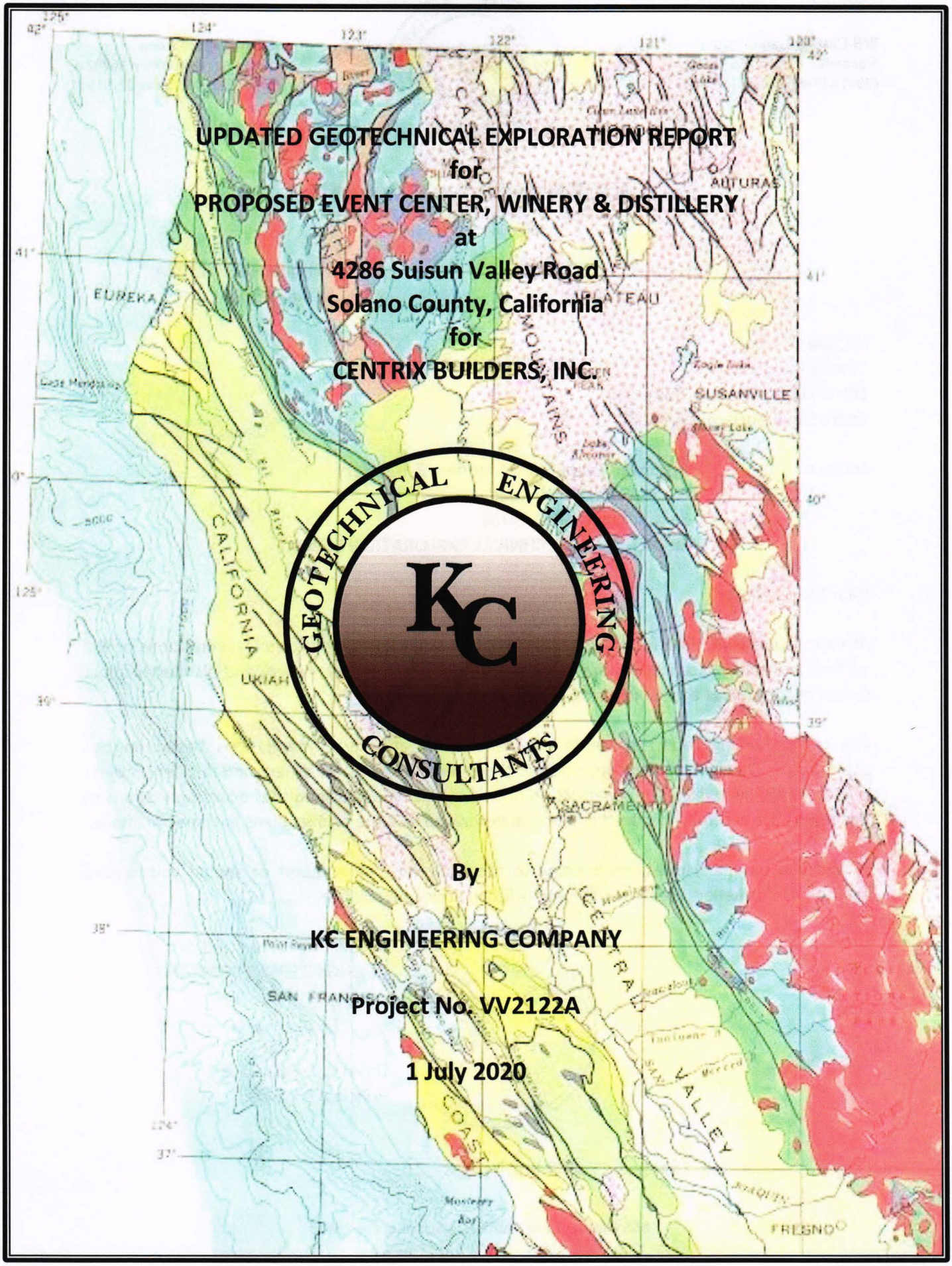

UPDATED GEOTECHNICAL EXPLORATION REPORT
for
PROPOSED EVENT CENTER, WINERY & DISTILLERY
at
4286 Suisun Valley Road
Solano County, California
for
CENTRIX BUILDERS, INC.

By

KC ENGINEERING COMPANY

Project No. VV2122A

1 July 2020

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Project No. VV2122A
1 July 2020

Mr. Joe Cassidy
Centrix Builders, Inc.
160 S. Linden Avenue, Suite 100
South San Francisco, CA 94080

Subject: Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road
Solano County, California
UPDATED GEOTECHNICAL EXPLORATION REPORT

Dear Mr. Cassidy:

At your request, **KC ENGINEERING COMPANY** has explored the geotechnical conditions of the surface and subsurface soils of the proposed special event center, winery and distillery project to be constructed at the subject site.

The accompanying report presents our conclusions and recommendations based on our exploration. Our findings indicate that the proposed event center, winery and distillery project is geotechnically feasible for construction on the subject site provided the recommendations of this report are carefully followed and are incorporated into the project plans and specifications.

Should you have any questions relating to the contents of this report or should you require additional information, please contact our office at your convenience.

REGISTERED PROFESSIONAL ENGINEER
DAVID V. CYMANSKI
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EXP. 6-30-22
GEOTECHNICAL
STATE OF CALIFORNIA

Respectfully Submitted,
KC ENGINEERING COMPANY

David V. Cymanski, G.E.
Principal Engineer

Copies: 3 mail, 1 email to Client & PDF Designs

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UPDATED GEOTECHNICAL EXPLORATION

Purpose and Scope

The purpose of the geotechnical exploration for the proposed special events center, winery and distillery project was to determine the surface and subsurface soil conditions at the subject site. It is noted that we previously investigated this site in 2008 for the large structure on the south. The data from that report was reviewed and utilized herein. Based on the results of our prior and recent exploration, updated geotechnical criteria and recommendations were established for grading of the site, design of foundations, slabs-on-grade, pavement sections and the construction of other related facilities on the property.

In accordance with your authorization, our exploration services included the following tasks:

a. A review of available geotechnical and geologic literature concerning the site and vicinity;
b. Site reconnaissance by the Geotechnical Engineer to observe and map surface conditions;
c. Drilling of a total of three exploratory borings, excavating one test pit and sampling of the subsurface soils;
d. Laboratory testing of the samples obtained to determine their classification and engineering characteristics;
e. Analysis of the data and formulation of conclusions and recommendations; and
f. Preparation of this written report.

Site Location and Description

The subject site is located at 4286 Suisun Valley Road in Solano County, California as shown on Figure 1, "Aerial Vicinity Map" included in the Appendix of this report. The vineyard property is flat and contains a custom residence, a guest house, a detached garage/shop building, and a former farm implement metal building.

The above description is based on a reconnaissance of the site by the Geotechnical Engineer, a review of a Partial Site Plan by PDF Designs, dated April 2019, and a review of a Google Earth image dated 9/1/18. The Google Earth image was used as the basis for our "Aerial Vicinity Map" included as Figure 1, and the PDF Site Plan was used as our "Site Plan" included as Figure 2 in the Appendix.

Proposed Construction

The proposed construction is planned to consist of tenant improvements and remodeling of the two existing shop/garage and farm buildings and construction of a new parking lot and driveways as shown on Figure 2, "Site Plan". The existing central-eastern building is proposed to be the new event center. The southeastern metal building is planned to have a building addition on the eastern side and will become the new winery, distillery and tasting room. Additional site improvements are planned to consist of underground utilities, concrete and asphalt pavements, and landscaping. Earthwork is expected to consist of processing and compacting the areas for the new addition, parking stalls and driveway areas.

Field Exploration

The field exploration was performed in March 2008 and included a reconnaissance of the site and the drilling of three exploratory test borings at the approximate locations shown on Figure 2, "Site Plan". We performed a supplemental reconnaissance and exploration in June of 2020 to observe current conditions and to obtain additional surface samples at the test pit location.

The borings were drilled to a maximum depth of 40 feet below the existing ground surface. The drilling was performed with a Mobile B-24 drill rig using power-driven, four-inch diameter solid flight augers. Visual classifications were made from auger cuttings and the samples in the field. As the drilling proceeded, relatively disturbed tube samples were obtained by driving a 3-inch O.D., California split-tube sampler, containing thin brass liners, into the boring bottom in accordance with ASTM D3550. The samplers were driven into the in-situ soils at various depths under the impact of a 140-pound hammer having a free fall of 30 inches. The number of blows required to advance the sampler 12 inches into the soil, after seating the sampler 6 inches, were adjusted to the standard penetration resistance (N-Value). The raw blow counts obtained using the California sampler were corrected to equivalent N-Values using Burmister's (1948) energy and diameter correction formula. When the sampler was withdrawn from the boring bottom, the samples were removed, examined for identification purposes, labeled and sealed to preserve the in-situ moisture content, and transported to our laboratory for testing.

Classifications made in the field were verified in the laboratory after further examination and testing. The stratification of the soils, descriptions, location of disturbed soil samples and standard penetration resistance are shown on the respective "Log of Test Boring" contained within the Appendix.

Laboratory Testing

The laboratory testing program was directed towards providing sufficient information for the determination of the engineering characteristics of the site soils so that the recommendations outlined in this report could be formulated. The laboratory test results are presented on the respective Boring Logs and lab data sheets in the Appendix.

Moisture content and dry density tests (ASTM D2937) were performed on representative relatively disturbed soil samples in order to determine the consistency of the soil and the moisture variation throughout the explored soil profile as well as estimate the compressibility of the underlying soils. In order to assist in the identification and classification of the subsurface soils, sieve analysis tests (ASTM D6913) and Atterberg Limits tests (ASTM D4318) were performed on selected soil samples. The Atterberg Limits test results were used to estimate the expansion potential of the near surface soils. The sieve analysis results also aided in our liquefaction analysis. The strength parameters of the foundation soils were determined from unconfined compression tests (ATSTM D2166) performed on selected relatively disturbed soil samples. Standard field penetration resistance (N-Values) also assisted in the determination of strength and bearing capacity. The standard penetration resistances are recorded on the respective "Log of Test Boring".

A representative bulk sample of the near surface soils was obtained to evaluate the presence and concentration of water soluble sulfates in accordance with ASTM C1580.

Subsurface Conditions

Based on our field exploration and laboratory testing, the surface and subsurface soil conditions are generally uniform across the site. The soil profile generally consists of reddish brown to dark brown, stiff to hard, moderately to highly expansive clay with varying amounts of sand extending to the maximum depth explored of 40 feet below the ground surface. It is noted that the upper 2 to 3 feet was relatively loose due to prior disking and/or vineyard ripping.

Groundwater was encountered at a depth of 23 feet below grade at the time of drilling in 2008. Fluctuations in the groundwater table can occur with variations in seasonal rainfall, variations in the characteristics of the subsurface deposits, and irrigation on the site and vicinity.

A more thorough description and stratification of the soils encountered along with the results of the laboratory tests are presented on the respective Boring Logs in the Appendix. The approximate locations of the borings are shown on Figure 2.

Site Geology

According to the Geologic Map of the Northeastern San Francisco Bay Region, the geologic deposits underlying the site consist of Holocene-aged alluvial fan deposits. These deposits consist of moderately to poorly sorted and moderately to poorly bedded sand, gravel, silt, and clay deposited where streams emanate from upland regions onto more gently sloping valley floors or plains. The subsurface deposits encountered during our investigation generally correlate with previous mapping.

Geo-Hazards

Seismicity & Ground Motion Analysis

The site is not located within an Alquist-Priolo Earthquake Fault Zone[1]. There are no known active faults crossing the site as mapped and/or recognized by the State of California. However, Suisun Valley is located in a seismically-active region and earthquake related ground shaking should be expected during the design life of structures constructed on the site. The California Geological Survey has defined an active fault as one that has had surface displacement in the last 11,700 years, or has experienced earthquakes in recorded history.

Based on our review of the Fault Activity Map of California[2] and the USGS National Seismic Hazard Maps-Source Parameters[3], the nearest active faults are the Cordelia, Green Valley and West Napa Faults, located approximately 0.9 miles to the west, 2.4 miles to the west and 9.1 miles to the west, respectively. Numerous other active faults in the Bay Area may also produce significant seismic shaking at the site.

The 2019 CBC specifies that the potential for liquefaction and soil strength loss should be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration with an adjustment for site class effects in accordance with American Society of Civil Engineer (ASCE 7-16)[4]. The MCE_G is peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. Based on ASCE 7-16, the MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated to be 0.757g for the property using SEAOC/OSHPD U.S. Seismic Design Maps web-based tool with a site coefficient (F_{PGA}) of 1.2 for Site Class D.

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[1] Parish, J.G., 2018 *Earthquake Fault Zones,* California Geological Survey, Special Publication 42, Revised 2018.
[2] Jennings, C.W. and Bryant, W.A., 2010, *Fault Activity Map of California*, California Geological Survey Geologic Data Map No. 6, scale 1:750,000
[3] U.S. Geological Survey, 2008 National Seismic Hazards Maps – Source Parameters, accessed 6/30/20, from USGS web site: https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_main.cfm
[4] American Society of Civil Engineer (ASCE), 2016, Minimum Design Loads for Buildings and Other Structures, Standard 7-16 and Supplement 1, dated 12/12/18.

The structure at the site should be designed to withstand the anticipated ground accelerations. Based on the SEAOC/OSHPD U.S Seismic Design Maps[5] website and ASCE 7-16, the 2019 CBC earthquake design values are as follows. The US seismic design summary report is included in the Appendix.

Site Class:	D
Mapped Acceleration Parameters:	S_S = 1.592g; S_1 = 0.600g
Design Spectral Response Accelerations:	S_{DS} = 1.273g; S_{D1} = 0.680g

The provided values are based on a stiff clay soil profile or Site Class D for the upper 100 feet. In our opinion, a ground motion hazard analysis is not necessary per ASCE 7-16, Section 11.4.8, Exception 2. The seismic response coefficient Cs should be determined by Eq. (12.8-2) for values of $T \leq 1.5T_S$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_S$ or Eq. (12.8-4) for $T > T_L$. This must be evaluated and verified by the Structural Engineer.

Fault Rupture

The site is not located within an Alquist-Priolo Earthquake Fault Zone. Based on our review of geologic maps, no known active or inactive faults cross or project toward the subject site. In addition, no evidence of active faulting was visible on the site during our site reconnaissance. Therefore, it is our opinion that there is no potential for fault-related surface rupture at the subject site.

Landsliding

The subject site and immediate vicinity is relatively flat and therefore, not subject to seismically-induced landslide hazards.

Liquefaction

Soil liquefaction is a phenomenon in which loose and saturated cohesionless soils are subject to a temporary, but essentially total loss of shear strength, due to pore pressure build-up under the reversing cyclic shear stresses associated with earthquakes. Soils typically found most susceptible to liquefaction are saturated and loose, fine to medium grained sand having a uniform particle range and less than 35% fines passing the No. 200 sieve, and a corrected standard penetration blow count $(N_1)_{60}$ less than 30. According to Special Publication 117A by the California Geological Survey, the assessment of hazards associated with potential liquefaction

[5] https://seismicmaps.org/, accessed 7/1/20

of soil deposits at a site must consider translational site instability (i.e. lateral spreading, etc.) and more localized hazards such as bearing failure and settlement. The acceptable factor of safety against liquefaction is recommended in SP117 to be 1.3 or greater.

The data used for evaluating liquefaction potential of the subsurface soils consisted of the unit weights, the soil type, the groundwater level, and the location of the site to the nearest active fault and the predicted ground surface acceleration. The subsurface soils encountered on the site are predominately cohesive with a consistency of stiff to hard. In addition, the soils below the groundwater table were found to have 96.1% fines passing the No. 200 sieve. Based on the data obtained and in view of the above noted criteria, it is our opinion that the potential for liquefaction related hazards at the site is very low.

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

General

From a geotechnical point of view, the proposed event center, winery and distillery project and associated improvements are considered to be feasible for construction on the subject site provided the recommendations presented in this report are incorporated into the project plans and specifications.

All grading and foundation plans for the development must be reviewed by the Geotechnical Engineer prior to contract bidding or submittal to governmental agencies to ensure that the geotechnical recommendations contained herein are properly incorporated and utilized in design.

KC ENGINEERING CO. should be notified at least two working days prior to site clearing, grading, and/or foundation operations on the property. This will give the Soil Engineer ample time to discuss the problems that may be encountered in the field and coordinate the work with the contractor.

Field observation and testing during the grading and/or foundation operations must be provided by representatives of ***KC ENGINEERING CO.*** to enable them to form an opinion regarding the adequacy of the site preparation, the acceptability of fill materials, and the extent to which the earthwork construction and the degree of compaction comply with the specification requirements. Any work related to the grading and/or foundation operations performed without the full knowledge and under the direct observation of the Soil Engineer will render the recommendations of this report invalid.

Geotechnical Considerations

The primary geotechnical concerns for the site are the presence of near-surface relatively soft and loose soils and moderately to highly expansive nature of the clays. The soft and loose soils under the proposed improvements will need to be over-excavated, processed and compacted as recommended herein. The near surface soil is prone to heave and shrink movements with changes in moisture content and must be carefully considered in the design of grading, foundations, drainage, and landscaping. We recommend that the proposed structures be supported by a deepened and interconnected spread footing and well-reinforced thickened slab foundation system, along with an underlying structural fill pad.

Grading

Grading activities may be performed during the rainy season, however, achieving proper compaction may be difficult due to excessive moisture; and delays may occur. Grading performed during the dry months will minimize the occurrence of the above problems. When project grading plans become available for our review, supplemental grading recommendations may be required.

In the area of the proposed building addition, parking areas and new driveways, we recommend that the existing soft and loose soils be over-excavated 2 feet, followed by ripping the exposed bottom 12 inches, moisture conditioning and compacting to a minimum degree of relative compaction of 90% at least 3 percent above optimum moisture content as determined by ASTM D1557 Laboratory Test Procedure. After processing and compacting the lower 12 inches, the site may be brought to the desired finished grades by placing engineered fill in lifts of 8 inches in un-compacted thickness and compacting to a relative compaction of 90% at 3 percent over optimum in accordance with the aforementioned test procedure.

Should select import material be used for general fill, the import material should be approved by the Soil Engineer before it is brought to the site. Where select import soil is used in other areas, it should meet the following requirements:

a. Have an R-Value of not less than 15;
b. Have a Plasticity Index not higher than 12;
c. Not more than 15% passing the No. 200 sieve;
d. No rocks larger than 3 inches in maximum size;

The fill materials shall be placed in uniform lifts of not more than 8 to 12 inches in uncompacted thickness depending on size and weight of equipment used. Each layer shall be spread evenly and shall be thoroughly blade mixed during the spreading to obtain uniformity of material in each layer. Before compaction begins, the fill shall be brought to a water content that will permit proper compaction by either (a) aerating the material if it is too wet, or (b) spraying the material with water if it is too dry.

Compaction shall be by footed rollers or other types of acceptable compacting rollers. Rollers shall be of such design that they will be able to compact the fill to the specified density. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient trips to ensure that the required density has been obtained. No ponding or jetting shall be permitted.

The standard test used to define maximum densities and optimum moisture content of all compaction work shall be the Laboratory Test procedure ASTM D1557 and field tests shall be expressed as a relative compaction in terms of the maximum dry density and optimum moisture content obtained in the laboratory by the foregoing standard procedure. Field density and moisture tests shall be made in each compacted layer by the Soil Engineer in accordance with ASTM D6938, respectively. When footed rollers are used for compaction, the density and moisture tests shall be taken in the compacted material below the surface disturbed by the roller. When these tests indicate that the compaction requirements for any layer of fill, or portion thereof, have not been met, the particular layer, or portion thereof, shall be reworked until the compaction requirements have been met.

Surface Drainage

A very important factor affecting the performance of structures and pavements is the proper design, implementation, and maintenance of surface drainage, as well as maintaining uniform moisture conditions around the structures. Ponded water will cause swelling and/or loss of soil strength and may also seep under structures. Should surface water be allowed to seep under the structures, differential foundation movement resulting in structural damage and/or standing water under the slab will occur. This may cause dampness to the floor which may result in mildew, staining, and/or warping of floor coverings. To minimize the potential for the above problems, dampproofing and waterproofing should be provided as required by Section 1805 of the 2019 CBC. In addition, the following surface drainage measures are recommended and must be maintained by the property owner in perpetuity:

a) Positive building pad slopes and surface drainage must be provided by the project Civil Engineer to remove all storm water from the pad and to prevent storm and/or irrigation water from ponding adjacent to the structure foundations. The finished pad grade around the structures should be compacted and sloped 5% away from the exterior foundations and as required in Section 1804.4 of the 2019 CBC and directed to catch basins or swales that discharge to a suitable outlet. Surface swales should be sloped a minimum of 2% as required by the CBC.

b) Enclosed or trapped planter areas adjacent to the structure foundations should be avoided if possible. Where enclosed planter areas are constructed, these areas must be provided with adequate measures to drain surface water (irrigation and rainfall) away from the foundation. Positive surface gradients and/or controlled drainage area inlets should be provided. Care should be taken to adequately slope surface grades away from the structure foundations and into area inlets. Drainage area inlets should be piped to a suitable discharge facility.

c) Adequate measures for storm water discharge from the roof gutter downspouts must be provided by the project Civil Engineer and maintained by the property owners at all times, such that no water is allowed to pond next to the structure. Closed pipe discharge lines should be connected to downspouts and discharged into a suitable drainage facility.

d) Site drainage should be designed by the project Civil Engineer. Civil engineering, hydraulic engineering, and surveying expertise is necessary to design proper surface drainage to assure that the flow of water is directed away from the foundations.

e) Over-irrigation of plants is a common source of water migrating beneath a structure. Consequently, the amount of irrigation should not be any more than the amount necessary to support growth of the plants. Foliage requiring little irrigation (drip system) is recommended for the areas immediately adjacent to the structures.

f) Landscape mounds or concrete flatwork should not be constructed to block or obstruct the surface drainage paths. The Landscape Architect or other landscaper should be made aware of these landscaping recommendations and should implement them as designed. The surface drainage facilities should be constructed by the contractor as designed by the Civil Engineer.

Foundations

Provided that the upper 3 feet of the building pad soils are processed and compacted as recommended in the "Grading" section, the proposed structure addition may be supported by utilizing a deepened, well-reinforced and inter-connected spread footing foundation system with a thickened slab floor. The new footings and slab should be structurally doweled to the existing foundation.

A continuous spread footing should be placed around the perimeter of the structure and be a minimum of 18 inches wide. All interior and exterior column footings should be interconnected to the perimeter with reinforced concrete tie-beams or by continuous slab floor reinforcing extending through the interior column footings. Isolated footings should not be utilized unless connected with reinforced tie-beams or through reinforced slab connections. The continuous and pad/column footings should extend to a minimum depth of 24 inches below the interior slab subgrade soil elevation. The tie beams where used should extend to a minimum depth of 18 inches below the interior soil pad grade. The recommended design allowable bearing pressure for footings is 2,000 p.s.f. due to dead plus live loads. The allowable pressure may be increased by 1/3 due to all transient loads which include wind and seismic.

All foundations must be adequately reinforced to provide structural continuity and resist the anticipated loads as determined by the project Structural Engineer. The final footing design and reinforcement should be determined by the project Structural Engineer. However, continuous footings and tie-beams are recommended to be reinforced with a minimum of four No. 6 bars, two at the top and two near the bottom of the footing. Additional reinforcement will be as required by the structural engineer and in accordance with structural building code requirements. Foundations designed in accordance with the above criteria are expected to experience a total settlement of less than ¾ of an inch with less than ½ inch of an inch in 50 feet.

To accommodate lateral building loads, the passive resistance of the foundation soil can be utilized. The passive soil pressures can be assumed to act against the front face of the footing below a depth of 1 foot below the ground surface. It is recommended that a passive pressure equivalent to that of a fluid weighing 250 p.c.f. be used. For design purposes, an allowable friction coefficient of 0.30 can be assumed at the base of the spread footings. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since the mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Previous testing indicates a sulfate content of 25 ppm (mg/kg). It is noted that the sulfate test results indicate low or "S0" sulfate exposure to concrete as identified in the Durability Requirements, Section 1904 of the 2016 California Building Code, and Tables 19.3.1.1 of ACI 318-14 Building Code Requirements for Structural Concrete. No cement type restriction is required, however, we do recommend that a Type II cement be utilized in concrete mixes for additional sulfate and corrosion resistance.

Slab-on-Grade Construction

Interior and exterior concrete slabs, including sidewalks, driveways, non-structural detached patios and general flatwork will likely experience some cracking due to finishing, curing methods, drying shrinkage, as well as moisture variations and related soil movements within the underlying clay soils. To reduce the potential cracking of the slabs-on-grade, the following recommendations are made:

a) All areas to receive slabs should be thoroughly wetted and soaked to seal any desiccation or shrinkage cracks prior to placing concrete. This work should be done under the observation of the Soil Engineer.

b) Slabs should be underlain by a minimum of 4 inches of Caltrans Class II Aggregate Base placed and compacted to a minimum of 90% between the finished subgrade and the slabs to serve as subbase support.

c) Interior slabs areas should be a minimum of 6 inches thick and reinforced with a minimum of No. 4 rebar spaced 18 inches center to center, each way. Exterior pedestrian flatwork and general slabs should be a minimum of 5 inches thick and reinforced with No. 3 rebar spaced at 18 inches on center. The actual slab thickness and reinforcement should be determined by the project Structural Engineer in accordance with the structural requirements and the anticipated loading conditions. The reinforcement shall be placed in the center of the slab unless otherwise designated by the design engineer. We recommend that exterior slabs be structurally rebar doweled to the perimeter foundation, especially at door openings. Doweling details should be provided by the Structural Engineer.

d) A vapor retarder membrane should be installed between the prepared building pad aggregate base and the interior slabs to minimize moisture condensation under the floor coverings and/or upward vapor transmission. The vapor barrier membrane should be a minimum 15-mil extruded polyolefin plastic that complies with ASTM E1745 Class A and have a permeance of less than 0.01 perms per ASTM E96 or ASTM F1249. It is noted that polyethylene films (visqueen) do not meet these specifications. The vapor barrier must be adequately lapped and taped/sealed at penetrations and seems in accordance with ASTM E1643 and the manufacturer's specifications. The vapor retarder must be placed continuously across the slab area.

e) Water vapor migrating to the surface of the concrete can adversely affect floor covering adhesives. Provisions should be provided in the concrete mix design to minimize moisture emissions. This should include the selection of a water-cement ratio which inhibits water permeation (0.45 max) and/or the addition of suitable admixtures to limit water transmission. We also recommend the use of Type II cement for additional corrosion resistance.

f) Slabs for driveways, and exterior flatwork should be placed structurally independent of the foundations. Driveway slab recommendations are presented in the "Pavement" section of the report. A 30-pound felt strip, expansion joint material, or other positive separator should be provided around the edge of all floating slabs to prevent bonding to the foundation. However, rebar doweling is recommended to minimize vertical movements between exterior slabs and building foundations. Doweling details should be determined by the Structural Engineer.

g) To minimize moisture infiltration under exterior slabs and to add edge rigidity, we recommend that slabs be thickened at the edges to extend below the aggregate base layer to the soil subgrade for a minimum width of 6 inches.

h) Slabs should be provided with crack control saw cut joints or tool joints to allow for expansion and contraction of the concrete. In general, contraction joints should be spaced no more than 20 times the slab thickness in each direction. The layout of the joints should be determined by the project Structural Engineer and/or Architect.

i) We recommend that appropriate provisions be provided by the Structural Engineer and Contractor to minimize slab cracking, such as curing measures and/or admixtures to minimize concrete drying-shrinkage and curling. American Concrete Institute methods and guidelines of curing, such as wet curing or membrane curing, are recommended to minimize drying shrinkage cracking.

Pavement Areas

The new driveways and parking areas may be paved with either asphalt concrete (AC) or Portland cement concrete (PCC) surfaces. Recommendations for these pavement surfaces are presented below. We emphasize that the performance of the pavement is critically dependent upon adequate and uniform compaction of the subgrade soils, as well as engineered fill and utility trench backfill within the limits of pavements. Pavements will typically have poor performance and shorter life where water is allowed to migrate into the aggregate base and subgrade soils. The main sources of water into pavement materials are landscape planters constructed within or adjacent to pavement areas. Where this is planned, it is suggested to extend the curbs into the soil subgrade at least 2 inches. The construction of all pavements should conform to the requirements set forth by the latest Standard Specifications of the Department of Transportation of the State of California (Caltrans) and/or the Solano County.

Preparation of Subgrade: After underground utilities have been placed in the areas to receive pavement and removal of excess material has been completed, the upper 12 inches of the subgrade soil shall be scarified, moisture conditioned and compacted to a minimum relative compaction of 95% at a moisture content at 3% or more above optimum in accordance with the grading recommendations specified in this report. Prior to placement of aggregate baserock, it is recommended that the subgrade be proof rolled and observed for deflection by the Soils Engineer. Should deflection and/or pumping conditions be encountered, stabilization recommendations will be provided based on field conditions.

Aggregate Base: All aggregate base material placed subsequently should also be compacted to a minimum relative compaction of 95% based on the ASTM Test Procedure D1557. Aggregate base should meet the minimum requirements of Caltrans ¾" Class 2 per Section 26 and be crushed and angular. The recommended aggregate base thicknesses for asphalt concrete pavements are noted in the table below. The minimum aggregate base thickness for Portland cement concrete PCC roadway pavements is 6 compacted inches.

Asphalt Concrete: Asphalt concrete shall conform with Section 39 of Caltrans Standard Specifications and shall be per the City Standards. Based on an R-Value of 5, and traffic indices typical for commercial developments, the recommended pavement sections for asphalt concrete surfaces are summarized in the table below. The appropriate traffic index (TI) and any minimum pavement sections should be determined by the Civil Engineer in conformance with Solano County Standards.

Traffic Condition	Traffic Index (TI)	Asphalt Concrete (inches)	Class II Aggregate Base[1] (inches)
Auto Parking Stalls	4.5	3.0 3.0	8.0 5.0**
Drive Lanes	6.0	3.0 3.0	13.5 9.0**

NOTES:
(1) Minimum R-Value = 78
(2) All layers in compacted thickness to CalTrans Standard Specifications.
** AB underlain by Tensar TX8 Geogrid

Portland Cement Concrete: Where PCC pavement areas are utilized, such as for drive isles and truck areas or at trash enclosures, the concrete should be poured on the compacted aggregate base layer described above of 6 inches. The concrete section should be designed by the project Civil or Structural Engineer per Chapter 620 of the Highway Design Manual or City Standards. We recommend a minimum of 6 inches thick PCC reinforced with a minimum of No. 4 rebar spaced at 16 inches on center, each way, underlain by 6 inches of compacted Class 2 aggregate base. Additional reinforcement may be required by the Structural Engineer. Pavement joints shall be per the HDM and City Standards.

General Construction Requirements

Utility trenches extending underneath all traffic areas must be backfilled with native or import soil materials and compacted to relative compaction of 90% to within 12 inches of the subgrade. The upper 12 inches should be compacted to 95% relative compaction in accordance with

Laboratory Test Procedure ASTM D1557. Backfilling and compaction of these trenches must also meet the requirements set forth by Solano County, Department of Public Works.

Applicable safety standards require that trenches in excess of 5 feet must be properly shored or that the walls of the trench slope back to provide safety for installation of lines. If trench wall sloping is performed, the inclination should vary with the soil type and applicable OSHA Safety Standards. The soils at the site are considered to be Type B, except where groundwater is encountered Type C should be used.

With respect to state-of-the-art construction or local requirements, utility lines are generally bedded with granular materials. These materials can convey surface or subsurface water beneath the structures. It is, therefore, recommended that all utility trenches which possess the potential to transport water be sealed with a compacted impervious cohesive soil material or lean concrete where the trench enters/exits the building perimeter. This impervious seal should extend a minimum of 2 feet away from the building perimeter.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. It should be noted that it is the responsibility of the owner or his representative to notify ***KC ENGINEERING CO.***, in writing, a minimum of two working days before any clearing, grading, or foundation excavation operations can commence at the site.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings and from a reconnaissance of the site. Should any variations or undesirable conditions be encountered during the development of the site, ***KC ENGINEERING CO.***, will provide supplemental recommendations as dictated by the field conditions.

3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans and that the necessary steps are taken to see that the Contractor and Subcontractors carry out such recommendations in the field.

4. At the present date, the findings of this report are valid for the property investigated. With the passage of time, significant changes in the conditions of a property can occur due to natural processes or works of man on this or adjacent properties. In addition, legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may render this report invalid, wholly or partially. Therefore, this report should not be considered valid after a period of two (2) years without our review, nor should it be used, or is it applicable, for any properties other than those investigated.

5. Notwithstanding, all the foregoing applicable codes must be adhered to at all times.

APPENDIX

Aerial Vicinity Map

Site Plan

Log of Test Borings

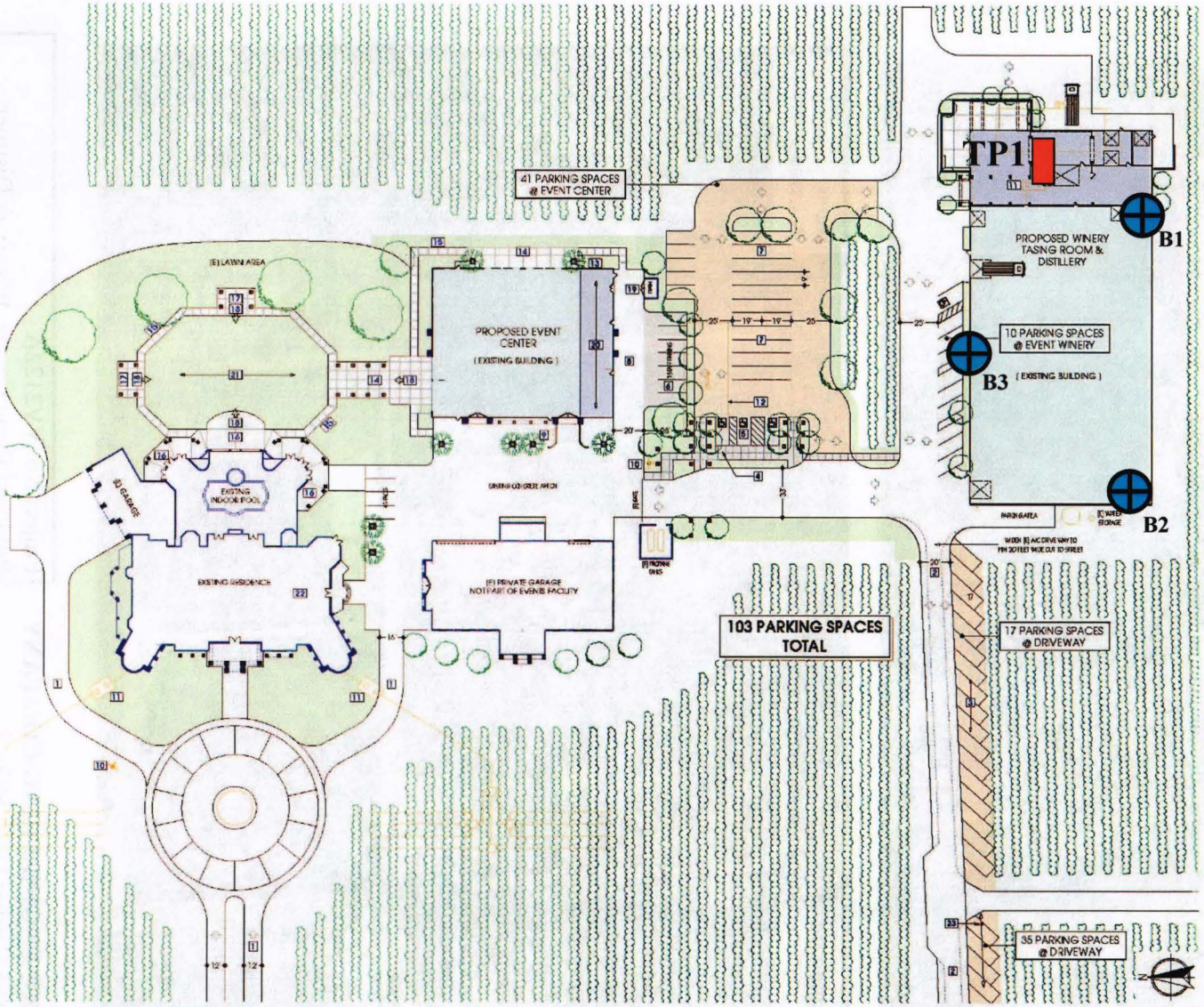
Subsurface Exploration Legend

Laboratory Test Results

US Seismic Design Report

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707.447.4025

Project No. VV2122A
Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road, Solano Co., CA
Figure 1 – AERIAL VICINITY MAP



PARTIAL SITE PLAN
Scale: 1" = 30'

SITE PLAN REFERENCE NOTES:

1. INDICATES EXISTING CONCRETE DRIVEWAY - NO WORK PROPOSED
2. INDICATES EXISTING ASPHALT DRIVEWAY TO BE WIDENED TO A MINIMUM OF 20 FEET WIDE FOR EMERGENCY VEHICLE ACCESS
3. PROPOSED VISITOR PARKING ALONG ASPHALT DRIVEWAY - NEW GRAVEL SURFACE PARKING STALLS WILL NOT BE PAINTED - LINES ILLUSTRATE THE REQUIRED SPACE FOR PARKING A VEHICLE (9 FOOT WIDE X 18 FEET DEEP) - TYPICAL
4. INDICATES NEW CONCRETE ACCESSIBLE WALK FROM PARKING AREA TO EVENT CENTER & WINERY BUILDING
5. INDICATES NEW CONCRETE ACCESSIBLE PARKING STALLS
6. INDICATES NEW CONCRETE PARKING STALLS FOR EVENT STAFF PARKING
7. NEW PARKING AREA - DECOMPOSED GRANITE OR DECORATIVE GRAVEL - PERMEABLE PARKING AREA WITH LANDSCAPE PLANTERS - PARKING STALLS SHOWN FOR ILLUSTRATION ONLY - NO PAINTED STRIPING
8. EXISTING CONCRETE FIRE LANE TO REMAIN
9. EXISTING FIRE DEPARTMENT CONNECTION, BACKFLOW & RPV VALVE FOR EXISTING FIRE SPRINKLER SYSTEM
10. EXISTING FIRE HYDRANT
11. APPROXIMATE LOCATION OF EXISTING SEPTIC TANK
12. EXISTING SEPTIC SYSTEM TO BE ABANDONED - NEW SEPTIC SYSTEM TO BE INSTALLED
13. EXISTING EVENT CENTER HVAC EQUIPMENT TO REMAIN - BEHIND NEW SCREEN WALL
14. NEW PAVED EXTERIOR ON GRADE PATIO AREA
15. NEW MIN 5 FOOT WIDE PAVED ACCESSIBLE PARKING FACILITY
16. EXISTING OUTDOOR CONCRETE PATIO AREA TO REMAIN - MIN 5 FOOT WIDE OUTDOOR AREA
17. NEW PAVED OUTDOOR AREA WITH TABLES & CHAIRS - MIN 5 FOOT WIDE OUTDOOR AREA
18. INDICATES OPTIONAL LOCATION FOR TEMPORARY PERFORMANCE AREA - ARROW INDICATES DIRECTION OF AMPLIFIED SOUND
19. NEW TRASH ENCLOSURE PER COUNTY HEALTH STANDARD REQUIREMENTS FOR COMMERCIAL FOOD FACILITY
20. INDICATES AREA OF PROPOSED COMMERCIAL FOOD FACILITY, REST ROOMS AND EVENT FACILITY STORAGE
21. OUTDOOR LAWN AREA - FRUIT TREE ARE - TENTS, BARNES, ETC.
22. PORTION OF EXISTING PRIVATE RESIDENCE WILL BE AVAILABLE FOR HOST/OVERNIGHT RENTAL, FOR WEDDING PARTIES, ETC.
23. INDICATES AN ADDITIONAL 35 - 9 FOOT WIDE PARKING SPACES ALONG DRIVEWAY AND LANDARCS

PDF

EVENT CENTER USE PERMIT
FOR: MR. JOE CASSIDY
4286 SUISUN VALLEY ROAD, SUISUN VALLEY, CALIFORNIA

REVISIONS

Partial Site Plan
Scale: As Noted
April 2019

Sheet Number
AS-1.2
of 4 sheets

LEGEND

Approximate Test Pit

Approx. Boring Location, KCE 2008

KC ENGINEERING COMPANY
865 Cotting Lane, Suite A
Vacaville, CA 95688
707-447-4025

Project No. VV2122A
Proposed Event Center, Winery & Distillery
4286 Suisun Valley Road, Solano Co., CA
Figure 2 – SITE PLAN

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ : 23 feet
FINAL ▽ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Reddish Brown CLAY w/ Fine Sand; slightly moist, very stiff	CL-CH				Disced upper 3 ft.
5	1-1					23	93.6	19.6	
				Reddish Brown CLAY with Sand; moist, stiff	CL				
10	1-2					14	-	-	%Sand=17.1 %<200=82.9
				Reddish Brown CLAY; moist, very stiff	CL				
15	1-3					22	-	-	
				Reddish Brown CLAY with Sand; moist, stiff	CL				
20	1-4					11	93.5	25.5	%Sand=23.9 %<200=76.1
				Reddish Brown CLAY; wet, stiff ▽	CL				
25	1-5					13	87.7	27.5	%Sand=3.9 %<200=96.1

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 3

LOG OF TEST BORING
BORING NO.: 1

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ : 23 feet
FINAL ▽ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
30				----As above; stiffer					
35	1-6			----As above; hard		67	-	-	
40				Boring terminated at 40 ft. Groundwater encountered at 23 ft.					
45									
50									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 3

LOG OF TEST BORING
BORING NO.: 2

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ :
FINAL ▼ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Reddish Brown CLAY; slightly moist, very stiff	CL-CH				Disced upper 3 ft.
5	2-1					17	109.7	19.8	UCC=5470 psf
				Reddish Brown CLAY w/ Fine Sand; moist, stiff	CL				
10	2-2					13	104.7	20.0	
				Dark Brown CLAY; moist, very stiff	CL				
15	2-3					19	102.5	22.4	
				Reddish Brown Sandy CLAY; moist, stiff	CL				
20	2-4					14	-	-	
				Boring terminated at 20 ft. Groundwater not encountered.					
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 4

LOG OF TEST BORING
BORING NO.: 3

PROJECT: Proposed Farm Implement Storage Building
PROJECT NO.: VV2122
CLIENT: Premier Design
DATE: 19 March 2008
LOCATION: 4286 Suisun Valley Road, Solano County
ELEVATION:
DRILLER: Ram Geotechnical Drilling, Inc.
LOGGED BY: PGT
DRILL RIG: Track-mounted Mobile B-24
BORING DIAMETER: 4 inches
DEPTH TO WATER: INITIAL ▽ :
FINAL ▼ :
AFTER: hrs.

DEPTH	SAMPLE NO.	SAMPLER	GRAPHIC LOG	GEOTECHNICAL DESCRIPTION AND CLASSIFICATION	SOIL CLASSIFICATION	CONVERTED SPT BLOW COUNT (BLOWS/FT.)	DRY DENSITY (PCF)	MOISTURE CONTENT (PERCENT)	ADDITIONAL TESTS AND REMARKS (LL, PI, UCC, ø&c, Gradation)
0				Reddish Brown CLAY; slightly moist, very stiff	CL				Disced upper 3 ft.
5	3-1					18	-	-	LL=43% PI=25%
				Reddish Brown Sandy CLAY; moist, stiff	CL				
10	3-2					11	107.0	20.3	UCC=1804 psf
	3-3			---As above; very stiff		25	100.6	22.1	
15				Boring terminated at 15 ft. Groundwater not encountered.					
20									
25									

This information pertains only to this boring and is not necessarily indicitive of the whole site.

KC ENGINEERING CO.

Figure 5

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOLS		TYPICAL NAMES
COARSE GRAINED SOILS More than half of material is larger than No. 200 Sieve	GRAVELS More than half of coarse fraction is larger than No. 4 sieve	Clean gravels (<5% fines)	GW		Well graded gravels, gravel-sand mixtures, little or no fines (Cu>4 & 1<Cc<3)
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravel with fines (>12% fines)	GM		Silty gravels, poorly graded gravel-sand-silt mixtures (PI<4 & below "A" line)
			GC		Clayey gravels, poorly graded gravel-sand-clay mixtures (PI>7 & above "A" line)
	SANDS More than half of coarse fraction is smaller than No. 4 sieve	Clean sands (<5% fines)	SW		Well graded sands, gravelly sands, little or no fines (Cu>6 & 1<Cc<3)
			SP		Poorly graded sands, gravelly sands, little or no fines
		Sands with fines (>12% fines)	SM		Silty sands, poorly graded sand-silt mixtures (PI<5 & below "A" line)
			SC		Clayey sands, poorly graded sand-clay mixtures (PI>7 & below "A" line)
FINE GRAINED SOILS More than half of material is smaller than No. 200 Sieve	SILTS AND CLAYS Liquid Limit is less than 50%		ML		Inorganic silts and very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and clays of low plasticity
	SILTS AND CLAYS Liquid Limit is more than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic silts and clays of medium to high plasticity
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils

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865 Cotting Lane, Suite A
Vacaville, CA 95688

SAMPLER AND LAB TESTING LEGEND

- Auger
- Bulk Sample, taken from auger cuttings
- California Sampler
- Bulk/Grab Sample
- Pitcher
- Standard Penetration Test
- Shelby Tube
- No Recovery

LL=Liquid Limit (%)
PI=Plasticity Index
Φ=Friction Angle
C=Cohesion
UCC=Unconfined Compression
R value=Resistance Value
Consol=Consolidation Test

SOIL GRAIN SIZE
U.S. STANDARD SIEVE OPENINGS

#200	#40	#10	#4	¾"	3"	12"
CLAY | SILT	SAND			GRAVEL		COBBLES | BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE	
0.002	0.075	0.425	2.00	4.75	19.0	75 | 300

SOIL GRAIN SIZE IN MILLIMETERS

RELATIVE DENSITY (Coarse-grained soils)

SANDS & GRAVELS	BLOWS/FOOT[1]
Very Loose	0 – 4
Loose	4 – 10
Medium Dense	10 – 30
Dense	30 – 50
Very Dense	> 50

CONSISTENCY (Fine-grained soils)

SILTS & CLAYS	STRENGTH[2]	BLOWS/FOOT[1]
Very Soft	< 500	0 – 2
Soft	500 – 1,000	2 – 4
Firm	1,000 – 2,000	4 – 8
Stiff	2,000 – 4,000	8 – 15
Very Stiff	4,000 – 8,000	15 – 30
Hard	> 8,000	>30

1 – Number of blows of 140 pound hammer falling 30 inches to drive a 2-inch O.D. split spoon sampler (ASTM D1586)
2 – Unconfined compressive strength in lb/ft^2 as determined by lab testing or approximated by the standard penetration test (ASTM D1586) or pocket penetrometer.

WEATHERING (Bedrock)

Fresh	No visible sign of decomposition or discoloration; rings under hammer impact
Slightly weathered	Slight discoloration inwards from open fractures; little or no effect on normal cementation; otherwise similar to Fresh
Moderately weathered	Discoloration throughout; weaker minerals decomposed; strength somewhat less than fresh rock but cores can not be broken by hand or scraped with knife; texture preserved; cementation little to not affected; fractures may contain filling
Highly weathered	Most minerals somewhat decomposed; specimens can be broken by hand with effort or shaved with knife; texture becoming indistinct but fabric preserved; faint fractures
Completely weathered	Minerals decomposed to soil but fabric and structure preserved; specimens can be easily crumbled or penetrated

STRENGTH (Bedrock)

Plastic	Very low strength
Friable	Crumbles easily by rubbing with fingers
Weak	An unfractured specimen will crumble under light hammer blows
Moderately strong	Specimen will withstand a few heavy hammer blows before breaking
Strong	Specimen will withstand a few heavy ringing blows and will yield with difficulty only dust and small flying fragments
Very strong	Specimen will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

BEDDING (Bedrock)	SPACING (inches)
Very thickly bedded	> 48
Thickly bedded	24 to 48
Thin bedded	2.5 to 24
Very thin bedded	5/8 to 2.5
Laminated	1/8 to 5/8
Thinly laminated	<1/8

FRACTURING (Bedrock)	SPACING (inches)
Very little fractured	> 48
Occasionally fractured	12 to 48
Moderately fractured	6 to 12
Closely fractured	1 to 6
Intensely fractrured	5/8 to 1
Crushed	<5/8

Materials Testing, Inc.

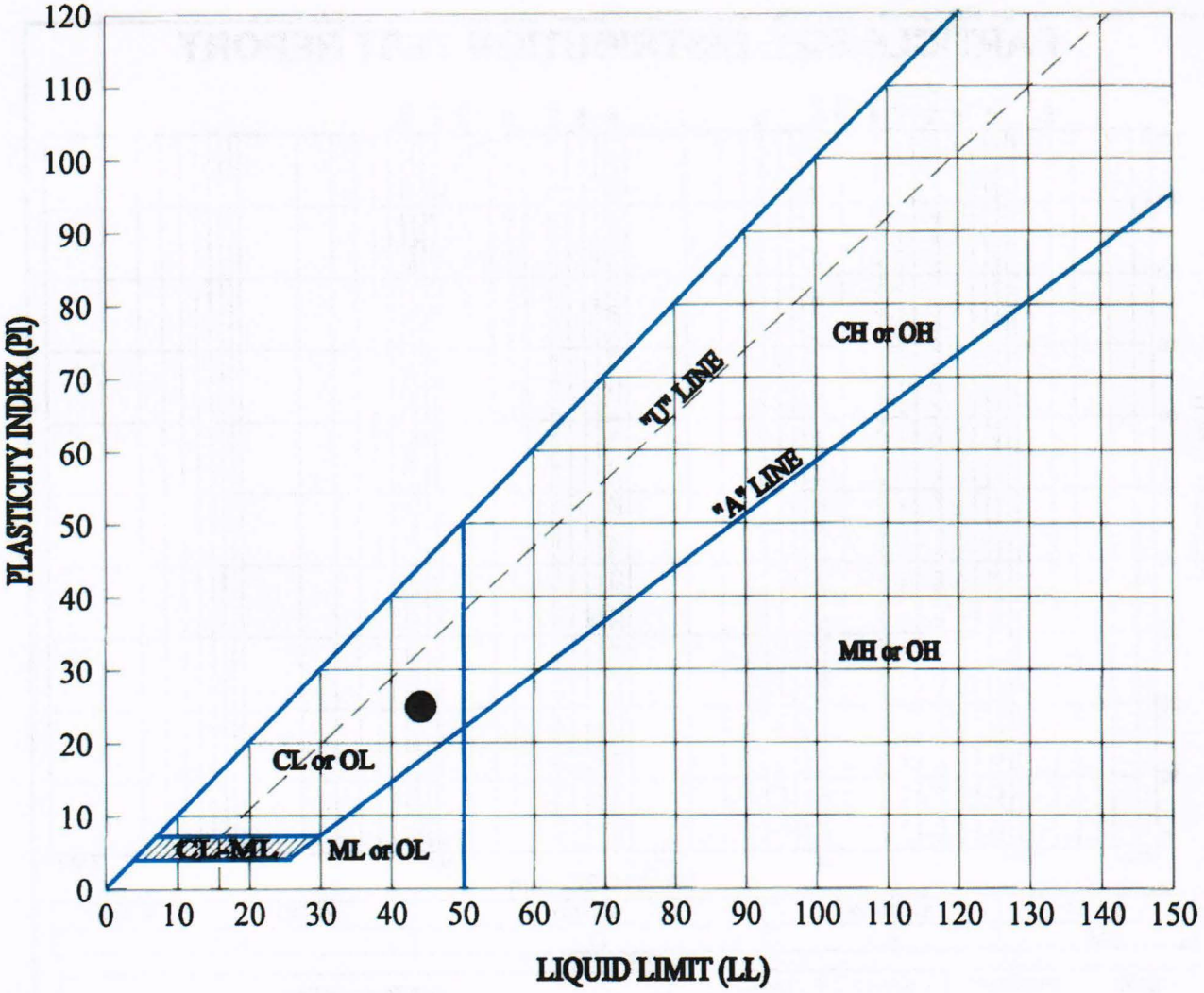
8798 Airport Road
Redding, California 96002
(530) 222-1116, fax 222-1611

865 Cotting Lane, Suite A
Vacaville, California 95688
(707) 447-4025, fax 447-4143

CLIENT:	Premier Design 1055 Stillspring Drive Vacaville, CA 95698	CLIENT NO: REPORT NO: DATE:	VV2122-001 0300-004 04/02/08
SUBJECT:	Farm Implement Storage Building	SUBMITTED BY:	KC Engineering

DENSITY OF IN PLACE SOIL BY THE DRIVE TUBE METHOD (ASTM D2937)
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX OF SOILS (ASTM D4318)
DATA SHEET

Sample #	Description	Dry Density p.c.f.	Moisture Content %	Liquid Limit	Plastic Limit	Plastic Index
1-1 @ 3.0'	Brown Clay (Visual)	93.6	19.6	—	—	—
1-4 @ 18.0'	Brown Sandy Clay (Visual)	93.5	25.5	—	—	—
1-5 @ 25.0'	Brown Clay (Visual)	87.7	27.5	—	—	—
2-1 @ 3.0'	Brown Clay (Visual)	109.7	19.8	—	—	—
2-2 @ 8.0'	Brown Sandy Clay (Visual)	104.7	20.0	—	—	—
2-3 @ 13.0'	Dark Brown Clay (Visual)	102.5	22.4	—	—	—
3-1 @ 3.0'	Brown Clay (Visual)	—	—	43	18	25
3-2 @ 8.0'	Brown Clay (Visual)	107.0	20.3	—	—	—
3-3 @ 13.0'	Brown Clay (Visual)	100.6	22.1	—	—	—



KEY SYMBOL	SAMPLE NUMBER	Depth	NATURAL MOISTURE CONTENT, %	PLASTIC LIMIT, PL, %	LIQUID LIMIT, LL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	3-1	3 feet	-	18	43	25	-	CL

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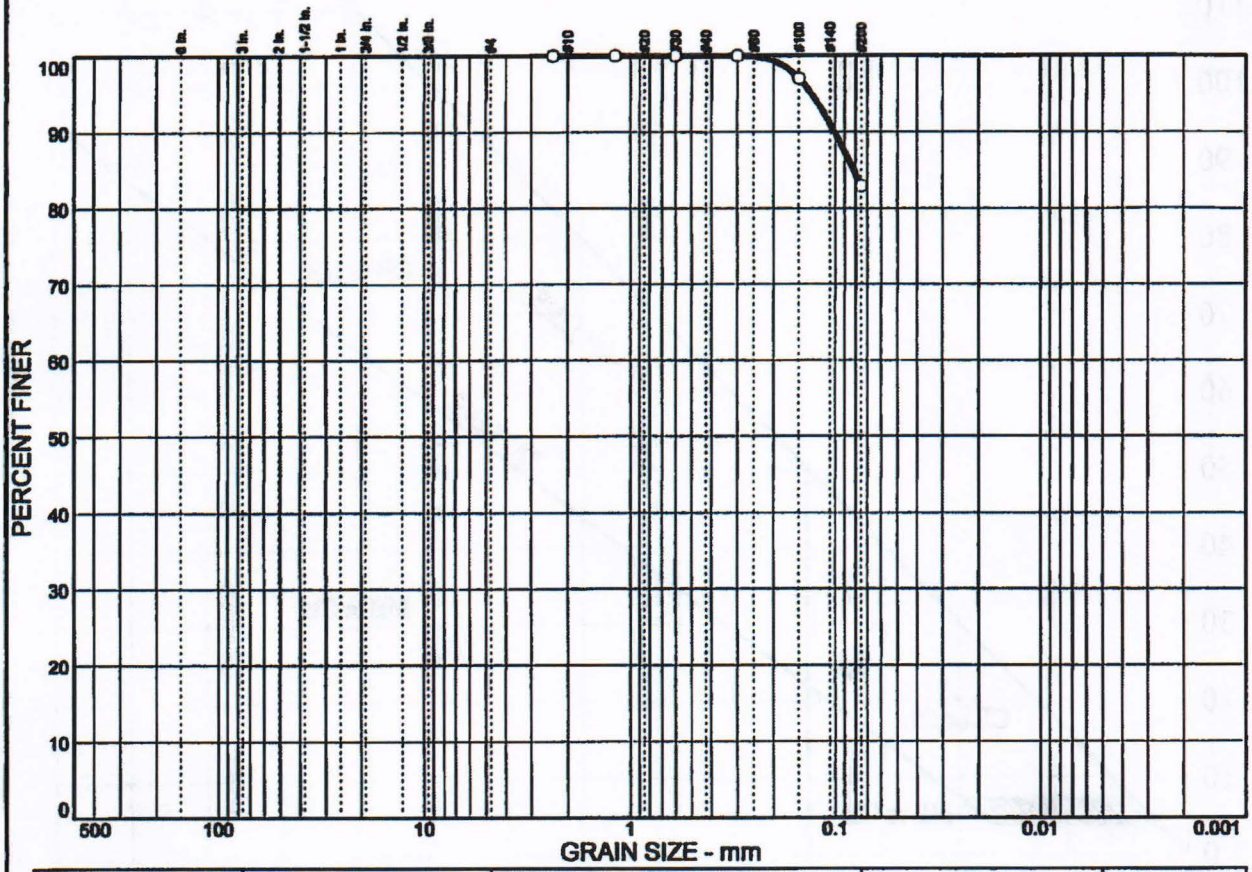
865 Cotting Lane, Suite A
Vacaville, CA 95688
(707) 447-4025

Project No. VV2122
Proposed Farm Implement Storage Building
4286 Suisun Valley Road
Solano County, California
PLASTICITY CHART AND DATA

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	17.1	82.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	100.0		
#100	97.0		
#200	82.9		

* (no specification provided)

Soil Description

Brown Sandy Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= 0.0818 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= —

Remarks

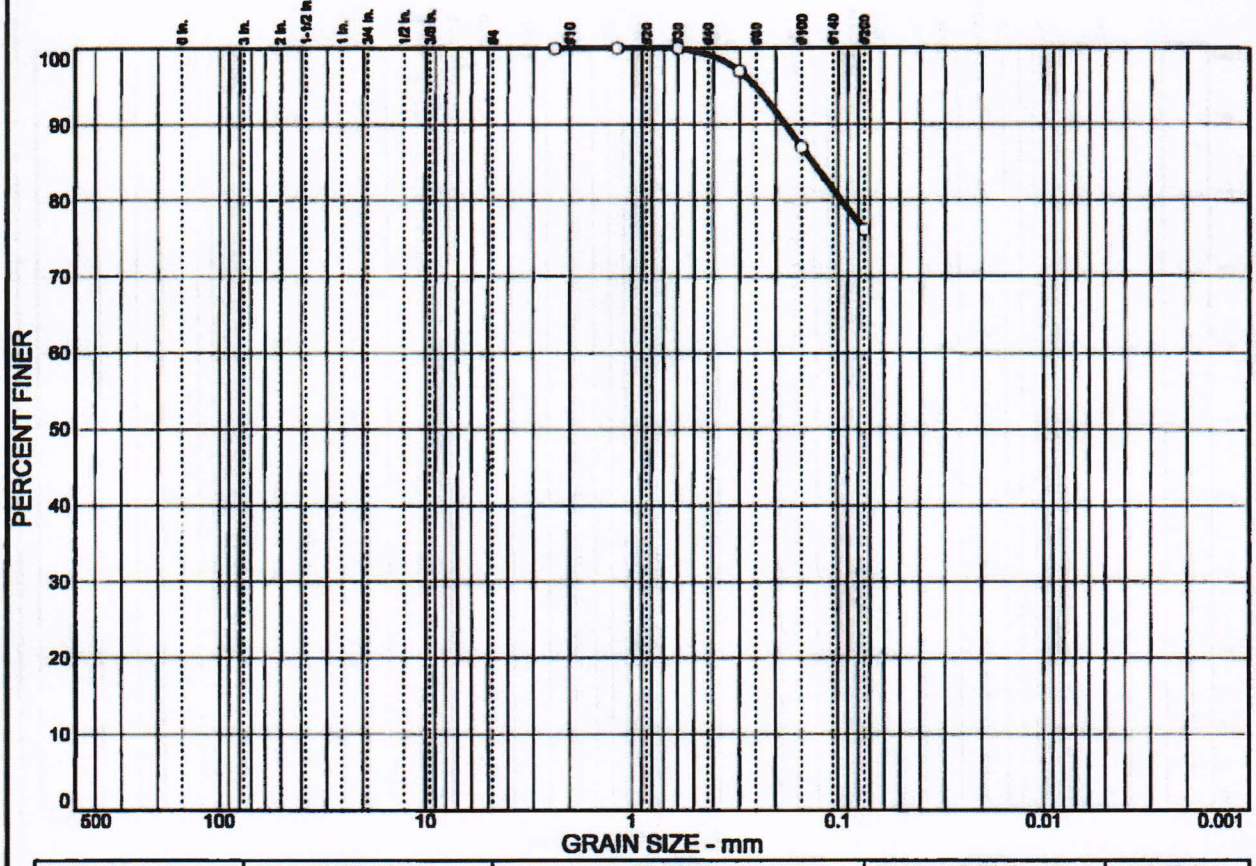
Sample No.: 1-2 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 8.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building

Project No: VV2122-001 **Report Number:** 0400-001

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	23.9	76.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	97.0		
#100	87.0		
#200	76.1		

* (no specification provided)

Soil Description

Brown Sandy Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= 0.133 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO= —

Remarks

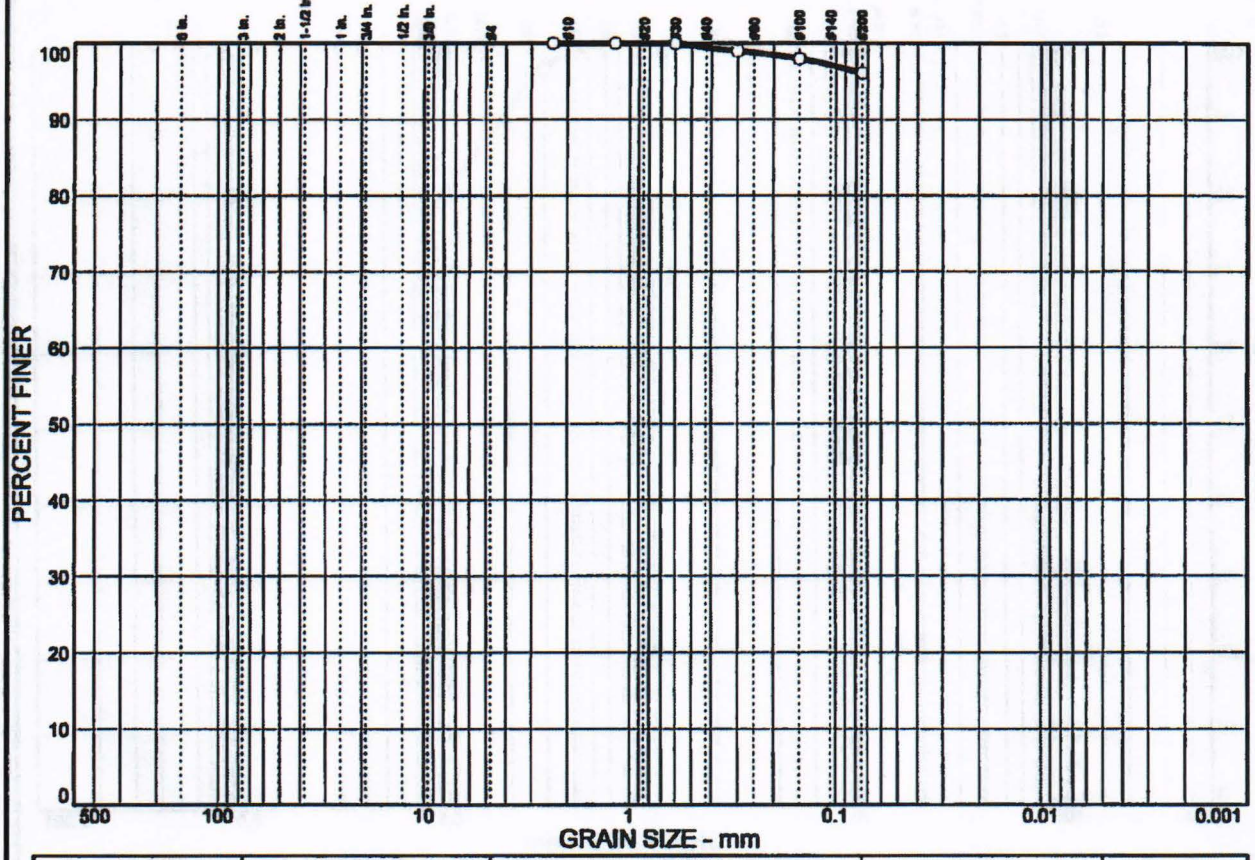
Sample No.: 1-4 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 18.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building

Project No: VV2122-001 **Report Number:** 0400-002

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	3.9	96.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#8	100.0		
#16	100.0		
#30	100.0		
#50	99.0		
#100	98.0		
#200	96.1		

* (no specification provided)

Soil Description

Brown Clay (Visual)

Atterberg Limits

PL= — LL= — PI= —

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_U= C_C=

Classification

USCS= CL AASHTO= —

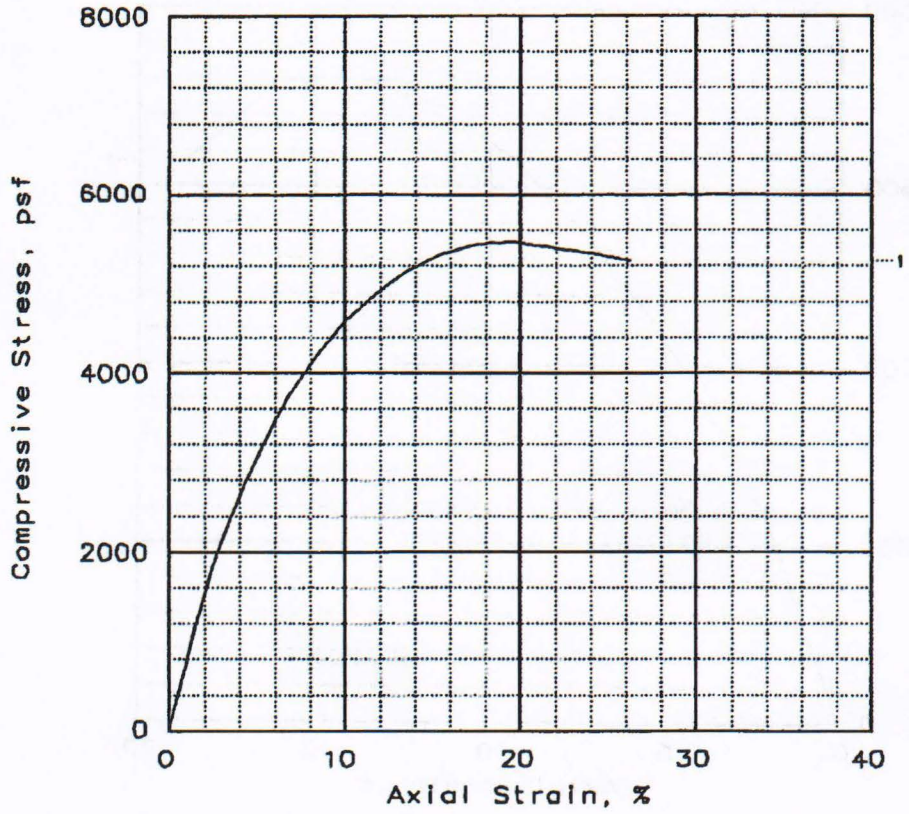
Remarks

Sample No.: 1-5 **Source of Sample:** Farm Implement Storage Building **Date:** 04/02/08
Location: **Elev./Depth:** 25.0'

Materials Testing, Inc.

Client: Premier Design
Project: Farm Implement Storage Building
Project No: VV2122-001 **Report Number:** 0400-003

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, psf	5470			
Undrained shear strength, psf	2735			
Failure strain, %	19.6			
Strain rate, %/min				
Water content, % (cuttings after test)	19.8			
Wet density, pcf	131.4			
Dry density, pcf	109.7			
Saturation, %	121.4			
Void ratio	0.4016			
Specimen diameter, in	2.410			
Specimen height, in	4.100			
Height/diameter ratio	1.70			

Description: Brown Clay

GS= 2.462 | Type: Tube

Project No.: VV2122
Date: 4-1-08
Remarks:
Type of Failure

Bulge

Report No.: ——

Client: Premier Design

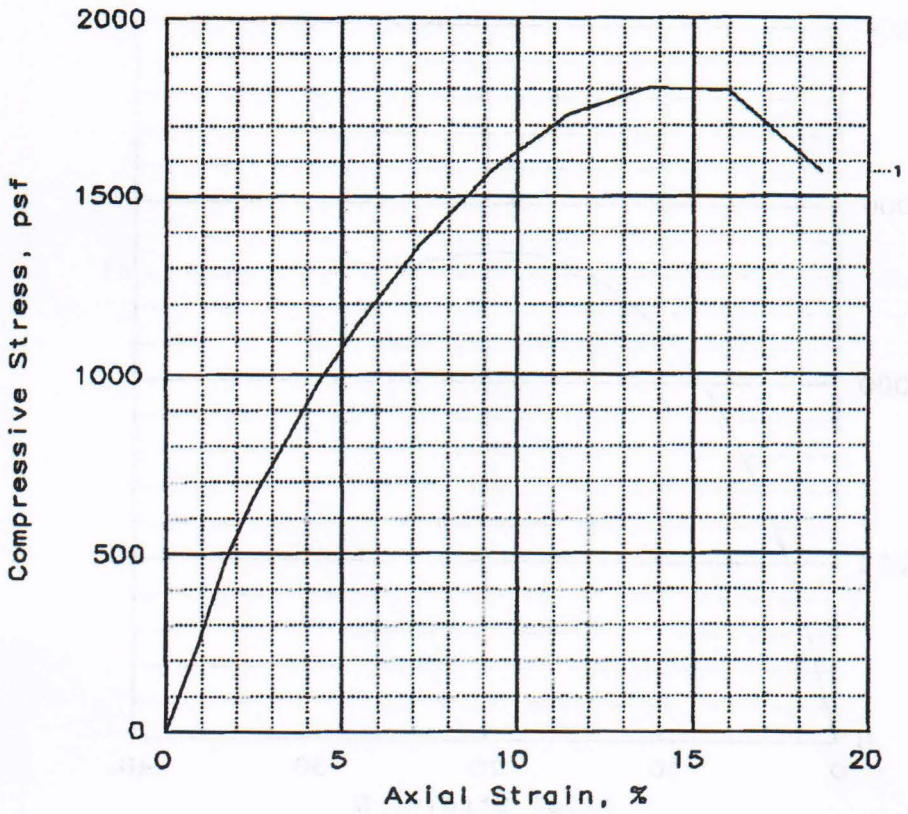
Project: Farm Implement Storage Building

Location: 2-103'

UNCONFINED COMPRESSION TEST

MATERIALS TESTING, INC.

UNCONFINED COMPRESSION TEST



SAMPLE NO.:	1			
Unconfined strength, psf	1804			
Undrained shear strength, psf	902			
Failure strain, %	13.8			
Strain rate, %/min				
Water content, % (cuttings after test)	20.3			
Wet density, pcf	128.7			
Dry density, pcf	107.0			
Saturation, %	85.3			
Void ratio	0.6882			
Specimen diameter, in	2.410			
Specimen height, in	4.000			
Height/diameter ratio	1.66			

Description: Brown Clay

GS= 2.893 | Type: Tube

Project No.: VV2122
Date: 4-1-08
Remarks:
Type of Failure

Bulge

Report No.: ——

Client: Premier Design

Project: Farm Implement Storage Building

Location: 3-208'

UNCONFINED COMPRESSION TEST

MATERIALS TESTING, INC.

Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 03/26/2008
Date Submitted 03/20/2008

To: Keith Litts
K.C. Engineering
865 Cotting Lane Suite A
Vacaville, CA 95688

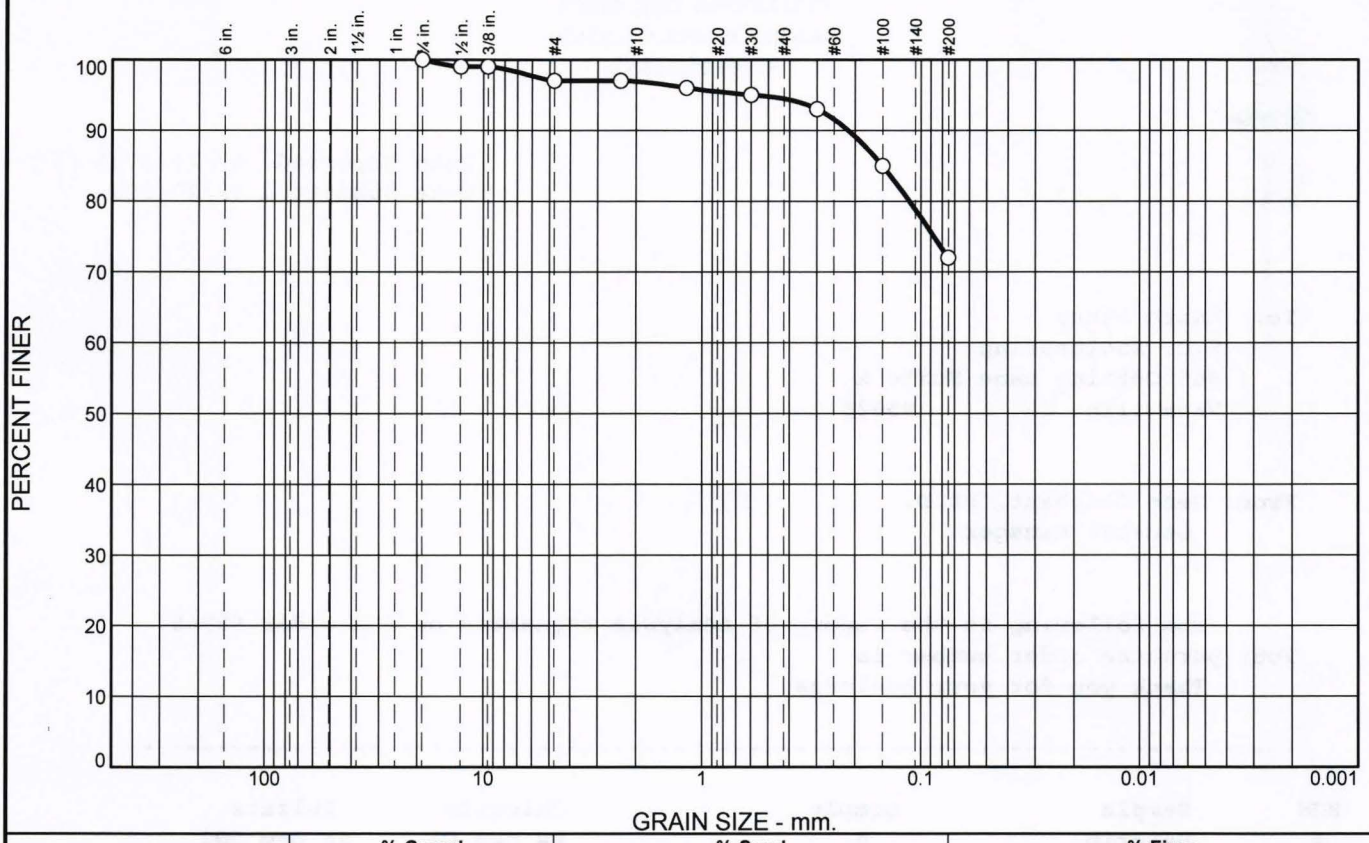
From: Gene Oliphant, Ph.D.
General Manager

The following is the report of analysis requested on SUN Order 52765.
Your purchase order number is .
Thank you for your business.

SUN #	Sample Describ	Sample #	Chloride as ppm Cl /Dry Wt.	Sulfate as ppm SO4 /Dry Wt.
105486	VV2122	BAG A	No Test	25.0

Methods: Sulfate-Cal Trans #417, Chloride-Cal Trans #422

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0	0	3	0	3	22	72	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100		
1/2"	99		
3/8"	99		
#4	97		
#8	97		
#16	96		
#30	95		
#50	93		
#100	85		
#200	72		

* (no specification provided)

Material Description

Ligh Grayish Brown Clay with Sand

Atterberg Limits

PL= 18 LL= 31 PI= 13

Coefficients

D_{90}= 0.2153 D_{85}= 0.1500 D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= CL AASHTO= A-6(7)

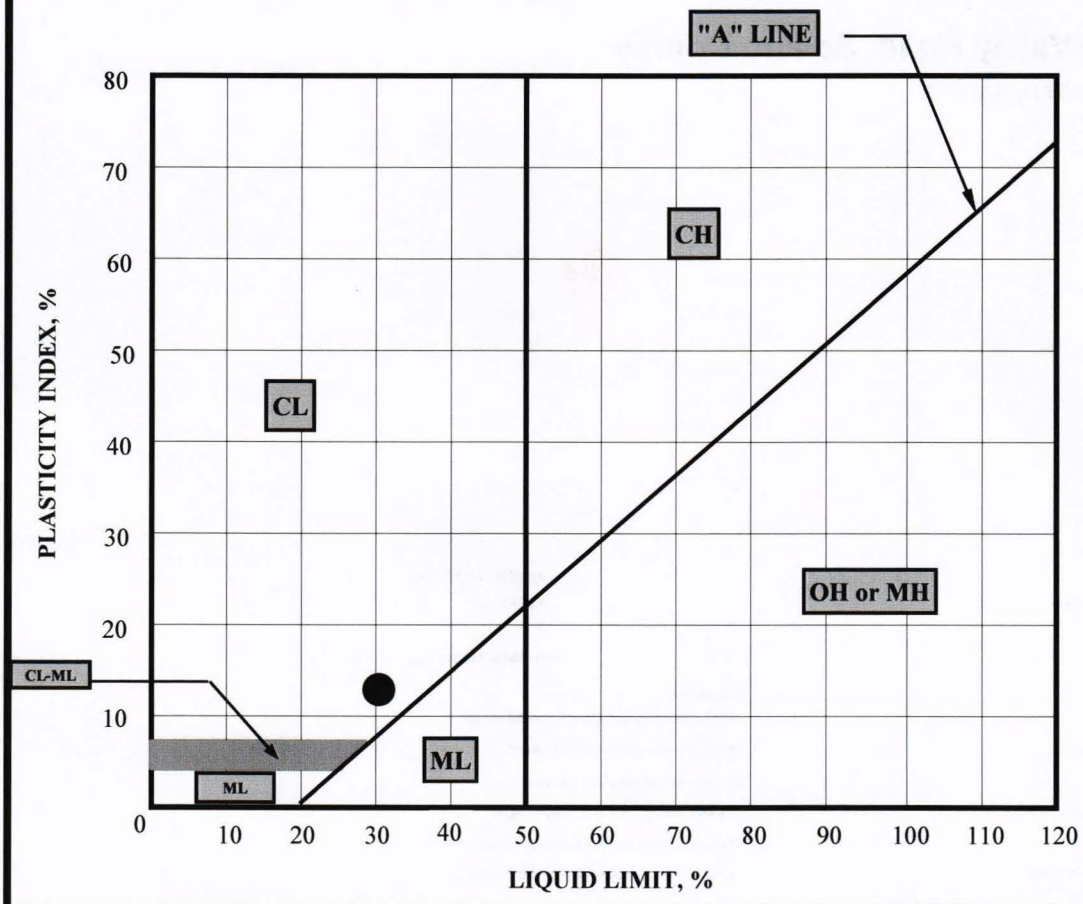
Remarks

Material tested in accordance with ASTM D6913.

Location: TP-1
Sample Number: 1 **Depth:** 1.0' **Date:** 06/25/2020

Client: Centrix Builders, Inc.
Project: Winery & Tasting Room Addition
4286 Suisun Valley Road, Fairfield, California
Project No: VV2122A **Figure** 0300-001

Tested By: John Hubbard



KEY SYMBOL	SAMPLE NUMBER	DEPTH	NATURAL MOISTURE CONTENT, %	LIQUID LIMIT, LL, %	PLASTIC LIMIT, PL, %	PLASTICITY INDEX, PI, %	LIQUIDITY INDEX	UNIFIED SOIL CLASSIFICATION SYMBOL
●	TP-1	1.0'	N/A	31	18	13	N/A	CL

Note: Atterberg Limits tested in accordance with ASTM D4318.

Materials Testing, Inc.

PLASTICITY CHART AND DATA

Winery & Tasting Romm Addition
4286 Suisun Valley Road, Fairfield, California

Project No:	Date:	Figure No:
VV2122A	6/25/2020	0300-002

OSHPD

4286 Suisun Valley Road, Solano County

Latitude, Longitude: 38.2508, -122.1157

Date	7/1/2020, 2:00:01 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.592	MCE_R ground motion. (for 0.2 second period)
S_1	0.6	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.91	Site-modified spectral acceleration value
S_{M1}	1.020 ion 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.273	Numeric seismic design value at 0.2 second SA
S_{D1}	0.680 on 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	1.2	Site amplification factor at 0.2 second
F_v	1.7 ection 11.4.8	Site amplification factor at 1.0 second
PGA	0.631	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.757	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.896	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.076	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.592	Factored deterministic acceleration value. (0.2 second)
S1RT	0.668	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.732	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.631	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.913	Mapped value of the risk coefficient at short periods
C_{R1}	0.913	Mapped value of the risk coefficient at a period of 1 s