7.20	2.00	0.65	5.00	0.00	1.35	1.35
7.25	2.00	0.65	5.00	0.00	1.35	1.35
7.30	2.00	0.65	5.00	0.00	1.35	1.35
7.35	2.00	0.65	5.00	0.00	1.35	1.35
7.40	2.00	0.65	5.00	0.00	1.35	1.35
7.45	2.00	0.65	5.00	0.00	1.35	1.35
7.50	2.00	0.65	5.00	0.00	1.35	1.35
7.55	2.00	0.65	5.00	0.00	1.35	1.35
7.60	2.00	0.65	5.00	0.00	1.35	1.35
7.65	2.00	0.65	5.00	0.00	1.35	1.35
7.70	2.00	0.65	5.00	0.00	1.35	1.35
7.75	2.00	0.65	5.00	0.00	1.35	1.35
7.80	2.00	0.65	5.00	0.00	1.35	1.35
7.85	2.00	0.65	5.00	0.00	1.35	1.35
7.90	2.00	0.65	5.00	0.00	1.35	1.35
7.95	2.00	0.65	5.00	0.00	1.35	1.35
8.00	2.00	0.65	5.00	0.00	1.35	1.35
8.05	2.00	0.65	5.00	0.00	1.35	1.35
8.10	2.00	0.65	5.00	0.00	1.35	1.35
8.15	2.00	0.65	5.00	0.00	1.35	1.35
8.20	2.00	0.65	5.00	0.00	1.35	1.35
8.25	2.00	0.65	5.00	0.00	1.35	1.35
8.30	2.00	0.65	5.00	0.00	1.35	1.35
8.35	2.00	0.65	5.00	0.00	1.35	1.35
8.40	2.00	0.65	5.00	0.00	1.35	1.35
8.45	2.00	0.65	5.00	0.00	1.35	1.35
8.50	2.00	0.65	5.00	0.00	1.35	1.35
8.55	2.00	0.65	5.00	0.00	1.35	1.35
8.60	2.00	0.65	5.00	0.00	1.35	1.35
8.65	2.00	0.65	5.00	0.00	1.35	1.35
8.70	2.00	0.65	5.00	0.00	1.35	1.35
8.75	2.00	0.65	5.00	0.00	1.35	1.35
8.80	2.00	0.65	5.00	0.00	1.35	1.35
8.85	2.00	0.65	5.00	0.00	1.35	1.35
8.90	2.00	0.65	5.00	0.00	1.35	1.35
8.95	2.00	0.65	5.00	0.00	1.35	1.35
9.00	2.00	0.65	5.00	0.00	1.35	1.35
9.05	2.00	0.65	5.00	0.00	1.35	1.35
9.10	2.00	0.65	5.00	0.00	1.35	1.35
9.15	2.00	0.65	5.00	0.00	1.35	1.35
9.20	2.00	0.65	5.00	0.00	1.35	1.35
9.25	2.00	0.65	5.00	0.00	1.35	1.35
9.30	2.00	0.65	5.00	0.00	1.35	1.35
9.35	2.00	0.65	5.00	0.00	1.35	1.35
9.40	2.00	0.65	5.00	0.00	1.35	1.35
9.45	2.00	0.65	5.00	0.00	1.35	1.35
9.50	2.00	0.65	5.00	0.00	1.35	1.35
9.55	2.00	0.65	5.00	0.00	1.35	1.35
9.60	2.00	0.65	5.00	0.00	1.35	1.35
9.65	2.00	0.65	5.00	0.00	1.35	1.35
9.70	2.00	0.65	5.00	0.00	1.35	1.35
9.75	2.00	0.65	5.00	0.00	1.35	1.35
9.80	2.00	0.65	5.00	0.00	1.35	1.35
9.85	2.00	0.65	5.00	0.00	1.35	1.35
9.90	2.00	0.65	5.00	0.00	1.35	1.35
9.95	2.00	0.65	5.00	0.00	1.35	1.35
10.00	0.28	0.65	5.00	0.00	1.35	1.35
10.05	0.29	0.65	5.00	0.00	1.34	1.34
10.10	0.29	0.65	5.00	0.00	1.34	1.34
10.15	0.29	0.65	5.00	0.00	1.33	1.33
10.20	0.30	0.65	5.00	0.00	1.32	1.32
10.25	0.30	0.65	5.00	0.00	1.31	1.31
10.30	0.30	0.65	5.00	0.00	1.30	1.30
10.35	0.30	0.65	5.00	0.00	1.29	1.29
10.40	0.31	0.65	5.00	0.00	1.28	1.28
10.45	0.31	0.65	5.00	0.00	1.27	1.27
10.50	0.31	0.65	5.00	0.00	1.27	1.27
10.55	0.32	0.65	5.00	0.00	1.26	1.26
10.60	0.32	0.65	5.00	0.00	1.25	1.25
10.65	0.32	0.65	5.00	0.00	1.24	1.24
10.70	0.32	0.65	5.00	0.00	1.23	1.23
10.75	0.33	0.65	5.00	0.00	1.23	1.23
10.80	0.33	0.65	5.00	0.00	1.22	1.22
10.85	0.33	0.65	5.00	0.00	1.21	1.21
10.90	0.34	0.65	5.00	0.00	1.20	1.20
10.95	0.34	0.65	5.00	0.00	1.19	1.19
11.00	0.34	0.65	5.00	0.00	1.19	1.19
11.05	0.35	0.65	5.00	0.00	1.18	1.18
11.10	0.35	0.65	5.00	0.00	1.17	1.17
11.15	0.35	0.65	5.00	0.00	1.16	1.16
11.20	0.35	0.65	5.00	0.00	1.16	1.16
11.25	0.36	0.65	5.00	0.00	1.15	1.15
11.30	0.36	0.65	5.00	0.00	1.14	1.14
11.35	0.36	0.65	5.00	0.00	1.14	1.14

11.40	0.37	0.65	5.00	0.00	1.13	1.13
11.45	0.37	0.65	5.00	0.00	1.12	1.12
11.50	0.37	0.65	5.00	0.00	1.11	1.11
11.55	0.38	0.65	5.00	0.00	1.11	1.11
11.60	0.38	0.65	5.00	0.00	1.10	1.10
11.65	0.39	0.64	5.00	0.00	1.09	1.09
11.70	0.39	0.64	5.00	0.00	1.09	1.09
11.75	0.39	0.64	5.00	0.00	1.08	1.08
11.80	0.40	0.64	5.00	0.00	1.07	1.07
11.85	0.40	0.64	5.00	0.00	1.07	1.07
11.90	0.41	0.64	5.00	0.00	1.06	1.06
11.95	0.41	0.64	5.00	0.00	1.05	1.05
12.00	0.41	0.64	5.00	0.00	1.05	1.05
12.05	0.42	0.64	5.00	0.00	1.04	1.04
12.10	0.42	0.64	5.00	0.00	1.03	1.03
12.15	0.43	0.64	5.00	0.00	1.03	1.03
12.20	0.43	0.64	5.00	0.00	1.02	1.02
12.25	0.44	0.64	5.00	0.00	1.01	1.01
12.30	0.44	0.64	5.00	0.00	1.01	1.01
12.35	0.45	0.64	5.00	0.00	1.00	1.00
12.40	0.45	0.64	5.00	0.00	1.00	1.00
12.45	0.46	0.64	5.00	0.00	0.99	0.99
12.50	0.46	0.64	5.00	0.00	0.98	0.98
12.55	0.47	0.64	5.00	0.00	0.98	0.98
12.60	0.48	0.64	5.00	0.00	0.97	0.97
12.65	0.49	0.64	5.00	0.00	0.97	0.97
12.70	0.50	0.64	5.00	0.00	0.96	0.96
12.75	0.51	0.64	5.00	0.00	0.95	0.95
12.80	0.52	0.64	5.00	0.00	0.95	0.95
12.85	0.53	0.64	5.00	0.00	0.94	0.94
12.90	0.56	0.64	5.00	0.00	0.93	0.93
12.95	0.59	0.64	5.00	0.00	0.93	0.93
13.00	2.55	0.64	5.00	0.00	0.92	0.92
13.05	2.55	0.64	5.00	0.00	0.92	0.92
13.10	2.55	0.64	5.00	0.00	0.91	0.91
13.15	2.55	0.64	5.00	0.00	0.91	0.91
13.20	2.55	0.64	5.00	0.00	0.90	0.90
13.25	2.55	0.64	5.00	0.00	0.89	0.89
13.30	2.55	0.64	5.00	0.00	0.89	0.89
13.35	2.55	0.64	5.00	0.00	0.88	0.88
13.40	2.55	0.64	5.00	0.00	0.88	0.88
13.45	2.55	0.64	5.00	0.00	0.87	0.87
13.50	2.55	0.64	5.00	0.00	0.87	0.87
13.55	2.55	0.64	5.00	0.00	0.86	0.86
13.60	2.55	0.64	5.00	0.00	0.85	0.85
13.65	2.55	0.64	5.00	0.00	0.85	0.85
13.70	2.55	0.64	5.00	0.00	0.84	0.84
13.75	2.55	0.64	5.00	0.00	0.84	0.84
13.80	2.55	0.64	5.00	0.00	0.83	0.83
13.85	2.55	0.64	5.00	0.00	0.83	0.83
13.90	2.55	0.64	5.00	0.00	0.82	0.82
13.95	2.55	0.64	5.00	0.00	0.82	0.82
14.00	2.55	0.64	5.00	0.00	0.81	0.81
14.05	2.55	0.64	5.00	0.00	0.81	0.81
14.10	2.55	0.64	5.00	0.00	0.80	0.80
14.15	2.55	0.64	5.00	0.00	0.80	0.80
14.20	2.55	0.64	5.00	0.00	0.79	0.79
14.25	2.55	0.64	5.00	0.00	0.79	0.79
14.30	2.55	0.64	5.00	0.00	0.78	0.78
14.35	2.55	0.64	5.00	0.00	0.78	0.78
14.40	2.55	0.64	5.00	0.00	0.77	0.77
14.45	2.55	0.64	5.00	0.00	0.77	0.77
14.50	2.55	0.64	5.00	0.00	0.76	0.76
14.55	2.55	0.64	5.00	0.00	0.76	0.76
14.60	2.55	0.64	5.00	0.00	0.75	0.75
14.65	2.55	0.64	5.00	0.00	0.75	0.75
14.70	2.55	0.64	5.00	0.00	0.74	0.74
14.75	2.55	0.64	5.00	0.00	0.74	0.74
14.80	2.55	0.64	5.00	0.00	0.73	0.73
14.85	2.55	0.64	5.00	0.00	0.73	0.73
14.90	2.55	0.64	5.00	0.00	0.73	0.73
14.95	2.55	0.64	5.00	0.00	0.73	0.73
15.00	2.00	0.64	5.00	0.00	0.72	0.72
15.05	2.00	0.64	5.00	0.00	0.72	0.72
15.10	2.00	0.64	5.00	0.00	0.72	0.72
15.15	2.00	0.64	5.00	0.00	0.72	0.72
15.20	2.00	0.64	5.00	0.00	0.72	0.72
15.25	2.00	0.64	5.00	0.00	0.72	0.72
15.30	2.00	0.64	5.00	0.00	0.72	0.72
15.35	2.00	0.64	5.00	0.00	0.72	0.72
15.40	2.00	0.64	5.00	0.00	0.72	0.72
15.45	2.00	0.64	5.00	0.00	0.72	0.72
15.50	2.00	0.64	5.00	0.00	0.72	0.72
15.55	2.00	0.64	5.00	0.00	0.72	0.72
15.60	2.00	0.64	5.00	0.00	0.72	0.72
15.65	2.00	0.64	5.00	0.00	0.72	0.72
15.70	2.00	0.64	5.00	0.00	0.72	0.72
15.75	2.00	0.64	5.00	0.00	0.72	0.72
15.80	2.00	0.64	5.00	0.00	0.72	0.72
15.85	2.00	0.64	5.00	0.00	0.72	0.72
15.90	2.00	0.64	5.00	0.00	0.72	0.72
15.95	2.00	0.64	5.00	0.00	0.72	0.72
16.00	2.00	0.64	5.00	0.00	0.72	0.72
16.05	2.00	0.64	5.00	0.00	0.72	0.72
16.10	2.00	0.64	5.00	0.00	0.72	0.72
16.15	2.00	0.64	5.00	0.00	0.72	0.72
16.20	2.00	0.64	5.00	0.00	0.72	0.72
16.25	2.00	0.64	5.00	0.00	0.72	0.72
16.30	2.00	0.64	5.00	0.00	0.72	0.72
16.35	2.00	0.64	5.00	0.00	0.72	0.72

16.40	2.00	0.64	5.00	0.00	0.72	0.72
16.45	2.00	0.64	5.00	0.00	0.72	0.72
16.50	2.00	0.64	5.00	0.00	0.72	0.72
16.55	2.00	0.64	5.00	0.00	0.72	0.72
16.60	2.00	0.64	5.00	0.00	0.72	0.72
16.65	2.00	0.64	5.00	0.00	0.72	0.72
16.70	2.00	0.64	5.00	0.00	0.72	0.72
16.75	2.00	0.64	5.00	0.00	0.72	0.72
16.80	2.00	0.64	5.00	0.00	0.72	0.72
16.85	2.00	0.64	5.00	0.00	0.72	0.72
16.90	2.00	0.64	5.00	0.00	0.72	0.72
16.95	2.00	0.64	5.00	0.00	0.72	0.72
17.00	2.00	0.64	5.00	0.00	0.72	0.72
17.05	2.00	0.64	5.00	0.00	0.72	0.72
17.10	2.00	0.64	5.00	0.00	0.72	0.72
17.15	2.00	0.64	5.00	0.00	0.72	0.72
17.20	2.00	0.64	5.00	0.00	0.72	0.72
17.25	2.00	0.64	5.00	0.00	0.72	0.72
17.30	2.00	0.64	5.00	0.00	0.72	0.72
17.35	2.00	0.64	5.00	0.00	0.72	0.72
17.40	2.00	0.64	5.00	0.00	0.72	0.72
17.45	2.00	0.64	5.00	0.00	0.72	0.72
17.50	2.00	0.64	5.00	0.00	0.72	0.72
17.55	2.00	0.64	5.00	0.00	0.72	0.72
17.60	2.00	0.64	5.00	0.00	0.72	0.72
17.65	2.00	0.64	5.00	0.00	0.72	0.72
17.70	2.00	0.64	5.00	0.00	0.72	0.72
17.75	2.00	0.64	5.00	0.00	0.72	0.72
17.80	2.00	0.64	5.00	0.00	0.72	0.72
17.85	2.00	0.64	5.00	0.00	0.72	0.72
17.90	2.00	0.64	5.00	0.00	0.72	0.72
17.95	2.00	0.64	5.00	0.00	0.72	0.72
18.00	2.00	0.64	5.00	0.00	0.72	0.72
18.05	2.00	0.64	5.00	0.00	0.72	0.72
18.10	2.00	0.64	5.00	0.00	0.72	0.72
18.15	2.00	0.63	5.00	0.00	0.72	0.72
18.20	2.00	0.63	5.00	0.00	0.72	0.72
18.25	2.00	0.63	5.00	0.00	0.72	0.72
18.30	2.00	0.63	5.00	0.00	0.72	0.72
18.35	2.00	0.63	5.00	0.00	0.72	0.72
18.40	2.00	0.63	5.00	0.00	0.72	0.72
18.45	2.00	0.63	5.00	0.00	0.72	0.72
18.50	2.00	0.63	5.00	0.00	0.72	0.72
18.55	2.00	0.63	5.00	0.00	0.72	0.72
18.60	2.00	0.63	5.00	0.00	0.72	0.72
18.65	2.00	0.63	5.00	0.00	0.72	0.72
18.70	2.00	0.63	5.00	0.00	0.72	0.72
18.75	2.00	0.63	5.00	0.00	0.72	0.72
18.80	2.00	0.63	5.00	0.00	0.72	0.72
18.85	2.00	0.63	5.00	0.00	0.72	0.72
18.90	2.00	0.63	5.00	0.00	0.72	0.72
18.95	2.00	0.63	5.00	0.00	0.72	0.72
19.00	2.00	0.63	5.00	0.00	0.72	0.72
19.05	2.00	0.63	5.00	0.00	0.72	0.72
19.10	2.00	0.63	5.00	0.00	0.72	0.72
19.15	2.00	0.63	5.00	0.00	0.72	0.72
19.20	2.00	0.63	5.00	0.00	0.72	0.72
19.25	2.00	0.63	5.00	0.00	0.72	0.72
19.30	2.00	0.63	5.00	0.00	0.72	0.72
19.35	2.00	0.63	5.00	0.00	0.72	0.72
19.40	2.00	0.63	5.00	0.00	0.72	0.72
19.45	2.00	0.63	5.00	0.00	0.72	0.72
19.50	2.00	0.63	5.00	0.00	0.72	0.72
19.55	2.00	0.63	5.00	0.00	0.72	0.72
19.60	2.00	0.63	5.00	0.00	0.72	0.72
19.65	2.00	0.63	5.00	0.00	0.72	0.72
19.70	2.00	0.63	5.00	0.00	0.72	0.72
19.75	2.00	0.63	5.00	0.00	0.72	0.72
19.80	2.00	0.63	5.00	0.00	0.72	0.72
19.85	2.00	0.63	5.00	0.00	0.72	0.72
19.90	2.00	0.63	5.00	0.00	0.72	0.72
19.95	2.00	0.63	5.00	0.00	0.72	0.72
20.00	2.00	0.63	5.00	0.00	0.72	0.72
20.05	0.12	0.63	5.00	0.00	0.72	0.72
20.10	0.13	0.63	5.00	0.00	0.69	0.69
20.15	0.13	0.63	5.00	0.00	0.67	0.67
20.20	0.14	0.63	5.00	0.00	0.64	0.64
20.25	0.14	0.63	5.00	0.00	0.61	0.61
20.30	0.15	0.63	5.00	0.00	0.59	0.59
20.35	0.16	0.63	5.00	0.00	0.57	0.57
20.40	0.16	0.63	5.00	0.00	0.55	0.55
20.45	0.17	0.63	5.00	0.00	0.53	0.53
20.50	0.18	0.63	5.00	0.00	0.51	0.51
20.55	0.18	0.63	5.00	0.00	0.49	0.49
20.60	0.19	0.63	5.00	0.00	0.47	0.47
20.65	0.19	0.63	5.00	0.00	0.46	0.46
20.70	0.20	0.63	5.00	0.00	0.44	0.44
20.75	0.21	0.63	5.00	0.00	0.42	0.42
20.80	0.21	0.63	5.00	0.00	0.41	0.41
20.85	0.22	0.63	5.00	0.00	0.39	0.39
20.90	0.22	0.63	5.00	0.00	0.38	0.38
20.95	0.23	0.63	5.00	0.00	0.37	0.37
21.00	0.24	0.63	5.00	0.00	0.35	0.35
21.05	0.24	0.63	5.00	0.00	0.34	0.34
21.10	0.25	0.63	5.00	0.00	0.33	0.33
21.15	0.25	0.63	5.00	0.00	0.32	0.32
21.20	0.26	0.63	5.00	0.00	0.30	0.30
21.25	0.27	0.63	5.00	0.00	0.29	0.29
21.30	0.27	0.63	5.00	0.00	0.28	0.28
21.35	0.28	0.63	5.00	0.00	0.27	0.27

21.40	0.28	0.63	5.00	0.00	0.26	0.26
21.45	0.29	0.63	5.00	0.00	0.25	0.25
21.50	0.30	0.63	5.00	0.00	0.24	0.24
21.55	0.30	0.63	5.00	0.00	0.23	0.23
21.60	0.31	0.63	5.00	0.00	0.22	0.22
21.65	0.32	0.63	5.00	0.00	0.21	0.21
21.70	0.33	0.63	5.00	0.00	0.21	0.21
21.75	0.33	0.63	5.00	0.00	0.20	0.20
21.80	0.34	0.63	5.00	0.00	0.19	0.19
21.85	0.35	0.63	5.00	0.00	0.18	0.18
21.90	0.36	0.63	5.00	0.00	0.17	0.17
21.95	0.37	0.63	5.00	0.00	0.17	0.17
22.00	0.37	0.63	5.00	0.00	0.16	0.16
22.05	0.38	0.63	5.00	0.00	0.15	0.15
22.10	0.39	0.63	5.00	0.00	0.15	0.15
22.15	0.40	0.63	5.00	0.00	0.14	0.14
22.20	0.42	0.63	5.00	0.00	0.14	0.14
22.25	0.43	0.63	5.00	0.00	0.13	0.13
22.30	0.44	0.63	5.00	0.00	0.13	0.13
22.35	0.46	0.63	5.00	0.00	0.12	0.12
22.40	0.48	0.63	5.00	0.00	0.12	0.12
22.45	0.50	0.63	5.00	0.00	0.11	0.11
22.50	0.54	0.63	5.00	0.00	0.11	0.11
22.55	2.55	0.63	5.00	0.00	0.10	0.10
22.60	2.55	0.63	5.00	0.00	0.10	0.10
22.65	2.55	0.63	5.00	0.00	0.09	0.09
22.70	2.55	0.63	5.00	0.00	0.09	0.09
22.75	2.55	0.63	5.00	0.00	0.09	0.09
22.80	2.55	0.63	5.00	0.00	0.08	0.08
22.85	2.55	0.63	5.00	0.00	0.08	0.08
22.90	2.55	0.63	5.00	0.00	0.08	0.08
22.95	2.55	0.63	5.00	0.00	0.07	0.07
23.00	2.55	0.63	5.00	0.00	0.07	0.07
23.05	2.55	0.63	5.00	0.00	0.07	0.07
23.10	2.55	0.63	5.00	0.00	0.07	0.07
23.15	2.55	0.63	5.00	0.00	0.06	0.06
23.20	2.55	0.63	5.00	0.00	0.06	0.06
23.25	2.55	0.63	5.00	0.00	0.06	0.06
23.30	2.55	0.63	5.00	0.00	0.06	0.06
23.35	2.55	0.63	5.00	0.00	0.05	0.05
23.40	2.55	0.63	5.00	0.00	0.05	0.05
23.45	2.55	0.63	5.00	0.00	0.05	0.05
23.50	2.55	0.63	5.00	0.00	0.05	0.05
23.55	2.55	0.63	5.00	0.00	0.04	0.04
23.60	2.55	0.63	5.00	0.00	0.04	0.04
23.65	2.55	0.63	5.00	0.00	0.04	0.04
23.70	2.55	0.63	5.00	0.00	0.04	0.04
23.75	2.55	0.63	5.00	0.00	0.04	0.04
23.80	2.55	0.63	5.00	0.00	0.04	0.04
23.85	2.55	0.63	5.00	0.00	0.03	0.03
23.90	2.55	0.63	5.00	0.00	0.03	0.03
23.95	2.55	0.63	5.00	0.00	0.03	0.03
24.00	2.55	0.63	5.00	0.00	0.03	0.03
24.05	2.55	0.63	5.00	0.00	0.03	0.03
24.10	2.55	0.63	5.00	0.00	0.03	0.03
24.15	2.55	0.63	5.00	0.00	0.03	0.03
24.20	2.55	0.63	5.00	0.00	0.02	0.02
24.25	2.55	0.63	5.00	0.00	0.02	0.02
24.30	2.55	0.63	5.00	0.00	0.02	0.02
24.35	2.55	0.63	5.00	0.00	0.02	0.02
24.40	2.55	0.63	5.00	0.00	0.02	0.02
24.45	2.55	0.63	5.00	0.00	0.02	0.02
24.50	2.55	0.63	5.00	0.00	0.01	0.01
24.55	2.55	0.63	5.00	0.00	0.01	0.01
24.60	2.55	0.62	5.00	0.00	0.01	0.01
24.65	2.55	0.62	5.00	0.00	0.01	0.01
24.70	2.55	0.62	5.00	0.00	0.01	0.01
24.75	2.55	0.62	5.00	0.00	0.01	0.01
24.80	2.55	0.62	5.00	0.00	0.01	0.01
24.85	2.55	0.62	5.00	0.00	0.01	0.01
24.90	2.55	0.62	5.00	0.00	0.00	0.00
24.95	2.55	0.62	5.00	0.00	0.00	0.00
25.00	2.55	0.62	5.00	0.00	0.00	0.00
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00
26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00

26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
27.20	2.00	0.62	5.00	0.00	0.00	0.00
27.25	2.00	0.62	5.00	0.00	0.00	0.00
27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00
30.05	2.00	0.62	5.00	0.00	0.00	0.00
30.10	2.00	0.62	5.00	0.00	0.00	0.00
30.15	2.00	0.62	5.00	0.00	0.00	0.00
30.20	2.00	0.62	5.00	0.00	0.00	0.00
30.25	2.00	0.62	5.00	0.00	0.00	0.00
30.30	2.00	0.61	5.00	0.00	0.00	0.00
30.35	2.00	0.61	5.00	0.00	0.00	0.00
30.40	2.00	0.61	5.00	0.00	0.00	0.00
30.45	2.00	0.61	5.00	0.00	0.00	0.00
30.50	2.00	0.61	5.00	0.00	0.00	0.00
30.55	2.00	0.61	5.00	0.00	0.00	0.00
30.60	2.00	0.61	5.00	0.00	0.00	0.00
30.65	2.00	0.61	5.00	0.00	0.00	0.00
30.70	2.00	0.61	5.00	0.00	0.00	0.00
30.75	2.00	0.61	5.00	0.00	0.00	0.00
30.80	2.00	0.61	5.00	0.00	0.00	0.00
30.85	2.00	0.61	5.00	0.00	0.00	0.00
30.90	2.00	0.61	5.00	0.00	0.00	0.00
30.95	2.00	0.61	5.00	0.00	0.00	0.00
31.00	2.00	0.61	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

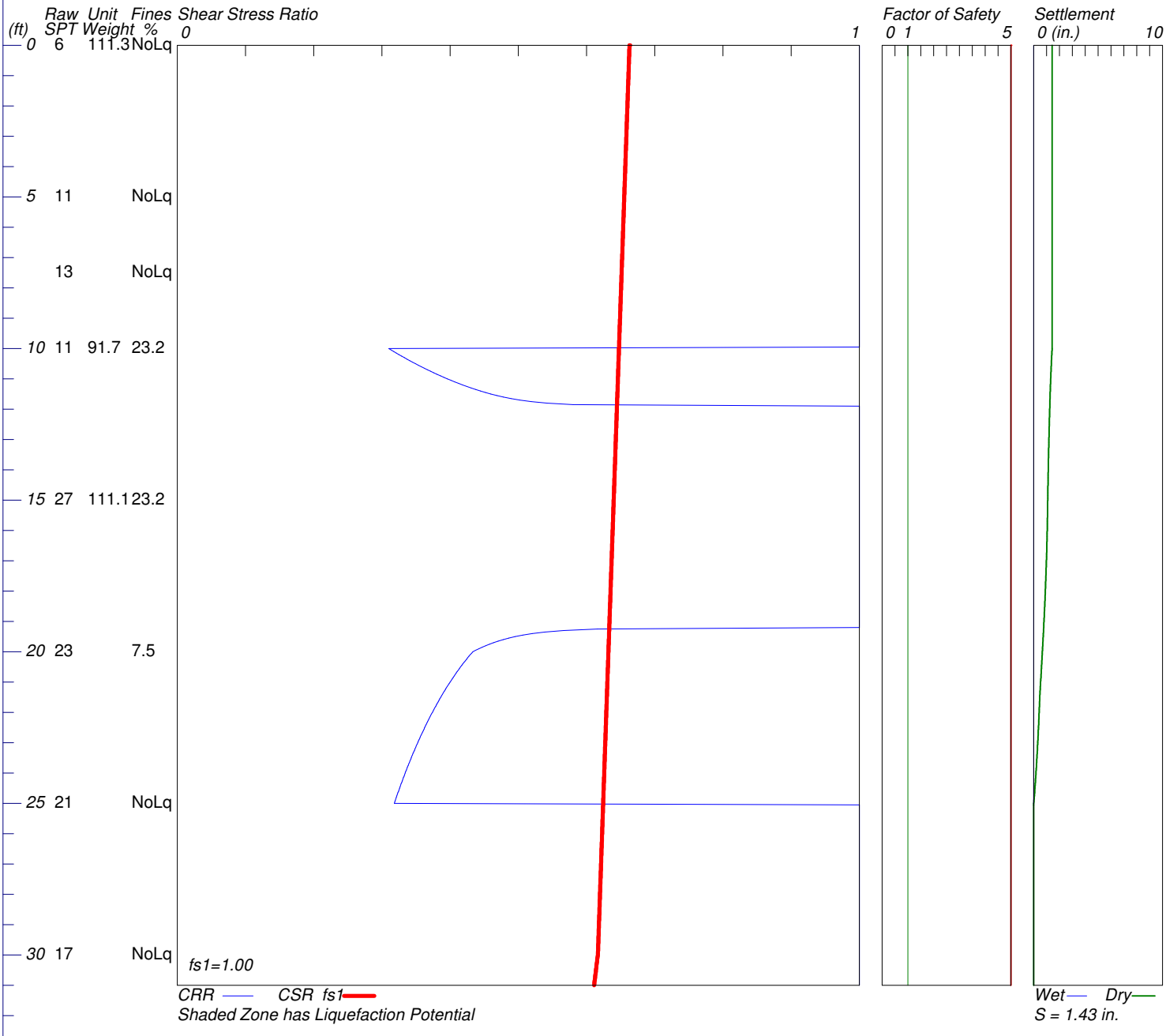
	CRRm	Cyclic resistance ratio from soils
	CSRfs	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
	F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
	S_sat	Settlement from saturated sands
	S_dry	Settlement from dry sands
	S_all	Total settlement from saturated and dry sands
	NoLiq	No-Liquefy Soils

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B11 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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LIQUEFACTION ANALYSIS CALCULATION SHEET

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Input File Name: C:\Users\adamr\Dropbox\LA Railroad 93 - Blackhall Studios\Liquefaction\LGC-B11.liq
Title: LA Railroad 93
Subtitle: 213015-01

Surface Elev.=
Hole No.=LGC-B11
Depth of Hole= 31.0 ft
Water Table during Earthquake= 65.0 ft
Water Table during In-Situ Testing= 110.0 ft
Max. Acceleration= 1.02 g
Earthquake Magnitude= 6.8

Input Data:
Surface Elev.=
Hole No.=LGC-B11
Depth of Hole=31.0 ft
Water Table during Earthquake= 65.0 ft
Water Table during In-Situ Testing= 110.0 ft
Max. Acceleration=1.02 g
Earthquake Magnitude=6.8

Earthquake Magnitude=6.8
2. Settlement Analysis Method: Tokimatsu / Seed
3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1.0
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.0	6.0	111.3	NoLiq
5.0	11.0	111.3	NoLiq
7.5	13.0	111.3	NoLiq
10.0	11.0	91.7	23.2
15.0	27.0	111.1	23.2
20.0	23.0	111.1	7.5
25.0	21.0	111.1	NoLiq
30.0	17.0	111.1	NoLiq

Output Results:
Settlement of saturated sands=0.00 in.
Settlement of dry sands=1.43 in.
Total settlement of saturated and dry sands=1.43 in.
Differential Settlement=0.714 to 0.943 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	1.43	1.43
0.05	2.00	0.66	5.00	0.00	1.43	1.43
0.10	2.00	0.66	5.00	0.00	1.43	1.43
0.15	2.00	0.66	5.00	0.00	1.43	1.43
0.20	2.00	0.66	5.00	0.00	1.43	1.43
0.25	2.00	0.66	5.00	0.00	1.43	1.43
0.30	2.00	0.66	5.00	0.00	1.43	1.43
0.35	2.00	0.66	5.00	0.00	1.43	1.43
0.40	2.00	0.66	5.00	0.00	1.43	1.43
0.45	2.00	0.66	5.00	0.00	1.43	1.43
0.50	2.00	0.66	5.00	0.00	1.43	1.43
0.55	2.00	0.66	5.00	0.00	1.43	1.43
0.60	2.00	0.66	5.00	0.00	1.43	1.43
0.65	2.00	0.66	5.00	0.00	1.43	1.43
0.70	2.00	0.66	5.00	0.00	1.43	1.43
0.75	2.00	0.66	5.00	0.00	1.43	1.43
0.80	2.00	0.66	5.00	0.00	1.43	1.43
0.85	2.00	0.66	5.00	0.00	1.43	1.43
0.90	2.00	0.66	5.00	0.00	1.43	1.43
0.95	2.00	0.66	5.00	0.00	1.43	1.43
1.00	2.00	0.66	5.00	0.00	1.43	1.43
1.05	2.00	0.66	5.00	0.00	1.43	1.43
1.10	2.00	0.66	5.00	0.00	1.43	1.43
1.15	2.00	0.66	5.00	0.00	1.43	1.43
1.20	2.00	0.66	5.00	0.00	1.43	1.43
1.25	2.00	0.66	5.00	0.00	1.43	1.43
1.30	2.00	0.66	5.00	0.00	1.43	1.43
1.35	2.00	0.66	5.00	0.00	1.43	1.43

1.40	2.00	0.66	5.00	0.00	1.43	1.43
1.45	2.00	0.66	5.00	0.00	1.43	1.43
1.50	2.00	0.66	5.00	0.00	1.43	1.43
1.55	2.00	0.66	5.00	0.00	1.43	1.43
1.60	2.00	0.66	5.00	0.00	1.43	1.43
1.65	2.00	0.66	5.00	0.00	1.43	1.43
1.70	2.00	0.66	5.00	0.00	1.43	1.43
1.75	2.00	0.66	5.00	0.00	1.43	1.43
1.80	2.00	0.66	5.00	0.00	1.43	1.43
1.85	2.00	0.66	5.00	0.00	1.43	1.43
1.90	2.00	0.66	5.00	0.00	1.43	1.43
1.95	2.00	0.66	5.00	0.00	1.43	1.43
2.00	2.00	0.66	5.00	0.00	1.43	1.43
2.05	2.00	0.66	5.00	0.00	1.43	1.43
2.10	2.00	0.66	5.00	0.00	1.43	1.43
2.15	2.00	0.66	5.00	0.00	1.43	1.43
2.20	2.00	0.66	5.00	0.00	1.43	1.43
2.25	2.00	0.66	5.00	0.00	1.43	1.43
2.30	2.00	0.66	5.00	0.00	1.43	1.43
2.35	2.00	0.66	5.00	0.00	1.43	1.43
2.40	2.00	0.66	5.00	0.00	1.43	1.43
2.45	2.00	0.66	5.00	0.00	1.43	1.43
2.50	2.00	0.66	5.00	0.00	1.43	1.43
2.55	2.00	0.66	5.00	0.00	1.43	1.43
2.60	2.00	0.66	5.00	0.00	1.43	1.43
2.65	2.00	0.66	5.00	0.00	1.43	1.43
2.70	2.00	0.66	5.00	0.00	1.43	1.43
2.75	2.00	0.66	5.00	0.00	1.43	1.43
2.80	2.00	0.66	5.00	0.00	1.43	1.43
2.85	2.00	0.66	5.00	0.00	1.43	1.43
2.90	2.00	0.66	5.00	0.00	1.43	1.43
2.95	2.00	0.66	5.00	0.00	1.43	1.43
3.00	2.00	0.66	5.00	0.00	1.43	1.43
3.05	2.00	0.66	5.00	0.00	1.43	1.43
3.10	2.00	0.66	5.00	0.00	1.43	1.43
3.15	2.00	0.66	5.00	0.00	1.43	1.43
3.20	2.00	0.66	5.00	0.00	1.43	1.43
3.25	2.00	0.66	5.00	0.00	1.43	1.43
3.30	2.00	0.66	5.00	0.00	1.43	1.43
3.35	2.00	0.66	5.00	0.00	1.43	1.43
3.40	2.00	0.66	5.00	0.00	1.43	1.43
3.45	2.00	0.66	5.00	0.00	1.43	1.43
3.50	2.00	0.66	5.00	0.00	1.43	1.43
3.55	2.00	0.66	5.00	0.00	1.43	1.43
3.60	2.00	0.66	5.00	0.00	1.43	1.43
3.65	2.00	0.66	5.00	0.00	1.43	1.43
3.70	2.00	0.66	5.00	0.00	1.43	1.43
3.75	2.00	0.66	5.00	0.00	1.43	1.43
3.80	2.00	0.66	5.00	0.00	1.43	1.43
3.85	2.00	0.66	5.00	0.00	1.43	1.43
3.90	2.00	0.66	5.00	0.00	1.43	1.43
3.95	2.00	0.66	5.00	0.00	1.43	1.43
4.00	2.00	0.66	5.00	0.00	1.43	1.43
4.05	2.00	0.66	5.00	0.00	1.43	1.43
4.10	2.00	0.66	5.00	0.00	1.43	1.43
4.15	2.00	0.66	5.00	0.00	1.43	1.43
4.20	2.00	0.66	5.00	0.00	1.43	1.43
4.25	2.00	0.66	5.00	0.00	1.43	1.43
4.30	2.00	0.66	5.00	0.00	1.43	1.43
4.35	2.00	0.66	5.00	0.00	1.43	1.43
4.40	2.00	0.66	5.00	0.00	1.43	1.43
4.45	2.00	0.66	5.00	0.00	1.43	1.43
4.50	2.00	0.66	5.00	0.00	1.43	1.43
4.55	2.00	0.66	5.00	0.00	1.43	1.43
4.60	2.00	0.66	5.00	0.00	1.43	1.43
4.65	2.00	0.66	5.00	0.00	1.43	1.43
4.70	2.00	0.66	5.00	0.00	1.43	1.43
4.75	2.00	0.66	5.00	0.00	1.43	1.43
4.80	2.00	0.66	5.00	0.00	1.43	1.43
4.85	2.00	0.66	5.00	0.00	1.43	1.43
4.90	2.00	0.66	5.00	0.00	1.43	1.43
4.95	2.00	0.66	5.00	0.00	1.43	1.43
5.00	2.00	0.66	5.00	0.00	1.43	1.43
5.05	2.00	0.66	5.00	0.00	1.43	1.43
5.10	2.00	0.66	5.00	0.00	1.43	1.43
5.15	2.00	0.66	5.00	0.00	1.43	1.43
5.20	2.00	0.65	5.00	0.00	1.43	1.43
5.25	2.00	0.65	5.00	0.00	1.43	1.43
5.30	2.00	0.65	5.00	0.00	1.43	1.43
5.35	2.00	0.65	5.00	0.00	1.43	1.43
5.40	2.00	0.65	5.00	0.00	1.43	1.43
5.45	2.00	0.65	5.00	0.00	1.43	1.43
5.50	2.00	0.65	5.00	0.00	1.43	1.43
5.55	2.00	0.65	5.00	0.00	1.43	1.43
5.60	2.00	0.65	5.00	0.00	1.43	1.43
5.65	2.00	0.65	5.00	0.00	1.43	1.43
5.70	2.00	0.65	5.00	0.00	1.43	1.43
5.75	2.00	0.65	5.00	0.00	1.43	1.43
5.80	2.00	0.65	5.00	0.00	1.43	1.43
5.85	2.00	0.65	5.00	0.00	1.43	1.43
5.90	2.00	0.65	5.00	0.00	1.43	1.43
5.95	2.00	0.65	5.00	0.00	1.43	1.43
6.00	2.00	0.65	5.00	0.00	1.43	1.43
6.05	2.00	0.65	5.00	0.00	1.43	1.43
6.10	2.00	0.65	5.00	0.00	1.43	1.43
6.15	2.00	0.65	5.00	0.00	1.43	1.43
6.20	2.00	0.65	5.00	0.00	1.43	1.43
6.25	2.00	0.65	5.00	0.00	1.43	1.43
6.30	2.00	0.65	5.00	0.00	1.43	1.43
6.35	2.00	0.65	5.00	0.00	1.43	1.43

6.40	2.00	0.65	5.00	0.00	1.43	1.43
6.45	2.00	0.65	5.00	0.00	1.43	1.43
6.50	2.00	0.65	5.00	0.00	1.43	1.43
6.55	2.00	0.65	5.00	0.00	1.43	1.43
6.60	2.00	0.65	5.00	0.00	1.43	1.43
6.65	2.00	0.65	5.00	0.00	1.43	1.43
6.70	2.00	0.65	5.00	0.00	1.43	1.43
6.75	2.00	0.65	5.00	0.00	1.43	1.43
6.80	2.00	0.65	5.00	0.00	1.43	1.43
6.85	2.00	0.65	5.00	0.00	1.43	1.43
6.90	2.00	0.65	5.00	0.00	1.43	1.43
6.95	2.00	0.65	5.00	0.00	1.43	1.43
7.00	2.00	0.65	5.00	0.00	1.43	1.43
7.05	2.00	0.65	5.00	0.00	1.43	1.43
7.10	2.00	0.65	5.00	0.00	1.43	1.43
7.15	2.00	0.65	5.00	0.00	1.43	1.43
7.20	2.00	0.65	5.00	0.00	1.43	1.43
7.25	2.00	0.65	5.00	0.00	1.43	1.43
7.30	2.00	0.65	5.00	0.00	1.43	1.43
7.35	2.00	0.65	5.00	0.00	1.43	1.43
7.40	2.00	0.65	5.00	0.00	1.43	1.43
7.45	2.00	0.65	5.00	0.00	1.43	1.43
7.50	2.00	0.65	5.00	0.00	1.43	1.43
7.55	2.00	0.65	5.00	0.00	1.43	1.43
7.60	2.00	0.65	5.00	0.00	1.43	1.43
7.65	2.00	0.65	5.00	0.00	1.43	1.43
7.70	2.00	0.65	5.00	0.00	1.43	1.43
7.75	2.00	0.65	5.00	0.00	1.43	1.43
7.80	2.00	0.65	5.00	0.00	1.43	1.43
7.85	2.00	0.65	5.00	0.00	1.43	1.43
7.90	2.00	0.65	5.00	0.00	1.43	1.43
7.95	2.00	0.65	5.00	0.00	1.43	1.43
8.00	2.00	0.65	5.00	0.00	1.43	1.43
8.05	2.00	0.65	5.00	0.00	1.43	1.43
8.10	2.00	0.65	5.00	0.00	1.43	1.43
8.15	2.00	0.65	5.00	0.00	1.43	1.43
8.20	2.00	0.65	5.00	0.00	1.43	1.43
8.25	2.00	0.65	5.00	0.00	1.43	1.43
8.30	2.00	0.65	5.00	0.00	1.43	1.43
8.35	2.00	0.65	5.00	0.00	1.43	1.43
8.40	2.00	0.65	5.00	0.00	1.43	1.43
8.45	2.00	0.65	5.00	0.00	1.43	1.43
8.50	2.00	0.65	5.00	0.00	1.43	1.43
8.55	2.00	0.65	5.00	0.00	1.43	1.43
8.60	2.00	0.65	5.00	0.00	1.43	1.43
8.65	2.00	0.65	5.00	0.00	1.43	1.43
8.70	2.00	0.65	5.00	0.00	1.43	1.43
8.75	2.00	0.65	5.00	0.00	1.43	1.43
8.80	2.00	0.65	5.00	0.00	1.43	1.43
8.85	2.00	0.65	5.00	0.00	1.43	1.43
8.90	2.00	0.65	5.00	0.00	1.43	1.43
8.95	2.00	0.65	5.00	0.00	1.43	1.43
9.00	2.00	0.65	5.00	0.00	1.43	1.43
9.05	2.00	0.65	5.00	0.00	1.43	1.43
9.10	2.00	0.65	5.00	0.00	1.43	1.43
9.15	2.00	0.65	5.00	0.00	1.43	1.43
9.20	2.00	0.65	5.00	0.00	1.43	1.43
9.25	2.00	0.65	5.00	0.00	1.43	1.43
9.30	2.00	0.65	5.00	0.00	1.43	1.43
9.35	2.00	0.65	5.00	0.00	1.43	1.43
9.40	2.00	0.65	5.00	0.00	1.43	1.43
9.45	2.00	0.65	5.00	0.00	1.43	1.43
9.50	2.00	0.65	5.00	0.00	1.43	1.43
9.55	2.00	0.65	5.00	0.00	1.43	1.43
9.60	2.00	0.65	5.00	0.00	1.43	1.43
9.65	2.00	0.65	5.00	0.00	1.43	1.43
9.70	2.00	0.65	5.00	0.00	1.43	1.43
9.75	2.00	0.65	5.00	0.00	1.43	1.43
9.80	2.00	0.65	5.00	0.00	1.43	1.43
9.85	2.00	0.65	5.00	0.00	1.43	1.43
9.90	2.00	0.65	5.00	0.00	1.43	1.43
9.95	2.00	0.65	5.00	0.00	1.43	1.43
10.00	0.31	0.65	5.00	0.00	1.43	1.43
10.05	0.31	0.65	5.00	0.00	1.42	1.42
10.10	0.32	0.65	5.00	0.00	1.42	1.42
10.15	0.32	0.65	5.00	0.00	1.41	1.41
10.20	0.32	0.65	5.00	0.00	1.40	1.40
10.25	0.33	0.65	5.00	0.00	1.40	1.40
10.30	0.33	0.65	5.00	0.00	1.39	1.39
10.35	0.34	0.65	5.00	0.00	1.39	1.39
10.40	0.34	0.65	5.00	0.00	1.38	1.38
10.45	0.34	0.65	5.00	0.00	1.38	1.38
10.50	0.35	0.65	5.00	0.00	1.37	1.37
10.55	0.35	0.65	5.00	0.00	1.36	1.36
10.60	0.36	0.65	5.00	0.00	1.36	1.36
10.65	0.36	0.65	5.00	0.00	1.35	1.35
10.70	0.37	0.65	5.00	0.00	1.35	1.35
10.75	0.37	0.65	5.00	0.00	1.34	1.34
10.80	0.38	0.65	5.00	0.00	1.34	1.34
10.85	0.38	0.65	5.00	0.00	1.34	1.34
10.90	0.39	0.65	5.00	0.00	1.33	1.33
10.95	0.39	0.65	5.00	0.00	1.33	1.33
11.00	0.40	0.65	5.00	0.00	1.32	1.32
11.05	0.40	0.65	5.00	0.00	1.32	1.32
11.10	0.41	0.65	5.00	0.00	1.31	1.31
11.15	0.41	0.65	5.00	0.00	1.31	1.31
11.20	0.42	0.65	5.00	0.00	1.30	1.30
11.25	0.42	0.65	5.00	0.00	1.30	1.30
11.30	0.43	0.65	5.00	0.00	1.30	1.30
11.35	0.44	0.65	5.00	0.00	1.29	1.29

11.40	0.44	0.65	5.00	0.00	1.29	1.29
11.45	0.45	0.65	5.00	0.00	1.28	1.28
11.50	0.46	0.65	5.00	0.00	1.28	1.28
11.55	0.47	0.65	5.00	0.00	1.28	1.28
11.60	0.48	0.65	5.00	0.00	1.27	1.27
11.65	0.49	0.64	5.00	0.00	1.27	1.27
11.70	0.50	0.64	5.00	0.00	1.26	1.26
11.75	0.52	0.64	5.00	0.00	1.26	1.26
11.80	0.54	0.64	5.00	0.00	1.26	1.26
11.85	0.58	0.64	5.00	0.00	1.25	1.25
11.90	2.55	0.64	5.00	0.00	1.25	1.25
11.95	2.55	0.64	5.00	0.00	1.25	1.25
12.00	2.55	0.64	5.00	0.00	1.24	1.24
12.05	2.55	0.64	5.00	0.00	1.24	1.24
12.10	2.55	0.64	5.00	0.00	1.24	1.24
12.15	2.55	0.64	5.00	0.00	1.23	1.23
12.20	2.55	0.64	5.00	0.00	1.23	1.23
12.25	2.55	0.64	5.00	0.00	1.23	1.23
12.30	2.55	0.64	5.00	0.00	1.22	1.22
12.35	2.55	0.64	5.00	0.00	1.22	1.22
12.40	2.55	0.64	5.00	0.00	1.22	1.22
12.45	2.55	0.64	5.00	0.00	1.21	1.21
12.50	2.55	0.64	5.00	0.00	1.21	1.21
12.55	2.55	0.64	5.00	0.00	1.21	1.21
12.60	2.55	0.64	5.00	0.00	1.20	1.20
12.65	2.55	0.64	5.00	0.00	1.20	1.20
12.70	2.55	0.64	5.00	0.00	1.20	1.20
12.75	2.55	0.64	5.00	0.00	1.20	1.20
12.80	2.55	0.64	5.00	0.00	1.19	1.19
12.85	2.55	0.64	5.00	0.00	1.19	1.19
12.90	2.55	0.64	5.00	0.00	1.19	1.19
12.95	2.55	0.64	5.00	0.00	1.18	1.18
13.00	2.55	0.64	5.00	0.00	1.18	1.18
13.05	2.55	0.64	5.00	0.00	1.18	1.18
13.10	2.55	0.64	5.00	0.00	1.18	1.18
13.15	2.55	0.64	5.00	0.00	1.17	1.17
13.20	2.55	0.64	5.00	0.00	1.17	1.17
13.25	2.55	0.64	5.00	0.00	1.17	1.17
13.30	2.55	0.64	5.00	0.00	1.16	1.16
13.35	2.55	0.64	5.00	0.00	1.16	1.16
13.40	2.55	0.64	5.00	0.00	1.16	1.16
13.45	2.55	0.64	5.00	0.00	1.16	1.16
13.50	2.55	0.64	5.00	0.00	1.15	1.15
13.55	2.55	0.64	5.00	0.00	1.15	1.15
13.60	2.55	0.64	5.00	0.00	1.15	1.15
13.65	2.55	0.64	5.00	0.00	1.15	1.15
13.70	2.55	0.64	5.00	0.00	1.14	1.14
13.75	2.55	0.64	5.00	0.00	1.14	1.14
13.80	2.55	0.64	5.00	0.00	1.14	1.14
13.85	2.55	0.64	5.00	0.00	1.14	1.14
13.90	2.55	0.64	5.00	0.00	1.13	1.13
13.95	2.55	0.64	5.00	0.00	1.13	1.13
14.00	2.55	0.64	5.00	0.00	1.13	1.13
14.05	2.55	0.64	5.00	0.00	1.13	1.13
14.10	2.55	0.64	5.00	0.00	1.13	1.13
14.15	2.55	0.64	5.00	0.00	1.12	1.12
14.20	2.55	0.64	5.00	0.00	1.12	1.12
14.25	2.55	0.64	5.00	0.00	1.12	1.12
14.30	2.55	0.64	5.00	0.00	1.12	1.12
14.35	2.55	0.64	5.00	0.00	1.11	1.11
14.40	2.55	0.64	5.00	0.00	1.11	1.11
14.45	2.55	0.64	5.00	0.00	1.11	1.11
14.50	2.55	0.64	5.00	0.00	1.11	1.11
14.55	2.55	0.64	5.00	0.00	1.11	1.11
14.60	2.55	0.64	5.00	0.00	1.10	1.10
14.65	2.55	0.64	5.00	0.00	1.10	1.10
14.70	2.55	0.64	5.00	0.00	1.10	1.10
14.75	2.55	0.64	5.00	0.00	1.10	1.10
14.80	2.55	0.64	5.00	0.00	1.10	1.10
14.85	2.55	0.64	5.00	0.00	1.09	1.09
14.90	2.55	0.64	5.00	0.00	1.09	1.09
14.95	2.55	0.64	5.00	0.00	1.09	1.09
15.00	2.55	0.64	5.00	0.00	1.09	1.09
15.05	2.55	0.64	5.00	0.00	1.09	1.09
15.10	2.55	0.64	5.00	0.00	1.09	1.09
15.15	2.55	0.64	5.00	0.00	1.08	1.08
15.20	2.55	0.64	5.00	0.00	1.08	1.08
15.25	2.55	0.64	5.00	0.00	1.08	1.08
15.30	2.55	0.64	5.00	0.00	1.08	1.08
15.35	2.55	0.64	5.00	0.00	1.08	1.08
15.40	2.55	0.64	5.00	0.00	1.07	1.07
15.45	2.55	0.64	5.00	0.00	1.07	1.07
15.50	2.55	0.64	5.00	0.00	1.07	1.07
15.55	2.55	0.64	5.00	0.00	1.07	1.07
15.60	2.55	0.64	5.00	0.00	1.07	1.07
15.65	2.55	0.64	5.00	0.00	1.06	1.06
15.70	2.55	0.64	5.00	0.00	1.06	1.06
15.75	2.55	0.64	5.00	0.00	1.06	1.06
15.80	2.55	0.64	5.00	0.00	1.06	1.06
15.85	2.55	0.64	5.00	0.00	1.06	1.06
15.90	2.55	0.64	5.00	0.00	1.05	1.05
15.95	2.55	0.64	5.00	0.00	1.05	1.05
16.00	2.55	0.64	5.00	0.00	1.05	1.05
16.05	2.55	0.64	5.00	0.00	1.05	1.05
16.10	2.55	0.64	5.00	0.00	1.04	1.04
16.15	2.55	0.64	5.00	0.00	1.04	1.04
16.20	2.55	0.64	5.00	0.00	1.04	1.04
16.25	2.55	0.64	5.00	0.00	1.04	1.04
16.30	2.55	0.64	5.00	0.00	1.03	1.03
16.35	2.55	0.64	5.00	0.00	1.03	1.03

16.40	2.55	0.64	5.00	0.00	1.03	1.03
16.45	2.55	0.64	5.00	0.00	1.03	1.03
16.50	2.55	0.64	5.00	0.00	1.02	1.02
16.55	2.55	0.64	5.00	0.00	1.02	1.02
16.60	2.55	0.64	5.00	0.00	1.02	1.02
16.65	2.55	0.64	5.00	0.00	1.01	1.01
16.70	2.55	0.64	5.00	0.00	1.01	1.01
16.75	2.55	0.64	5.00	0.00	1.01	1.01
16.80	2.55	0.64	5.00	0.00	1.00	1.00
16.85	2.55	0.64	5.00	0.00	1.00	1.00
16.90	2.55	0.64	5.00	0.00	1.00	1.00
16.95	2.55	0.64	5.00	0.00	0.99	0.99
17.00	2.55	0.64	5.00	0.00	0.99	0.99
17.05	2.55	0.64	5.00	0.00	0.98	0.98
17.10	2.55	0.64	5.00	0.00	0.98	0.98
17.15	2.55	0.64	5.00	0.00	0.98	0.98
17.20	2.55	0.64	5.00	0.00	0.97	0.97
17.25	2.55	0.64	5.00	0.00	0.97	0.97
17.30	2.55	0.64	5.00	0.00	0.96	0.96
17.35	2.55	0.64	5.00	0.00	0.96	0.96
17.40	2.55	0.64	5.00	0.00	0.96	0.96
17.45	2.55	0.64	5.00	0.00	0.95	0.95
17.50	2.55	0.64	5.00	0.00	0.95	0.95
17.55	2.55	0.64	5.00	0.00	0.94	0.94
17.60	2.55	0.64	5.00	0.00	0.94	0.94
17.65	2.55	0.64	5.00	0.00	0.94	0.94
17.70	2.55	0.64	5.00	0.00	0.93	0.93
17.75	2.55	0.64	5.00	0.00	0.93	0.93
17.80	2.55	0.64	5.00	0.00	0.92	0.92
17.85	2.55	0.64	5.00	0.00	0.92	0.92
17.90	2.55	0.64	5.00	0.00	0.91	0.91
17.95	2.55	0.64	5.00	0.00	0.91	0.91
18.00	2.55	0.64	5.00	0.00	0.90	0.90
18.05	2.55	0.64	5.00	0.00	0.90	0.90
18.10	2.55	0.64	5.00	0.00	0.89	0.89
18.15	2.55	0.63	5.00	0.00	0.89	0.89
18.20	2.55	0.63	5.00	0.00	0.88	0.88
18.25	2.55	0.63	5.00	0.00	0.88	0.88
18.30	2.55	0.63	5.00	0.00	0.87	0.87
18.35	2.55	0.63	5.00	0.00	0.87	0.87
18.40	2.55	0.63	5.00	0.00	0.86	0.86
18.45	2.55	0.63	5.00	0.00	0.86	0.86
18.50	2.55	0.63	5.00	0.00	0.85	0.85
18.55	2.55	0.63	5.00	0.00	0.85	0.85
18.60	2.55	0.63	5.00	0.00	0.84	0.84
18.65	2.55	0.63	5.00	0.00	0.84	0.84
18.70	2.55	0.63	5.00	0.00	0.83	0.83
18.75	2.55	0.63	5.00	0.00	0.83	0.83
18.80	2.55	0.63	5.00	0.00	0.82	0.82
18.85	2.55	0.63	5.00	0.00	0.82	0.82
18.90	2.55	0.63	5.00	0.00	0.81	0.81
18.95	2.55	0.63	5.00	0.00	0.80	0.80
19.00	2.55	0.63	5.00	0.00	0.80	0.80
19.05	2.55	0.63	5.00	0.00	0.79	0.79
19.10	2.55	0.63	5.00	0.00	0.79	0.79
19.15	2.55	0.63	5.00	0.00	0.78	0.78
19.20	2.55	0.63	5.00	0.00	0.78	0.78
19.25	0.62	0.63	5.00	0.00	0.77	0.77
19.30	0.57	0.63	5.00	0.00	0.76	0.76
19.35	0.54	0.63	5.00	0.00	0.76	0.76
19.40	0.52	0.63	5.00	0.00	0.75	0.75
19.45	0.51	0.63	5.00	0.00	0.75	0.75
19.50	0.50	0.63	5.00	0.00	0.74	0.74
19.55	0.49	0.63	5.00	0.00	0.73	0.73
19.60	0.48	0.63	5.00	0.00	0.73	0.73
19.65	0.47	0.63	5.00	0.00	0.72	0.72
19.70	0.46	0.63	5.00	0.00	0.71	0.71
19.75	0.46	0.63	5.00	0.00	0.71	0.71
19.80	0.45	0.63	5.00	0.00	0.70	0.70
19.85	0.45	0.63	5.00	0.00	0.70	0.70
19.90	0.44	0.63	5.00	0.00	0.69	0.69
19.95	0.44	0.63	5.00	0.00	0.68	0.68
20.00	0.43	0.63	5.00	0.00	0.68	0.68
20.05	0.43	0.63	5.00	0.00	0.67	0.67
20.10	0.43	0.63	5.00	0.00	0.66	0.66
20.15	0.43	0.63	5.00	0.00	0.66	0.66
20.20	0.43	0.63	5.00	0.00	0.65	0.65
20.25	0.42	0.63	5.00	0.00	0.64	0.64
20.30	0.42	0.63	5.00	0.00	0.64	0.64
20.35	0.42	0.63	5.00	0.00	0.63	0.63
20.40	0.42	0.63	5.00	0.00	0.62	0.62
20.45	0.42	0.63	5.00	0.00	0.62	0.62
20.50	0.42	0.63	5.00	0.00	0.61	0.61
20.55	0.41	0.63	5.00	0.00	0.60	0.60
20.60	0.41	0.63	5.00	0.00	0.59	0.59
20.65	0.41	0.63	5.00	0.00	0.59	0.59
20.70	0.41	0.63	5.00	0.00	0.58	0.58
20.75	0.41	0.63	5.00	0.00	0.57	0.57
20.80	0.41	0.63	5.00	0.00	0.57	0.57
20.85	0.40	0.63	5.00	0.00	0.56	0.56
20.90	0.40	0.63	5.00	0.00	0.55	0.55
20.95	0.40	0.63	5.00	0.00	0.55	0.55
21.00	0.40	0.63	5.00	0.00	0.54	0.54
21.05	0.40	0.63	5.00	0.00	0.53	0.53
21.10	0.40	0.63	5.00	0.00	0.52	0.52
21.15	0.40	0.63	5.00	0.00	0.52	0.52
21.20	0.39	0.63	5.00	0.00	0.51	0.51
21.25	0.39	0.63	5.00	0.00	0.50	0.50
21.30	0.39	0.63	5.00	0.00	0.50	0.50
21.35	0.39	0.63	5.00	0.00	0.49	0.49

21.40	0.39	0.63	5.00	0.00	0.48	0.48
21.45	0.39	0.63	5.00	0.00	0.47	0.47
21.50	0.39	0.63	5.00	0.00	0.47	0.47
21.55	0.38	0.63	5.00	0.00	0.47	0.47
21.60	0.38	0.63	5.00	0.00	0.46	0.46
21.65	0.38	0.63	5.00	0.00	0.46	0.46
21.70	0.38	0.63	5.00	0.00	0.45	0.45
21.75	0.38	0.63	5.00	0.00	0.45	0.45
21.80	0.38	0.63	5.00	0.00	0.44	0.44
21.85	0.38	0.63	5.00	0.00	0.44	0.44
21.90	0.38	0.63	5.00	0.00	0.43	0.43
21.95	0.38	0.63	5.00	0.00	0.43	0.43
22.00	0.37	0.63	5.00	0.00	0.42	0.42
22.05	0.37	0.63	5.00	0.00	0.42	0.42
22.10	0.37	0.63	5.00	0.00	0.42	0.42
22.15	0.37	0.63	5.00	0.00	0.41	0.41
22.20	0.37	0.63	5.00	0.00	0.41	0.41
22.25	0.37	0.63	5.00	0.00	0.40	0.40
22.30	0.37	0.63	5.00	0.00	0.39	0.39
22.35	0.37	0.63	5.00	0.00	0.39	0.39
22.40	0.36	0.63	5.00	0.00	0.38	0.38
22.45	0.36	0.63	5.00	0.00	0.38	0.38
22.50	0.36	0.63	5.00	0.00	0.37	0.37
22.55	0.36	0.63	5.00	0.00	0.37	0.37
22.60	0.36	0.63	5.00	0.00	0.36	0.36
22.65	0.36	0.63	5.00	0.00	0.36	0.36
22.70	0.36	0.63	5.00	0.00	0.35	0.35
22.75	0.36	0.63	5.00	0.00	0.35	0.35
22.80	0.36	0.63	5.00	0.00	0.34	0.34
22.85	0.36	0.63	5.00	0.00	0.33	0.33
22.90	0.35	0.63	5.00	0.00	0.33	0.33
22.95	0.35	0.63	5.00	0.00	0.32	0.32
23.00	0.35	0.63	5.00	0.00	0.32	0.32
23.05	0.35	0.63	5.00	0.00	0.31	0.31
23.10	0.35	0.63	5.00	0.00	0.30	0.30
23.15	0.35	0.63	5.00	0.00	0.30	0.30
23.20	0.35	0.63	5.00	0.00	0.29	0.29
23.25	0.35	0.63	5.00	0.00	0.28	0.28
23.30	0.35	0.63	5.00	0.00	0.28	0.28
23.35	0.35	0.63	5.00	0.00	0.27	0.27
23.40	0.34	0.63	5.00	0.00	0.26	0.26
23.45	0.34	0.63	5.00	0.00	0.26	0.26
23.50	0.34	0.63	5.00	0.00	0.25	0.25
23.55	0.34	0.63	5.00	0.00	0.24	0.24
23.60	0.34	0.63	5.00	0.00	0.24	0.24
23.65	0.34	0.63	5.00	0.00	0.23	0.23
23.70	0.34	0.63	5.00	0.00	0.22	0.22
23.75	0.34	0.63	5.00	0.00	0.22	0.22
23.80	0.34	0.63	5.00	0.00	0.21	0.21
23.85	0.34	0.63	5.00	0.00	0.20	0.20
23.90	0.34	0.63	5.00	0.00	0.19	0.19
23.95	0.33	0.63	5.00	0.00	0.19	0.19
24.00	0.33	0.63	5.00	0.00	0.18	0.18
24.05	0.33	0.63	5.00	0.00	0.17	0.17
24.10	0.33	0.63	5.00	0.00	0.16	0.16
24.15	0.33	0.63	5.00	0.00	0.15	0.15
24.20	0.33	0.63	5.00	0.00	0.15	0.15
24.25	0.33	0.63	5.00	0.00	0.14	0.14
24.30	0.33	0.63	5.00	0.00	0.13	0.13
24.35	0.33	0.63	5.00	0.00	0.12	0.12
24.40	0.33	0.63	5.00	0.00	0.11	0.11
24.45	0.33	0.63	5.00	0.00	0.10	0.10
24.50	0.33	0.63	5.00	0.00	0.10	0.10
24.55	0.33	0.63	5.00	0.00	0.09	0.09
24.60	0.32	0.62	5.00	0.00	0.08	0.08
24.65	0.32	0.62	5.00	0.00	0.07	0.07
24.70	0.32	0.62	5.00	0.00	0.06	0.06
24.75	0.32	0.62	5.00	0.00	0.05	0.05
24.80	0.32	0.62	5.00	0.00	0.04	0.04
24.85	0.32	0.62	5.00	0.00	0.03	0.03
24.90	0.32	0.62	5.00	0.00	0.03	0.03
24.95	0.32	0.62	5.00	0.00	0.02	0.02
25.00	0.32	0.62	5.00	0.00	0.01	0.01
25.05	2.00	0.62	5.00	0.00	0.00	0.00
25.10	2.00	0.62	5.00	0.00	0.00	0.00
25.15	2.00	0.62	5.00	0.00	0.00	0.00
25.20	2.00	0.62	5.00	0.00	0.00	0.00
25.25	2.00	0.62	5.00	0.00	0.00	0.00
25.30	2.00	0.62	5.00	0.00	0.00	0.00
25.35	2.00	0.62	5.00	0.00	0.00	0.00
25.40	2.00	0.62	5.00	0.00	0.00	0.00
25.45	2.00	0.62	5.00	0.00	0.00	0.00
25.50	2.00	0.62	5.00	0.00	0.00	0.00
25.55	2.00	0.62	5.00	0.00	0.00	0.00
25.60	2.00	0.62	5.00	0.00	0.00	0.00
25.65	2.00	0.62	5.00	0.00	0.00	0.00
25.70	2.00	0.62	5.00	0.00	0.00	0.00
25.75	2.00	0.62	5.00	0.00	0.00	0.00
25.80	2.00	0.62	5.00	0.00	0.00	0.00
25.85	2.00	0.62	5.00	0.00	0.00	0.00
25.90	2.00	0.62	5.00	0.00	0.00	0.00
25.95	2.00	0.62	5.00	0.00	0.00	0.00
26.00	2.00	0.62	5.00	0.00	0.00	0.00
26.05	2.00	0.62	5.00	0.00	0.00	0.00
26.10	2.00	0.62	5.00	0.00	0.00	0.00
26.15	2.00	0.62	5.00	0.00	0.00	0.00
26.20	2.00	0.62	5.00	0.00	0.00	0.00
26.25	2.00	0.62	5.00	0.00	0.00	0.00
26.30	2.00	0.62	5.00	0.00	0.00	0.00
26.35	2.00	0.62	5.00	0.00	0.00	0.00

26.40	2.00	0.62	5.00	0.00	0.00	0.00
26.45	2.00	0.62	5.00	0.00	0.00	0.00
26.50	2.00	0.62	5.00	0.00	0.00	0.00
26.55	2.00	0.62	5.00	0.00	0.00	0.00
26.60	2.00	0.62	5.00	0.00	0.00	0.00
26.65	2.00	0.62	5.00	0.00	0.00	0.00
26.70	2.00	0.62	5.00	0.00	0.00	0.00
26.75	2.00	0.62	5.00	0.00	0.00	0.00
26.80	2.00	0.62	5.00	0.00	0.00	0.00
26.85	2.00	0.62	5.00	0.00	0.00	0.00
26.90	2.00	0.62	5.00	0.00	0.00	0.00
26.95	2.00	0.62	5.00	0.00	0.00	0.00
27.00	2.00	0.62	5.00	0.00	0.00	0.00
27.05	2.00	0.62	5.00	0.00	0.00	0.00
27.10	2.00	0.62	5.00	0.00	0.00	0.00
27.15	2.00	0.62	5.00	0.00	0.00	0.00
27.20	2.00	0.62	5.00	0.00	0.00	0.00
27.25	2.00	0.62	5.00	0.00	0.00	0.00
27.30	2.00	0.62	5.00	0.00	0.00	0.00
27.35	2.00	0.62	5.00	0.00	0.00	0.00
27.40	2.00	0.62	5.00	0.00	0.00	0.00
27.45	2.00	0.62	5.00	0.00	0.00	0.00
27.50	2.00	0.62	5.00	0.00	0.00	0.00
27.55	2.00	0.62	5.00	0.00	0.00	0.00
27.60	2.00	0.62	5.00	0.00	0.00	0.00
27.65	2.00	0.62	5.00	0.00	0.00	0.00
27.70	2.00	0.62	5.00	0.00	0.00	0.00
27.75	2.00	0.62	5.00	0.00	0.00	0.00
27.80	2.00	0.62	5.00	0.00	0.00	0.00
27.85	2.00	0.62	5.00	0.00	0.00	0.00
27.90	2.00	0.62	5.00	0.00	0.00	0.00
27.95	2.00	0.62	5.00	0.00	0.00	0.00
28.00	2.00	0.62	5.00	0.00	0.00	0.00
28.05	2.00	0.62	5.00	0.00	0.00	0.00
28.10	2.00	0.62	5.00	0.00	0.00	0.00
28.15	2.00	0.62	5.00	0.00	0.00	0.00
28.20	2.00	0.62	5.00	0.00	0.00	0.00
28.25	2.00	0.62	5.00	0.00	0.00	0.00
28.30	2.00	0.62	5.00	0.00	0.00	0.00
28.35	2.00	0.62	5.00	0.00	0.00	0.00
28.40	2.00	0.62	5.00	0.00	0.00	0.00
28.45	2.00	0.62	5.00	0.00	0.00	0.00
28.50	2.00	0.62	5.00	0.00	0.00	0.00
28.55	2.00	0.62	5.00	0.00	0.00	0.00
28.60	2.00	0.62	5.00	0.00	0.00	0.00
28.65	2.00	0.62	5.00	0.00	0.00	0.00
28.70	2.00	0.62	5.00	0.00	0.00	0.00
28.75	2.00	0.62	5.00	0.00	0.00	0.00
28.80	2.00	0.62	5.00	0.00	0.00	0.00
28.85	2.00	0.62	5.00	0.00	0.00	0.00
28.90	2.00	0.62	5.00	0.00	0.00	0.00
28.95	2.00	0.62	5.00	0.00	0.00	0.00
29.00	2.00	0.62	5.00	0.00	0.00	0.00
29.05	2.00	0.62	5.00	0.00	0.00	0.00
29.10	2.00	0.62	5.00	0.00	0.00	0.00
29.15	2.00	0.62	5.00	0.00	0.00	0.00
29.20	2.00	0.62	5.00	0.00	0.00	0.00
29.25	2.00	0.62	5.00	0.00	0.00	0.00
29.30	2.00	0.62	5.00	0.00	0.00	0.00
29.35	2.00	0.62	5.00	0.00	0.00	0.00
29.40	2.00	0.62	5.00	0.00	0.00	0.00
29.45	2.00	0.62	5.00	0.00	0.00	0.00
29.50	2.00	0.62	5.00	0.00	0.00	0.00
29.55	2.00	0.62	5.00	0.00	0.00	0.00
29.60	2.00	0.62	5.00	0.00	0.00	0.00
29.65	2.00	0.62	5.00	0.00	0.00	0.00
29.70	2.00	0.62	5.00	0.00	0.00	0.00
29.75	2.00	0.62	5.00	0.00	0.00	0.00
29.80	2.00	0.62	5.00	0.00	0.00	0.00
29.85	2.00	0.62	5.00	0.00	0.00	0.00
29.90	2.00	0.62	5.00	0.00	0.00	0.00
29.95	2.00	0.62	5.00	0.00	0.00	0.00
30.00	2.00	0.62	5.00	0.00	0.00	0.00
30.05	2.00	0.62	5.00	0.00	0.00	0.00
30.10	2.00	0.62	5.00	0.00	0.00	0.00
30.15	2.00	0.62	5.00	0.00	0.00	0.00
30.20	2.00	0.62	5.00	0.00	0.00	0.00
30.25	2.00	0.62	5.00	0.00	0.00	0.00
30.30	2.00	0.61	5.00	0.00	0.00	0.00
30.35	2.00	0.61	5.00	0.00	0.00	0.00
30.40	2.00	0.61	5.00	0.00	0.00	0.00
30.45	2.00	0.61	5.00	0.00	0.00	0.00
30.50	2.00	0.61	5.00	0.00	0.00	0.00
30.55	2.00	0.61	5.00	0.00	0.00	0.00
30.60	2.00	0.61	5.00	0.00	0.00	0.00
30.65	2.00	0.61	5.00	0.00	0.00	0.00
30.70	2.00	0.61	5.00	0.00	0.00	0.00
30.75	2.00	0.61	5.00	0.00	0.00	0.00
30.80	2.00	0.61	5.00	0.00	0.00	0.00
30.85	2.00	0.61	5.00	0.00	0.00	0.00
30.90	2.00	0.61	5.00	0.00	0.00	0.00
30.95	2.00	0.61	5.00	0.00	0.00	0.00
31.00	2.00	0.61	5.00	0.00	0.00	0.00

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* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

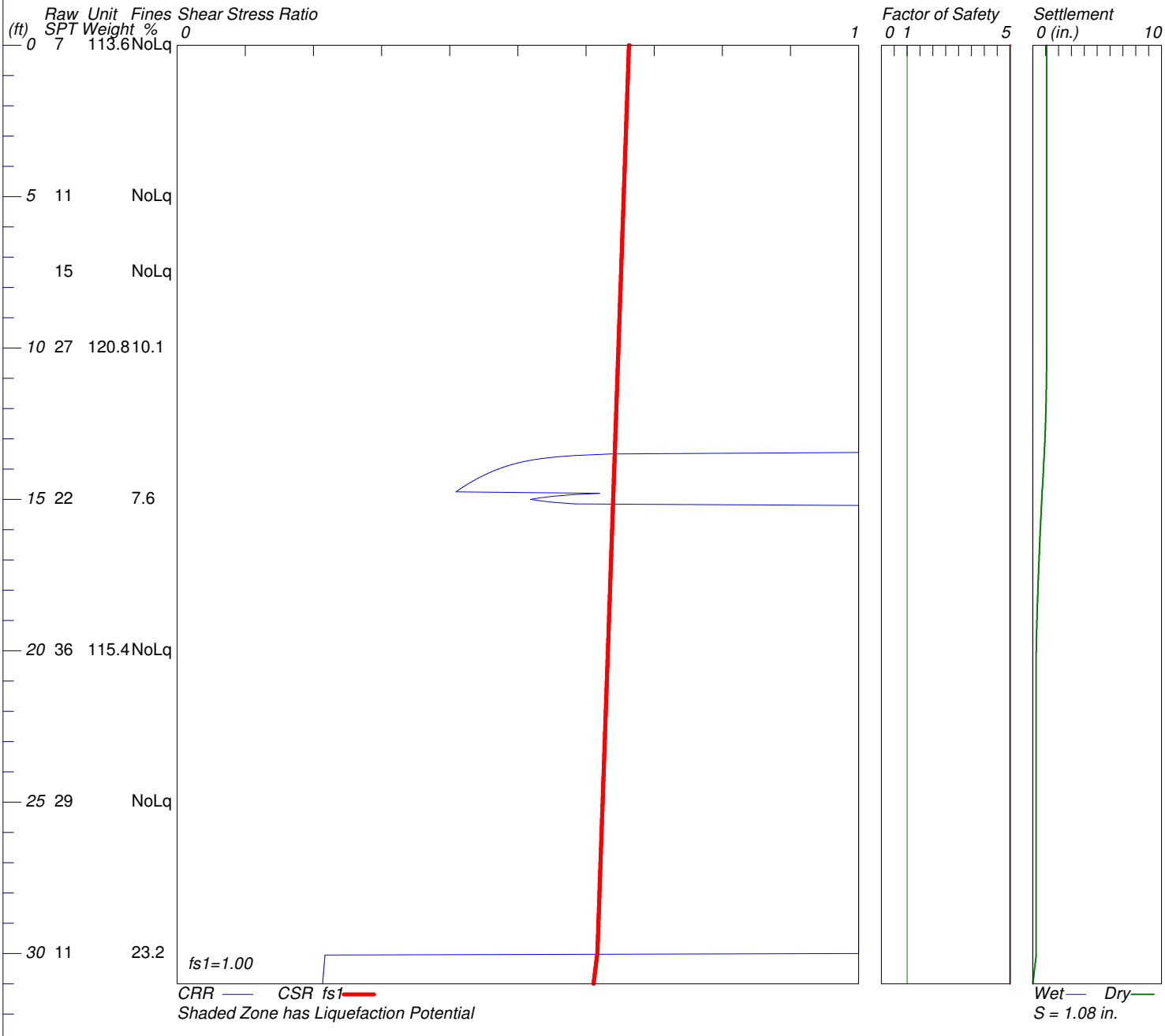
	CRRm	Cyclic resistance ratio from soils
	CSRfs	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
	F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
	S_sat	Settlement from saturated sands
	S_dry	Settlement from dry sands
	S_all	Total settlement from saturated and dry sands
	NoLiq	No-Liquefy Soils

SEISMIC SETTLEMENT ANALYSIS

LA Railroad 93

Hole No.=LGC-B12 Water Depth=65 ft

Magnitude=6.82
Acceleration=1.02g



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        Input File Name: C:\Users\ARich\Dropbox\LA Railroad 93 - Blackhall
Studios\Liquefaction\LGC-B12.liq
        Title:  LA Railroad 93
        Subtitle:  213015-01

        Surface Elev.=
        Hole No.=LGC-B12
        Depth of Hole= 31.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration= 1.02 g
        Earthquake Magnitude= 6.8

 Input Data:
        Surface Elev.=
        Hole No.=LGC-B12
        Depth of Hole=31.0 ft
        Water Table during Earthquake= 65.0 ft
        Water Table during In-Situ Testing= 110.0 ft
        Max. Acceleration=1.02 g
        Earthquake Magnitude=6.8

        Earthquake Magnitude=6.8
        2. Settlement Analysis Method: Tokimatsu / Seed
        3. Fines Correction for Liquefaction: Idriss/Seed (SPT only)
        4. Fine Correction for Settlement: During Liquefaction*
        5. Settlement Calculation in: All zones*
        6. Hammer Energy Ratio,                                    Ce = 1.3
        7. Borehole Diameter,                                      Cb= 1
        8. Sampling Method,                                        Cs= 1
        9. User request factor of safety (apply to CSR) ,   User= 1.0
           Plot one CSR curve (fs1=User)
        10. Use Curve Smoothing: Yes*
        * Recommended Options

        In-Situ Test Data:
```

Depth ft	SPT	gamma pcf	Fines %
0.0	7.0	113.6	NoLiq
5.0	11.0	113.6	NoLiq
7.5	15.0	113.6	NoLiq
10.0	27.0	120.8	10.1
15.0	22.0	120.8	7.6
20.0	36.0	115.4	NoLiq
25.0	29.0	115.4	NoLiq
30.0	11.0	115.4	23.2

Output Results:

Settlement of saturated sands=0.00 in.
Settlement of dry sands=1.08 in.
Total settlement of saturated and dry sands=1.08 in.
Differential Settlement=0.542 to 0.716 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.66	5.00	0.00	1.08	1.08
0.05	2.00	0.66	5.00	0.00	1.08	1.08
0.10	2.00	0.66	5.00	0.00	1.08	1.08
0.15	2.00	0.66	5.00	0.00	1.08	1.08
0.20	2.00	0.66	5.00	0.00	1.08	1.08
0.25	2.00	0.66	5.00	0.00	1.08	1.08
0.30	2.00	0.66	5.00	0.00	1.08	1.08
0.35	2.00	0.66	5.00	0.00	1.08	1.08
0.40	2.00	0.66	5.00	0.00	1.08	1.08
0.45	2.00	0.66	5.00	0.00	1.08	1.08
0.50	2.00	0.66	5.00	0.00	1.08	1.08
0.55	2.00	0.66	5.00	0.00	1.08	1.08
0.60	2.00	0.66	5.00	0.00	1.08	1.08
0.65	2.00	0.66	5.00	0.00	1.08	1.08
0.70	2.00	0.66	5.00	0.00	1.08	1.08
0.75	2.00	0.66	5.00	0.00	1.08	1.08
0.80	2.00	0.66	5.00	0.00	1.08	1.08
0.85	2.00	0.66	5.00	0.00	1.08	1.08
0.90	2.00	0.66	5.00	0.00	1.08	1.08
0.95	2.00	0.66	5.00	0.00	1.08	1.08
1.00	2.00	0.66	5.00	0.00	1.08	1.08
1.05	2.00	0.66	5.00	0.00	1.08	1.08
1.10	2.00	0.66	5.00	0.00	1.08	1.08
1.15	2.00	0.66	5.00	0.00	1.08	1.08
1.20	2.00	0.66	5.00	0.00	1.08	1.08
1.25	2.00	0.66	5.00	0.00	1.08	1.08
1.30	2.00	0.66	5.00	0.00	1.08	1.08
1.35	2.00	0.66	5.00	0.00	1.08	1.08

1.40	2.00	0.66	5.00	0.00	1.08	1.08
1.45	2.00	0.66	5.00	0.00	1.08	1.08
1.50	2.00	0.66	5.00	0.00	1.08	1.08
1.55	2.00	0.66	5.00	0.00	1.08	1.08
1.60	2.00	0.66	5.00	0.00	1.08	1.08
1.65	2.00	0.66	5.00	0.00	1.08	1.08
1.70	2.00	0.66	5.00	0.00	1.08	1.08
1.75	2.00	0.66	5.00	0.00	1.08	1.08
1.80	2.00	0.66	5.00	0.00	1.08	1.08
1.85	2.00	0.66	5.00	0.00	1.08	1.08
1.90	2.00	0.66	5.00	0.00	1.08	1.08
1.95	2.00	0.66	5.00	0.00	1.08	1.08
2.00	2.00	0.66	5.00	0.00	1.08	1.08
2.05	2.00	0.66	5.00	0.00	1.08	1.08
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2.65	2.00	0.66	5.00	0.00	1.08	1.08
2.70	2.00	0.66	5.00	0.00	1.08	1.08
2.75	2.00	0.66	5.00	0.00	1.08	1.08
2.80	2.00	0.66	5.00	0.00	1.08	1.08
2.85	2.00	0.66	5.00	0.00	1.08	1.08
2.90	2.00	0.66	5.00	0.00	1.08	1.08
2.95	2.00	0.66	5.00	0.00	1.08	1.08
3.00	2.00	0.66	5.00	0.00	1.08	1.08
3.05	2.00	0.66	5.00	0.00	1.08	1.08
3.10	2.00	0.66	5.00	0.00	1.08	1.08
3.15	2.00	0.66	5.00	0.00	1.08	1.08
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3.75	2.00	0.66	5.00	0.00	1.08	1.08
3.80	2.00	0.66	5.00	0.00	1.08	1.08
3.85	2.00	0.66	5.00	0.00	1.08	1.08
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4.05	2.00	0.66	5.00	0.00	1.08	1.08
4.10	2.00	0.66	5.00	0.00	1.08	1.08
4.15	2.00	0.66	5.00	0.00	1.08	1.08
4.20	2.00	0.66	5.00	0.00	1.08	1.08
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4.75	2.00	0.66	5.00	0.00	1.08	1.08
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8.00	2.00	0.65	5.00	0.00	1.08	1.08
8.05	2.00	0.65	5.00	0.00	1.08	1.08
8.10	2.00	0.65	5.00	0.00	1.08	1.08
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8.35	2.00	0.65	5.00	0.00	1.08	1.08
8.40	2.00	0.65	5.00	0.00	1.08	1.08
8.45	2.00	0.65	5.00	0.00	1.08	1.08
8.50	2.00	0.65	5.00	0.00	1.08	1.08
8.55	2.00	0.65	5.00	0.00	1.08	1.08
8.60	2.00	0.65	5.00	0.00	1.08	1.08
8.65	2.00	0.65	5.00	0.00	1.08	1.08
8.70	2.00	0.65	5.00	0.00	1.08	1.08
8.75	2.00	0.65	5.00	0.00	1.08	1.08
8.80	2.00	0.65	5.00	0.00	1.08	1.08
8.85	2.00	0.65	5.00	0.00	1.08	1.08
8.90	2.00	0.65	5.00	0.00	1.08	1.08
8.95	2.00	0.65	5.00	0.00	1.08	1.08
9.00	2.00	0.65	5.00	0.00	1.08	1.08
9.05	2.00	0.65	5.00	0.00	1.08	1.08
9.10	2.00	0.65	5.00	0.00	1.08	1.08
9.15	2.00	0.65	5.00	0.00	1.08	1.08
9.20	2.00	0.65	5.00	0.00	1.08	1.08
9.25	2.00	0.65	5.00	0.00	1.08	1.08
9.30	2.00	0.65	5.00	0.00	1.08	1.08
9.35	2.00	0.65	5.00	0.00	1.08	1.08
9.40	2.00	0.65	5.00	0.00	1.08	1.08
9.45	2.00	0.65	5.00	0.00	1.08	1.08
9.50	2.00	0.65	5.00	0.00	1.08	1.08
9.55	2.00	0.65	5.00	0.00	1.08	1.08
9.60	2.00	0.65	5.00	0.00	1.08	1.08
9.65	2.00	0.65	5.00	0.00	1.08	1.08
9.70	2.00	0.65	5.00	0.00	1.08	1.08
9.75	2.00	0.65	5.00	0.00	1.08	1.08
9.80	2.00	0.65	5.00	0.00	1.08	1.08
9.85	2.00	0.65	5.00	0.00	1.08	1.08
9.90	2.00	0.65	5.00	0.00	1.08	1.08
9.95	2.00	0.65	5.00	0.00	1.08	1.08
10.00	2.55	0.65	5.00	0.00	1.08	1.08
10.05	2.55	0.65	5.00	0.00	1.08	1.08
10.10	2.55	0.65	5.00	0.00	1.08	1.08
10.15	2.55	0.65	5.00	0.00	1.08	1.08
10.20	2.55	0.65	5.00	0.00	1.08	1.08
10.25	2.55	0.65	5.00	0.00	1.08	1.08
10.30	2.55	0.65	5.00	0.00	1.08	1.08
10.35	2.55	0.65	5.00	0.00	1.08	1.08
10.40	2.55	0.65	5.00	0.00	1.08	1.08
10.45	2.55	0.65	5.00	0.00	1.08	1.08
10.50	2.55	0.65	5.00	0.00	1.07	1.07
10.55	2.55	0.65	5.00	0.00	1.07	1.07
10.60	2.55	0.65	5.00	0.00	1.07	1.07
10.65	2.55	0.65	5.00	0.00	1.07	1.07
10.70	2.55	0.65	5.00	0.00	1.07	1.07
10.75	2.55	0.65	5.00	0.00	1.07	1.07
10.80	2.55	0.65	5.00	0.00	1.07	1.07
10.85	2.55	0.65	5.00	0.00	1.07	1.07
10.90	2.55	0.65	5.00	0.00	1.06	1.06
10.95	2.55	0.65	5.00	0.00	1.06	1.06
11.00	2.55	0.65	5.00	0.00	1.06	1.06
11.05	2.55	0.65	5.00	0.00	1.06	1.06
11.10	2.55	0.65	5.00	0.00	1.06	1.06
11.15	2.55	0.65	5.00	0.00	1.06	1.06
11.20	2.55	0.65	5.00	0.00	1.06	1.06
11.25	2.55	0.65	5.00	0.00	1.05	1.05
11.30	2.55	0.65	5.00	0.00	1.05	1.05
11.35	2.55	0.65	5.00	0.00	1.05	1.05

11.40	2.55	0.65	5.00	0.00	1.05	1.05
11.45	2.55	0.65	5.00	0.00	1.05	1.05
11.50	2.55	0.65	5.00	0.00	1.04	1.04
11.55	2.55	0.65	5.00	0.00	1.04	1.04
11.60	2.55	0.65	5.00	0.00	1.04	1.04
11.65	2.55	0.64	5.00	0.00	1.04	1.04
11.70	2.55	0.64	5.00	0.00	1.04	1.04
11.75	2.55	0.64	5.00	0.00	1.03	1.03
11.80	2.55	0.64	5.00	0.00	1.03	1.03
11.85	2.55	0.64	5.00	0.00	1.03	1.03
11.90	2.55	0.64	5.00	0.00	1.03	1.03
11.95	2.55	0.64	5.00	0.00	1.02	1.02
12.00	2.55	0.64	5.00	0.00	1.02	1.02
12.05	2.55	0.64	5.00	0.00	1.02	1.02
12.10	2.55	0.64	5.00	0.00	1.01	1.01
12.15	2.55	0.64	5.00	0.00	1.01	1.01
12.20	2.55	0.64	5.00	0.00	1.01	1.01
12.25	2.55	0.64	5.00	0.00	1.01	1.01
12.30	2.55	0.64	5.00	0.00	1.00	1.00
12.35	2.55	0.64	5.00	0.00	1.00	1.00
12.40	2.55	0.64	5.00	0.00	0.99	0.99
12.45	2.55	0.64	5.00	0.00	0.99	0.99
12.50	2.55	0.64	5.00	0.00	0.99	0.99
12.55	2.55	0.64	5.00	0.00	0.98	0.98
12.60	2.55	0.64	5.00	0.00	0.98	0.98
12.65	2.55	0.64	5.00	0.00	0.98	0.98
12.70	2.55	0.64	5.00	0.00	0.97	0.97
12.75	2.55	0.64	5.00	0.00	0.97	0.97
12.80	2.55	0.64	5.00	0.00	0.96	0.96
12.85	2.55	0.64	5.00	0.00	0.96	0.96
12.90	2.55	0.64	5.00	0.00	0.95	0.95
12.95	2.55	0.64	5.00	0.00	0.95	0.95
13.00	2.55	0.64	5.00	0.00	0.94	0.94
13.05	2.55	0.64	5.00	0.00	0.94	0.94
13.10	2.55	0.64	5.00	0.00	0.93	0.93
13.15	2.55	0.64	5.00	0.00	0.93	0.93
13.20	2.55	0.64	5.00	0.00	0.92	0.92
13.25	2.55	0.64	5.00	0.00	0.92	0.92
13.30	2.55	0.64	5.00	0.00	0.91	0.91
13.35	2.55	0.64	5.00	0.00	0.91	0.91
13.40	2.55	0.64	5.00	0.00	0.90	0.90
13.45	2.55	0.64	5.00	0.00	0.89	0.89
13.50	0.64	0.64	5.00	0.00	0.89	0.89
13.55	0.58	0.64	5.00	0.00	0.88	0.88
13.60	0.55	0.64	5.00	0.00	0.88	0.88
13.65	0.54	0.64	5.00	0.00	0.87	0.87
13.70	0.52	0.64	5.00	0.00	0.86	0.86
13.75	0.51	0.64	5.00	0.00	0.86	0.86
13.80	0.50	0.64	5.00	0.00	0.85	0.85
13.85	0.49	0.64	5.00	0.00	0.85	0.85
13.90	0.48	0.64	5.00	0.00	0.84	0.84
13.95	0.48	0.64	5.00	0.00	0.83	0.83
14.00	0.47	0.64	5.00	0.00	0.83	0.83
14.05	0.47	0.64	5.00	0.00	0.82	0.82
14.10	0.46	0.64	5.00	0.00	0.81	0.81
14.15	0.46	0.64	5.00	0.00	0.81	0.81
14.20	0.45	0.64	5.00	0.00	0.80	0.80
14.25	0.45	0.64	5.00	0.00	0.79	0.79
14.30	0.44	0.64	5.00	0.00	0.79	0.79
14.35	0.44	0.64	5.00	0.00	0.78	0.78
14.40	0.43	0.64	5.00	0.00	0.78	0.78
14.45	0.43	0.64	5.00	0.00	0.77	0.77
14.50	0.43	0.64	5.00	0.00	0.76	0.76
14.55	0.42	0.64	5.00	0.00	0.75	0.75
14.60	0.42	0.64	5.00	0.00	0.75	0.75
14.65	0.42	0.64	5.00	0.00	0.74	0.74
14.70	0.41	0.64	5.00	0.00	0.73	0.73
14.75	0.41	0.64	5.00	0.00	0.73	0.73
14.80	0.62	0.64	5.00	0.00	0.72	0.72
14.85	0.58	0.64	5.00	0.00	0.71	0.71
14.90	0.55	0.64	5.00	0.00	0.71	0.71
14.95	0.53	0.64	5.00	0.00	0.70	0.70
15.00	0.52	0.64	5.00	0.00	0.70	0.70
15.05	0.53	0.64	5.00	0.00	0.69	0.69
15.10	0.55	0.64	5.00	0.00	0.68	0.68
15.15	0.58	0.64	5.00	0.00	0.68	0.68
15.20	2.55	0.64	5.00	0.00	0.67	0.67
15.25	2.55	0.64	5.00	0.00	0.67	0.67
15.30	2.55	0.64	5.00	0.00	0.66	0.66
15.35	2.55	0.64	5.00	0.00	0.65	0.65
15.40	2.55	0.64	5.00	0.00	0.65	0.65
15.45	2.55	0.64	5.00	0.00	0.64	0.64
15.50	2.55	0.64	5.00	0.00	0.64	0.64
15.55	2.55	0.64	5.00	0.00	0.63	0.63
15.60	2.55	0.64	5.00	0.00	0.63	0.63
15.65	2.55	0.64	5.00	0.00	0.62	0.62
15.70	2.55	0.64	5.00	0.00	0.61	0.61
15.75	2.55	0.64	5.00	0.00	0.61	0.61
15.80	2.55	0.64	5.00	0.00	0.60	0.60
15.85	2.55	0.64	5.00	0.00	0.60	0.60
15.90	2.55	0.64	5.00	0.00	0.59	0.59
15.95	2.55	0.64	5.00	0.00	0.59	0.59
16.00	2.55	0.64	5.00	0.00	0.58	0.58
16.05	2.55	0.64	5.00	0.00	0.58	0.58
16.10	2.55	0.64	5.00	0.00	0.57	0.57
16.15	2.55	0.64	5.00	0.00	0.57	0.57
16.20	2.55	0.64	5.00	0.00	0.56	0.56
16.25	2.55	0.64	5.00	0.00	0.56	0.56
16.30	2.55	0.64	5.00	0.00	0.55	0.55
16.35	2.55	0.64	5.00	0.00	0.55	0.55

16.40	2.55	0.64	5.00	0.00	0.54	0.54
16.45	2.55	0.64	5.00	0.00	0.54	0.54
16.50	2.55	0.64	5.00	0.00	0.53	0.53
16.55	2.55	0.64	5.00	0.00	0.53	0.53
16.60	2.55	0.64	5.00	0.00	0.52	0.52
16.65	2.55	0.64	5.00	0.00	0.52	0.52
16.70	2.55	0.64	5.00	0.00	0.51	0.51
16.75	2.55	0.64	5.00	0.00	0.51	0.51
16.80	2.55	0.64	5.00	0.00	0.50	0.50
16.85	2.55	0.64	5.00	0.00	0.50	0.50
16.90	2.55	0.64	5.00	0.00	0.49	0.49
16.95	2.55	0.64	5.00	0.00	0.49	0.49
17.00	2.55	0.64	5.00	0.00	0.48	0.48
17.05	2.55	0.64	5.00	0.00	0.48	0.48
17.10	2.55	0.64	5.00	0.00	0.47	0.47
17.15	2.55	0.64	5.00	0.00	0.47	0.47
17.20	2.55	0.64	5.00	0.00	0.46	0.46
17.25	2.55	0.64	5.00	0.00	0.46	0.46
17.30	2.55	0.64	5.00	0.00	0.45	0.45
17.35	2.55	0.64	5.00	0.00	0.45	0.45
17.40	2.55	0.64	5.00	0.00	0.45	0.45
17.45	2.55	0.64	5.00	0.00	0.44	0.44
17.50	2.55	0.64	5.00	0.00	0.44	0.44
17.55	2.55	0.64	5.00	0.00	0.43	0.43
17.60	2.55	0.64	5.00	0.00	0.43	0.43
17.65	2.55	0.64	5.00	0.00	0.42	0.42
17.70	2.55	0.64	5.00	0.00	0.42	0.42
17.75	2.55	0.64	5.00	0.00	0.42	0.42
17.80	2.55	0.64	5.00	0.00	0.41	0.41
17.85	2.55	0.64	5.00	0.00	0.41	0.41
17.90	2.55	0.64	5.00	0.00	0.40	0.40
17.95	2.55	0.64	5.00	0.00	0.40	0.40
18.00	2.55	0.64	5.00	0.00	0.40	0.40
18.05	2.55	0.64	5.00	0.00	0.39	0.39
18.10	2.55	0.64	5.00	0.00	0.39	0.39
18.15	2.55	0.63	5.00	0.00	0.38	0.38
18.20	2.55	0.63	5.00	0.00	0.38	0.38
18.25	2.55	0.63	5.00	0.00	0.38	0.38
18.30	2.55	0.63	5.00	0.00	0.37	0.37
18.35	2.55	0.63	5.00	0.00	0.37	0.37
18.40	2.55	0.63	5.00	0.00	0.36	0.36
18.45	2.55	0.63	5.00	0.00	0.36	0.36
18.50	2.55	0.63	5.00	0.00	0.36	0.36
18.55	2.55	0.63	5.00	0.00	0.35	0.35
18.60	2.55	0.63	5.00	0.00	0.35	0.35
18.65	2.55	0.63	5.00	0.00	0.35	0.35
18.70	2.55	0.63	5.00	0.00	0.34	0.34
18.75	2.55	0.63	5.00	0.00	0.34	0.34
18.80	2.55	0.63	5.00	0.00	0.33	0.33
18.85	2.55	0.63	5.00	0.00	0.33	0.33
18.90	2.55	0.63	5.00	0.00	0.33	0.33
18.95	2.55	0.63	5.00	0.00	0.32	0.32
19.00	2.55	0.63	5.00	0.00	0.32	0.32
19.05	2.55	0.63	5.00	0.00	0.32	0.32
19.10	2.55	0.63	5.00	0.00	0.31	0.31
19.15	2.55	0.63	5.00	0.00	0.31	0.31
19.20	2.55	0.63	5.00	0.00	0.31	0.31
19.25	2.55	0.63	5.00	0.00	0.30	0.30
19.30	2.55	0.63	5.00	0.00	0.30	0.30
19.35	2.55	0.63	5.00	0.00	0.30	0.30
19.40	2.55	0.63	5.00	0.00	0.29	0.29
19.45	2.55	0.63	5.00	0.00	0.29	0.29
19.50	2.55	0.63	5.00	0.00	0.29	0.29
19.55	2.55	0.63	5.00	0.00	0.28	0.28
19.60	2.55	0.63	5.00	0.00	0.28	0.28
19.65	2.55	0.63	5.00	0.00	0.28	0.28
19.70	2.55	0.63	5.00	0.00	0.27	0.27
19.75	2.55	0.63	5.00	0.00	0.27	0.27
19.80	2.55	0.63	5.00	0.00	0.27	0.27
19.85	2.55	0.63	5.00	0.00	0.27	0.27
19.90	2.55	0.63	5.00	0.00	0.27	0.27
19.95	2.55	0.63	5.00	0.00	0.27	0.27
20.00	2.55	0.63	5.00	0.00	0.27	0.27
20.05	2.00	0.63	5.00	0.00	0.26	0.26
20.10	2.00	0.63	5.00	0.00	0.26	0.26
20.15	2.00	0.63	5.00	0.00	0.26	0.26
20.20	2.00	0.63	5.00	0.00	0.26	0.26
20.25	2.00	0.63	5.00	0.00	0.26	0.26
20.30	2.00	0.63	5.00	0.00	0.26	0.26
20.35	2.00	0.63	5.00	0.00	0.26	0.26
20.40	2.00	0.63	5.00	0.00	0.26	0.26
20.45	2.00	0.63	5.00	0.00	0.26	0.26
20.50	2.00	0.63	5.00	0.00	0.26	0.26
20.55	2.00	0.63	5.00	0.00	0.26	0.26
20.60	2.00	0.63	5.00	0.00	0.26	0.26
20.65	2.00	0.63	5.00	0.00	0.26	0.26
20.70	2.00	0.63	5.00	0.00	0.26	0.26
20.75	2.00	0.63	5.00	0.00	0.26	0.26
20.80	2.00	0.63	5.00	0.00	0.26	0.26
20.85	2.00	0.63	5.00	0.00	0.26	0.26
20.90	2.00	0.63	5.00	0.00	0.26	0.26
20.95	2.00	0.63	5.00	0.00	0.26	0.26
21.00	2.00	0.63	5.00	0.00	0.26	0.26
21.05	2.00	0.63	5.00	0.00	0.26	0.26
21.10	2.00	0.63	5.00	0.00	0.26	0.26
21.15	2.00	0.63	5.00	0.00	0.26	0.26
21.20	2.00	0.63	5.00	0.00	0.26	0.26
21.25	2.00	0.63	5.00	0.00	0.26	0.26
21.30	2.00	0.63	5.00	0.00	0.26	0.26
21.35	2.00	0.63	5.00	0.00	0.26	0.26

21.40	2.00	0.63	5.00	0.00	0.26	0.26
21.45	2.00	0.63	5.00	0.00	0.26	0.26
21.50	2.00	0.63	5.00	0.00	0.26	0.26
21.55	2.00	0.63	5.00	0.00	0.26	0.26
21.60	2.00	0.63	5.00	0.00	0.26	0.26
21.65	2.00	0.63	5.00	0.00	0.26	0.26
21.70	2.00	0.63	5.00	0.00	0.26	0.26
21.75	2.00	0.63	5.00	0.00	0.26	0.26
21.80	2.00	0.63	5.00	0.00	0.26	0.26
21.85	2.00	0.63	5.00	0.00	0.26	0.26
21.90	2.00	0.63	5.00	0.00	0.26	0.26
21.95	2.00	0.63	5.00	0.00	0.26	0.26
22.00	2.00	0.63	5.00	0.00	0.26	0.26
22.05	2.00	0.63	5.00	0.00	0.26	0.26
22.10	2.00	0.63	5.00	0.00	0.26	0.26
22.15	2.00	0.63	5.00	0.00	0.26	0.26
22.20	2.00	0.63	5.00	0.00	0.26	0.26
22.25	2.00	0.63	5.00	0.00	0.26	0.26
22.30	2.00	0.63	5.00	0.00	0.26	0.26
22.35	2.00	0.63	5.00	0.00	0.26	0.26
22.40	2.00	0.63	5.00	0.00	0.26	0.26
22.45	2.00	0.63	5.00	0.00	0.26	0.26
22.50	2.00	0.63	5.00	0.00	0.26	0.26
22.55	2.00	0.63	5.00	0.00	0.26	0.26
22.60	2.00	0.63	5.00	0.00	0.26	0.26
22.65	2.00	0.63	5.00	0.00	0.26	0.26
22.70	2.00	0.63	5.00	0.00	0.26	0.26
22.75	2.00	0.63	5.00	0.00	0.26	0.26
22.80	2.00	0.63	5.00	0.00	0.26	0.26
22.85	2.00	0.63	5.00	0.00	0.26	0.26
22.90	2.00	0.63	5.00	0.00	0.26	0.26
22.95	2.00	0.63	5.00	0.00	0.26	0.26
23.00	2.00	0.63	5.00	0.00	0.26	0.26
23.05	2.00	0.63	5.00	0.00	0.26	0.26
23.10	2.00	0.63	5.00	0.00	0.26	0.26
23.15	2.00	0.63	5.00	0.00	0.26	0.26
23.20	2.00	0.63	5.00	0.00	0.26	0.26
23.25	2.00	0.63	5.00	0.00	0.26	0.26
23.30	2.00	0.63	5.00	0.00	0.26	0.26
23.35	2.00	0.63	5.00	0.00	0.26	0.26
23.40	2.00	0.63	5.00	0.00	0.26	0.26
23.45	2.00	0.63	5.00	0.00	0.26	0.26
23.50	2.00	0.63	5.00	0.00	0.26	0.26
23.55	2.00	0.63	5.00	0.00	0.26	0.26
23.60	2.00	0.63	5.00	0.00	0.26	0.26
23.65	2.00	0.63	5.00	0.00	0.26	0.26
23.70	2.00	0.63	5.00	0.00	0.26	0.26
23.75	2.00	0.63	5.00	0.00	0.26	0.26
23.80	2.00	0.63	5.00	0.00	0.26	0.26
23.85	2.00	0.63	5.00	0.00	0.26	0.26
23.90	2.00	0.63	5.00	0.00	0.26	0.26
23.95	2.00	0.63	5.00	0.00	0.26	0.26
24.00	2.00	0.63	5.00	0.00	0.26	0.26
24.05	2.00	0.63	5.00	0.00	0.26	0.26
24.10	2.00	0.63	5.00	0.00	0.26	0.26
24.15	2.00	0.63	5.00	0.00	0.26	0.26
24.20	2.00	0.63	5.00	0.00	0.26	0.26
24.25	2.00	0.63	5.00	0.00	0.26	0.26
24.30	2.00	0.63	5.00	0.00	0.26	0.26
24.35	2.00	0.63	5.00	0.00	0.26	0.26
24.40	2.00	0.63	5.00	0.00	0.26	0.26
24.45	2.00	0.63	5.00	0.00	0.26	0.26
24.50	2.00	0.63	5.00	0.00	0.26	0.26
24.55	2.00	0.63	5.00	0.00	0.26	0.26
24.60	2.00	0.62	5.00	0.00	0.26	0.26
24.65	2.00	0.62	5.00	0.00	0.26	0.26
24.70	2.00	0.62	5.00	0.00	0.26	0.26
24.75	2.00	0.62	5.00	0.00	0.26	0.26
24.80	2.00	0.62	5.00	0.00	0.26	0.26
24.85	2.00	0.62	5.00	0.00	0.26	0.26
24.90	2.00	0.62	5.00	0.00	0.26	0.26
24.95	2.00	0.62	5.00	0.00	0.26	0.26
25.00	2.00	0.62	5.00	0.00	0.26	0.26
25.05	2.00	0.62	5.00	0.00	0.26	0.26
25.10	2.00	0.62	5.00	0.00	0.26	0.26
25.15	2.00	0.62	5.00	0.00	0.26	0.26
25.20	2.00	0.62	5.00	0.00	0.26	0.26
25.25	2.00	0.62	5.00	0.00	0.26	0.26
25.30	2.00	0.62	5.00	0.00	0.26	0.26
25.35	2.00	0.62	5.00	0.00	0.26	0.26
25.40	2.00	0.62	5.00	0.00	0.26	0.26
25.45	2.00	0.62	5.00	0.00	0.26	0.26
25.50	2.00	0.62	5.00	0.00	0.26	0.26
25.55	2.00	0.62	5.00	0.00	0.26	0.26
25.60	2.00	0.62	5.00	0.00	0.26	0.26
25.65	2.00	0.62	5.00	0.00	0.26	0.26
25.70	2.00	0.62	5.00	0.00	0.26	0.26
25.75	2.00	0.62	5.00	0.00	0.26	0.26
25.80	2.00	0.62	5.00	0.00	0.26	0.26
25.85	2.00	0.62	5.00	0.00	0.26	0.26
25.90	2.00	0.62	5.00	0.00	0.26	0.26
25.95	2.00	0.62	5.00	0.00	0.26	0.26
26.00	2.00	0.62	5.00	0.00	0.26	0.26
26.05	2.00	0.62	5.00	0.00	0.26	0.26
26.10	2.00	0.62	5.00	0.00	0.26	0.26
26.15	2.00	0.62	5.00	0.00	0.26	0.26
26.20	2.00	0.62	5.00	0.00	0.26	0.26
26.25	2.00	0.62	5.00	0.00	0.26	0.26
26.30	2.00	0.62	5.00	0.00	0.26	0.26
26.35	2.00	0.62	5.00	0.00	0.26	0.26

26.40	2.00	0.62	5.00	0.00	0.26	0.26
26.45	2.00	0.62	5.00	0.00	0.26	0.26
26.50	2.00	0.62	5.00	0.00	0.26	0.26
26.55	2.00	0.62	5.00	0.00	0.26	0.26
26.60	2.00	0.62	5.00	0.00	0.26	0.26
26.65	2.00	0.62	5.00	0.00	0.26	0.26
26.70	2.00	0.62	5.00	0.00	0.26	0.26
26.75	2.00	0.62	5.00	0.00	0.26	0.26
26.80	2.00	0.62	5.00	0.00	0.26	0.26
26.85	2.00	0.62	5.00	0.00	0.26	0.26
26.90	2.00	0.62	5.00	0.00	0.26	0.26
26.95	2.00	0.62	5.00	0.00	0.26	0.26
27.00	2.00	0.62	5.00	0.00	0.26	0.26
27.05	2.00	0.62	5.00	0.00	0.26	0.26
27.10	2.00	0.62	5.00	0.00	0.26	0.26
27.15	2.00	0.62	5.00	0.00	0.26	0.26
27.20	2.00	0.62	5.00	0.00	0.26	0.26
27.25	2.00	0.62	5.00	0.00	0.26	0.26
27.30	2.00	0.62	5.00	0.00	0.26	0.26
27.35	2.00	0.62	5.00	0.00	0.26	0.26
27.40	2.00	0.62	5.00	0.00	0.26	0.26
27.45	2.00	0.62	5.00	0.00	0.26	0.26
27.50	2.00	0.62	5.00	0.00	0.26	0.26
27.55	2.00	0.62	5.00	0.00	0.26	0.26
27.60	2.00	0.62	5.00	0.00	0.26	0.26
27.65	2.00	0.62	5.00	0.00	0.26	0.26
27.70	2.00	0.62	5.00	0.00	0.26	0.26
27.75	2.00	0.62	5.00	0.00	0.26	0.26
27.80	2.00	0.62	5.00	0.00	0.26	0.26
27.85	2.00	0.62	5.00	0.00	0.26	0.26
27.90	2.00	0.62	5.00	0.00	0.26	0.26
27.95	2.00	0.62	5.00	0.00	0.26	0.26
28.00	2.00	0.62	5.00	0.00	0.26	0.26
28.05	2.00	0.62	5.00	0.00	0.26	0.26
28.10	2.00	0.62	5.00	0.00	0.26	0.26
28.15	2.00	0.62	5.00	0.00	0.26	0.26
28.20	2.00	0.62	5.00	0.00	0.26	0.26
28.25	2.00	0.62	5.00	0.00	0.26	0.26
28.30	2.00	0.62	5.00	0.00	0.26	0.26
28.35	2.00	0.62	5.00	0.00	0.26	0.26
28.40	2.00	0.62	5.00	0.00	0.26	0.26
28.45	2.00	0.62	5.00	0.00	0.26	0.26
28.50	2.00	0.62	5.00	0.00	0.26	0.26
28.55	2.00	0.62	5.00	0.00	0.26	0.26
28.60	2.00	0.62	5.00	0.00	0.26	0.26
28.65	2.00	0.62	5.00	0.00	0.26	0.26
28.70	2.00	0.62	5.00	0.00	0.26	0.26
28.75	2.00	0.62	5.00	0.00	0.26	0.26
28.80	2.00	0.62	5.00	0.00	0.26	0.26
28.85	2.00	0.62	5.00	0.00	0.26	0.26
28.90	2.00	0.62	5.00	0.00	0.26	0.26
28.95	2.00	0.62	5.00	0.00	0.26	0.26
29.00	2.00	0.62	5.00	0.00	0.26	0.26
29.05	2.00	0.62	5.00	0.00	0.26	0.26
29.10	2.00	0.62	5.00	0.00	0.26	0.26
29.15	2.00	0.62	5.00	0.00	0.26	0.26
29.20	2.00	0.62	5.00	0.00	0.26	0.26
29.25	2.00	0.62	5.00	0.00	0.26	0.26
29.30	2.00	0.62	5.00	0.00	0.26	0.26
29.35	2.00	0.62	5.00	0.00	0.26	0.26
29.40	2.00	0.62	5.00	0.00	0.26	0.26
29.45	2.00	0.62	5.00	0.00	0.26	0.26
29.50	2.00	0.62	5.00	0.00	0.26	0.26
29.55	2.00	0.62	5.00	0.00	0.26	0.26
29.60	2.00	0.62	5.00	0.00	0.26	0.26
29.65	2.00	0.62	5.00	0.00	0.26	0.26
29.70	2.00	0.62	5.00	0.00	0.26	0.26
29.75	2.00	0.62	5.00	0.00	0.26	0.26
29.80	2.00	0.62	5.00	0.00	0.26	0.26
29.85	2.00	0.62	5.00	0.00	0.26	0.26
29.90	2.00	0.62	5.00	0.00	0.26	0.26
29.95	2.00	0.62	5.00	0.00	0.26	0.26
30.00	2.00	0.62	5.00	0.00	0.26	0.26
30.05	0.22	0.62	5.00	0.00	0.26	0.26
30.10	0.22	0.62	5.00	0.00	0.25	0.25
30.15	0.22	0.62	5.00	0.00	0.24	0.24
30.20	0.22	0.62	5.00	0.00	0.22	0.22
30.25	0.22	0.62	5.00	0.00	0.21	0.21
30.30	0.22	0.61	5.00	0.00	0.20	0.20
30.35	0.22	0.61	5.00	0.00	0.18	0.18
30.40	0.22	0.61	5.00	0.00	0.17	0.17
30.45	0.22	0.61	5.00	0.00	0.15	0.15
30.50	0.22	0.61	5.00	0.00	0.14	0.14
30.55	0.22	0.61	5.00	0.00	0.13	0.13
30.60	0.21	0.61	5.00	0.00	0.11	0.11
30.65	0.21	0.61	5.00	0.00	0.10	0.10
30.70	0.21	0.61	5.00	0.00	0.08	0.08
30.75	0.21	0.61	5.00	0.00	0.07	0.07
30.80	0.21	0.61	5.00	0.00	0.06	0.06
30.85	0.21	0.61	5.00	0.00	0.04	0.04
30.90	0.21	0.61	5.00	0.00	0.03	0.03
30.95	0.21	0.61	5.00	0.00	0.01	0.01
31.00	0.21	0.61	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit Weight = pcf, Settlement = in.

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_____________________________________________________________________________
        CRRm            Cyclic resistance ratio from soils
        CSRfs           Cyclic stress ratio induced by a given earthquake (with user
request factor of safety)
        F.S.            Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
        S_sat           Settlement from saturated sands
        S_dry           Settlement from dry sands
        S_all           Total settlement from saturated and dry sands
        NoLiq           No-Liquefy Soils
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APPENDIX H

LGC VALLEY, INC.

General Earthwork and Grading Specifications For Rough Grading

1.0 General

1.1 Intent: These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record: Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 ***<u>The Earthwork Contractor</u>:*** The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. . The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 <u>Preparation of Areas to be Filled</u>

2.1 ***<u>Clearing and Grubbing</u>:*** Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 10 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 ***Processing:*** Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free from oversize material and the working surface is reasonably uniform, flat, and free from uneven features that would inhibit uniform compaction.

2.3 ***Overexcavation:*** In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 ***Benching:*** Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 ***Evaluation/Acceptance of Fill Areas:*** All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 ***General:*** Material to be used as fill shall be essentially free from organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 ***Oversize:*** Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 ***Import:*** If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 ***Fill Layers:*** Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 ***Fill Moisture Conditioning:*** Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-12).

4.3 ***Compaction of Fill:*** After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-12). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 ***Compaction of Fill Slopes:*** In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-12.

4.5 ***Compaction Testing:*** Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 ***Frequency of Compaction Testing:*** Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 ***Compaction Test Locations:*** The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.