SOILS ENGINEERING, INC.

GEOTECHNICAL INVESTIGATION REPORT

FOR THE

CITY VIEW APARTMENTS

3403 BERNARD STREET

BAKERSFIELD, KERN COUNTY, CA

Prepared for:

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By:

SOILS ENGINEERING, INC.
SEI File No. 23-19029
August 8, 2023

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Engineering Manager

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INTRODUCTION

At your request, Soils Engineering, Inc. has prepared this Geotechnical Investigation for the subject site. This report includes recommendations for the site preparation and grading and for foundation design.

Appendix A, "Guide Specifications for Earthwork," is providing as supplement to Section I, "Earthwork," in the recommendations of the report.

Appendix B, "Field Investigation," contains a Boring Location Map, Figure 1, and Logs of Test Borings, Figures 2 and 3.

Appendix C, "Soils Test Data," contains tabulations of laboratory test data.

Appendix D, "Seismic Investigation," contains information provided by EQFAULT, and the SEAOC.

We hope this provides the information you require. If you have any questions regarding the contents of our report, or if we can be of further assistance, please contact us.

Respectfully submitted,
SOILS ENGINEERING, INC.

SITE INFORMATION

A. SITE LOCATION AND CONDITIONS

The City View Apartments project is located at 3403 Bernard Street in Bakersfield, California. The project site is approximately 4.1 acres in size. The proposed improvements are to construct 37 new apartment units, between 1-2 stories high. We anticipate this structure will be constructed of a combination of concrete, wood, masonry and/or metal framing. It is assumed that the parking and drive aisles will be made up of aggregate base and hot mix asphalt. Currently the site is mainly a vacant lot with a retention basin along the western border, a gravel pile adjacent to the southwestern corner, has a paved access road that leads to the apartments to the west on the northwestern corner, and has graded slopes along the western, northern and southern border.

Site borders include the Residences at East Hills Apartments to the west, Bernard Street and Body Xchange to the north, residential properties to the east, and Pico Ave and residential properties to the south.

The project area currently consists mostly of dirt ground surfaces and there are paved surfaces on the northwest corner of the site. The site is at a higher elevation when compared to the southern road (Pico Ave), the northern road (Bernard Street), and the western Apartments. The southern third of the site sits approximately 10 to 12 feet lower than the northern planar portions of the site.

B. GEOLOGIC SETTING

According to the 2010 Geologic Map of California the zone of influence for the proposed construction is located wholly within Pliocene-Pleistocene nonmarine (continental) sedimentary rock deposits (QPc) within the southern San Joaquin Valley. Although the site is not located in an Alquist-Priolo (earthquake fault) Special Study Zone, there are various earthquake faults in the vicinity. Nearby faults, with distances from the site, are tabulated below.

Kern Front	5.7	miles/	9.1	kilometers
White Wolf	16.5	miles/	26.6	Kilometers
Pleito Thrust.....	27.0	miles/	43.5	Kilometers
Garlock (West)	35.7	miles/	57.4	kilometers
San Andreas – Whole M-1a and other segments	38.6	miles/	62.2	Kilometers
Big Pine	39.5	miles/	63.5	kilometers
San Gabriel.....	47.0	miles/	75.7	Kilometers

The largest estimated maximum site acceleration, based on deterministic methods, is 0.3127g from a 6.3 magnitude earthquake on the Kern Front Fault approximately 9.1 kilometers away. The information above is from the program EQFault (vers.3.0) and a complete listing of faults within 100-miles is presented in Appendix D.

C. SUBSURFACE CONDITIONS

Surface soils encountered in our field investigation consisted predominately of upper soil layers of light yellowish brown, damp, cohesive, medium stiff, and with gravel Clayey Sand in B-1 and B-2 and is underlain by a light yellowish brown, damp, with gravel, medium dense to dense Clayey Sand in B-1. Hard drilling was encountered between 10' bgs to 18' bgs due to rock and gravel in B-1 that resulted in refusal. In B-2, a thin soil layer of a light reddish brown, damp Poorly Graded Sand with low fine content underlays the Clayey Sand. Following the PG Sand with low fine content, a light yellowish brown, loose (at 6'bgs) to dense, cohesive, and gravelly Silty Sand was encountered at approximate depths of 3' to 25'. A very dense 5' thick Clayey Sand at depths ranging from 25' to 30' underlays the Silty Sand. Dense to very dense PG Sands (with gravel) and PG Sands with low fine content were encountered at depths ranging from 30' to 51.5'. These soils are classified as CL, SC, SM, SP-SM, and SP, respectively in the Unified Soil Classification System (USCS).

Testing performed in our laboratory showed an Expansion Index (EI) of 0 which indicates non-expansive soils. Expansive soils are defined in the 2022 California Building Code (CBC), Section 1803.5.3. Soils are considered to be expansive when the EI result is greater than 20, per ASTM D4829, Expansion Index of Soils.

Detailed descriptions of the various soils encountered during our field investigation are shown on Figures 2 and 3 in Appendix B, "Field Investigation." A "Key to Symbols" legend describing the symbols in the boring logs is also attached.

D. GROUNDWATER

No groundwater was encountered in any of the soil borings (B-1 & B-2) to the total depth explored of 51.5 feet. According to maps prepared by the California Department of Water Resources and presented on the State SGMA Data Viewer, approximate depth to water was 234' in the Spring of 2022 and 117' in the Spring of 2019. It is expected that groundwater will be deep enough to not be an issue to this site.

E. SEISMIC DESIGN VALUES

Per the 2022 California Building Code (CBC) and American Society of Civil Engineers (ASCE) 7-16 Section 20.3, and local knowledge the site is classified as Site Class D. Utilizing the USGS and ASCE 7-16 seismic design methodologies the following seismic design values were determined.

SEISMIC DESIGN CRITERIA		VALUE	SOURCE
Risk Category		**II**	2022 CBC Table 1604.5 or 1604A.5
Site Class		**D**	2022 CBC §1613.2.2 or 1613A.2.2; ASCE 7-16 Table. 20.3-1; Site Specific Soils Report, and local knowledge.
Mapped MCER Spectral Response Acceleration, short period	**S_S**	**0.92g**	SEAOC-OSHPD software; 2022 CBC Figure 1613.2.1(1)
Mapped MCER Spectral Response Acceleration, at 1-sec. Period	**S_1**	**0.331g**	SEAOC-OSHPD software; 2022 CBC Figure 1613.2.1(2)

SEISMIC DESIGN CRITERIA		VALUE	SOURCE
Site Coefficient	**F_a**	**1.132**	SEAOC- OSHPD software; 2022 CBC Table 1613.2.3(1) or 1613A.2.3(1)
Site Coefficient	**F_v***	**1.969***	2022 CBC Table 1613.2.3(2) or 1613A.2.3(2)
Adjusted MCER Spectral Response Acceleration, short period, F_a * S_s	**S_{MS}**	**1.042g**	SEAOC- OSHPD software; 2022 CBC §1613.2.3 or 1613A.2.3
Adjusted MCER Spectral Response Acceleration, 1-sec. period, F_v * S_1	**S_{M1}***	**0.652g***	2022 CBC §1613.2.3 or 1613A.2.3
Design Spectral Response Acceleration, short period, 2/3 * S_{MS}	**S_{DS}**	**0.694g**	SEAOC- OSHPD software; 2022 CBC §1613.2.4 or 1613A.2.4
Design Spectral Response Acceleration, 1-sec. period, 2/3 * S_{MI}	**S_{D1}***	**0.434g***	2022 CBC §1613.2.4 or 1613A.2.4
Peak Ground Acceleration for Max. Considered Earthquake (MCEG)	**PGA**	**0.398g**	SEAOC- OSHPD software; ASCE 7-16 Fig 22-9
Site Coefficient, F_{PGA} = 1.202, F_{PGA}* PGA	**PGA_M**	**0.479g**	SEAOC- OSHPD software; ASCE 7-16 §11.8.3.2
Mapped Risk Coefficient at 0.2 second Spectral Response Period	**C_{RS}**	**0.924**	SEAOC- OSHPD software; ASCE 7-16 Figure 22-18A
Mapped Risk Coefficient at 1 second Spectral Response Period	**C_{R1}**	**0.921**	SEAOC- OSHPD software; ASCE 7-16 Figure 22-19A
Seismic Design Category, short period		**D**	2022 CBC §1613.2.5
Seismic Design Category, 1second period *		**D***	2022 CBC §1613.2.5
MCER = Maximum Considered Earthquake (risk targeted) MCEG = Maximum Considered Earthquake (geometric mean)			
** The project designer shall confirm that a ground motion hazard analysis is not required in accordance with ASCE 7-16 §11.4.8-Exception 2. The values tabulated above for S_{M1}, S_{D1}, and the Seismic Design Category/1-second period are based on the site coefficient, F_v, interpolated from 2022 CBC Table 1613.2.3(2) or 1613A.2.3(2). The use of that table is predicated on the above referenced Exception 2 being applicable for the site and the structure(s). Where the above referenced Exception 2 does not apply, the values for F_v, S_{M1}, S_{D1}, and for the Seismic Design Category/1-second period may not be applicable for the site and structure(s).*			

F. LIQUEFACTION POTENTIAL & ESTIMATED SEISMIC SETTLEMENT

Liquefaction Potential:

Groundwater was not encountered in any of the borings conducted in the geotechnical soil borings conducted on-site to depths as great as 51.5' bgs. The unconfined aquifer is not shown to be less than 117 feet below ground surface at the site based on current and historical information from the Kern County Water Agency. Historical depth to water data by the DWR and presented on the Water Data Library Station Map indicates depth to water on a nearby well within 1-mile of the subject property was 117' in 2019. SPT blowcounts in the two (2) SEI soil borings (B-1 and B-2) ranged from 6 to 81 blowcounts per foot to a depth of 51'. The lithology encountered in the subsurface includes multiple silty sand, clayey sand, and poorly graded sand with some gravel and cobbles layers in the borings. A liquefaction analysis was performed on the deep boring B-2 utilizing the program LiquefyPro (version 5.9b). Site-specific information was used in this analysis including; SPT equivalent blowcounts per foot, grain-size analysis, wet weight densities, the moment magnitude earthquake and the PGA for the MCEg earthquake motion (0.479g) and a depth to water of 117. The liquefaction potential at this site appears to be low. See attached LiquefyPro data in Appendix D and boring logs for more detail.

Seismic Settlement:

The estimated amount of dynamic settlement that would occur at this site during a major earthquake is approximately 0.29” (B-2) based on the lithology encountered, the SPT blowcounts recorded during sampling and the settlement analysis conducted on boring B-2 utilizing the program LiquefyPro. The estimated amount of differential settlement is 0.145” over a span of 30 feet as shown in the program LiquefyPro results. These settlement values appear to be acceptable for the proposed development as long as the over-excavation and replacement with engineered fill recommended by the Geotechnical Engineer is implemented. See attached Liquefaction Analysis Calculation Sheets and graphs in Appendix D for more detail.

EARTHWORK RECOMMENDATIONS

"Earthwork Specifications," in Appendix A are provided for general guidance in preparing site grading plans. In addition, the following specific recommendations are provided and supersede the latter wherever discrepancies may exist:

A. COMPACTION AND OPTIMUM MOISTURE

Unless otherwise specified herein, the terms, "Compaction," or "Compacted," wherever used or implied within this report should be interpreted as compaction to 90 percent of the maximum density obtainable by ASTM Test Method D1557. The term, "Optimum Moisture," wherever used or implied within this report, should be interpreted as that obtained by the above described test method.

B. STRIPPING

Prior to site grading, existing ground surfaces should be stripped of surface vegetation and high-volume root masses. A stripping depth of one to three inches is generally adequate. Stripped material shall not be used as engineered fill or blended with or incorporated into any materials which will underlie any structures or other improvements on the project. Removal of trees or other large plants shall include all roots larger than ¾” diameter. If necessary, root remnants are to be removed by hand-picking. Remove existing structures and improvements, including within the limits of grading or as depicted in the project documents.

C. GROUND SURFACE PREPARATION

Proposed Structure Areas:

The objective of the over-excavation and compaction of the upper layer of soils in the building area is to remove the loose soils and to construct a uniform engineered fill layer that will minimize the settlements of the proposed structures. Accordingly, earth materials within and to a distance beyond the proposed structure footprint should be prepared as follows:

1. Excavate earth material to a minimum depth of two feet (2) below the bottom of the lowest foundation elevation or four (4) feet below existing grade in each of the structure areas, whichever is deeper.

2. The bottom of the excavation shall be reviewed by the soil engineer or his representative prior to any backfill operations. The top eight (8) inches of materials exposed at the bottom of the excavation shall be scarified, moisture-conditioned and compacted to a minimum of 90 percent of ASTM D1557.

3. Moisten excavated and imported soils to near the optimum moisture or to a moisture content consistent with effective compaction and soil stability. Compact moistened soils to a minimum of 90 percent of the maximum density obtained by ASTM Test Method D1557.

4. Work to lines at least five (5) feet beyond the outside edges of exterior footing and two feet beyond pavement edges except where excavation may undermine or damage adjacent structures or utilities.

Over-Excavation:

Excavation and placement of engineered fill should extend laterally beyond the outer edge(s) of the structure foundation(s) a distance equal to, or greater than, the distance between bottom of the foundation and the bottom of the excavation. If existing conditions preclude the achievement of the recommended lateral extent of excavation and backfill, the Geotechnical Engineer should be advised so that the special condition can be addressed. Ground surface preparation for paved areas should extend laterally two feet (2.0') beyond the pavement edges.

Review:

Prior to any compaction or backfill activities, the bottom of the excavation shall be reviewed by the geotechnical engineer or his representative. If indications of previous fill, discoloration, loose or compressible material, buried improvements, structures, pipelines, debris, rubble, trash, or any other disturbance are observed by the contractor, the geotechnical engineer shall be notified immediately. Excavation of native soils shall continue in vertical increments of one foot until compaction tests at the bottom of the excavation equal or exceed 80%.

Fill placement in excavations shall not proceed until the geotechnical engineer or his representative on the site has reviewed, tested as described above and accepted materials exposed at the bottom of the excavation.

Proof-rolling:

After the bottom of the excavation has been reviewed, the soil surface should be proof-rolled with a loaded scraper or other equipment with high wheel loads. Proof-rolling is intended to identify loose areas which could require additional excavation and compaction. Proof-rolling should be performed at a normal walking speed. Wheel tracks should cover the entire excavation surface.

Compaction:

After the excavation has been reviewed and proof-rolled and it has been determined that no additional excavation is required, place and compact the excavated soils, or approved import material, in thin lifts. Adjust the moisture content of the material to be compacted as needed prior to compaction. Apply compaction effort in conformance with the recommendations of this report, using means, methods, and equipment suitable for the type of material being compacted. Refer to Appendix A for compaction requirements.

Pavement Areas:

Ground surfaces to receive concrete driveway and bituminous pavements should be scarified and compacted to a minimum depth of 12 inches below the grading plane in cut areas or to 12 inches in areas to receive fill. Engineered fill placed in proposed pavement areas should conform to the requirements of section 5.4, “Placing, Spreading and Compacting Fill Materials,” of Appendix A.

Compaction in proposed pavement areas should be a minimum of 90 percent of the maximum density as obtained to ASTM Test Method D1557 and should extend to a minimum of two feet beyond the outside edges of pavements.

Utility Lines:

Backfill for utility lines traversing areas proposed for facilities, pavements, concrete slabs-on-grade, or areas to receive engineered fill for future construction should be compacted in accordance with the same requirements for adjacent and/or overlying fill materials.

Compaction should include haunch area, spring line and from top of pipe to finished subgrade. The haunch area up to one foot above the top of the pipe should be backfilled with “cohesionless” material.

Cohesionless native materials may be used for trench and pipe or conduit backfill. The term “cohesionless,” as used herein, is defined as material which, when dry, will flow readily in the haunch areas of the pipe trench.

Pipe backfill materials should <u>not</u> contain rocks larger than two inches in maximum dimension. Where adjacent native materials exposed on the trench bottoms contain protruding rock fragments larger than two inches in maximum dimension, conduits and pipelines should be laid on a bedding consisting of clean, cohesionless sand (SP), in the Unified Soils Classification System.

Compaction Requirements – where not otherwise specified in our plans or in these recommendations, the following compaction requirements are applicable to all electrical, gas or water conduits:

TABLE A COMPACTION DEPTH			
Area	**Haunch to 1 ft. Above Top Of Pipe**	**1 ft. Above Top of Pipe to 2'6" Below Finished Grade**	**2'6" Below Finished Grade to Finished Subgrade**
Structural	90%	90%	90%
Pavements	90%	90%	90%
Non-Structural	90%	90%	90%

D. ENGINEERED FILL

Areas to receive fill or to support structures, slabs or pavements should be removed of all vegetation, debris and disturbed soils. All existing uncertified fill soils should be excavated to expose competent native soils.

Cohesionless Soils are earth-materials that lack sufficient binder to remain stable in vertical-excavations; are easily disturbed when used as pavement subgrade; and function most effectively when confined within another more stable component such as an aggregate base or subbase with superior interlocking properties.

When this is not practicable, forms will be required to maintain stability in foundation excavations. Cohesionless soils cannot adequately support paving equipment, or light vehicular traffic, or foot-traffic without being disturbed beyond usual construction tolerances unless they are mixed with an adequate binder material such as cement or a small silt / clay component. Cohesionless materials are best used as trench back-fill, fill within the pipe-zone of utility trenches, or underlayment for aggregate base sections.

Earth materials obtained on site are acceptable for use as engineered fill provided that all grasses, weeds and other deleterious debris are first removed. Engineered fill materials should be placed in thin layers (less than ten inches uncompacted thickness), brought to near the optimum moisture content or to a moisture content commensurate with effective compaction and soil stability, and compacted to a minimum of 90 percent of the maximum density obtainable by ASTM Test Method D1557, "Placing, Spreading and Compacting Fill Materials," in Appendix A.

E. IMPORTED FILL

The table shown below provides general guidelines for acceptance of import engineered fill. Materials of equal or better quality than on-site material could be reviewed by the Geotechnical Engineer on a case-by-case basis. No soil materials shall be imported onto the project site without prior approval by the Geotechnical Engineer. Any deviation from the specifications given below shall be approved by the Geotechnical Engineer prior to import operations.

MAXIMUM PERCENT PASSING #200 SIEVE	40
MAXIMUM PERCENT RETAINED 3" SIEVE	0
MAXIMUM PERCENT RETAINED 1½" SIEVE *FOR BUILDING AREAS*	15
MAXIMUM PERCENT RETAINED ¾" SIEVE *FOR LANDSCAPE AREAS*	5
MAXIMUM LIQUID LIMIT	40
MAXIMUM PLASTICITY INDEX	14
MINIMUM R-VALUE FOR PAVEMENT AREAS	50
MAXIMUM EXPANSION INDEX	20

Furthermore, the soils proposed for import shall be generally homogenous and shall not contain cemented or clayey and/or silty lumps larger than one inch. When such lumps are present, they shall not represent more than ten percent (10%) of the material by dry weight. Where a proposed import source contains obviously variable soils, such as clay and/or silt layers, the soils which do not meet the above requirements shall be segregated and not used for this project or the various layers shall be thoroughly mixed prior to acceptance testing by the Geotechnical Engineer.

The contractor shall provide sufficient advance notice, prior to import operations, to allow testing and evaluation of the proposed import materials. Because of the time needed to perform the above tests, the contractor shall provide a means by which the Geotechnical Engineer or others can verify that the soil(s) which was sampled and tested is the same soil(s) which is being imported to the project.

F. DRAINAGE

Finished ground grades adjacent to the proposed structures should be sloped to provide positive free drainage away from the foundations. No areas should be constructed that would allow drainage generated on the site, or water impinging upon the site from outside sources, to pond near footings and slabs or behind curbs.

Where ground surfaces adjacent to subsurface walls are to be landscaped, walls should be waterproofed. Installation of gravel-filled drains to route subsurface drainage away from walls will reduce the thickness of damp-proofing resulting in a considerable savings.

G. SLOPES

Both fill and cut slopes should be constructed at 2:1 (horizontal to vertical) in accordance with the 2022 California Building Code.

Finished slopes nearer than five feet from building foundations should be graded no steeper than five horizontal to one vertical (5:1). A slope ratio of two horizontal to one vertical (2:1) should provide adequate stability for slopes farther than five feet from footing lines.

The fill slopes shall be compacted to a minimum of 90% of ASTM D1557 and in accordance with the Guide Specifications for Earthwork, Appendix A. This may be achieved by overfilling the constructed slope and trimming to a compacted finished surface, rolling the slope face with a sheepsfoot as the level of the fill is raised, or any method that achieves the desired product.

The cut portion of the slope should be constructed first. Prior to construction of the fill slope, incompetent surface soils should be removed from the top of the cut.

Areas to receive fill or to support structures, slabs or pavements should be removed of all vegetation, debris and disturbed soils. All existing uncertified fill soils should be excavated to expose competent native soils.

Existing underground pipelines, private sewage disposal systems and any water or oil wells, if encountered during grading, should be removed or capped in accordance with procedures considered acceptable by the appropriate governing agency. Tree roots to 2 inches in diameter should be removed.

Both fill and cut slopes will be subject to erosion immediately after grading and should be designed to reduce surficial sloughing by implementing a permanent slope maintenance program as soon as practical after completion of slope construction.

Slope maintenance should include proper care of erosion and drainage control devices, rodent control, and immediate planting with deep-rooting, lightweight, drought-resistant vegetation. An erosion control geotextile may also be used in combination with vegetation to control erosion.

Experience has shown that slope performance is largely dependent upon proper slope maintenance (i.e., planting, proper watering, clearing of drainage devices, etc.). Slopes properly placed and conscientiously maintained are not expected to display excessive raveling or sloughing.

FOUNDATIONS RECOMMENDATIONS

Spread Footings – The proposed foundation could be supported on continuous spread footings in accordance with the following Table B:

TABLE B
FOUNDATION DESIGN CRITERIA

Footing Type	Minimum Width (ft.)	Minimum Depth Below Lowest Adjacent Subgrade (ft.)	Maximum Allowable Soil Bearing Pressure (lbs/ft^2)
Continuous	2	1.5	2500
Isolated	2	1.5	2500

Bearing pressures given are for the minimum widths and depths shown above.

Bearing pressures given above are for dead and sustained (loads acting most of the time) live loads; they may be increased by one-third for wind and/or seismic loading conditions.

The proposed foundations shall be reinforced in accordance with the structural engineer's recommendations.

Settlement:

Provided maximum allowable soil bearing pressures given above are not exceeded, total settlement should not exceed one inch. A major portion two-thirds to one-half of total settlement should occur before the end of construction. Differential settlements should occur before the end of construction. Differential settlements should, accordingly, be less than one-half of an inch for a horizontal span of twenty feet.

MODULUS OF SUBGRADE REACTION

Modulus of subgrade reaction for use in design of foundations is based on ranges of values for soil types provided by Foundation Analysis and Design by Joseph E Bowles.[1] Equation 1 should be used for footings on sandy soils.

Foundations on clay soils should employ Equation 2. Equation 3 is for rectangular footings having dimensions w= **b** (width) and l = **mb** (length) the variable "m" being the ratio of the length to the width of the foundation**.** **K_s1** is the modulus of subgrade reaction from the source referenced above based on a 1 foot x 1 foot square plate. For general guidance K_s1 of 150 kcf may be used for the subsurface soils.

Equation (1) $$k_{sf} = K_{s1} \times \left(\frac{B+1}{2B}\right)^2$$

Equation (2) $$k_{sf} = K_{s1} \times B$$

Equation (3) $$k_{sf} = K_{s1} \times \frac{m+.5}{1.5 \times m}$$

Values given above should be used for guidance. Local values may be higher or lower and should be based on results of in-situ plate bearing tests performed in accordance with ASTM Test Method D1194.

LATERAL EARTH PRESSURES

Lateral earth pressures and friction coefficients for determining the passive lateral resistance of foundations against lateral movement and the active lateral forces against retaining walls and subsurface walls, expressed as equivalent fluid pressures, are given below in Table C. Lateral earth pressures were computed assuming that backfill materials are essentially free draining and level; and that no surcharge loads or sloping backfills are present within a distance from the wall equal to or less than the height (H)* of the wall.

(H)* = the height of backfill above the lowest adjacent ground surface.

[1] Bowles, Joseph E; FOUNDATION ANALYSIS AND DESIGN; McGraw-Hill Book Company (1977); Table 9-1 pg 269

TABLE C LATERAL EARTH PRESSURES	
Case	**Lateral Earth Pressures**
Active	45 P.C.F.
Passive	400 P.C.F.
At-Rest	55 P.C.F.

Active Case: Active lateral earth pressures should be used when computing forces against free standing retaining walls, unrestrained at the tops. Active pressures should not be used where tilting outward of the walls is greater than .002H would not be desirable.

Passive Case: Passive lateral earth pressures should be used when computing the lateral resistance provided by undisturbed or compacted native soils against the movement of footing. When computing passive resistance, the upper one foot of embedment depth should be discounted.

At-Rest Case: At-rest pressures should be used for subsurface walls restrained at their tops by floor diaphragms or tie-backs and for retaining walls where tilting outward greater than .002 H would not be desirable.

Frictional Resistance: A friction coefficient of **0.45** may be used when computing the frictional resistance to sliding of footings, grade beams, and slabs-on-grade. Frictional resistance and passive lateral soil resistance may be combined without reduction.

SLABS-ON-GROUND

Slabs-on-ground may be supported on earth materials prepared in accordance with the recommendations of this Geotechnical Investigation.

Moisture protection between the soil and the interior slabs-on-ground is recommended. For exceptions to slab moisture protection, refer to the 2022 California Building Code, §1907.1. The project designer should provide specific details regarding construction of the concrete slab-on-ground, including the moisture barrier or vapor retarder/barrier, capillary break (if included), and blotter material (if included). The American Concrete Institute recommends a minimum moisture vapor retarder of 10 mil thick polyethylene. The vapor retarder should be protected from damage. Punctures and tears should be repaired prior to concrete placement.

It has been common local practice to use a sandy material as a blotter layer between the moisture barrier and the concrete to absorb some of the bleed water and to potentially reduce slab curling. However, a blotter layer may act as a moisture reservoir. If that occurs, all apparent advantages of its use are negated. A blotter layer should not be incorporated into the section design for moisture-sensitive slabs if it cannot be kept dry prior to concrete placement or if water may migrate into the layer after slab construction (e.g. wet curing, rainfall). If the slab-on-ground section is to include a blotter layer between the moisture barrier and the concrete, it is our recommendation that the blotter material consist of crusher fines (rock dust) or sand with angular, interlocking

grains. The material should be easily compacted and should be screened so that 100% of the material is finer than ¼". Do not use blotter material which may be potentially reactive with the alkalis in the concrete or which has high sulfate content. At the time of concrete placement, the blotter material should be dry to damp, compact, and smooth. For slabs which are to be water-cured, a blotter layer should not be used. For further consideration, refer to the American Concrete Institute *Manual of Concrete Practice 302.1R and 360.*

Slab thicknesses, reinforcing, and the concrete characteristics should be in accordance with the project designer's recommendations. The 2022 California Building Code, §1907.1 requires that the slab thickness be not less than 3½".

Pressurized water lines should not be installed beneath slabs-on-ground. Where pressurized water lines must be routed beneath the slab, they should be routed entirely inside continuous sleeves with both ends open to the atmosphere above the slab surface. Gravity flow sewer lines may underlie slabs-on-ground, but they should be routed to the exterior point of connection by the shortest feasible path.

SOIL CORROSIVITY

Soluble Sulfates (SO_4)

The highest Sulfate (SO_4) concentration measured was **1900 ppm**.

Based on Table 19.3.1.1 “Exposure categories and classes” of ACI 318-14 “Building Code Requirements for Structural Concrete” the soil exposure is classified as S2. Per Table 19.3.2.1 “Requirement for Concrete by Exposure Class” of the same reference, Type V cement should be used.

Chlorides (Cl)

The highest Chloride (Cl) concentration measured was 130 ppm. Generally, chloride concentrations greater than 500 ppm are considered to be corrosive to foundation elements. (Ref: Caltrans Corrosion Guidelines / Version 1.0)

pH

The soil pH results measured at 7.92. Generally, a pH level less than 5.5 are considered to be corrosive to foundation elements. (Ref: Caltrans Corrosion Guidelines / Version 1.0)

Preliminary test results indicate that existing surface soils at the locations and depths tested are **corrosive**. If it is anticipated that earthwork operations will consist of excavation and compaction of the upper existing soils, producing a blend of native and/or imported soils, it is recommended that tests for soil corrosivity be performed on finished subgrade soils to confirm that corrosive soils remain present and in contact with foundation. If test results show that corrosive soils remain present foundation concrete should be formulated for exposure to corrosive soils in accordance with ACI 318-14, Sections 19.3 and Table 19.3.1.1.

Soils Engineering, Inc. are not experts in the field of soil corrosivity. Should detailed analysis of soil corrosivity be required, it is our recommendation to contract a corrosion engineer.

PAVEMENT FIELD INVESTIGATION & DESIGN DATA

One (1) boring was drilled to a maximum depth of five (5) feet below existing grade. Bore locations are shown on the attached Boring Location Map, Figure 1.

For design, an R-value of 50 should be used. The laboratory test reports are provided as Figure D-1.

HMA design should meet the requirements of the 2010 or newer, State of California, Standard Specifications Manual (SSM), Section 39. Aggregate Base should also meet the Class 2 requirements of the SSM, Section 26.

PCC design should meet the requirements of the American Concrete Institute (ACI) 330R, Guide for the Design and Construction of Concrete.

Ground surfaces to receive HMA or Portland Cement Concrete (PCC) pavements should be scarified and compacted to a minimum depth of 12 inches below the grading plane in cut areas or to 12 inches in areas to receive fill. Engineered fill placed in proposed pavement areas should conform to the requirements of section 5.4, “Placing, Spreading and Compacting Fill Materials,” of Appendix A.

Compaction in proposed pavement areas should be a minimum of 90 percent of the maximum density as obtained to ASTM Test Method D1557, and should extend to a minimum of two feet beyond the outside edges of pavements.

These recommendations are valid only if the pavement is properly drained and shoulder areas are graded to prevent water ponding at pavement edges. All construction should be subject to adequate tests and observations to verify conformance with these recommendations.

LIMITATIONS, OBSERVATION AND TESTING

Conclusions and recommendations in this report are given for the proposed City View Apartments, located at 3403 Bernard Street, Bakersfield, Kern County, California and are based on the following;

a. The information retrieved from two (2) exploratory borings drilled at the subject site to a maximum depth of 51.5 feet below the existing ground surface.

b. Our laboratory testing program results.

c. Our engineering analysis based on the information defined in this report.

d. Our experience in the Kern County area.

Variations in soil type, strength and consistency may exist between specific boring locations. These variations may not become evident until after the start of construction. If such variations appear, a re-evaluation of the soils test data and recommendations may be necessary.

Unless a Geotechnical Engineer of this firm is afforded the opportunity to review plans and specifications, we accept no responsibility for compliance with design concepts or interpretations made by others with regard to foundation support, fill selection, fill placement or other recommendations presented in this report.

Changes in conditions of the subject property can occur with time because of natural processes or the works of man on the subject site or on adjacent properties. Changes in applicable engineering and construction standards can also occur as the result of legislation or from the broadening of knowledge.

Accordingly, the finding of this report may be invalidated, wholly or in part, by changes beyond our control. Therefore, this report is subject to review and should not be relied upon without review after a period of two years or after any modifications to the site.

REVIEW OF EARTHWORK OPERATIONS

Review of earthwork operations relating to site clearing, ground stabilization, placement and compaction of fill materials, and finished grading is critical to the structural integrity of building foundation and floor systems.

While the preliminary Geotechnical investigation and report provide guidelines which are used by the design team, i.e., architects, grading engineers, structural engineers, landscape engineers, etc., in completing their respective tasks, review of plans and site review and testing during earthwork operations are vital adjuncts to the completion of the Geotechnical engineer's tasks.

The most prevalent cause of failure of a structure foundation system is lack of adequate review and testing during the earthwork phase of the project. Projects rarely reach completion without some alteration being required such as may result from a change in subsurface conditions, an amendment in the size and scope of the project, a revision of the grading plans or a variation in structural details. Occasionally, even minor changes can significantly affect the performance of foundations.

The most prevalent secondary cause for foundation failure is inadequate implementation of Geotechnical recommendations during the formulation of foundation designs and grading plans. The error in a foundation design or an omission of a key element from a grading plan occurs most often as a result of inadequate communication between the various project consultants and -- when a change in consultants occurs -- improper transfer of authority and responsibility[2].

[2] If the civil engineer, the soils engineer, the engineering geologist or the testing agency of record is changed during the course of the work, the work shall be stopped until the replacement has agreed to accept the responsibility within the area of his or her technical competence for approval upon completion of the work.

It is imperative, therefore, that any revisions to the project scope, any change in structural detail, or change in consultant, be brought to the attention of Soils Engineering, Inc. to allow for timely review and revision of recommendations and for an orderly transfer of responsibility and approval.

It is the responsibility of the owner or his or her representative to ensure that a representative of our firm is present at all times during earthwork operations relating to site preparation and grading, so that relative compaction tests can be performed, earthwork operations can be observed and compliance with the recommendations provided herein can be established.

This engineering report has been prepared within the limits prescribed to us by the client or his or her representative, in accordance with the generally accepted principles and practices of Geotechnical engineering. No other warranty, expressed or implied, is included or intended in this report.

Respectfully submitted,
SOILS ENGINEERING, INC.

APPENDIX A

GENERAL GUIDE SPECIFICATIONS FOR EARTHWORK

1. GENERAL

1.1 Scope

These specifications and plans include all earthwork pertaining to site rough grading including, but not limited to furnishing all labor and equipment necessary for clearing and grubbing; stripping; preparation of ground surfaces to receive fill; excavation; placement and compaction of structural and non-structural fill; disposal of excess materials and products of clearing, grubbing, and stripping; and any other work necessary to bring ground elevations to the lines and grades shown on the project plans.

1.2 Performance:

It shall be the responsibility of the contractor to complete all earthwork in accordance with project plans and specifications. No variance from plans and specifications shall be permitted without written approval of the Engineer-of-Record, hereinafter referred to as the "engineer" or his or her designated representative, hereinafter referred to as the "soils engineer." Earthwork shall not be considered complete until the "engineer" has issued a written statement confirming substantial compliance of earthwork operations to these specifications and to the project plans.

The contractor shall assume sole responsibility for job site conditions during the course of earthwork operations on the project, including safety of all persons and preservation of all property; this requirement shall apply continuously and not be limited to normal working hours. The contractor shall defend, indemnify, and hold harmless the owners, engineer, and soils engineer from any and all liability and claims, real or alleged, arising out of performance of earthwork on this project, except from liability incurred through sole negligence of the owner, engineers, or soils engineers.

2. DEFINITIONS

2.1 Excavations:

Excavation shall be defined within the content of these specifications as earth material excavated for the purpose of constructing fill embankment; grading the site to elevations shown on project plans; or placing underground pipelines, conduits, or other subsurface utilities or minor structures.

Excavations shall be made true to the lines shown on project plans and to within plus or minus one-tenth (0.1) of a foot, of grades shown on the accepted site grading plans.

2.2 Engineered Fill:

Engineered fill shall be construed within the body of these specifications as earth materials conforming to specifications provided in the soils or geotechnical report placed to raise the grade of the site, to backfill excavations, or to construct asphaltic concrete or Portland cement concrete pavement; and upon which the soils engineer has performed sufficient tests and has made sufficient observation during placement and compaction to enable him to issue a written statement confirming substantial conformance of the work to project earthwork specifications.

2.3 On-Site Material:

On-site material is earth material obtained in excavation made on the project site.

2.4 Imported Material:

Imported materials are earth materials obtained off the site, hauled in, and placed as fill.

2.5 "Compaction" or "Compacted:"

Wherever expressed or implied within the context of these specifications shall be interpreted as compaction to ninety (90) percent of the maximum density obtainable by ASTM Test Method D1557.

2.6 Grading Plane:

The grading Plane is the surface of the basement material upon which the lowest layer of subbase, base, asphaltic or Portland cement concrete, surfacing, or other specified layer is placed.

3. SITE CONDITIONS

The contractor shall visit the site, prior to bid submittal, to determine existing soil and topographic conditions, and the nature of materials that may be encountered during the course of the work under this contract, and make his or her own interpretation of the contents of the Geotechnical Report, as they pertain to said conditions.

The contractor shall assume all liability under the contract for any loss sustained as a result of variations which may exist between specific soil boring locations or changed conditions resulting from natural or man-made circumstances occurring after the date of the Preliminary Field Investigations.

4. CLEARING AND GRUBBING

4.1 Clearing and Grubbing

Clearing and grubbing shall consist of removing all debris such as metal, broken concrete, trash, vegetation growth and other biodegradable substances, from all

areas to be graded. Existing obstructions below shall be removed in accordance with the following procedures:

4.1.1 **Slabs and Pavements** – Shall be completely removed. Asphaltic or Portland Cement, concrete fragments may be used in engineered fills provided they are broken down to a maximum dimension of six (6.0) inches and thoroughly dispersed within a friable soil matrix. Engineered fill containing said fragments should not be placed above the elevation of the bottom of the lowest structure footing.

4.1.2 **Foundations** – existing at the time of grading shall be removed to a depth not less than two (2.0) feet below the bottom of the lowest structure footing.

4.1.3 **Basements, Septic Tanks** – buried concrete containers of similar construction located within areas destined to receive pavements, structures, or engineered fills should be completely removed and disposed of off the site. Basements, septic tanks, etc., situated outside structures, or structural fill areas shall be disposed of by breaking an opening in bottoms to permit drainage, and by breaking walls down to not less than two (2.0) feet below finished subgrade.

4.1.4 **Buried Utilities** – such as sewer, water and gas lines or electrical conduits to remain in service shall be re-routed to pass no closer than four (4.0) feet to the outside edge of proposed exterior footings of structures. Lines to be abandoned shall be completely removed to a minimum depth of two (2.0) feet below finished building pad grade. Concrete lines deeper than two (2.0) feet below finished building pad grade and having diameters less than six (6.0) inches can be crushed in place.

4.1.5 **Root Systems** – shall be completely removed to a minimum depth of two (2.0) feet below the bottom of the lowest proposed structure footing or to two (2.0) feet below finished subgrade, whichever depth is lower. Root systems deeper than the elevation indicated above shall be excavated to allow no roots larger than two (2.0) inches in diameter.

4.1.6 **Cavities** – resulting from clearing and grubbing or cavities existing on the site as a result of man-made or natural activity shall be backfilled with earth materials placed and compacted in accordance with Sections 5.3 and 5.4 of these specifications.

4.1.7 **Preservation or Monuments, Construction Stakes, Property Corner Stakes**, or other temporary or permanent horizontal or vertical control reference points shall be the responsibility of the contractor. Where these markers are disturbed, they shall be replaced at the contractor's expense.

5. SITE GRADING

Site grading shall consist of excavation and placement of fills to lines and grades shown on the project plans and in accordance with project specifications and recommendations of the Preliminary Soils Report, whichever is more stringent. The following are recommendations issued in this report.

5.1 Areas to Receive Fill:

5.1.1 Surfaces to receive fill shall be scarified to a depth of at least six (6.0) inches, or as recommended in this report, whichever is greater, until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

5.1.2 After the area to receive fill has been cleared and scarified, it shall be moistened and compacted to a depth of at least six (6.0) inches in accordance with specifications for compacting fill material in paragraph 5.4, below.

5.2 Excavation:

5.2.1 Excavations shall be cut to elevations plus or minus 0.1 foot of the grades shown on the accepted plans.

5.2.2 When excavated materials are to be used in engineered fill, the excavation shall be made in a manner to produce as much mixing of the excavated materials as practicable.

5.2.3 When excavations are to backfilled, and where surfaces exposed by excavation are to support structures or concrete floor slabs, the exposed surfaces shall be scarified, moistened and compacted, as stated above for areas to receive fill. Over excavation below specified depths will not eliminate the requirement for exposed surface compaction.

5.3 Fill Materials:

5.3.1 Materials obtained from on-site excavations will be considered satisfactory for construction of on-site engineered fills unless otherwise stated in the Soils Report or Foundation Investigation. If unexpected pockets of poor or weak materials are encountered in excavations, and they cannot be upgraded by mixing with other materials or by other means, they may be rejected by the soils engineer for use in engineered fill.

Rocks larger than 12 inches in size in any dimension shall not be allowed in the proposed building area. If a large amount of rocks greater than 12 inches in size in any dimension is encountered a rock disposal area shall be located on the grading plan. Rocks shall be mixed with well graded soils to assure that the voids in these areas will fill properly.

5.3.2 When imported fill materials are necessary to bring the site up to planned grades, no material shall be imported prior to its approval and acceptance by the soils engineer.

5.3.3 The soils engineer shall be given notice of the proposed source of imported materials with adequate time allowance for his or her testing of the proposed materials. The time required for testing will vary with different types of materials, job conditions, and ultimate function of filled areas. Under best conditions the time requirement will not be less than 48 hours.

5.4 Placing, Spreading, and Compacting Fill Material:

5.4.1 The fill materials shall be placed in layers which, when compacted, shall not exceed six (6.0) inches in thickness. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material in each layer. Increased thickness of layers may be approved by the soils engineer when conditions warrant.

5.4.2 All fills shall be placed in level layers; layers shall be continuous over the area of any structural unit, and all portions of the fill shall be brought up simultaneously within the area of any structural unit. When imported material is used, it must be placed so that its thickness is as uniform as possible within the area of any structural unit.

5.4.3 When materials are to be excavated and replaced in a compacted condition, segmented, or leap-frogging of cut-fill operation within the area of any structural unit will not be permitted unless the method is specifically described by the soils engineer.

5.4.4 When the moisture content of fill material is below the lower limit specified by the Soils Engineer, water shall be added until the moisture content is as specified; and when it is above the upper limit specified, the material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

5.4.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted to not less than ninety (90) percent of maximum density in accordance with ASTM Density Test Method D1557. Compaction shall be by equipment of such design that it will be able to compact the fill to specified density. When the soils engineer specifies a specific type of compaction equipment to be used, such equipment shall be used as specified.

5.4.6 Compaction of each layer shall be continuous over its entire area and the equipment shall make sufficient trips to insure that the desired density has been obtained.

5.4.7 Field density tests shall be made by the soils engineer. The compaction of each layer of fill shall be subject to testing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests shall be taken in the compacted material below the disturbed surface. When tests indicate the density of any layer of fill or portion thereof is below the required ninety (90) percent density, the particular layer or portion shall be re-worked until the required density has been obtained.

5.4.8 When the soils engineer specifies compaction to other standards or to percentages other than ninety (90) percent, such specification, with respect to the particular items shall supersede these specifications.

5.4.9 The fill operation shall be continued in six (6) inch compacted layers, as specified above, until the fill has been brought to within 0.1 foot, plus or minus of the finished slopes and grades, as shown on the accepted plans. The finished surface of fill areas shall be graded or bladed to a smooth and uniform surface and no loose material shall be left on the surface.

5.4.10 No fill materials shall be placed, spread, or compacted while it is frozen or thawing or during unfavorable weather conditions. When work is interrupted by weather conditions, fill operations shall not be resumed until the soils engineer indicates that moisture content and density of previously placed fill are satisfactory.

5.5 Observations and Testing:

5.5.1 The soils engineer shall be provided with a 48 hour advance notice, in order that he may be present at the site during all earthwork activities related to excavation, tree root removal, stripping, backfill, and compaction and filling of the site and to perform periodic compaction tests so that substantial conformance to these recommendations can be established.

APPENDIX B

FIELD INVESTIGATION

Two (2) test borings were drilled at the subject site and terminated at a maximum depth of 51.5 feet below the existing ground surface. Borings were advanced using an (4.25) inch hollow-stem auger. Test data and descriptions from these holes form the basis of the conclusions and recommendations contained in this report.

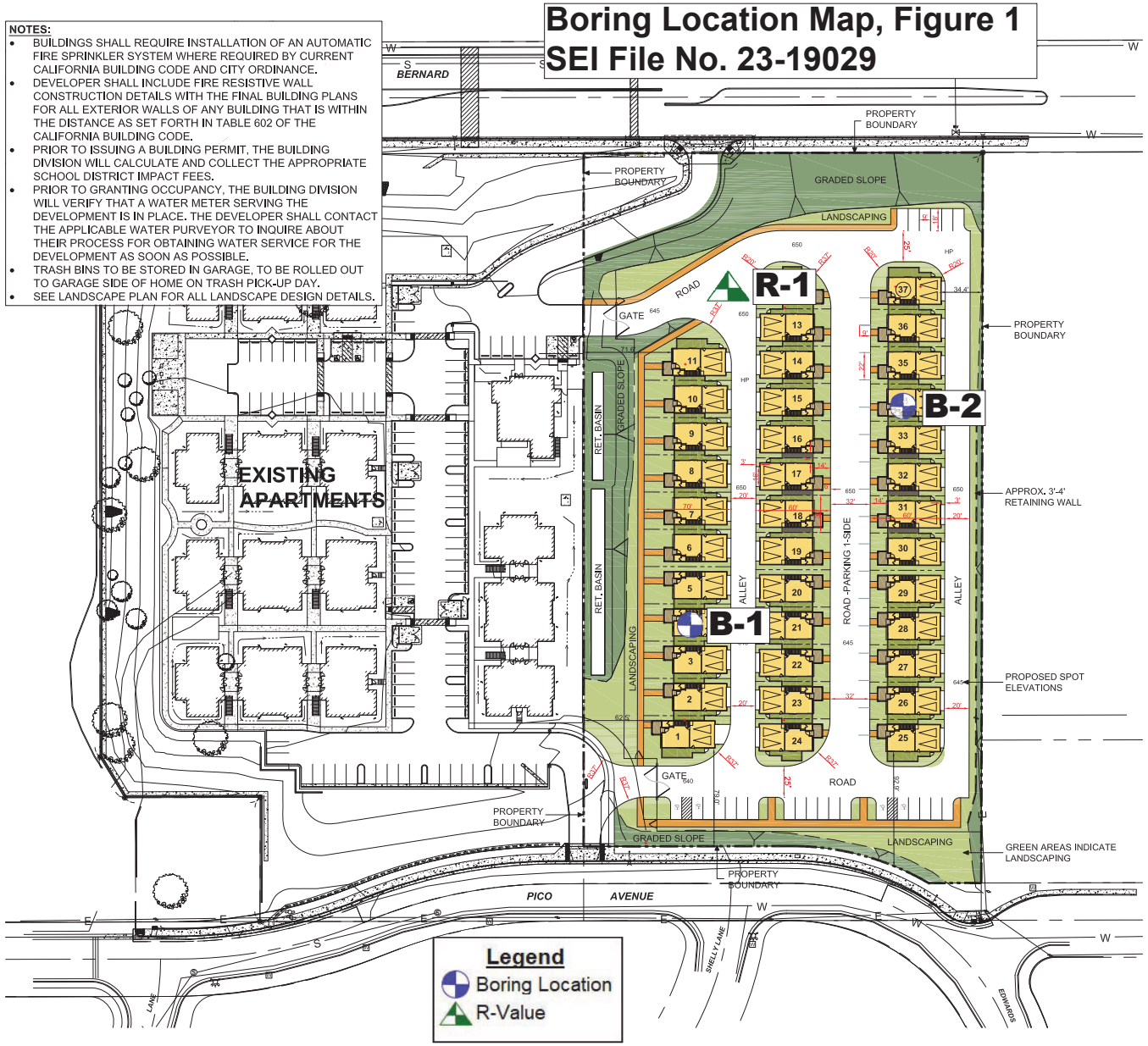
Undisturbed samples and disturbed bulk samples were obtained. Undisturbed samples were taken using either a 2-3/8” (inside diameter) split-barrel sampler or a 1-3/8” (inside diameter), 2” (outside diameter) Standard Penetration Sampler (SPT). Penetration resistance of undisturbed soils was obtained by driving the above-described sampler using a one-hundred-forty-pound hammer falling thirty inches (30"). Blow counts for each six inch (6") driven increment was recorded and are reported on the Test Borings Logs. In addition, bulk soil samples, selected as most representative of near surface soils encountered, were taken for laboratory testing.

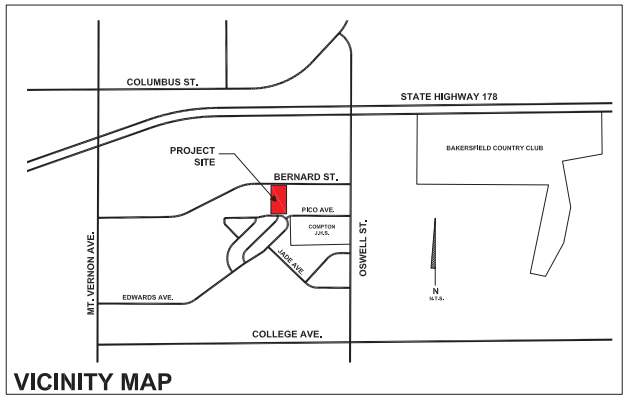
As drilling progressed, earth materials encountered were logged and classified in accordance with the Unified Soils Classification System and presented graphically on Logs of Test Borings, Figures 2 and 3, along with the Legend. Approximate locations of test borings are shown on the Boring Location Map, Figure 1.

Boring Location Map, Figure 1
SEI File No. 23-19029

NOTES:

- BUILDINGS SHALL REQUIRE INSTALLATION OF AN AUTOMATIC FIRE SPRINKLER SYSTEM WHERE REQUIRED BY CURRENT CALIFORNIA BUILDING CODE AND CITY ORDINANCE.
- DEVELOPER SHALL INCLUDE FIRE RESISTIVE WALL CONSTRUCTION DETAILS WITH THE FINAL BUILDING PLANS FOR ALL EXTERIOR WALLS OF ANY BUILDING THAT IS WITHIN THE DISTANCE AS SET FORTH IN TABLE 602 OF THE CALIFORNIA BUILDING CODE.
- PRIOR TO ISSUING A BUILDING PERMIT, THE BUILDING DIVISION WILL CALCULATE AND COLLECT THE APPROPRIATE SCHOOL DISTRICT IMPACT FEES.
- PRIOR TO GRANTING OCCUPANCY, THE BUILDING DIVISION WILL VERIFY THAT A WATER METER SERVING THE DEVELOPMENT IS IN PLACE. THE DEVELOPER SHALL CONTACT THE APPLICABLE WATER PURVEYOR TO INQUIRE ABOUT THEIR PROCESS FOR OBTAINING WATER SERVICE FOR THE DEVELOPMENT AS SOON AS POSSIBLE.
- TRASH BINS TO BE STORED IN GARAGE, TO BE ROLLED OUT TO GARAGE SIDE OF HOME ON TRASH PICK-UP DAY.
- SEE LANDSCAPE PLAN FOR ALL LANDSCAPE DESIGN DETAILS.





VICINITY MAP

PROJECT SUMMARY TABLE

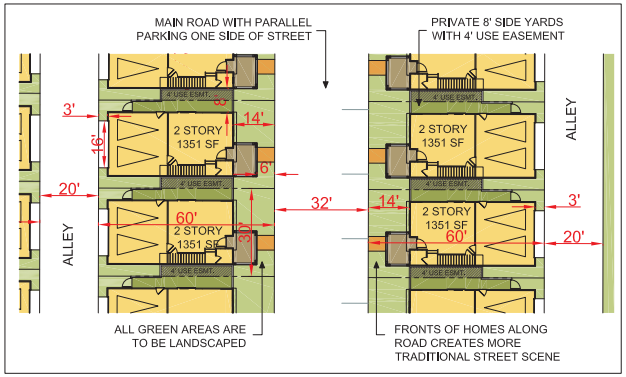
GROSS SITE AREA	4.1 ACRES
NET SITE AREA	3.0 ACRES
TOTAL UNITS	37 UNITS
NET DENSITY	12.3 DU/AC

RESIDENTIAL UNIT SUMMARY

UNIT PLAN	SQ. FT.	BD/BA	# UNITS	% MIX	TOTAL S.F.
PLAN 1 - 2 STORY	1351	3/2.5	37	100%	49,987

PARKING SUMMARY

REQUIRED		PROVIDED	
2 SPACE PER UNIT	74	GARAGE SPACES	74
		PARALLEL SPACES	16
		PULL-IN STALLS	21
		HANDICAP PARKING SPACES	4
TOTAL	74		115



TYPICAL LOT LAYOUT

CITY VIEW
KERN COUNTY HOUSING AUTHORITY
BAKERSFIELD, CA

CONCEPTUAL SITE PLAN

PROJECT ADDRESS:
3403 BERNARD STREET
BAKERSFIELD, CA 93306

APN: 130-162-26

0 40' 80'

DANIELIAN ASSOCIATES
architects ▪ planners

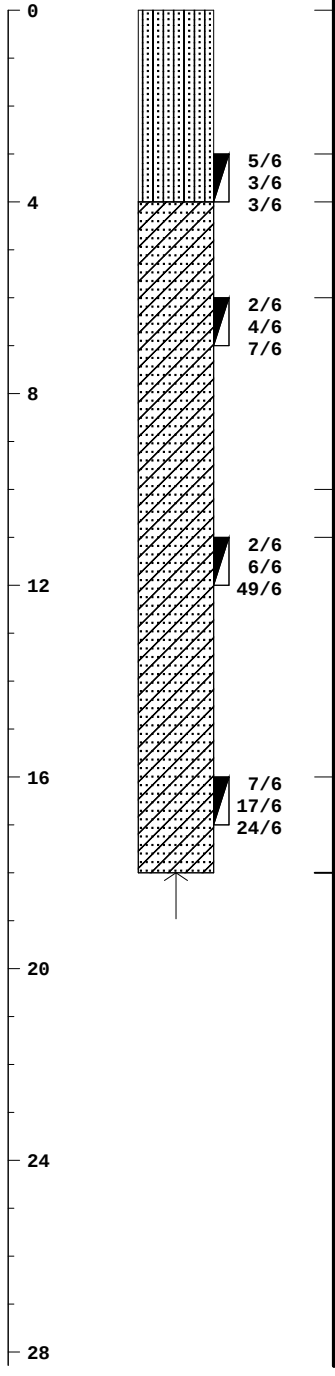
01/26/23

21097.00

LOG OF TEST BORING
BORING B-1

PROJECT: *City View Apartments*
BORING DATE: *7/7/23*
BORING LOCATION: *See Boring Location Map, Figure 1*
DRILL METHOD: *4.25" I.D. Hollow-Stem Auger*
DESCRIPTION: *Geotechnical Engineering Services*
DEPTH TO WATER - ▽ **:** *N/A* **CAVING -** ▰ **:** *N/A*

FILE NO: *19029*
ELEV.: *Approx. 656'*
START: *7/7/23*
FINISH: *7/7/23*
LOGGER: *LW*

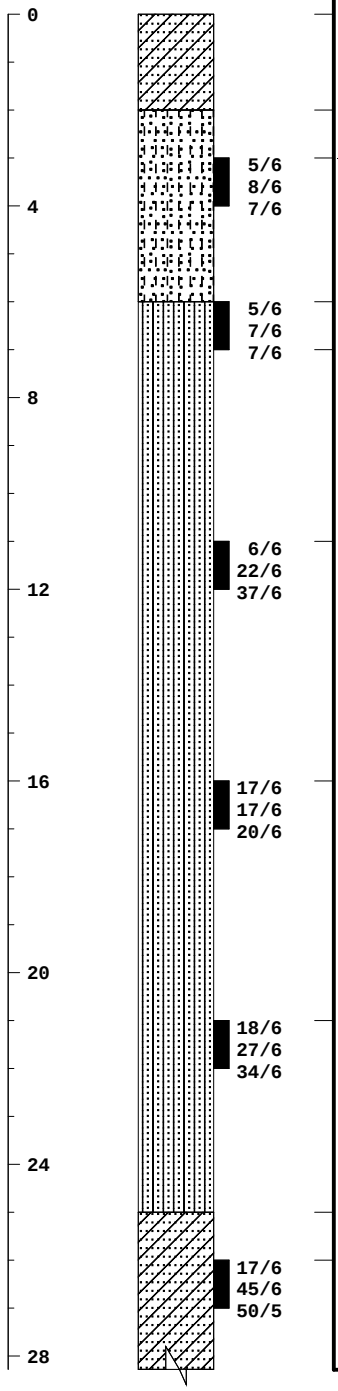


ELEVATION/ DEPTH (feet)	USCS	Description	Remarks	Density pcf	Moisture %
0	SM	SILTY SAND; light yellowish brown, damp, cohesive, gravel.			
		Loose.			3.7
4	SC	CLAYEY SAND; light yellowish brown, damp, gravel.			
		Medium dense.			3.6
8		Hard drilling between 10 and 18 feet due to rock and gravel.			
		Very dense. Sampler hitting rock.			0.9
12					
16		Dense.			1.7
		BOTTOM.	Refusal due to cobbles.		
20					
24					
28					

Figure Number 2

LOG OF TEST BORING
BORING B-2

PROJECT: *City View Apartments*
FILE NO: *19029*
BORING DATE: *7/7/23*
ELEV.: *Approx. 656'*
BORING LOCATION: *See Boring Location Map, Figure 1*
START: *7/7/23*
DRILL METHOD: *4.25" I.D. Hollow-Stem Auger*
FINISH: *7/7/23*
DESCRIPTION: *Geotechnical Engineering Services*
DEPTH TO WATER - ▼ **:** *N/A* **CAVING -** ⬟ **:** *N/A* **LOGGER:** *LW*

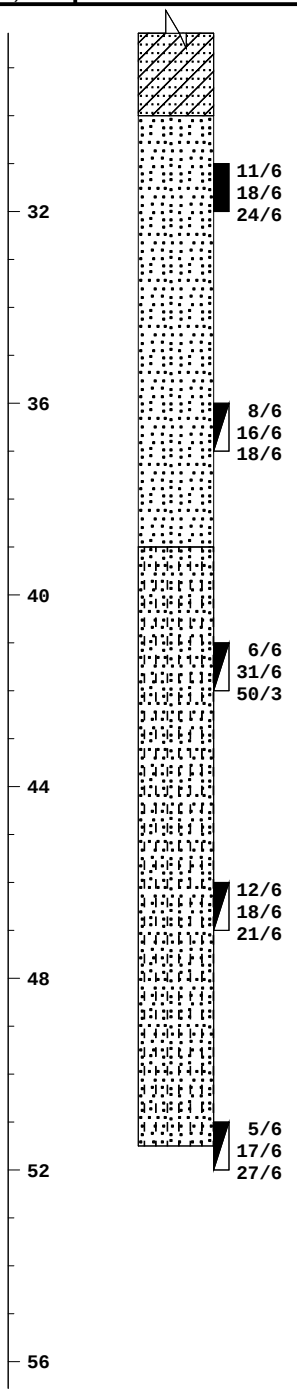


ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
		SC	CLAYEY SAND; light yellowish brown, damp, cohesive, gravel.			
		SP-SM	POORLY GRADED SAND with low fine content; light reddish brown, damp. Medium dense.		106.7	4.6
		SM	SILTY SAND; light yellowish brown, cohesive, loose. Heavier gravel 7-17'		111.1	6.0
			Dense. Hard drilling.		111.5	3.7
			Medium dense, gravel and sand with clay.		109.2	3.5
			Dense.		116.1	6.2
		SC	CLAYEY SAND; dark reddish brown, damp, meidum plasticity. Very dense.		123.9	6.2

Figure Number 3

LOG OF TEST BORING
BORING B-2

PROJECT: *City View Apartments*
FILE NO: *19029*
BORING DATE: *7/7/23*
ELEV.: *Approx. 656'*
BORING LOCATION: *See Boring Location Map, Figure 1*
START: *7/7/23*
DRILL METHOD: *4.25" I.D. Hollow-Stem Auger*
FINISH: *7/7/23*
DESCRIPTION: *Geotechnical Engineering Services*
DEPTH TO WATER - ▽ **:** *N/A* **CAVING -** ▰ **:** *N/A* **LOGGER:** *LW*



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	Density pcf	Moisture %
		SP	POORLY GRADED SAND; light brown, damp, fine to medium grained.		93.2	1.8
			Medium dense, gravel.			
			Dense.			1.6
		SP-SM	POORLY GRADED SAND with low fine content; light yellowish brown, damp, non-cohesive.			1.1
			Very dense.			
			Dense.			1.3
			BOTTOM.			

Figure Number 3

KEY TO SYMBOLS

Symbol	Description
Strata symbols	
	Silty sand
	Clayey sand
	Poorly graded sand with silt
	Poorly graded sand
Misc. Symbols	
	Drill rejection
	Boring continues
Soil Samplers	
	Standard penetration test
	California sampler

Notes:

1. Two (2) exploratory borings were drilled on 07/07/2023 using an 8-inch outside diameter hollow-stem auger.

2. No free groundwater was encountered to the maximum depth drilled of 51.5'.

3. Boring locations are shown on the Boring Location Map, Figure 1.

4. These logs are subject to the limitations, conclusions, and recommendations in this report.

5. Results of tests conducted on samples recovered are reported on the logs.

APPENDIX C

SOIL TEST DATA

SIEVE ANALYSES (ASTM D422 and/or ASTM D1140)

Grain size distributions for specimens retrieved from various subsurface elevations were tested to classify the materials. Test results are presented on Figures A-1 and A-2.

IN-SITU DENSITY & MOISTURE RELATIONSHIPS (ASTM D2216 & D2937)

Moisture & density data for undisturbed native soils was obtained by use of a 2-3/8-inch (inside diameter) split-barrel sampler. Test results are given on the Logs of Test Borings, Figures 2 and 3.

CONSOLIDATION TESTS (ASTM D2435)

Compressibility of soils was determined on saturated, undisturbed samples of native materials. Consolidation Test Diagrams, Figure B-1, graphically express the relationship of vertical strain vs. applied vertical (normal) load for earth materials selected as most representative of the soil strata within the anticipated zone of influence of foundation loads.

DIRECT SHEAR TESTS (ASTM D3080)

Quick-consolidated direct shear test was performed on an undisturbed, saturated sample of native earth materials. This test provides information on soil shear strength vs. normal load and is used to determine the angle of internal friction and cohesion of earth materials under essentially drained conditions. Test results are presented on Figure C-1.

EXPANSION INDEX (ASTM D4829)

The Expansion Index test is designed to measure a basic index property of soil and in this respect is comparable to other index tests such as the Atterberg Limits. In formulating the test procedures, no attempt has been made to duplicate any particular moisture or loading conditions which may occur in the field. Rather, an attempt has been made to control all variables which influence the expansive characteristics of a particular soil and still retain a practical test for general engineering usage. Near surface soils were obtained and tested for expansiveness. Test results are presented on the Laboratory Testing Recap Table 1.

R-VALUE TESTS (CTM-301)

R-Value tests were performed to obtain flexible pavement design data. Test results are presented on Figure D-1.

SOIL CORROSIVITY (SO4 / pH / Chlorides)

Tests for Soluble Sulfates (SO4), Soluble Chlorides (Cl), and pH values were performed on one (1) composite sample taken from the upper 0-5 feet to determine the corrosion potential of the soils. Corrosion prevention measures and the extent to which measures should be taken (if any) should be addressed with the corrosion engineer. Soluble Sulfates and Soluble Chlorides values were determined according to EPA 300.0M. The pH values were determined according to EPA 9045C. Results of all the constituent(s) are discussed in the Soil Corrosivity section.

Golden Empire Affordable Housing, Inc.

Geotechnical Engineering Services
City View Apartments
3403 Bernard Street, Bakersfield, CA 93306

SEI File No. 23-19029
August 4, 2023

TABLE 1

TEST LOCATION	USCS	% < # 200	CONSOLIDATION				DIRECT SHEAR		UNCONFINED COMPRESSION		E.I.	ATTERBERG LIMITS			R-VALUE @ 300 psi		MAXIMUM DENSITY	
			C_C	C_S	S.P. (psf)	HV %	C, (ksf)	F.A.	Q_U, (psi)	C, (ksf)		LL	PL	PI	R.V.	E.P. (psi)	MDD (pcf)	O.M.
B-1 @ 0-5'	SM	38									0							
B-2 @ 3'	SP-SM	6.4									0							
B-2 @ 6'	SM	15					0.37	34.2										
B-2 @ 11'	SM		0.06	0	0	-0.6												
B-2 @ 26'	SC	46																
B-2 @ 31'	SP	4.4																
B-2 @ 41'	SP-SM	9.7																
R-1 @ 0-5'	SM	29													59	0		

CONSOLIDATION
Cc - Compression Index
Cs - Swell Index
S.P. (psf) - Swell Pressure
HV % - Heave Precentage / Collapase

UNCONFINED COMPRESSION
Q_U (psi) - Unconfined Compression Strength
C, (ksf) - Cohesion

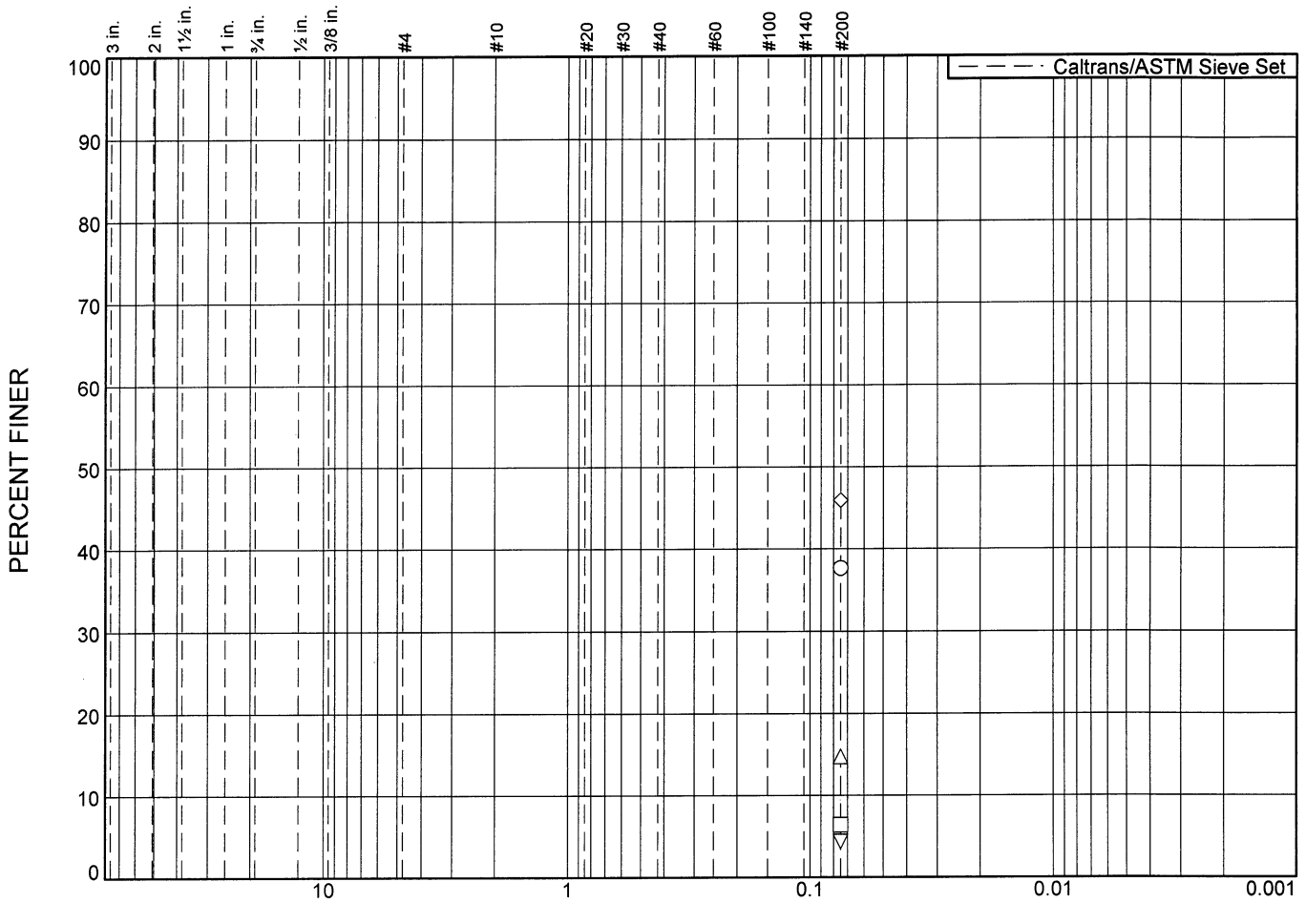
DIRECT SHEAR
C (ksf) - Cohesion
F.A. - Friction Angle

E.I. - EXPANSION INDEX
ATTERBERG LIMITS
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index

(R)ESISTANCE VALUE
RV - R-Value @ 300 psi
EP - Expansion Press @ 300 psi

SOILS ENGINEERING, INC.

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							37.7	
□							6.4	
△							14.7	
◇							45.9	
▽							4.4	

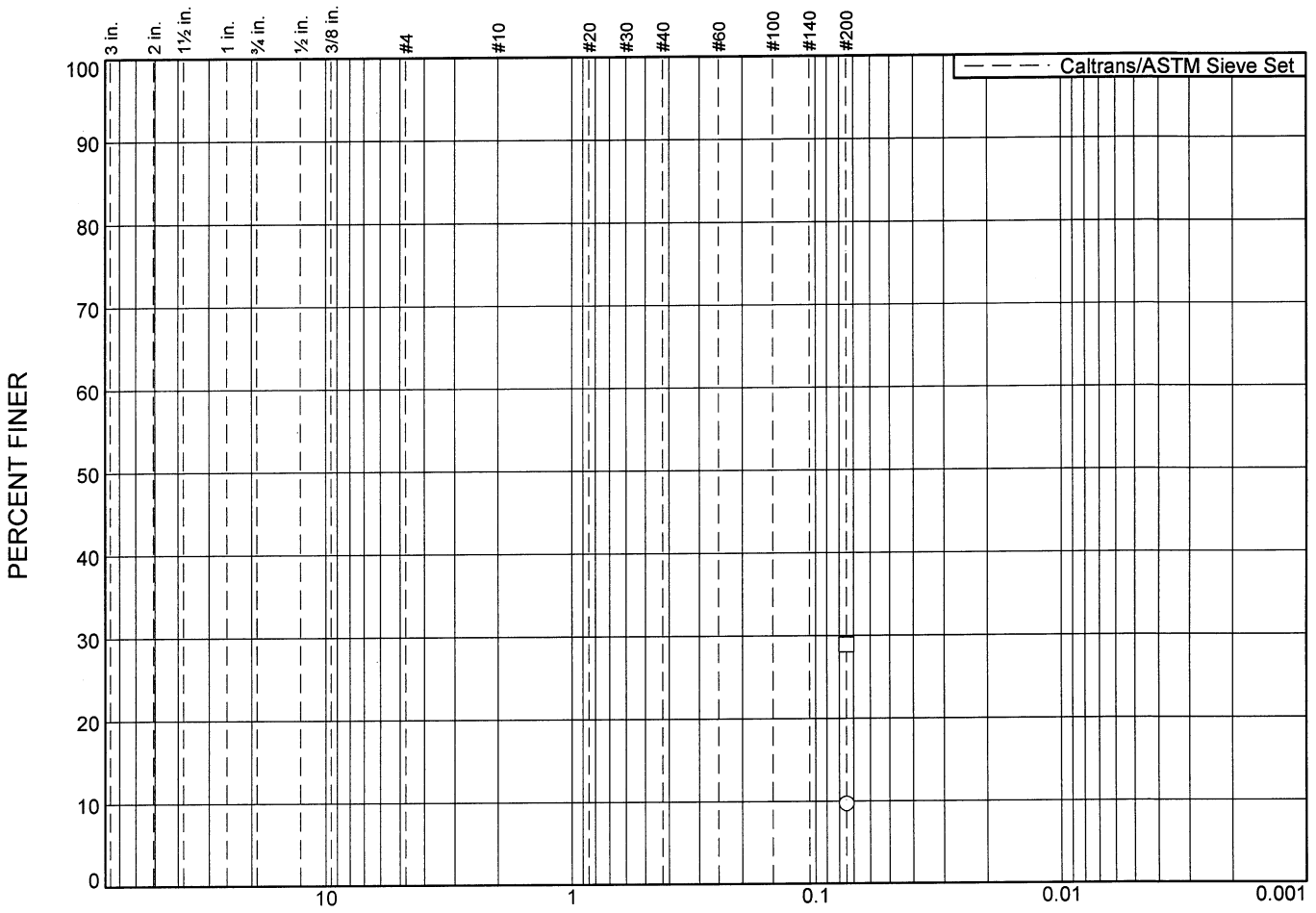
SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○		89087	0-5'	SILTY SAND (B-1)	SM
□	B-2		3'	POORLY GRADED SAND with low fine content	SP-SM
△	B-2		6'	SILTY SAND	SM
◇	B-2		26'	CLAYEY SAND	SC
▽	B-2		31'	POORLY GRADED SAND	SP

SOILS ENGINEERING, INC.

Client: Golden Empire Affordable Housing, Inc.
Project: City View Apartments
Project No.: 19029 **Figure** A-1

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○							9.7	
□							28.9	

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B-2		41'	POORLY GRADED SAND with low fine content	SP-SM
□		89103	0-5'	SILTY SAND (R-1)	SM

SOILS ENGINEERING, INC.

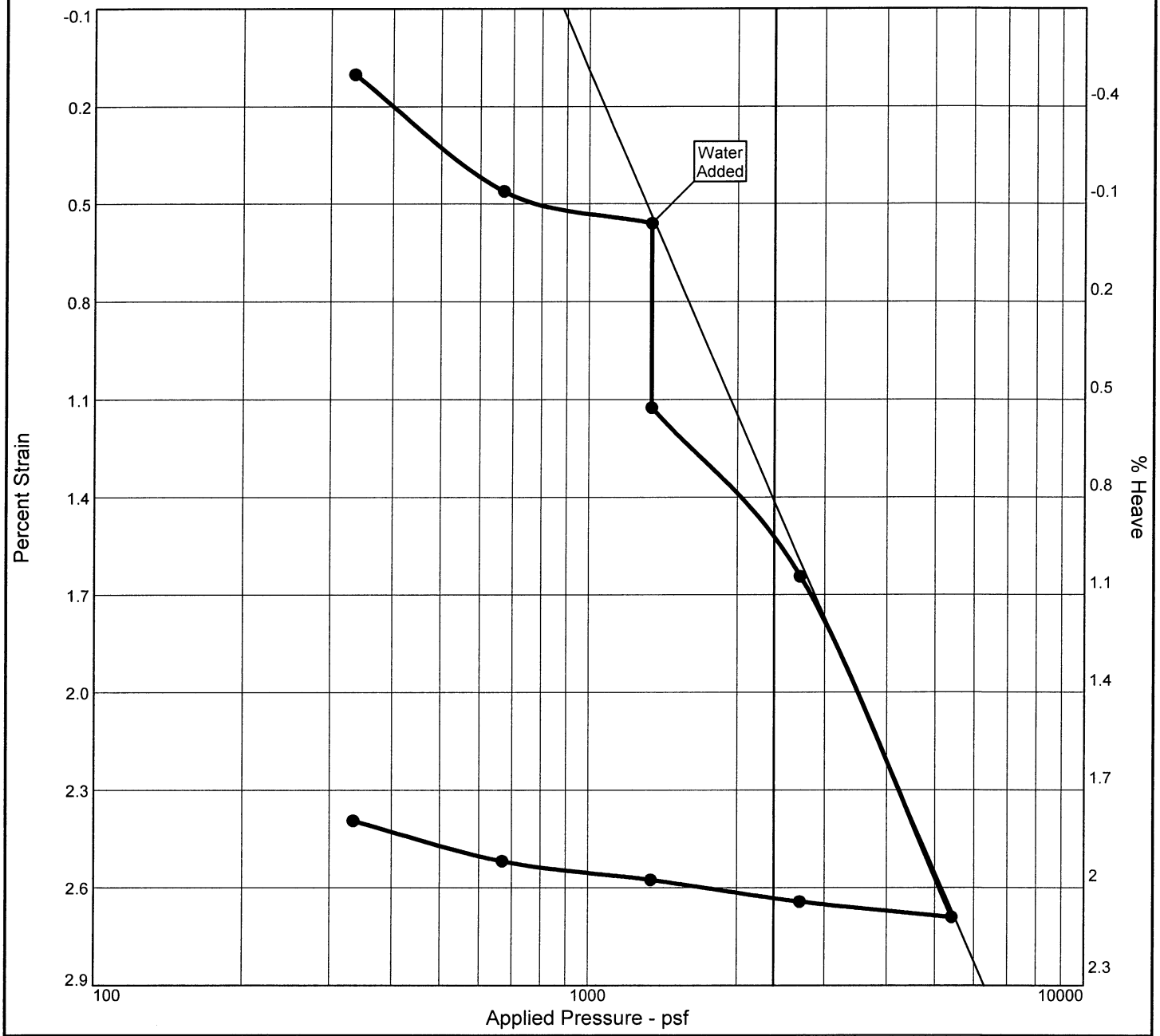
Client: Golden Empire Affordable Housing, Inc.

Project: City View Apartments

Project No.: 19029

Figure A-2

CONSOLIDATION TEST REPORT



Natural		Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (psf)	P_c (psf)	C_c	C_s	Swell Press. (psf)	Heave %	e_o
Sat.	Moist.											
41.2 %	9.0 %	104.7	N/A	N/A	2.65	336	2628	0.06	0.00		-0.6	0.581

MATERIAL DESCRIPTION	USCS	AASHTO
SILTY SAND	SM	N/A

Project No. 19029 **Client:** Golden Empire Affordable Housing, Inc.

Project: City View Apartments

Source of Sample: B-2 **Depth:** 11'

Remarks:

Test Date: 07/27/23

SOILS ENGINEERING, INC.

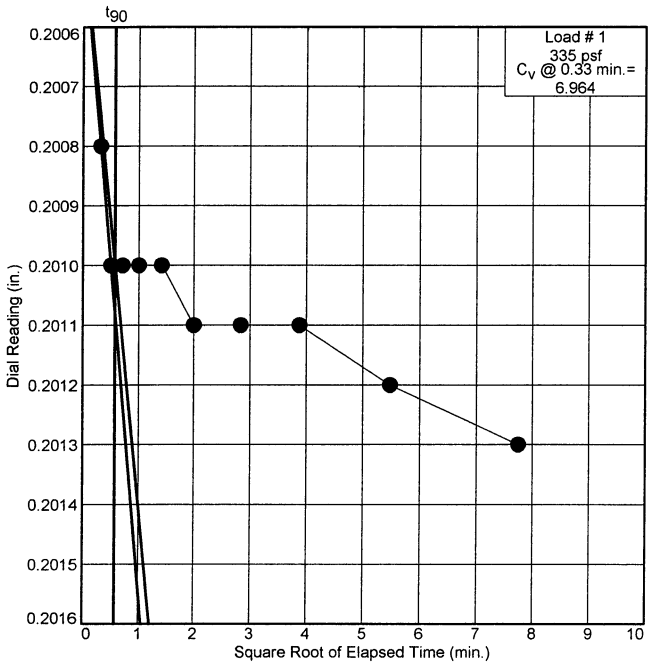
Figure B-1

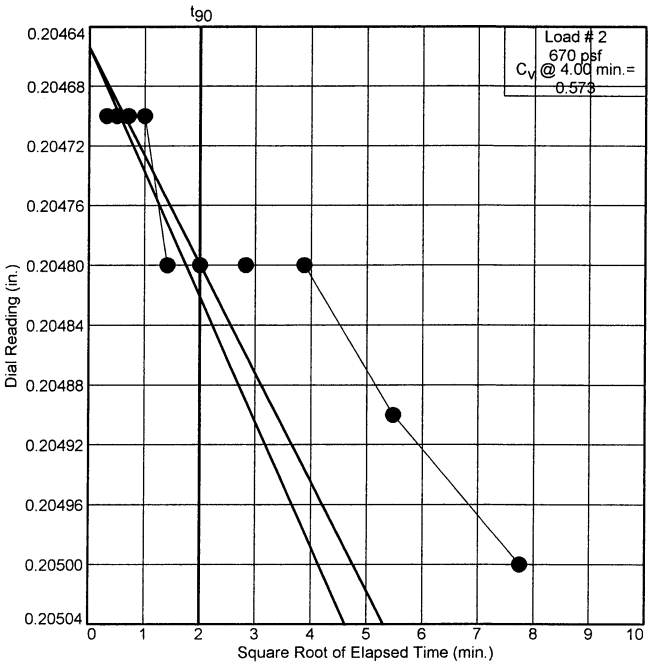
Tested By: CE **Checked By:** AL

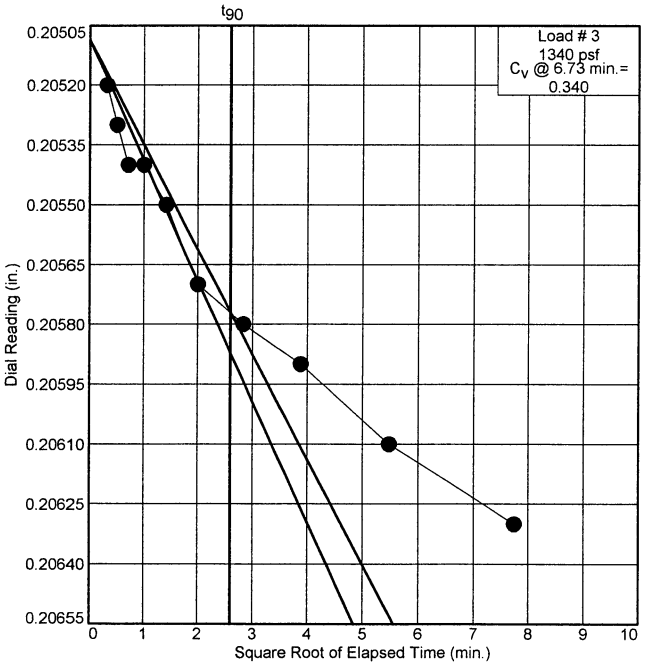
Dial Reading vs. Time

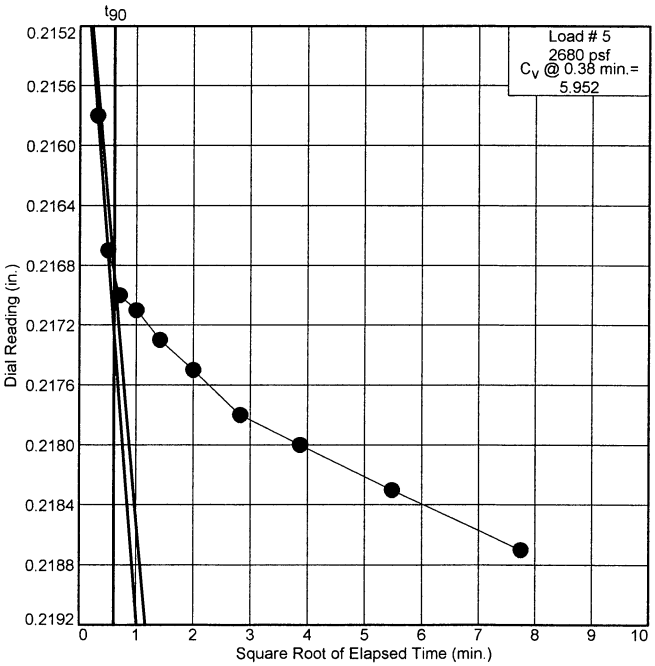
Project No.: 19029
Project: City View Apartments

Source of Sample: B-2 Depth: 11'









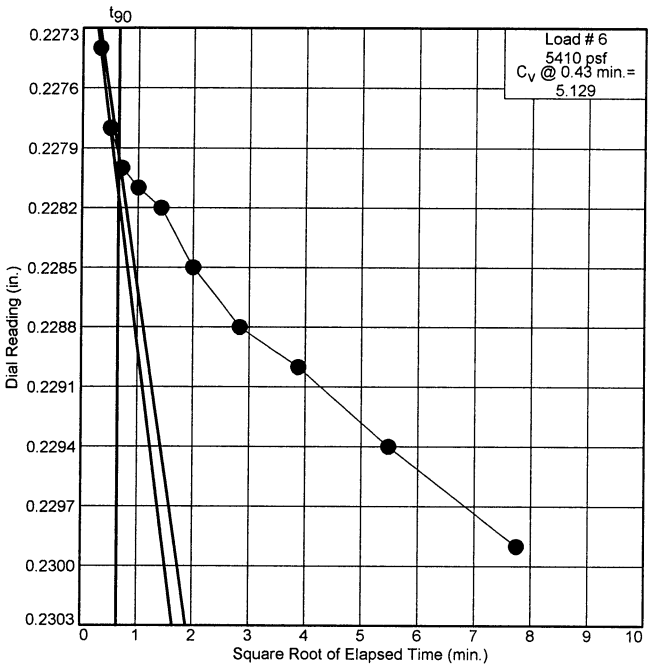
SOILS ENGINEERING, INC.

Figure B-1

Dial Reading vs. Time

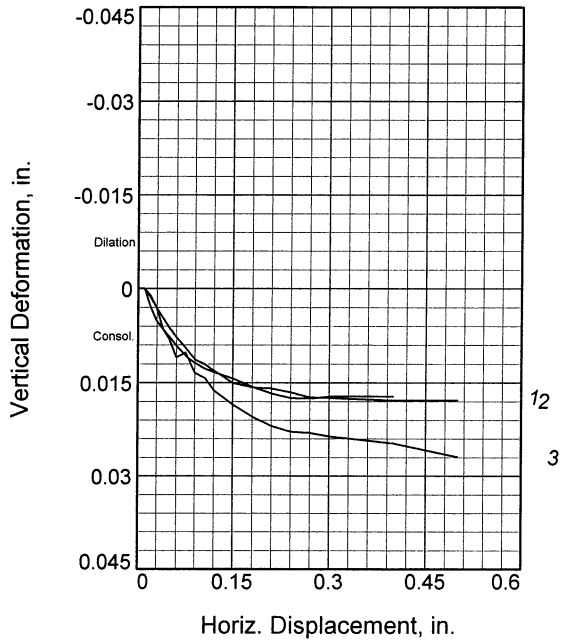
Project No.: 19029
Project: City View Apartments

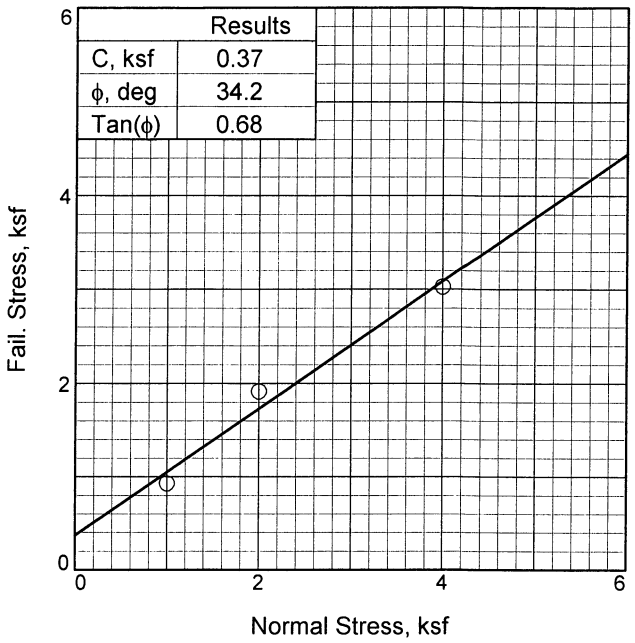
Source of Sample: B-2 Depth: 11'

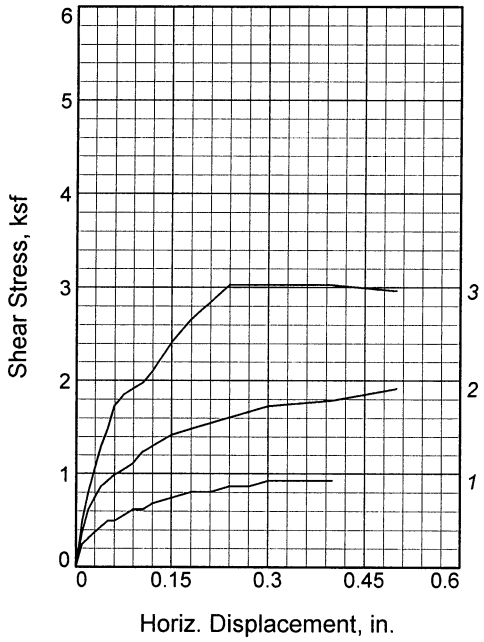


SOILS ENGINEERING, INC.

Figure B-1







Sample No.		1	2	3
Initial	Water Content, %	5.6	6.9	8.0
	Dry Density, pcf	90.9	85.6	84.9
	Saturation, %	18.0	19.7	22.3
	Void Ratio	0.8201	0.9335	0.9492
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	18.6	20.3	20.2
	Dry Density, pcf	90.9	85.6	84.9
	Saturation, %	60.2	57.6	56.3
	Void Ratio	0.8201	0.9335	0.9492
	Diameter, in.	2.38	2.38	2.38
	Height, in.	1.00	1.00	1.00
Normal Stress, ksf		1.00	2.00	4.00
Fail. Stress, ksf		0.93	1.91	3.03
Displacement, in.		0.30	0.50	0.24
Ult. Stress, ksf				
Displacement, in.				
Strain rate, in./min.		N/A	N/A	N/A

Sample Type: 2.5" x 6" TUBE
Description: SILTY SAND; light reddish brown, fine, cohesive.
LL= N/A **PI=** N/A
Assumed Specific Gravity= 2.65
Remarks: Test Date: 07/27/23

Client: Golden Empire Affordable Housing, Inc.

Project: City View Apartments

Source of Sample: B-2 **Depth:** 6'

Proj. No.: 19029 **Date Sampled:** 07/07/23

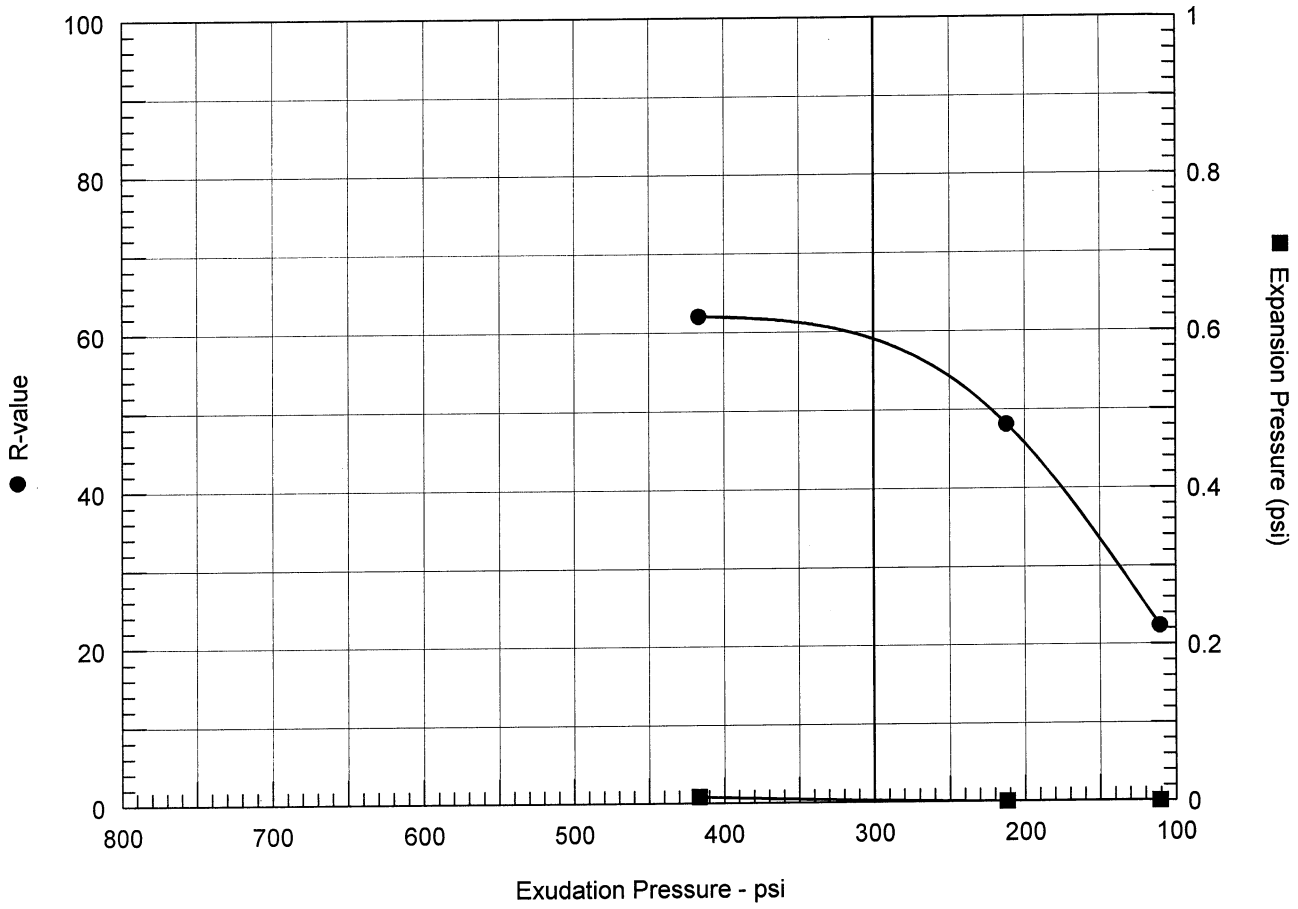
DIRECT SHEAR TEST REPORT

SOILS ENGINEERING, INC.

Figure C-1

Tested By: DH **Checked By:** AL

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	155	122.0	9.5	0.01	34	2.41	417	64	62
2	105	124.9	10.5	0.00	56	2.46	212	48	48
3	55	124.7	11.6	0.00	100	2.50	111	22	22

Test Results	Material Description
R-value at 300 psi exudation pressure = 59 **Exp. pressure at 300 psi exudation pressure =** 0.00 psi	SILTY SAND; light brown, poorly graded, cohesive.

Project No.: 19029
Project: City View Apartments
Location: R-1 @ 0-5'
Sample Number: 89103 **Depth:** 0-5'
Date: 7/21/2023

Tested by: RC
Checked by: AL
Remarks:
Test Date: 07/10/23

R-VALUE TEST REPORT

SOILS ENGINEERING, INC.

Figure D-1

APPENDIX D

SEISMIC INVESTIGATION

SEISMIC DESIGN INFORMATION
SEAC Design Map Summary and Detail Report

EQFAULT
Version 3.00

California Fault Map

19029 City View Apartments

Latitude, Longitude: 35.3912, -118.9547

Date	7/28/2023, 10:42:27 AM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	0.92	MCE_R ground motion. (for 0.2 second period)
S_1	0.331	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.042	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.694	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.132	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.398	MCE_G peak ground acceleration
F_{PGA}	1.202	Site amplification factor at PGA
PGA_M	0.479	Site modified peak ground acceleration
T_L	12	Long-period transition period in seconds
SsRT	0.92	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.996	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.331	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.359	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.398	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.924	Mapped value of the risk coefficient at short periods

Type	Value	Description
C_{R1}	0.921	Mapped value of the risk coefficient at a period of 1 s
C_V	1.26	Vertical coefficient

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*   *
* E Q F A U L T *
*   *
* Version 3.00 *
*   *
****

DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 19029

DATE: 07-27-2023

JOB NAME: City View Apartments

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: CGSFLTE.DAT

SITE COORDINATES:
SITE LATITUDE: 35.3912
SITE LONGITUDE: 118.9547

SEARCH RADIUS: 100 mi

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
DISTANCE MEASURE: cd_2drp
SCOND: 0
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT MAXIMUM EARTHQUAKE MAG.(Mw)	PEAK SITE ACCEL. g	EST. SITE INTENSITY MOD.MERC.
Kern Front	5.7(9.1)	6.3	0.313	IX
WHITE WOLF	16.5(26.6)	7.3	0.256	IX
PLEITO THRUST	27.0(43.5)	7.0	0.151	VIII
GARLOCK (West)	35.7(57.4)	7.3	0.117	VII
SAN ANDREAS - Whole M-1a	38.6(62.2)	8.0	0.159	VIII
SAN ANDREAS - Carrizo M-1c-2	38.6(62.2)	7.4	0.116	VII
SAN ANDREAS - 1857 Rupture M-2a	38.6(62.2)	7.8	0.143	VIII
SAN ANDREAS - Cho-Moj M-1b-1	38.6(62.2)	7.8	0.143	VIII
BIG PINE	39.5(63.5)	6.9	0.088	VII
SAN GABRIEL	47.0(75.7)	7.2	0.090	VII
SAN ANDREAS - Cholame M-1c-1	51.6(83.1)	7.3	0.088	VII
GARLOCK (East)	52.9(85.2)	7.5	0.096	VII
SAN ANDREAS - Mojave M-1c-3	54.1(87.0)	7.4	0.090	VII
So. SIERRA NEVADA	55.5(89.3)	7.3	0.101	VII
SANTA YNEZ (East)	55.6(89.5)	7.1	0.075	VII
SAN JUAN	59.1(95.1)	7.1	0.071	VI

SAN CAYETANO	60.3(97.0)	7.0	0.081	VII
M.RIDGE-ARROYO PARIDA-SANTA ANA	61.5(99.0)	7.2	0.089	VII
SANTA SUSANA	66.7(107.4)	6.7	0.064	VI
HOLSER	66.8(107.5)	6.5	0.058	VI
NORTH CHANNEL SLOPE	67.9(109.2)	7.4	0.091	VII
LENWOOD-LOCKHART-OLD WOMAN SPRGS	68.2(109.8)	7.5	0.079	VII
OAK RIDGE (Onshore)	69.2(111.3)	7.0	0.073	VII
RED MOUNTAIN	69.2(111.4)	7.0	0.073	VII
NORTHRIDGE (E. Oak Ridge)	69.5(111.9)	7.0	0.073	VII
GREAT VALLEY 14	70.1(112.8)	6.4	0.053	VI
LITTLE LAKE	70.3(113.2)	6.9	0.056	VI
SANTA YNEZ (West)	71.3(114.8)	7.1	0.062	VI
VENTURA - PITAS POINT	71.6(115.2)	6.9	0.067	VI
SIMI-SANTA ROSA	71.6(115.3)	7.0	0.071	VI
SIERRA MADRE (San Fernando)	72.2(116.2)	6.7	0.060	VI
OAK RIDGE MID-CHANNEL STRUCTURE	75.6(121.6)	6.6	0.055	VI
SAN LUIS RANGE (S. Margin)	76.2(122.7)	7.2	0.075	VII
OWENS VALLEY	77.7(125.1)	7.6	0.075	VII
CHANNEL IS. THRUST (Eastern)	79.4(127.8)	7.5	0.085	VII
VERDUGO	79.5(127.9)	6.9	0.062	VI
SAN ANDREAS - Parkfield	79.8(128.4)	6.5	0.041	V
LOS ALAMOS-W. BASELINE	81.6(131.4)	6.9	0.061	VI
SIERRA MADRE	82.4(132.6)	7.2	0.071	VI
GREAT VALLEY 13	84.9(136.7)	6.5	0.048	VI

DETERMINISTIC SITE PARAMETERS

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT: MAXIMUM EARTHQUAKE MAG.(Mw)	ESTIMATED MAX. EARTHQUAKE EVENT: PEAK SITE ACCEL. g	ESTIMATED MAX. EARTHQUAKE EVENT: EST. SITE INTENSITY MOD.MERC.
HELENDALE - S. LOCKHARDT	85.0(136.8)	7.3	0.060	VI
GRAVEL HILLS - HARPER LAKE	85.1(136.9)	7.1	0.054	VI
ANACAPA-DUME	85.3(137.3)	7.5	0.081	VII
LIONS HEAD	85.4(137.5)	6.6	0.050	VI
OAK RIDGE(Blind Thrust Offshore)	85.9(138.2)	7.1	0.065	VI
LOS OSOS	86.6(139.4)	7.0	0.061	VI
BLACKWATER	86.9(139.9)	7.1	0.053	VI
RINCONADA	87.8(141.3)	7.5	0.065	VI
CASMALIA (Orcutt Frontal Fault)	88.9(143.1)	6.5	0.046	VI
MALIBU COAST	90.4(145.5)	6.7	0.051	VI
INDEPENDENCE	90.8(146.1)	7.1	0.062	VI

CLAMSHELL-SAWPIT	91.5(147.2)	6.5	0.045	VI
HOLLYWOOD	92.1(148.3)	6.4	0.043	VI
UPPER ELYSIAN PARK BLIND THRUST	93.7(150.8)	6.4	0.042	VI
SANTA MONICA	94.2(151.6)	6.6	0.046	VI
TANK CANYON	94.3(151.7)	6.4	0.042	VI
PUENTE HILLS BLIND THRUST	94.6(152.3)	7.1	0.060	VI
RAYMOND	95.0(152.9)	6.5	0.044	VI
NEWPORT-INGLEWOOD (L.A.Basin)	98.4(158.4)	7.1	0.048	VI
SAN ANDREAS (Creeping)	99.8 (160.6)	6.2	0.030	V

****

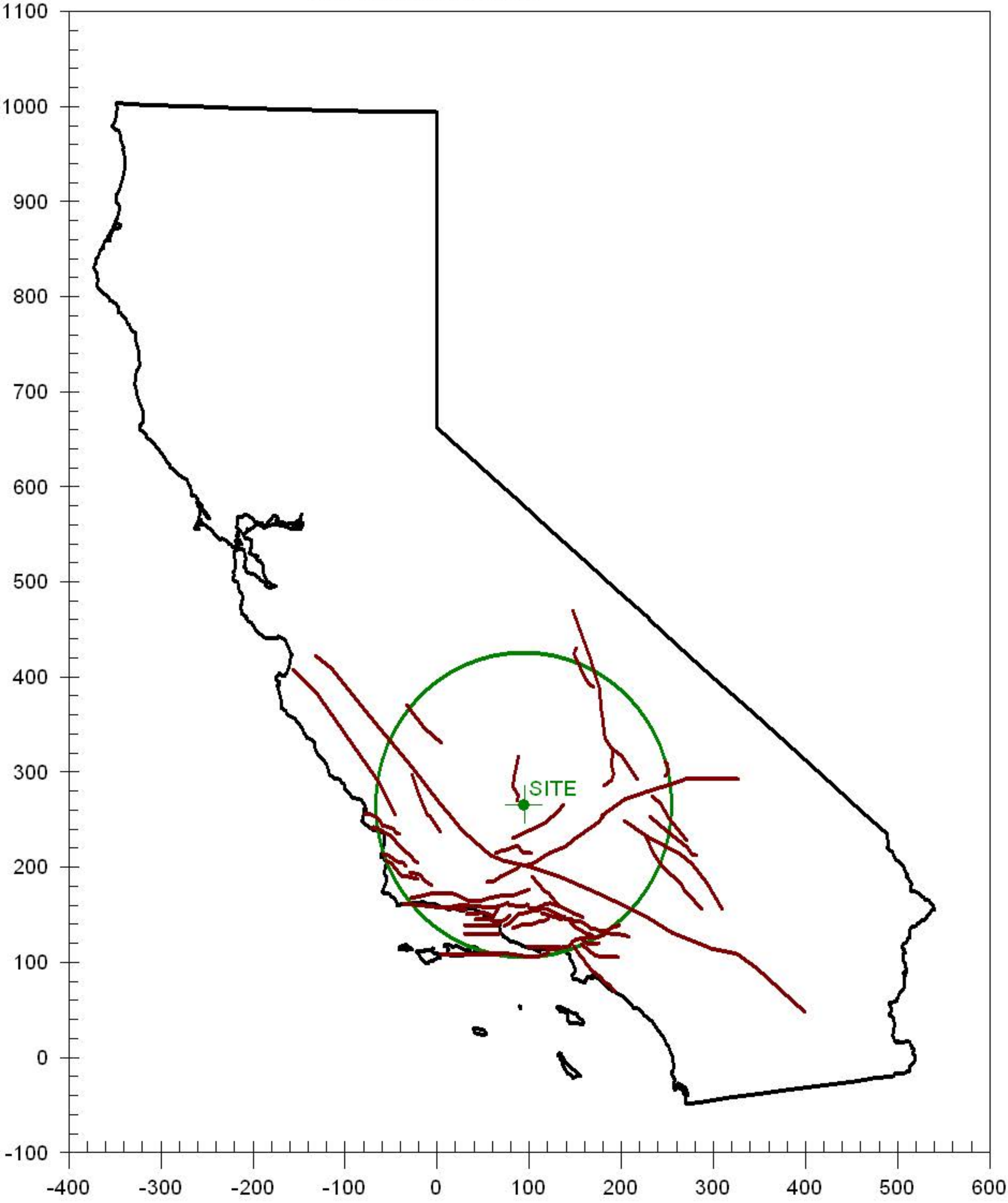
-END OF SEARCH- 60 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE Kern Front FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 5.7 MILES (9.1 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.3127 g

CALIFORNIA FAULT MAP

City View Apartments

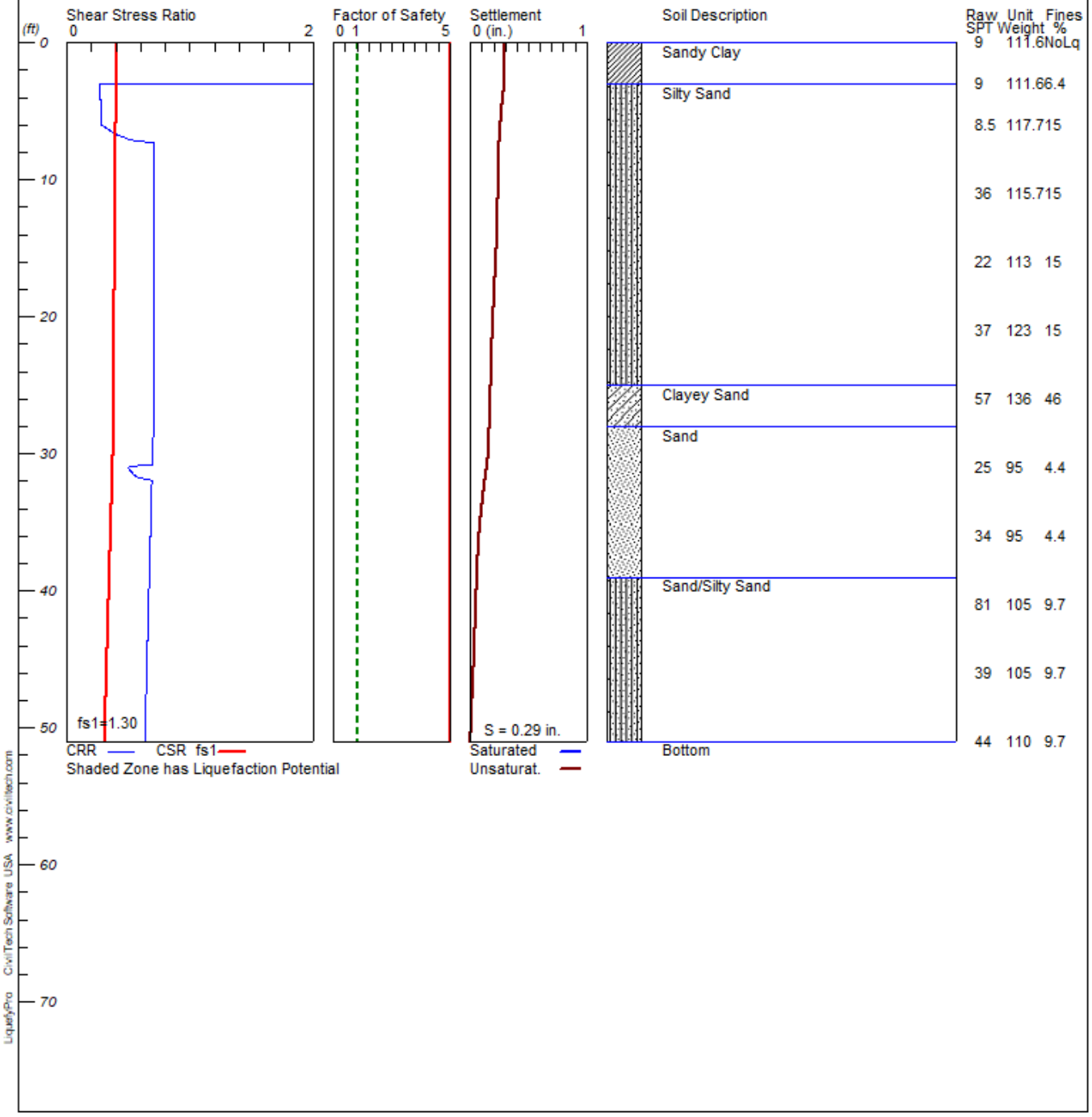


LIQUEFACTION ANALYSIS

19029 City View Apts

Hole No.=B-2 Water Depth=117 ft

Magnitude=6.57
Acceleration=0.479g



****
LIQUEFACTION ANALYSIS SUMMARY
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Font: Courier New, Regular, Size 8 is recommended for this report.
Licensed to SEI, 7/31/2023 11:08:50 AM

Input File Name: O:\b. PROJECT FILES (ACTIVE)\19000-19099\19029 Golden Empire Affordable Housing, City View Apartments GEOTECH \OFFICE REPORTS\Site Info and Seismic\LiquefyPro Data\19029 B-2 Liquefy.liq
Title: 19029 City View Apts
Subtitle: 19029

Surface Elev.=
Hole No.=B-2
Depth of Hole= 51.00 ft
Water Table during Earthquake= 117.00 ft
Water Table during In-Situ Testing= 117.00 ft
Max. Acceleration= 0.48 g
Earthquake Magnitude= 6.57

Input Data:
Surface Elev.=
Hole No.=B-2
Depth of Hole=51.00 ft
Water Table during Earthquake= 117.00 ft
Water Table during In-Situ Testing= 117.00 ft
Max. Acceleration=0.48 g
Earthquake Magnitude=6.57
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

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= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	9.00	111.60	NoLiq
3.00	9.00	111.60	6.40
6.00	8.50	117.70	15.00
11.00	36.00	115.70	15.00
16.00	22.00	113.00	15.00
21.00	37.00	123.00	15.00
26.00	57.00	136.00	46.00
31.00	25.00	95.00	4.40
36.00	34.00	95.00	4.40
41.00	81.00	105.00	9.70
46.00	39.00	105.00	9.70
51.00	44.00	110.00	9.70

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.29 in.
Total Settlement of Saturated and Unsaturated Sands=0.29 in.
Differential Settlement=0.145 to 0.191 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.40	5.00	0.00	0.29	0.29
0.05	2.00	0.40	5.00	0.00	0.29	0.29
0.10	2.00	0.40	5.00	0.00	0.29	0.29
0.15	2.00	0.40	5.00	0.00	0.29	0.29
0.20	2.00	0.40	5.00	0.00	0.29	0.29
0.25	2.00	0.40	5.00	0.00	0.29	0.29
0.30	2.00	0.40	5.00	0.00	0.29	0.29
0.35	2.00	0.40	5.00	0.00	0.29	0.29
0.40	2.00	0.40	5.00	0.00	0.29	0.29
0.45	2.00	0.40	5.00	0.00	0.29	0.29
0.50	2.00	0.40	5.00	0.00	0.29	0.29
0.55	2.00	0.40	5.00	0.00	0.29	0.29
0.60	2.00	0.40	5.00	0.00	0.29	0.29
0.65	2.00	0.40	5.00	0.00	0.29	0.29
0.70	2.00	0.40	5.00	0.00	0.29	0.29
0.75	2.00	0.40	5.00	0.00	0.29	0.29
0.80	2.00	0.40	5.00	0.00	0.29	0.29
0.85	2.00	0.40	5.00	0.00	0.29	0.29
0.90	2.00	0.40	5.00	0.00	0.29	0.29
0.95	2.00	0.40	5.00	0.00	0.29	0.29
1.00	2.00	0.40	5.00	0.00	0.29	0.29
1.05	2.00	0.40	5.00	0.00	0.29	0.29
1.10	2.00	0.40	5.00	0.00	0.29	0.29
1.15	2.00	0.40	5.00	0.00	0.29	0.29
1.20	2.00	0.40	5.00	0.00	0.29	0.29
1.25	2.00	0.40	5.00	0.00	0.29	0.29
1.30	2.00	0.40	5.00	0.00	0.29	0.29

1.35	2.00	0.40	5.00	0.00	0.29	0.29
1.40	2.00	0.40	5.00	0.00	0.29	0.29
1.45	2.00	0.40	5.00	0.00	0.29	0.29
1.50	2.00	0.40	5.00	0.00	0.29	0.29
1.55	2.00	0.40	5.00	0.00	0.29	0.29
1.60	2.00	0.40	5.00	0.00	0.29	0.29
1.65	2.00	0.40	5.00	0.00	0.29	0.29
1.70	2.00	0.40	5.00	0.00	0.29	0.29
1.75	2.00	0.40	5.00	0.00	0.29	0.29
1.80	2.00	0.40	5.00	0.00	0.29	0.29
1.85	2.00	0.40	5.00	0.00	0.29	0.29
1.90	2.00	0.40	5.00	0.00	0.29	0.29
1.95	2.00	0.40	5.00	0.00	0.29	0.29
2.00	2.00	0.40	5.00	0.00	0.29	0.29
2.05	2.00	0.40	5.00	0.00	0.29	0.29
2.10	2.00	0.40	5.00	0.00	0.29	0.29
2.15	2.00	0.40	5.00	0.00	0.29	0.29
2.20	2.00	0.40	5.00	0.00	0.29	0.29
2.25	2.00	0.40	5.00	0.00	0.29	0.29
2.30	2.00	0.40	5.00	0.00	0.29	0.29
2.35	2.00	0.40	5.00	0.00	0.29	0.29
2.40	2.00	0.40	5.00	0.00	0.29	0.29
2.45	2.00	0.40	5.00	0.00	0.29	0.29
2.50	2.00	0.40	5.00	0.00	0.29	0.29
2.55	2.00	0.40	5.00	0.00	0.29	0.29
2.60	2.00	0.40	5.00	0.00	0.29	0.29
2.65	2.00	0.40	5.00	0.00	0.29	0.29
2.70	2.00	0.40	5.00	0.00	0.29	0.29
2.75	2.00	0.40	5.00	0.00	0.29	0.29
2.80	2.00	0.40	5.00	0.00	0.29	0.29
2.85	2.00	0.40	5.00	0.00	0.29	0.29
2.90	2.00	0.40	5.00	0.00	0.29	0.29
2.95	2.00	0.40	5.00	0.00	0.29	0.29
3.00	2.00	0.40	5.00	0.00	0.29	0.29
3.05	0.27	0.40	5.00	0.00	0.29	0.29
3.10	0.27	0.40	5.00	0.00	0.29	0.29
3.15	0.27	0.40	5.00	0.00	0.29	0.29
3.20	0.27	0.40	5.00	0.00	0.29	0.29
3.25	0.27	0.40	5.00	0.00	0.29	0.29
3.30	0.27	0.40	5.00	0.00	0.29	0.29
3.35	0.27	0.40	5.00	0.00	0.29	0.29
3.40	0.27	0.40	5.00	0.00	0.29	0.29
3.45	0.27	0.40	5.00	0.00	0.29	0.29
3.50	0.27	0.40	5.00	0.00	0.29	0.29
3.55	0.27	0.40	5.00	0.00	0.29	0.29
3.60	0.27	0.40	5.00	0.00	0.28	0.28
3.65	0.27	0.40	5.00	0.00	0.28	0.28
3.70	0.27	0.40	5.00	0.00	0.28	0.28
3.75	0.27	0.40	5.00	0.00	0.28	0.28
3.80	0.27	0.40	5.00	0.00	0.28	0.28
3.85	0.27	0.40	5.00	0.00	0.28	0.28
3.90	0.27	0.40	5.00	0.00	0.28	0.28
3.95	0.27	0.40	5.00	0.00	0.28	0.28
4.00	0.27	0.40	5.00	0.00	0.28	0.28

4.05	0.27	0.40	5.00	0.00	0.28	0.28
4.10	0.27	0.40	5.00	0.00	0.28	0.28
4.15	0.27	0.40	5.00	0.00	0.28	0.28
4.20	0.27	0.40	5.00	0.00	0.28	0.28
4.25	0.27	0.40	5.00	0.00	0.28	0.28
4.30	0.27	0.40	5.00	0.00	0.28	0.28
4.35	0.27	0.40	5.00	0.00	0.27	0.27
4.40	0.27	0.40	5.00	0.00	0.27	0.27
4.45	0.27	0.40	5.00	0.00	0.27	0.27
4.50	0.27	0.40	5.00	0.00	0.27	0.27
4.55	0.27	0.40	5.00	0.00	0.27	0.27
4.60	0.27	0.40	5.00	0.00	0.27	0.27
4.65	0.27	0.40	5.00	0.00	0.27	0.27
4.70	0.28	0.40	5.00	0.00	0.27	0.27
4.75	0.28	0.40	5.00	0.00	0.27	0.27
4.80	0.28	0.40	5.00	0.00	0.27	0.27
4.85	0.28	0.40	5.00	0.00	0.27	0.27
4.90	0.28	0.40	5.00	0.00	0.27	0.27
4.95	0.28	0.40	5.00	0.00	0.27	0.27
5.00	0.28	0.40	5.00	0.00	0.27	0.27
5.05	0.28	0.40	5.00	0.00	0.27	0.27
5.10	0.28	0.40	5.00	0.00	0.27	0.27
5.15	0.28	0.40	5.00	0.00	0.27	0.27
5.20	0.28	0.40	5.00	0.00	0.27	0.27
5.25	0.28	0.40	5.00	0.00	0.27	0.27
5.30	0.28	0.40	5.00	0.00	0.27	0.27
5.35	0.28	0.40	5.00	0.00	0.26	0.26
5.40	0.28	0.40	5.00	0.00	0.26	0.26
5.45	0.28	0.40	5.00	0.00	0.26	0.26
5.50	0.28	0.40	5.00	0.00	0.26	0.26
5.55	0.28	0.40	5.00	0.00	0.26	0.26
5.60	0.28	0.40	5.00	0.00	0.26	0.26
5.65	0.28	0.40	5.00	0.00	0.26	0.26
5.70	0.28	0.40	5.00	0.00	0.26	0.26
5.75	0.28	0.40	5.00	0.00	0.26	0.26
5.80	0.28	0.40	5.00	0.00	0.26	0.26
5.85	0.28	0.40	5.00	0.00	0.26	0.26
5.90	0.28	0.40	5.00	0.00	0.26	0.26
5.95	0.28	0.40	5.00	0.00	0.26	0.26
6.00	0.28	0.40	5.00	0.00	0.26	0.26
6.05	0.29	0.40	5.00	0.00	0.26	0.26
6.10	0.30	0.40	5.00	0.00	0.26	0.26
6.15	0.31	0.40	5.00	0.00	0.26	0.26
6.20	0.32	0.40	5.00	0.00	0.26	0.26
6.25	0.32	0.40	5.00	0.00	0.25	0.25
6.30	0.33	0.40	5.00	0.00	0.25	0.25
6.35	0.34	0.40	5.00	0.00	0.25	0.25
6.40	0.35	0.40	5.00	0.00	0.25	0.25
6.45	0.36	0.40	5.00	0.00	0.25	0.25
6.50	0.37	0.40	5.00	0.00	0.25	0.25
6.55	0.38	0.40	5.00	0.00	0.25	0.25
6.60	0.39	0.40	5.00	0.00	0.25	0.25
6.65	0.40	0.40	5.00	0.00	0.25	0.25
6.70	0.41	0.40	5.00	0.00	0.25	0.25

6.75	0.42	0.40	5.00	0.00	0.25	0.25
6.80	0.43	0.40	5.00	0.00	0.25	0.25
6.85	0.44	0.40	5.00	0.00	0.25	0.25
6.90	0.46	0.40	5.00	0.00	0.25	0.25
6.95	0.47	0.40	5.00	0.00	0.25	0.25
7.00	0.48	0.40	5.00	0.00	0.25	0.25
7.05	0.50	0.40	5.00	0.00	0.25	0.25
7.10	0.52	0.40	5.00	0.00	0.25	0.25
7.15	0.54	0.40	5.00	0.00	0.25	0.25
7.20	0.58	0.40	5.00	0.00	0.25	0.25
7.25	0.68	0.40	5.00	0.00	0.25	0.25
7.30	0.70	0.40	5.00	0.00	0.25	0.25
7.35	0.70	0.40	5.00	0.00	0.25	0.25
7.40	0.70	0.40	5.00	0.00	0.25	0.25
7.45	0.70	0.40	5.00	0.00	0.25	0.25
7.50	0.70	0.40	5.00	0.00	0.25	0.25
7.55	0.70	0.40	5.00	0.00	0.25	0.25
7.60	0.70	0.40	5.00	0.00	0.25	0.25
7.65	0.70	0.40	5.00	0.00	0.25	0.25
7.70	0.70	0.40	5.00	0.00	0.25	0.25
7.75	0.70	0.40	5.00	0.00	0.25	0.25
7.80	0.70	0.40	5.00	0.00	0.25	0.25
7.85	0.70	0.40	5.00	0.00	0.25	0.25
7.90	0.70	0.40	5.00	0.00	0.25	0.25
7.95	0.70	0.40	5.00	0.00	0.24	0.24
8.00	0.70	0.40	5.00	0.00	0.24	0.24
8.05	0.70	0.40	5.00	0.00	0.24	0.24
8.10	0.70	0.40	5.00	0.00	0.24	0.24
8.15	0.70	0.40	5.00	0.00	0.24	0.24
8.20	0.70	0.40	5.00	0.00	0.24	0.24
8.25	0.70	0.40	5.00	0.00	0.24	0.24
8.30	0.70	0.40	5.00	0.00	0.24	0.24
8.35	0.70	0.40	5.00	0.00	0.24	0.24
8.40	0.70	0.40	5.00	0.00	0.24	0.24
8.45	0.70	0.40	5.00	0.00	0.24	0.24
8.50	0.70	0.40	5.00	0.00	0.24	0.24
8.55	0.70	0.40	5.00	0.00	0.24	0.24
8.60	0.70	0.40	5.00	0.00	0.24	0.24
8.65	0.70	0.40	5.00	0.00	0.24	0.24
8.70	0.70	0.40	5.00	0.00	0.24	0.24
8.75	0.70	0.40	5.00	0.00	0.24	0.24
8.80	0.70	0.40	5.00	0.00	0.24	0.24
8.85	0.70	0.40	5.00	0.00	0.24	0.24
8.90	0.70	0.40	5.00	0.00	0.24	0.24
8.95	0.70	0.40	5.00	0.00	0.24	0.24
9.00	0.70	0.40	5.00	0.00	0.24	0.24
9.05	0.70	0.40	5.00	0.00	0.24	0.24
9.10	0.70	0.40	5.00	0.00	0.24	0.24
9.15	0.70	0.40	5.00	0.00	0.24	0.24
9.20	0.70	0.40	5.00	0.00	0.24	0.24
9.25	0.70	0.40	5.00	0.00	0.24	0.24
9.30	0.70	0.40	5.00	0.00	0.24	0.24
9.35	0.70	0.40	5.00	0.00	0.24	0.24
9.40	0.70	0.40	5.00	0.00	0.24	0.24

9.45	0.70	0.40	5.00	0.00	0.24	0.24
9.50	0.70	0.40	5.00	0.00	0.24	0.24
9.55	0.70	0.40	5.00	0.00	0.24	0.24
9.60	0.70	0.40	5.00	0.00	0.24	0.24
9.65	0.70	0.40	5.00	0.00	0.24	0.24
9.70	0.70	0.40	5.00	0.00	0.24	0.24
9.75	0.70	0.40	5.00	0.00	0.24	0.24
9.80	0.70	0.40	5.00	0.00	0.24	0.24
9.85	0.70	0.40	5.00	0.00	0.24	0.24
9.90	0.70	0.40	5.00	0.00	0.24	0.24
9.95	0.70	0.40	5.00	0.00	0.24	0.24
10.00	0.70	0.40	5.00	0.00	0.24	0.24
10.05	0.70	0.40	5.00	0.00	0.24	0.24
10.10	0.70	0.40	5.00	0.00	0.24	0.24
10.15	0.70	0.40	5.00	0.00	0.24	0.24
10.20	0.70	0.40	5.00	0.00	0.24	0.24
10.25	0.70	0.40	5.00	0.00	0.24	0.24
10.30	0.70	0.40	5.00	0.00	0.24	0.24
10.35	0.70	0.39	5.00	0.00	0.24	0.24
10.40	0.70	0.39	5.00	0.00	0.24	0.24
10.45	0.70	0.39	5.00	0.00	0.24	0.24
10.50	0.70	0.39	5.00	0.00	0.24	0.24
10.55	0.70	0.39	5.00	0.00	0.24	0.24
10.60	0.70	0.39	5.00	0.00	0.24	0.24
10.65	0.70	0.39	5.00	0.00	0.24	0.24
10.70	0.70	0.39	5.00	0.00	0.24	0.24
10.75	0.70	0.39	5.00	0.00	0.24	0.24
10.80	0.70	0.39	5.00	0.00	0.24	0.24
10.85	0.70	0.39	5.00	0.00	0.24	0.24
10.90	0.70	0.39	5.00	0.00	0.24	0.24
10.95	0.70	0.39	5.00	0.00	0.24	0.24
11.00	0.70	0.39	5.00	0.00	0.24	0.24
11.05	0.70	0.39	5.00	0.00	0.24	0.24
11.10	0.70	0.39	5.00	0.00	0.24	0.24
11.15	0.70	0.39	5.00	0.00	0.24	0.24
11.20	0.70	0.39	5.00	0.00	0.24	0.24
11.25	0.70	0.39	5.00	0.00	0.24	0.24
11.30	0.70	0.39	5.00	0.00	0.24	0.24
11.35	0.70	0.39	5.00	0.00	0.24	0.24
11.40	0.70	0.39	5.00	0.00	0.24	0.24
11.45	0.70	0.39	5.00	0.00	0.24	0.24
11.50	0.70	0.39	5.00	0.00	0.24	0.24
11.55	0.70	0.39	5.00	0.00	0.24	0.24
11.60	0.70	0.39	5.00	0.00	0.24	0.24
11.65	0.70	0.39	5.00	0.00	0.24	0.24
11.70	0.70	0.39	5.00	0.00	0.24	0.24
11.75	0.70	0.39	5.00	0.00	0.24	0.24
11.80	0.70	0.39	5.00	0.00	0.24	0.24
11.85	0.70	0.39	5.00	0.00	0.24	0.24
11.90	0.70	0.39	5.00	0.00	0.23	0.23
11.95	0.70	0.39	5.00	0.00	0.23	0.23
12.00	0.70	0.39	5.00	0.00	0.23	0.23
12.05	0.70	0.39	5.00	0.00	0.23	0.23
12.10	0.70	0.39	5.00	0.00	0.23	0.23

12.15	0.70	0.39	5.00	0.00	0.23	0.23
12.20	0.70	0.39	5.00	0.00	0.23	0.23
12.25	0.70	0.39	5.00	0.00	0.23	0.23
12.30	0.70	0.39	5.00	0.00	0.23	0.23
12.35	0.70	0.39	5.00	0.00	0.23	0.23
12.40	0.70	0.39	5.00	0.00	0.23	0.23
12.45	0.70	0.39	5.00	0.00	0.23	0.23
12.50	0.70	0.39	5.00	0.00	0.23	0.23
12.55	0.70	0.39	5.00	0.00	0.23	0.23
12.60	0.70	0.39	5.00	0.00	0.23	0.23
12.65	0.70	0.39	5.00	0.00	0.23	0.23
12.70	0.70	0.39	5.00	0.00	0.23	0.23
12.75	0.70	0.39	5.00	0.00	0.23	0.23
12.80	0.70	0.39	5.00	0.00	0.23	0.23
12.85	0.70	0.39	5.00	0.00	0.23	0.23
12.90	0.70	0.39	5.00	0.00	0.23	0.23
12.95	0.70	0.39	5.00	0.00	0.23	0.23
13.00	0.70	0.39	5.00	0.00	0.23	0.23
13.05	0.70	0.39	5.00	0.00	0.23	0.23
13.10	0.70	0.39	5.00	0.00	0.23	0.23
13.15	0.70	0.39	5.00	0.00	0.23	0.23
13.20	0.70	0.39	5.00	0.00	0.23	0.23
13.25	0.70	0.39	5.00	0.00	0.23	0.23
13.30	0.70	0.39	5.00	0.00	0.23	0.23
13.35	0.70	0.39	5.00	0.00	0.23	0.23
13.40	0.70	0.39	5.00	0.00	0.23	0.23
13.45	0.70	0.39	5.00	0.00	0.23	0.23
13.50	0.70	0.39	5.00	0.00	0.23	0.23
13.55	0.70	0.39	5.00	0.00	0.23	0.23
13.60	0.70	0.39	5.00	0.00	0.23	0.23
13.65	0.70	0.39	5.00	0.00	0.23	0.23
13.70	0.70	0.39	5.00	0.00	0.23	0.23
13.75	0.70	0.39	5.00	0.00	0.23	0.23
13.80	0.70	0.39	5.00	0.00	0.23	0.23
13.85	0.70	0.39	5.00	0.00	0.23	0.23
13.90	0.70	0.39	5.00	0.00	0.23	0.23
13.95	0.70	0.39	5.00	0.00	0.23	0.23
14.00	0.70	0.39	5.00	0.00	0.23	0.23
14.05	0.70	0.39	5.00	0.00	0.23	0.23
14.10	0.70	0.39	5.00	0.00	0.23	0.23
14.15	0.70	0.39	5.00	0.00	0.23	0.23
14.20	0.70	0.39	5.00	0.00	0.23	0.23
14.25	0.70	0.39	5.00	0.00	0.23	0.23
14.30	0.70	0.39	5.00	0.00	0.23	0.23
14.35	0.70	0.39	5.00	0.00	0.23	0.23
14.40	0.70	0.39	5.00	0.00	0.23	0.23
14.45	0.70	0.39	5.00	0.00	0.23	0.23
14.50	0.70	0.39	5.00	0.00	0.23	0.23
14.55	0.70	0.39	5.00	0.00	0.23	0.23
14.60	0.70	0.39	5.00	0.00	0.23	0.23
14.65	0.70	0.39	5.00	0.00	0.23	0.23
14.70	0.70	0.39	5.00	0.00	0.23	0.23
14.75	0.70	0.39	5.00	0.00	0.23	0.23
14.80	0.70	0.39	5.00	0.00	0.22	0.22

14.85	0.70	0.39	5.00	0.00	0.22	0.22
14.90	0.70	0.39	5.00	0.00	0.22	0.22
14.95	0.70	0.39	5.00	0.00	0.22	0.22
15.00	0.70	0.39	5.00	0.00	0.22	0.22
15.05	0.70	0.39	5.00	0.00	0.22	0.22
15.10	0.70	0.39	5.00	0.00	0.22	0.22
15.15	0.70	0.39	5.00	0.00	0.22	0.22
15.20	0.70	0.39	5.00	0.00	0.22	0.22
15.25	0.70	0.39	5.00	0.00	0.22	0.22
15.30	0.70	0.39	5.00	0.00	0.22	0.22
15.35	0.70	0.39	5.00	0.00	0.22	0.22
15.40	0.70	0.39	5.00	0.00	0.22	0.22
15.45	0.70	0.39	5.00	0.00	0.22	0.22
15.50	0.70	0.39	5.00	0.00	0.22	0.22
15.55	0.70	0.39	5.00	0.00	0.22	0.22
15.60	0.70	0.39	5.00	0.00	0.22	0.22
15.65	0.70	0.39	5.00	0.00	0.22	0.22
15.70	0.70	0.39	5.00	0.00	0.22	0.22
15.75	0.70	0.39	5.00	0.00	0.22	0.22
15.80	0.70	0.39	5.00	0.00	0.22	0.22
15.85	0.70	0.39	5.00	0.00	0.22	0.22
15.90	0.70	0.39	5.00	0.00	0.22	0.22
15.95	0.70	0.39	5.00	0.00	0.22	0.22
16.00	0.70	0.39	5.00	0.00	0.22	0.22
16.05	0.70	0.39	5.00	0.00	0.22	0.22
16.10	0.70	0.39	5.00	0.00	0.22	0.22
16.15	0.70	0.39	5.00	0.00	0.22	0.22
16.20	0.70	0.39	5.00	0.00	0.22	0.22
16.25	0.70	0.39	5.00	0.00	0.22	0.22
16.30	0.70	0.39	5.00	0.00	0.22	0.22
16.35	0.70	0.39	5.00	0.00	0.22	0.22
16.40	0.70	0.39	5.00	0.00	0.22	0.22
16.45	0.70	0.39	5.00	0.00	0.22	0.22
16.50	0.70	0.39	5.00	0.00	0.22	0.22
16.55	0.70	0.39	5.00	0.00	0.21	0.21
16.60	0.70	0.39	5.00	0.00	0.21	0.21
16.65	0.70	0.39	5.00	0.00	0.21	0.21
16.70	0.70	0.39	5.00	0.00	0.21	0.21
16.75	0.70	0.39	5.00	0.00	0.21	0.21
16.80	0.70	0.39	5.00	0.00	0.21	0.21
16.85	0.70	0.39	5.00	0.00	0.21	0.21
16.90	0.70	0.39	5.00	0.00	0.21	0.21
16.95	0.70	0.39	5.00	0.00	0.21	0.21
17.00	0.70	0.39	5.00	0.00	0.21	0.21
17.05	0.70	0.39	5.00	0.00	0.21	0.21
17.10	0.70	0.39	5.00	0.00	0.21	0.21
17.15	0.70	0.39	5.00	0.00	0.21	0.21
17.20	0.70	0.39	5.00	0.00	0.21	0.21
17.25	0.70	0.39	5.00	0.00	0.21	0.21
17.30	0.70	0.39	5.00	0.00	0.21	0.21
17.35	0.70	0.39	5.00	0.00	0.21	0.21
17.40	0.70	0.39	5.00	0.00	0.21	0.21
17.45	0.70	0.39	5.00	0.00	0.21	0.21
17.50	0.70	0.39	5.00	0.00	0.21	0.21

17.55	0.70	0.39	5.00	0.00	0.21	0.21
17.60	0.70	0.39	5.00	0.00	0.21	0.21
17.65	0.70	0.39	5.00	0.00	0.21	0.21
17.70	0.70	0.39	5.00	0.00	0.21	0.21
17.75	0.70	0.39	5.00	0.00	0.21	0.21
17.80	0.70	0.39	5.00	0.00	0.21	0.21
17.85	0.70	0.39	5.00	0.00	0.21	0.21
17.90	0.70	0.39	5.00	0.00	0.21	0.21
17.95	0.70	0.39	5.00	0.00	0.21	0.21
18.00	0.70	0.39	5.00	0.00	0.21	0.21
18.05	0.70	0.39	5.00	0.00	0.21	0.21
18.10	0.70	0.39	5.00	0.00	0.21	0.21
18.15	0.70	0.39	5.00	0.00	0.21	0.21
18.20	0.70	0.39	5.00	0.00	0.21	0.21
18.25	0.70	0.39	5.00	0.00	0.21	0.21
18.30	0.70	0.39	5.00	0.00	0.20	0.20
18.35	0.70	0.39	5.00	0.00	0.20	0.20
18.40	0.70	0.39	5.00	0.00	0.20	0.20
18.45	0.70	0.39	5.00	0.00	0.20	0.20
18.50	0.70	0.39	5.00	0.00	0.20	0.20
18.55	0.70	0.39	5.00	0.00	0.20	0.20
18.60	0.70	0.39	5.00	0.00	0.20	0.20
18.65	0.70	0.39	5.00	0.00	0.20	0.20
18.70	0.70	0.39	5.00	0.00	0.20	0.20
18.75	0.70	0.39	5.00	0.00	0.20	0.20
18.80	0.70	0.39	5.00	0.00	0.20	0.20
18.85	0.70	0.39	5.00	0.00	0.20	0.20
18.90	0.70	0.39	5.00	0.00	0.20	0.20
18.95	0.70	0.39	5.00	0.00	0.20	0.20
19.00	0.70	0.39	5.00	0.00	0.20	0.20
19.05	0.70	0.39	5.00	0.00	0.20	0.20
19.10	0.70	0.39	5.00	0.00	0.20	0.20
19.15	0.70	0.39	5.00	0.00	0.20	0.20
19.20	0.70	0.39	5.00	0.00	0.20	0.20
19.25	0.70	0.39	5.00	0.00	0.20	0.20
19.30	0.70	0.39	5.00	0.00	0.20	0.20
19.35	0.70	0.39	5.00	0.00	0.20	0.20
19.40	0.70	0.39	5.00	0.00	0.20	0.20
19.45	0.70	0.39	5.00	0.00	0.20	0.20
19.50	0.70	0.39	5.00	0.00	0.20	0.20
19.55	0.70	0.39	5.00	0.00	0.20	0.20
19.60	0.70	0.39	5.00	0.00	0.20	0.20
19.65	0.70	0.39	5.00	0.00	0.20	0.20
19.70	0.70	0.39	5.00	0.00	0.20	0.20
19.75	0.70	0.39	5.00	0.00	0.20	0.20
19.80	0.70	0.39	5.00	0.00	0.20	0.20
19.85	0.70	0.39	5.00	0.00	0.20	0.20
19.90	0.70	0.39	5.00	0.00	0.20	0.20
19.95	0.70	0.39	5.00	0.00	0.20	0.20
20.00	0.70	0.39	5.00	0.00	0.20	0.20
20.05	0.70	0.39	5.00	0.00	0.20	0.20
20.10	0.70	0.39	5.00	0.00	0.19	0.19
20.15	0.70	0.39	5.00	0.00	0.19	0.19
20.20	0.70	0.39	5.00	0.00	0.19	0.19

20.25	0.70	0.39	5.00	0.00	0.19	0.19
20.30	0.70	0.39	5.00	0.00	0.19	0.19
20.35	0.70	0.39	5.00	0.00	0.19	0.19
20.40	0.70	0.39	5.00	0.00	0.19	0.19
20.45	0.70	0.39	5.00	0.00	0.19	0.19
20.50	0.70	0.39	5.00	0.00	0.19	0.19
20.55	0.70	0.39	5.00	0.00	0.19	0.19
20.60	0.70	0.39	5.00	0.00	0.19	0.19
20.65	0.70	0.39	5.00	0.00	0.19	0.19
20.70	0.70	0.39	5.00	0.00	0.19	0.19
20.75	0.70	0.39	5.00	0.00	0.19	0.19
20.80	0.70	0.39	5.00	0.00	0.19	0.19
20.85	0.70	0.39	5.00	0.00	0.19	0.19
20.90	0.70	0.39	5.00	0.00	0.19	0.19
20.95	0.70	0.38	5.00	0.00	0.19	0.19
21.00	0.70	0.38	5.00	0.00	0.19	0.19
21.05	0.70	0.38	5.00	0.00	0.19	0.19
21.10	0.70	0.38	5.00	0.00	0.19	0.19
21.15	0.70	0.38	5.00	0.00	0.19	0.19
21.20	0.70	0.38	5.00	0.00	0.19	0.19
21.25	0.70	0.38	5.00	0.00	0.19	0.19
21.30	0.70	0.38	5.00	0.00	0.19	0.19
21.35	0.70	0.38	5.00	0.00	0.19	0.19
21.40	0.70	0.38	5.00	0.00	0.19	0.19
21.45	0.70	0.38	5.00	0.00	0.19	0.19
21.50	0.70	0.38	5.00	0.00	0.19	0.19
21.55	0.70	0.38	5.00	0.00	0.19	0.19
21.60	0.70	0.38	5.00	0.00	0.19	0.19
21.65	0.70	0.38	5.00	0.00	0.19	0.19
21.70	0.70	0.38	5.00	0.00	0.19	0.19
21.75	0.70	0.38	5.00	0.00	0.19	0.19
21.80	0.70	0.38	5.00	0.00	0.19	0.19
21.85	0.70	0.38	5.00	0.00	0.19	0.19
21.90	0.70	0.38	5.00	0.00	0.19	0.19
21.95	0.70	0.38	5.00	0.00	0.19	0.19
22.00	0.70	0.38	5.00	0.00	0.19	0.19
22.05	0.70	0.38	5.00	0.00	0.19	0.19
22.10	0.70	0.38	5.00	0.00	0.19	0.19
22.15	0.70	0.38	5.00	0.00	0.19	0.19
22.20	0.70	0.38	5.00	0.00	0.18	0.18
22.25	0.70	0.38	5.00	0.00	0.18	0.18
22.30	0.70	0.38	5.00	0.00	0.18	0.18
22.35	0.70	0.38	5.00	0.00	0.18	0.18
22.40	0.70	0.38	5.00	0.00	0.18	0.18
22.45	0.70	0.38	5.00	0.00	0.18	0.18
22.50	0.70	0.38	5.00	0.00	0.18	0.18
22.55	0.70	0.38	5.00	0.00	0.18	0.18
22.60	0.70	0.38	5.00	0.00	0.18	0.18
22.65	0.70	0.38	5.00	0.00	0.18	0.18
22.70	0.70	0.38	5.00	0.00	0.18	0.18
22.75	0.70	0.38	5.00	0.00	0.18	0.18
22.80	0.70	0.38	5.00	0.00	0.18	0.18
22.85	0.70	0.38	5.00	0.00	0.18	0.18
22.90	0.70	0.38	5.00	0.00	0.18	0.18

22.95	0.70	0.38	5.00	0.00	0.18	0.18
23.00	0.70	0.38	5.00	0.00	0.18	0.18
23.05	0.70	0.38	5.00	0.00	0.18	0.18
23.10	0.70	0.38	5.00	0.00	0.18	0.18
23.15	0.70	0.38	5.00	0.00	0.18	0.18
23.20	0.70	0.38	5.00	0.00	0.18	0.18
23.25	0.70	0.38	5.00	0.00	0.18	0.18
23.30	0.70	0.38	5.00	0.00	0.18	0.18
23.35	0.70	0.38	5.00	0.00	0.18	0.18
23.40	0.70	0.38	5.00	0.00	0.18	0.18
23.45	0.70	0.38	5.00	0.00	0.18	0.18
23.50	0.70	0.38	5.00	0.00	0.18	0.18
23.55	0.70	0.38	5.00	0.00	0.18	0.18
23.60	0.70	0.38	5.00	0.00	0.18	0.18
23.65	0.70	0.38	5.00	0.00	0.18	0.18
23.70	0.70	0.38	5.00	0.00	0.18	0.18
23.75	0.70	0.38	5.00	0.00	0.18	0.18
23.80	0.70	0.38	5.00	0.00	0.18	0.18
23.85	0.70	0.38	5.00	0.00	0.18	0.18
23.90	0.70	0.38	5.00	0.00	0.18	0.18
23.95	0.70	0.38	5.00	0.00	0.18	0.18
24.00	0.70	0.38	5.00	0.00	0.18	0.18
24.05	0.70	0.38	5.00	0.00	0.18	0.18
24.10	0.70	0.38	5.00	0.00	0.18	0.18
24.15	0.70	0.38	5.00	0.00	0.18	0.18
24.20	0.70	0.38	5.00	0.00	0.18	0.18
24.25	0.70	0.38	5.00	0.00	0.18	0.18
24.30	0.70	0.38	5.00	0.00	0.18	0.18
24.35	0.70	0.38	5.00	0.00	0.18	0.18
24.40	0.70	0.38	5.00	0.00	0.18	0.18
24.45	0.70	0.38	5.00	0.00	0.18	0.18
24.50	0.70	0.38	5.00	0.00	0.18	0.18
24.55	0.70	0.38	5.00	0.00	0.18	0.18
24.60	0.70	0.38	5.00	0.00	0.18	0.18
24.65	0.70	0.38	5.00	0.00	0.18	0.18
24.70	0.70	0.38	5.00	0.00	0.18	0.18
24.75	0.70	0.38	5.00	0.00	0.18	0.18
24.80	0.70	0.38	5.00	0.00	0.18	0.18
24.85	0.70	0.38	5.00	0.00	0.18	0.18
24.90	0.70	0.38	5.00	0.00	0.18	0.18
24.95	0.70	0.38	5.00	0.00	0.18	0.18
25.00	0.70	0.38	5.00	0.00	0.18	0.18
25.05	0.70	0.38	5.00	0.00	0.17	0.17
25.10	0.70	0.38	5.00	0.00	0.17	0.17
25.15	0.70	0.38	5.00	0.00	0.17	0.17
25.20	0.70	0.38	5.00	0.00	0.17	0.17
25.25	0.70	0.38	5.00	0.00	0.17	0.17
25.30	0.70	0.38	5.00	0.00	0.17	0.17
25.35	0.70	0.38	5.00	0.00	0.17	0.17
25.40	0.70	0.38	5.00	0.00	0.17	0.17
25.45	0.70	0.38	5.00	0.00	0.17	0.17
25.50	0.70	0.38	5.00	0.00	0.17	0.17
25.55	0.70	0.38	5.00	0.00	0.17	0.17
25.60	0.70	0.38	5.00	0.00	0.17	0.17

25.65	0.70	0.38	5.00	0.00	0.17	0.17
25.70	0.70	0.38	5.00	0.00	0.17	0.17
25.75	0.70	0.38	5.00	0.00	0.17	0.17
25.80	0.70	0.38	5.00	0.00	0.17	0.17
25.85	0.70	0.38	5.00	0.00	0.17	0.17
25.90	0.70	0.38	5.00	0.00	0.17	0.17
25.95	0.70	0.38	5.00	0.00	0.17	0.17
26.00	0.70	0.38	5.00	0.00	0.17	0.17
26.05	0.70	0.38	5.00	0.00	0.17	0.17
26.10	0.70	0.38	5.00	0.00	0.17	0.17
26.15	0.70	0.38	5.00	0.00	0.17	0.17
26.20	0.70	0.38	5.00	0.00	0.17	0.17
26.25	0.70	0.38	5.00	0.00	0.17	0.17
26.30	0.70	0.38	5.00	0.00	0.17	0.17
26.35	0.70	0.38	5.00	0.00	0.17	0.17
26.40	0.70	0.38	5.00	0.00	0.17	0.17
26.45	0.70	0.38	5.00	0.00	0.17	0.17
26.50	0.70	0.38	5.00	0.00	0.17	0.17
26.55	0.70	0.38	5.00	0.00	0.17	0.17
26.60	0.70	0.38	5.00	0.00	0.17	0.17
26.65	0.70	0.38	5.00	0.00	0.17	0.17
26.70	0.70	0.38	5.00	0.00	0.17	0.17
26.75	0.70	0.38	5.00	0.00	0.17	0.17
26.80	0.70	0.38	5.00	0.00	0.17	0.17
26.85	0.70	0.38	5.00	0.00	0.17	0.17
26.90	0.70	0.38	5.00	0.00	0.17	0.17
26.95	0.70	0.38	5.00	0.00	0.17	0.17
27.00	0.70	0.38	5.00	0.00	0.17	0.17
27.05	0.70	0.38	5.00	0.00	0.17	0.17
27.10	0.70	0.38	5.00	0.00	0.17	0.17
27.15	0.70	0.38	5.00	0.00	0.17	0.17
27.20	0.70	0.38	5.00	0.00	0.17	0.17
27.25	0.70	0.38	5.00	0.00	0.17	0.17
27.30	0.70	0.38	5.00	0.00	0.17	0.17
27.35	0.70	0.38	5.00	0.00	0.17	0.17
27.40	0.70	0.38	5.00	0.00	0.17	0.17
27.45	0.71	0.38	5.00	0.00	0.17	0.17
27.50	0.71	0.38	5.00	0.00	0.17	0.17
27.55	0.71	0.38	5.00	0.00	0.17	0.17
27.60	0.71	0.38	5.00	0.00	0.17	0.17
27.65	0.70	0.38	5.00	0.00	0.17	0.17
27.70	0.70	0.38	5.00	0.00	0.16	0.16
27.75	0.70	0.38	5.00	0.00	0.16	0.16
27.80	0.70	0.38	5.00	0.00	0.16	0.16
27.85	0.70	0.38	5.00	0.00	0.16	0.16
27.90	0.70	0.38	5.00	0.00	0.16	0.16
27.95	0.70	0.38	5.00	0.00	0.16	0.16
28.00	0.70	0.38	5.00	0.00	0.16	0.16
28.05	0.70	0.38	5.00	0.00	0.16	0.16
28.10	0.70	0.38	5.00	0.00	0.16	0.16
28.15	0.70	0.38	5.00	0.00	0.16	0.16
28.20	0.70	0.38	5.00	0.00	0.16	0.16
28.25	0.70	0.38	5.00	0.00	0.16	0.16
28.30	0.70	0.38	5.00	0.00	0.16	0.16

28.35	0.70	0.38	5.00	0.00	0.16	0.16
28.40	0.70	0.38	5.00	0.00	0.16	0.16
28.45	0.70	0.38	5.00	0.00	0.16	0.16
28.50	0.70	0.38	5.00	0.00	0.16	0.16
28.55	0.70	0.38	5.00	0.00	0.16	0.16
28.60	0.70	0.38	5.00	0.00	0.16	0.16
28.65	0.70	0.38	5.00	0.00	0.16	0.16
28.70	0.70	0.38	5.00	0.00	0.16	0.16
28.75	0.70	0.38	5.00	0.00	0.16	0.16
28.80	0.70	0.38	5.00	0.00	0.16	0.16
28.85	0.70	0.38	5.00	0.00	0.16	0.16
28.90	0.70	0.38	5.00	0.00	0.16	0.16
28.95	0.70	0.38	5.00	0.00	0.16	0.16
29.00	0.70	0.38	5.00	0.00	0.16	0.16
29.05	0.70	0.38	5.00	0.00	0.16	0.16
29.10	0.70	0.38	5.00	0.00	0.16	0.16
29.15	0.70	0.38	5.00	0.00	0.16	0.16
29.20	0.70	0.38	5.00	0.00	0.16	0.16
29.25	0.70	0.38	5.00	0.00	0.16	0.16
29.30	0.70	0.38	5.00	0.00	0.16	0.16
29.35	0.70	0.38	5.00	0.00	0.16	0.16
29.40	0.70	0.38	5.00	0.00	0.16	0.16
29.45	0.70	0.38	5.00	0.00	0.16	0.16
29.50	0.70	0.38	5.00	0.00	0.16	0.16
29.55	0.70	0.38	5.00	0.00	0.16	0.16
29.60	0.70	0.38	5.00	0.00	0.16	0.16
29.65	0.70	0.38	5.00	0.00	0.15	0.15
29.70	0.70	0.38	5.00	0.00	0.15	0.15
29.75	0.70	0.38	5.00	0.00	0.15	0.15
29.80	0.70	0.38	5.00	0.00	0.15	0.15
29.85	0.70	0.38	5.00	0.00	0.15	0.15
29.90	0.70	0.38	5.00	0.00	0.15	0.15
29.95	0.70	0.38	5.00	0.00	0.15	0.15
30.00	0.70	0.38	5.00	0.00	0.15	0.15
30.05	0.70	0.38	5.00	0.00	0.15	0.15
30.10	0.70	0.38	5.00	0.00	0.15	0.15
30.15	0.70	0.38	5.00	0.00	0.15	0.15
30.20	0.70	0.38	5.00	0.00	0.15	0.15
30.25	0.69	0.38	5.00	0.00	0.15	0.15
30.30	0.69	0.38	5.00	0.00	0.15	0.15
30.35	0.69	0.38	5.00	0.00	0.15	0.15
30.40	0.69	0.38	5.00	0.00	0.15	0.15
30.45	0.69	0.37	5.00	0.00	0.15	0.15
30.50	0.69	0.37	5.00	0.00	0.15	0.15
30.55	0.69	0.37	5.00	0.00	0.15	0.15
30.60	0.69	0.37	5.00	0.00	0.15	0.15
30.65	0.69	0.37	5.00	0.00	0.15	0.15
30.70	0.69	0.37	5.00	0.00	0.15	0.15
30.75	0.69	0.37	5.00	0.00	0.14	0.14
30.80	0.69	0.37	5.00	0.00	0.14	0.14
30.85	0.60	0.37	5.00	0.00	0.14	0.14
30.90	0.54	0.37	5.00	0.00	0.14	0.14
30.95	0.52	0.37	5.00	0.00	0.14	0.14
31.00	0.50	0.37	5.00	0.00	0.14	0.14

31.05	0.50	0.37	5.00	0.00	0.14	0.14
31.10	0.50	0.37	5.00	0.00	0.14	0.14
31.15	0.51	0.37	5.00	0.00	0.14	0.14
31.20	0.51	0.37	5.00	0.00	0.14	0.14
31.25	0.52	0.37	5.00	0.00	0.14	0.14
31.30	0.52	0.37	5.00	0.00	0.14	0.14
31.35	0.53	0.37	5.00	0.00	0.13	0.13
31.40	0.53	0.37	5.00	0.00	0.13	0.13
31.45	0.54	0.37	5.00	0.00	0.13	0.13
31.50	0.54	0.37	5.00	0.00	0.13	0.13
31.55	0.55	0.37	5.00	0.00	0.13	0.13
31.60	0.56	0.37	5.00	0.00	0.13	0.13
31.65	0.57	0.37	5.00	0.00	0.13	0.13
31.70	0.58	0.37	5.00	0.00	0.13	0.13
31.75	0.59	0.37	5.00	0.00	0.13	0.13
31.80	0.61	0.37	5.00	0.00	0.13	0.13
31.85	0.63	0.37	5.00	0.00	0.13	0.13
31.90	0.65	0.37	5.00	0.00	0.13	0.13
31.95	0.69	0.37	5.00	0.00	0.12	0.12
32.00	0.69	0.37	5.00	0.00	0.12	0.12
32.05	0.69	0.37	5.00	0.00	0.12	0.12
32.10	0.69	0.37	5.00	0.00	0.12	0.12
32.15	0.69	0.37	5.00	0.00	0.12	0.12
32.20	0.69	0.37	5.00	0.00	0.12	0.12
32.25	0.69	0.37	5.00	0.00	0.12	0.12
32.30	0.69	0.37	5.00	0.00	0.12	0.12
32.35	0.69	0.37	5.00	0.00	0.12	0.12
32.40	0.69	0.37	5.00	0.00	0.12	0.12
32.45	0.69	0.37	5.00	0.00	0.12	0.12
32.50	0.69	0.37	5.00	0.00	0.12	0.12
32.55	0.69	0.37	5.00	0.00	0.12	0.12
32.60	0.69	0.37	5.00	0.00	0.11	0.11
32.65	0.69	0.37	5.00	0.00	0.11	0.11
32.70	0.69	0.37	5.00	0.00	0.11	0.11
32.75	0.69	0.37	5.00	0.00	0.11	0.11
32.80	0.69	0.37	5.00	0.00	0.11	0.11
32.85	0.69	0.37	5.00	0.00	0.11	0.11
32.90	0.69	0.37	5.00	0.00	0.11	0.11
32.95	0.69	0.37	5.00	0.00	0.11	0.11
33.00	0.69	0.37	5.00	0.00	0.11	0.11
33.05	0.69	0.37	5.00	0.00	0.11	0.11
33.10	0.69	0.37	5.00	0.00	0.11	0.11
33.15	0.69	0.37	5.00	0.00	0.11	0.11
33.20	0.69	0.37	5.00	0.00	0.11	0.11
33.25	0.69	0.37	5.00	0.00	0.11	0.11
33.30	0.69	0.37	5.00	0.00	0.11	0.11
33.35	0.69	0.37	5.00	0.00	0.10	0.10
33.40	0.69	0.37	5.00	0.00	0.10	0.10
33.45	0.68	0.37	5.00	0.00	0.10	0.10
33.50	0.68	0.36	5.00	0.00	0.10	0.10
33.55	0.68	0.36	5.00	0.00	0.10	0.10
33.60	0.68	0.36	5.00	0.00	0.10	0.10
33.65	0.68	0.36	5.00	0.00	0.10	0.10
33.70	0.68	0.36	5.00	0.00	0.10	0.10

33.75	0.68	0.36	5.00	0.00	0.10	0.10
33.80	0.68	0.36	5.00	0.00	0.10	0.10
33.85	0.68	0.36	5.00	0.00	0.10	0.10
33.90	0.68	0.36	5.00	0.00	0.10	0.10
33.95	0.68	0.36	5.00	0.00	0.10	0.10
34.00	0.68	0.36	5.00	0.00	0.10	0.10
34.05	0.68	0.36	5.00	0.00	0.10	0.10
34.10	0.68	0.36	5.00	0.00	0.09	0.09
34.15	0.68	0.36	5.00	0.00	0.09	0.09
34.20	0.68	0.36	5.00	0.00	0.09	0.09
34.25	0.68	0.36	5.00	0.00	0.09	0.09
34.30	0.68	0.36	5.00	0.00	0.09	0.09
34.35	0.68	0.36	5.00	0.00	0.09	0.09
34.40	0.68	0.36	5.00	0.00	0.09	0.09
34.45	0.68	0.36	5.00	0.00	0.09	0.09
34.50	0.68	0.36	5.00	0.00	0.09	0.09
34.55	0.68	0.36	5.00	0.00	0.09	0.09
34.60	0.68	0.36	5.00	0.00	0.09	0.09
34.65	0.68	0.36	5.00	0.00	0.09	0.09
34.70	0.68	0.36	5.00	0.00	0.09	0.09
34.75	0.68	0.36	5.00	0.00	0.09	0.09
34.80	0.68	0.36	5.00	0.00	0.09	0.09
34.85	0.68	0.36	5.00	0.00	0.09	0.09
34.90	0.68	0.36	5.00	0.00	0.09	0.09
34.95	0.68	0.36	5.00	0.00	0.09	0.09
35.00	0.68	0.36	5.00	0.00	0.08	0.08
35.05	0.68	0.36	5.00	0.00	0.08	0.08
35.10	0.68	0.36	5.00	0.00	0.08	0.08
35.15	0.68	0.36	5.00	0.00	0.08	0.08
35.20	0.68	0.36	5.00	0.00	0.08	0.08
35.25	0.68	0.36	5.00	0.00	0.08	0.08
35.30	0.68	0.36	5.00	0.00	0.08	0.08
35.35	0.68	0.36	5.00	0.00	0.08	0.08
35.40	0.68	0.36	5.00	0.00	0.08	0.08
35.45	0.68	0.36	5.00	0.00	0.08	0.08
35.50	0.68	0.36	5.00	0.00	0.08	0.08
35.55	0.68	0.36	5.00	0.00	0.08	0.08
35.60	0.68	0.36	5.00	0.00	0.08	0.08
35.65	0.68	0.36	5.00	0.00	0.08	0.08
35.70	0.68	0.36	5.00	0.00	0.08	0.08
35.75	0.68	0.36	5.00	0.00	0.08	0.08
35.80	0.68	0.36	5.00	0.00	0.08	0.08
35.85	0.68	0.36	5.00	0.00	0.08	0.08
35.90	0.68	0.36	5.00	0.00	0.08	0.08
35.95	0.68	0.36	5.00	0.00	0.07	0.07
36.00	0.68	0.36	5.00	0.00	0.07	0.07
36.05	0.68	0.36	5.00	0.00	0.07	0.07
36.10	0.68	0.36	5.00	0.00	0.07	0.07
36.15	0.68	0.36	5.00	0.00	0.07	0.07
36.20	0.68	0.36	5.00	0.00	0.07	0.07
36.25	0.68	0.36	5.00	0.00	0.07	0.07
36.30	0.68	0.36	5.00	0.00	0.07	0.07
36.35	0.68	0.36	5.00	0.00	0.07	0.07
36.40	0.68	0.36	5.00	0.00	0.07	0.07

36.45	0.68	0.36	5.00	0.00	0.07	0.07
36.50	0.68	0.35	5.00	0.00	0.07	0.07
36.55	0.68	0.35	5.00	0.00	0.07	0.07
36.60	0.68	0.35	5.00	0.00	0.07	0.07
36.65	0.68	0.35	5.00	0.00	0.07	0.07
36.70	0.68	0.35	5.00	0.00	0.07	0.07
36.75	0.67	0.35	5.00	0.00	0.07	0.07
36.80	0.67	0.35	5.00	0.00	0.07	0.07
36.85	0.67	0.35	5.00	0.00	0.07	0.07
36.90	0.67	0.35	5.00	0.00	0.07	0.07
36.95	0.67	0.35	5.00	0.00	0.07	0.07
37.00	0.67	0.35	5.00	0.00	0.07	0.07
37.05	0.67	0.35	5.00	0.00	0.07	0.07
37.10	0.67	0.35	5.00	0.00	0.07	0.07
37.15	0.67	0.35	5.00	0.00	0.07	0.07
37.20	0.67	0.35	5.00	0.00	0.07	0.07
37.25	0.67	0.35	5.00	0.00	0.07	0.07
37.30	0.67	0.35	5.00	0.00	0.07	0.07
37.35	0.67	0.35	5.00	0.00	0.07	0.07
37.40	0.67	0.35	5.00	0.00	0.06	0.06
37.45	0.67	0.35	5.00	0.00	0.06	0.06
37.50	0.67	0.35	5.00	0.00	0.06	0.06
37.55	0.67	0.35	5.00	0.00	0.06	0.06
37.60	0.67	0.35	5.00	0.00	0.06	0.06
37.65	0.67	0.35	5.00	0.00	0.06	0.06
37.70	0.67	0.35	5.00	0.00	0.06	0.06
37.75	0.67	0.35	5.00	0.00	0.06	0.06
37.80	0.67	0.35	5.00	0.00	0.06	0.06
37.85	0.67	0.35	5.00	0.00	0.06	0.06
37.90	0.67	0.35	5.00	0.00	0.06	0.06
37.95	0.67	0.35	5.00	0.00	0.06	0.06
38.00	0.67	0.35	5.00	0.00	0.06	0.06
38.05	0.67	0.35	5.00	0.00	0.06	0.06
38.10	0.67	0.35	5.00	0.00	0.06	0.06
38.15	0.67	0.35	5.00	0.00	0.06	0.06
38.20	0.67	0.35	5.00	0.00	0.06	0.06
38.25	0.67	0.35	5.00	0.00	0.06	0.06
38.30	0.67	0.35	5.00	0.00	0.06	0.06
38.35	0.67	0.35	5.00	0.00	0.06	0.06
38.40	0.67	0.35	5.00	0.00	0.06	0.06
38.45	0.67	0.35	5.00	0.00	0.06	0.06
38.50	0.67	0.35	5.00	0.00	0.06	0.06
38.55	0.67	0.35	5.00	0.00	0.06	0.06
38.60	0.67	0.35	5.00	0.00	0.06	0.06
38.65	0.67	0.35	5.00	0.00	0.06	0.06
38.70	0.67	0.35	5.00	0.00	0.06	0.06
38.75	0.67	0.35	5.00	0.00	0.06	0.06
38.80	0.67	0.35	5.00	0.00	0.06	0.06
38.85	0.67	0.35	5.00	0.00	0.06	0.06
38.90	0.67	0.35	5.00	0.00	0.06	0.06
38.95	0.67	0.35	5.00	0.00	0.06	0.06
39.00	0.67	0.35	5.00	0.00	0.06	0.06
39.05	0.67	0.35	5.00	0.00	0.06	0.06
39.10	0.67	0.35	5.00	0.00	0.06	0.06

39.15	0.67	0.35	5.00	0.00	0.06	0.06
39.20	0.67	0.35	5.00	0.00	0.06	0.06
39.25	0.67	0.35	5.00	0.00	0.06	0.06
39.30	0.67	0.35	5.00	0.00	0.05	0.05
39.35	0.67	0.35	5.00	0.00	0.05	0.05
39.40	0.67	0.35	5.00	0.00	0.05	0.05
39.45	0.67	0.35	5.00	0.00	0.05	0.05
39.50	0.67	0.35	5.00	0.00	0.05	0.05
39.55	0.67	0.34	5.00	0.00	0.05	0.05
39.60	0.67	0.34	5.00	0.00	0.05	0.05
39.65	0.67	0.34	5.00	0.00	0.05	0.05
39.70	0.67	0.34	5.00	0.00	0.05	0.05
39.75	0.67	0.34	5.00	0.00	0.05	0.05
39.80	0.67	0.34	5.00	0.00	0.05	0.05
39.85	0.67	0.34	5.00	0.00	0.05	0.05
39.90	0.67	0.34	5.00	0.00	0.05	0.05
39.95	0.67	0.34	5.00	0.00	0.05	0.05
40.00	0.67	0.34	5.00	0.00	0.05	0.05
40.05	0.66	0.34	5.00	0.00	0.05	0.05
40.10	0.66	0.34	5.00	0.00	0.05	0.05
40.15	0.66	0.34	5.00	0.00	0.05	0.05
40.20	0.66	0.34	5.00	0.00	0.05	0.05
40.25	0.66	0.34	5.00	0.00	0.05	0.05
40.30	0.66	0.34	5.00	0.00	0.05	0.05
40.35	0.66	0.34	5.00	0.00	0.05	0.05
40.40	0.66	0.34	5.00	0.00	0.05	0.05
40.45	0.66	0.34	5.00	0.00	0.05	0.05
40.50	0.66	0.34	5.00	0.00	0.05	0.05
40.55	0.66	0.34	5.00	0.00	0.05	0.05
40.60	0.66	0.34	5.00	0.00	0.05	0.05
40.65	0.66	0.34	5.00	0.00	0.05	0.05
40.70	0.66	0.34	5.00	0.00	0.05	0.05
40.75	0.66	0.34	5.00	0.00	0.05	0.05
40.80	0.66	0.34	5.00	0.00	0.05	0.05
40.85	0.66	0.34	5.00	0.00	0.05	0.05
40.90	0.66	0.34	5.00	0.00	0.05	0.05
40.95	0.66	0.34	5.00	0.00	0.05	0.05
41.00	0.66	0.34	5.00	0.00	0.05	0.05
41.05	0.66	0.34	5.00	0.00	0.05	0.05
41.10	0.66	0.34	5.00	0.00	0.05	0.05
41.15	0.66	0.34	5.00	0.00	0.05	0.05
41.20	0.66	0.34	5.00	0.00	0.05	0.05
41.25	0.66	0.34	5.00	0.00	0.05	0.05
41.30	0.66	0.34	5.00	0.00	0.05	0.05
41.35	0.66	0.34	5.00	0.00	0.05	0.05
41.40	0.66	0.34	5.00	0.00	0.05	0.05
41.45	0.66	0.34	5.00	0.00	0.05	0.05
41.50	0.66	0.34	5.00	0.00	0.05	0.05
41.55	0.66	0.34	5.00	0.00	0.05	0.05
41.60	0.66	0.34	5.00	0.00	0.05	0.05
41.65	0.66	0.34	5.00	0.00	0.05	0.05
41.70	0.66	0.34	5.00	0.00	0.04	0.04
41.75	0.66	0.34	5.00	0.00	0.04	0.04
41.80	0.66	0.34	5.00	0.00	0.04	0.04

41.85	0.66	0.34	5.00	0.00	0.04	0.04
41.90	0.66	0.34	5.00	0.00	0.04	0.04
41.95	0.66	0.34	5.00	0.00	0.04	0.04
42.00	0.66	0.34	5.00	0.00	0.04	0.04
42.05	0.66	0.34	5.00	0.00	0.04	0.04
42.10	0.66	0.34	5.00	0.00	0.04	0.04
42.15	0.66	0.34	5.00	0.00	0.04	0.04
42.20	0.66	0.34	5.00	0.00	0.04	0.04
42.25	0.66	0.34	5.00	0.00	0.04	0.04
42.30	0.66	0.34	5.00	0.00	0.04	0.04
42.35	0.66	0.34	5.00	0.00	0.04	0.04
42.40	0.66	0.34	5.00	0.00	0.04	0.04
42.45	0.66	0.34	5.00	0.00	0.04	0.04
42.50	0.66	0.34	5.00	0.00	0.04	0.04
42.55	0.66	0.34	5.00	0.00	0.04	0.04
42.60	0.66	0.33	5.00	0.00	0.04	0.04
42.65	0.66	0.33	5.00	0.00	0.04	0.04
42.70	0.66	0.33	5.00	0.00	0.04	0.04
42.75	0.66	0.33	5.00	0.00	0.04	0.04
42.80	0.66	0.33	5.00	0.00	0.04	0.04
42.85	0.66	0.33	5.00	0.00	0.04	0.04
42.90	0.66	0.33	5.00	0.00	0.04	0.04
42.95	0.66	0.33	5.00	0.00	0.04	0.04
43.00	0.66	0.33	5.00	0.00	0.04	0.04
43.05	0.66	0.33	5.00	0.00	0.04	0.04
43.10	0.66	0.33	5.00	0.00	0.04	0.04
43.15	0.66	0.33	5.00	0.00	0.04	0.04
43.20	0.66	0.33	5.00	0.00	0.04	0.04
43.25	0.65	0.33	5.00	0.00	0.04	0.04
43.30	0.65	0.33	5.00	0.00	0.04	0.04
43.35	0.65	0.33	5.00	0.00	0.04	0.04
43.40	0.65	0.33	5.00	0.00	0.04	0.04
43.45	0.65	0.33	5.00	0.00	0.04	0.04
43.50	0.65	0.33	5.00	0.00	0.04	0.04
43.55	0.65	0.33	5.00	0.00	0.04	0.04
43.60	0.65	0.33	5.00	0.00	0.04	0.04
43.65	0.65	0.33	5.00	0.00	0.04	0.04
43.70	0.65	0.33	5.00	0.00	0.04	0.04
43.75	0.65	0.33	5.00	0.00	0.04	0.04
43.80	0.65	0.33	5.00	0.00	0.04	0.04
43.85	0.65	0.33	5.00	0.00	0.04	0.04
43.90	0.65	0.33	5.00	0.00	0.03	0.03
43.95	0.65	0.33	5.00	0.00	0.03	0.03
44.00	0.65	0.33	5.00	0.00	0.03	0.03
44.05	0.65	0.33	5.00	0.00	0.03	0.03
44.10	0.65	0.33	5.00	0.00	0.03	0.03
44.15	0.65	0.33	5.00	0.00	0.03	0.03
44.20	0.65	0.33	5.00	0.00	0.03	0.03
44.25	0.65	0.33	5.00	0.00	0.03	0.03
44.30	0.65	0.33	5.00	0.00	0.03	0.03
44.35	0.65	0.33	5.00	0.00	0.03	0.03
44.40	0.65	0.33	5.00	0.00	0.03	0.03
44.45	0.65	0.33	5.00	0.00	0.03	0.03
44.50	0.65	0.33	5.00	0.00	0.03	0.03

44.55	0.65	0.33	5.00	0.00	0.03	0.03
44.60	0.65	0.33	5.00	0.00	0.03	0.03
44.65	0.65	0.33	5.00	0.00	0.03	0.03
44.70	0.65	0.33	5.00	0.00	0.03	0.03
44.75	0.65	0.33	5.00	0.00	0.03	0.03
44.80	0.65	0.33	5.00	0.00	0.03	0.03
44.85	0.65	0.33	5.00	0.00	0.03	0.03
44.90	0.65	0.33	5.00	0.00	0.03	0.03
44.95	0.65	0.33	5.00	0.00	0.03	0.03
45.00	0.65	0.33	5.00	0.00	0.03	0.03
45.05	0.65	0.33	5.00	0.00	0.03	0.03
45.10	0.65	0.33	5.00	0.00	0.03	0.03
45.15	0.65	0.33	5.00	0.00	0.03	0.03
45.20	0.65	0.33	5.00	0.00	0.03	0.03
45.25	0.65	0.33	5.00	0.00	0.03	0.03
45.30	0.65	0.33	5.00	0.00	0.03	0.03
45.35	0.65	0.33	5.00	0.00	0.03	0.03
45.40	0.65	0.33	5.00	0.00	0.03	0.03
45.45	0.65	0.33	5.00	0.00	0.03	0.03
45.50	0.65	0.33	5.00	0.00	0.03	0.03
45.55	0.65	0.33	5.00	0.00	0.03	0.03
45.60	0.65	0.32	5.00	0.00	0.03	0.03
45.65	0.65	0.32	5.00	0.00	0.03	0.03
45.70	0.65	0.32	5.00	0.00	0.03	0.03
45.75	0.65	0.32	5.00	0.00	0.03	0.03
45.80	0.65	0.32	5.00	0.00	0.03	0.03
45.85	0.65	0.32	5.00	0.00	0.03	0.03
45.90	0.65	0.32	5.00	0.00	0.03	0.03
45.95	0.65	0.32	5.00	0.00	0.03	0.03
46.00	0.65	0.32	5.00	0.00	0.03	0.03
46.05	0.65	0.32	5.00	0.00	0.03	0.03
46.10	0.65	0.32	5.00	0.00	0.02	0.02
46.15	0.65	0.32	5.00	0.00	0.02	0.02
46.20	0.65	0.32	5.00	0.00	0.02	0.02
46.25	0.65	0.32	5.00	0.00	0.02	0.02
46.30	0.65	0.32	5.00	0.00	0.02	0.02
46.35	0.65	0.32	5.00	0.00	0.02	0.02
46.40	0.65	0.32	5.00	0.00	0.02	0.02
46.45	0.65	0.32	5.00	0.00	0.02	0.02
46.50	0.65	0.32	5.00	0.00	0.02	0.02
46.55	0.65	0.32	5.00	0.00	0.02	0.02
46.60	0.65	0.32	5.00	0.00	0.02	0.02
46.65	0.64	0.32	5.00	0.00	0.02	0.02
46.70	0.64	0.32	5.00	0.00	0.02	0.02
46.75	0.64	0.32	5.00	0.00	0.02	0.02
46.80	0.64	0.32	5.00	0.00	0.02	0.02
46.85	0.64	0.32	5.00	0.00	0.02	0.02
46.90	0.64	0.32	5.00	0.00	0.02	0.02
46.95	0.64	0.32	5.00	0.00	0.02	0.02
47.00	0.64	0.32	5.00	0.00	0.02	0.02
47.05	0.64	0.32	5.00	0.00	0.02	0.02
47.10	0.64	0.32	5.00	0.00	0.02	0.02
47.15	0.64	0.32	5.00	0.00	0.02	0.02
47.20	0.64	0.32	5.00	0.00	0.02	0.02

47.25	0.64	0.32	5.00	0.00	0.02	0.02
47.30	0.64	0.32	5.00	0.00	0.02	0.02
47.35	0.64	0.32	5.00	0.00	0.02	0.02
47.40	0.64	0.32	5.00	0.00	0.02	0.02
47.45	0.64	0.32	5.00	0.00	0.02	0.02
47.50	0.64	0.32	5.00	0.00	0.02	0.02
47.55	0.64	0.32	5.00	0.00	0.02	0.02
47.60	0.64	0.32	5.00	0.00	0.02	0.02
47.65	0.64	0.32	5.00	0.00	0.02	0.02
47.70	0.64	0.32	5.00	0.00	0.02	0.02
47.75	0.64	0.32	5.00	0.00	0.02	0.02
47.80	0.64	0.32	5.00	0.00	0.02	0.02
47.85	0.64	0.32	5.00	0.00	0.02	0.02
47.90	0.64	0.32	5.00	0.00	0.02	0.02
47.95	0.64	0.32	5.00	0.00	0.02	0.02
48.00	0.64	0.32	5.00	0.00	0.01	0.01
48.05	0.64	0.32	5.00	0.00	0.01	0.01
48.10	0.64	0.32	5.00	0.00	0.01	0.01
48.15	0.64	0.32	5.00	0.00	0.01	0.01
48.20	0.64	0.32	5.00	0.00	0.01	0.01
48.25	0.64	0.32	5.00	0.00	0.01	0.01
48.30	0.64	0.32	5.00	0.00	0.01	0.01
48.35	0.64	0.32	5.00	0.00	0.01	0.01
48.40	0.64	0.32	5.00	0.00	0.01	0.01
48.45	0.64	0.32	5.00	0.00	0.01	0.01
48.50	0.64	0.32	5.00	0.00	0.01	0.01
48.55	0.64	0.32	5.00	0.00	0.01	0.01
48.60	0.64	0.32	5.00	0.00	0.01	0.01
48.65	0.64	0.31	5.00	0.00	0.01	0.01
48.70	0.64	0.31	5.00	0.00	0.01	0.01
48.75	0.64	0.31	5.00	0.00	0.01	0.01
48.80	0.64	0.31	5.00	0.00	0.01	0.01
48.85	0.64	0.31	5.00	0.00	0.01	0.01
48.90	0.64	0.31	5.00	0.00	0.01	0.01
48.95	0.64	0.31	5.00	0.00	0.01	0.01
49.00	0.64	0.31	5.00	0.00	0.01	0.01
49.05	0.64	0.31	5.00	0.00	0.01	0.01
49.10	0.64	0.31	5.00	0.00	0.01	0.01
49.15	0.64	0.31	5.00	0.00	0.01	0.01
49.20	0.64	0.31	5.00	0.00	0.01	0.01
49.25	0.64	0.31	5.00	0.00	0.01	0.01
49.30	0.64	0.31	5.00	0.00	0.01	0.01
49.35	0.64	0.31	5.00	0.00	0.01	0.01
49.40	0.64	0.31	5.00	0.00	0.01	0.01
49.45	0.64	0.31	5.00	0.00	0.01	0.01
49.50	0.64	0.31	5.00	0.00	0.01	0.01
49.55	0.64	0.31	5.00	0.00	0.01	0.01
49.60	0.64	0.31	5.00	0.00	0.01	0.01
49.65	0.64	0.31	5.00	0.00	0.01	0.01
49.70	0.64	0.31	5.00	0.00	0.01	0.01
49.75	0.64	0.31	5.00	0.00	0.01	0.01
49.80	0.64	0.31	5.00	0.00	0.01	0.01
49.85	0.64	0.31	5.00	0.00	0.01	0.01
49.90	0.64	0.31	5.00	0.00	0.01	0.01

49.95	0.64	0.31	5.00	0.00	0.01	0.01
50.00	0.64	0.31	5.00	0.00	0.00	0.00
50.05	0.63	0.31	5.00	0.00	0.00	0.00
50.10	0.63	0.31	5.00	0.00	0.00	0.00
50.15	0.63	0.31	5.00	0.00	0.00	0.00
50.20	0.63	0.31	5.00	0.00	0.00	0.00
50.25	0.63	0.31	5.00	0.00	0.00	0.00
50.30	0.63	0.31	5.00	0.00	0.00	0.00
50.35	0.63	0.31	5.00	0.00	0.00	0.00
50.40	0.63	0.31	5.00	0.00	0.00	0.00
50.45	0.63	0.31	5.00	0.00	0.00	0.00
50.50	0.63	0.31	5.00	0.00	0.00	0.00
50.55	0.63	0.31	5.00	0.00	0.00	0.00
50.60	0.63	0.31	5.00	0.00	0.00	0.00
50.65	0.63	0.31	5.00	0.00	0.00	0.00
50.70	0.63	0.31	5.00	0.00	0.00	0.00
50.75	0.63	0.31	5.00	0.00	0.00	0.00
50.80	0.63	0.31	5.00	0.00	0.00	0.00
50.85	0.63	0.31	5.00	0.00	0.00	0.00
50.90	0.63	0.31	5.00	0.00	0.00	0.00
50.95	0.63	0.31	5.00	0.00	0.00	0.00
51.00	0.63	0.31	5.00	0.00	0.00	0.00

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

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request 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

Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

April 26, 2022 KA No. 022-22030

Ms. Maria Guzman
Golden Empire Affordable Housing, Inc.
601 24th Street, Suite B
Bakersfield, California 93301

Re: Addendum No. 1 - Geotechnical Engineering Investigation Report
Proposed Oregon Street Multi-Family Development
3927 Oregon Street
Bakersfield, California

Dear Ms. Guzman:

Krazan & Associates, Inc. are providing this Addendum No. 1 to our previous Geotechnical Engineering Investigation report for this project (KA Project No. 022-22030) dated April 19, 2022. The purpose of this Addendum is to provide recommendations for Asphalt-Concrete (AC) pavement design and Portland Cement Concrete (PCC) pavement design for the site. At the time of our previous report, R-Value test results were not available.

R-Value Test Results and Pavement Design

One R-value sample was obtained from the project site at the location shown on the attached site plan. The sample was tested in accordance with the State of California Materials Manual Test Designation 301. Results of the test are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM)	54

The test results indicate good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	4.0"	12.0"

6.5	3.5"	4.0"	12.0"
7.0	4.0"	4.0"	12.0"
7.5	4.0"	4.0"	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***

If traffic indices are not available, an estimated index of 4.5 may be used for light automobile traffic, and an index of 7.0 for light truck traffic are typical values.

The following recommendations are for light duty and heavy-duty Portland Cement Concrete pavement sections.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	---	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	6.5"	---	12.0"

**** 95% compaction based on ASTM Test Method D1557 or CAL 216***
***** 90% compaction based on ASTM Test Method D1557 or CAL 216***
******Minimum concrete compressive strength of 3000 psi***

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill materials should be moisture-conditioned to at least 2 percent above optimum moisture and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle which may require annual maintenance. At a minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned as necessary and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The recommendations and limitations provided in our Geotechnical Engineering Investigation report dated April 19, 2022, shall remain applicable where not superseded by the recommendations provided herein.

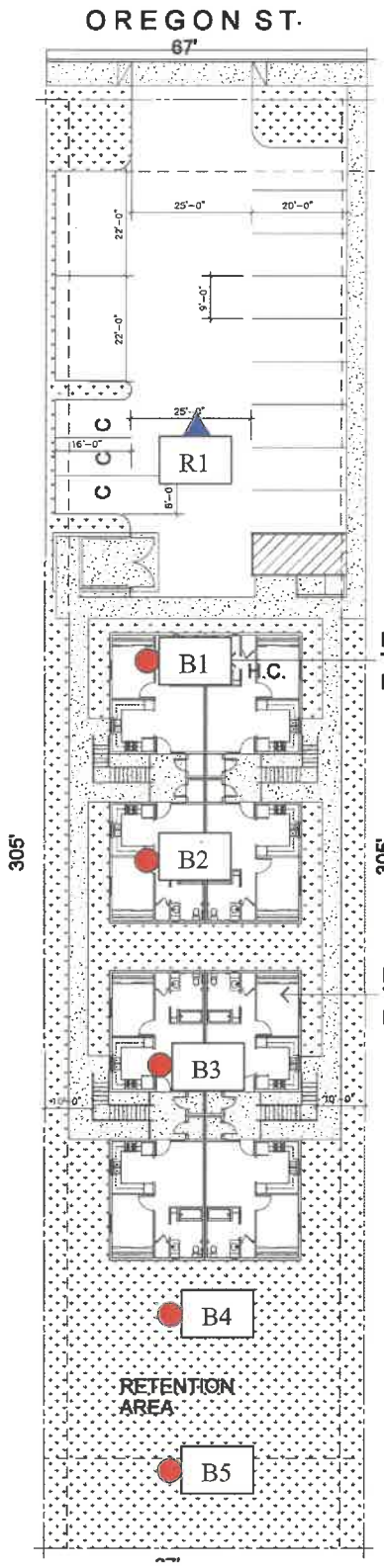
If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Ryan K. Privett, PE
Senior Engineer
RCE No. 59372

REGISTERED PROFESSIONAL ENGINEER
RYAN K. PRIVETT
NO. 59372
CIVIL
STATE OF CALIFORNIA

RKP:rp



STATISTICS

SITE AREA	20,435 SF .47 ACRES
LANDSCAPE AREA	13,480 SF
UNITS	16 1-BR UNITS
BLDG AREA	5,856 SF
DENSITY	25.5 UNITS/ACRE
ZONE	R2
PARKIG REQUIRED	1 SPACE/UNIT + 10% = 18 SPACES
PARKING PROVIDED	11 FULL SIZE SPACES 3 COMPACT SPACES
TOTAL	14 SPACES

● APPROXIMATE BORING LOCATION

▲ APPROXIMATE R-VALUE LOCATION

N
W E
S

SITE MAP	**Scale:** NTS	**Date:** April 2022
Multi-Family Development **3927 Oregon Street** **Bakersfield, California**	**Drawn by:** HT	**Approved by:** DJ
	Project No. 022-22030	**Figure No.** 1

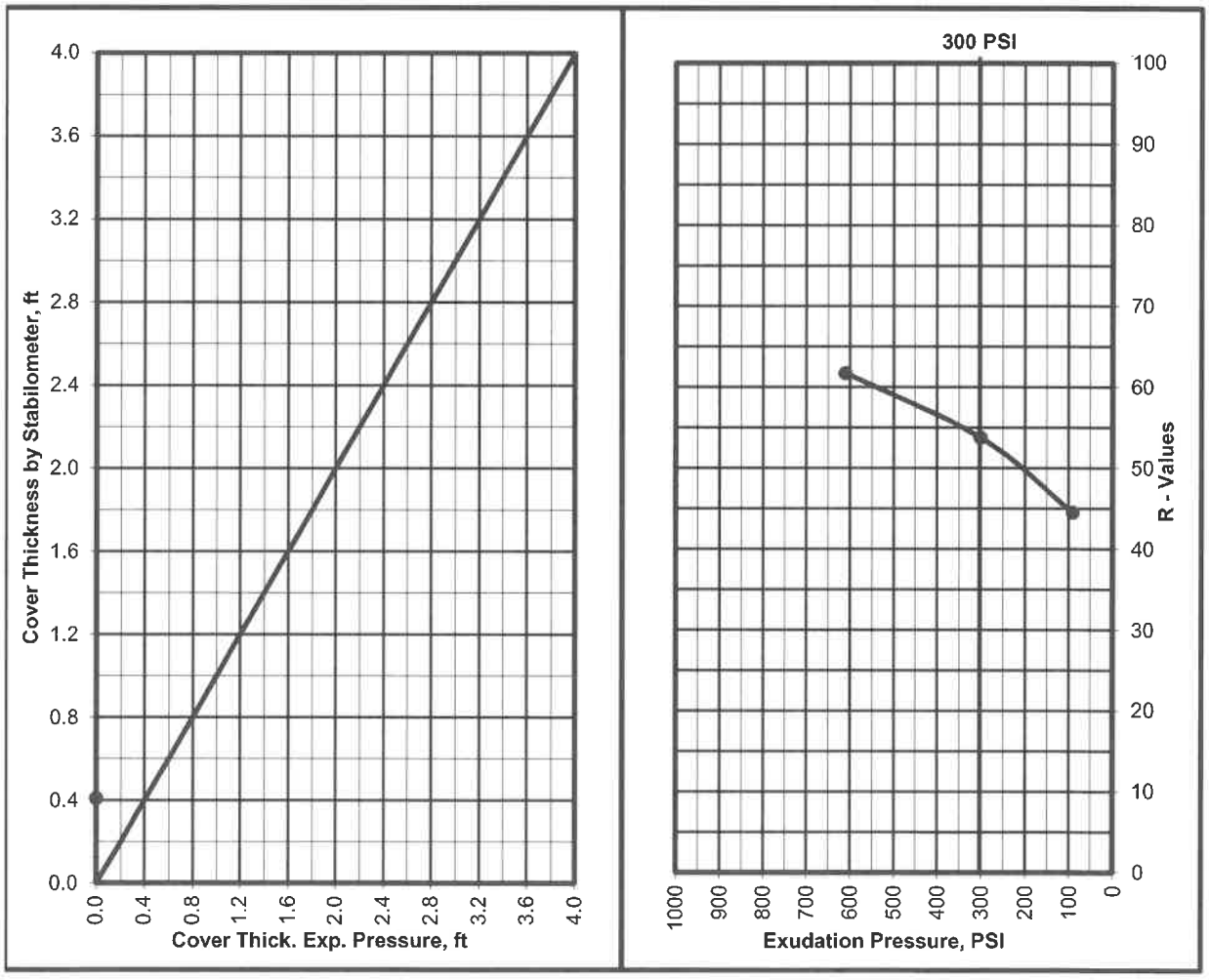
Krazan
GEOTECHNICAL ENGINEERING

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-22030
Project Name	:	Oregon Street Multi-Family Development
Date	:	4/26/2022
Sample Location/Curve Number	:	RV#1
Soil Classification	:	SM

TEST	A	B	C
Percent Moisture @ Compaction, %	8.0	8.8	9.2
Dry Density, lbm/cu.ft.	128.7	128.1	127.4
Exudation Pressure, psi	610	300	90
Expansion Pressure, (Dial Reading)	0	0	0
Expansion Pressure, psf	0	0	0
Resistance Value R	62	54	45

R Value at 300 PSI Exudation Pressure	**54**
R Value by Expansion Pressure (TI =): 5	**Expansion Pressure nil**



Krazan Testing Laboratory