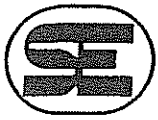


GEOTECHNICAL INVESTIGATION
PROPOSED MIXED-USE DEVELOPMENT
SEC CEDAR AVENUE &
SANTA ANA AVENUE
APN 0257-101-01
BLOOMINGTON, CALIFORNIA

-Prepared By-

Sladden Engineering

450 Egan Avenue
Beaumont, California 92223
(951) 845-7743



Sladden Engineering

45-090 Golf Center Parkway, Suite F, Indio, CA 92201 (760) 863-0713 Fax (760) 863-0847
6782 Stanton Avenue, Suite C, Buena Park, CA 90621 (714) 523-0952 Fax (714) 523-1369
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863
800 E. Florida Avenue, Suite 200, Hemet, CA 92543 (951) 766-8777 Fax (951) 766-8778

September 17, 2019

Project No. 644-19046
19-09-071

Black Gold Builders Group, Inc.
Post Office Box 2817
Indio, California 92202

Subject: Geotechnical Investigation

Project: Proposed Mixed-Use Development
SEC Cedar Avenue & Santa Ana Avenue
APN 0257-101-01
Bloomington, California


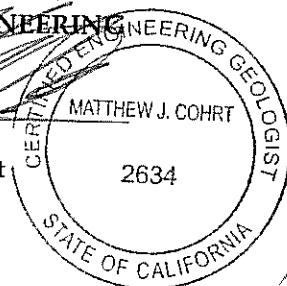
Sladden Engineering is pleased to present the results of our geotechnical investigation proposed for the mixed-use development to be constructed on the subject site located on the southeast corner of Cedar Avenue and Santa Ana Avenue in the City of Bloomington, California. Our services were completed in accordance with our proposal for geotechnical engineering services dated July 29, 2019 and your authorization to proceed with the work. The purpose of our investigation was to explore the subsurface conditions at the site in order to provide recommendations for foundation design and site preparation. Evaluation of environmental issues and hazardous wastes was not included within the scope of services provided.


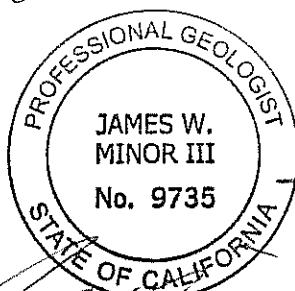
The opinions, recommendations and design criteria presented in this report are based on our field exploration program, laboratory testing and engineering analyses. Based on the results of our investigation, it is our professional opinion that the proposed project should be feasible from a geotechnical perspective provided that the recommendations presented in this report are implemented into design and carried out through construction.

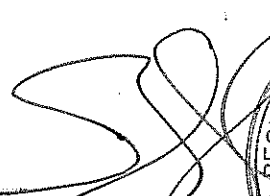
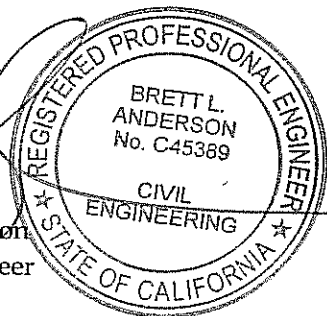
We appreciate the opportunity to provide service to you on this project. If you have any questions regarding this report, please contact the undersigned.

Respectfully submitted,

SLADDEN ENGINEERING


Matthew J. Cohrt
Principal Geologist



James W. Minor III
Senior Geologist



Brett L. Anderson
Principal Engineer


SER/jm

Copies: 4/Addressee

GEOTECHNICAL INVESTIGATION
 PROPOSED MIXED-USE DEVELOPMENT
 SEC CEDAR AVENUE & SANTA ANA AVENUE
 APN 0257-101-01
 BLOOMINGTON, CALIFORNIA

September 17, 2019

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INTRODUCTION

This report presents the results of the geotechnical investigation performed by Sladden Engineering (Sladden) for the proposed mixed-use development to be constructed on the site located on the southeast corner of Cedar Avenue and Santa Ana Avenue in the City of Bloomington, California. The site is located at approximately 33.0551 degrees north latitude and 117.3954 degrees west longitude. The approximate location of the site is indicated on the Site Location Map (Figure 1).

Our investigation was conducted in order to evaluate the engineering properties of the subsurface materials, to evaluate their *in-situ* characteristics, and to provide engineering recommendations and design criteria for site preparation, foundation design and the design of various site improvements. This study also includes a review of published and unpublished geotechnical and geological literature regarding seismicity at and near the subject site.

PROJECT DESCRIPTION

Based on our preliminary plans (Black Gold Builders Group, 2019), it is our understanding that the proposed project will consist of constructing multiple buildings including a new grocery store, fuel station, retail stores, restaurant and car wash on the currently undeveloped property. We anticipate that the proposed project will also include underground utilities, concrete flatwork, paved parking areas and various associated surface improvements. For our analyses we expect that the proposed new commercial buildings will consist of relatively lightweight wood-frame, steel-frame, reinforced masonry or reinforced concrete tilt-up structures supported on conventional shallow spread footings and concrete slabs-on-grade.

Sladden anticipates that grading will be limited to minor cuts and fills in order to accomplish the desired pad elevations and to provide adequate gradients for site drainage. This does not include the removal and re-compaction of the primary foundation bearing soil within the building areas. Upon completion of precise grading plans, Sladden should be retained in order to ensure that the recommendations presented within in this report are incorporated into the design of the proposed project.

Structural foundation loads were not available at the time of this report. Based on our experience with relatively lightweight wood-frame, steel-frame, reinforced masonry or concrete tilt-up structures, we expect that isolated column loads will be less than 50 kips and continuous wall loads will be less than 3.0 kips per linear foot. If these assumed loads vary significantly from the actual loads, we should be consulted to verify the applicability of the recommendations provided.

SCOPE OF SERVICES

The purpose of our investigation was to determine specific engineering characteristics of the surface and near surface soil in order to develop foundation design criteria and recommendations for site preparation. Exploration of the site was achieved by drilling eight (8) exploratory boreholes depths of approximately 10 to 51 feet below the existing ground surface (bgs). Specifically, our site characterization consisted of the following tasks:

- Site reconnaissance to assess the existing surface conditions on and adjacent to the site.
- Advancing eight (8) exploratory boreholes to depths between of 10 and 51 feet bgs in order to characterize the subsurface soil conditions. Representative samples of the soil were classified in the field and retained for laboratory testing and engineering analyses.
- Performing laboratory testing on selected samples to evaluate the engineering characteristics.
- Reviewing geologic literature and discussing geologic hazards.
- Performing engineering analyses to develop recommendations for foundation design and site preparation.
- The preparation of this report summarizing our work at the site.

SITE CONDITIONS

The project site (APN: 0257-101-01) is located on the southeast corner of Santa Ana Avenue and Cedar Avenue in the City of Bloomington, California. The site consists of approximately 8.5 acres of undeveloped land. The surface soil consists of undulating alluvial sediment that is covered by overgrown weeds throughout the property. The southeast corner of the property appeared to have been burnt from a previous fire. The site is near the elevation of the adjacent properties and is generally bounded by vacant property to the south and east, Cedar Avenue to the west, and north by Santa Ana Avenue.

Based on our review of the USGS (2012), the site is situated at an approximate elevation of 1030 feet above mean sea level (MSL).

No natural ponding of water or surface seeps were observed at or near the site during our investigation conducted on August 21, 2019. Site drainage appears to be controlled via sheet flow and surface infiltration.

GEOLOGIC SETTING

The project site is located in the Peninsular Ranges Physiographic Province of California. The Peninsular Ranges are mountainous areas that extend from the western edge of the continental borderland to the Salton Trough and from the Transverse Ranges Physiographic Province in the north to the tip of Baja California in the south. The Peninsular Ranges Physiographic province is characterized by elongated, northwest-southeast trending mountain ranges and valleys and is truncated at its northern margin by the east-west grain of the Transverse Ranges. Mountainous areas of the Peninsular Ranges Physiographic Province generally consist of Igneous, metasedimentary and metavolcanic rocks. However, plutonic rocks of the Southern California Batholith are the dominant basement rock exposed (Jahns, 1954).

The site has been mapped by Morton (1999) to be immediately underlain by old alluvial fan deposits (Qof) consisting of silty sand to gravelly sand. The geologic setting for the site and site vicinity is illustrated on the Regional Geologic Map, Figure 2.

SUBSURFACE CONDITIONS

The subsurface conditions at the site were investigated by drilling eight (8) exploratory boreholes to depths of approximately 10 to 51 feet bgs in order to evaluate the subsurface soil conditions. The approximate locations of the boreholes are illustrated on the Borehole Location Plan (Figure 3). The boreholes were advanced using a truck-mounted Mobile B-61 drill-rig equipped with 8-inch outside diameter (O.D.) hollow stem augers. A representative of Sladden was on-site to log the materials encountered and retrieve samples for laboratory testing and engineering analysis.

During our field investigation, alluvial sediment was encountered. The native soil consists primarily of gravelly sand (SP) and silty sand (SM). Generally, the native earth materials appeared yellowish brown in in-situ color, slightly moist and fine to coarse grained with gravel.

Groundwater was not encountered at the maximum explored depth of 51 feet bgs during our field investigation. Based upon the depth to groundwater in the project vicinity, it is our opinion that groundwater should not be a factor in the design or construction of the proposed project.

The final logs represent our interpretation of the contents of the field logs, and the results of the laboratory observations and tests of the field samples. The final logs are included in Appendix A of this report. The stratification lines represent the approximate boundaries between soil types although the transitions may be gradual.

SEISMICITY AND FAULTING

The southwestern United States is a tectonically active and structurally complex region, dominated by northwest trending dextral faults. The faults of the region are often part of complex fault systems, composed of numerous subparallel faults which splay or step from main fault traces. Strong seismic shaking could be produced by any of these faults during the design life of the proposed project.

We consider the most significant geologic hazard to the project to be the potential for moderate to strong seismic shaking that is likely to occur during the design life of the project. The proposed project is located in the highly seismic Southern California region within the influence of several fault systems that are considered to be active or potentially active. An active fault is defined by the State of California as a "sufficiently active and well-defined fault" that has exhibited surface displacement within the Holocene epoch (about the last 11,000 years). A potentially active fault is defined by the State as a fault with a history of movement within Pleistocene time (between 11,000 and 1.6 million years ago).

As previously stated, the site has been subjected to strong seismic shaking related to active faults that traverse through the region. Some of the more significant seismic events near the subject site within recent times include: M6.0 North Palm Springs (1986), M6.1 Joshua Tree (1992), M7.3 Landers (1992), M6.2 Big Bear (1992), M7.1 Hector Mine (1999) and M7.2 Baja California (2010).

Table 1 lists the closest known potentially active faults that was generated in part using the EQFAULT computer program (Blake, 2000), as modified using the fault parameters from The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al, 2003). This table does not identify the probability of reactivation or the on-site effects from earthquakes occurring on any of the other faults in the region.

TABLE 1
CLOSEST KNOWN ACTIVE FAULTS

Fault Name	Distance (Km)	Maximum Event
San Jacinto – San Bernardino	6.9	6.7
Cucamonga	14.8	6.9
San Jacinto – San Jacinto Valley	15.2	6.9
San Andreas – San Bernardino	18.7	*7.5
San Andreas – Southern	18.7	*7.5
Cleghorn	25.7	6.5
Chino – Central Avenue	27.7	6.7
San Jose	27.9	6.4

* 8.2 for multiple segment rupture

2016 CBC SEISMIC DESIGN PARAMETERS

Sladden has reviewed the 2016 California Building Code (CBC) and summarized the current seismic design parameters for the proposed structures. The seismic design category for a structure may be determined in accordance with Section 1613 of the 2016 CBC or ASCE7. According to the 2016 CBC, Site Class D may be used to estimate design seismic loading for the proposed structures. The 2016 CBC Seismic Design Parameters are summarized below (SEAC, 2019). The project Design Map Reports are included within Appendix C.

Risk Category (Table 1.5-1): II
Site Class (Table 1613.3.2): D
S_s (Figure 1613.3.1): 1.522g
S₁ (Figure 1613.3.1): 0.651g
F_a (Table 1613.3.3(1)): 1.0
F_v (Table 1613.5.3(2)): 1.5
S_{ms} (Equation 16-37 {F_a X S_s}): 1.522g
S_{m1} (Equation 16-38 {F_v X S₁}): 0.977g
SDS (Equation 16-39 {2/3 X S_{ms}}): 1.014g
SD1 (Equation 16-40 {2/3 X S_{m1}}): 0.651g
Seismic Design Category: D

GEOLOGIC HAZARDS

The subject site is located in an active seismic zone and will likely experience strong seismic shaking during the design life of the proposed project. In general, the intensity of ground shaking will depend on several factors including: the distance to the earthquake focus, the earthquake magnitude, the response characteristics of the underlying materials, and the quality and type of construction. Geologic hazards and their relationship to the site are discussed below.

- I. Surface Rupture. Surface rupture is expected to occur along preexisting, known active fault traces. However, surface rupture could potentially splay or step from known active faults or rupture along unidentified traces. Based on our review of Morton (1999), Jennings (1994) and CDOC (2019) known active faults are not mapped on or projecting towards the site. Signs of active surface faulting were not observed during our review of non-stereo digitized photographs of the site and site vicinity (Google, 2019). Finally, no signs of active surface fault rupture or secondary seismic effects (lateral spreading, lurching etc.) were identified on-site during our field investigation. Therefore, it is our opinion that risks associated with primary surface ground rupture should be considered "low".
- II. Ground Shaking. The site has been subjected to past ground shaking by faults that traverse through the region. Strong seismic shaking from nearby active faults is expected to produce strong seismic shaking during the design life of the proposed project. A probabilistic approach was employed to estimate the peak ground acceleration (a_{max}) that could be experienced at the site. Based on the USGS Unified Hazard Tool (USGS, 2019) and shear wave velocity (V_{s30}) of 259 m/s, the site could be subjected to ground motions on the order of 0.54g. The peak ground acceleration at the site is judged to have a 475 year return period and a 10 percent chance of exceedance in 50 years.
- III. Liquefaction. Liquefaction is the process in which loose, saturated granular soil loses strength as a result of cyclic loading. The strength loss is a result of a decrease in granular sand volume and a positive increase in pore pressures. Generally, liquefaction can occur if all of the following conditions apply: liquefaction-susceptible soil, groundwater within a depth of 50 feet or less, and strong seismic shaking.

We have performed "dry-sand settlement" calculations utilizing a magnitude of 8.09 (USGS, 2019) and peak ground acceleration of 0.597g (PGAm). Historic high groundwater depths were determined to be approximately greater than 51 feet bgs (DWR, 2019). A review of the seismically induced settlement in the top 50 feet of the soil profile revealed total settlements of approximately 0.79 inches for BH-1. Based on the depth to groundwater and the generally uniform soil conditions underlying the site, differential seismic settlements are expected to be less than 1/2 inch over a horizontal distance of approximately 100 feet. Our seismic settlement estimates are presented within Appendix D.

- IV. Tsunamis and Seiches. Because the site is situated at an inland location and is not immediately adjacent to any impounded bodies of water, risk associated with tsunamis and seiches is considered negligible.
- V. Slope Failure, Landsliding, Rock Falls. No signs of slope instability in the form of landslides, rock falls, earthflows or slumps were observed at or near the subject site. Based on our field observations of the site vicinity, risks associated with slope instability should be considered "low".
- VI. Expansive Soil. Generally, the site surface soil consists of sand (SW/SM/SP). Based on the results of our laboratory testing (EI=2), the materials underlying the site are considered to have a "very low" expansion potential and the risk of structural damage caused by volumetric changes in the subgrade soil is considered "low".
- VII. Settlement. Settlement resulting from the anticipated foundation loads should be tolerable provided that the recommendations included in this report are considered in foundation design and construction. The estimated ultimate settlement is calculated to be less than approximately one inch when using the recommended bearing pressures. As a practical matter, differential settlement between footings can be assumed as one-half of the total settlement.
- VIII. Subsidence. Land subsidence can occur in valleys where aquifer systems have been subjected to extensive groundwater pumping, such that groundwater pumping exceeds groundwater recharge. Generally, pore water reduction can result in a rearrangement of skeletal grains and could result in elastic (recoverable) or inelastic (unrecoverable) deformation of an aquifer system.

Locally, no fissures or other surficial evidence of subsidence were observed at or near the subject site. However, site specific effects resulting from long term regional subsidence is beyond the scope of our investigation.
- IX. Debris Flows. Debris flows are viscous flows consisting of poorly sorted mixtures of sediment and water and are generally initiated on slopes steeper than approximately six horizontal to one vertical (6H:1V)(Boggs, 2001). Because the site is situated on relatively flat ground and not adjacent to any hills, risks associated with debris flows should be considered remote.

- X. Flooding and Erosion. No signs of flooding or erosion were observed during our field investigation. Risks associated with flooding and erosion should be evaluated and mitigated by the project design Civil Engineer.

CONCLUSIONS

Based on the results of our investigation, it is our professional opinion that the project should be feasible from a geotechnical perspective provided that the recommendations presented in this report are incorporated into design and carried out through construction. The main geotechnical concerns in the construction of the proposed project are the presence of loose and potentially compressible near surface soil.

Because of the loose and potentially compressible condition of some of the near surface soil, remedial grading including over-excavation and re-compaction is recommended for the proposed building and foundation areas. We recommend that remedial grading within the proposed building areas include over-excavation and re-compaction of the primary foundation bearing soil. Specific recommendations for site preparation are presented in the Earthwork and Grading section of this report.

Groundwater was not encountered within our bores and groundwater is expected to be in excess of 50 feet below the existing ground surface in the vicinity of the site. Based upon the depth to groundwater and our dry sand settlement calculations, the potential for seismic settlement and the related surficial affects of settlement impacting the site are considered negligible.

Caving did occur to varying degrees within each of our exploratory bores and the surface soil may be susceptible to caving within deeper excavations. All excavations should be constructed in accordance with the normal CALOSHA excavation criteria. On the basis of our observations of the materials encountered, we anticipate that the subsoil will conform to that described by CALOSHA as Type B or C. Soil conditions should be verified in the field by a "Competent person" employed by the Contractor.

The following recommendations present more detailed design criteria that have been developed on the basis of our field and laboratory investigation.

EARTHWORK AND GRADING

Earthwork including excavation, backfill and preparation of the subgrade soil, should be performed in accordance with the geotechnical recommendations presented in this report and portions of the local regulatory requirements, as applicable. All earthwork should be performed under the observation and testing of a qualified soil engineer. The following geotechnical engineering recommendations for the proposed project are based on observations from the field investigation program, laboratory testing and geotechnical engineering analyses.

- a. Stripping. Areas to be graded should be cleared of any existing surface vegetation, associated root systems, and debris. All areas scheduled to receive fill should be cleared of old fills and any irreducible matter. The stripping should be removed off site or stockpiled for later use in landscape areas. Voids left by obstructions should be properly backfilled in accordance with the compaction recommendations of this report.

- b. Preparation of the Building Areas. In order to achieve firm and uniform bearing conditions, we recommend over-excavation and re-compaction throughout the building areas. All artificial fill soil and low density near surface native soil should be removed to a depth of at approximately 3 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper. Remedial grading should extend laterally, a minimum of five feet beyond the building perimeter. The exposed surface should then be scarified, moisture conditioned to within two percent of optimum moisture content, and compacted to at least 90 percent relative compaction.

- c. Compaction. The previously removed soil and any soil to be used as engineered fill should be free of organic material, debris, and other deleterious substances, and should not contain irreducible matter greater than eight inches in maximum dimension. All fill material should be placed in thin lifts not exceeding six inches in a loose condition. If import fill is required, the material should be of a low to non-expansive nature and should meet the following criteria:

Plastic Index	Less than 12
Liquid Limit	Less than 35
Percent Soil Passing #200 Sieve	Between 15% and 35%
Maximum Aggregate Size	3 inches

The exposed subgrade and all fills should be compacted with acceptable compaction equipment, to at least 90 percent relative compaction. The bottom of the exposed subgrade should be observed by a representative of Sladden Engineering prior to fill placement. Compaction testing should be performed on all lifts in order to ensure proper placement of the fill materials. Table 2 provides a summary of the excavation and compaction recommendations.

**Table 2
SUMMARY OF RECOMMENDATIONS**

*Remedial Grading	Over-excavation and re-compaction within the building envelope and extending laterally for 5 feet beyond the building limits and to approximately 3 feet below existing grade or 3 feet below the bottom of the footings, whichever is deeper.
Native / Import Engineered Fill	Place in thin lifts not exceeding 6 inches in a loose condition, compact to a minimum of 90 percent relative compaction within 2 percent of the optimum moisture content.
Asphalt Concrete	Compact the top 12 inches to at least 95 percent compaction within 2 percent of optimum moisture content.

*Actual depth may vary and should be determined by a representative of Sladden Engineering in the field during construction.

- d. Shrinkage and Subsidence. Volumetric shrinkage of the material that is excavated and replaced as controlled compacted fill should be anticipated. We estimate that this shrinkage should be less than 15 percent. Subsidence of the surfaces that are scarified and compacted should be between 1 and 2 tenths of a foot. This will vary depending upon the type of equipment used, the moisture content of the soil at the time of grading and the actual degree of compaction attained. The losses associated with the removal of oversized cobbles and boulders cannot be estimated at this time but could be significant.

FOUNDATIONS: CONVENTIONAL SHALLOW SPREAD FOOTINGS

The proposed commercial buildings may be supported upon conventional shallow spread footings. Load bearing walls may be supported on continuous spread footings and interior columns may be supported on isolated pad footings. All footings should be founded upon properly compacted engineered fill soil and should have a minimum embedment depth of 12 inches measured from the lowest adjacent finished grade. Continuous and isolated footings should have minimum widths of 12 inches and 24 inches, respectively. Continuous and isolated footings may be designed using an allowable (net) bearing pressures of 1800 and 2000 pounds per square foot (psf), respectively. Allowable increases of 250 psf for each additional 1 foot in width and 250 psf for each additional 6 inches in depth may be utilized, if desired. The maximum allowable bearing pressure should be 3,000 psf. The maximum bearing pressure applies to combined dead and sustained live loads. The allowable bearing pressure may be increased by one-third when considering transient live loads, including seismic and wind forces. All footings should be reinforced in accordance with the project structural engineer's recommendations.

Based on the allowable bearing pressures recommended above, total settlement of the shallow footings are anticipated to be less than one-inch, provided foundation preparations conform to the recommendations described in this report. Differential settlement is anticipated to be approximately half the total settlement for similarly loaded footings spaced up to approximately 40 feet apart.

Lateral load resistance for the spread footings will be developed by passive soil pressure against the sides of the footings below grade and by friction acting at the base of the concrete footings bearing on compacted fill. An allowable passive pressure of 300 psf per foot of depth may be used for design purposes. An allowable coefficient of friction 0.45 may be used for dead and sustained live loads to compute the frictional resistance of the footing placed directly on compacted fill. Under seismic and wind loading conditions, the passive pressure and frictional resistance may be increased by one-third.

All footing excavations should be observed by a representative of the project geotechnical consultant to verify adequate embedment depths prior to placement of forms, steel reinforcement or concrete. The excavations should be trimmed neat, level and square. All loose, disturbed, sloughed or moisture-softened soils and/or any construction debris should be removed prior to concrete placement. Excavated soil generated from footing and/or utility trenches should not be stockpiled within the building envelope or in areas of exterior concrete flatwork.

SLABS-ON-GRADE

In order to reduce the risk of cracking and settlement, concrete slabs-on-grade must be placed on properly compacted fill as outlined in previous sections of this report. Slab subgrade should remain near optimum moisture content and should not be permitted to dry prior to concrete placement. All slab subgrades should be firm and unyielding. Disturbed soil should be removed and then replaced and compacted to a minimum of 90 percent relative compaction.

Slab thickness and reinforcement should be determined by the Structural Engineer. We recommend a minimum floor slab thickness of 4.0 inches with office areas and 6.0 inches in warehouse areas and minimum reinforcement of #3 bar at 24 inches on center in each direction. All slab reinforcement should be supported on concrete chairs to ensure that reinforcement is placed at slab mid-height. Final floor slab design and reinforcement should be determined by the structural engineer.

Slabs with moisture sensitive surfaces should be underlain with a moisture vapor retarder consisting of a polyvinyl chloride membrane such as 10-mil Visqueen, or equivalent. All laps within the membrane should be sealed and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface can not be achieved by grading, consideration should be given to placing a 1-inch thick leveling course of sand across the pad surface prior to placement of the membrane.

CORROSION SERIES

The soluble sulfate concentrations of the surface soil were determined to be 20 parts per million (ppm). The soil is considered to have "negligible" corrosion potential with respect to concrete. The use of Type V cement and special sulfate resistant concrete mixes should not be necessary. Soluble sulfate content of the surface soil should be reevaluated after grading and appropriate concrete mix designs should be established based upon post-grading test results.

The pH level of the surface soil was 8.3. Based on soluble chloride concentration testing (60 ppm), the soil is considered to have "negligible" corrosion with respect to normal grade steel. The minimum resistivity of the surface soil was found to be 6,200 ohm-cm, which suggests that the site soil is considered to have "low" corrosion potential with respect to ferrous metal installations.

PRELIMINARY PAVEMENT DESIGN

Asphalt concrete pavements should be designed based on R-Value and Traffic Index. The R-Value of the surface soil was determined to be 68 in the determination of the preliminary pavement design sections. The subgrade soil should be tested for R-Value prior to establishing final pavement design sections. For preliminary pavement design, a Traffic Index of (TI) of 5.0 was assumed for pavement areas limited to light auto traffic and parking. A traffic Index of 6.5 was used for areas where truck traffic is expected. We assumed Asphalt Concrete (AC) over Class II Aggregate Base (AB). The preliminary flexible pavement layer thickness is as follows:

RECOMMENDED ASPHALT PAVEMENT SECTION LAYER THICKNESS		
Pavement Material	Recommended Thickness	
	TI=5.0 (Light Duty)	TI=6.5 (Heavy Duty)
Asphalt Concrete Surface Course	3.0 inches	4.0 inches
Class II Aggregate Base Course	4.0 inches	6.0 inches
Compacted Subgrade Soil	12.0 inches	12.0 inches

Asphalt concrete should conform to the latest edition of the Standard Specifications for Public Works Construction (Greenbook) or Caltrans Standard Specifications. Aggregate base should conform to Section 26 of the Caltrans Standard Specifications or Greenbook, latest edition. The aggregate base course should be compacted to at least 95 percent of the maximum dry density as determined by ASTM Method D 1557.

We expect that concrete pavement may be considered for onsite pavement areas. A concrete pavement section of 6.0 inches of Portland Cement Concrete (PCC) on compacted native soil should be adequate for the on-site concrete pavement subject to light vehicle traffic and occasional heavy truck traffic. In areas where repeated and regular heavy truck traffic is expected, the concrete pavement section should be increased to 8.0 inches of PCC on compacted native soil.

Properly spaced and constructed control joints including expansion joints and contraction joints should be incorporated into concrete pavement design to accommodate shrinkage related cracking. Joint spacing and joint patterns should be established based upon Portland Cement Association (PCA) and American Concrete Institute (ACI) guidelines.

UTILITY TRENCH BACKFILL

All utility trench backfill should be compacted to a minimum relative compaction of 90 percent. Trench backfill materials should be placed in lifts no greater than six inches in a loose condition, moisture conditioned (or air-dried) as necessary to achieve near optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. A representative of the project soil engineer should test the backfill to verify adequate compaction.

EXTERIOR CONCRETE FLATWORK

To minimize cracking of concrete flatwork, the subgrade soil below concrete flatwork areas should first be compacted to a minimum relative compaction of 90 percent. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soil prior to concrete placement.

DRAINAGE

All final grades should be provided with positive gradients away from foundations to provide rapid removal of surface water runoff to an adequate discharge point. No water should be allowed to be pond on or immediately adjacent to foundation elements. In order to reduce water infiltration into the subgrade soil, surface water should be directed away from building foundations to an adequate discharge point. Subgrade drainage should be evaluated upon completion of the precise grading plans and in the field during grading.

LIMITATIONS

The findings and recommendations presented in this report are based upon an interpolation of the soil conditions between the exploratory boring locations and extrapolation of these conditions throughout the proposed building area. Should conditions encountered during grading appear different than those indicated in this report, this office should be notified.

The use of this report by other parties or for other projects is not authorized. The recommendations of this report are contingent upon monitoring of the grading operation by a representative of Sladden Engineering. All recommendations are considered to be tentative pending our review of the grading operation and additional testing, if indicated. If others are employed to perform any soil testing, this office should be notified prior to such testing in order to coordinate any required site visits by our representative and to assure indemnification of Sladden Engineering.

We recommend that a pre-job conference be held on the site prior to the initiation of site grading. The purpose of this meeting will be to assure a complete understanding of the recommendations presented in this report as they apply to the actual grading performed.

ADDITIONAL SERVICES

Once completed, final project plans and specifications should be reviewed by us prior to construction to confirm that the full intent of the recommendations presented herein have been applied to design and construction. Following review of plans and specifications, observation should be performed by the Soil Engineer during construction to document that foundation elements are founded on/or penetrate into the recommended soil, and that suitable backfill soil is placed upon competent materials and properly compacted at the recommended moisture content.

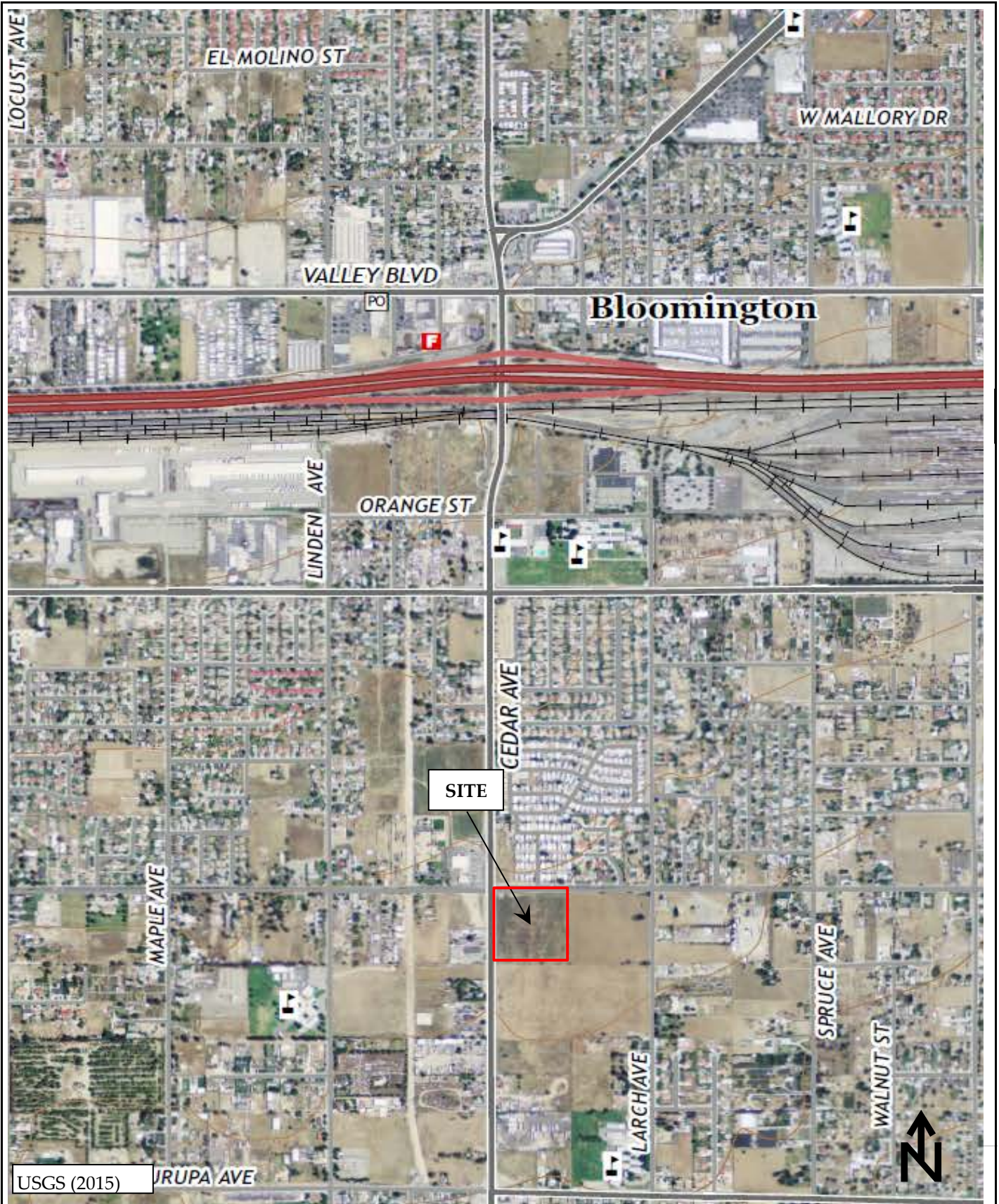
Tests and observations should be performed during grading by the Soil Engineer or his representative in order to verify that the grading is being performed in accordance with the project specifications. Field density testing shall be performed in accordance with acceptable ASTM test methods. The minimum acceptable degree of compaction should be 90 percent for subgrade soils and 95 percent for Class II aggregate base as obtained by the ASTM D1557 test method. Where testing indicates insufficient density, additional compactive effort shall be applied until retesting indicates satisfactory compaction.

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FIGURES

SITE LOCATION MAP
REGIONAL GEOLOGIC MAP
BOREHOLE LOCATION PLAN



USGS (2015)



Sladden Engineering

SITE LOCATION MAP

Project Number:	644-19046
Report Number:	19-09-071
Date:	September 17, 2019

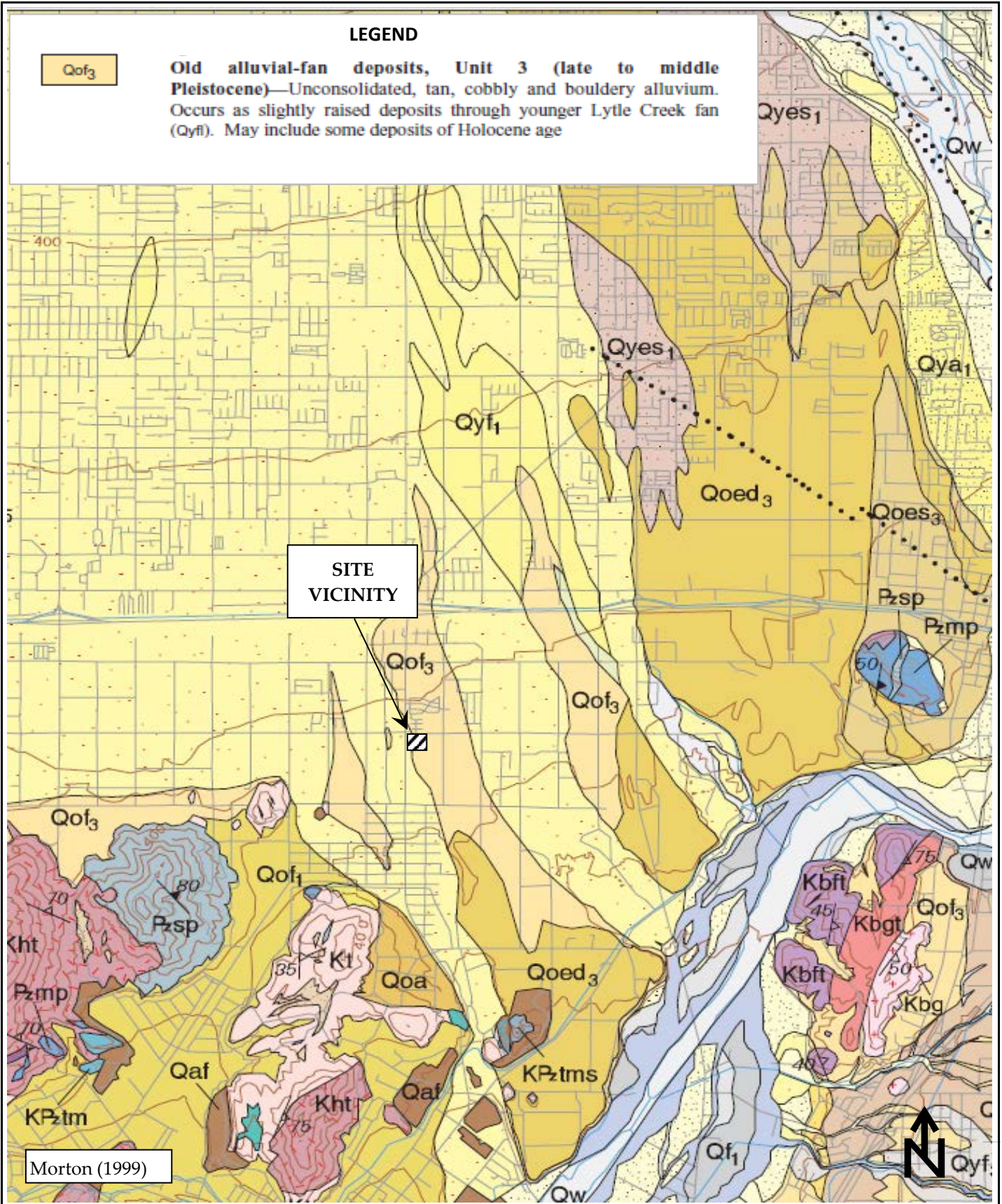
FIGURE

1

LEGEND

Qof₃

Old alluvial-fan deposits, Unit 3 (late to middle Pleistocene)—Unconsolidated, tan, cobbly and bouldery alluvium. Occurs as slightly raised deposits through younger Lytle Creek fan (Qyf₁). May include some deposits of Holocene age



**SITE
VICINITY**

Morton (1999)

REGIONAL GEOLOGIC MAP

FIGURE

Project Number:

644-19046

Report Number:

19-09-071

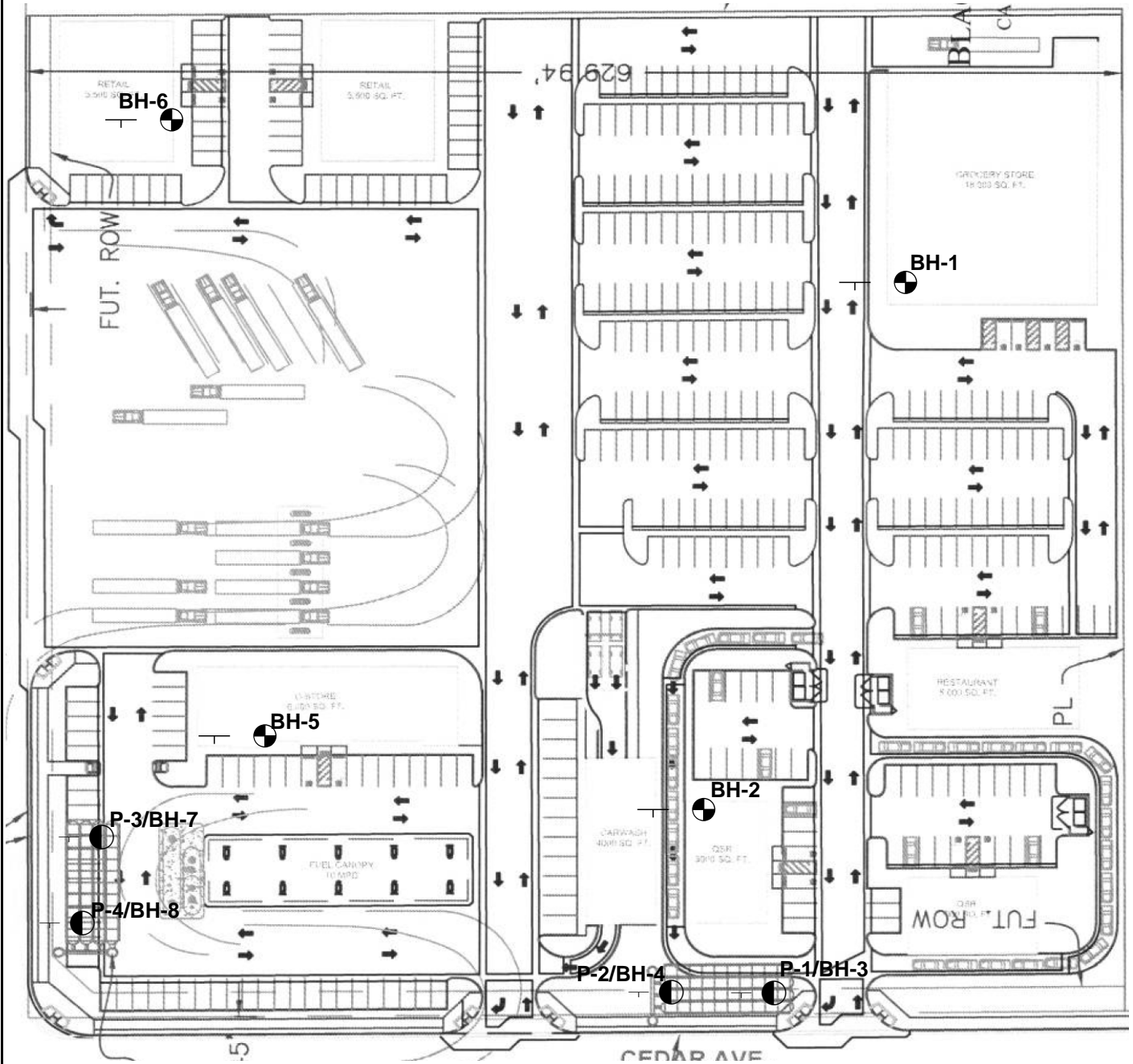
Date:

September 17, 2019

2



Sladden Engineering



LEGEND

- BH-8 APPROXIMATE BOREHOLE LOCATION
- P-4 APPROXIMATE PERCOLATION TEST LOCATION



Sladden Engineering

BOREHOLE LOCATION PLAN

Project Number:	644-19046
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Date:	September 17, 2019

FIGURE

3

APPENDIX A
FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

For our field investigation eight (8) exploratory bores were excavated utilizing a truck-mounted hollow stem auger rig (Mobile B-61). Continuous logs of the materials encountered were made by a representative of Sladden Engineering. Materials encountered in the boreholes were classified in accordance with the Unified Soil Classification System that is presented in this appendix.

Representative undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler (California split spoon sampler) or a Standard Penetration Test (SPT) sampler with a 140 pound automatic-trip hammer dropping approximately 30 inches (ASTM D1586). The number of blows required to drive the samplers 18 inches was recorded in 6-inch increments and blow counts are indicated on the boring logs.

The California samplers are 3.0 inches in diameter, carrying brass sample rings having inner diameters of 2.5 inches. The standard penetration samplers are 2.0 inches in diameter with an inner diameter of 1.5 inches. Undisturbed samples were removed from the sampler and placed in moisture sealed containers in order to preserve the natural soil moisture content. Bulk samples were obtained from the excavation spoils and samples were then transported to our laboratory for further observations and testing.



BORE LOG

Drill Rig: Mobile B-61 Date Drilled: 9/9/2015
Elevation: 1030 Ft (MSL) Boring No: BH-1

Table with columns: Sample, Blow Counts, Bulk Sample, Expansion Index, % Minus #200, % Moisture, Dry Density, Depth (Feet), Graphic Lithology, Description. Rows include soil types like Silty Sand (SM), Gravelly Sand (SP), and Sandy Silt (ML) with associated test data and depth ranges.

Completion Notes:
Terminated at - 51.5 feet bgs.
No Bedrock Encountered.
No Groundwater or Seepage Encountered.

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01
Project No: 644-19046
Report No: 19-09-071
Page 1



BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	8/21/2019
Elevation:	1030 Ft (MSL)	Boring No:	BF1-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
	2/3/4			3.9	2.8		4		Gravelly Sand (SP); yellowish brown, slightly moist, loose, fine- to coarse-grained (Qof).
							6		
	10/14/16			18.5	6.4	99.9	10		Silty Sand (SM); yellowish brown, slightly moist, loose, fine- to coarse-grained (Qof).
							12		Gravelly Sand (SP); yellowish brown, slightly moist, loose, fine- to coarse-grained (Qof).
	7/8/9			6.1	2.3		14		
							16		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
	10/16/27			4.2	2.2	113.9	18		
							20		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
							22		
							24		Terminated at -21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01

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BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	8/21/2019
Elevation:	1030 Ft (MSL)	Boring No:	BH-3/P-1

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
	2/3/6			18.5	3.3	114.1	4		Silty Sand (SP); yellowish brown, slightly moist, loose, fine- to coarse-grained with gravel (Qof).
							6		
							8		
							10		
							12		Terminated at - 10.0 Feet bgs.
							14		No Bedrock Encountered.
							16		No Groundwater or Seepage Encountered.
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01

Project No: 644-19046
Report No: 19-09-071



BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	8/21/2019
Elevation:	1030 Ft (MSL)	Boring No:	BH-4/P-2

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
							4		Silty Sand (SP); yellowish brown, slightly moist, fine- to coarse-grained with gravel (Qof).
						6			
						8			
						10			
							12		Terminated at ~ 10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01

Project No: 644-19046

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BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	8/21/2019
Elevation:	1030 Ft (MSL)	Boring No:	BH-5

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
	10/11/12			28.8	2.1	116.2	4		Silty Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained with gravel (Qof).
	7/9/10			4.5	2.0		6		
							8		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
	10/15/22			6.0	1.5	110.3	10		
							12		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
	6/8/12			3.5	2.6		14		
							16		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
							18		
							20		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
							22		
							24		Terminated at -21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01



BORE LOG

Drill Rig: Mobile B-61 Date Drilled: 8/21/2019

Elevation: 1030 Ft (MSL) Boring No: BH-6

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
	7/5/5			21.8	4.4		4		Silty Sand (SP); yellowish brown, slightly moist, loose, fine- to coarse-grained with gravel (Qof).
							6		
	18/24/23			3.7	2.4		10		Gravelly Sand (SP); yellowish brown, slightly moist, dense, fine- to coarse-grained (Qof).
							12		
	5/7/9			7.7	2.9		16		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
							18		
	10/15/24			4.4	1.0	105.1	20		Gravelly Sand (SP); yellowish brown, slightly moist, medium dense, fine- to coarse-grained (Qof).
							22		
							24		Terminated at -21.5 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01

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BORE LOG

Drill Rig: Mobile B-61 Date Drilled: 8/21/2019

Elevation: 1030 Ft (MSL) Boring No: BH-7/P-3

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
	5/6/8			24.2	4.6		2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
							4		Silty Sand (SP); yellowish brown, slightly moist, medium dense, fine to coarse-grained with gravel (Qof).
							6		
							8		Terminated at ~ 10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							10		
							12		
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:



BORE LOG

Drill Rig:	Mobile B-61	Date Drilled:	8/21/2019
Elevation:	1030 Ft (MSL)	Boring No:	BH-8/P-4

Sample	Blow Counts	Bulk Sample	Expansion Index	% Minus #200	% Moisture	Dry Density	Depth (Feet)	Graphic Lithology	Description
							2		Silty Sand (SM); yellowish brown, moist, fine- to coarse-grained with gravel and trace of clay (Fill).
							4		Silty Sand (SP); yellowish brown, slightly moist, fine- to coarse-grained with gravel (Qof).
						6			
						8			
						10			
							12		Terminated at ~ 10.0 Feet bgs. No Bedrock Encountered. No Groundwater or Seepage Encountered.
							14		
							16		
							18		
							20		
							22		
							24		
							26		
							28		
							30		
							32		
							34		
							36		
							38		
							40		
							42		
							44		
							46		
							48		
							50		

Completion Notes:

PROPOSED MIXED USE DEVELOPMENT
APN: 0257-101-01

Project No:	644-19046
Report No:	19-09-071

APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING

Representative bulk and relatively undisturbed soil samples were obtained in the field and returned to our laboratory for additional observations and testing. Laboratory testing was generally performed in two phases. The first phase consisted of testing in order to determine the compaction of the existing natural soil and the general engineering classifications of the soils underlying the site. This testing was performed in order to estimate the engineering characteristics of the soil and to serve as a basis for selecting samples for the second phase of testing. The second phase consisted of soil mechanics testing. This testing including consolidation, shear strength and expansion testing was performed in order to provide a means of developing specific design recommendations based on the mechanical properties of the soil.

CLASSIFICATION AND COMPACTION TESTING

Unit Weight and Moisture Content Determinations: Each undisturbed sample was weighed and measured in order to determine its unit weight. A small portion of each sample was then subjected to testing in order to determine its moisture content. This was used in order to determine the dry density of the soil in its natural condition. The results of this testing are shown on the Boring Logs.

Maximum Density-Optimum Moisture Determinations: Representative soil types were selected for maximum density determinations. This testing was performed in accordance with the ASTM Standard D1557, Test Method A. The results of this testing are presented graphically in this appendix. The maximum densities are compared to the field densities of the soil in order to determine the existing relative compaction to the soil.

Classification Testing: Soil samples were selected for classification testing. This testing consists of mechanical grain size analyses. This provides information for developing classifications for the soil in accordance with the Unified Soil Classification System which is presented in the preceding appendix. This classification system categorizes the soil into groups having similar engineering characteristics. The results of this testing is very useful in detecting variations in the soil and in selecting samples for further testing.

SOIL MECHANIC'S TESTING

Expansion Testing: One (1) bulk sample was selected for Expansion testing. Expansion testing was performed in accordance with the UBC Standard 18-2. This testing consists of remolding 4-inch diameter by 1-inch thick test specimens to a moisture content and dry density corresponding to approximately 50 percent saturation. The samples are subjected to a surcharge of 144 pounds per square foot and allowed to reach equilibrium. At that point the specimens are inundated with distilled water. The linear expansion is then measured until complete.

Direct Shear Testing: One (1) bulk sample was selected for Direct Shear testing. This test measures the shear strength of the soil under various normal pressures and is used to develop parameters for foundation design and lateral design. Tests were performed using a recompacted test specimen that was saturated prior to tests. Tests were performed using a strain controlled test apparatus with normal pressures ranging from 800 to 2300 pounds per square foot.

Consolidation: One (1) relatively undisturbed samples was selected for consolidation testing. For this test, a one-inch thick test specimen was subjected to vertical loads varying from 575 psf to 11520 psf applied progressively. The consolidation at each load increment was recorded prior to placement of each subsequent load.

Corrosion Series Testing: The soluble sulfate concentrations of the surface soil were determined in accordance with California Test Method Number (CA) 417. The pH and Minimum Resistivity were determined in accordance with CA 643. The soluble chloride concentrations were determined in accordance with CA 422.



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Maximum Density/Optimum Moisture

ASTM D698/D1557

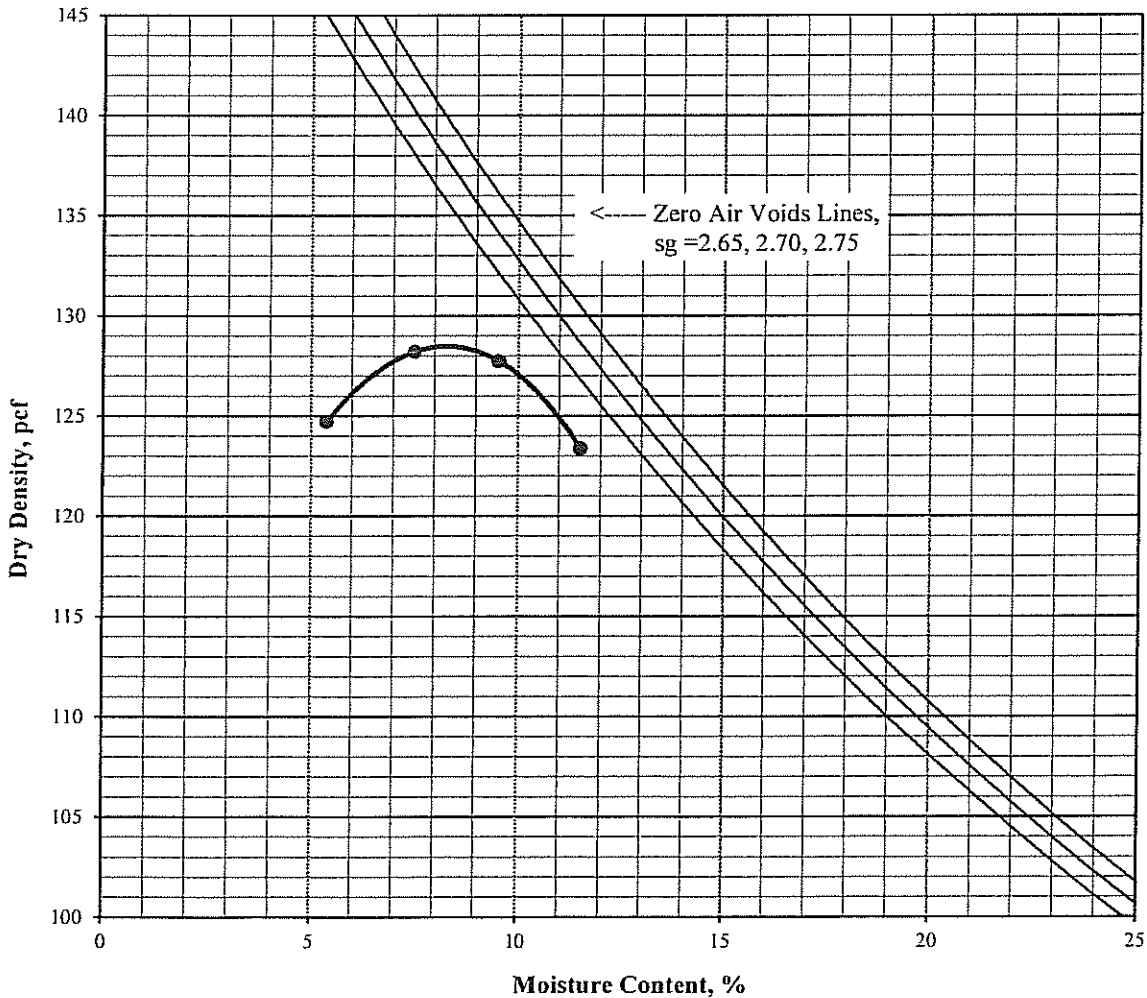
Project Number: 644-19046
Project Name: Cedar Avenue & Santa Ana Avenue
Lab ID Number: LN6-19447
Sample Location: BH-1 Bulk 1 @ 0-5'
Description: Brown Silty Sand (SM)

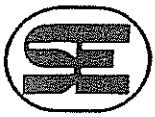
September 11, 2019

ASTM D-1557 A
Rammer Type: Machine

Maximum Density: 131 pcf
Optimum Moisture: 8%
Corrected for Oversize (ASTM D4718)

Sieve Size	% Retained
3/4"	
3/8"	
#4	9.2





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Expansion Index

ASTM D 4829

Job Number: 644-19046
 Job Name: Cedar Avenue & Santa Ana Avenue
 Lab ID Number: LN6-19447
 Sample ID: BH-1 Bulk 1 @ 0-5'
 Soil Description: Brown Silty Sand (SM)

September 11, 2019

Wt of Soil + Ring:	596.4
Weight of Ring:	194.8
Wt of Wet Soil:	401.6
Percent Moisture:	7.4%
Sample Height, in	0.95
Wet Density, pcf:	128.1
Dry Denstiy, pcf:	119.3

% Saturation:	48.4
----------------------	------

Expansion

Rack # 2

Date/Time	9/9/2019	4:00 PM
Initial Reading	0.0000	
Final Reading	0.0022	

Expansion Index

2

(Final - Initial) x 1000



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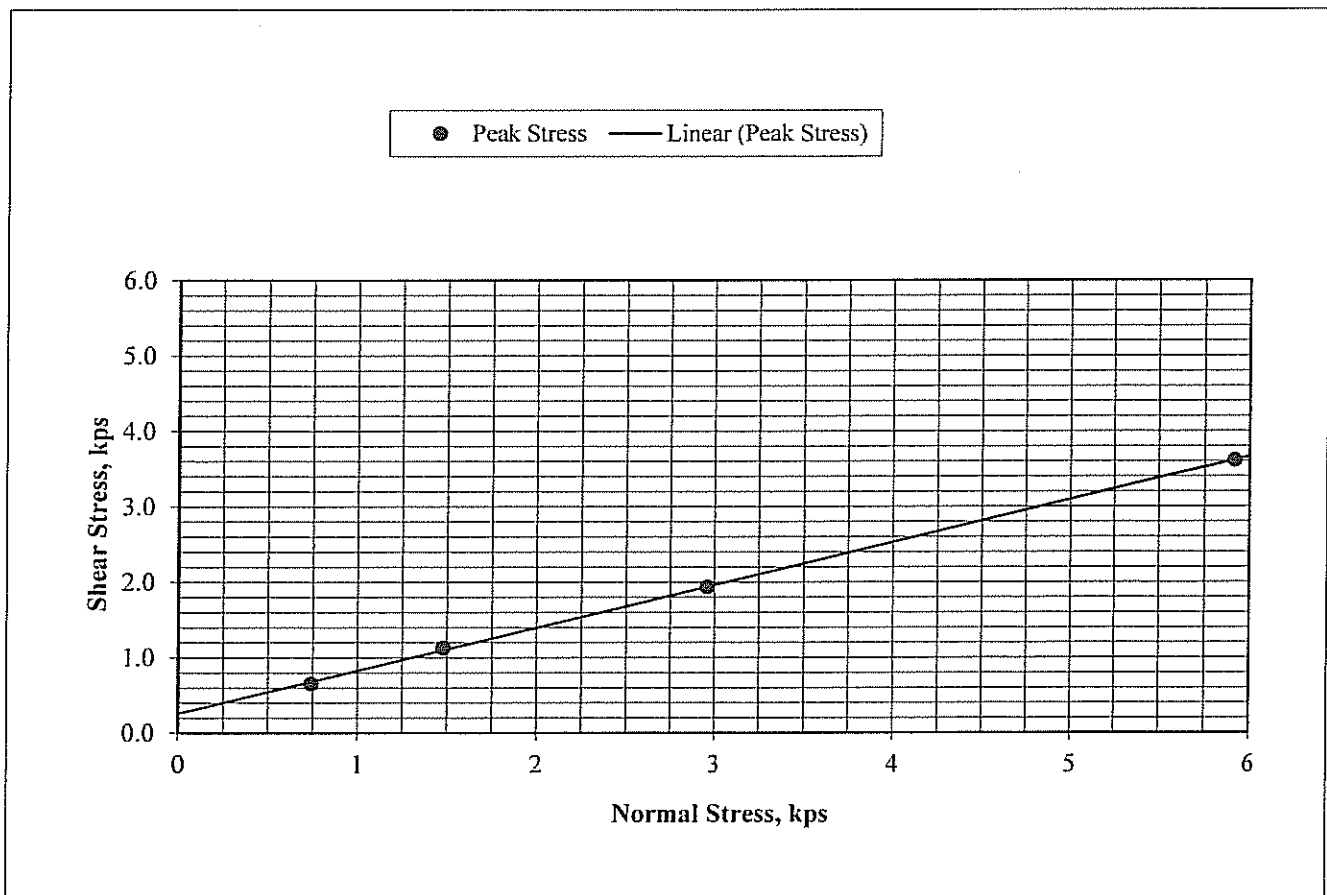
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Direct Shear ASTM D 3080-04 (modified for unconsolidated condition)

Job Number: 644-19046
Job Name Cedar Avenue & Santa Ana Avenue
Lab ID No. LN6-19447
Sample ID BH-1 Bulk 1 @ 0-5'
Classification Brown Silty Sand (SM)
Sample Type Remolded @ 90% of Maximum Density

September 11, 2019
Initial Dry Density: 115.2 pcf
Initial Moisture Content: 8.8 %
Peak Friction Angle (ϕ): 30°
Cohesion (c): 260 psf

Test Results	1	2	3	4	Average
Moisture Content, %	15.2	15.2	15.2	15.2	15.2
Saturation, %	88.9	88.9	88.9	88.9	88.9
Normal Stress, kps	0.739	1.479	2.958	5.916	
Peak Stress, kps	0.653	1.131	1.936	3.611	



Job Number: 644-19046
Job Name: Cedar Avenue & Santa Ana Avenue
Date: 9/11/2019

Moisture Adjustment	
Wt of Soil:	<u>1,000</u>
Moist As Is:	<u>5.3</u>
Moist Wanted:	<u>8.5</u>

Remolded Shear Weight	
Max Dry Density:	128.5
Optimum Moisture:	8.5

ml of Water to Add: 30.4

Wt Soil per Ring, g: 150.9

UBC



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Gradation

ASTM C117 & C136

Project Number: 644-19046

September 11, 2019

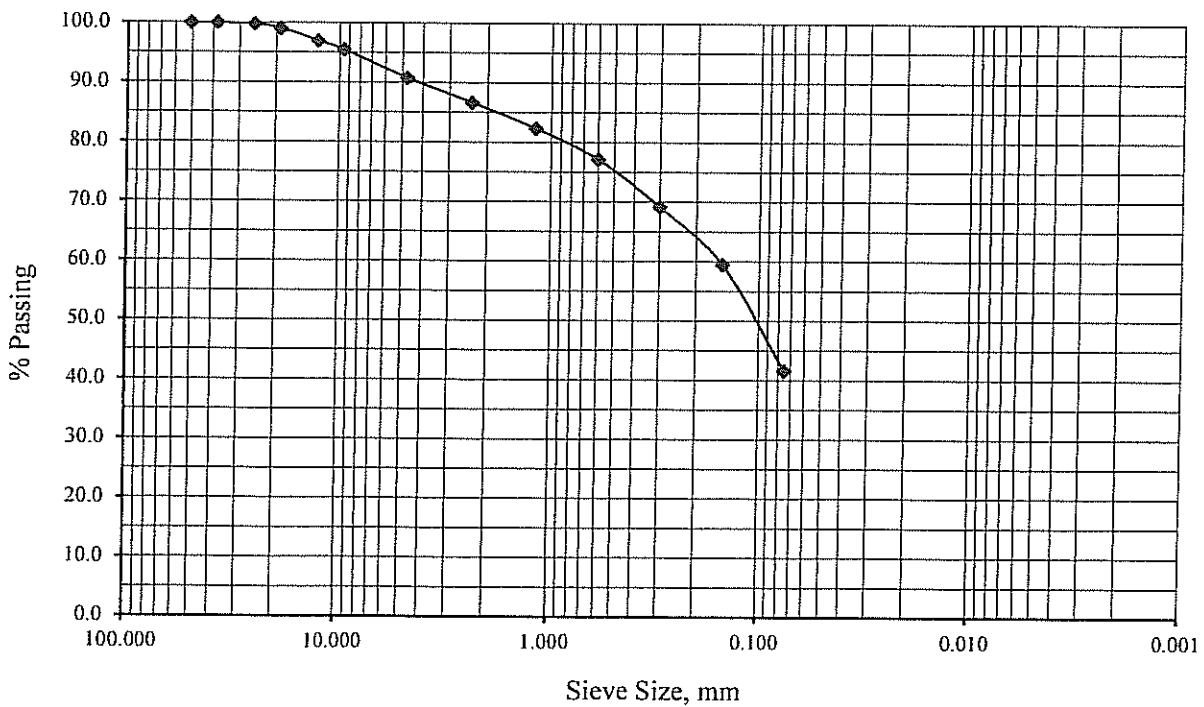
Project Name: Cedar Avenue & Santa Ana Avenue

Lab ID Number: LN6-19447

Sample ID: BH-1 Bulk 1 @ 0-5'

Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
2"	50.8	100.0
1 1/2"	38.1	100.0
1"	25.4	99.8
3/4"	19.1	99.0
1/2"	12.7	97.0
3/8"	9.53	95.5
#4	4.75	90.8
#8	2.36	86.6
#16	1.18	82.3
#30	0.60	77.1
#50	0.30	69.1
#100	0.15	59.5
#200	0.075	41.6





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Gradation

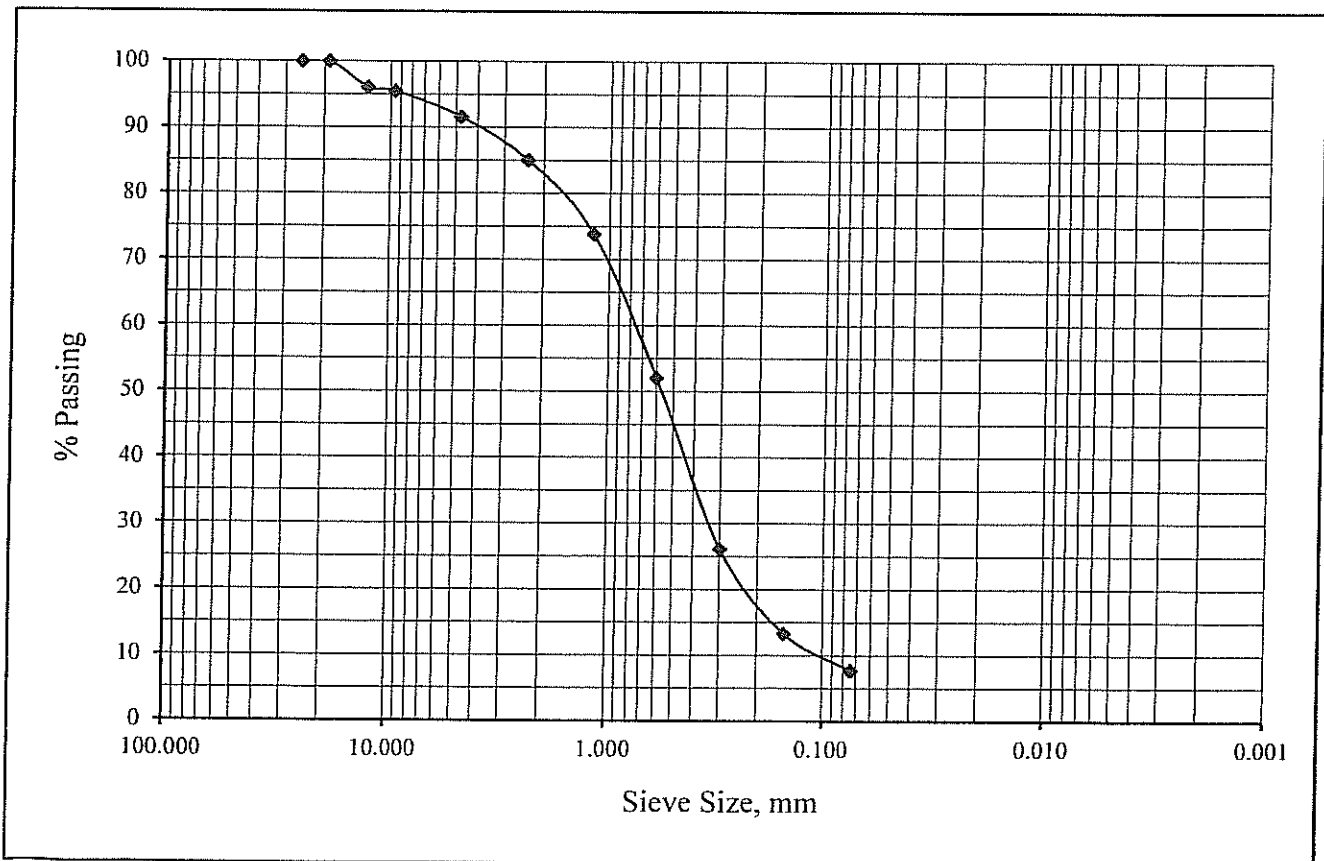
ASTM C117 & C136

Project Number: 644-19046
Project Name: Cedar Avenue & Santa Ana Avenue
Lab ID Number: LN6-19447
Sample ID: BH-1 S-3 @ 10'

September 11, 2019

Soil Classification: SW-SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	96.0
3/8"	9.53	95.5
#4	4.75	91.6
#8	2.36	85.0
#16	1.18	73.8
#30	0.60	52.1
#50	0.30	26.1
#100	0.15	13.3
#200	0.074	7.7





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Gradation

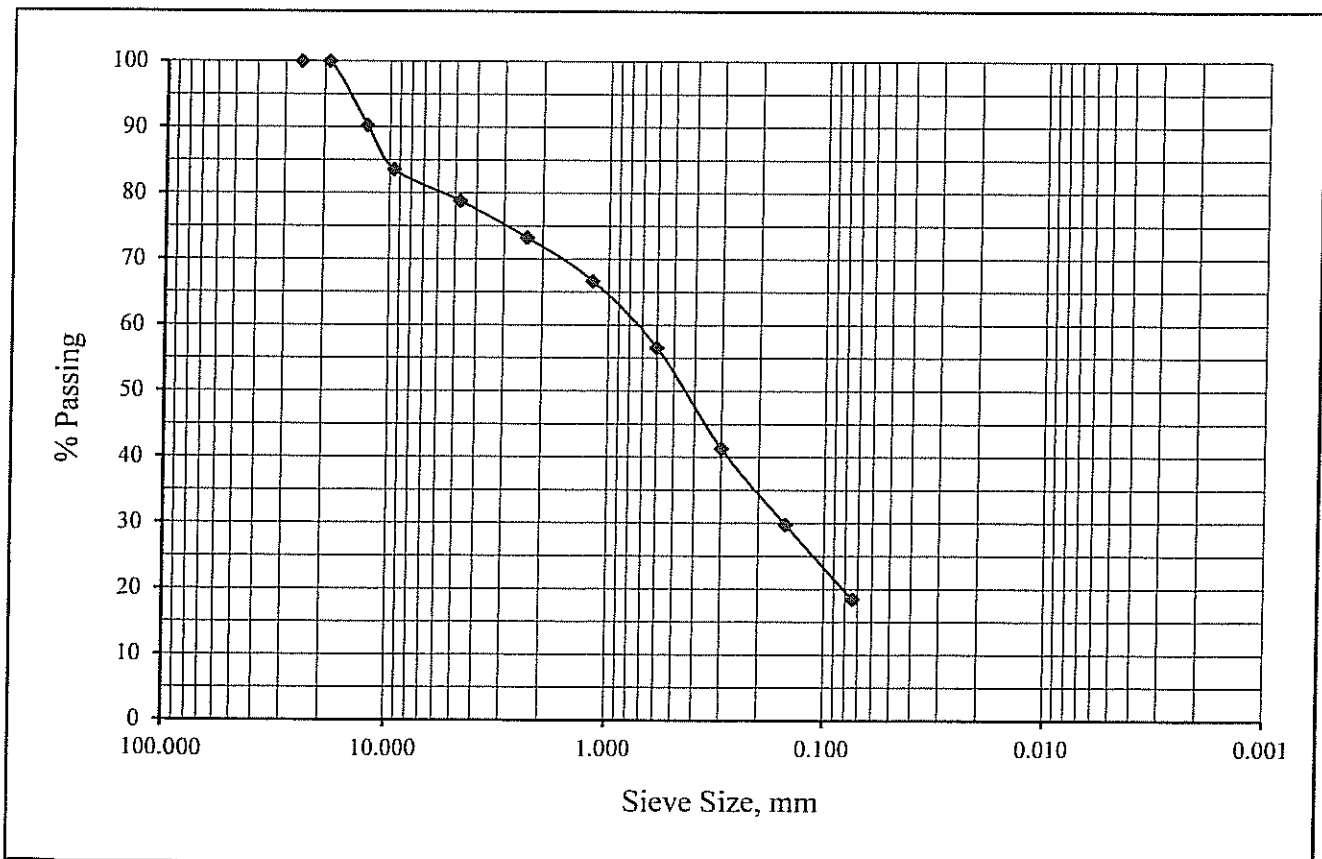
ASTM C117 & C136

Project Number: 644-19046
Project Name: Cedar Avenue & Santa Ana Avenue
Lab ID Number: LN6-19447
Sample ID: BH-3 R-1 @ 5'

September 11, 2019

Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	90.2
3/8"	9.53	83.6
#4	4.75	78.8
#8	2.36	73.2
#16	1.18	66.7
#30	0.60	56.6
#50	0.30	41.3
#100	0.15	29.8
#200	0.074	18.5





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Gradation

ASTM C117 & C136

Project Number: 644-19046

September 11, 2019

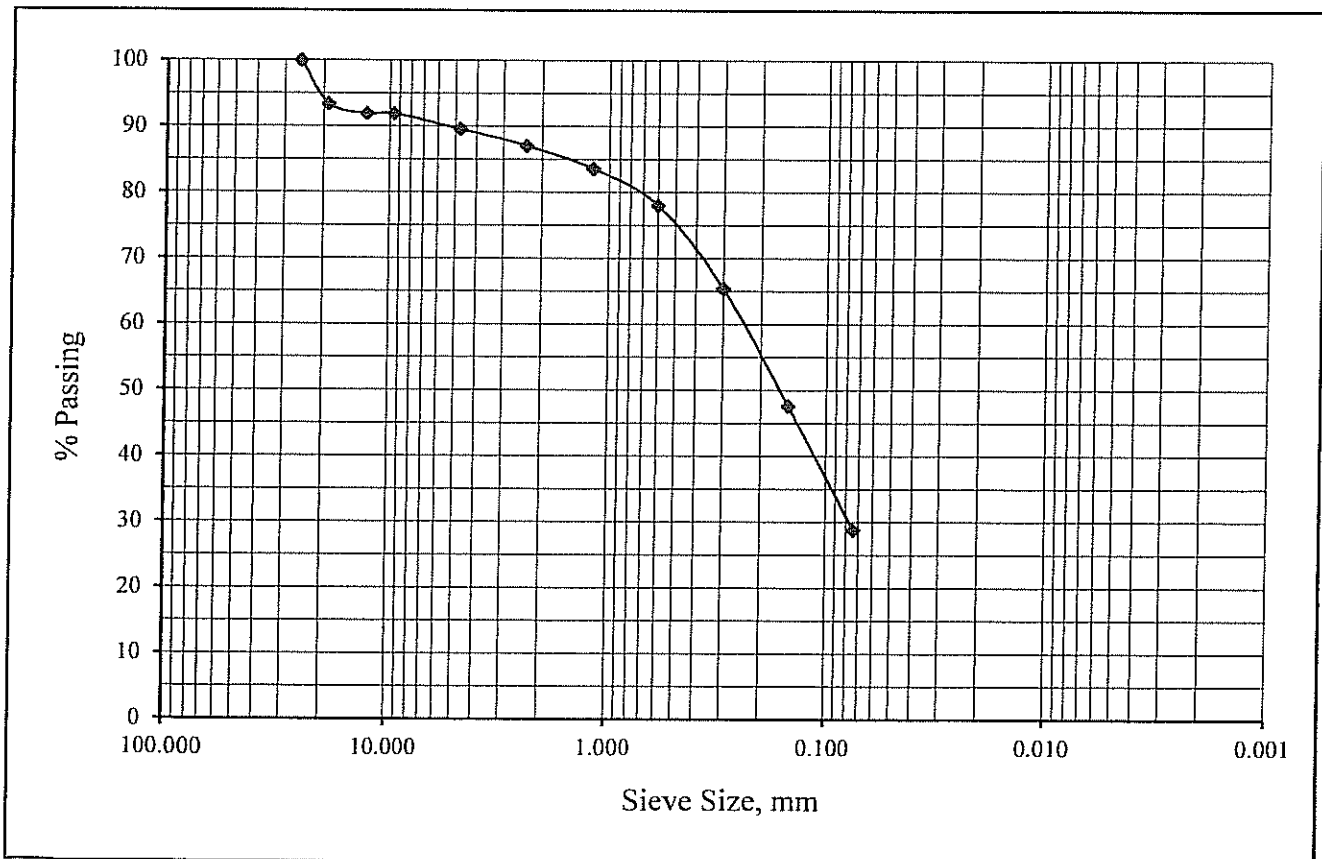
Project Name: Cedar Avenue & Santa Ana Avenue

Lab ID Number: LN6-19447

Sample ID: BH-5 R-1 @ 5'

Soil Classification: SM

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	93.4
1/2"	12.7	91.9
3/8"	9.53	91.9
#4	4.75	89.5
#8	2.36	87.1
#16	1.18	83.6
#30	0.60	78.0
#50	0.30	65.4
#100	0.15	47.6
#200	0.074	28.8





Sladden Engineering

450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

Gradation

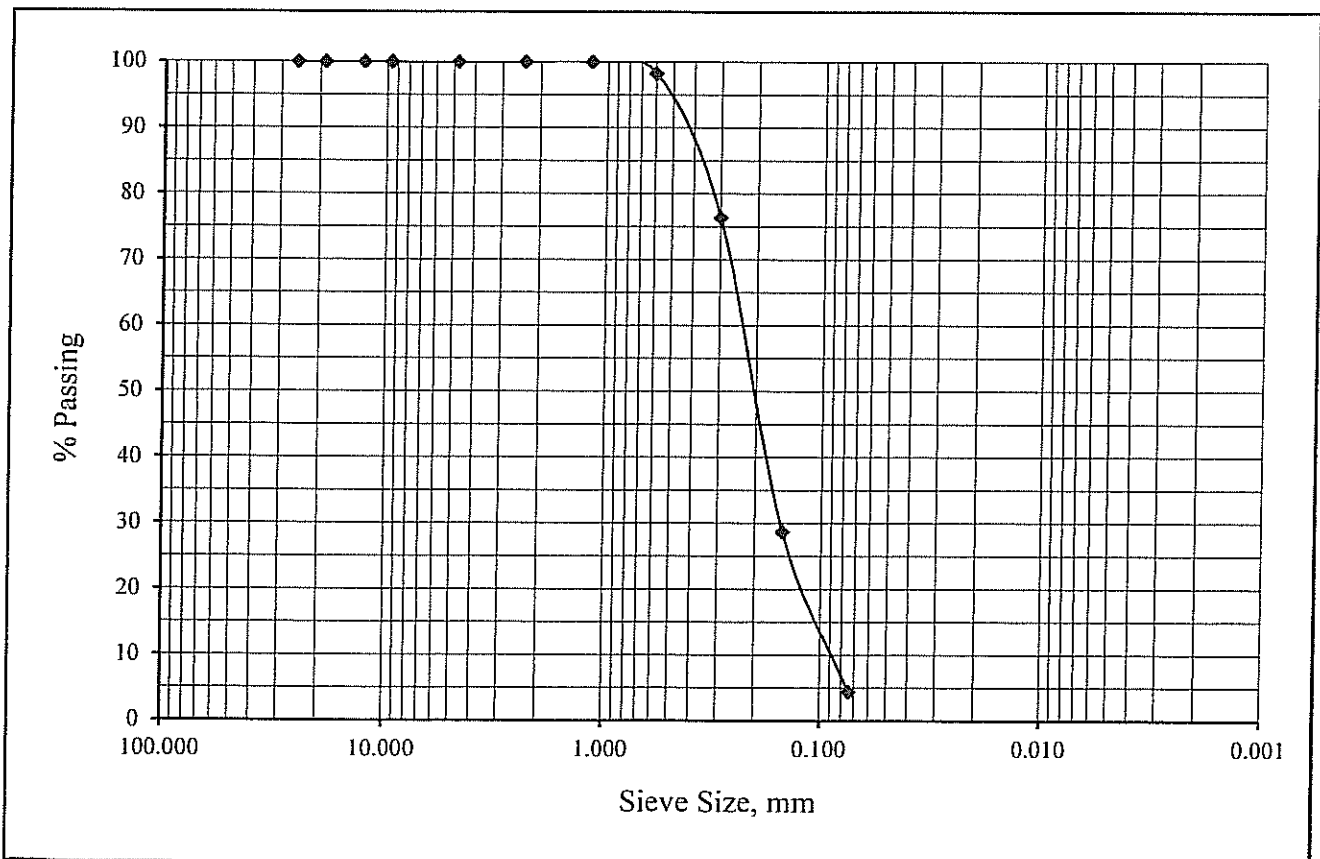
ASTM C117 & C136

Project Number: 644-19046
Project Name: Cedar Avenue & Santa Ana Avenue
Lab ID Number: LN6-19447
Sample ID: BH-6 R-4 @ 20'

September 11, 2019

Soil Classification: SP

Sieve Size, in	Sieve Size, mm	Percent Passing
1"	25.4	100.0
3/4"	19.1	100.0
1/2"	12.7	100.0
3/8"	9.53	100.0
#4	4.75	100.0
#8	2.36	100.0
#16	1.18	100.0
#30	0.60	98.2
#50	0.30	76.4
#100	0.15	28.7
#200	0.074	4.4





Sladden Engineering

450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

One Dimensional Consolidation

ASTM D2435 & D5333

Job Number: 644-19046
Job Name: Cedar Avenue & Santa Ana Avenue

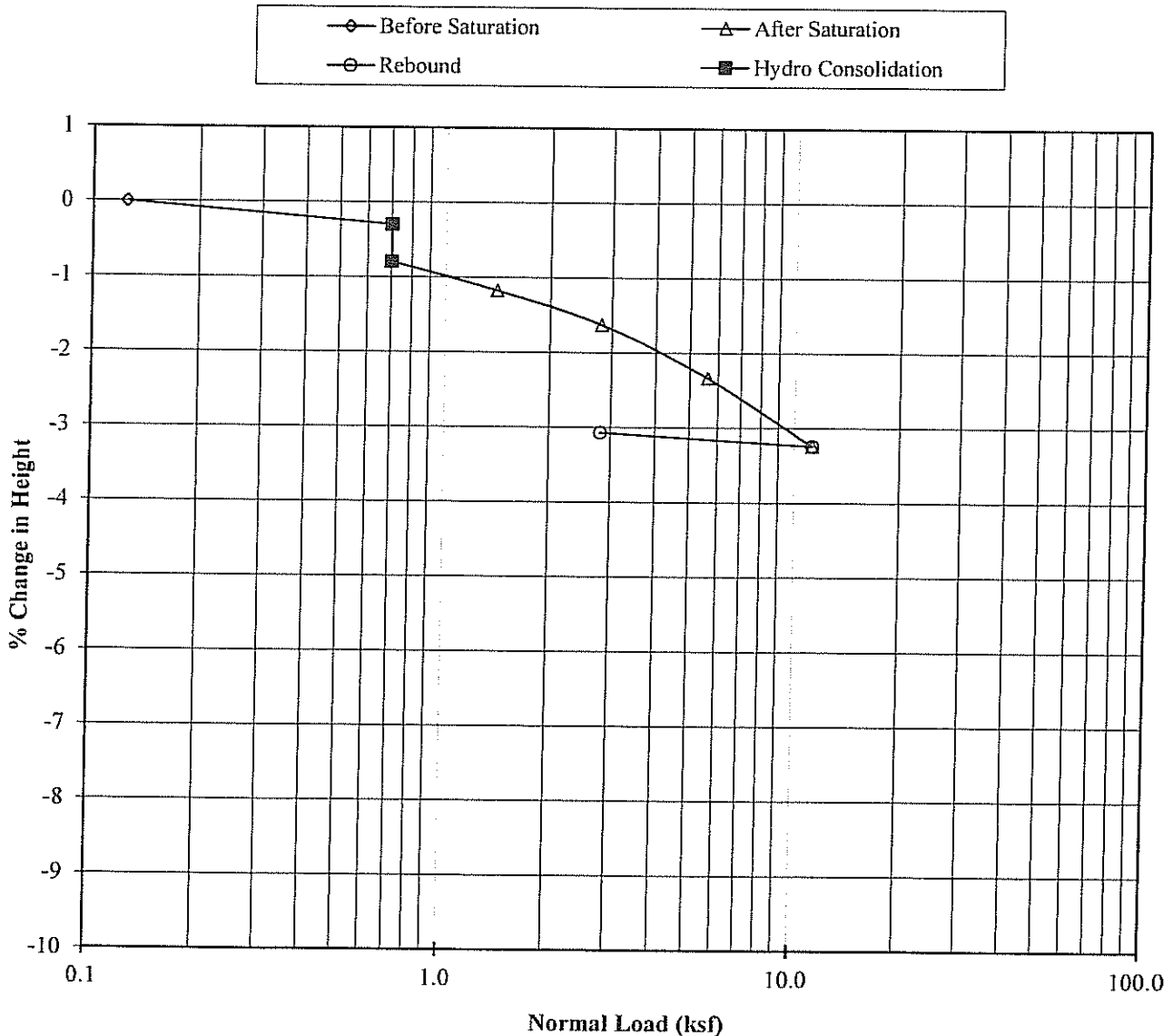
September 11, 2019

Lab ID Number: LN6-19447
Sample ID: BH-5 R-1 @ 5'
Soil Description: Brown Silty Sand (SM)

Initial Dry Density, pcf: 113.7
Initial Moisture, %: 2.1
Initial Void Ratio: 0.466
Specific Gravity: 2.67

Hydrocollapse: 0.5% @ 0.702 ksf

% Change in Height vs Normal Pressure Diagram





Sladden Engineering

450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

RESISTANCE 'R' VALUE AND EXPANSION PRESSURE

CTM 301

September 11, 2019

Project Number: 644-19046

Project Name: Cedar Avenue & Santa Ana Avenue

Lab ID Number: LN6-19447

Sample ID: BH-1 Bulk 1 @ 0-5'

Sample Description: Brown Silty Sand (SM)

Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 122.9-pcf

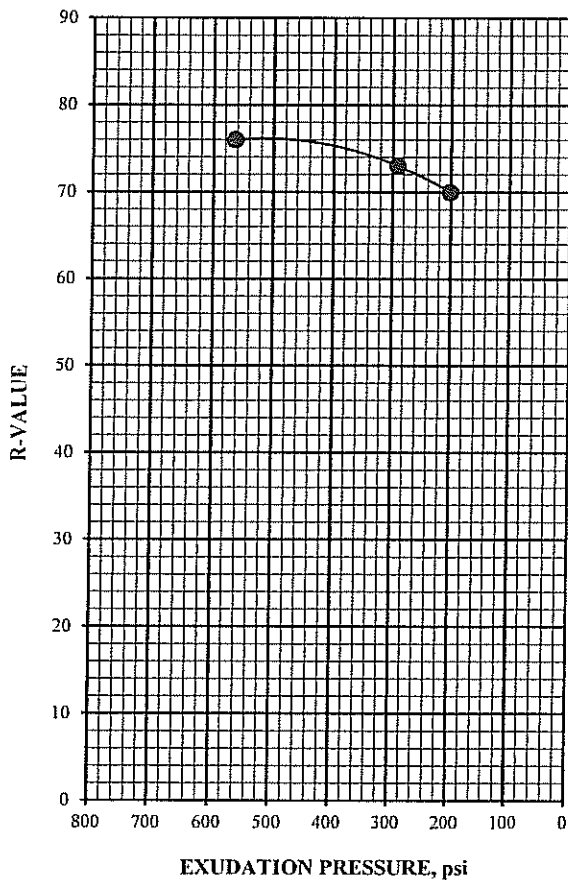
%Moisture @ 300 psi Exudation Pressure: 9.8%

R-Value - Exudation Pressure: 73

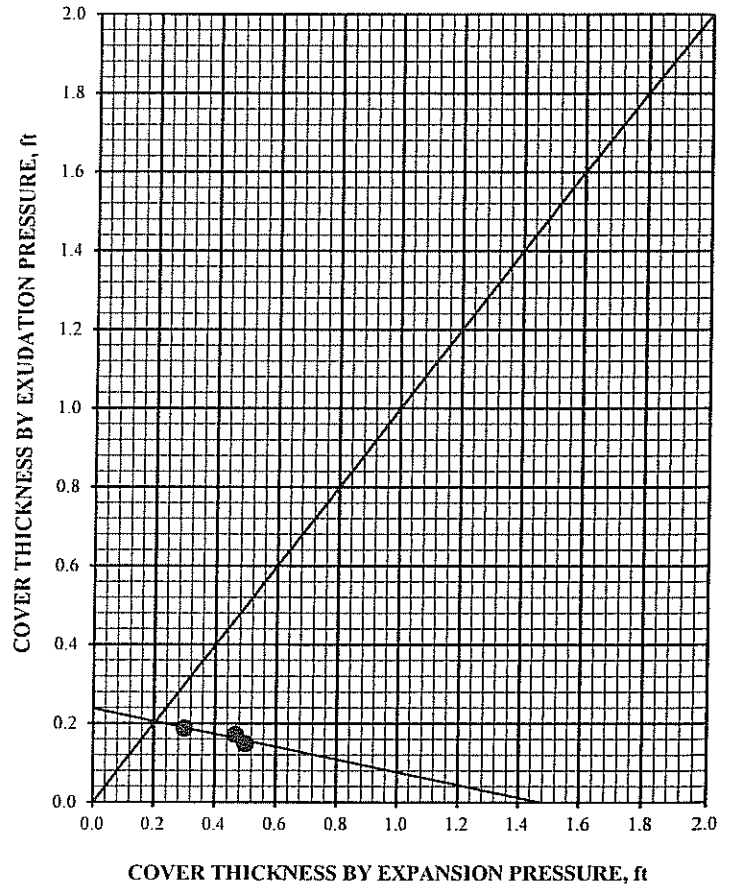
R-Value - Expansion Pressure: 68

R-Value @ Equilibrium: 68

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART





Sladden Engineering

6782 Stanton Ave., Suite A, Buena Park, CA 90621 (714) 523-0952 Fax (714) 523-1369
45090 Golf Center Pkwy, Suite F, Indio CA 92201 (760) 863-0713 Fax (760) 863-0847
450 Egan Avenue, Beaumont, CA 92223 (951) 845-7743 Fax (951) 845-8863

Date: September 11, 2019

Account No.: 644-19046

Customer: Black Gold Builders Group, Inc.

Location: APN 0257-101-01, Cedar Avenue & Santa Ana Avenue, Bloomington Area

Analytical Report

Corrosion Series

	pH per CA 643	Soluble Sulfates per CA 417 ppm	Soluble Chloride per CA 422 ppm	Min. Resistivity per CA 643 ohm-cm
BH-1 @ 0-5'	8.3	20	60	6200

APPENDIX C

**SEISMIC DESIGN MAP AND REPORT
DEAGGREGATION OUTPUT**



Latitude, Longitude: 34.055103, -117.395372

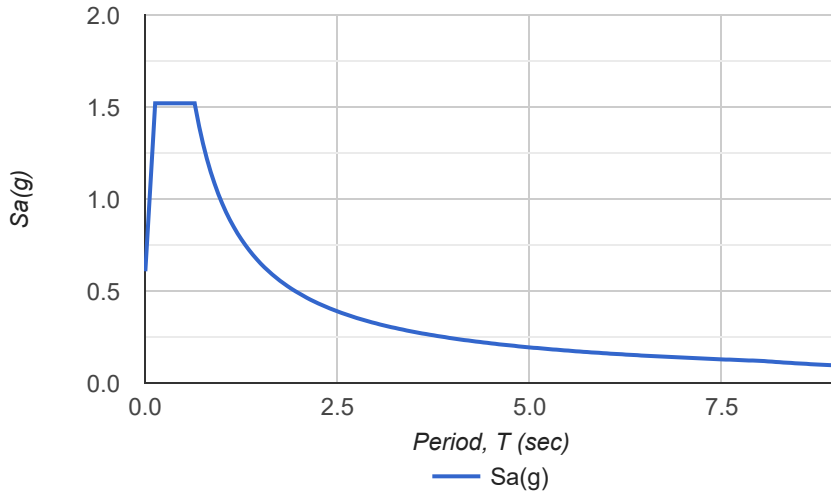


Date	9/13/2019, 12:14:06 PM
Design Code Reference Document	ASCE7-10
Risk Category	II
Site Class	D - Stiff Soil

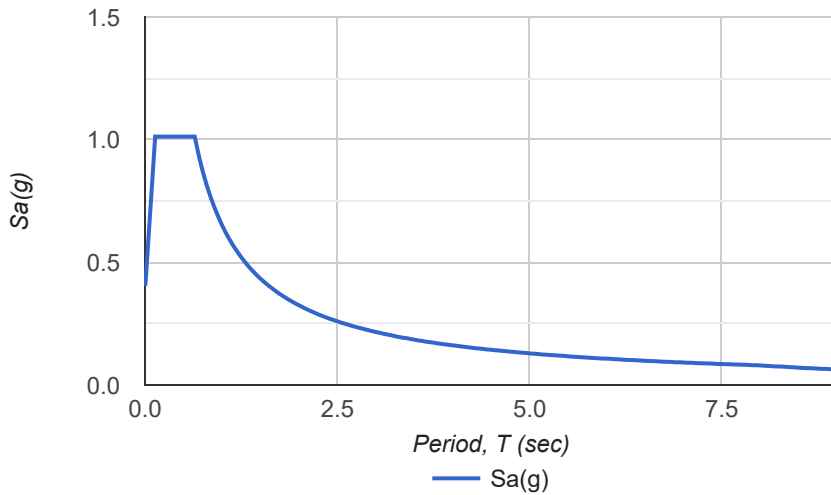
Type	Value	Description
S_S	1.522	MCE_R ground motion. (for 0.2 second period)
S_1	0.651	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.522	Site-modified spectral acceleration value
S_{M1}	0.977	Site-modified spectral acceleration value
S_{DS}	1.014	Numeric seismic design value at 0.2 second SA
S_{D1}	0.651	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	D	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	1.5	Site amplification factor at 1.0 second
PGA	0.597	MCE_G peak ground acceleration
F_{PGA}	1	Site amplification factor at PGA
PGA_M	0.597	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
$SsRT$	2.327	Probabilistic risk-targeted ground motion. (0.2 second)
$SsUH$	2.158	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.522	Factored deterministic acceleration value. (0.2 second)
$S1RT$	0.914	Probabilistic risk-targeted ground motion. (1.0 second)
$S1UH$	0.883	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
$S1D$	0.651	Factored deterministic acceleration value. (1.0 second)
$PGAd$	0.597	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	1.078	Mapped value of the risk coefficient at short periods
C_{R1}	1.035	Mapped value of the risk coefficient at a period of 1 s

MCER Response Spectrum



Design Response Spectrum



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Unified Hazard Tool



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

^ Input

Edition

Spectral Period

Latitude

Decimal degrees

Time Horizon

Return period in years

Longitude

Decimal degrees, negative values for western longitudes

Site Class

^ Hazard Curve



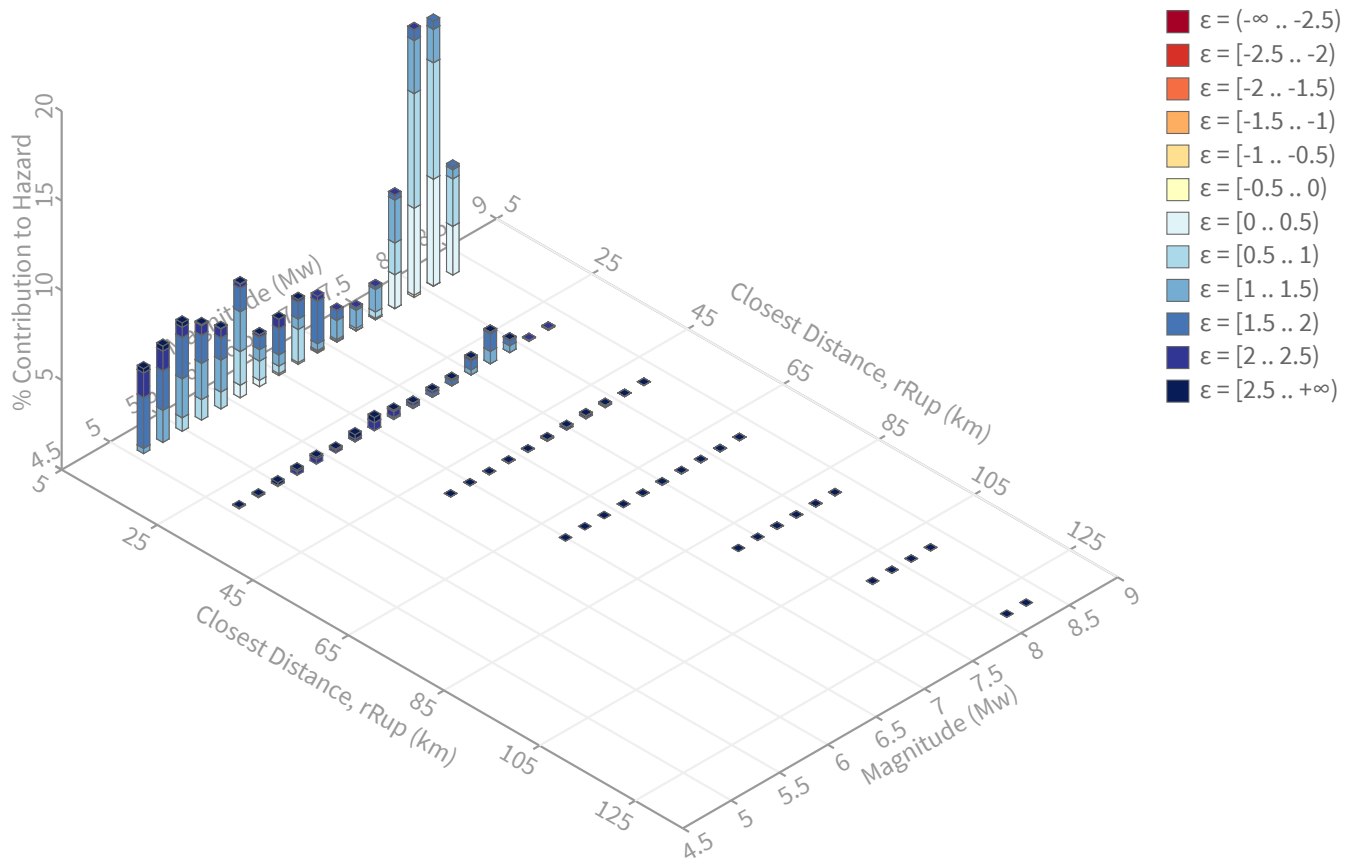
Please select "Edition", "Location" & "Site Class" above to compute a hazard curve.

Compute Hazard Curve

^ Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 475 yrs

Exceedance rate: 0.0021052632 yr⁻¹

PGA ground motion: 0.53755888 g

Recovered targets

Return period: 519.6158 yrs

Exceedance rate: 0.0019244988 yr⁻¹

Totals

Binned: 100 %

Residual: 0 %

Trace: 0.14 %

Mean (over all sources)

m: 6.94

r: 13.2 km

ε₀: 1.18 σ

Mode (largest m-r bin)

m: 7.91

r: 12.65 km

ε₀: 0.75 σ

Contribution: 14.93 %

Mode (largest m-r-ε₀ bin)

m: 8.09

r: 14.18 km

ε₀: 0.75 σ

Contribution: 6.49 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km

m: min = 4.4, max = 9.4, Δ = 0.2

ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)

ε1: [-2.5 .. -2.0)

ε2: [-2.0 .. -1.5)

ε3: [-1.5 .. -1.0)

ε4: [-1.0 .. -0.5)

ε5: [-0.5 .. 0.0)

ε6: [0.0 .. 0.5)

ε7: [0.5 .. 1.0)

ε8: [1.0 .. 1.5)

ε9: [1.5 .. 2.0)

ε10: [2.0 .. 2.5)

ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↴ Source	Type	r	m	ϵ_0	lon	lat	az	%
UC33brAvg_FM31	System							31.07
San Jacinto (San Bernardino) [3]		8.34	8.02	0.48	117.322°W	34.099°N	54.15	9.60
San Andreas (San Bernardino N) [4]		17.05	7.71	1.15	117.296°W	34.185°N	32.30	8.65
San Jacinto (Lytle Creek connector) [2]		8.24	7.99	0.46	117.341°W	34.112°N	38.15	2.49
San Andreas (San Bernardino S) [0]		19.18	6.97	1.67	117.222°W	34.150°N	56.47	1.52
San Andreas (North Branch Mill Creek) [0]		16.88	7.98	0.89	117.270°W	34.171°N	41.65	1.48
Fontana (Seismicity) [0]		8.14	6.61	0.96	117.463°W	34.100°N	309.12	1.32
UC33brAvg_FM32	System							30.76
San Jacinto (San Bernardino) [3]		8.34	8.01	0.48	117.322°W	34.099°N	54.15	9.54
San Andreas (San Bernardino N) [4]		17.05	7.72	1.14	117.296°W	34.185°N	32.30	8.67
San Jacinto (Lytle Creek connector) [2]		8.24	7.98	0.46	117.341°W	34.112°N	38.15	2.51
San Andreas (North Branch Mill Creek) [0]		16.88	7.99	0.88	117.270°W	34.171°N	41.65	1.54
San Andreas (San Bernardino S) [0]		19.18	6.98	1.67	117.222°W	34.150°N	56.47	1.54
Fontana (Seismicity) [0]		8.14	6.61	0.96	117.463°W	34.100°N	309.12	1.08
UC33brAvg_FM31 (opt)	Grid							19.10
PointSourceFinite: -117.395, 34.150		11.20	5.70	1.63	117.395°W	34.150°N	0.00	3.05
PointSourceFinite: -117.395, 34.150		11.20	5.70	1.63	117.395°W	34.150°N	0.00	3.05
PointSourceFinite: -117.395, 34.105		7.52	5.59	1.20	117.395°W	34.105°N	0.00	2.79
PointSourceFinite: -117.395, 34.105		7.52	5.59	1.20	117.395°W	34.105°N	0.00	2.79
PointSourceFinite: -117.395, 34.114		8.00	5.71	1.21	117.395°W	34.114°N	0.00	1.79
PointSourceFinite: -117.395, 34.114		8.00	5.71	1.21	117.395°W	34.114°N	0.00	1.79
UC33brAvg_FM32 (opt)	Grid							19.06
PointSourceFinite: -117.395, 34.150		11.20	5.70	1.63	117.395°W	34.150°N	0.00	3.05
PointSourceFinite: -117.395, 34.150		11.20	5.70	1.63	117.395°W	34.150°N	0.00	3.05
PointSourceFinite: -117.395, 34.105		7.52	5.59	1.20	117.395°W	34.105°N	0.00	2.79
PointSourceFinite: -117.395, 34.105		7.52	5.59	1.20	117.395°W	34.105°N	0.00	2.79
PointSourceFinite: -117.395, 34.114		8.00	5.71	1.21	117.395°W	34.114°N	0.00	1.79
PointSourceFinite: -117.395, 34.114		8.00	5.71	1.21	117.395°W	34.114°N	0.00	1.79

APPENDIX D

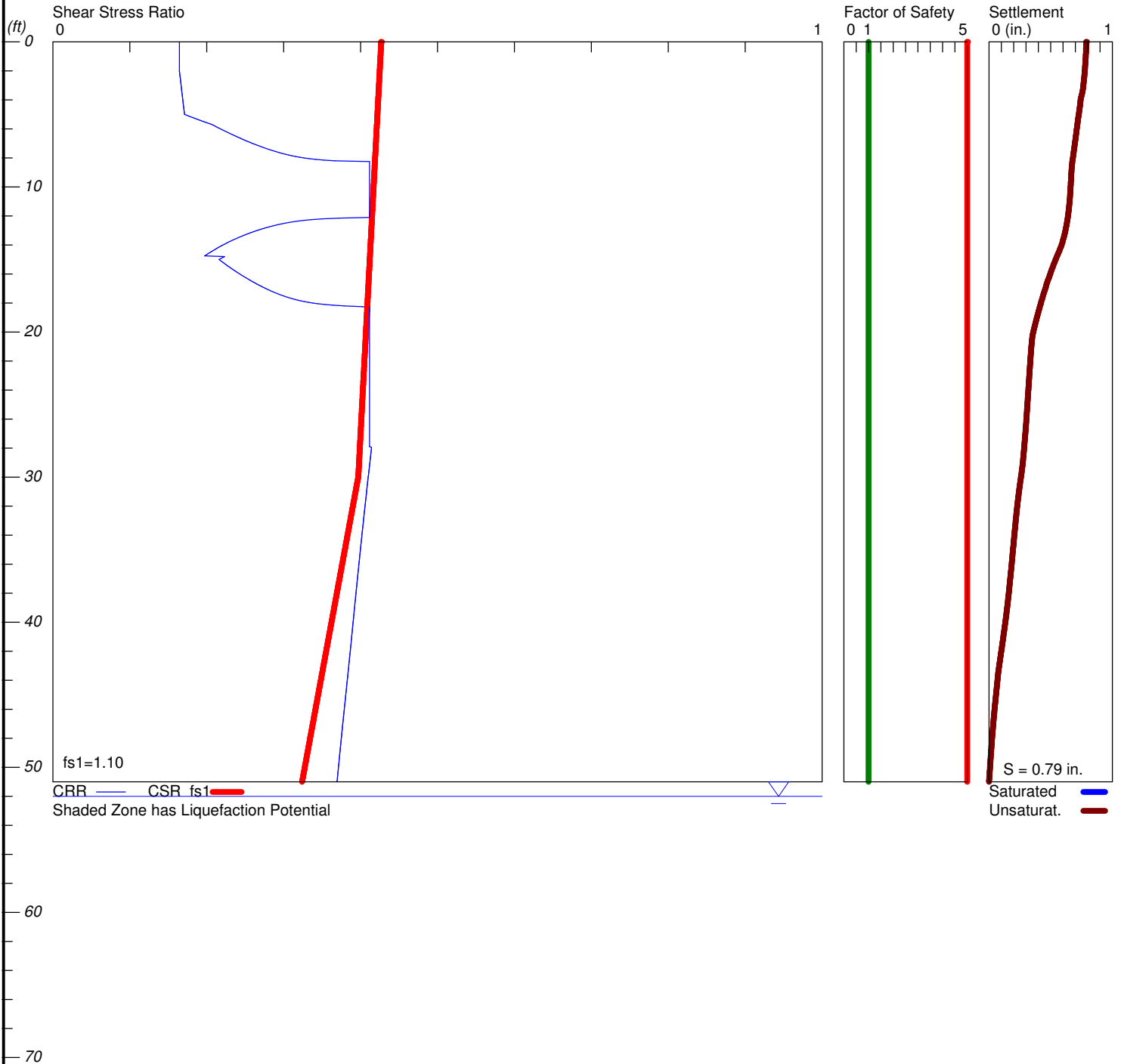
SEISMIC SETTLEMENT ANALYSIS

LIQUEFACTION ANALYSIS

APN 0257-101-01

Hole No.=BH-1 Water Depth=52 ft Surface Elev.=1030

Magnitude=8.09
Acceleration=0.597g



LiquefyPro CivilTech Software USA www.civiltech.com

Liquefy.sum

LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to , 9/17/2019 12:08:24 PM

Input File Name: G:\Liquefy5\444-19011 BH-1.liq
Title: APN 0257-101-01
Subtitle: 644-19046

Surface Elev.=1030
Hole No.=BH-1
Depth of Hole= 51.00 ft
Water Table during Earthquake= 52.00 ft
Water Table during In-Situ Testing= 52.00 ft
Max. Acceleration= 0.6 g
Earthquake Magnitude= 8.09

Input Data:

Surface Elev.=1030
Hole No.=BH-1
Depth of Hole=51.00 ft
Water Table during Earthquake= 52.00 ft
Water Table during In-Situ Testing= 52.00 ft
Max. Acceleration=0.6 g
Earthquake Magnitude=8.09
No-Liquefiable Soils: Based on Analysis

1. SPT or BPT Calculation.
 2. Settlement Analysis Method: Tokimatsu, M-correction
 3. Fines Correction for Liquefaction: Modify Stark/Olson
 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= 1.1
Plot one CSR curve (fs1=User)
 10. Use Curve Smoothing: Yes*
- * Recommended Options

Liquefy.sum

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	6.00	125.90	42.30
2.00	6.00	125.90	42.30
5.00	10.66	133.60	14.40
10.00	28.00	133.60	7.70
15.00	18.00	103.30	9.60
20.00	29.00	103.30	9.30
25.00	48.66	106.50	6.20
30.00	23.00	106.50	56.70
35.00	34.00	104.40	57.10
40.00	30.00	104.40	53.40
45.00	30.66	119.00	48.90
50.00	33.00	119.00	73.30

Output Results:

Settlement of Saturated Sands=0.00 in.
 Settlement of Unsaturated Sands=0.79 in.
 Total Settlement of Saturated and Unsaturated Sands=0.79 in.
 Differential Settlement=0.394 to 0.520 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.16	0.43	5.00	0.00	0.79	0.79
0.05	0.16	0.43	5.00	0.00	0.79	0.79
0.10	0.16	0.43	5.00	0.00	0.79	0.79
0.15	0.16	0.43	5.00	0.00	0.79	0.79
0.20	0.16	0.43	5.00	0.00	0.79	0.79
0.25	0.16	0.43	5.00	0.00	0.79	0.79
0.30	0.16	0.43	5.00	0.00	0.79	0.79
0.35	0.16	0.43	5.00	0.00	0.79	0.79
0.40	0.16	0.43	5.00	0.00	0.79	0.79
0.45	0.16	0.43	5.00	0.00	0.79	0.79
0.50	0.16	0.43	5.00	0.00	0.79	0.79
0.55	0.16	0.43	5.00	0.00	0.79	0.79
0.60	0.16	0.43	5.00	0.00	0.79	0.79
0.65	0.16	0.43	5.00	0.00	0.79	0.79
0.70	0.16	0.43	5.00	0.00	0.79	0.79
0.75	0.16	0.43	5.00	0.00	0.79	0.79
0.80	0.16	0.43	5.00	0.00	0.79	0.79
0.85	0.16	0.43	5.00	0.00	0.79	0.79
0.90	0.16	0.43	5.00	0.00	0.78	0.78
0.95	0.16	0.43	5.00	0.00	0.78	0.78
1.00	0.16	0.43	5.00	0.00	0.78	0.78

Liquefy.sum

1.05	0.16	0.43	5.00	0.00	0.78	0.78
1.10	0.16	0.43	5.00	0.00	0.78	0.78
1.15	0.16	0.43	5.00	0.00	0.78	0.78
1.20	0.16	0.43	5.00	0.00	0.78	0.78
1.25	0.16	0.43	5.00	0.00	0.78	0.78
1.30	0.16	0.43	5.00	0.00	0.78	0.78
1.35	0.16	0.43	5.00	0.00	0.78	0.78
1.40	0.16	0.43	5.00	0.00	0.78	0.78
1.45	0.16	0.43	5.00	0.00	0.78	0.78
1.50	0.16	0.43	5.00	0.00	0.78	0.78
1.55	0.16	0.43	5.00	0.00	0.78	0.78
1.60	0.16	0.43	5.00	0.00	0.78	0.78
1.65	0.16	0.43	5.00	0.00	0.78	0.78
1.70	0.16	0.43	5.00	0.00	0.78	0.78
1.75	0.16	0.43	5.00	0.00	0.78	0.78
1.80	0.16	0.43	5.00	0.00	0.78	0.78
1.85	0.16	0.43	5.00	0.00	0.78	0.78
1.90	0.16	0.42	5.00	0.00	0.78	0.78
1.95	0.16	0.42	5.00	0.00	0.78	0.78
2.00	0.16	0.42	5.00	0.00	0.78	0.78
2.05	0.16	0.42	5.00	0.00	0.78	0.78
2.10	0.16	0.42	5.00	0.00	0.78	0.78
2.15	0.16	0.42	5.00	0.00	0.77	0.77
2.20	0.16	0.42	5.00	0.00	0.77	0.77
2.25	0.17	0.42	5.00	0.00	0.77	0.77
2.30	0.17	0.42	5.00	0.00	0.77	0.77
2.35	0.17	0.42	5.00	0.00	0.77	0.77
2.40	0.17	0.42	5.00	0.00	0.77	0.77
2.45	0.17	0.42	5.00	0.00	0.77	0.77
2.50	0.17	0.42	5.00	0.00	0.77	0.77
2.55	0.17	0.42	5.00	0.00	0.77	0.77
2.60	0.17	0.42	5.00	0.00	0.77	0.77
2.65	0.17	0.42	5.00	0.00	0.77	0.77
2.70	0.17	0.42	5.00	0.00	0.77	0.77
2.75	0.17	0.42	5.00	0.00	0.77	0.77
2.80	0.17	0.42	5.00	0.00	0.77	0.77
2.85	0.17	0.42	5.00	0.00	0.77	0.77
2.90	0.17	0.42	5.00	0.00	0.77	0.77
2.95	0.17	0.42	5.00	0.00	0.77	0.77
3.00	0.17	0.42	5.00	0.00	0.76	0.76
3.05	0.17	0.42	5.00	0.00	0.76	0.76
3.10	0.17	0.42	5.00	0.00	0.76	0.76
3.15	0.17	0.42	5.00	0.00	0.76	0.76
3.20	0.17	0.42	5.00	0.00	0.76	0.76
3.25	0.17	0.42	5.00	0.00	0.76	0.76
3.30	0.17	0.42	5.00	0.00	0.76	0.76
3.35	0.17	0.42	5.00	0.00	0.76	0.76
3.40	0.17	0.42	5.00	0.00	0.76	0.76

				Liquefy.sum		
3.45	0.17	0.42	5.00	0.00	0.76	0.76
3.50	0.17	0.42	5.00	0.00	0.76	0.76
3.55	0.17	0.42	5.00	0.00	0.75	0.75
3.60	0.17	0.42	5.00	0.00	0.75	0.75
3.65	0.17	0.42	5.00	0.00	0.75	0.75
3.70	0.17	0.42	5.00	0.00	0.75	0.75
3.75	0.17	0.42	5.00	0.00	0.75	0.75
3.80	0.17	0.42	5.00	0.00	0.75	0.75
3.85	0.17	0.42	5.00	0.00	0.74	0.74
3.90	0.17	0.42	5.00	0.00	0.74	0.74
3.95	0.17	0.42	5.00	0.00	0.74	0.74
4.00	0.17	0.42	5.00	0.00	0.74	0.74
4.05	0.17	0.42	5.00	0.00	0.74	0.74
4.10	0.17	0.42	5.00	0.00	0.74	0.74
4.15	0.17	0.42	5.00	0.00	0.74	0.74
4.20	0.17	0.42	5.00	0.00	0.74	0.74
4.25	0.17	0.42	5.00	0.00	0.74	0.74
4.30	0.17	0.42	5.00	0.00	0.74	0.74
4.35	0.17	0.42	5.00	0.00	0.74	0.74
4.40	0.17	0.42	5.00	0.00	0.74	0.74
4.45	0.17	0.42	5.00	0.00	0.74	0.74
4.50	0.17	0.42	5.00	0.00	0.74	0.74
4.55	0.17	0.42	5.00	0.00	0.74	0.74
4.60	0.17	0.42	5.00	0.00	0.73	0.73
4.65	0.17	0.42	5.00	0.00	0.73	0.73
4.70	0.17	0.42	5.00	0.00	0.73	0.73
4.75	0.17	0.42	5.00	0.00	0.73	0.73
4.80	0.17	0.42	5.00	0.00	0.73	0.73
4.85	0.17	0.42	5.00	0.00	0.73	0.73
4.90	0.17	0.42	5.00	0.00	0.73	0.73
4.95	0.17	0.42	5.00	0.00	0.73	0.73
5.00	0.17	0.42	5.00	0.00	0.73	0.73
5.05	0.17	0.42	5.00	0.00	0.73	0.73
5.10	0.18	0.42	5.00	0.00	0.73	0.73
5.15	0.18	0.42	5.00	0.00	0.72	0.72
5.20	0.18	0.42	5.00	0.00	0.72	0.72
5.25	0.18	0.42	5.00	0.00	0.72	0.72
5.30	0.19	0.42	5.00	0.00	0.72	0.72
5.35	0.19	0.42	5.00	0.00	0.72	0.72
5.40	0.19	0.42	5.00	0.00	0.72	0.72
5.45	0.19	0.42	5.00	0.00	0.72	0.72
5.50	0.20	0.42	5.00	0.00	0.72	0.72
5.55	0.20	0.42	5.00	0.00	0.72	0.72
5.60	0.20	0.42	5.00	0.00	0.72	0.72
5.65	0.20	0.42	5.00	0.00	0.72	0.72
5.70	0.21	0.42	5.00	0.00	0.72	0.72
5.75	0.21	0.42	5.00	0.00	0.72	0.72
5.80	0.21	0.42	5.00	0.00	0.71	0.71

Liquefy.sum

5.85	0.21	0.42	5.00	0.00	0.71	0.71
5.90	0.21	0.42	5.00	0.00	0.71	0.71
5.95	0.22	0.42	5.00	0.00	0.71	0.71
6.00	0.22	0.42	5.00	0.00	0.71	0.71
6.05	0.22	0.42	5.00	0.00	0.71	0.71
6.10	0.22	0.42	5.00	0.00	0.71	0.71
6.15	0.22	0.42	5.00	0.00	0.71	0.71
6.20	0.23	0.42	5.00	0.00	0.71	0.71
6.25	0.23	0.42	5.00	0.00	0.71	0.71
6.30	0.23	0.42	5.00	0.00	0.71	0.71
6.35	0.23	0.42	5.00	0.00	0.71	0.71
6.40	0.23	0.42	5.00	0.00	0.71	0.71
6.45	0.24	0.42	5.00	0.00	0.70	0.70
6.50	0.24	0.42	5.00	0.00	0.70	0.70
6.55	0.24	0.42	5.00	0.00	0.70	0.70
6.60	0.24	0.42	5.00	0.00	0.70	0.70
6.65	0.24	0.42	5.00	0.00	0.70	0.70
6.70	0.25	0.42	5.00	0.00	0.70	0.70
6.75	0.25	0.42	5.00	0.00	0.70	0.70
6.80	0.25	0.42	5.00	0.00	0.70	0.70
6.85	0.25	0.42	5.00	0.00	0.70	0.70
6.90	0.25	0.42	5.00	0.00	0.70	0.70
6.95	0.26	0.42	5.00	0.00	0.70	0.70
7.00	0.26	0.42	5.00	0.00	0.70	0.70
7.05	0.26	0.42	5.00	0.00	0.70	0.70
7.10	0.26	0.42	5.00	0.00	0.69	0.69
7.15	0.27	0.42	5.00	0.00	0.69	0.69
7.20	0.27	0.42	5.00	0.00	0.69	0.69
7.25	0.27	0.42	5.00	0.00	0.69	0.69
7.30	0.27	0.42	5.00	0.00	0.69	0.69
7.35	0.28	0.42	5.00	0.00	0.69	0.69
7.40	0.28	0.42	5.00	0.00	0.69	0.69
7.45	0.28	0.42	5.00	0.00	0.69	0.69
7.50	0.29	0.42	5.00	0.00	0.69	0.69
7.55	0.29	0.42	5.00	0.00	0.69	0.69
7.60	0.29	0.42	5.00	0.00	0.69	0.69
7.65	0.30	0.42	5.00	0.00	0.69	0.69
7.70	0.30	0.42	5.00	0.00	0.68	0.68
7.75	0.30	0.42	5.00	0.00	0.68	0.68
7.80	0.31	0.42	5.00	0.00	0.68	0.68
7.85	0.31	0.42	5.00	0.00	0.68	0.68
7.90	0.32	0.42	5.00	0.00	0.68	0.68
7.95	0.32	0.42	5.00	0.00	0.68	0.68
8.00	0.33	0.42	5.00	0.00	0.68	0.68
8.05	0.33	0.42	5.00	0.00	0.68	0.68
8.10	0.34	0.42	5.00	0.00	0.68	0.68
8.15	0.35	0.42	5.00	0.00	0.68	0.68
8.20	0.37	0.42	5.00	0.00	0.68	0.68

Liquefy.sum

8.25	0.41	0.42	5.00	0.00	0.68	0.68
8.30	0.41	0.42	5.00	0.00	0.67	0.67
8.35	0.41	0.42	5.00	0.00	0.67	0.67
8.40	0.41	0.42	5.00	0.00	0.67	0.67
8.45	0.41	0.42	5.00	0.00	0.67	0.67
8.50	0.41	0.42	5.00	0.00	0.67	0.67
8.55	0.41	0.42	5.00	0.00	0.67	0.67
8.60	0.41	0.42	5.00	0.00	0.67	0.67
8.65	0.41	0.42	5.00	0.00	0.67	0.67
8.70	0.41	0.42	5.00	0.00	0.67	0.67
8.75	0.41	0.42	5.00	0.00	0.67	0.67
8.80	0.41	0.42	5.00	0.00	0.67	0.67
8.85	0.41	0.42	5.00	0.00	0.67	0.67
8.90	0.41	0.42	5.00	0.00	0.67	0.67
8.95	0.41	0.42	5.00	0.00	0.67	0.67
9.00	0.41	0.42	5.00	0.00	0.67	0.67
9.05	0.41	0.42	5.00	0.00	0.67	0.67
9.10	0.41	0.42	5.00	0.00	0.67	0.67
9.15	0.41	0.42	5.00	0.00	0.67	0.67
9.20	0.41	0.42	5.00	0.00	0.67	0.67
9.25	0.41	0.42	5.00	0.00	0.67	0.67
9.30	0.41	0.42	5.00	0.00	0.67	0.67
9.35	0.41	0.42	5.00	0.00	0.67	0.67
9.40	0.41	0.42	5.00	0.00	0.67	0.67
9.45	0.41	0.42	5.00	0.00	0.66	0.66
9.50	0.41	0.42	5.00	0.00	0.66	0.66
9.55	0.41	0.42	5.00	0.00	0.66	0.66
9.60	0.41	0.42	5.00	0.00	0.66	0.66
9.65	0.41	0.42	5.00	0.00	0.66	0.66
9.70	0.41	0.42	5.00	0.00	0.66	0.66
9.75	0.41	0.42	5.00	0.00	0.66	0.66
9.80	0.41	0.42	5.00	0.00	0.66	0.66
9.85	0.41	0.42	5.00	0.00	0.66	0.66
9.90	0.41	0.42	5.00	0.00	0.66	0.66
9.95	0.41	0.42	5.00	0.00	0.66	0.66
10.00	0.41	0.42	5.00	0.00	0.66	0.66
10.05	0.41	0.42	5.00	0.00	0.66	0.66
10.10	0.41	0.42	5.00	0.00	0.66	0.66
10.15	0.41	0.42	5.00	0.00	0.66	0.66
10.20	0.41	0.42	5.00	0.00	0.66	0.66
10.25	0.41	0.42	5.00	0.00	0.66	0.66
10.30	0.41	0.42	5.00	0.00	0.66	0.66
10.35	0.41	0.42	5.00	0.00	0.66	0.66
10.40	0.41	0.42	5.00	0.00	0.66	0.66
10.45	0.41	0.42	5.00	0.00	0.66	0.66
10.50	0.41	0.42	5.00	0.00	0.66	0.66
10.55	0.41	0.42	5.00	0.00	0.66	0.66
10.60	0.41	0.42	5.00	0.00	0.66	0.66

Liquefy.sum

10.65	0.41	0.42	5.00	0.00	0.66	0.66
10.70	0.41	0.42	5.00	0.00	0.66	0.66
10.75	0.41	0.42	5.00	0.00	0.66	0.66
10.80	0.41	0.42	5.00	0.00	0.66	0.66
10.85	0.41	0.42	5.00	0.00	0.65	0.65
10.90	0.41	0.42	5.00	0.00	0.65	0.65
10.95	0.41	0.42	5.00	0.00	0.65	0.65
11.00	0.41	0.42	5.00	0.00	0.65	0.65
11.05	0.41	0.42	5.00	0.00	0.65	0.65
11.10	0.41	0.42	5.00	0.00	0.65	0.65
11.15	0.41	0.42	5.00	0.00	0.65	0.65
11.20	0.41	0.42	5.00	0.00	0.65	0.65
11.25	0.41	0.42	5.00	0.00	0.65	0.65
11.30	0.41	0.42	5.00	0.00	0.65	0.65
11.35	0.41	0.42	5.00	0.00	0.65	0.65
11.40	0.41	0.42	5.00	0.00	0.65	0.65
11.45	0.41	0.42	5.00	0.00	0.65	0.65
11.50	0.41	0.42	5.00	0.00	0.65	0.65
11.55	0.41	0.42	5.00	0.00	0.65	0.65
11.60	0.41	0.42	5.00	0.00	0.65	0.65
11.65	0.41	0.42	5.00	0.00	0.65	0.65
11.70	0.41	0.42	5.00	0.00	0.64	0.64
11.75	0.41	0.42	5.00	0.00	0.64	0.64
11.80	0.41	0.42	5.00	0.00	0.64	0.64
11.85	0.41	0.42	5.00	0.00	0.64	0.64
11.90	0.41	0.42	5.00	0.00	0.64	0.64
11.95	0.41	0.41	5.00	0.00	0.64	0.64
12.00	0.41	0.41	5.00	0.00	0.64	0.64
12.05	0.41	0.41	5.00	0.00	0.64	0.64
12.10	0.41	0.41	5.00	0.00	0.64	0.64
12.15	0.37	0.41	5.00	0.00	0.64	0.64
12.20	0.35	0.41	5.00	0.00	0.64	0.64
12.25	0.34	0.41	5.00	0.00	0.64	0.64
12.30	0.33	0.41	5.00	0.00	0.63	0.63
12.35	0.32	0.41	5.00	0.00	0.63	0.63
12.40	0.31	0.41	5.00	0.00	0.63	0.63
12.45	0.31	0.41	5.00	0.00	0.63	0.63
12.50	0.30	0.41	5.00	0.00	0.63	0.63
12.55	0.30	0.41	5.00	0.00	0.63	0.63
12.60	0.29	0.41	5.00	0.00	0.63	0.63
12.65	0.29	0.41	5.00	0.00	0.63	0.63
12.70	0.28	0.41	5.00	0.00	0.63	0.63
12.75	0.28	0.41	5.00	0.00	0.63	0.63
12.80	0.28	0.41	5.00	0.00	0.62	0.62
12.85	0.27	0.41	5.00	0.00	0.62	0.62
12.90	0.27	0.41	5.00	0.00	0.62	0.62
12.95	0.27	0.41	5.00	0.00	0.62	0.62
13.00	0.27	0.41	5.00	0.00	0.62	0.62

Liquefy.sum

13.05	0.26	0.41	5.00	0.00	0.62	0.62
13.10	0.26	0.41	5.00	0.00	0.62	0.62
13.15	0.26	0.41	5.00	0.00	0.62	0.62
13.20	0.25	0.41	5.00	0.00	0.61	0.61
13.25	0.25	0.41	5.00	0.00	0.61	0.61
13.30	0.25	0.41	5.00	0.00	0.61	0.61
13.35	0.25	0.41	5.00	0.00	0.61	0.61
13.40	0.25	0.41	5.00	0.00	0.61	0.61
13.45	0.24	0.41	5.00	0.00	0.61	0.61
13.50	0.24	0.41	5.00	0.00	0.61	0.61
13.55	0.24	0.41	5.00	0.00	0.60	0.60
13.60	0.24	0.41	5.00	0.00	0.60	0.60
13.65	0.23	0.41	5.00	0.00	0.60	0.60
13.70	0.23	0.41	5.00	0.00	0.60	0.60
13.75	0.23	0.41	5.00	0.00	0.60	0.60
13.80	0.23	0.41	5.00	0.00	0.60	0.60
13.85	0.23	0.41	5.00	0.00	0.59	0.59
13.90	0.22	0.41	5.00	0.00	0.59	0.59
13.95	0.22	0.41	5.00	0.00	0.59	0.59
14.00	0.22	0.41	5.00	0.00	0.59	0.59
14.05	0.22	0.41	5.00	0.00	0.59	0.59
14.10	0.22	0.41	5.00	0.00	0.58	0.58
14.15	0.22	0.41	5.00	0.00	0.58	0.58
14.20	0.21	0.41	5.00	0.00	0.58	0.58
14.25	0.21	0.41	5.00	0.00	0.58	0.58
14.30	0.21	0.41	5.00	0.00	0.57	0.57
14.35	0.21	0.41	5.00	0.00	0.57	0.57
14.40	0.21	0.41	5.00	0.00	0.57	0.57
14.45	0.21	0.41	5.00	0.00	0.57	0.57
14.50	0.20	0.41	5.00	0.00	0.57	0.57
14.55	0.20	0.41	5.00	0.00	0.56	0.56
14.60	0.20	0.41	5.00	0.00	0.56	0.56
14.65	0.20	0.41	5.00	0.00	0.56	0.56
14.70	0.20	0.41	5.00	0.00	0.55	0.55
14.75	0.20	0.41	5.00	0.00	0.55	0.55
14.80	0.22	0.41	5.00	0.00	0.55	0.55
14.85	0.22	0.41	5.00	0.00	0.55	0.55
14.90	0.22	0.41	5.00	0.00	0.54	0.54
14.95	0.22	0.41	5.00	0.00	0.54	0.54
15.00	0.22	0.41	5.00	0.00	0.54	0.54
15.05	0.22	0.41	5.00	0.00	0.54	0.54
15.10	0.22	0.41	5.00	0.00	0.54	0.54
15.15	0.22	0.41	5.00	0.00	0.53	0.53
15.20	0.22	0.41	5.00	0.00	0.53	0.53
15.25	0.22	0.41	5.00	0.00	0.53	0.53
15.30	0.22	0.41	5.00	0.00	0.53	0.53
15.35	0.22	0.41	5.00	0.00	0.52	0.52
15.40	0.23	0.41	5.00	0.00	0.52	0.52

Liquefy.sum

15.45	0.23	0.41	5.00	0.00	0.52	0.52
15.50	0.23	0.41	5.00	0.00	0.52	0.52
15.55	0.23	0.41	5.00	0.00	0.52	0.52
15.60	0.23	0.41	5.00	0.00	0.51	0.51
15.65	0.23	0.41	5.00	0.00	0.51	0.51
15.70	0.23	0.41	5.00	0.00	0.51	0.51
15.75	0.24	0.41	5.00	0.00	0.51	0.51
15.80	0.24	0.41	5.00	0.00	0.50	0.50
15.85	0.24	0.41	5.00	0.00	0.50	0.50
15.90	0.24	0.41	5.00	0.00	0.50	0.50
15.95	0.24	0.41	5.00	0.00	0.50	0.50
16.00	0.24	0.41	5.00	0.00	0.50	0.50
16.05	0.24	0.41	5.00	0.00	0.49	0.49
16.10	0.25	0.41	5.00	0.00	0.49	0.49
16.15	0.25	0.41	5.00	0.00	0.49	0.49
16.20	0.25	0.41	5.00	0.00	0.49	0.49
16.25	0.25	0.41	5.00	0.00	0.49	0.49
16.30	0.25	0.41	5.00	0.00	0.48	0.48
16.35	0.25	0.41	5.00	0.00	0.48	0.48
16.40	0.26	0.41	5.00	0.00	0.48	0.48
16.45	0.26	0.41	5.00	0.00	0.48	0.48
16.50	0.26	0.41	5.00	0.00	0.48	0.48
16.55	0.26	0.41	5.00	0.00	0.47	0.47
16.60	0.26	0.41	5.00	0.00	0.47	0.47
16.65	0.26	0.41	5.00	0.00	0.47	0.47
16.70	0.27	0.41	5.00	0.00	0.47	0.47
16.75	0.27	0.41	5.00	0.00	0.47	0.47
16.80	0.27	0.41	5.00	0.00	0.46	0.46
16.85	0.27	0.41	5.00	0.00	0.46	0.46
16.90	0.27	0.41	5.00	0.00	0.46	0.46
16.95	0.27	0.41	5.00	0.00	0.46	0.46
17.00	0.28	0.41	5.00	0.00	0.46	0.46
17.05	0.28	0.41	5.00	0.00	0.45	0.45
17.10	0.28	0.41	5.00	0.00	0.45	0.45
17.15	0.28	0.41	5.00	0.00	0.45	0.45
17.20	0.28	0.41	5.00	0.00	0.45	0.45
17.25	0.29	0.41	5.00	0.00	0.45	0.45
17.30	0.29	0.41	5.00	0.00	0.45	0.45
17.35	0.29	0.41	5.00	0.00	0.44	0.44
17.40	0.29	0.41	5.00	0.00	0.44	0.44
17.45	0.30	0.41	5.00	0.00	0.44	0.44
17.50	0.30	0.41	5.00	0.00	0.44	0.44
17.55	0.30	0.41	5.00	0.00	0.44	0.44
17.60	0.30	0.41	5.00	0.00	0.43	0.43
17.65	0.31	0.41	5.00	0.00	0.43	0.43
17.70	0.31	0.41	5.00	0.00	0.43	0.43
17.75	0.31	0.41	5.00	0.00	0.43	0.43
17.80	0.32	0.41	5.00	0.00	0.43	0.43

Liquefy.sum

17.85	0.32	0.41	5.00	0.00	0.43	0.43
17.90	0.33	0.41	5.00	0.00	0.42	0.42
17.95	0.33	0.41	5.00	0.00	0.42	0.42
18.00	0.34	0.41	5.00	0.00	0.42	0.42
18.05	0.34	0.41	5.00	0.00	0.42	0.42
18.10	0.35	0.41	5.00	0.00	0.42	0.42
18.15	0.36	0.41	5.00	0.00	0.42	0.42
18.20	0.38	0.41	5.00	0.00	0.41	0.41
18.25	0.40	0.41	5.00	0.00	0.41	0.41
18.30	0.41	0.41	5.00	0.00	0.41	0.41
18.35	0.41	0.41	5.00	0.00	0.41	0.41
18.40	0.41	0.41	5.00	0.00	0.41	0.41
18.45	0.41	0.41	5.00	0.00	0.41	0.41
18.50	0.41	0.41	5.00	0.00	0.40	0.40
18.55	0.41	0.41	5.00	0.00	0.40	0.40
18.60	0.41	0.41	5.00	0.00	0.40	0.40
18.65	0.41	0.41	5.00	0.00	0.40	0.40
18.70	0.41	0.41	5.00	0.00	0.40	0.40
18.75	0.41	0.41	5.00	0.00	0.40	0.40
18.80	0.41	0.41	5.00	0.00	0.39	0.39
18.85	0.41	0.41	5.00	0.00	0.39	0.39
18.90	0.41	0.41	5.00	0.00	0.39	0.39
18.95	0.41	0.41	5.00	0.00	0.39	0.39
19.00	0.41	0.41	5.00	0.00	0.39	0.39
19.05	0.41	0.41	5.00	0.00	0.39	0.39
19.10	0.41	0.41	5.00	0.00	0.39	0.39
19.15	0.41	0.41	5.00	0.00	0.38	0.38
19.20	0.41	0.41	5.00	0.00	0.38	0.38
19.25	0.41	0.41	5.00	0.00	0.38	0.38
19.30	0.41	0.41	5.00	0.00	0.38	0.38
19.35	0.41	0.41	5.00	0.00	0.38	0.38
19.40	0.41	0.41	5.00	0.00	0.38	0.38
19.45	0.41	0.41	5.00	0.00	0.37	0.37
19.50	0.41	0.41	5.00	0.00	0.37	0.37
19.55	0.41	0.41	5.00	0.00	0.37	0.37
19.60	0.41	0.41	5.00	0.00	0.37	0.37
19.65	0.41	0.41	5.00	0.00	0.37	0.37
19.70	0.41	0.41	5.00	0.00	0.37	0.37
19.75	0.41	0.41	5.00	0.00	0.37	0.37
19.80	0.41	0.41	5.00	0.00	0.36	0.36
19.85	0.41	0.41	5.00	0.00	0.36	0.36
19.90	0.41	0.41	5.00	0.00	0.36	0.36
19.95	0.41	0.41	5.00	0.00	0.36	0.36
20.00	0.41	0.41	5.00	0.00	0.36	0.36
20.05	0.41	0.41	5.00	0.00	0.36	0.36
20.10	0.41	0.41	5.00	0.00	0.36	0.36
20.15	0.41	0.41	5.00	0.00	0.35	0.35
20.20	0.41	0.41	5.00	0.00	0.35	0.35

Liquefy.sum

20.25	0.41	0.41	5.00	0.00	0.35	0.35
20.30	0.41	0.41	5.00	0.00	0.35	0.35
20.35	0.41	0.41	5.00	0.00	0.35	0.35
20.40	0.41	0.41	5.00	0.00	0.35	0.35
20.45	0.41	0.41	5.00	0.00	0.35	0.35
20.50	0.41	0.41	5.00	0.00	0.35	0.35
20.55	0.41	0.41	5.00	0.00	0.35	0.35
20.60	0.41	0.41	5.00	0.00	0.35	0.35
20.65	0.41	0.41	5.00	0.00	0.35	0.35
20.70	0.41	0.41	5.00	0.00	0.35	0.35
20.75	0.41	0.41	5.00	0.00	0.35	0.35
20.80	0.41	0.41	5.00	0.00	0.35	0.35
20.85	0.41	0.41	5.00	0.00	0.35	0.35
20.90	0.41	0.41	5.00	0.00	0.34	0.34
20.95	0.41	0.41	5.00	0.00	0.34	0.34
21.00	0.41	0.41	5.00	0.00	0.34	0.34
21.05	0.41	0.41	5.00	0.00	0.34	0.34
21.10	0.41	0.41	5.00	0.00	0.34	0.34
21.15	0.41	0.41	5.00	0.00	0.34	0.34
21.20	0.41	0.41	5.00	0.00	0.34	0.34
21.25	0.41	0.41	5.00	0.00	0.34	0.34
21.30	0.41	0.41	5.00	0.00	0.34	0.34
21.35	0.41	0.41	5.00	0.00	0.34	0.34
21.40	0.41	0.41	5.00	0.00	0.34	0.34
21.45	0.41	0.41	5.00	0.00	0.34	0.34
21.50	0.41	0.41	5.00	0.00	0.34	0.34
21.55	0.41	0.41	5.00	0.00	0.34	0.34
21.60	0.41	0.41	5.00	0.00	0.34	0.34
21.65	0.41	0.41	5.00	0.00	0.34	0.34
21.70	0.41	0.41	5.00	0.00	0.34	0.34
21.75	0.41	0.41	5.00	0.00	0.34	0.34
21.80	0.41	0.41	5.00	0.00	0.34	0.34
21.85	0.41	0.41	5.00	0.00	0.34	0.34
21.90	0.41	0.41	5.00	0.00	0.34	0.34
21.95	0.41	0.41	5.00	0.00	0.33	0.33
22.00	0.41	0.40	5.00	0.00	0.33	0.33
22.05	0.41	0.40	5.00	0.00	0.33	0.33
22.10	0.41	0.40	5.00	0.00	0.33	0.33
22.15	0.41	0.40	5.00	0.00	0.33	0.33
22.20	0.41	0.40	5.00	0.00	0.33	0.33
22.25	0.41	0.40	5.00	0.00	0.33	0.33
22.30	0.41	0.40	5.00	0.00	0.33	0.33
22.35	0.41	0.40	5.00	0.00	0.33	0.33
22.40	0.41	0.40	5.00	0.00	0.33	0.33
22.45	0.41	0.40	5.00	0.00	0.33	0.33
22.50	0.41	0.40	5.00	0.00	0.33	0.33
22.55	0.41	0.40	5.00	0.00	0.33	0.33
22.60	0.41	0.40	5.00	0.00	0.33	0.33

Liquefy.sum

22.65	0.41	0.40	5.00	0.00	0.33	0.33
22.70	0.41	0.40	5.00	0.00	0.33	0.33
22.75	0.41	0.40	5.00	0.00	0.33	0.33
22.80	0.41	0.40	5.00	0.00	0.33	0.33
22.85	0.41	0.40	5.00	0.00	0.33	0.33
22.90	0.41	0.40	5.00	0.00	0.33	0.33
22.95	0.41	0.40	5.00	0.00	0.33	0.33
23.00	0.41	0.40	5.00	0.00	0.33	0.33
23.05	0.41	0.40	5.00	0.00	0.33	0.33
23.10	0.41	0.40	5.00	0.00	0.33	0.33
23.15	0.41	0.40	5.00	0.00	0.33	0.33
23.20	0.41	0.40	5.00	0.00	0.32	0.32
23.25	0.41	0.40	5.00	0.00	0.32	0.32
23.30	0.41	0.40	5.00	0.00	0.32	0.32
23.35	0.41	0.40	5.00	0.00	0.32	0.32
23.40	0.41	0.40	5.00	0.00	0.32	0.32
23.45	0.41	0.40	5.00	0.00	0.32	0.32
23.50	0.41	0.40	5.00	0.00	0.32	0.32
23.55	0.41	0.40	5.00	0.00	0.32	0.32
23.60	0.41	0.40	5.00	0.00	0.32	0.32
23.65	0.41	0.40	5.00	0.00	0.32	0.32
23.70	0.41	0.40	5.00	0.00	0.32	0.32
23.75	0.41	0.40	5.00	0.00	0.32	0.32
23.80	0.41	0.40	5.00	0.00	0.32	0.32
23.85	0.41	0.40	5.00	0.00	0.32	0.32
23.90	0.41	0.40	5.00	0.00	0.32	0.32
23.95	0.41	0.40	5.00	0.00	0.32	0.32
24.00	0.41	0.40	5.00	0.00	0.32	0.32
24.05	0.41	0.40	5.00	0.00	0.32	0.32
24.10	0.41	0.40	5.00	0.00	0.32	0.32
24.15	0.41	0.40	5.00	0.00	0.32	0.32
24.20	0.41	0.40	5.00	0.00	0.32	0.32
24.25	0.41	0.40	5.00	0.00	0.32	0.32
24.30	0.41	0.40	5.00	0.00	0.32	0.32
24.35	0.41	0.40	5.00	0.00	0.32	0.32
24.40	0.41	0.40	5.00	0.00	0.32	0.32
24.45	0.41	0.40	5.00	0.00	0.32	0.32
24.50	0.41	0.40	5.00	0.00	0.31	0.31
24.55	0.41	0.40	5.00	0.00	0.31	0.31
24.60	0.41	0.40	5.00	0.00	0.31	0.31
24.65	0.41	0.40	5.00	0.00	0.31	0.31
24.70	0.41	0.40	5.00	0.00	0.31	0.31
24.75	0.41	0.40	5.00	0.00	0.31	0.31
24.80	0.41	0.40	5.00	0.00	0.31	0.31
24.85	0.41	0.40	5.00	0.00	0.31	0.31
24.90	0.41	0.40	5.00	0.00	0.31	0.31
24.95	0.41	0.40	5.00	0.00	0.31	0.31
25.00	0.41	0.40	5.00	0.00	0.31	0.31

Liquefy.sum

25.05	0.41	0.40	5.00	0.00	0.31	0.31
25.10	0.41	0.40	5.00	0.00	0.31	0.31
25.15	0.41	0.40	5.00	0.00	0.31	0.31
25.20	0.41	0.40	5.00	0.00	0.31	0.31
25.25	0.41	0.40	5.00	0.00	0.31	0.31
25.30	0.41	0.40	5.00	0.00	0.31	0.31
25.35	0.41	0.40	5.00	0.00	0.31	0.31
25.40	0.41	0.40	5.00	0.00	0.31	0.31
25.45	0.41	0.40	5.00	0.00	0.31	0.31
25.50	0.41	0.40	5.00	0.00	0.31	0.31
25.55	0.41	0.40	5.00	0.00	0.31	0.31
25.60	0.41	0.40	5.00	0.00	0.31	0.31
25.65	0.41	0.40	5.00	0.00	0.31	0.31
25.70	0.41	0.40	5.00	0.00	0.31	0.31
25.75	0.41	0.40	5.00	0.00	0.31	0.31
25.80	0.41	0.40	5.00	0.00	0.30	0.30
25.85	0.41	0.40	5.00	0.00	0.30	0.30
25.90	0.41	0.40	5.00	0.00	0.30	0.30
25.95	0.41	0.40	5.00	0.00	0.30	0.30
26.00	0.41	0.40	5.00	0.00	0.30	0.30
26.05	0.41	0.40	5.00	0.00	0.30	0.30
26.10	0.41	0.40	5.00	0.00	0.30	0.30
26.15	0.41	0.40	5.00	0.00	0.30	0.30
26.20	0.41	0.40	5.00	0.00	0.30	0.30
26.25	0.41	0.40	5.00	0.00	0.30	0.30
26.30	0.41	0.40	5.00	0.00	0.30	0.30
26.35	0.41	0.40	5.00	0.00	0.30	0.30
26.40	0.41	0.40	5.00	0.00	0.30	0.30
26.45	0.41	0.40	5.00	0.00	0.30	0.30
26.50	0.41	0.40	5.00	0.00	0.30	0.30
26.55	0.41	0.40	5.00	0.00	0.30	0.30
26.60	0.41	0.40	5.00	0.00	0.30	0.30
26.65	0.41	0.40	5.00	0.00	0.30	0.30
26.70	0.41	0.40	5.00	0.00	0.30	0.30
26.75	0.41	0.40	5.00	0.00	0.30	0.30
26.80	0.41	0.40	5.00	0.00	0.30	0.30
26.85	0.41	0.40	5.00	0.00	0.30	0.30
26.90	0.41	0.40	5.00	0.00	0.30	0.30
26.95	0.41	0.40	5.00	0.00	0.29	0.29
27.00	0.41	0.40	5.00	0.00	0.29	0.29
27.05	0.41	0.40	5.00	0.00	0.29	0.29
27.10	0.41	0.40	5.00	0.00	0.29	0.29
27.15	0.41	0.40	5.00	0.00	0.29	0.29
27.20	0.41	0.40	5.00	0.00	0.29	0.29
27.25	0.41	0.40	5.00	0.00	0.29	0.29
27.30	0.41	0.40	5.00	0.00	0.29	0.29
27.35	0.41	0.40	5.00	0.00	0.29	0.29
27.40	0.41	0.40	5.00	0.00	0.29	0.29

Liquefy.sum

27.45	0.41	0.40	5.00	0.00	0.29	0.29
27.50	0.41	0.40	5.00	0.00	0.29	0.29
27.55	0.41	0.40	5.00	0.00	0.29	0.29
27.60	0.41	0.40	5.00	0.00	0.29	0.29
27.65	0.41	0.40	5.00	0.00	0.29	0.29
27.70	0.41	0.40	5.00	0.00	0.29	0.29
27.75	0.41	0.40	5.00	0.00	0.29	0.29
27.80	0.41	0.40	5.00	0.00	0.29	0.29
27.85	0.41	0.40	5.00	0.00	0.29	0.29
27.90	0.41	0.40	5.00	0.00	0.29	0.29
27.95	0.41	0.40	5.00	0.00	0.29	0.29
28.00	0.41	0.40	5.00	0.00	0.28	0.28
28.05	0.41	0.40	5.00	0.00	0.28	0.28
28.10	0.41	0.40	5.00	0.00	0.28	0.28
28.15	0.41	0.40	5.00	0.00	0.28	0.28
28.20	0.41	0.40	5.00	0.00	0.28	0.28
28.25	0.41	0.40	5.00	0.00	0.28	0.28
28.30	0.41	0.40	5.00	0.00	0.28	0.28
28.35	0.41	0.40	5.00	0.00	0.28	0.28
28.40	0.41	0.40	5.00	0.00	0.28	0.28
28.45	0.41	0.40	5.00	0.00	0.28	0.28
28.50	0.41	0.40	5.00	0.00	0.28	0.28
28.55	0.41	0.40	5.00	0.00	0.28	0.28
28.60	0.41	0.40	5.00	0.00	0.28	0.28
28.65	0.41	0.40	5.00	0.00	0.28	0.28
28.70	0.41	0.40	5.00	0.00	0.28	0.28
28.75	0.41	0.40	5.00	0.00	0.28	0.28
28.80	0.41	0.40	5.00	0.00	0.28	0.28
28.85	0.41	0.40	5.00	0.00	0.28	0.28
28.90	0.41	0.40	5.00	0.00	0.27	0.27
28.95	0.41	0.40	5.00	0.00	0.27	0.27
29.00	0.41	0.40	5.00	0.00	0.27	0.27
29.05	0.41	0.40	5.00	0.00	0.27	0.27
29.10	0.41	0.40	5.00	0.00	0.27	0.27
29.15	0.41	0.40	5.00	0.00	0.27	0.27
29.20	0.41	0.40	5.00	0.00	0.27	0.27
29.25	0.41	0.40	5.00	0.00	0.27	0.27
29.30	0.41	0.40	5.00	0.00	0.27	0.27
29.35	0.41	0.40	5.00	0.00	0.27	0.27
29.40	0.41	0.40	5.00	0.00	0.27	0.27
29.45	0.41	0.40	5.00	0.00	0.27	0.27
29.50	0.41	0.40	5.00	0.00	0.27	0.27
29.55	0.41	0.40	5.00	0.00	0.27	0.27
29.60	0.41	0.40	5.00	0.00	0.27	0.27
29.65	0.41	0.40	5.00	0.00	0.26	0.26
29.70	0.41	0.40	5.00	0.00	0.26	0.26
29.75	0.41	0.40	5.00	0.00	0.26	0.26
29.80	0.41	0.40	5.00	0.00	0.26	0.26

Liquefy.sum

29.85	0.41	0.40	5.00	0.00	0.26	0.26
29.90	0.41	0.40	5.00	0.00	0.26	0.26
29.95	0.41	0.40	5.00	0.00	0.26	0.26
30.00	0.41	0.40	5.00	0.00	0.26	0.26
30.05	0.41	0.40	5.00	0.00	0.26	0.26
30.10	0.41	0.40	5.00	0.00	0.26	0.26
30.15	0.41	0.40	5.00	0.00	0.26	0.26
30.20	0.41	0.40	5.00	0.00	0.26	0.26
30.25	0.41	0.40	5.00	0.00	0.25	0.25
30.30	0.41	0.40	5.00	0.00	0.25	0.25
30.35	0.41	0.40	5.00	0.00	0.25	0.25
30.40	0.41	0.40	5.00	0.00	0.25	0.25
30.45	0.41	0.40	5.00	0.00	0.25	0.25
30.50	0.41	0.40	5.00	0.00	0.25	0.25
30.55	0.41	0.40	5.00	0.00	0.25	0.25
30.60	0.41	0.39	5.00	0.00	0.25	0.25
30.65	0.41	0.39	5.00	0.00	0.25	0.25
30.70	0.41	0.39	5.00	0.00	0.25	0.25
30.75	0.41	0.39	5.00	0.00	0.25	0.25
30.80	0.41	0.39	5.00	0.00	0.25	0.25
30.85	0.41	0.39	5.00	0.00	0.25	0.25
30.90	0.41	0.39	5.00	0.00	0.24	0.24
30.95	0.41	0.39	5.00	0.00	0.24	0.24
31.00	0.41	0.39	5.00	0.00	0.24	0.24
31.05	0.41	0.39	5.00	0.00	0.24	0.24
31.10	0.41	0.39	5.00	0.00	0.24	0.24
31.15	0.41	0.39	5.00	0.00	0.24	0.24
31.20	0.41	0.39	5.00	0.00	0.24	0.24
31.25	0.41	0.39	5.00	0.00	0.24	0.24
31.30	0.41	0.39	5.00	0.00	0.24	0.24
31.35	0.41	0.39	5.00	0.00	0.24	0.24
31.40	0.41	0.39	5.00	0.00	0.24	0.24
31.45	0.41	0.39	5.00	0.00	0.24	0.24
31.50	0.41	0.39	5.00	0.00	0.24	0.24
31.55	0.41	0.39	5.00	0.00	0.23	0.23
31.60	0.41	0.39	5.00	0.00	0.23	0.23
31.65	0.41	0.39	5.00	0.00	0.23	0.23
31.70	0.41	0.39	5.00	0.00	0.23	0.23
31.75	0.41	0.39	5.00	0.00	0.23	0.23
31.80	0.41	0.39	5.00	0.00	0.23	0.23
31.85	0.41	0.39	5.00	0.00	0.23	0.23
31.90	0.41	0.39	5.00	0.00	0.23	0.23
31.95	0.41	0.39	5.00	0.00	0.23	0.23
32.00	0.41	0.39	5.00	0.00	0.23	0.23
32.05	0.41	0.39	5.00	0.00	0.23	0.23
32.10	0.41	0.39	5.00	0.00	0.23	0.23
32.15	0.41	0.39	5.00	0.00	0.23	0.23
32.20	0.41	0.39	5.00	0.00	0.23	0.23

Liquefy.sum

32.25	0.41	0.39	5.00	0.00	0.23	0.23
32.30	0.41	0.39	5.00	0.00	0.22	0.22
32.35	0.41	0.39	5.00	0.00	0.22	0.22
32.40	0.40	0.39	5.00	0.00	0.22	0.22
32.45	0.40	0.39	5.00	0.00	0.22	0.22
32.50	0.40	0.39	5.00	0.00	0.22	0.22
32.55	0.40	0.39	5.00	0.00	0.22	0.22
32.60	0.40	0.39	5.00	0.00	0.22	0.22
32.65	0.40	0.39	5.00	0.00	0.22	0.22
32.70	0.40	0.39	5.00	0.00	0.22	0.22
32.75	0.40	0.39	5.00	0.00	0.22	0.22
32.80	0.40	0.39	5.00	0.00	0.22	0.22
32.85	0.40	0.39	5.00	0.00	0.22	0.22
32.90	0.40	0.39	5.00	0.00	0.22	0.22
32.95	0.40	0.39	5.00	0.00	0.22	0.22
33.00	0.40	0.39	5.00	0.00	0.22	0.22
33.05	0.40	0.39	5.00	0.00	0.22	0.22
33.10	0.40	0.39	5.00	0.00	0.22	0.22
33.15	0.40	0.39	5.00	0.00	0.21	0.21
33.20	0.40	0.39	5.00	0.00	0.21	0.21
33.25	0.40	0.39	5.00	0.00	0.21	0.21
33.30	0.40	0.39	5.00	0.00	0.21	0.21
33.35	0.40	0.39	5.00	0.00	0.21	0.21
33.40	0.40	0.39	5.00	0.00	0.21	0.21
33.45	0.40	0.38	5.00	0.00	0.21	0.21
33.50	0.40	0.38	5.00	0.00	0.21	0.21
33.55	0.40	0.38	5.00	0.00	0.21	0.21
33.60	0.40	0.38	5.00	0.00	0.21	0.21
33.65	0.40	0.38	5.00	0.00	0.21	0.21
33.70	0.40	0.38	5.00	0.00	0.21	0.21
33.75	0.40	0.38	5.00	0.00	0.21	0.21
33.80	0.40	0.38	5.00	0.00	0.21	0.21
33.85	0.40	0.38	5.00	0.00	0.21	0.21
33.90	0.40	0.38	5.00	0.00	0.21	0.21
33.95	0.40	0.38	5.00	0.00	0.21	0.21
34.00	0.40	0.38	5.00	0.00	0.21	0.21
34.05	0.40	0.38	5.00	0.00	0.20	0.20
34.10	0.40	0.38	5.00	0.00	0.20	0.20
34.15	0.40	0.38	5.00	0.00	0.20	0.20
34.20	0.40	0.38	5.00	0.00	0.20	0.20
34.25	0.40	0.38	5.00	0.00	0.20	0.20
34.30	0.40	0.38	5.00	0.00	0.20	0.20
34.35	0.40	0.38	5.00	0.00	0.20	0.20
34.40	0.40	0.38	5.00	0.00	0.20	0.20
34.45	0.40	0.38	5.00	0.00	0.20	0.20
34.50	0.40	0.38	5.00	0.00	0.20	0.20
34.55	0.40	0.38	5.00	0.00	0.20	0.20
34.60	0.40	0.38	5.00	0.00	0.20	0.20

Liquefy.sum

34.65	0.40	0.38	5.00	0.00	0.20	0.20
34.70	0.40	0.38	5.00	0.00	0.20	0.20
34.75	0.40	0.38	5.00	0.00	0.20	0.20
34.80	0.40	0.38	5.00	0.00	0.20	0.20
34.85	0.40	0.38	5.00	0.00	0.20	0.20
34.90	0.40	0.38	5.00	0.00	0.20	0.20
34.95	0.40	0.38	5.00	0.00	0.19	0.19
35.00	0.40	0.38	5.00	0.00	0.19	0.19
35.05	0.40	0.38	5.00	0.00	0.19	0.19
35.10	0.40	0.38	5.00	0.00	0.19	0.19
35.15	0.40	0.38	5.00	0.00	0.19	0.19
35.20	0.40	0.38	5.00	0.00	0.19	0.19
35.25	0.40	0.38	5.00	0.00	0.19	0.19
35.30	0.40	0.38	5.00	0.00	0.19	0.19
35.35	0.40	0.38	5.00	0.00	0.19	0.19
35.40	0.40	0.38	5.00	0.00	0.19	0.19
35.45	0.40	0.38	5.00	0.00	0.19	0.19
35.50	0.40	0.38	5.00	0.00	0.19	0.19
35.55	0.40	0.38	5.00	0.00	0.19	0.19
35.60	0.40	0.38	5.00	0.00	0.19	0.19
35.65	0.40	0.38	5.00	0.00	0.19	0.19
35.70	0.40	0.38	5.00	0.00	0.19	0.19
35.75	0.40	0.38	5.00	0.00	0.19	0.19
35.80	0.40	0.38	5.00	0.00	0.19	0.19
35.85	0.40	0.38	5.00	0.00	0.19	0.19
35.90	0.40	0.38	5.00	0.00	0.18	0.18
35.95	0.40	0.38	5.00	0.00	0.18	0.18
36.00	0.40	0.38	5.00	0.00	0.18	0.18
36.05	0.40	0.38	5.00	0.00	0.18	0.18
36.10	0.40	0.38	5.00	0.00	0.18	0.18
36.15	0.40	0.38	5.00	0.00	0.18	0.18
36.20	0.40	0.38	5.00	0.00	0.18	0.18
36.25	0.40	0.38	5.00	0.00	0.18	0.18
36.30	0.40	0.38	5.00	0.00	0.18	0.18
36.35	0.40	0.37	5.00	0.00	0.18	0.18
36.40	0.40	0.37	5.00	0.00	0.18	0.18
36.45	0.40	0.37	5.00	0.00	0.18	0.18
36.50	0.40	0.37	5.00	0.00	0.18	0.18
36.55	0.40	0.37	5.00	0.00	0.18	0.18
36.60	0.40	0.37	5.00	0.00	0.18	0.18
36.65	0.40	0.37	5.00	0.00	0.18	0.18
36.70	0.40	0.37	5.00	0.00	0.18	0.18
36.75	0.40	0.37	5.00	0.00	0.17	0.17
36.80	0.40	0.37	5.00	0.00	0.17	0.17
36.85	0.40	0.37	5.00	0.00	0.17	0.17
36.90	0.40	0.37	5.00	0.00	0.17	0.17
36.95	0.40	0.37	5.00	0.00	0.17	0.17
37.00	0.40	0.37	5.00	0.00	0.17	0.17

Liquefy.sum

37.05	0.40	0.37	5.00	0.00	0.17	0.17
37.10	0.40	0.37	5.00	0.00	0.17	0.17
37.15	0.40	0.37	5.00	0.00	0.17	0.17
37.20	0.40	0.37	5.00	0.00	0.17	0.17
37.25	0.40	0.37	5.00	0.00	0.17	0.17
37.30	0.40	0.37	5.00	0.00	0.17	0.17
37.35	0.40	0.37	5.00	0.00	0.17	0.17
37.40	0.40	0.37	5.00	0.00	0.17	0.17
37.45	0.40	0.37	5.00	0.00	0.17	0.17
37.50	0.39	0.37	5.00	0.00	0.17	0.17
37.55	0.39	0.37	5.00	0.00	0.17	0.17
37.60	0.39	0.37	5.00	0.00	0.16	0.16
37.65	0.39	0.37	5.00	0.00	0.16	0.16
37.70	0.39	0.37	5.00	0.00	0.16	0.16
37.75	0.39	0.37	5.00	0.00	0.16	0.16
37.80	0.39	0.37	5.00	0.00	0.16	0.16
37.85	0.39	0.37	5.00	0.00	0.16	0.16
37.90	0.39	0.37	5.00	0.00	0.16	0.16
37.95	0.39	0.37	5.00	0.00	0.16	0.16
38.00	0.39	0.37	5.00	0.00	0.16	0.16
38.05	0.39	0.37	5.00	0.00	0.16	0.16
38.10	0.39	0.37	5.00	0.00	0.16	0.16
38.15	0.39	0.37	5.00	0.00	0.16	0.16
38.20	0.39	0.37	5.00	0.00	0.16	0.16
38.25	0.39	0.37	5.00	0.00	0.16	0.16
38.30	0.39	0.37	5.00	0.00	0.16	0.16
38.35	0.39	0.37	5.00	0.00	0.16	0.16
38.40	0.39	0.37	5.00	0.00	0.15	0.15
38.45	0.39	0.37	5.00	0.00	0.15	0.15
38.50	0.39	0.37	5.00	0.00	0.15	0.15
38.55	0.39	0.37	5.00	0.00	0.15	0.15
38.60	0.39	0.37	5.00	0.00	0.15	0.15
38.65	0.39	0.37	5.00	0.00	0.15	0.15
38.70	0.39	0.37	5.00	0.00	0.15	0.15
38.75	0.39	0.37	5.00	0.00	0.15	0.15
38.80	0.39	0.37	5.00	0.00	0.15	0.15
38.85	0.39	0.37	5.00	0.00	0.15	0.15
38.90	0.39	0.37	5.00	0.00	0.15	0.15
38.95	0.39	0.37	5.00	0.00	0.15	0.15
39.00	0.39	0.37	5.00	0.00	0.15	0.15
39.05	0.39	0.37	5.00	0.00	0.15	0.15
39.10	0.39	0.37	5.00	0.00	0.15	0.15
39.15	0.39	0.37	5.00	0.00	0.14	0.14
39.20	0.39	0.36	5.00	0.00	0.14	0.14
39.25	0.39	0.36	5.00	0.00	0.14	0.14
39.30	0.39	0.36	5.00	0.00	0.14	0.14
39.35	0.39	0.36	5.00	0.00	0.14	0.14
39.40	0.39	0.36	5.00	0.00	0.14	0.14

Liquefy.sum

39.45	0.39	0.36	5.00	0.00	0.14	0.14
39.50	0.39	0.36	5.00	0.00	0.14	0.14
39.55	0.39	0.36	5.00	0.00	0.14	0.14
39.60	0.39	0.36	5.00	0.00	0.14	0.14
39.65	0.39	0.36	5.00	0.00	0.14	0.14
39.70	0.39	0.36	5.00	0.00	0.14	0.14
39.75	0.39	0.36	5.00	0.00	0.14	0.14
39.80	0.39	0.36	5.00	0.00	0.14	0.14
39.85	0.39	0.36	5.00	0.00	0.13	0.13
39.90	0.39	0.36	5.00	0.00	0.13	0.13
39.95	0.39	0.36	5.00	0.00	0.13	0.13
40.00	0.39	0.36	5.00	0.00	0.13	0.13
40.05	0.39	0.36	5.00	0.00	0.13	0.13
40.10	0.39	0.36	5.00	0.00	0.13	0.13
40.15	0.39	0.36	5.00	0.00	0.13	0.13
40.20	0.39	0.36	5.00	0.00	0.13	0.13
40.25	0.39	0.36	5.00	0.00	0.13	0.13
40.30	0.39	0.36	5.00	0.00	0.13	0.13
40.35	0.39	0.36	5.00	0.00	0.13	0.13
40.40	0.39	0.36	5.00	0.00	0.13	0.13
40.45	0.39	0.36	5.00	0.00	0.13	0.13
40.50	0.39	0.36	5.00	0.00	0.12	0.12
40.55	0.39	0.36	5.00	0.00	0.12	0.12
40.60	0.39	0.36	5.00	0.00	0.12	0.12
40.65	0.39	0.36	5.00	0.00	0.12	0.12
40.70	0.39	0.36	5.00	0.00	0.12	0.12
40.75	0.39	0.36	5.00	0.00	0.12	0.12
40.80	0.39	0.36	5.00	0.00	0.12	0.12
40.85	0.39	0.36	5.00	0.00	0.12	0.12
40.90	0.39	0.36	5.00	0.00	0.12	0.12
40.95	0.39	0.36	5.00	0.00	0.12	0.12
41.00	0.39	0.36	5.00	0.00	0.12	0.12
41.05	0.39	0.36	5.00	0.00	0.12	0.12
41.10	0.39	0.36	5.00	0.00	0.11	0.11
41.15	0.39	0.36	5.00	0.00	0.11	0.11
41.20	0.39	0.36	5.00	0.00	0.11	0.11
41.25	0.39	0.36	5.00	0.00	0.11	0.11
41.30	0.39	0.36	5.00	0.00	0.11	0.11
41.35	0.39	0.36	5.00	0.00	0.11	0.11
41.40	0.39	0.36	5.00	0.00	0.11	0.11
41.45	0.39	0.36	5.00	0.00	0.11	0.11
41.50	0.39	0.36	5.00	0.00	0.11	0.11
41.55	0.39	0.36	5.00	0.00	0.11	0.11
41.60	0.39	0.36	5.00	0.00	0.11	0.11
41.65	0.39	0.36	5.00	0.00	0.11	0.11
41.70	0.39	0.36	5.00	0.00	0.10	0.10
41.75	0.39	0.36	5.00	0.00	0.10	0.10
41.80	0.39	0.36	5.00	0.00	0.10	0.10

Liquefy.sum

41.85	0.39	0.36	5.00	0.00	0.10	0.10
41.90	0.39	0.36	5.00	0.00	0.10	0.10
41.95	0.39	0.36	5.00	0.00	0.10	0.10
42.00	0.39	0.36	5.00	0.00	0.10	0.10
42.05	0.39	0.36	5.00	0.00	0.10	0.10
42.10	0.39	0.35	5.00	0.00	0.10	0.10
42.15	0.39	0.35	5.00	0.00	0.10	0.10
42.20	0.39	0.35	5.00	0.00	0.10	0.10
42.25	0.39	0.35	5.00	0.00	0.10	0.10
42.30	0.39	0.35	5.00	0.00	0.09	0.09
42.35	0.39	0.35	5.00	0.00	0.09	0.09
42.40	0.39	0.35	5.00	0.00	0.09	0.09
42.45	0.39	0.35	5.00	0.00	0.09	0.09
42.50	0.39	0.35	5.00	0.00	0.09	0.09
42.55	0.39	0.35	5.00	0.00	0.09	0.09
42.60	0.39	0.35	5.00	0.00	0.09	0.09
42.65	0.39	0.35	5.00	0.00	0.09	0.09
42.70	0.39	0.35	5.00	0.00	0.09	0.09
42.75	0.39	0.35	5.00	0.00	0.09	0.09
42.80	0.39	0.35	5.00	0.00	0.09	0.09
42.85	0.38	0.35	5.00	0.00	0.08	0.08
42.90	0.38	0.35	5.00	0.00	0.08	0.08
42.95	0.38	0.35	5.00	0.00	0.08	0.08
43.00	0.38	0.35	5.00	0.00	0.08	0.08
43.05	0.38	0.35	5.00	0.00	0.08	0.08
43.10	0.38	0.35	5.00	0.00	0.08	0.08
43.15	0.38	0.35	5.00	0.00	0.08	0.08
43.20	0.38	0.35	5.00	0.00	0.08	0.08
43.25	0.38	0.35	5.00	0.00	0.08	0.08
43.30	0.38	0.35	5.00	0.00	0.08	0.08
43.35	0.38	0.35	5.00	0.00	0.08	0.08
43.40	0.38	0.35	5.00	0.00	0.08	0.08
43.45	0.38	0.35	5.00	0.00	0.08	0.08
43.50	0.38	0.35	5.00	0.00	0.07	0.07
43.55	0.38	0.35	5.00	0.00	0.07	0.07
43.60	0.38	0.35	5.00	0.00	0.07	0.07
43.65	0.38	0.35	5.00	0.00	0.07	0.07
43.70	0.38	0.35	5.00	0.00	0.07	0.07
43.75	0.38	0.35	5.00	0.00	0.07	0.07
43.80	0.38	0.35	5.00	0.00	0.07	0.07
43.85	0.38	0.35	5.00	0.00	0.07	0.07
43.90	0.38	0.35	5.00	0.00	0.07	0.07
43.95	0.38	0.35	5.00	0.00	0.07	0.07
44.00	0.38	0.35	5.00	0.00	0.07	0.07
44.05	0.38	0.35	5.00	0.00	0.07	0.07
44.10	0.38	0.35	5.00	0.00	0.07	0.07
44.15	0.38	0.35	5.00	0.00	0.07	0.07
44.20	0.38	0.35	5.00	0.00	0.07	0.07

Liquefy.sum

44.25	0.38	0.35	5.00	0.00	0.07	0.07
44.30	0.38	0.35	5.00	0.00	0.07	0.07
44.35	0.38	0.35	5.00	0.00	0.06	0.06
44.40	0.38	0.35	5.00	0.00	0.06	0.06
44.45	0.38	0.35	5.00	0.00	0.06	0.06
44.50	0.38	0.35	5.00	0.00	0.06	0.06
44.55	0.38	0.35	5.00	0.00	0.06	0.06
44.60	0.38	0.35	5.00	0.00	0.06	0.06
44.65	0.38	0.35	5.00	0.00	0.06	0.06
44.70	0.38	0.35	5.00	0.00	0.06	0.06
44.75	0.38	0.35	5.00	0.00	0.06	0.06
44.80	0.38	0.35	5.00	0.00	0.06	0.06
44.85	0.38	0.35	5.00	0.00	0.06	0.06
44.90	0.38	0.35	5.00	0.00	0.06	0.06
44.95	0.38	0.34	5.00	0.00	0.06	0.06
45.00	0.38	0.34	5.00	0.00	0.06	0.06
45.05	0.38	0.34	5.00	0.00	0.06	0.06
45.10	0.38	0.34	5.00	0.00	0.06	0.06
45.15	0.38	0.34	5.00	0.00	0.05	0.05
45.20	0.38	0.34	5.00	0.00	0.05	0.05
45.25	0.38	0.34	5.00	0.00	0.05	0.05
45.30	0.38	0.34	5.00	0.00	0.05	0.05
45.35	0.38	0.34	5.00	0.00	0.05	0.05
45.40	0.38	0.34	5.00	0.00	0.05	0.05
45.45	0.38	0.34	5.00	0.00	0.05	0.05
45.50	0.38	0.34	5.00	0.00	0.05	0.05
45.55	0.38	0.34	5.00	0.00	0.05	0.05
45.60	0.38	0.34	5.00	0.00	0.05	0.05
45.65	0.38	0.34	5.00	0.00	0.05	0.05
45.70	0.38	0.34	5.00	0.00	0.05	0.05
45.75	0.38	0.34	5.00	0.00	0.05	0.05
45.80	0.38	0.34	5.00	0.00	0.05	0.05
45.85	0.38	0.34	5.00	0.00	0.05	0.05
45.90	0.38	0.34	5.00	0.00	0.05	0.05
45.95	0.38	0.34	5.00	0.00	0.05	0.05
46.00	0.38	0.34	5.00	0.00	0.05	0.05
46.05	0.38	0.34	5.00	0.00	0.04	0.04
46.10	0.38	0.34	5.00	0.00	0.04	0.04
46.15	0.38	0.34	5.00	0.00	0.04	0.04
46.20	0.38	0.34	5.00	0.00	0.04	0.04
46.25	0.38	0.34	5.00	0.00	0.04	0.04
46.30	0.38	0.34	5.00	0.00	0.04	0.04
46.35	0.38	0.34	5.00	0.00	0.04	0.04
46.40	0.38	0.34	5.00	0.00	0.04	0.04
46.45	0.38	0.34	5.00	0.00	0.04	0.04
46.50	0.38	0.34	5.00	0.00	0.04	0.04
46.55	0.38	0.34	5.00	0.00	0.04	0.04
46.60	0.38	0.34	5.00	0.00	0.04	0.04

Liquefy.sum

46.65	0.38	0.34	5.00	0.00	0.04	0.04
46.70	0.38	0.34	5.00	0.00	0.04	0.04
46.75	0.38	0.34	5.00	0.00	0.04	0.04
46.80	0.38	0.34	5.00	0.00	0.04	0.04
46.85	0.38	0.34	5.00	0.00	0.04	0.04
46.90	0.38	0.34	5.00	0.00	0.04	0.04
46.95	0.38	0.34	5.00	0.00	0.03	0.03
47.00	0.38	0.34	5.00	0.00	0.03	0.03
47.05	0.38	0.34	5.00	0.00	0.03	0.03
47.10	0.38	0.34	5.00	0.00	0.03	0.03
47.15	0.38	0.34	5.00	0.00	0.03	0.03
47.20	0.38	0.34	5.00	0.00	0.03	0.03
47.25	0.38	0.34	5.00	0.00	0.03	0.03
47.30	0.38	0.34	5.00	0.00	0.03	0.03
47.35	0.38	0.34	5.00	0.00	0.03	0.03
47.40	0.38	0.34	5.00	0.00	0.03	0.03
47.45	0.38	0.34	5.00	0.00	0.03	0.03
47.50	0.38	0.34	5.00	0.00	0.03	0.03
47.55	0.38	0.34	5.00	0.00	0.03	0.03
47.60	0.38	0.34	5.00	0.00	0.03	0.03
47.65	0.38	0.34	5.00	0.00	0.03	0.03
47.70	0.38	0.34	5.00	0.00	0.03	0.03
47.75	0.38	0.34	5.00	0.00	0.03	0.03
47.80	0.38	0.34	5.00	0.00	0.03	0.03
47.85	0.38	0.33	5.00	0.00	0.03	0.03
47.90	0.38	0.33	5.00	0.00	0.03	0.03
47.95	0.38	0.33	5.00	0.00	0.03	0.03
48.00	0.37	0.33	5.00	0.00	0.02	0.02
48.05	0.37	0.33	5.00	0.00	0.02	0.02
48.10	0.37	0.33	5.00	0.00	0.02	0.02
48.15	0.37	0.33	5.00	0.00	0.02	0.02
48.20	0.37	0.33	5.00	0.00	0.02	0.02
48.25	0.37	0.33	5.00	0.00	0.02	0.02
48.30	0.37	0.33	5.00	0.00	0.02	0.02
48.35	0.37	0.33	5.00	0.00	0.02	0.02
48.40	0.37	0.33	5.00	0.00	0.02	0.02
48.45	0.37	0.33	5.00	0.00	0.02	0.02
48.50	0.37	0.33	5.00	0.00	0.02	0.02
48.55	0.37	0.33	5.00	0.00	0.02	0.02
48.60	0.37	0.33	5.00	0.00	0.02	0.02
48.65	0.37	0.33	5.00	0.00	0.02	0.02
48.70	0.37	0.33	5.00	0.00	0.02	0.02
48.75	0.37	0.33	5.00	0.00	0.02	0.02
48.80	0.37	0.33	5.00	0.00	0.02	0.02
48.85	0.37	0.33	5.00	0.00	0.02	0.02
48.90	0.37	0.33	5.00	0.00	0.02	0.02
48.95	0.37	0.33	5.00	0.00	0.02	0.02
49.00	0.37	0.33	5.00	0.00	0.02	0.02

Liquefy.sum						
49.05	0.37	0.33	5.00	0.00	0.02	0.02
49.10	0.37	0.33	5.00	0.00	0.02	0.02
49.15	0.37	0.33	5.00	0.00	0.02	0.02
49.20	0.37	0.33	5.00	0.00	0.01	0.01
49.25	0.37	0.33	5.00	0.00	0.01	0.01
49.30	0.37	0.33	5.00	0.00	0.01	0.01
49.35	0.37	0.33	5.00	0.00	0.01	0.01
49.40	0.37	0.33	5.00	0.00	0.01	0.01
49.45	0.37	0.33	5.00	0.00	0.01	0.01
49.50	0.37	0.33	5.00	0.00	0.01	0.01
49.55	0.37	0.33	5.00	0.00	0.01	0.01
49.60	0.37	0.33	5.00	0.00	0.01	0.01
49.65	0.37	0.33	5.00	0.00	0.01	0.01
49.70	0.37	0.33	5.00	0.00	0.01	0.01
49.75	0.37	0.33	5.00	0.00	0.01	0.01
49.80	0.37	0.33	5.00	0.00	0.01	0.01
49.85	0.37	0.33	5.00	0.00	0.01	0.01
49.90	0.37	0.33	5.00	0.00	0.01	0.01
49.95	0.37	0.33	5.00	0.00	0.01	0.01
50.00	0.37	0.33	5.00	0.00	0.01	0.01
50.05	0.37	0.33	5.00	0.00	0.01	0.01
50.10	0.37	0.33	5.00	0.00	0.01	0.01
50.15	0.37	0.33	5.00	0.00	0.01	0.01
50.20	0.37	0.33	5.00	0.00	0.01	0.01
50.25	0.37	0.33	5.00	0.00	0.01	0.01
50.30	0.37	0.33	5.00	0.00	0.01	0.01
50.35	0.37	0.33	5.00	0.00	0.01	0.01
50.40	0.37	0.33	5.00	0.00	0.00	0.00
50.45	0.37	0.33	5.00	0.00	0.00	0.00
50.50	0.37	0.33	5.00	0.00	0.00	0.00
50.55	0.37	0.33	5.00	0.00	0.00	0.00
50.60	0.37	0.33	5.00	0.00	0.00	0.00
50.65	0.37	0.33	5.00	0.00	0.00	0.00
50.70	0.37	0.33	5.00	0.00	0.00	0.00
50.75	0.37	0.32	5.00	0.00	0.00	0.00
50.80	0.37	0.32	5.00	0.00	0.00	0.00
50.85	0.37	0.32	5.00	0.00	0.00	0.00
50.90	0.37	0.32	5.00	0.00	0.00	0.00
50.95	0.37	0.32	5.00	0.00	0.00	0.00
51.00	0.37	0.32	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: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

Liquefy.sum

1 atm (atmosphere) = 1 tsf (ton/ft²)

CRRm Cyclic resistance ratio from soils

request CSRsf Cyclic stress ratio induced by a given earthquake (with user
factor of safety)

F.S. Factor of Safety against liquefaction, $F.S. = CRRm / CSRsf$

S_sat Settlement from saturated sands

S_dry Settlement from Unsaturated Sands

S_all Total Settlement from Saturated and Unsaturated Sands

NoLiq No-Liquefy Soils