REESE CONSULTING GEOTECHNICAL & ASSOCIATES ENGINEERS
134 LYSTRA COURT
TELEPHONE (707) 528-3078
SANTA ROSA, CA 95403
FACSIMILE (707) 528-2837
REESE@REESEANDASSOC.COM

January 3, 2022

Job No. 2502.1.3

[redacted]

Report
Soil Engineering Consultation
Son Residence
5275 Wikiup Court
Santa Rosa, California

This report presents the results of our soil engineering consultation for your proposed replacement residence at 5275 Wikiup Court in Santa Rosa, California. The original residence was destroyed during the 2017 Tubbs Fire. Giblin Associates (GA) performed a soil investigation for the original residence, and the results were submitted in their report dated January 30, 1987.

The original residence was supported on a drilled pier foundation. GA was on-site during foundation installation for the original residence, and concluded that foundation pier drilling had been completed satisfactorily in accordance with their recommendations.

We understand the proposed new residence will be constructed within approximately the same footprint as the original residence and it is currently proposed to support the main residence on the existing drilled piers. The new residence will consist of one- and/or two-story wood frame construction with wood floors supported on joists above grade. The attached garage will have a concrete slab-on-grade floor. We anticipate new foundations may be needed at some locations.

SITE CONDITIONS

On November 11, 2021, our project geologist was on-site to observe conditions exposed on the property. We observed the condition of the pad soils and the proposed main house area, with particular attention to the condition of the soils providing support to the existing drilled piers.

In general, the site is located within moderately sloping hillside terrain within the Wikiup area. The 0.72-acre parcel slopes downward to the southwest varying in steepness from about three horizontal to one vertical (3:1) on the eastern portion of the site to about 5:1 on the westerly portion.

The test pits and laboratory tests performed by GA indicate that the proposed building area is underlain by discontinuous layers of soft to medium stiff sandy clays and highly weathered claystone bedrock of the Glen Ellen or Petaluma formations. Fill materials were encountered in several of the pits to a depth of 1 to 1½ feet. The fill materials consist of sandy clays of low to moderate expansion potential. Such soils would tend to undergo low to moderate strength and volume changes with seasonal changes in moisture content. All of the pits encountered highly plastic, moderately expansive sandy clay soils overlying the weathered bedrock and varied in thickness from about 2½ to 5½ feet. In general, the materials encountered below about three to six feet would be considered relatively firm and incompressible under the anticipated loading conditions.

SEISMIC DESIGN PARAMETERS

The geologic maps reviewed indicate that the site is located on the east boundary of the designated Alquist-Priolo Earthquake Fault Zone. Based on this map, the Rodgers Creek fault is located approximately 400 feet southwest of the site. However, based on a recent study from 2018 by the United States Geological Survey (USGS), an active trace of the Rodgers Creek Fault could be located approximately 210 feet southeast of the site. Fault gouge was not observed in any of the test pits during the initial GA site exploration, and no surface expressions of faulting was observed at the site. A subsurface investigation including trenching to help locate fault traces was not performed and is beyond the scope of this report.

In a seismically active region such as Northern California, there is always some possibility for future faulting at any site. Because of the proximity of active faults in the region and the potential for very strong to violent ground shaking, it will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction. Based on the procedures outlined in Section 1613 of the 2019 California Building Code (CBC), the seismic provisions are as follows:

2019 CBC Ground Motion Parameters:

Site Class	C

Mapped Spectral Response Accelerations:

S_S	2.224g
S_1	0.858g

Design Spectral Response Accelerations:

S_{DS}	1.779g
S_{D1}	0.801g

CONSULTATION

Based on our observations and review of GA files from the original construction, we judge that, from a geotechnical engineering standpoint, the existing drilled piers would be suitable for reuse as support the main residence. New foundations, if needed, should be designed using the criteria provided in subsequent sections of this report.

Foundations

New foundation piers, if needed, should be designed and reinforced to withstand lateral creep soil forces imposed by the tendency of the weak upper and/or expansive soils to creep downward on the slope. Creep is the long term, gradual downslope movement (on the order of a faction of an inch per year) of weak soil and/or soft rock under the force of gravity.

Foundation piers should be at least 18 inches in diameter and be bottomed at least 15 feet below the existing ground surface. The foundation piers should extend at least 10 feet into firm underlying soil or bedrock material. The portion of the piers extending into firm natural soil or bedrock below the creep soil zone can impose 750 pounds per square foot (psf) of skin friction. End bearing should be neglected because of the difficulty of cleaning out small diameter pier holes and the uncertainty of mobilizing end bearing and skin friction simultaneously.

Piers should be designed and reinforced to resist an average creep soil depth of 5 feet imposed by the tendency of weak clayey soils to creep downward on the slope. The lateral force exerted on the piers by the indicated creep soil zone can be assumed as an at-rest equivalent fluid pressure of 55 pounds per cubic foot (pcf), acting over two pier diameters. For piers, resistance

to lateral loads can be obtained from a passive earth pressure of 300 pcf, assumed to act over two pier diameters. Passive pressure can be calculated from a depth of 3 feet, but should be neglected within the creep soil zone and within 8 feet of an adjacent slope, whichever is deeper. Passive pressure should be limited to 2,000 psf.

Piers should be spaced no closer than three diameters, center to center. Piers beneath perimeter and bearing walls should be interconnected with grade beams designed to support the calculated structure loads. To help tie the foundations together, upslope/downslope-oriented tie beams or grade beams should be spaced no farther apart than about 20 feet. Tie beams, if used, should be at least 12 inches square and reinforced with at least two No. 5 (or three No. 4) bars.

If caving soils or groundwater are encountered, it may be necessary to case the holes, dewater the holes or place concrete by an approved pumping method.

To retard the wet concrete from settling, the pier holes should not contain more than 3 inches of slough. The slough may need to be tamped prior to concrete placement, as determined by the soil engineer.

Slab-on-Grade

Concrete slab-on-grade floors can be used in the garage area but, in general, should not be used in living areas. Garage floor slabs should be underlain with a capillary moisture break and cushion layer consisting of at least 4 inches of free-draining gravel or crushed rock (slab rock). The gravel or crushed rock should be at least 1/4-inch and no larger than 3/4-inch in size. Moisture vapor will condense on the underside of slabs. Where migration of moisture vapor through slabs is detrimental, a 10-mil minimum vapor retarder should be provided between the supporting base material and the slabs. Two inches of moist, clean sand could be placed on top of the membrane to aid in curing and to help provide puncture protection. However, the actual use of sand should be determined by the architect or design engineer. The use of a less permeable and stronger membrane should be considered if sand is not to be placed for puncture protection. Concrete design and curing specifications should recognize the potential adverse effects associated with placement of concrete directly on the membrane.

Garage slabs should be at least 4 inches thick, be reinforced with bars to reduce cracking and structurally separated from adjacent foundations. Commercial expansion joint material, or other positive and low friction separations should be used. Prior to placing the reinforcing or

slab rock, the subgrade soils should be prepared by scarifying to a depth of at least 8 inches, moisture-conditioning to near optimum (at least 4 percentage points above optimum for expansive clayey soils) and compacting to at least 90 percent relative compaction.[1]

Soil Engineering Drainage

Ponding water will cause softening of the site soils and could be detrimental to foundations. It is important that the ground surface adjacent to the structure be sloped to drain away from foundations. We recommend that good, positive surface drainage away from and around the structure be provided. Careful attention to fine (finish) grading around the building should be provided, and no loose or poorly compacted materials should be allowed adjacent to grade beams. A gradient of at least 1/2-inch per foot extending at least 4 feet out and careful attention to fine (finish) grading around the structure should be provided. The areas around the residence should be sloped to provide positive lateral drainage.

The roof should be provided with gutters, and the downspouts should be connected to rigid nonperforated plastic pipelines that discharge by gravity to suitable outlet locations. Roof downspouts and surface drains should be maintained entirely separate.

Homeowner and/or professional landscaping should maintain good positive flow of surface water away from and around the buildings. It should be recognized that fences, walks, patio slabs, lawns, planters, etc. can impede water flow and promote surface soil saturation and seepage under slabs and foundations.

Supplemental Services

We should be notified to review final grading (if any) and foundation plans for conformance with the intent of our recommendations. We recommend that the pier drilling operations be observed by the soil engineer to verify that the actual conditions encountered are as anticipated and to modify our recommendations, if warranted.

1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the American Society for Testing and Materials (ASTM) Standard ASTM D1557 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

LIMITATIONS

We have performed the consultation and prepared this report in accordance with generally accepted standards of the soil engineering profession. No warranty, either express or implied, is given. This scope of work is limited to reviewing and evaluating the physical properties of earth materials considered typical of geotechnical engineering practice and does not include other concerns such as soil chemistry, corrosion potential, mold, and soil and/or groundwater contamination.

Subsurface conditions are complex and may differ from those indicated by surface features or encountered at test pit locations. Therefore, variations in subsurface conditions not indicated herein could be encountered.

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.

Supplemental services as recommended herein are in addition to this consultation and are charged for on an hourly basis in accordance with our Standard Schedule of Charges. Such supplemental services are performed on an as-requested basis, and we can accept no responsibility for items we are not notified to check, nor for use or interpretation by others of the information contained herein.

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

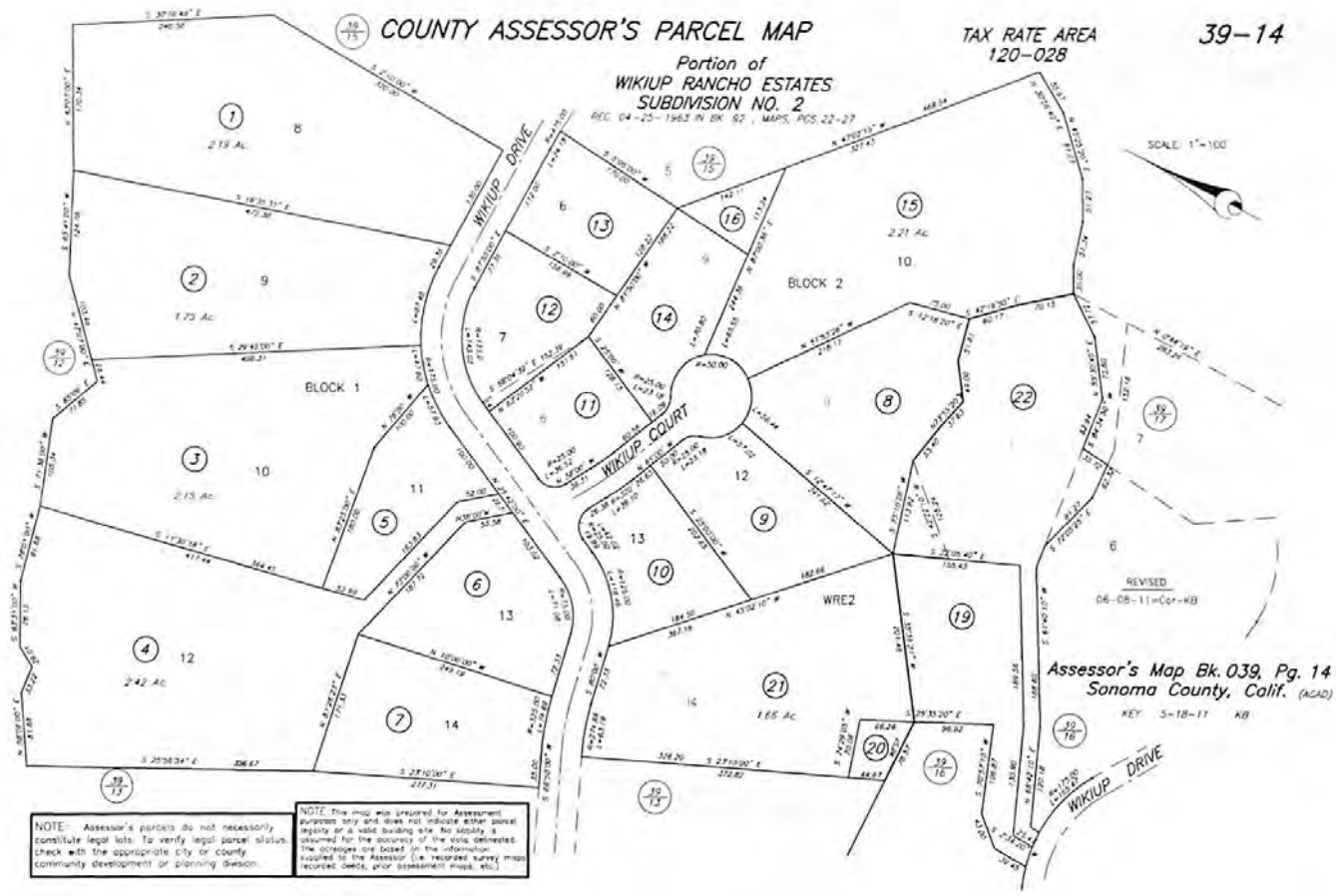
We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us.

Yours very truly,

REESE & ASSOCIATES

Jeffrey K. Reese
Civil Engineer No. 47753

TJC/BFP/JKR:nay/ra/Job No. 2502.1.3
Copies submitted: 1


COUNTY ASSESSOR'S PARCEL MAP
TAX RATE AREA 120-028
39-14
Portion of WIKIUP RANCHO ESTATES SUBDIVISION NO. 2
REC. 04-25-1963 IN BK. 92, MAPS, POS. 22-27
SCALE: 1"=100'
WIKIUP DRIVE
WIKIUP COURT
BLOCK 1
BLOCK 2
WRE2
2.19 Ac.
1.73 Ac.
2.13 Ac.
2.42 Ac.
2.21 Ac.
1.65 Ac.
R=50.00
REVISED
06-08-11=Cor-KB
Assessor's Map Bk. 039, Pg. 14
Sonoma County, Calif. (ACAD)
KEY 5-18-11 KB
NOTE: Assessor's parcels do not necessarily constitute legal lots. To verify legal parcel status, check with the appropriate city or county community development or planning division.
NOTE: This map was prepared for Assessment purposes only and does not indicate either parcel legality or a valid building site. No liability is assumed for the accuracy of the data delineated. The acreages are based on the information supplied to the Assessor (i.e. recorded survey maps, recorded deeds, prior assessment maps, etc.)

Adamson, Amy N

From:	judith adamson <judithannadamson@sbcglobal.net>
Sent:	Wednesday, April 11, 2018 11:22 AM
To:	Charles Adamson; Reed Adamson; Adamson, Amy N
Subject:	Fw: Geotechnical Soil Engineering Consultation - Adamson Residence - 3818 Bluegrass Lane
Attachments:	adamson residence 1510.1.13 sec jdm 3818 bluegrass lane.pdf

Show original message
On Wednesday, April 11, 2018 10:35 AM, Reese Associates <reese@reeseandassoc.com> wrote:

Hello,

Attached please find one copy of our Geotechnical Soil Engineering Consultation for the above-mentioned project.

Thank You,

Soil Report
$500 ~ $2,500

Janice Corder
Report Production Specialist

REESE & ASSOCIATES
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Santa Rosa, CA 95403
707 528-3078
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reese@sonic.net
www.reeseandassoc.com

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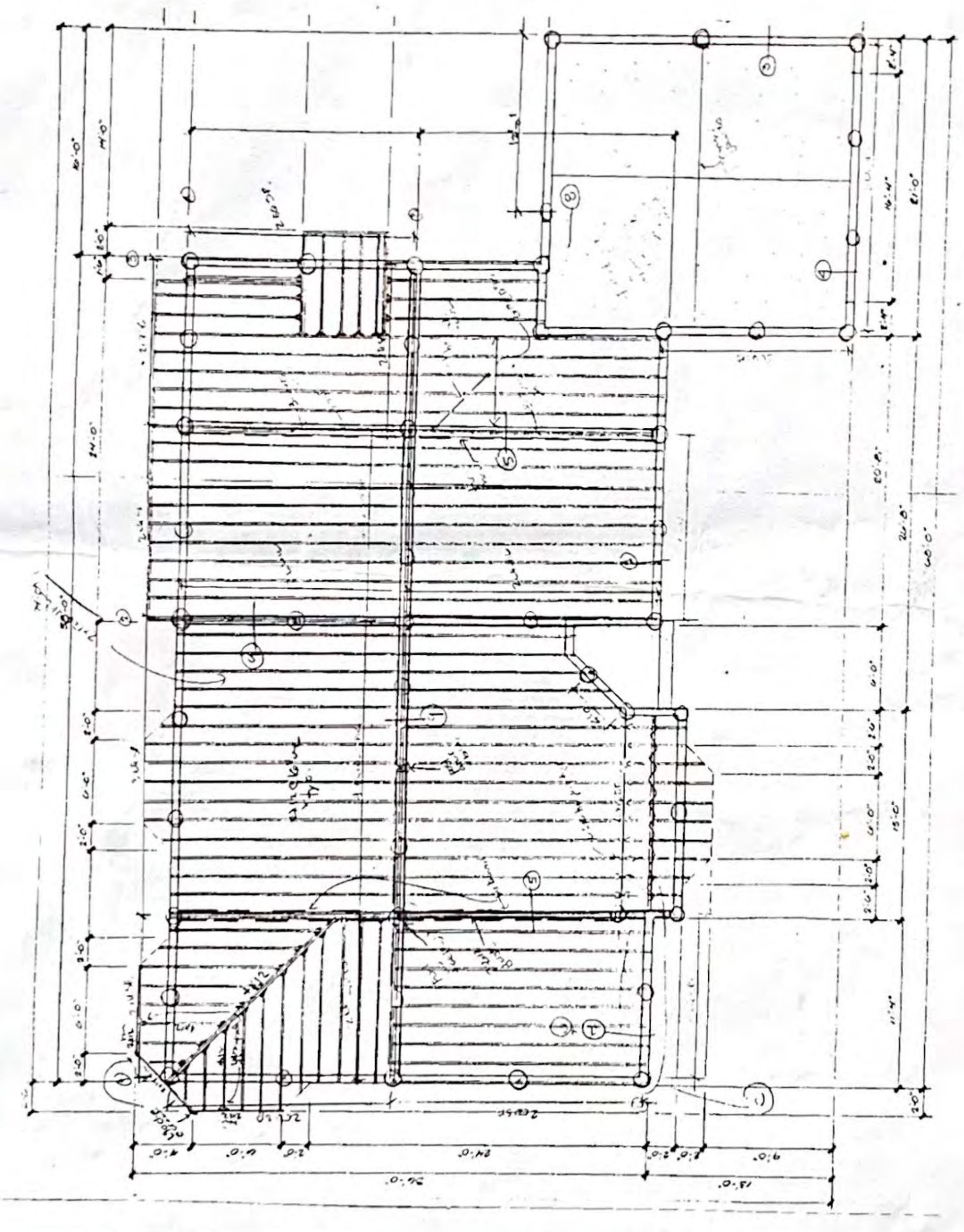
4/15/87		9a OF 10



Eotac
survey

Now Reese & Associates
Jeff / Brian / Nancy
Pianza
528 3078

GIBLIN ASSOCIATES

POST OFFICE BOX 11712 SANTA ROSA, CA 95406

CONSULTING
GEOTECHNICAL
ENGINEERS

(707) 528-3078

REPORT

Soil Investigation
Wikiup Estates Lot 12
Sonoma County, California

Prepared for

Two Star Corporation
1285 Wikiup Drive
Santa Rosa, CA 95401

By

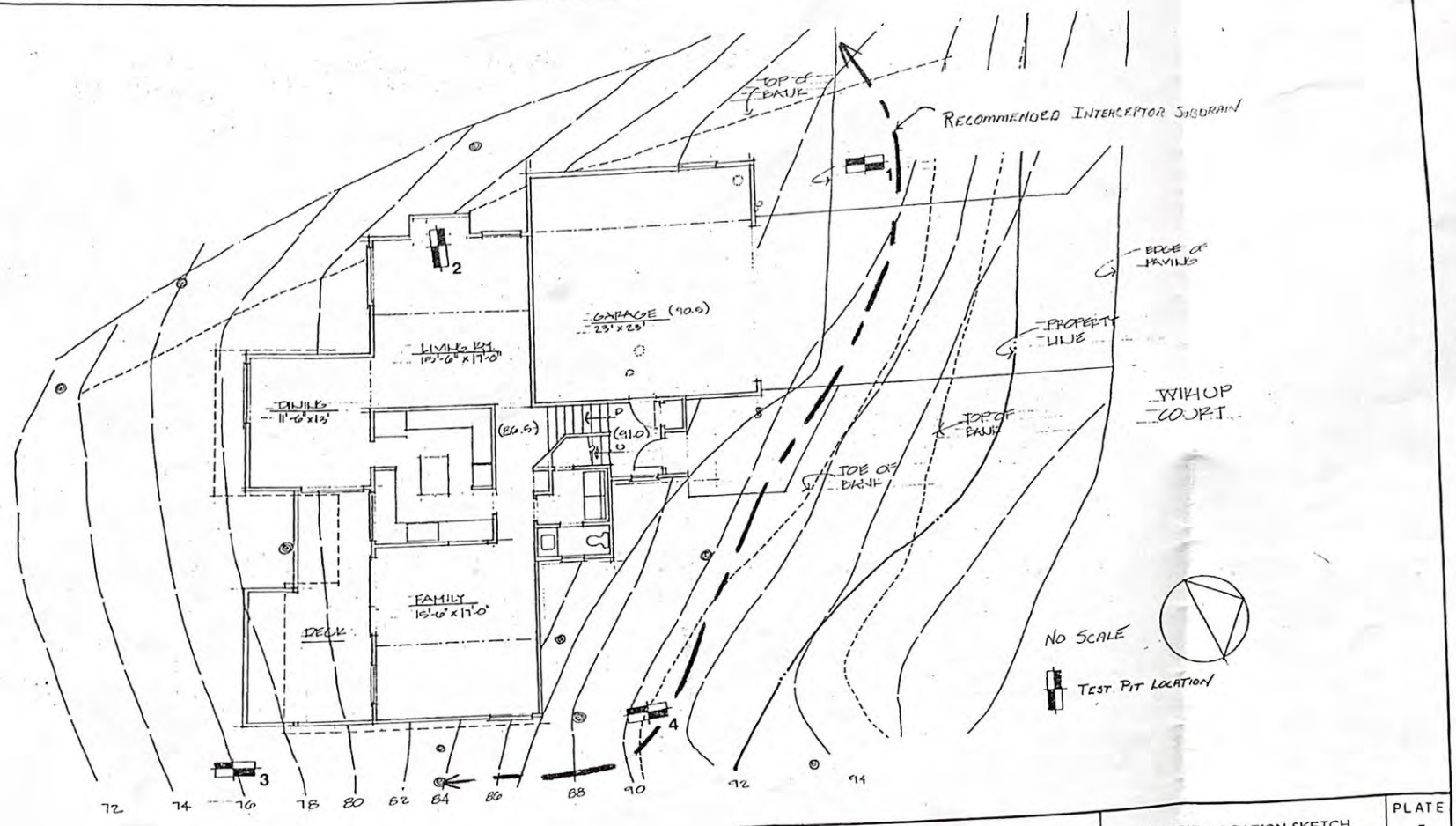
GIBLIN ASSOCIATES
Consulting Geotechnical Engineers

Jere A. Giblin
Civil Engineer - No. 19796

REGISTERED PROFESSIONAL ENGINEER
JERE A. GIBLIN
No. CE-19796
ex. 9-30-89
CIVIL
STATE OF CALIFORNIA

GA Job No. 518.1
January 30, 1987

20 pages
4/2/17



GIBLIN ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS

Job No. 518.1 Appr. Date 1-29-87

TEST PIT LOCATION SKETCH

Wikiup Estates Lot 12
Sonoma County, California

PLATE 1

permit SONOMA

County of Sonoma
Permit & Resource Management Department

19 March, 2018

Property Owners

RE: NOTICE OF POTENTIAL GEOLOGIC HAZARD

Dear Property Owner,

Permit Sonoma is dedicated to assisting persons affected by the October fires with rebuilding their homes and businesses. Our records indicate you are a property owner of a parcel located within the burned zone of the 2017 fires and within the Geologic Hazard Combining District (G combining zone). Building sites located within the G combining zone require specific geologic studies before development to avoid active fault areas.

The G combining zone includes areas in close proximity to active faults, which are defined by the California Geological Survey in the 1972 Alquist-Priolo Earthquake Fault Zoning Act. A map of the G combining zone is attached and more detailed mapping can be found at the link below.

SonomaCounty.ca.gov/PRMD/Geologic-Hazard-Zone

The intent of the seismic safety regulation is to prevent the construction of buildings used for human occupancy where an active fault intersects the ground surface. In practice, the regulations require a specialized geologic study be conducted to define the location of active geologic faults in the vicinity of the subject property. The State has found that locating structures away from active faults is a significant economic benefit to homeowners and local government, with an estimated A 10-to-1 benefit-to-cost ratio.

Local code requires a minimum setback of 50 feet from an active fault (see section 26-70 of the Sonoma County Code). We understand that a 50 foot setback may not be attainable for some properties; in this case a site specific variance may be granted, allowing for a reduced setback.

The following recommendations are provided for those intending to apply for building permits within the G combining zone:

- Verify with map applications or Permit Sonoma staff that your proposed building envelope is within the G combining zone and specialized geologic study requirements apply to your project;
- Research past soils and geotechnical reports for your parcel; provide these reports to the firm you select to conduct the geologic study;
- Consider contacting your insurance provider and informing them of the local requirement;
- Consider working with neighbors when choosing a qualified firm to conduct the geologic study;
- Contact Permit Sonoma staff to discuss the geologic review process.

2550 Ventura Avenue Santa Rosa CA 95403-2859 (707) 565-1900
www.PermitSonoma.org

4/2/18

Permit Sonoma remains committed to assisting you through the rebuilding process to provide a safer, more resilient community. More information is available at: http://sonomacounty.ca.gov/Rebuilding/

If you have additional questions or concerns please contact Robert Pennington, staff geologist, (707) 565-1352 or Robert.Pennington@sonoma-county.org

Sincerely,

Tennis Wick, AICP
Director

www.PermitSonoma.org

County of Sonoma

2550 Ventura Avenue, Santa Rosa, CA 95403

Direct: 707-565-1925 |

Office: 707-565-1900 | Fax: 707-565-1103

4/2/18

JCP LGS
HAZARD DISCLOSURES

JCP-LGS Residential Property Disclosure Reports

Natural Hazard Disclosure (NHD) Report For SONOMA County

Property Address: 5275 WIKIUP CT
SANTA ROSA, SONOMA COUNTY, CA 95403
("Property")

APN: 039-140-009
Report Date: 03/23/2018
Report Number: 2260078

Statutory Natural Hazard Disclosure ("NHD") Statement and Acknowledgment of Receipt

The transferor and his or her agent(s) or a third-party consultant disclose the following information with the knowledge that even though this is not a warranty, prospective transferees may rely on this information in deciding whether and on what terms to purchase the Property. Transferor hereby authorizes any agent(s) representing any principal(s) in this action to provide a copy of this statement to any person or entity in connection with any actual or anticipated sale of the Property.

The following are representations made by the transferor and his or her agent(s) based on their knowledge and maps drawn by the State. This information is a disclosure and is not intended to be part of any contract between the transferee and the transferor. THIS REAL PROPERTY LIES WITHIN THE FOLLOWING HAZARDOUS AREA(S):

A SPECIAL FLOOD HAZARD AREA (Any type Zone "A" or "V") designated by the Federal Emergency Management Agency
Yes___ No X Do not know and information not available from local jurisdiction ___

AN AREA OF POTENTIAL FLOODING shown on a dam failure inundation map pursuant to Section 8589.5 of the Government Code.
Yes___ No X Do not know and information not available from local jurisdiction___

A VERY HIGH FIRE HAZARD SEVERITY ZONE pursuant to Section 51178 or 51179 of the Government Code. The owner of this Property is subject to the maintenance requirements of Section 51182 of the Government Code.
Yes___ No X

A WILDLAND AREA THAT MAY CONTAIN SUBSTANTIAL FOREST FIRE RISK AND HAZARDS pursuant to Section 4125 of the Public Resources Code. The owner of this Property is subject to the maintenance requirements of Section 4291 of the Public Resources Code. Additionally, it is not the state's responsibility to provide fire protection services to any building or structure located within the wildlands unless the Department of Forestry and Fire Protection has entered into a cooperative agreement with a local agency for those purposes pursuant to Section 4142 of the Public Resources Code.
Yes X No___

AN EARTHQUAKE FAULT ZONE pursuant to Section 2622 of the Public Resources Code.
Yes X No___

A SEISMIC HAZARD ZONE pursuant to Section 2696 of the Public Resources Code.
Yes (Landslide Zone)___ Yes (Liquefaction Zone)___

No___ Map not yet released by state X

THESE HAZARDS MAY LIMIT YOUR ABILITY TO DEVELOP THE REAL PROPERTY, TO OBTAIN INSURANCE, OR TO RECEIVE ASSISTANCE AFTER A DISASTER. THE MAPS ON WHICH THESE DISCLOSURES ARE BASED ESTIMATE WHERE NATURAL HAZARDS EXIST. THEY ARE NOT DEFINITIVE INDICATORS OF WHETHER OR NOT A PROPERTY WILL BE AFFECTED BY A NATURAL DISASTER. TRANSFEREE(S) AND TRANSFEROR(S) MAY WISH TO OBTAIN PROFESSIONAL ADVICE REGARDING THOSE HAZARDS AND OTHER HAZARDS THAT MAY AFFECT THE PROPERTY.

Signature of Transferor(s)	Date	Signature of Transferor(s)	Date
Signature of Agent	Date	Signature of Agent	Date

☐ Transferor(s) and their agent(s) represent that the information herein is true and correct to the best of their knowledge as of the date signed by the transferor(s) and agent(s).

☒ Transferor(s) and their agent(s) acknowledge that they have exercised good faith in the selection of a third-party report provider as required in Civil Code Section 1103.7, and that the representations made in this Natural Hazard Disclosure Statement are based upon information provided by the independent third-party disclosure provider as a substituted disclosure pursuant to Civil Code Section 1103.4. Neither transferor(s) nor their agent(s) (1) has independently verified the information contained in this statement and Report or (2) is personally aware of any errors or inaccuracies in the information contained on the statement. This statement was prepared by the provider below:

Third-Party Disclosure Provider(s) FIRST AMERICAN PROFESSIONAL REAL ESTATE SERVICES, INC. OPERATING THROUGH ITS JCP-LGS DIVISION.
Date 23 March 2018

Transferee represents that he or she has read and understands this document. Pursuant to Civil Code Section 1103.8, the representations in this Natural Hazard Disclosure Statement do not constitute all of the transferor's or agent's disclosure obligations in this transaction.

Signature of Transferee(s)	Date	Signature of Transferee(s)	Date

TRANSFEREE(S) REPRESENTS ABOVE HE/SHE HAS RECEIVED, READ AND UNDERSTANDS THE COMPLETE JCP-LGS DISCLOSURE REPORT DELIVERED WITH THIS SUMMARY:

A. Additional Property-specific Statutory Disclosures: Former Military Ordnance Site, Commercial/Industrial Use Zone, Airport Influence Area, Airport Noise, San Francisco Bay Conservation and Development District Jurisdiction (in S.F. Bay counties only), California Energy Commission Duct Sealing Requirement, Notice of Statewide Right to Farm, Notice of Mining Operations, Sex Offender Database (Megan's Law), Gas and Hazardous Liquid Transmission Pipeline Database.
B. Additional County and City Regulatory Determinations as applicable: Airports, Avalanche, Blow Sand, Coastal Zone, Dam/Levee Failure Inundation, Debris Flow, Erosion, Flood, Fault Zone, Fire, Groundwater, Landslide, Liquefaction, Methane Gas, Mines, Naturally Occurring Asbestos, Redevelopment Area, Right to Farm, Runoff Area, Seiche, Seismic Shaking, Seismic Ground Failure, Slope Stability, Soil Stability, Subsidence, TRPA, Tsunami.
C. General advisories: Methamphetamine Contamination, Mold, Radon, Endangered Species Act, Abandoned Mines, Oil & Gas Wells, Tsunami Maps (coastal only), Wood-burning fireplaces.
D. Additional Reports - Enclosed if ordered: (1) PROPERTY TAX REPORT (includes state-required Notices of Mello-Roos and 1915 Bond Act Assessments, and Notice of Supplemental Property Tax Bill, (2) ENVIRONMENTAL SCREENING REPORT (discloses Transmission Pipelines, Contaminated Sites, and Oil & Gas Wells). Enclosed if applicable: Local Addenda.
E. Government Guides in Combined Booklet with Report. Refer to Booklet: (1) ENVIRONMENTAL HAZARDS: "A Guide for Homeowners, Buyers, Landlords and Tenants"; (2) EARTHQUAKE SAFETY: "The Homeowners Guide To Earthquake Safety" and included "RESIDENTIAL EARTHQUAKE HAZARDS REPORT FORM"; (3) LEAD-BASED PAINT: "Protect Your Family From Lead In Your Home"; (4) BRIEF GUIDE TO MOLD, MOISTURE AND YOUR HOME; (5) WHAT IS YOUR HOME ENERGY RATING? Government Guides are also available on the Company's "Electronic Bookshelf" at http://www.disclosures.com/.

ZFA
STRUCTURAL
ENGINEERS

MKM
&Associates
structural engineering

November 2, 2017

MKM and ZFA have been discussing best practices and meeting with the County (and hopefully will meet the City soon) to develop consistent guidelines and expectations for the firestorm victims.

Based on the Right of Access Letter and confirmed at Sonoma County / Santa Rosa City debris removal meeting (October 26) the homeowner must allow removal of all foundations if pursuing the public cleanup option. Stem walls and retaining walls may be left on a case-by-case basis for erosion control purposes only. Homeowners participating in the program and later deciding to keep a foundation will be withdrawn from the program and billed for cleanup services up to that point. If an owner begins the cleanup process with a private contractor, they may not be able to opt back into the Federal cleanup program.

Based on our respective research and limited site reviews we currently have the following recommendations:

1. For flat lots with shallow spread footing foundations/mat slabs we recommend full removal and replacement of the foundation. In these cases, the majority of the above ground concrete, including slabs, is likely damaged and thus there is little benefit to keeping the concrete. In addition to concrete degradation, the vapor barrier, if it exists, and under slab utilities may have been compromised by the heat.
2. For flat lots, with light pier and grade beam foundations, full removal of the grade beams is recommended. The piers may remain, but likely will not be used as part of the permanent foundation unless approved for reuse by a Structural Engineer and Geotechnical Engineer. After consultation with Geotechnical Engineers, more damage to the soil will likely occur if the piers are removed.
3. For hillside sites it may be advantageous to keep portions of the foundations, but it is likely that significant portions of the above-ground elements are damaged. However, substantial portions of the below grade elements may be undamaged. Homeowners attempting to re-use foundations should consider the following:
    a. Attempting to save foundations may require the homeowner to opt for private cleanup as discussed above. To complete this approach a contractor will need to clear enough debris for review by the Structural Engineer. It can then be determined if the existing foundation can be used. If so, removal of debris without damaging the foundation will be necessary. If, however, the foundation is unusable then it shall be removed.
    b. The existing drawings should be available, and the concrete should test to an appropriate strength level. If no drawings are available, significant investigation and testing would be required to reuse the existing foundation.
    c. A site review to verify the foundation matches the original drawings and testing to verify reinforcing spacing may be necessary. Unfortunately, it may be difficult to examine the condition of foundations until after debris is removed.
    d. While this is a nonstructural issue, the City will also require that the underground utilities are certified as being acceptable, but has not provided direction on how to achieve it.
    e. Site soils will need to be tested for contaminants and cleared. Additional soil may need to be removed and may affect foundations.

The homeowner should be clear about options for government removal and impacts to the site, which can be substantial.

These are our current recommendations. We are continuing to meet with the County and City. We will modify our recommendations, as warranted, especially relating to hillside sites. A more formal document may be produced to assist in the reconstruction efforts.

4/2/18

MKM & Associates
structural engineering
5880 Commerce Boulevard
Suite 105
Rohnert Park, CA 94928
(707) 578-8185
mkmassociates.com

PRELIMINARY FOUNDATION FIRE DAMAGE REPORT

MKM File # 171018

Location: 5275 Wikiup Court

Type of Review: Fire damage assessment for above grade concrete foundations

PE/PM: DG/TP

Report Date: 12/12/17
Updated 1/12/18
Date of Visit: 12/4/17
Time of Visit: 12:30pm

Present at Site: Steve Dell'Era, Richard Ingram, Peter Leveque

Distribution
- ☒ Owner: Peter Leveque
- ☐ Contractor:
- ☒ Other: Richard Ingram (son-in-law)

Reviewer's Signature:

Steve Dell'Era

Existing Foundation Type:
- ☐ Shallow Spread Footings
- ☐ Deepened Spread Footings
- ☒ Pier and Grade Beam
- ☐ Retaining Walls over 4'
- ☐ Post-Tensioned or Mat Slab
- ☐ Slab on Grade
- ☐ Unknown

Foundation Fire Damage Assessment: This preliminary review is limited to the accessible portion of the *above grade perimeter foundations*.

- ☐ Concrete does not appear to be significantly fire damaged.
- ☒ Concrete appears to be significantly fire damaged.

Recommendations:

- ☐ Portions of the existing above grade foundation may remain. Foundation may require retrofits to comply with current code. See attached guidelines for additional information. ***Additional reviews will be required after site has been "certified clean."***
- ☒ Existing above grade foundation cannot be used and requires removal. See attached guidelines for additional information.

Field Notes:

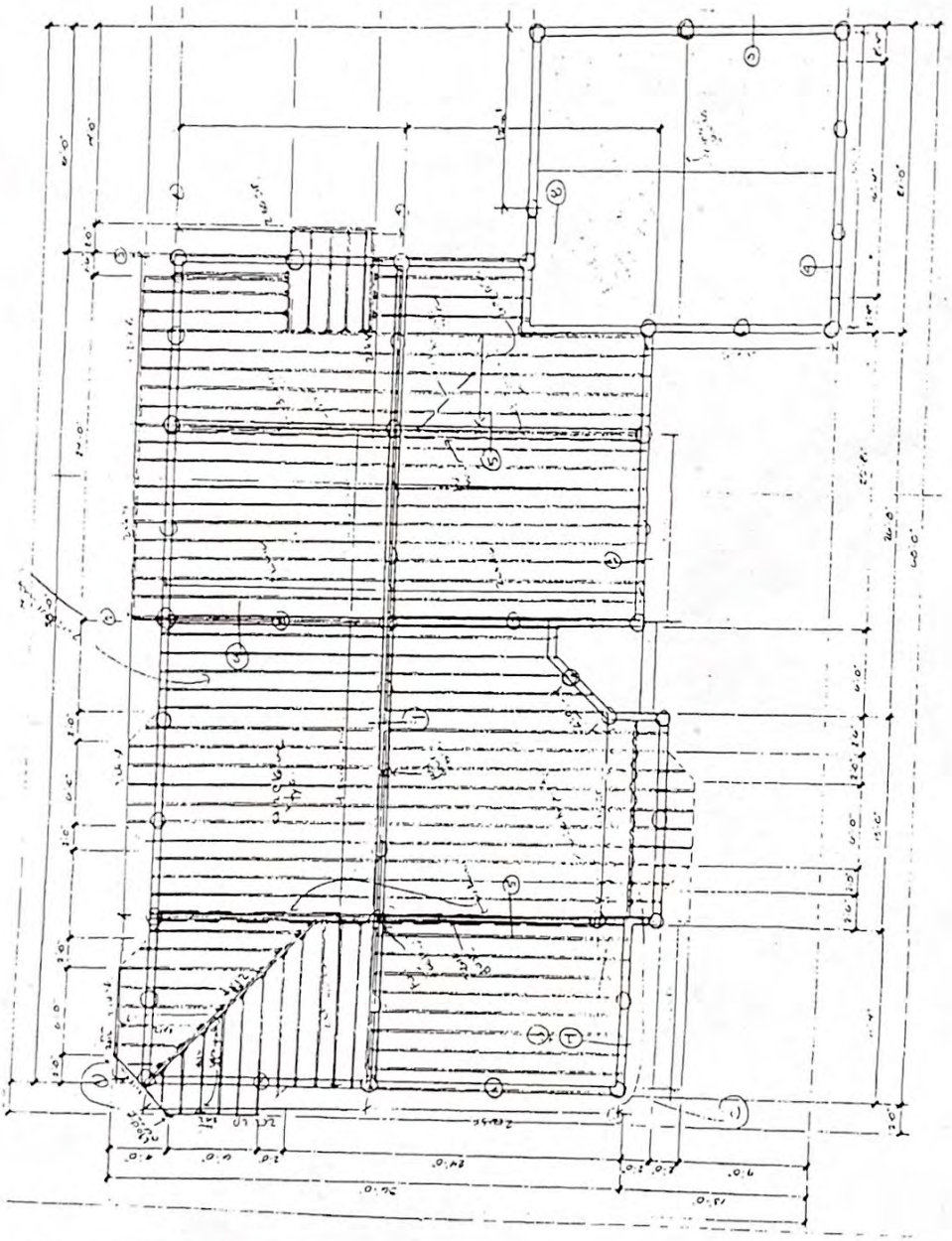
Per original calculations, MKM job #87242 dated 4/15/87, the foundation is pier and grade beam. The owner is to investigate and verify existing piers.

Update 1/12/18: Richard Ingram verified existing drilled piers at locations shown on the attached foundation key plan.

4/2/18

MKM & ASSOCIATES CIVIL & STRUCTURAL ENGINEERS
441 COLLEGE AVE. • SANTA ROSA, CA 95401 • (707) 578-8185

JK		87242
4/15/87		9a OF 10



4/2/18

CALGreen Special Inspection Agency Recognition List

CNI-041

Agency / Address	Inspector Name	Email Address	Phone
California Living & Energy	Randy Chaffey	randy.chaffey@califliving.com	(209) 538-2879
CPG Consultants 2007 Buchanan Street #1 San Francisco, CA 94115	Paul Correa	pcorrea@cpg-consultants.com	(650) 269-3470
John Craig Construction, Inc.	John N. Craig	jccinc@mac.com	(707) 287-6334
Del Starrett Architect	Keith Taylor	keith@archstarrett.com	(707) 526-9645
FOSCO	Fergus O'Sullivan	Fergus@fosco.biz	(415) 754-8064
Gilleran Energy Management 750-A Davis Street Santa Rosa, CA 95401	Kimberly Beltran Christine Condon Alaina Piskor-Carpenter Collette Williams	kbeltran@gilleranenergy.com ccondon@gilleranenergy.com apiskor@gilleranenergy.com cwilliams@gilleranenergy.com	(707) 528-7318
Hybrid Home Performance 1083 Vine Street, Suite 236 Healdsburg, CA 95448	Arthur Beeken	Arthur@HybridHomePerformance.com	(707) 431-4230
Philip Neumann Energy & Mechanical Design 193 A West Blithedale Ave. Mill Valley, CA 94941	Philip Neumann	philip@philipneumann.com	(650) 630-4818
Phillips Seabrook Associates	Kevin Scott	Eric@phillipsseabrook.com	(707) 544-9500
Rick's Energy Solutions 1523 Cavendish Avenue Santa Rosa, CA 95401	John Woodward Andrew Hoss	johnw@rc-networks.biz AndrewH@rc-networks.biz	(707) 578-5380
Robert Leys Architects AIA P.O. Box 291 Cotati, CA 94931	Robert Leys	rleysarc@pacbell.net	(707) 795-4420
Save Energy Consulting 10555 Chalk Hill Road Healdsburg, CA 95448	Skeer	skeer22@gmail.com	(707) 838-8505
Soldata Energy Consulting 2235 Challenger Way, #103 Santa Rosa, CA 95407	Shawn Caron Sarah Pernula Sean Plikuhn Adam Turrey Ann Wolfe	shawnc@soldata.com sarah@soldata.com sean@soldata.com adamt@sonic.net ann@soldata.com	(707) 545-4440

5275 Wikiup Ct

SONOMA COUNTY BUILDING INSPECTION

575 ADMINISTRATION DRIVE
SANTA ROSA, CALIFORNIA 95401
TELEPHONE (707) 527-2221

OWNER
NAME: Ed and Francine Temple
ADDRESS: [redacted] TEL. NO. [redacted]
CITY [redacted] ZIP CODE

PROJECT
ADDRESS: 5275 Wikiup Ct
CITY: Santa Rosa
SUBDIVISION NAME: Wikiup Rancho Est. UNIT NO. 2 LOT BLOCK
ASSESSOR'S PARCEL NO. 039-140-09-0
NEAREST CROSS STREET: Wikiup DR

CONTRACTOR
NAME
ADDRESS TEL. NO.
CITY ZIP CODE
STATE LIC. NO. LIC. CLASS

DESIGNER
NAME LIC. NO.
ADDRESS TEL. NO.
CITY ZIP CODE

① LICENSED CONTRACTORS DECLARATION: I hereby affirm 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.
Contractor's Signature

② OWNER-BUILDER DECLARATION: I hereby affirm 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 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 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 Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his 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 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 Contractor's License Law does not apply to an owner of property who builds or improves thereon, and contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).
☐ I am exempt under Sec. ________ B.&P.C. for this reason.
Owner's Signature

③ WORKER'S COMPENSATION DECLARATION: I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building Inspection Department (Sec. 3800, Lab. C.).
Policy No. Insurance Co.
Applicant's Signature Expiration Date

④ CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE: 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 Workers' Compensation Laws of California.
Owner's or Contractor's Signature

⑤ CONSTRUCTION LENDING AGENCY: I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.).
Lender's Name
Lender's Address

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK AUTHORIZED IS NOT COMMENCED WITHIN 180 DAYS, AND IS SUBJECT TO EXPIRATION IF WORK THEREUNDER IS SUSPENDED FOR 180 DAYS.

APPLICANT
NAME: Ron Hindley
ADDRESS: 1096 Wikiup DR CITY: S.R ZIP CODE: 95401
I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all County 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 from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.
SIGNATURE: Ron Hindley DATE 10-22-86
☐ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☒ AGENT FOR OWNER

CERTAIN AREAS WITHIN SONOMA COUNTY MAY BE GEOLOGICALLY HAZARDOUS. YOU ARE INVITED TO REVIEW ANY GEOLOGIC DATA THAT THIS DEPT. HAS AVAILABLE TO AID YOU IN MAKING A DETERMINATION AS TO THE SUITABILITY OF A PROPOSED BUILDING SITE. 10-24-86

CONDITION OF SOIL AT JOB SITE
☐ ORIGINAL ☐ ENGINEERED FILL ☐ LOOSE FILL

SITE REVIEW 25-35-%

REQUIRED REPORTS:
☐ GEOLOGY ☐ SOILS ☐ COMPACTION
☐ FLOOD ZONE ☐
100 YR. ELEV. FFL RATE ZONE

SEWER CONNECTION: SANITATION ENGINEER
APPROVED BY DATE / /

SEPTIC TANK INSTALLATION: HEALTH DEPARTMENT
PERMIT NUMBER OR CLEARANCE
DATE REC'D / / DATE ISSUED / /

DESCRIBE WORK TO BE DONE: Site Review for Future OSTD

NEW	ADDITION	ALTERATION	REPAIR	MOVING	DEMOLISH	OCC CHG
☐	☐	☐	☐	☐	☐	☐

	SIZE IN SQUARE FEET	RATE PER SQUARE FOOT	VALUE
FLOOR AREA			
GARAGE CARPORT			
DECK AWNING			
		TOTAL ▶	

FEES – Per Chapter 7, et seq. Sonoma County Code

☐ BUILDING	
☐ PLAN CHECK	
☐ PLUMBING	
☐ ELECTRICAL	
☐ MECHANICAL	
☐ GRADING	
☒ SITE REVIEW	30.00
☐ PLANNING	
☐ LATE FEES	
☐ SCHOOL IMPACT	
☐	
TOTAL $	30.00

☐ PLANS APPROVED
APPROVED BY: D. [signature] DATE: 10-22-86

JOB ADDRESS: 5275 Wikiup Ct.
NEAREST CROSS STREET: Wikiup Dr.
INSPECTION AREA: 1

DATE RECEIVED	REC'D BY	PREVIOUS PERMIT NO.	DATE ISSUED	BY

PLANNING DEPARTMENT
ZONING FILE NO. ACRES
EXISTING USE
PROPOSED USE
YARDS: FRONT LEFT SIDE RIGHT SIDE REAR

PLANNING APPROVALS
FOR PERMIT ISSUANCE — BY DATE
FOR OCCUPANCY — BY DATE

REMARKS

TYPE OF STRUCTURE | OCCUPANCY
NO. OF STORIES | VIOLATION
CERTIFICATE OF OCC.
FINAL DATE: 10-24-86
INSPECTOR: [signature]

MACHINE SPACE FOR PERMIT FEE
014253 10/22/86D01
PERMIT 0074573
SITE $30.00
***TTL $30.00
CHECK $30.00
CHNG $0.00

PERMIT NUMBER 74573-1

5275 WIKIUP Ct.

SONOMA COUNTY BUILDING INSPECTION

575 ADMINISTRATION DRIVE
SANTA ROSA, CALIFORNIA 95401
TELEPHONE (707) 527-2221

OWNER
NAME: Peter and Olivia Levesque
ADDRESS: [redacted] TEL NO: [redacted]
CITY: [redacted]

PROJECT
ADDRESS: 5275 Wikiup Ct
CITY: Santa Rosa
SUBDIVISION NAME: Wikiup Estates | UNIT NO. 2 | LOT 12 | BLOCK
ASSESSOR'S PARCEL NO.: [redacted] 039-140-09
NEAREST CROSS STREET: Wikiup Dr. — Carriage

CONTRACTOR
NAME: Callahan Construction
ADDRESS: 1521 MarkWest Spr. Rd. TEL NO: 542-331
CITY: Santa Rosa, Ca. ZIP CODE: 95404
STATE LIC. NO.: 394701 LIC. CLASS: B1

DESIGNER
NAME: Same LIC. NO.
ADDRESS: TEL NO.
CITY: ZIP CODE:

CERTAIN AREAS WITHIN SONOMA COUNTY MAY BE GEOLOGICALLY HAZARDOUS. YOU ARE INVITED TO REVIEW ANY GEOLOGIC DATA THAT THIS DEPT HAS AVAILABLE TO AID YOU IN MAKING A DETERMINATION AS TO THE SUITABILITY OF A PROPOSED BUILDING SITE.

CONDITION OF SOIL AT JOB SITE
☒ ORIGINAL ☐ ENGINEERED FILL ☐ LOOSE FILL

SITE REVIEW: 20[redacted] TO [redacted] 33%
GEOTECHNICAL REPORT IS REQUIRED DUE TO CLOSE PROXIMITY TO WINTER CREEK / FILL

REQUIRED REPORTS:
☒ GEOLOGY ☐ SOILS ☐ COMPACTION
☐ FLOOD ZONE ☐
100 YR. ELEV. ____ FFL ____ RATE ZONE ____

SEWER CONNECTION: SANITATION ENGINEER
APPROVED: [signature] DATE: 4/30/87

SEPTIC TANK INSTALLATION: HEALTH DEPARTMENT
PERMIT NUMBER ____ OR CLEARANCE ____
DATE REC'D ____ DATE ISSUED ____

DESCRIBE WORK TO BE DONE
SFD / Attached Garage

NEW	ADDITION	ALTERATION	REPAIR	MOVING	DEMOLITION	OCC CHG
☐	☐	☐	☐	☐	☐	☐

	SIZE IN SQUARE FEET	RATE PER SQUARE FOOT	VALUE
FLOOR AREA	2060	~~46.30~~ 46.30	95378
GARAGE CARPORT	462	~~16.50~~ 16.50	7623
DECK AWNING			
		TOTAL ▶	103,001

(1) **LICENSED CONTRACTORS DECLARATION:** I hereby affirm 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.
Contractor's Signature [signature]

(2) **OWNER-BUILDER DECLARATION:** I hereby affirm 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 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 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 Contractor's License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or through his 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 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 Contractor's License Law does not apply to an owner of property who builds or improves thereon, and contracts for such projects with a contractor(s) licensed pursuant to the Contractor's License Law.).
☐ I am exempt under Sec. ____, B.&P.C. for this reason
Owner's Signature ____

(3) **WORKER'S COMPENSATION DECLARATION:** I hereby affirm that I have a certificate of consent to self-insure, or a certificate of Workers' Compensation Insurance, or a certified copy thereof filed with the Building Inspection Department (Sec. 3800, Lab. C.).
Policy No. ____ Insurance Co. ____
Applicant's Signature [signature] Expiration Date ____

(4) **CERTIFICATE OF EXEMPTION FROM WORKERS' COMPENSATION INSURANCE:** 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 Workers' Compensation Laws of California.
Owner's or Contractor's Signature ____

(5) **CONSTRUCTION LENDING AGENCY:** I hereby affirm that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C.).
Lender's Name: Exchange Bank
Lender's Address: 136 Calistoga Rd. S.R.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK AUTHORIZED IS NOT COMMENCED WITHIN 180 DAYS, AND IS SUBJECT TO EXPIRATION IF WORK THEREUNDER IS SUSPENDED FOR 180 DAYS.

APPLICANT
NAME: Michael D. Callahan
ADDRESS: 1521 MarkWest Spr. Rd. CITY: S.R. ZIP CODE: 95404
I certify that I have read this application and state that the above information is correct, and that I am the owner or the duly authorized agent of the owner. I agree to comply with all County 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 from the Worker's Compensation provisions of the Labor Code I should become subject to such provisions, I will forthwith comply. In the event I do not comply with the Workmen's Compensation law, this permit shall be deemed revoked.
SIGNATURE [signature] DATE 4-29-87
☒ CONTRACTOR ☐ OWNER ☐ AGENT FOR CONTRACTOR ☐ AGENT FOR OWNER

FEES – Per Chapter 7, et seq. Sonoma County Code

☒	BUILDING	443.00
☐	PLAN CHECK	
☒	PLUMBING	41.20
☒	ELECTRICAL	41.20
☒	MECHANICAL	20.60
☐	GRADING	
☐	SITE REVIEW 33%	
☒	PLANNING	8.00
☐	LATE FEES	
☐	SCHOOL IMPACT Mark West	
☐	rec. 7-21-87	
	TOTAL $	554.00

☐ PLANS APPROVED
APPROVED BY: Dewey B. by D. [illegible] DATE:

DATE RECEIVED	RECEIVED BY	PREVIOUS PERMIT NO.	DATE ISSUED	BY
4 30 87	[illegible]			

TYPE OF STRUCTURE | OCCUPANCY
NO OF STORIES | VIOLATION
CERTIFICATE OF OCC 2 9 87
FINAL DATE
INSPECTOR SP

MACHINE SPACE FOR PERMIT FEE

010726 07/21/87001
PERMIT 0079265
BLDG. $443.00
BLDG. $41.20
BLDG. $41.20
BLDG. $20.60
PLNNG $8.00
TTL $554.00
CHECK $554.00
CHNG $0.00

PLANNING DEPARTMENT
ZONING: R1-B7 FILE NO ____ ACRES: ~7½
EXISTING USE: Vacant
PROPOSED USE: SFD
YARDS: FRONT 20 ft LEFT SIDE 5' RIGHT SIDE 5' REAR 20 ft

PLANNING APPROVALS
FOR PERMIT ISSUANCE: BY ____ DATE ____
FOR OCCUPANCY: BY [signature] DATE 4/29/87

REMARKS: Subject to Development Fees

JOB ADDRESS: 5275 Wikiup Ct. NEAREST CROSS STREET: Wikiup Dr. INSPECTION AREA: [illegible]

PERMIT NUMBER: 79265-1

INSPECTION RECORD	DATE	NAME	REMARKS
SURVEY			
FOUNDATION FORMS - SET BACK	8-6-87	RM4	
CAISSIONS & STEEL CAGES 7-24-87			
SLAB	10-2-87		
UFER GROUND			
CONC BLOCK			
RETAINING WALLS			
MASONRY			
FIREPLACE - FOOTING ☐			
HEARTH ☐ THROAT ☐ CHIMNEY ☐			
UNDERFLOOR/SLAB ELEC			
UNDERFLOOR/SLAB MECH	8-18-87		
UNDERFLOOR/SLAB PLUMB	8-18-87		
UNDERFLOOR/SLAB FRAME	8-19-87		
ELEC ROUGH	10-2-87		
MECH ROUGH			
PLUMB ROUGH	9-30-87		
GAS TEST			
FRAME ROUGH	10-1-87		
DIAPHRAGMS			
ROOF NAILING			
SHEAR WALLS	9-3-87		
HOLD DOWNS			
SIDING	10-1-87		
STUCCO			
MESH			
SCRATCH			
BROWN			
ROOFING	9-30-87		
INFILTRATION CONTROL	10-1-87		
INSULATION ROOF ☒ WALLS ☒ FLOORS ☒			
WALL BOARD	10-12-87		
FIREWALLS			
GAS SERVICE EQUIPT			
ELEC SERVICE EQUIPT	11-30-87		
PANEL BOARDS			
SMOKE DETECTOR	11-30-87		
STAIRWAYS - HANDRAILS			
SUSPENDED CEILINGS			
FIRE DAMPERS			
RAMPS - RAILS			
HANDICAP REQ			
ENERGY REQ			
TEMP OCCUPANCY			
TEMP ELEC			
TEMP GAS			
FINAL			
FIRE DEPT			
HEALTH DEPT			
PLANNING			
ELEC METER AUTH	12-9-87		
GAS METER AUTH			
PLUMBING FINAL	11-30-87		
ELECT FINAL			
MECH FINAL			
GRADING FINAL	11-30-87		
SWIMMING POOL PRE-GUNITE			
PRE-DECK			
PRE-PLASTER			
FINAL	12-9-87		

GIBLIN ASSOCIATES
POST OFFICE BOX 11712 SANTA ROSA, CA 95406
CONSULTING GEOTECHNICAL ENGINEERS
(707) 528-3078

July 14, 1987

Job No. 424.2

Callahan Construction
1521 Mark West Springs Road
Santa Rosa, CA 95404

Gentlemen:

Report
Soil Engineering Observation of
Drilled Pier Foundations
Planned Residence, Lot 12
Wikiup Estates Subdivision
Santa Rosa, California

This report presents the results of our soil engineering observation of foundation pier drilling for the planned residence on Lot 12 of the Wikiup Estates Subdivision north of Santa Rosa, California. Our foundation recommendations for the proposed residence were presented in our soil investigation report dated January 30, 1987.

On July 13 and 14, 1987, our representative was at the site on an intermittent basis to observe conditions exposed in pier drilling operations.

The foundation pier holes for the residence were drilled by the Pacific Coast Drilling Company of Petaluma. Per our recommendations in the field, pier holes vary in depth from approximately 12 to 20 feet below the surface. A small amount of loose material was present in the bottom of each of the holes checked. The depth of loose material was generally about six inches. However, in some of the holes, up to 12 inches of loose material was observed. As recommended to Mr. Dan Rice at the site, those pier holes containing more than six inches of loose material were cleaned out. All of the pier holes were tamped with an iron rod to compact the loose material at the bottom.

GIBLIN ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Therefore, we believe that the foundation pier holes have been drilled in accordance with the intent of our recommendations and the criteria in the original soil investigation report.

During grading of the building pad and drilling of foundations, some excavated soils have been stockpiled outside the planned building area. Such stockpiles were not placed under soil engineering observation and testing services, and we can accept no responsibility for their performance. Any stockpiles could be subject to significant settlement, sloughing, or erosion.

It should be understood that our requested scope of services was specifically limited to observation of drilled pier foundations. No other services concerning soil engineering aspects of the construction were requested, authorized or performed.

We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us.

Yours very truly,
GIBLIN ASSOCIATES

Jere A. Giblin
Civil Engineer No. 19796

REGISTERED PROFESSIONAL ENGINEER
JERE A. GIBLIN
No. CE-19796
ex. 9-30-89
CIVIL
STATE OF CALIFORNIA

JAG:dt
Copies Submitted: 3

Attachment: Copy of Field Memorandum

GIBLIN ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS
Post Office Box 11712
Santa Rosa, California 95406
(707) 528-3078

Date: 7-14-87
Job Name: WIKIUP ESTATES #2
Job No: LOT 12 - 5275 WIKIUP CT.
By: JR.

ALL PIER HOLE EXCAVATIONS IN CONFORMANCE WITH OUR RECOMMENDATIONS. THOSE HOLES ON THE NORTH PIER LINE WERE DRILLED TO DEPTHS GREATER THAN INDICATED IN THE SOILS REPORT AS RECOMMENDED IN THE FIELD. ALL HOLES FREE FROM SIGNIFICANT AMOUNT OF LOOSE MATERIAL. OTHER ISOLATED HOLES SIMILARLY DEEPENED OR SHORTENED.

Giblin Assoc.

7-14-87

MKM & ASSOCIATES CIVIL & STRUCTURAL ENGINEERS
441 COLLEGE AVE. • SANTA ROSA, CA 95401 • (707)578-8185

Cw	Residence for Mike Callahan Lot #12 Wikiup Estates Santa Rosa, Ca.	87242
4/14/87		1 OF 10

DESIGN CRITERIA

Uniform Building Code 1985 Edition

Vertical Loads	dead	live
Roof (comp)	14 psf	16 psf
Roof ( )	psf	psf
Floor (wood)	12 psf	40 psf
Floor ( )	psf	psf
Exterior Walls (wood)	10 psf	-
Exterior Walls ( )	psf	-
Interior Walls (gyp)	10 psf	-

Lateral Loads

Wind = 17.7 psf (80mph, exp. B)

Earthquake = 0.186W (Zone IV)

Soils Report

Soils Engineer: Giblin + Assoc.

Title: Wikiup Estates Lot #12

Job No: 518.1 Dated: Jan 30, 1987

Pier + grade beam foundation

18" ϕ piers x 15'-0" deep (10' into bedrock)

Pier capacity = $\frac{16}{12}\pi(10)(750) = 31,337$ #

MKM & ASSOCIATES CIVIL & STRUCTURAL ENGINEERS
441 COLLEGE AVE. • SANTA ROSA, CA • 95401 (707) 578-8185

REV. 7-25-86

87242

MOMENT AND SHEAR CAPACITIES

2 OF 10

DOUG. FIR (S4S)		A	MOMENT CAPACITY (1/#)			SHEAR CAPACITY (#)		
SIZE	GRADE	S	1.0	1.15	1.25	1.0	1.15	1.25
4×6	NO.1	19.25	2206	2537	2758	1219	1402	1524
	NO.2	17.65	1838	2114	2298	1219	1402	1524
		48.53						
4×8	NO.1	25.38	3833	4408	4791	1607	1848	2009
	NO.2	30.66	3194	3673	3993	1607	1848	2009
		111.15						
4×10	NO.1	32.38	6239	7175	7799	2050	2358	2563
	NO.2	49.91	5199	5679	6499	2050	2358	2563
		230.84						
4×12	NO.1	39.38	9229	10613	11536	2494	2868	3117
	NO.2	73.83	7691	8844	9613	2494	2868	3117
		415.28						
4×14	NO.1	46.38	12066	14560	15827	2937	3378	3672
	NO.2	102.41	10551	12134	13189	2937	3378	3672
		678.48						
4×16	NO.1	53.38	16511	18985	20640	3381	3889	4226
	NO.2	135.66	13760	15824	17200	3381	3889	4226
		1034.42						
6×6	NO.1	30.25	2773	3189	3466	1714	1971	2143
	S.S.	27.73	3466	3986	4332	1714	1971	2143
		76.73						
6×8	NO.1	41.25	5156	5930	6446	2338	2689	2922
	S.S.	51.56	6445	7412	8057	2338	2689	2922
		193.36						
6×10	NO.1	52.25	8962	10306	11203	2961	3405	3701
	S.S.	82.73	11030	12685	13788	2961	3405	3701
		392.96						
6×12	NO.1	63.25	13133	15103	16416	3584	4122	4480
	S.S.	121.23	16164	18589	20205	3584	4122	4480
		697.07						
6×14	NO.1	74.25	17863	20542	22329	4207	4838	5259
	S.S.	167.06	21984	25282	27480	4207	4838	5259
		1127.67						
6×16	NO.1	85.25	23189	26668	28987	4831	5556	6039
	S.S.	220.23	28541	32822	35676	4831	5556	6039
		1706.78						
6×18	NO.1	96.75	29163	33538	36454	5454	6272	6818
	S.S.	280.73	35884	41278	44867	5454	6272	6818
		2456.38						

* ALLOWABLE STRESSES - 4×

DF #1 f_b = 1500 psi / f_v = 95 psi
DF #2 f_b = 1250 psi / f_v = 95 psi

$C_f = \left[\frac{12}{d}\right]^{1/9}$ WHEN $d > 12"$

- 6×10 TO 6×18:

DF #1 f_b = 1300 psi / f_v = 85 psi
DF S.S. f_b = 1600 psi / f_v = 85 psi
(SELECT STRUCTURAL)

- 6×6 & 6×8:

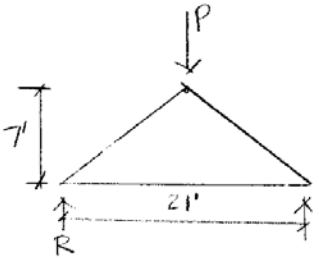
DF #1 f_b = 1200 psi / f_v = 85 psi
DF S.S f_b = 1500 psi / f_v = 85 psi

MKM & ASSOCIATES CIVIL & STRUCTURAL ENGINEERS
441 COLLEGE AVE. • SANTA ROSA, CA 95401 • (707) 578-8185

Cad		87242
4/27/87		3 OF 10

Roof framing

Roof truss over garage



$P = (14+16)(19.5/2)^2(9/2)(2) = 2190$

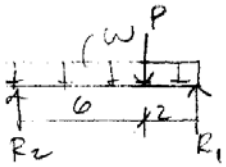
$R = 2190/2 = 1095$

Tie force: $F_t = 1095 \times 21/2 \times \frac{1}{7} = 1643$

16d nails

$\frac{1643}{82 \times 1.25} = 16$ - 16d nails

Beam over wall



$w = (14+16)(18) = 540$

$P = (14+16)(12.5)^2(9/8)(2) = 1440$

$R_1 = 540 \times 8/2 + 1440 \times 6/8 = 3240$

$V_{@d} = 3240 - 540 = 2700$

$R_2 = 540 \times 8/2 + 1440 \times 2/8 = 2520$

$M = 2520(1.7) - 540(1.7^2/2) = 5880$

use 4x12 DF #2

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△ rev. 4/27/87

Roof framing

Beams @ living / family rooms span = 10.5'

w = (14+16)(12.5×2) = 750

M = 750 × 10.5²/8 = 10336

V = 750 × 10.5/2 = 3937

use 6×12 DF #1 (1)

Beam @ living room span = 15'

w = (14+16)(13/2) = 195

M = 195 × 15²/8 = 5484

V = 195 × 15/2 = 1463

use 6×12 DF #1

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GRADE BEAM DESIGN

$f_s = 20000$ psi $f_c = 0.45(2000) = 900$ psi

- USE 8"x16" GRADE BEAM W/ 2-#4 TOP & BOTTOM

$p = \frac{2(0.20)}{8 \times 13} = 0.0038 < 200/f_y$ ∴ DESIGN W/ $0.75(A_s) = 0.75(.40) = 0.30$

$T = C = 0.30(20000) = 900(8)(kd/2)$ $kd = 1.67$

$M = A_s f_s (d - kd/3) = 0.30(20000)(13 - 1.67/3)(1/12) = 6222$ #

- 12' SPACING $w = \frac{9M}{l^2} = \frac{9(6222)}{12^2} = 389$ plf $- 133 =$ **256 plf**

  $P = (389)(12) = 4668$# $Vcd = 389(12/2 - 13/12) = 1913$#

- 10' SPACING $w = \frac{9(6222)}{10^2} = 500$ plf $- 133 =$ **427 plf**

  $P = (500)(10) = 5000$# $Vcd = 500(10/2 - 13/12) = 2193$#

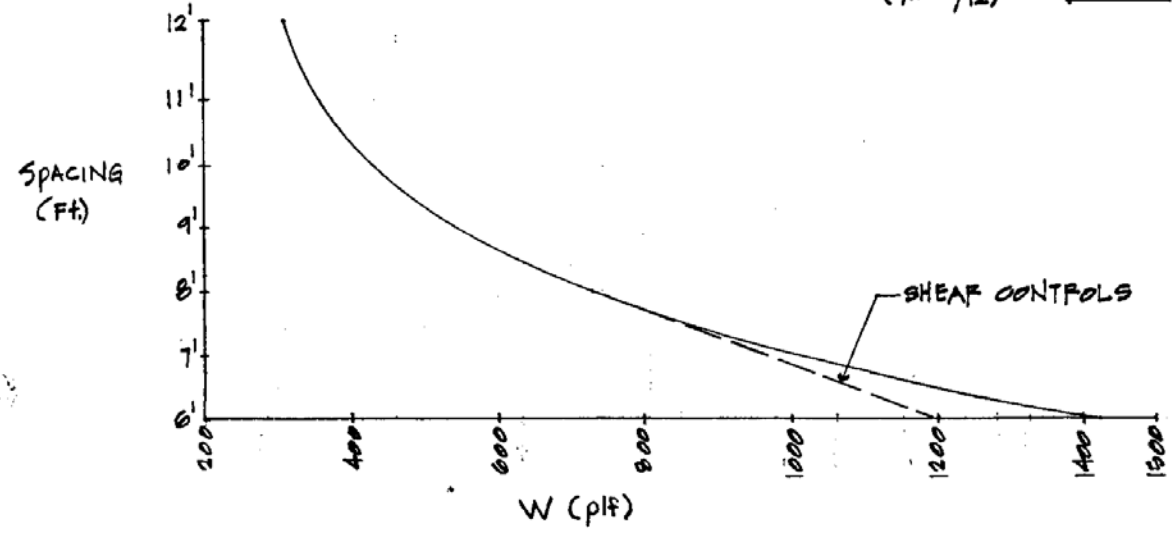
- 8' SPACING $w = \frac{9(6222)}{8^2} = 875$ plf $- 133 =$ **742 plf**

  $P = (875)(8) = 7000$# $Vcd = 875(8/2 - 13/12) = 2552$#

- 6' SPACING $w = \frac{9(6222)}{6^2} = 1556$ plf $- 133 =$ **1423 plf**

  $P = (1556)(6) = 9336$# $Vcd = 1556(6/2 - 13/12) = 2982$#

$V_{MAX} = 1.1\sqrt{2000}\,(1/2)(8 \times 13) = 2548\# < 2982\#$ $W_{MAX} = \frac{2548}{(6/2 - 13/12)} - 133 =$ **1196 plf**



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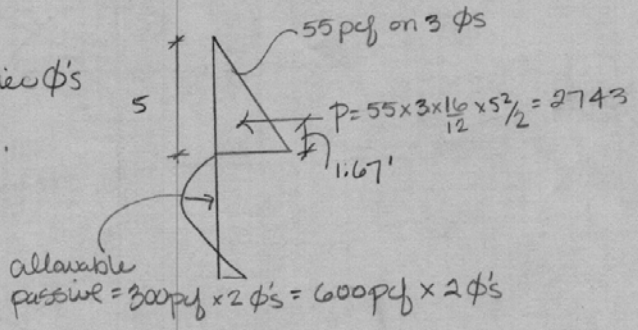
Foundation

Design creep forces on piers

- use 55pcf on 3 pier ϕ's
- use 300pcf passive on 2 pier ϕ's
- 16"ϕ x 15'-0" deep piers typ.
- w/ 5'-0" deep creep zone



use 14" ϕ pier
w/ 4 - #7 bars

from CRSI Manual
$M_u = 53 k\text{-}f \times \frac{2000}{4000} = 26.5 k\text{-}f$

$M_u = 1.7(2743)(1.67 + \frac{5.65}{3}) = 16{,}570 \#$

$V_u = 1.7(2743) = 4663\#$

$\phi V_c/2 = 0.85\sqrt{2000}\,(\pi(8)^2)\frac{1}{2} = 3821\#$

use min. stirrups

#3 @ 7" oc

$A_v = \frac{50(b_w)s}{f_y} = \frac{50(16(2/3))(7)}{40{,}000} = 0.09\ in^2$

```
======== POLE PROGRAM ========
THIS PROGRAM SOLVES FOR THE
REQUIRED DEPTH OF A LATERALLY
LOADED POLE.

LATERAL SOIL PRESSURE= 600 PCF
  THE ALLOWABLE SOIL PRESSURE
  IS INCREASED FOR EACH FOOT OF
  DEPTH TO MAX. OF 12 TIMES THE
  DESIGNATED VALUE.

DIAMETER = 1.33 FT.
APPLIED FORCE=  2743 LBS.
HEIGHT TO POINT LOAD=  1.67 FT.

FOOTING IS NOT CONSTRAINED.

REQUIRED DEPTH=  5.65 FT.
```

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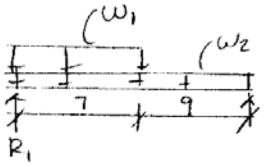
Foundation

joists supporting roof bearing wall

$w_1 = (14+16)(16.5) + 8(10) = 575$

$w_2 = 69$



$R_1 = 575(7)\frac{(12.5)}{16} + 69(16/2) = 36960$

3144 552

$V_{ed} = 3696 - 644 = 3052$

$A_z = \frac{1.5(3052)}{95 \times 1.25} = 38.6$

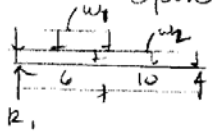
$M = 3696(5.7) - (575+69)(5.7^2/2) = 10,605$

use 4x12 DF #1

$S_x = \frac{10605 \times 12}{1450 \times 1.25} = 70.2$

or use 3-2x12

joists supporting roof bearing wall @ kitchen span = 16'



$w_1 = (14+16)(8) + 8(10) = 320$

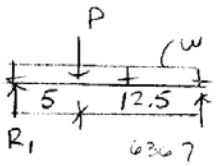
$w_2 = 69$

$R_1 = 320(6)\frac{(13)}{16} + 69(16/2) = 2112$

$M = 2112(5.4) - (320+69)(5.4^2/2) = 5733$

use 2-2x12

typ joists w/ roof bearing



$w = 69$

$P = \left((14+16)(10) + 8(10)\right)\frac{16}{12} = 747$

$R_1 = 69(17.5/2) + 747\frac{(12.5)}{17.5} = 1137$

$A_z = \frac{1.5(1137-69)}{95 \times 1.25} = 134$

6367 1052 443

$M = 1137(5.16) - 69(5.16^2/2) - 747(0.6) = 4836$

$S_x = \frac{4836 \times 12}{1450 \times 1.25} = 32$

use 7x12 @ 12" o.c.

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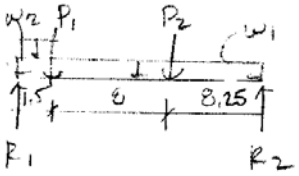
Foundation

joists supporting beam of hall



$w_1 = 70$

$w_2 = 575$ ← see joists supp roof beam/wall calc'

$P_1 = 2700$ } see beam calc'.
$P_2 = 3240$ }

$R_1 = 70 \times 17.75/2 + 575(1.5)\left(\frac{17}{17.75}\right) + 2700\left(\frac{16.25}{17.75}\right) + 3240\left(\frac{8.25}{17.75}\right) = 5424$

621 + 826 + 2471 + 1506

$R_2 = 70 \times 17.75/2 + 575 \times 1.5^2/2 \times \frac{1}{17.75} + 2700\left(\frac{1.5}{17.75}\right) + 3240\left(\frac{9.5}{17.75}\right) = 2619$

621 + 36 + 228 + 1734

$M = 2619(8.25) - 70(8.25^2/2) = 19224$

SY $\frac{19224 \times 12}{1450 \times 1.25} = 127$

AT $\frac{1.5(5424 - 645)}{95 \times 1.25} = 60$

use 4-2x12 DF #2

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Foundation framing

joists supporting roof bearing wall (@ master bedroom) span = 16'

$w = (14+16)(9/2) + 8(10) + (12+40)16/12 = 285$

135 80 70

$M = 285 \times 16^2/8 = 9120$

$V = 285 \times 16/2 = 2280$

$S \geq \frac{9120 \times 12}{1250 \times 1.25} = 70$

$A_v \geq \frac{1.5(2280-285)}{95 \times 1.25} = 25$ use 3-2x12

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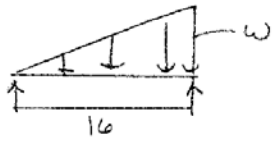
floor framing

skewed beam:

$w = (12+40)(16/2) = 416$

$M = 0.128\,(416)(16/2)(16) = 6815$

$V = 416 \times 16/2 \times 9/8 = 2219$



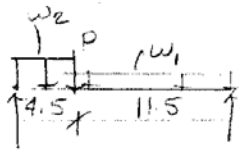
use 4x12 DF#2

supporting beam:

$w_1 = (12+40)(16/12) = 70$

$P = 2219$

$w_2 = (12+40)\,8/12 + (12+40)(11.5/2) = 334$



$R_1 = 70(11.5^2/2)\frac{1}{16} + 2219(11.5/16) + 334\,(4.5)\frac{(13.75)}{16} = 3176$

289 + 1595 + 1292

$M = 3176\,(4.5) - 334\,(4.5^2/2) = 10{,}910$

use 6x12 DF#1

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Garage Floor Framing.

• joists – span 11' (assume 2000# load spread to 2 joists)

$M_{max} = 1000(11/4) + \frac{45(11)^2}{8} = 3431^{1-\#}$

$V_{max} = 1000\ \underset{(871)}{\frac{11 - 5/2 - 1}{11}} + \underset{(202)}{45(\frac{11}{2} - 1)} = 1074^{\#}$

$S_{req} = \frac{3431(12)}{1450} = 28.4 < 31.6$.

$A_{req} = \frac{1.5(1074)}{95} = 16.95 \doteq 16.88$

use 2x12 DF#2 @ 2" o.c.
3/4" CDX T&G plywood.

• girder – span $7\frac{1}{2}'$

$M_{conc.} = 2000\frac{7.5}{4} + \frac{45(11)(7)^2}{8} = 6782^{1-\#}$ ← govern.

$M_{unif.} = \frac{95(11)(7)^2}{8} = 6401^{1-\#}$

$V_{conc.} = 2000\underset{3333}{\left(\frac{3.75 - 10/12 - 7/12}{3.75}\right)} + \underset{1444}{45(11)(3.75 - 10/12)} = 2777^{\#}$

$V_{unif} = 95(11)(3.75 - 10/12) = 3048^{\#}$ ← govern.

use 6x12 DF#1

$P_{max} = 95(11)7.5 = 7838^{\#}$.

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Foundation

grid (A)

$w = (12+40)(16/2) + 8(10) + (14+16)(8/2) = 616$ plf
416, 80, 120

space piers @ 8'oc

grid (B) (w/roof bearing)

$w = (12+40)(33.75/2) + 8(10) + (14+16)(34/2) = 1467$ plf — space piers @ 4'-6"oc
877, 80, 510

$V_{ed} = (1467+133)(4.5/2 - 13/12) = 1866 < 2542$

(w/ floor only)

$w = 884 + 80 = 964$ plf — space piers @ 7'-0"oc

grid (C)

$w = (12+40)(18/2) + 8(10) + (14+16)(12/2) = 728$ — space piers @ 8'oc
468, 80, 180

grids (1) + (3)

$w = (14+16)(8/2) + 8(10) + (12+40)(12/2) = 512$ — space piers @ 9'oc
120, 80, 312

girder @ front — span = 14.5'

$w = (12+40)(20/2) = 520$ — $M = 520 \times 14.5^2/8 = 13{,}666$

$V = 520 \times 14.5/2 = 3770$ — $V_{ed} = 3770 - 520 = 3250$

$\Delta_{LL} = \frac{5(400)(14.5^4)(1728)}{384(1.7\times10^6) I} \le \ell/360$ — $I \geq 484$ — use 6x12 DF#SS

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Foundation

grid ②

W= (14+16)(10/2) + 8(10) = 230 space plus @ 12'oc

garage wall

W= (14+16)(11/2) + 8(10) = 245 space plus @ 12'oc

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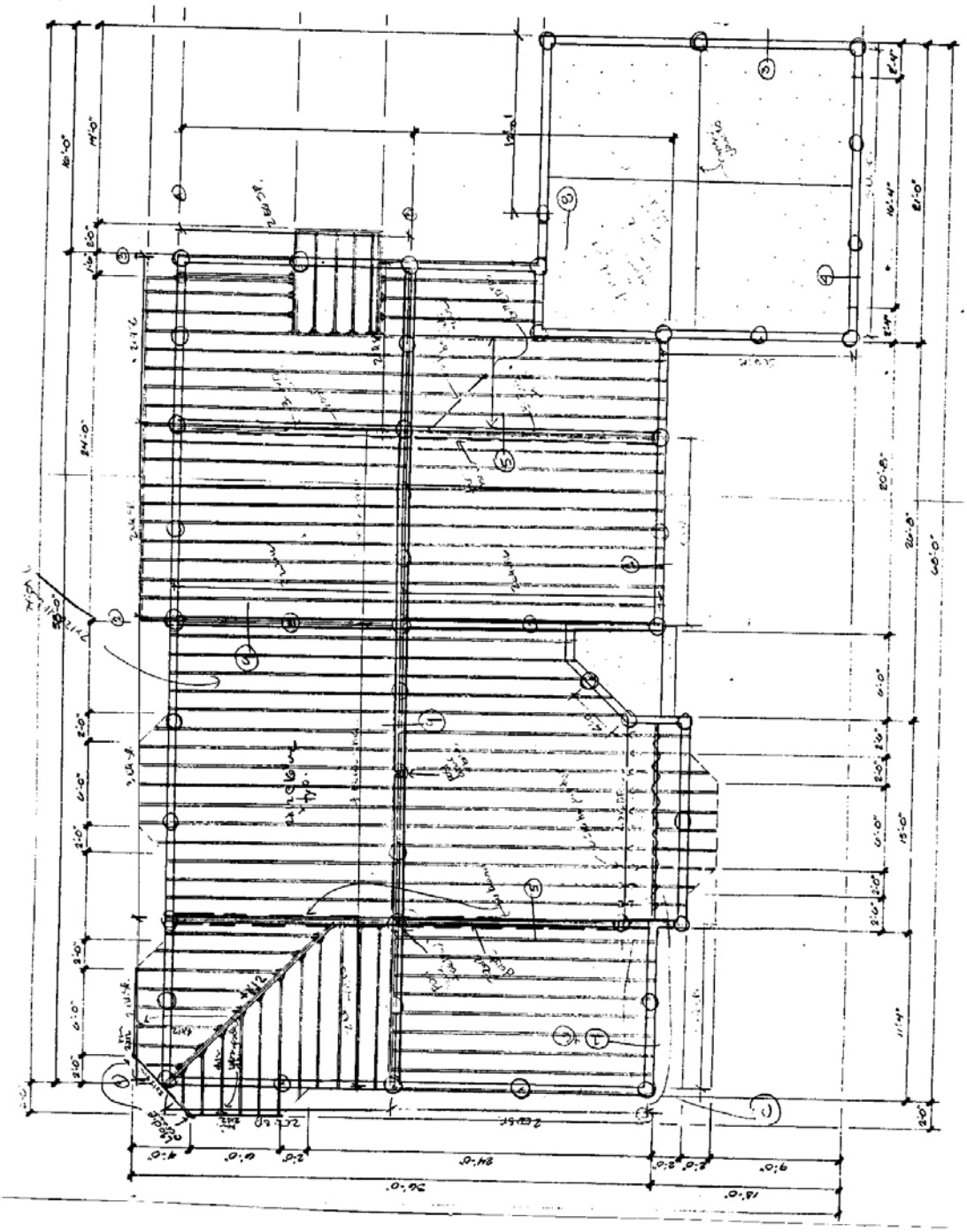

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Lateral Review

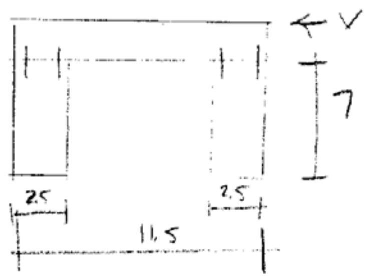
Bldg. conforms w/ UBC section 2517(g) 3 except where noted

Shearframe @ front

$V = 17.7 \times (7 \times 10) = 1239$

$v = \frac{1239}{5} = 248$

use 3/8 ply w/ 8d@4



Ties $T_t = 248 \times 7 = 1736$

use ST6224

Uplift $M_{OT} = 1239 \times 8 = 9912$

$M_R = 2/3\,(14\,(4)(11.5^2/2)) = 2468$ uplift $= \frac{9912 - 2468}{11.5} = 647$

uplift resisted by adjacent walls