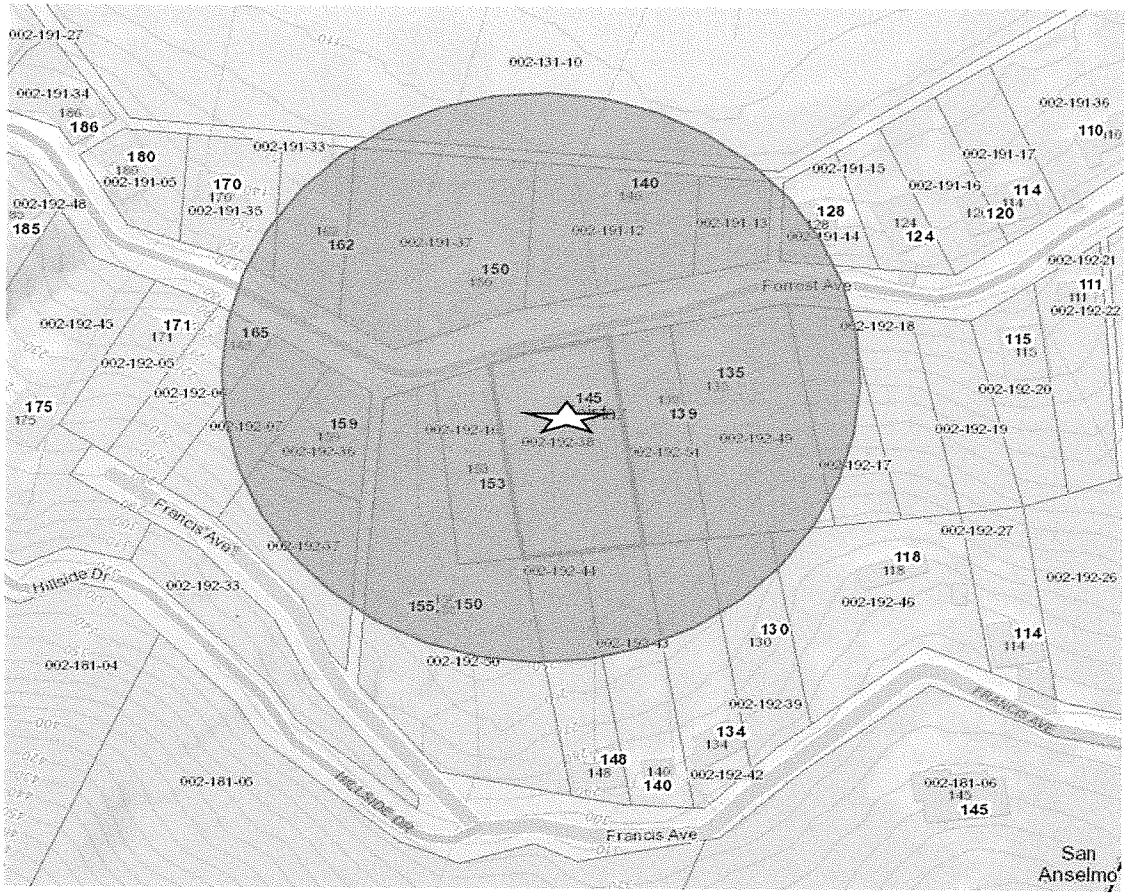
TOWN OF FAIRFAX
STAFF REPORT
Department of Planning and Building Services

TO:	Fairfax Planning Commission
DATE:	April 26, 2017
FROM:	Michelle Levenson, Zoning Technician
LOCATION:	145 Forrest Avenue; Assessor' Parcel No. 002-192-38
ZONING:	Residential RS 6 Zone
PROJECT:	Renovate a Single-Family Residence and Remove an Unauthorized Retaining Wall and Vehicle Pull-Out
ACTION:	Application No. 16-35; Conditional Use Permit
APPLICANT:	Erick Mikiten, Mikiten Architecture
OWNER:	Vakil Kuner
CEQA STATUS:	Categorically Exempt, §15301(a)



145 Forrest Avenue

AGENDA ITEM # 2

BACKGROUND

The 17,346-sqaure-foot lot is located along Forrest Avenue. The site slopes up from Forrest Avenue and has an average slope of 38-percent. The site contains a one-story, 1,671-square-foot single-family residence that is 13-feet, 10-inches in height. An unnamed drainage runs along the western boundary of the site.

In early January 2016, the applicant submitted a preliminary application to Planning and Building Services Department staff requesting review of and comment on the proposed project. In addition to improvements to the single-family residence, the preliminary application included work to an existing retaining wall along the western boundary of the property. Upon a site inspection of the property in January 2016, staff discovered that in the area of the proposed retaining wall repair, the previous owner(s) had constructed a retaining wall extension that supports a vehicle turn-out, without the required approvals. The wall extension appears to be un-engineered and is attached to several mature redwood trees, endangering the health of the trees and posing potential safety issues to the roadway below. (Attachment B). In a letter dated January 25, 2016 (Attachment C), staff requested additional information regarding the proposed retaining wall repairs including a report by an arborist regarding the present and continued health of the redwood trees.

On June 23, 2016, the applicant submitted the formal application for the project; the formal application did not include repair and legalization of the retaining wall extension. The applicant has stated that while the owner is pursuing repairs to the retaining wall extension in an attempt to legalize the structure, the work will be pursued as a separate project. In a letter dated August 3, 2016, and emails dated August 25, 2016 and September 6, 2016, staff advised the applicant that the retaining wall repair may require discretionary approval(s) by the Planning Commission and that it would be in the best interest of the property owner to revise the planning application and submit the required materials to evaluate and process the improvements to the retaining wall extension with the improvements to the single-family residence (see Attachment D for August 2016 and September 2016 correspondence). The owner requested that staff proceed with the application, without the retaining wall repair component.

On September 15, 2016, the application was considered by the Planning Commission at its regularly scheduled meeting. At the meeting, the Planning Commission requested that the item be continued to such a date when the project included repair of the retaining wall, in consultation with the Town Engineer and Town Arborist.

After receipt and review of a series of proposals (a total of three design iterations were submitted by the applicant), the plans received on March 17, 2017, were found to comply with the recommendations of the Town Engineer and Town Arborist (see Attachment E for recommendations from the Town Engineer and Town Arborist). The proposal would involve removing the unauthorized vehicle turnout and the majority of the failing retaining wall and associated fill under the direction of an on-site arborist and

engineer. To support a section of the existing driveway, a cantilevered system is proposed that would utilize a series of small pipe piles (3-inches-in-diameter) that would support the continuation of the edge of the driveway.

REQUIRED DISCRETIONARY PERMIT

With regard to the RS-6 Zone, Town Code Section 17.080.050 states that, "...a use permit...must be first secured in the RS-6 Zone for any use, occupancy or physical improvement failing of or on a building site failing to meet the following requirements:... (C) Building sites having a slope of more than 15 percent shall increase in area above 7,000 square feet, and a minimum width of 65 feet, at a rate of 1,000 square feet of area and three feet of width for each one percent increase in slope...".

The site slope is 38-percent; correspondingly the Town Code requires a minimum buildable area of 30,000 square feet and a minimum width of 99 feet. The project site is 17,346 square feet in area and 99 feet wide. Because the site does not meet the minimum Code requirements, a Conditional Use Permit (CUP) is required.

DISCUSSION

The application proposes the following improvements to the residence; (1) removing an interior wall creating a combined living/dining space; (2) extending a rear (southern) wall 4 feet to the south creating 94 square feet of additional area to the combined living/dining area; (3) covering an existing 874-square-foot concrete patio with an 870-square-foot deck; (4) constructing an 18-square-foot master bedroom closet by extending out from the eastern exterior wall by approximately 2 feet; and (3) creating an entry porch, with an arbor (62 square feet) A total of 112 square feet of additional square footage is proposed with project.

As indicated above, the property is zoned "Residential RS-6". The project complies with the regulations for the RS-6 Zone as follows:

	Front Setback (ft)	Rear Setback (ft)	Combined Front/rear Setback (ft)	Side Setbacks (ft)	Combined Side Setbacks (ft)	FAR	Lot Coverage	Height
Required/ Permitted	6	12	35	5 & 5	20	.40	.35	28.5 feet; 3 stories
Existing	28	92	120	20.5 & 10	30.5	.07	.19	13 feet, 10 inches; 1 story
Proposed	No change	No change	No change	20.5 & 8	28.5	.08	.20	No change

Conditional Use Permit

The purpose of the CUP process is to allow the proper integration of uses which may only be suitable in certain locations or only if the uses are designed in a particular way [Town Code § 17.032.010(A)]. In consideration of a CUP application, the Commission must make the findings required under Town Code Section 17.032.060 specifically that the granting of a CUP shall (1) not constitute a grant of special privilege or contravene the doctrines of equity and equal treatment; (2) the development and use of the property, as approved under the CUP shall not create a public nuisance, cause excessive or unreasonable detriment to adjoining properties, cause adverse physical or economic effects or create undue or excessive burdens in the use and enjoyment of neighboring properties; (3) approval of the CUP is not contrary to the goals and standards adopted by the Town; and (4) approval of the CUP will result in equal or better development of the premises that would otherwise by the case and the approval is in the public interest and for the protection or enhancement of the community.

Homes in the immediate neighborhood range in size from a 1,284-square-foot residence containing 2 bedrooms and 1.5 bathrooms on a 14,740-square-foot lot (140 Forrest Avenue) to a 2,324-square-foot residence containing 4 bedrooms and 2.5 bathrooms on a 25,336-square-foot lot (150 Forrest Avenue). The proposed project would result in a 1,783-square-foot, 3-bedroom, 2-bathroom residence. The resultant residence would not be out of scale with other neighboring residences or the property, and would afford the occupant(s) similar amenities to those experienced by neighboring residents. Therefore, the proposed project would not constitute a grant of special privilege or contravene the doctrines of equity and equal treatment.

The addition of the master bathroom would be limited to a 2-foot-wide extension off of the eastern wall of the residence and would maintain an 8-foot setback from the side property line. In addition, the rear extension would be outside of the required rear setback and due to the topography of the site would be not be visible from the rear neighboring residence. All required setbacks would be maintained with the project

The 2010-2030 Fairfax General Plan Policies LU-7.2.2 and CON-5.2.1 encourage the retention of native tree species. The applicant has developed a proposal to remove the unauthorized retaining wall that currently poses harm to redwood trees and to install a cantilevered system to support a section of driveway in a manner that would protect the current and long-term health of the trees. Therefore, the project would be consistent with goals and standards adopted by the Town.

The implementation of the project would afford the property owner with an enhanced use of outdoor space, and would improve the functionality of the interior of the residence. With the construction of the residential improvements as well as remedying the unauthorized retaining wall and vehicle turnout, the project would result in equal or better development of the premises and would be in the public interest and would protect and enhance the community.

Other Agency/Department Conditions/Comments

Ross Valley Fire Department (RVFD)

1. A 13-D type sprinkler system with added sprinkler heads in the attic, closets and under the rear deck shall be installed throughout the entire building that complies with the requirements of the National Fire Protection Association. Plans and specifications for the system shall be submitted by a licensed design and/or design sprinkler system entity.

2. A Vegetation Management Plan designed in accordance with Ross Valley Fire Standard #220 is required for the project. A separate deferred permit shall be required for this plan and submitted directly to the RVFD for review and approval.

3. All smoke detectors in the residence 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.

4. Carbon monoxide alarms shall be provided in residential buildings and shall be located outside of all sleeping areas.

5. 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 (MMWD)

1. The project must comply with all the indoor and outdoor requirements of District Code Title 13, Water Conservation. Plans must be submitted to the District and be approved.

2. The District's backflow prevention requirements must be met and if installation of a backflow device is required, the device shall be tested/inspected and be approved by a District Inspector prior to the project final inspection and issuance of the occupancy permit.

3. Comply with MMWD Ordinance No. 429, requiring the installation of gray water

recycling systems when practicable for all projects required to install new water service and existing structures undergoing "substantial remodel" that necessitates an enlarged water service.

Ross Valley Sanitary District and the Fairfax Police, Public Works and Building Departments

The Ross Valley Sanitary District, Ross Valley Fire Department, and the Fairfax Police, Public Works and Building Department(s) did not provide conditions of approval or comments on the project.

RECOMMENDATION

1. Open the public hearing and take testimony.

2. Close the public hearing.

3. Move to approve Application No. 16-35 by adopting Resolution No. 16-28, setting forth the findings and conditions for project approval.

ATTACHMENTS

Attachment A – Resolution No. 16-28
Attachment B – Retaining Wall Photos
Attachment C – January 25, 2016 Letter to Applicant
Attachment D – August 3, 2016 Letter to Applicant, and Emails to Applicant dated August 25, 2016 and September 6, 2016
Attachment E – Recommendations-Town Engineer and Town Arborist

RESOLUTION NO. 16-28

A Resolution of the Fairfax Planning Commission Approving a Conditional Use Permit for the Expansion of the Residence and Replacement of the Unpermitted Driveway Retaining Wall at 145 Forrest Avenue

WHEREAS, the Town of Fairfax has received an application to construct a 94-square foot, dining room/living room addition and a 18-square-foot, master bedroom closet addition to an existing 1,671-square-foot, 3-bedroom, 2-bathroom single-family residence increasing the living space to 1,783-square-feet, as well as to remove an unauthorized retaining wall and vehicular turn-out and install a cantilevered support system for a section of driveway; and

WHEREAS, the Planning Commission held a duly noticed meeting on April 26, 2017, at which time the Planning Commission determined that the proposed project, as long as the conditions of approval contained within this resolution are met, conforms with the Fairfax General Plan and Zoning Ordinance regulations; 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. Houses in the immediate neighborhood on similarly sized, sloped lots range in size from a 1,284-square-foot, 2-bedroom, 1 ½-bathroom house on a 14,740-square-foot parcel (140 Forrest Avenue) to a 2,324-square-foot, 4-bedroom, 2 ½-bathroom house on a 25,226-square-foot parcel (150 Forrest Avenue). Therefore, the proposed 1,783--square-foot, 3-bedroom, 2-bathroom residence on this 17,346--square-foot site is not out of scale with the property or with other residential structures in the neighborhood.

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 once the unpermitted driveway retaining wall is: 1) either removed and the natural bank surrounding the unauthorized structure: or 2) a replacement wall is designed by a licensed engineer in conjunction with an ISA Certified Arborist, is permitted by the Town and constructed in conjunction with the additions to the residence.

4. The project results in a remodeled structure that maintains the required setbacks, height- floor area ratio and lot coverage percentage(s). Therefore, the

ATTACHMENT A

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 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.

6. The use permit conditioned upon removal of the unauthorized retaining wall and vehicular turnout and construction of a new support system, will not be contrary to those objectives, goals or standards pertinent to the particular case and contained in the 2010 – 2030 Fairfax General Plan or set forth in the Town Code.

7. Approval of the use permit will result in equal or better development of the premises than would otherwise be the case and will result in the reconstruction of an unpermitted retaining wall so that it is in compliance with the Fairfax General Plan, Zoning Ordinance, accepted engineering techniques and the Uniform Building Code.

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

1. This approval is limited to the development illustrated on the plans prepared by Mikiten Architecture, entitled, "Kuner Additional and Remodel", Sheets T-1.0 through T-2.0 (revised 3/15/16 (sic)), Sheet A-1.0 (revised 3/15/16 (sic)), Sheet A-2.1 (revised 3/15/16 (sic)), A-3.1 through A-3.2 (revised 3/15/16 (sic)) and Sheet S-1 dated 10/4/16, all received on March 21, 2017.

2. Secure written approval from the Ross Valley Fire Authority, Marin Municipal Water District and the Ross Valley Sanitary District noting that the development conformance with all of their recommendations and conditions.

3. During removal of the existing retaining wall and vehicle turn-out and installation of the new cantilever system, the project arborist and engineer shall be on-site to ensure any recommended mitigation measures are properly implemented. As directed by the Town Engineer and the Town Arborist, the pipe piles shall be installed a minimum of four (4) feet and the cantilevered curb edge shall be installed no closer than one (1) foot from the edge of any redwood tree trunk. Prior to the project final inspection, the arborist and engineer shall provide written verification that the project has been constructed in compliance with the approved plans, recommendations and mitigation measures.

4. All construction-related vehicles including equipment delivery, supply delivery and cement trucks, as well as all construction material 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.

5. 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.

6. The following Best Management Practices shall be employed:

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

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

7. Any changes, modifications, additions or alterations made to the approved set of plans will require a modification of Application # 16-35. Any construction based on job plans that have been altered without the benefit of an approved modification of Application 16-35 will result in the job being immediately stopped and red tagged.

8. Any damages to Forrest Avenue or other public roadways used to access the site resulting from construction activities shall be the responsibility of the property owner.

9. 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. If the parties cannot reach agreement, the Town may select its own legal counsel and the applicant agrees to pay directly, or timely reimburse on a monthly basis, the Town for all such court costs, attorney fees, and time referenced herein, provided, however, that the applicant's duty in this regard

shall be subject to the Town's promptly notifying the applicant of any said claim, action, or proceeding.

10. The applicant shall comply with all applicable local, county, state and federal laws and regulations. Local ordinances which must be complied with include, but are not limited to: the Noise Ordinance, Chapter 8.20, Polystyrene Foam, Degradable and Recyclable Food Packaging, Chapter 8.16, Garbage and Rubbish Disposal, Chapter 8.08, Urban Runoff Pollution Prevention, Chapter 8.32 and the Americans with Disabilities Act.

11. The applicant shall comply with any and all the conditions of the Marin Municipal Water District, Ross Valley Sanitary District, Ross Valley Fire Department, Fairfax Public Works Department and Fairfax Building Department. Other agency conditions can be waived by those agencies in writing to the Town Building Department.

12. Other agency/department conditions can be waived by that agency/department in writing to the Fairfax Planning and Building Services Department.

Ross Valley Fire Department (RVFD)

1. A 13-D type sprinkler system with added sprinkler heads in the attic, closets and under the rear deck shall be installed throughout the entire building that complies with the requirements of the National Fire Protection Association. Plans and specifications for the system shall be submitted by a licensed design and/or design sprinkler system entity.

2. A Vegetation Management Plan designed in accordance with Ross Valley Fire Standard #220 is required for the project. A separate deferred permit shall be required for this plan and submitted directly to the RVFD for review and approval.

3. 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.

4. Carbon monoxide alarms shall be provided in residential buildings and shall be located outside of all sleeping areas.

5. 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 (MMWD)

1. The project must comply with all the indoor and outdoor requirements of District Code Title 13, Water Conservation. Plans must be submitted to the District and be approved.

2. The District's backflow prevention requirements must be met and if installation of a backflow device is required, the device shall be tested/inspected and be approved by a District Inspector prior to the project final inspection and issuance of the occupancy permit.

3. Comply with MMWD Ordinance No. 429, requiring the installation of gray water recycling systems when practicable for all projects required to install new water service and existing structures 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 Conditional Use Permit is in conformance with the 2010 – 2030 Fairfax General Plan and the Fairfax Zoning Ordinance, Town Code Title 17; and

- Construction of the residence can occur without causing significant impacts on neighboring residences and the environment.

The foregoing resolution was adopted at a regular meeting of the Planning Commission held in said Town, on the 26th day of April, by the following vote:

AYES:
NOES:
ABSTAIN:

_____
Chair, Norma Fragoso

Attest:

_____
Linda Neal, Principle Planner

Photo 1: Retaining wall tilting to the west (driveway above)

Photo 2: Compromised base of wall. Note exposed open-ended drainage pipe.

ATTACHMENT B

Photo 5: Deteriorated wall.

Photo 7: Topped-off redwood tree

TOWN OF FAIRFAX
142 Bolinas Road, Fairfax, California 94930
(415) 453-1584 / Fax (415) 453-1618

January 25, 2016

Erick Mikiten
2415 Fifth Street
Berkeley, California 94710

Re: 145 Forrest Avenue, Fairfax, Marin County
Assessor Parcel Number 002-192-38
Preliminary Plan Review

Dear Mr. Mikiten,

The Department of Planning and Building Services has completed its preliminary review of the above referenced plans entitled, "Kuner Addition and Remodel, 145 Forrest Avenue, Fairfax, California 94930", Sheet(s) T-1 and A-1 through A-3, prepared by Mikiten Architecture, dated January 4, 2016, and received on January 5, 2016. The following represents our findings and request for additional information. Please note that the information requested below will be required in the formal application submitted for the project.

Project Details

(1) *Property Boundaries*- Thank you for providing the front and side property lines for the property. In addition, please indicate the location of the rear property line on the project plans.

(2) *Square Footage Estimates*-Our calculations indicate that the proposed project would result in the addition of 172 square feet, however the plans cite different estimates (e.g, 150 to 170 to 172 square feet). Please reevaluate the square footage estimates provided in the plan and provide consistent square footage(s) for the proposed project.

(3) *Scope of Work and Project Cost*-The description of the work to be performed is unclear. The "Construction Permit Application" and the "Scope of Work" shown on the project plans (Sheet T-1) state that the work consists of extending the front entry to include a new porch, foyer and closet, extending the dining and living room, remodeling the master bathroom and adding a closet to the master bedroom by extending the residence to the east. However, the plans note that the northwestern retaining wall would be "rebuilt", the rear deck would be resurfaced and the roof would be "re-roofed". Please indicate all work that is proposed at this

ATTACHMENT C

percent involves the movement of 50 cubic yards or more, a "Hill Area Residential Development Permit" is required. Please indicate the amount of earth moving proposed for the retaining wall and other project components. Based on this information, staff will determine whether a "Hill Area Residential Development Permit is required.

Once you have finalized the scope of the project, we will be able to provide you with input on staff's position regarding the project. If you have any questions, please do not hesitate to contact the Department of Planning and Building Services.

Sincerely,

Michelle Burt Levenson
Zoning Technician

cc: Mr. Vakil Kuner, property owner

Attachment(s)

TOWN OF FAIRFAX
142 Bolinas Road, Fairfax, California 94930
(415) 453-1584 / Fax (415) 453-1618

August 3, 2016

Erick Mikiten
2415 Fifth Street
Berkeley, California 94710

Re: 145 Forrest Avenue, Fairfax, Marin County
Assessor Parcel Number 002-192-38
Planning Application Review

Dear Mr. Mikiten,

On June 23, 2016, the Department of Planning and Building Services received a Planning Application for the renovation and expansion of the single-family residence located at 145 Forrest Avenue, in the Town Fairfax. While staff has determined that the Planning Application is "complete", it has come to our attention that work on the northwestern retaining wall was performed without the necessary Town approvals, and that the resultant retaining wall poses potential safety issues and endangers the health of mature redwood trees. The retaining wall must be corrected and brought into compliance with the Town Code to avoid the initiation of formal abatement action.

Staff has identified the following two options for correcting and obtaining approval for the retaining wall:

(1) Revise the project application and plans to include improvements to the retaining wall at this time. Depending on the scope of these activities, additional discretionary approvals from the Planning Commission may be required. For example, bringing the wall up to accepted engineering standards and eliminating its connection to the redwood tree(s) may increase its height beyond 6 feet, which would require the approval of a retaining wall height variance. If additional discretionary approvals are required, the request for these approvals could be combined with the renovation work. An arborist and engineer report(s) would be required to evaluate the retaining wall; or

(2) Bring the current application before the Planning Commission without the retaining wall work. The staff would recommend the project be approved by the Planning Commission subject to future discretionary approvals (if applicable) for the retaining wall work and issuance of a building permit for the engineered wall, prior to the issuance of a building

ATTACHMENT D

Michelle Levenson

From: Michelle Levenson
Sent: Thursday, August 25, 2016 10:05 AM
To: 'Erick Mikiten AIA'
Subject: RE: 145 Forrest

Hi Erick-Thanks for chatting with me this morning.

As we discussed, I am waiting to receive comments from the Ross Valley Fire Department regarding the project. I rerouted the plans to them and have let them know that this project needs review. Once I receive their comments, I can schedule the meeting before the Planning Commission. There is a tight time frame for the September 15, 2016 meeting as I would need to receive comments from the Fire Department by mid-next week to include the project on the Meeting Agenda which gets mailed to adjacent property owners on September 2, 2016.

In addition, the Town has not received any information or application for the retaining wall work. As I indicated in my letter to you dated August 3, 30216, the retaining wall work may require additional Planning Commission approval. While Planning Staff would prefer to process the retaining wall and renovation work as one project, I understand that the preference of the home owner is to process the items separately. Please be aware and as indicated in my August 3rd letter, the building permit for the renovation work will be contingent upon the issuance of a building permit for the retaining wall.

Please let me know if you have additional questions.

Michelle Levenson
Town of Fairfax

From: Erick Mikiten AIA [mailto:erick@mikitenarch.com]
Sent: Wednesday, August 24, 2016 9:36 AM
To: Michelle Levenson
Cc: Victoria Ellison; Linda Neal
Subject: Re: 145 Forrest

Hi Michelle,

Checking back on these questions. I left another VM this morning.

Thanks.
Erick

Erick Mikiten, AIA
Architect, LEED-AP
MIKITEN ARCHITECTURE

2415 Fifth Street, Berkeley, CA 94710
510-540-7111 Fax: 540-7117
www.MikitenArch.com

Michelle Levenson

From: Michelle Levenson
Sent: Tuesday, September 06, 2016 11:02 AM
To: 'Erick Mikiten AIA'; Victoria Ellison
Cc: Linda Neal
Subject: RE: 145 Forrest - Retaining Wall
Attachments: 145 Forrest-apprvw8.3.16.pdf

Hi Erick-The specific details (location, length, height, engineering report, materials, etc.) for the retaining wall, as well as the arborist report and recommendations/mitigation measures to ensure the continued health of the redwood trees, are necessary to "tie" the project in with the residential improvements and include the retaining wall work with the current planning application.

As detailed in the attached letter dated August 3, 2016, depending on the details of the retaining wall work, discretionary approvals specific to the wall could be required. Based on the information we have at this time as well as a site inspection, staff believes that additional discretionary approvals for the wall are likely. Because of the likelihood of additional discretionary approvals, staff advised you and the property owner in the 8/3/16, letter to provide the required information listed above, revise the planning application accordingly and apply for approval for the retaining wall work with the current request for approval of the residential improvements.

As I understand from our conversations, the owner has decided not to pursue this option and wishes to pursue the improvements separately. As detailed in my attached letter, any discretionary approvals issued for the residential improvements would be conditioned such that the building permit for the residential improvements would be issued once all discretionary approvals and a building permit have been issued for the retaining wall.

As we discussed, the staff report for the currently submitted project will be going out this Friday, 9/9/16. If the owner decides to change the project in any way from the most recently submitted plans (dated 6/23/16) you will need to revise the relevant sections of the planning application form and provide revised project plans. I will need information (revised form and plans) regarding project revisions by 9/7/16 at 10:00am if you wish to be on the 9/15/16 Planning Commission Agenda.

Lastly, we discussed several scenarios related to revising the project after receiving Planning Commission approval. As you know while sometimes unavoidable, changing the project after receiving project approval is not optimal. Depending on the changes proposed, additional review and approval before the Planning Commission could be required. The fee for changes to the Conditional Use Permit is $813 and is subject to the same time frame that governs the initial application submittal (e.g., the Permit Streamlining Act).

Unfortunately, I do not have the email address for the property owner; please forward this email to him at your earliest convenience.

Please contact me should you have further questions.

Michelle Levenson
Town of Fairfax

From: Erick Mikiten AIA [mailto:erick@mikitenarch.com]
Sent: Tuesday, September 06, 2016 9:59 AM
To: Michelle Levenson

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: April 14, 2017

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 3/27/17 e-mail. The documents reviewed included a 3/15/17 plan by Structural Engineer Detlev Doring, a topographic survey by David Harp & Associates, dated 9/10/15 and five plan sheets by Mikiten Architecture, dated 12/2/16. I suspect that the date of 3/15/16 on the Architect's plans was intended to be 3/15/17.

The Detlev plan shows what was discussed at the 3/7/17 site meeting as what I and Town Staff expressed as the design concept which would achieve the result recommended in the 11/2/16 Urban Forestry Associates, Inc. report. My involvement in this project was to help Town Staff work through the engineering details to achieve an improved condition for the existing Redwood Trees along the site driveway. We were working with the recommendations in that Urban Forestry Associates report and I find that this latest design does a good job of following those recommendations.

Removals of existing concrete slabs and some of the existing wood retaining walls are called for. There are some wood retaining walls that are not shown to be removed that might provide a better result if they are removed but I think the concept is to leave those removals to the judgment of the arborist and Town Staff. Soil fill removal that is damaging the trees will need to be removed under the direction of the arborist and that should also include approval by the soils engineer. Fill that has been invaded by the Redwood Tree roots, I think, should be left in place since removal of that fill would also remove the roots.

My review is not a structural plan check. I noted that the Detlev plan does not have the engineer's signature and there are no structural calculations for it. This driveway must be strong enough to carry vehicle wheel loads. If there is to be a structural plan check that should be done as part of the Building Official's normal review. I did see that the structural section calls out a 6" thick concrete slab that is dimensioned to be 8" thick. My suggestion is that the 6" thickness was a missed revision in the plan change and that it will be very difficult to get all the steel placement and concrete cover requirements if that slab is placed at 6" thick. As noted on the plan, the pipe pile locations are to be subject to field review to minimize damage to the Redwood Tree roots.

This is the first time I have seen the Harp topographic survey. It is not signed but that is okay unless you need information from it for your review. It was good information but it was not essential for the review I provided.

ATTACHMENT E

"Wood Lagging Clarification

The structural section drawing A/S1 shows wood lagging supported by the concrete piers. This was interpreted as being continuous, thereby cutting through any tree roots. But the intention was that it would only occur where the tree roots are not providing support for the soil under the driveway. This can only be determined after the driveway edge and the existing retaining wall are removed.

We have put a note on the attached drawing clarifying that the wood lagging is not to cut through existing roots".

As previously noted, the work is very close to the trees and it should be expected that the roots will be everywhere in this area. The plan and statement above indicate the intention to rely on the tree roots for some structural support. In my experience, tree roots should not be relied on for structural support except for supporting trees.

"Conjecture and the Process

Only once the existing retaining wall and driveway edge are removed can we determine placement of piers, amount of unsupported exposed soil, and configuration of redwood tree roots. Until then we are making educated guesses. We don't know when the retaining wall was built without permit; the soil behind it might be full of some redwood tree roots that none of us would want to lose, or it could be 100% soil. The roots might be dense under the driveway proper, or have many voids that make locating piers easy.

The impossibility of exactly determining these things prior to starting demolition is probably the main reason that a solution has been difficult to agree upon; we can't design for all possible scenarios and the ideal solution will actually depend on things that are now hidden from view. I think it's important for us all to agree that a drawn solution can only go so far.

We'd like to agree on a basic concept, and recognize that we may have to make adjustments in the field, rather than drag the process out further with month-long reviews of costly drawn scenarios. Alternately, a simple one-hour site meeting with the City Engineer and our project team on the site could cut through all the back and forth and address everybody's concerns at one time".

One thing that has not been established is the ownership of the trees. This can only be done by accurately locating the property lines. As we know, tree ownership is an undivided interest among the properties the tree partly occupies. I think the best approach is to keep the work, as much as possible, away from the trees and away from the soil banks that are described as eroding and undermining. Along with this is the need to comply with Town requirements to minimize damage to the trees. Drilling or driving a modest amount of pier or pile holes away from the trees can probably be accepted by the arborists and the Town.

"Restoring the slope

We discussed that it was unclear to us why the Town Arborist requested restoring the preexisting slope once the retaining wall is removed. Please ask for clarification on this".

It is my understanding that removal of the fill soil is needed, according to the arborist, to improve the soil aeration and ground water recharge near the Redwood Trees. I also see it as taking some of the load off of the steep slope to reduce eroding, undermining and instability.

"Alternative Concept

During our call we discussed our concern that the requirement of removing the pullout and all the soil under it could expose roots under the pullout. An alternative approach that could actually be more flexible to construct, would be the following:

1. Support the driveway edge with the easy-to-place 3" piles.
2. Leave the existing retaining wall. It is tilted but not failing, and once it's unloaded from the driveway weight, should be stable. If deemed necessary, we could drive I-beam supports as needed in front of it for additional stability.
3. Remove the top board or two (depending on roots encountered) from the existing retaining wall, and slope the soil from the driveway edge down to that level. This would make it less likely that a future owner would think they could just pave it and use as a pullout again, as you brought up.

We understand that the existing condition of the wall is unpermitted, but at this point it may have been there for 15 or 20 years, and might not be removable without impact to the trees, which we are all trying to protect.

I hope that the above clarifications are useful, so that either our existing proposal is accepted, or the alternative of leaving the existing retaining wall and going back to the pipe piles for the driveway is deemed acceptable"

I have reproduced the Architect's letter here because it really starts to present so many options that it is not possible to know what is being proposed. I would be willing to do a site meeting but I believe we would just be discussing concepts that are fishing to preserve the driveway generally as it is and that puts the work too close to the Redwood Trees. I have not seen a design that proposes to support the driveway on (easy to place) 3" piles. I have only seen a design to support the reconstructed turnout on the 3" pipe piles or a design with 18" concrete piers with deep wood lagging. If 3" pipe piles are believed to need lateral bending strength, if they only support the driveway edge, larger diameter pipe piles could be used and the previously mentioned anchors or vertical wall element on the inboard edge of the new concrete slab could be placed to pick up lateral loads. The wood retaining wall is failing from my view. If partially unloaded and left in place, it would probably go down slowly and just be unsightly for a long time and would harm the trees. I see the driven I-beams as unneeded if a proper design is done and they would cut tree roots when driven. Driven beams would cut roots without exposing them so ignorance would be bliss in that case. Removing the top board or two and sloping the soil would improve things but I believe removal, as recommended by the arborist is better. If there are problems during the removal, they could be resolved with staff field review and that should not be a complex item.

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: December 22, 2016

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 12/5/16 transmittal. The documents reviewed included an 11/30/16 plan by Structural Engineer Detlev Doring, a Landscape Tree Inspection Report from Marin Tree Service, dated 12/2/16, two plan sheets from Mikiten Architecture, dated 12/2/16 and structural calculations from Detlev Doring, dated 11/30/16.

This information was reviewed to determine if requirements in the 11/4/16 Town Engineer memorandum were satisfied.

The primary focus of the last review was involved with getting a concrete turning area and a failing retaining wall away from the existing Redwood Trees. The new plan does that and that seems to satisfy the requirements in the Urban Forestry Associates report for removing those features.

The previous structural plan showed 3" pipe piles supporting a cantilevered structural concrete slab with no vertical retaining wall element that would cut through the existing tree roots. This, previous, structural concept was related to keeping the existing turning area in place near the Redwood Trees. It did have the advantage of fairly minimal soil disturbance under the slab. This was noted in the previous geotechnical reports. The piers, now shown, are 18" diameter reinforced concrete of uncertain depth but probably 12' to 15' deep from the existing pavement surface. These are not typically hand augured piers as described in the Marin Tree Service report. The piers would have vertical wood lagging between them to some depth with 4' deep lagging shown. This vertical cut for the lagging would be about 2.5' to 3' from the center of the Redwood Trees. I would expect that vertical cut to go through a lot of roots. That is not the concept that was suggested in the previous structural plan and the Geotechnical reports.

The concept of a cantilevered structural slab set back from the Redwood Trees would eliminate the vertical cut for the retaining wall lagging and that is a concept that should be reviewed with Urban Forestry. The change from the 3" pipe piles to the 18" concrete piers is significant but I think the vertical wood lagging set against the new piers will have the greatest affect on the Redwood Tree roots. The need for a retaining wall element to support the driveway slab will be related to how far the slab supporting soil is from the slope near the trees. This is something that could be best evaluated by the Arborist and the Geotechnical Engineer once the pier locations are layed out in the field. With a cantilevered slab, there may be no need for a vertical wall if the setback from the slope, of the slab supporting soil, is placed far enough away by using a wide enough cantilever supported slab.

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: November 4, 2016

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 10/7/16 transmittal. The documents reviewed included a 10/4/16 plan by Structural Engineer Detlev Doring, letters from Geotechnical Engineer Dennis H. Furby, dated September 14, 2016 and October 7, 2016 and a report from Urban Forestry Associates, Inc., dated 11/2/16.

A site review was completed 11/3/16.

The proposed repair work was reviewed, in a meeting with you, 11/3/16. The proposed work involves repair of a widened area in the driveway, at this site, where there is an existing concrete slab and supporting wood retaining walls. Town records indicate that the widened area in the concrete driveway, the wood retaining walls supporting that widened area and the wood retaining walls directly uphill were all constructed without obtaining a building permit covering that work. The concrete driveway near and in the widened area and the wood retaining walls are close to or touching a number of Redwood Trees that are growing out of a steep earth slope directly below the driveway and wood walls.

The Detlev Doring plan provides topography information of the widened driveway and nearby area and it also provides details for layout of the repair work and structural details for new driveway slabs and steel pipe piles that will support the concrete driveway surface. There is no property line information on the topography so the relationship of the work and improvements to property lines and street right of way lines is unknown. The Assessor's map of this property shows a recorded record of survey for this property. It would have been very helpful if the property line information from that survey had been included on the submitted plan.

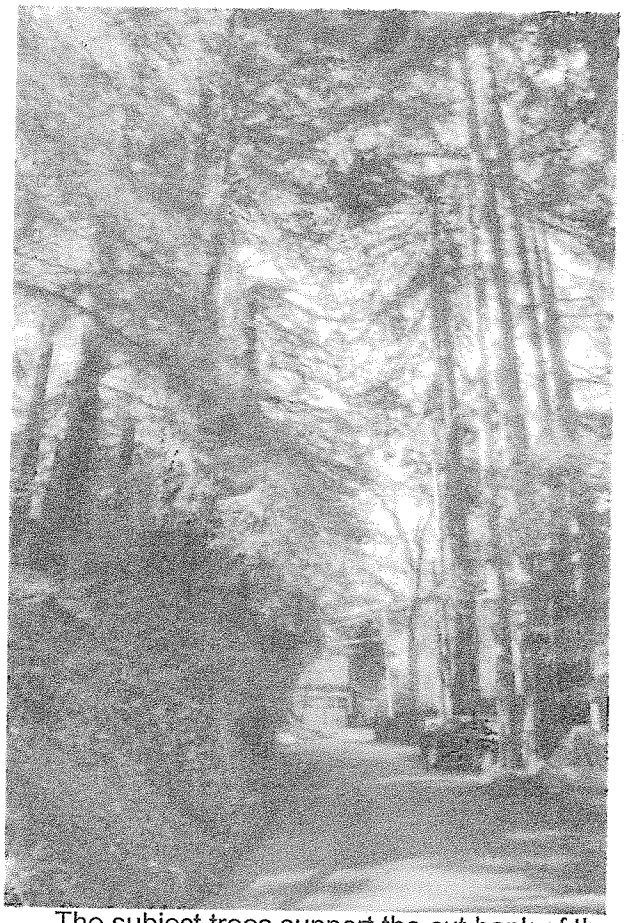
The letters from Dennis Furby discuss the leaning posts in the retaining wall that supports the existing driveway concrete slab. While the wall posts are still standing, they are leaning enough to be clearly in early stages of failure. The concrete slab in this widened area contains a pond of water and the water drains over the curb at the outboard edge of the widened area onto the failing wood wall and the steep hill slope below. The concrete slab near the wood retaining wall, at the deep edge of the pond, looks like it has settled quite a bit and this settlement would be expected to continue as the wall posts lean more out of vertical. The water overflow should cause some erosion on the slope below during hard rain periods when overflow would be greatest.

Michelle Levenson

From: Ray Moritz <ray@urbanforestryassociates.com>
Sent: Wednesday, November 02, 2016 5:20 PM
To: Michelle Levenson
Cc: info@urbanforestryassociates.com; Linda Neal; info@urbanforestryassociates.com
Subject: 145 Arborist Pier Review
Attachments: 145 Forrest Report 2.pdf

Hi Michelle,
Please let me know if you would like to have me address any issue I failed to address in my report.

Ray Moritz
Senior Consultant
Urban Forestry Associates, Inc.
8 Willow St., San Rafael, CA
Office: (415) 454-4212
info@urbanforestryassociates.com



The subject trees support the cut bank of the road between the 145 driveway and Forrest Ave.

Trees 1, 2, 3 & 4 have been employed as retaining wall supports which threatens both the trees and the walls.

Tree #: 3

Species	Coast Redwood (*Sequoia sempervirens*)
Size	24.2" at 9.5 feet a.g.
Location	6 feet on center (o.c.) east of the center of Tree 2, and aginst the driveway retaining wall.
Condition	Good vigor and color but concerning because the butt of the tree against the retaining wall displays a lot of scar tissue (a.k.a. "wound wood"). Bolts have been inserted into the tree to support the fence sections on either side. Bolts, screws or nails may have been inserted into the tree to hold the horizontal retaining boards. Fill soils and concrete pavement have been placed over the south-extending roots. The 6" X 6" vertical support posts between the redwood trunk supports are failing and the wall will need to be replaced to provide lateral support to the driveway fill. It is my understanding that pipe piles and grade beams have been proposed to support the driveway between Trees 3 and 4. (See Arborist Map and 145 Forrest Redplan).
Damage	The use for this tree as a retaining wall support post is damaging to the tree and potentially to the wall as the tree grows in diameter and moves under wind loads. The implementation of the proposed 145 Forrest redplan would place pipe piles and 12" X 12" tie beams within the structural root zones of Trees #3 and 4. Because the surface is paved it is not possible to probe the areas prior to installation to determine whether the trees will be damaged or not.
Conclusion	This tree is currently endangered by its use as a support post and the fill soils over the southeasterly structural and absorbing roots. The wound wood/scar tissue indicates that the tree was mechanically damaged in the past on the wall side of the tree base.
RECOM'D	When the retaining wall is repaired it should be placed no closer than one foot from the trunk and a qualified arborist should determine the location and oversee the installation of new support posts.

Tree #: 4

Species	Coast Redwood (*Sequoia sempervirens*)
Size	21.6" at 8.5' above grade (the top of the fence)
Location	7.0 feet o.c. from the turn in the wall and fence and approximately 18' from Tree #3.
Condition	Good vigor and color but concerning because the butt of the tree against the retaining wall displays a lot of scar tissue (a.k.a. "wound wood"). Bolts have been inserted into the tree to support the fence sections on either side. Bolts, screws or nails may have been inserted into the tree to hold the horizontal retaining boards. Fill soils and concrete pavement have been placed over the south-extending roots. The 6" X 6" vertical support posts between the redwood trunk supports are failing and the wall will need to be replaced to provide lateral support to the driveway fill. It is my understanding that pipe piles and grade beams have been proposed to support the driveway between Trees 3 and 4. (See Arborist Map and 145 Forrest Redplan).
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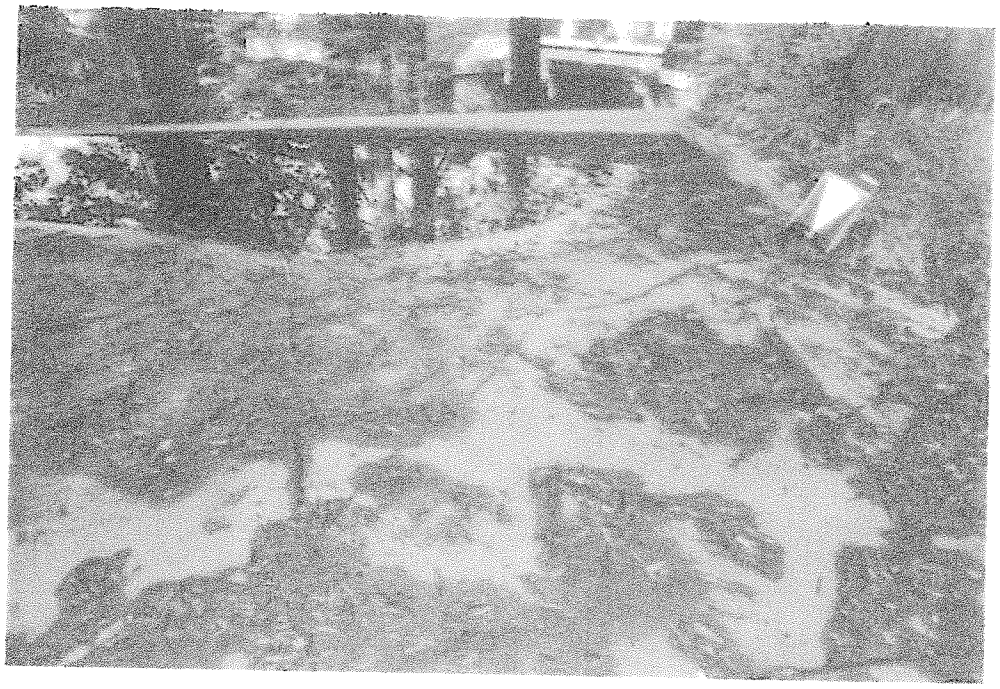
Conclusion	This tree is currently endangered by its use as a support post and the fill soils over the southeasterly structural and absorbing roots.
RECOM'D	When the retaining wall is repaired it should be placed no closer than one foot from the trunk and a qualified arborist should determine the location and oversee the installation of new support posts.

Tree #: 5

Species	Coast Redwood (*Sequoia sempervirens*)
Size	24.1" DBH

APPENDIX



The failing parking turnout. Tree #1 is shown in the upper right hand corner just 5" from the slab.

Tree #1

The failing retaining wall above Trees #5 and 6. Failure of the wall and fill soil will impact Trees #5 and 6.

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: April 14, 2017

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 3/27/17 e-mail. The documents reviewed included a 3/15/17 plan by Structural Engineer Detlev Doring, a topographic survey by David Harp & Associates, dated 9/10/15 and five plan sheets by Mikiten Architecture, dated 12/2/16. I suspect that the date of 3/15/16 on the Architect's plans was intended to be 3/15/17.

The Detlev plan shows what was discussed at the 3/7/17 site meeting as what I and Town Staff expressed as the design concept which would achieve the result recommended in the 11/2/16 Urban Forestry Associates, Inc. report. My involvement in this project was to help Town Staff work through the engineering details to achieve an improved condition for the existing Redwood Trees along the site driveway. We were working with the recommendations in that Urban Forestry Associates report and I find that this latest design does a good job of following those recommendations.

Removals of existing concrete slabs and some of the existing wood retaining walls are called for. There are some wood retaining walls that are not shown to be removed that might provide a better result if they are removed but I think the concept is to leave those removals to the judgment of the arborist and Town Staff. Soil fill removal that is damaging the trees will need to be removed under the direction of the arborist and that should also include approval by the soils engineer. Fill that has been invaded by the Redwood Tree roots, I think, should be left in place since removal of that fill would also remove the roots.

My review is not a structural plan check. I noted that the Detlev plan does not have the engineer's signature and there are no structural calculations for it. This driveway must be strong enough to carry vehicle wheel loads. If there is to be a structural plan check that should be done as part of the Building Official's normal review. I did see that the structural section calls out a 6" thick concrete slab that is dimensioned to be 8" thick. My suggestion is that the 6" thickness was a missed revision in the plan change and that it will be very difficult to get all the steel placement and concrete cover requirements if that slab is placed at 6" thick. As noted on the plan, the pipe pile locations are to be subject to field review to minimize damage to the Redwood Tree roots.

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ATTACHMENT E

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: February 10, 2017

From: Ray Wysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 1/30/17 and 2/7/17 e-mails. The documents reviewed included an 11/30/16 plan by Structural Engineer Detlev Doring and a letter by Architect Erick Mikiten, dated 1/11/17.

The Detlev plan appears to be substantially the same as the plan reviewed in the 12/22/16 Town Engineer Memorandum with a new note limiting wood lagging placement. The item to be reviewed is the 1/11/17 letter that provides an explanation for what is being proposed.

I am providing a reference here to the 11/4/16 and the 12/22/16 Town Engineer review memorandums that identify most of the items previously reviewed for this project. As previously noted, the main items of concern are work done without a permit, the advancing structural failure of retaining walls and paving and the damage to the existing Redwood Trees.

I want to note that the previously reviewed Urban Forestry Associates, Inc., 11/2/16, report states "No species has a more extensive and massive root system than the Coast Redwood". From what I have seen, any excavation, near a Redwood Tree, should encounter the roots of that tree. We have been trying to achieve a reworking of the driveway improvements that will minimize damage to the Redwood Tree roots without eliminating the driveway. Also from the Urban Forestry Associates, Inc. report is the comment "The parking pullout and the retaining walls for both the pullout and the upper driveway were not professionally constructed".

The existing driveway at this site was not constructed based on good consideration for solving the bank stability and bank erosion problems so they can be considered as an inherent part of the original construction or original design. For steep uphill building sites that lack a lot of room to develop a stable grading configuration, a driveway design similar to the one at nearby 159 Forest Avenue is one of the limited design options that clearly solve the erosion and stability issues. That involves staying close to the existing access road grade and enclosing the driveway and garage in retaining walls set in a stable manner.

The Mikiten 1/11/17 letter has many interrelated comments so I think the best way to review them, for our records, is to reproduce them here and then provide a response.

"Wood Lagging Clarification

The structural section drawing A/S1 shows wood lagging supported by the concrete piers. This was interpreted as being continuous, thereby cutting through any tree roots. But the intention was that it would only occur where the tree roots are not providing support for the soil under the driveway. This can only be determined after the driveway edge and the existing retaining wall are removed.

We have put a note on the attached drawing clarifying that the wood lagging is not to cut through existing roots".

As previously noted, the work is very close to the trees and it should be expected that the roots will be everywhere in this area. The plan and statement above indicate the intention to rely on the tree roots for some structural support. In my experience, tree roots should not be relied on for structural support except for supporting trees.

"Conjecture and the Process

Only once the existing retaining wall and driveway edge are removed can we determine placement of piers, amount of unsupported exposed soil, and configuration of redwood tree roots. Until then we are making educated guesses. We don't know when the retaining wall was built without permit; the soil behind it might be full of some redwood tree roots that none of us would want to lose, or it could be 100% soil. The roots might be dense under the driveway proper, or have many voids that make locating piers easy.

The impossibility of exactly determining these things prior to starting demolition is probably the main reason that a solution has been difficult to agree upon; we can't design for all possible scenarios and the ideal solution will actually depend on things that are now hidden from view. I think it's important for us all to agree that a drawn solution can only go so far.

We'd like to agree on a basic concept, and recognize that we may have to make adjustments in the field, rather than drag the process out further with month-long reviews of costly drawn scenarios. Alternately, a simple one-hour site meeting with the City Engineer and our project team on the site could cut through all the back and forth and address everybody's concerns at one time".

One thing that has not been established is the ownership of the trees. This can only be done by accurately locating the property lines. As we know, tree ownership is an undivided interest among the properties the tree partly occupies. I think the best approach is to keep the work, as much as possible, away from the trees and away from the soil banks that are described as eroding and undermining. Along with this is the need to comply with Town requirements to minimize damage to the trees. Drilling or driving a modest amount of pier or pile holes away from the trees can probably be accepted by the arborists and the Town.

"To our original proposal we were going to leave the existing retaining wall around the pullout and support the new pullout with steel piles. The concept was that by unloading the retaining wall, it could remain in place.

The Town required that we remove the pullout area and return it to natural grade, which would include the removal of the existing retaining wall. That means leaving the soil along the driveway edge exposed to eroding away and undermining the driveway. That in turn introduced the need for a new retaining wall. The steel piles are unable to take any lateral load, so we had the following choices:".

The original proposal was to leave or replace the unpermitted and failing retaining wall, fill and pavement in places which would damage the Redwood Trees as outlined in the Urban Forestry report. This seems to argue that it is reasonable to allow all this bad work to remain in place. I reject that concept. It states the Town required removal (of all this unpermitted and bad work) which would leave the driveway vulnerable to erosion and undermining. These problems were already underway. These problems seem to be caused by the original construction being done in a way that ignored the effect of the nearby winter stream (not shown on the topographic survey) in combination with the excessively steep soil along the edge of the driveway.

"1. Construct two separate systems – one to support the driveway edge, and another to retain the exposed soil. This might be steel piles for the driveway, then a new row of driven I-beams for the retaining wall, a few feet away from the driveway edge".

These two systems would have worked had they given adequate consideration to protecting the Redwood Trees which, so far has not been done. The steel pile supported structural concrete driveway slab could be approved if it adapts to protecting the Redwood Trees. The driven steel I-beam piles, as proposed, would damage the Redwood Trees and the lateral support they would provide (if needed) can be replaced with anchors or a vertical element on the structural concrete driveway slab along the southeasterly (inboard) edge of the new slab. This would leave the slab independent of the effects of the stream and steep soil slope and would allow for removal of the failing walls and the soil fill that damages the tree roots.

"2. Construct one system that could support the driveway and provide the required lateral resistance for retaining as currently shown. The piers would be dug with a hand-operated auger machine, in locations acceptable to our arborist based on tree root location, and determined exactly once the existing driveway is removed and the roots are revealed".

The currently proposed construction includes 18" diameter piers, not the 3" pipe piles previously shown and an, apparently, four foot deep wood lagging wall. All very close to the Redwood Trees. My experience is when you dig within 10' to 15' of Redwood Trees, of this size, you will find roots everywhere so the best thing is to minimize the digging to protect the tree roots. The Morey report states the pier holes will be hand augured. This is needed to allow detection of the roots before they are severed by the augur. I have never seen holes of this size and depth cut by a hand powered augur. As noted above they will be dug by a hand operated machine. Reality is getting stretched a lot here. The lagging is noted, on the revised plan, to go where there are no roots and I believe the roots will be everywhere when the work is so close to the trees.

"Restoring the slope

We discussed that it was unclear to us why the Town Arborist requested restoring the preexisting slope once the retaining wall is removed. Please ask for clarification on this".

It is my understanding that removal of the fill soil is needed, according to the arborist, to improve the soil aeration and ground water recharge near the Redwood Trees. I also see it as taking some of the load off of the steep slope to reduce eroding, undermining and instability.

"Alternative Concept

During our call we discussed our concern that the requirement of removing the pullout and all the soil under it could expose roots under the pullout. An alternative approach that could actually be more flexible to construct, would be the following:

1. Support the driveway edge with the easy-to-place 3" piles.
2. Leave the existing retaining wall. It is tilted but not failing, and once it's unloaded from the driveway weight, should be stable. If deemed necessary, we could drive I-beam supports as needed in front of it for additional stability.
3. Remove the top board or two (depending on roots encountered) from the existing retaining wall, and slope the soil from the driveway edge down to that level. This would make it less likely that a future owner would think they could just pave it and use as a pullout again, as you brought up.

We understand that the existing condition of the wall is unpermitted, but at this point it may have been there for 15 or 20 years, and might not be removable without impact to the trees, which we are all trying to protect.

I hope that the above clarifications are useful, so that either our existing proposal is accepted, or the alternative of leaving the existing retaining wall and going back to the pipe piles for the driveway is deemed acceptable"

I have reproduced the Architect's letter here because it really starts to present so many options that it is not possible to know what is being proposed. I would be willing to do a site meeting but I believe we would just be discussing concepts that are fishing to preserve the driveway generally as it is and that puts the work too close to the Redwood Trees. I have not seen a design that proposes to support the driveway on (easy to place) 3" piles. I have only seen a design to support the reconstructed turnout on the 3" pipe piles or a design with 18" concrete piers with deep wood lagging. If 3" pipe piles are believed to need lateral bending strength, if they only support the driveway edge, larger diameter pipe piles could be used and the previously mentioned anchors or vertical wall element on the inboard edge of the new concrete slab could be placed to pick up lateral loads. The wood retaining wall is failing from my view. If partially unloaded and left in place, it would probably go down slowly and just be unsightly for a long time and would harm the trees. I see the driven I-beams as unneeded if a proper design is done and they would cut tree roots when driven. Driven beams would cut roots without exposing them so ignorance would be bliss in that case. Removing the top board or two and sloping the soil would improve things but I believe removal, as recommended by the arborist is better. If there are problems during the removal, they could be resolved with staff field review and that should not be a complex item.

When I first was asked to look at this project it only seemed to involve the problems with the existing turnout. I now knew of the close-by stream channel, the settlement of the existing house, the lack of property line location and the long steep hillside feeding into the stream channel. There also appears to be a plan to add to the house. I believe some consideration should be given to getting a determination from the project geotechnical engineer that this house is safe from landslide danger coming down from the hill above before it is improved and expanded. Landslides often follow stream channels so if a debris flow from above occurred, it would be directed, by this channel, to near or into this house. Location of property lines, easements and completion of the topographic survey including the stream channel and the location of the road, below should be considered.

We have discussed a cantilevered structural concrete slab supported on pipe piles, with the piles set as far as possible from the trees. I believe this provides a solution that responds fairly well to all the issues.

Let me know if you have any questions about the above information.

Ray Wrysinski, P. E.
Town Engineer

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: December 22, 2016
Page 1 of 2

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 12/5/16 transmittal. The documents reviewed included an 11/30/16 plan by Structural Engineer Detlev Doring, a Landscape Tree Inspection Report from Marin Tree Service, dated 12/2/16, two plan sheets from Mikiten Architecture, dated 12/2/16 and structural calculations from Detlev Doring, dated 11/30/16.

This information was reviewed to determine if requirements in the 11/4/16 Town Engineer memorandum were satisfied.

The primary focus of the last review was involved with getting a concrete turning area and a failing retaining wall away from the existing Redwood Trees. The new plan does that and that seems to satisfy the requirements in the Urban Forestry Associates report for removing those features.

The previous structural plan showed 3" pipe piles supporting a cantilevered structural concrete slab with no vertical retaining wall element that would cut through the existing tree roots. This, previous, structural concept was related to keeping the existing turning area in place near the Redwood Trees. It did have the advantage of fairly minimal soil disturbance under the slab. This was noted in the previous geotechnical reports. The piers, now shown, are 18" diameter reinforced concrete of uncertain depth but probably 12' to 15' deep from the existing pavement surface. These are not typically hand augured piers as described in the Marin Tree Service report. The piers would have vertical wood lagging between them to some depth with 4' deep lagging shown. This vertical cut for the lagging would be about 2.5' to 3' from the center of the Redwood Trees. I would expect that vertical cut to go through a lot of roots. That is not the concept that was suggested in the previous structural plan and the Geotechnical reports.

The concept of a cantilevered structural slab set back from the Redwood Trees would eliminate the vertical cut for the retaining wall lagging and that is a concept that should be reviewed with Urban Forestry. The change from the 3" pipe piles to the 18" concrete piers is significant but I think the vertical wood lagging set against the new piers will have the greatest affect on the Redwood Tree roots. The need for a retaining wall element to support the driveway slab will be related to how far the slab supporting soil is from the slope near the trees. This is something that could be best evaluated by the Arborist and the Geotechnical Engineer once the pier locations are layed out in the field. With a cantilevered slab, there may be no need for a vertical wall if the setback from the slope, of the slab supporting soil, is placed far enough away by using a wide enough cantilever supported slab.

The 18" diameter concrete piers, with retaining wall boards up against them, is a completely different concept than what we have been reviewing. The reinforce concrete driveway slab supported on and cantilevered on pairs of pipe piles, as previously proposed, is a much less invasive structure when trying to protect the Redwood Trees and the tree roots. I think placing a reinforced slab, on the previously proposed pipe piles, while still avoiding keeping that turnout area, will do a much better job of protecting the trees and tree roots than the newly proposed 18" piers and retaining wall.

Let me know if you have any questions about the above information.

Ray Wrysinski, P. E.
Town Engineer

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

MEMORANDUM

To: Linda Neal – Principal Planner

Date: November 4, 2016

From: Ray Wrysinski
Town Engineer

Subject: Proposed Repair of Driveway Retaining Wall
145 Forest Avenue
Fairfax, CA

A.P. 002-192-38

I have reviewed the information that was provided with your 10/7/16 transmittal. The documents reviewed included a 10/4/16 plan by Structural Engineer Detlev Doring, letters from Geotechnical Engineer Dennis H. Furby, dated September 14, 2016 and October 7, 2016 and a report from Urban Forestry Associates, Inc., dated 11/2/16.

A site review was completed 11/3/16.

The proposed repair work was reviewed, in a meeting with you, 11/3/16. The proposed work involves repair of a widened area in the driveway, at this site, where there is an existing concrete slab and supporting wood retaining walls. Town records indicate that the widened area in the concrete driveway, the wood retaining walls supporting that widened area and the wood retaining walls directly uphill were all constructed without obtaining a building permit covering that work. The concrete driveway near and in the widened area and the wood retaining walls are close to or touching a number of Redwood Trees that are growing out of a steep earth slope directly below the driveway and wood walls.

The Detlev Doring plan provides topography information of the widened driveway and nearby area and it also provides details for layout of the repair work and structural details for new driveway slabs and steel pipe piles that will support the concrete driveway surface. There is no property line information on the topography so the relationship of the work and improvements to property lines and street right of way lines is unknown. The Assessor's map of this property shows a recorded record of survey for this property. It would have been very helpful if the property line information from that survey had been included on the submitted plan.

The letters from Dennis Furby discuss the leaning posts in the retaining wall that supports the existing driveway concrete slab. While the wall posts are still standing, they are leaning enough to be clearly in early stages of failure. The concrete slab in this widened area contains a pond of water and the water drains over the curb at the outboard edge of the widened area onto the failing wood wall and the steep hill slope below. The concrete slab near the wood retaining wall, at the deep edge of the pond, looks like it has settled quite a bit and this settlement would be expected to continue as the wall posts lean more out of vertical. The water overflow should cause some erosion on the slope below during hard rain periods when overflow would be greatest.

The Town's three specific concerns for this driveway are the work having been done without a permit, the advancing structural failure and the work being done in a way that damages the existing Redwood Trees.

The report by Urban Forestry Associates, Inc. provides many details on the damaging affects the wood retaining walls, fill under the driveway slab and soil cover from the driveway slab are having on the Redwood Trees. The major recommendations in that report include removing the widened area driveway slab and removing the retaining walls and soil fill that are up against the trees. Considering that the retaining walls and driveway slab are in the process of failing, removing them seems like the most reasonable action at this time. If protecting the Redwood Trees is to be done, then, as the Forestry Report recommended, the widened area concrete slab should not be put back. The Forestry report discusses keeping the new driveway wall at least one foot from the trees. This recommendation is based on the assumption that vertical supports will be placed under the supervision of a qualified arborist. A different approach can be using a system that looks like the detail on the Detley Boring plan which shows an outside edge of curb at about four feet beyond the center of the supporting pipe pils while using a modest 6" thick reinforced concrete slab as a cantilevered structural element. With this structural shape, the edge of curb could be kept one foot from the trees and the supporting pils would be an additional four feet back from the edge of tree. A slightly thicker slab could increase the cantilever to more than four feet. This type of cantilever and pile supported slab greatly reduces the need for soil fill and would adapt to eliminating the need for any fill near the trees. Pipe pile placement, approved by the arborist, would need to be done to minimize tree root damage.

Using the above methods, the water overflow onto the steep slops could be eliminated. This type of design could move the edge of driveway away from the Redwood Trees and, with the cantilevered driveway slab, the need for soil fill on the tree roots would be greatly reduced bringing the work into conformance with the Urban Forestry Associates, Inc. Report recommendations.

If the property owner desires to regain some of the widened driveway in this area, a design study for this on the driveway area opposite the Redwood Trees may produce this widening.

I hope this provides the information you need at this time.

Ray Wrysinski

Ray Wrysinski, P. E.
Town Engineer

Michelle Levenson

From: Ray Moritz <ray@urbanforestryassociates.com>
Sent: Wednesday, November 02, 2016 5:20 PM
To: Michelle Levenson
Cc: info@urbanforestryassociates.com; Linda Neal; info@urbanforestryassociates.com
Subject: 145 Arborist Pier Review
Attachments: 145 Forrest Report 2.pdf

Hi Michelle,
Please let me know if you would like to have me address any issue I failed to address in my report.

Ray Moritz
Senior Consultant
Urban Forestry Associates, Inc.
8 Willow St., San Rafael, CA
Office: (415) 454-4212
info@urbanforestryassociates.com

Urban Forestry Associates, Inc.

Date: November 2nd, 2016

Town of Fairfax

URBAN FORESTRY ASSOCIATES, INC.

ARBORIST PIER REVIEW REPORT

For

Town of Fairfax

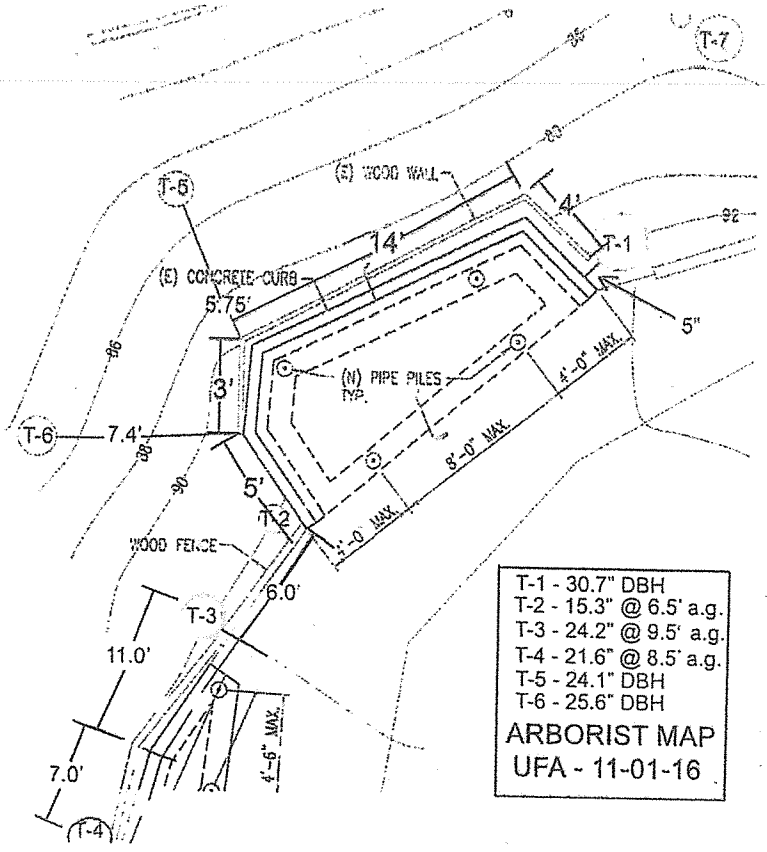
145 Forrest Avenue Fairfax, AP # 002-192-38

PURPOSE

Urban Forestry Associates (UFA) was hired to perform a site inspection and pier review for proposed correction of a parking turnout along the driveway to the 145 Forrest Ave. residence. The retaining walls on the spoil side of the driveway are poorly constructed and failing. The turnout concrete slab is also poorly constructed and failing. A fix for the failing turnout was proposed on October 5th, 2016. I have reviewed the plans and inspected the site. I have assessed the existing impacts and potential impacts connected with the proposed fix on the six redwood trees around the parking turnout and upper retaining wall.

LOCATION

The subject trees are part of a redwood stand that was bifurcated when Forrest Avenue was put through. The trees at issue are above the cut bank for the road and are an ideal species to support the bank. No species has a more extensive and massive root system than coast redwood (*Sequoia sempervirens*). There are six trees in close proximity to the parking pullout at issue. The parking pull out was built right against two of the trees (Trees #1 and #2).



The subject trees support the cut bank of the road between the 145 driveway and Forrest Ave.

Trees 1, 2, 3 & 4 have been employed as retaining wall supports which threatens both the trees and the walls.

SCOPE OF WORK AND LIMITATIONS

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. The health and hazard assessments in this report are limited by the visual nature of the assessment. Defects may be obscured by soil, brush, vines, aerial foliage, branches, multiple trunks or other trees. Even structurally sound, healthy trees are wind thrown during severe storms. Consequently, a conclusion that a tree does not require corrective surgery or removal is not a guarantee of no risk, hazard, or sound health. **Note: This is not a geotechnical report and none of the observations, conclusions or recommendations are intended to be geotechnical in nature.**

OBSERVATIONS

Tree #: 1

Species	Coast Redwood (*Sequoia sempervirens*)
Size	30.7" DBH[1]
Location	East end of the parking area (See Arborist map, page 1, based on the Detlev Doring Plan)
Condition	Good, possibly previously topped. Used as a support for a retaining wall. Poor aeration of tree base and fill soils of west and south structural root zone.
Damage	The base of the tree is directly against the retaining wall and fill soil topped by a concrete slab has impacted aeration of the bark and west-extending structural roots. Several of the retaining vertical supports have been shallowly inserted into the proximal root zone of the tree where there is a high risk of damage. The existence and/or extent of damage to the trunk, root crown or roots is unknown.
Conclusion	The use of trees for retaining wall support is both damaging to the tree and potentially damaging to the wall as the tree grows and moves in the wind.
RECOM'D	**My recommendation is to remove the concrete pullout slab, the fill soil and the retaining wall in accordance with arborist specifications.**

Tree #: 2

Species	Coast Redwood (*Sequoia sempervirens*)
Size	15.3" at 6.5 feet above grade (a.g.), the top of the fence. The wall covers 2.5 feet of trunk.
Location	At the west end of the parking pullout area (See Arborist map, page 1)
Condition	Poor, recently topped at approximately 15 feet above grade. Used as a support for both the retaining wall for the parking pullout and the upper driveway retaining wall. Poor aeration of tree base bounded by two walls and fill soils of east and south structural root zone.
Damage	The fill soils, topped by concrete pavement, smother both the south and east extending proximal roots. The tree has been wounded by bolts inserted to support the fence and possible nails, bolts or screws fixing the retaining boards to the tree.
Conclusions	Where wounds are located in areas of the trunk pressing against the retaining walls the potential for disease and decay is greater due to moisture retention.
Conclusion	This tree has sprouted from just below the topping cut but the sprout growth from latent buds under the bark and is therefore poorly attached to the outermost wood of the main trunk. The sprouts will grow fast because they are fed by a well-established root system that previously fed the entire tree. They will be subject to breakage after they are long enough to exercise significant lever force on their attachments. The driveway retaining wall, in part supported by Trees #2, 3 & 4, west of Tree #2 is also failing.
RECOM'D	Remove the turnout retaining wall and fill soil. When the Driveway wall is replaced install the new retaining wall at least 1 foot from Trees #2, 3 & 4. All vertical supports should be installed under the supervision of a qualified consulting arborist.

[1] DBH is Diameter at Breast Height, measured 4.5' above grade on the upslope side of a tree.

Tree #: 3

Species	Coast Redwood (*Sequoia sempervirens*)
Size	24.2" at 9.5 feet a.g.
Location	6 feet on center (o.c.) east of the center of Tree 2, and aginst the driveway retaining wall.
Condition	Good vigor and color but concerning because the butt of the tree against the retaining wall displays a lot of scar tissue (a.k.a. "wound wood"). Bolts have been inserted into the tree to support the fence sections on either side. Bolts, screws or nails may have been inserted into the tree to hold the horizontal retaining boards. Fill soils and concrete pavement have been placed over the south-extending roots. The 6" X 6" vertical support posts between the redwood trunk supports are failing and the wall will need to be replaced to provide lateral support to the driveway fill. It is my understanding that pipe piles and grade beams have been proposed to support the driveway between Trees 3 and 4. (See Arborist Map and 145 Forrest Redplan).
Damage	The use for this tree as a retaining wall support post is damaging to the tree and potentially to the wall as the tree grows in diameter and moves under wind loads. The implementation of the proposed 145 Forrest redplan would place pipe piles and 12" X 12" tie beams within the structural root zones of Trees #3 and 4. Because the surface is paved it is not possible to probe the areas prior to installation to determine whether the trees will be damaged or not.
Conclusion	This tree is currently endangered by its use as a support post and the fill soils over the southeasterly structural and absorbing roots. The wound wood/scar tissue indicates that the tree was mechanically damaged in the past on the wall side of the tree base.
RECOM'D	When the retaining wall is repaired it should be placed no closer than one foot from the trunk and a qualified arborist should determine the location and oversee the installation of new support posts.

Tree #: 4

Species	Coast Redwood (*Sequoia sempervirens*)
Size	21.6" at 8.5' above grade (the top of the fence)
Location	7.0 feet o.c. from the turn in the wall and fence and approximately 18' from Tree #3.
Condition	Good vigor and color but concerning because the butt of the tree against the retaining wall displays a lot of scar tissue (a.k.a. "wound wood"). Bolts have been inserted into the tree to support the fence sections on either side. Bolts, screws or nails may have been inserted into the tree to hold the horizontal retaining boards. Fill soils and concrete pavement have been placed over the south-extending roots. The 6" X 6" vertical support posts between the redwood trunk supports are failing and the wall will need to be replaced to provide lateral support to the driveway fill. It is my understanding that pipe piles and grade beams have been proposed to support the driveway between Trees 3 and 4. (See Arborist Map and 145 Forrest Redplan).
Damage	The use for this tree as a retaining wall support post is damaging to the tree and potentially to the wall as the tree grows in diameter and moves under wind loads. The implementation of the proposed 145 Forrest redplan would place pipe piles and 12" X 12" tie beams within the structural root zones of Trees #3 and 4. Because the surface is paved it is not possible to probe the areas prior to installation to determine whether the trees will be damaged or not.
Conclusion	This tree is currently endangered by its use as a support post and the fill soils over the southeasterly structural and absorbing roots.
RECOM'D	When the retaining wall is repaired it should be placed no closer than one foot from the trunk and a qualified arborist should determine the location and oversee the installation of new support posts.

Tree #: 5

Species	Coast Redwood (*Sequoia sempervirens*)
Size	24.1" DBH

Location	Tree 5 is 5.75 feet down slope (northwest) of the failing 6" X 6" post at the failing corner of the parking turnout (See Arborist Map).
Condition	Good. However, this tree is within 6 feet of a support post for the turnout parking space and the fill behind its retaining wall. The post and wall are in the structural root zone of the tree.
Damage	The fill soil and concrete pavement obstruct soil aeration, ground water recharge and to some extent impact the southeast extending roots.
Conclusion	The percent of the root zone impacted does not amount to critical damage for this tree but to some extent reduces the vigor and health of this tree.
RECOM'D	The parking turnout and support should be removed and the native grade restored to improve soil aeration and ground water recharge.

Tree #: 6

Species	Coast Redwood (*Sequoia sempervirens*)
Size	25.6" DBH
Location	7.4 feet west of the corner support post of the parking turnout retaining wall.
Condition	Good. The parking turnout retaining wall and fill are within the structural and lateral root zone of this tree.
Damage	The fill soil and concrete pavement obstruct soil aeration, ground water recharge and to some extent impact the southeast extending roots.
Conclusion	The percent of the root zone impacted does not amount to critical damage for this tree but to some extent reduces the vigor and health of this tree.
RECOM'D	The parking turnout and support should be removed and the native grade restored to improve soil aeration and ground water recharge.

Tree #: 7

Species	Coast Redwood (*Sequoia sempervirens*)
Size	Three stems.
Location	Not close enough to be affected by the parking turnout.
Condition	Fair, The multiple stems are too close together for adequate canopy space for any stem.
Damage	Insignificant.
Conclusion	The parking turnout does not have a significant effect on the health and vigor of this tree.
RECOM'D	This tree would have better health, vigor and structure if the subordinate stem were removed.

GENERAL CONCLUSIONS

The parking pullout and the retaining walls for both the pullout and the upper driveway were not professionally constructed. To preserve the trees and assure support of the driveway the parking pullout should be removed and a professional retaining wall installed to provide reliable lateral support of the driveway. Any repair or replacement of the driveway retaining wall should include consultation with a qualified urban forestry or arboricultural consultant, working with the engineer from the start. The unprofessional design is damaging the trees and the retaining wall support of the driveway. Retention of the pullout also encourages vehicle damage to Trees #1 and 2. The subject redwoods are important for support of the cut bank along Forrest Avenue and should be preserved.

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

APPENDIX

The failing parking turnout. Tree #1 is shown in the upper right hand corner just 5" from the slab.

Tree #1

The failing retaining wall above Trees #5 and 6. Failure of the wall and fill soil will impact Trees #5 and 6.