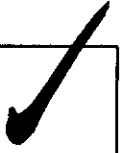


B

Type



Plans

BLD15-6171

Permit Number

905

Street Number

ROBERTSON RD

Street Name

GLE

Community Code

054-330-043

APN

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: CRAIG C. WALKER Date Applied: 11/25/15

INFORMATION WITHIN HEAVY LINE TO BE COMPLETED BY APPLICANT
 905 Robertsson Rd SITE LOCATION INFORMATION - PRINT CLEARLY

Site Address: 1127 London Ranch Road City: GLEN KILLEN ZIP: 95442
 Cross-Street: ARNOLD ALAN APN: 054-0330043 Project Phone #: (707) 938-4800 Project Fax #: 707 938-4804
 Directions: _____ Email address: _____ Unit #: _____ Lot #: _____

Describe Project: Replacement retaining wall 400x
 Living Area: _____ Garage: _____ Decks: _____ Contract Price: _____

OWNER NAME AND ADDRESS: Name: JON & LAURA Wilson Mailing Address: 1127 London Ranch Road City: GLEN KILLEN State: CA ZIP: 95442 Day Ph: 707 938-4800 Fax: 707 938-4804
 APPLICANT NAME AND ADDRESS: Name: CRAIG C. WALKER Mailing Address: 527 BROADWAY #201 City: SONOMA State: CA ZIP: 95476 Day Ph: 707 938-4800 Fax: 707 938-4804

CONTRACTOR INFORMATION: Company Name: STEP ONE / CRAIG C. WALKER Address: 527 BROADWAY #201 City: SONOMA State: CA ZIP: 95476 Day Ph: 707 938-4800 Fax: 707 938-4804
 OTHER PERSONS (ARCHITECT, ENGINEER, ETC.): Name: JAMES HILL - PENINSULA Address: 43700 Highway 128 City: CLAVAN PARK State: CA ZIP: _____ Day Ph: 707 894-5541 Fax: ()

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: _____ Policy No.: _____
 (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: 2/3/16 Applicant: Craig Walker
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: NONE
 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: _____

FOR DEPARTMENT USE
 Zoning: R1-B6-2-LARGE File No: 215-0763 Acres: 0.13
 Existing Use/Structures: SED/GAR
 Proposed Use/Structures: RESIDC EXISTING RETAINING WALL
 Zoning Min. Yard Requirements: Front NA Left NA Right NA Back NA
 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
 Approved for Permit Issuance: _____ Approved for Occupancy: _____
 By: [Signature] Date: 11/25/15
 By: [Signature] Date: 11/25/15
 Conditions: _____

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.: 968387
 Exp. Date: 12/31/16 Contractor: Craig Walker

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, 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.
 PERMITTEE SIGNATURE: [Signature]
 ADDRESS: 527 BROADWAY SONOMA 95476
 Contractor Owner Other Licensed Professional

Sewer Connection: Available Fees Paid
 Approved by: _____ Date: _____
 Road Encroachment: Fees Paid
 Approved by: _____ Date: _____
 Septic System Permit/Clearance # _____
 Approved by: _____ Date: _____
 Flood Zone: Yes No 100 Year Flood Elevation: _____
 Site Review: Bldg 15-2316
 Drainage Review: [Signature] Date: 11/25/2015
 Fire: _____
 Approved by: _____ Date: _____
 Code Enforcement Violation Yes No Violation # _____
 This permit is limited to _____ days.
 Work Authorized: retaining wall

Machine Space for Permit Fees: REC'D
 \$ _____
 NOV 25 2015
 PERMIT AND RESOURCE MANAGEMENT DEPARTMENT
 COUNTY OF SONOMA
 Distribution: White - File Canary - Applicant Blue - Assessor Cardstock - Inspector

JOB ADDRESS: 905 Robertsson Rd PERMIT NUMBER: Bldg 15-2316 INSPECTION AREA: 6

131) SPECIAL INSPECTION REQUIRED		<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	IF YES, SEE ADDITIONAL SHEET
INSPECTION RECORD	DATE	NAME	REMARKS.	
101) ROUGH GRADING			Apple Retaining wall 80'	
103) FOUNDATION				
FORMS/SETBACK				
FOOTING	12-9-15	EA		
WALLS				
106) UFER GROUND #			(110) O.K. TO START on to 12E 3' course to PROTECT LIPS onto #5 UETILES. 12-17-15 EA	
104) CAISSONS/PIERS				
105) SLAB				
107) UNDERGROUND UTILITIES				
110) MASONRY	1-4-16	EA		
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				
<input type="checkbox"/> INTERIOR	<input type="checkbox"/> EXTERIOR			
127) DIAPHRAGMS				
<input type="checkbox"/> ROOF	<input type="checkbox"/> 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				
<input type="checkbox"/> LATH	<input type="checkbox"/> SCRATCH			
137) ROOFING				
130) TUB/SHOWER PAN				
162) FIRE DAMPERS/DOORS				
164) SUSPENDED CEILING				
<input type="checkbox"/> ROUGH ELEC.	<input type="checkbox"/> ROUGH MECH.			
165) EXITING - RAMPS/STAIRS				
163) HANDRAILS/GUARDRAILS				
CORRIDORS/DOORS				
166) ACCESSIBILITY COMPLIANCE			650) SUSMP INSPECTION	
144) WATER TANKS			651) NPDES EROSION COMPLIANCE	
<input type="checkbox"/> SLAB	<input type="checkbox"/> WALLS		652) NPDES SEDIMENT COMPLIANCE	
170) TEMPORARY OCCUPANCY			653) NPDES DOCS/SWPPP	
171) TEMPORARY ELECTRICAL			FIRE INSPECTION REQUIRED	
172) TEMPORARY GAS			<input type="checkbox"/> Yes <input type="checkbox"/> No	
174) ELECTRIC METER AUTHORIZATION			759) KNOX BOX	
152) PANEL BOARDS/SERVICE			760) PROPANE TANK HOLD DOWNS	
189) SEPTIC ELECTRIC FINAL			770) SPRINKLER FINAL	
175) GAS METER AUTHORIZATION			771) ABOVEGROUND HYDROSTATIC	
153) GAS PRESSURE TEST			772) UNDERGROUND HYDROSTATIC	
HOUSE	YARD		773) UNDERGROUND FLUSH	
190) MANUF. HOME FOUNDATION			774) THRUST BLOCKS	
191) MANUF. HOME INSTALLATION			775) PIPE WELD	
CONTINUITY			776) HYDRANTS/APPLIANCES	
STAIRS/SKIRTS			777) PUMP ACCEPTANCE	
RIDGE BOLTING			778) WATER SUPPLY/TANK	
193) MANUF. HOME COND. FINAL			779) ALARM SYSTEM	
SWIMMING POOLS			780) HOOD & DUCT SYSTEM	
194) PRE-GUNITE			781) ABOVEGROUND TANK/DISPENSER	
195) PRE-DECK			198) FIRE FINAL	
196) PRE-PLASTER/FENCE			CLEARANCES:	
197) VINYL/FIBERGLASS POOL EXCAVATION			FIRE <input type="checkbox"/> Local <input type="checkbox"/> County	
102) GRADING FINAL			HEALTH DEPARTMENT	
176) ELECTRICAL FINAL			ZONING	
177) MECHANICAL FINAL			SANITATION	
178) PLUMBING FINAL				
199) FINAL	7/29/16	ME	PLAN RETENTION REQUIRED?	
OCCUPANCY (OK TO OCCUPY)			<input type="checkbox"/> Yes <input type="checkbox"/> No	

PERMIT # 88015-6171



PJC & Associates, Inc.

Consulting Engineers & Geologists

July 21, 2015
Revised August 8, 2015

Job No. S1116.01

Step One Residential Design & Construction
Attention: Craig Walker
527 Broadway, #201
Sonoma, CA 95476

Subject: Geotechnical Recommendations & Design Criteria
Proposed Structural Upgrade & Residential Addition
1127 London Ranch Road
Glen Ellen, California

Reference: Report titled, "Geotechnical Investigation, Proposed Perry Residence, 1123 & 1125 London Ranch Road, Glen Ellen, California," prepared by AJD & Associates, dated April 30, 2013.

PJC and Associates, Inc. (PJC) is pleased to present the geotechnical recommendations and design criteria for the proposed structural upgrade and residential addition located at 1127 London Ranch Road in Glen Ellen, California. Our services were completed in accordance with our written agreement for geotechnical engineering services, dated July 7, 2015. The purpose of our work was to review the above referenced geotechnical report, observe the shallow subsurface conditions at the site and provide recommendations and geotechnical criteria for design and construction of the proposed structural upgrade and residential addition. The opinions, recommendations and geotechnical design criteria presented in this report were based on our review of the above reference geotechnical report, observations of the existing cut slope, geotechnical engineering analysis and our experience with other projects in the area.

1. PROJECT DESCRIPTION

Based on the preliminary floor plan and information provided by you, it is our understanding that the project will consist of upgrading the existing foundation, framing and constructing an approximately 200 square-foot residential addition to the west side of the first floor of the residence. It is our understanding that the existing structure has experienced some lateral distortion, therefore it is our understanding that the project will include upgrading some of the existing foundations and framing to help correct some of the lateral distortion. This will probably require the construction of new foundations and other structural improvements. The addition will consist of wood frame construction with a concrete slab-on-grade floor. Furthermore, new retaining wall construction will be required to support the generated cut slope. The project will be serviced by underground municipal utilities.

Structural foundation loading information for the project was not available at the time of this report. For our analysis, we anticipate that structural foundation loads will be light with dead plus live continuous wall loads less than two kips per lineal foot (plf) and dead plus live isolated column loads less than 50 kips. If these assumed loads vary significantly from the actual loads, we should be consulted to review the actual loading conditions and, if necessary, revise the recommendations of this report.

Due to the scope of the project, we do not anticipate significant filling will be required. However, cuts of six feet and less will be required to achieve the desired pad grades. We anticipate any additional grading will consist of minor cuts and fills to provide adequate gradients for site drainage.

2. SITE CONDITIONS

The site is located in a residential area west of downtown Glen Ellen. The site is bounded by a single family residences to the north, south and west, and Robertson Road to the east. At the time of our investigation, the site was occupied by an existing single-family residence, and landscape areas. According to the United States Geological Survey (USGS) Glen Ellen, California, 7.5 Minute Quadrangle Map (Topographic), the site is situated near an elevation of 240 feet above mean sea level (MSL). Site drainage generally consists of sheet flow and surface infiltration. Regional drainage is provided by Sonoma Creek, which is located approximately 500 feet northeast of the site.

3. WORK PERFORMED AND SUBSURFACE CONDITIONS

On July 7, 2015, we visually observed the shallow subsurface conditions at the site by observing the existing cut slope at the west uphill side of the proposed addition. At the surface, we observed a colluvial layer consisting of sandy clays that extended to depths between three and four feet below the existing ground surface. The surface sandy clay appeared dry to slightly moist, very stiff to hard and exhibited high plasticity characteristics. Based on the presence of significant desiccation cracking, visual observations of the colluvial clays and our previous experience with similar soils at nearby sites, the colluvial clays are considered highly expansive. Underlying the surface stratum, we observed sandstone bedrock of the Glen Ellen Formation that extended to the bottom of the cut slope, approximately five feet below the original ground surface. The sandstone bedrock appeared soft, friable, and highly weathered. Based on our Atterburg limits testing ($PI=7$), the sandstone is not considered expansive.

Groundwater was not encountered during our site reconnaissance on July 7, 2015. However, seepage within the upper soil layers and bedrock fractures should be anticipated in the winter and early spring, and may vary depending on the amount of rainfall.

4. FAULTING

Geologic structures in the region are primarily controlled by northwest trending faults. No known active fault passes through the site. The site is not located in the Alquist-Priolo Earthquake Fault Studies Zone. Based on our research, the three closest potentially active faults to the site are the Rodgers Creek, West Napa and Maacama faults. The Rodgers Creek fault is located three miles to the southwest, the West Napa fault is located 11 miles east and the Maacama fault is located 16 miles northwest of the site. Table 1 outlines the closest known active faults and their associated maximum magnitude.

**TABLE 1
CLOSEST KNOWN ACTIVE FAULTS**

Fault Name	Distance from Site (Miles)	Maximum Earthquakes (Moment Magnitude)	Peak Site Acceleration (g)
Rodgers Creek	3	7.0	0.48
West Napa	11	6.5	0.18
Maacama	16	6.9	0.17

5. SEISMICITY

The site is located within a zone of high seismic activity related to the active faults that transverse through the surrounding region. Future damaging earthquakes could occur on any of these fault systems during the lifetime of the proposed project. In general, the intensity of ground shaking at the site will depend upon the distance to the causative earthquake epicenter, the magnitude of the shock, the response characteristics of the underlying earth materials and the quality of construction. Seismic considerations and hazards are discussed in the following subsections of this report.

6. SEISMIC CONSIDERATIONS & GEOLOGIC HAZARDS

The site is located within a region subject to a high level of seismic activity. Therefore, the site could experience strong seismic ground shaking during the lifetime of the project. The following discussion reflects the possible earthquake effects which could result in damage to the proposed project.

- a. Fault Rupture. Rupture of the ground surface is expected to occur along known active fault traces. No evidence of existing faults or previous ground displacement on the site due to fault movement is indicated in the geologic literature or field exploration. Therefore, the likelihood of ground rupture at the site due to faulting is considered to be low.

- b. Ground Shaking. The site has been subjected in the past to ground shaking by earthquakes on the active fault systems that traverse the region. It is believed that earthquakes with significant ground shaking will occur in the region within the next several decades. Therefore, it must be assumed that the site will be subjected to strong ground shaking during the design life of the project.
- c. Liquefaction. Our field exploration revealed no loose, saturated, granular soil strata at the site. Furthermore, the site is underlain by shallow bedrock deposits not considered susceptible to soil liquefaction that likely extend to great depths below the site. Therefore, it is judged that liquefaction is not likely to occur at the site.
- d. Lateral Spreading and Lurching. Lateral spreading is normally induced by vibration of near-horizontal alluvial soil layers adjacent to an exposed face. Lurching is an action, which produces cracks or fissures parallel to streams or banks when the earthquake motion is at right angles to them. There are no exposed faces or a creek embankment adjacent to the site. Therefore, we judge that the potential for lateral spreading and lurching at the site is low.
- e. Expansive Soils. Based on our visual observations and our experience with projects on nearby sites, the surface soils at the site exhibited high plasticity characteristics and are judged to have a high expansion potential. However, based on our Atterberg limits testing ($PI=7$), the sandstone is considered to have a low expansion potential.

7. CONCLUSIONS

Based on our field and office studies, we judge that from a geotechnical engineering standpoint, the project is feasible provided the recommendations presented in this report are incorporated into the design and carried out through construction. The primary geotechnical concern in design and construction of the project is the presence of weak and expansive colluvial soils.

The colluvial soils are weak and expansive, and are not suitable for support of fills, foundations, or slabs. Below the colluvial soils are sandstone bedrock deposits of the Glen Ellen Formation, which are considered incompressible for the anticipated foundation loads. Therefore, it will be necessary to extend the footings through any unsuitable soils and into the underlying bedrock.

Concrete slabs-on-grade will be used for the addition. As previously mentioned, the colluvial soils are weak and expansive. However, we anticipate that site grading will remove the unsuitable soils and expose

bedrock adequate for support of concrete slabs on grade. If site grading does not remove the weak and expansive soils, the unsuitable soils should be removed and replaced with non-expansive compacted engineered fill.

Detailed geotechnical engineering recommendations for use in design and construction of the project are presented in the subsequent sections of this report.

8. FOUNDATIONS: SPREAD FOOTINGS

- a. Vertical Loads. The addition and new foundations for the structural upgrade may be adequately supported by spread footing foundations extending through the surface soils and at least 12 inches into bedrock. All footings should be reinforced. The recommended soil bearing pressures, depth of minimum embedment, and minimum widths of spread footings are presented in Table 2. The bearing values provided have been calculated assuming that all footings uniformly bear on firm bedrock.

**TABLE 2
FOUNDATION DESIGN CRITERIA**

Footing Type	Bearing Pressure (psf)*	Minimum Embedment (in)**	Minimum Width (in)
Continuous Wall	2000	12	12
Isolated Column	2500	12	18

*Dead plus live load

** Into bedrock

The allowable soil bearing pressures are net values. The weight of foundation may be neglected when computing dead loads. Allowable soil bearing pressures may be increased by one-third for transient loads such as wind and seismic.

We recommend that the footing excavations not be left open longer than necessary and should be maintained in a moist condition at all times.

- b. Lateral Loads. Resistance to lateral forces may be computed using friction or passive pressure. A friction factor of 0.35 is considered appropriate between the bottom of concrete structures and the bedrock. A passive pressure equivalent to that exerted by a fluid weighing 350 pounds per square foot per foot of depth (psf/ft) may be used. Unless restrained at the surface, the upper six inches of the bedrock should be neglected for passive resistance. There should be at least seven feet of horizontal confinement between the bottom of the footing and the face of the nearest slope.

Footing concrete should be placed neat against bedrock. Footing excavations should not be allowed to dry before placing concrete. If shrinkage cracks appear in the footing excavations, the bearing material should be thoroughly moistened to close all cracks prior to concrete placement.

- c. Settlement. Total settlement of individual foundations will vary depending on the width of the foundation and the actual load supported. Foundation settlements have been estimated based on the bearing values provided. Maximum settlements of shallow foundations designed and constructed in accordance with the preceding recommendations are estimated to be less than one inch. Differential settlement between similarly loaded, adjacent footings are expected to be less than one-half of one inch. The majority of the settlement is expected to occur during construction and placement of dead loads.

The geotechnical engineer should observe the bearing surfaces of the spread footings after the cleaning and prior to placement of concrete and steel to assess the conditions of the foundation bearing materials.

9. SLAB-ON-GRADE

Concrete slab-on-grade floors will be used for the addition. We anticipate that site grading will remove the colluvial soil and expose sandstone bedrock adequate for support of the proposed concrete slabs. If site grading does not remove the weak and expansive colluvial soils, the unsuitable soils should be removed and replaced with non-expansive compacted engineered fill under the direction of the geotechnical engineer in the field during construction. Regardless, the slab subgrade should be moisture conditioned to over optimum moisture content and rolled to produce a firm and unyielding surface. We recommend that the slabs-on-grade be provided with floor subdrains as shown on Plate 1.

Slabs-on-grade should be at least four inches thick and underlain by a four inch layer of compacted clean gravel or crushed rock. The rock will serve as a capillary break; however moisture may accumulate in the base course. Therefore, a plastic vapor barrier should be provided over the rock where moisture protection is desired. To control cracking, the slabs should be reinforced as determined by the project structural engineer.

10. RETAINING WALLS

Retaining walls free to rotate on the top and supporting a level backfill may be designed to resist an active equivalent fluid pressure of 45 pcf acting in a triangular pressure distribution. Retaining walls supporting steeply sloping backfill should be designed for an active equivalent fluid pressure

of 60 pcf acting in a triangular pressure distribution. These pressures do not consider surcharge loads resulting from adjacent foundations, traffic loads or earthquake loads. If additional surcharge loading is anticipated, we can assist in evaluating their effects.

We recommend that a backdrain be provided behind all retaining walls or the walls should be designed for full hydrostatic pressures. The backdrain should consist of a heavy walled, four inch diameter, perforated pipe sloped to drain to outlets by gravity, and of clean, free-draining, three-quarter to one-inch crushed rock or gravel. The crushed rock or gravel should extend to within one foot of the surface. The upper foot should be backfilled with compacted, fine grained soil to exclude surface water intrusion. A drainage filter cloth should be placed between the soil and the drain rock or Class II permeable material be used in lieu of the filter fabric and drain rock.

We recommend that the ground surface behind the retaining walls be sloped to drain. Under no circumstances should the surface water be diverted into back drains. Where migration of moisture through walls would be detrimental, the walls should be waterproofed.

11. RETAINING WALLS-SEISMIC LOADING

PJC has performed analysis to estimate the anticipated dynamic load due to seismic shaking on retaining walls at the site. Based on our pseudostatic analysis, the walls should be designed for a dynamic lateral force equivalent to a uniform point load, P_e , as determined by the following equation:

$$P_e = 6.9 * H^2$$

Where:

H = height of retaining wall in feet

P_e = pseudostatic seismic loading in lbs/ft

The pseudostatic force, P_e should be applied at a distance of $(2/3)*H$ above the base of the retaining wall.

12. SEISMIC DESIGN

Geologic structures in the region are primarily controlled by northwest trending faults. No known active fault passes through the site. The site is not located in the Alquist-Priolo Earthquake Fault Studies Zone. Based on the data reviewed, it is concluded that the project site could be subjected to seismic shaking resulting from earthquakes on the active faults primarily

in the Coast Ranges. For design, a site class type D, and spectral accelerations of S_s of 1.50 g and S_1 of 0.60 g are recommended.

13. DRAINAGE

All final grades should be provided with positive gradients away from foundations to provide rapid removal of surface water runoff to an adequate discharge point. No ponding of water should be allowed on the pad or adjacent to foundations. Furthermore, we recommend that the slabs-on-grade be provided with floor subdrains as shown on Plate 1.

If the residence does not have functioning foundation subdrains, we recommend that foundation subdrains be placed adjacent to all foundations, except the downhill foundation. The foundation subdrains should extend at least 12 inches below the interior adjacent grade. The subdrain should consist of a heavy walled four-inch diameter perforated pipe. The bottom of the trench should be sloped to drain by gravity and lined with a few inches of three quarter to one and a half inch-drain rock. The trench should then be backfilled to within six inches of finished surface with drain rock. The upper few inches should consist of compacted soil to reduce surface water inclusion. We recommend that a drainage filter cloth be placed between the soil and the drain rock or Class II permeable material be used in lieu of the filter fabric and drain rock.

Roof downspouts and surface drains must be maintained entirely separate from the foundation subdrains. The outlets should discharge onto erosion resistant areas.

14. LIMITATIONS

The data, information, interpretations and recommendations contained in this report are presented solely as bases and guides to the geotechnical design for the proposed residential addition located at 1127 London Ranch Road in Glen Ellen, California. The conclusions and professional opinions presented herein were developed by PJC in accordance with generally accepted geotechnical engineering principles and practices. No warranty, either expressed or implied, is intended.

This report has not been prepared for use by parties other than the designers of the project. It may not contain sufficient information for the purposes of other parties or other uses. If any changes are made in the project as described in this report, the conclusions and recommendations contained herein should not be considered valid, unless the changes are reviewed by PJC, and the conclusions and recommendations are modified or approved in writing. This report and the figures contained herein are intended for design purposes only. They are not intended to act, by themselves, as construction drawings or specifications.

Soil deposits may vary in type, strength, and many other important properties between the points of observation and exploration. Additionally, changes can occur in groundwater and soil moisture conditions due to seasonal variations, or for other reasons. Therefore, it must be recognized that we do not and cannot have complete knowledge of the subsurface conditions underlying the subject site. The criteria presented are based upon the findings at the points of exploration and upon interpretative data, including interpolation and extrapolation of information obtained at points of observation.

15. ADDITIONAL SERVICES

Upon completion of the project plans, they should be reviewed by our firm to determine that the design is consistent with the recommendations of this report. Observation and testing services should also be provided by PJC to verify that the intent of the plans and specifications is carried out during construction; these services should include observing the foundation excavations, field density testing of fill, and installation of the subsurface drainage facilities.

These services will be performed only if PJC is provided with sufficient notice to perform the work. PJC does not accept responsibility for items that they are not notified to observe.

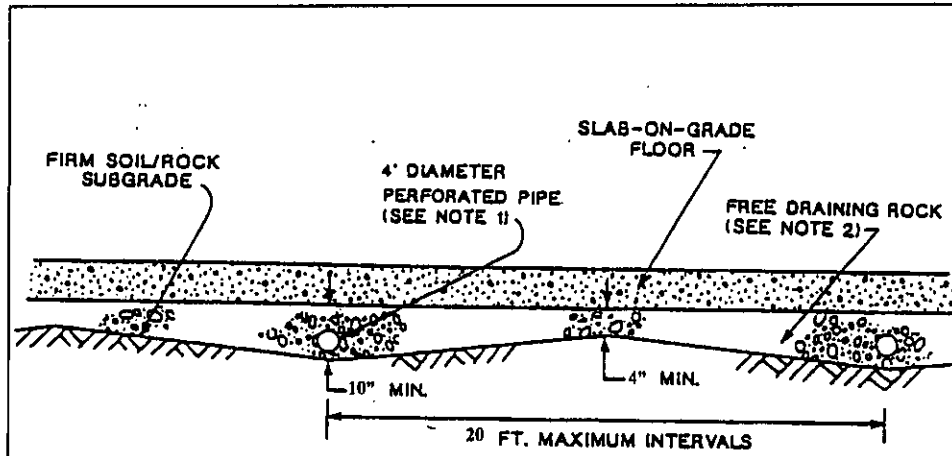
It has been a pleasure working with you on this project. Please call us if you have any questions regarding the results of this investigation, or if we can be of further assistance.

Sincerely,

PJC & ASSOCIATES


Anthony J. DeMartini
Geotechnical Engineer
GE 2750, California





Notes:

1. PERFORATED PIPE (PVC OR EQUIVALENT) SHOULD BE PLACED WITH PERFORATIONS DOWN. THE PIPE SHOULD BE SLOPED FOR GRAVITY FLOW AND OUTLET THROUGH SOLID PIPE TO DAYLIGHT.
2. DRAIN ROCK SHOULD BE AT LEAST 4" THICK AND A MINIMUM OF 10" WHERE PIPES ARE LOCATED. THE DRAIN ROCK SHOULD BE ½ OR ¾ INCH DRAIN ROCK ON FILTER FABRIC OR CONSIST OF CLASS II PERMEABLE MATERIAL.



PJC & Associates, Inc.
Consulting Engineers & Geologists

**SLAB UNDERDRAIN SYSTEM
 PROPOSED RESIDENTIAL ADDITION
 1127 LONDON RANCH ROAD
 GLEN ELLEN, CALIFORNIA**

PLATE

1

Proj. No: S1116.01

Date: 7/15

App'd by: PJC

HILL ENGINEERING

H  **ILL ENGINEERING**
James H. Hill  43700 Highway 128
Cloverdale, CA. 95425
(707) 894-5541



Design Calculations
for
Proposed Wilson Retaining Wall
at
1127 London Ranch Road
Glen Ellen, Ca 95442

Prepared for:

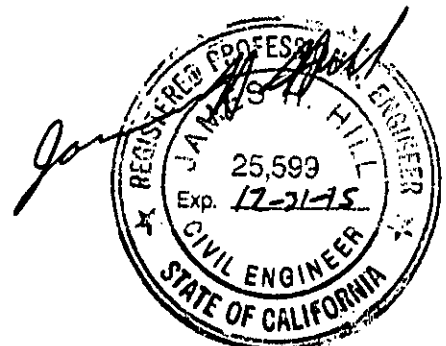
S1RDC Inc.
527 Broadway #201
Sonoma, CA 95476
707-938-4800

FILE COPY
BLD5-6171
905 ROBERTSON RD

Prepared by:

Hill Engineering
43700 Hwy. 128
Cloverdale, CA 95425

November 28, 2015



Observation of Foundations
Field Report

Date 11/17/15
(M) T W T F S S

Job # _____

Client	_____	Area Observed	<u>Rear Site Wall</u>
Project Name	<u>Proposed Site Retaining Wall</u>	Building Permit #	_____
Project Address	<u>1127 Lorden Ranch Rd</u>	General Contractor	_____
Project City	<u>Glen Ellen</u>	Plan Author	_____
Plan Date	_____	Plan Revised Date	_____
Project Foundation Investigation Report Date	_____	Building Dept Stamped Approval Date	_____
Prepared By	_____	Supplemental	_____
		Report Project #	_____

- The footing excavations listed below were bottomed on material for which the bearing values recommended in the foundation report are applicable.
- The cast-in-place drilled friction piles listed below penetrated material for the which the allowable supporting capacities recommended in the foundation report are applicable. The piles were excavated to diameters at least as large as specified and the excavation extended at least to the depths indicated on the project plans.
- The excavations for the cast-in-place belled piers listed below were bottomed on material for which the bearing values recommended in the foundation report are applicable. The belled excavations were at least as large as specified on the project plans.
- The driven piles listed below were observed to be driven to the specified lengths and/or driving resistance to obtain the supporting capacities recommended in the foundation report.

Foundations Observed on site to observe the existing conditions
at the rear of the structure. The excavation has
exposed weathered bedrock which should be adequate
for support. Therefore, our geotechnical report and design criteria
are applicable for the proposed wall.

- Note:
- The observations reported do not constitute an approval of foundation location, size, depth, reinforcement or design
 - Loose, soft or disturbed soils must be removed prior to placement of reinforcement or concrete.

PJC is not responsible for Lines or Grades.

Field Technician/Special Inspector

[Signature] Anthony J. DeMartini, GE 2750

Signature Full Name, Printed