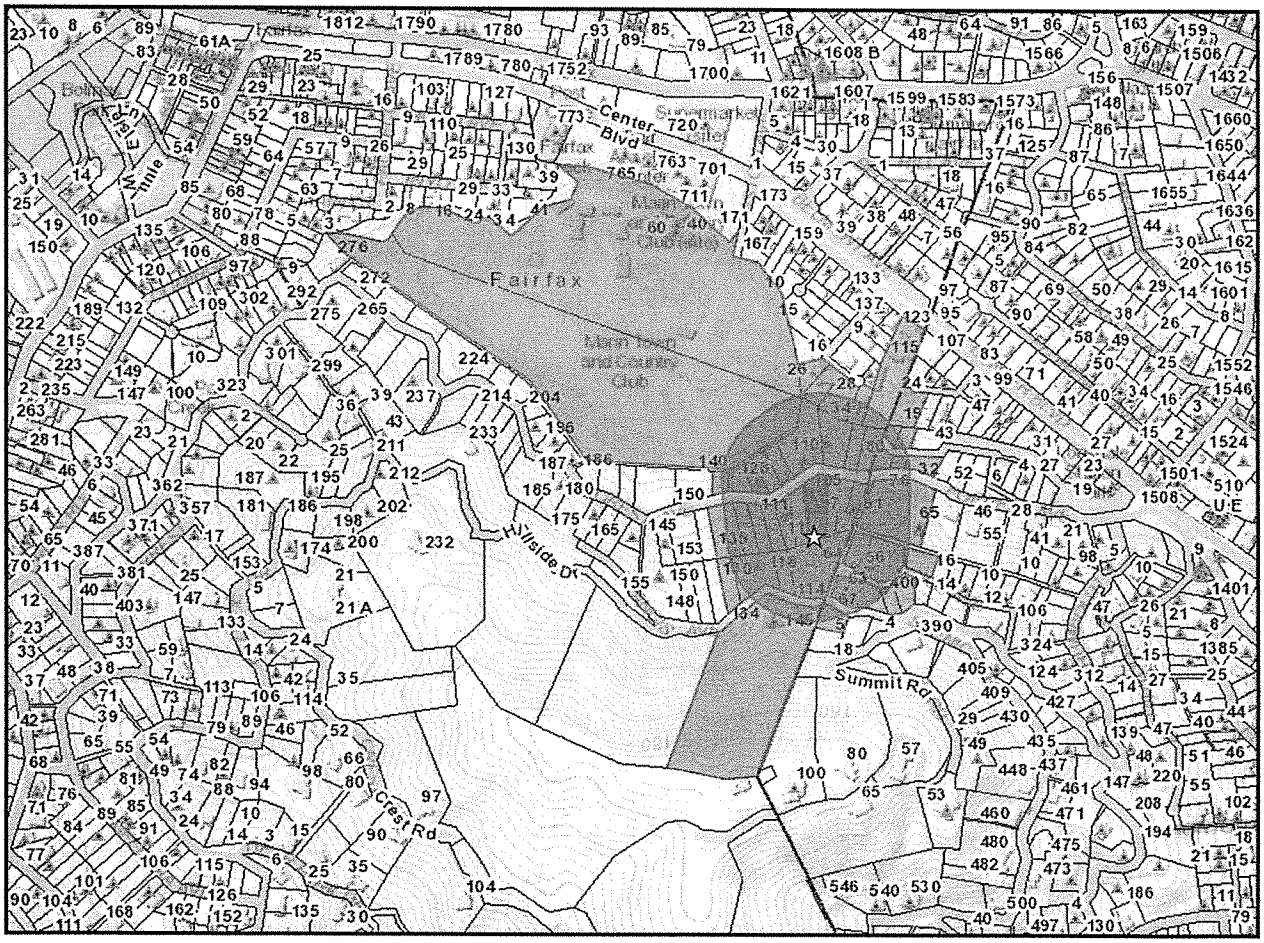
TOWN OF FAIRFAX
STAFF REPORT
Department of Planning and Building Services

TO:	Fairfax Planning Commission
DATE:	June 18, 2015
FROM:	Jim Moore, Director of Planning and Building Services Linda Neal, Principal Planner
LOCATION:	105 Forrest Avenue; Assessor's Parcel No. 002-192-22
ZONING:	Residential Single-family RS 6 Zone District
PROJECT:	Addition/remodel of single-family residence
ACTION:	Use Permit; Application # 15-13
APPLICANT:	Ryan Cullinan, Leff Construction
OWNER:	Brendan Donahoe and Gabrielle Hall
CEQA STATUS:	Categorically exempt, § 15301(e)(1)



105 FORREST AVENUE

AGENDA ITEM # 1

BACKGROUND

The 16,156 square foot site slopes up from Forrest Avenue with an average slope of 34%. It is developed with a single-family residence that was originally constructed as a 2 story building in 1920 providing two bedrooms and a bathroom on the first level and 1 bedroom and 1 bath, with a kitchen and dining room on the second level. A third story, master bedroom and bathroom addition were constructed in 1980 after the Town granted a Use Permit for that expansion resulting in a three bedroom, three bath residence. The site also has a 216 square foot, 1 car, garage.

DISCUSSION

The project encompasses the remodel of the first floor and a structural upgrade of the residence. A new foundation is proposed along with the relocation of the bathroom, installation of a laundry area that will include a laundry sink and a stacked washer/dryer and installation of new windows and a set of French doors. The lower half of the internal stairway between the first and second floors, that currently does not meet building code requirements, will be reconstructed in compliance with the building code. The areas of the lower floor that do not meet minimum ceiling height requirements will also be increased so they are conforming. The rear deck will be replaced with a patio and the front porch and stairs will be repaired.

The proposed remodel will not increase the size of the 2,173 square foot residence and it will remain a three bedroom, three bath house.

The project complies with the regulations for the Residential Single-family RS 6 Zone District where the site is located as follows:

	Front Setback	Rear Setback	Combined Front/rear Setback	Side Setbacks	Combined Side Setbacks	FAR	Lot Coverage	Height
Required/ Permitted	**6ft**	**12ft**	**35ft**	**5ft & 5ft**	**20ft**	**.40**	**.35**	**28.5ft, 2 stories**
Existing	**House 37 ft Garage 0 ft**	**149 ft**	**House 186 ft Garage 149 ft**	**3.5 ft & 11 ft**	**14.5 ft**	**.13**	**.14**	**30 ft 6 in, 3 stories**
Proposed	**same**	**same**	**same**	**same**	**same**	**.13**	**.14**	**same**

The project site is non-conforming due to its steep 34% slope. Town Code § 17.080.050(C) requires that a parcel with a 34% slope be 26,000 square feet in size and 122 feet wide to comply with the code. The subject site is only 16,156 square feet in size and varies in width from 60 ft to 84 ft. It is therefore considered a legal non-

conforming property because it was legally created in its substandard size by the approval of Map No. 2 of Deer Park filed for record October 9th, 1908 at the Marin County Recorder's Office. The site did not become non-conforming until the adoption of Ordinance 352 which incorporated slope factors into required lot sizes and increased setback regulations for sloped properties. Ordinance 352 went into effect on March 13th of 1973.

The project does not constitute a 50% remodel based on the Town definition of a 50% remodel found in Town Code 17.008.020 nor does the remodel add a bedroom to the home. Therefore, the project does not require design review approval and does not require a parking variance [Town Code §§ 17.020.030(A) and 17.016.040(1) and (2)].

Only 90 cubic yards of material will need to be excavated to construct the new foundation so the project is not subject to the review and approval of an excavation permit by the Planning Commission (Town Code § 12.20.080).

Use Permit

The project does require the approval of a Use Permit because the lot is substandard in size. Town Code § 17.080.050 requires that a use permit be approved by the Planning Commission prior to any use, occupancy or physical improvement on a building site failing to meet the minimum lot size requirements.

The purpose of the Use Permit process is to allow the proper integration into Fairfax of uses which may be suitable only in certain locations in the town or in a zone or only if the uses are designed or laid out on the site in a particular manner. In considering an application for a conditional use permit the Commission looks at the nature and condition of surrounding private and public improvements to determine if the proposed use/project will have negative impacts on the surrounding existing developments.

This project is occurring within the existing footprint of the structure and in areas of the site that are already disturbed so it will not result in any significant disruption of the site. The proposed enlarged windows are in basically the same locations as the existing windows and the 2 new windows on the east and west sides replace existing doors. The structure is located 25 feet away from the closest residence to the west (111 Forrest Ave.) and 60 feet away from the house to the east (97 Forrest Ave.). The closest house to the north is on the other side of Forrest Avenue at a much lower elevation (110 Forrest Ave.) and the project will have no impact on that property and no impact on the property to the south which is at a much higher elevation and fronts on Francis Avenue (100 Francis Ave.). The house exceeds the all the minimum setbacks and therefore, the project should have a minimal impact on the neighbors.

Note: The first level of the residence includes a laundry area and a full bathroom. Laundry areas are easily converted into kitchens so, as is standard practice by the Commission, staff has included a condition in the resolution for approval requiring that the owners sign, notarize and record a deed restriction clarifying the approved single-

family use of the property, prior to issuance of the building permit (Exhibit A – Resolution No. 15-18, condition no. 15.

Other Agency/Department Comments/Conditions

Ross Valley Fire Department

1. A fire sprinkler system shall be installed throughout the entire building which complies with the requirements of the National Fire Protection Association (NFPA) 13-D and local standards. A separate permit is required from the Fire Department. Plans and specifications for system shall be submitted by an individual or firm licensed to design and/or design/build sprinkler system and be noted on the plans.

2. A dedicated fire truck pull out shall be included in the project plans that are submitted for building permit.

3. An effective fire break shall be maintained around the building by removing and clearing all flammable vegetation and/or other combustible growth within the defensible space zone of 30 to 100 feet. Ross Valley Fire protection Standard 220 Vegetation/Fuels Management plan is available on-line@Rossvalleyfire.org to assist the applicant in meeting the minimum defensible space requirements.

4. All smoke detectors in the house and accessory bedroom/bath shall be provided with AC power and be interconnected for simultaneous alarm. Detectors shall be located in each sleeping room, outside of sleeping rooms centrally located in the corridor and over the center of all stairways with a minimum of one detector per story of the occupied portion of the residence. The alarm in the accessory structure can be located anywhere in the main room (not in the bathroom).

5. Carbon monoxide alarms shall be provided in both residential buildings and shall be located outside the sleeping areas in the main house and anywhere in the accessory bedroom main room.

6. Address numbers at least 4" tall must be in place adjacent to the front door. If not clearly visible from the street, additional numbers are required. Residential numbers must be internally illuminated (backlit), placed next to a light or be reflective numbers. If the project is a new house or a substantial remodel, they may only be internally illuminated or illuminated by an adjacent light controlled by a photocell and switched on only be a breaker so it will remain illuminated all night. If not currently as described, the numbers must be installed as described as part of this project.

Marin Municipal Water District

1. The proposed remodel will not impair the District's ability to continue service to this property.

2. The project must comply with all indoor and outdoor requirements of District Code Title 13, Water Conservation. Indoor plumbing fixtures must meet specific efficiency requirements. Landscape Plans shall be submitted and reviewed to confirm compliance. The Code requires a landscape plan, an irrigation plan and a grading plan.

3. Should backflow protection be required, it shall be installed prior to the final inspection for the retroactive building permit for the conversion of the structure to living space.

Ross Valley Sanitary District

1. The project will require a connection permit from the District. The size of the sewer lateral will depend on the fixture count calculated during the permitting process. If the existing lateral meets the size requirement of the fixture count, the applicant has the option of installing a new lateral or, the old sewer lateral needs to be tested in the presence of a District Inspector and be found to meet all current District requirements.

2. Sanitary District No. 1 will place a hold on said property once the building permit is issued. This hold prevents the new building from being released for occupancy until the District's permit and sewer requirements are fulfilled. It is the owner's responsibility to obtain a sewer connection permit from the District and meet all the District's requirements pertaining to the private side sewer lateral.

Fairfax Police/Public Works/Building Departments

The Police, Public Works and Building Departments had no comments or conditions for the project.

RECOMMENDATION

Move to adopt Resolution No. 15-18 approving application # 15-13 and setting forth the findings and conditions for the project approval (Exhibit A).

ATTACHMENTS

Attachment A – Resolution No. 15-18
Attachment B – application's supplemental information
Attachment C – geotechnical report by Dave Olnes dated 6/30/14

RESOLUTION NO. 15-18

A Resolution of the Fairfax Planning Commission Approving a Conditional Use Permit for the Remodel of the Residence at 105 Forrest Avenue

WHEREAS, the Town of Fairfax has received an application to remodel the house and upgrade the foundation of a 2,173 square foot single-family residence; and

WHEREAS, the Planning Commission held a duly noticed Public Hearing on June 18, 2015 at which time the Planning Commission determined that the proposed project conforms with the Fairfax Zoning Ordinance regulations, is less than a 50% remodel and therefore, is exempt from the Hill Area Residential Development permit and design review processes and does not require an upgrade of the existing legal non-conforming parking; 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.

WHEREAS, the Commission has made the following findings:

1. The proposed residence conforms to the regulations set forth in the Residential Single-family RS 6 Zone District.

2. The proposed development does not change the single-family residential character of the neighborhood and does not increase the number of bedrooms in the structure.

3. The proposed development is of a quality and character appropriate to, and serving to protect the value of, private and public investments in the area.

4. The project does not extend beyond the footprint of the existing residence and preserves the large rear portion of the property in its natural state.

5. The project results in a remodeled structure that maintains the same setbacks, Floor Area Ratio and Lot Coverage as the existing development. 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.

6. The development and use of property as approved under the use permit will 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.

7. Approval of the use permit is not contrary to those objectives, goals or standards

ATTACHMENT A

f. Prior to submittal of the building permit plans the applicant shall secure written approval from the Ross Valley Fire Authority noting the development conformance with their recommendations. The residence shall be provided with sprinkler system that complies with the requirements of the Ross Valley Fire Authority. If required, a fire truck pull out shall be provided or shall be identified and marked in the field.

g. Submit the record of survey with the building permit plans.

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

a. The geotechnical engineer shall be on-site during the grading and shall submit written certification to the Town Staff that the grading has been completed as recommended prior to installation of foundation and/or retaining forms and piers.

b. Prior to the concrete form inspection by the building official, the geotechnical and structural engineers shall field check the forms of the foundations and retaining elements and provide written certification to the Town staff that the work to this point has been completed in conformance with their recommendations and the approved building plans. The Building Official shall field check the concrete forms prior to the pour.

c. All construction related vehicles including equipment delivery, supply 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 project sponsor.

d. 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.

4. Prior to issuance of an occupancy permit the following shall be completed:

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

b. The Planning Department shall field check the completed project to verify that all planning commission conditions have been complied with prior to issuance of the certificate of occupancy.

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

6. a) The roadways shall be kept free of dust, gravel and other construction materials by sweeping them, daily, if necessary.

b) Every effort shall be made to minimize the disturbance of dust, sand or other particulate matter during construction.

waived by those agencies in writing to the Town Building Department.

13. The applicant must comply with all outside agency conditions unless a specific agency waives their conditions in a written letter to the Department of Planning and Building Services.

14. Prior to issuance of the building permit the applicant shall sign, notarize and record a deed restriction prepared by staff stating that there shall only be one kitchen in the structure and that the lowest level may not be used as a separate dwelling unit.

Ross Valley Fire Department

1. A fire sprinkler system shall be installed throughout the entire building which complies with the requirements of the National Fire Protection Association (NFPA) 13-D and local standards. A separate permit is required from the Fire Department. Plans and specifications for system shall be submitted by an individual or firm licensed to design and/or design/build sprinker system and be noted noted on the plans.

2. A dedicated fire truck pull out shall be included in the project plans that are submitted for building permit unless the requirement is waived by the Fire Inspector.

3. An effective fire break shall be maintained around the building by removing and clearing all flammable vegetation and/or other combustible growth within the defensible space zone of 30 to 100 feet. Ross Valley Fire protection Standard 220 Vegetation/Fuels Management plan is available on-line@Rossvalleyfire.org to assist the applicant in meeting the minimum defensible space requirements.

4. All smoke detectors in the house and accessory bedroom/bath shall be provided with AC power and be interconnected for simultaneous alarm. Detectors shall be located in each sleeping room, outside of sleeping rooms centrally located in the corridor and over the center of all stairways with a minimum of one detector per story of the occupied portion of the residence. The alarm in the accessory structure can be located anywhere in the main room (not in the bathroom).

5. Carbon monoxide alarms shall be provided in both residential buildings and shall be located outside the sleeping areas in the main house and anywhere in the accessory bedroom main room.

6. Address numbers at least 4" tall must be in place adjacent to the front door. If not clearly visible from the street, additional numbers are required . Residential numbers must be internally illuminated (backlit), placed next to a light or be reflective numbers. If the project is a new house or a substantial remodel, they may only be internally illuminated or illuminated by an adjacent light controlled by a photocell and switched on only be a breaker so it will remain illuminated all

AYES:
NOES:
ABSTAIN:

_____
Chair, Philip Green

Attest:

_____
Jim Moore, Director of Planning and Building Services

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MAR 2 0 2015

PROJECT DESCRIPTION: -Remodel and structural upgrade of existing home lower level. - Addition at lower level within structural upgrade footprint. - New lighting, heating and windows in lower story. - Regrading as needed. - New front porch, landing & s. -replace rear deck w/ patio.

GENERAL INFORMATION (if applicable):

Item	Existing	Proposed
Lot size	1. sf	
Size of structure(s) or commercial space (square feet)	836 sf	
Height and No. of stories	3	same.
Lot coverage	2,215 sf 13.8%	same.
No. of dwellings units	1	2,258 sf
Parking[1] No. of spaces	2 car garage @ street.	same.
Size of spaces		

Amount of proposed excavation and fill	Excavation = approx. 86.5 cy.	Fill = 0

Estimated cost of construction $ 550k

Lot Coverage is defined as the land area covered by all buildings and improvements with a finished height above grade and all impervious surfaces except driveways.

[1]Minimum parking dimensions are 9' wide by 19' long by 7' high. Do not count parking spaces that do not meet the minimum standards.

X Restrictions: Are there any deed restrictions, easements, etc. that affect the property, and, if so, what are they? Not that we are aware of.

X [signature]
Signature of Property Owner

Date 3/24/15

[signature]
Signature of Applicant

Date 3-24-15

Planning Department staff is available by appointment between 8:30 a.m. and 12:00 noon and 1:00 p.m. and 5:00 p.m. Monday through Thursday at 142 Bolinas Road, Fairfax, CA (415) 453-1584

ATTACHMENT B

Use Permit Applications - Additional information required.

- A written description of the proposed use, major activities, hours of operation, number of employees on the premises during the busiest shift and when the busiest shift is expected and other information pertinent to the application.

- Floor plans must include location of any special equipment.

- Designate customer, employee and living areas.

- If different uses are included in this activity, for example storage, retail, living space, etc. Indicate square footage of each proposed use.

In order to approve your project, the Planning Commission must make findings of fact which state that the project will not have a negative impact on the general public welfare, conforms with the policies of the Town, does not create excessive physical of economic impacts on adjacent property and provides for equal treatment with similar properties in Town.

In the space below, please provide any information which you feel is relevant to these issues and which further explains your project.

This structural upgrade and remodel is for the safety and residential use of a 5 person family. There will be no business run out of home and the use will be the same as the family activities currently.

The final disposition of each use permit shall be in accordance with the facts of the particular case, and such facts must support the following determinations and findings before a use permit may be approved. Indicate how the findings below can be made:

- 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.

All proposed design and improvements are typical and follow fairfax policy. There is no need for special privilege.

- The development and use of property, as approved under the use permit, shall not create a public nuisance, 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, any or all of which effects are substantially beyond that which might occur without approval or issuance of the use permit.

The building footprint and use will remain the same, and therefore will not have any future effect on adjoining properties (different) and neighbors.

- Approval of the use permit is not contrary to those objectives, goals or standards pertinent to the particular case and contained or set forth in any master plan, development plan or other plan or policy, officially adopted by the town.

All master plans, development plans and town policies have been followed in our proposed design.

DAVE OLNES P.E. INC.
CIVIL & SOIL ENGINEER
7915 CREST AVENUE, OAKLAND, CALIFORNIA 94605
PHONE & FAX: (510) 568-2162 daveolnes@sbcglobal.net

June 30, 2014

Gabrielle Hall and Brendan Donahoe
105 Forrest Avenue
Fairfax, CA 94930

RE: Geotechnical Reconnaissance
105 Forrest Avenue, Fairfax

Dear Mrs. Hall and Mr. Donahoe:

In accordance with your request I have performed a geotechnical reconnaissance of your residential property, located at 105 Forrest Avenue in Fairfax. The purpose of this examination was to investigate soil conditions underlying the area, to provide foundation recommendations for support of proposed improvements.

The scope of this limited reconnaissance included a visual examination of the existing structure, review of geologic mapping of the area and excavation of several hand-auger probes. No deep borings or lab testing were performed in this limited reconnaissance. It is essential that I be contacted to inspect the foundation excavations in progress, in order to confirm the assumptions made in this report.

SITE DESCRIPTION AND PROPOSED CONSTRUCTION: The subject property consists of a partial two-story wood framed residence located on an up-sloping hillside lot. The house structure appears to be 80+ years old, and is accessed via a set of concrete and stone steps which wind up the front slope. The lower level rooms have slab on grade floors, most of which have sub-standard ceiling heights. The front yard slopes moderately downward in a northwesterly direction toward the street, and is terraced by a series of low stone walls. There is an existing single-car garage cut into the slope at the northeast corner of the lot. There is a split level deck at the right (west) side of the house. Two grouted stone masonry walls exist behind the house. The up-sloping rear yard is terraced with a series of wood walls and small decks.

It is my understanding that you are planning to improve upon the downstairs rooms. This will require replacement of much of the foundation, in order to achieve "legal" floor heights throughout. The failing stone masonry walls at the rear will be replaced, and/or incorporated into the structure as foundation walls. Additional walls will be constructed along the street frontage, in order to provide additional off-street parking.

ATTACHMENT C

EXAMINATION OF EXISTING STRUCTURE: The original foundations consist of trapezoidal concrete footings at the perimeter. The foundation at the right (western) side of the house appears to be original. This foundation is probably unreinforced and the concrete is moderately deteriorated. There is a large crack at the right front corner, which appears to be recently active (judging by the "fresh" concrete crumbling from the crack). In contrast, the concrete in the front foundation is in good condition, with little cracking. However, pulling back the carpeting in the right front bedroom revealed a gap of up to 2 inches between the floor slab and the front foundation, which suggests that it has bowed laterally toward the slope. This gap was previously patched with concrete, and patching material has settled out, indicating the foundation is continuing to drift forward. It may be that the front footing was previously replaced, and could be reinforced, given minimal state of cracking despite the obvious bowing.

The rear and right foundations are not readily visible, as they have been concealed behind finished surfaces. It appears that a curb wall was constructed in front of the original rear foundation at the right rear quarter of the house. This likely indicates that the stairwell and lower bath were added as an afterthought, excavating below the original rear perimeter footing (both the curb wall and the original footing are concealed behind drywall). The left rear quarter of the basement remains un-excavated, and has been converted to a sleeping loft, with a plywood platform apparently laid on the crawlspace surface.

The house exhibits significant floor slope both upstairs and down. A level survey performed at the time of my examination shows that the upper floor slopes 4 inches, from a high point at the left rear corner, to a low point at the right perimeter. Readings taken off the floor slab of the lower level indicate a differential of 6 inches, trending toward the right front corner.

As stated there are two grouted stone retaining walls directly behind the house, both of which are approximately 3 feet tall. The lower wall is located within 2 feet of the back of the house, and the upper wall is set back approximately 4 feet, separated by a flagstone walkway. Both of these walls are visibly buckling. The wood terrace walls on the rear slope also exhibit varying degrees of rotation.

There are no provisions for drainage at the property. It is likely that considerable runoff from the rear slope washes over the stone retaining walls and against the back of the house. The plywood platform in the sleeping loft shows clear signs of water damage where it abuts the rear perimeter foundation.

GEOLOGICAL REVIEW: Review of a geological map of the area prepared by Strand, Rice and Smith (1976), indicates that the area is underlain by Franciscan Melange and Cretaceous Sandstone bedrock. Franciscan Melange typically consists of a random assortment of sheared shale, sandstone, greenstone and serpentine, deformed by ancient

tectonic activity. An outcrop of "massive" (ie not exhibiting fractures or bedding) sandstone is exposed in the road cut right of the entry steps.

During various site visits several probes were excavated at the site with a hand auger. Probes excavated at the front of the house encountered what appeared to be Sandstone and Shale at a depth of 3 feet below the left front corner of the house, and at a depth of 5 feet near the center. The overburden soils consist of Silty CLAY with rock fragments. In order to confirm that the probes were actually hitting bedrock and not buried rubble, your contractor excavated a large pit near the right front corner of the house. This pit encountered highly weathered Shale at a depth of 5 feet. Probing below the pit, the shale appeared to become firmer at a depth of 6 feet.

Two more probes were excavated in the area of the proposed parking spaces at the base of the lot. Not surprisingly, the probe at the right side of the entry steps, below the Sandstone outcrop, hit solid bedrock within a few inches of the surface. The probe to the left of the steps encountered approximately 18 inches of highly weathered Shale before reaching refusal.

Strand, Rice and Smith have mapped much of the surrounding hillside as an area of possible historic shallow landsliding (which is typical of most of the slopes in Fairfax). The authors have assigned the area a stability number of 4, indicating a high potential for instability. I observed no indication of active landsliding at the site. However, the distortions in the various retaining walls and the front foundation indicate that the clayey surface mantle is subject to lateral creep distortion.

SEISMICITY: It should be common knowledge that the Bay Area is subject to strong ground shaking due to the regular occurrence of earthquakes. The subject property is located within 12 kilometers of the active San Andreas and Seal Cove/San Gregorio Faults. Other nearby faults include the Hayward Fault and the Healdsburg/Rodgers Creek Fault. Given the location of the site and the shallow bedrock, there is no risk of ground rupture or liquefaction. Given the sheared nature of the Franciscan Melange formation, there is a remote risk of seismically-induced landsliding (which could be said of many of the slopes in Marin County). Quantifying this risk would require a sophisticated Geologic study outside the scope of this limited reconnaissance.

Design of the new improvements in accordance with the 2013 CBC should utilize the following factors:

Mapped Short Period Spectral Acceleration, S_S:	1.500
Mapped 1-Second Spectral Acceleration, S_1:	0.652
Site Class:	B

Short Period Site Coefficient, F_a:	1.0
1-Second Site Coefficient, F_v:	1.0
Modified Short Period Acceleration, Sms:	1.500
Modified Short Period Acceleration, Sms:	0.652
Design Short Period Acceleration, Sds:	1.000
Design Short Period Acceleration, Sds:	0.435
Design Category:	D

DISCUSSION AND CONCLUSIONS: Considering the minimal nature of the existing foundations, the house has performed reasonably well to date. Excavation of the basement will likely reveal weathered bedrock, at least at the up-slope perimeter, and possibly along the center bearing line. However, moderate differential settlement has occurred toward the downslope perimeters. Therefore it is recommended that the down-slope foundations be supported on drilled or hand-dug piers.

The lower of the two stone masonry walls behind the house should be incorporated into the new rear foundation wall of the house, which would then be a full 8 feet or so in height. The second wall should be replaced as a "Soldier Pile" structure, supported on drilled piers assuming a reduced passive resistance, in order to avoid surcharging the foundation wall. Footing-supported walls may be used to create the parking spaces at the base of the lot.

In summary, it is my opinion that the site is suitable for the proposed construction, assuming the following recommendations are adhered to.

RECOMMENDATIONS: The following are specific parameters to be used in the structural design of the foundations for the proposed improvements.

1. **GRADING:** No significant grading work is anticipated for this project, other than retained cuts for the proposed expansion of the lower level rooms. If the scope of work is revised to include unretained exterior cuts or fills in excess of 36 inches in height, please contact my office for supplemental recommendations. Soil spoils should not be deposited on site slopes.

2. **PIER AND GRADE BEAM FOUNDATIONS:** New foundation elements located at the up-slope perimeter, and at interior bearing points within the structure, may be founded on footings bearing on weathered bedrock. Spread footings may also be used to support the walls at the parking area at the base of the slope. All other foundation elements shall bear on reinforced concrete drilled or hand-dug piers.

   2.1 **Spread Footings:** Spread footings may be used to support the new foundation wall at the up-slope perimeter of the house, and at interior post locations. These footings shall extend a minimum of 12 inches below the slab subgrade, or as needed to extend through the overburden soils into the weathered Sandstone/Shale bedrock, as determined by the undersigned Geotechnical Engineer. Note that the post footings will likely have to extend to depths of 24 to 48 inches, in order to reach the weathered rock.

   The weathered Shale has a very clay-like consistency. Therefore it is recommended that the footings be designed for modest soil values, including a bearing pressure of 2000psf and a sliding friction of 0.30. A passive resistance of 450pcf may be assumed to begin at the slab level. Hard Sandstone is expected in the vicinity of the parking wall to the right of the entry steps. Design of this footing may assume a bearing pressure of 3000psf, a sliding friction of 0.40 and a passive resistance of 600pcf.

   2.2 **Drilled Piers:** Drilled piers should be 18 inches in diameter, and should be drilled at least 7 feet into bedrock, per the undersigned Geotechnical Engineer (total depths of 12 to 15 feet should be anticipated). Piers may be designed for a friction value of 500psf, for the portion extending into bedrock. For resistance to lateral loads, a passive resistance of 200pcf may be assumed to begin at grade, increasing to 450pcf at a depth of 5 feet. The passive resistance may be assumed to act against twice the pier diameter. The passive value may be increased to 600pcf where hard Sandstone is encountered.

   All piers shall contain a minimum of four #5 bars arranged in a 12-inch circular cage enclosed by a #3 bar spiraled at 6-inch pitch. This reinforcing schedule is intended to account for incidental creep and seismic forces.

   The perimeter grade beams shall have minimum dimensions of 10"x18" and shall contain a minimum of two #5 bars top and bottom, with #3 closed ties

at 16 inches on center. The grade beams shall be connected to the foundation piers with a minimum of four #5 angle dowels.

2.3 **Optional Hand-Dug Piers:** Hand-dug piers may be used in lieu of drilled piers. Hand-dug piers shall have minimum dimensions of 2'x3', and shall be excavated to minimum depths of 5 feet, or as needed to achieve full bearing in weathered bedrock, as verified by the undersigned Geotechnical Engineer. Hand-dug piers shall be designed for a bearing value of 2000psf (or 3000psf where hard Sandstone is encountered).

2.4 **Floor Slabs On Grade:** New floor slabs shall be a minimum of 4 inches thick slabs, reinforced with a minimum of #4 bars at 18 inches on center each way. Slab reinforcing shall be integrated into the structural foundations. Floor slabs used as living space shall be constructed over a moisture barrier consisting of 4 inches of clean 3/8-inch pea gravel or 3/4-inch river rock (do not use 3/4-inch crushed rock as the sharp edges tend to perforate the membrane), covered by a minimum 10-mil plastic membrane and 2 inches of sand.

3. **RETAINING WALLS:** Site retaining walls shall be designed for an active pressure of 45pcf for slopes flatter than 2:1, or 60pcf where the backfill slope is 2:1 or greater. The new perimeter foundation wall of the house, and the new parking walls at the base of the slope, may bear on spread footings per Section 2.1. All exterior walls sited on sloping grades shall bear in drilled piers, per Section 2.2. For replacement of the stone wall behind the house, the passive resistance for the piers should be reduced to 200pcf for the first 8 feet, if the wall is to be located within 6 feet of the foundation wall of the house.

Retaining walls shall contain gravel back drains wrapped in filter cloth, with perforated piles or weep holes or slots along the base. Foundation walls shall utilize waterproofing membranes attached with termination bar at the top edge.

4. **DRAINAGE:** As a minimal drainage improvement, all roof downspouts shall be fitted with 4-inch solid PVC discharge pipes. Surrounding yard and patio areas shall utilize V-1 or brass catch basins tied to the roof downspout lines, or shall be graded to shed runoff away from the house in an unconcentrated manner.

In order to mitigate seasonal moisture intrusion into the crawlspace area and reduce hydrostatic pressure against the rear foundation wall, a perimeter gravel subdrain around the house. The subdrains shall consist of a trench extending at least 12 inches below the adjacent floor slab, sloped at 1%. A perforated PVC pipe shall be placed along the bottom of the trench, and the trench shall be backfilled with 3/4-inch drain rock wrapped in filter cloth.

All piping shall be 4-inch SDR-35 PVC. All drain lines shall be sloped at 1% minimum to outlet at two or more rubble dissipaters at the base of the lot. Drainage systems require regular maintenance to insure proper functioning. Catch basins and downspout pipes should be flushed regularly (dependant on the rate of falling leaf litter). Discharge points should be also be periodically inspected to insure that outlet piping is not obstructed. It is recommended that an accurate as-built plan of the drainage systems be prepared, and that maintenance requirements be disclosed to all future buyers of the property.

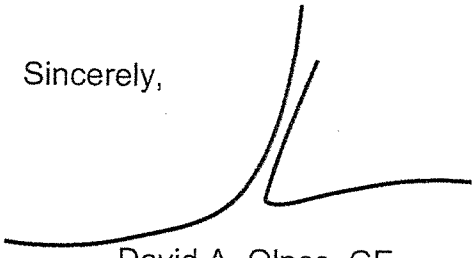
5. **PLAN REVIEW AND CONSTRUCTION OBSERVATION:** It is recommended that I review the final building plans for conformance with the above recommendations and inspect all pier drilling, footing excavations and subdrain trenches in progress prior to placement of reinforcing steel, concrete or backfill. Allowances should be made for potential changes to the final design requirements in the event that actual construction conditions differ from the conditions assumed in this report.

EXCLUSIONS: The preliminary findings and recommendations outlined above are based entirely on visual observations. The examination did not include deep borings or analysis of the "global" stability of the underlying strata of the area. Further engineering investigation and analysis could effect the final design recommendations and the ultimate cost of the project. At your request I can provide you with a separate contract for additional investigative services.

LIMIT OF LIABILITY: This report was prepared under written contractual agreement with the addressee (client) indicated above. The client has agreed to limit the liability of Dave Olnes P.E., Inc. to an amount not to exceed ten times the fee for services indicated above, for any and all matters arising from this visual examination and report. The information provided herein is for the exclusive use of the specified client. Dave Olnes P.E., Inc. shall assume no liability for other parties who use the report without its express written consent. The recommendations contained in this report are valid for a period of two years, pending further review by the undersigned Geotechnical Engineer.

If you have any questions regarding this matter, please contact my office at (510)568-2162.

Sincerely,



David A. Olnes, GE
Principal Engineer

2Forrest(105)-Recon

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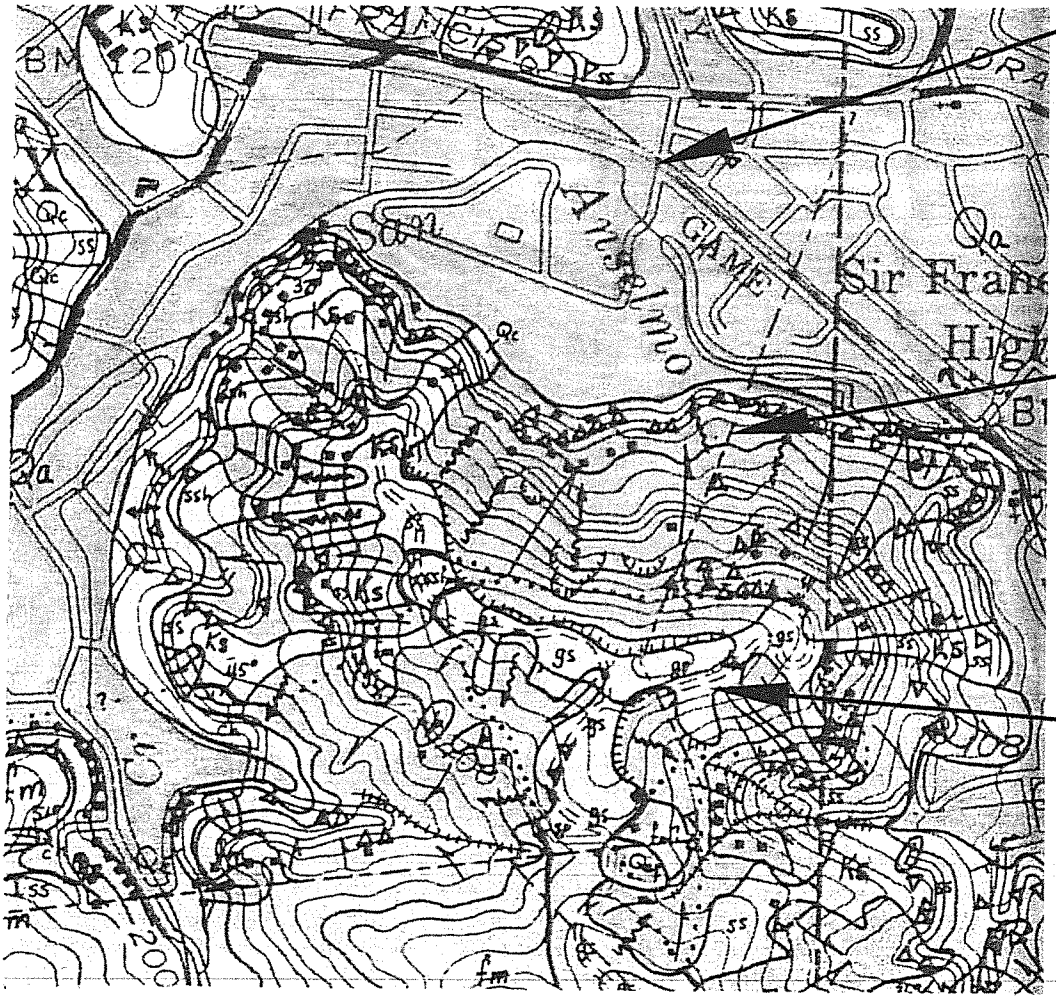
Olnes, David A., "Foundation Evaluation, 105 Forrest Avenue, Fairfax, California", February 13, 2011.

Rice, Salem J.; Smith, Theodore C.; Strand, Rudolph G., State of California Division of Mines and Geology, Open File Report 76-2, "Geology for Planning: Central and Southwest Marin County, California", 1976.

State of California Division of Mines and Geology,"Maps of Known Active Fault Near-Source Zones in California and Adjacent portions of Nevada", 1998.



SITE LOCATION AND GEOLOGY MAP

SCALE: 1"~1000'

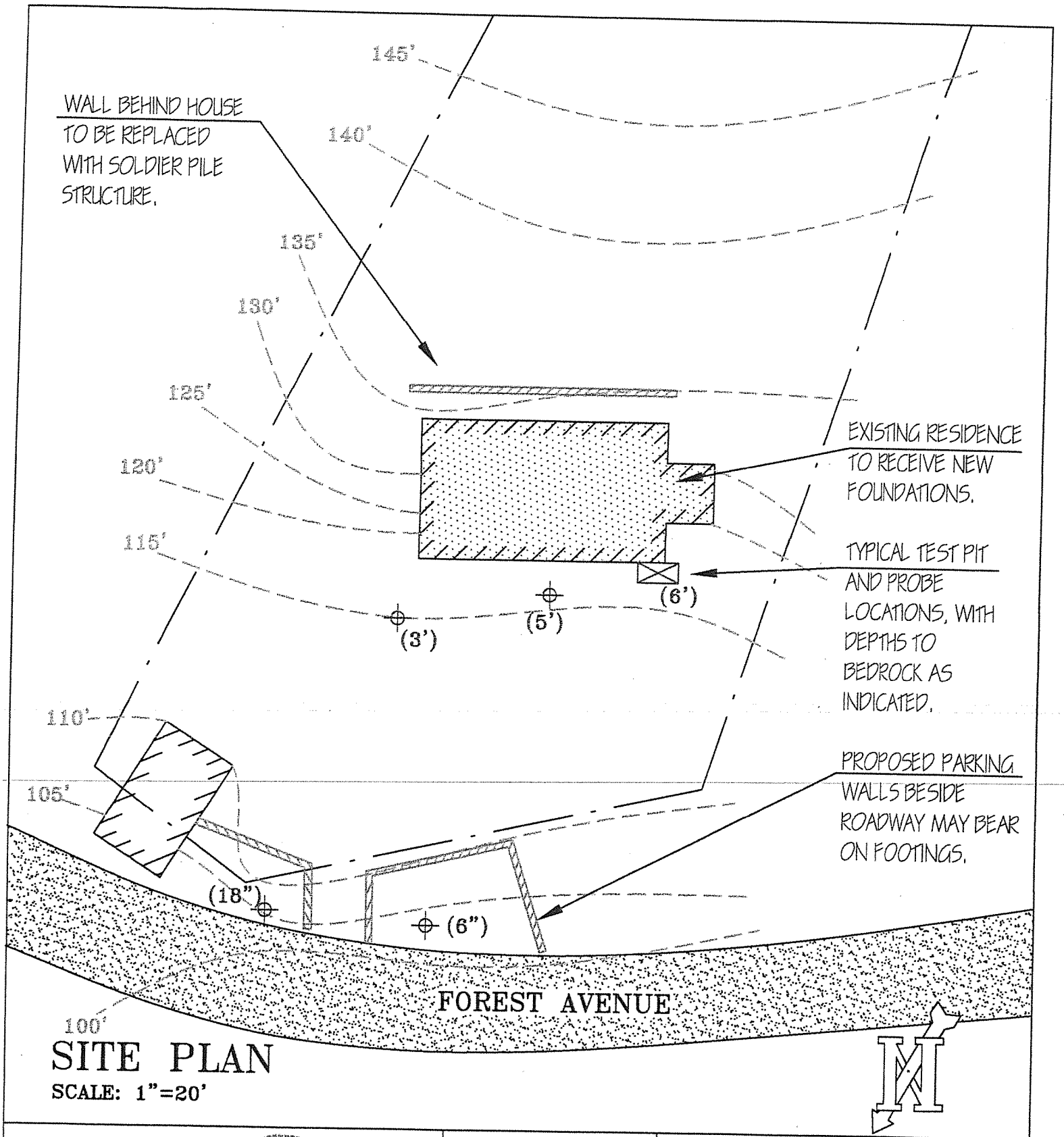
SOURCE:
STATE OF CALIFORNIA DEPT. OF MINING & GEOLOGY, OPEN FILE REPORT 76-2
"GEOLOGY FOR PLANNING: CENTRAL & SOUTHEAST MARIN COUNTY, CALIFORNIA,"
SALEM J. RICE, THEODORE C. SMITH & RUDOLPH G. STRAND, 1976.

DAVE OLNES P.E. INC.
CIVIL & SOIL ENGINEER
7915 CREST AVENUE OAKLAND CALIF. 94605
PH & FX: (510)568-2162 daveolnes@sbcglobal.net

SCALE: 1"~1000'
JOB #: VO-3938
DRAWN: DAO
DATE: 3-25-14

GEOTECHNICAL RECONNAISSANCE
105 FORREST AVENUE
FAIRFAX, CALIFORNIA

FIGURE: 1



SITE PLAN

SCALE: 1"=20'

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GEOTECHNICAL RECONNAISSANCE
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FAIRFAX, CALIFORNIA

FIGURE: 2

105 Forrest Ave Parking Improvement APN 002-192-22