B

Type

X

Plans

BLD10-1628

Permit Number

300

Street Number

Via Archimedes

Street Name

GOLF

Community Code

140-030-026

APN

PRMD County of Sonoma

S.C. Repro 3/10

COUNTY OF SONOMA - PERMIT AND RESOURCE MANAGEMENT DEPARTMENT

2550 Ventura Avenue, Santa Rosa, CA 95403 (707) 565-1900 FAX (707) 565-1103

Please Print Your Name: Brian Russell **Date Applied:** 5.4.10

JOB ADDRESS: 300 Via Archimedes Gey PERMIT NUMBER: BLD10-1628 INSPECTION AREA:

INFORMATION WITHIN HEAVY LINE TO BE COMPLETED BY APPLICANT

SITE LOCATION INFORMATION - PRINT CLEARLY

Site Address: 300 Via Archimedes City: Geyserville ZIP 95441

Cross-Street: APN: 140-030-026 Project Phone #: ( ) Project Fax #: ( )

Directions: Email address: brian@grassinapa.com Unit # Lot #

Describe Project: Loading Dock Improvement Living Area Garage Decks Contract Price:

OWNER NAME AND ADDRESS

Name: Francis Coppola Winery

Mailing Address: 300 Via Archimedes

City: Geyserville State: CA ZIP: 95441

Day Ph: ( ) Fax: ( )

APPLICANT NAME AND ADDRESS

Name: Brian Russell - Grassi & Assoc.

Mailing Address: 1213 Coombs Street

City: Napa State: CA ZIP: 94559

Day Ph: (707) 255-3232 Fax: ( )

CONTRACTOR INFORMATION

Company Name: Grassi & Assoc.

Address: 1213 Coombs St.

City: Napa State: CA ZIP: 94559

Day Ph: (707) 255-3232 Fax: ( )

OTHER PERSONS (ARCHITECT, ENGINEER, ETC.)

Name:

Address:

City: State: ZIP:

Day Ph: ( ) Fax: ( )

License No: Exp. Date:

WORKER'S COMPENSATION DECLARATION

I hereby affirm under penalty of perjury one of the following declarations:

☐ I have and will maintain a certificate of consent to self-insure for worker's compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

☒ I have and will maintain worker's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My worker's compensation insurance carrier and policy number are:

Carrier State Compensation Insurance Fund

Policy No. 713-000615 7

(This section need not be completed if the permit is for one hundred dollars ($100) or less).

☐ I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the worker's compensation laws of California, and agree that if I should become subject to the worker's compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Exp. Date: 10/1/2009 Applicant: Grassi & Assoc.

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

CONSTRUCTION LENDING DECLARATION

I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued. (Sec. 3097, Civ. C.).

Lenders Name

Lenders Address

OWNER-BUILDER DECLARATION

I hereby affirm under penalty of perjury that I am exempt from the Contractor's License Law for the following reason (Sec. 7031.5, Business and Professions Code: Any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractor's License Law (Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500).):

☐ I, as owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044 Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his or her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he or she did not build or improve for the purpose of sale.).

☐ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law.).

☐ I am exempt under Sec. _____, B & P.C. for this reason _____

By my signature below I acknowledge that, except for my personal residence in which I must have resided for at least one year prior to completion of the improvements covered by this permit, I cannot legally sell a structure that I have built as an owner-builder if it has not been constructed in its entirety by licensed contractors. I understand that a copy of the applicable law, Section 7044 of the Business and Professions Code, is available upon request when this application is submitted or at the following website: http://www.leginfo.ca.gov/calaw.html.

Date Signature of Property Owner or Authorized Agent

LICENSED CONTRACTOR'S DECLARATION

I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Lic. Class B Lic. No. 855199

Exp. Date 3/31/11 Contractor Grassi & Assoc.

ASBESTOS DECLARATION

Written asbestos notification pursuant to Part 61 of Title 40 of the Code of Federal Regulations is required when asbestos exists in buildings, or portions thereof, undergoing demolition. I hereby declare that demolition authorized by this permit is from construction that (☐ does) (☐ does not) contain asbestos, or that ☐ no demolition is authorized by this permit.

I certify that I have read this application and affirm under penalty of perjury that the above information is correct. I agree to comply with all local Ordinances and State laws relating to building construction. I hereby authorize representatives of the County of Sonoma to enter upon the above-mentioned property for inspection purposes. If, after making the Certificate of Exemption for the Worker's Compensation provision of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workman's Compensation law, this permit shall be deemed revoked.

B Russell

PERMITTEE SIGNATURE

1213 Coombs St. Napa CA 94559

ADDRESS CITY ZIP

☒ Contractor ☐ Owner ☐ Other Licensed Professional

THIS PERMIT SHALL EXPIRE IN THREE(3) YEARS FROM DATE FEES ARE PAID UNLESS OTHERWISE NOTED BY CODE ENFORCEMENT

FOR DEPARTMENT USE

Zoning LIA / RVSE File No. Acres

Existing Use/Structures Winery

Proposed Use/Structures Loading Dock as planned

Zoning Min. Yard Requirements Front Left Right Back

NOTE: Fire Safe Standards require all parcels greater than 1 acre to have a min. 30' setback unless mitigated. ☐ Mitigation Required ☐ Address subject to change

Approval for Permit Issuance: By: Date:

Approval for Occupancy: By: Jack Jessow Date: 6/4/2010 for

Conditions: Signed Swedenburg approved permit in computer on 5-4-2010. But did not stamp plans.

Sewer Connection: ☐ Available ☐ Fees Paid

Approved by: Date:

Road Encroachment: ☐ Fees Paid

Approved by: Date:

Septic System Permit/Clearance # SEP10-0108

Approved by: Date: 5-3-10

Flood Zone: ☐ Yes ☒ No 100 Year Flood Elevation:

Site Review

Drainage Review:

Approved by: Date: 5-3-10

Fire:

Approved by: Date:

Code Enforcement Violation ☐ Yes ☒ No Violation #

This permit is limited to _____ days.

Work Authorized: Awning only

☒ Plans Approved ☐ No Plans Subject to Field Inspection

☐ Post FIRM ☐ Alquist Priolo Report Available ☐ Pre FIRM ☐ Geotechnical report Available

Plancheck Cleared By	Date: 6/3/10	Type of Construction V-B	Occupancy U	No. of Stories 0	No. of Bedrooms 0
Permit Cleared for Issuance By	Date: 6/3/10	Auto. Fire Sprinkler Req'd NO	No of Units	Certificate of Occupancy	

Machine Spaces for Permit Fee

PAYMENT RECEIVED

$

JUN 03 2010

PERMIT AND RESOURCE MANAGEMENT DEPARTMENT COUNTY OF SONOMA

cmiller s:\handouts\css\CIS-007.cdr Revised: 01/29/2009

Distribution: White - File Canary - Applicant Blue - Assessor Cardstock - Inspector

131) **SPECIAL INSPECTION REQUIRED** ❒ YES ❒ NO IF YES, SEE ADDITIONAL SHEET

	INSPECTION RECORD	DATE	NAME
101)	**ROUGH GRADING**		
103)	**FOUNDATION**		
	FORMS/SETBACK		
	FOOTING	4/4/10	R.6 S.
	WALLS		
106)	**UFER GROUND #**		
104)	**CAISSONS/PIERS**		
105)	**SLAB**		
107)	**UNDERGROUND UTILITIES**		
110)	**MASONRY**	8/19/10	R.S S
109)	**RETAINING WALLS**		
113)	**FIREPLACE**		
	FOOTING		
	HEARTH/PROTECTION		
	THROAT		
114)	**CHIMNEY**		
120)	**UNDERFLOOR/UNDERSLAB**		
115)	**HYDRONICS**		
116)	**U/F ELECTRICAL**		
117)	**U/F MECHANICAL**		
118)	**U/F PLUMBING**		
119)	**U/F FRAMING**		
139)	**U/F INSULATION**		
126)	**SHEAR WALLS**		
❒ INTERIOR	❒ EXTERIOR		
127)	**DIAPHRAGMS**		
❒ ROOF	❒ FLOOR		
134)	**SIDING/SHEATHING**		
125)	**HOLD DOWNS**		
132)	**CLOSE-IN**		
122)	**ROUGH ELECTRICAL**		
123)	**ROUGH MECHANICAL**		
124)	**ROUGH PLUMBING**		
128)	**ROUGH FRAME**		
160)	**SMOKE DETECTORS**		
139)	**INSULATION**		
142)	**WALLBOARD**		
143)	**FIREWALLS**		
135)	**STUCCO/PLASTER**		
❒ LATH	❒ SCRATCH		
137)	**ROOFING**		
130)	**TUB/SHOWER PAN**		
162)	**FIRE DAMPERS/DOORS**		
164)	**SUSPENDED CEILING**		
❒ ROUGH ELEC.	❒ ROUGH MECH.		
165)	**EXITING** - RAMPS/STAIRS		
163)	HANDRAILS/GUARDRAILS		
	CORRIDORS/DOORS		
166)	**ACCESSIBILITY COMPLIANCE**		
144)	**WATER TANKS**		
❒ SLAB	❒ WALLS		
170)	**TEMPORARY OCCUPANCY**		
171)	**TEMPORARY ELECTRICAL**		
172)	**TEMPORARY GAS**		
174)	**ELECTRIC METER AUTHORIZATION**		
152)	**PANEL BOARDS/SERVICE**		
189)	**SEPTIC ELECTRIC FINAL**		
175)	**GAS METER AUTHORIZATION**		
153)	**GAS PRESSURE TEST**		
HOUSE	YARD		
190)	**MANUF. HOME FOUNDATION**		
191)	**MANUF. HOME INSTALLATION**		
	CONTINUITY		
	STAIRS/SKIRTS		
	RIDGE BOLTING		
193)	**MANUF. HOME COND. FINAL**		
	SWIMMING POOLS		
194)	PRE-GUNITE		
195)	PRE-DECK		
196)	PRE-PLASTER/FENCE		
197)	VINYL/FIBERGLASS POOL EXCAVATION		
102)	**GRADING FINAL**		
176)	**ELECTRICAL FINAL**		
177)	**MECHANICAL FINAL**		
178)	**PLUMBING FINAL**		
199)	**FINAL**	8/19/10	166 S.
	OCCUPANCY (OK TO OCCUPY)		

REMARKS

650)	**SUSMP INSPECTION**		
651)	**NPDES EROSION COMPLIANCE**		
652)	**NPDES SEDIMENT COMPLIANCE**		
653)	**NPDES DOCS/SWPPP**		

FIRE INSPECTION REQUIRED	DATE	NAME
❒ Yes ❒ No		
759) **KNOX BOX**		
760) **PROPANE TANK HOLD DOWNS**		
770) **SPRINKLER FINAL**		
771) **ABOVEGROUND HYDROSTATIC**		
772) **UNDERGROUND HYDROSTATIC**		
773) **UNDERGROUND FLUSH**		
774) **THRUST BLOCKS**		
775) **PIPE WELD**		
776) **HYDRANTS/APPLIANCES**		
777) **PUMP ACCEPTANCE**		
778) **WATER SUPPLY/TANK**		
779) **ALARM SYSTEM**		
780) **HOOD & DUCT SYSTEM**		
781) **ABOVEGROUND TANK/DISPENSER**		
198) **FIRE FINAL**		

CLEARANCES:

FIRE ❒ Local ❒ County

HEALTH DEPARTMENT

ZONING

SANITATION

PLAN RETENTION REQUIRED?
❒ Yes ❒ No

PERMIT # RB10-1628

BAUER associates

GEOTECHNICAL CONSULTANTS

May 5, 2010
Job No. 2455.1

Francis Ford Coppola Presents, LLC
Attention: Mr. Mike Brown
620 Airpark Road
Napa, CA 94558

Plan Review
Geotechnical Engineering Services
during Final Design
Loading Dock Improvements
Rosso & Bianco Winery
300 Via Archimedes Road
Geyserville, California

This letter transmits our comments regarding the following project plans: Sheets C1 through C3, and Sheet S1 revision dated April 30, 2010, prepared by Summit Engineering, Inc. We previously performed a geotechnical investigation for the project and transmitted the results in our report dated August 6, 2007. We are performing our plan review as requested by Ms. Tania Schram of Summit Engineering and in general accordance with our July 21, 2008 and May 26, 2009 agreements.

We have reviewed the soil related portions of the referenced plans and find that the plans are in general conformance with the intent of our recommendations. However, we recommend that Design Criteria Note 2 on Sheet C2, be amended to include this letter.

Grading should be performed in accordance with our recommendations, including placement of at least 30 inches of non-expansive select fill in critical slab areas. Either prior to, or during site grading, we should confirm the depth of weak soils in the project area, and develop supplemental recommendations as needed.

We can not comment on the adequacy of items we are not contacted to observe. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter.

Westside Center
Post Office Box 460
Forestville, CA 95436
707.887.2505 (V)
707.887.9756 (F)

BL10-1628

We trust this provides the information you require at this time. If you have any questions, please call.

Yours very truly,

BAUER ASSOCIATES

Arthur H. Graff
Geotechnical Engineer

BB/AHG (pr/rosso loading dock)
Copies submitted: 2

cc: Summit Engineering, Inc. (2 copies & e-mail)
Attention: Ms. Tania Schram

BAUER associates
GEOTECHNICAL CONSULTANTS

REPORT
GEOTECHNICAL INVESTIGATION
Winery Facility Improvements
Francis Coppola Winery
400 Souverain Road
Geyserville, California

Prepared for:

Francis Coppola Winery, LLC
c/o Summit Engineering, Inc.
Attention: Ms. Bianca Gomez
463 Aviation Blvd. Suite 200
Santa Rosa, CA 95403

by

BAUER ASSOCIATES
Job No. 2455.0

Arthur H. Graff
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
ARTHUR H. GRAFF
NUMBER 2319
Exp. 3/31/09
GEOTECHNICAL
STATE OF CALIFORNIA

Bryce Bauer
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
BRYCE BAUER
NO. GE 2139
Exp. 6/30/08
GEOTECHNICAL
STATE OF CALIFORNIA

August 6, 2007

Westside Center
Post Office Box 460
Forestville, CA 95436
707.887.2505 (V)
707.887.9756 (F)

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed improvements to the Francis Coppola Winery in Geyserville, California. The site is located at 400 Souverain Road, about 1/2-mile west of Highway 101. The development is indicated on the Preliminary Phasing Studies Plan, undated, prepared by Geldert Residential and Retail Studios, and partially reproduced on Plates 1a and 1b.

We understand that the project improvements will include a Guest Reception Center, Exterior Restaurant, Cabanas, Event Restroom Center, Outdoor Pool, Band Shell and Dance Floor, and Bocce court. Associated improvements include retaining walls, site work, parking lot modifications and utilities.

Further, we understand that the structures will be of steel and wood frame construction, with concrete slab-on-grade floors. Foundation loads are expected to be a maximum of 3 kip per lineal foot for footings and a maximum of 10 kips for column loads. The extent of grading is not known at this time. Retaining walls are anticipated.

The scope of our investigation, as outlined in our November 3, 2006 agreement included reviewing selected published geologic information from our files, exploring subsurface conditions at the site, and performing laboratory testing on selected samples. Based on the geological review, the results of our field and laboratory work, and engineering analyses, we have developed the following geotechnical information:

1) Soil/rock and groundwater conditions observed.

2) Primary geotechnical concerns affecting the design and construction of the project.

3) Conclusions and recommendations regarding:

   a) Site preparation and grading, including depth of stripping, permanent cut slope criteria, and compaction requirements.

   b) Foundation type(s) and design criteria.

   c) Slab-on-grade.

   d) Pavement thicknesses.

   e) Geotechnical engineering drainage including subsurface drainage and erosion-protection methods.

   f) Supplemental geotechnical engineering services.

During our investigation, we consulted with Ms. Bianca Gomez with Summit Engineering, Inc., to provide preliminary information as it was developed. Our scope of work did not include an evaluation of any potential hazardous waste contamination of the soil or groundwater at the site. Further, our scope of services did not include evaluation of the existing structures or other existing developments.

WORK PERFORMED

We reviewed the published geologic information summarized in the List of References as well as our previous work from other projects in the vicinity.

On March 6, 2007, our geotechnical engineer explored the subsurface conditions in the development area to the extent of 10 test borings. The test borings were drilled with a track-mounted drill rig equipped with 6-inch diameter, solid stem augers. The completed test borings ranged in depth from about 4 to 15 feet.

The test borings were located by our engineer by pacing from features indicated on the plan provided. The approximate test boring locations are shown on Plate 1. Our engineer logged the conditions exposed and obtained samples at selected intervals for visual identification and laboratory testing. Relatively undisturbed samples were obtained with a 2.4-inch, inside-diameter, split-spoon sampler driven with a 140-pound hammer. The stroke during driving was about 30 inches. The blows required to drive the sampler were recorded and converted to equivalent standard penetration blow counts for correlation with other data. Logs of the borings showing the materials encountered, sample depths, and converted blow counts are presented on Plates 2 through 11. The soils are classified in accordance with the Unified Soil Classification System presented on Plate 12.

The logs show our interpretation of the subsurface conditions on the date and locations indicated, and it is not warranted that they are representative of the subsurface conditions at other locations and times. Also, the stratification lines on the logs represent the approximate boundaries between soil types; the transition may be gradual. The test borings were backfilled with excavated soil and may settle.

Representative samples of the soils encountered were laboratory tested to determine their moisture content, density, classification (Atterberg Limits), strength, corrosion potential, and

Resistance (R-) value. The test results are generally presented on the logs in the manner described in the Key to Test Data, Plate 12. Resistance value and corrosion potential test data are shown on Plates 13 and 14, respectively.

SITE AND SOIL CONDITIONS

The property is currently developed with a large winery structure, smaller structures, tank storage areas, asphalt paved driveway and parking areas, landscaping, and vineyards. The property is in an area of typically gently rolling terrain. The existing development is built on two nearly level terraces constructed by cutting into the hillside and in some areas, placing fill downslope. The slope gradients between the two terraces are between about 2:1 (horizontal to vertical) and about 5:1. We understand that the existing one and two-story buildings, constructed in the 1970's, have performed well with no significant problems. We anticipate that they are supported on shallow spread footings.

The geologic maps reviewed indicate that the site is underlain by stream terrace deposits. These deposits typically consist of sand, silt, and gravel.

The results of our field exploration indicate that most of the planned development areas are covered by approximately 1 foot to as much as about 11 feet of variable density old fills. These fills include about 2 to 2-1/2 inches of asphaltic concrete in some areas. The fills consist of sandy/gravelly clays and silts, clayey and sandy gravels, and sands. Where old fills were not

encountered, the surface soils consisted of natural very dense clayey gravels, soft to hard sandy silts and clays, and medium dense silty sands. The variable density old fills are considered weak for their full depth. The natural surface soils in Test Borings 6, 7 and 8 are weak in the upper about 1 to 2 feet. The estimated depth of weak soils is shown on the right side of the test boring logs. Variable density old fills and porous/weak soils may consolidate and/or collapse when loaded and saturated. Our visual classification and laboratory test results indicate that the clay old fills and natural surface clays are of moderate to very high expansion potential. Highly expansive soils can heave and crack lightly loaded, shallow foundations and slabs-on-grade.

The old fills and natural surface soils are underlain by medium stiff to hard sandy/gravelly silts and clays, and very dense clayey gravels. These underlying soils have moderate to high strength and are relatively incompressible for the range of anticipated foundation loads. The clays are moderately to highly expansive.

Groundwater was not encountered in our test borings. Groundwater conditions will vary seasonally and at different locations. We have previously observed in the project vicinity, during and after periods of prolonged rainfall, temporarily perched groundwater can occur within several feet of the ground surface.

Published geologic maps of the area do not show any active faults at the site. The property is not within an Alquist-Priolo Earthquake Fault Zone, which could require a detailed investigation to evaluate the hazard of fault surface rupture in relation to nearby active faults. The nearest faults considered seismically active (experiencing surface rupture within about the last 11,000 years) are the Healdsburg and Maacama Faults are located approximately 1/2 and 3-

1/2 miles to the southwest and northeast, respectively. The San Andreas and Rodgers Creek Faults are approximately 22 and 6 miles to the southwest and southeast, respectively. The distances are interpolated from the map prepared by Wagner, D.L., and Borugno, E.J., and by Fox, K.R., et. al., and may not correspond to the 1997 UBC criteria. An unnamed, possibly active fault is located approximately 1-1/2 miles to the northwest. A possibly active fault is considered to have experienced displacement within about the last 2 million years, and is therefore, considered less prone to renewed movement.

DISCUSSIONS AND CONCLUSIONS

Based upon the results of our work, we judge that the site is suitable for the proposed development from a geotechnical viewpoint. The significant geotechnical factors that must be considered in design and construction are discussed in the following sections.

A. Weak/Expansive Soils & Foundation Support

The site is blanketed by relatively weak surface soils and variable density old fills. Portions of the natural soils and old fills are also expansive. Weak surface soils can undergo significant strength loss and settlement when saturated in a loaded condition. Moderately to highly expansive soils undergo significant volumetric changes with seasonal variations in

moisture content. Such movements can result in unacceptable heaving and cracking of lightly-loaded structural elements, such as asphalt pavements, foundations and concrete slabs-on-grade.

The weak surface soils and expansive soils are unsuitable in their present condition for support of fills, foundations, concrete slabs-on-grade, or asphalt pavement. Therefore, we conclude that the existing weak surface materials must be upgraded in building areas (including dance floor, trash enclosures and critical slab-on-grade areas) by removal and/or recompaction for their full depth. Within asphalt paved roadways and roadway fill areas, the weak soils and variable density, old fills must be excavated and recompacted to at least 18 inches below existing grade or planned subgrade, whichever is deeper. The underlying expansive clays, if dry, must be pre-swelled (moisture conditioned) prior to construction.

In the building areas, the risk of future structural damage by shrinking and swelling of the expansive clays, where encountered, must be further reduced by covering the expansive soils with a 30-inch thick confining and moisture protecting blanket of non-expansive fill. Satisfactory foundation support for the proposed structures can then be obtained from spread footings bottomed on properly compacted fill or firm natural soils.

Excavations adjacent to, and lower than, the bottom of existing footings must be performed in short sections not exceeding 10 feet in length to avoid removing lateral confinement. The contractor must use extreme caution when excavating directly adjacent to existing footings. Construction operations must be carefully planned to allow for the installation of concrete or new footings as soon as possible after completing the excavation. Heavy vibratory equipment which could cause settlement must not be used next to existing footings.

The existing buildings should be monitored for settlement. Should settlement of the existing structures be noted during construction, or if the risk (to the owner) of settlement to a structure is too high, underpinning, bracing and/or shoring may be necessary, and should be considered.

Non-critical slabs may be constructed on properly prepared subgrade provided that: 1) the slabs are separated from foundations; 2) slabs are designed to minimize cracking (i.e. reinforced and provided with control joints); and 3) soil related cracking and settlement is considered acceptable.

The results of the corrosion testing and brief comments are presented on Plate 14. We should be contacted to provide additional comments, if needed.

B. Groundwater

Groundwater was not encountered in our test borings. We have previously observed in the project vicinity, during and after periods of prolonged rainfall, groundwater can occur relatively near to the ground surface. Seasonal conditions may necessitate providing sumps or other dewatering measures to keep the excavations free of water. Grading the site in the summer or fall could reduce or eliminate the need for dewatering.

Depending on when site grading is performed, stabilization of the excavation bottom could be required. If wet, yielding soils are exposed in the excavation bottom, the excavation bottom may be blanketed by a woven filter fabric such as Mirafi 600x prior to fill placement. Where excessive yielding is present and compaction of the on-site soils can not be satisfactorily

achieved, twelve inches of granular material may be required over the fabric. We can provide supplemental recommendations during construction when the actual conditions are exposed.

When the excavated soil is recompacted as fill, the fill density is generally different than the original in-situ density. This results in swell or shrinkage of the excavated materials. Based on our past experience, we estimate that when the natural materials are excavated and placed as fill, there will be an average shrink of about 15 to 20 percent for the natural soils and old fills.

C. Earthquake Ground Shaking

The Sonoma County area is seismically active, and low magnitude earthquakes occur every year in the area. The intensity of future shaking will depend on the distance of the site to the earthquake focus, magnitude of the earthquake, and response of the structure to the underlying soil and/or rock. Severe ground shaking could also induce such hazards as densification and liquefaction. It will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

Densification or differential compaction usually occurs in soft or low density uniform size, fine grain sands or silts above groundwater levels. Severe vibrations caused by earthquakes can also trigger a phenomenon called liquefaction, which involves a temporary transformation of granular materials into a fluid-like mass. Liquefaction occurs in loose, cohesion-less sandy soil below the groundwater.

Our test borings did not encounter soils below the weak surface soils and old fills which are considered liquefiable or prone to densification. Therefore, we consider the risk of damage

to the planned development from surface effects of liquefaction at the site to be low. We judge that the recommendations presented in the following section will provide suitable support of the improvements and to mitigate the hazard of earthquake shaking.

Division V, Section 1636 of the 1997 Uniform Building Code (UBC) indicates that site categorization for seismic design should be based on the average soil values within the upper 100 feet of the site. Although the scope of our investigation was limited to relatively shallow test holes (ranging to about 15 feet deep), we estimate that a Soil Profile Type "S_D" will be appropriate for design. Upon request, we could perform supplemental exploration to determine the actual subsurface conditions ranging to 100 feet.

RECOMMENDATIONS

A. Site Preparation and Grading

Our detailed recommendations for site preparation and grading have been incorporated into the suggested geotechnical specifications (Appendix A). The suggested geotechnical specifications may be used in part or in whole as decided by the project design team, but should be reviewed by the project engineer or architect for conformance with other aspects of the project contract documents.

The site should be cleared of designated brush, rubble and debris. Material generated by the clearing operations should be removed from the site. Wells, cesspools, abandoned leach

fields, septic tanks excavations and other voids encountered or generated during clearing should be either backfilled with granular material or compacted soil, capped with concrete in accordance with Sonoma County Health regulations and as determined by us.

Areas to be graded should be stripped of the upper soils containing root growth and organic matter. We anticipate that the required depth of stripping will average about 3 to 6 inches. Deeper stripping will be required to remove localized heavy concentrations of root growth. The strippings should be removed from the site, stockpiled for reuse as topsoil, or mixed with at least two parts soil and used as fill in areas 10 feet beyond structures, walks and paved areas.

For the purpose of definition, "select fill areas" referred to in the remainder of this report are: 1) structure areas (i.e. buildings, swimming pool, bocce court, and dance floor areas), and the zones extending for a distance of at least 5 feet beyond outside edges of perimeter footings or other footings extending from buildings; and 2) within critical exterior concrete slab areas and the zones extending for a distance of 5 feet beyond their edges.

Following clearing, stripping and planned excavations, weak, porous surface soils and variable density, old fills should be excavated for their full depth within select fill areas.

Additional excavation should be performed, as necessary, to allow installation of the 30-inch thick, non-expansive select fill. In paved roadways and roadway fill areas, weak soils and variable density, old fills should be excavated to at least 18 inches below existing grade or planned subgrade, whichever is deeper. Excavations adjacent to and lower than the bottom of footings must be performed in short sections not exceeding 10 feet in length to avoid removing

lateral confinement. Fill placed in close proximity to adjacent existing foundations should be compacted with light compaction equipment.

If isolated deeper zones of soft, saturated, dry (shrinkage cracks), highly porous or organic soils are encountered during excavation and recompaction, the soils should be removed to expose firm soils. The depth and extent of excavations and overexcavations should be approved in the field by us.

Areas to receive fill that are steeper than 8:1 should typically be prepared by cutting level keyways extending into firm soils as determined by us. A typical fill section and subdrain detail is presented on Plate 15.

If grading is performed during the winter or spring seasons, we anticipate that higher groundwater conditions may be encountered. Severe groundwater conditions may result in the need for dewatering, placement of stabilization fabrics, and/or placement of ballast rock to achieve stable excavation bottoms. The contractor should be responsible for developing a dewatering plan. We can provide consultation to help develop a dewatering plan.

All exposed soils should be scarified to a depth of 6 inches, moisture conditioned to at least two percent above optimum moisture content (four percent for expansive soils), and compacted to at least 90 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil, as determined by ASTM D 1557-02. Optimum moisture content is the water content (percentage by dry weight) corresponding to the maximum dry density.

Fill and backfill material should meet the requirements presented in the suggested geotechnical specifications, and should be approved by us prior to use. On-site expansive clay soils will not be suitable as select fill unless lime treated. Fill and backfill materials should be placed, moisture conditioned, and compacted as outlined in the suggested geotechnical specifications.

In general, cut and fill slopes should be constructed no steeper than 2:1. Graded slopes should be planted with quick growing, dense vegetation or protected from erosion by other measures upon completion of grading. Seepage and surface water runoff should be intercepted and diverted away from the slope surfaces.

At all times, temporary construction excavations should conform to the regulations of the State of California, Department of Industrial Relations, Division of Industrial Safety or other stricter governing regulations. Temporary cut slopes are the responsibility of the contractor/owner.

Temporary cut slopes of 1:1 may be used for planning purposes, but must be reviewed in the field by us. The tops of the cut slopes should be rounded back to 2:1 in the weak soil zones. Depending on the exposed subsurface conditions, presence of groundwater seepage and the time of year when grading is performed, temporary cut slopes may need to be excavated to 1-1/4:1 or 1-1/2:1.

B. Foundations

Foundation support can be obtained from shallow spread footings bottomed on properly compacted, non-expansive select fill or firm material below the select fill. However, where possible, footings should not extend through the non-expansive, select fill. If expansive soils are exposed in foundation excavations, the expansive soils should be maintained at least 4 percent above optimum moisture content until concrete is placed and we should be contacted to provide additional recommendations as needed.

Spread footings should be designed using an allowable soil bearing pressure of 2,500 pounds per square foot (psf) for dead plus code live loads and 3,500 psf for total design loads, including wind or seismic forces. Wall and column footings should be at least 12 and 18 inches wide, respectively, regardless of load, and should be bottomed at least 12 inches below the lowest adjacent compacted fill subgrade. Further, excavations should be stepped as necessary to produce level tops and bottoms, and should be deepened as necessary to produce at least 7 feet of horizontal confinement between the footing bottoms and the face of the nearest slope.

Resistance to lateral loads in compacted fill or natural soil should be calculated using a passive pressure of 350 pounds per cubic foot (pcf) equivalent fluid pressure (triangular distribution) and a base friction of 0.35 times net vertical dead load. Passive pressures should be neglected in the upper 1 foot where footings are not confined by concrete slabs-on-grade or asphalt pavement structural sections. We should observe the footing excavations prior to the placement of reinforcing steel and concrete.

Concrete thrust blocks should be designed using a passive lateral earth pressure of 1000 pounds per square foot (rectangular distribution). This value assumes the thrust block is at least 3 feet deep and into firm soils.

C. Retaining Walls

Foundation support for the retaining walls can be obtained from spread footings in accordance with the previous section recommendations. Wall footings should be at least 18 inches wide and at least 18 inches below lowest adjacent grade.

Retaining walls free to rotate (yield more than 0.1 percent of the wall height at the top of the backfill) and with level backfill should be designed to resist an active lateral earth pressure (triangular distribution) of 40 pcf. Rigid walls which can not yield should be designed for an "at-rest" lateral earth pressure of 60 pcf. If walls are subjected to vehicular traffic, the walls should be designed for a surcharge pressure equal to 2-1/2 feet of additional backfill. These pressures do not consider additional loads resulting from adjacent foundations or other downward loads. If additional surcharge loadings are anticipated, we can assist in evaluating their effects.

Retaining walls should be provided with permanent backdrains to prevent the build-up of hydrostatic pressure. The drains should be constructed as shown on Plate 16 and as explained in the Geotechnical Engineering Drainage Section. Where possible, the top of the perforated drainage pipe should be located at least 8 inches below any adjacent interior slabs to reduce the risk of seepage through walls into interior building areas.

Quality, placement and compaction requirements for backfill behind retaining walls are presented in the suggested geotechnical specifications.

Where mitigation of moisture through retaining walls would be detrimental, retaining walls should be waterproofed. Fill materials should be compacted in a manner to prevent over-stressing the wall structures. Further, wall bracing should be considered. Retaining walls will yield slightly during backfilling. Therefore, retaining walls should be backfilled prior to building on or adjacent the walls. On-site soils may generally be used as backfill, however the soils must be compacted in accordance with our previous recommendations. We should be contacted to observe the backfill of retaining walls.

We typically recommend that foundations and slabs not be located within retaining wall backfills to avoid the potential for differential settlement. Mitigation may include designing foundations to span from retaining walls to areas beyond the backfill. We should be contacted to provide supplemental consultation if foundations will extend across retaining wall backfills.

D. Concrete Slabs-on-Grade

During foundation installation and utility trench excavation and backfilling, previously compacted subgrade soils may become disturbed. Where this is the case, these soils should be uniformly moisture conditioned to above optimum moisture content and rerolled to provide a smooth, unyielding surface compacted to at least 90 percent relative compaction. Further, the upper 6 inches should be compacted to at least 95 percent compaction where slabs are subject to vehicle (including forklift) traffic and/or heavy storage loads. Considering the planned use of

select fill in slab areas, slabs should be designed using a modulus of subgrade reaction of 150 pounds per cubic inch.

Exterior, non-critical concrete slabs can be placed directly on a properly prepared subgrade soil provided that slabs are reinforced to resist cracking, separated from foundations, and that some soil related cracking and movement is acceptable. At the less critical slab-on-grade areas, the performance of the slabs can be improved by the placement and compaction of at least 12 inches of non-expansive, imported fill materials and /or reworking portions of the weak soils under slabs. We should be contacted to provide additional recommendations, as needed.

A capillary moisture break and cushion layer consisting of at least four inches of clean, free-draining crushed rock should be provided below the slabs. The crushed rock should be at least 1/4-inch, and no larger than 3/4-inch, in size. Moisture will condense on the underside of slabs. Where moisture migration through slabs is detrimental, waterproofing mitigation methods should be designed by others for incorporation into the project plans. Slabs should be at least 4 inches thick and reinforced to reduce cracking.

Some cracking of slabs must be anticipated considering concrete shrinkage. Reinforcing must be carefully installed in accordance with the structural engineer's recommendations to minimize the potential of cracking. We typically recommend the use of rebar reinforcement, placed on blocks at the center of the slab. We have commonly observed that welded wire mesh is not properly located in the slabs. Control and expansion joints should be provided, as appropriate, to mitigate the effects of differential settlement.

E. Asphalt Pavement Structural Sections

It appears that the subgrade materials in the pavement areas will consist primarily of clayey sand soils. However, other materials may be exposed in some pavement areas. The final pavement section will depend on the subgrade materials encountered during construction. Subgrade materials should be evaluated when the subgrade is exposed.

A Resistance (R-) Value test was performed on a representative sample. The test result indicated an R-Value of 21. Considering the potential for variable quality subgrade materials, we used an assumed R-Value of 10. Using this R-Value and the Traffic Indices (T.I.'s) below specified by Summit Engineering, we recommend the following pavement sections:

T.I.	Asphalt Concrete (inches)	Class II* Aggregate Base (inches)
3.5	2.5	6
4.5	2.5	9
5.5	3.0	11
6.5	3.5	14
7.5	4.5	16
8.5	5.0	19

*R-Value = 78 minimum
**R-Value = 30 minimum

If highly expansive soils are encountered at subgrade during construction, the pavement section should be increased with either an additional three inches of Class II Aggregate Base, or six inches of Class 4 Aggregate Subbase.

The flexible pavement materials and construction methods should conform to the quality requirements of the State of California, Caltrans Standard Specifications, current edition, and that of the Sonoma County. We have not developed pavement thicknesses for the paved areas adjacent the dumpsters. We understand that recommendations are available from the waste disposal service companies for dumpster areas.

Prior to preparation of the subgrade, all underground utilities in the paved areas should be installed and properly backfilled, and the concrete curbs and gutters or header-boards should be in place. Subgrade soil should be uniformly moisture conditioned to 2 percent above optimum moisture content (4 percent for expansive soils) and compacted to at least 95 percent relative compaction, providing a firm and unyielding surface. This may require scarifying and recompacting to achieve uniformity. The aggregate base materials should be placed in thin lifts in a manner to prevent segregation, uniformly moisture conditioned, and compacted to at least 95 percent relative compaction to provide a smooth, unyielding surface.

F. Geotechnical Engineering Drainage

Ponding water will be detrimental to foundations, therefore the site should be graded to provide positive drainage away from foundations and finished cut and fill slopes. Roofs should be provided with gutters, and the downspouts connected to non-perforated pipes discharging into the storm drain system or erosion resistant areas well away from the structures and slopes.

Interior slab-on-grade floors should be provided with outlets in the slab rock to reduce the risk of water build up in the slab rock. Increased mitigation should be provided by constructing

trench subdrains beneath the slab rock. The subdrains should consist of 12-inch deep by 12-inch wide trenches that cross the slab area, as directed by us. The slab rock should be connected to the subdrain rock. The materials (i.e. pipe, rock and fabric) should conform to those specified for the retaining wall backdrains, as discussed below.

Retaining wall backdrains should be at least 12 inches wide, for the full height of walls. Backdrains, as shown on Plate 16, should consist of 4-inch diameter, perforated pipe, installed perforations down, placed at the bottom of the drain and sloped to drain to outlets by gravity. The top of the pipe should be at least 8 inches below the lowest adjacent interior floor elevation. The pipe should conform to the requirements presented in the suggested geotechnical specifications. The pipe should be overlain with clean, free-draining, 3/4 or 1-1/2 inch, crushed drain rock separated from adjacent soil/rock by a non-woven filter fabric. As alternatives to standard drain rock and fabric, Class II permeable material complying with Section 68, "Caltrans" may be used without fabric or a prefabricated synthetic drainage structure such as Miradrain 6000 (or equivalent) may be used. The upper 6 inches of the drain should be backfilled with compacted soil to exclude surface water. We should be contacted to observe the installation of subdrains. If ground-water seepage is encountered during grading, additional subdrains should be installed according to us.

G. Supplemental Services

We should review the final plans for conformance with the intent of our recommendations. During grading and foundation construction, we should provide intermittent

geotechnical engineering observations, along with necessary field and laboratory testing, during: 1) removal of weak soil and old fills; 2) fill placement and compaction; 3) subdrainage placement; 4) preparation and compaction of subgrade; 5) placement and compaction of Class II Aggregate Base and 6) excavation of foundations. These observations and tests would allow us to check that the contractor's work conforms with the intent of our recommendations and the project plans and specifications. These observations also permit us to check that conditions encountered are as anticipated, and modify our recommendations, as necessary.

These supplemental services are performed on an as-requested basis, and we can accept absolutely no responsibility for items that we are not notified to observe. These supplemental services are in addition to this investigation, and are charged for on an hourly basis in accordance with our Schedule of Charges. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter.

MAINTENANCE

Periodic land maintenance will be required. Surface and subsurface drains should be checked frequently, and cleaned and maintained as necessary.

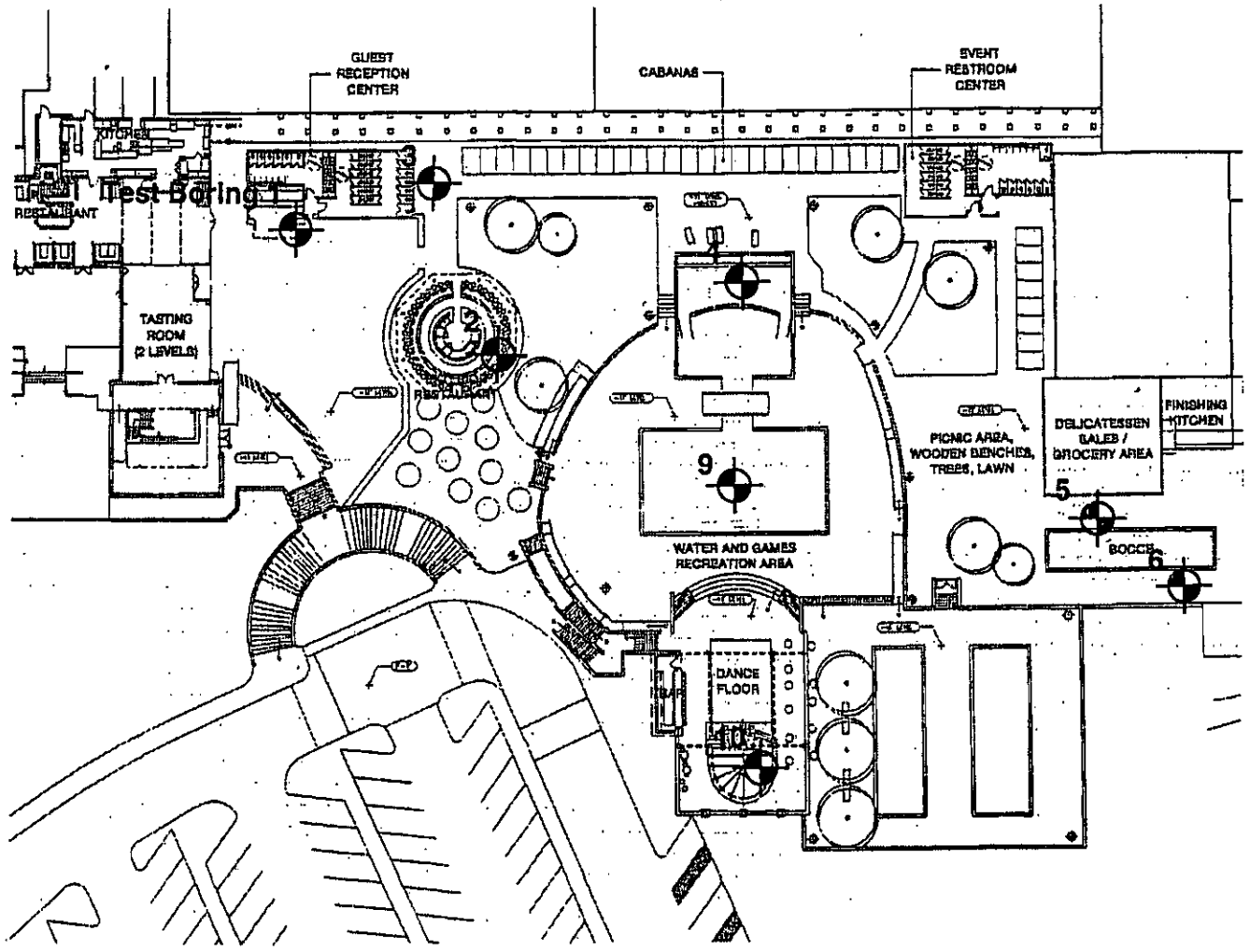
LIMITATIONS

We performed the investigation and prepared this report in accordance with generally accepted standards of the geotechnical engineering profession. No other warranty, either express or implied, is given.

If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months of the submittal date.

ILLUSTRATIONS



0 30 60

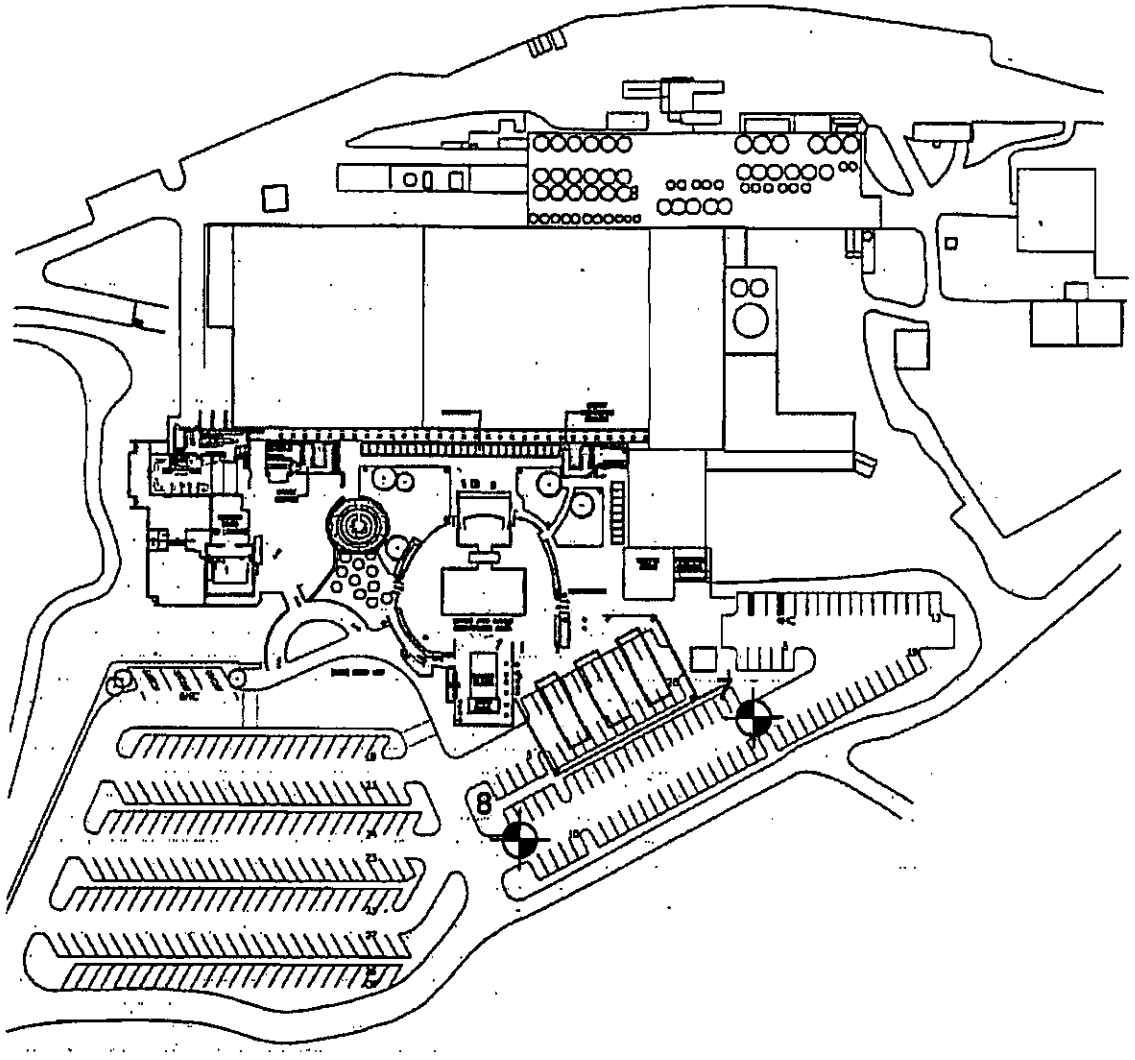
Approximate Scale in Feet

N

Reference North

Reference: Preliminary Phasing Studies, undated, prepared by Geldert Residential and Retail Studies.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 7/07 By: AB	**SITE PLAN** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **1a**



N

Reference North

Not To Scale

Reference: Parking Expansion, Option 1, dated September 22, 2006, prepared by Geldert Residential and Retail Studies.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 7/07 By: AB	**SITE PLAN** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **1b**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
Classification Tests LL = 57 PL = 58 PI = 29	26/9"			
DS 1070 (750)	27	19.6	109	
DS 1875 (1500)		16.2	116	
	26/3"			3
				6
	43/9"	24.6	94	9
				12
	43/8"			15
				18
				21

BROWN SANDY CLAY (CL)
soft, saturated, Fill

MOTTLED ORANGE BROWN SAND & GRAY SANDY CLAY (CH)
very stiff to hard, saturated, Fill

LIGHT GRAY GRAVELLY CLAY (CL)
very stiff, saturated, Probable Fill

LIGHT BROWN CLAYEY GRAVEL (GC)
very dense, wet to saturated

LIGHT OLIVE GREEN SANDY SILT (ML)
hard, wet, minor clay

LIGHT OLIVE GREEN SANDY CLAY (CL)
hard, saturated

No Free Water Encountered
No Caving

Weak Soils

* Blows Converted to standard penetration resistance values.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 1** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **2**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
					2" ASPHALTIC CONCRETE
	29	15.8	113		GREENISH GRAY CLAYEY GRAVEL (GC) medium dense, saturated, Fill
				3	becomes GRAVELLY CLAY below about 3'
	33	20.7	104		
				6	harder drilling below about 6-1/2'
	26/2"				LIGHT GRAY GRAVELLY SANDY SILT (ML) hard, wet
				9	
					ORANGE BROWN CLAYEY GRAVEL (GC) very dense, wet to saturated
	47/8"			12	
					No Free Water Encountered No Caving
				15	
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 2** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **3**

Equipment: 6" Flight Auger

Date: March 6, 2007

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
Classification Tests LL = 41 PL = 19 PI = 22	22/3"				2-1/2" ASPHALTIC CONCRETE GRAY SANDY GRAVEL (GP) medium dense, wet, Fill ORANGE BROWN SANDY CLAY (CL) hard, wet, Fill LIGHT GRAY/WHITE GRAVELLY SANDY SILT (ML) hard, wet, Fill
				3	
DS 1085 (500) DS 1315 (1000)	35/6"	22.6 23.1	96 97		LIGHT BROWN SANDY SILT (ML) hard, wet
				6	
	29/3"				REDDISH BROWN & GRAY BROWN CLAYEY GRAVEL (GC) very dense, wet to saturated
				9	
	38/8"	26.9	90		LIGHT BROWN SANDY SILT (ML) hard, wet
				12	No Free Water Encountered No Caving
				15	
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 3** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **4**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
				0	2" ASPHALTIC CONCRETE GRAY CLAYEY GRAVEL (GC) medium dense, saturated, Fill
	16			3	ORANGE BROWN SANDY CLAY (CH) stiff, wet, gravel, Fill
	19/6"	21.1 23.6	106 100	6	
					ORANGE BROWN SANDY CLAY (CH) very stiff, saturated, Fill
	24	25.9	96	9	
					GRAY SANDY CLAY (CL) very stiff, wet to saturated
				12	
	38/6"				LIGHT BROWN SANDY SILT (ML) hard, wet
				15	No Free Water Encountered
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 4** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **5**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
	18			3	MOTTLED ORANGE BROWN & GRAY SANDY CLAY (CH) very stiff, saturated, Fill
	23	23.1	99	6	minor gravels below about 3'
	31			9	LIGHT BROWN GRAVELLY CLAY (CL) very stiff to hard, saturated, Fill
	30	24.8	93	12	ORANGE BROWN & GRAY SANDY CLAY (CL) very stiff, saturated
	33			15	GRAY SANDY CLAY (CL) hard, saturated, minor gravels
				18	No Free Water Encountered No Caving
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 5** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **6**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
	15/9"	18.6	110		ORANGE BROWN SANDY CLAY (CH) medium stiff, saturated, Fill
				3	BROWN SANDY CLAY (CH) stiff, saturated, roots, porous, possible Fill
Tx 925 (720)	13	18.5	110		
					GRAY SILTY SAND (SM) medium dense, saturated, roots
	43			6	GRAY BROWN SANDY SILT (ML) hard, wet
					GRAY BROWN SANDY SILT (ML) hard, wet
	35/7"			9	
					No Free Water Encountered No Caving
				12	
				15	
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 6** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **7**

Laboratory Tests | Blows/Foot* | Moisture Content (%) | Dry Density (pcf) | Depth

Equipment: 6" Flight Auger

Date: March 6, 2007

Elevation: Not Available

BROWN & GRAY BROWN SANDY CLAY (CL)
soft to medium stiff, saturated, Fill

Weak Soils

3

ORANGE BROWN SANDY CLAY (CL)
medium stiff to stiff, saturated, gravels

No Free Water Encountered
No Caving

6

9

12

15

18

21

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 7** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **8**

Equipment: 6" Flight Auger

Date: March 6, 2007

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
R-Value, see Plate 12				3	ORANGE BROWN SANDY CLAY (CL) soft to medium stiff, saturated, minor gravels medium stiff below about 2'
				6	No Free Water Encountered No Caving
				9	
				12	
				15	
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 8** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **9**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
	8/3"				GRAY BROWN SANDY CLAY (CL) soft, saturated, porous BROWN GRAVELLY CLAY (CL) very stiff, saturated
Tx 2785 (576)	29	11.9	121	3	ORANGE BROWN GRAVELLY CLAY (CL) very stiff, saturated
	27/9"			6	GRAYISH GREEN SANDY CLAY (CL) hard, wet, gravels gravels encountered between 7-1/2' - 8-1/2'
	38/7"	20.0	101	9	LIGHT BROWN SANDY SILT (ML) hard, wet
				12	No Free Water Encountered No Caving
				15	
				18	
				21	

Weak Soils

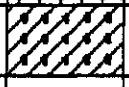
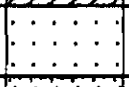
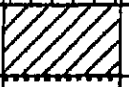
BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 9** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **10**

Equipment: 6" Flight Auger
Date: March 6, 2007
Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
					2" ASPHALTIC CONCRETE
					GRAY CLAYEY GRAVEL (GC) stiff, saturated, Fill
Classification Tests LL = 36 PL = 18 PI = 18	22				GRAY SANDY CLAY (CL) very stiff, saturated, Fill
				3	
					becomes stiff and fewer gravels below about 4'
	13				
				6	
	33	19.4	109		GRAY BROWN SANDY CLAY (CL) hard, wet
				9	
					LIGHT BROWN SANDY SILT (ML) hard, wet
	32/3"				
				12	
					No Free Water Encountered No Caving
				15	
				18	
				21	

Weak Soils

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**LOG OF TEST BORING 10** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **11**

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN #200 SIEVE)	GRAVELS more than half coarse fraction is larger than no. 4 sieve size	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXUTRES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
	SANDS more than half coarse fraction is smaller than no.4 sieve size	CLEAN SAND WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVEL-SAND MIXTURES
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN #200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, VERY FINE SANDS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS OR LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER 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 CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

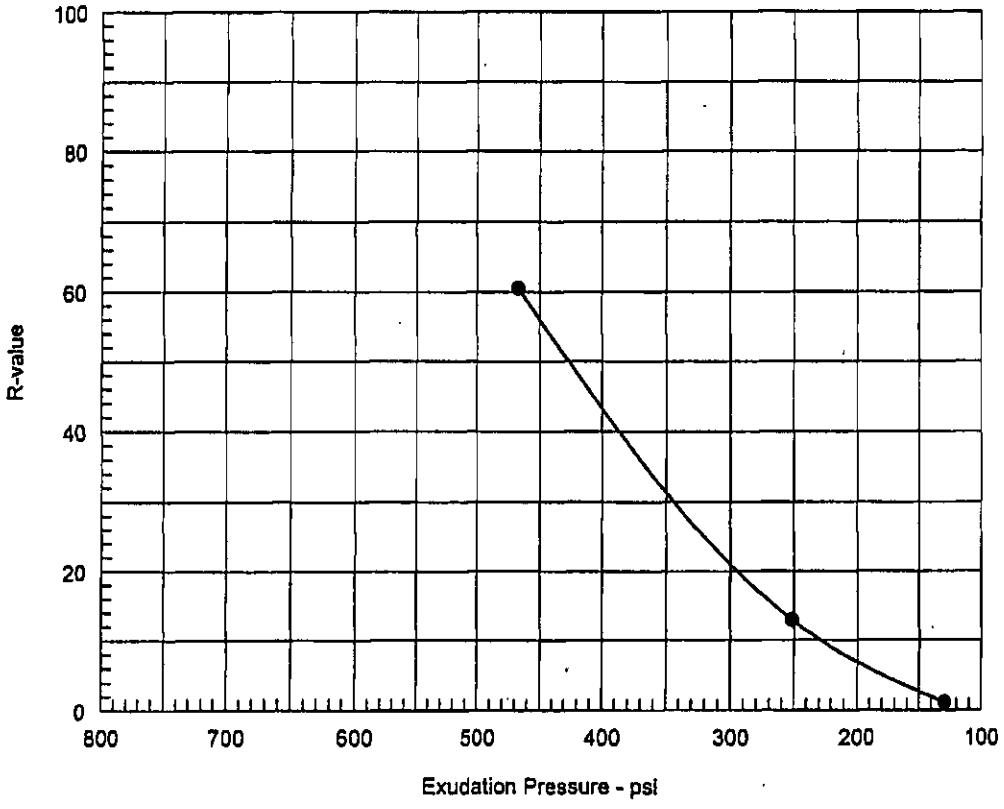
KEY TO TEST DATA

LL - Liquid Limit (In %)
PL - Plastic Limit (In %)
G - Specific Gravity
SA - Sieve Analysis
Consol - Consolidation
■ - "Undisturbed" Sample
⊠ - Bulk or Disturbed Sample
□ - No Sample Recovery

	Shear Strength, psf	Confining Pressure, psf	
*Tx	320	(2600)	Unconsolidated Undrained Triaxal
Tx CU	320	(2600)	Consolidated Undrained Triaxal
DS	2750	(2000)	Consolidated Drained Direct Shear
FVS	470		Field Vane Shear
*UC	2000		Unconfined Compression
LVS	700		Laboratory Vane Shear

Notes: (1) All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated.
(2) * Indicates 1.4" diameter sample.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	SOIL CLASSIFICATION CHART & KEY TO TEST DATA FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE 12



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psf	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	50	116.7	14.9	0	156	2.54	130	1	1
2	150	121.6	12.6	0	129	2.58	251	12	13
3	350	126.5	10.6	0	44	2.44	467	62	60

Test Results	Material Description
R-value at 300 psi exudation pressure = 21	Orange Brown Sandy Clay (CL) with minor gravels

Source of Sample: B-8 **Depth:** 1.0-4.0'

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**RESISTANCE VALUE TEST DATA** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **13**

LAB SAMPLE NUMBER	SAMPLE ID	DESCRIPTION of SOIL and/or SEDIMENT	SOIL pH -log[H+]	NOMINAL RESISTIVITY ohm-cm	ELECTRICAL CONDUCTIVITY µmhos/cm	SULFATE SO4 ppm	CHLORIDE Cl ppm
02637-1	CW1/SC	B-2 @ 2'	7.95	667	[1500]	117	51
Method	Detection	Limits --->	—	1	0.1	1	1

LAB SAMPLE NUMBER	SAMPLE ID	DESCRIPTION of SOIL and/or SEDIMENT	SALINITY ECe mmhos/cm	SOLUBLE SULFIDES (S=) ppm	SOLUBLE CYANIDES (CN=) ppm	REDOX ±mV	PERCENT MOISTURE %
02637-1	CW1/SC	B-2 @ 2'				+314.0	
Method	Detection	Limits --->	—	0.1	0.1	1	0.1

COMMENTS

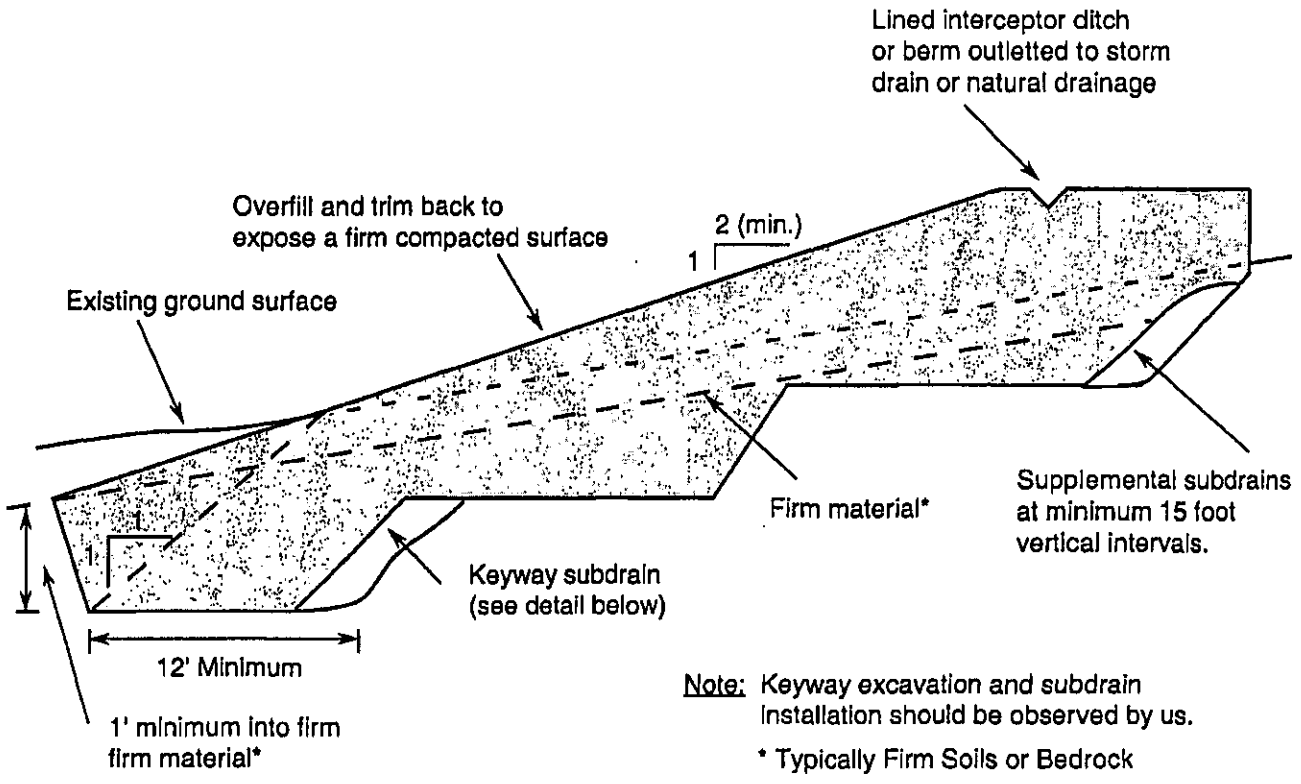
Resistivity is quite low at well under 1,000 ohm-cm range which is poor, but soil reaction (i.e., pH) is alkaline and does help; sulfate and chloride are low enough; and redox is only very mild. The CalTrans times to perforation are as follows: for 18 ga steel the time is 21 yrs, and for 12 ga it goes to up to 46.5 yrs. Chloride level is quite low in this soil, thus it should not have any significant corrosion impact on concrete steel reinforcement; and sulfates are low enough that they should not be any adverse impact on concrete mortar, grout or cement. As concerns buried metals, this soil would not benefit at all from alkaline treatment since its pH is already near eight, i.e., it is alkaline enough. The redox value of this soil shows it to be so mildly reduced that there should not be a significant or measureable adverse impact on construction materials in general. To increase metals longevity any more in this soil would require metals upgrading be done (e.g. increased gauge and/or more resistant steel, etc.); and/or that other actions be taken (e.g. wrapping steel, special engeering fill, cathodic protection, coatings, plastic pipe, etc.). Last based on these results for this soil, standard concrete mixes should be acceptable .

\\\\NOTES: Methods are from following sources: extractions by Cal Trans protocols as per Cal Test 417 (SO4), 422 (Cl), and 532/643 (pH and resistivity); &/or by ASTM Vol. 4.08 & ASTM Vol. 11.01 (=EPA Methods of Chemical Analysis, or Standard Methods); pH - ASTM G 51; Specific Conductance - ASTM D 1125; resistivity - ASTM G 57; redox - Pt probe/ISE; sulfate - extraction Title 22, detection ASTM D 516 (=EPA 375.4); chloride - extraction Title 22, detection ASTM D 512 (=EPA 325.3); sulfides - extraction by Title 22, and detection EPA 376.2 (=SMEWW 4500-S= D); cyanides - extraction by Title 22, and detection by ASTM D 4374 (=EPA 335.2).

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2455.0 Date: 3/07 By: AB	**CORROSION POTENTIAL TEST DATA** FRANCIS COPPOLA WINERY, LLC 400 Souverain Road Geyserville, California	PLATE **14**

TYPICAL FILL SECTION - KEYWAY CONSTRUCTION

(Not to Scale)

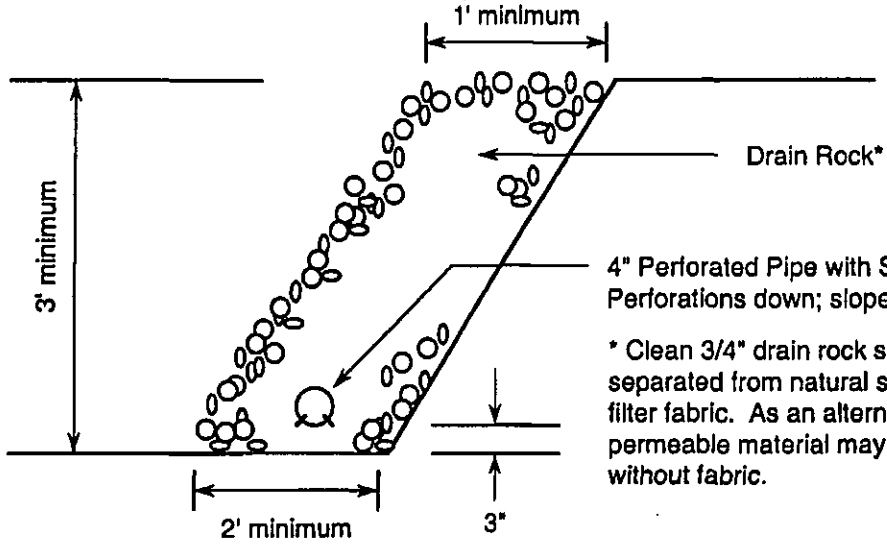


Note: Keyway excavation and subdrain installation should be observed by us.

* Typically Firm Soils or Bedrock

SUBDRAIN DETAIL

(Not to Scale)



* Clean 3/4" drain rock should be separated from natural soil/rock by filter fabric. As an alternative, Class II permeable material may be used without fabric.

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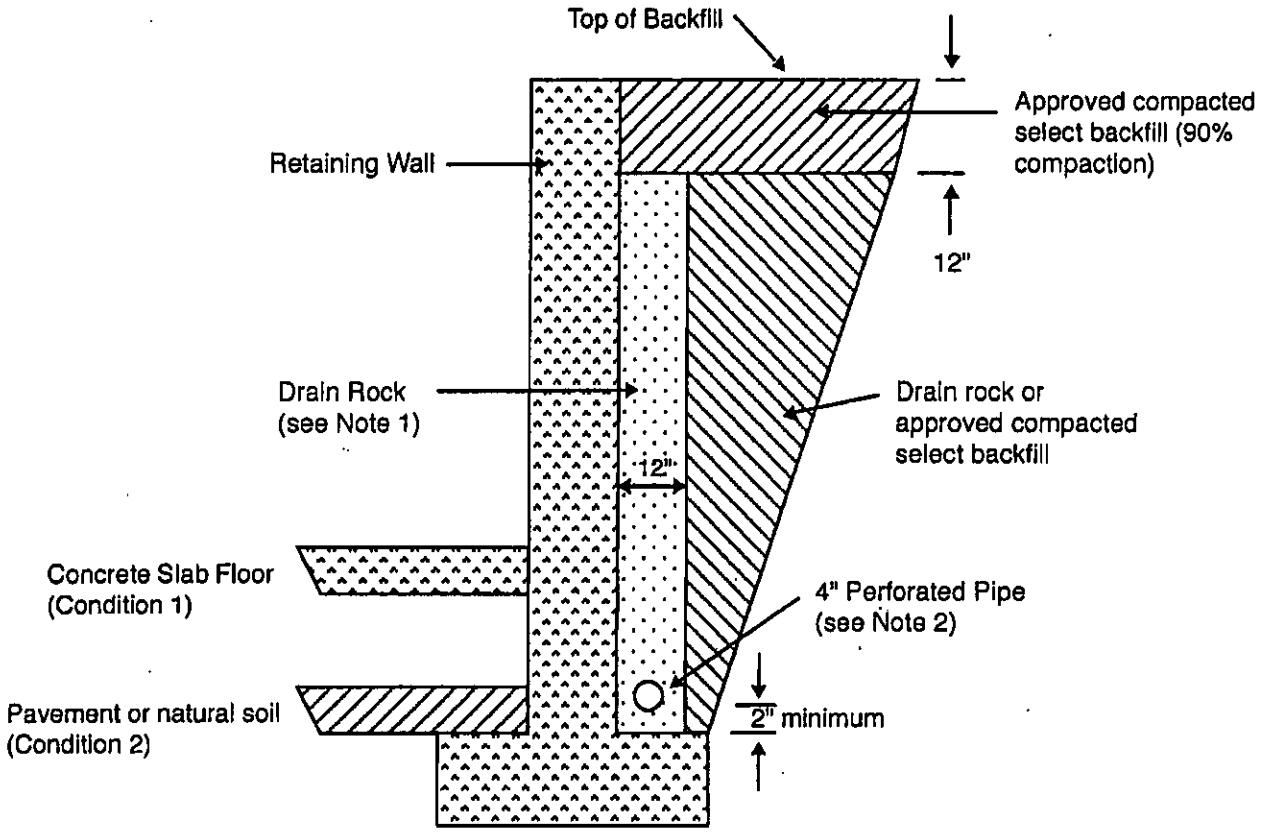

WALL DRAINAGE DETAIL
(Not to scale)

NOTES:

(1) Drain rock should be either: 1) clean, free-draining and meet the requirements for Class II Permeable Material, Section 68, State of California "Caltrans" Standard Specifications, latest edition; or 2) 3/4 or 1 -1/2 inch crushed drain rock separated from the adjacent soil/rock by non-woven filter fabric.

(2) Pipe should consist of PVC Schedule 40 or ABS with a SDR of 35 or better, perforations placed down. Pipes for subsurface walls should be sloped at 1% minimum to drain to gravity outlet or sump with automatic pump.

Perforated pipe should be a minimum of 8" below concrete slab-on-grade floors.

(3) Prefabricated synthetic drainage structure such as Miradrain 6000 or equivalent may be used in lieu of drainrock along the back of the retaining wall.

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LIST OF REFERENCES

Cooper • Clark & Associates, November 20, 1972, Report, Soil and Foundation Investigation, Proposed Souverain Winery, North of Healdsburg, Sonoma County, California, Job No. 1403-A.

Hart, E. W., and Bryant, W. A., 1999, Fault-Rupture Hazard Zones in California: California Division of Mines and Geology, Special Publication 42, 38pp.

Huffman, M.E., and Armstrong, C.F., 1980; Geology for Planning in Sonoma County: California Division of Mines and Geology, Special Report 120, Scale 1:62,500.

Wagner, D.L., and Bortugno, E.J., 1982, Geologic Map of the Santa Rosa Quadrangle: California Division of Mines and Geology, Scale 1:250,000.

DISTRIBUTION

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