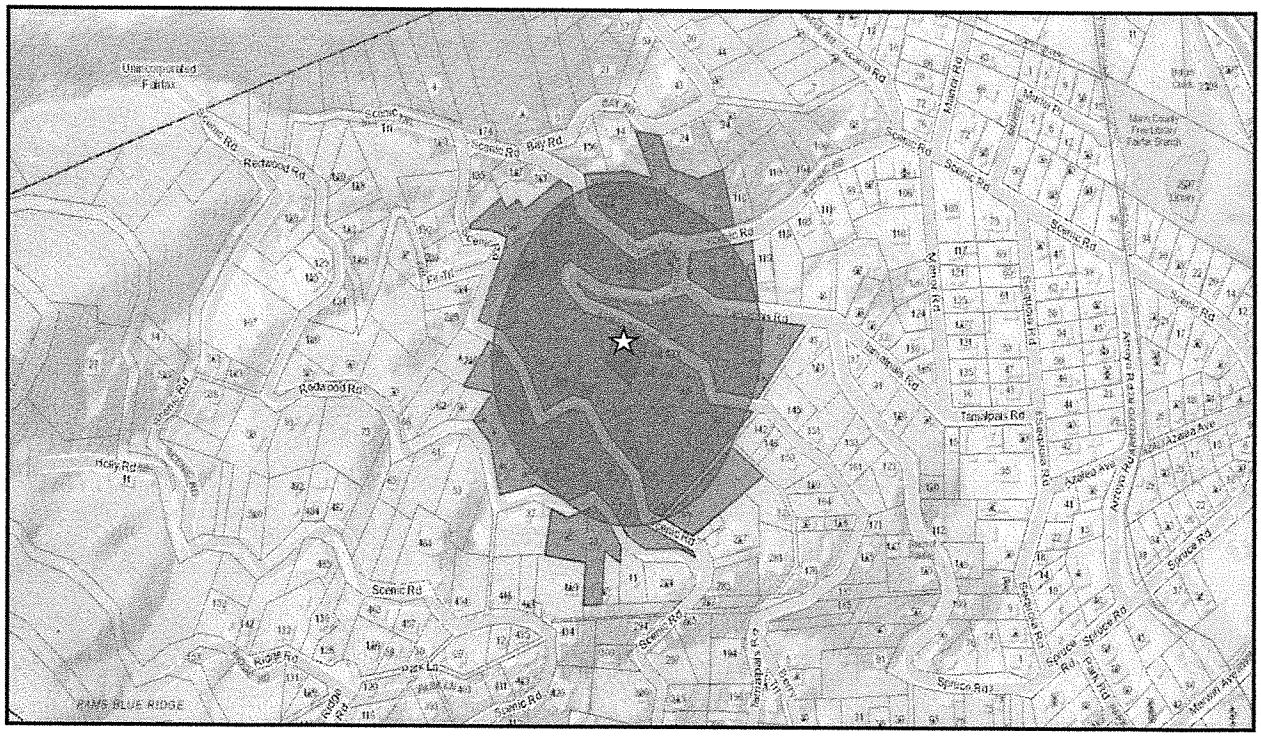
TOWN OF FAIRFAX
STAFF REPORT
Department of Planning and Building Services

TO:	Fairfax Planning Commission
DATE:	May 19, 2016
FROM:	Jim Moore, Director of Planning and Building Services Linda Neal, Principal Planner
LOCATION:	118 Tamalpais Road; Assessor's Parcel No. 001-121-61
ZONING:	Residential RS-6 Zone
PROJECT:	Construction of front access stairway to residence
ACTION:	Side-yard Setback Variance and Encroachment Permit; Application # 16-20
APPLICANT:	Nick Rasic
OWNER:	Federal National Mortgage Association
CEQA STATUS:	Categorically Exempt, § 15302 and 15305(a)



118 TAMALPAIS ROAD

AGENDA ITEM # 6

BACKGROUND

The site is steeply sloped up from Tamalpais Road at an average rate of 63% and is developed with a single-family residence that was constructed in 1958.

A search of the Town's original tax records indicates that the house at 120 Tamalpais Road was constructed prior to the Town's incorporation in 1931 and the house at 118 Tamalpais Road was constructed as a guest house for the residence at 120 Tamalpais Road. In 1982, the main house at 120 Tamalpais Road was rendered uninhabitable by a landslide that filled the structure with mud. Since the construction of 118 Tamalpais in 1958, both residences used the same access stairway which was destroyed by another landslide in 2011. While the Town repaired the landslide to maintain access along Tamalpais Road, the property owners did not repair the shared access stairway.

To achieve access to 118 Tamalpais Road, the persons residing at this address have been using access stairs to the house at 124 Tamalpais Road, and following a path across the uninhabitable property they own at 120 Tamalpais Road,. This access route is 190 feet long, traverses a planter area for 124 Tamalpais Road, with various steep and treacherous stairways and paths that do not meet code requirements for access, and terminates at stairs leading up to the front door of 118 Tamalpais Road. Access to 118 Tamalpais Road has occurred over this route since 2011.

In 1989 the property owner of 120 Tamalpais Road was informed in a Residential Resale Inspection Report prepared by the Town's Planning and Building Department that the structure on the property was uninhabitable and needed to be demolished. The persons residing at 118 Tamalpais Road purchased the damaged residence at 120 Tamalpais Road in 1991.

DISCUSSION

The current owner of the property at 118 Tamalpais Road is requesting a side-yard setback variance and an encroachment permit to construct new access stairs to the structure located on the property. Construction of a new access stairway to 118 Tamalpais Road, where the owner of 120 Tamalpais Road is currently residing, is a safety issue for persons residing in the residence and visitors to the site. In addition, the current access conditions pose a safety issue for emergency response personnel who, being unable to climb the steep slope up from Tamalpais road without climbing equipment, would have to take the same treacherous and circuitous route to the house. The route can be described as follows:

1) Climb 40 feet up from the street on a very steep, narrow concrete stairway that is not built to building code standards to the house at 124 Tamalpais Road; 2) Cross in front of 124 Tamalpais on a narrow retaining wall where the path in some places is less than 1 foot wide; 3) cross in front of the condemned house at 120 Tamalpais Road on a

small section of dirt path and continue between redwood trees for 49 feet; and 4) proceed 90 feet down steep, narrow steps that are not to code, across a small section of dirt path and up more stairs to the front stairs to 118 Tamalpais Road (The total distance of the current access route is roughly 170 feet over treacherous terrain that includes landscaping stairs, sloping dirt paths, the top of a retaining wall, etc.).

The applicant is requesting the following discretionary permits to build a new access stairway to 118 Tamalpais Road:

A Side-yard Setback Variance

Town Code § 17.080.070(B)(2) requires that properties with over a 10% slope have a minimum side-yard setback of 5 feet and a combined side yard setback of 20 feet. The stairs have been designed to provide the shortest access path to the house while also meeting building code requirements for stairway rise, run and landing dimensions while avoiding mature trees on the site, if possible, and minimizing the disruption to this steep, potentially unstable slope.

Building in the chosen location for the stairway would require the removal of 1 (one) maple tree (T-1) and the protection of two additional trees (T-2 and T-3) during and after construction. An arborist report (Attachment B) indicates that the uppermost Maple, identified as Tree T-2, is in fair health and has fair structural integrity. The report indicates that while Tree T-2 can be removed without compromising the stability of the slope, the applicant intends to retain the tree by implementing protection measures during construction. The report lists the health of the maple tree slated for removal (T-1) as fair and describes the structural integrity as poor. The report indicates that the third, larger maple tree (T-3) in the vicinity of the proposed stairway, is in fair to good health with fair to good structural integrity. Tree T-3 does not have to be removed to construct the stairway. The arborist report sets forth conditions that would be implemented prior to and during construction to ensure that Trees T-2 and T-3 remain healthy with project implementation. These conditions have been included as conditions of project approval in Resolution No. 16-14 attached.

Relocating the stairway 5 feet from the southeastern side property line, outside of the required side setback could compromise the health of the maple tree that is considered to be in fair to good shape. Locating the stairway anywhere else along the very steep property frontage would require additional excavation, a taller retaining wall, and further site disturbance. Therefore, Staff believes that the requested side-yard setback variance is warranted.

Retaining Wall Height Variance and an Encroachment Permit

The public roads in Fairfax are rarely built to the entire width of the right-of-way easements due to the steep and varied topography of the hillsides. As a result, property lines are located away from the edge of the paved roadbeds. At 118 Tamalpais Road, the project surveyor has determined that the front property line starts

7 to 8 feet up the hillside from the edge of the paved roadbed.

The Town Code allows private property owners to obtain an Encroachment Permit from the Planning Commission to use the area between the roadbed and private property lines if the area is not being used by the general public for public improvements and as long as there is no suitable location on their own property for the improvement [Town Code § 12.32.010(A) and (B)].

The Town Code limits the heights of retaining walls and fences along the property frontage to 4 feet. In order to support the excavated hillside and an access stairway to the house at 118 Tamalpais Road, a retaining wall ranging in height from 8 to 10 feet is required, with the first flight of stairs and landing located within the Tamalpais Road right-of-way. The structures would encroach 6-feet into the right-of-way and maintain a 2 foot setback from the edge of the paved street.

The applicant has submitted a geotechnical report prepared by Geoengineering, Inc., that indicates that a retaining wall engineered and designed to support the cut hillside and accommodate the new stairway requires piers drilled to a depth of 9 feet. (Attachment C). The retaining wall has been designed with piers that would be 12 ½ feet deep exceeding the depth recommended by the geotechnical engineer (Page 5 of the Plans, Section A).

Relocating the wall and stairway further to the west, where the site is steeper, would result in a taller retaining wall, increased excavation and more site disturbance with the stairway and/or access path having to cross the front of the site to the existing front door. Therefore, staff believes that the requested variance for retaining wall height deviation and an encroachment permit are warranted.

RECOMMENDATION

1. Open the public hearing and take testimony.

2. Close the public hearing.

3. Move to approve Application # 16-20 by adopting Resolution #. 16-14 setting forth the findings and conditions for approval of the project.

ATTACHMENTS

Attachment A – Resolution No. 16-14
Attachment B – Urban Forestry Associates, Inc. report
Attachment C – Geoengineering Inc., report
Attachment D – Letter and attachments from Attorney Larry Bragman who is representing Mr. Walter Bess

RESOLUTION NO. 16-14

A Resolution of the Fairfax Planning Commission Approving a Retaining Wall and Entry Stairway Encroachment Permit for the Property at 118 Tamalpais Road

WHEREAS, the Town of Fairfax has received an application to construct a retaining wall and front stairway to a house at 118 Tamalpais Road that has been without an access stairway since the original access stairway was destroyed in a 2011 landslide event; and

WHEREAS, based on the plans and other documentary evidence in the record, the Planning Commission has determined that the applicant has met the burden of proof required to support the findings necessary to approve the project with certain conditions of approval as listed below; and

WHEREAS, the Commission has made the following findings:

The site slopes up at over a 90° angle from Tamalpais Road along most of the property frontage, and it is the steep slope of the site that is the special circumstance applicable to the property where the strict application of the 5 foot, minimum side-yard setback – if enforced – would deprive the applicants of the ability to construct an access stairway while also minimizing the disturbance to the site: a privilege enjoyed by other property owners of hillside lots in the Residential Single-family RS-6 Zone District. Therefore, the location chosen for the stairway, at the southeastern corner of the property where the slope is slightly more gradual will minimize the number of the trees and amount of excavation necessary to restore access to the structure.

Many residences in the hillside areas have access stairs and/or entry landings/decks within either the minimum 5 foot side-yard setback or the combined 20-foot side yard setback. Originally the stairway destroyed by a 2011 slide was a shared stairway for both 118 Tamalpais Road and 120 Tamalpais Road and it was located within the minimum side setback for 120 Tamalpais Road. The new stairway will intersect with a path that leads to 120 Tamalpais Road so the new stairway will still provide access to both residences but will be located within the side-yard setback for 118 Tamalpais Road instead of 120 Tamalpais Road. The strict application of the minimum, 5-foot, side-yard setback regulations could negatively impact a mature maple tree on the site that could otherwise be saved which will result in excessive or unreasonable hardship for the owner.

The granting of the variance will be beneficial to the public welfare by providing a safe means of direct access to the house at 118 Tamalpais Road for emergency response personnel and anyone else having to access the structure including residents/tenants.

The variance will not constitute a grant of special privilege, is consistent with the limitations upon other properties in the vicinity and under identical zone classification, and is consistent with the objectives of this title.

The plans show that the stairway and wall improvements will be located within a portion of the Tamalpais Road right-of-way not being used by the general public in accordance with Town Code § 12.32.020.

2. Upon compliance with the conditions listed below the improvements can be constructed without having negative impacts on the neighboring properties, general public or on vehicles or pedestrians using Tamalpais Road.

3. The proposed retaining wall and stairway will not change the single-family residential character of the neighborhood.

4. The deck is similar to other decks found throughout the neighborhood and it will maintain the required setbacks from the property lines. Therefore, the approval of the use permit shall not constitute a grant of special privilege and shall not contravene the doctrines of equity and equal treatment.

5. The engineered stairway and retaining wall drawings are based on the findings contained in the arborist report by Urban Forestry, Inc. and the site geotechnical evaluation by Geoengineering, Inc. The design of the project, based on these reports by technical experts in their fields, ensure development of the property shall not cause excessive or unreasonable detriment to adjoining properties or premises, or cause adverse physical or economic effects thereto, or create undue or excessive burdens in the use and enjoyment thereof, or any or all of which effects are substantially beyond that which might occur without approval or issuance of the use permit.

WHEREAS, the Commission has approved the project subject to the applicant's compliance with the following conditions:

Recommended Conditions of Approval

1. The surveyor shall mark the side property line in the presence of the Building Official prior to the start of construction.

2. The project arborist shall work with the engineer and contractor to ensure the integrity of maple tree T-3, as depicted on Page 4 of the arborist report by Urban Forestry Associated, is not compromised. Any roots encountered over 1 inch in diameter should be cut cleanly to reduce the chances of disease/decay entering the roots. Hand excavation to locate and cut roots shall be performed prior to drilling the pier closest to tree T-3 and the hand excavation and pier drilling shall be done in the presence of Ray Moritz, project Arborist and Robert Settgast, project Geotechnical Engineer. After construction of the project and prior to the project final inspection, both the project arborist and the project geotechnical engineer shall provide a letter to the Town of Fairfax indicating that their recommendations were complied with and the construction occurred in compliance with their specifications.

3. The owner shall complete the Revocable Encroachment Permit and submit it to the Town for review and approval. Once approved, the owners shall sign and notarize the document and return it to the Town for recording.

4. The applicant shall comply with any conditions of the Fairfax Building Official, Public Works Director/Manager, Town Engineer, Ross Valley Fire Department, Marin Municipal Water District and Ross Valley Sanitary District.

5. This approval is limited to the development illustrated on the following plan pages: Front and Side Elevations by American Land Surveying, Inc. s prepared by

6. Prior to issuance of a building permit, the applicant or his assigns shall submit a bond, cash deposit or letter of credit to the Town in an amount that will cover the cost of grading, weatherization and repair of possible roadway damage. The applicant shall submit contractor's estimates for any grading, site weatherization and improvement plans for approval by the Public Works Director. Upon approval of the contract costs, the applicant shall submit a cash deposit, letter of credit or bond equaling 100% of the estimated construction costs.

7. Prior to issuance of the building permit, the applicant shall provide the Town with a video of the access streets to be used during construction. The Public Works Director shall make a decision prior to the project final, regarding street resurfacing and repair that may be required as a result of damage and wear and tear from project vehicles.

8. Prior to issuance of the building permit, the applicant shall submit a Construction Management Plan subject to review and approval by the Building Official/Public Works Manager. The plan shall include:

- Construction delivery routes approved by the Department of Public Works;
- Construction schedule (deliveries, worker hours, etc.);
- Notification to area residents;
- Emergency access routes; and
- Parking plan to minimize the impacts of contractor/employee vehicles and construction equipment on neighborhood parking

9. During the construction process the following shall be required:

a. The project engineer shall be on-site during the grading process and shall submit written certification to the Town staff that the grading has been completed as designed and recommended prior to installation of retaining forms.

b. The project engineer shall field check the grade of the driveway and provide written certification to the Town staff that the work to this point has been completed in conformance with the approved building plans and recommendations.

c. All construction related vehicles including equipment delivery, cement trucks and construction materials shall be situated off the travel lane of the adjacent public right(s)-of-way at all times. This condition may be waived by the building official on a case by case basis with prior notification from the contractor.

d. Additionally, any proposed temporary closure of a public right-of-way shall require prior approval by the Fairfax Police Department and any necessary traffic control, signage or public notification shall be the responsibility of the applicant or his/her assigns. Any violation of this provision will result in a stop work order being placed on the property and issuance of a citation.

10. Prior to the project final inspection the following shall be completed:

a. The project engineer shall field check the completed project and submit written certification to Town Staff stating that the retaining, grading and drainage elements have been installed in conformance with the approved building plans.

b. The Building Official shall field check the completed project to verify that the work has been installed as per the approved plan.

c. The Planning Department shall field check the completed project to verify that all conditions of the Planning Commission have been complied with including installation of landscaping and irrigation prior to the final inspection.

11. Excavation shall not occur between October 1st and April 1st of any year. The Town Engineer has the authority to waive this condition depending upon the weather.

12. The applicant shall comply with the Town Noise Ordinance Chapter 8.16 of the Fairfax Town Code.

13. Any changes, modifications, additions or alterations made to the approved set of plans will require approval by the Town Engineer and the Director of Planning and Building Services. Any construction based on project plans that have been altered without the benefit of an approved modification will result in the job being immediately stopped and red tagged.

14. Any modification of these Conditions of Approval must be approved by the Fairfax Planning Commission.

15. The applicant and its heirs, successors, and assigns shall, at its sole cost and expense, defend with counsel selected by the Town, indemnify, protect, release, and hold harmless the Town of Fairfax and any agency or instrumentality thereof, including its agents, officers, commissions, and employees (the "Indemnitees") from any and all claims, actions, or proceedings arising out of or in any way relating to the processing and/or approval of the project as described herein, the purpose of which is to attack, set aside, void, or annul the approval of the project, and/or any environmental determination that accompanies it, by the Planning Commission, Town Council, Planning Director, Design Review Board or any other department or agency of the Town. This indemnification shall include, but not be limited to, suits, damages, judgments, costs, expenses, liens, levies, attorney fees or expert witness fees that may be asserted or incurred by any person or entity, including the applicant, third parties and the Indemnitees, arising out of or in connection with the approval of this project, whether or not there is concurrent, passive, or active negligence on the part of the Indemnitees. Nothing

herein shall prohibit the Town from participating in the defense of any claim, action, or proceeding. The parties shall use best efforts, acting in good faith, to select mutually agreeable defense counsel.

16. Prior to issuance of the building permit for the project the applicant shall sign, notarize and return the "Revocable Encroachment" agreement to the Town for recordation at the Marin County Recorder's Office.

OTHER AGENCY CONDITIONS

Marin Municipal Water District

1. The District owns and maintains water facilities within the Pine Drive right-of-way. No work shall encroach upon or encumber access to District facilities. The applicant must have District facilities located and marked prior to construction to avoid potential conflicts.

2. All indoor and outdoor requirements of District Code Title 13 – Water Conservation, is a condition of water service. Indoor plumbing fixtures must meet specific efficiency requirements. Landscaping plans shall be submitted and be reviewed and approved by the District. The Code requires submittal of a landscape plan, an irrigation plan and a grading plans.

3. Should backflow protection be required, it shall be installed, inspected and approved by the District prior to the project final inspection.

4. On November 3, 2015, the District adopted Ordinance 429 (effective after January 3, 2016) requiring installation of gray water recycling systems for all projects undergoing substantial remodel that necessitates an enlarged water service.

NOW, THEREFORE BE IT RESOLVED, the Planning Commission of the Town of Fairfax hereby finds and determines as follows:

The approval of the Use Permit, Retaining Wall Height Variance and Encroachment Permit for construction of the entry stairway and associated retaining wall at 118 Tamalpais Road can be made without causing significant impacts on neighboring residences and the environment and is in compliance with the 2010 to 2013 Fairfax General Plan and Fairfax Zoning Ordinance.

The foregoing resolution was adopted at a regular meeting of the Planning Commission held in said Town, on May 19, 2016 by the following vote:

AYES:
NOES:
ABSTAIN:

_____
Chair, Laura Kehrlein

Attest:

_____

Jim Moore, Director of Planning and Building Services

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Urban Forestry Associates, Inc.

9/3/15

Fannie Mae
Attn: Nick Rasic
Via email:
reinvest@rasic.us

URBAN FORESTRY ASSOCIATES, INC.
8 Willow Street San Rafael, CA 94901
(415) 454-4212 info@urbanforestryassociates.com

ARBORIST REPORT

118 Tamalpais Rd. Fairfax, 94930

PURPOSE

Urban Forestry Associates (UFA) was hired to assess two big leaf maple trees with the planned demolition of an existing stairway and installation of a new stairway located at 120 Tamalpais Road in Fairfax. Conclusions in regard to planned construction are based on the development plans dated 7/28/15.

SCOPE OF WORK AND LIMITATIONS

This report is not a geotechnical assessment. Urban Forestry Associates has no personal or monetary interest in the outcome of this investigation. All observations regarding trees in this report were made by UFA, independently, based on our education and experience. All determinations of health condition, structural condition, or hazard potential of a tree or trees at issue are based on our best professional judgment.

This report is strictly an urban forestry and arboricultural land use report. All opinions and conclusions are based on an urban forestry and arboricultural perspective of the effect of geology and soils on trees and other vegetation and the role of roots in erosion control, soil cohesion, anchoring of the soul mantle and soil dewatering. The identification of soil and geologic conditions at the subject property are based our experience and inspection of the site and are essential to the understanding of the e3nvironmental role of trees at the site. This report shall not be assumed to be a structural, civil or geotechnical engineering report. If you have engineering, soil science or geotechnical concerns we recommend that you consult the appropriate licensed geotechnical engineering specialist.

GENERAL OBSERVATIONS

The subject trees are located on a heavily vegetated steep slope (approx. 62 degree). There is a mix of native tree species; big leaf maple (*Acer macrophyllum*), coast redwood (*Sequoia sempervirens*), California bay laurel (*Umbellularia californica*), and California buckeye (*Aesculus californica*). The two subject maple trees are reportedly located on the property of 118 Tamalpais although property lines were not clearly defined. The existing stairway is degraded and not in use at this time.

OBSERVATIONS

Tree 1

Species	big leaf maple (*Acer macrophyllum*)
Size	14.9" DBH
Location	-Within the footprint of the planned stairway improvements. -12.5 feet upslope from T-1. -8' horizontal distance from the nearest coast redwood (*Sequoia semperivrens*) tree. -6' from the base of the main stem of the T-3, a California bay laurel. 5.5' from its' root crown.
Condition	Fair health and structure. It is beginning to enter early dormancy. Adjacent bay and redwood canopies limit its canopy, though it has fairly good balance upslope. There is a rope improperly connected to T-1, T-2, and T-3. It was presumably installed to provide some degree of structural support for T-2 though the rope is relatively slack and not providing much support. Soil probing found no significant voids in the soil, though adjacent hardscape limited exploration. There is a group of second growth redwood stems across and upslope from the subject tree, which appear to have originated from a sizeable mother stump.

ATTACHMENT B

Conclusions The planned stairway improvement plan necessitates the removal of this tree. Due to its close proximity to adjacent trees, the species of adjacent trees, and the nature of tree root systems, the removal of this tree is unlikely to have a significant impact on slope stability. T-1 is located within the structural root zone[1] of T-3 (to be retained) indicating that many large roots from T-3 are intermingled on the slope and will continue to contribute to the slope stability if T-1 is removed. As a species, coast redwood is well known for its' extensive, fibrous root system, dewatering soils, contributing to erosion control, soil stability and soil cohesion. The subject redwood roots are likely occupying much of the same slope immediately as the subject maple trees.

General Conclusion This tree could be removed for stairway installation without concern that its removal would result in slope instability.

Tree 2

Species big leaf maple (*Acer macrophyllum*)
Size 9.9" DBH
Location -Within the footprint of the planned stairway improvements.
-Above the cut bank at 120 Tamalpais Rd. Its canopy extends over the road.

Condition Fair health, poor structure. It is heavily suppressed under canopies of adjacent trees, and as a result has a relatively stunted canopy and severe lean over the road. It is currently beginning to go in to dormancy, evident from leaf drop and change in leaf color. It has poor structure, with a severe phototrophic lean (in response to sunlight limitations) over Tamalpais Road. Soil probing (with a 4' metal probe) on the upslope side of the tree base found one void, where it inserted easily through the soil. The poorly attached rope is not contributing to structural support.

Conclusions This is a relatively small, and stunted tree with poor structure. The observed soil void likely indicates lifting of the root plate as result of the severe lean, significantly increasing the probability of failure. At this point there is a serious concern that this tree has a negastive effect on soil stability. The current plans place it within the footprint of stairway improvement, necessitating its removal.

Recom'ds My recommendation is to remove this tree whether or not the new stairway is built. Whole tree removal for poor structure and stairway installation.

Tree 3

Species California bay laurel (*Umbellularia californica*)
Size Three trunks: 23.7, 12.2" DBH There is also a 16.7" CA bay connected to the down slope portion of the root crown.
Location -30' slope distance above the cut bank for the road.
-6' across slope from T-1

Condition Fair to good health and structure. The 12.2" stem was almost completely removed in the past with a large heading cut. The down slope trunk has a significant lean down slope.

Conclusions Though significant negative impacts to this tree from the proposed project are unlikely measures should be taken to protect it during demolition and construction. The plans call for a 12" pier less than 4 feet from its base (within the structural root zone). The project arborist should work with the engineer and contractor to assure the integrity. Any roots encountered over 1" diameter should be cut cleanly to reduce the chances of disease/decay entering the

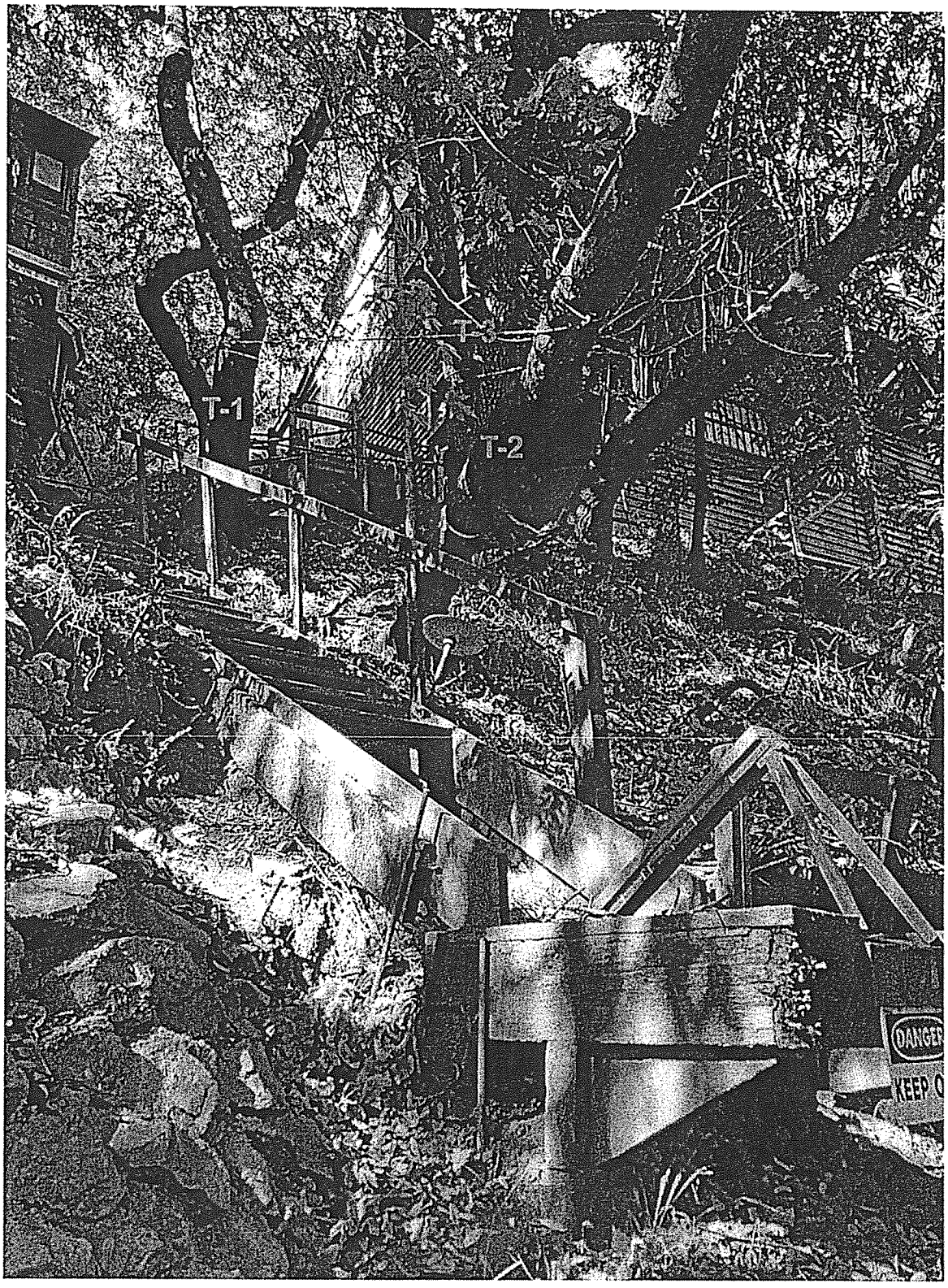
[1] Radius at which roots responsible for providing structural stability are typically found, calculated by multiplying 3- 5 times the diameter at breast height. This radius helps to develop an acceptable distance at which roots can be cut without causing irreversible harm to the health and/or structural stability of a tree.

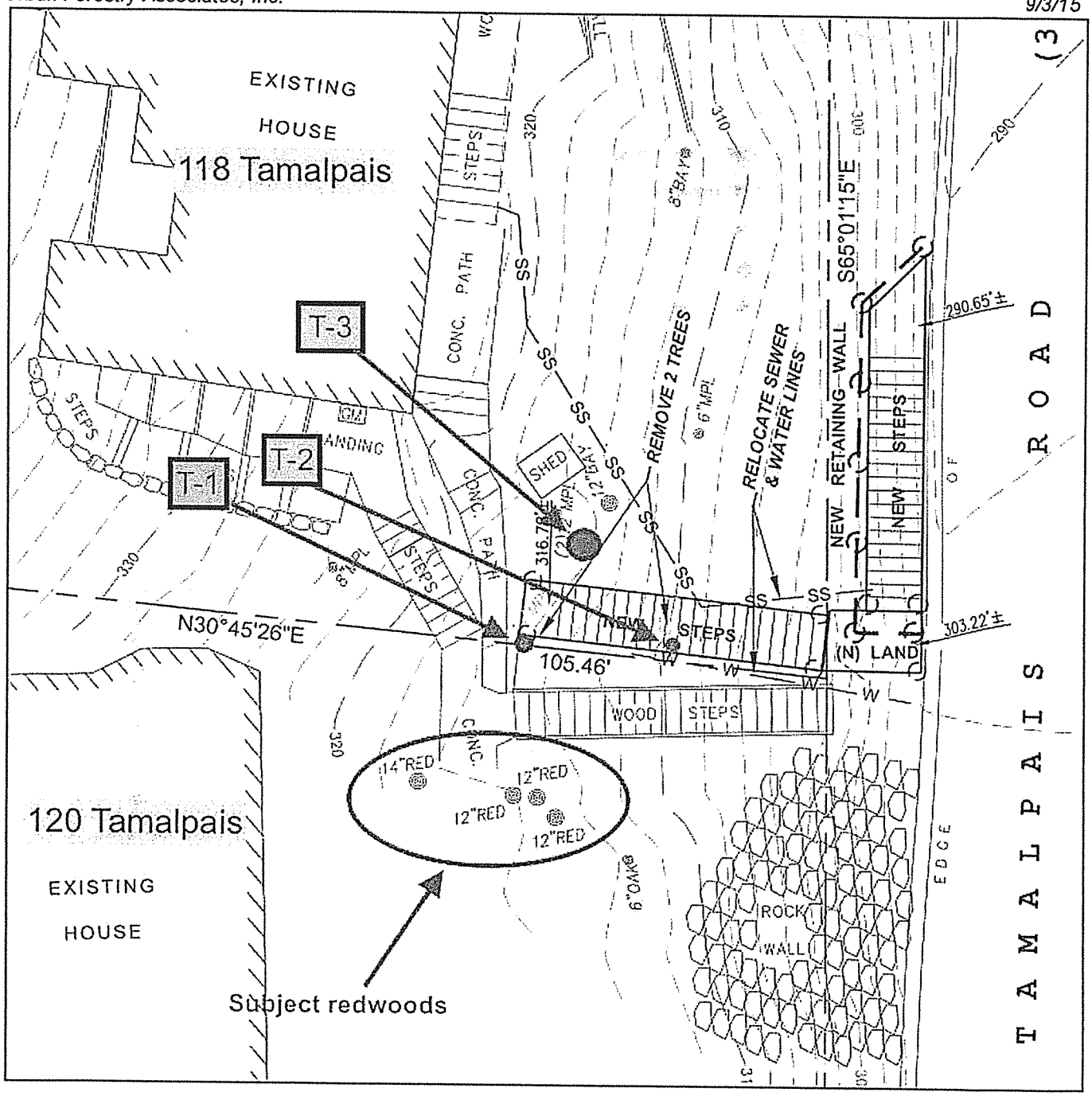
root. Hand excavation to locate and cut roots should be performed prior to drilling the pier closest to this tree.

All other structural members of the proposed stair should be at or above grade. Soils and roots must be armored during construction.

Ray Moritz, Urban Forester SAF Cert #241
ISA Certified Tree Risk Assessor

Soil Armoring


T-1
T-2
DANGER


EXISTING
HOUSE
118 Tamalpais
T-3
T-2
T-1
STEPS
LANDING
CONC. PATH
SHED
REMOVE 2 TREES
RELOCATE SEWER & WATER LINES
NEW RETAINING WALL
NEW STEPS
S65°01'15"E
290.65'±
303.22'±
(N) LAND
N30°45'26"E
105.46'
NEW STEPS
WOOD STEPS
14"RED
12"RED
12"RED
12"RED
120 Tamalpais
EXISTING
HOUSE
ROCK WALL
EDGE OF ROAD
TAMALPAIS
Subject redwoods

GEOENGINEERING, INC.

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April 21, 2016
File 3-147-als

GEOTECHNICAL RE-EVALUATION
AND
PLAN REVIEW & ACCEPTANCE
DRILLED I-BEAM &
TIMBER LAGGING BULKHEAD
AND WOOD STAIRWAY
CUT INTO RISING SLOPES
118 TAMALPAIS AVENUE
FAIRFAX, CALIFORNIA

Our firm had performed a geotechnical evaluation and developed a design for the entitled drilled bulkhead. This submittal (which is attached) includes: A General Plan, on Sheet 1; A typical Design Section on Sheet 2; Photos on Sheet 3; and our Calculations & Design Criteria on Sheet 4.

Weathered bedrock is exposed at grades of or within a half foot of grade, which simplifies design. The project was then designed by American Land Surveying if Mill Valley (ALS) who used our criteria with consultation from us.

We have reviewed the final version of the project design by ALS (Sheets 1 through 5–dated 2/27/16–their file ALS14025)) and have discussed it with them.
We had also re-visited the site on April 14. Aside from some minor sloughage that is normal, there were no changes since our previous 2/27/16 evaluation.

As indicated on th plans and on sheet 2 of our criteria and on sheet 5 of the current ALS plan, foundation drilling and earthwork must be monitored and approved by the geoechnical engineer--and our acceptance is subject to this

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In view of the above points we find these plans to meet the intent of our criteria as well as other normal standards for similar projects in comparable settings.

Given the favorable geological conditions, there are no reasons why this project cannot proceed in an expedited manner.

CLOSURE AND LIMITATIONS

By accepting this report the client and other recipients acknowledge their understanding and acceptance of the following terms and conditions. They also acknowledge that no verbal or written guarantees were made by the undersigned.

Even though we see no reason to suspect that the soil or foundation behavior will differ from our predictions, one must recognize that factors contributing to hillside and foundation instability, surface and groundwater seepage, and other geotechnical related problems cannot always be detected.

Earth slippage and subfloor water are sometimes unavoidable especially during rainfall and/or irrigation. Sub-drain performance can never be predicted and blockages in such system are common. Cracks in wallboard & tile, and some distortions in hardwood floors will develop in most structures from normal wood shrinkage and relaxation--especially for additions. Concrete curing and stress cracks are unavoidable. Since we are not contracted for full time observations, we are not be liable for construction errors.

It is also understood that certain risks must be assumed for all types of foundation, earth, and drainage systems. These risks can always be lessened by upgrading these systems even though the margin of additional safety may be small compared to the additional costs involved. Although the engineer may assist in selection of the optimum balance between safety and economy, the client and all recipients understand that the risk is their own.

This report represents our best judgment based on the available information and complies with current standards of practice for projects of comparable scope and budgets. No forms of warranty or insurance coverage are expressed or implied in our reports or other communications.

If a claim is made against GeoEngineering, Inc. for any act relating to our professional services without just cause, the initiator(s) of the claim shall pay for all costs and lost time associated with our defense. In any case, our liability cannot exceed our fee for this project.
We carry no errors and omission insurance.

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We trust that this report provides the information required. You may contact us for clarification.

Respectfully submitted,
GEOENGINEERING INC.

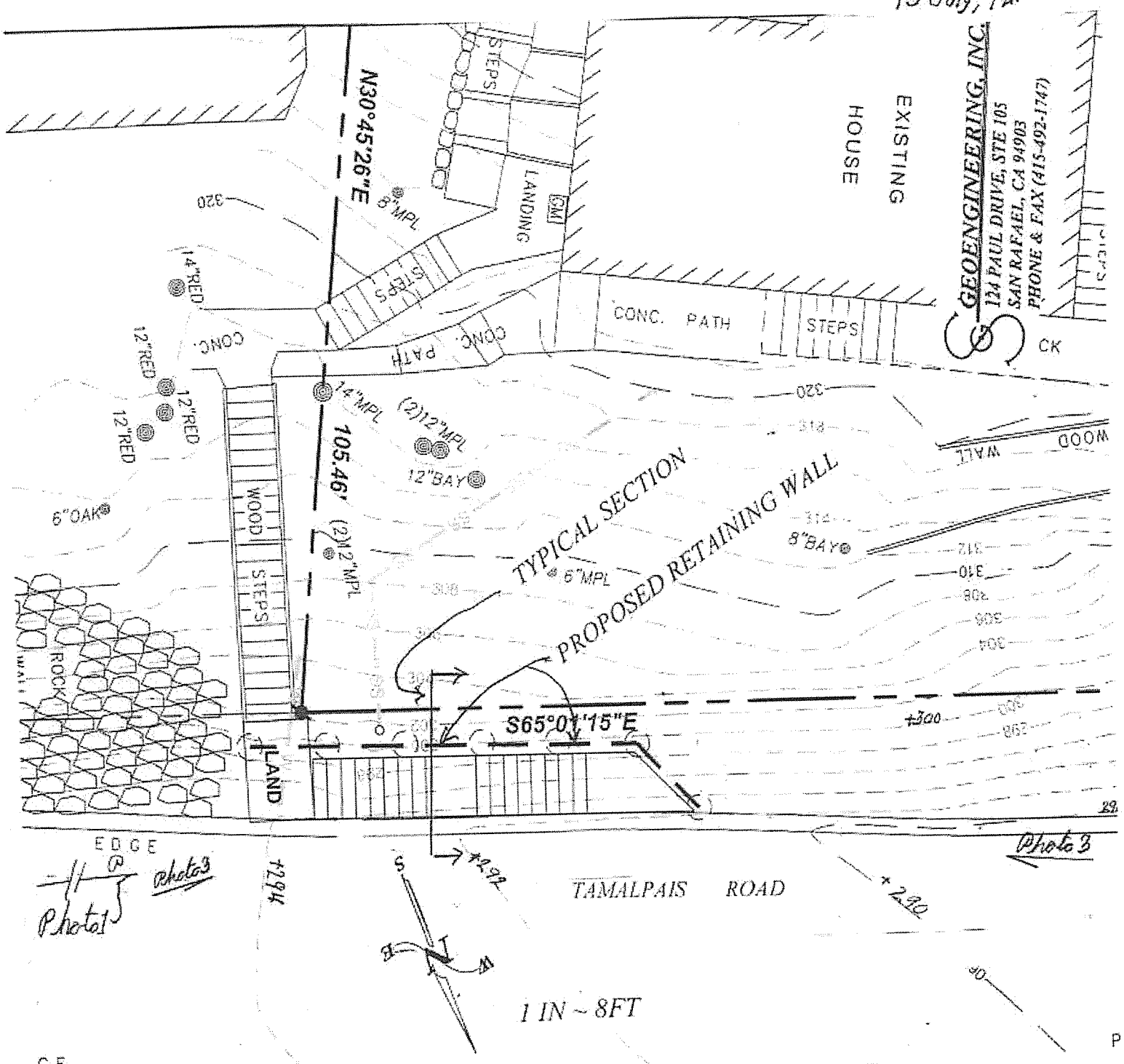
Robert H. Settgast
Professional Geotechnical Engineer

RHS:rhs
Attachment: Design & Criteria 1. General Plan; 2. Typical Design Section; 3. Photos; & 4. Calculations & Design Criteria.

CC: American Land Surveying ; joeelemen@sbcglobal.net
Town of Fairfax 142 Bolinas Road, Fairfax, CA . Attn Linda Neal:linda@townoffairfax.org
Glenn Wechsler; glenn@glennwechsler.com

File 3-147-als

13 July, 14



GEOENGINEERING, INC.
124 PAUL DRIVE, STE 105
SAN RAFAEL, CA 94903
PHONE & FAX (415-492-1747)

GENERAL PLAN
PROPOSED DRILLED I-BEAM
RETAINING WALL
STAIRWAY ACCESS CUT
118 TAMALPAIS RD
FAIRFAX, CA
FOR AMERICAN LAND SURVEYING

REGISTERED PROFESSIONAL ENGINEER
ROBERT SETTGAST
No. GE000764
Exp. 6/30/09
GEOTECHNICAL
STATE OF CALIFORNIA

Sheet 1 of 4

File 3-147-als

13 July, 14

GEOENGINEERING, INC.
124 PAUL DRIVE, STE 105
SAN RAFAEL, CA 94903
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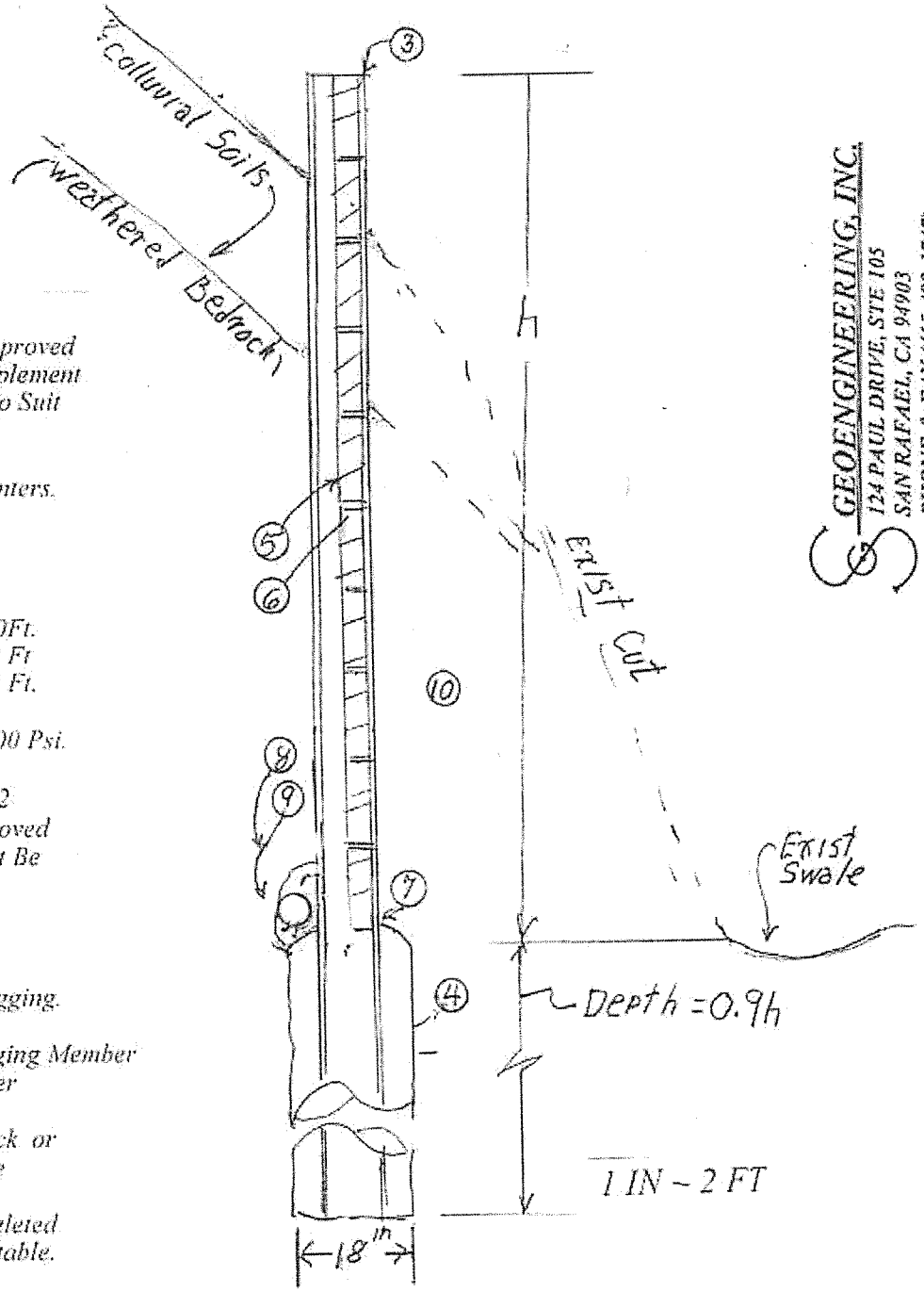


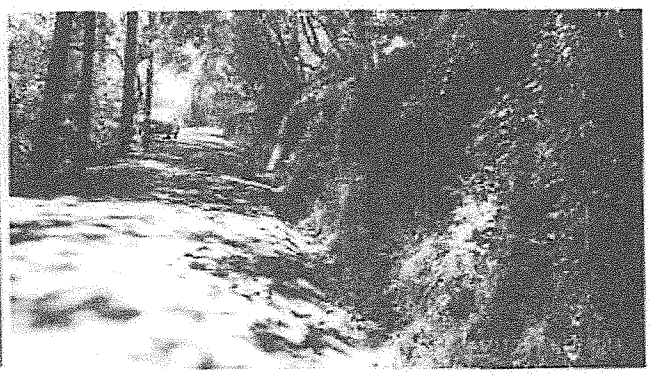
1. Work to Be Monitored & Approved By Engineer Who Would Implement Appropriate Modifications to Suit Exposed Conditions.
2. Sockets Drilled on ~3 Ft Centers. Positions May Be Adjusted To Facilitate Drilling .
3. I-beams to Be 50 Ksi Steel; W8 X 24 or Equal for H <10Ft. W8 X 21 or Equal for H < 9 Ft W8 X 15 or Equal for H< 8 Ft.
4. Concrete to Be at Least 2,500 Psi.
5. Lagging to Be 4X12 Grade 2 Doug Fir or Equal; & Approved For Earth Contact. Cuts Tot Be Treated with Preservative 3X12 Lagging May Suffice If Approved by Engr.
6. ~3/8 Inch Gaps Between Lagging.
7. Spacing below Bottom Lagging Member May Be Adjusted by Engineer
8. Class 2 Permeable Drainrock or Miriddrain for Backdrainage
9. Bottom-perf Pipe May Be Deleted If Seepage at Base Is Acceptable.
10. Final Grading for Drainage to Be Developed During Construction.

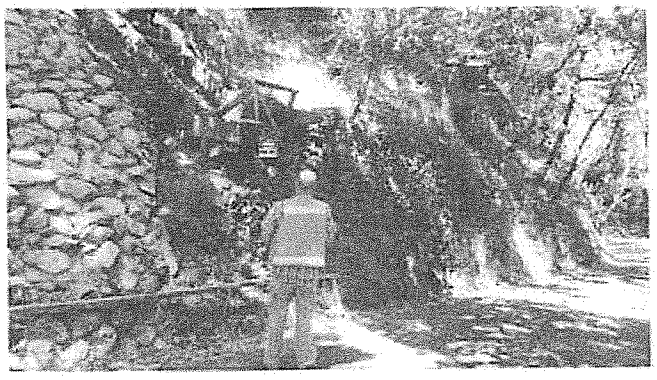
REGISTERED PROFESSIONAL ENGINEER
ROBERT SETTGAST
No. GE000764
Exp. 6/30/15
GEOTECHNICAL
CALIFORNIA

Settgast

TYPICAL SECTION
PROPOSED DRILLED I-BEAM
RETAINING WALL
STAIRWAY ACCESS CUT
118 TAMALPAIS RD
FAIRFAX, CA
FOR AMERICAN LAND SURVEYING

Sheet 2 of 12

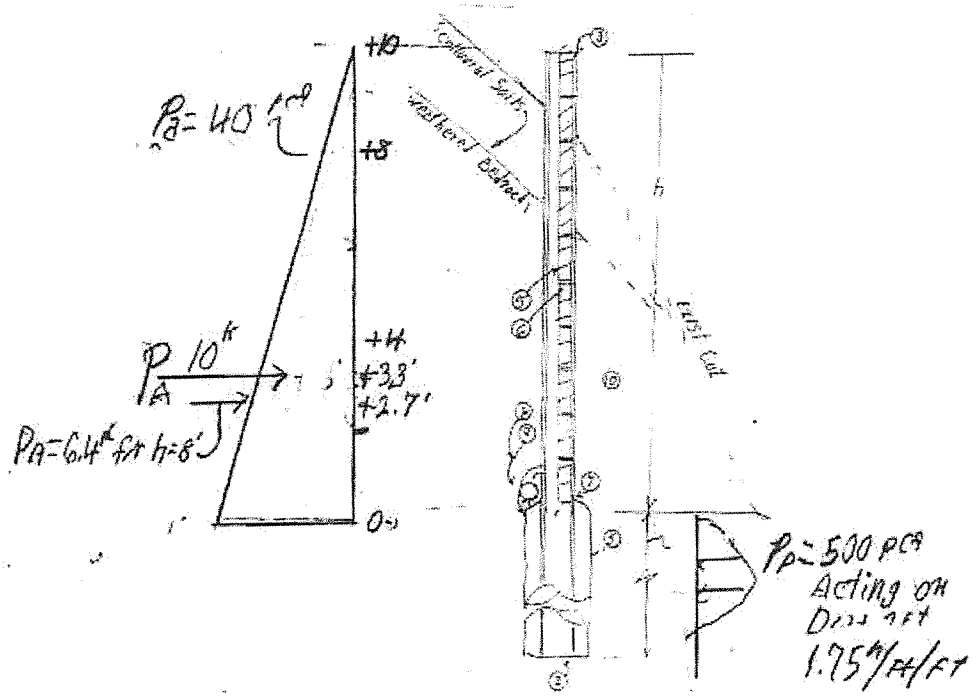




Joe Elemen
118 Tamalpais Rd
Fairfax ,CA

File 3-147-als
13 July, 14

GEOENGINEERING, INC.
124 PAUL DRIVE, STE 105
SAN RAFAEL, CA 94903
PHONE & FAX (415-492-1747)



$h=10'$ $P_A = 5'(40pcf)(10')/2 = 10^k$ For $h=10'$

$Z_F = \frac{2}{3}\sqrt{\frac{2P}{1.75^k/ft/ft}} = \frac{2}{3}\sqrt{\frac{2\times 10^k}{1.75^k/ft/ft}} = 2.4'$

$M = 10^k(3.3'+2.4') = 57^{k'}$ → W 8X24 (57 k')

W8 x 28
W10 x 22

$h=8'$ $P_A = 5'(40pcf)(8')/2 = 6.4^k$

$Z_F = \frac{2}{3}\sqrt{\frac{2\times 6.4^k}{1.75^k/ft/ft}} = 1.8'$

$M = 6.4^k(2.7'+1.8') = 29^{k'}$ — W8x15 (32 k')

$h=10'$ $A = \frac{2.34(16^k)}{\frac{2}{3}(1.75^k/ft)} = 5.0'$

$d = \frac{5.0}{2}\left(1+\sqrt{1+\frac{2.0}{4.36(3.3'}}\right) = 7'$

$d = 8'$ is OK

Use $d = 0.9h$ For All Cases

Timber Stress → $M = 0.04^{kcf} \times 8' \times (5')^2/8 = 1.0^{k'} = 12^{k''}$

$S = \frac{11.5''(2.6'')^2}{6} = 13.2in^2$

$f_b = \frac{12^{k''}}{13} = 0.9^k$ OK For 3X12 (Marginal)

CALCULATIONS
DRILLED I-BEAM
RETAINING WALL
STAIRWAY ACCESS CUT
118 TAMALPAIS RD
FAIRFAX, CA
FOR AMERICAN LAND SURVEYING

REGISTERED PROFESSIONAL ENGINEER
ROBERT SETTGAST
No. GE000764
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STATE OF CALIFORNIA

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GEOTECHNICAL
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LAWRENCE BRAGMAN
ATTORNEY AT LAW
912 LOOTENS PLACE • SECOND FLOOR
SAN RAFAEL, CALIFORNIA 94901-3110
(415) 459-6060 FAX: (415) 459-6067

May 10, 2016

Fairfax Planning Commission
142 Bolinas Road
Fairfax, CA 94930

Re: 118 Tamalpais, Fairfax, CA 94930

Dear Planning Commission:

I represent Walter Bess in this matter and in a related civil action which is now pending in the Marin Superior Court, Bess v. Federal National Mortgage Company, Marin Superior Court Case No.: 1403284.

Walter and Rebecca Bess purchased 118 Tamalpais in 1990 and have lived there continuously for over twenty five years. The property went through a disputed foreclosure in 2011 which is the subject of the pending case against Federal National Mortgage Company ("Fannie Mae"). The complaint specifically requests that all improvements be stayed pending the outcome of the case.

The pending application for a variance and encroachment permit has been submitted by an agent of Fannie Mae over the objection of Walter Bess. As set forth below, we believe that Fannie Mae's plans pose a risk of further destabilizing the hillside and prejudice Mr. Bess's property rights in several respects. The stairway repair will also expedite Fannie Mae's continuing efforts to evict Walter and Rebecca from their home which they have been renting since the disputed foreclosure.

As you can see on the plans, 118 Tamalpais is a very steeply sloped parcel. The hillside on which it is located has had three major landslides in recent decades: the first known slide from Scenic Road destabilized the land abutting the uphill boundary of the property; in 1982, a second slide sent tons of debris crashing into neighboring 120 Tamalpais; and, in 2011, a third slide destroyed the front access staircase and sent mud and debris into Tamalpais Road.

Through the years, there has been significant geo-technical examination of this property by Herzog Engineering of Mill Valley. In the most recent report, Consulting Engineer Craig Herzog did extensive examination of slope stability including drilling core samples to test subjacent support. The report found significant areas of concern and recommended major structural repairs to 118 Tamalpais. I have attached a copy of Mr. Herzog's report for your immediate reference. We are awaiting Mr. Herzog's evaluation of Fannie Mae's current plans and will provide them to you if available on the date of the hearing. If it is not available, we will be requesting a continuance of the hearing on the 19th.

ATTACHMENT D

The Town of Fairfax repaired the 2011 slide with engineered rip rap in order to stabilize the hill and reopen the roadway. While the Town's repair work is considered durable, it lacks the definable factor of safety provided by an engineered retaining wall and remains subject to yearly inspection to determine if it shows any signs of distress that would require additional stabilization work. See attached Memorandum by Town Engineer, Ray Wrysinski. Fannie Mae's application unwisely seeks to construct the stairway adjacent to this already compromised slope.

Further, in order to construct the stairway in the proposed location, Fannie Mae intends to cut down two mature maple trees which are located in close proximity to the Town's landslide repair work. We believe that removal of the two maples will further destabilize this area. While the applicant's arborist report indicates that adjacent redwood trees will keep the hillside intact, the historical record of slides belies that contention. A further study should be done to determine whether tree removal is safe or if the construction should be relocated.

It is also significant to note that at least one of the maples is located directly *on or in* the boundary between 118 Tamalpais, the property which is in litigation, and 120 Tamalpais which is owned outright by Mr. Bess. Under California Civil Code section 834, "Trees whose trunks stand partly on the land of two or more coterminous owners, belong to them in common." Hence, applicant Fannie Mae does not have the right to compel removal these trees without permission of coterminous owner, Walter Bess, which he cannot give at this time.

There is also a legitimate concern about the accuracy of the survey points that were used to locate the boundary between 118 and 120 Tamalpais. The downhill survey monument is located on an old redwood platform that was used for garbage cans before the 2011 mudslide. The platform was buried under debris and is in disrepair. Movement of this critical point of reference has a material impact on the boundary and should be verified by referencing reliable survey points.

Lastly, it is significant to note that Fannie Mae has vastly understated the cost of the proposed construction in their application which estimates that the cost of repairs is $10,000.00. Mr. Bess's construction engineering consultant, William J. Gibson, estimated that the actual cost is over $65,000.00.(Gibson bid attached) Fannie Mae, itself, produced a cost of repair estimate of approximately $135,000 in the course of discovery in the pending litigation.

This outcome of this application will affect the fundamental rights of Walter and Rebecca Bess to protect and preserve their longtime home and adjoining property. We greatly appreciate your time and consideration and will be available at the hearing to answer any questions that arise in your deliberations.

Sincerely yours,

LARRY BRAGMAN

HERZOG
GEOTECHNICAL
CONSULTING ENGINEERS

December 19, 2014
Project Number 3209-01-14

Lawrence Bragman, Attorney at Law
912 Lootens Place, 2nd Floor
Fairfax, California 94901-3110

RE: Geotechnical Stability Evaluation
118 Tamalpais Road
Fairfax, California

This presents the results of our geotechnical of foundation and site stability conditions at 118 Tamalpais Road in Fairfax, California. Our scope of work consisted of performing a site reconnaissance, reviewing selected geologic references, sampling three test borings, conducting laboratory testing, performing engineering analyses, and submitting this report presenting conclusions regarding slope and foundation stability conditions, and geotechnical recommendations for the design and construction of remedial measures, as appropriate. Our work was performed in accordance with our proposal dated December 5, 2014.

WORK PERFORMED

We reviewed the following information as part of our work:

- Donald Herzog & Associates, July 29, 1982, *Report: Landslide, 120 Tamalpais, Fairfax, California,* Job No. 1325.1.
- Donald Herzog & Associates, September 29, 1982, *Report: Soil Investigation, Landslide, 120 Tamalpais, Fairfax, California,* Job No. 1325.1.
- Donald Herzog & Associates, December 13, 1983, *Report: Site Inspection, 120 Tamalpais, Fairfax, California,* Job No. 1325.1.
- Rice, S.J., Smith, T.C., and Strand, R.G., 1976, *Geology for Planning: Central and Southeastern Marin County, California,* California Department of Conservation, Division of Mines and Geology, DMG Open File Report 76-2.
- Davenport, C.W., 1984, *An Analysis of Slope Failures in Eastern Marin County, California, Resulting From the January 3 & 4, 1982 Storm,* California Department of Conservation, Division of Mines and Geology DMG Open-File Report 84-22.

We explored the subsurface conditions in the project area on December 9, 2014 to the extent of three test borings ranging between approximately 4-1/2 and 7 feet deep, and extending into bedrock. Due to limited access, the test borings were performed by continuously sampling with portable equipment. The approximate locations of the borings are shown on the attached *Boring Location Plan*, Plate 1.

Our personnel observed sampling, logged the subsurface conditions encountered, and collected soil samples for visual examination and laboratory testing. Samples were retrieved using Sprague and Henwood and Standard Penetration Test samplers driven with a 70-pound hammer. Penetration resistance blow counts were obtained by dropping the hammer through a 30-inch free fall. The number of blows was recorded for each 6 inches of sampler penetration. These blow counts were then correlated to equivalent standard penetration resistance blow counts. The blows per foot recorded on the boring logs represent the accumulated number of correlated standard penetration blows that were required to drive the sampler the last 12 inches or fraction thereof.

Logs of our test borings are presented on Plates 2 through 4. The soils encountered are described in accordance with the criteria presented on Plate 5. Bedrock is described in accordance with the *Engineering Geology Rock Terms* presented on Plate 6. The logs depict our interpretation of subsurface conditions on the date and at the depths indicated. The stratification lines on the logs represent the approximate boundaries between soil types; the actual transitions may be gradational.

Selected samples were laboratory tested to determine their moisture content and dry density. Laboratory test results are posted on the boring logs in the manner described on the *Key to Test Data*, Plate 5.

FINDINGS

Site Conditions

The site is located on the southwestern (upslope) side of Tamalpais Road in Fairfax, California. The site is situated on a hillside which extends up towards the southwest at inclinations between approximately 2:1 and 1-1/2:1 (horizontal:vertical). The portion of the roadway below the site was created by excavating along the upslope side. The resultant cut bank upslope of the roadway ranges to about 30 feet high, and generally exposes several feet of sandy and gravelly silt colluvium (slopewash) overlying highly weathered and closely fractured sandstone and shale bedrock. The cut bank has experienced sloughing and localized instability, resulting in an overhang at the top. During our investigation we noted recent rockfall originating from the central portion of the bank, and accumulated soil and rock debris at the base of the cut. Two terraced timber bulkheads located near the top of the cut bank have been undermined by erosion

and are yielding. The upper bulkhead supports fills for a level walkway abutting the downslope side of the residence.

The residence is a wood-framed structure that is situated on a sloping pad. We understand that the house was constructed in 1958. Roof downspouts for the house discharge into onto the ground adjacent to the structure. The building is supported on spread footing foundations. We noted that portions of the foundations have experienced undermining and cracking. The upslope side of the house is excavated several feet into the hillside. Resultant cuts upslope of the western portion of the house expose highly weathered sandstone bedrock.

We understand that the neighboring property to the southeast (120 Tamalpais Road) has experienced several episodes of landsliding. The first slide destabilized a portion of Scenic Road above the site, and encompassed a large portion of a vacant property between Scenic Road and 120 Tamalpais Road. The date of this slide is not known.

A subsequent slide during the heavy rains in January 1982 impacted the residence at 120 Tamalpais Road. This slide deposited a significant amount of slide debris against and within the building, severely damaging the structure. This condition has not been remediated, and the structure has remained vacant. During our investigation we noted extensive amounts of perched slide debris on the hillside above the 120 Tamalpais Road residence, and hummocky topography suggestive of old earthflow slide deposits upslope of the southern corner of the 118 Tamalpais Road house.

We understand that an additional slide occurred in 2011 encompassed the northwestern portion of the Tamalpais Road cut bank below 120 Tamalpais Road. This slide was recently repaired as a rip-rap buttress. That slide damaged the lower portion of a staircase servicing the subject property at 118 Tamalpais Road.

Subsurface Conditions

The site is within the Coast Range Geomorphic Province which includes San Francisco Bay and the northwest-trending mountains that parallel the coast of California. These features were formed by tectonic forces resulting in extensive folding and faulting of the area. Previous geologic mapping by Rice (1976) indicates the site to be blanketed by earthflow landslide deposits underlain by sandstone and shale bedrock of the Franciscan Assemblage.

Our test borings encountered fill, topsoil and slide debris overlying bedrock. The fill encountered generally consists of very loose to loose clayey gravel with cobbles and organics. The topsoil encountered consists of soft to medium stiff sandy silt. The slide debris encountered consists of very soft sandy clay and loose clayey gravel. The soils encountered are relatively weak and compressible, and are subject to downslope creep and instability on hillsides. Bedrock encountered in the borings consist of firm to moderately hard shale and sandstone.

The approximate test boring locations are shown on the *Site Plan* (Plate 1). The test borings encountered the following profiles:

	Depth (feet)			
Boring	Fill	Topsoil	Slide Debris	Bedrock
B-1	0-3.0	3.0-4.0	---	4.0-4.5+
B-2	---	---	0-4.0	4.0-4.5+
B-3	0-6.0	---	---	6.0-7.0+

Descriptions of the subsurface conditions encountered are presented on the boring logs.

Groundwater

Free groundwater was encountered in Boring 2 at a depth of approximately 3-1/2 feet. Free groundwater did not develop in the remaining borings prior to backfilling. Groundwater levels at the site are expected to fluctuate over time due to variations in rainfall and other factors. Rainwater percolates through the relatively porous surface soils. On hillsides, the water typically migrates downslope in the form of seepage within the porous soils, at the interface of the soil/bedrock contact, and within the upper portions of the weathered and fractured bedrock.

Mapped Landsliding

Regional mapping by Rice, Smith and Strand (1976) indicates that the site lies within a large earthflow landslide complex. The mapping indicates the slide complex ranges to more than 1000 feet wide, and extends from approximately 200 to 500 horizontal feet upslope of Tamalpais Road to just downslope of the roadway. We observed topography on and adjacent to the property indicative of earthflow slide deposits, and encountered slide debris in our test boring upslope of the southern corner of the building.

The site lies within Slope Stability Zone 4 as defined in *"Geology for Planning: Central and Southeast Marin County"* (Rice, 1976). Zone 4 includes areas of existing active or inactive landslides and areas subject to downslope creep. The zones range from 1 to 4, with Zone 4 being least stable. The mapping indicates that slide related damage to a structure near the site was reported in newspapers published during heavy rains in 1955 and/or 1961 through 1975.

A map by Davenport (1984) of slope failures resulting from the severe 1982 storms indicates that the previously discussed slide at 120 Tamalpais Road was a slump-avalanche type failure in which a block of material with several redwood trees slid 60 to 70 feet. That mapping notes that the slide covered the house with debris up to the roof, and indicates that slide deposits entered the house. A 1982 soils investigation by Donald Herzog & Associates of the slide indicated the head scarp to be located approximately 100 horizontal feet upslope of the rear of the residence, and that portions of the slide scar encroached laterally onto the neighboring property located upslope of the 118 Tamalpais Road property.

CONCLUSIONS

Based on the results of our investigation, we have identified the following stability-related issues at the site:

1. The residence is underlain by varying thicknesses of poorly compacted fills and weak native soils which are subject to settlement, gradual downslope creep, and instability. In addition, foundations located on the downslope side of the structure are subject to undermining as a result of ongoing progressive failure of the Tamalpais Road cut bank and yielding of the existing timber bulkheads. In order to mitigate future damage, we judge that foundation support for the structure should be extended into bedrock located below the influence of the cut bank. Perimeter support for the structure should be derived from drilled, cast-in-place, reinforced concrete piers which extend well into bedrock below the influence of the cut bank, and which are designed to resist lateral forces imposed by creeping and potentially unstable materials. Due to access constraints for drilling equipment, upgraded support for interior foundations may be derived from hand-excavated pit footings extending into bedrock. It will be necessary to closely space drilled piers along the downslope side of the house in order to restrain the soils beneath the structure and to reduce lateral loading on interior foundations.

2. The timber bulkheads supporting fills and the walkway downslope of the building are yielding and are subject to instability, particularly as a result of heavy rainfall and/or earthquake ground shaking. It will therefore be necessary to replace the bulkheads with engineered retaining walls which are supported in bedrock below the influence of the roadway cut bank.

3. The hillside upslope of the residence is blanketed by varying thicknesses of weak native soils and old slide deposits which are subject to instability, particularly as a result of heavy rainfall, time-dependent strength loss, and/or earthquake ground shaking. These materials pose an impact risk to the residence and exterior improvements. It will therefore be necessary to provide debris catchment along the upslope side of the residence as outlined in this report.

4. The Tamalpais Road cut bank below the site is subject to continuing sloughing and possible larger failures, particularly as a result of heavy rainfall, weathering, and/or earthquake ground shaking. We judge that the risk posed to the residence due to bank instability will be mitigated by extending foundation support well into bedrock below the influence of the cut bank. Mitigating the risk of future bank instability will necessitate retaining the bank with tiedback shotcrete or steel mesh. This would necessitate work within the Town right-of-way. We should be contacted to provide design recommendations for this work, if desired.

It is important that surface and subsurface water be controlled to reduce future moisture variations in the weak and unstable on-site soils. Positive drainage should be provided away from walls, foundations and slopes. Downspouts and surface drains should be connected to non-perforated conduits which discharge at an approved erosion resistant outlet at the base of the street.

Our work did not address drainage conditions within the residence. If unacceptable moisture is noted in existing crawl spaces or interior areas, we should be contacted to provide recommendations for new perimeter foundation subdrains and for crawl space drainage improvements.

RECOMMENDATIONS

Foundations

Drilled Piers

Drilled piers should be at least 18 inches in diameter and should extend at least 8 feet into bedrock located below a 1-1/2:1 plane projected up from the base of existing banks. The depth to bedrock may be estimated based on the boring logs. Design pier depths and diameters should be calculated by the Project Structural Engineer using the criteria presented below. The materials encountered in the pier excavations should be evaluated by our representative in the field during drilling. Drill spoils should be removed from the site.

Piers, grade beams and buttressed foundations should be designed and reinforced to resist creep forces acting from the ground surface to the top of the rock or to the top of a 1-1/2:1 line projected up from the base of existing banks, whichever is deeper, and exerting an active equivalent fluid pressure of 60 pounds per cubic foot (pcf). For isolated piers, this pressure should be assumed to act on 2 pier diameters. Piers along the downslope side of the building should be spaced no more than 3 pier diameters (measured center-to-center) and should have a clear spacing of no more than 3 feet to reduce movement of upslope soils. Active pressures on closely spaced piers should be assumed to act over the entire width of pier line plus 3 feet at each end.

The portion of piers extending into bedrock and below a 1-1/2:1 line projected up from the base of existing banks, and at least 7 horizontal feet from the face of the nearest slope or wall can impose a passive equivalent fluid pressure of 400 pounds per cubic foot (pcf) acting over 2 pier diameters, and vertical dead plus real live loads of 1000 pounds per square foot (psf) in skin friction. These values may be increased by 1/3 for seismic and wind loads, but should be decreased by 1/3 for determining uplift resistance. End bearing should be neglected due to the uncertainty of mobilizing end bearing and skin friction simultaneously.

If groundwater is encountered, it will be necessary to dewater the holes and/or to place concrete by the tremie method. If caving soils are encountered, it will be necessary to case the holes. Hard drilling or coring may be required to achieve the necessary penetrations in bedrock.

Spread Footings

Spread footings should only be used in areas less than 30 horizontal feet of closely-spaced drilled piers. Footings should be at least 24 inches square, and should be bottomed at least 12 inches into approved bedrock. Footing excavations should be shored as necessary to prevent ground loss. Spread footings extending into bedrock can be designed to impose dead plus code live load bearing pressures and total design load bearing pressures of 4000 and 5300 psf, respectively. Excavation spoils should be removed from the site.

Resistance to lateral pressures can be obtained in rock from passive pressures against the sides of footings and from friction along the base of footings. Soils above the bedrock should be neglected in the determination of lateral resistance. We recommend the following criteria for design:

Passive Pressures*	=	400 pounds per cubic foot (pcf) equivalent fluid pressure
Friction Factor	=	0.40 times net vertical dead load

Grade Beams

Piers and spread footings should be interconnected with grade beams to support structural loads and to transfer lateral loads to the drilled pier system.

Replacement Retaining Walls

Temporary Slopes

Temporary slopes should be laid back or shored in conformance with OSHA standards. Shoring should be designed to resist the lateral pressures outlined in this report. All temporary slopes, shoring and the stability of improvements during construction should be contractually established as solely the responsibility of the Contractor.

Lateral Pressures

Retaining walls should be designed to resist active lateral earth pressures equivalent to those exerted by a fluid weighing 45 pounds per cubic foot (pcf) where the backslope is level, and 60 pcf for backfill at a 2:1 slope. A minimum factor of safety against instability of 1.5 should be used to evaluate static stability of retaining walls. Wall facing should extend at least 12 inches below undisturbed downslope grade to reduce soil loss between the piers. Where settlement of

walkways above the walls will be unacceptable, it will be necessary to structurally support walkways or to closely space the piers as outlined previously.

In addition to lateral earth pressures, retaining walls must be designed to resist horizontal pressures that may be generated by uphill retaining walls. Where an imaginary 1-1/2:1 (horizontal:vertical) plane projected downward from the base of an upslope retaining wall intersects the downslope wall, that portion of the downslope wall below the intersection should be designed for an additional uniform horizontal pressure equivalent to the maximum calculated lateral earth pressure at the base of the upslope wall.

Drilled Piers

Drilled piers for support of retaining and catchment walls should be designed using the criteria presented in the *Foundations* section of this report.

Wall Backdrains

The retaining walls should be fully backdrained. The backdrains should consist of 4-inch diameter, rigid perforated pipe surrounded by a drainage blanket. The top of the drain pipe should be at least 8 inches below lowest adjacent downslope grade. The pipe should be PVC Schedule 40 or ABS with an SDR of 35 or better, and the pipe should be sloped to drain at least 1 percent by gravity to an approved outlet. Frequent cleanout risers should be provided for the drains, and sweeps or sanitary wyes should be used to allow for future inspection and maintenance of the drains. The drainage blanket should consist of clean, free-draining crushed rock or gravel wrapped in a filter fabric such as Mirafi 140N. Alternatively, the drainage blanket could consist of Caltrans Class 2 "Permeable Material", in which case the filter fabric may be omitted. A prefabricated drainage structure such as Mirafi Miradrain may also be used provided that the backdrain pipe is embedded in permeable material or fabric-wrapped crushed rock. The drainage blanket should be continuous, at least 1 horizontal foot thick, and should extend to within 1 foot of the surface. The uppermost 1 foot should be backfilled with compacted soil to exclude surface water.

Wall Backfill

We anticipate that the on-site soils will be suitable for reuse as wall backfill, although moisture conditioning of materials may be required. Lumps greater than 4 inches in largest dimension and perishable materials should be removed, and the fill materials should be approved by Herzog Geotechnical prior to use. Imported fill should have a plasticity index of 15 or less, a liquid limit of 40 or less, and should be free of organic matter and of rocks larger than 4 inches. Herzog Geotechnical should observe and approve fill material prior to importing.

Weak soils in areas to receive backfill should be overexcavated as necessary to create level benches in bedrock. The depth and extent of overexcavation should be approved in the field by Herzog Geotechnical prior to placing fill. Wall backfill should be placed in level lifts not

exceeding 8 inches in loose thickness. Each lift should be brought to within 3 percent of optimum moisture content and compacted to at least 90 percent relative compaction. Relative compaction refers to the in-place dry density of a soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557 test procedure. Optimum moisture content is the water content of the soil (percentage by dry weight) corresponding to the maximum dry density. Backfilling should be performed only with hand operated equipment to avoid over-stressing the walls.

Debris Catchment

In order to reduce the risk of debris impacting the residence, a slough catchment barrier should be provided upslope of the house. The barrier should be at least 5 feet high, and should consist of either structural wall or structural fencing designed for an equivalent fluid impact pressure of 125 pounds per cubic foot (pcf). Foundations for the catchment wall or fencing should be designed in accordance with the criteria presented previously.

The barrier should be periodically inspected for damage, and maintained and repaired as necessary. Clear storage space should be provided and maintained upslope of the barrier. The catchment area behind the barrier should be cleaned out following each episode, and annually prior to the winter rains. In addition, it may be necessary to remove fines that migrate through the barrier.

Geotechnical Drainage

Positive drainage should be provided away from walls, foundations and slopes. Surface runoff should be intercepted with a lined swale along the upslope side of the structure. Surface drains should be connected to non-perforated conduits which discharge at an approved erosion resistant outlet at Tamalpais Road. Conduit should consist of rigid PVC or ABS pipe which is Schedule 40, SDR 35 or equivalent. Downspouts, surface drains and subsurface drains should be checked for blockage and cleared and maintained on a regular basis. Surface drains and downspouts should be maintained entirely separate from subdrains.

If unacceptable moisture is noted in existing crawl spaces or interior areas, we should be contacted to provide recommendations for new perimeter foundation subdrains and for crawl space drainage improvements.

Supplemental Services

Our conclusions and recommendations are contingent upon Herzog Geotechnical being retained to review the project plans and specifications to evaluate if they are consistent with our recommendations, and our being retained to provide intermittent observation and appropriate field and laboratory testing during pier drilling, footing excavation, wall backdrain installation, and wall backfilling to evaluate if subsurface conditions are as anticipated and to check for conformance with our geotechnical recommendations. We should also be notified to observe the

completed project. Steel, concrete, shoring, surface drainage, and/or waterproofing should be inspected by the appropriate party, and are not part of our scope of work.

If during construction subsurface conditions different from those described in this report are observed, we should be advised at once so that these conditions may be reviewed and our recommendations reconsidered. The recommendations made in this report are contingent upon our being notified to review changed conditions.

If more than 18 months have elapsed between the submission of this report and the start of work at the site, or if conditions have changed because of natural causes or construction operations at or adjacent to the site, the recommendations of this report may no longer be valid or appropriate. In such case, we recommend that we review this report to determine the applicability of the conclusions and recommendations considering the time elapsed or changed conditions. The recommendations made in this report are contingent upon such a review.

We should be notified at least 48 hours before the beginning of each phase of work requiring our observation, and upon resumption after interruptions. These services are performed on an as-requested basis and are in addition to this geotechnical reconnaissance. We cannot provide comment on conditions, situations or stages of construction that we are not notified to observe.

LIMITATIONS

This report has been prepared for the exclusive use of Lawrence Bragman, Attorney at Law and his consultants for the proposed project described in this report. Our services consist of professional opinions and conclusions developed in accordance with generally-accepted geotechnical engineering principles and practices. We provide no other warranty, either expressed or implied. Our conclusions and recommendations are based on the information provided us regarding the proposed construction, the results of our field exploration and laboratory testing programs, and professional judgment. Verification of our conclusions and recommendations is subject to our review of the project plans and specifications, and our observation of construction.

The test boring logs represent subsurface conditions at the locations and on the dates indicated. It is not warranted that they are representative of such conditions elsewhere or at other times. Site conditions and cultural features described in the text of this report are those existing at the time of our field exploration and may not necessarily be the same or comparable at other times. The locations of the test borings were established in the field by reference to existing features, and should be considered approximate only.

The risk of slope instability at this site is considered higher than for typical Marin County hillsides due to mapped large scale landsliding and the unretained roadway bank. We therefore recommend that the owner obtains the appropriate landslide and earthquake insurance.

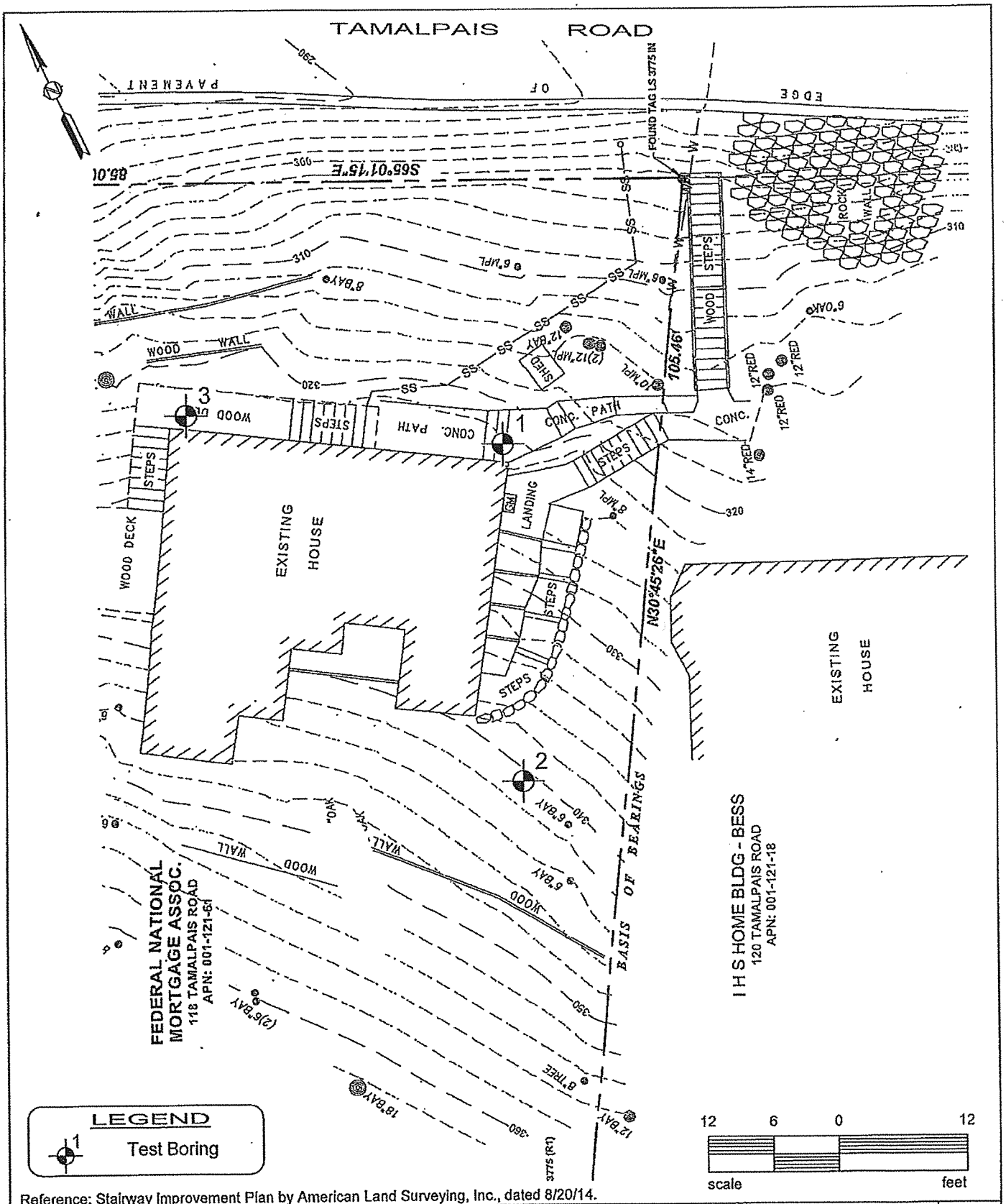
Our investigation did not include an environmental assessment or an investigation of the presence or absence of hazardous, toxic or corrosive materials in the soil, surface water, ground water or air, on or below, or around the site, nor did it include an evaluation or investigation of the presence or absence of wetlands. Our work also did not address the evaluation or mitigation of mold hazard at the site.

We appreciate the opportunity to be of service to you. If you have any questions, please call us at (415) 388-8355.

Sincerely,
HERZOG GEOTECHNICAL

Craig Herzog, G.E.
Principal Engineer

Attachments: Plates 1 through 6



Reference: Stairway Improvement Plan by American Land Surveying, Inc., dated 8/20/14.

HERZOG
GEOTECHNICAL
CONSULTING ENGINEERS

Job. No: 3209-01-14
Appr:
Drwn: LPDD
Date: DEC 2014

SITE PLAN
118 Tamalpais Road
Fairfax, California

PLATE
1

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
							0	BROWN CLAYEY GRAVEL WITH SAND (GC), loose, dry, with roots and cobbles (Fill)
		16.8	88		8		1	
							2	
		6.3	121		11		3	BROWN SANDY SILT (ML), soft to medium stiff, moist, with roots
					27		4	LIGHT BROWN SANDSTONE, moderately hard, weak, highly weathered
								BOTTOM OF BORING 1 @ 4.5 FEET No Free Water Encountered

EQUIPMENT: Continuous Sampling ELEVATION: **

LOGGED BY: C.H. START DATE: 12-9-14

FINISH DATE: 12-9-14

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

HERZOG GEOTECHNICAL CONSULTING ENGINEERS

Job No: 3209-01-14

Appr: CH

Drwn: LPDD

Date: DEC 2014

LOG OF BORING 1

118 Tamalpais Road

Fairfax, California

PLATE 2

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot * Sample	DEPTH (FEET)	EQUIPMENT: Continuous Sampling ELEVATION: ** LOGGED BY: C.H. START DATE: 12-9-14 FINISH DATE: 12-9-14
						0	DARK BROWN SANDY CLAY (CL), very soft, moist, with roots and gravels (Slide Debris)
		20.9	95		2	1	
						2	
							RED-GRAY-BROWN CLAYEY GRAVEL WITH SAND (GC), loose, wet, with sandstone and shale cobbles (Slide Debris)
						3	
		8.2	116		10		free water encountered at 3-1/2' ▽
					26	4	YELLOW-BROWN SANDSTONE, moderately hard, weak, highly weathered
							BOTTOM OF BORING 2 @ 4.5 FEET

* Converted to equivalent standard penetration blow counts.

** Existing ground surface at time of investigation.

HERZOG GEOTECHNICAL CONSULTING ENGINEERS

Job No: 3209-01-14

Appr: CT

Drwn: LPDD

Date: DEC 2014

LOG OF BORING 2

118 Tamalpais Road

Fairfax, California

PLATE 3

EQUIPMENT: Continuous Sampling ELEVATION: **
LOGGED BY: C.H. START DATE: 12-9-14
FINISH DATE: 12-9-14

Other Laboratory Tests	Pocket Penetrometer (ksf)	Moisture Content (%)	Dry Density (pcf)	% Passing #200 sieve	Blows/Foot *	Sample	DEPTH (FEET)	
							0	DARK BROWN CLAYEY GRAVEL (GC), very loose, moist, with organics and sandstone cobbles (Fill)
		12.5	94		3		1	
							2	
		12.2	117		3		3	
							4	
					10		5	
					26		6	GRAY-BROWN SANDSTONE WITH INTERBEDDED SHALE, firm, friable, highly weathered
							7	BOTTOM OF BORING 3 @ 7 FEET No Free Water Encountered

* Converted to equivalent standard penetration blow counts.
** Existing ground surface at time of investigation.

HERZOG GEOTECHNICAL CONSULTING ENGINEERS

Job No: 3209-01-14
Appr: CH
Drwn: LPDD
Date: DEC 2014

LOG OF BORING 3

118 Tamalpais Road
Fairfax, California

PLATE 4

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS More than Half > #200 sieve	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND
			GP	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POOORLY GRADED SAND-SILT MIXTURES
			SC	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half < #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

			Shear Strength, psf / Confining Pressure, psf	
Consol	Consolidation	Tx	2630 (240)	Unconsolidated Undrained Triaxial
LL	Liquid Limit (in %)	Tx sat	2100 (575)	Unconsolidated Undrained Triaxial, saturated prior to test
PL	Plastic Limit (in %)	DS	3740 (960)	Unconsolidated Undrained Direct Shear
PI	Plasticity Index	TV	1320	Torvane Shear
Gs	Specific Gravity	UC	4200	Unconfined Compression
SA	Sieve Analysis	LVS	500	Laboratory Vane Shear
■	Undisturbed Sample (2.5-inch ID)	FS	Free Swell	
◪	2-inch-ID Sample	EI	Expansion Index	
◪	Standard Penetration Test	Perm	Permeability	
☒	Bulk Sample	SE	Sand Equivalent	

KEY TO TEST DATA

HERZOG GEOTECHNICAL CONSULTING ENGINEERS

Job No: 3209-01-14
Appr:
Drwn: LPDD
Date: DEC 2014

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA

118 Tamalpais Road

Fairfax, California

PLATE 5

ROCK SYMBOLS

 SHALE OR CLAYSTONE

 CHERT

 SERPENTINITE

 SILTSTONE

 PYROCLASTIC

 METAMORPHIC ROCKS

 SANDSTONE

 VOLCANIC

 DIATOMITE

 CONGLOMERATE

 PLUTONIC

 SHEARED ROCKS

LAYERING

MASSIVE	Greater than 6 feet
THICKLY BEDDED	2 to 6 feet
MEDIUM BEDDED	8 to 24 inches
THINNLY BEDDED	2-1/2 to 8 inches
VERY THINNLY BEDDED	3/4 to 2-1/2 inches
CLOSELY LAMINATED	1/4 to 3/4 inches
VERY CLOSELY LAMINATED	Less than 1/4 inch

JOINT, FRACTURE, OR SHEAR SPACING

VERY WIDELY SPACED	Greater than 6 feet
WIDELY SPACED	2 to 6 feet
MODERATELY SPACED	8 to 24 inches
CLOSELY SPACED	2-1/2 to 8 inches
VERY CLOSELY SPACED	3/4 to 2-1/2 inches
EXTREMELY CLOSELY SPACED	Less than 3/4 inch

HARDNESS

SOFT - Pliable; can be dug by hand

FIRM - Can be gouged deeply or carved with a pocket knife

MODERATELY HARD - Can be readily scrached by a knife blade; scratch leaves heavy trace of dust and is readily visable after the powder has been blown away

HARD - Can be scratched with difficulty; scratch produces little powder and is often faintly visable

VERY HARD - Cannot be scratched with pocket knife; leaves a metallic streak

STRENGTH

PLASTIC - Capable of being molded by hand

FRIABLE - Crumbles by rubbing with fingers

WEAK - An unfractured specimen of such material will crumble under light hammer blows

MODERATELY STRONG - Specimen will withstand a few heavy hammer blows before breaking

STRONG - Specimem will withstand a few heavy ringing hammer blows and usually yields large fragments

VERY STRONG - Rock will resist heavy ringing hammer blows and will yield with difficulty only dust and small flying fragments

DEGREE OF WEATHERING

HIGHLY WEATHERED - Abundant fractures coated with oxides, carbonates, sulphates, mud, etc., thourough discoloration, rock disintegration, mineral decomposition

MODERATELY WEATHERED - Some fracture coating, moderate or localized discoloration, little to no effect on cementation, slight mineral decomposition

SLIGHTLY WEATHERED - A few stained fractures, slight discoloration, little or no effect on cementation, no mineral decomposition

FRESH - Unaffected by weathering agents, no appreciable change with depth

ENGINEERED SOIL REPAIRS, INC.
FOUNDATIONS • DRAINAGE • RETAINING WALLS • SLIDE REPAIRS

March 24, 2015

Mr. Lawrence Bragman
912 Lootens Place
2nd Floor
Fairfax, CA 94901

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

Dear Mr. Bragman:

In accordance with your request, I am providing you with a bid to perform foundation, retaining wall and drainage repair work recommended in the Herzog Geotechnical report, dated December 19, 2014. In general, the report recommends the house foundation be supported in bedrock. We propose to accomplish this by underpinning the existing building foundation elements with either drilled, reinforced, concrete piers or hand excavated, reinforced, concrete piers. The new underpinning piers and existing foundation elements will be structurally connected together with a series of reinforced concrete grade beams. The report recommends the retaining walls along the downslope side of the building be replaced, a catchment wall be installed along the upslope side of the building and the surface drainage be improved.

Specifically, we propose to do the following work:

House Foundation Repairs

1. Prepare design plans in order to obtain a building permit.
2. Obtain a building permit. (Actual cost of the permit is not included in this proposal).
3. Mobilize equipment to the site.
4. Remove the existing concrete slab-on-grade floors in the house.
5. Drill 25, 18-inch diameter by up to 15-foot deep underpinning pier holes along the perimeter of the house.
6. Install a steel cage in each drilled hole and cast each hole in concrete.

1267 Springbrook Road
Walnut Creek, CA 94597
esr@pacbell.net

CA State License #668184
NV State License #0072897
www.esrweb.com

(925) 210-2150
FAX (925) 210-2158

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

7. Extend each underpinning pier beneath the existing house foundations with a reinforced concrete haunch.

8. Hand excavate 9, 30-inch square by up to 15-feet deep underpinning holes along the interior of the house.

9. Install a steel cage in each hand excavated hole and cast each hole in concrete.

10. Install new reinforced grade beams, interconnect exterior and interior underpinning piers together with the existing foundation elements.

11. Partially relevel the house to create a more aesthetically pleasing floor slope and relieve built up stresses in the framework.

12. Connect the new interior piers to the existing floor framing system.

13. Cast new concrete slab floors in the house where the existing have been removed.

14. Remove and replace existing wood decks and flatwork in the area of underpinning work.

15. Remove excess excavated soil, drill spoils, concrete rubble and wood debris from the site.

Retaining Wall

1. Prepare design plans in order to obtain a building permit.

2. Obtain a building permit. (Actual cost of the permit is not included in this proposal).

3. Mobilize equipment to the site.

4. Remove the existing failing wood retaining walls.

5. Drill 10, 18-inch diameter by up to 13-feet deep pier holes for the new wall.

6. Install a steel wide flanged beam in each hole and cast each hole in concrete.

7. Form and place steel for the new retaining wall.

8. Cast the new retaining wall in concrete.

9. Install a subdrain behind the wall consisting of a 4-inch diameter, SDR-35, perforated drain pipe and $^{3}/_{4}$-inch drain rock, wrapped in filter fabric.

10. Remove excess excavated soil, drill spoils and wood debris from the site.

Catchment Wall

1. Prepare design plans in order to obtain a building permit.

2. Obtain a building permit. (Actual cost of the permit is not included in this proposal).

3. Mobilize equipment to the site.

4. Excavate foundations for the catchment posts.

5. Install reinforcing steel and cast post foundations in concrete.

6. Bolt the posts to the new foundations.

7. Install a Geobrugg GBE-100A-R catchment fence.

8. Install a hold down anchor at each end of the fence.

Drainage System

1. Prepare design plans in order to obtain a permit.

2. Obtain a permit. (Actual cost of the permit is not included in this proposal).

3. Install a concrete lined drainage ditch upslope of the building.

4. Grade the soil around the perimeter of the building footprint to direct water runoff away from the foundation and toward existing or new drainage facilities.

5. Install 8, Christy V-1 concrete catch basins around the perimeter of the building.

6. Install a buried, 4-inch diameter, non-perforated, SDR-35 drain pipe to convey water collected in the concrete ditch, catch basins and empty collected water onto the street.

7. Remove excess excavated soil, drill spoils and concrete rubble from the site.

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

Front Entry Wood Steps

1. Prepare design plans in order to obtain a building permit.
2. Obtain a building permit. (Actual cost of the permit is not included in this proposal).
3. Mobilize equipment to the site.
4. Remove the existing wood entry steps.
5. Excavate for the new entry steps.
6. Drill 7, 18-inch diameter by up to 9-feet deep pier holes for the new entry steps retaining wall.
7. Install a steel wide flanged beam in each hole and cast each hole in concrete.
8. Construct up to a 10 foot tall retaining wall utilizing 4-inch thick wood lagging.
9. Form and place steel for the new retaining wall.
10. Install a subdrain behind the wall consisting of a 4-inch diameter, SDR-35, perforated drain pipe and a pocket of $^{3}/_{4}$-inch drain rock, wrapped in filter fabric.
11. Drill 7, 18-inch diameter by up to 9-feet deep pier holes for the new entry steps footings.
12. Install a steel cage in each drilled hole and cast each hole in concrete.
13. Excavate 5, 1.5 foot square by 1.5 foot deep footings for entry steps.
14. Install reinforcing steel and cast each footing in concrete.
15. Construct new wood steps.
16. Remove excess excavated soil, drill spoils and wood debris from the site.

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

We will provide all labor, equipment and material to do this work for the lump sum of:

$ 245,585.00	Foundation Repairs
$ 58,307.00	Retaining Wall
$ 47,866.00	Catchment Wall
$ 20,631.00	Drainage System
$ 65,664.00	Entry Steps
$ 43,805.00	Contingency (10%)
$ 481,858.00	Total Bid

Nothing has been included in this bid for cosmetic repairs. These prices do not include geotechnical engineering designs that are performed by others. The price does not include permit fees, special inspections or any other work not specifically mentioned.

Standard Conditions

Our evaluation has been completed in accordance with our interpretation of the "Standard of Practice" for the industry. Our recommendations have been made based on the conditions we have observed and only enough information has been presented to give you a clear understanding as to our interpretation of the problem and how we propose to correct it. Since it is only a bid proposal and does not contain any engineering details, it should not be used by other contractors for bidding or construction purposes. Any use by other contractors is at their sole risk. The bid amount above does not include costs associated with modification of our standard insurance certificate. Should you require special conditions such as additional insured endorsement, there will be an additional charge at cost.

In an effort to control shrinkage cracks, control joints will be installed and the new sections of walkway will be reinforced with half-inch diameter steel bars on 18-inch centers in each direction. To prevent offsetting, the new sections will be doweled into the surrounding concrete flatwork. As much as practical, the coloration, texture and composition of the surrounding flatwork will be matched. However, this is difficult to achieve and cannot be guaranteed.

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

The underpinning recommended in this proposal is intended to stop further settlement of the foundation where the piles and/or piers are installed. Based on our experience as engineers, we stand confidently behind our work. However, minor interior/exterior cosmetic cracks may still occur and are often times the result of seasonal movement of the expansive soil and/or settlement of the non-underpinned portions of the perimeter and interior footings. Proper control of drainage and irrigation around the house will likely reduce the magnitude of these movements.

This repair proposal will be in effect for 90 days. If you wish to proceed with the work, please sign and return a copy of this proposal in the enclosed envelope. We expect payment of 30% of the contract amount upon commencement of work at the site along with periodic progress payments. The job foreman will collect the 30% payment at the start of the job at which time a receipt will be provided to you. Progress payments must be paid within seven days of the invoice date or there will be a cessation of the project. Upon substantial completion of the work, Engineered Soil Repairs will have been paid 95% of the contract amount. The final 5% will be paid within 30 days of completion of the work. All invoices are due upon receipt. Past due accounts greater than 30 days will accumulate interest at the legal prevailing rate of 10% per annum.

If you have any questions concerning this proposal, please contact me.

Sincerely,

William J. Gibson

William J. Gibson
Principal Engineer

WJG/tm

Attachment: Repair Drawing

RE: Repair Proposal
118 Tamalpais Road
Fairfax, CA

APPROVED:

Foundation Repairs
($245,585.00)_____
(signature)

Retaining Wall
($58,307.00)_____
(signature)

Catchment Wall
($47,866.00)_____
(signature)

Drainage System
($20,631.00)_____
(signature)

Entry Steps
($65,664.00)_____
(signature)

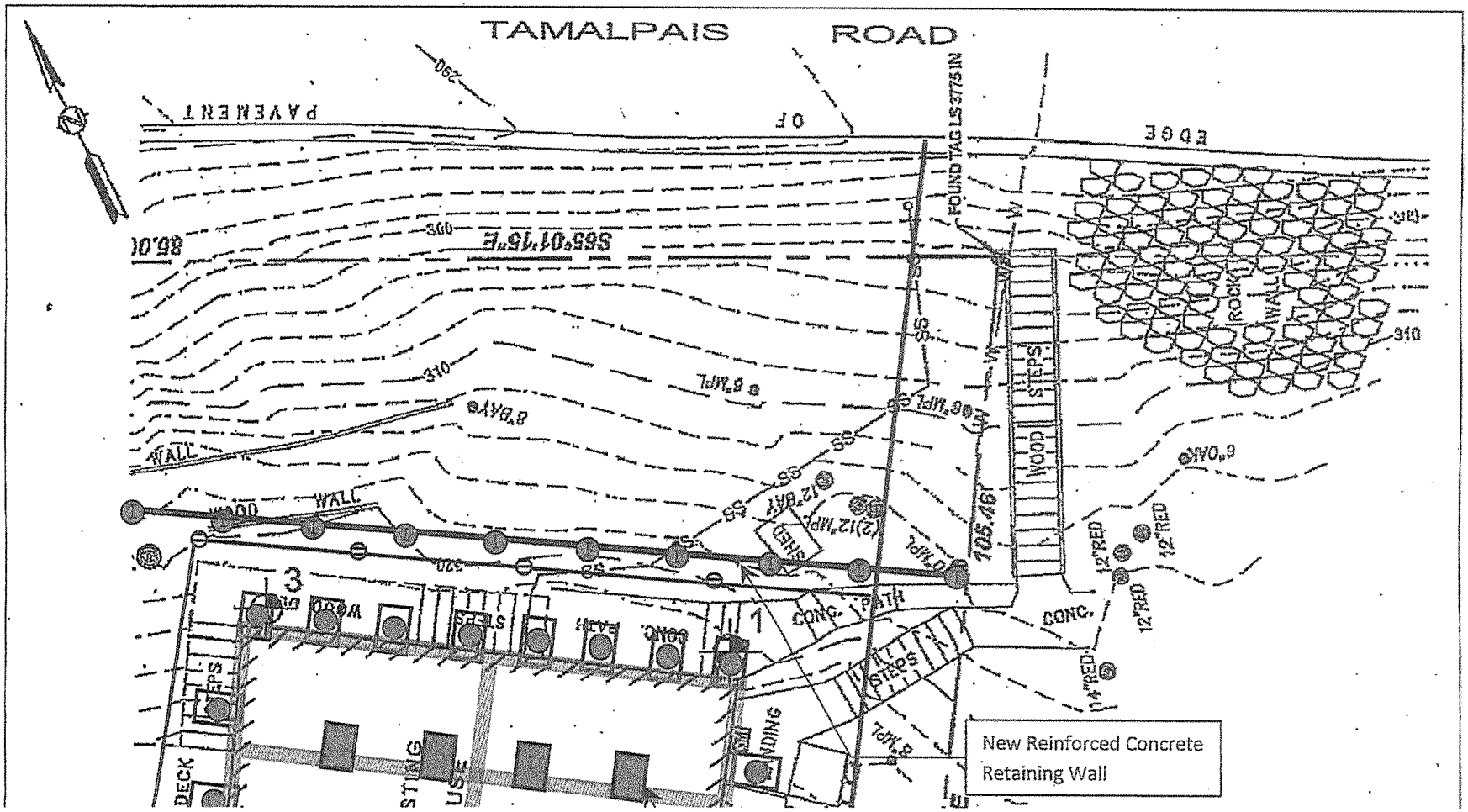
Permit and Third Party
Inspection Fees
(At Cost)_____
(signature)

DATE:_____

As a contractor, we are required by law to be licensed and are regulated by the Contractors' State License Board. As part of the requirements, we are enclosing Notice to Owner regarding mechanics' liens and Notice of Cancellation. If you have any questions concerning us or any other contractor, your questions should be referred to the Registrar of the Board at the following address:

Contractors' State License Board
P.O. Box 26000
Sacramento, CA 95826

PRELIMINARY REPAIR PLAN



TOWN OF FAIRFAX
142 BOLINAS ROAD, FAIRFAX, CALIFORNIA 94930
PHONE (415) 453-1584 / FAX (415) 453-1618

MEMORANDUM

To: Mark Lockaby – Building Inspector

Date: March 23, 2011

From: Ray Wrysinski
Town Engineer

Subject: Slide Repair
120 Tamalpais Road
Fairfax, CA

This is to provide information in addition to the attached "Slide Repair Details" drawing, sheet 1 of 1, dated March 23, 2011, to define the slide repair work.

The landslide is on the uphill side of the Tamalpais Road pavement at 120 Tamalpais Rd.

The slide is approximately 20' wide and extends about 20' uphill of the edge of pavement.

There is a sewer pipe in the work area and there might be other underground utilities in the work area so the contractor will have to do the work in a way to avoid damage to the utilities.

The slide repair work involves placing a perforated subdrain pipe on some visqueen sheets in the base of the repair.

The pipe and visqueen will be covered with State Class 2 Permeable Material (filter gravel). The slide volume will be primarily filled with rock slope protection material (State Specifications Section 72). This rock will be set on the top of the Class 2 Permeable gravel. That gravel will cover the bottom and uphill slope face of the slide scarp and it will be directly under the rock slope protection. The rock pieces are to range in size from about 75 pounds to 200 pounds which is the gradation for Class "Facing" Rock Slope Protection. The top layer of rock is to have all voids filled with concrete grout to help lock the rock pieces together. The contractor must set all the rock in place so the pieces fit together closely to achieve a stable three point bearing of the rock above on the rocks below.

The 4" subsurface perforated drain pipe (PVC SDR 26) will slope at 2% in the rock fill area. The 4" outlet pipe (not perforated), about 20' long, will be sloped at 1% and will be set just uphill of the edge of pavement and will drain onto the pavement surface of the roadside drainage swale. The outlet pipe trench and hillside cut will be backfilled with concrete to protect the pipe and restore the existing steep cut bank that was excavated. The pavement slopes up at about 10% so the outlet pipe will drop below the pavement surface and will be about 22" below the pavement surface when it reaches the repair area and the beginning of the perforated subdrain pipe. This depth below the pavement will allow the base of the repair to be keyed in a little below the pavement elevation and still have positive drainage for this base. The subdrain pipe and outlet pipe must be tested after the rock is in place to confirm it has not been crushed by the rock fill. A pull cord must be placed in the pipe and a minimum 3" test plug must be

pulled through the pipe under my or your observation to provide a final test for that pipe.

This repair will remove a lot of the subsurface flow that is now going to the road at this location and so will reduce soil saturation and related weakness in the soil below the road.

As we have discussed, this method of repair should provide a long term repair without the level of cost that would go with the construction of a large retaining wall with deep footings. It will not have the definable factor of safety that would go with that type of wall but this type of rock rip-rap repair has a reputation of doing a good durable repair for slides of this size. It will be good practice for the Town Staff to check this repair area on at least a yearly basis to determine if the road and slide area show any signs of distress that would require additional stabilization work.

I should be on site to observe the placement of the subdrain pipe and subdrain outlet pipe and should be on site, regularly to observe the placement of the permeable material, rock rip-rap and grouting of the finished surface of the rock. The contractor should coordinate his work with you and me so that I can do those observations.

Stormwater pollution prevention practices must be part of this work so that the construction does not put additional silt into the drainage system.

If you have questions on any of the above information, let me know what they are so that I can provide answers.

Ray Wrysinski

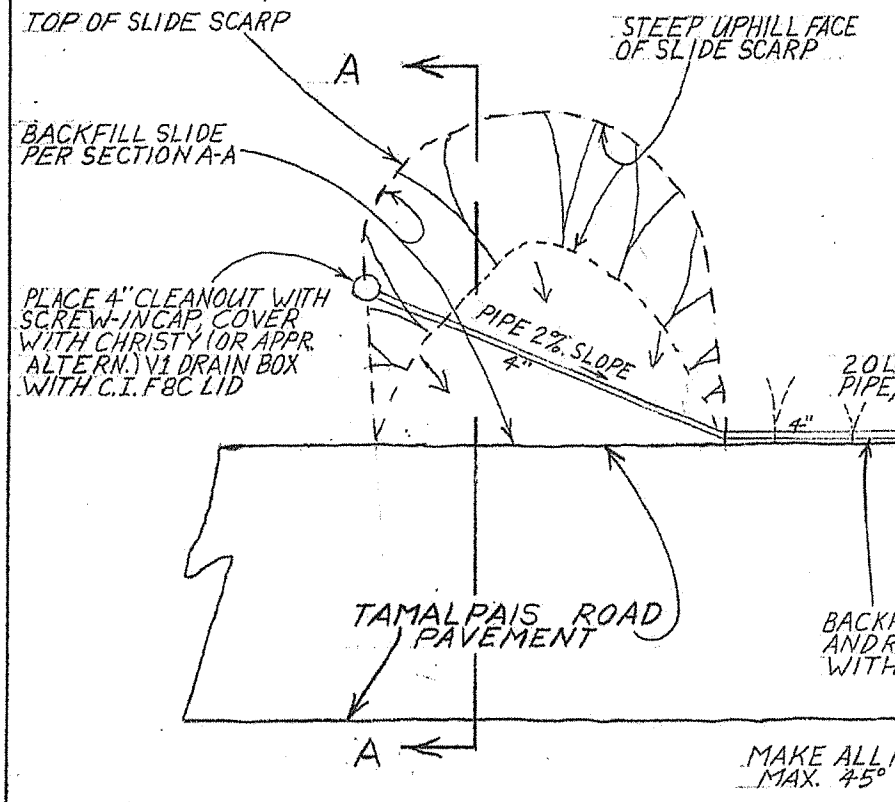
REGISTERED PROFESSIONAL ENGINEER
RAY C. WRYSINSKI
No. 23518
Exp. 12/31/11
CIVIL
STATE OF CALIFORNIA

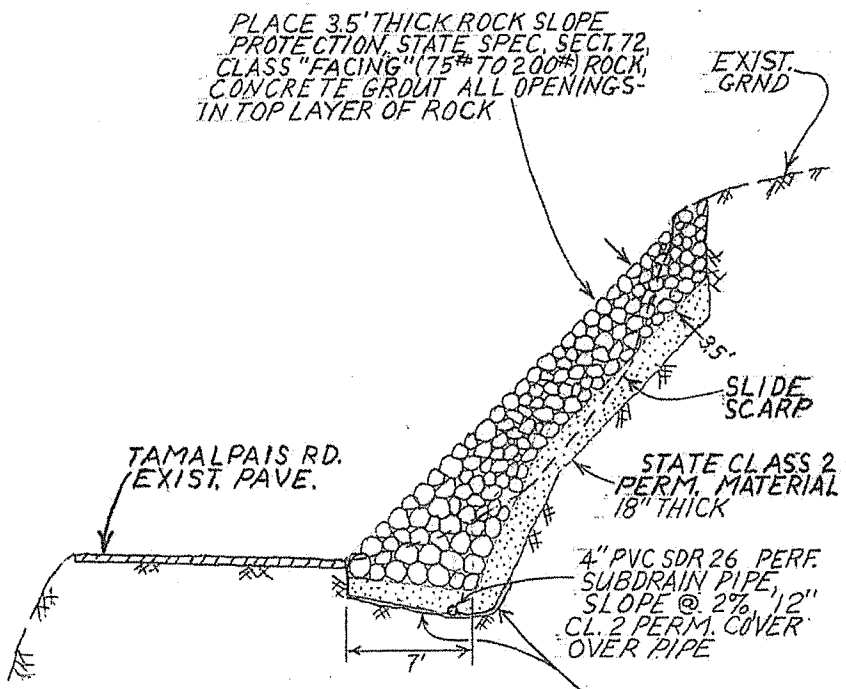
Ray Wrysinski, P. E.
Town Engineer

PLAN BY:
RAY WRYSINSKI CIVIL ENGINEER
1510 GRANT AVENUE #310
NOVATO, CA 94945
PH. 415-892-4874

SEE 3/23/11 MEMORANDUM BY RAY WRYSINSKI, TOWN ENGINEER, FOR ADDITIONAL INFORMATION

Note: 5/11/2016
This plan design was chosen for repair of the 120 Tamalpais Road landslide, based on a discussion with the Town Manager, with strong consideration of the repair cost. It was expected to have a high probability of performing for a reasonable period of time but was not seen as a final solution. It is not a general landslide repair design. RW





120 TAMALPAIS ROAD, FAIRFAX, CA – SLIDE REPAIR DETAILS
SCALE 1" = 10'