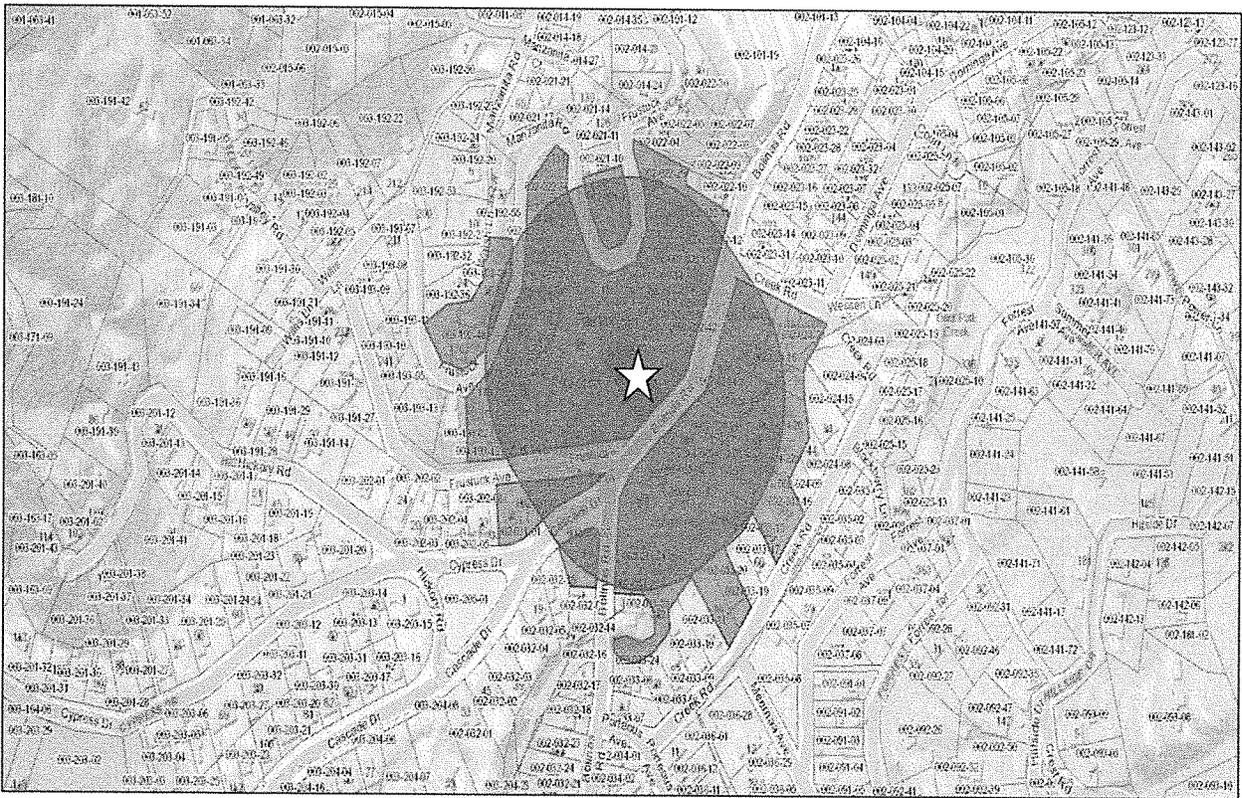


**TOWN OF FAIRFAX  
STAFF REPORT  
Department of Planning and Building Services**

**TO:** Fairfax Planning Commission  
**DATE:** April 21, 2016  
**FROM:** Jim Moore, Director of Planning and Building Services  
Linda Neal, Principal Planner  
**LOCATION:** 288 Bolinas Road; Assessor's Parcel No. 002-022-19  
**ZONING:** Residential Single-family RS 6 Zone  
**PROJECT:** Remodel/Expansion of a Residential Structure  
**ACTION:** Hill Area Residential Development permit, Variances, Excavation permit; Application # 16-13  
**APPLICANT:** Rich Rushton, Architect  
**OWNER:** Justin Morgan  
**CEQA STATUS:** 15301(l)(4), 15303(e) and 15305(a).



**288 BOLINAS ROAD**

## BACKGROUND

The 9,530-square-foot, 59-foot-wide, site slopes up from Bolinas Road at an average rate of 45%. The site is developed with 2 structures, a residential structure that was originally built as a single-family residence, and a garage that has been illegally converted for storage use at the street level. Both structures were constructed in 1926.

The residence was converted with a permit into a 2 bedroom, 1 bath residence with a smaller 1 bedroom, 1 bath unit on the lower floor in 1968. It unclear from the record how the conversion was permitted because the site was zoned for single-family residential development at that time.

On December 12, 2014, the Town issued a building permit to the property owner to re-roof the structure. While re-roofing the owner discovered extensive dry rot and began to remove the portions of the structure that were unsound. The work progressed to the point where restoration constituted a 50% remodel under Town Code \_\_\_\_\_ and the Building Official stopped the job in early 2015. Since that time, the applicants have been working to submit a complete Hill Area Residential Development permit application.

## DISCUSSION

The project encompasses reconstruction and expansion of the existing structure, converting it from a 2-unit residential structure to a 3-bedroom, 3-bathroom, single-family residence, as well as adding a study. The project would increase the square footage of the building from 1,743 square feet to 2,007 square feet and would include demolition of the old 1-car garage, and replacing it with a 2-car garage. In addition the front access stairway would be relocated.

The project site is located within the Residential Single-family RS 6 Zone District and complies with the zone requirements as follows:

	Front Setback	Rear Setback	Combined Front/rear Setback	Side Setbacks	Combined Side Setbacks	FAR	Lot Coverage	Height
<b>Required/ Permitted</b>	6 ft.	12 ft.	35 ft.	5 ft. & 5 ft.	20 ft.	.40	.35	28.5 ft., 2 stories
<b>Existing</b>	0 ft. (garage at street)	67 ft.	67 ft.	5 ft. 0 ft.	5 ft.	.18	.29	18 ft., 2 stories
<b>Proposed</b>	same	same	same	5 ft. & 4 ft.	9 ft.	.21	.31	18 ft., 2 stories

The existing duplex has 2-decks on the south side that cross the property line onto the neighboring property at 300 Bolinas Road. The northern portion of the retaining wall at the rear of the structure and the fences along the side property lines also extend onto the neighboring properties. These encroachments would be removed as a part of the proposed project. The applicant requires permission from the neighboring property owners to trespass on their properties to remove these improvements. As a condition of approval, the applicant would be required to provide the Town with evidence of maintenance easements with the appropriate property owners prior to commencing construction of the project.

The project requires the approval of the following discretionary permits;

**A Hill Area Residential Development (HRD) Permit:**

Town Code § 17.072 020,(HRD) Applicability, and 17.072.050, Uses Permitted Without a Development Permit, set forth the criteria for determining when a project is subject to the Hill Area Residential Development permit process.

The proposed project constitutes a 50% remodel, the site is substandard in size and has a 40% slope, the excavation amount exceeds 50 cubic yards, and the property falls within a Landslide Hazard Zone [Town Code §§ 17.072(A)(4), (B) and (D) and Town Code § 17.072-050(A)]. For these reasons, the proposed project is subject to the requirement to obtain a Hill Area Residential Development (HRD) permit.

The purpose of the HRD Ordinance is to encourage the following: 1) the maximum retention of natural topographic features; 2) minimize grading of hillside areas; 3) provide a safe means of ingress and egress for vehicular and pedestrian traffic to and within hillside areas; 4) minimize water runoff and soil erosion problems during and after construction; 5) prevent loss of life, reduce injuries and property damage and minimize economic dislocations from geologic hazards; and 6) ensure that infill development on hillside lots is of a size and scale appropriate to the property and that the development is consistent with other properties in the vicinity and located in the same zone.

The Town Engineer has reviewed the following plans and documents and has indicated that the project can be approved provided certain conditions are complied with prior to issuance of the building permit:

- Supplemental Geotechnical Engineering evaluation dated 3/14/16 by Dennis Furby, Geotechnical Engineer.
- Preliminary Geotechnical Engineering Evaluation dated 1/13/16 by Dennis Furby, Geotechnical Engineer.
- Preliminary Site Drainage Study dated March 14, 2016 by Vlad Iojica, Civil Engineer.
- Civil Engineering plans dated 3/14/16 by Vlad Iojica, pages C1.0, C1.1, C2.0, C3.0, C3.1, C4.0, C5.0 and C6.0.

- Architectural plans by Rich Rushton, pages A2.1, A2.3, A4.1, A4.2, A6.1, A7.1 and A7.2.
- Topographic survey dated 8/24/15 by Lawrence Stevens, Land Surveyor.

After reviewing the project plans and reports and performing a site inspection, the Town Engineer has determined that the project can be constructed without negatively impacting neighboring properties, the Town's roadway improvements or the neighborhood as long as the applicant complies with certain conditions. The Town Engineer's recommended conditions of approval have been incorporated into the draft Resolution No. 16-09 and are as follows:

The following must be submitted with the building permit application and will be subject to review and approval by the Town Engineer prior to issuance of the building permit (Town Engineer's review will be paid for by the applicant):

- a) Three copies of a recorded boundary survey with a notation that all property easements are shown or a notation with the following wording, "Based on the review of the Title report (give the date and title company source of the report and based on this surveyor's knowledge of this site, there are no easements";
- b) Three copies of the Fee Title Deed;
- c) The building permit plans must address all the information requested in the February 24, 2016 Town Engineer's memorandum;
- d) A grading and drainage plan that includes all the information described in the Town Engineer's 2/24/16 memorandum;
- e) Recorded easement documents that create access for demolition of existing improvements to be removed from neighboring properties and easements for construction and maintenance of new improvements constructed on and/or near the side property lines;
- f) An addendum to the geotechnical report must be submitted that contains the following:
  - i. Indicates no debris flow or landslide protection is needed at the rear of the site; if it is determined that landslide protection is needed, the design of that protection will be submitted subject to approval of Ray Wrynski, the Town Engineer;
  - ii. Addresses how the retaining wall reconstruction on the westerly side of the building can be done without leaving an unstable situation on the adjoining property where the walls are also failing;
  - iii. Provides recommendations on how the retaining walls can be rebuilt/built

safely and in compliance with OSHA requirements; and

- vi. Provides recommendations on how the front bank of the site along the street will be stabilized or will indicate the proposed stabilization method shown on page C3.0 of the engineering drawings is adequate to prevent soil movement or sloughing once construction is completed.
- g) The geotechnical engineer shall approve in writing the final constructed drainage dissipater configuration prior to the project final inspection.

### **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. This project would result in the excavation of 199.27 cubic yards of soil material and 12.34 cubic yards of fill for a total excavation/fill amount of 212 cubic yards. The excavation and fill amounts are necessary to create the additional parking on the site, repair failing walls and to install the required drainage necessary to make the site safe from potential slides. The amount of excavation proposed is the minimum necessary to enable the owner to rehabilitate his property and improve the on-site drainage system.

### **A Variance of the Minimum Front Yard Setback and Encroachment Permit**

Town Code § 17.080.070(B)(1) indicates that each building site in the RS 6 Zone with a slope over 10% shall have a front yard setback of 6 feet and Town Code § 17.040.020 indicates that accessory buildings shall maintain a front yard setback of 10 feet.

The house is located beyond the required 6 foot front setback but it is not feasible to build a parking structure out of the required 10 foot front yard setback due to the steep upslope of the property. In addition, it is not feasible to build additional parking on the site without locating some private improvements within the Bolinas Road easement due to the location of the site property line, 5 ½ feet upslope from the Bolinas Road curb and gutter improvements. All parking configurations would require some type of structure, be it a retaining wall or retaining walls with a roof over the parking, within the required front setback and partially within the public right-of-way easement.

The encroachments into the right-of-way and the front yard setback area are the minimum necessary to bring the property into compliance with the current parking requirements for a single-family residence.

### **Design Review**

Town Code § 17.020.030(A) requires design review approval by the Planning Commission of all projects that constitute 50% remodels. The Town definition of a 50% remodel states: "...The renovation of any structure that affects more than 50% of the

existing floor area of the structure, expands that floor area by more than 50%, or result in the addition of a bedroom....” The proposed project affects more than 50% of the structure and requires design review approval.

The intent of the design review regulations are to, “...foster a good design character through consideration of aesthetic and functional relationships to surrounding development, and.. to further enhance the town’s appearance and the livability and usefulness of properties...”.

The project would remove improvements that have been constructed across property lines resulting in a property that would be in compliance with the current parking requirements for a single-family residence. A compliant property would be a benefit to the general public and the immediate neighbors.

The existing exterior architecture of the home would be retained with a deep front porch at the front and a shed roof sloping up and following the topography of the site. The new garage roof slope would match that of the house. The only change would be the inclusion of a new deck located below the lower living level with a dual staircase accessing the first floor where the bedrooms are located at the front of the structure. This feature improves the articulation of the façade of the residence.

The on-site landscaping would be retained in its natural state at the time so no landscaping plan has been provided.

All the exterior lighting for the garage, exterior of the house and the access stairway would be “dark sky” compliant and direct the light downward to minimize impacts on the street and neighboring properties.

The exterior siding would be of horizontal hardi-plank painted a beige/cream color (Benjamin Moore “Ladyfinger”, #1045). The window trim, fascia, gutters and downspouts and the overhang soffit would be white and the roof material would be a shade of brown (Elk or equal). The area below the front deck would be enclosed with hardi-plank horizontal siding painted beige/cream with the railing painted white to match the house.

The exterior materials and colors of the garage would match the house except for the garage door which would be cedar/brown in color.

The design of the proposed project would serve to protect the [Linda looks like part of the sentence was cut off.]

The proposed design of the remodel creates a well composed building exterior that would relate harmoniously to other residences in the immediate area and would present a pleasing façade when viewed from Bolinas Road. The project also brings the property into compliance with the parking regulations and eliminates improvements that have encroached on neighboring properties over the years.

## **Compliance with the 2010-2030 Fairfax General Plan and Zoning Ordinance**

Page H-33 of the 2010-2030 Fairfax General Plan describes Housing Programs as the, "most dynamic part of the 2010 Housing Element". The section states that, "...The Housing Element must address primary areas of housing need and provide an overall structure for the consideration of alternative housing strategies and subsequently for the organization and articulation of goals, objectives, policies and implementing programs. The primary areas of housing are listed and include, "Conserving and improving the condition of existing affordable housing....".

That is the only reference included in the general plan about existing affordable housing and does not define "affordable housing" or set forth the manner or type of affordable housing to be retained and improved. At some future date the Town will consider affordable housing as described in the general plan and develop an ordinance to meet the intended objective with regards to affordable housing. If the Commission believes that this statement means that the Town should stop the elimination of any second unit, they can include the following condition in the conditions of approval for the project:

The floor plans of the structure at 188 Bolinas Road shall be amended to include a junior second unit and an additional bathroom for the lower living unit of the main residence. The revised floor plans will be subject to review and approval by the Director of Planning and Building Services as required by Ordinance # 800, Junior Second Units, prior to issuance of the building permit for the reconstruction/remodel.

## **Other Agency/Department Comments/Conditions**

### **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 will 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. A fire hydrant capable of supplying 1000 gallons per minute of water shall be provided so that no portion of the exterior of the structure is greater than 350 feet from the closest hydrant measured along the path of travel. The closest hydrant is 300 feet from the front of the property so a new hydrant is required as a part of this project.
3. A vegetative management plan must be approved by the Fire Department prior to issuance of the building permit for the project that complies with Ross Valley Fire Standard #220.

4. 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.
5. 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.
6. 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.
7. 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.
8. Alternative materials or methods may be proposed for any of the above conditions in accordance with Section 104.9 of the Fire Code.
9. 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.

## **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 # 16-13 by adopting Resolution No. 16-09 setting forth the findings and conditions for approval of the project.

## **ATTACHMENTS**

- Attachment A – Resolution No. 16-13
- Attachment B – Applicant's supplemental information
- Attachment C – Geotechnical report and addendum letter
- Attachment D- Drainage Study
- Attachment E – Town Engineer's memorandums
- Attachment F – E-mail from concerned neighbor to Commissioner Newton



**RESOLUTION NO. 16-09**

**A Resolution Of The Fairfax Planning Commission Approving Application No. 16-13 For A Hill Area Residential Development Permit, Encroachment Permit, Excavation Permit, Design Review Permit And Front Setback Variance For A 50% Remodel Of An Existing Duplex Conversion To A Single-family Residence And To Construct A 2-car Garage At 288 Bolinas Road**

**WHEREAS**, the Town of Fairfax has received an application from Justin Morgan to reconstruct and expand the existing structure, converting it from a 2-unit residential structure to a 3-bedroom, 3-bathroom, single-family residence and adding a study. The project will increase the square footage of the building from 1,743 square feet to 2,007 square feet and will include replacing the dilapidated 1-car garage with a 2-car garage and relocating the front access stairway; and

**WHEREAS**, the Planning Commission held a duly noticed Public Hearing on April 21, 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, Encroachment, Design Review and Excavation Permits and for the Front Setback 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.
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 to the 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 modification to 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.

### **Front Setback Variance and Encroachment Permits**

1. The area of the Bolinas Road right-of-way where the garage wing walls and residence entry stairs will encroach is an area not currently being used by the general public for pedestrian or vehicular traffic
2. The property slopes up steeply from Bolinas Road and the front property line is set back on the hillside, 5 feet from the curb. The steep slope and the narrow width of the paved roadway make it impossible to build the required parking in compliance with the front-yard setback which deprives the owner of the ability to have on-site parking, a privilege enjoyed by other property owners in the vicinity and in the RS 6 Zone.
3. Throughout the Town it is common to see parking structures located within the public rights-of-way and front yard setbacks due to the sloped topography of many areas and the fact that most of the paved roads are not improved to the full width of the right-of-way. Therefore, the approval of the 0-foot, front-yard setback and encroachment permit do not constitute a grant of special privilege, are consistent with the limitations upon other properties in the vicinity and under identical zone classifications, and is consistent with the objectives of the Town Code.
4. The strict application of the 10-foot, front-yard setback would result in excessive or unreasonable hardship because the strict application of this law would prohibit the owner from rebuilding and expanding his parking structure.
5. The granting of the variance will not be detrimental to the public welfare or injurious to other property in the vicinity in which the property is situated because the location of the improvements will not obstruct visibility or create a safety hazard for the general public.

## **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:

- Supplemental Geotechnical Engineering evaluation dated 3/14/16 by Dennis Furby, Geotechnical Engineer.
- Preliminary Geotechnical Engineering Evaluation dated 1/13/16 by Dennis Furby, Geotechnical Engineer.
- Preliminary Site Drainage Study dated March 14, 2016 by Vlad Iojica, Civil Engineer.
- Civil Engineering plans dated 3/14/16 by Vlad Iojica, pages C1.0, C1.1, C2.0, C3.0, C3.1, C4.0, C5.0 and C6.0.
- Architectural plans by Rich Rushton, pages A2.1, A2.3, A4.1, A4.2, A6.1, A7.1 and A7.2.
- Topographic survey dated 8/24/15 by Lawrence Stevens, Land Surveyor

Based on the Town Engineer's review and recommendation that the project be processed, 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 1<sup>st</sup> through April 1<sup>st</sup> 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 1/14/16, pages A2.1, A2.3, A3.1, A4.1, A4.2, A6.1, A7.1, A7.2 and A7.5, the topographical survey by Lawrence Stevens, dated 11/23/15 and the civil engineering plans by Vlad Iojica, Civil Engineer, dated 1/12/16, pages C1.0, C1.1, C2.0., C3.0, C3.1, C4.0, C5.0 and C7.1.

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 a 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 colorized 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. Prior to pouring the foundation and/or new retaining walls the surveyor shall submit a letter certifying that the house had been located within the building envelope approved by the Settlement Agreement.

d. 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.

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

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

- a. The geotechnical engineer shall field check the completed project and submit written certification to the Town Staff that the foundation, retaining, grading and drainage elements have been installed in conformance with the approved building plans and the recommendations of the soils report.
  - b. The Planning Department 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 1<sup>st</sup> 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. During construction, the developer and all employees, contractor's and subcontractor's must comply with all requirements set forth in Ordinance # 637 (Chapter 8.26 of the Town Code), "Storm Water Management and Discharge Control Program."
  8. Any changes, modifications, additions or alterations made to the approved set of plans will require a modification of Application # 16-13. Any construction based on job plans that have been altered without the benefit of an approved modification of Application 16-13 will result in the job being immediately stopped and red tagged.
  9. Any damages to the public portions of Bolinas Road or other public roadway used to access the site resulting from construction activities shall be the responsibility of the property owner.
  10. 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.

11. 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.

12. Copies of recorded easement documents creating easements for access to demolish improvements on neighboring properties and to construct and maintain new retaining walls that project over the property lines adjacent to 280 and 300 Bolinas Road shall be provided to the Town prior to issuance of the building permit.

13. 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.

### **Town Engineer's Conditions**

1. Three copies of a recorded boundary survey that include a notation that all property easements are shown or a notation with the following wording, "Based on the review of the Title report (give the date and title company source of the report and based on this surveyor's knowledge of this site, there are no easements".
2. Three copies of the Fee Title Deed.
3. The building permit plans must address all of the information requested in the February 24, 2016, Town Engineer's memorandum.
4. A grading and drainage plan that includes all the information described in the Town Engineer's February 24, 2016, memorandum.
5. Recorded easement documents that create access for demolition of existing improvements to be removed from neighboring properties and easements for construction and maintenance of new improvements constructed on and/or near the side property lines.
6. An addendum to the geotechnical report must be submitted that:
  - a. Indicates no debris flow or landslide protection is needed at the rear of the

site. If it is determined that landslide protection is needed, the design of that protection will be submitted subject to approval of Ray Wrynski, the Town Engineer.

- b. Addresses how the retaining wall reconstruction on the westerly-side of the building can be accomplished without resulting in an unstable situation on the adjoining property where the walls are also failing.
  - c. Provides recommendations on how the retaining walls can be rebuilt/built safely and in compliance with OSHA requirements.
  - d. Provides recommendations on how the front bank of the site along the street will be stabilized or will indicate that the proposed stabilization method shown on page C3.0 of the engineering drawings is adequate to prevent soil movement or sloughing once construction is completed.
7. The geotechnical engineer shall approve in writing the final constructed drainage dissipater configuration prior to the project final inspection.

### **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. A fire hydrant capable of supplying 1000 gallons per minute of water shall be provided so that no portion of the exterior of the structure is greater than 350 feet from the closest hydrant measured along the path of travel. The closest hydrant is 300 feet from the front of the property so a new hydrant is required as a part of this project.
3. A vegetative management plan must be approved by the Fire Department prior to issuance of the building permit for the project that complies with Ross Valley Fire Standard #220.
4. 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.
5. 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.

6. 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.
7. 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.
8. Alternative materials or methods may be proposed for any of the above conditions in accordance with Section 104.9 of the Fire Code.
9. 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, Encroachment Permit, Front-yard Setback 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 21<sup>st</sup> day of April, by the following vote:

AYES:

NOES:

ABSENT:

\_\_\_\_\_  
Acting Chair,

Attest:

\_\_\_\_\_  
Jim Moore, Director of Planning and Building Services

## JOB MEMORANDUM

TO: Justin Morgan (jveeva@yahoo.com)  
cc: Richard Rushton (rushtonchartock@comcast.net)

Sept 08, 2015  
Job No. 1508A

FROM: Vlad Iojica (vlad@via-eng.com)

SUBJECT: Preliminary Soil Design Criteria Prop  
Remodel and Site Improvements  
288 Bolinas Road, Fairfax, California

This informal memo briefly summarizes my current understanding of the project and presents preliminary soil engineering design criteria to be used for project design and plan preparation; it is intended to provide parameters for the design of proposed site improvements. Opinions presented in this memo are based on a brief visual examination of the exposed site conditions and does not constitute a formal site investigation report.

Site Conditions

The subject property consists of an existing two story house located on an uphill lot. Existing site improvements include a single car garage with access from Bolinas Road as well as a concrete stairway providing access to the house. Site topographic survey indicates an average site slope of  $\pm 42$  percent, to the back of the lot, from the road. Based on our site visit and available soil survey data we anticipate the slope surface is underlain by 1 to 2 feet of loam soil material, gradually becoming weathered Sandstone/Shale rock that is weak and friable near the surface, but stronger and less fractured with depth.

Project

Proposed project calls for minor site improvements in area adjacent to the existing house, consisting of repairs to the paved existing patios, which will include revising drainage patterns to ensure positive drainage away from existing house and site retaining wall located at the back of the house. It is recommended to capture and convey storm water runoff from the house pad, to an area of lower elevation, within the lot, and dissipate the flows to avoid concentrated discharges onto the surface.. At the lower end of the parcel existing single-car garage it is proposed to be replaced with a two-car covered parking structure located southwest, along the edge of the right-of-way, from existing structure. The proposed garage structure will involve construction of retaining walls along the perimeter, up to 10-ft in height. A new stairway will be constructed to accommodate proposed layout at the front of the lot, and to provide access to the uphill residence.

Seismicity

The site lies about 10 kilometers east of San Andreas Fault zone, an active fault. Since the site is located outside of the Alquist-Priolo Special Studies Zone, the risk of ground rupture is considered low. Given the shallow depth to bedrock in this area, the risk of seismically induced landsliding should be fairly low. The surface materials at this site may be assumed to be in Site Class "D" as described in the 2013 CBC. The site Spectral Acceleration values:

$S_S = 1.500$ g;	$S_{MS} = 1.500$ g;	$S_{DS} = 1.000$ g
$S_1 = 0.605$ g;	$S_{M1} = 0.908$ g;	$S_{D1} = 0.605$ g

Recommendations:

New Garage Retaining Walls:

Active lateral earth pressures = 50 pcf, EFP with triangular distribution;  
Passive pressure = 300 pcf;  
Bearing Capacity = 1,500 psf, for dead plus live loads. This value may be increased by one third for wind and seismic loads.  
Friction Value = 0.40

In all areas where new concrete slabs or concrete pavement will be constructed, it is advised that a minimum of the upper 6 to 12 inches of soil, or the depth of disturbed soil, whichever is deeper, should be re-compacted prior to placement of the gravel base.

Surface water runoff from upstream areas should be collected by a concrete-lined ditch or swale across the top of the slope, at existing and proposed site retaining walls, with the collection DI discharged downslope in a rigid smooth-walled pipe, leading into an water energy dissipater for the runoff collected at existing site-wall, and either an energy dissipater or established storm drain system at Bolinas Rd, for the walls associated with new garage structure.

Very truly yours,  
ViA Atelier, Inc.



Vlad G. Iojica, P.E.  
Reg. No.: RCE C73861

MAR 16 2016

RECEIVED

DENNIS H. FURBY, PE  
CONSULTING GEOTECHNICAL ENGINEER

March 14, 2016  
Job No. 1200-1

Justin Morgan  
3311 Nicasio Valley Road  
Nicasio, CA 94946

Subject: Supplemental Geotechnical Engineering Evaluations  
Residential Remodel and Addition  
288 Bolinas Road, Fairfax, CA  
(AP No. 002-022-19)

Dear Mr. Morgan:

This letter supplements earlier preliminary geotechnical engineering evaluations for the planned residential renovations at 288 Bolinas Road, Fairfax, CA. as presented in my letter dated January 13, 2016, in order to respond to comments received from the Town of Fairfax in their letter of March 1 and Memorandum dated February 24, 2016. I am providing services for this project in accordance with my Professional Services Agreement dated 5 December 2015. In addition to reviewing the Town's comments, I performed additional site reconnaissance on March 4, 2016, and subsequently consulted with your Architect, Richard Rushton, and Engineer, Vlad Iojica, to discuss project modifications. Lastly, I have reviewed the following revised drawings that reflect our responses:

- Architectural sheet A2.1 dated 3/14/16, prepared by Rushton – Chartock Architects; and
- Civil drawings C1.0 & -1, C2.0 thru C6.0 dated 03/14/16, prepared by VIA Atelier

My geotechnical engineering responses are itemized in the following paragraphs.

1. OSHA Standards for Temporary Cuts - The temporary excavation for the new garage can be near-vertical for the lower 5 feet thru rock (weathered to very stiff sandy clay and/or moderately hard Sandstone), then inclined back at approximately ½:1 to 1:1 (horizontal to vertical ratio) thru weathered rock/stiff soil, and finally the top rounded off to 2:1 or less to blend in with existing. The exposed cuts can also be draped with mesh, if necessary, to protect against raveling of loose soil/rocks. These criteria may be modified during construction based on my observations of the actual soil/rock conditions exposed. These same criteria will also apply for the temporary cut during replacement of the retaining wall across the back of the house.
2. Stabilize graded slopes in front of property – At the same time as the old garage is being demolished, it is planned to construct a short retaining wall (not exceeding 4 feet so the Marin County Standard Detail may be used) across the toe of the slope to the right (facing upslope) of the garage. This wall will then be backfilled with compacted soil generated from the new excavation to buttress the slope between the wall and the existing tree that is intended to be saved. The compacted slope will be no steeper than 2:1, which

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30 Via Holon, #18  
Greenbrae, CA 94904

**ATTACHMENT** 

will be stable for the relatively small localized area involved. This, and the completed slope on the other side of the new garage, will be graded smooth, covered with jute mesh, and then re-seeded to establish the erosion-resistant ground cover. Further, the two new drainage dissipaters that are planned will be sized and located appropriately to prevent concentrations of surface water runoff over this new slopes.

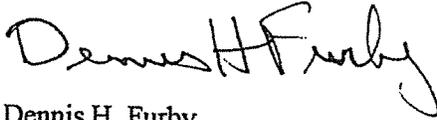
3. Re-construction of retaining walls along west property line – It is planned to saw-cut the existing walls at the property line, and then demolish the portions on the Morgan property. During construction of the new retaining walls, both perpendicular to and along the property line, including deepened edges of new concrete patio slabs, they will be structurally connected to the remaining walls on the adjacent property to stabilize them. While it may be necessary to temporarily buttress the adjacent walls during the construction process, the completed project will leave these walls in a stable condition adjacent to the property line so that future movement (demolition or unlikely failure) will not adversely affect the Morgan property improvements. Any temporary localized disturbance to the adjacent property will be re-graded and re-seeded to restore the slope surface to its previous condition.
4. Re-construction of retaining wall along east property line – It is only a relatively short section of existing wall to be removed from the adjacent property, and only approximately 8 to 10 linear feet is taller than 5 feet high. Therefore, the exposed bank can be easily protected against sloughing & raveling with draped mesh. Further, the new wall will be concrete block so that it can be backfilled as the wall is being constructed without having workers between the wall and the bank. The temporary mesh can be easily removed and the adjacent slope surface can be restored and re-seeded upon completion.
5. “Ensuring” the stability of the existing slopes uphill of the house – First, it should be understood that professional engineers cannot and should not “ensure” anything; this word is tantamount to insuring or providing a guarantee which is not possible. However, we do use our professional judgements, based on reasonable evaluations, to indicate whether the risks of slope instability are within acceptable limits for the circumstances. I have made such evaluations for this site, and render my professional opinion that there are no indications of damaging slope instability that cannot be mitigated by the planned improvements, specifically the new retaining wall and drainage installations. The observed distress to the existing wall is due, not to slope movement but, to insufficient drainage and/or design/construction of the wall itself. The new wall will be properly designed and constructed to resist the lateral earth pressure from the slope, and the new drainage behind the wall will relieve any excessive hydrostatic pressures, thus providing adequate stability to the toe of the slope adjacent to the residence. To further reduce the risk of erosion of the weak near-surface erodible soils (relatively thin based on observations of the existing cut slope directly behind the wall) I have recommended an added precaution of installing a graded ditch/berm across the lower portion of the slope to intercept and divert surface water runoff away from the house. Therefore, my professional opinion is that, following completion of construction of the planned improvements, and with proper future maintenance, the existing slope will be stable within acceptable limits for the residential development.

March 14, 2016

I trust this provides the information required at this time. Should you or others have further questions regarding the soil engineering aspects of this project, please call me.

Yours very truly,

D. H. FURBY, PE  
ENGINEERING CONSULTANT



Dennis H. Furby  
Geotechnical Engineer-326  
(Expires 12/31/17)



DHF/dhf

2 copies submitted ([jveeva@yahoo.com](mailto:jveeva@yahoo.com)) ([pkhoopai@gmail.com](mailto:pkhoopai@gmail.com))

cc: Richard Rushton ([rushtonchartock@gmail.com](mailto:rushtonchartock@gmail.com))

Vlad Iojica ([vlad@via-eng.com](mailto:vlad@via-eng.com))

(additional copies may be printed as required for submittal to the Town of Fairfax)

JAN 27 2016

RECEIVED

DENNIS H. FURBY, PE  
CONSULTING GEOTECHNICAL ENGINEER

January 13, 2016  
Job No. 1200-1

Justin Morgan  
3311 Nicasio Valley Road  
Nicasio, CA 94946

Subject: Preliminary Geotechnical Engineering Evaluations  
Residential Remodel and Addition  
288 Bolinas Road, Fairfax, CA  
(AP No. 002-022-19)

Dear Mr. Morgan:

#### INTRODUCTION

This letter documents my preliminary geotechnical engineering evaluations for the planned residential renovations at 288 Bolinas Road, Fairfax, CA. I am providing services for this project in accordance with my Professional Services Agreement dated 5 December 2015. These services have included the following:

1. Evaluate the existing site conditions based on surface reconnaissance, research of available geologic data, and previous experience in the site vicinity;
2. Review of the preliminary plans and previous correspondence, as follows;
  - Architectural plans, elevations & sections, sheets A2.1, -4.1, -4.2, -6.1, -7.1, & -7.2 dated 8/31/15 with latest revision for planning submittal dated 11/19/15, prepared by Rushton - Chartock Architects;
  - Civil plans & details, sheets C1.0, -3.0, -4.0 & .1, -6.0 and -7.1, dated 1/12/16, prepared by VIA - Engineering; and
  - Town of Fairfax Memorandum dated October 20 2015, prepared Ray Wrynski, Town Engineer;
3. Consult with the project architect, Rushton-Chartock Architects, and engineer, VIA Atelier, while preparing my conclusions and recommendations;
4. Determine appropriate soil design criteria for new foundations and retaining walls, and document them, along with site drainage guidelines, in an informal Job Memorandum dated January 2, 2016; and
5. Prepare this Preliminary Geotechnical Report for the required Planning submittals.

Following planning approvals, I will provide continued consultation, as required, to respond to any changes in the project planning, review the final plans as they are nearing completion for conformance with the intent of my recommendations, and document the results of this consultation and plan review in a formal letter for the Permit submittal. I will also be performing intermittent site observations during construction to check that the exposed soil & rock conditions are as anticipated, and that the geotechnical-related work is performed in accordance with the intent of my recommendations and the approved plans. The results of these construction-related services will also be reported in a brief letter upon satisfactory completion of the work.

I have not performed any subsurface exploration at this time, nor is any necessary due to the existing exposed soil and rock conditions, both in the cut slope behind the existing residence and within the crawl space beneath the residence. Further, I will be observing the exposed soil & rock conditions during construction and will have an opportunity to make any necessary adjustments in foundation depths and/or underpinning requirements at that time.

#### SITE & PROJECT DESCRIPTION

The site slopes uphill to the northwest above Bolinas Avenue at an average inclination of 2½ to 1 (horizontal to vertical ratio). The existing building area has been created by excavations into the slope and placement of localized small fills outside of the building area for landscaped patios and yard. The cuts and fills are being retained by a combination of short stone & wood walls, a concrete block wall across the back of the residence, and a higher concrete wall perpendicular to the south side of the house. I understand that some of these walls actually cross over the property lines and will have to be removed. Further, some of these walls are failing due to combinations of deterioration, improper construction (little or no reinforcing steel), and excessive lateral earth pressures in turn due to improper drainage and water infiltration.

The natural slope surface contains sparse grass and scattered small to moderate-sized trees. Existing surface drainage appears to be primarily relatively uniform surface water runoff over the slope. There are no indications of slope movements such as erosion, sloughing or slope creep, or other forms of slope instability. The mapped geology of the area<sup>1</sup> indicates that the hillsides are underlain primarily by Sandstone of the Franciscan Complex, which typically consists of weathered rock (dense clayey sand & stiff sandy clay) near the surface but which becomes harder and less fractured with depth. There can also be localized zones of hard rock that require jackhammering for excavation. These conditions are verified by the rock exposures in the cut slope behind the house and within the crawl space beneath the house.

The existing residence is essentially a one-story wood-frame structure supported above the terraced building pad on spread footings bottomed in the firm natural weathered Sandstone. There is a small "duplex unit" on the lower level and exterior wood decks in the front and west side of the house. A small one-car garage/storage structure is located adjacent to Bolinas Road at the toe of the slope, with concrete and wood stairs leading up to the house.

In addition to interior renovations & improvements to convert the duplex into a single-family residence, the current project includes the following elements:

- Demolish the existing garage adjacent to Bolinas Road, expand the excavation into the toe of the slope, and construct a new two-car garage with retaining walls varying up to a maximum of 10 feet;
- Demolish the existing block wall across the back of the residence, lower the adjacent patio grade approximately 9 to 12 inches, and construct a new retaining wall varying from 4 to 9 feet high that will lie entirely within the property limits;
- Enlarge/improve the northwest portion of the crawl space for an office/study, which will require further excavation into the exposed slope and construction of a new short retaining wall, new individual footings, possible underpinning of existing footings, and a new concrete slab-on-grade floor. This work will also require installation of temporary cribbing/shoring to support the existing structure while making the excavations and constructing the new footings;

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<sup>1</sup> California Regional Geologic Map No. 5A (San Francisco Quadrangle), 1991

- Enlarge/improve the front entry deck and stairs leading up from the new garage;
- Replace and/or construct new lateral retaining walls to maintain the existing terracing & landscaping on each side of the house; and
- Provide drainage improvements to control surface water runoff and reduce the risk of any future erosion or other forms of slope instability.

The project plans being prepared by Rushton – Chartock Architects and VIA-Engineering will provide the guidelines for the work.

### CONCLUSIONS & DISCUSSION

My current geotechnical engineering evaluations lead me to conclude that the planned additions and improvements for the residence at 288 Bolinas Road are both feasible and appropriate. There are no adverse soil or geologic conditions that would preclude or limit the planned improvements, and the new foundations can consist of conventional spread footings bottomed in the firm natural Sandstone (weathered or hard rock). The primary geotechnical-related concerns will be 1) the proper design and construction of the new footings and retaining walls to adapt to the varying soil and rock conditions, and 2) improved surface drainage and proper erosion control to maintain the stability of the hillside site. These issues are briefly discussed in the following paragraphs.

For shallower excavations between about 1½ to 5 feet below original slope grade, the dense clayey sand or stiff sandy clay, both with rock fragments, will adequately support the relatively light loads of typical wood-frame construction. However, for the deeper excavations below about 5 feet, such as for the back of the new garage and the higher portion of the retaining wall behind the residence, the harder and less-fractured Sandstone rock will be exposed, thereby permitting appropriately increased foundation bearing pressures with decreased lateral earth pressures on the walls. The appropriate soil design criteria for these varying situations are presented in the following Recommendations section of this report.

This hillside site is currently relatively stable, but proper control & discharge of surface water runoff is important to maintaining this stability. Infiltration of surface water into the weaker near-surface soils can greatly increase the lateral pressures against retaining walls and foundation stem walls. Thus the importance of providing proper wall backdrains and footing drains. Further, concentrations of surface water runoff can result in erosion of the weak near-surface soils leading to further instability. Therefore, it is important to properly dissipate the collected concentrations of surface water from extended winter rains. These methods of drainage improvements, along with slope planting guidelines, are also presented in the following section.

### RECOMMENDATIONS

#### Foundations

The new footings for retaining walls and building additions should be designed using the soil criteria presented in the table on the following page. Some localized deepening of footing excavations may be required to provide uniform bearing conditions and at least five feet of lateral confinement adjacent to slope surfaces. Conversely, deeper excavations may encounter hard rock that requires jackhammering; in this case, grouted reinforcing steel anchors installed in accordance with the structural engineer's details may be utilized to provide the required lateral resistance. The final footing depths should be determined during construction based on my observations of the actual exposed soil/rock conditions, and all footing excavations must be cleaned of loose soil and free water prior to placing concrete.

	<u>In Soil<sup>1</sup></u>	<u>In Rock<sup>2</sup></u>
Minimum width x depth	12 in. x 12in.	18 in. x 18 in.
Bearing pressures:		
Dead loads	2000 psf	3000 psf
Total loads <sup>3</sup>	3000 psf	4500 psf
Lateral resistance:		
Friction factor <sup>4</sup>	0.30	0.40
Passive pressure <sup>5</sup>	400 pcf	600 pcf

- Notes:
1. Within 5 feet of original slope surface
  2. Deeper than 5 feet below original slope surface
  3. Including earthquake forces
  4. Factor times Net Vertical Dead Load
  5. Ignore upper 12" unless surface is confined

Retaining Walls

New retaining walls should be designed to resist either active or "at rest" lateral earth pressures depending on whether the top of the wall is free to rotate (cantilever wall) such as the walls lateral to the residence or the shorter section of the wall across the back of the residence, or restrained against rotation (lateral movement less than 0.1% of the retained height) such as the garage walls and the taller portion of the back wall at the north corner. Further, the design lateral earth pressures will vary depending on the soil or rock conditions being retained. Recommended lateral earth pressures for these various conditions are as follows:

<u>Wall Conditions</u>	<u>Active Pressure<sup>1</sup></u>	<u>"At-rest" Pressure<sup>2</sup></u>
Garage side walls, level backfill		60 pcf
Garage back wall, sloping backfill		75 pcf, 400 psf max.
Short wall behind house, sloping backfill (less than 5 feet high)	50 pcf	-----
Tall wall in north corner (over 5 ft. high)	-----	75 pcf, 400 psf max.
Walls lateral to house, level backfill	35 pcf	-----

- Notes:
1. Equivalent fluid pressure (EFP), triangular distribution
  2. EFP to the indicated maximum, then rectangular distribution for remaining lower portion

Retaining walls, and foundation stem walls retaining fill, should be provided with backdrains to prevent buildup of hydrostatic pressure. These drains should consist of at least a 12-inch thick blanket of clean free-draining gravel with filter fabric between the soil/gravel interface, or a prefabricated drain such as Miradrain 6000, or equivalent. The drains should outlet through rigid perforated pipe (placed with perforations down and sloped for gravity flow) along the base of the wall, and which discharge through rigid non-perforated pipe backfilled with impervious compacted soil. Alternatively, the drains can outlet through uniformly spaced weep-holes (4 inches in diameter spaced at approximately 6 feet on center) along the base of the wall. The drain rock should be capped with 12 inches of impervious compacted soil to prevent surface water infiltration, and the surface should be sloped to prevent ponding of water adjacent to the wall.

### Seismic Design Criteria

Mitigation for future strong earthquake-induced ground shaking is to design the structures in conformance with the provisions of the most recent version of the California Building Code (2013 CBC) utilizing the appropriate Soil Profile Type. The appropriate seismic design factors for 288 Bolinas Road, Fairfax, are as follows:

Site Class C: very dense soil and soft rock

Spectral Accelerations:  $S_s = 1.500$   $S_1 = 0.635$

Site Coefficients:  $F_a = 1.0$   $F_v = 1.3$

Retaining wall surcharge

for short-term seismic loads:  $5H$ , rectangular distribution for wall height,  $H$

### Surface Drainage Guidelines

All roof edges should be provided with gutters to collect rainfall runoff, and the downspouts should be connected to closed pipe leaders which discharge at least five feet away from the building or onto an impervious surface. If the leaders are to be buried, they should consist of smooth rigid non-perforated pipe to facilitate future maintenance. Alternative roof gutter and downspout systems are possible but should be reviewed and approved by the Soil Engineer.

The ground surface should slope away from the building at an inclination of at least two percent ( $\frac{1}{4}$ -inch per foot) to prevent collection or ponding of surface water adjacent to foundations. The uphill side of perimeter foundations should be provided with a footing drain consisting of a rigid perforated pipe (placed with perforations down and sloped for gravity flow at approximately two percent) embedded near the bottom of clean free-draining gravel or drain rock wrapped in filter fabric. Where there are landscape plantings, sidewalks or patios which obstruct surface flow, area drains should be added to collect surface water runoff. The exposed ground within crawl spaces should be smooth, firm and sloped to provide surface flow towards an outlet through the perimeter stem wall in order to drain any water which migrates beneath the foundations.

The discharge from downspout leaders, footing drains, area drains, and retaining wall backdrains should be down slope of and well away from buildings, preferably directly onto a paved surface or into an established surface drainage system. Drainage outlets on slopes should be protected with cobble rip-rap or should be through capped rigid perforated pipe placed across the slope surface to dissipate the discharge over a large area and reduce the risk of surface erosion.

### Site Grading & Slope Protection

No new site grading is planned for the current project other than the indicated excavations into the toe of the slope for the new garage and to lower the patio grade behind the house. Therefore, the only geotechnical recommendation is, upon completion of the project, to clean-up of all loose soils & debris from slope surfaces and restore the surface vegetation by planting erosion resistant grasses. Installation of jute mesh and/or wattles will aid in resisting surface erosion until the new vegetation is established. Further, if desired by the owner, intermittent short planter walls can be installed as part of the slope landscaping.

### Additional Geotechnical Engineering Services

Prior to construction, I should review the completed project plans and specifications for conformance with the intent of my recommendations. If there are changes or additions to the project design or approach, I should review these changes in order to determine whether the conclusions and recommendations presented in this report are still valid.

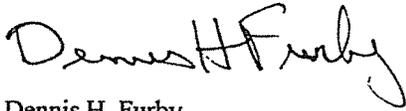
January 13, 2016

During construction, I should observe the foundation excavations and drainage installations to determine that the exposed soil and rock conditions are as anticipated. These observations will permit me to modify my recommendations, if necessary, should unanticipated conditions arise. Further, it will also permit me to check that the contractor's work is in conformance with the intent of my recommendations and the approved project plans.

I trust this provides the information required at this time. Should you or others have further questions regarding the soil engineering aspects of this project, please call me.

Yours very truly,

D. H. FURBY, PE  
ENGINEERING CONSULTANT



Dennis H. Furby  
Geotechnical Engineer-326  
(Expires 12/31/17)



DHF/dhf

1 copy submitted ([jveeva@yahoo.com](mailto:jveeva@yahoo.com))

cc: Richard Rushton ([rushtonchartock@gmail.com](mailto:rushtonchartock@gmail.com))

Vlad Iojica ([vlad@via-eng.com](mailto:vlad@via-eng.com))

(additional copies may be printed as required for submittal to the Town of Fairfax)

TOWN OF FAIRFAX

MAR 16 2016

RECEIVED

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# Preliminary Site Drainage Study

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Project Name:

Morgan Residence

---

Project Address:

288 Bolinas Road

Town of Fairfax, CA 94930

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Prepared For:

Justin Morgan

---



Prepared by:

VIA Atelier, Inc.

9 Brookside Ct.

San Anselmo, CA

T: 415-774-6776

E: office@via-eng.com

---

Date:

January 12, 2016

March 14, 2016 (*Revised*)

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ATTACHMENT D

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Figure 4: Precipitation Frequency Data (NOAA Atlas 2).....	9

## I. Introduction

This drainage study has been prepared to support the conceptual improvement plans prepared for the review during the planning and hillside development review. A final study will be submitted along with the construction documents for the redevelopment of the real-estate property. During the residential hillside parcel proposed for redevelopment is located at 288 Bolinas Road, in the Town of Fairfax, CA 94930, northeasterly to the intersection of Bolinas Road with Frustuck Avenue. Per site survey map prepared by L.A. Stevens & Associates, the topography of the parcel (see attachments for map) slopes from northwest towards southeast at an average slope of 43.2%, with upper end of the parcel at elevation 181-ft, and an elevation of 110-ft along lower boundary line, the right-of-way of Bolinas Road. Parcel's longitude and latitude: 37°58'59" North, and 122°35'34" West. Parcel's assessor number: 002-022-19.

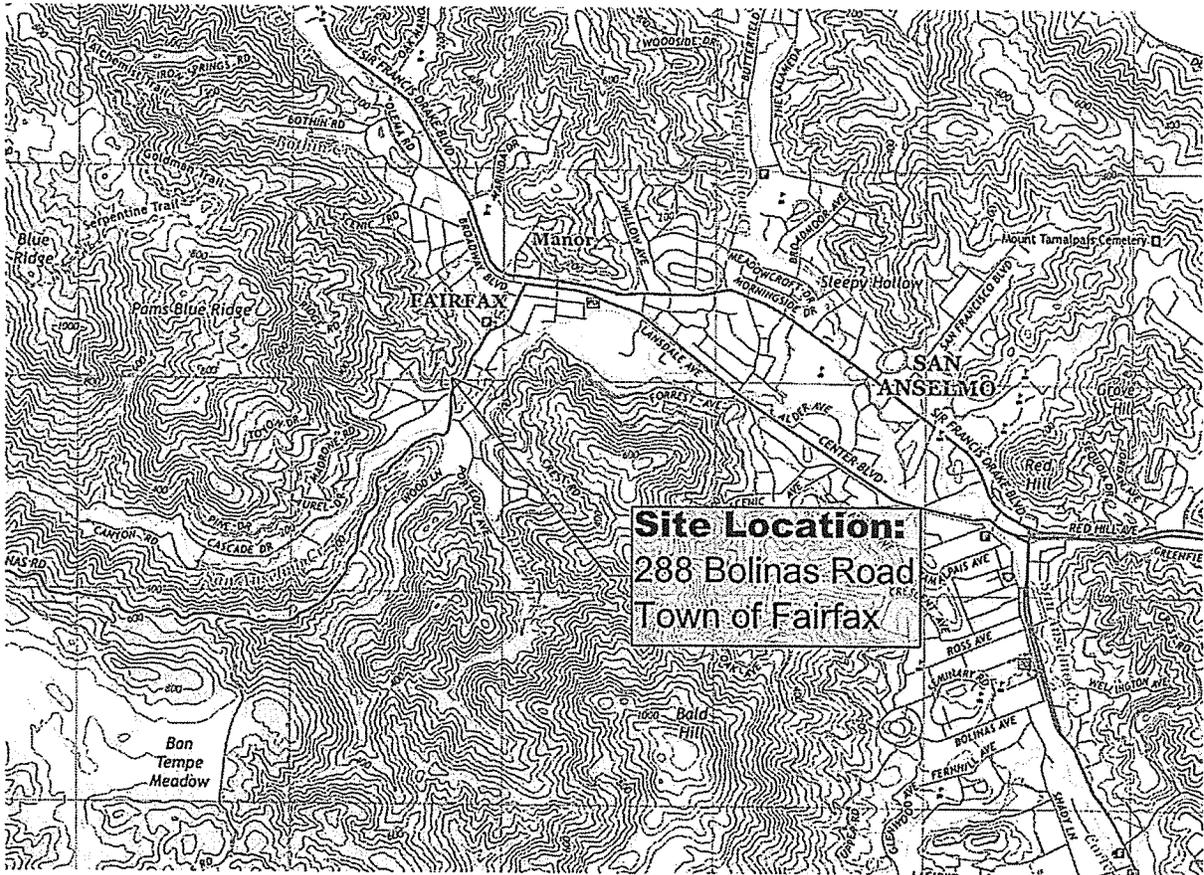


Figure 1 Location Map (USGS Quadrangle Map for California Marin County)

Existing improvements consists of a two story, conventional wood framed structure with a detached one-car garage, and miscellaneous site improvements including concrete access stairway, concrete patios, and site retaining walls.

The parcel, part of the Rancho Cañada de Herrera subdivision, is located in an area designated as RS-6 in the Town's zoning map, and it is bounded by developed parcels along the north, east and west property lines, and by Bolinas Road, an arterial road, along the south property line.



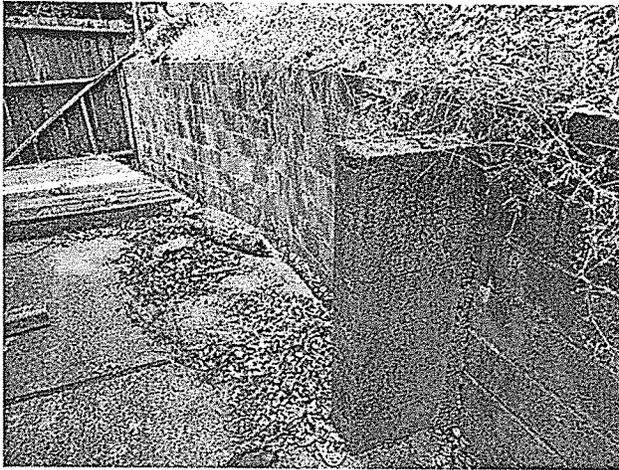


Figure 3. Retaining Wall and Channel at Patio

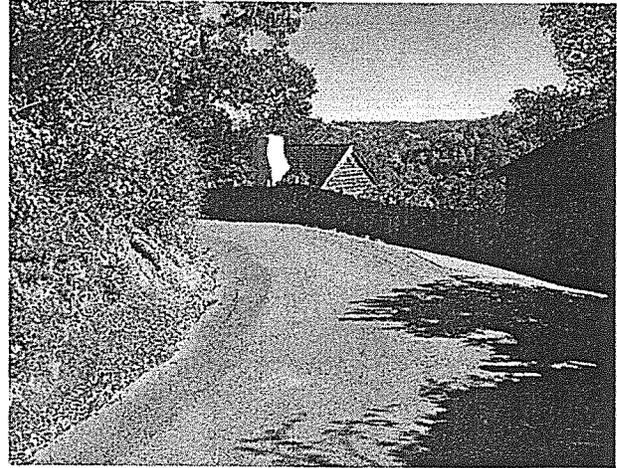


Figure 4. Frustuck Avenue Above 288 Bolinas

## II.a Off-Site Drainage

Following site recognition, and review of available topographic information for the areas adjacent and upstream to the parcel at 288 Bolinas, the off-site tributary area has been delineated per Exhibit H1.0, under Appendix A. Area immediately upstream from the parcel's boundary line drains naturally towards the southeast, and it includes natural landscape as well as hardscape: roof top, driveway, located on the parcel above. While the natural watershed would extend to the ridge, manmade drainage facilities along the alignment of Frustuck Avenue intercepts and divert along its alignment to the north and northeast some of the runoff. Figure 4 shows existing improvements at Frustuck Avenue, uphill from parcel proposed for re-development, including the drainage swale along the edge of pavement.

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

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

Runoff weighted coefficient is calculated based with the following formula:

$$C_w = (\sum C_i \times A_i) / A$$

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 A.3.

The storm water runoff being generated on off-site tributary areas upstream from the parcel, passes across upper property line and continues on-site until reaching the retaining wall / channel at the patio along the north elevation of the house. This process will not be altered through proposed remodels/site improvements.

## **II.b On-Site Drainage**

Under the current conditions the drainage of storm water runoff within the parcel boundary it is handled on the surface, where it sheet flows towards the southeast, and discharges along the alignment of Bolinas Road. No on-site storm water conveyance system has been identified. Pervious and In-pervious areas are mapped per Exhibit H2.0, under Appendix A.

## **III. Proposed Conditions**

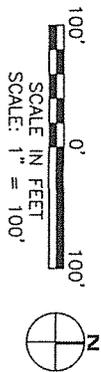
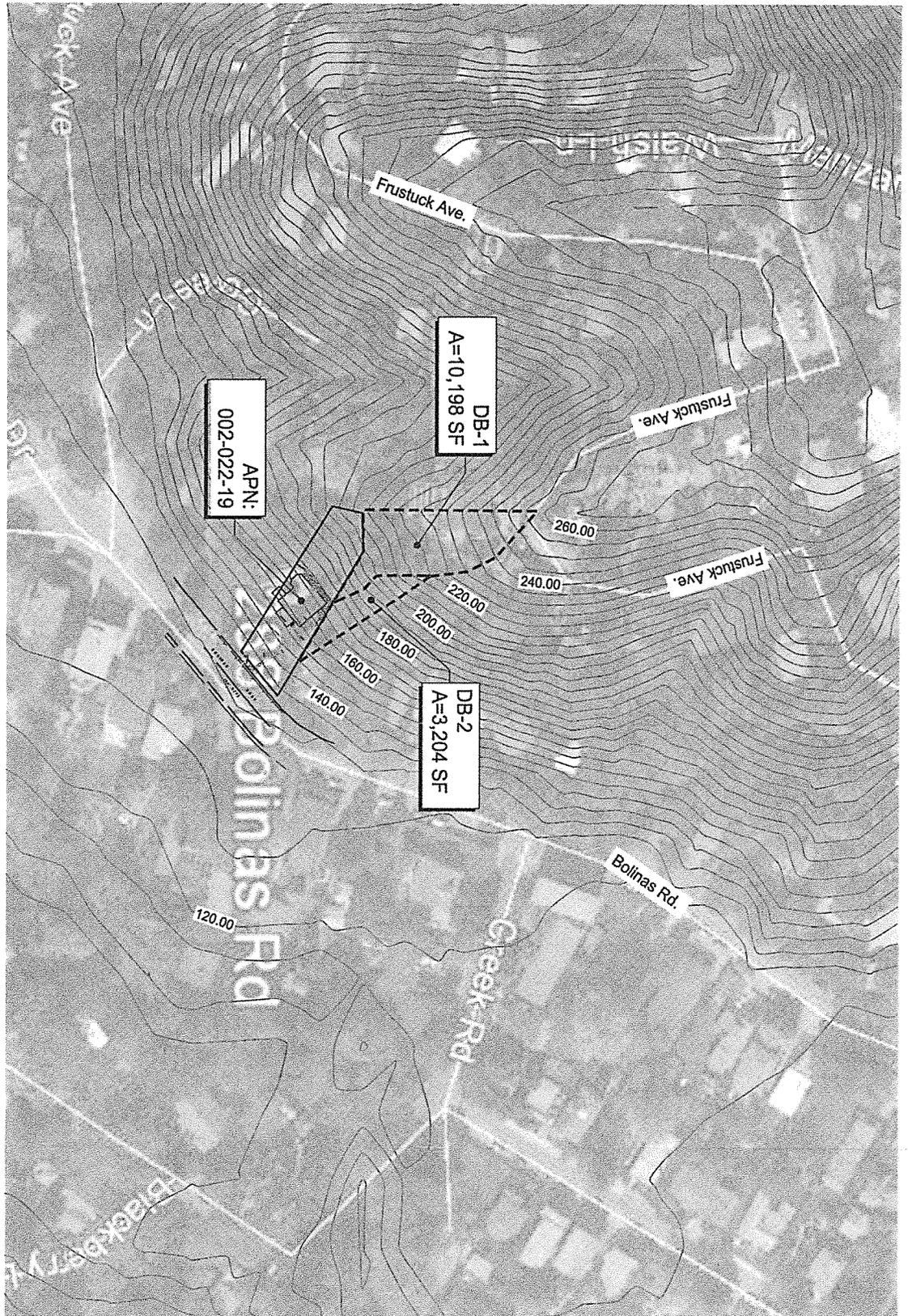
Proposed improvements at 288 Bolinas Road include replacing existing site retaining walls, upper patio pavement, site access staircase, and existing one-car garage with a new two-car garage structure. The improvement plan also includes installation of a on-site storm drain conveyance system, with dissipaters installed mid-slope. The discharge point will be maintained the same as under the pre-development conditions, along the alignment of Bolinas Road.

Exhibit H3.0, under Appendix A shows impervious areas proposed by the improvement plan.

Hydrology and hydraulic calculations are presented under Appendices B and C.

**Appendix A**

**Appendix A: Maps and Exhibits**



3 Brookside Court  
 San Anselmo  
 CA 94960  
 T: 415-714-6116  
 E: office@via-eng.com  
 www.via-eng.com

SHEET NAME:

OFF-SITE HYDROLOGY MAP

PROJECT:

MORGAN RESIDENCE - 288 BOLINAS ROAD, FAIRFAX, CA

ISSUE DATE: Jan. 12, 2016

DRAWN BY: V.I.

REVIEWED BY: -

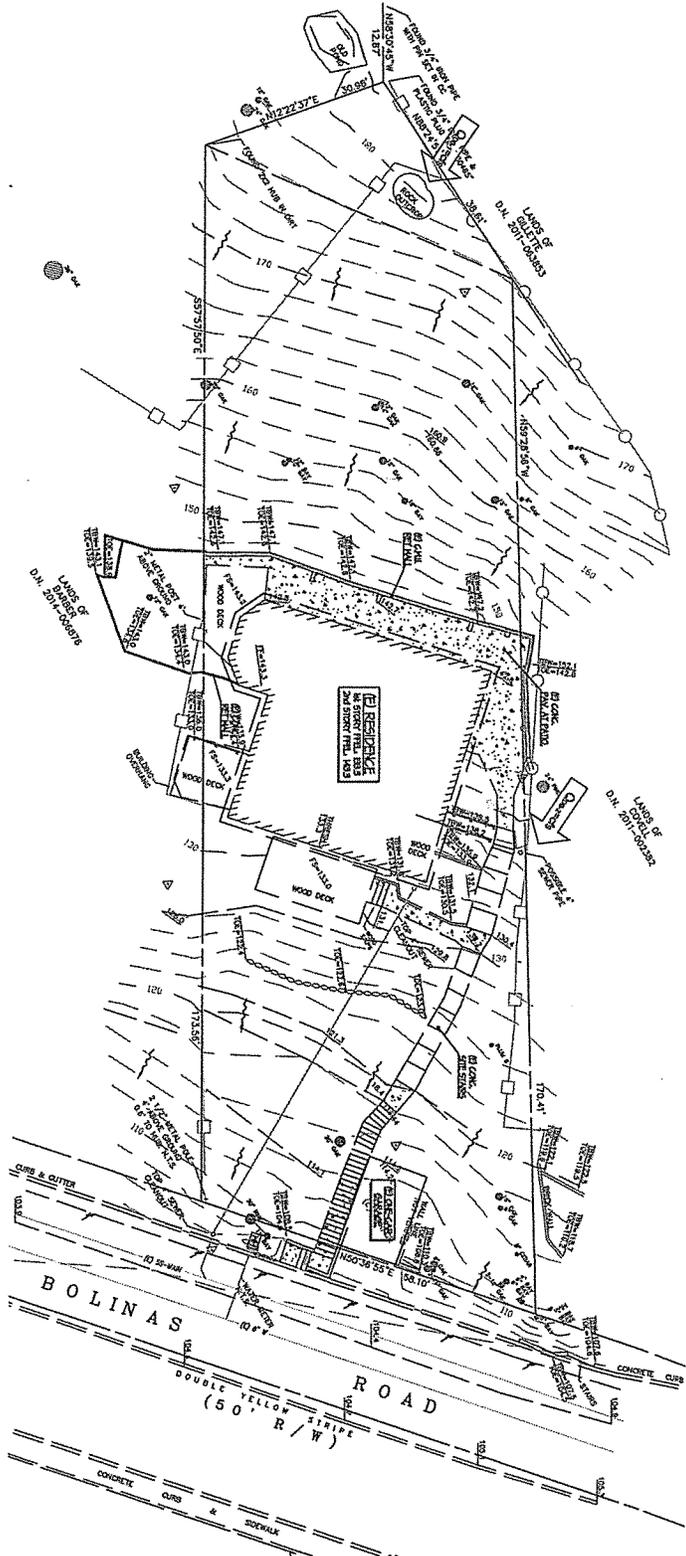
PROJECT NO. 1500.A

REFERENCE:

SHEET NO. -

REF. SHEET:

H1.0



**PRE-DEVELOPMENT DRAINAGE MAP**

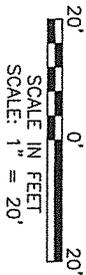
SCALE: 1" = 20'

**AREAS CALCULATION:**

Roof: 1491.26 + 153.70 = 1645 sq.ft.  
 Pavement: 842.27 sq.ft.  
 Landscape: 7121.55 sq.ft.  
 Total: 9455.08 sq.ft.

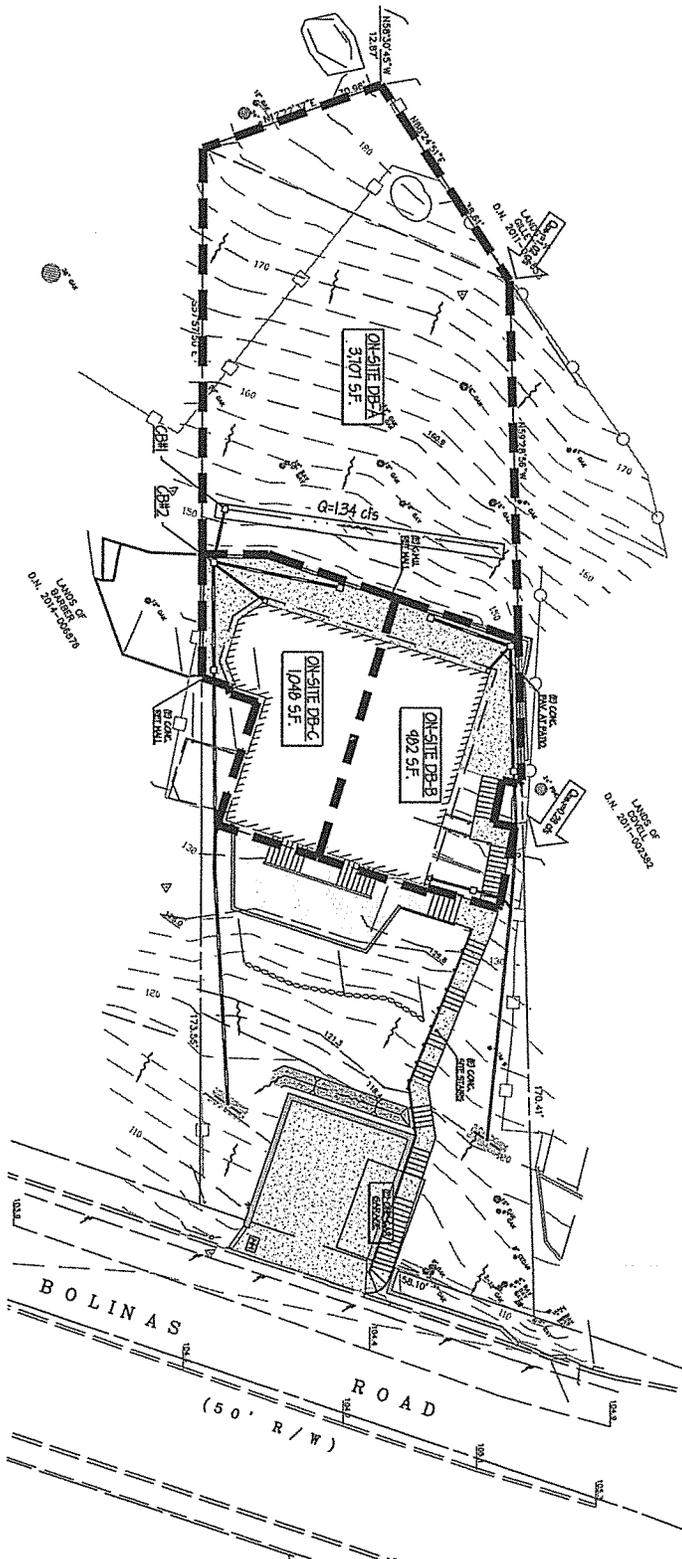
**LEGEND:**

-  SURFACE FLOW DIRECTION
-  OFF-SITE RINOFF (TRIBUTARY AREA)



4 Brookside Court  
 San Anselmo  
 CA 94960  
 T: 415-714-6716  
 E: office@via-eng.com  
 www.via-eng.com

SHEET NAME		ISSUE DATE		REFERENCE	
PRE-DEVELOPMENT ON-SITE DRAINAGE MAP		Jan. 12, 2016		-	
PROJECT		DRAWN BY		SHEET NO.	
MORGAN RESIDENCE - 288 BOLINAS ROAD, FAIRFAX, CA		V.J.		H2.0	
		REVIEWED BY		REF. SHEET	
		-		-	
		PROJECT NO.			
		1508A			



**POST-DEVELOPMENT DRAINAGE MAP**

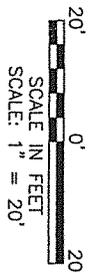
SCALE: 1" = 20'

**ON-SITE DRAINAGE BASINS:**

BASIN ID.	AREA	M (weighted)
DB-A	3707 SF	0.33
DB-B	482 SF	0.34
DB-C	1048 SF	0.34

**LEGEND:**

	SURFACE FLOW DIRECTION
	OFF-SITE RUNOFF (TRIBUTARY AREA)



9 Brookside Court  
San Anselmo  
CA 94960  
T: 415-714-6776  
E: office@via-eng.com  
www.via-eng.com © 200

SHEET NAME:

POST-DEVELOPMENT ON-SITE DRAINAGE MAP

PROJECT:

MORGAN RESIDENCE - 288 BOLINAS ROAD, FAIRFAX, CA

ISSUE DATE:

Jan. 12, 2016

DESIGNED BY:

V.I.

PROJECT NO.

1508.A

REFERENCE:

-

SHEET NO.:

H3.0

REF. SHEET:

-

**Appendix B: Site Hydrology**

# Precipitation Data

12/4/2015

Precipitation Frequency Data Server



NOAA Atlas 14, Volume 6, Version 2  
 Location name: Fairfax, California, US\*  
 Latitude: 37.9830°, Longitude: -122.5936°  
 Elevation: 185 ft\*  
 \* source: Google Maps



## POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Istani Roy, Carl Trypaluk, Dana Unruh, Fenglin Yan, Michael Yakta, Tan Zhao, Geoffrey Bonnin, Daniel Bruwer, Li-Chuan Chen, Tye Parzybok, John Yarchon

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerial

### PF tabular



PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.94 (1.73-2.21)	2.38 (2.11-2.70)	2.99 (2.65-3.41)	3.52 (3.10-4.06)	4.30 (3.61-5.14)	4.92 (4.04-6.05)	5.60 (4.48-7.09)	6.35 (4.90-8.30)	7.42 (5.45-10.2)	8.30 (5.86-11.9)
10-min	1.39 (1.24-1.58)	1.70 (1.52-1.94)	2.14 (1.90-2.44)	2.52 (2.21-2.90)	3.07 (2.59-3.68)	3.53 (2.90-4.34)	4.01 (3.20-5.08)	4.55 (3.51-5.95)	5.32 (3.91-7.30)	5.95 (4.19-8.51)
15-min	1.12 (1.00-1.27)	1.38 (1.22-1.56)	1.73 (1.53-1.97)	2.04 (1.78-2.34)	2.48 (2.09-2.97)	2.84 (2.34-3.50)	3.24 (2.58-4.10)	3.66 (2.83-4.80)	4.28 (3.15-5.89)	4.80 (3.38-6.86)
30-min	0.866 (0.772-0.982)	1.06 (0.944-1.20)	1.33 (1.18-1.52)	1.57 (1.38-1.81)	1.91 (1.61-2.29)	2.19 (1.80-2.70)	2.50 (1.99-3.16)	2.83 (2.18-3.70)	3.30 (2.43-4.54)	3.70 (2.61-5.30)
60-min	0.622 (0.554-0.705)	0.761 (0.677-0.864)	0.957 (0.849-1.09)	1.13 (0.989-1.30)	1.37 (1.16-1.65)	1.57 (1.29-1.94)	1.79 (1.43-2.27)	2.03 (1.57-2.66)	2.37 (1.74-3.26)	2.65 (1.87-3.80)
2-hr	0.464 (0.414-0.526)	0.568 (0.505-0.644)	0.711 (0.630-0.810)	0.834 (0.732-0.959)	1.01 (0.851-1.21)	1.15 (0.947-1.42)	1.30 (1.04-1.65)	1.47 (1.13-1.92)	1.70 (1.25-2.34)	1.89 (1.33-2.70)
3-hr	0.398 (0.355-0.451)	0.487 (0.433-0.553)	0.609 (0.540-0.693)	0.712 (0.625-0.820)	0.860 (0.725-1.03)	0.979 (0.805-1.20)	1.10 (0.882-1.40)	1.24 (0.957-1.62)	1.43 (1.05-1.97)	1.59 (1.12-2.27)
6-hr	0.298 (0.265-0.338)	0.365 (0.325-0.415)	0.457 (0.405-0.521)	0.534 (0.468-0.614)	0.641 (0.541-0.769)	0.727 (0.598-0.893)	0.816 (0.651-1.03)	0.910 (0.703-1.19)	1.04 (0.766-1.43)	1.15 (0.810-1.64)
12-hr	0.207 (0.185-0.235)	0.259 (0.230-0.294)	0.328 (0.291-0.374)	0.385 (0.338-0.443)	0.464 (0.391-0.556)	0.526 (0.432-0.646)	0.589 (0.471-0.746)	0.656 (0.506-0.858)	0.748 (0.549-1.03)	0.820 (0.579-1.17)
24-hr	0.146 (0.131-0.165)	0.186 (0.167-0.211)	0.238 (0.214-0.271)	0.281 (0.250-0.322)	0.340 (0.294-0.402)	0.386 (0.327-0.465)	0.433 (0.359-0.533)	0.482 (0.389-0.609)	0.549 (0.427-0.720)	0.601 (0.453-0.814)
2-day	0.096 (0.086-0.108)	0.121 (0.109-0.138)	0.155 (0.139-0.176)	0.182 (0.162-0.209)	0.220 (0.190-0.260)	0.249 (0.211-0.300)	0.279 (0.231-0.344)	0.310 (0.250-0.391)	0.352 (0.274-0.462)	0.385 (0.290-0.521)
3-day	0.074 (0.066-0.083)	0.093 (0.084-0.105)	0.118 (0.106-0.135)	0.139 (0.124-0.159)	0.167 (0.145-0.198)	0.189 (0.160-0.228)	0.211 (0.175-0.260)	0.234 (0.189-0.295)	0.265 (0.206-0.348)	0.289 (0.218-0.391)
4-day	0.061 (0.055-0.069)	0.077 (0.069-0.088)	0.098 (0.088-0.112)	0.115 (0.102-0.132)	0.138 (0.119-0.163)	0.156 (0.132-0.187)	0.173 (0.144-0.213)	0.191 (0.155-0.242)	0.216 (0.168-0.283)	0.234 (0.177-0.317)
7-day	0.043 (0.038-0.048)	0.054 (0.049-0.061)	0.068 (0.061-0.078)	0.080 (0.071-0.092)	0.095 (0.082-0.113)	0.107 (0.090-0.128)	0.118 (0.098-0.145)	0.129 (0.104-0.163)	0.144 (0.112-0.189)	0.156 (0.117-0.211)
10-day	0.035 (0.031-0.039)	0.044 (0.040-0.050)	0.056 (0.050-0.064)	0.066 (0.058-0.075)	0.078 (0.067-0.092)	0.087 (0.073-0.104)	0.095 (0.079-0.117)	0.104 (0.084-0.131)	0.115 (0.090-0.151)	0.124 (0.093-0.168)
20-day	0.023 (0.021-0.026)	0.029 (0.026-0.033)	0.037 (0.034-0.042)	0.043 (0.039-0.050)	0.051 (0.044-0.060)	0.057 (0.048-0.068)	0.062 (0.051-0.076)	0.067 (0.054-0.084)	0.073 (0.057-0.096)	0.078 (0.059-0.106)
30-day	0.019 (0.017-0.021)	0.024 (0.022-0.027)	0.030 (0.027-0.035)	0.035 (0.031-0.040)	0.041 (0.036-0.049)	0.046 (0.039-0.055)	0.050 (0.041-0.061)	0.053 (0.043-0.067)	0.058 (0.045-0.076)	0.062 (0.046-0.083)
45-day	0.015 (0.014-0.017)	0.020 (0.018-0.022)	0.025 (0.022-0.028)	0.029 (0.026-0.033)	0.033 (0.029-0.040)	0.037 (0.031-0.044)	0.040 (0.033-0.048)	0.043 (0.035-0.054)	0.046 (0.036-0.061)	0.049 (0.037-0.066)
60-day	0.014 (0.012-0.015)	0.017 (0.016-0.020)	0.022 (0.020-0.025)	0.025 (0.023-0.029)	0.029 (0.025-0.035)	0.032 (0.027-0.039)	0.035 (0.029-0.043)	0.037 (0.030-0.047)	0.040 (0.031-0.053)	0.042 (0.032-0.057)

<sup>1</sup> 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.

Figure 4: Precipitation Frequency Data (NOAA Atlas 2)

## Off-Site Hydrology

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

### Off-Site Basin DB-1:

- **Sub- Basin Drainage Area (A):** **10,198 sf**  
*Drainage Basin Area delineated using topographic information for the area upstream from parcel property line. See exhibit H1.0, "Off-Site Hydrology Map"*
- **Time of Concentration (T<sub>c</sub>):** **5 min**  
*In accordance with recommendations under §816.6 of the Highway Design Manual for steep slopes with limited opportunity for surface storage.*
- **Weighted Manning Roughness Coefficient (C):** **0.78**  
*Roughness coefficient has been calculated using Figure 819.2A of the Highway Design Manual.*
- **Average Rainfall Intensity (I<sub>100</sub>):** **5.60 in/hr**  
*Average Rainfall Intensity corresponding to the time of concentration determined above, and for the selected frequency (100-yr) has been determined using NOAA Atlas 14 precipitation data for the project's specific location (reproduced above), in accordance with §819.2 of the Highway Design Manual.*
- **Design discharge at the property line, using the Rational Method:**

$$Q_{DB-1} = CIA = 0.78 * 5.60 * 10,198/43,560 = \underline{1.02 \text{ cfs}}$$

### Off-Site Basin DB-2:

- **Sub- Basin Drainage Area (A):** **3,204 sf**  
*Drainage Basin Area delineated using topographic information for the area upstream from parcel property line. See exhibit H1.0, "Off-Site Hydrology Map"*
- **Time of Concentration (T<sub>c</sub>):** **5 min**  
*In accordance with recommendations under §816.6 of the Highway Design Manual for steep slopes with limited opportunity for surface storage.*
- **Manning Roughness Coefficient (C):** **0.67**  
*Roughness coefficient has been calculated using Figure 819.2A of the Highway Design Manual.*
- **Average Rainfall Intensity (I<sub>100</sub>):** **5.60 in/hr**  
*Average Rainfall Intensity corresponding to the time of concentration determined above, and for the selected frequency (100-yr) has been determined using NOAA Atlas 14 precipitation data for the project's specific location (reproduced above), in accordance with §819.2 of the Highway Design Manual.*
- **Design discharge at the property line, using the Rational Method:**

$$Q_{DB-2} = CIA = 0.67 * 5.6 * 3,204/43,560 = \underline{0.28 \text{ cfs}}$$

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 <sub>c</sub>	Time of concentration (min.)

## On-Site Hydrology

### On-Site Basin DB-A:

- **Sub- Basin Drainage Area (A):** 3,707 sf  
*Drainage Basin Area delineated using topographic information for the area upstream from parcel property line. See exhibit H3.0, "On-Site Drainage Map"*
- **Time of Concentration (T<sub>c</sub>):** 5 min  
*In accordance with recommendations under §816.6 of the Highway Design Manual for steep slopes with limited opportunity for surface storage.*
- **Manning Roughness Coefficient (C):** 0.67  
*Roughness coefficient has been calculated using Figure 819.2A of the Highway Design Manual.*
- **Average Rainfall Intensity (I<sub>100</sub>):** 5.60 in/hr  
*Average Rainfall Intensity corresponding to the time of concentration determined above, and for the selected frequency (100-yr) has been determined using NOAA Atlas 14 precipitation data for the project's specific location (reproduced above), in accordance with §819.2 of the Highway Design Manual.*
- **Design discharge at proposed earth lined swale (See Map H3.0)**

$$Q_{DB-A} = CIA = 0.67 * 5.6 * 3,707/43,560 = \underline{0.32 \text{ cfs}}$$

### On-Site Basin DB-B:

- **Sub-Basin Drainage Area (A):** 982 sf
- **Time of Concentration (T<sub>c</sub>):** 5 min
- **Manning Roughness Coefficient (C):** 0.90 (Table 819.2B of HDM)
- **Average Rainfall Intensity (I<sub>100</sub>):** 5.6 in/hr
- **Design discharge (Q):**

$$Q_{DB-B} = CIA = 0.90 * 5.6 * 982/43,560 = \underline{0.11 \text{ cfs}}$$

### On-Site Basin DB-C:

- **Sub-Basin Drainage Area (A):** 1,048 sf
- **Time of Concentration (T<sub>c</sub>):** 5 min
- **Manning Roughness Coefficient (C):** 0.90
- **Average Rainfall Intensity (I<sub>100</sub>):** 5.6 in/hr
- **Design discharge (Q):**

$$Q_{DB-C} = CIA = 0.90 * 5.6 * 1,048/43,560 = \underline{0.12 \text{ cfs}}$$

**Appendix C: Hydraulic Calculations**

### *Proposed on-site conveyance system*

See Exhibit H3.0 titled “*Post-Development On-Site Drainage Map*” for reference.

The proposed post construction storm water conveyance system captures the runoff generated within on-site DB-A and off-site DB-1 along the top of the proposed to be re-built retaining wall at the upper patio of the house and directs the flows from there along the two branches along the sides of the building (see C5.0) that routs the flows downstream of the house to dissipaters.

The proposed earth lined swale located upstream from the patio’s retaining wall will intercept and convey stormwater runoff generated on on-site and off-site tributary areas upstream:

$$Q_{\#1} = Q_{DB-1} + Q_{DB-A} = 1.02 + 0.32 = 1.34 \text{ cfs}$$

These flows will be captured by proposed DI#1, located at the end of the swale, and conveyed through a 6-in pipe downstream, where additional stormwater runoff generated on the on-site basin DB-C gets concentrated at DI#2:

$$Q_{\#2} = Q_{\#1} + Q_{DB-C} = 1.34 + 0.12 = 1.46 \text{ cfs}$$

From the catch basin CB#2 the accumulated runoff will travel down to a runoff dissipater, through a 6-in pipe.

## Structure Capacity Analysis

a. Earth Lined Swale upslope from house patio:

Input Parameters	Result Parameters
<ul style="list-style-type: none"><li>• Channel Type: Triangular</li><li>• Side Slope: 1.5:1.0 (ft)</li><li>• Longitudinal Slope: 0.10 (ft/ft)</li><li>• Manning's n: 0.0150</li><li>• Depth: 0.350 (ft)</li></ul>	<ul style="list-style-type: none"><li>• Flow: 1.593 (cfs) &gt; 1.34 cfs <span style="float: right;">☒</span></li><li>• Area of Flow: 0.184 (ft<sup>2</sup>)</li><li>• Wetted Perimeter: 1.262 (ft)</li><li>• Hydraulic Radius: 0.146 (ft)</li><li>• Average Velocity: 8.67 (ft/s)</li><li>• Top Width: 1.05 (ft)</li><li>• Froude Number: 3.65</li><li>• Critical Depth: 0.588 (ft)</li></ul>

b. Hydraulic Analysis for the 6-in Pipe between CB#2 and stormwater dissipater:

Input Parameters	Result Parameters
<ul style="list-style-type: none"><li>• Channel Type: Circular</li><li>• Pipe Diameter: 0.50 (ft)</li><li>• Longitudinal Slope: 0.05 (ft/ft)</li><li>• Manning's n: 0.01</li><li>• Depth: 0.50 (ft)</li></ul>	<ul style="list-style-type: none"><li>• Flow: 1.631 (cfs) &gt; 1.46 cfs <span style="float: right;">☒</span></li><li>• Area of Flow: 0.196 (ft<sup>2</sup>)</li><li>• Wetted Perimeter: 1.57 (ft)</li><li>• Hydraulic Radius: 0.125 (ft)</li><li>• Average Velocity: 8.407 (ft/s)</li><li>• Top Width: 0.0000 (ft)</li><li>• Froude Number: 0.0000</li><li>• Critical Depth: 0.496 (ft)</li></ul>



# TOWN OF FAIRFAX

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

## MEMORANDUM

To: Linda Neal - Principal Planner

Date: February 24, 2016

Page 1 of 5

From: Ray Wrynski  
Town Engineer

Subject: Single Family Residence – Remodel & Addition  
288 Bolinas Road  
Fairfax, CA

A.P. 00-022-19

I have reviewed the documents enclosed with your 1/28/16 transmittal. The items reviewed included an eighteen sheet plan from Rushton-Chartock Architects, dated 1/14/16 and that plan set included eight sheets by VIA Atelier, Inc., dated 1/12/16 and it included one sheet by L. A. Stevens & Associates, Inc., dated 11/23/15. The sheets by VIA Atelier, Inc. included two sheets 5/8, no sheet 7/8 and one sheet 9/8 and there are references to a non-existent sheet 6 so those sheets must be checked and corrected so that the sheets we review appear to be a complete plan set. Also included were the Preliminary Site Drainage Study by VIA Atelier dated 1/12/16, the Preliminary Geotechnical Engineering Evaluations by Dennis H. Furby, PE, dated 1/13/16, the Old Republic 9/17/14 estimated buyer's closing statement with 9/4/14 title information and a 7/24/14 Old Republic preliminary title report. This information was reviewed to determine if it satisfied requirements in the 10/20/15 Town Engineer Memorandum.

The previous memorandum noted that the 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 licensed to do land surveying is required. The submitted survey provides much of the required information including the surveyor's signature and seal. The survey must show all easements that are existing or proposed and must include a note that all easements are shown if there are easements to be shown. If there are no easements then the survey must include a note that there are no easements. A note was suggested similar to the following which can take care of the easement note requirement. "Based on the review of the title report (give the date and title company source of the report and submit two copies of the referenced title report for use in Town review) and based on this surveyor's knowledge of this site, there are no easements". That note was not used and the note, now, on the survey only states that no easements were listed on the Title Insurance Policy. I don't find that this note satisfies the intent of the Code requirement on easements but I will accept this response if you are comfortable with it. A copy of the current fee title deed for this site was required and was not submitted and so still must be submitted for use in Town review of the boundary information. The boundary shown on the submitted survey previously had given an alternate location and a note stated that a record of survey is in progress and will be recorded at the Marin County Recorder's office. That alternate boundary is no longer shown so it is not an issue to be resolved. As noted previously, to process this

**ATTACHMENT E**

application the Town Staff must know what property boundary we are dealing with. The previous memorandum had discussion about the alternate boundary problem which was expected to be resolved by review of the recorded Record of Survey which, as was noted, must be received for use, as the accurate boundary, in review of the boundary we have on the submitted plans. That recorded Record of Survey was not submitted and is still required to be submitted

Information that was required to be added to the submitted topographic survey, with the boundary, is the current precise setback ties of the existing building from the boundary that is given. In addition to those setbacks, the survey must show, the existing roof overhang lines in the areas where they are close to the property lines. This was not done. This information must be provided so that the building and roof overhang lines can be evaluated by Town Staff as they relate to required building setback lines. There is an unlabeled dashed line on the Architect's site plan that is probably the roof overhang and there are setback lines indicated on that plan. The building setback from property line is not dimensioned on the topographic survey or the site plans so this dimension check can only be scaled. This information is primarily for Planning Staff use so if you find it, as provided, to be sufficient we avoid requiring it to be given on the next submittal. It appears that the north corner of the house will be something less than three feet clear of the retaining wall if the wall is rebuilt all on this property. The copies of the submitted topographic survey satisfy the requirement that they must be without new design information, so existing features are easily read and they are at the same scale as the site plans and grading and drainage plan so that requirement is satisfied.

Site drainage calculations, prepared by a licensed civil engineer for this site were submitted, as required, for use in the Town review. The drainage discharge flows calculation used is not familiar to me and the flows computed are about two to four times too small. A simple solution would be to multiply all the previously computed flows by four and design for those flows. The local rainfall design intensities are usually obtained from the study called "State of California Department of Transportation (Caltrans) District 4 - Hydraulics Section - Guidelines for the use of Standards Developed by the 1941 -71 Rainfall Intensity-Duration-Frequency Analysis -- October 1974". The County has some simplified hydrology instructions that refer to some of the maps and charts in the above study. Unfortunately those simplified instructions show adding 5 minutes to the time of concentration which is a serious mistake for small short time of concentration watersheds and causes systems to be sized much too small. Much flooding in Marin County is the result of storm drain systems being designed and built too small. This time addition is not supported in the technical design literature. The Kirpich calculation, once referenced by the State Highway Design Manual, does a good job of quickly getting an adequate time of concentration, in this case about one minute. The Highway Design Manual, Section 816.6 states that for extremely short times of concentration a minimum time of 5 minutes should be used to avoid overly conservative rainfall intensities. A five minute time in this case produces about 4.3 inches per hour from the chart which is greater than the 2.7 in the calculations. The runoff coefficient in the calculations for the hillside is given as 0.4 which is okay for flat land but this is a very steep hillside. The Highway Design Manual Figure 819.2A provides a basis for runoff coefficient calculation and that along with the Manual's required 100 year storm frequency factor (Fairfax requires a 100 year storm design) will produce a runoff coefficient of about 0.85 to 0.90 for this site. My experience has been that storm drain systems sized with this system of flow calculation work okay in this area. Systems designed

using a method that produces lesser flows produce more troublesome overflows as the design flows get smaller. The drainage flow calculations must be revised and the stormwater conduit systems must be sufficiently sized and shown for this application's submittal so that, as the plans move through reviews, an at least adequate drainage system size is visible. Systems must be sized reasonably. A 4" pipe at the steep slope on this site would appear to carry a one cubic foot per second flow but that flow is unlikely to go into entrances and through bends due to energy losses. Different calculation methods can be used but the resulting design flows must be at least close to or greater than the Caltrans method so that adequate function can be expected.

A site grading and drainage plan, prepared by a licensed civil engineer was required and has been submitted. This plan was required to show proposed grading, site drainage features including discharge points for backdrains or subsurface drains, it must show site features that are to be demolished, it must show tree removals, it must show retaining walls to be constructed including new foundation walls along with the proposed exposed wall heights. The northerly retaining wall footing and backdrain is shown on the adjoining property so that must be moved or resolved somehow. The discharge points for backdrains or subsurface drains are not shown and are still required to be shown. The first floor addition grading and new foundation work (crawl space excavation) was not shown and is still required to be shown. As previously noted, where new work is needed in the foundation area, existing ground elevations along with new finished floor elevations must be shown so that the extent of the work is clear. There is an existing patio like feature that extends beyond the upper westerly portion of the existing house onto the adjoining property as shown on the topographic survey. It appears that this patio like feature was for the use of this property but is now blocked off by a fence and appears to not exist on the sheet A2.1 site plan. The new upper patio along the property line, in this area will be supported, from below, with a new block retaining wall on this site. That patio will be supported on the westerly adjoining property by the existing old failing retaining wall. The plan must show how the patio will be supported after the old failing wall is gone on the adjoining property. The design might consider a deck or a retaining wall following the property line on this property. Getting complete ground elevations in this area would make it easier to see what is needed here. The required clarification for how existing retaining walls will be rebuilt has generally been addressed with the information on new block retaining walls.

Demolition work and construction access that occurs on the adjoining properties cannot be permitted unless the Town receives a copy of permission to enter and construct, for this work, from the affected property owners. The extent of this work on the adjoining properties seems to be generally shown on this submittal. Permanent new construction, if any, on the adjoining properties must be provided for by recorded easements for the improvements or by written permission, provided by the adjoining property owners, for construction and maintenance of the improvements with copies given to the Town.

This plan may show the required final property lines. That will be checked when the required recorded record of survey and the latest deed are received for review.

Required retaining wall typical sections high enough to generally fit the apparent needed wall heights are now shown on the plans. The retaining wall design for the northerly retaining walls calls

for a drainage swale above the walls. This drainage swale and the grading for it must be shown along with the outlet for the flow from this drainage swale.

As previously noted the plan must show how the graded banks by the garage at the street will be made stable. The existing bank is near 100% slope and shows instability and the construction work will disturb it and increase the stability problem. This was not done and is still required

It was required that the existing sanitary sewer lateral, water lateral and gas line lateral must be shown on the plan so it is clear they will not be damaged by the proposed construction and more particularly the garage construction. Information is provided for the sanitary sewer and the water lines. The gas line is not shown and that is still required. Work needed, if any, for the gas line must be shown.

The Town cannot approve the proposed work to include work on the adjoining properties unless written proof is provided, to the Town, that those affected property owners have approved the work on their sites.

A report by a registered civil engineer specializing in soils and foundation design, was required, that was more complete than the Job Memorandum with preliminary soil engineering design criteria that was submitted. The Preliminary Geotechnical Engineering Evaluations from Dennis Furby, PE, Consulting Geotechnical Engineer provides most of the needed information.

It was previously required that the report clarify if there is any danger of debris flow or landslide damage to this building. Hill slopes of steepness like the one above the house often produce soil sliding or debris flows and the leaning existing retaining wall indicates some soil movement here. The new report indicates that slopes above Bolinas Avenue average inclination is 2 ½ to 1 (40%). Previously, it was stated that some slopes above the house are 77% as shown on the topographic survey. It was required that the soils report must clarify if landslide or debris flow protection is needed for this building and, if needed, design criteria for this protection must be provided. If there is no significant potential for landsliding or debris flows to come to this building then that must be clearly stated in the soils report. The report states "There are no indications of slope movements such as erosion, sloughing or slope creep, or other forms of slope instability". I do not find that this answers the question. The report can be supplemented, to resolve this issue, with a letter that states that no debris flow or landslide protection is needed if, in fact, that is what is meant by the above comment about instability.

It was previously required that the soils report must provide recommendations on how the retaining wall rebuild work on the westerly side of the building can be done without leaving an unstable situation on the adjoining property were retaining walls on this site connect to retaining walls on that adjoining site. The old walls on this site are being replaced, partly, because they show signs of failure while the old walls on the adjoining property (apparently constructed to provide a patio for this site) are shown to be left in place to protect the new patio for this site. When the old walls collapse, the soil from that adjoining site can be expected to cave onto the patio of this site, or out from under it, leaving a bank on that other site to unravel as it may and perhaps create a need for litigation between the two properties. A resolution for this problem was required and is still required. It may, at this point, only be a design item for the Civil Engineer.

The retaining wall rebuilding and construction of new retaining walls, including the new garage, will create soil banks higher than the OSHA five foot limit on soil banks so the soils report must provide recommendations on how this can be done safely. The garage excavation will create cuts up to about 14' high. These safety recommendations are still required so that Cal OSHA requirements can be satisfied.

The bank along the fronting street is excessively steep and unstable and it will be disturbed by the proposed construction. The soils report must provide recommendations on how this bank along the street will be finished so it will be in a stable condition after construction completion. This stabilization work may have to extend to the limits of the property because of the near vertical condition of this bank.

The new soils report provides the needed information for the building foundation.

An erosion control and stormwater pollution prevention plan was required and has been provided.

The required standard concrete driveway approach has been shown to be constructed through the existing curb at the street. The driveway slope up to the garage finished floor must be shown to be not steeper than allowed in the County Uniform Standards Drawing NO. 140, for the full width of the driveway. The driveway elevations shown provide much too steep a slope into the garage. The driveway slope must be revised and a lower garage floor elevation is needed to get an adequate slope to the street gutter flowline.

The drainage discharge energy dissipaters, shown, may become an erosion problem so there should be a requirement that the project soils engineer must approve, in writing, the final constructed drainage dissipater configuration prior to the permit final.

The garage side retaining walls, the stair structure at the street and the driveway approach will be in the public right of way so these items must be covered by an encroachment permit as required by Code Section 12.32.

The plans do not show project grading quantity totals. This grading information must be provided. The grading looks like it will be more than the 279 cubic yards previously shown so it should be planned that the grading must receive Planning Commission approval as called for in Code Section 12.20.080

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



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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 20, 2015

From: Ray Wrysinski  
Town Engineer

Page 1 of 4

Subject: Single Family Residence – Remodel & Addition  
288 Bolinas Road  
Fairfax, CA

A.P. 00-22-19

I have reviewed the documents enclosed with your 9/17/15 transmittal. The items reviewed included an eight sheet plan set by Rushton-Chartock Architects, dated 8/31/15, a topographic survey with a tentative boundary shown, by L. A. Stevens & Associates, Land Surveyors, dated 8/24/15, a Job Memorandum of preliminary soil engineering design criteria by Vlad Iojica Civil Engineer, dated 9/8/15, a preliminary title report dated 7/24/14 and a preliminary title report dated 9/4/14.

A site review was done 10/16/15.

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 licensed to do land surveying is required. The submitted survey provides much of the required information including the surveyor's signature and seal. The survey must show all easements that are existing or proposed and must include a note that all easements are shown if there are easements to be shown. If there are no easements then the survey must include a note that there are no easements. A note similar to the following can take care of the easement note requirement. "Based on the review of the title report (give the date and title company source of the report and submit two copies of the referenced title report for use in Town review) and based on this surveyor's knowledge of this site, there are no easements". A copy of the current fee title deed must be submitted for use in Town review of the boundary information. The boundary shown on the submitted survey is given with an alternate location and a note states that a record of survey is in progress and will be recorded at the Marin County Recorder's office. It is not stated that the record of survey will resolve the boundary down to a single location. A note on the topographic survey recommends that the adjoining owners execute a line of agreement along the boundary line or between the area of uncertainty to minimize potential litigation. To process this application the Town Staff must know what property boundary we are dealing with. If the recorded record of survey will not show a final single property boundary line then the recorded agreement of the adjoining owners is needed for Town use. The adjoining owners agreement should provide a boundary that will be shown on the recorded record of survey but if that is not feasible then the recorded copy of the adjoining owners agreement must include a precise plat signed

by the licensed land surveyor who prepared it and the plat must clearly relate the final property line to the property lines shown on the recorded record of survey so the Town has a precise and easily identifiable boundary for use in reviewing this project. If for some reason, one of the above two options is not provided to resolve the boundary, the applicant should provide a recommended resolution to the uncertain boundary. This resolution may need to be approved by the Town Attorney. A possible option in this may be to use the most restrictive boundary location identified by the surveyor and identify precise building setback lines from that restrictive boundary. Information that must be added to the submitted topographic survey, with the boundary, is the current precise setback ties of the existing building from the alternate boundaries that are given. In addition to those setbacks, the survey must show, the existing roof overhang lines in the areas where they are close to the property lines. This information must be provided so that the building and roof overhang lines can be evaluated by Town Staff as they relate to required building setback lines. Copies of this survey without new design information, so existing features are easily read must be submitted. These copies must be at the same scales as the site plans and grading and drainage plan so they can be easily overlaid on these plans to compare existing conditions with the design.

Site drainage calculations, prepared by a licensed civil engineer for this site must be submitted for use in the Town review. Drainage discharge flows for the site drainage system may be large enough to cause erosion or soil stability problems for this site. Drainage systems must be sized to carry the design drainage flows

A site grading and drainage plan, prepared by a licensed civil engineer is required. This plan must show proposed grading, site drainage features including discharge points for backdrains or subsurface drains, it must show site features that are to be demolished, it must show tree removals, it must show retaining walls to be constructed including new foundation walls along with the proposed exposed wall heights. It appears that the first floor addition may include grading and the need for new foundation work. Where new work is needed in the foundation area, existing ground elevations along with new finished floor elevations must be shown so that the extent of the work is clear. There is an existing patio like feature that extends beyond the upper westerly portion of the existing house onto the adjoining property as shown on the topographic survey. It appears that this patio like feature was for the use of this property but is now blocked off by a fence and appears to not exist on the sheet A2.1 site plan. Retaining walls on this site appear to, in general, be showing signs of failure such as cracking and leaning. The site plan (A2.1) with good reason shows these walls to be rebuilt but what rebuilt means is unclear. That rebuilt term must be clarified with typical wall sections and wall heights shown on the plans. These sections must be sufficient for use in estimating structural excavation and backdrain placement so that the extent of work on the adjoining property can be estimated. To fix the retaining wall by the upper west side of the existing house it will be necessary to work on the adjoining property and if this repair or rebuilding or replacement is not done properly it will leave an unstable wall on the adjoining property in this area. The project proposal and the grading and drainage plan must provide a resolution to this problem. Retaining walls in this area may be near eight feet high. This plan must show the final property lines.

The plan sheet A6.1 shows a block retaining wall typical section of unknown height that is drawn with six precast blocks high which suggest it goes to about four feet high. In the upper area of this site it appears that retaining walls up to about 10 feet high, such as in the northerly corner, may be needed so appropriate wall configurations must be added to the plan. The fence and building

removal and reconfiguration work along the westerly side of the property on the adjoining property must be shown on the plans. The grading and drainage plan must show the work on the adjoining property on the easterly side of the site. The proposed retaining wall on the northerly and easterly upper part of the site appears to show a graded swale for drainage above the retaining wall. This graded swale appears to leave an excessively steep soil slope above the wall which will become an erosion problem. The existing earth slope in this area is already excessively steep. The plan must show how to resolve the erosion and steepness problems in this area. The existing slope goes up to about 77% with typically allowed grading of 50% (as shown on sheet A6.1) so the wall must be made higher or some other solution found to allow the needed drainage to be placed without creating an unacceptably steep bank.

The plan must show how the graded banks by the garage at the street will be made stable. The existing bank is near 100% slope and shows instability and the construction work will disturb it and increase the stability problem. The existing sanitary sewer lateral, water lateral and gas line lateral must be shown on the plan so it is clear they will not be damaged by the proposed construction and more particularly the garage construction.

The Town cannot approve the proposed work to include work on the adjoining properties unless written proof is provided, to the Town, that those affected property owners have approved the work on their sites.

A report by a registered civil engineer specializing in soils and foundation design is required. The Job Memorandum with preliminary soil engineering design criteria does not provide all the needed information. A more complete soils report is needed. The report must clarify how the shallow depth to bedrock, for this site, was determined. There is a steep existing slope above the site building and the retaining wall in this area shows cracking and is leaning. The submitted memorandum provides retaining wall soil loading criteria to cover the retaining walls to be built in this area. The report does not clarify if there is any danger of debris flow or landslide damage to this building. Hill slopes of steepness like the one above the house often produce soil sliding or debris flows and the leaning existing retaining wall indicates some soil movement here. The soils report must clarify if landslide or debris flow protection is needed for this building and, if needed, design criteria for this protection must be provided. If there is no potential for landsliding or debris flows to come to this building then that must be clearly stated in the soils report. The soils report must provide recommendations on how the retaining wall rebuild work on the westerly side of the building can be done without leaving an unstable situation on the adjoining property were retaining walls on this site connect to retaining walls on that adjoining site. If drilled pier foundations are needed that must be stated. The retaining wall rebuilding and construction of new retaining walls, including the new garage, will create soil banks higher than the OSHA five foot limit on soil banks so the soils report must provide recommendations on how this can be done safely. The bank along the fronting street is excessively steep and unstable and it will be disturbed by the proposed construction. The soils report must provide recommendations on how this bank along the street will be finished so it will be in a stable condition after construction completion. This stabilization work may have to extend to the limits of the property because of the near vertical condition of this bank. With consideration of the movement of the existing retaining walls, the soils report must include

a review of the existing building foundation and must provide, if needed, recommendations for strengthening or stabilizing it.

There are trees shown to be removed on plan sheet A2.1 and additional trees are shown to be removed on sheet A2.3. The removal of these trees must be covered by a Fairfax Tree Committee Report and Permit.

An erosion control and stormwater pollution prevention plan is required. It must include the requirement 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 requirements. An additional requirement is that the project Civil Engineer or the project Geotechnical Engineer must visit the project site on a regular basis during the winter months to confirm that the erosion and sediment control improvements are in place and are adequate.

A standard concrete driveway approach must be shown to be constructed through the existing curb at the street. The driveway slope up to the garage finished floor must be shown to be not steeper than allowed in the County Uniform Standards Drawing NO. 140 for the full width of the driveway.

The drainage discharge energy dissipaters, shown, may become an erosion problem so there should be a requirement that the project soils engineer must approve, in writing, the final constructed drainage dissipater configuration prior to the permit final.

The garage side retaining walls and the stair structure at the street will be in the public right of way so these items must be covered by an encroachment permit as required by Code Section 12.32.

The plans show a project grading total of 279 cubic yards. This looks like a reasonable estimate of the project grading. This amount of grading must receive Planning Commission approval as called for in Code Section 12.20.080

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



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Ray Wrynski, P. E.  
Town Engineer

## Linda Neal

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**From:** Mimi Newton <mimi.newton@gmail.com>  
**Sent:** Tuesday, April 05, 2016 5:59 PM  
**To:** Linda Neal; Jim Moore  
**Subject:** Fwd: 288 Bolinas

Linda & Jim

I am not sure whether 288 Bolinas is planned for the 4/21/16 Planning Meeting or not, but if so, could you include this email message from Niccolo in the packets for the Commissioners &, just in case you were leaning that way, not include it as a consent item?

thanks -

Mimi

----- Forwarded message -----

**From:** <caldararo@aol.com>  
**Date:** Tuesday, April 5, 2016  
**Subject:** 288 Bolinas  
**To:** [mimi.newton@gmail.com](mailto:mimi.newton@gmail.com)

Dear Mimi:

Let me lobby you about 288 Bolinas. I see on the notice I received that it is a 1,743 sq. ft. 2 unit residential structure. It is providing barely affordable housing for people working in the area. To allow a variance for it to be transformed into a 2,007 sq.ft. single family residence goes against all the protestations of housing advocates and experts for the past decade. It also violates our Housing Element and several sections of other parts of the General Plan. This is just what we should not be doing. We need to preserve our current rental properties as they are the only resource a gasping working population can count on. If there is a compelling reason to award a variance please let me know.

Niccolo Caldararo  
415-606-4688