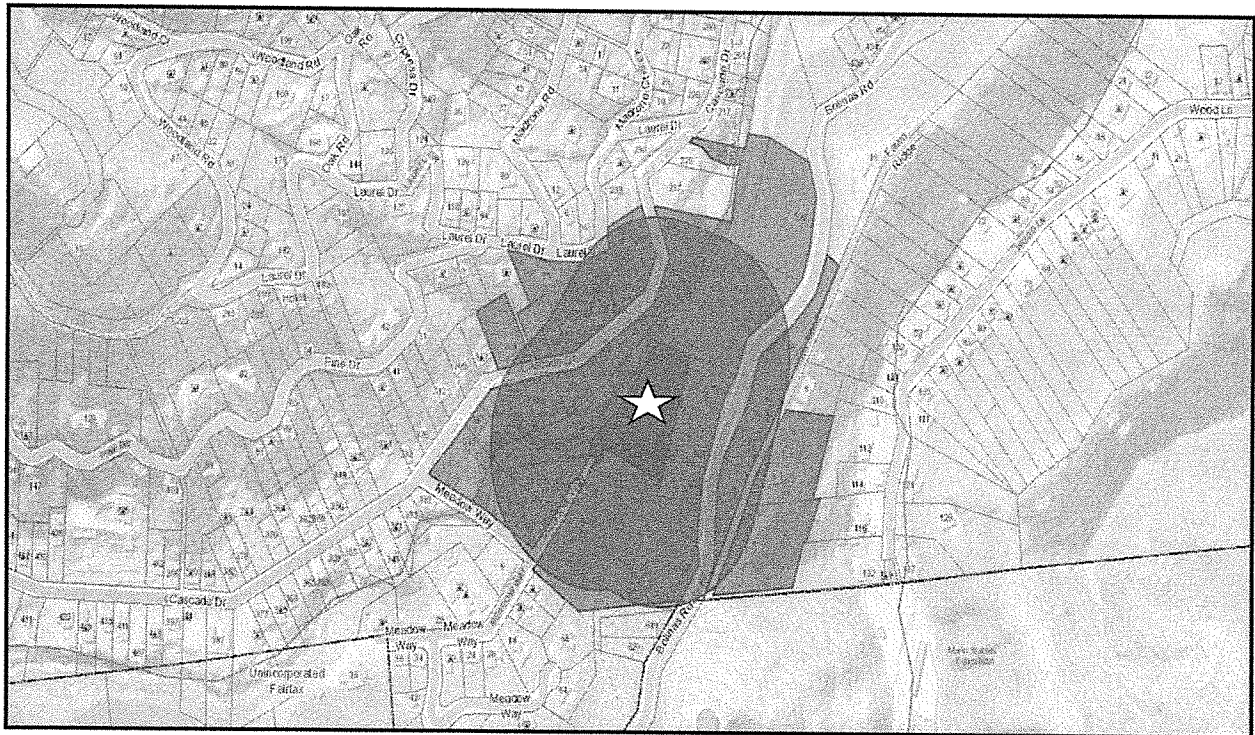


**TOWN OF FAIRFAX
STAFF REPORT
Department of Planning and Building Services**

TO: Fairfax Planning Commission
DATE: May 19, 2016
FROM: Jim Moore, Director of Planning and Building Services
Linda Neal, Principal Planner
LOCATION: 22 Meadow Way; Assessor' Parcel No. 003-122-50
ZONING: Residential Single-family RS 6 Zone
PROJECT: 50% remodel/expansion of a single-family residence
ACTION: Hill Area Residential Development Permit, Parking Variance,
Excavation Permit, Design Review Permit
APPLICANT: Rich Rushton, Rushton Chartock Architects
OWNER: Nadim and Stacy Nahas
CEQA STATUS: Categorically Exempt, § 15301(2)



22 MEADOW WAY

BACKGROUND

The 43,797-square-foot site is located at the northern end of Meadow Way. San Anselmo Creek runs along the western side; the site slopes up from the top of the creek bank at an average rate of 51%. A 15-foot wide, Ross Valley Sanitary District ingress and egress maintenance easement runs through the property from north-south and continues along the creek to the north. A smaller intermittent stream flows along the southwest side of the residence, mostly along the adjacent property at 4 Meadow Way. This stream crosses the southeastern corner of the property and flows underneath the driveway/parking area where it joins the main San Anselmo Creek.

The 960-square-foot, 2-bedroom, 1 ½-bath, residence was constructed in 1988 after the Planning Commission approved a Hill Area Residential Development Permit and Design Review Permit for the project. When the project was originally proposed, the intention of the owner was to expand the residence at some time in the future. The pier holes for the future expansion were drilled while constructing the previously approved project. Some of these piers support the existing deck on the west side of the structure while the other piers remain unused.

DISCUSSION

The applicants are proposing to expand the existing 960-square-foot, 2 bedroom 1 ½ bath, single-family residence to a 3,176-square-foot, 4 bedroom, 3 ½ bathroom, single-family residence. An area of the driveway that was previously excavated and retained with a wooden retaining wall would be expanded and further retained to provide a fire truck turn, a project requirement of the Ross Valley Fire Department. An additional retaining wall would also be built and the front access stairs would be reconfigured to provide 3 parking spaces.

The project includes expanding all three levels of the house. The east side of the first story would be expanded with a new entryway, bedroom and bathroom addition. The second story would be expanded to provide a living room on the west side and family room and pantry/laundry/mud room on the east side. The third story would be expanded to provide a master bedroom and bathroom on the east side of the house. The deck on the north side of the residence would be expanded by 154 square feet while the deck currently located on the west side of the house would be removed to accommodate the first story bedroom/bath and entry, and the second story living room.

The property is zoned Residential Single-family RS-6 and the project complies with the regulations for that zone as follows:

	Front Setback	Rear Setback	Combined Front/rear Setback	Side Setbacks	Combined Side Setbacks	FAR	Lot Coverage	Height
Required/ Permitted	6 ft.	12 ft.	35 ft.	5 ft. & 5 ft.	20 ft.	.40	.35	28.5 ft., 2 stories
Existing	96 ft.	102 ft.	198 ft.	32 ft. & 40 ft.	72 ft.	.02	.02	29 ft., 2 stories
Proposed	73 ft.	66 ft.	139 ft.	19 ft. & 32 ft.	51 ft.	.07	.04	same

Note: This house predates the adoption of Town of Fairfax Ordinance No. 605 which decreased the maximum height on lots that slope up from the street, at an average rate of 10% or more, to 28.5 feet and 2 stories. Prior to the adoption of Ordinance 605 residences located on similar sites to the subject site could be 35 feet tall and 3 stories.

Hill Area Residential Development Permit

Town Code Chapter 17.072-"Hill Area Residential Development Overlay Zone (HRD)", governs development of hillside lots. Certain characteristics of a property can result in a project on a hillside property being subject to the HRD Ordinance. The purpose of the HRD Ordinance is to encourage maximum retention of natural topographic features, minimize grading of hillside areas, provide a safe means of ingress and egress for vehicular and pedestrian traffic, minimize water runoff and soil erosion during and after construction, prevent loss of life, reduce injuries and property damage and minimize economic dislocations from geologic hazards and ensure that infill development is of a size and scale appropriate to the property and consistent with other properties in the vicinity under the same zone classification.

The characteristics of this project and property that result in this proposal being subject to the HRD Ordinance regulations are as follows [Town Code § 17.072.020A) through (D):

- The property has a 51% slope and the project will require the excavation/fill of over 50 cubic yards of material; and
- The property falls within a landslide hazard zone.

Because the property falls within a landslide hazard zone and the construction of the project would require the excavation/fill of 155 cubic yards of material, the project is subject to the HRD Ordinance.

The applicants have submitted a geotechnical report prepared by Dave Olnes, Civil and Geotechnical Engineer for the project. The report states that site lies within a massive, shallow, landslide area that covers much of the surrounding hillside. Because the site is located in a geologically unstable area, the Town Engineer evaluated the project for

safety in the event of future soil movement. The Town Engineer reviewed the following plans and reports to determine whether the project could be constructed in accord with the Town Code provisions regarding hillside development:

Architectural plans by Rich Rushton, Rushton Chartock Architects, pages A1.1, A2.2, A2.3, A2.4, A2.5, A4.0, A4.1, A4.2, A7.1 and A7.2.

Revised engineering pages by Vlad Iojica, dated 2/5/16. pages C1.0, C1.1, C2.0, C3.0, C4.0, C4.1, C5.0, C6.0 and C7.0.

Geotechnical report by Dave Olnes, Civil and Geotechnical Engineering dated 1/19/16 (Attachment B).

Preliminary drainage studies by Vlad Iojica, Civil Engineer, dated 9/9/15 and 2/9/16 (Attachment C).

After reviewing the above plans and reports, and performing a site inspection, the Town Engineer has determined that the project can be constructed as designed using accepted engineering and drainage techniques that will ensure the safety of the residents and without negatively impacting neighboring properties, the Town's roadway improvements or the neighborhood (Attachment D).

Proposed drainage system improvements include but are not limited to: 1) construction of a concrete or cobble lined swale and sub drains along the uphill side of the house to direct storm water from upslope of the structure to an energy flow dissipater below the house adjacent to the San Anselmo Creek channel; and b) installation of a storm drain system to collect run-off from the roof and other impervious surfaces and direct it to the dissipater and ultimately to the San Anselmo Creek.

The retaining walls at the rear of the house, where soil movement may occur, would be designed to act as debris barriers, as well as stout and pier-supported to help mitigate the impacts of any futures slides. Most of the past debris flows that have occurred on the site have been carried within the existing creek channel that runs along the south side of the site, mostly on the neighboring property at 4 Meadow Way.

Covered Parking Variance

The project constitutes a 50% remodel, therefore the Code requires that the parking be brought up to current standards, or that a Parking Variance be approved by the Planning Commission [Town Code § 17.016.040(B)(1) and (2) and (C)(2)(a)]. The Ross Valley Fire Department has required that the existing driveway be widened and that almost all of the driveway be used exclusively as a fire truck turn-around. Therefore, the applicants are proposing to lengthen the driveway to the north, in front of the new structure, to provide three, 9-foot by 19-foot parking spaces, two of which would be in tandem, in compliance with the Town Parking Ordinance, Town Code Chapter 17.052 [Town Code §§17.052.0409(B) and (E)]. Town Code § 17.052.010(D)

requires that at least 1 parking space be covered. The applicants are requesting an exception to have no covered parking spaces because the only way to provide a covered space on this site would be to build within the required 20-foot, creek-setback or within the Marin Municipal Water District's access/egress easement, blocking the path that would have to be used by vehicles and/or large equipment, to maintain the sewer line that runs for some distance along the top of the San Anselmo Creek, north of the site.

Excavation Permit

Town Code § 12.20 080 indicates that an excavation permit is required from the Planning Commission for any project that will involve the excavation and/or fill of over 100 cubic yards of material.

The only new excavation/fill that would occur on the site is in the area of the new fire truck turn-around and for the new addition foundation piers and drainage improvements that are necessary to facilitate development in a safe manner. Therefore, the proposed excavation/fill of 115 cubic yards of material is the minimum necessary to build the project.

Design Review Permit

The additions on either side of the existing structure include flat roofs and stucco siding, resulting in the proposed structure having a modern appearance. The roofing material would be of grey asphalt shingles to match the existing roof. The siding of the new portions of the structure would be stucco to contrast with the wood siding of the existing structure and would be painted a light gray (French Grey, S-56) to contrast with the darker grey (Benjamin Moore, Chelsea Grey, HC-168) of the existing wood sided structure. The fascia and soffit would be painted a similar grey color to the stucco siding (Benjamin Moore, Coventry Grey, X-56). The window and door trim would be a dark bronze color. The deck to be expanded on the north side of the structure would be stained natural cedar.

The structure has been articulated through the use of two different siding materials, windows of different shapes and sizes and by stepping the living area up the hillside. The extensive exterior articulation minimizes the visual bulk and mass of the structure when viewed from Meadow way.

6 trees would be removed with the project– 1 fir tree at the entrance of the property to accommodate the fire truck turn-around, 3 Bay trees at the rear of the house immediately adjacent to an oak in order to comply with Wildland Urban Interface (WUI) regulations, and one Acacia tree located along the south property line, also to comply with the WUI regulations (Attachment F).

Other residences in the Meadow Way neighborhood range from a 1,136-square-foot, 2-bedroom, 1-bathroom, residence on a 10,625 square foot parcel (64 Meadow Way) to a

3,387-square-foot, 5-bedroom, 4-bathroom residence on a 23,400-square-foot parcel (27 Meadow Way). Therefore, the 3,176-square-foot, 4 bedroom, 3 ½ bathroom, single-family residence on a 43,797-square-foot parcel would not be out of scale with the size of the site or other residences found throughout the neighborhood.

Other Agency/Department Conditions/Comments

Ross Valley Fire Department

1. The project has been deemed a substantial remodel and as such requires installation of a fire sprinkler system that complies with the National Fire Protection Association regulation 13-D and local standards. The system would require a permit from the Fire Department and the submittal of plans and specifications for system submitted by an individual or firm licensed to design and/or design-build sprinkler systems.
2. The property is located within the Wildland Urban Interface Area for Fairfax and the new construction must comply with Chapter 7A of the California Building Code or equivalent.
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 each sleeping room in a central location in the corridor and over the center of all stairways with a minimum of 1 detector on each story of the occupied portion of the residence.
4. Carbon monoxide alarms shall be provided in existing dwellings when a permit is required for alterations, repairs, or addition and the cost of the permit exceeds \$1,000.00. Carbon monoxide alarms shall be located outside of each sleeping area in the immediate vicinity of the bedrooms and on every level of the dwelling, including basements.
5. Address numbers at least 4 inches tall must be in place adjacent to the front door. If not clearly visible from the street, additional numbers must be placed in location that is visible from the street. The numbers must be internally illuminated or illuminated by and adjacent light controlled by a photocell that can be switched off only by a breaker so it will remain illuminated all night.
6. Alternative materials or methods may be proposed for any of the above conditions in accordance with Section 104.9 of the Fire Code.
7. All approved alternatives requests, and their supporting documentation, shall be included in the plan sets submitted for final approval by the Fire Department.
8. The plans have been redesigned to comply with an earlier e-mail from the Ross Valley Fire Department requiring a fire truck turn around (Attachment E).

Marin Municipal Water District

1. A high pressure water service permit is required for this project.
2. The plans 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.
3. 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.
4. Comply with 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

A Sanitary District sewer connection permit is required to either replace the existing sewer lateral, or demonstrate to a District Inspector that the existing lateral meets current requirements, prior to the project final inspection and issuance of an occupancy permit for the residence.

Fairfax Police, Public Works and Building Departments

The police, public works and the building department 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 # 16-18 by adopting Resolution No. 16-12 setting forth the findings and conditions for project approval.

ATTACHMENTS

Attachment A – Resolution No. 16-12

Attachment B – Geotechnical Report

Attachment C – Hydrology Report

Attachment D – Town Engineer's review memorandums dated 10/13/15, 4/16/16 and 4/20/16

Attachment E – Architect’s clarification on tree removal
Attachment F – Ross Valley Fire Department e-mail dated 12/23/15

RESOLUTION NO. 16-12

A Resolution of The Fairfax Planning Commission Approving Application No. 16-18 for a Hill Area Residential Development Permit, Excavation Permit, Design Review Permit and Covered Parking Variance for a 50% Remodel of an Existing Residence at 22 Meadow Way

WHEREAS, the Town of Fairfax has received an application from Nadim and Stacy Nahas to expand an existing single family residence from a 960 square foot, 2-bedroom, 1 1/2 –bathroom residence to a 3,176-square-foot, 4-bedroom, 2 ½-bathroom residence; and

WHEREAS, the Planning Commission held a duly noticed Public Hearing on May 19, 2016, at which time the Planning Commission determined that the proposed 50% remodel complies with the Hill Area Residential Development Overlay Ordinance; 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 Hill Area Residential Development, Design Review, Excavation and Covered Parking Variance; and

WHEREAS, the Commission has made the following findings:

Hill Area Residential Development

1. The proposed development is consistent with the General Plan and the Residential Single-family RS 6 Zone regulations.
2. The site planning preserves identified natural features as much as possible while also complying with other agencies' regulations.
3. Vehicular access and parking are adequate.
4. The proposed development harmonizes with surrounding residential development and meets the design review criteria contained in Town Code § 17.020.040.
5. The approval of the Hill Area Residential Development permit to allow the 50% remodel and expansion of the structure shall not constitute a grant of special privilege and shall not contravene the doctrines of equity and equal treatment.
6. The development and use of property as approved under the Hill Area Residential Development Permit will not cause excessive or unreasonable detriment to adjoining properties or premises, or cause adverse physical or economic effects thereto, or create undue or excessive burdens in the use and

enjoyment thereof, or any or all of which effects are substantially beyond that which might occur without approval or issuance of the use permit.

7. Approval of the proposed Hill Area Residential Development permit is not contrary to those objectives, goals or standards pertinent to the particular case and contained or set forth in any Master Plan, or other plan or policy, officially adopted by the City.
8. Approval of the Hill Area Residential Development permit to allow the 50% remodel will result in equal or better development of the premises than would otherwise be the case.

Covered Parking Variance

1. The location of the sanitary district maintenance easement and the creek setback are the special circumstances that result in it being difficult to provide the required one (1) covered parking space.
2. All three (3) required parking spaces will be provided on site. Therefore, the variance will not constitute a grant of special privilege, is consistent with the limitations upon other properties in the vicinity and under identical zone classification, and is consistent with the objectives of this title. These are the special circumstances applicable to the property, including size, shape, topography, location of surroundings, thus the strict application of this title will deprive the applicant of privileges enjoyed by other property owners in the vicinity and under identical zone classification.
3. The strict application of the covered parking requirements would result in more site excavation as the structure would have to be excavated into the hillside out of the fire truck turn around, easement and creek setback, resulting in excessive or unreasonable hardship.
4. The granting of the variance to have no covered parking space on this site will only impact the residents of 22 Meadow Way and will not be detrimental to the public welfare or injurious to other property in the vicinity in which the property is situated.
5. Neither present nor anticipated future traffic volumes generated by the use of the site or the uses of sites in the vicinity reasonable require strict or literal interpretation and enforcement of the covered parking requirement.
6. Granting of the variance will not result in the parking or loading of vehicles on public streets in a manner as to interfere with the free flow of traffic on the streets.

7. Granting of the variance will not create a safety hazard or any other condition inconsistent with the objectives of this title

Excavation Permit

The Town Engineer has reviewed the following plans and reports and has determined the project can be constructed, with certain conditions of approval, without creating any hazards:

- a) Architectural plans by Rich Rushton, Rushton Chartock Architects, pages A1.1, A2.2, A2.3, A2.4, A2.5, A4.0, A4.1, A4.2, A7.1 and A7.2.
- b) Revised engineering pages by Vlad Iojica, pages C1.0, C1.1, C2.0, C3.0, C4.0, C4.1, C5.0, C6.0 and C7.0.
- c) Geotechnical report by Dave Olnes, Civil and Geotechnical Engineering dated 1/19/16
- d) Preliminary drainage studies by Vlad Iojica, Civil Engineer, dated 9/9/15 and 2/9/16

Based on the Town Engineer's review and recommendation that the project can be safely constructed, the Planning Commission finds that:

1. The health safety and welfare of the public will not be adversely affected;
2. Adjacent properties are adequately protected by project investigation and design from geologic hazards as a result of the work;
3. Adjacent properties are adequately protected by project design from drainage and erosion problems as a result of the work;
4. The amount of the excavation or fill proposed is not more than that required to allow the property owner substantial use of his or her property;
5. The visual and scenic enjoyment of the area by others will not be adversely affected by the project more than is necessary;
6. Natural landscaping will not be removed by the project more than is necessary; and
7. Town code § 17.072.090(c)(4) prohibits grading of hillside properties from October 1st through April 1st of each year. Therefore, the time of year during which construction will take place is such that work will not result in excessive siltation from storm runoff nor prolonged exposure of unstable excavated slopes.

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 amended plans prepared by Rich Rushton, dated 2/8/16, pages A1.1, A2.2, A2.3, A2.4, A2.5, A4.0, A4.1, A4.2, A7.1 and A7.2, and the civil engineering plans by Vlad Iojica, Civil Engineer, dated 2/15/16, pages C1.0, C1.1, C2.0., C3.0, C4.0, C4.1, C5.0, C6.0 and C7.0.

2. Prior to issuance of any of the building permits for the project the applicant or his assigns shall:

a. Submit a construction plan to the Public Works Department which may include but is not limited to the following:

- Construction delivery routes approved by the Department of Public Works.
- Construction schedule (deliveries, worker hours, etc.)
- Notification to area residents
- Emergency access routes

b. The applicant shall prepare, and file with the Public Works Director, a video tape of the roadway conditions on the public construction delivery routes (routes must be approved by Public Works Director).

c. Submit a cash deposit, bond or letter of credit to the Town in an amount that will cover the cost of grading, weatherization and repair of possible damage to public roadways. The applicant shall submit contractor's estimates for any grading, site weatherization and improvement plans for approval by the Town Engineer. Upon approval of the contract costs, the applicant shall submit a cash deposit, bond or letter of credit equaling 100% of the estimated construction costs.

d. The foundation and retaining elements shall be designed by a structural engineer certified as such in the state of California. Plans and calculations of the foundation and retaining elements shall be stamped and signed by the structural engineer and submitted to the satisfaction of the Town Structural Engineer.

e. The grading, foundation, retaining, and drainage elements shall also be stamped and signed by the site geotechnical engineer as conforming to the recommendations made by the project Geotechnical Engineer.

f. Prior to submittal of the building permit plans, the applicant shall secure written approval from the Ross Valley Fire Authority, Marin Municipal Water District and the Ross Valley Sanitary District noting the development conformance with their recommendations.

g. Submit 3 copies of the record of survey with the building permit plans.

h. All retaining walls that are visible from the street and are constructed of concrete shall be heavily textures or colored in a manner approved by the

planning staff prior to issuance of the building permit. This condition is intended to mitigate the visual impact of the proposed walls.

i. The applicant shall secure a tree cutting permit, if required, from the Town prior to removal of any on-site trees subject to a permit under Town Code Chapter 9.36. To further minimize impacts on trees and significant vegetation, the applicant shall submit plans for any utility installation (including sewer, water and drainage) which incorporates the services of an International Society of Arborists (ISA) certified arborist to prune and treat trees having roots 2 inches or more in diameter that are disturbed during the construction, excavation or trenching operations. In particular, cross country utility extensions shall minimize impacts on existing trees. Tree root protection measures may include meandering the line, check dams, rip rap, hand trenching, soil evaluation and diversion dams. Any pruning shall take place during the winter when trees are dormant for deciduous species and during July to August for evergreen species.

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

a. The geotechnical engineer shall be on-site during the grading process (if there is any grading remaining to be done) and shall submit written certification to the Town Staff that the grading has been completed as recommended prior to installation of foundation and/or retaining forms and piers.

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

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

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

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

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

building plans and the recommendations of the soils report.

b. The Planning Department and Town Engineer shall field check the completed project to verify that all and planning commission conditions and required engineering improvements have been complied including installation of landscaping and irrigation prior to issuance of the certificate of occupancy.

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

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

7. Any changes, modifications, additions or alterations made to the approved set of plans will require a modification of Application # 16-18. Any construction based on job plans that have been altered without the benefit of an approved modification of Application 16-18 will result in the job being immediately stopped and red tagged.

8. Any damages to the public portions of Meadow Way or other public roadway 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. Conditions placed upon the project by outside agencies or by the Town Engineer may be eliminated or amended with that agency's or the Town Engineer's written notification to the Planning Department prior to issuance of the building permit.

Ross Valley Fire Department

1. Project has been deemed a "substantial remodel" and as such requires installation of a fire sprinkler system that complies with the National Fire Protection Association regulation 13-D and local standards. The system will require a permit from the Fire Department and the submittal of plans and specifications for a system submitted by an individual or firm licensed to design and/or design-build sprinkler systems.

2. The property is located within the Wildland Urban Interface Area for Fairfax and the new construction must comply with Chapter 7A of the California Building Code or equivalent.

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 each sleeping room in a central location in the corridor and over the center of all stairways with a minimum of 1 detector on each story of the occupied portion of the residence.

4. Carbon monoxide alarms shall be provided in existing dwellings when a permit is required for alterations, repairs, or addition and the cost of the permit exceeds \$1,000.00. Carbon monoxide alarms shall be located outside of each sleeping area in the immediate vicinity of the bedrooms and on every level of the dwelling, including basements.

5. Address numbers at least 4 inches tall must be in place adjacent to the front door. If not clearly visible from the street, additional numbers must be placed in location that is visible from the street. The numbers must be internally illuminated or illuminated by and adjacent light controlled by a photocell that can be switched off only by a breaker so it will remain illuminated all night.

6. Alternative materials or methods may be proposed for any of the above conditions in accordance with Section 104.9 of the Fire Code.

7. All approved alternatives requests, and their supporting documentation, shall be included in the plan sets submitted for final approval by the Fire Department.

Marin Municipal Water District

- 1. A high pressure water service permit is required for this project.
- 2. The plans 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.
- 3. 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.
- 4. Comply with 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

A Sanitary District sewer connection permit is required to either replace the existing sewer lateral, or demonstrate to a District Inspector that the existing lateral meets current requirements, prior to the project final inspection and issuance of an occupancy permit for the residence.

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

The approval of the Hill Area Residential Development Permit, Excavation Permit, Covered Parking Variance and Design Review Permit is in conformance with the 2010 – 2030 Fairfax General Plan and the Fairfax Zoning Ordinance, Town Code Title 17; and

Construction of the project 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 19 day of May 2016 by the following vote:

- AYES:
- NOES:
- ABSTAIN:

Chair Kehrlein

Attest:

Jim Moore, Director of Planning and Building Services

FEB 16 2016

RECEIVED

**GEOTECHNICAL MEMORANDUM:**

To: Nadim and Stacy Nahas

RE: Geotechnical Investigation
Proposed Residential Additions
22 Meadow Way, Fairfax

Date: January 19, 2016

Dear Mr. and Mrs. Nahas:

In accordance with your request I have performed a Geotechnical Investigation at your residential property, located at 22 Meadow Way in Fairfax, California. The purpose of this investigation was to evaluate the soil conditions in the areas of proposed improvements, and to provide foundation recommendations as appropriate.

The scope of services for this investigation included a review of published geologic literature, past reports and plans by others and proposed improvement plans; a visual inspection of the site and examination of the foundations of the existing structure; exploration of the subsurface conditions in the vicinity of proposed construction using a portable drill rig and hand-auger probes, limited lab testing and preparation of this report. This investigation did not include screening for potential hazardous materials.

BACKGROUND AND PROPOSED CONSTRUCTION: The subject property consists of an existing, small, 2 story house situated on a steeply up-sloping lot. The lot fronts San Anselmo Creek, and is located approximately 1 mile southwest of downtown Fairfax. The existing compact, two-story structure was constructed in the late 1980's on a pier and grade beam foundation. The structure is situated over a sloping crawlspace.

At the time the house was built there were several piers drilled outboard of the main structure, to support future decks, including 5 piers on the front slope and 4 at the rear. The piers at the front currently do support a deck, while those at the rear were never used. There are minor wood and dry-stacked stone walls creating paths and landscape areas in various locations around the house, including a wood wall approximately 3 feet in height, which runs along the rear of the present structure.

ATTACHMENT B

Along the southern property line there is a drainage swale that feeds down from the eastern slope, apparently emanating from storm drains along Bolinas Road above. The swale feeds into a 15-inch diameter culvert which passes under the parking area at the end of the driveway, and discharges over the embankment of San Anselmo creek, which forms the western border of the property.

North of the house there is an old road cut, apparently an extension of Meadow Way, which runs parallel to the creek bank below the house, continuing on to the north. This cut contains a sewer main which was replaced in recent years. As part of that work the Sewer District constructed a wood wall to retain the base of the road cut, and repaired a section of the creek bank north of the house, using gabion baskets and rip-rap.

Proposed construction is to involve substantial additions to the front and rear of the house, effectively tripling the present size of the structure. The front addition will create a new ground-level bedroom, with a roof deck at the main floor level. This addition will extend approximately 6 feet past the existing row of deck piers. The rear addition will include a small laundry and study at the main floor level, requiring a crawlspace retaining wall approximately 5 feet in height to support the present slope. The upper level of this addition will accommodate a master bedroom suite. The rear addition will extend approximately 2 feet past the unused piers on the rear slope.

ORIGINAL SOILS REPORT AND EVALUATION OF EXISTING FOUNDATIONS: You have provided me with a copy of the original soils report for the property, prepared in 1988 by Curtis Jensen (apparently a relative of the original owner). There were no borings performed in the original investigation. The report calls for the piers to be at least 12 inches in diameter, and to extend 5 feet into "bearing soils", neglecting the upper 2 to 4 feet of support. This implies that the existing piers might be only 7 to 9 feet deep. However, the approved plans state that the piers were to be 18 inches in diameter, and at least 16 feet deep. The report recommended that the pier design assume a skin friction of 400psf. Grade beams were to be cast over cardboard void forms to provide a cushion against expansion. Retaining wall design was to assume an active pressure of 45pcf on flat surfaces or modest grades, or 65pcf on steeply sloping grades.

The existing house structure shows no sign of movement. A level survey performed during our site visit found that the floors are within ½ inch of relative level, which is excellent. Thus the existing house piers have performed well to date.

GEOLOGY: Review of geology maps of the area indicate that the site lies within a massive landslide feature which blankets much of the surrounding hillside (See Figure 1). The maps indicate that the area is underlain by Franciscan Melange, which consists of various bedrock units that have been sheared and altered by tectonic activity. Sheared Sandstone and Shale occur most commonly in the Fairfax area. A large outcrop of

Sandstone, or possibly a massive boulder, is evident along the old road cut approximately 50 feet to the north of the house. Outcrops of Sandstone and Shale are sporadically evident in road Cuts along Bolinas road, east of the site. Several large boulders exist in the incised drainage channel above the site.

As stated, the geologic map indicates that the site lies within a massive shallow landslide complex, which covers much of the surrounding slope. Thus the map authors have assigned the area a stability number of 4, indicating a high risk for landsliding.

PREVIOUS SLIDE EVENTS AT DRIVEWAY AREA: It is my understanding that in during the heavy rains of the early 1980's, prior to the construction of the house, a debris flow landslide occurred within the swale along the southern property line, apparently caused by a materials displaced from the property above. The debris flow apparently inundated the culvert and deposited debris within the driveway area, but did not affect the present house pad, which is located approximately 30 feet away and several above axis of the swale.

Another debris flow even occurred in ? Again the culvert became inundated, causing concentrated storm water to wash over the driveway, and washed out the upper portion of the creek bank, below the driveway. This slide event was investigated by Craig Herzog, who performed three borings in the vicinity of the driveway, using a truck-mounted rig. Two borings at the up-slope side of the driveway encountered over 20 feet of very stiff to hard Clay soils, before apparently reaching Sandstone or Shale bedrock. A third boring drilled along the down-slope edge of the driveway encountered 30 feet of stiff to hard Clay soils, with no bedrock. Based on these findings, Herzog provided recommendations for constructing a retaining wall along the down-slope edge of the driveway, founded on minimum 20-foot deep piers, supplemented by drilled and grouted tie backs.

It is my understanding that the Sanitary District actually paid for the wall construction, in order to protect the sewer main which passes under the driveway. Probably for budgetary reasons, another Soil Engineer was brought in to provide recommendations for an alternate wall design, consisting of a "Matterhorn" gravity block wall approximately 6 feet in height, which bears on a massive reinforced concrete grade beam. The grade beam is supported on Helical piers, supplemented by Helical Anchor tie backs. The original design Engineer, Struber Stroe, indicates that the work was inspected and signed off. We have also interviewed the contractor who installed the Helicals, who confirmed that they were installed per plan. An inspection of this wall confirms that it has performed well for the 13+ years that it has been in place.

As part of the driveway repair, the culvert under the pavement was increased in size, but the upper section of pipe remains at its original size. Since you have owned the property, the culvert has required regular maintenance with following storm events due to the accumulation of debris washing down the ravine. During a recent site visit I walked up the ravine onto the adjoining property. The upper reaches of the channel is incised 6 to 8 feet,

and is strewn with rocks and debris, including a large, dislodged section of corrugated metal pipe which likely washed down from Bolinas Road during a prior failure. Thus there is ample material in the flow path to trigger future debris flow events. However, as it passes onto your property, the flow line of the channel is separated from the house by substantial ridge of competent earth. Thus, although the parking area is certain to experience further debris flow events emanating from the ravine, it would be physically impossible for these events to directly effect the house.

I also inspected the immediately above the house amidst a period of heavy rains...

As part of the present investigation, two probes were excavated at the site using a hand auger. The first probe was performed at the front perimeter of the existing structure, just beyond the line of the proposed addition, at the base of an existing landscape wall. This probe encountered approximately 2 feet of moist brown silty Clay, underlain by dense olive brown clayey Silt. This probe met refusal in apparent Sandstone at a depth of 7 feet from the existing grade (or perhaps 10 feet from the original grade, factoring in the cut for the landscape wall).

The second probe was performed on the rear slope, directly adjacent to southern-most existing pier. This probe also encountered approximately 5 feet of soft Silty Clay top soils, underlain by denser clayey Silt. This probe was extended to a depth of 13 feet, without encountering firm bedrock. However, the dense clayey Silt did intermittently exhibited faint rock structure, which implies that the material is deeply decomposed Shale. This probe was backfilled with dry concrete mix, so as not to disturb the bearing for the pier.

A sample of the clay soil was taken to a lab for an Atterberg Limits test (see Figure 4). The clay was found to have a Plasticity Index of 40, which is very high for a Marin County site. This implies that the soil has a high susceptibility to expansion and contraction with changes in moisture content.

The second probe was excavated directly adjacent to one of the existing, unused piers. I was able to feel the probe scraping against the concrete to a depth of about 7 feet, which would be the minimum depth called for in the original soils report.

SEISMICITY: It should be considered common knowledge that this site and the Bay Area in general are subject to strong ground shaking due to the regular occurrence of large earthquakes. The site is located approximately 5 miles east of the San Andreas/Seal Cove Faults, and approximately 11 miles west of the Hayward Fault, all of which are active type A faults, with Maximum Credible Earthquake (MCE) magnitudes of 7.1 to 7.9 on the Richter Scale.

Given the location and topography of the site, ground rupture and liquefaction should not

be of concern. However, given the steep slope above the house which does not appear to contain much bedrock, there is a remote chance of seismically induced landsliding. Construction of a stout, pier-supported retaining wall at the back of the proposed laundry room should help to mitigate this risk.

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

Mapped Short Period Spectral Acceleration, S_s:	1.500
Mapped 1-Second Spectral Acceleration, S₁:	0.663
Site Class:	C
Short Period Site Coefficient, F_a:	1.0
1-Second Site Coefficient, F_v:	1.3
Modified Short Period Acceleration, S_{ms}:	1.500
Modified Short Period Acceleration, S_{ms}:	0.861
Design Short Period Acceleration, S_{ds}:	1.000
Design Short Period Acceleration, S_{ds}:	0.574
Design Category:	D

DISCUSSION AND CONCLUSIONS: The proposed front addition will extend too far past the existing piers for them to be of use as the primary elements of support. Therefore a new line of piers will be required beneath the outboard perimeter. The new piers should be 18 inches in diameter, and should be drilled at least 7 feet into bedrock (assume total depths of 15 to 18 feet). A suggested layout for the new foundations is shown on attached Figure 3.

As stated, it is possible that the existing abandoned piers did not reach bedrock. However, given the favorable performance of the front deck piers to date, these piers could be used to support interior floor loads, if necessary. To evaluate their capacity, skin friction of 400pcf may be assumed for the lower 5 feet of these piers, as recommended in the Jensen report.

At the rear addition the rock is apparently deeper and the slope is steeper, and is therefore more subject to creep. The existing unused piers on the rear slope are not trustworthy, in my opinion. Thus the rear addition will require all new piers. Again the piers should be 18 inches in diameter, and they should extend 7 feet into rock (this will require piers at least 20 feet deep in this location). The foundation wall at the laundry will be cut into the slope about 5 feet. This wall should be designed to resist an active force of 65pcf, as indicated in the Jensen report. It is recommended that tie beams run up the slope from the top of this wall to the rear perimeter grade beam at approximately 10 feet on center.

The clay soils at this site are apparently highly plastic, and therefore susceptible to

expansion. Swelling soils could push upwards on the grade beams, pulling the piers out of the ground (this is a more common occurrence in the East Bay, where the highly expansive soils run very deep). At the subject site, I suspect that the greatest risk of expansion would occur at the foundation wall of the laundry, which is cut into the slope and therefore well seated in the potentially expansive clay. The grade beams for this foundation wall should be cast over 4-inch cardboard void forms to provide a cushion against expansion, and if a floor slab is used it should be free floating (ie without dowel connections into the foundations). The front and rear perimeter grade beams will be perched on sloping grades, where expansion should be less of a concern.

The upper run of culvert above the parking area may be under-sized for the channel which feeds into it; not so much because of the volume of runoff, but more because of the debris which typically washes down a woodland swales in this area. A larger pipe could serve much better. However, without undoing the work which was done before, the upper pipe could only be increased to 18 inches, which may not be a substantial improvement. Because the overflow does not affect the house, you may choose to leave the system as is, with the understanding that the pipe inlet will require regular maintenance, and with the awareness that the parking area could be again inundated with debris.

As the rear slope will impend on the new rear perimeter foundation, it is recommended that a V-ditch be installed across the back of the house. A gravel drain approximately 3 feet deep should be installed below the ditch, to divert shallow subsurface seepage.

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

are used, they should be 6 inches thick and reinforced with #4 bars at 12 inches on center each way, *without* dowel connections to the perimeter foundations. Floor slabs should be cast over 4 inches of pea gravel covered by 10 mil plastic sheeting. Slab subgrades should be maintained in a thoroughly saturated condition for 72 hours prior to concrete placement, to pre-swell the clay soils. Still some movements should be expected, related to seasonal expansion and contraction of the subgrade. If this is not acceptable, the slabs cast over void forms, and structurally suspended off the adjacent pier-supported foundations.

3. **RETAINING WALLS:** Site retaining walls situated on the rear slope, including the foundation wall at the back of the laundry, shall be designed for an active pressure of 65pcf. Walls situated on the flatter front slope may be designed for an active pressure of 45pcf. Walls shall be supported on drilled piers, using the values outlined in Section 2 above. Creep loads may be neglected, provided that the resultant active pressure is a minimum of 500plf. Retaining walls shall contain gravel back drains wrapped in filter cloth, with perforated pipes or weep holes along the base.
4. **DRAINAGE:** As a minimal drainage improvement, all roof downspouts shall be fitted with 4-inch solid PVC discharge pipes. Surrounding yard and patio areas shall utilize V-1 or brass catch basins tied to the roof downspout lines, or shall be graded to shed runoff away from the house in an unconcentrated manner.
 - 4.1 **Concrete V-Ditch:** In order to divert storm runoff from the rear slope, a concrete ditch should be installed against the up-slope perimeter of the house. This ditch may discharge to the drainage swale along the south property line.
 - 4.2 **Subsurface Drainage:** In order to mitigate seasonal moisture intrusion into the crawlspace area, a perimeter gravel subdrain should be installed around the up-slope perimeter of the house, below the concrete ditch. The subdrain shall consist of a trench at least 36 inches deep, extending well below the adjacent crawlspace grades, sloped at 1%. A perforated PVC pipe shall be placed along the bottom of the trench, and the trench shall be backfilled with 3/4-inch drain rock wrapped in filter cloth.
 - 4.3 **Piping:** All piping shall be 4-inch SDR-35 PVC. All drain lines shall be sloped at 1% minimum to outlet at to the existing drainage swale at the south side of the house. Where elevations do not permit discharge to the existing storm drain, drain lines may run to rubble dissipaters below the house.

4.4 Maintenance: Drainage systems require regular maintenance to insure proper functioning. Catch basins and downspout pipes should be flushed regularly (dependant on the rate of falling leaf litter). Discharge points should be also be periodically inspected to insure that outlet piping is not obstructed. It is recommended that an accurate as-built plan of the drainage systems be prepared, and that maintenance requirements be disclosed to all future buyers of the property.

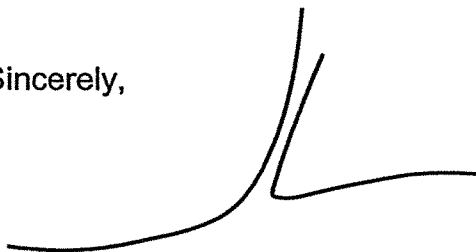
5. PLAN REVIEW AND CONSTRUCTION OBSERVATION: The undersigned Geotechnical Engineer should review the final foundation details for conformance with the above recommendations, and should inspect all pier drilling and subdrain trenches in progress prior to placement of reinforcing steel, concrete or backfill. Allowances should be made for potential changes to the final design requirements in the event that actual construction conditions differ from the conditions assumed in this report.

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

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

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

Sincerely,



David A. Olnes, GE
Principal Engineer



REFERENCES

Knudsen, Keith L., Sowers, Janet M. Witter, Robert S., Wentworth, Carl M, Helley, Edward J., "Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California", USGS Open File Report 00-444, 2000.

Olnes, David A., "Contract for Engineering Services, 22 Meadow Way, Fairfax", May 5, 2015.

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

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



ALLUVIAL VALLEY
CONTAINING
SAN ANSELMO
CREEK BELOW.

SLOPE BELOW
BOLINAS ROAD
MAPPED AS A
LANDSLIDE.

SITE MAPPED AS
CRETACEOUS
SANDSTONE
(Ks) AND FRANCISCAN
MELANGE (Fm).

SOURCE:

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

DAVE



OLNES P.E.
INC.

CIVIL & SOIL ENGINEER

7915 CREST AVENUE OAKLAND CALIF. 94605
PH & FX: (510)568-2162 daveolnes@sbcglobal.net

SCALE: 1"~1500'

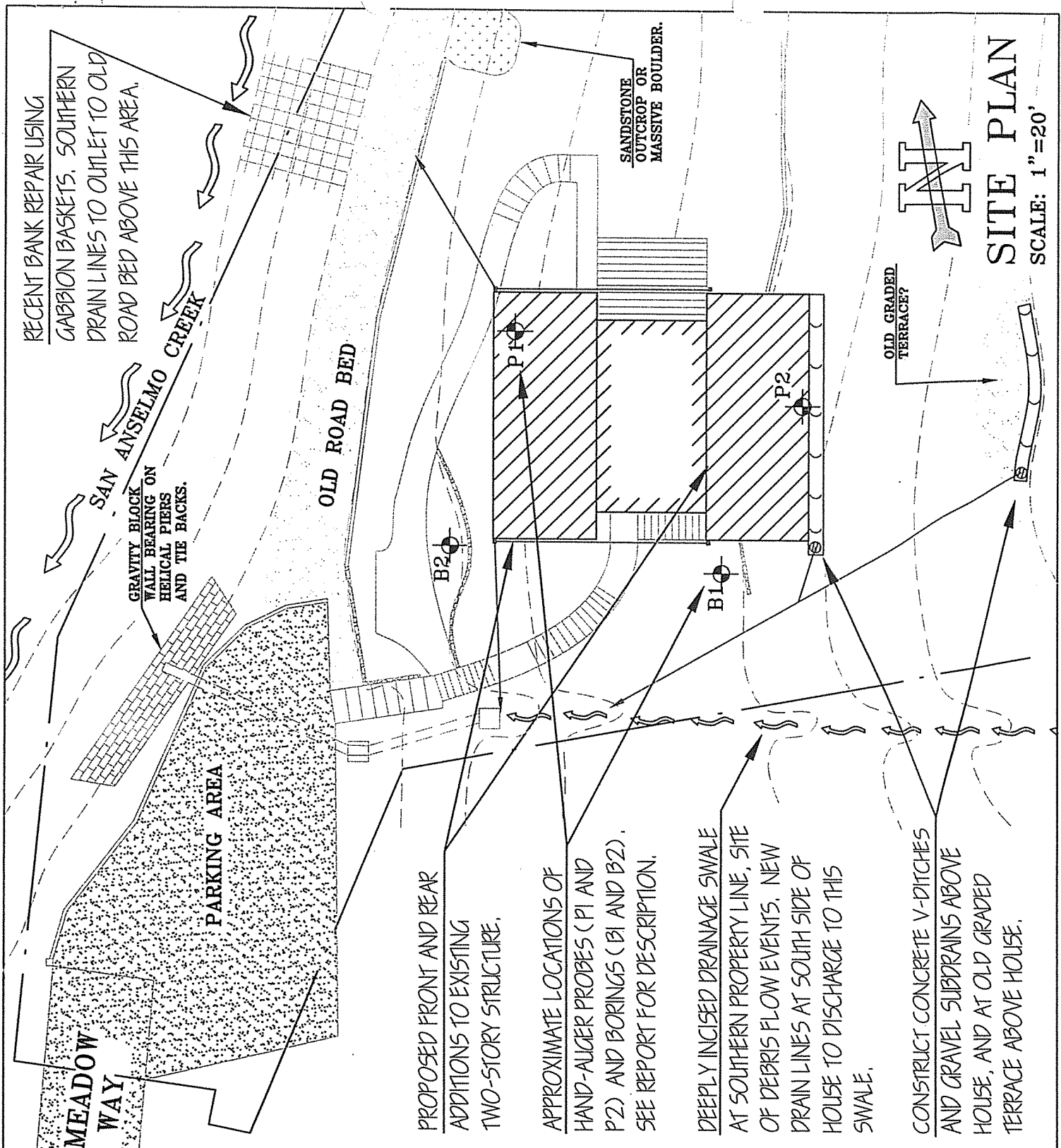
JOB #: 0-3940

DRAWN: DAO/VHD

DATE: 1-22-16

GEOTECHNICAL RECONNAISSANCE
22 MEADOW WAY
FAIRFAX, CALIFORNIA

FIGURE: 1



RECENT BANK REPAIR USING
GABBION BASKETS. SOUTHERN
DRAIN LINES TO OUTLET TO OLD
ROAD BED ABOVE THIS AREA.

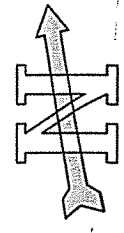
SAN ANSELMO CREEK

GRAVITY BLOCK
WALL BEARING ON
HELICAL PIERS
AND TIE BACKS.

OLD ROAD BED

SANDSTONE
OUTCROP OR
MASSIVE BOULDER.

OLD GRADED
TERRACE?



SITE PLAN
SCALE: 1"=20'

PARKING AREA

MEADOW
WAY

PROPOSED FRONT AND REAR
ADDITIONS TO EXISTING
TWO-STORY STRUCTURE.

APPROXIMATE LOCATIONS OF
HAND-AUGER PROBES (P1 AND
P2) AND BORINGS (B1 AND B2).
SEE REPORT FOR DESCRIPTION.

DEEPLY INCISED DRAINAGE SWALE
AT SOUTHERN PROPERTY LINE, SITE
OF DEBRIS FLOW EVENTS. NEW
DRAIN LINES AT SOUTH SIDE OF
HOUSE TO DISCHARGE TO THIS
SWALE.

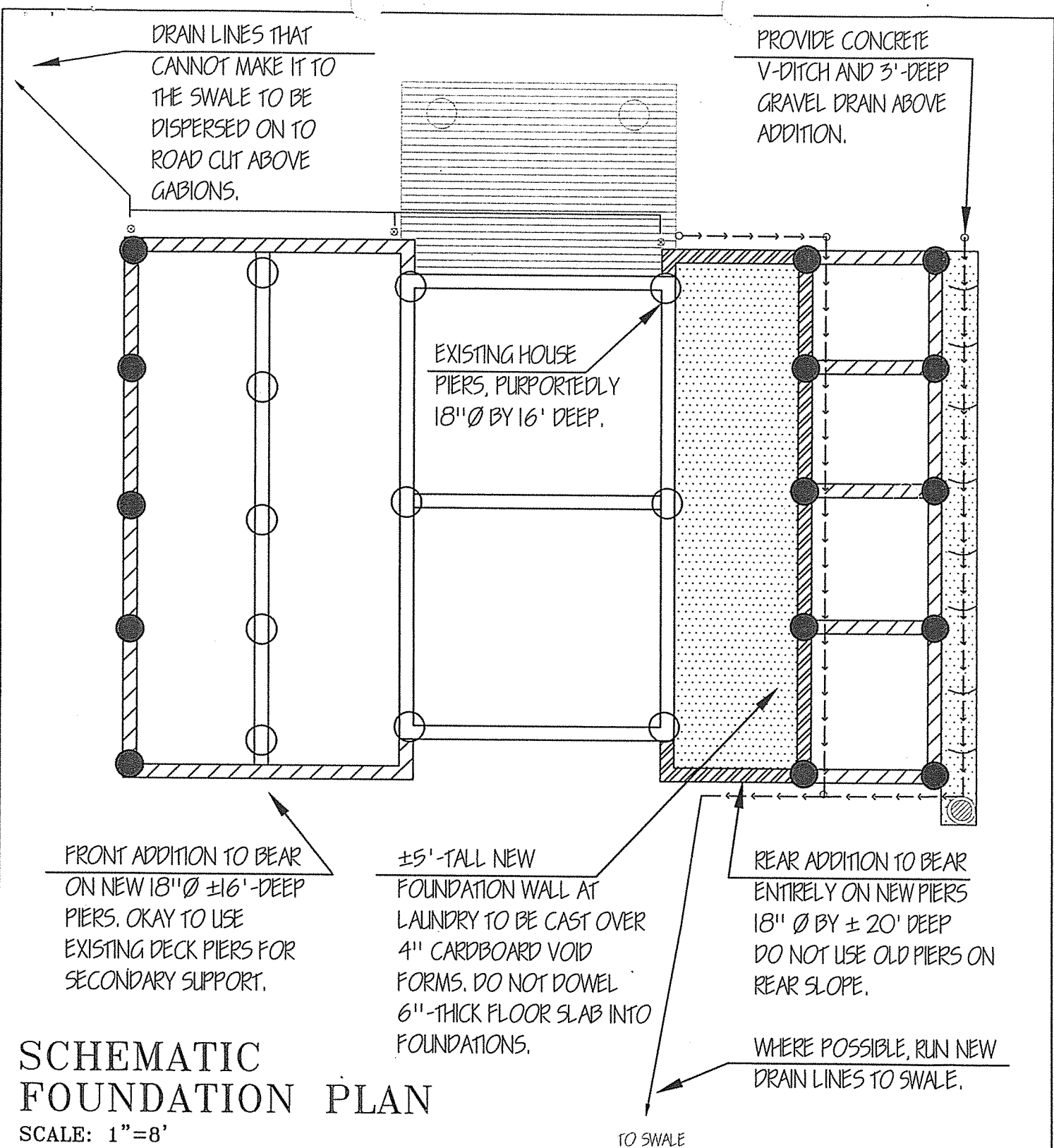
CONSTRUCT CONCRETE V-DITCHES
AND GRAVEL SUBDRAINS ABOVE
HOUSE, AND AT OLD GRADED
TERRACE ABOVE HOUSE.

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

SCALE: 1"=20'
JOB #: 0-3940
DRAWN: DAO/VHD
DATE: 1-22-16


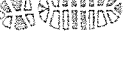

GEOTECHNICAL RECONNAISSANCE
22 MEADOW WAY
FAIRFAX, CALIFORNIA

FIGURE: 2



SCHEMATIC FOUNDATION PLAN

SCALE: 1"=8'

<p>DAVE   </p> <p>OLNES P.E. INC.</p> <p>CIVIL & SOIL ENGINEER</p> <p>7915 CREST AVENUE OAKLAND CALIF. 94605 PH & FX: (510)568-2162 daveolnes@sbcglobal.net</p>	<p>SCALE: 1"=8'</p> <p>JOB #: 0-3940</p> <p>DRAWN: DAO/VHD</p> <p>DATE: 1-22-16</p>	<p>GEOTECHNICAL RECONNAISSANCE 22 MEADOW WAY FAIRFAX, CALIFORNIA</p> <p>PRELIMINARY NOT FOR CONSTRUCTION</p> <p>FIGURE: 3</p>
--	---	---

BORING: B1 Location: **BESIDE SOUTHEAST CORNER OF EXISTING RESIDENCE**

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark brown Silty CLAY/Clayey SILT (CL-ML) medium stiff	0				Top Soil
mottled grey-brown Silt CLAY/Clayey SILT (CL-ML) very stiff/dense	0				Ancient Colluvium? (Well Consolidated)
	5				
		1-1	65/ 6"	9.7%	
	10	1-2	50/ 4"	11.4%	
		1-3	50/ 5"	11.5%	
Bottom of Boring @ 13'	15				Sampler Refusal No Groundwater
	20				

DAVE   
OLNES P.E.
INC.
CIVIL & SOIL ENGINEER
 7915 CREST AVENUE OAKLAND, CA 94605
 TELEPHONE & FAX (510) 568-2162

PROJECT: Geotechnical Investigation
 22 Meadow Way
 Fairfax, California
DATE: January 11, 2016

Figure: 4

BORING: B2 Location: **BELOW SOUTHWEST CORNER OF EXISTING RESIDENCE**

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark brown Silty CLAY/Clayey SILT (CL-ML) medium stiff	0 - 5				Top Soil
mottled grey/brown Silty CLAY/Clayey SILT Sandstone and Shale fragments (CL-ML) very stiff/dense	5 - 10				Ancient Colluvium? (Well Consolidated)
		2-1	53	12.5%	Water Pocket at 6'
	10 - 15				
		2-2	100+	11.2%	
		2-3	100+	10%	
Bottom of Boring @ 16'	16 - 20				Sampler Refusal No Groundwater



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OLNES P.E.
 CIVIL & SOIL ENGINEER
 7915 CREST AVENUE OAKLAND, CA 94605
 TELEPHONE & FAX (510) 568-2162

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 22 Meadow Way
 Fairfax, California
 Date: January 11, 2016

Figure: 5

BORING: P1 Location: **BELOW NORTHWEST CORNER OF HOUSE**

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark brown Silty CLAY/Clayey SILT medium stiff, moist (CL-ML)	0 1 2 3 4				Top Soil
mottled brown Clayey SILT with rock fragments (CL-ML) very stiff/dense	5 6 7 8				Ancient Colluvium? (Well Consolidated)
Bottom of Probe @ 8'	9 10 11 12 13 14 15 16 17 18 19 20				Refusal on SANDSTONE Boulder? No Groundwater




DAVE
OLNES P.E.
INC.
CIVIL & SOIL ENGINEER
 7915 CREST AVENUE OAKLAND, CA 94605
 TELEPHONE & FAX (510) 568-2162

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 22 Meadow Way
 Fairfax, California
Date: January 11, 2016

Figure: 6

BORING: P2

Location: ABOVE HOUSE, BESIDE OLD PIER

DESCRIPTION	DEPTH FEET	SAMPLE NUMBER	BLOW COUNT	MOISTURE CONTENT	COMMENTS
dark brown-black Silty CLAY (ML-CL) medium stiff, moist	0 - 1				Top Soil
mottled brown-olive grey Silty CLAY/ Clayey SILT with rock fragments (CL-ML) very stiff/dense	1 - 5				Ancient Colluvium (Well Consolidated)
	5 - 10				occasional rock structure?
Bottom of Probe @ 13'	10 - 15				No Groundwater
	15 - 20				

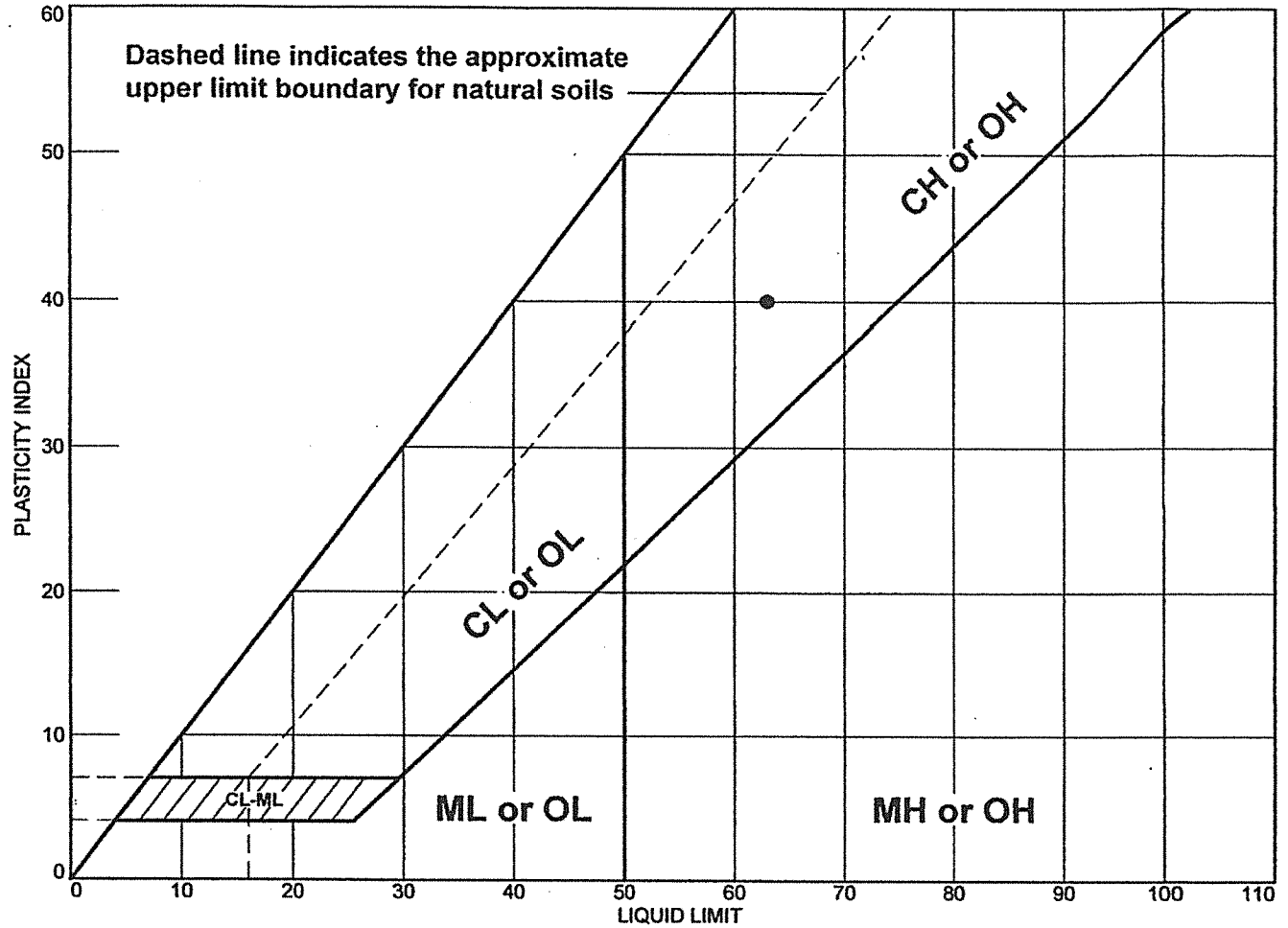
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OLNES P.E.
INC.
 CIVIL & SOIL ENGINEER
 7915 CREST AVENUE OAKLAND, CA 94605
 TELEPHONE & FAX (510) 568-2162

Project: Geotechnical Investigation
 22 Meadow Way
 Fairfax, California

Date:

Figure: 7

LIQUID AND PLASTIC LIMITS TEST REPORT



MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
● Dark gray FAT CLAY with sand.	63	23	40			CH

Project No. _____ Client: Dave Olnes

Project: _____

● Source of Sample: 22 Meadow, Fairfax. Sample Number: Bulk

Soil Mechanics Lab

Oakland, California

Remarks:

Plate

Tested By: MA

TOWN OF FAIRFAX

FEB 16 2016

RECEIVED

Preliminary Site Drainage Study

Project Name:

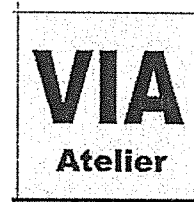
Nahas Residence

Project Address:

22 Meadow Way
Fairfax, CA 94930
APN: 003-122-50

Prepared For:

Stacy and Nadim Nahas
22 Meadow Way
Fairfax, CA 94930

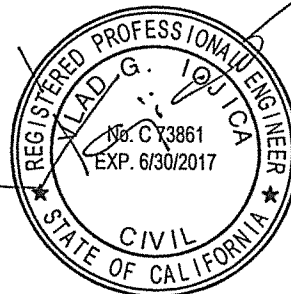


Prepared by:

ViA Atelier, Inc.
9 Brookside Ct.
San Anselmo, CA
T: 415-774-6776
E: office@via-eng.com

Date:

September 9, 2015
February 9, 2016 (Revised)



ATTACHMENT C

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Introduction

The purpose of this study is to make an assessment of current and proposed site drainage conditions, and provide recommendations for construction, to be implemented in the construction documents for proposed structure addition and site improvements.

In developing this site drainage study, we used in addition to the site topographic map, as well as the proposed site development plan, prepared by Rushton-Chartock Architects, and dated 6/4/15, our site observation notes, as well as information regarding existing site drainage facilities. These plans and maps used in developing this study are attached for reference under Appendix A.

The parcel proposed for partial redevelopment, located at 22 Meadow Way, in the Town of Fairfax (APN: 003-122-50), see Figure 1, have an average slope of 51 percent, encompasses 43,822 sq.ft., in accordance with the Parcel Map prepared by Adobe Associates, and dated August 1984. The most part of the parcel is undeveloped, in natural condition, with mature vegetation covering entire parcel (site survey map prepared by our office attached for reference under the appendixes) it is bounded along northwesterly boundary line by San Anselmo Creek, Meadow Way at the southwest corner, and partially developed hillside residential parcels along south and southeast. The parcel in question is located on the incorporated land of the Town of Fairfax.

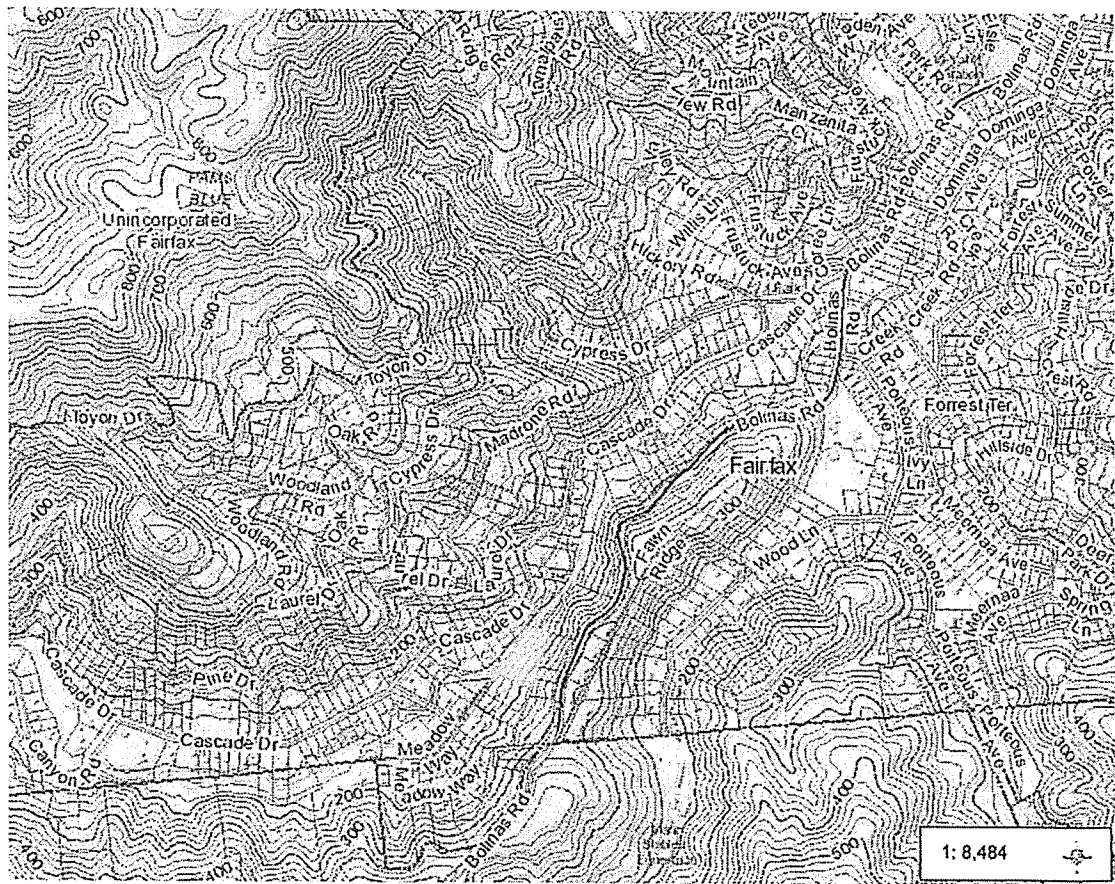


Figure 1 Area Map, Town of Fairfax

The topography of the area, as shown in figures 1 and 2, indicates that the parcel, potentially receives storm water from upstream tributary areas, to the southeast, in the form of sheet flows runoff. Existing drainage improvements at the site consists of a lined swale located along the south boundary line of the parcel that collects and conveys storm water runoff from areas along southwest property line. The swale conveys the storm water runoff into a catch basin at the lower elevations, and from there it is being discharged into the San Anselmo Creek. These improvements have been installed per plans prepared by I.L Schwartz Associated, Inc., and dated 05/07/02. Topographic site map attached for reference under appendix A.

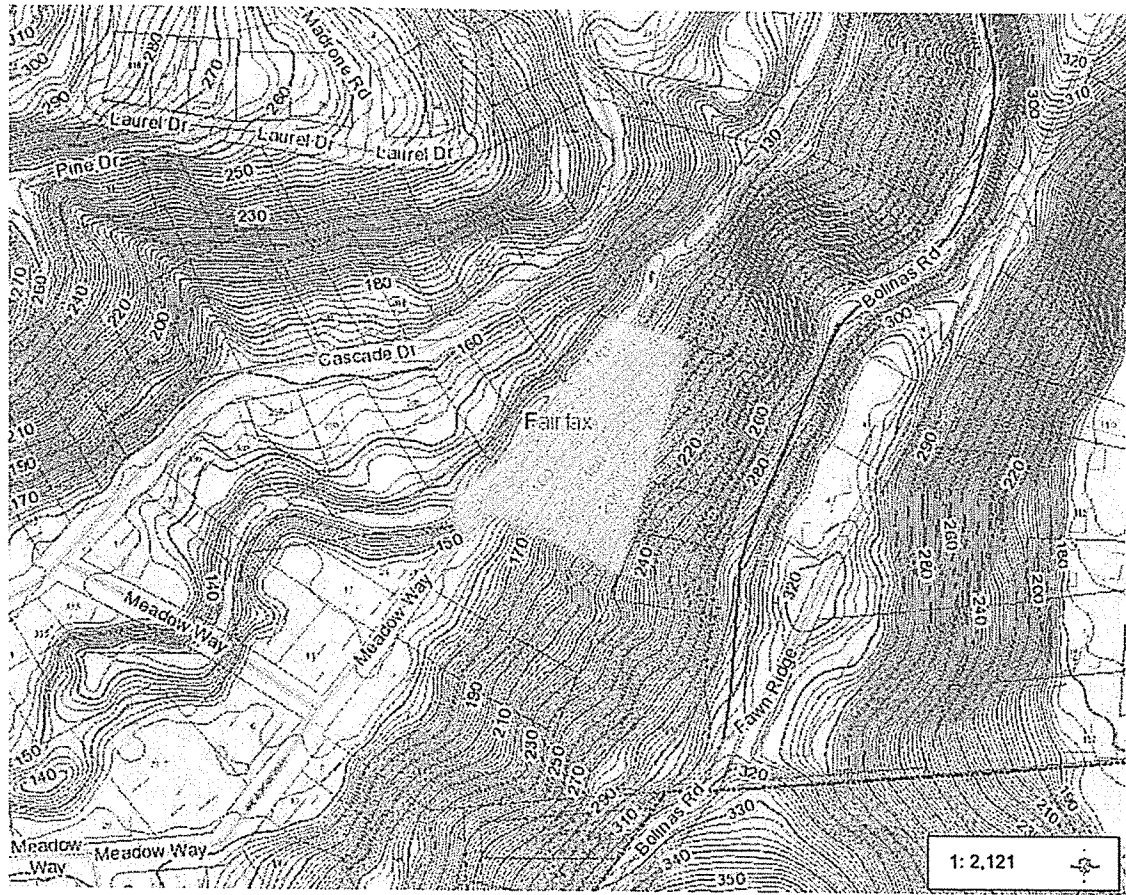


Figure 2 Vicinity Map

A geotechnical investigation report for parcel in question prepared by Hadlenbeck & Associates, and dated Feb. 22, 1988 it is currently under review by Mr. Dave Olnes, Civil and Soils Engineer, and recommendations for the proposed additions will be made available to be used for the construction documents.

Pre-Development Conditions

Current site improvements includes a two story single family residence, associated AC paved driveway, parking and site walkways, patios and decks as summarized under Table 1.

Table 1 Weighted Runoff Coefficient for the Pre-Development

	Roof <i>i</i>	Driveway <i>ii</i>	Pavers <i>iii</i>	Deck <i>iv</i>	Concrete Pavement <i>v</i>	Landscaped/ Undisturbed <i>vi</i>	Total <i>vii</i>
Runoff Factor	0.90	0.95	0.85	0.80	0.90	0.25	0.31
Current Cond. [sf]	505	1,890	1,254	730	n/a	39,443	43,822



Figure 3 Existing Drainage Improvements

With the site generally sloping from east towards west, the storm water runoff generated within the site as well as any runoff generated on the off-site tributary areas, and crossing the parcel boundary, areas identified under **Off-Site Hydrology Map (Exhibit H1.0/Appendix A)**, do sheet-flow towards northwest, and ultimately discharge into San Anselmo Creek. Except a brick lined swale that capture storm water runoff along the southerly parallel line, for the rest of the site the runoff sheet-flows towards the creek.

At the house pad level, grading was done to ensure storm water flowing away from the house perimeter.

The storm water runoff generated at asphaltic concrete (AC) paved driveway, also sheet flows towards west and discharges at a low point located next to the gate into a catch basin, that ultimately discharges the runoff into the creek. The runoff coefficients have been calculated (revised) in accordance with Figure 819.2B under Ch.810 of the Caltrans Highway Design Manual.

The off-site and on-site tributary areas indicated per Exhibit H1.0, under Appendix A.

The stormwater runoff discharge rates for the off-site and on-site tributary areas is calculated using the Rational Method for the 100-yr storm event:

$$Q_{100\text{-yr}} = Cw I A$$

- Where:
- Q Storm water runoff discharge
 - C Site specific weighted runoff coefficient (calculation bellow)
 - I Precipitation intensity for the 100-yr storm (via NOAA Atlas 2)*
 - A Drainage basin area in acres
 - tc Time of concentration (min.)

Calculation of the storm water runoff discharged by drainage tributary area along the upper parcel's boundary line using the Rational Method are presented in Appendix C.

Post-Development Conditions

The proposed improvements to the existing residence include additions to the east and west side of existing structure, which will replace an existing deck located along west perimeter of the dwelling, while along the east perimeter of the existing house, the addition will be built over an existing graded passage way , and encroach into the undeveloped portion of the lot. See table 2 bellow for a comparison between proposed and current conditions. The roughness coefficients have been calculated (revised) in accordance with Figure 819.2B under Ch.810 of the Caltrans Highway Design Manual.

Table 2 Weighted Runoff Coefficient for the Post-Development Conditions

	Roof	Driveway	Pavers	Deck	Concrete Pavement	Landscaped/Undisturbed	Total
	i	ii	iii	iv	v	vi	vii
Runoff Factor	0.90	0.95	0.85	0.80	0.90	0.25	0.34
Proposed Cond. [sf]	1,453	2,140	1,424	610	181	38,014	43,822

By comparison with the current, under the proposed conditions an additional roof area summing 948 sq.ft. is added, bay taking away existing deck area, pavement, and an encroachment into the undeveloped land (677 sq.ft.).

The stormwater runoff discharge rates for the off-site and on-site tributary areas is calculated using the Rational Method for the 100-yr storm event:

Giving the size of the impervious area being re-developed (create or replace less than 2,500 square feet of impervious surface), this project does not require implementation of Low Impact Development (LID) measures.

The preliminary improvement plans submitted along with this report includes following measures:

- In constructing the final grade along the perimeter of the remodeled house specify a minimum grade of 5.0% away from the structure perimeter, for any landscaped area and a minimum of 1.0% away from perimeter of the house, on any paved surface.
- Construct a concrete or cobble lined swale along the east perimeter of the house, and integrate with a berm into the design, to capture and divert storm water generated upstream of the house. Dimensioning the conveyance system will be done by calculating maximum expected discharge from the site and upstream tributary areas.
- Install a storm drain system to collect and convey away from the house pad runoff from the roof as well as other impervious surfaces. Install outlet flow dissipaters, connected to a subgrade drainage pipes from future site retaining walls.
- In constructing/extending the drainage system, use ASTM 2729 pipe, with a minimum section of 4 inches and not less than 12 inches of cover. Alternatively HDPE pipe with a minimum section of 4 inches can be use. Minimum slope on the site drainage system: 1.0%. Install stormdrain cleanouts at every change in the direction of pipe's alignment exceeding an angle greater than 45 degrees.
- Connect roof downspouts from the house existing and proposed roofed surface to the stormdrain system described above.
- For any site curb-walls higher than 18 inches or site retaining walls, specify subdrains located above the heel of the wall foundation, consisting off a 3-inch minimum, perforated pipe, wrapped in woven geotextile fabric material, and set in a layer of 12 inches of drain rock. Connect subdrains to the site drainage system.
- Specify installation of slope / outlet protection, at the downslope/drainage system discharge point(s). As concentrated flows can create erosion problems during a major storm, implementing these energy dissipater measures are highly recommended.

Conclusions

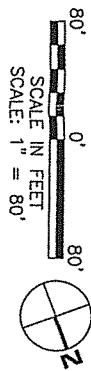
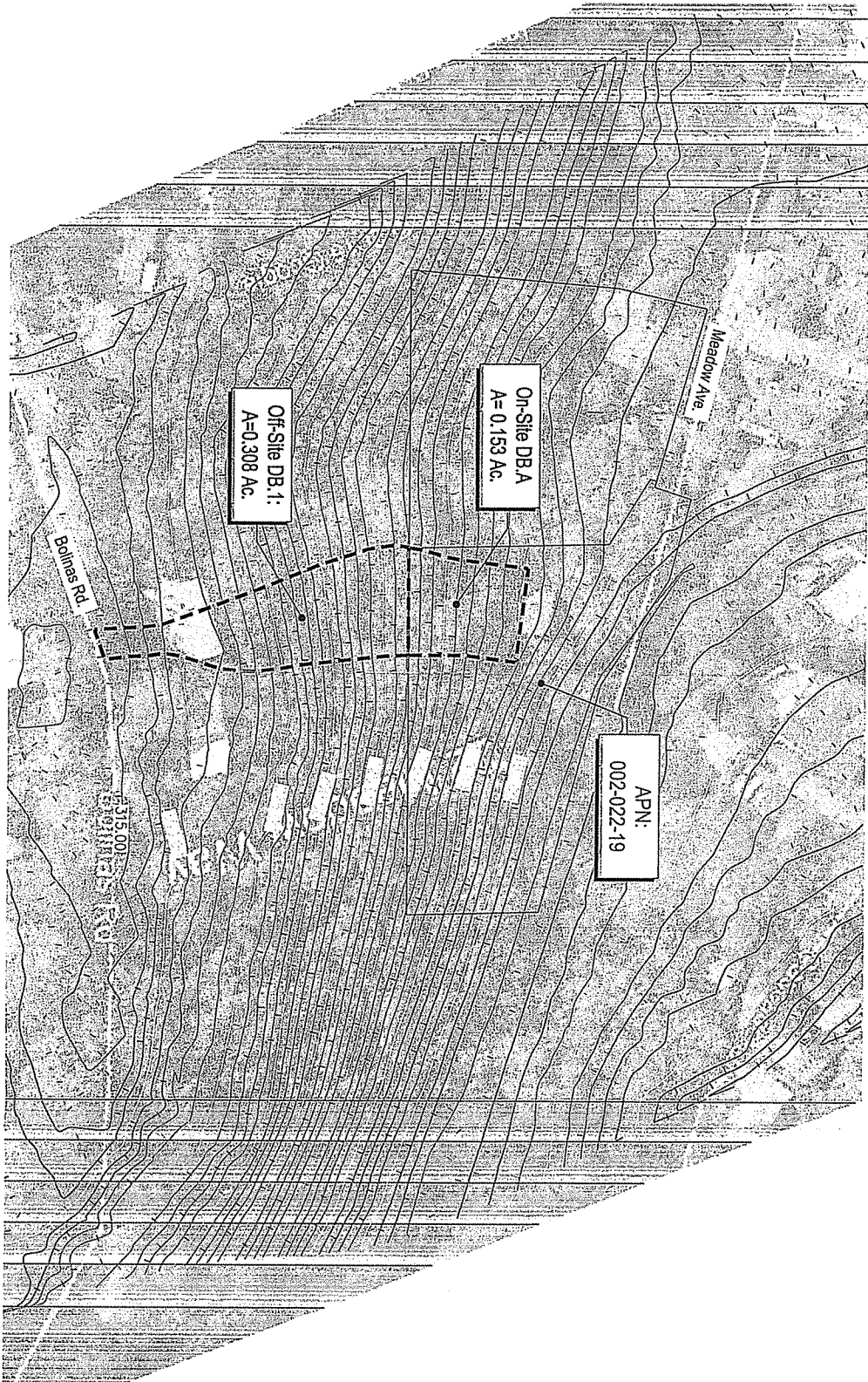
Based on the extends of proposed improvements, areas proposed for re-development encompassing less than 2,500 square feet, of replaced or newly constructed impervious areas, the proposed project, a partial re-development of a single-family, two story residence, on a hillside lot, does not require implementation of Structural Source Controls measures.

Current study makes an assessment of current conditions and provides specific recommendations for drainage measures to be implemented in the final construction documents.

Referenced Documents and Policies

- MCSTOPPP
- BASMAA
- RQCVB
- Highway Design Manual
- The Marin County Stormwater Pollution Prevention Program
- Bay Area Stormwater Management Agency Association
- State / Regional Water Quality Control Board
- California Department of Transportation

Appendix A: Maps and Exhibits



	4 Brookside Court San Anselmo CA 94960 T: 415-774-6776 E: office@via-eng.com www.via-eng.com © 2015	SHEET NAME: <h2 style="text-align: center;">OFF-SITE HYDROLOGY MAP</h2>	ISSUE DATE: FEB. 5, 2016	REFERENCE: -
	PROJECT: NAHAS RESIDENCE - 22 MEADOW AVE, FAIRFAX, CA 94930	DRAWN BY: V.L.	SHEET NO.: <h1 style="text-align: center;">H1.0</h1>	REVIEWED BY: -
	PROJECT NO.: 1602A	REF. SHEET: -		

Appendix B: Site Hydrology

Precipitation Data

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Precipitation Frequency Data Server



NOAA Atlas 14, Volume 6, Version 2
 Location name: Fairfax, California, US*
 Latitude: 37.9783°, Longitude: -122.5982°
 Elevation: 168 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Penca, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitania, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Tyspaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.93 (1.73-2.20)	2.38 (2.11-2.69)	2.98 (2.64-3.40)	3.50 (3.08-4.03)	4.27 (3.60-5.12)	4.91 (4.03-6.04)	5.59 (4.46-7.07)	6.34 (4.88-8.29)	7.40 (5.44-10.2)	8.29 (5.86-11.9)
10-min	1.39 (1.24-1.57)	1.70 (1.51-1.93)	2.14 (1.90-2.44)	2.51 (2.21-2.89)	3.07 (2.59-3.67)	3.52 (2.89-4.33)	4.01 (3.20-5.07)	4.54 (3.50-5.94)	5.31 (3.90-7.30)	5.95 (4.19-8.52)
15-min	1.12 (0.996-1.27)	1.37 (1.22-1.56)	1.72 (1.53-1.96)	2.03 (1.78-2.33)	2.47 (2.08-2.96)	2.84 (2.33-3.48)	3.23 (2.58-4.09)	3.66 (2.82-4.79)	4.28 (3.14-5.88)	4.80 (3.38-6.87)
30-min	0.878 (0.784-0.996)	1.08 (0.958-1.22)	1.35 (1.20-1.54)	1.59 (1.40-1.83)	1.94 (1.64-2.33)	2.23 (1.83-2.74)	2.54 (2.02-3.21)	2.87 (2.22-3.76)	3.36 (2.47-4.62)	3.77 (2.66-5.39)
60-min	0.633 (0.564-0.718)	0.775 (0.690-0.880)	0.974 (0.864-1.11)	1.15 (1.01-1.32)	1.40 (1.18-1.68)	1.60 (1.32-1.97)	1.83 (1.46-2.31)	2.07 (1.60-2.71)	2.42 (1.78-3.33)	2.71 (1.91-3.88)
2-hr	0.471 (0.420-0.534)	0.576 (0.512-0.654)	0.722 (0.640-0.823)	0.848 (0.744-0.976)	1.03 (0.866-1.23)	1.17 (0.965-1.44)	1.33 (1.06-1.68)	1.50 (1.16-1.96)	1.74 (1.28-2.39)	1.94 (1.36-2.77)
3-hr	0.405 (0.361-0.459)	0.496 (0.441-0.563)	0.620 (0.550-0.707)	0.727 (0.638-0.836)	0.879 (0.741-1.05)	1.00 (0.823-1.23)	1.13 (0.903-1.43)	1.27 (0.981-1.66)	1.47 (1.08-2.02)	1.63 (1.15-2.33)
6-hr	0.304 (0.271-0.345)	0.374 (0.332-0.424)	0.468 (0.415-0.533)	0.547 (0.480-0.629)	0.658 (0.555-0.788)	0.746 (0.613-0.917)	0.838 (0.669-1.06)	0.936 (0.722-1.23)	1.07 (0.788-1.48)	1.18 (0.833-1.69)
12-hr	0.213 (0.189-0.241)	0.266 (0.236-0.302)	0.336 (0.298-0.383)	0.395 (0.347-0.454)	0.476 (0.401-0.570)	0.539 (0.443-0.662)	0.604 (0.482-0.764)	0.672 (0.519-0.879)	0.765 (0.562-1.05)	0.839 (0.592-1.20)
24-hr	0.151 (0.136-0.171)	0.192 (0.173-0.218)	0.246 (0.221-0.280)	0.290 (0.258-0.332)	0.351 (0.303-0.414)	0.398 (0.337-0.479)	0.446 (0.369-0.549)	0.496 (0.400-0.626)	0.564 (0.438-0.740)	0.617 (0.465-0.836)
2-day	0.099 (0.089-0.112)	0.125 (0.112-0.142)	0.159 (0.143-0.181)	0.187 (0.167-0.215)	0.226 (0.195-0.267)	0.256 (0.217-0.308)	0.286 (0.237-0.353)	0.318 (0.257-0.402)	0.361 (0.281-0.474)	0.394 (0.297-0.534)
3-day	0.076 (0.068-0.086)	0.096 (0.086-0.109)	0.122 (0.109-0.138)	0.143 (0.127-0.164)	0.172 (0.148-0.203)	0.194 (0.165-0.234)	0.217 (0.180-0.267)	0.240 (0.194-0.304)	0.272 (0.212-0.357)	0.297 (0.224-0.402)
4-day	0.063 (0.057-0.071)	0.079 (0.071-0.090)	0.101 (0.091-0.115)	0.118 (0.105-0.136)	0.142 (0.123-0.168)	0.160 (0.135-0.192)	0.178 (0.147-0.219)	0.197 (0.159-0.248)	0.222 (0.172-0.291)	0.241 (0.182-0.327)
7-day	0.044 (0.039-0.050)	0.056 (0.050-0.063)	0.070 (0.063-0.080)	0.082 (0.073-0.094)	0.098 (0.085-0.116)	0.110 (0.093-0.132)	0.121 (0.100-0.149)	0.133 (0.107-0.168)	0.148 (0.115-0.194)	0.160 (0.120-0.216)
10-day	0.036 (0.032-0.041)	0.046 (0.041-0.052)	0.058 (0.052-0.066)	0.068 (0.060-0.077)	0.080 (0.069-0.095)	0.089 (0.076-0.107)	0.098 (0.081-0.121)	0.107 (0.087-0.135)	0.119 (0.092-0.156)	0.127 (0.096-0.173)
20-day	0.024 (0.021-0.027)	0.030 (0.027-0.034)	0.039 (0.035-0.044)	0.045 (0.040-0.051)	0.053 (0.045-0.062)	0.058 (0.049-0.070)	0.064 (0.053-0.078)	0.069 (0.056-0.087)	0.076 (0.059-0.099)	0.080 (0.061-0.109)
30-day	0.019 (0.017-0.022)	0.025 (0.022-0.028)	0.032 (0.028-0.036)	0.036 (0.033-0.042)	0.043 (0.037-0.050)	0.047 (0.040-0.057)	0.051 (0.043-0.063)	0.055 (0.045-0.070)	0.060 (0.047-0.079)	0.064 (0.048-0.086)
45-day	0.016 (0.014-0.018)	0.020 (0.018-0.023)	0.026 (0.023-0.029)	0.030 (0.026-0.034)	0.035 (0.030-0.041)	0.038 (0.032-0.046)	0.041 (0.034-0.051)	0.044 (0.036-0.056)	0.048 (0.037-0.063)	0.051 (0.038-0.068)
60-day	0.014 (0.013-0.016)	0.018 (0.016-0.021)	0.023 (0.020-0.026)	0.026 (0.023-0.030)	0.030 (0.026-0.036)	0.033 (0.028-0.040)	0.036 (0.030-0.044)	0.039 (0.031-0.049)	0.042 (0.032-0.055)	0.044 (0.033-0.059)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

a. *Off-Site Hydrology*

Using the Rational Method the stormwater runoff discharged along the property lines from Off-Site Tributary area identified per H1.0 "Map of Drainage Tributary Areas", are calculated as follows:

Off-Site Basin DB-1:

Time of Concentration: $T_c = (0.42L^{0.4}/5n^{0.4}) / (P^{1/2} s^{2/5}) = 15 \text{ min}$

Weighted Manning Roughness Coefficient for DB-1: 0.34 (Table 1)

Stormwater runoff discharge at the property line:

$$Q_{DB-1} = CIA = 0.34 \times 3.23 \times 0.308 \text{ Ac.} = 0.34 \text{ cfs}$$

Where:	Q	Storm water runoff discharge
	C	Site specific weighted runoff coefficient (calculation bellow)
	I	Precipitation intensity for the 100-yr storm (via NOAA Atlas 2)*
	A	Drainage basin area in acres
	T _c	Time of concentration (min.)

b. *Post-Construction, On-Site Hydrology*

On-Site Basin DB-A:

Time of Concentration: $T_c = (0.42L^{0.4}/5n^{0.4}) / (P^{1/2} s^{2/5}) = 10 \text{ min}$

Weighted Manning Roughness Coefficient for DB-1: 0.34 (Table 2)

Stormwater runoff discharge at point of concentration along the swale adjacent to the proposed house addition:

$$Q_{DB-A} = CIA = 0.34 \times 4.01 \times 0.153 \text{ Ac.} = 0.21 \text{ cfs}$$

Appendix C: Hydraulic Calculations

Channel Capacity:

a. Upslope Channel

Input Parameters

Channel Type: Semi - Circular
Pipe Diameter: 4.0000 (ft)
Longitudinal Slope: 0.0200 (ft/ft)
Manning's n: 0.0150
Flow: 0.3400 (cfs)

Result Parameters

Depth: 0.1307 (ft)
Area of Flow: 0.1248 (ft²)
Wetted Perimeter: 1.4541 (ft)
Hydraulic Radius: 0.0858 (ft)
Average Velocity: 2.7249 (ft/s)
Top Width: 1.4223 (ft)
Froude Number: 1.6213
Critical Depth: 0.1665 (ft)
Critical Velocity: 1.9005 (ft/s)
Critical Slope: 0.0071 (ft/ft)
Critical Top Width: 1.5979 (ft)
Calculated Max Shear Stress: 0.1631 (lb/ft²)
Calculated Avg Shear Stress: 0.1071 (lb/ft²)

b. Channel Adjacent to the Proposed House Addition

Input Parameters

Channel Type: Semi - Circular
Pipe Diameter: 4.0000 (ft)
Longitudinal Slope: 0.0200 (ft/ft)
Manning's n: 0.0150
Flow: 0.3400 (cfs)

Result Parameters

Depth: 0.1307 (ft)
Area of Flow: 0.1248 (ft²)
Wetted Perimeter: 1.4541 (ft)
Hydraulic Radius: 0.0858 (ft)
Average Velocity: 2.7249 (ft/s)
Top Width: 1.4223 (ft)
Froude Number: 1.6213
Critical Depth: 0.1665 (ft)
Critical Velocity: 1.9005 (ft/s)
Critical Slope: 0.0071 (ft/ft)
Critical Top Width: 1.5979 (ft)
Calculated Max Shear Stress: 0.1631 (lb/ft²)
Calculated Avg Shear Stress: 0.1071 (lb/ft²)

c. *4-in Pipe between the two concrete channels, upslope from the House*

Input Parameters

Channel Type: Circular
Pipe Diameter: 0.3300 (ft)
Longitudinal Slope: 0.0400 (ft/ft)
Manning's n: 0.0150
Flow: 0.3400 (cfs)

Result Parameters

Depth: 0.2927 (ft)
Area of Flow: 0.0802 (ft²)
Wetted Perimeter: 0.8105 (ft)
Hydraulic Radius: 0.0990 (ft)
Average Velocity: 4.2391 (ft/s)
Top Width: 0.2089 (ft)
Froude Number: 1.2057
Critical Depth: 0.3091 (ft)
Critical Velocity: 4.0840 (ft/s)
Critical Slope: 0.0387 (ft/ft)
Critical Top Width: 0.1609 (ft)
Calculated Max Shear Stress: 0.7306 (lb/ft²)
Calculated Avg Shear Stress: 0.2470 (lb/ft²)

d. *6-in Pipe to the dissipater*

Input Parameters

Channel Type: Circular
Pipe Diameter: 0.5000 (ft)
Longitudinal Slope: 0.0200 (ft/ft)
Manning's n: 0.0120
Flow: 0.5500 (cfs)

Result Parameters

Depth: 0.2907 (ft)
Area of Flow: 0.1184 (ft²)
Wetted Perimeter: 0.8671 (ft)
Hydraulic Radius: 0.1366 (ft)
Average Velocity: 4.6444 (ft/s)
Top Width: 0.4933 (ft)
Froude Number: 1.6705
Critical Depth: 0.3779 (ft)
Critical Velocity: 3.4542 (ft/s)
Critical Slope: 0.0097 (ft/ft)
Critical Top Width: 0.4296 (ft)
Calculated Max Shear Stress: 0.3628 (lb/ft²)
Calculated Avg Shear Stress: 0.1704 (lb/ft²)

TOWN OF FAIRFAX

SEP 15 2015

RECEIVED



Site Stormwater Analysis

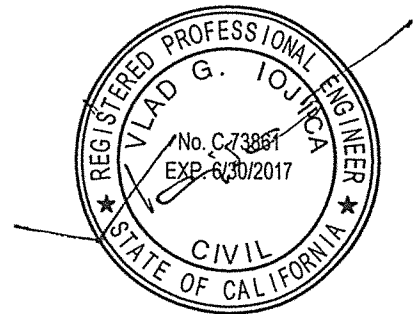
Prepared For:

Nadim & Stacy Nahas

Site Address:

22 Meadow Way
Fairfax, CA 94960
(APN: 003-122-50)

Prepared By:



Vlad Iojica, P.E.
Registered Civil Engineer (RCE: C73861)

Date:

Sept. 9, 2015

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Introduction

The purpose of this study is to make an assessment of current and proposed site drainage conditions, and provide recommendations for construction, to be implemented in the construction documents for proposed structure addition and site improvements.

In developing this site drainage study, we used in addition to the site topographic map, as well as the proposed site development plan, prepared by Rushton-Chartock Architects, and dated 6/4/15, our site observation notes, as well as information regarding existing site drainage facilities. These plans and maps used in developing this study are attached for reference under Appendix A.

The parcel proposed for partial redevelopment, located at 22 Meadow Way, in the Town of Fairfax (APN: 003-122-50), see Figure 1, have an average slope of 51 percent, encompasses 43,822 sq.ft., in accordance with the Parcel Map prepared by Adobe Associates, and dated August 1984. The most part of the parcel is undeveloped, in natural condition, with mature vegetation covering entire parcel (site survey map prepared by our office attached for reference under the appendixes) it is bounded along northwesterly boundary line by San Anselmo Creek, Meadow Way at the southwest corner, and partially developed hillside residential parcels along south and southeast. The parcel in question is located on the incorporated land of the Town of Fairfax.

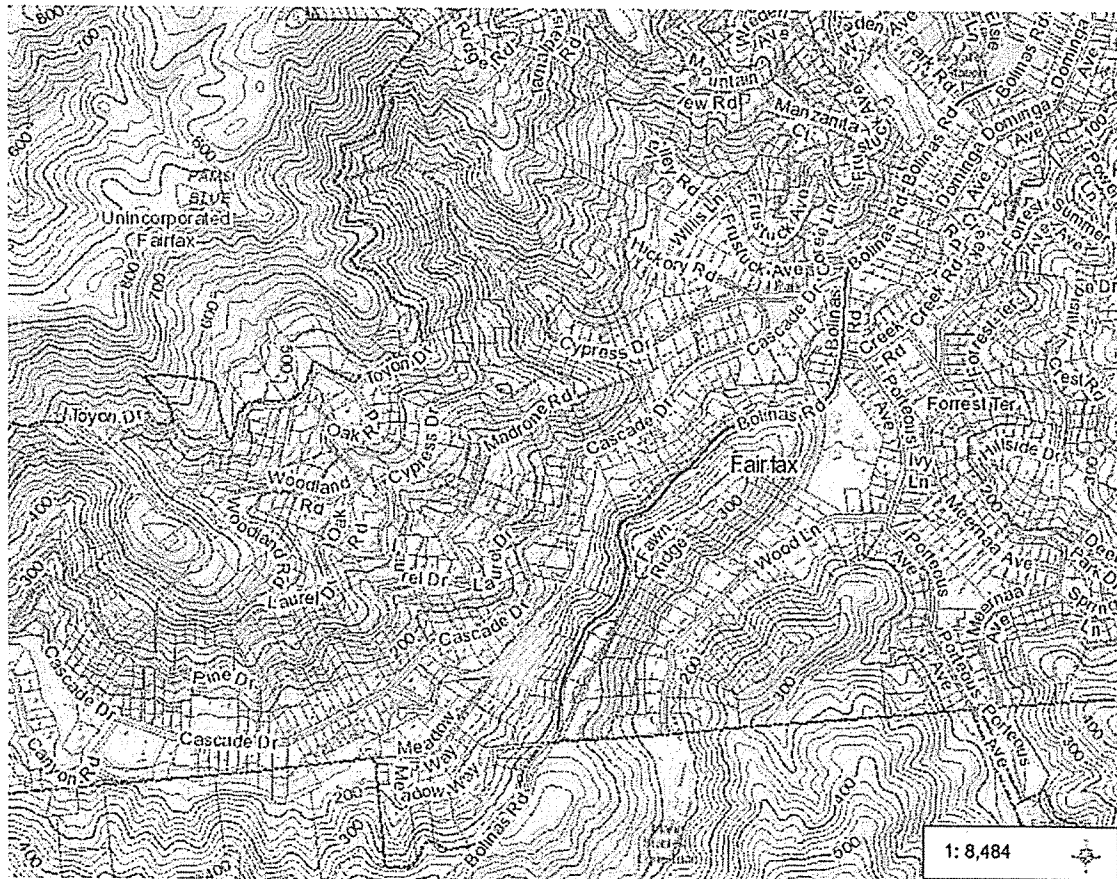


Figure 1: Area Map

The topography of the area, as shown in figures 1 and 2, indicates that the parcel, potentially receives storm water from upstream tributary areas, to the southeast, in the form of sheet flows runoff. Existing drainage improvements at the site consists of a lined swale located along the south boundary line of the parcel that collects and conveys storm water runoff from areas along southwest property line. The swale conveys the storm water runoff into a catch basin at the lower elevations, and from there it is being discharged into the San Anselmo Creek. These improvements have been installed per plans prepared by I.L Schwartz Associated, Inc., and dated 05/07/02. Topographic site map attached for reference under appendix A.

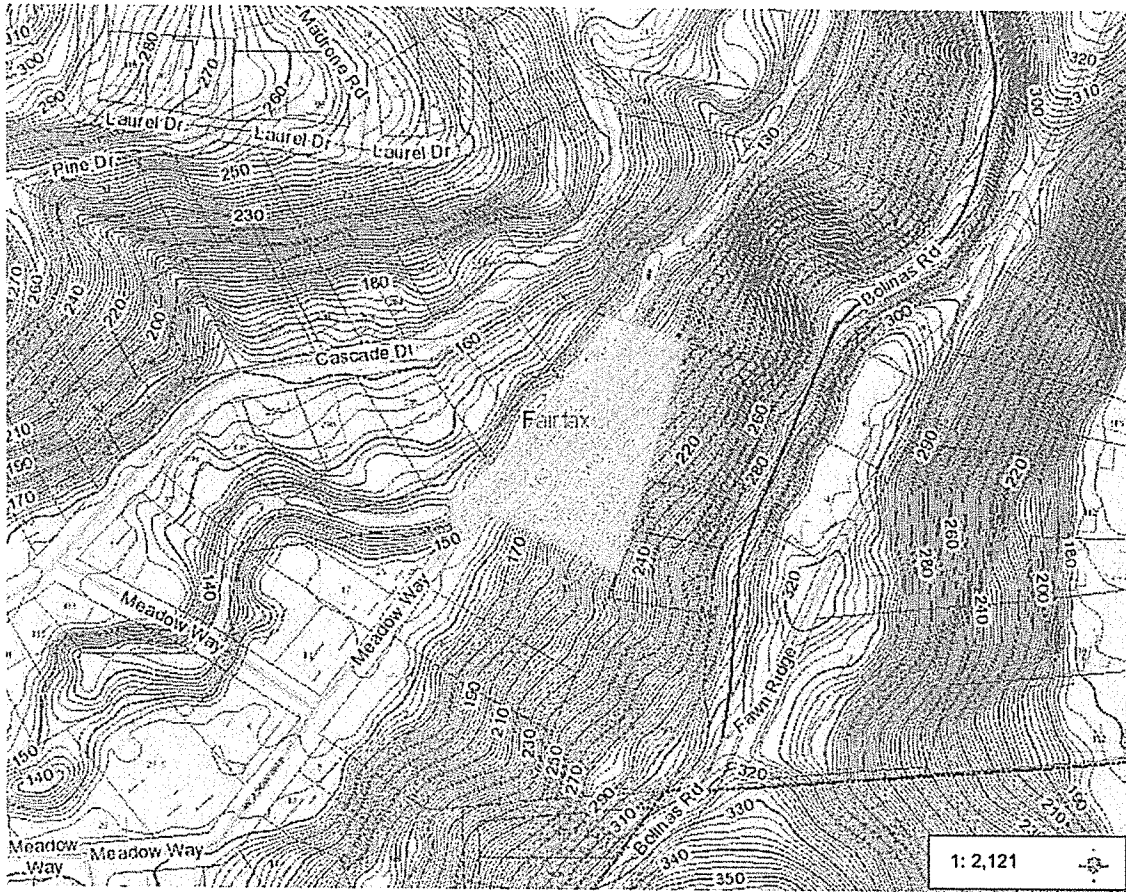


Figure 2: Key Map

A geotechnical investigation report for parcel in question prepared by Hadlenbeck & Associates, and dated Feb. 22, 1988 it is currently under review by Mr. Dave Olnes, Civil and Soils Engineer, and recommendations for the proposed additions will be made available to be used for the construction documents.

Pre-Development Conditions

Current site improvements includes a two story single family residence, associated AC paved driveway and site walkways, patios and decks as summarized under Table 1.

	Roof	Driveway	Pavers	Deck	Concrete Pavement	Landscaped	Total
	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Runoff Factor	1.00	1.00	0.50	1.00	1.00	0.10	0.18
Current Cond. [sf]	505	1,890	1,254	730	n/a	39,443	43,822

Table 1: Current Conditions

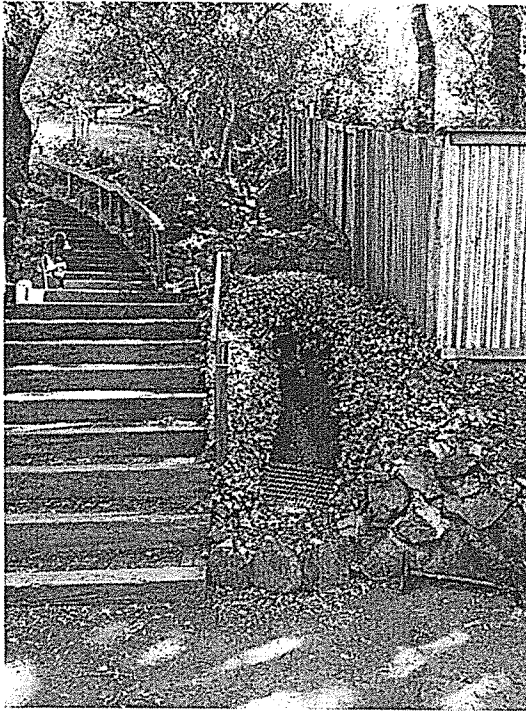


Figure 3: Existing Drainage Improvements

With the site generally sloping from east towards west, the storm water runoff generated within the site as well as any runoff generated on off-site tributary areas, and crossing the parcel boundary, do sheet-flow towards northwest, and ultimately discharge into San Anselmo Creek. Except the lined swale that capture storm water runoff along the southerly parallel line, for the rest of the site the runoff sheet-flows towards the creek.

At the house pad level, grading was done to ensure storm water flowing away from the house perimeter.

The storm water runoff generated at asphaltic concrete (AC) paved driveway, also sheet flows towards west and discharges at a low point located next to the gate into a catch basin, that ultimately discharges the runoff into the creek.

Post-Development Conditions

The proposed improvements to the existing residence include additions to the east and west side of existing structure, which will replace an existing deck located along west perimeter of the dwelling, while along the east perimeter of the existing house, the addition will be built over an existing graded passage way , and encroach into the undeveloped portion of the lot. See table 2 bellow for a comparison between proposed and current conditions.

	Roof	Driveway	Pavers	Deck	Concrete Pavement	Landscaped	Total
	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>	<i>vii</i>
Runoff Factor	1.00	1.00	0.50	1.00	1.00	0.10	0.19
Proposed Cond. [sf]	1,453	1,890	1,254	459	n/a	38,766	43,822

Table 2: Proposed Conditions

By comparison with the current, under the proposed conditions an additional roof area summing 948 sq.ft. is added, bay taking away existing deck area, pavement, and an encroachment into the undeveloped land (677 sq.ft.).

Giving the size of the impervious area being re-developed (create or replace less than 2,500 square feet of impervious surface), this project does not require implementation of Low Impact Development (LID) measures.

Our recommendations for re-development of the lot include:

- In constructing the final grade along the perimeter of the remodeled house specify a minimum grade of 2.0 % away from the structure perimeter, for any landscaped area and a minimum of 1.0% away from perimeter of the house, on any paved surface.
- Construct a concrete or cobble lined swale along the east perimeter of the house, and integrate with a berm into the design, to capture and divert storm water generated upstream of the house. Dimensioning the conveyance system will be done by calculating maximum expected discharge from the site and upstream tributary areas.
- Install a storm drain system to collect and convey away from the house pad runoff from the roof as well as other impervious surfaces. Install outlet flow dissipaters, connected to a subgrade drainage pipes from future site retaining walls.
- In constructing/extending the drainage system, use ASTM 2729 pipe, with a minimum section of 4 inches and not less than 12 inches of cover. Alternatively HDPE pipe with a minimum section of 4 inches can be use. Minimum slope on the site drainage system: 1.0 %. Install stormdrain cleanouts at every change in the direction of pipe's alignment exceeding an angle greater than 45 degrees.
- Connect roof downspouts from the house existing and proposed roofed surface to the stormdrain system described above.
- For any site curb-walls higher than 18 inches or site retaining walls, specify subdrains located above the heel of the wall foundation, consisting off a 3-inch minimum, perforated pipe, wrapped in woven geotextile fabric material, and set in a layer of 12 inches of drain rock. Connect subdrains to the site drainage system.
- Specify installation of slope / outlet protection, at the downslope/drainage system discharge point(s). As concentrated flows can create erosion problems during a major storm, implementing these energy dissipater measures are highly recommended.

Conclusions

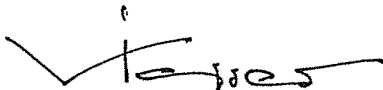
Based on the extends of proposed improvements, areas proposed for re-development encompassing less than 2,500 square feet, of replaced or newly constructed impervious areas, the proposed project, a partial re-development of a single-family, two story residence, on a hillside lot, does not require implementation of Structural Source Controls measures.

Current study makes an assessment of current conditions and provides specific recommendations for drainage measures to be implemented in the final construction documents.

Referenced Documents and Policies

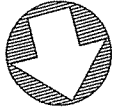
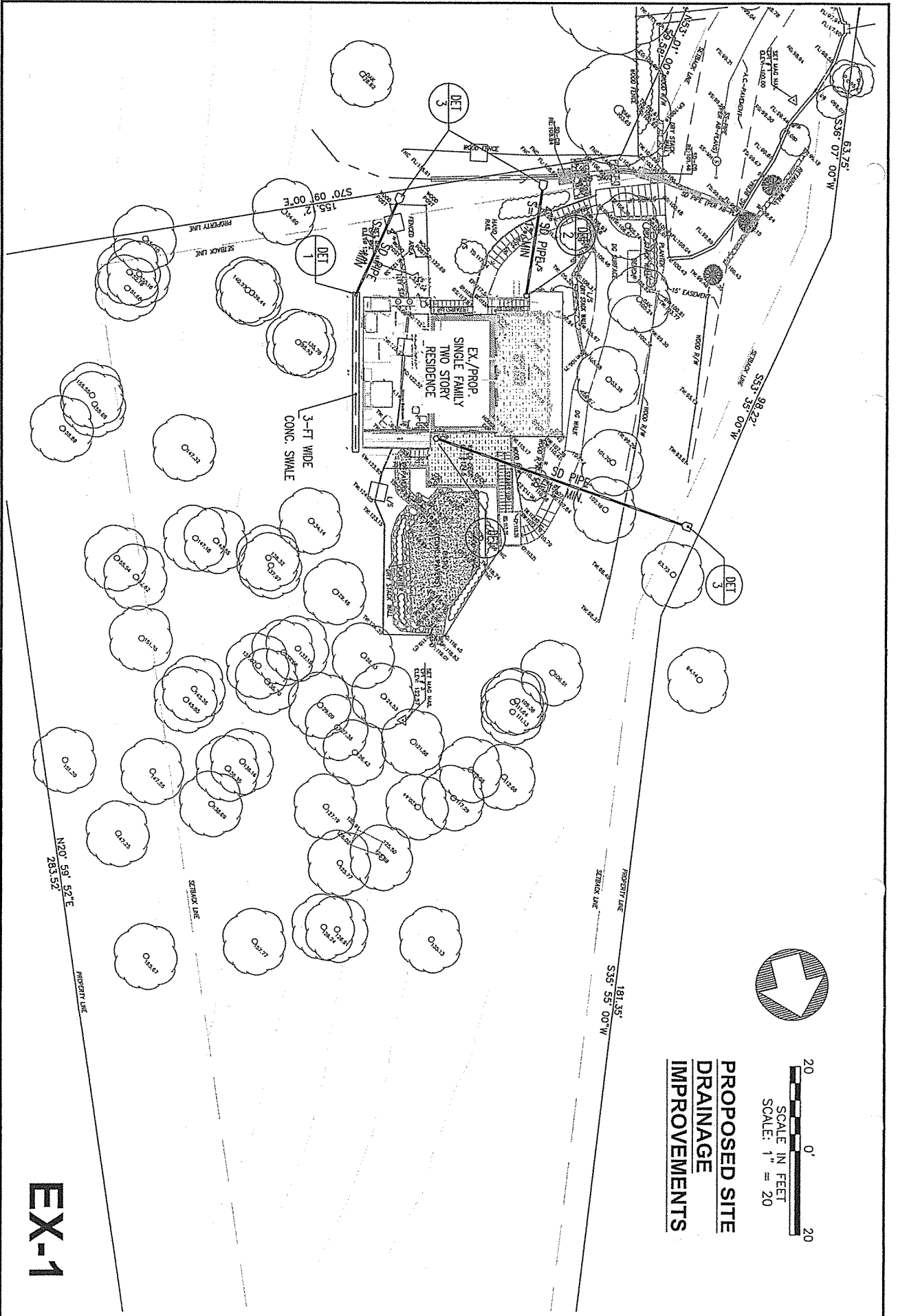
- | | |
|------------|--|
| • MCSTOPPP | The Marin County Stormwater Pollution Prevention Program |
| • BASMAA | Bay Area Stormwater Management Agency Association |
| • RQCWB | State / Regional Water Quality Control Board |

Sincerely,
ViA Atelier, Inc.



Vlad Iojica, P.E., QSD
Registered Civil Engineer

Appendix A: Exhibits



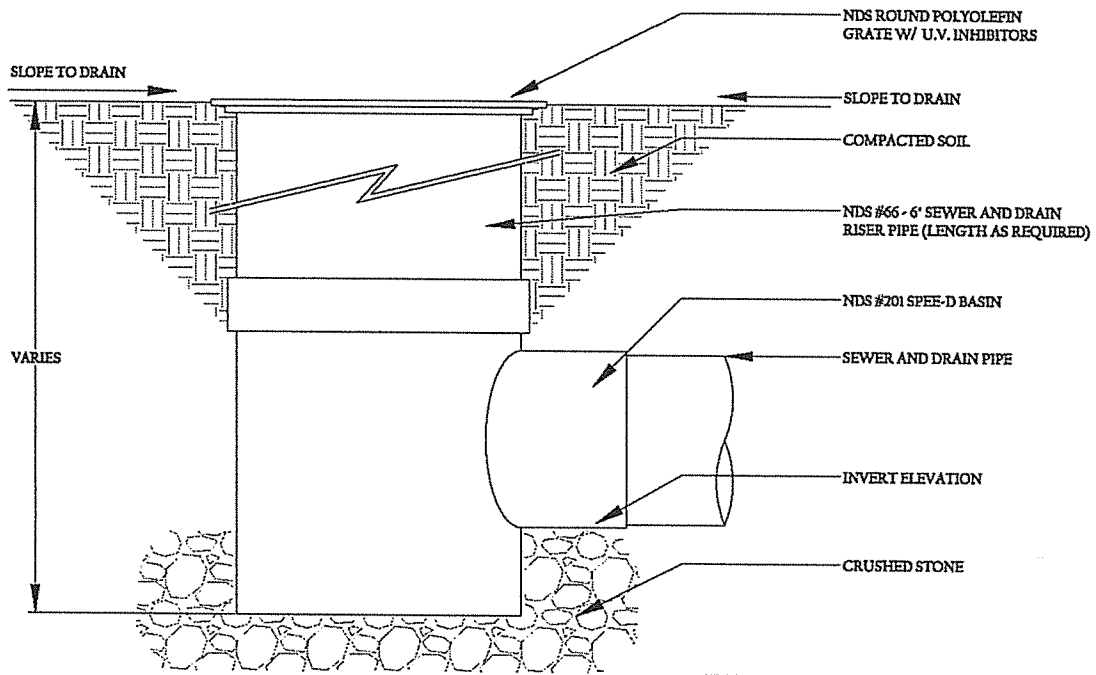
20
 0'
 20
 SCALE IN FEET
 SCALE: 1" = 20

**PROPOSED SITE
 DRAINAGE
 IMPROVEMENTS**

EX-1

Appendix B: Details

Detail1: Area Drain



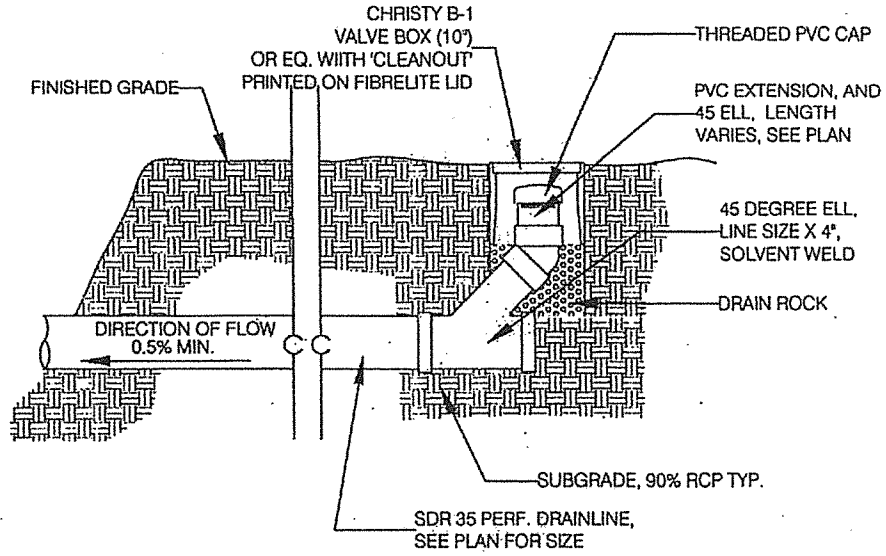
NDS ROUND GRATE WITH NDS SPEE-D BASIN

SEWER & DRAIN PIPE

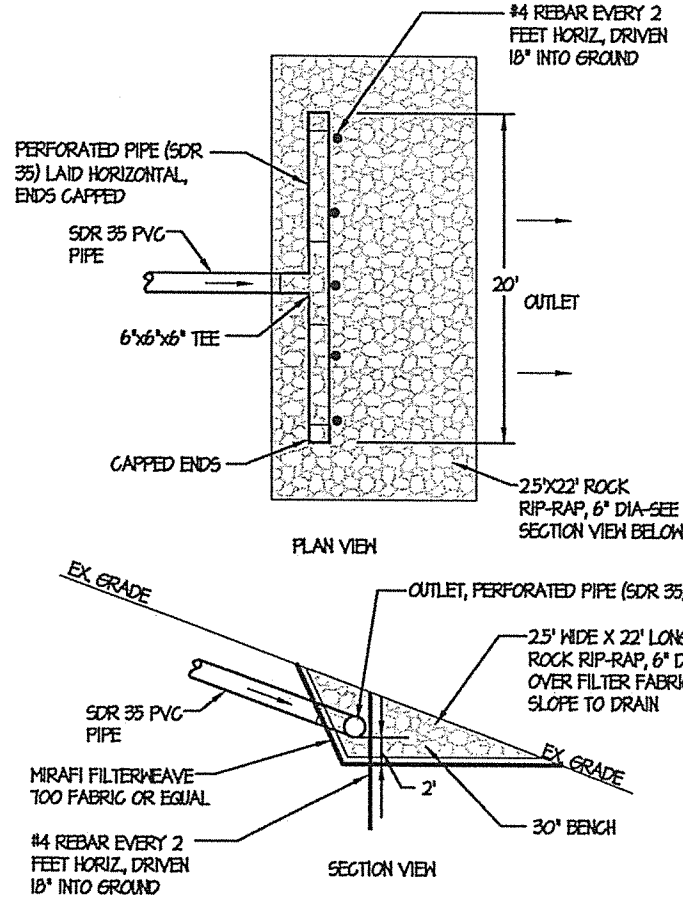
TECHNICAL SERVICES
1-888-825-4716
techservice@ndspro.com

N.T.S.

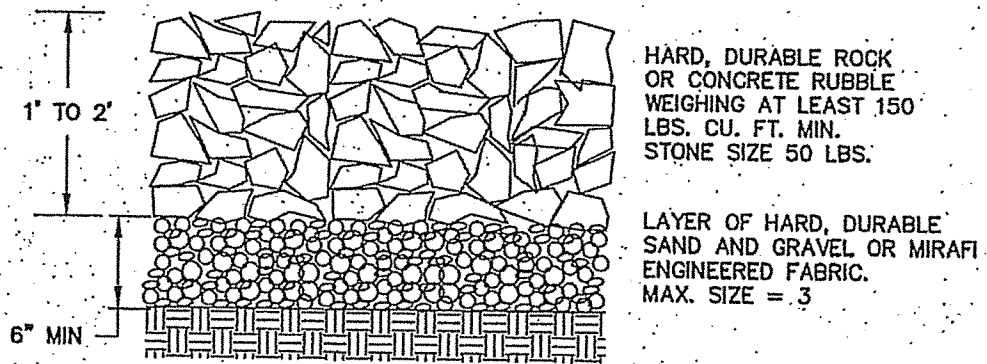
Detail 2: Storm Drain Cleanout



Detail 3: Outlet Protection



Detail 4B: Rip-Rap at Outlet Protection



Appendix C: Site Hydrology & Hydraulic Calculations

Computed Time of Concentration
Time of Concentration: 12.35 (min)

Sheet Flow Input Parameters

Top Elevation: 250.00 (ft)
Bottom Elevation: 175.00 (ft)
Length: 228.00 (ft)
Recommended length not to exceed 100'. Maximum length is 300'
Manning's n: 0.4000
See HDS-2 Table 2.1
2 yr, 24 hr precip: 3.8500 (in)

Sheet Flow Results

Slope: 0.3289 (ft/ft)
Time of Concentration: 12.35 (min)

Total Time of Concentration

Time of Concentration: 12.35 min

Hydrograph - Rational Method Analysis - Rational Hydrograph Method

100 year recurrence Interval, Peak Discharge: 0.233 (cfs), Time to Peak: 12.00 (min), Total Volume: 165.94 (ft³)

Time (minutes)	Flow (cfs)
0.00	0.00
1.00	0.02
2.00	0.04
3.00	0.06
4.00	0.08
5.00	0.09
6.00	0.11
7.00	0.13
8.00	0.15
9.00	0.17
10.00	0.19
11.00	0.21
12.00	0.23
13.00	0.21
14.00	0.19
15.00	0.18
16.00	0.16
17.00	0.14
18.00	0.12
19.00	0.10
20.00	0.08
21.00	0.06
22.00	0.04
23.00	0.02
24.00	-0.00

Hydraulic Calculations

Channel Analysis: Channel Analysis

Notes: Channel at uphill side of the house, designed to accommodate upstream flows.

Input Parameters

Channel Type: Triangular
Side Slope 1 (Z1): 3.0000 (ft/ft)
Side Slope 2 (Z2): 3.0000 (ft/ft)
Longitudinal Slope: 0.0100 (ft/ft)
Manning's n: 0.0150
Flow: 0.2000 (cfs)

Result Parameters

Depth: 0.1847 (ft)
Area of Flow: 0.1023 (ft²)
Wetted Perimeter: 1.1682 (ft)
Hydraulic Radius: 0.0876 (ft)
Average Velocity: 1.9542 (ft/s)
Top Width: 1.1082 (ft)
Froude Number: 1.1332
Critical Depth: 0.1942 (ft)
Critical Velocity: 1.7681 (ft/s)
Critical Slope: 0.0077 (ft/ft)
Critical Top Width: 1.1651 (ft)
Calculated Max Shear Stress: 0.1153 (lb/ft²)
Calculated Avg Shear Stress: 0.0547 (lb/ft²)



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 20, 2016

From: Ray Wrynski
Town Engineer

Page 1 of 2

Subject: Addition to Single Family Residence
22 Meadow Way
Fairfax, CA

A.P. 003-122-50

I have reviewed the documents enclosed with your 3/29/16 transmittal and 4/8/16 e-mail. The items reviewed included a 10 sheet plan set from VIA Atelier, dated 3/23/16 and a Geotechnical Memorandum from Dave Olnes P.E., dated April 1, 2016.

This information was reviewed to determine if it satisfied requirements in the 3/16/16 Town Engineer Memorandum.

A topographic and boundary survey signed by the Surveyor or Civil Engineer who prepared it was required and has been provided. Show Code required information including easements both existing and proposed or if none exist a notation of this must be made on the survey. If easements exist they must be shown along with a note that all easements are shown. I believe all easements identified in the title report have been shown in this submittal. The previously noted easement, Recorders Serial Number 93-09029, from the title report, that was not shown, appears to now be shown but not identified as that recorded easement. The note that all easements are shown or all known easement are shown was not provided but I think we should accept what is submitted since it appears that all the known easements are shown.

The previously provided elevation contours and tree locations are on the topographic survey and that has been supplemented with tree names and trees sizes as discussed in the last review. This makes the survey conform with the information we normally obtain. The creek setback information remains as an item that you should decide on the need for.

Copies of this survey must be submitted free of design information so that existing conditions and features can be easily read. The 1/16"=1' scale copy of the survey is in this form and a copy has been submitted at a scale of 1/8"=1' which matches the design plan sheets. This plan (C2.1) is noted as being 1/16"=1' but it is drawn at 1/8"=1'. Information was needed for Architect's plan sheet A2.3. You noted that sheet has been eliminated so that information requirement is resolved.

A report by a registered civil engineer specializing in soils and foundation design was required that will provide recommendations related to the probability that this building may be impacted by debris flows from the steep hillside above the site. A recommendation was required to be provided for the placement

ATTACHMENT **D**

of adequate protection to make the house safe or if there is not a reasonable expectation of the building site being impacted by a debris flow, such that protection is not needed, then the report must clearly state that condition. The above noted Geotechnical Memorandum provides the needed information. The project building design should be conditioned to conform with that Memorandum's recommendations for reinforcing the building.

The plans previously showed an estimated grading cut of 37.1 cubic yards on the submitted plan sheet C1.1. That sheet now shows 51.1 cubic yards of estimated total cut and fill grading. That plan sheet now shows finished floor elevations that conform with the previously submitted Architects plans. There was a requirement that the plans show the building pad subgrade elevations so grading quantities could be reviewed. That was not done. There is a Fire Department Turning area to be constructed and there is a retaining wall that was required to be shown along the uphill side of that turning area. The wall is not shown and it appears, from the elevation contours, to need about a 7' cut to create the wall. The plans indicate an 8" curb at this wall location. The site grading quantities of excavation, fill and material hauled out of the site or into the site were required to be shown and they are shown on sheet C1.1 however those quantities appear to be low. The estimated excavation quantity previously required to be shown on the plans was to include amounts removed for drilled piers, grade beams, retaining walls including the wall footings and the volume where the drainage material backfill in back of the wall will be placed and must include quantities for soil removed for paving and wall work in the new turning area and parking areas to be built. I do not see that drilled pier excavation and wall footing and backfill area quantities are shown however I do not think that will exceed 30 cubic yards which will still leave the total material movement below the 100 cubic yard amount that requires Planning Commission approval.

The project should be conditioned to show the retaining wall in the paved turning area on the permit plans. Delay for this item seems unnecessary. The limits of work shown on the plan indicate that work on the adjoining property will be needed beyond the easement that allows this work. The accuracy of the elevation contours should be checked. This relates to actual excavation needed to build the improvements. The building permit should not be issued until the plan is revised, realistically, to show that there will be no excavation work outside of easement lines or property lines that allow for this work or additional needed easements are obtained.

As previously note, the drainage pipe shown includes a discharge of stormwater and subdrain water onto the steep hillside. I see that discharge as a place where the very steep hillside will get supersaturated resulting in erosion and landsliding. The 4/1/16 Geotechnical Memorandum, noted above, provides recommendations for changing the drainage system. The permit plans drainage should be required to conform with the Geotechnical Engineer's recommendations

The plan sheet numbering has been revised as suggested.

I recommend that the processing of this project proceed.



Ray Wrynski, 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: March 16, 2016

From: Ray Wrysinski
Town Engineer

Page 1 of 4

Subject: Addition to Single Family Residence
22 Meadow Way
Fairfax, CA

A.P. 003-122-50

I have reviewed the documents enclosed with your 2/18/16 transmittal. The items reviewed include a response letter from ViA Atelier, Inc., undated, a Geotechnical Memorandum from Dave Olnes P.E., dated January 19, 2016, a 2/9/16 Preliminary Site Drainage Study from VIA Atelier and a 19 sheet plan set from Rushton-Chartock Architects, which included 9 sheets from VIA Atelier, dated 2/5/16.

This information was reviewed to determine if it satisfied requirements in the 10/13/15 Town Engineer Memorandum.

A site review was done 3/15/16.

A topographic and boundary survey signed by the Surveyor or Civil Engineer who prepared it was required. This survey normally must show the signature and seal of a person licensed to do land surveying but the boundary information appears to be of record so I believe a civil engineer without that authority can create the map using record information. Copies of that survey, with the signature and seal of the person responsible for it, must be provided. The survey submitted was not signed and it still must be signed. This survey must show Code required information including easements both existing and proposed or if none exist a notation of this must be made on the survey. If easements exist they must be shown along with a note that all easements are shown. This includes all easements identified in the title report. There are a number of easements shown but the note that all easements are shown was not on the survey and it is still required. There is an easement noted in the title report, Recorders Serial Number 93-09029, that was not shown. That easement must be shown or information must be provided as to why it is not shown. The survey is required to show existing and new sanitary sewer, water and storm drain lines with their sizes. A sewer line and a storm drain line are shown. I think that since this site will be served by the existing utility connections and there should be no need to do trenching work where the underground utilities exist, the information provided is sufficient for this item. This survey must show and identify the trees and must show labeled elevation contours. The trees have been shown but the tree diameter and tree species, which we normally get on these surveys, are not shown. I will defer to you as to whether getting the tree species and tree diameter must still be shown. There must be enough information on the survey to identify the Code required creek setback. The information showing

the creek and creek top of bank was not provided. I will defer to you as the need to still require this information since you would be the person to determine the creek setback line. Copies of this survey must be submitted free of design information so that existing conditions and features can be easily read. The 1/16"=1' scale copy of the survey is in this form. Copies of the survey must be submitted that are at the same scales as the various project site plans and grading and drainage plans so that the survey can be easily overlaid on those plans to compare existing information with the design plans. Those other design plans are at a scale of 1/8"=1' and a copy of the topographic survey covering the 1/8 scale plans was not submitted and is still required. One copy of the topographic and boundary survey must be submitted at a scale that will show the entire property boundary so that the relationship of all features on the site can be compared to features along the property boundary. The 1/16" scale copy of the survey provides the coverage of the whole property but, as noted, that copy must be provided with the required signature and seal.

The project site plans and grading and drainage plans must be done on a base map of the topographic survey with the site features and boundary and easements shown on it. There is an Architect's plan sheet A2.3 that is called Survey that seems to be a site plan. This sheet has unlabeled elevation contours on it and those contours are different than the elevation contours on the Civil Engineer's sheet C6.0. Those two sheets are at the same scale and I assume the Civil Engineer's drawing has the correct elevation contours. The contours on the Architect's sheet A2.3 must be corrected. There was no labeled Grading and Drainage plan but there is a Site Improvement Plan that seems to serve that purpose.

There are a number of trees shown to be removed on the sheet A2.5 Vegetative Management Plan. A Fairfax Tree Committee report and permit must be obtained to allow these tree removals. I direct your attention to the large fir tree at the site entry that is shown to be removed. It is a fairly healthy tree and you may want to determine if it can be kept in place. The removal seems related to the Fire Department turn area paving and that is a relatively flat area so it may be appropriate to alter the paving limits to keep the tree in place.

A report by a registered civil engineer specializing in soils and foundation design is required. It must include the information required in the previously noted Code Section 17.072.080. The submitted Contract for Engineering Services does not provide the required information. The above noted Geotechnical Memorandum provides most of the needed information. The report, to be submitted, must provide recommendations related to the stability of this building site and the submitted Geotechnical Memorandum provided this information except for the item of the probability that this building may be impacted by debris flows from the steep hillside above the site. A recommendation was required to be provided for the placement of adequate protection to make the house safe or if there is not a reasonable expectation of the building site being impacted by a debris flow, such that protection is not needed, then the report must clearly state that condition. The Memorandum states "there is a remote chance of seismically induced landsliding. Construction of a stout, pier-supported retaining wall at the back of the proposed laundry room should help to mitigate this risk". I look at this information as indicating a risk of soil debris coming down that hill and hitting the house. A retaining wall is recommended at the back, uphill side, of the house but, as shown, this wall rises to the level of the existing hill slope so a debris flow coming down the hill to the house would go over the top of the wall and push the house down the hill. We commonly see houses in this situation designed for a high impact strength concrete wall that extends above existing grade so that it will provide a catchment area above grade to stop and hold a

debris flow, of a size estimated by the Geotechnical Engineer, uphill of the impact wall and below the top of the impact wall. Clarification must be provided by the Geotechnical Engineer on the debris flow problem. If the Engineer finds that there is very little risk of a debris flow hitting the house that must be stated. If that low risk finding cannot be made then some form of protection for the house, against that debris flow, must be provided and included in the submitted plans.

The Architect's plans, sheet A1.1, previously showed an estimated grading material movement of 125 cubic yards using the preliminary information available. This quantity of material movement requires Planning Commission approval as called for in Code Section 12.20.080. That information is no longer on the plan sheet but there is an estimated cut of 37.1 cubic yards shown on the submitted plan sheet C1.1. This new soil material movement quantity looks very low. I see that the plan sheet C6.0 shows finished building floor elevations of 133.3 and 143.3. The plan sheet A7.2 shows building finished floor elevations of 115.6, 124.6 and 133.6. I think the C6.0 floor elevations need to be corrected. The C6.0 sheet must show the joist floor crawl space subgrade pad elevation and the slab floor subgrade elevation so that the grading quantities shown can be reviewed by the Town. There is a Fire Department Turning area to be constructed and there is a retaining wall that must be shown along the uphill side of that turning area. The site grading quantities of excavation, fill and material hauled out of the site or into the site must be shown. The estimated excavation quantity to be shown on the plans must include amounts removed for drilled piers, grade beams, retaining walls including the wall footings and the volume where the drainage material backfill in back of the wall will be placed and must include quantities for soil removed for paving and wall work in the new turning area and parking areas to be built.

The submitted Geotechnical Memorandum includes the required information as to the placement of the work recommended in the Herzog report to stabilize the driveway. The memorandum indicates that substantial stabilization work was done but it was done by some design other than given in the Herzog report. It is suggested that the stabilization work in the driveway area was done in some connection with the Sanitary District work to support the existing sanitary sewer pipe in that area.

The previous Site Stormwater Analysis calculations had an extremely low runoff coefficient and an extremely long time of concentration for this small drainage area on the very steep hillside of this site. Adjustments, using the State Highway Design Manual guidelines for drainage calculations in Chapter 810 Hydrology, were required. Revisions were made but a State Table 819.2B was used to obtain a runoff coefficient and this table only provides for developed areas up to 7% slope and this site has, primarily, an undeveloped watershed at about 50% slope. That item and some other things gave a result of flows that I still find to be low. I believe the reason for so much small system local flooding in Marin County has been the use of drainage calculation methods that produce economical pipe sizes that are easily overwhelmed by moderately heavy rainfalls. Fortunately the pipe sizes shown on the plan are larger than previously shown and I think they will function as needed so the drainage calculation issue does not need to be revisited.

Information on site drainage, grading and erosion control is required and that has been provided.

A site grading and drainage plan prepared by a licensed Civil Engineer is required. That plan seems to be the Site Improvement Plan that has been submitted. The plan must show the additional information and revisions noted above including the height and extent of retaining walls to be constructed. It must

show the location of new foundations to be placed and must show estimated pier location as appropriate to assist with the estimating of soil movement quantities. Foundation location, extent and depth along with grading information will be used to check grading material movement quantities. The basic proposed site drainage has been shown. The drainage pipe discharging water onto the adjoining property toward the existing drainage channel has been eliminated. The drainage pipe shown includes a discharge of stormwater and subdrain water onto the steep hillside. I see that discharge as a place where the very steep hillside will get supersaturated resulting in erosion and landsliding. I think a less troublesome discharge for that water flow would be to extend a pipe, within this property, down to the established drainage channel southerly of the house. This would require an adjustment to the grades and maybe the location of the drainage ditch and subdrain above the house. If the drainage discharge is to remain, as shown, on the steep hillside, a letter from the Geotechnical Engineer stating his approval for that hillside flow discharge must be provided.

Plan Sheet C4.1 and Sheet C6.0 are both noted as being sheet 6 of 9. That should be corrected.

A site erosion control and stormwater pollution prevention plan has been submitted as required.

I recommend that the processing of this project be delayed until the above, noted, information is provided.



Ray Wrynski, 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: October 13, 2015

From: Ray Wrysinski
Town Engineer

Page 1 of 3

Subject: Addition to Single Family Residence
22 Meadow Way
Fairfax, CA

A.P. 003-122-50

I have reviewed the documents enclosed with your 9/17/15 transmittal. The items reviewed include an eight sheet plan set by Rushton-Chartock Architects, dated 9/7/15, with an attached 5 page project description, dated 9/14/15, there was a grant deed and a 7/24/06 title report, there was a 9/9/15 Site Stormwater Analysis by Civil Engineer Vlad Iojica and a 5/5/15 Contract for Engineering Services from Dave Olnes, Soil Engineer. Additionally, information on file from a previous application including a recorded parcel map by Adobe Associates (22 P.M. 42) and some soils information by Knutson, Jensen and Herzog was used in the review.

Town Code Section 17.072.080 provides a list of submittal requirements for Hill Area Residential Development. A topographic and boundary survey signed by the Surveyor or Civil Engineer is required. This survey normally must show the signature and seal of a person licensed to do land surveying but the boundary information appears to be of record so I believe a civil engineer without that authority can create the map using record information. Copies of that survey, with the signature and seal of the person responsible for it, must be provided. This survey must show Code required information including easements both existing and proposed or if none exist a notation of this must be made on the survey. If easements exist they must be shown along with a note that all easements are shown. This includes all easements identified in the title report. The survey must show existing and new sanitary sewer, water and storm drain lines with their sizes. This survey must show and identify the trees and must show labeled elevation contours. There must be enough information on the survey to identify the Code required creek setback. Copies of this survey must be submitted free of design information so that existing conditions and features can be easily read. Copies of the survey must be submitted that are at the same scales as the various project site plans and grading and drainage plans so that the survey can be easily overlaid on those plans to compare existing information with the design plans. One copy of the topographic and boundary survey must be submitted at a scale that will show the entire property boundary so that the relationship of all features on the site can be compared to features along the property boundary.

The submitted deed and title report along with the file parcel map copy provide the needed information to review the site boundary.

The project site plans and grading and drainage plans must be done on a base map of the topographic survey with the site features and boundary and easements shown on it.

There are a number of trees shown to be removed on the sheet A2.5 Vegetative Management Plan. A Fairfax Tree Committee report and permit must be obtained to allow these tree removals.

A report by a registered civil engineer specializing in soils and foundation design is required. It must include the information required in the above noted Code Section. The submitted Contract for Engineering Services does not provide the required information. The above noted contract mentions a report by Curtis Jensen. There also exists a 4/23/2001 report by Herzog Geotechnical that recommends considerable work to stabilize the driveway. There is also a 12/4/2001 Herzog letter along with a 1/3/2002 letter by Arthur T Knutson Geotechnical Engineer. The Olnes Contract mentions that the site is mapped in a massive landslide feature. The Herzog report has similar comments about the hillside potential instability. The report, to be submitted, must provide recommendations related to the stability of this building site. If there is a probability that this building may be impacted by debris flows from the steep hillside above the site, recommendations must be provided for the placement of adequate protection to make the house safe. If there is not a reasonable expectation of the building site being impacted by a debris flow, such that protection is not needed, then the report must clearly state that condition. The submitted report must provide recommendations for placing a stable building foundation including pier depths if piers are needed. The estimated pier depths and spacing will be used to estimate soil removal as part of the project grading material movement. The Herzog report, on file, does not include a readable plot of boring locations but it does state a boring depth of up to 32 feet so there may be considerable soil depth at this site. The Architect's plans, sheet A1.1, show an estimated grading material movement of 125 cubic yards using the preliminary information available. This quantity of material movement requires Planning Commission approval as called for in Code Section 12.20.080. The Architect's plan sheet A2.2 indicates a small amount of added parking area. The submitted soils report must provide recommendations, as needed, to provide for stable placement of that added parking area. The submitted soils report must include the findings of the soils engineer as to the placement of the work recommended in the Herzog report to stabilize the driveway. The Herzog report included a recommendation for signs and City and Title documents related to tieback locations. The Town does not have information to confirm that the work called for by Herzog was done. What is needed from this soils engineer, in his report, is a statement that either he found evidence that the Herzog recommended work was done or he did not find evidence that the Herzog recommended work was done. This is not a requirement for this project soils engineer to do a detailed forensic investigation to determine what work may have been done related to the Herzog report. If it is not obvious that the Herzog report recommended work was done then the submitted report must just state that. The large driveway storm drain suggested in the Olnes Contract, while having a practical nature, is not an issue that I think the Town will get into in this application. The site owners can look at that as something that might be done.

The Site Stormwater Analysis calculations have an extremely low runoff coefficient of 0.15 and an extremely long time of concentration, 12.35 minutes, for this small drainage area on the very steep hillside at this site. The State Highway Design Manual has some guidelines for drainage calculations in Chapter 810 Hydrology. The state information has some complex formulas for flow time but at one time they used the Kirpich equation for flow time of concentration. That equation would probably produce a flow time of near one minute for this site so the State guideline is to use their minimum 5 minute time of

concentration in this type of drainage area. The Manual Figure 819.2A will provide a runoff coefficient of about 0.8 to 0.9 when the 100 year frequency factor is included. The State 1941-1971 Rainfall Intensity-Duration-Frequency Analysis, October 1974 has typically been used to determine rainfall intensity in this region. I think it would show an intensity a bit higher than 4" per hour for the 5 minute time of concentration so this would be a bit higher than the 3.77 inches per hour in the Site Stormwater Analysis. Adjustments of this character must be made to the drainage calculations for this site so that appropriate drainage improvements can be designed. There have been too many drainage problems in Fairfax due to undersized drainage improvements.


Information on site drainage, grading and erosion control is required. A site grading and drainage plan prepared by a licensed Civil Engineer is required. The plan must show site features to be removed. The plan must show the location, height and extent of retaining walls to be constructed. It must show the location of new foundations to be placed and must show estimated pier location as appropriate. Excavated and filled graded pad locations and elevations must be shown. Estimated grading quantities must be shown. Foundation location, extent and depth along with grading information will be used to check grading material movement quantities. The basic proposed site drainage must be shown including subsurface drain outlets. The submitted Stormwater Analysis shows a drainage pipe discharging water onto the adjoining property toward the existing drainage channel. If there is an easement to allow this drainage discharge onto the adjoining property then that easement must be shown. If there is no easement for this use then the pipe discharge must be directed and extended downhill to the drainage channel on this site.

A site erosion control and stormwater pollution prevention plan must be submitted. The plan must include a note that the work shall comply with the requirements of the "Marin County Stormwater Pollution Prevention Program, Minimum Erosion/Sediment Control Measures For Small Construction Projects" (2 pgs of details, see - website of the Marin County Stormwater Pollution prevention Program), comply with the current State Water Resources Control Board requirements and that the work must satisfy Fairfax Town Code Section 8.32 and 17.072.090.

Architect's plan sheet A2.2 shows property line dimensions that are not consistent with the dimensions on sheet A2.1 and not consistent with the recorded parcel map that provides the dimensions of this property. The property dimensions shown must be consistent with the recorded parcel map dimensions.

A site review will be done after the above required information is provided.

I recommend that the processing of this project be delayed until the above, noted, information is provided.



Ray Wrynski, P. E.
Town Engineer

Linda Neal

From: Ruben Martin <rmartin@rossvalleyfire.org>
Sent: Wednesday, December 23, 2015 3:28 PM
To: Nadim Nahas
Cc: Mark Mills; Linda Neal; Mark Lockaby; Tim Grasser; Robert Bastianon
Subject: 22 Meadow Way, Fairfax
Attachments: Alternate Application.docx; 22 Meadow Way Grasser Comments (1).pdf; entrance reconfig (1).pdf

Dear Mr Nahas,

I was able to review the email chain along with the supporting documents regarding your proposed remodel project for the property located at 22 Meadow Way, Fairfax, CA APN #003-122-50.

On 10-12-15 the Ross Valley Fire Department performed a plan review for the planning commission portion of your project. During the plan review it was discovered that your project did not meet the 2013 CA Fire Code, CA Wildland Urban Interface Code, or the 2012 International Code (model code) for Access (road width), first floor exterior wall access (150" to all portions), Fire apparatus Turn-around, and fire hydrant within 350' of the residence.

Section 103.3 of the 2013 CA Fire Code allows for you, the applicant to apply for an Alternate Materials and Methods to try to achieve the intent of the currently adopted codes.

It is my understanding that you will be proposing the following Alternates and Methods in order to meet the intent of the Fire Code:

1. 13 R Fire Sprinkler System as an Alternate for the hydrant distance to the property.
2. Modification to the existing landscape at the entry to the property to achieve the 20" fire apparatus access (removal of landscaping on the left and right side of the road).
3. WUI approved building materials-no wood siding/ (to offset the travel distance of greater than 150' to all portions of the first floor exterior walls).
4. Reconfiguration of the entry gate, tree removal (Douglas Fir, Oak Tree) Power Pole relocation, retaining wall re-configuration, and off street parking for your vehicles. (this was based on the recommendation of Chief Grasser's site visit). I am aware that Chief Grasser and on duty personnel made a site visit to your property last week to verify what will be required for a fire apparatus turn-around (See Attached Document).

Please re-submit a complete set of plans to Linda Neal at the Town of Fairfax showing the corrections and addressing all of the comments above. Once received, we will make a determination that all of our requirements have been met. I have also attached a copy of the Alternate Materials Application (one per alternate request, copies can be made as needed).

Also, another concern is the maximum weight limit for the bridge that crosses the creek into your street. It currently has a weight limit of 16 tons, our fire engines have a weight of 20 tons. As you can see, this makes it

difficult to access your neighborhood without adding to the hazard. (This may have to be addressed by the Town of Fairfax prior to any new construction being permitted.

--

Ruben Martin
Fire Inspector
Ross Valley Fire Department
777 San Anselmo Ave
San Anselmo, CA 94960
415-258- 4686 Ext. 21
rmartin@rossvalleyfire.org



**APPLICATION FOR
ACCEPTANCE OF ALTERNATE MATERIALS OR METHODS**

Application Date: _____

Project Information

Name: _____

Address: _____

Permit Number: _____

Applicant Information

Name: _____

Address: _____

Phone Number: _____

Email Address: _____

DESCRIPTION OF ALTERNATE MATERIALS OR METHODS (Include code section)

JUSTIFICATION OF ALTERNATE MATERIALS OR METHODS, (Describe, in detail, the equivalency of your proposed alternate, use additional pages if necessary and attach two site/floor plans)

Signed _____
Applicant

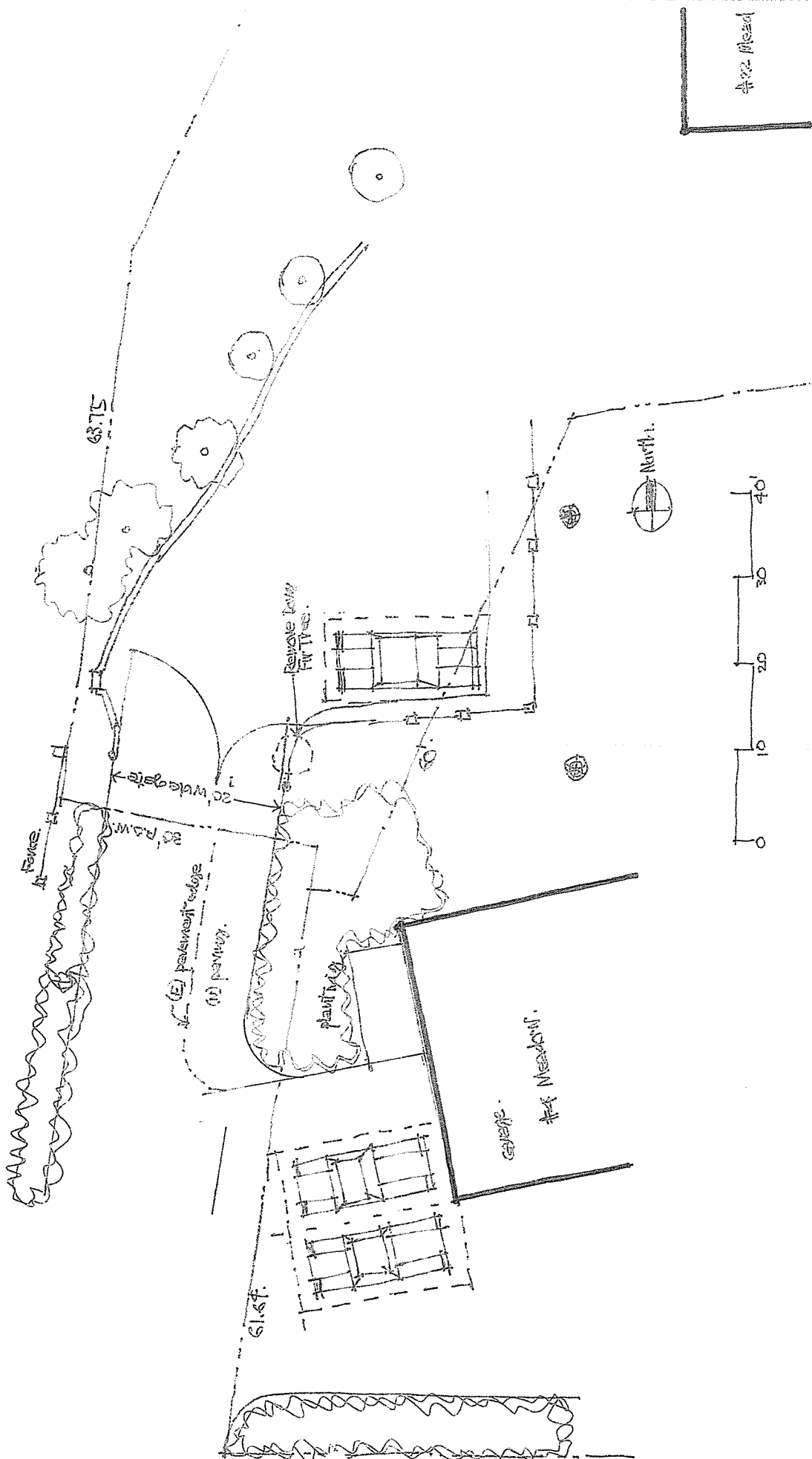
- Approved
 - Denied
 - Comments / Additional Mitigation(s):
- _____
- _____
- _____
- _____

Signed: _____
Fire Marshal

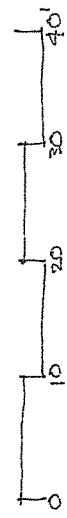
Date: _____

Acceptance of an alternate for Fire Department requirements does not establish, or override, requirements of other Town departments.

Committed to the protection of life, property, and environment.
SAN ANSELMO • FAIRFAX • ROSS • SLEEPY HOLLOW



4' x 2' Mezzal



at fence

63.75

20' walkway
30' P.A.W.

if (E) pavement edge
(12) paving

Reinforce below
4" thick.

plant dry

garage
4' x 4' Mezzal

61.67

If utility pole and oak tree were removed it would allow for swing over edge of the road way

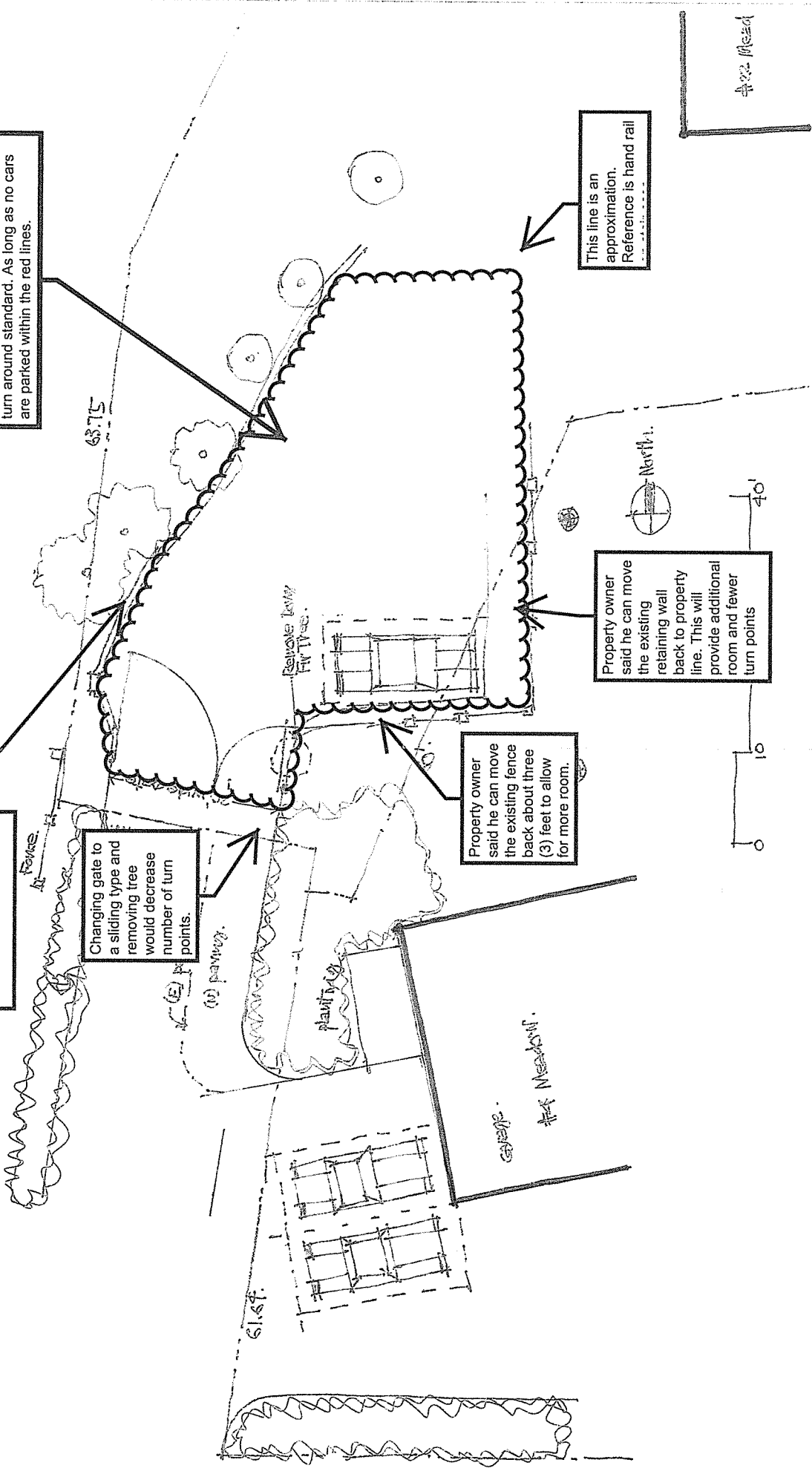
Changing gate to a sliding type and removing tree would decrease number of turn points.

Area can provide for an alternative to the turn around standard. As long as no cars are parked within the red lines.

Property owner said he can move the existing fence back about three (3) feet to allow for more room.

Property owner said he can move the existing retaining wall back to property line. This will provide additional room and fewer turn points

This line is an approximation. Reference is hand rail



Linda Neal

From: Richard Rushton <rushtonchartock@gmail.com>
Sent: Monday, May 09, 2016 11:44 AM
To: Linda Neal
Cc: Nadim Nahas
Subject: Re: 22 Meadow Way

We don't want to remove any trees that are not required to be removed by the fire dept. Therefore we have removed all bays within the "Defensible Space Zone" (except 2 at the northwest corner of the house that will be pruned up 12' only). There is also an Acacia being removed along the south property line. The 12" Douglas Fir at the driveway entrance will be removed as it is in the fire dept. required widening of the driveway entrance.

All oaks are to remain, altho the 2 small oak trees shown at the east side of the addition were really just a single plum tree that has fallen down since the survey was done.

One Alder (in the center of the west elevation) was mis-labeled on our plan as a 12" bay and it will be retained. See sheet C6.0 for correct labeling of all trees.

Let me know if there are questions.

Rich

On Mon, May 9, 2016 at 9:40 AM, Linda Neal <lneal@townoffairfax.org> wrote:

Hi Rich,

I notice that a number of trees are marked to be removed, 2 because of the project and a number that do not appear to be coming out because the construction.

Does the owner by any chance have an arborist report on these trees and if so, can the Town be provided with a copy. I don't want trees that have nothing to do with the project becoming an issue at the meeting.

If they don't have a report already, can you find out why they are planning to remove the trees not impacted by the proposed construction and I will try to cover their removal in a way that won't staff the project.

Also, one of the trees being removed is a bay but the other trees species to be removed are not identified. Do you know what they are?

Thanks,

Thanks,

Linda Neal

Principal Planner