



A G E N D A

Scotts Valley Planning Commission

Date: April 11, 2019

Time: 6pm

CITY OF SCOTTS VALLEY 1 Civic Center Drive Scotts Valley, CA 95066 831-440-5630	MEETING LOCATION City Council Chambers 1 Civic Center Drive Scotts Valley, CA 95066	POSTING: The agenda was posted on April 2, 2019, at City Hall, SV Senior Center, SV Library and on the Internet at www.scottsvalley.org .
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Appointed Officials	City Staff Members
Carlos Arcangeli, Chair Rosanna Herrera, Vice Chair Lori Gentile, Commissioner David Hodgins, Commissioner Chuck Maffia, Commissioner	Taylor Bateman, Community Development Director Brenda Stevens, Associate Planner

Notice regarding Planning Commission Meetings:

The Planning Commission meets regularly on the 2nd Thursday of each month (unless otherwise noticed) at 6pm in the City Hall Council Chambers located at 1 Civic Center Drive, Scotts Valley, CA 95066.

Agenda and Agenda Packet Materials:

The Planning Commission agenda is available for review the Friday before the Thursday meeting on the Internet at the City's website: www.scottsvalley.org and in the lobby of City Hall at 1 Civic Center Drive, Scotts Valley, CA. Pursuant to Government Code §54957.5, materials related to an agenda item, submitted after distribution of the agenda packet, are available for public inspection in the lobby of City Hall during normal business hours, Monday-Friday, 8am-Noon and 1-5pm. In accordance with AB 1344, such documents will be posted on the City's website at www.scottsvalley.org.

CALL TO ORDER

(The Planning Commission Chair calls the meeting to order.)

PLEDGE OF ALLEGIANCE and MOMENT OF SILENCE

(The Planning Commission Chair leads the pledge of allegiance.)

ROLL CALL

(Planning Department staff conduct roll call of the Planning Commission.)

PUBLIC COMMENT TIME

This is the opportunity for individuals to make and/or submit written or oral comments to the Commission on any items within the purview of the Commission, which are NOT part of the Agenda. No action on the item may be taken, but the Commission may request the matter be placed on a future agenda.

ALTERATIONS TO CONSENT AGENDA

(The Commission can remove or add items to the Consent Agenda.)

CONSENT AGENDA

(The Consent Agenda is comprised of items which appear to be non-controversial. Persons wishing to speak on any items may do so raising their hand to be recognized by the Chair. These items will be acted upon in one motion unless they are removed from the consent agenda for discussion by the Commission.)

Approve the Action Meeting Minutes from the March 14, 2019 meeting.

ALTERATIONS TO PUBLIC HEARING AGENDA

(Commission can remove or add items to the Regular Agenda.)

PUBLIC HEARING AGENDA

(Persons wishing to speak on any item may do so by raising their hand to be recognized by the Chair.)

ALTERATIONS TO REGULAR AGENDA

(Commission can remove or add items to the Regular Agenda.)

REGULAR AGENDA

(Persons wishing to speak on any item may do so by raising their hand to be recognized by the Chair.)

1. Address: 115 Blueberry Drive // APN 021-293-03

Applicant / Property Owner: Jennie Flores

Planning Permit Application No.: Design Review DR18-009

Project Description: Consideration of a recommendation to the Scotts Valley Planning Commission for a Design Review of a new 3,501 square foot, single family residence in the R-1-10 zoning district, subject to the Hillside Combining District Regulations and with grading in slopes over 30%.

Staff: Brenda Stevens, Associate Planner, 440-5635 bstevens@scottsvalley.org
and Jonathan Kwan, Associate Planner CSG Consultants

DISCUSSION ITEMS AND FUTURE AGENDA ITEMS

(The Planning Commission or Community Development Director may request to schedule items on future agendas.)

WRITTEN COMMUNICATIONS – FOR INFORMATION ONLY

(City Council Minutes or other items are provided if available.)

DIRECTOR UPDATES

(The Community Development Director may provide any department or city updates that are available.)

ADJOURNMENT

(Adjournment shall be no later than 11pm unless extended by a four-fifths vote of all Planning Commission members or a unanimous vote of the members present per City Municipal Code Section 2.21.010.)

The City of Scotts Valley does not discriminate against persons with disabilities. The City Council Chambers is an accessible facility. If you wish to attend a Planning Commission meeting and require assistance such as sign language, a translator, or other special assistance or devices in order to attend and participate at the meeting, please call the Community Development Department at 831-440-5630 five to seven days in advance of the meeting to make arrangements for assistance. If you require the agenda of a Planning Commission meeting be available in an alternative format consistent with a specific disability, please call the Community Development Department. The California State Relay Service (TTY/VCO/HCO to Voice: English 1-800-735-2929, Spanish 1-800-855-3000; or, Voice to TTY/VCO/HCO: English 1-800-735-2922, Spanish 1-800-855-3000), provides Telecommunications Devices for the Deaf and Disabled and will provide a link between the TDD caller and users of telephone equipment.



Minutes

Meeting of the Scotts Valley Planning Commission

Date: March 14, 2019

Time: 6:00 PM

CITY OF SCOTTS VALLEY 1 Civic Center Drive Scotts Valley, CA 95066 (831) 440-5630	MEETING LOCATION City Council Chambers 1 Civic Center Drive Scotts Valley, CA 95066	POSTING: The agenda was posted at City Hall, SV Senior Center, SV Library and on the Internet at www.scottsvally.org .
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Appointed Officials	City Staff Members
Carlos Arcangeli, Chair Rosanna Herrera, Vice Chair Lori Gentile, Commissioner David Hodgkin, Commissioner Chuck Maffia, Commissioner	Taylor Bateman, Community Development Director Brenda Stevens, Associate Planner

CALL TO ORDER: 6:00pm

PLEDGE OF ALLEGIANCE and MOMENT OF SILENCE: The Planning Commission Chair led the pledge of allegiance.

ROLL CALL: Present: Arcangeli, Gentile, Herrera, Hodgkin and Maffia. Absent: None

ELECTION OF OFFICERS: The Planning Commission elected a Chair and Vice-Chair for the calendar year.

M/S: Maffia/Hodgkin

To elect Commissioner Arcangeli as Chair.

Carried: 5/0/0 (AYES: Arcangeli, Gentile, Herrera, Hodgkin and Maffia; NOES: None; ABSENT: None)

M/S: Gentile/Maffia

To elect Commissioner Herrera as Vice-Chair.

Carried: 5/0/0 (AYES: Arcangeli, Gentile, Herrera, Hodgkin and Maffia; NOES: None; ABSENT: None)

GPAC COMMITTEE SELECTION: The Planning Commission elected a Planning Commissioner to the General Plan Advisory Committee (GPAC).

M/S: Herrera/Maffia

To elect Commissioner Gentile to the GPAC Committee.

Carried: 5/0/0 (AYES: Arcangeli, Gentile, Herrera, Hodgkin and Maffia; NOES: None; ABSENT: None)

PUBLIC COMMENT: None.

ALTERATIONS TO CONSENT AGENDA: None.

CONSENT AGENDA: None scheduled.

A. Action Meeting Minutes from January 14, 2019 meeting.

M/S: Herrera/Hodgin

To approve the minutes from the January 14, 2019 meeting.

Carried: 5/0/0 (AYES: Arcangeli, Gentile, Herrera, Hodgkin and Maffia; NOES: None; ABSENT: None)

ALTERATIONS TO REGULAR AGENDA: None.

PUBLIC HEARING AGENDA:

REGULAR AGENDA:

1. **Address:** 213 Blueberry Drive // APN 021-105-05
Applicant / Property Owner: Jeff Mora
Planning Permit Application No.: Design Review DR18-010, EA18-010
Project Description: Consideration of a recommendation to the Scotts Valley Planning Commission for a Design Review of a new 624 square foot, two story, single-family dwelling with a two car garage in grading in slopes over 30%. **Staff:** Brenda Stevens, Associate Planner

M/S: Hodgkin/Maffia

To approve the project via Resolution No. 1742 subject to conditions of approval.

Carried: 5/0/0 (AYES: Arcangeli, Gentile, Herrera, Hodgkin and Maffia; NOES: None; ABSENT: None)

DISCUSSION ITEMS AND FUTURE AGENDA ITEMS: None.

WRITTEN COMMUNICATIONS – FOR INFORMATION ONLY: None.

DIRECTOR UPDATES: None.

ADJOURNMENT: 6:40 pm.

STAFF REPORT

Applicant: Glatfelter-Jones & Decker Architecture

Owner: Jennie M. Flores

Application: DR18-009

Location: 115 Blueberry Drive // APN 021-293-03

General Plan / Zoning: R-1-10 (Residential Medium Density)

Environmental Status: Exempt from CEQA (Section 15303)

Request: Consideration of a Design Review application for a new 3,501 square foot single family residence in the R-1-10 zoning district subject to the Hillside Combining District Regulations and with grading proposed in slopes over 30 percent.

Staff Planner: Brenda Stevens, Associate Planner
Jonathan Kwan, Associate Planner, CSG Consultants

STAFF RECOMMENDATION

It is recommended that the Planning Commission review the plans for Design Review application No. DR18-009, and approve the application, subject to the attached conditions in Exhibit A.

PROJECT DESCRIPTION

The project site is an 18,407 square foot kite-shaped lot that is surrounded by residential properties and the City boundary to the east (Attachment 2 – Location Map). The property owner proposes to construct a 3,501 square foot single family dwelling with an approximately 533 square foot attached garage. The proposed development is sited to protect the majority of the existing trees on site, however, nine trees are proposed for removal. The project site includes grading in slopes over 30 percent, therefore, Planning Commission approval is required.

ENVIRONMENTAL REVIEW

The project is exempt from California Environmental Quality Act (CEQA) and the CEQA Guidelines, pursuant to Section 15303, Class 3, New construction of Small Structures, which includes up to three single-family residences in urban areas. The project site lies within the Mount Hermon June Beetle endangered species habitat and will be subject to complying with the Interim Programmatic Habitat Conservation Plan.

PROJECT DISCUSSION

Below is a review of the proposed project's compliance with the City's General Plan and Zoning Requirements.

Hillside Regulations

The City's Hillside Regulations apply to all lots having an average slope of more than 10%. The Hillside Regulations require that construction on hillsides avoid unreasonable interference of views and privacy, preserve the natural landscape, minimize perception of excessive bulk, and that bulk and height be compatible with the neighborhood. Grading in slopes exceeding 30% requires Planning Commission approval.

The average slope of the site is 35.7% with the majority of the building pad between 25-39.9% slope. As proposed, this complies with Section 17.40.050(B)(1) of the Scotts Valley Municipal Code (SVMC), which requires that the building pads have an average slope of less than 40%. Building sites with an average slope exceeding 25% require an engineering geology report to ensure that the site is suitable for the proposed development. A condition has been added to require an engineering geology report to be submitted prior to issuance of a building permit. The grading required for the foot print of the current project follows the natural grade to minimize ground disturbance in keeping with the Hillside Regulations. The proposed dwelling is located on the east side of Blueberry Drive and portions of the dwelling may be visible from residences to the east. However, existing trees provide screening and the project proposes additional landscaping on the east side of the proposed building.

Design Features

The proposed single family dwelling is designed to step down the hillside and blend with the natural environment. The proposed footprint follows the natural contours and the proposed exterior utilizes earthy colors and stone to blend into the hillside. Architecturally, the dwelling is designed to break up massing with features such as varied roof lines, a large number of windows, outdoor spaces such as decks and terraces, and proposes additional landscaping to break up mass and bulk.

Driveway / Parking

The site is accessed by a proposed driveway at the front of the property that leads to the proposed garage approximately 40 feet below. The proposed driveway is located at the front of the property where small portions of the property exceed a 40% slope. The proposed driveway is approximately 137 feet long, with a maximum slope of about 19.5%. Existing dwellings nearby have similar driveway access due to the topography of the lots. Per Section 17.40.050(B)(3) of the SVMC, no driveway to or on any building site shall exceed a grade of 15% along the length of the pavement without specific approval of the Planning Commission.

The driveway winds down the front of the property, avoiding the majority of trees that benefit the property by acting as habitat, protecting the slope from erosion, and providing screening to the roadway above. At the end of the driveway, the project proposes a two-car garage with additional driveway length for two uncovered parking spaces and a vehicle turn around area. Given the location of the existing habitat and the steep slope at the front of the lot, the slope of the driveway is necessary. The portions of the driveway that reach 19.5% slope are not near the connection to the roadway or the proposed garage. The Fire District has reviewed the project and determined that the proposed driveway complies with Fire District requirements. Therefore, the proposed driveway design is appropriate at the site for the proposed project.

Trees

A tree preservation plan for the proposed project was prepared by James P. Allen & Associates in 2018. The subject lot includes 22 trees, the majority of which are Ponderosa pine and Coast live oak trees. The project proposes to remove a total of nine trees, five of which are protected, while preserving and protecting the remaining 13 trees on site. The tree removals are necessary because they would be impacted by construction of the proposed development which increases the risk of failure.

Project plans include five new 15-gallon Western red bud trees along with 42 shrubs and bushes on the property as shown on the Site Lighting and Planning Schematic (Sheet 1.3 of the plans). Condition #7 has been added to increase the replacement plantings to add an additional five replacement trees, to plant a total of 10, 15-gallon trees at the property, to meet a 2:1 replacement ratio. If the site cannot accommodate additional replacement trees, the applicant shall contribute \$40 per tree to the City's Tree Replacement Fund.

FINDINGS

1. *Proposed grading is limited to the minimum necessary for development of roads, building sites, utilities and driveways.* The proposed grading conforms with the Hillside Regulations. The dwelling has been designed to be built into the hillside and follows the topography, reducing the area of the site to be graded.

2. *Mass grading will not reasonably affect the natural character of the area.* The proposed grading is considerate of the natural character of the area as it steps down the slope and follows the contours of the hillside.
3. *The proposed structure minimizes perceptions of bulk in relation to the immediate neighborhood.* As designed, the dwelling is built into and steps down with the topography and incorporates elements which serve to reduce bulk in relation to the immediate neighborhood.
4. *The proposed structure is compatible with existing residences in the neighborhood and zoning district in terms of bulk and height.* The proposed dwelling complies with all applicable zoning requirements and is compatible with the bulk and height of residences in the neighborhood.
5. *The proposed buildings and other improvements are consistent with the policies described in the Residential Design Handbook.* The proposed structure complies with the principles of the Residential Design Handbook. The applicant has demonstrated that the project, as designed, complies with the Hillside Regulations and the Residential Design Handbook.

ATTACHMENTS

Page Number

1. Location Map..... 12
2. Geotechnical Plan Review prepared by CMAG
Engineering, Inc. (February 22, 2018 and December 14, 2018) Attached
3. Tree Preservation Plan by James P. Allen & Associates (July 30, 2018)..... Attached
4. Project Plans (Received March 4, 2019) Attached

RESOLUTION NO. ____

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF SCOTTS VALLEY APPROVING DESIGN REVIEW NO. DR18-009 FOR A 3,501 SQUARE FOOT SINGLE FAMILY DWELLING WITH A 533 SQUARE FOOT GARAGE LOCATED AT 115 BLUEBERRY DRIVE // APN 021-293-03

WHEREAS, the Planning Department of the City of Scotts Valley has received an application filed by GJ&D Architecture, on behalf of property owner Jennie Flores, for Design Review Permit No. DR18-009 for a 3,501 square foot single family dwelling located at 115 Blueberry Drive // APN 021-293-03; and,

WHEREAS, GJ&D Architecture, (referred to as the “applicant”) has presented substantial evidence which supports the application; and,

WHEREAS, the application was reviewed for completeness and is determined to be Categorically Exempt, Class 3 from the regulations of the California Environmental Quality Act (CEQA); and,

WHEREAS, the project was reviewed by the Planning Commission at a regularly scheduled meeting on Thursday, April 11, 2019.

NOW THEREFORE, the Planning Commission of the City of Scotts Valley hereby resolves as follows:

SECTION 1: The environmental determination represents the independent judgement of the City.

SECTION 2: The categorical exemption is hereby approved.

SECTION 3: The Planning Commission of the City of Scotts Valley does hereby specifically make the following findings, as further clarified in the staff report dated April 11, 2019:

1. *Proposed grading is limited to the minimum necessary for development of roads, building sites, utilities and driveways.* The proposed grading conforms with the Hillside Regulations. The dwelling has been designed to be built into the hillside and follows the topography, reducing the area of the site to be graded.
2. *Mass grading will not reasonably affect the natural character of the area.* The proposed grading is considerate of the natural character of the area as it steps down the slope and follows the contours of the hillside.
3. *The proposed structure minimizes perceptions of bulk in relation to the immediate*

neighborhood. As designed, the dwelling is built into and steps down with the topography and incorporates elements which serve to reduce bulk in relation to the immediate neighborhood.

4. *The proposed structure is compatible with existing residences in the neighborhood and zoning district in terms of bulk and height. The proposed dwelling complies with all applicable zoning requirements and is compatible with the bulk and height of residences in the neighborhood.*
5. *The proposed buildings and other improvements are consistent with the policies described in the Residential Design Handbook. The proposed structure complies with the principles of the Residential Design Handbook. The applicant has demonstrated that the project, as designed, complies with the Hillside Regulations and the Residential Design Handbook.*

SECTION 4: After careful consideration of the application and related materials, plans, maps, facts, exhibits, staff report, testimony and other evidence submitted in this matter, and incorporated herein by this reference, the Planning Commission of the City of Scotts Valley does hereby approve Design Review No. DR18-009 for a 3,501 square foot single family dwelling with an attached 533 square foot garage located at 115 Blueberry Drive // APN 021-293-03, subject to the conditions set forth in the attached Exhibit A, which are incorporated herein by this reference.

SECTION 5: This Design Review No. DR18-009 shall lapse and become void one year from the date of this resolution unless, prior to the expiration date, a building permit is issued by the Building Department and construction has commenced, or an extension of this approval is granted by the Planning Commission.

THE ABOVE AND FOREGOING RESOLUTION was duly adopted and passed by the Planning Commission of the City of Scotts Valley at a regularly scheduled meeting held on the 11th day of April 2019, by the following vote:

AYES:

NOES:

ABSTAIN:

ABSENT:

Carlos Arcangeli, Chair

Taylor Bateman, Community Development Director

EXHIBIT A

CONDITIONS OF APPROVAL

STANDARD

1. Developer has agreed to and shall defend, indemnify and hold harmless the City of Scotts Valley, its officers, agents and employees from any claim, action or proceeding against the City or its officers, agents or employees to attach, set aside, void or annul any action of the City in connection with approvals under the California Environmental Quality Act or with respect to approval of the project, which action is brought within the time period(s) prescribed by law. The City shall promptly notify the developer of any such claim, action or proceeding and shall fully cooperate in defense.
2. After Planning Commission approval, the property owner shall sign the Conditions of Approval (Exhibit A) agreeing to the Conditions of Approval prior to the issuance of any building permits.
3. All required building permits shall be obtained and the applicant shall pay all appropriate fees prior to commencement of any construction on the property.
4. The applicant shall affix a copy of the approving resolution and conditions of approval to each set of construction plans which will be submitted to the Building Department.
5. The applicant shall submit all applicable school fees to the Scotts Valley Unified School District and submit a receipt to the City prior to building permit issuance.

PLANNING DEPARTMENT

6. The color, materials, size, location, and design of the improvements shall match the approved plans. Modifications to the approved project may require approval by the Planning Commission at the discretion of the Community Development Director. All future colors shall blend with the surrounding environment and be compatible with surrounding structures.
7. The project site lies within the Zayante Sandhills, Mount Hermon June Beetle endangered species habitat. The applicant shall comply with the Interim Programmatic Habitat Conservation Plan.
8. Prior to building permit issuance, the applicant shall modify the Site Lighting and Planting Schematic (Sheet A-1.3 of the plans) to add an additional five, 15-gallon

trees, 10, 15-gallon trees total, subject the approval of the Community Development Director prior to issuance of building permits. If the site cannot accommodate additional replacement trees, the applicant shall contribute \$40 per tree to the City's Tree Replacement Fund.

9. All landscaping and irrigation shall match the Site Lighting and Planting Schematic (Sheet A-1.3 of the plans) and be in place prior to building permit final.

Grading

10. All recommendations in the geotechnical report prepared by CMAG Engineering, dated February 22, 2018 and December 14, 2018, are incorporated as conditions of project approval.
11. The limits of grading shall be clearly marked on the site prior to the issuance of a grading or building permit.
12. If grading in the rainy season (October 15th to April 15th) is necessary, all necessary approvals from the Building Department shall be obtained.
13. The location of all soil to be exported shall be reviewed and approved by the Building Official prior to issuance of a grading or building permit.

Trees

14. The applicant shall comply with all recommendations as stated in the arborist report prepared by James P. Allen & Associates, dated July 30, 2018.
15. Tree removal shall not occur until a grading or building permit has been issued for the project.
16. The final grading plans and improvement plans shall be reviewed and approved by the project Arborist prior to any grading and if deemed necessary additional tree preservation measures shall be applied to the project.
17. The project arborist shall place a monetary value on trees preserved on development sites and a surety bond in an amount equal to the value of the preserved trees shall be deposited with the city prior to issuance of a grading/building permit for the project. If damage occurs to the preserved trees during development and/or construction, funds will be drawn from the deposited amount. Funds remaining in the account will be returned to the applicant upon final inspection of the project.

18. During the pre-construction phase of development, the project arborist shall inspect tree protection fencing and the completion of pre-construction treatments. This inspection shall be completed prior to the issuance of any grading or building permits.
19. The project arborist shall routinely inspect the development site through the term of the project.
20. Upon completion of construction activities, the consulting arborists shall submit a letter to the Planning Department stating that all recommended tree preservation measures have been complied with prior to issuance of an Occupancy Permit.
21. The cost of the project arborist review and implementation of conditions, site inspection and related work shall be borne by the applicant.

BUILDING DEPARTMENT

Standard

22. All requirements of the Building Department of the City of Scotts Valley shall be met.
23. All structures shall comply with the most current California Energy Commission Standards. (2016 California Energy Code)
24. The buildings must be designed to comply with the California Building Code (CBC), 2016 edition, structural and seismic/earthquake requirements.
25. The building permit plans must comply with the California Building Code (CBC), 2016 edition, for water-conserving fixtures and fittings and with the CA Energy Commission Building Energy Efficiency Standards (2016) (which includes energy-saving appliances, etc.).
26. All new utilities shall be installed underground.
27. The plans submitted for a building permit must include a drainage plan that conforms to the City's Storm Drain Master Plan (December 1989) and post run-off requirements. Development shall not increase the rate of flow (cubic feet per second) or velocity (feet per second) of site run-off water to any off-site drainage areas beyond the measured or calculated pre-project rate and velocity.

28. The applicant shall comply with the City's standard erosion control measures. The plans submitted for a building permit must include best management practices (e.g. erosion control practices and procedures) during construction.
29. All construction within the City shall be limited to the hours between 8 AM and 6 PM, Monday through Friday, and 9 AM through 5 PM on Saturday. **No construction activity is allowed on Sundays.**
30. At least 2 days prior to site disturbing activities including tree removal, USA North shall be contacted to assure that there are no utilities that conflict with the proposed site disturbing activities (USA North: 811/1-800-227-2600).
31. An engineered grading permit may be required for the proposed site work.
32. Structural calculations shall be submitted and wet-signed by the Engineer of record.

FIRE DISTRICT

33. A qualified engineer shall certify that the proposed driveway can support a fire district engine.
34. The applicant shall comply with all applicable requirements of the Scotts Valley Fire Protection District.

WATER DISTRICT

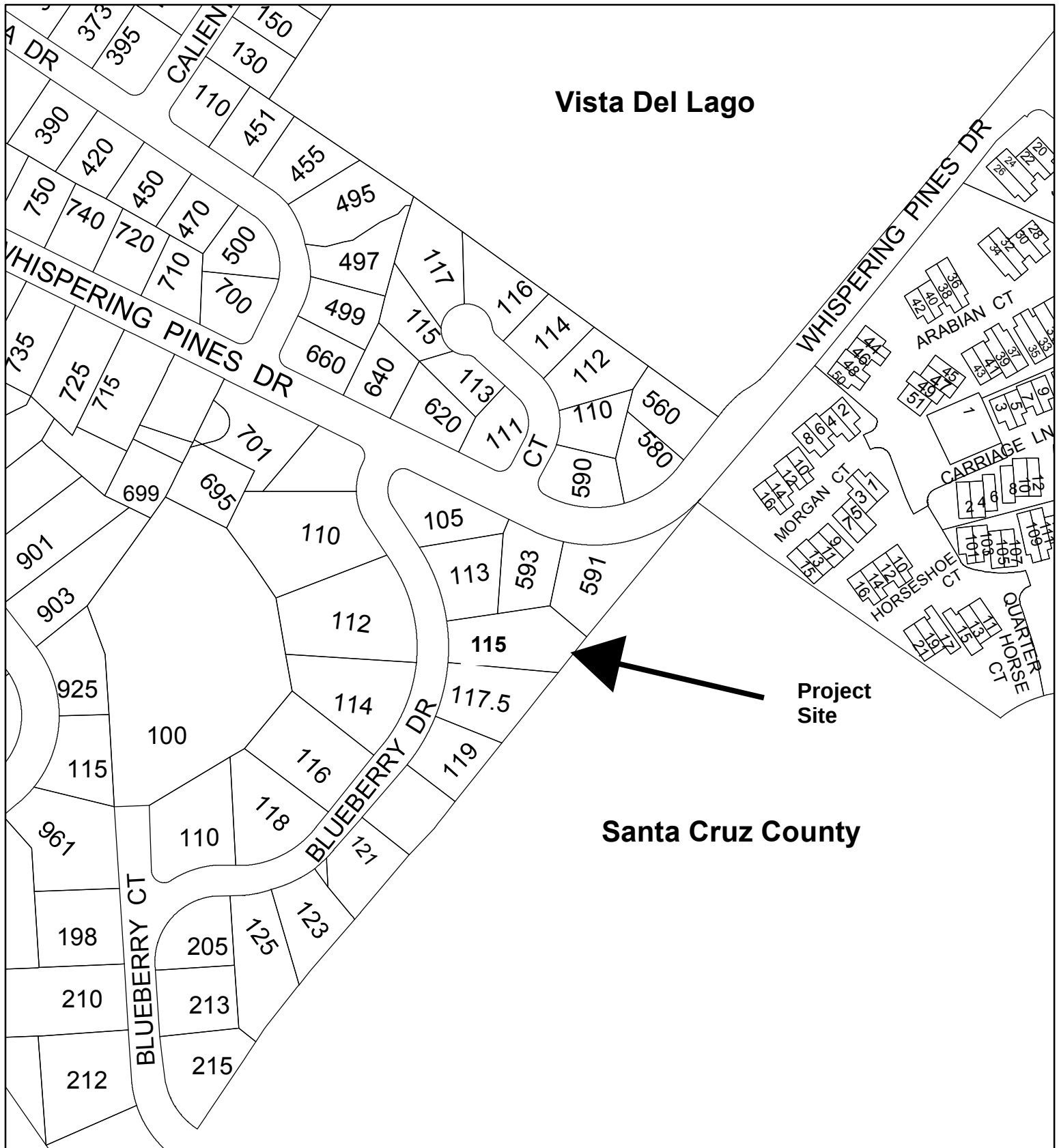
35. Applicant shall work directly with Water District General Manger to comply with all applicable requirements of the San Lorenzo Valley Water District.
36. Trees and shrubs to be planted directly over the water main shall not be vigorous rooting species.
37. The exact location of existing water main and valves shall be shown on the project plans prior to issuance of building permit.
38. Access to the water main valve just below end of north leg of fire truck turnaround shall be preserved and the valve shall be shown on the project plans prior to issuance of a building permit.

PUBLIC WORKS

- 39. Prior to any work or staging in the City right of way, the applicant shall apply for an encroachment permit.
- 40. No structures, including the retaining wall on the north west corner of the property shall be located in the drainage easement along the north side of the property.

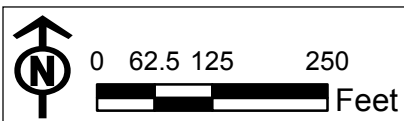
Name and Signature of Property Owner

Date

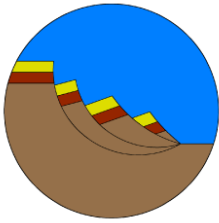


Project Site

Santa Cruz County



115 Blueberry Drive
APN 021-293-03



CMAG ENGINEERING, INC.

P.O. BOX 640, APTOS, CALIFORNIA 95001

PHONE: 831.475.1411

WWW.CMAGENGINEERING.COM

December 14, 2018
Project No. 17-136-SC

Jennie Flores
4121 Scotts Valley Drive #20
Scotts Valley, California 95066

SUBJECT: GEOTECHNICAL PLAN REVIEW
Proposed Single Family Residence
115 Blueberry Drive, Scotts Valley, Santa Cruz County, California
APN 021-292-03

REFERENCE: CMAG Engineering, Inc. (February 22, 2018). *Geotechnical Investigation, Proposed Single Family Residence, 115 Blueberry Drive, Scotts Valley, Santa Cruz County, California, APN 021-292-03. Project No. 17-136-SC.*

Dear Ms. Flores:

1.0 INTRODUCTION

Per the request of your Structural Engineer, we have reviewed the following plans for the subject project:

- GJ & D Architecture (November 15, 2018). *New Residence for Jennie Martha Flores, 115 Blueberry Drive, Scotts Valley California, APN 021-292-03. Sheets A-0.1, A-1.1, A-1.2, A-3.1, A-3.2.*
- C2G Civil Consultants Group, Inc. (July 19, 2018). *Flores Residence, 115 Blueberry Dr, Scotts Valley, APN 021-292-03. Sheets C0.1, C1.1, C2.1.*

The purpose of our review was to ensure the conformance of the geotechnical aspects of the plans with the geotechnical conditions present on the site and with the recommendations provided in the referenced report.

2.0 CONCLUSIONS AND RECOMMENDATIONS

It is our opinion that the referenced plans that have been reviewed by our office are in general conformance with the geotechnical conditions present and with the recommendations presented in the referenced report. The proposed project is considered feasible from a geotechnical standpoint provided the site is graded in conformance with the referenced report and the Santa Cruz County Grading Code. The recommendations presented herein and in the referenced report should not be considered to preclude more restrictive criteria by the governing agencies or by structural considerations.

Observation and testing services should be provided by CMAG Engineering, Inc. during construction of the subject project. All earthwork must be observed and approved by CMAG Engineering, Inc. Any earthwork performed without the full knowledge and observation of CMAG Engineering, Inc. will render the recommendations of this review invalid. During grading, all excavation, fill placement and compaction operations should be observed and field density testing should be performed to evaluate the suitability of the fill, and to determine that the applicable recommendations are incorporated during construction.

3.0 LIMITATIONS

Our review was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this review.

As in most projects, conditions revealed during construction may be at variance with preliminary findings. Should this occur, the changed conditions must be evaluated by CMAG Engineering, Inc. and revised recommendations provided as required.

This plan review letter is issued with the understanding that it is the responsibility of the Owner, or his Representative, to ensure that the information and recommendations presented herein are brought to the attention of the Architect and Engineers for the project and incorporated into the plans, and that the Contractor and Subcontractors implement such recommendations in the field.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this review are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether due to natural events or human activity on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur as a result of legislation or a broadening of knowledge. Accordingly, this review may become invalidated, wholly or partially, by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance please do not hesitate to contact our office.

Sincerely,

CMAG ENGINEERING, INC.



Shannon Chome', PE
Senior Engineer
C 68398
Expires 9/30/19

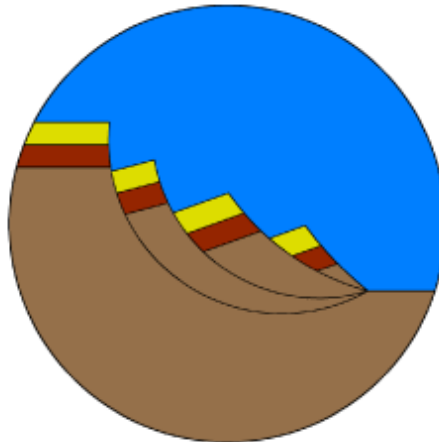
Distribution: Client (Electronic Copy)
 Ed Glatfelter-Jones (Electronic Copy)
 Josh Wolff-(Electronic Copy)

GEOTECHNICAL INVESTIGATION

**115 Blueberry Drive
Scotts Valley, Santa Cruz County, California**

Submitted to:

Jennie Flores
4121 Scotts Valley Drive #20
Scotts Valley, California 95066

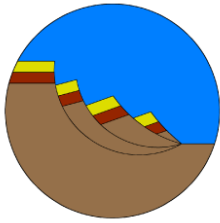


Prepared by:

CMAG ENGINEERING, INC.

Project No. 17-136-SC

February 22, 2018



CMAG ENGINEERING, INC.

P.O. BOX 640 APTOS, CALIFORNIA 95001

PHONE: 831.475.1411

WWW.CMAGENGINEERING.COM

February 22, 2018
Project No. 17-136-SC

Jennie Flores
4121 Scotts Valley Drive #20
Scotts Valley, California 95066

SUBJECT: GEOTECHNICAL INVESTIGATION
Proposed Single Family Residence
115 Blueberry Drive, Scotts Valley, Santa Cruz County, California
APN 021-292-03

Dear Ms. Flores:

In accordance with your authorization, we have completed a geotechnical investigation for the subject project. This report summarizes the findings, conclusions, and recommendations from our field exploration, laboratory testing, and engineering analysis. It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

CMAG ENGINEERING, INC.

Reviewed by:



Shannon Chome', PE
Senior Engineer
C 68398
Expires 9/30/19



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Distribution: Addressee (4 Hard Copies; Electronic Copy)

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Field Exploration Program

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1.0 INTRODUCTION

This report presents the results of our geotechnical investigation for the proposed single family residence and associated improvements located at 115 Blueberry in Scotts Valley, Santa Cruz County, California.

The purpose of our investigation was to provide information regarding the surface and subsurface soil conditions, and based on our findings, provide geotechnical recommendations for the design and construction of the proposed project. Conclusions and recommendations related to site grading, drainage, foundations, slabs-on-grade floors, and retaining walls are presented herein.

1.1 Terms of Reference

CMAG Engineering, Inc.'s (CMAG) scope of work for this phase of the project included site reconnaissance, subsurface exploration, soil sampling, laboratory testing, engineering analyses, and preparation of this report.

The work was undertaken in accordance with CMAG's *Proposal for Geotechnical Services* dated June 27, 2017.

The recommendations contained in this report are subject to the limitations presented in Section 8.0 of this report.

1.2 Site Location

The project site is located on the east side of Blueberry Drive just south of its intersection with Whispering Pines Drive, in Scotts Valley, Santa Cruz County, California. The site location is shown on the Site Location Map, Figure A-1, in Appendix A.

1.3 Surface Conditions

The eastern portion of the property is gently sloping and descends to the east. The western edge, adjacent to Blueberry Drive, has been graded relatively flat to match the roadway elevation. A moderate to steep slope, approximately 14 feet in height, descends from the flat western edge of the parcel to the gently sloping eastern portion of the lot. The moderate to steep fill slope appears to have been constructed during the grading for Blueberry Drive. The parcel is clear of structures and is vegetated mainly with grasses, some small shrubs, and predominately mature pine trees.

2.0 PROJECT DESCRIPTION

It is our understanding that the proposed project consists of the construction of a single family residence, attendant driveway, and associated improvements. Site retaining walls on the order of 3 to 7 feet tall are proposed along the majority of the driveway. Portions of the perimeter walls of the residence and garage will also be constructed as retaining walls. Also anticipated is the construction of utilities and associated landscape improvements.

Anticipated construction consists of wood frame walls and roof, founded on a conventional shallow foundation system, or a drilled cast-in-place concrete shaft and grade beam foundation system with raised wood and/or slab-on-grade floors.

3.0 FIELD EXPLORATION AND LABORATORY TESTING PROGRAMS

Our field exploration program included drilling, logging, and interval sampling of 4 borings on January 10, 2018. The borings were advanced to depths between 6± feet and 21± feet below existing grades. Details of the field exploration program, including the Boring Logs, Figures A-4 through A-7, are presented in Appendix A.

Representative samples obtained during the field investigation were taken to the laboratory for testing to determine physical and engineering properties. Details of the laboratory testing program are presented in Appendix B. Test results are presented on the Boring Logs and in Appendix B.

4.0 SUBSURFACE CONDITIONS AND EARTH MATERIALS

4.1 General

The geologic map of Santa Cruz County (Brabb, 1989) depicts the subject property as underlain by Santa Margarita Sandstone. The Santa Margarita Sandstone (Tsm; upper Miocene) generally consists of very thick bedded to massive thickly crossbedded yellowish-gray to white friable granular medium-to fine-grained arkosic sandstone.

Four borings were advanced in the area of the proposed residence and driveway. The subsurface profile encountered during our field investigation generally consisted of colluvial deposits overlying Santa Margarita Sandstone across the project area to the depths explored. Artificial fill was also encountered in Boring B-1 overlying the colluvium on the west side of the property adjacent to Blueberry Drive. Complete soil profiles are presented on the Boring Logs, Figures A-4 through A-7, in Appendix A. The boring locations are shown on the Boring Location Plan, Figure A-2.

A representative cross section has been constructed based on the results of our field exploration program. Cross Sections A-A' is presented on Figure A-8, in Appendix A.

The earth materials were classified based on field observations and laboratory tests. The classification was in accordance with the Unified Soil Classification System (Figure A-3).

4.2 Artificial Fill - af

Artificial fill was encountered in Boring B-1 from the surface to approximately 6± feet below existing grade. The fill generally consisted of very loose, moist to wet, poorly graded sand with silt. Based on the results of our field investigation, the fill is considered to be highly compressible.

4.3 Colluvial Deposits - Qc

Colluvial deposits were encountered underlying the fill in Boring B-1 and from the surface in Borings B-2 through B-4 to between 11± and 14± feet below the existing grades across the site. The colluvium generally consisted of very loose to loose, dry to moist, poorly graded sand.

4.4 Santa Margarita Sandstone - Tsm

Santa Margarita Sandstone was encountered underlying the colluvial deposits across the site to the extent of our borings at 21± feet below the existing grades. The sandstone bedrock was generally dense to very dense, dry to moist, and weakly cemented.

4.5 Groundwater

Groundwater was not encountered during the course of our field investigation. It should be noted that groundwater conditions, perched or regional, may vary with location and may fluctuate with variations in rainfall, runoff, irrigation, and other changes to the conditions existing at the time our field investigation was performed.

5.0 GEOTECHNICAL HAZARDS

5.1 General

In our opinion, the geotechnical hazards that could potentially affect the proposed project are:

- Seismic shaking
- Collateral seismic hazards

5.2 Seismic Shaking

The seismic hazard due to seismic shaking in California is high in many areas, indicative of the number of large earthquakes that have occurred historically. Intense seismic shaking may occur at the site during the design lifetime of the proposed structure from an earthquake along one of the local fault systems. Generally, the intensity of shaking will increase the closer the site is to the epicenter of an earthquake, however, seismic shaking is a complex phenomenon and may be modified by local topography and soil conditions. The transmission of earthquake vibrations from the ground into the structure may cause structural damage.

The County of Santa Cruz has adopted the seismic provisions set forth in the 2016 California Building Code (2016 CBC) to address seismic shaking. The seismic provisions in the 2016 CBC are minimum load requirements for the seismic design for the proposed structure. The provisions set forth in the 2016 CBC will not prevent structural and nonstructural damage from direct fault ground surface rupture, coseismic ground cracking, liquefaction and lateral spreading, seismically induced differential compaction, or seismically induced landsliding.

Table 1 has been constructed based on the 2016 CBC requirements for the seismic design of the proposed structures. The Site Class has been determined based on our field investigation and laboratory testing.

Table 1. Seismic Design Parameters - 2016 CBC

S _s	S ₁	Site Class	F _a	F _v	S _{MS}	S _{M1}	S _{DS}	S _{D1}	PGA _M
1.500g	0.600g	D	1.0	1.5	1.500g	0.900g	1.000g	0.600g	0.528g

5.3 Collateral Seismic Hazards

In addition to seismic shaking, other seismic hazards that may have an adverse affect to the site and/or the structure are: fault ground surface rupture, coseismic ground cracking, seismically induced liquefaction and lateral spreading, seismically induced differential compaction, and seismically induced landsliding. It is our opinion that the potential for collateral seismic hazards to affect the site, and to damage the proposed structure is low.

Regarding the potential for slope instability; A moderate to steep unengineered fill slope is situated on the west side of the property. As currently proposed, the driveway alignment will cut across the subject slope and will require retaining walls along the inboard and outboard sides of the driveway. The proposed inboard wall

will be situated such that it will support the majority of the toe of the subject fill slope. Grading recommendations have also been provided herein for reconstructing the unsupported portions of the slope to remain. Therefore, it is our opinion that the potential for slope instability to occur and adversely affect the proposed development is low.

6.0 DISCUSSIONS AND CONCLUSIONS

The subsurface profile across the project area generally consists of colluvial deposits overlying Santa Margarita Sandstone. Artificial fill was also encountered overlying the colluvial deposits on the west side of the property. The artificial fill and/or colluvial deposits were observed to be between 11 and 14 feet below the existing grade and generally consisted of very loose to loose poorly graded sand. Based on our field investigation, the fill and colluvium are considered highly compressible. Adverse settlement beneath conventional shallow foundations and damage to driveway surfaces is likely, if the near-surface soils beneath the improvements are not processed and compacted as engineered fill.

In the gently sloping eastern portion of the property, where the proposed residence has been sited, overexcavation and recompaction of the near-surface soils should provide uniform bearing conditions for conventional shallow foundations and reduce the potential for adverse settlement to occur. However, it may be more feasible to support the proposed site retaining walls along the driveway on drilled, cast-in-place, concrete shafts. This will drastically reduce the earthwork quantities by eliminating the removal and recompaction of the surficial soils beneath large spread footings as well as provide sufficient lateral support for the retaining walls. Conversely, the site is overlain by soils which are prone to caving and casing of the upper shafts may become necessary during drilling operations.

7.0 RECOMMENDATIONS

7.1 General

Based on the results of our field investigation, laboratory testing, and engineering analysis, it is our opinion, from a geotechnical standpoint, the subject site will be suitable for the proposed development provided the recommendations presented herein are implemented into the design and construction of the project.

It is our opinion that a conventional shallow foundation system is an appropriate foundation system to support the proposed single family residence. The system should consist of continuous perimeter footings in conjunction with isolated pad footings and/or continuous interior footings. Refer to Subsection 7.3 for recommendations.

In order to mitigate the potential for adverse settlement, and ensure uniform compression characteristics, we recommend site preparation consisting of overexcavation and recompaction beneath new conventional shallow foundations, slab-on-grade floors, and driveway and parking areas. Refer to Subsection 7.2.2 for details.

We recommend the proposed site retaining walls along the inboard and outboard sides of the driveway be founded on drilled, cast-in-place, concrete shafts. For retaining wall recommendations, refer to Subsection 7.4.

7.2 Site Grading

7.2.1 Site Clearing

Prior to grading, the areas to be developed for structures, pavements and other improvements, should be stripped of any vegetation and cleared of any surface or subsurface obstructions, including any existing foundations, utility lines, basements, septic tanks, pavements, stockpiled fills, and miscellaneous debris.

Surface vegetation and organically contaminated topsoil should be removed from areas to be graded. The required depth of stripping will vary with the time of year the work is done and should be observed by the Geotechnical Engineer. It is generally anticipated that the required depth of stripping will be 6 to 8 inches.

Holes resulting from the removal of buried obstructions that extend below finished site grades should be backfilled with compacted engineered fill in accordance with Subsection 7.2.2.

7.2.2 Preparation of On-Site Soils

The results of our field investigation indicate that the near-surface soils at the subject site are highly compressible. In order to ensure uniform compression characteristics and to obviate the potential for differential settlement, site preparation, consisting of overexcavation and recompaction will be required beneath conventional shallow foundations, concrete slab-on-grade floors, and driveway areas. The depths of overexcavation and recompaction recommended herein are subject to review during grading.

For conventional shallow foundations and slab-on-grade floors, the native soil should be overexcavated a minimum of 2 feet below bottom of footing, or 2 feet below existing grade, whichever is greater. The overexcavation shall extend beneath all concrete slab-on-grade floors. The exposed surface should then be scarified, moisture conditioned, and compacted. The excavated material should then be placed as engineered fill compacted to a minimum of 90 percent relative compaction to finish pad grade. This zone of engineered fill shall extend a minimum of 5 feet laterally beyond the building footprint.

In drive areas (including concrete, asphalt, and non-permeable pavers), the subgrade soils should be overexcavated to a minimum of 1.5 feet below the bottom of the aggregate base course, or a depth sufficient to remove all artificial fill, whichever is greater. The exposed surface should then be scarified, moisture conditioned, and compacted. The excavated material should then be placed as engineered fill compacted to a minimum of 90 percent relative compaction. The upper 6 inches of subgrade and all aggregate base and subbase in driveway areas shall be compacted to a minimum of 95 percent relative compaction. This zone of reworking should extend laterally a minimum of 2 feet beyond the driveway except where bounded by retaining walls.

The on-site soils may be used as engineered fill. Note: If this work is done during or soon after the rainy season, or in the spring, the soil may require significant drying prior to use as engineered fill. The soil should be verified by a representative of CMAG in the field during grading operations. All soils, both existing on-site and imported, to be used as fill, should contain less than 3 percent organics and be free of debris and gravel over 2.5 inches in maximum dimension.

Imported fill material should be approved by a representative of CMAG prior to importing. Soils having a significant expansion potential should not be used as imported fill. **The Geotechnical Engineer should be notified not less than 5 working days in advance of placing any fill or base course material proposed for import.** Each proposed source of import material should be sampled, tested, and approved by the Geotechnical Engineer prior to delivery of any soils imported for use on the site.

All fill should be compacted with heavy vibratory equipment. Fill should be compacted by mechanical means in uniform horizontal loose lifts not exceeding 8 inches in thickness. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D1557. **The Geotechnical Engineer should observe the overexcavations, and placement of engineered fill.**

Any surface or subsurface obstruction, or questionable material encountered during grading, should be brought immediately to the attention of the Geotechnical Engineer for proper processing as required.

7.2.3 Fill Slopes

As currently proposed, the driveway alignment will cut across the oversteepened fill slope on the west side of the property and will require retaining walls along the inboard and outboard sides. The proposed inboard wall will be situated such that it will support the majority of the toe of the existing fill slope. **The portions of the oversteepened fill slope which will not be supported by the inboard driveway retaining wall shall either be cut back to a more stable slope angle, or**

reconstructed as an engineered fill slope per the recommendation herein.

Fills situated on slopes greater than 5:1 (horizontal to vertical) should be constructed per the recommendations of this section.

All fill slopes should be constructed with engineered fill meeting the minimum density requirements of Subsection 7.2.2 and have a gradient no steeper than 2:1 H:V (horizontal to vertical).

Where the vertical height of a fill slope exceeds 10 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on each bench.

Fill slopes shall be benched and keyed into the native slopes by providing a base keyway whose minimum width is 10 feet and which is sloped negatively at least 2 percent back into the slope. The depth of keyways will vary, depending on the materials encountered, but at all locations shall be at least 2 feet into firm material. This keyway should be combined with intermediate benching as required. Refer to Figure 1 for general details.

A keyway drain may be required for fill slopes. Drainage facilities may also include backdrains, gravel blankets, rockfill surface trenches or horizontally drilled drains. Configurations and type of drainage will be determined by the Geotechnical Engineer during grading operations.

Fill slope backdrains and keyway drains should consist of 4-inch diameter SDR 35 PVC perforated pipe or equivalent, embedded in approximately 3 ft³/linear foot of Caltrans Class 2 permeable drain rock with **Mirafi 180N** filter fabric, or approved equivalent, placed on top of the permeable material. The pipe should be 4± inches above the trench bottom; a gradient of 2± percent being provided to the pipe and trench bottom; discharging into suitably protected outlets. Perforations in fill slope backdrains are recommended as follows: ½ inch diameter, in 2 rows at the ends of a 120 degree arc, at 5 inch centers in each row, staggered between rows, placed downward.

The surfaces of fill slopes should be worked to reduce erosion. This work, as a minimum, should include track rolling of the fill slopes and effective planting of all slopes. The protection of the slopes should be installed as soon as practicable so that a sufficient growth will be established prior to inclement weather conditions. It is vital that no slope be left standing through a winter season without the erosion control measures having been provided.

The above recommended gradients do not preclude periodic maintenance of the slopes, as minor sloughing and erosion may take place.

7.2.4 Utility Trenches

Bedding material should consist of sand with SE not less than 30 which may then be jetted.

The on-site soils may be utilized for trench backfill. Imported fill should be free of organic material and gravel over 2.5 inches in diameter. Backfill of all exterior and interior trenches should be placed in thin lifts and mechanically compacted to achieve a relative compaction of not less than 95 percent in paved areas and 90 percent in other areas per ASTM D1557. Care should be taken not to damage utility lines.

Utility trenches that are parallel to the sides of a building should be placed so that they do not extend below a line sloping down and away at an inclination of 2:1 H:V (horizontal to vertical) from the bottom outside edge of all footings.

A 3 foot concrete plug should be placed in each trench where it passes under the exterior footings. Anti-seep collars (trench dams) should also be placed in utility trenches on steep slopes to prevent migration of water and sand.

Trenches should be capped with 1.5± feet of impermeable material. Import material should be approved by the Geotechnical Engineer prior to its use.

Trenches must be shored as required by the local regulatory agency, the State Of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

7.2.5 Vibration During Compaction

Residential structures are within close proximity to the project area. The contractor should take all precautionary measures to minimize vibration on the site during grading operations. This may require that the engineered fill be placed in thin lifts using a static roller or hand operated equipment. It is the contractor's responsibility to ensure that the process in which the engineered fill is placed does not adversely affect the neighboring parcels.

7.2.6 Excavating Conditions

We anticipate that excavation of the on-site soils may be accomplished with standard earthmoving and trenching equipment.

If grading commences during, or shortly after the rainy season, difficult construction due to saturated soil conditions should be anticipated. The bottom of excavations may require stabilization measures, in order to construct the graded building pad.

7.2.7 Surface Drainage

Pad drainage should be designed to collect and direct surface water away from structures to approved drainage facilities. A minimum gradient of 2± percent should be maintained and drainage should be directed toward approved swales or drainage facilities. Concentrations of surface water runoff should be handled by providing the necessary structures, paved ditches, catch basins, etc.

All roof eaves should be guttered with the outlets from the downspouts provided with adequate capacity to carry the storm water away from the structure to reduce the possibility of soil saturation and erosion.

Drainage patterns approved at the time of construction should be maintained throughout the life of the structures. The building and surface drainage facilities must not be altered nor any grading, filling, or excavation conducted in the area without prior review by the Geotechnical Engineer.

Irrigation activities at the site should be controlled and reasonable. Planter areas should not be sited adjacent to walls without implementing approved measures to contain irrigation water and prevent it from seeping into walls and under foundations and slabs-on-grade.

The surface soils are classified as highly erodible. Therefore, the finished ground surface should be planted with erosion resistant landscaping and ground cover and continually maintained to minimize surface erosion.

7.3 Foundations

7.3.1 Conventional Shallow Foundations

We recommend that conventional shallow foundations be founded on compacted engineered fill per Subsection 7.2.2.

Footing widths should be based on the allowable bearing value but not less than 12 inches for 1 story and 15 inches for 2 story structures. The minimum recommended depth of embedment is 24 inches for exterior wall footings. Interior footings depths should be at least 18 inches for 1 and 2 story structures. Embedment depths should not be allowed to be affected adversely, such as through erosion, softening, digging, etc. Should local building codes require deeper embedment of the footings or wider footings, the codes must apply.

Footings constructed to the given criteria may be design for an allowable bearing capacity of 2,500 psf. The allowable bearing capacity may be increased by one-third for short duration loads, such as those imposed by wind and seismic forces. If imported material is to be used as engineered fill beneath shallow foundations, it should be approved by a representative of CMAG prior to importing, or the allowable

bearing capacity value revised based on the actual import material used.

A passive pressure of 325 psf/ft (equivalent fluid pressure) may be assumed for design purposes. Neglect passive pressure in the upper 12 inches of soil. Passive pressures may be increased by one-third for seismic loading. A friction coefficient of 0.35, between engineered fill and rough concrete may be assumed for design purposes. Where both friction and the passive resistance are utilized for sliding resistance, either of the values indicated should be reduced by one-third.

Footing excavations should be observed by the Geotechnical Engineer before steel reinforcement is placed and concrete is poured.

7.3.2 Concrete Slabs-on-Grade

We recommend that concrete slab-on-grade floors be founded on compacted engineered fill per Subsection 7.2.2. The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.

The slab-on-grade should be underlain by a minimum 4 inch thick capillary break of clean crushed rock. It is recommended that neither Class II baserock nor sand be employed as the capillary break material. Where moisture sensitive floor coverings are anticipated or vapor transmission may be a problem, a vapor retarder should be placed between the granular layer and the floor slab in order to reduce moisture condensation under the floor coverings. The vapor retarder should be specified by the slab designer. It should be noted that conventional slab-on-grade construction is not waterproof. Under-slab construction consisting of a capillary break and vapor retarder will not prevent moisture transmission through the slab-on-grade. CMAG does not practice in the field of moisture vapor transmission evaluation or mitigation. Where moisture sensitive floor coverings are to be installed, a waterproofing expert should be consulted for their recommended moisture and vapor protection measures.

7.3.3 Settlements

Total and differential settlements beneath the conventional shallow foundation system are expected to be within tolerable limits. Vertical movements are not expected to exceed 1 inch. Differential movements are expected to be within the normal range ($\frac{1}{2}$ inch) for the anticipated loads and spacings. These preliminary estimates should be reviewed by the Geotechnical Engineer when foundation plans for the proposed structures become available.

7.4 Retaining Structures

7.4.1 General

Perimeter retaining walls for the proposed residence should be founded on spread footings per Subsection 7.3.1. All residential retaining wall footings shall be founded on compacted engineered fill in accordance with Subsection 7.2.2.

Site retaining walls are proposed along the inboard and outboard sides of the driveway. These site retaining walls shall be founded on drilled, cast-in-place, concrete shafts per Subsection 7.4.2.

7.4.2 Drilled, Cast-In-Place Concrete Shafts

The drilled, cast-in-place concrete shafts, should have a minimum embedment depth of **twice the retaining wall height, or a minimum of 6 feet below lowest adjacent grade**, whichever is deeper.

The minimum recommended shaft diameter is 18 inches. Shafts should be spaced a maximum of 8 feet, on-center, and no closer than 2.5 diameters, on-center.

The estimated allowable downward and upward axial shaft capacities for 18 inch diameter, drilled, cast-in-place, concrete shafts are presented in Table 2. The upward capacity includes the weight of the shaft. The downward capacity includes the weight of the shaft. The recommended axial capacities apply to single shafts with the specified spacing.

Table 2. Drilled, Cast-In-Place Concrete Shaft Axial Capacities

Depth Below Grade Beams (ft)	Allowable Downward Capacity (Kips)	Allowable Upward Capacity (Kips)
6	5.8	1.9
8	8.1	2.7
10	10.5	3.6
12	13.2	4.6
14	15.9	5.7

A passive pressure of 325 psf/ft (equivalent fluid pressure), may be assumed for design purposes. Passive pressures may be design acting over a plane 2 times the shaft diameter. Neglect passive pressure in the top 2 feet of the shaft, or the upper portion of the shaft situated within 8 feet laterally from the slope face, whichever is greater. Refer to Passive Pressure for Drilled Shafts, Figure 2, for details. Passive pressures may be increased by one-third for seismic loading.

We recommend that the poured-in-place concrete grade beam be constructed at the base of the retaining wall. The grade beam shall have a minimum embedment depth of 1.5 feet below lowest adjacent grade.

The drilling equipment should be capable of maintaining vertical tolerances. The drilled excavations should not deviate more than 1 percent from vertical. The drilled excavations for the cast-in-place concrete shafts should be clean, dry, and free of debris or loose soil.

Caving was not observed during our field investigation, however, relatively cohesionless sand is present at the site and caving may occur during drilling operations. If caving does occur and the contractor chooses to use casing, it must be pulled during the concrete pour. It must be pulled slowly with a minimum of 4 feet of casing remaining embedded within the concrete at all times. If the bottom of the holes are unable to be cleaned with conventional drilling and hand equipment, a bucket auger should be utilized to clean the bottom of the shafts and remove all loose slough.

Groundwater is not anticipated to be encountered during construction, unless the shafts are constructed during, or soon after the rainy season. If groundwater is encountered within the shafts and is unable to be pumped from the drilled excavation, a tremie will be required. The tremie must be placed to the bottom of the drilled excavation to remove all groundwater. The end of the tube must remain embedded a minimum of 4 feet into the concrete at all times. The concrete and steel design of the drilled, cast-in-place concrete shaft should be such that a tremie can be easily placed down the center of the excavation.

For drilled, cast-in-place concrete shafts depths in excess of 8 feet, concrete should be placed via a tremie. The end of the tube must remain embedded a minimum of 4 feet into the concrete at all times.

All shaft construction must be observed by the Geotechnical Engineer before steel reinforcement is placed and concrete is poured.

7.4.3 Lateral Earth Pressures

The lateral earth pressures presented in Table 3 are recommended for the design of retaining structures with a backdrain and backfill consisting of the native soils.

Table 3. Lateral Earth Pressures

Soil Profile (H:V)	Equivalent Fluid Pressure (psf/ft)	
	Active Pressure	At-Rest Pressure
Level	36	56
4:1	42	69
3:1	44	73
2:1	53	80

Pressure due to any surcharge loads from adjacent footings, traffic, etc., should be analyzed separately. Refer to the Surcharge Pressure Diagram, Figure 3, for details. Pressures due to these loading conditions can be supplied upon receipt of the appropriate plans and loads.

7.4.4 Lateral Pressure Due to Earthquake Motions

For design purposes, the lateral force on retaining walls due to earthquake motions is $6H^2$ lbs/horizontal foot, acting at a point $1/3H$ above the wall base, where H is the height of the wall in feet.

7.4.5 Backfill

Backfill should be placed under engineering control. Backfill should be compacted per Subsection 7.2.2, however, precautions should be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressures against, and movement of, the walls.

It is recommended that granular, or relatively low expansivity, backfill be utilized, for a width equal to approximately $1/3$ times the wall height, and not less than 2 feet, subject to review during construction. The permeable material used for the backdrain is suitable for use as backfill.

The use of water-stops/impermeable barriers and appropriate waterproofing should be considered for any basement construction, and for building walls which retain earth.

7.4.6 Backfill Drainage

Backdrains should be provided directly behind retaining walls. Backdrains should consist of 4 inch diameter SDR 35 PVC perforated pipe or equivalent, embedded in Caltrans Class 2 permeable drain rock.

The drain should be a minimum of 18 inches in width and should extend to within 12 inches from the surface. The upper 12 inches should be capped with soil if the drain is not located directly beneath concrete or pavement. Mirafi 180N or approved equivalent should be placed between the surface cap and the drain rock. The pipe should be 4± inches above the trench bottom; a gradient of 2± percent being provided to the pipe and trench bottom; discharging into suitably protected outlets. See Typical Backdrain Detail, Figure 4, for recommendations.

Perforations in backdrains are recommended as follows: ½ inch diameter, in 2 rows at the ends of a 120 degree arc, at 5 inch centers in each row, staggered between rows, placed downward.

Backdrains should be observed by the Geotechnical Engineer after placement of bedding and pipe and prior to the placement of clean crushed gravel.

An unobstructed outlet should be provided at the lower end of each segment of backdrain. The outlet should consist of an unperforated pipe of the same diameter, connected to the perforated pipe and extended to a protected outlet at an approved location below the project area on a continuous gradient of at least 1 percent.

7.5 Plan Review

The recommendations presented in this report are based on preliminary design information for the proposed project and on the findings of our geotechnical investigation. When completed, the Grading Plans, Foundation Plans and design loads should be reviewed by CMAG prior to submitting the plans and contract bidding. Additional field exploration and laboratory testing may be required upon review of the final project design plans.

7.6 Observation and Testing

Field observation and testing must be provided by a representative of CMAG to enable them to form an opinion regarding the adequacy of the site preparation, the adequacy of fill materials, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications, and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of CMAG will render the recommendations of this report invalid.

CMAG should be notified **at least 5 working days** prior to any site clearing or other earthwork operations on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction meeting should be held on the site to discuss project specifications, observation and testing requirements and responsibilities, and scheduling.

8.0 LIMITATIONS

The recommendations contained in this report are based on our field explorations, laboratory testing, and our understanding of the proposed construction. The subsurface data used in the preparation of this report was obtained from the borings drilled during our field investigation. Variation in soil, geologic, and groundwater conditions can vary significantly between sample locations. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Engineer and the Geologist, and revised recommendations be provided as required. In addition, if the scope of the proposed construction changes from the described in this report, our firm should also be notified.

Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field. The use of information contained in this report for bidding purposes should be done at the Contractor's option and risk.

This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they be due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.

The scope of our services mutually agreed upon did not include any environmental assessment or study for the presence of hazardous to toxic materials in the soil, surface water, or air, on or below or around the site. CMAG is not a mold prevention consultant; none of our services performed in connection with the proposed project are for the purpose of mold prevention. Proper implementation of the recommendations conveyed in our reports will not itself be sufficient to prevent mold from growing in or on the structures involved.

REFERENCES

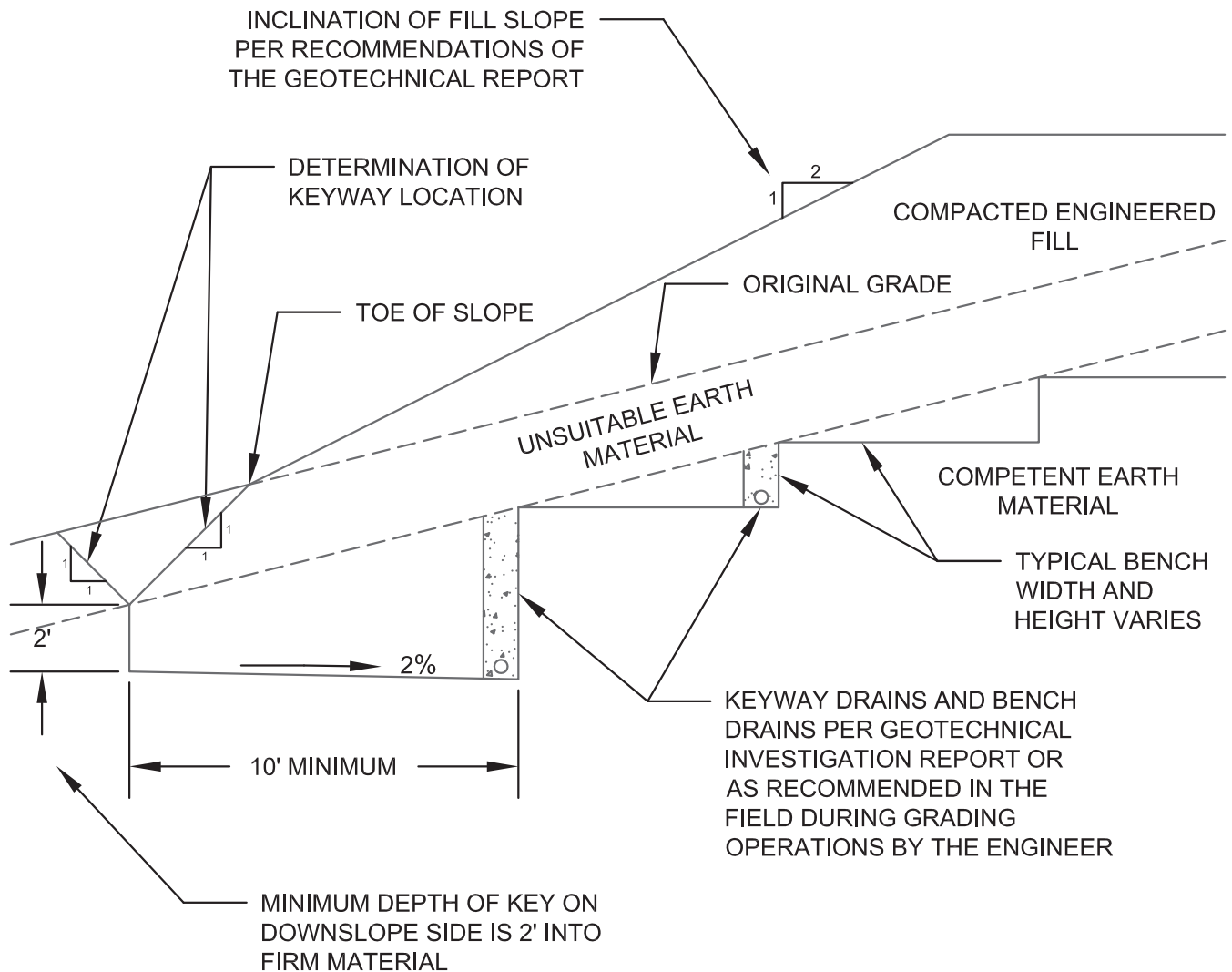
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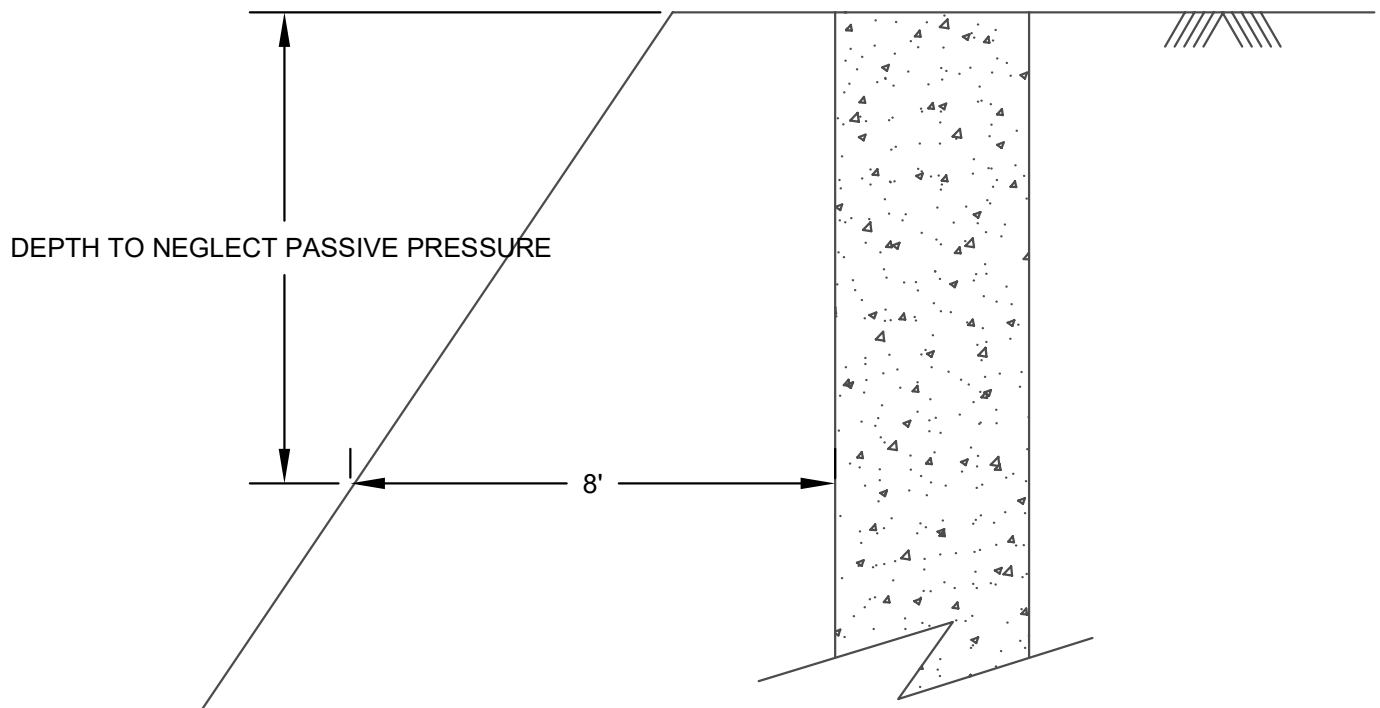
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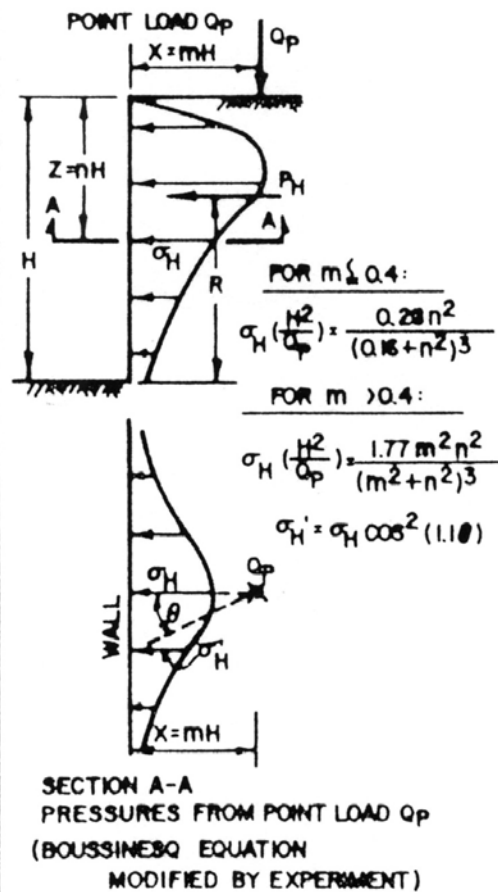
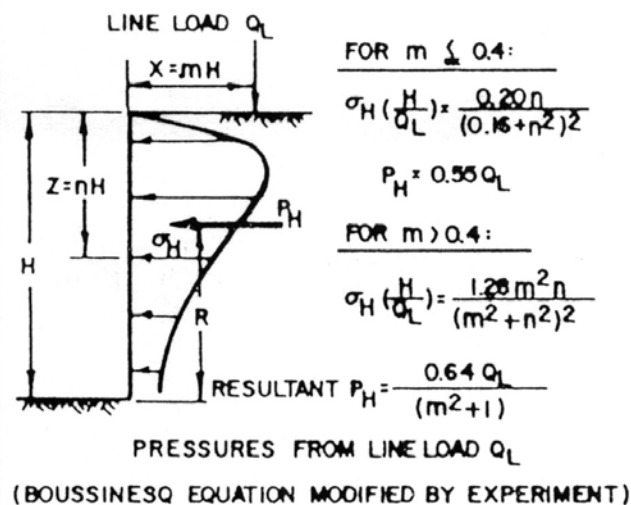
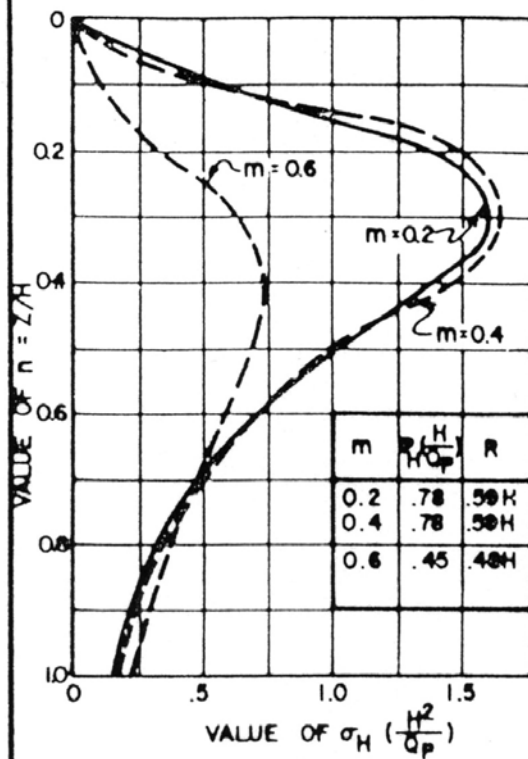
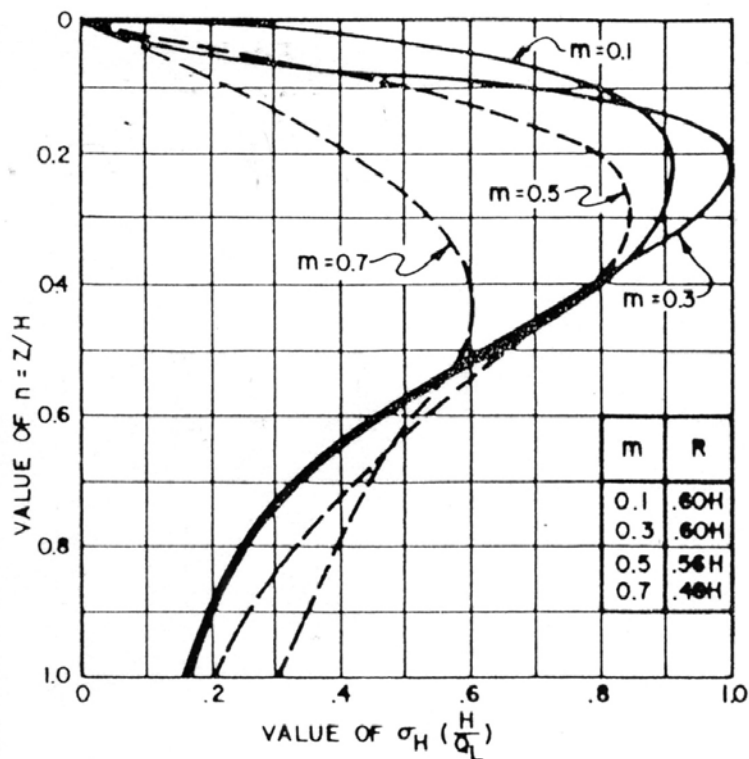


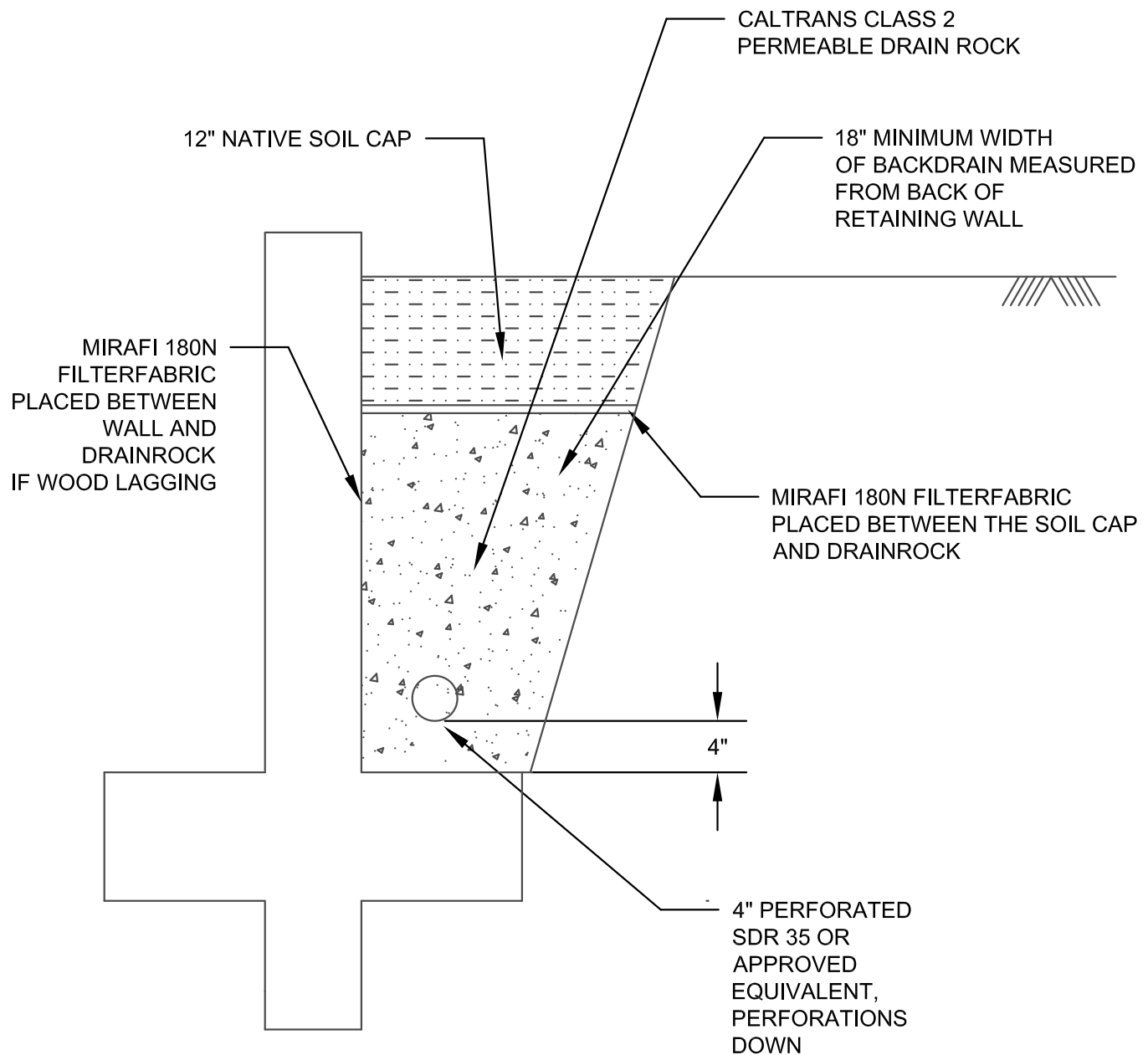
NOTES:

1. DRAWING IS NOT TO SCALE
2. FILLS SITUATED ON SLOPES STEEPER THAN 5:1 (H:V) SHOULD BE KEYED AND BENCHED
3. ENGINEERED FILL SHOULD BE PLACED PER THE GEOTECHNICAL INVESTIGATION REPORT
4. KEYWAY AND BENCH DRAINS SHOULD BE CONSTRUCTED PER THE GEOTECHNICAL INVESTIGATION REPORT



NOTES:
1. DRAWING IS NOT TO SCALE





NOTES:

1. DRAWING IS NOT TO SCALE
2. 2+ PERCENT TO PIPE AND TRENCH BOTTOM
3. PERFORATED SDR 35 PVC PIPE, OR APPROVED EQUIVALENT, CONNECTED TO CLOSED CONDUITS THAT DISCHARGE TO AN APPROVED LOCATION
4. INSTALL CLEAN OUTS AT APPROVED LOCATIONS

APPENDIX A

FIELD EXPLORATION PROGRAM

Field Exploration Procedures	Page A-1
Site Location Map	Figure A-1
Boring Location Plan	Figure A-2
Key to the Logs	Figure A-3
Logs of the Borings	Figures A-4 through A-7
Cross Section A-A'	Figure A-8

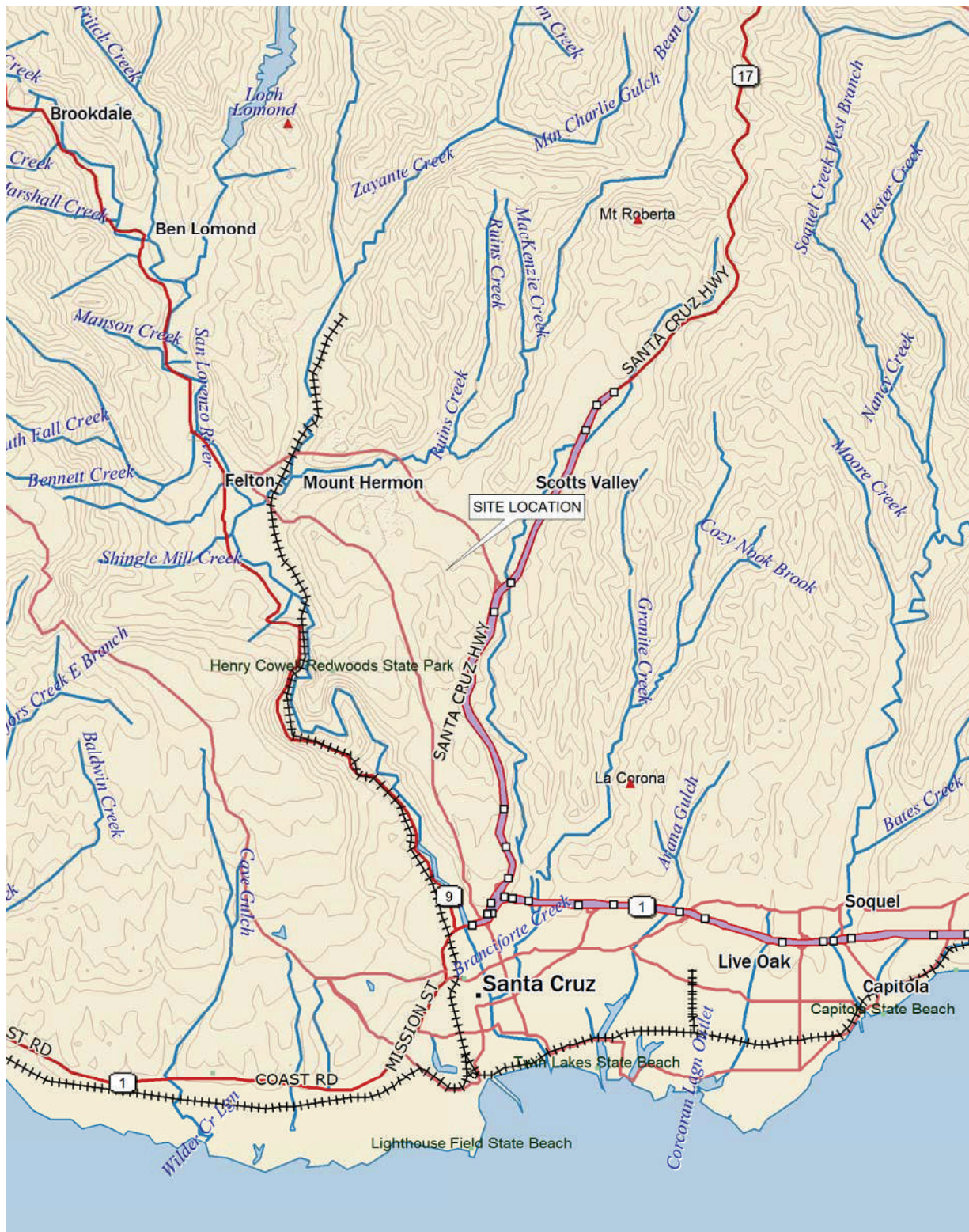
FIELD EXPLORATION PROCEDURES

Subsurface conditions were explored by drilling 4 borings to depths ranging between 6± feet and 21± feet below the existing grades. Boring B-1 was drilled with a truck mounted drill rig equipped with 6 inch diameter solid stem augers. Borings B-2 and B-3 were drilled with a portable drill rig equipped with 4 inch diameter solid stem augers. Boring B-4 was advanced with a 3 inch diameter hand auger. The Key to The Logs and the Logs of the Borings are included in Appendix A, Figures A-3 through A-7. The approximate location of the borings are shown on the Boring Location Plan, Figure A-2.

The earth materials encountered in the borings were continuously logged in the field by a representative of CMAG. Bulk and relatively undisturbed samples for identification and laboratory testing were obtained in the field. These samples were classified based on field observations and laboratory tests. The classification is in accordance with the Unified Soil Classification System (Figure A-3).

Representative samples were obtained by means of a drive sampler, the hammer weight and drop being 140 lb and 30 inches, respectively. These samples were recovered using a 3 inch outside diameter Modified California Sampler or a 2 inch outside diameter Terzaghi Sampler. The number of blows required to drive the samplers 12 inches are indicated on the Boring Logs. The penetration test data for the Terzaghi driven samples has been presented as N_{60} values. The N_{60} values are also indicated on the Boring Logs.

A representative cross section was developed for the subject site. The location of the cross section is shown on the Boring Location Plan, Figure A-2, in Appendix A. Cross Section A-A' is presented on Figure A-8.



BASEMAP: DeLorme Topo USA®

SCALE: 1:100,000

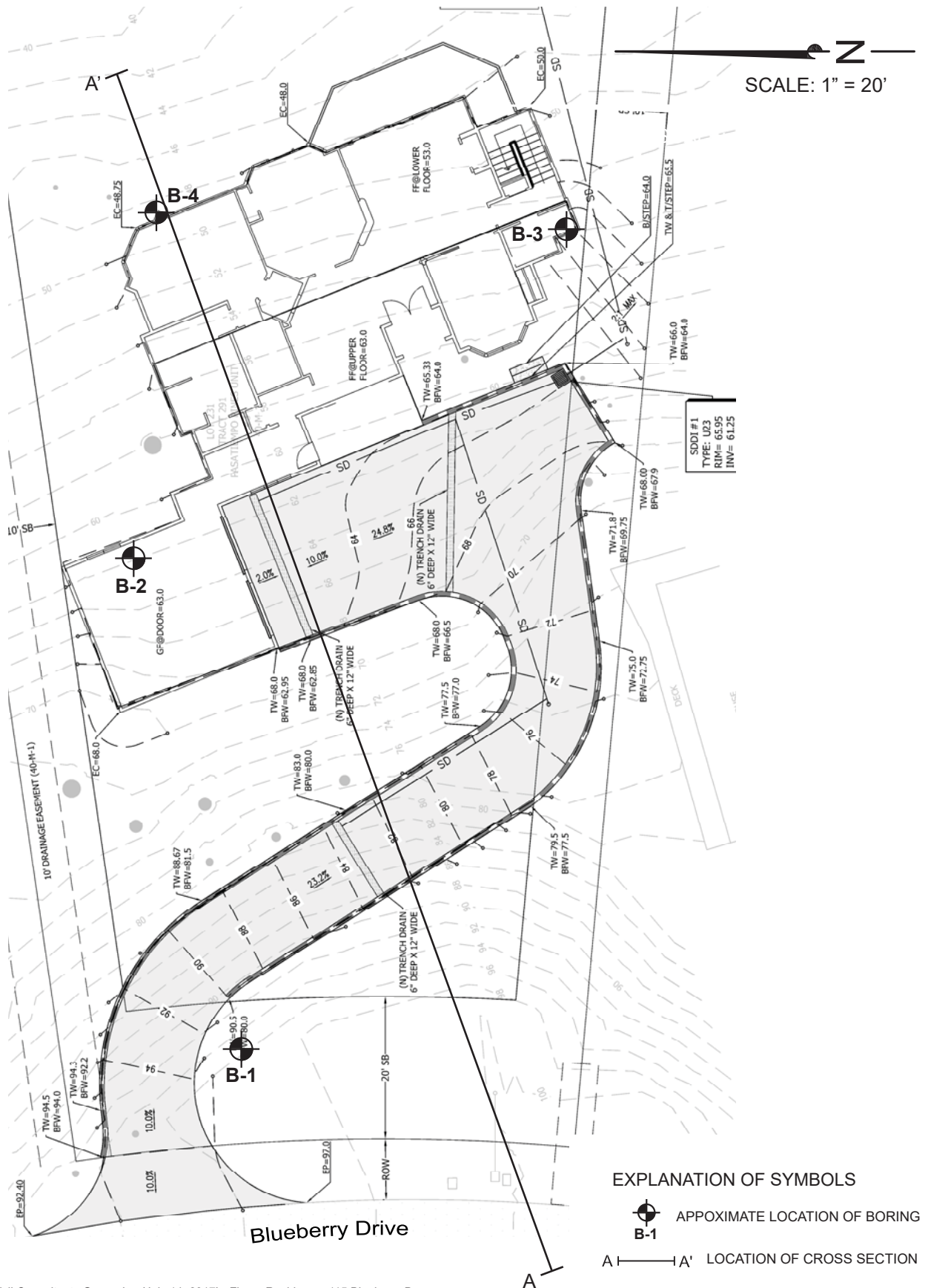
CMAG ENGINEERING

SITE LOCATION MAP

115 Blueberry Drive

FIGURE

A-1



BASEMAP: C2G /Civil Consultants Group, Inc (July 14, 2017). Flores Residence, 115 Blueberry Dr, Scotts Valley, APN 021-292-03. Original Scale 1" = 10'. Sheet C2.1. Job No. 445-56.

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BORING LOCATION PLAN

115 Blueberry Drive

FIGURE

A-2

KEY TO LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS More than half of the material is larger than the No. 200 sieve	GRAVELS More than half of the coarse fraction is larger than the No. 4 sieve	CLEAN GRAVELS (Less than 5% fines)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS More than half of the coarse fraction is smaller than the No. 4 sieve	CLEAN SANDS (Less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SAND WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS More than half of the material is smaller than the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS Liquid limit greater than 50		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
			HIGHLY ORGANIC SOILS	

GRAIN SIZE LIMITS

SILT AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		
	No. 200	No. 40	No. 10	No. 4	3/4 in.	3 in.	12 in.
US STANDARD SIEVE SIZE							

RELATIVE DENSITY	
SAND AND GRAVEL	BLOWS/FT*
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

CONSISTENCY	
SILT AND CLAY	BLOWS/FT*
VERY SOFT	0 - 2
SOFT	2 - 4
FIRM	4 - 8
STIFF	8 - 16
VERY STIFF	16 - 32
HARD	OVER 32

MOISTURE CONDITION
DRY
MOIST
WET

BEDROCK
(GROUP SYMBOL)
Brackets Denote Bedrock

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).

LOG OF EXPLORATORY BORING

Project No: 17-136-SC Project: 115 Blueberry Drive Santa Cruz County, California Drill Rig: Truck Mounted Drill Rig, 6in. Solid Stem Auger, 140lb. Safety Hammer	Boring: B-1 Date Drilled: January 10, 2018 Logged By: SSC
---	---

Depth (ft.)	Soil Type	Sample	Terzaghi Split Spoon Sample 2" Ring Sample 2.5" Ring Sample S 3" Shelby Tube Bulk Sample Groundwater Elevation	Blows / Foot	N ₆₀	Dry Density (pcf)	Moisture Cont. (%)	Other Tests	
Description									
1	SP-SM		af: Dark Yellowish Brown and Grayish Brown Poorly Graded SAND with Silt and Gravel. Very Loose, Wet, Non Plastic. Sand - Fine to Coarse Grained. Gravel - up to 3/8", Rounded.	6		101.2	17.0	F.C.=9.2%	
2									
3									
4	SP-SM		Material Consistent - Moist, No Gravel.	5	3		8.3		
5									
6	SP		Qc: Brown Poorly Graded SAND. Loose, Dry to Moist, Non Plastic. Sand - Fine to Medium Grained.	7	5		3.9	Particle Size F.C.=4.1%	
7									
8									
9	SP		Caving Soils Material Consistent - Light Yellowish Brown, Dry.	16		108.8	1.8		
10									
11									
12	(SP)		Tsm: Light Gray SANDSTONE. Very Dense, Dry to Moist. Weakly Cemented. (Poorly Graded Sand). Sand - Fine to Medium Grained.	59	51		1.8	F.C.=3.9%	
13									
14									
15	(SP)		Material Consistent	100+			2.8		
16									
17									
18			Boring Terminated at 21± ft. Groundwater Not Encountered. Boring Backfilled with Cuttings.						
19									
20									
21									
22									
23									
24									

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FIGURE
A-4

LOG OF EXPLORATORY BORING

Project No: 17-136-SC Project: 115 Blueberry Drive Santa Cruz County, California Drill Rig: Portable Drill Rig, 4in. Solid Stem Auger, 140lb. Safety Hammer	Boring: B-2 Date Drilled: January 10, 2018 Logged By: SSC
--	---

Depth (ft.)	Soil Type	Sample	Terzaghi Split Spoon Sample 3" Shelby Tube 2" Ring Sample Bulk Sample 2.5" Ring Sample Groundwater Elevation	Blows / Foot	N ₆₀	Dry Density (pcf)	Moisture Cont. (%)	Other Tests
Description								
1			Qc: Very Dark Brown Poorly Graded SAND. Very Loose, Moist to Wet, Non Plastic. Sand - Fine to Medium Grained. Material Consistent - Dark Yellowish Brown, Loose. Material Consistent					Direct Shear $\Phi = 34^\circ$ C = 40 psf Particle Size F.C.=3.6%
2	SP			8		97.7	8.0	
3								
4	SP			8	5		8.0	
5								
6								
7	SP			10	7		8.5	F.C.=2.3%
8								
9								
10								
11								
12			Tsm: Light Gray SANDSTONE. Dense, Dry to Moist. Weakly Cemented. (Poorly Graded Sand). Sand - Fine to Medium Grained.					Particle Size F.C.=4.9%
13	(SP)			50	39		3.7	
14			Boring Terminated at 13.5+ ft. Groundwater Not Encountered. Boring Backfilled with Cuttings.					
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

CMAG ENGINEERING

FIGURE
A-5

LOG OF EXPLORATORY BORING

Project No: 17-136-SC	Boring: B-3
Project: 115 Blueberry Drive	Date Drilled: January 10, 2018
Santa Cruz County, California	Logged By: SSC
Drill Rig: Portable Drill Rig, 4in. Solid Stem Auger, 140lb. Safety Hammer	

Depth (ft.)	Soil Type	Sample	Terzaghi Split Spoon Sample 3" Shelby Tube 2" Ring Sample Bulk Sample 2.5" Ring Sample Groundwater Elevation	Blows / Foot	N ₆₀	Dry Density (pcf)	Moisture Cont. (%)	Other Tests
Description								
1			Qc: Dark Yellowish Brown Poorly Graded SAND. Very Loose, Moist to Wet, Non Plastic. Sand - Fine to Medium Grained. Material Consistent - Loose. Material Consistent - Yellowish Brown. Material Consistent					
2	SP			4	3		8.0	Particle Size F.C.=3.8%
3								
4	SP			14		103.1	8.1	
5								
6	SP			9	6		8.6	
7								
8								
9	SP			11	8		8.5	
10								
11								
12			Tsm: Light Yellowish Brown SANDSTONE. Dense, Moist, Weakly Cemented. (Poorly Graded Sand). Sand - Fine to Medium Grained.					
13	(SP)			38	30		3.4	
14			Boring Terminated at 13.5+ ft. Groundwater Not Encountered. Boring Backfilled with Cuttings.					
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

CMAG ENGINEERING

FIGURE
A-6

LOG OF EXPLORATORY BORING

Project No: 17-136-SC Project: 115 Blueberry Drive Santa Cruz County, California Drill Rig: 3 in. Diameter Hand Auger	Boring: B-4 Date Drilled: January 10, 2018 Logged By: SSC
--	---

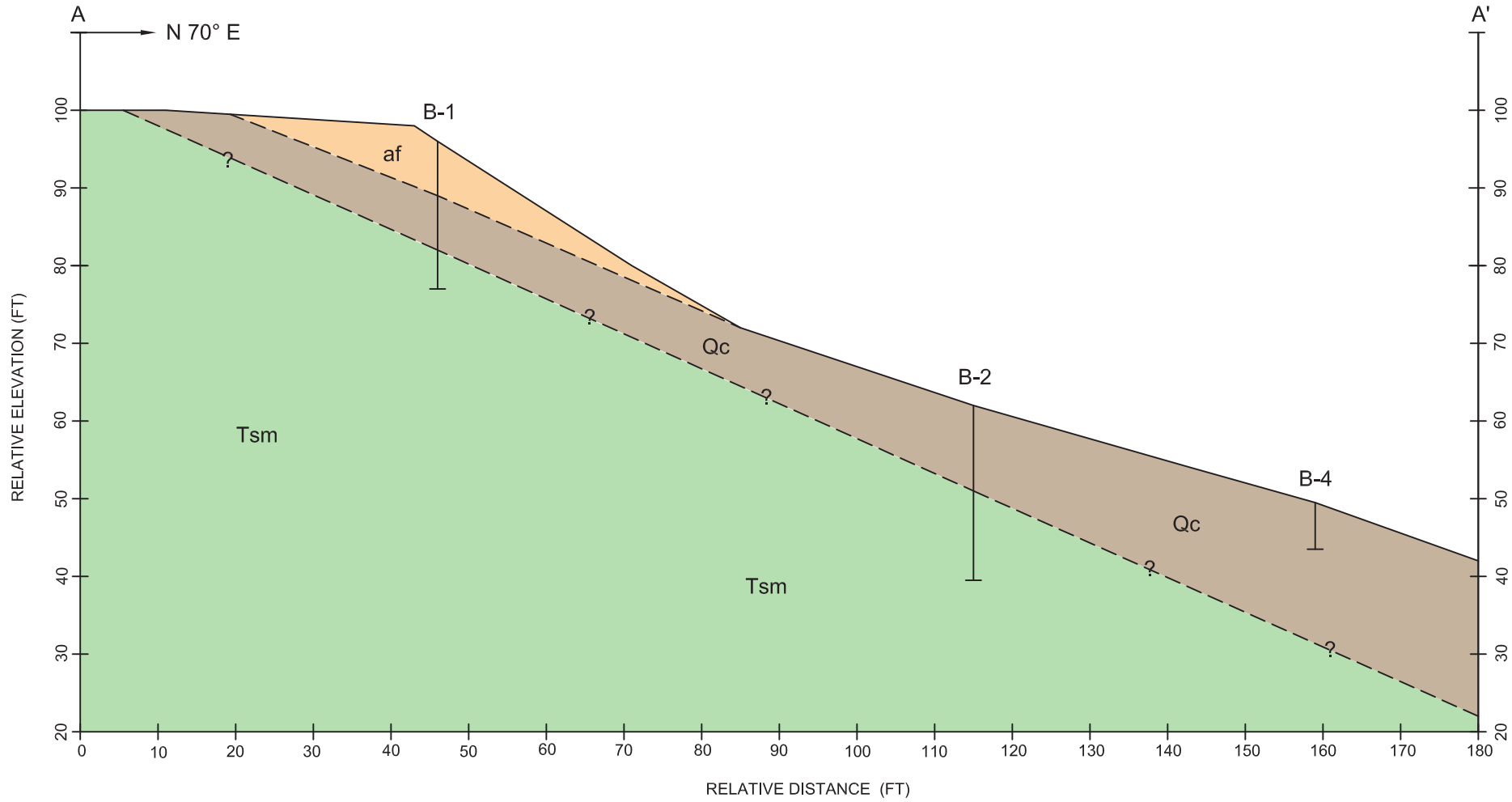
Depth (ft.)	Soil Type	Sample	 Terzaghi Split Spoon Sample  3" Shelby Tube  2" Ring Sample  Bulk Sample  2.5" Ring Sample  Groundwater Elevation	Blows / Foot	N ₆₀	Dry Density (pcf)	Moisture Cont. (%)	Other Tests
			Description					
1	SP		Qc: Dark Yellowish Brown Poorly Graded SAND. Moist to Wet, Non Plastic. Sand - Fine to Coarse Grained.					
2								
3	SP							
4			Yellowish Brown Poorly Graded SAND. Moist to Wet, Non Plastic. Sand - Fine to Coarse Grained.					
5								
6	SP							
6			Material Consistent.					
7			Boring Terminated at 6+ ft. Groundwater Not Encountered. Boring Backfilled with Cuttings.					
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								

CMAG ENGINEERING

FIGURE
A-7

CROSS SECTION A-A'

SCALE: 1" = 20' H = V



EXPLANATION

UNITS



af: Artificial Fill

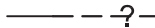


Qc: Colluvium



Tsm: Santa Margarita Sandstone

SYMBOLS



Geologic Contact, Dashed Where Approximate,
Queried Where Uncertain

B-2



Approximate Location of Borings

APPENDIX B

LABORATORY TESTING PROGRAM

Laboratory Testing Procedures	Page B-1
Direct Shear Test Results	Figure B-1
Particle Size Distribution Test Results	Figures B-2 through B-5

LABORATORY TESTING PROCEDURES

Classification

Soils were classified according to the Unified Soil Classification System in accordance with ASTM D 2487 and D 2488. See Figure A-3. Moisture content and dry density determinations were made for representative, relatively undisturbed samples in accordance with ASTM D 2216. Results of the moisture-density determinations, together with classifications, are shown on the Boring Logs, Figures A-4 through A-6.

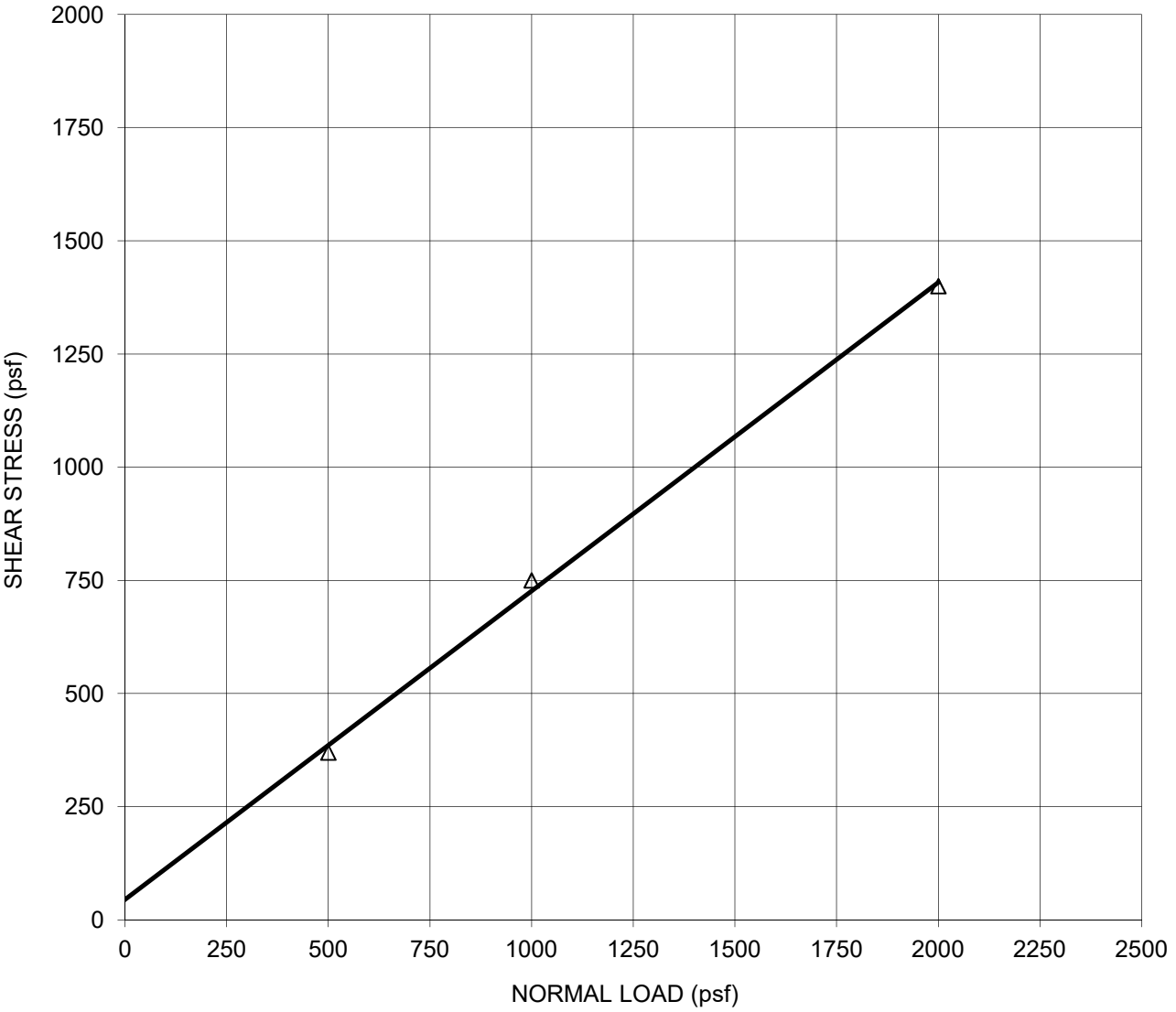
Direct Shear

A consolidated drained direct shear test was performed in accordance with ASTM D 3080 on a representative, relatively undisturbed sample of the on-site soils. To simulate possible adverse field conditions the samples were saturated prior to shearing. A saturating device was used which permitted the samples to absorb moisture while preventing volume change. The direct shear test results are presented on the Boring Logs and on Figure B-1.

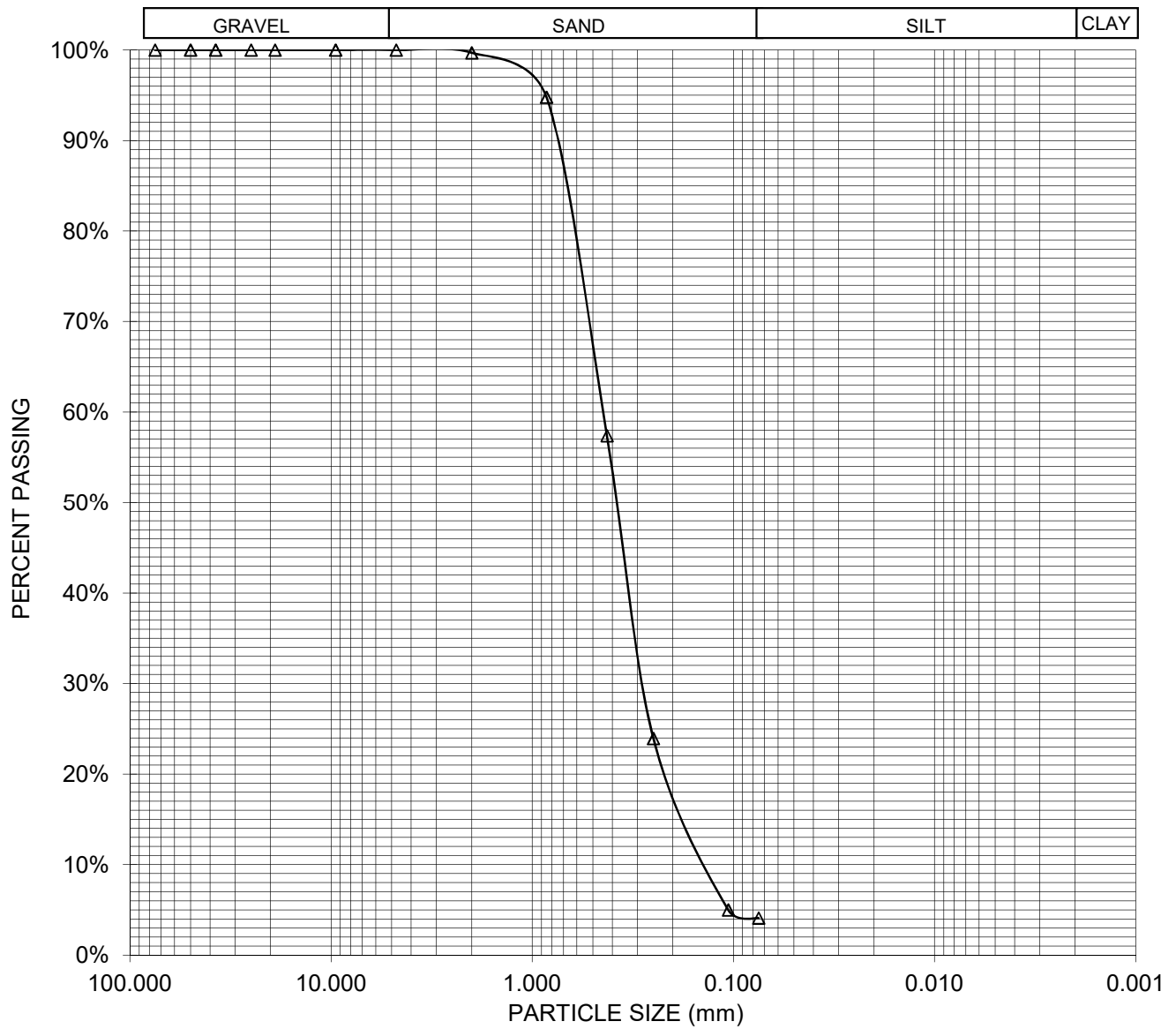
Particle Size Distribution

Particle size distribution tests were performed on representative samples of the underlying soils and bedrock in accordance with ASTM D 422. The test results are presented on the Boring Logs and Figures B-2 through B-5.

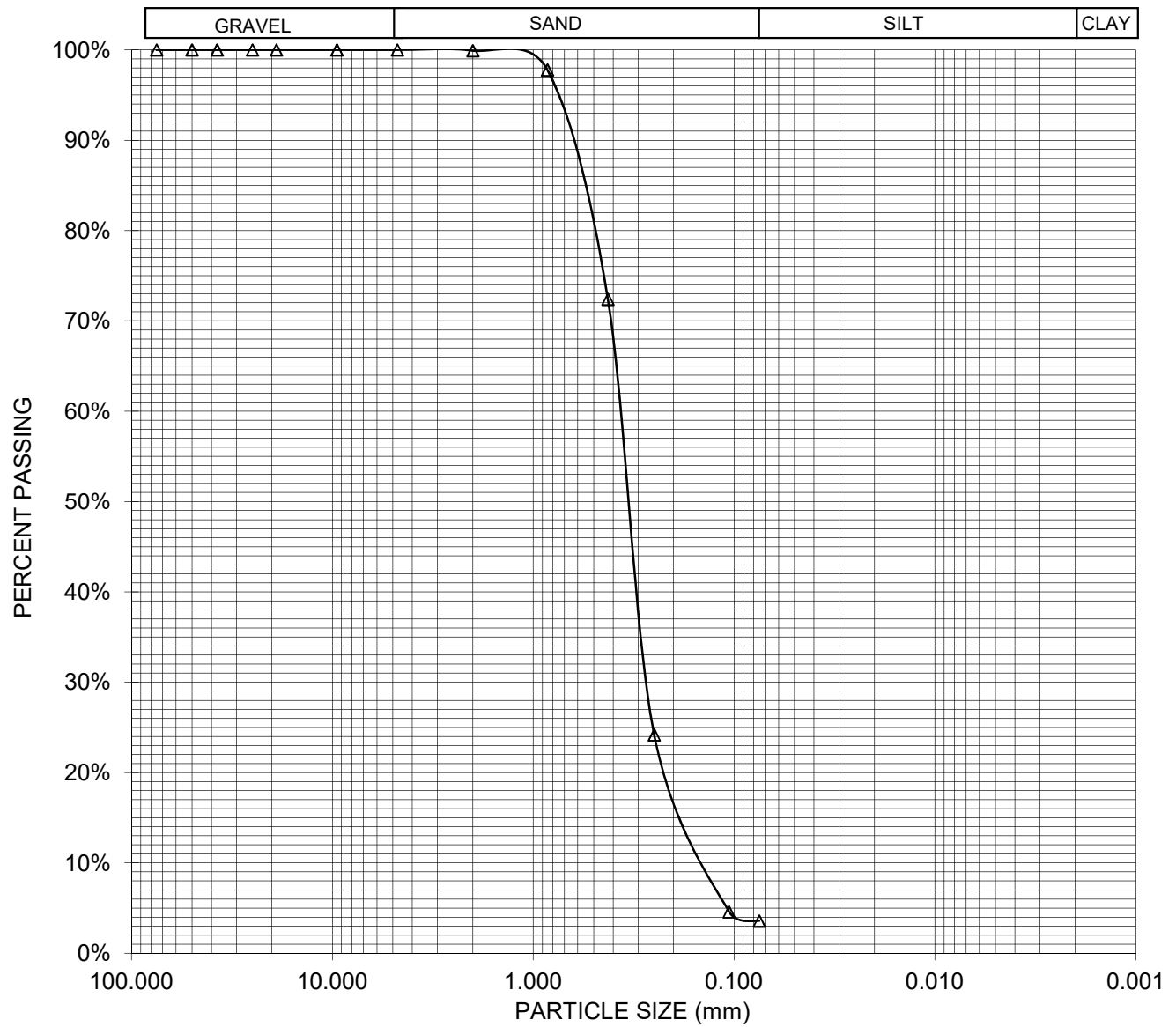
BORING:	B-2	PEAK FULLY SOFTENED	COHESION (psf)	FRICTION ANGLE
DEPTH (ft):	1.5		40	34
SOIL TYPE (USCS):	SP			
MOISTURE: SATURATED		TEST TYPE: CONSOLIDATED - DRAINED		



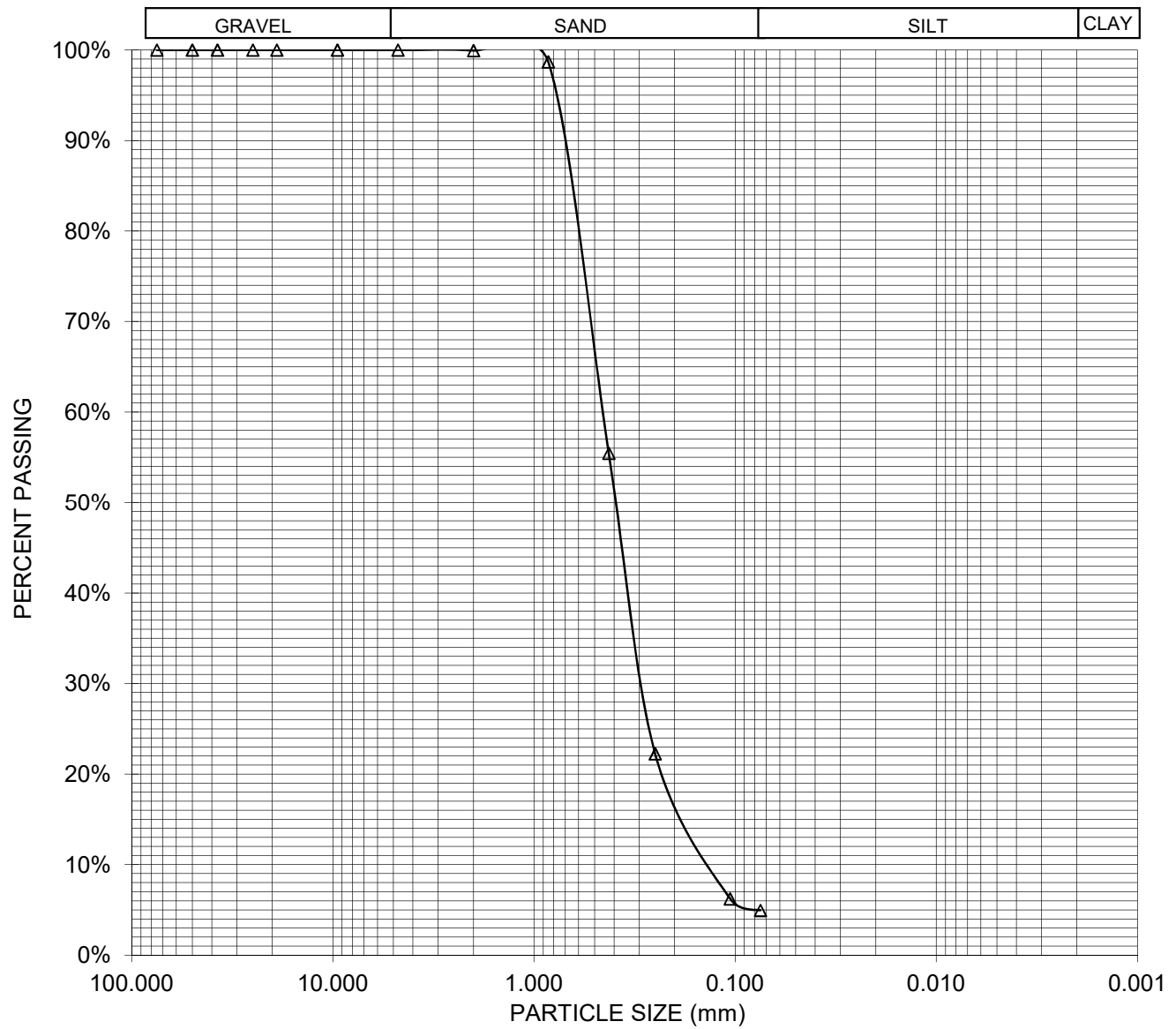
BORING:	B-1	PERCENT	PERCENT
DEPTH (ft):	7	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SP	100.0%	4.1%



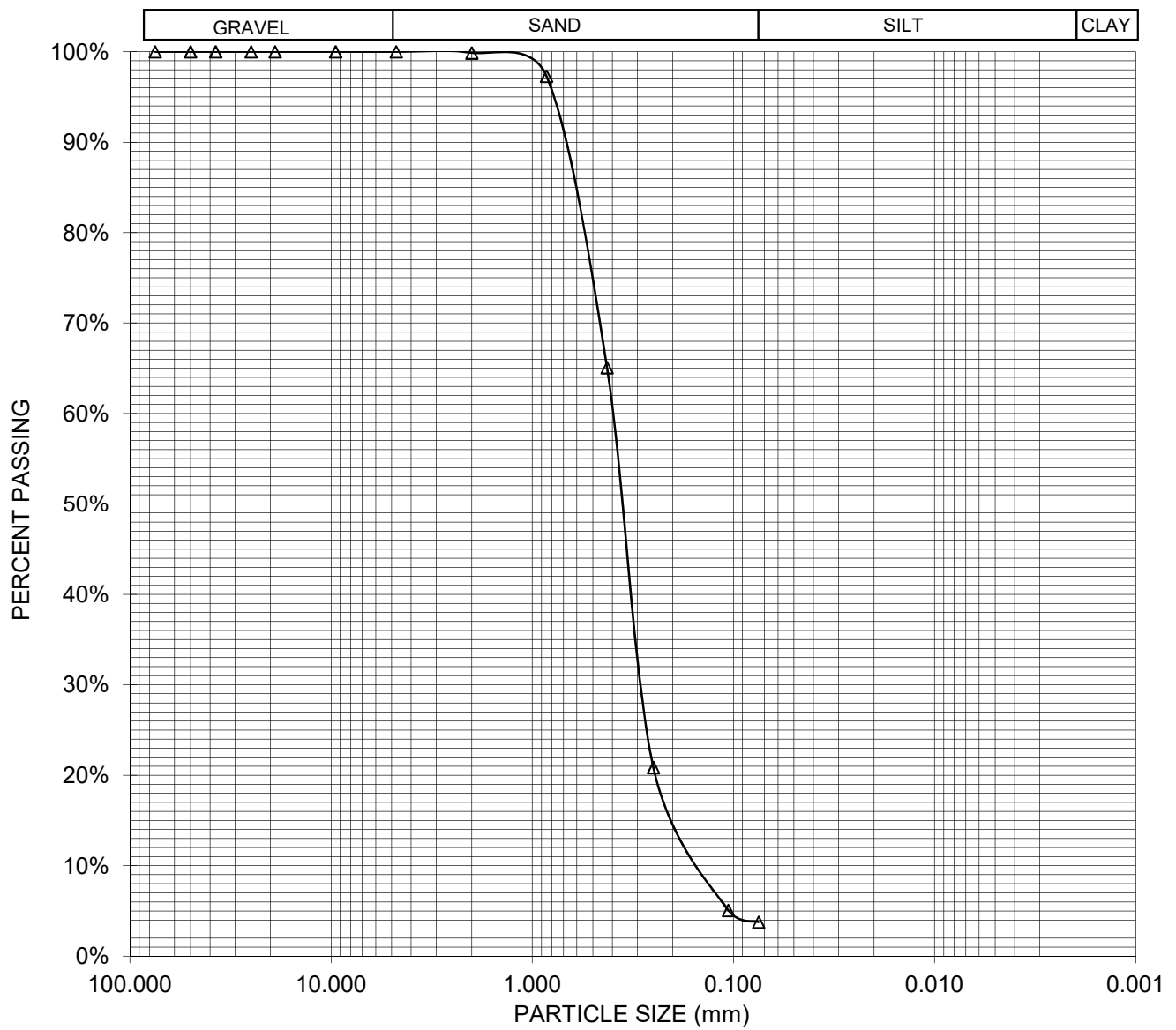
BORING:	B-2	PERCENT	PERCENT
DEPTH (ft):	1.5	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SP	100.0%	3.6%



BORING:	B-2	PERCENT	PERCENT
DEPTH (ft):	12	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SP	100.0%	4.9%



BORING:	B-3	PERCENT	PERCENT
DEPTH (ft):	3	PASSING No. 4	PASSING No. 200
SOIL TYPE (USCS):	SP	100.0%	3.8%





Flores Residence
115 Blueberry Drive
APN 021-293-03

Tree Resource Evaluation/
Construction Impact Assessment/
Tree Protection Plan



Consulting Arborists

611 Mission Street
Santa Cruz, CA 95060
831.426.6603 office
831.460.1464 fax
jpallen@consultingarborists.com

Prepared for
Jennie Martha Flores, Property Owner

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Observations.....	Pages 4 and 5
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Appraised Value of Preserved Trees.....	Page 12
Tree Preservation	Page 13 and 14

Attachments

- Tree Appraisal Worksheet
- Tree Resource Inventory
- Tree Location Map

ASSIGNMENT/SCOPE OF SERVICES

The construction of a single-family residence is proposed on a vacant parcel at 115 Blueberry Drive in Scotts Valley, APN 021-292-03. Sections of this property are densely forested with native tree species. There are several significant trees that are potential key features of this site. To ensure the protection of the tree resources and meet City requirements Jennie Martha Flores, the property owner has requested the following tasks be completed:

- Locate, numerically tag, catalog and verify mapped locations of trees greater than 6 inches in trunk diameter growing within the proposed development boundary
- Identify tree species and measure trunk diameter
- Identify trees that meet Protected status as defined by *Scotts Valley Municipal Code Section 17.44.080*
- Rate individual tree health and structure as “good”, “fair” or “poor”
- Map Critical Root Zones
- Review project plans provided by GJ&D Architecture dated June 30, 2018 and C2G Engineering dated July 19, 2018 to determine potential impacts to the tree population
- Define necessary tree removal/retention based on overall tree condition and construction related impacts
- Determine necessary tree maintenance requirements for preserved trees
- Create a Tree Protection Plan for trees suitable for retention
- Determine tree replacement requirements for “Protected” trees removed as outlined by the City of Scotts Valley Planning Department
 - Provide recommendations for appropriate species, locations and sizes for replacement trees
 - Determine the number of Protected trees to be removed that will not be replaced at a 2:1 ratio for the developer to pay the applicable fee into the tree replacement fund
 - Define the Maintenance and Monitoring program
- Appraise the value of trees to be preserved
- Provide all findings in the form of a Tree Resource Evaluation/Construction Impact Assessment Report accompanied by a Tree Location Map/Preservation Plan

SUMMARY

Plans for this project have been reviewed. Twenty-two (22) trees growing within 20 feet of grading limits have been assessed and the known impacts resulting from the construction of proposed improvements defined at this time have been evaluated.

To complete the improvements as presented requires the removal of 9 trees due to construction impacts, 5 of which meet Protected criteria and require mitigation. (see Tree Removal Summary Table on page 8).

An additional CALFIRE (California Department of Forestry) permit will be required to remove trees after they are approved for removal by the City.

In order to compensate for the loss of tree resources and meet City Code requirements, 5 “protected” trees removed will be replaced at a 2:1 ratio, two trees planted for each tree removed or by contributing \$80 per tree removed to the Tree Trust Fund. To ensure the survivability and proper growth of the replacement trees a five-year Maintenance and Monitoring Program (MM&P) has been defined with success criteria to meet a 100% survival rate.

The appraised value of “protected” trees to be preserved growing within 20 feet of the Limits of Grading is \$39,277. A retention bond in this amount shall be posted by the developer and held in trust by the City of Scotts Valley. If project management fails to implement recommended procedures, the contract cost of implementing tree preservation treatments shall be deducted from the retention funds. If trees are damaged by construction activities, the Project Arborist shall determine the appraised value of the damage. Monetary costs for remediation and/or fines will be assessed and deducted from the retention funds.

Monitoring, by the Project Arborist should occur at the intervals defined within this report to assure tree protection guidelines are adhered to and unforeseen impacts are resolved prior to damage occurring.

To ensure the protection of the trees remaining on this site it is imperative that the recommendations detailed within this document are incorporated as conditions of project approval.

This parcel contains sensitive Sandhills Habitat as designated by Santa Cruz County's Interim Programmatic Habitat Conservation Plan (IPHCP). Specific construction protocols and supplemental mitigation requirements in addition to those defined in this report may be required.

BACKGROUND

I was contacted by Mr. Ed Gladfelter-Jones of GJ&D Architecture during the month of December in 2017 who asked of my interest and availability to provide arboricultural services for this project. Mr. Gladfelter-Jones provided background materials and verbally described the project. I reviewed the documents, expressed interest in providing service and executed a service contract with provided Ms. Flores, the property owner on December 28, 2018.

Over the course of the next 7 months the Project Team interacted frequently via email and conducted two, face-to-face meetings in order to create a design that minimized tree related impacts. Site topography and the steepness of the eastern facing slope presented challenges for driveway placement and the protection of key trees on the site. Ms. Flores, the Property Owner was invested in retaining trees and tasked the team with this challenge.

The slope of the driveway was required to be decreased in order to meet City criteria requiring the Project plans to be revised. Josh Wolf of C2G Engineers worked within the parameters that I defined in order minimize grade changes within Critical Root Zones, meet City criteria for driveway construction.

Impacts to tree resources resulting from the construction of necessary site improvements were determined through review of plans provided by GJ&D Architecture dated June 30, 2018 and

C2G Engineering dated July 19, 2018. The exact Limits of Grading will not be known until the grading plan is finalized and field staking representing cut/fill and disturbance limits are survey located and set in the field by the project survey team. It is anticipated the level of impacts will change when grade stakes are placed delineating grading limits for the remainder of the project. The exact locations of the proposed grading and other improvements will be reviewed and evaluated once the site staking is in place. There is a strong possibility that tree classification and recommended procedures will change once the exact positions of the proposed improvements are known. Necessary changes will be defined in the field by the Project Arborist and implemented by the builder as Conditions of Project Approval.

If additional tree removal is necessary a confirming addendum will be prepared and submitted to the Scotts Valley City Planning Department.

OBSERVATIONS

Site Description

The project spans an 18,400 square foot vacant parcel that is bound to the west by Blueberry Drive, and to the north, south and east by neighboring property boundaries. The parcel exists on a very steep slope with an east-facing aspect. The slope begins very dramatically on the western edge near Blueberry Drive. The slope lessens and becomes more level towards the property's eastern boundary.

This parcel contains sensitive Sandhills Habitat as designated by the Interim-Programmatic Habitat Conservation Plan for the Endangered June Beetle and Endangered Ben Lomond Spineflower prepared for the Citizens of Scotts Valley and County of Santa Cruz Proposing Small-Scale development Projects in the Zayante Sandhills, Santa Cruz County. This Plan was prepared by the US Fish and Wildlife Service, Ventura, California; Santa Cruz County; and City of Scotts Valley dated January 2011.

Tree Descriptions

Tree resources on this Project are dominated **Ponderosa pine** (*Pinus ponderosa*) comprising 12 of the 22 trees inventoried. There are 9 **coast live oak** (*Quercus agrifolia*) trees on the property and one lone, mature **Monterey pine**, (*Pinus radiata*).

Ponderosa pines are a critical element of the Sandhills Habitat and are the dominant species within Maritime Coast Range Ponderosa Pine Forest, a sensitive plant community endemic to the Sandhills.

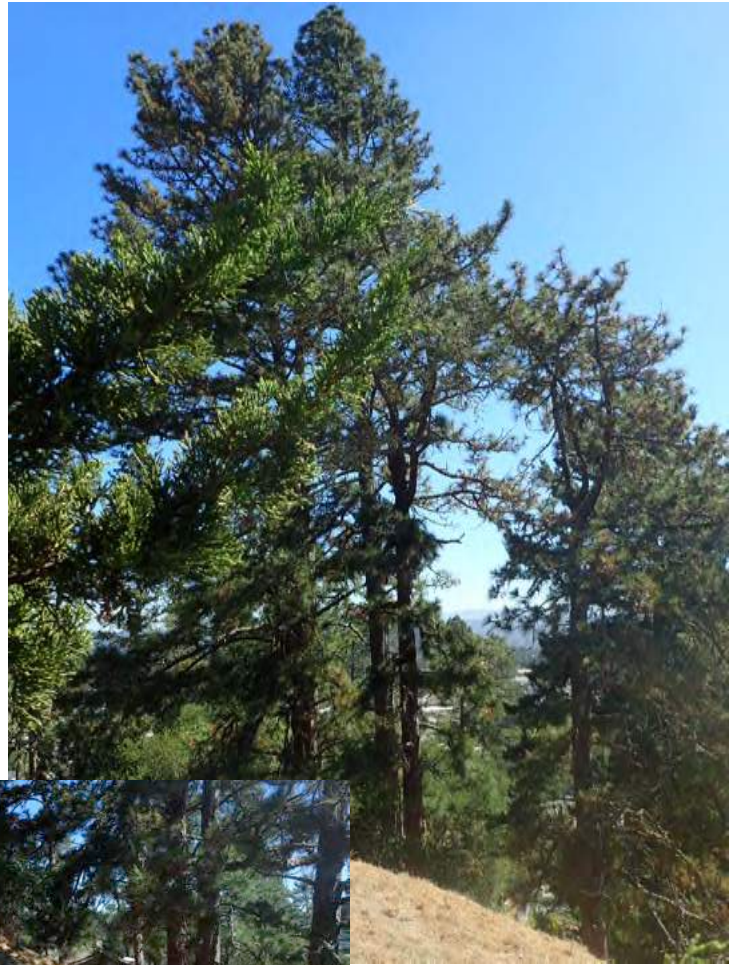
Trees #101 through 104, a group of young Ponderosa pines pictured on the title page stand on the northwest corner of the Project. Three of these 4 trees are within the proposed driveway and will need to be removed. Three of the larger trees have fair to good preservation suitability. If the driveway could be moved a few feet to the south, these trees may be able to be preserved and remain key assets to the Project.

Trees #105 through 110 are mature trees growing at the base of the steep slope.

This mature group of Ponderosa pine are key are key assets to the site. The focus of driveway design was to retain this group and minimize grading and utility line impacts.

Individual trees are in a fair to poor state of health with thinning canopies, dead and dying branches. Several of these trees have structural problems; asymmetrical and suppressed canopies, weak trunk/stem attachments and bowed trunks.

A qualified arborist should monitor these trees at regular intervals to assess conditional changes and define maintenance requirements.



Tree #111, pictured at left stands on the south side of the fence and will be preserved and protected during construction.

The 9 coast live oaks grow in crowded suppressed conditions. Canopies are short in height wide spreading with 4 of the trees having two to 4 trunks each. Six of the 9 coast live oaks will be removed to accommodate construction. All of the coast live oaks proposed for removal are in poor structural condition. One of the trees, **#114** was identified as having High Failure Potential.

Coast live oak **Trees #118 and 119** are to be retained and protected. Canopy clearance pruning will be require as indicated by the red arrow in order to provide space for construction of the residence.



One lone mature Monterey pine **Tree #116** grows near the northern property boundary. The tree is in poor structural condition with dead and broken branches and a pronounced lean to the southeast, toward the proposed residence. There is visible evidence of the presence of red turpentine beetle *Dendroctonus valens* a known vector of Pine Pitch Canker, a disease that is prevalent in this species.

Tree #116 is proposed for removal due to construction impacts.

TREE INVENTORY METHODOLOGY

Each tree was visually assessed from the root crown to the extents of the foliar canopy. The attached inventory lists information on trees ≥ 6 inches in diameter growing within 20 feet of proposed grading limits. Tree locations are documented on the attached Tree Location Map.

The tree inventory lists species, trunk diameter, tree health, structure and suitability ratings, Critical Root Zone extents, level of impacts and description, observations, required procedures and whether the tree meets “Protected” criteria.

Diameter is the width of the trunk measured at 4.5 feet above natural grade (ground level). For trees that were unable to be measured at 4.5 feet above natural grade, measurement heights are provided.

Health, Structure and Preservation Suitability ratings are categorized as “good, fair or poor.”

Note* **Tree health and structure** are separate issues that are related since both are revealed by tree anatomy. A tree’s vascular system is confined in a thin layer of tissue between the bark and wood layers. This thin layer is responsible for transport of nutrients and water between the root system and the foliar canopy. When this tissue layer is functioning properly a tree has the ability to produce foliage (leaves). As long as the tree maintains a connected vascular system it may appear to be in good health.

When conditions conducive to decay are present, fungi, bacteria or poor compartmentalization, wood strength is degraded. As decay advances, the tree’s ability to continue standing is compromised. Thus, a tree can appear to be in good health, but have poor structure.

Critical Root Zone, Defined for Preserved Trees Only: Individual tree root systems provide anchorage, absorption of water/minerals, storage of food reserves and synthesis of certain organic materials necessary for tree health and stability. The Critical Root Zone (CRZ) is the species-specific amount of roots necessary to continue to supply these elements essential for each tree to stand upright and maintain vigor. This distance reflects the minimum footage measurement from the trunk required for the protection of the tree’s root zone.

Construction activities proposed within these areas are subject to specific review and the implementation of recommended special treatments.

Construction Impacts, Level and Description: This section describes what procedures are proposed near the individual tree or tree group. The influences proposed construction activities will have on the tree are classified as **None**, **Low**, **Moderate** or **High**. These classifications are defined as follows:

- **None**, the tree is not near the impact area of the proposed construction.
- **Low**, adverse affects from the proposed construction activities are minimal.
- **Moderate**, this level of impacts will result in loss in tree vigor and/or stability. Recommended procedures must be implemented to decrease these impacts.
- **High**, requiring tree removal or the understanding that premature tree mortality and/or destabilization can be anticipated. Mitigation is required for trees subject to this level of impacts.

Construction of this project as presented requires the following procedures that impact tree health and stability:

- Over-excavation for site stabilization
- Grading for building and retaining wall construction
- Trenching for utility lines and drainage structure installation
- Construction of single-family residence
- Planned landscape installation

These procedures require alteration of natural grade in the form of cut and/or fill (described below) at the defined "Limits of Grading". Roots shattered during this process provide openings for opportunistic decay causing organisms degrading tree support systems and vigor.

Alteration of natural grade

- Cuts, lowering of natural grade, require the removal of soil until the desired elevation is reached. A cut within the trees Critical Root Zone can remove non-woody and woody roots. Non-woody (absorbing) roots are responsible for transporting moisture and nutrients necessary for maintaining tree health. More significant cuts remove woody roots that provide structural support, compromising the tree's ability to stand upright.
- Fill, increasing natural grade, often requires an initial cut to "knit in" and stabilize the material. This material is applied in layers and compacted in the process. Compaction breaks down soil structure by removing air and adding moisture. Anaerobic conditions may develop, promoting decay. Absorbing roots can suffocate from lack of oxygen. Structural roots may be compromised as a result of the decay.

Protected Tree Criteria

Trees that meet protected criteria were determined as defined in *Scotts Valley Municipal Code Section 17.44.080, Tree Protection Regulations*:

7. "Protected tree" means a standing or upright tree meeting any one of the following:

a. Any tree having a main stem or trunk which measures twenty-five inches or greater in circumference (eight 8 inches in diameter, approximately) measured fifty-four inches above natural grade, located in a hillside residential zone where the slope of the area within twenty feet of where the tree is located exceeds twenty percent;

REQUIRED PROCEDURES

Tree Removal due to Construction Impacts

Nine (9) trees will need to be removed to construct the project as proposed. Five of these trees meet "Protected" criteria and require replacement. Trees proposed for removal are within disturbance limits. Trees to be removed are identified in the attached spreadsheet and listed as follows:

- **Trees Removed due to Construction Impacts: Trees #101, 103, 104, 114, 115, 116, 120, 121 and 122.**
 - **Trees # 101, 104, 114, 115, 116 meet "Protected" criteria**

Tree locations are documented on the attached *Construction Impact Assessment Tree Location* map.

Trees are to be removed in a controlled, sectional manner to avoid damaging surrounding trees to be preserved and adjacent properties.

Tree removal is to be performed by a qualified contractor with valid City Business/State Contractors/Timber Operator Licenses and General Liability and Workmen's Compensation insurance.

All applicable California State Department of Forestry (CalFire) permits will be necessary once the City of Scotts Valley approves tree removal.

**Flores Residence Construction Impact Analysis
Tree Removal Summary Table
July 30, 2018**

Number of trees/tree groups inventoried	Number of trees proposed for removal	Trees proposed for removal due to construction impacts	Trees proposed for removal due to construction impacts that meet "protected criteria"	Total number of "protected" trees to be removed that require mitigation
22	9	9	5	5

Tree Maintenance and Monitoring

Maintenance pruning has been defined to remove dead branches and provide vertical clearance for construction for specific inventoried trees defined in the attached spreadsheet. This is necessary in order to decrease the risk of branches, stems and trunks falling and striking workers or the residents.

- **Dead Branch Removal: Trees #102, 105, 106 and 108**
- **Vertical Canopy Clearance Pruning: Tree #118 and 119**

A qualified certified arborist, using the following industry guidelines should be contracted to perform all tree pruning.

- American National Standards Institute A300 for Tree Care Operations-Tree, Shrub and Other Woody Plant Maintenance-Standard Practices.
 - (Part 1)-2001 Pruning
- International Society of Arboriculture: Best Management Practices
- American National Standards Institute Z133.1-1994 for Tree Care Operations-Pruning, Trimming, Repairing, Maintaining, and Removing Trees and Cutting Brush-Safety Requirements

Special Treatments: To be determined by the Project Arborist once grade stakes have been placed including:

Pre Grading Root Severance; A “Ditchwitch” type trencher with sharp cutting teeth will prune roots along the Limits of Grading to minimum depths of three feet under the direction of the Project Arborist. This machine can be used when the “Final Line of Disturbance” is near the perimeter of the Critical Root Zone following these procedures:

- Establish a “final line of disturbance” with field staking. This line represents the furthest distance from the trees trunk that will allow the proposed construction.
- Trench to a minimum three-foot depth along this established line.
- Prune roots after trenching using the techniques defined below.

A backhoe type machine may be required near several trees to be preserved on this site for preconstruction root severance treatments if the distance between these trees and the grading limit cannot be decreased. This procedure is defined below:

- Establish a “final line of disturbance” with field staking. This line represents the furthest distance from the trees trunk that will allow the proposed construction.
- Determine the depth of the cut required.
- Begin digging 8 to 10 feet from the established line in a “spoke in wheel” pattern, using the tree trunk as the hub.
- Dig toward the trees trunk to determine where roots are located to the required depth
- Begin pruning roots using the techniques defined below.
- Upon reaching the final line of disturbance make the final root pruning cuts.

Root Pruning

Once the trencher has severed roots and grading equipment has removed soils from the root severance trench, roots are to be pruned cleanly leaving bark intact. All root pruning should be performed by skilled labor. The following tools should be used:

- Hand-pruners/Loppers
- Handsaw
- Reciprocating saw
- Chainsaw

When completed, the pruned portions should be covered with burlap or similar material and kept moist.

Required Tree Replacement

Compensation for tree removal required in order to complete the project will include:

- Preservation and protection of retained trees/tree groups
- Implementation of Special Treatments to be defined by the Project Arborist once grade stakes are placed
- Tree planting as a component of the planned landscape to be maintained in perpetuity

A replanting program for 5 “protected” trees proposed for removal shall meet 2:1 replacement ratios, two trees planted per “protected” tree removed. If there is insufficient space to replant 28 replacement trees, a hybrid mitigation plan may be designed. If the number of trees planted is not sufficient to meet 2:1 replacement ratios, a contribution to the Tree Trust Fund representing \$80 per “protected” tree removed will be required for the remainder of trees that cannot be replanted.

Replacement trees should be 15-gallon nursery grown container trees, or trees propagated from native seed sources. Tree species for forest restoration could be comprised of:

- Interior live oak *Quercus wislizenii*
- Coast live oak *Quercus agrifolia*
- Big leaf maple *Acer macrophyllum*
- Coast redwood *Sequoia sempervirens*
- Western redbud *Cercis canadensis*
- Dogwood *Cornus* sp.

Tree species for landscaping near the home may consist of species found in *Tree Species That Perform Well In The Scotts Valley Area*. This publication can be found on the City website or in hard copy at the City of Scotts Valley Planning Department.

Nursery stock selected for dominant species shall be standard (single trunk).

Trees planted should be well formed without co-dominant, poorly attached stems. Trees shall be disease free and absent of swirling or girdling roots.

Qualified professionals adhering to the following guidelines shall plant the replacement trees:

- Prepare the planting site by excavating 3 times the width and 2 inches less than the exact depth of the nursery container.
- Prune any visible matted or circling roots to remove or straighten them. Cut the root ball vertically on opposite sides at least half the distance to the trunk.
- Free roots from the root ball breaking away some of the soil to provide better contact between the root ball and the backfill soil.
- Backfill with native soil.
- After backfilling a two to four-inch layer of tree chip mulch should be applied to the soil layer. Chips should not be applied within 12 inches of the trunk.
- Stakes, for support should be driven opposite sides of the root ball and driven into the soil. The tree can be secured to the stakes using “Arbortape” or by using the “ReadyStake” system.

Supplemental irrigation will be provided the new trees by means of a temporary “drip” emitter system for a period of two (2) years. This system shall be designed, installed and maintained by a qualified professional to maintain appropriate moisture levels.

Maintenance and Monitoring Program Criteria

To ensure the survivability and proper growth of the replacement trees success criteria will be defined to meet a 100% survival rate and implemented as follows.

- A qualified professional will monitor the newly planted trees at one (1) month intervals for the first year of growth and every 3 months thereafter for an additional four-year period
- Tree health and growth rates will be assessed
- Trees suffering poor growth rates or declining health will be identified
- Invigoration treatments will be provided
- Dead trees or trees in an irreversible state of decline will be replaced
- At the end of the five-year period the status of the new plantings will be assessed to make certain that success criteria has been met and all replacement trees planted are performing well

Implementation of these success criteria shall be a condition of project approval.

APPRAISED VALUE OF PRESERVED TREES

As required by Scotts Valley Municipal Code Section 17.44.080, the “protected” trees on this site to be preserved were valued using Trunk Formula Method. This procedure is consistent with the national standards authored by the Council of Tree and Landscape Appraisers and published in the year 2000 by the International Society of Arboriculture in the Guide for Plant Appraisal, Ninth Edition.

The Trunk Formula Method is used to appraise the monetary value of trees too large to be transplanted. Appraisal calculations for individual trees on each lot as well as project access road impacts are included on attached spreadsheet. This method uses planting costs, trunk diameter at 4.5 feet and a factor representing growth to determine the Basic Tree Cost. This Basic Tree Cost is multiplied by Species, Condition and Location factors to establish the appraised value of the tree.

The appraised value of the “protected” trees to be preserved within 20 feet of the Limits of Grading is \$39,277. These values are documented on the attached. A retention bond in this amount shall be posted by the developer and held in trust by the City of Scotts Valley. If project management fails to implement recommended procedures, the contract cost of implementation of necessary tree preservation treatments shall be deducted from the retention funds. If trees are damaged the appraised value of damage to these preserved trees, resulting from construction activities shall be determined by the Project Arborist, monetary costs/fines assessed and deducted from the retention funds.

Damage shall be defined by the Project Arborist with fines assessed and may include any of the following:

- Unauthorized pruning by contractor or sub contractor, branch size dependant per occurrence:
 - 1 inch diameter branch: \$1000
 - 1 to 2 diameter inch branch: \$2000
 - 2-3 inch diameter branch: \$4000
 - Branches greater than 3 diameter inches: \$5000
- Any further disturbance or cutting of structural roots beyond the currently established limit of excavation (final line of disturbance) and/or within a tree’s Critical Root Zone: \$5000
- Unauthorized intrusion into the defined tree protection exclusionary zone.
 - \$1000 per occurrence

TREE PRESERVATION AND PROTECTION

Tree Preservation Specifications included in this report outline specifics for tree protection structures and other procedures that will provide the best opportunity for their long-term survivability.

Tree Preservation Structures shall be constructed of the following materials as field specified by the Project Arborist.

- Chain link, 72 inches in height secured to metal stakes driven at least 18 inches into the soil.
- Temporary orange snow fencing attached to “T” posts driven into the ground
- Silt fencing
- Rice straw bales

Tree Preservation Structure locations are documented on the attached Tree Location/Preservation Map.

Monitoring of the project will be the responsibility of the Project Arborist. Site inspections will take place at the following intervals;

- Following on-site placement of grade stakes
- During tree removal operations
- During preconstruction root severance
- After Tree Preservation fencing locations have been staked
- Following Tree Protection fencing installation and prior to the commencement of grading
- During all grading activities within Critical Root Zones
- As necessary during the grading activities to ensure compliance with all conditions of project approval

Site monitoring forms will be submitted to Scotts Valley Planning Department at regular intervals.

To ensure the protection of the trees remaining on this site it is imperative that the recommendations detailed within this document are incorporated as conditions of project approval.

Questions regarding this report may be directed to my office.

Respectfully submitted,

James P. Allen
Registered Consulting Arborist #390

Tree Preservation Specifications
Flores Residence
115 Blueberry Drive, Scotts Valley CA
APN 021-292-03

These guidelines should be printed on all pages of the development plans. Contractors and sub contractors should be aware of tree protection guidelines and restrictions. Contracts should incorporate tree protection language that includes “damage to trees will be assessed by James P. Allen, Project Arborist and monetary fines levied”.

A pre construction meeting with the Project Arborist

A meeting with the Project Arborist, Project Manager and all contractors involved with the project shall take place prior to the onset of tree removal. Tree removal and preservation specifications will be reviewed and discussed.

Establishment of a tree preservation zone (TPZ)

Tree protection structures will be

- Chain link, 72 inches in height or temporary orange, 48 inches in height secured to metal stakes driven at least 12-18 inches into the soil.
- Silt fencing
- Rice straw bales

Structures will be installed prior to the onset of grading, under the supervision of the Project Arborist and shall not be moved until after landscape installation is completed

Restrictions within the Tree Preservation Zone (TPZ)

No storage of construction materials, debris, or excess soil will be allowed within the TPZ. Parking of vehicles or construction equipment in this area is prohibited. Solvents or liquids of any type should be disposed of properly, never within this protected area.

Field decisions

The Project Arborist, Soils Engineer and Grading Contractor will determine the most effective construction methods to maintain tree health and stability.

Alteration of grade

Maintain the natural grade around trees. If trees roots are unearthed during the construction process the consulting arborist will be notified immediately. Exposed roots will be covered with moistened burlap until the Project Arborist makes a determination.

Trenching requirements

Any areas of proposed grading and trenching adjacent to preserved trees will be evaluated with the Project Arborist and the contractor prior to construction.

Tree canopy alterations

Unauthorized pruning of any tree on this site will not be allowed. Necessary tree canopy alterations will be performed to the specifications established by the Project Arborist.



**Flores Residence
115 Blueberry Drive
APN 021-292-03**

Dedicated to the Preservation of Trees

**James P. Allen
& Associates**

**Appraised Value of Preserved "Protected" Trees
Trunk Formula Method**

Tree/ Tree Group #	Species	Diameter (inches)	Basic Tree Cost	Rating Percentages %					Nursery Group	Replacement Stock			Stock Price	Installation Cost	Installed Tree Cost	Appraised Trunk Area TAA (in²)	Appraised Trunk Increase TAINCR	Appraised Value
				Species	Condition	Site	Contribution	Placement		Trunk Diameter (in)	Trunk Area (in²)	Basic Price cost/trunk in²						
102	Ponderosa pine <i>Pinus ponderosa</i>	16.8	\$8,229	80%	76%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	221.56	216.81	\$3,002
105	Ponderosa pine <i>Pinus ponderosa</i>	31.5	\$28,494	80%	68%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	778.92	774.17	\$9,300
106	Ponderosa pine <i>Pinus ponderosa</i>	30.2	\$26,205	80%	68%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	715.95	711.20	\$8,553
107	Ponderosa pine <i>Pinus ponderosa</i>	13.9	\$5,687	80%	62%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	151.67	146.92	\$1,692
108	Ponderosa pine <i>Pinus ponderosa</i>	25.5	\$18,733	80%	64%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	510.45	505.70	\$5,755
109	Ponderosa pine <i>Pinus ponderosa</i>	19.6	\$11,138	80%	54%	60%	25%	25%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	301.57	296.82	\$1,764
110	Ponderosa pine <i>Pinus ponderosa</i>	19.8	\$11,363	80%	54%	60%	25%	25%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	307.75	303.00	\$1,800
111	Ponderosa pine <i>Pinus ponderosa</i>	18	\$9,421	80%	72%	60%	60%	60%	4	2.46	4.75	\$36.36	\$172.73	\$172.73	\$345.46	254.34	249.59	\$3,256
112	coast live oak <i>Quercus agrifolia</i>	5	\$1,065	90%	44%	60%	60%	60%	3	2.2	3.8	\$45.46	\$172.73	\$172.73	\$345.46	19.63	15.83	\$253
113	coast live oak <i>Quercus agrifolia</i>	11.8	\$5,142	90%	52%	60%	60%	60%	3	2.2	3.8	\$45.46	\$172.73	\$172.73	\$345.46	109.30	105.50	\$1,444
117	Coast live oak <i>Quercus agrifolia</i>	8.9	\$2,999	90%	54%	60%	60%	60%	3	2.2	3.8	\$45.46	\$172.73	\$172.73	\$345.46	62.18	58.38	\$875
118	Coast live oak <i>Quercus agrifolia</i>	11.3	\$4,729	90%	62%	60%	60%	60%	3	2.2	3.8	\$45.46	\$172.73	\$172.73	\$345.46	100.24	96.44	\$1,583

**TOTAL VALUE
OF
PRESERVED
TREES** **\$39,277**



James P. Allen
 & Associates

Flores Residence
 115 Blueberry Drive, Scotts Valley CA
 APN 021-292-03

DATE 7/30/18

Dedicated to the Preservation of Trees

TREE RESOURCE INVENTORY

TREE #	SPECIES	DIAMETER @ 4.5ft ABOVE NATURAL GRADE (INCHES)	HEALTH	STRUCTURE	PRESERVATION SUITABILITY	CRITICAL ROOT ZONE FOOTAGE RADIUS, Preserved Trees Only	IMPACTS Level of Severity/ Description	• OBSERVATIONS • REQUIRED PROCEDURES • MEETS "PROTECTED" CRITERIA Yes/No
101	Ponderosa pine <i>Pinus ponderosa</i>	6.8	Fair	Poor	Poor	N/A	HIGH/ Within proposed driveway	- Suppressed to the East Leaning slightly to the West Removal due to Construction Impacts - No
102	Ponderosa pine <i>Pinus ponderosa</i>	16.8	Good	Fair	Good	12	HIGH/ Within 3.5' of proposed driveway	- Lower canopy slightly suppressed to the East Dead and dying branches Preserve and Protect Special Treatment Area - Remove dead branches > 1 diameter inch - Yes
103	Ponderosa pine <i>Pinus ponderosa</i>	16.5	Good	Good	Good	N/A	HIGH/ Within proposed driveway	- Well formed tree Small diameter dead branches Removal due to Construction Impacts - Yes
104	Ponderosa pine <i>Pinus ponderosa</i>	11.6	Fair	Poor	Fair	N/A	HIGH/ Within proposed driveway	- English ivy growth on trunk Slightly suppressed to the West Removal due to Construction Impacts - Yes
105	Ponderosa pine <i>Pinus ponderosa</i>	31.5	Fair	Fair	Fair	20	LOW/ Within 15' of proposed garage	- Grows within drainage easement Large diameter dead branches Preserve and Protect - Remove dead branches > 1 diameter inch - Yes



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 & Associates

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DATE 7/30/18

Dedicated to the Preservation of Trees

TREE RESOURCE INVENTORY

TREE #	SPECIES	DIAMETER @ 4.5ft ABOVE NATURAL GRADE (INCHES)	HEALTH	STRUCTURE	PRESERVATION SUITABILITY	CRITICAL ROOT ZONE FOOTAGE RADIUS, Preserved Trees Only	IMPACTS Level of Severity/ Description	• OBSERVATIONS • REQUIRED PROCEDURES • MEETS "PROTECTED" CRITERIA Yes/No
106	Ponderosa pine <i>Pinus ponderosa</i>	30.2	Fair	Fair	Fair	20	LOW/ Within 18' of proposed garage	• Large diameter dead branches • Preserve and Protect • Remove dead branches > 1 diameter inch • Yes
107	Ponderosa pine <i>Pinus ponderosa</i>	13.9	Fair	Poor	Poor	10	MODERATE/ Within 8 feet of proposed stack block retaining wall	• Suppressed to the East • Slightly bowed trunk 35ft. above grade • Apex swoops to the West • Preserve and Protect • Yes
108	Ponderosa pine <i>Pinus ponderosa</i>	25.5	Fair	Poor	Fair	18	MODERATE/ Within 8 feet of proposed stack block retaining wall	• Suppressed to the North • Large diameter dead branches • Preserve and Protect • Remove dead branches > 1 diameter inch • Yes
109	Ponderosa pine <i>Pinus ponderosa</i>	19.6	Fair	Poor	Fair	14	MODERATE/ Within 8 feet of proposed stack block retaining wall.	• Asymmetrical canopy • Suppressed to the North & East • Poor trunk and stem attachment at 45ft. • Preserve and Protect • Yes
110	Ponderosa pine <i>Pinus ponderosa</i>	19.8	Fair	Poor	Fair	14	LOW/ Within 13 to 15' of proposed driveway	• Asymmetrical canopy • Suppressed to the North & East • Poor trunk/stem attachment at 40ft. • Preserve and Protect • Yes



James P. Allen
 & Associates

Flores Residence
 115 Blueberry Drive, Scotts Valley CA
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DATE 7/30/18

Dedicated to the Preservation of Trees

TREE RESOURCE INVENTORY

TREE #	SPECIES	DIAMETER @ 4.5ft ABOVE NATURAL GRADE (INCHES)	HEALTH	STRUCTURE	PRESERVATION SUITABILITY	CRITICAL ROOT ZONE FOOTAGE RADIUS, Preserved Trees Only	IMPACTS Level of Severity/ Description	• OBSERVATIONS • REQUIRED PROCEDURES • MEETS "PROTECTED" CRITERIA Yes/No
111	Ponderosa pine <i>Pinus ponderosa</i>	*18	Fair	Fair	Fair	18	MODERATE/ Within 2 feet of proposed short stack block retaining wall	• Lower branches removed up to 20ft. Small diameter dead branches Trunk bows slightly at 30ft. • Preserve and Protect * Special Treatment Area • Yes
112	coast live oak <i>Quercus agrifolia</i>	6 Stems 2-5in.	Fair	Poor	Fair	8	LOW/ Within 12-15' feet of proposed low stack block retaining wall	• Poor trunk attachment Multiple stems developing from basal sprout growth • Preserve and Protect Special Treatment Area • Yes
113	coast live oak <i>Quercus agrifolia</i>	*11.8	Fair	Poor	Fair	12	LOW/ Within 8' of proposed retaining wall	• Asymmetrical canopy Small diameter dead branches • Preserve and Protect Special Treatment Area • Yes



James P. Allen
& Associates

Flores Residence
115 Blueberry Drive, Scotts Valley CA
APN 021-292-03

DATE 7/30/18

Dedicated to the Preservation of Trees

TREE RESOURCE INVENTORY

TREE #	SPECIES	DIAMETER @ 4.5ft ABOVE NATURAL GRADE (INCHES)	HEALTH	STRUCTURE	PRESERVATION SUITABILITY	CRITICAL ROOT ZONE FOOTAGE RADIUS, Preserved Trees Only	IMPACTS Level of Severity/ Description	- OBSERVATIONS - REQUIRED PROCEDURES - MEETS "PROTECTED" CRITERIA Yes/No
114	coast live oak <i>Quercus agrifolia</i>	21.2 *measured at 3ft. above grade	Fair	Poor	Poor	N/A	HIGH/ Within proposed raised deck	- Divides 4ft. above grade - Poor trunk/stem attachment High Failure Potential Removal due to Construction Impacts - Yes
115	coast live oak <i>Quercus agrifolia</i>	Double trunk 7.2 & 6.3	Fair	Poor	Poor	N/A	HIGH/ Within proposed house footprint	- Double trunk - Poor trunk attachment Removal due to Construction Impacts - Yes
116	Monterey pine <i>Pinus radiata</i>	36.5	Fair	Poor	Poor	N/A	HIGH/ Within proposed house footprint	- Presence of red turpentine beetle - Leans to the West and South - Large diameter broken branches in southern portion of lower canopy Remove due to Construction Impacts - Yes
117	coast live oak <i>Quercus agrifolia</i>	Triple trunk 8.9, 8.7, 5	Fair	Poor	Fair	12	LOW/ No impacts known	- Triple trunk - Trunk swoops North and West - Suppressed to the East - Decayed wound sites Preserve and Protect - Yes
118	coast live oak <i>Quercus agrifolia</i>	Quadruple trunk 11.3, 4.6, 9, 9.8	Fair	Poor	Fair	14	MODERATE/ Within 9' of foundation, Canopy conflicts with proposed structure	- Quadruple trunk - Suppressed to the North - Southern most trunk tangled in poison oak Preserve and Protect - Canopy clearance pruning required - Yes



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 & Associates

Flores Residence
 115 Blueberry Drive, Scotts Valley CA
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DATE 7/30/18

Dedicated to the Preservation of Trees

TREE RESOURCE INVENTORY

TREE #	SPECIES	DIAMETER @ 4.5ft ABOVE NATURAL GRADE (INCHES)	HEALTH	STRUCTURE	PRESERVATION SUITABILITY	CRITICAL ROOT ZONE FOOTAGE RADIUS, Preserved Trees Only	IMPACTS Level of Severity/ Description	• OBSERVATIONS • REQUIRED PROCEDURES • MEETS "PROTECTED" CRITERIA Yes/No
119	coast live oak <i>Quercus agrifolia</i>	6.8	Fair	Poor	Fair	8	MODERATE/ Within 5' of foundation, Canopy conflicts with proposed structure	• Trunk leans to the South Canopy co-mingled with poison oak • Preserve and Protect Canopy clearance pruning required • No
120	Ponderosa pine <i>Pinus ponderosa</i>	7.7	Fair	Poor	Fair	N/A	HIGH/ Within proposed house footprint	• Suppressed young tree • Removal due to Construction Impacts • No
121	coast live oak <i>Quercus agrifolia</i>	4.9	Fair	Poor	Fair	N/A	HIGH/ Within proposed house footprint	• Poor trunk/stem attachment • Removal due to Construction Impacts • No
122	coast live oak <i>Quercus agrifolia</i>	6.2	Fair	Poor	Poor	N/A	HIGH/ Within proposed house footprint	• Broken top at 6ft. above grade Profuse poorly attached sprout growth • Removal due to Construction Impacts • No

Map Key / Legend

- Surveyed Tree Trunk Location
- Field Located Tree Trunk Location
- 101** Meets "Protected" Criteria
- 101** Remove due to Construction Impacts
- 105** Preserve and Protect
- Canopy Extents
- Critical Root Zone/ Tree Preservation Zone
- Tree Preservation Fencing With Straw Bales, where deemed necessary by t Project Arborist
- Canopy Clearance Pruning Required
- Special Treatment Area
Treatments to be Determined by the Project Arborist after grade stakes are set.

Treatments may include:
 - Decrease Grading Limits
 - Pre-Construction Root Pruning
 - Mulching
 - Supplemental Irrigation
 - Canopy Clearance Pruning
 - Alternative Construction Methods

Flores Residence
115 Blueberry Dr.
Scotts Valley, CA
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Tree Resource Assessment/
Construction Impact Analysis/
Tree Protection Plan

Flores Residence
115 Blueberry Dr.
Scotts Valley, CA
APN 021-292-03

Tree Location Map

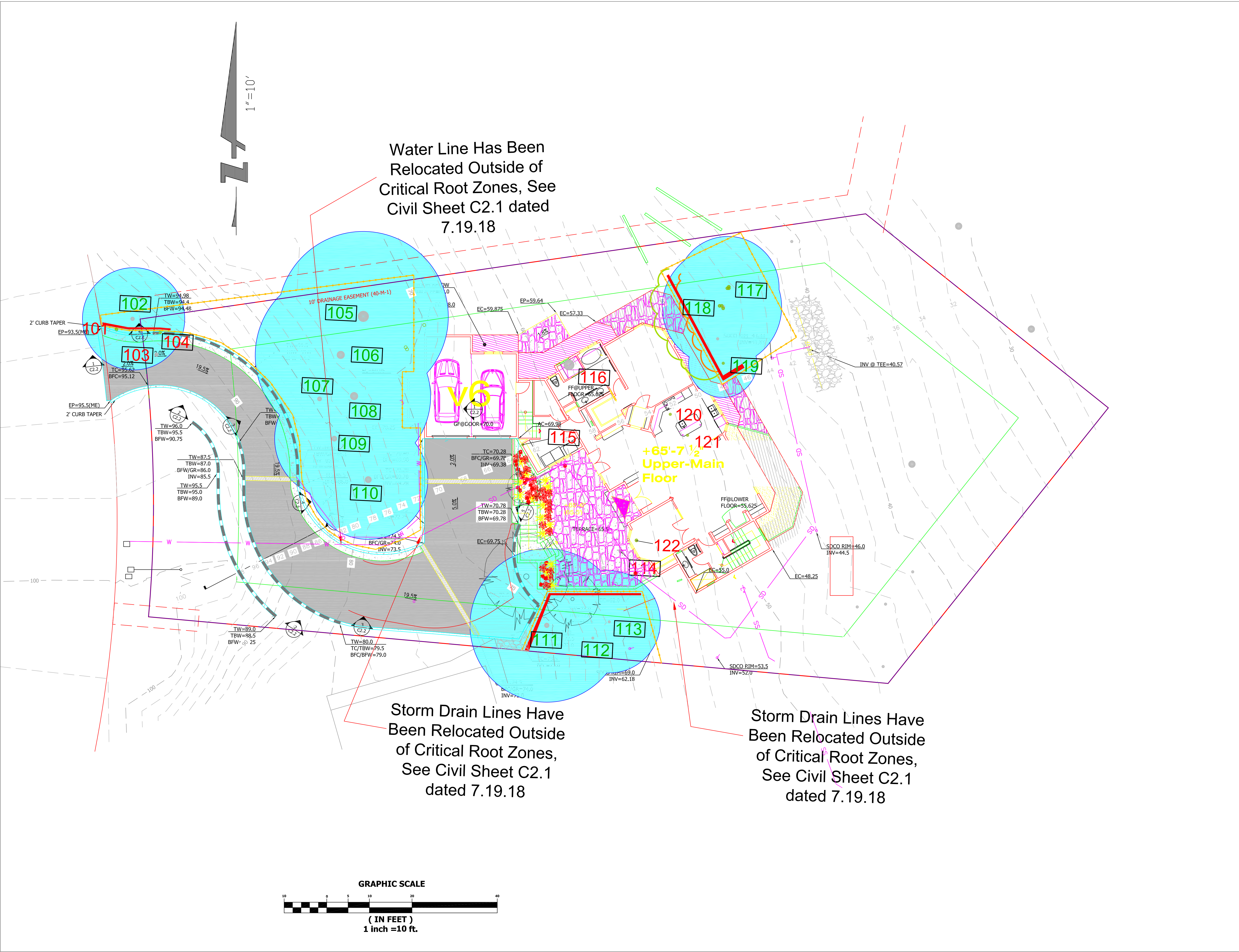


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1 of 1

Date:01/23/18
Revision: 07/30/18
Revision: XX/XX/XX



a New Residence for
Jennie Martha Flores

115 Blueberry Drive, Scotts Valley, California

apn: 021-292-03



Vicinity Map

No Scale

LIST of CONTACTS

Owner Email Telephone	Jennie Martha Flores jennimflores@yahoo.com 831-428-3484
Architect Contact Email Telephone	Glatfelter-Jones & Decker, Architecture Ed Glatfelter-Jones gjd.architecture@gmail.com 831-295-4339
Civil Engineering Contact Email Telephone	C2G/Civil Consultants Group, Inc. Joshua Wolff josh@c2gengrs.com 831-438-4420
Arborist Contact Email Telephone	James P Allen & Associates James Allen jpallen@consultingarborists.com 831-426-6603
Geotechnical Engineer Contact Email Telephone	CMAG Engineering, Inc. Adrian L. Garner, Shannon Chome adrian@cmengineering.com 831-475-1411

DESIGN CRITERIA

All construction is to conform to the 2016 editions of the California Residential Code, Electrical, Mechanical, Plumbing and Fire Codes, and the 2016 California Energy Efficiency Standards, as amended by the State of California and/or the City of Scotts Valley.

The building is to be sprinklered per NFPA 13D standards under a separate submittal.

Zoning District	R-1-10	
ITEM	PROPOSED	ALLOWABLE
SETBACKS		
Front	60'-0"	20'-0" Minimum
Sides	17'-0" & 17'-9"	10'-0" Minimum
Rear	52'-4"	15'-0" Minimum
HEIGHT	32'-5 1/2"	35'-0" Maximum

BUILDING AREAS

Conditioned		
1st FLOOR	1484.0 SF	
2nd FLOOR	2017.0 SF	
Non-Conditioned GARAGE	532.75 SF	
Total Conditioned Garage	3501.0 SF	
Total	532.75 SF	4033.75 SF

LOT COVERAGE

Site Area	18,407 SF	100%	0.42 Acre
House Footprint including garage and decks	3,283 SF	17.8%	

For impervious area calculations, see civil drawings Sheet C2.1

PARKING

PARKING PROVIDED	PARKING REQUIRED
2 Covered	2 Covered
1 Uncovered	1 Uncovered

Site Address	115 Blueberry Drive, Scotts Valley, California
APN	021-292-03
Site Area	18,407 Square Feet
Zoning	R-1-10
Occupancy	Group R-3 dwelling with attached Group U private garage
Construction Type	Type V-B Sprinklered

Project Description	A new single family dwelling and attached garage
---------------------	--

Owner	Jennie Martha Flores 4121 Scotts Valley Drive, #20 Scotts Valley, California 95066
-------	--

INDEX OF SHEETS

Architectural:

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A-1.1
A-1.2
A-1.3
A-2.1
A-3.1
A-3.2

Cover Sheet, Project Data, Vicinity Map
Site Plan and Upper Floor
Site Plan and Lower Floor
Site Lighting and Planting Schematic
Floor Plans
Elevations
Elevations

Civil Engineering:

C0.1
C1.1
C2.1
C2.2
C3.1
C4.1

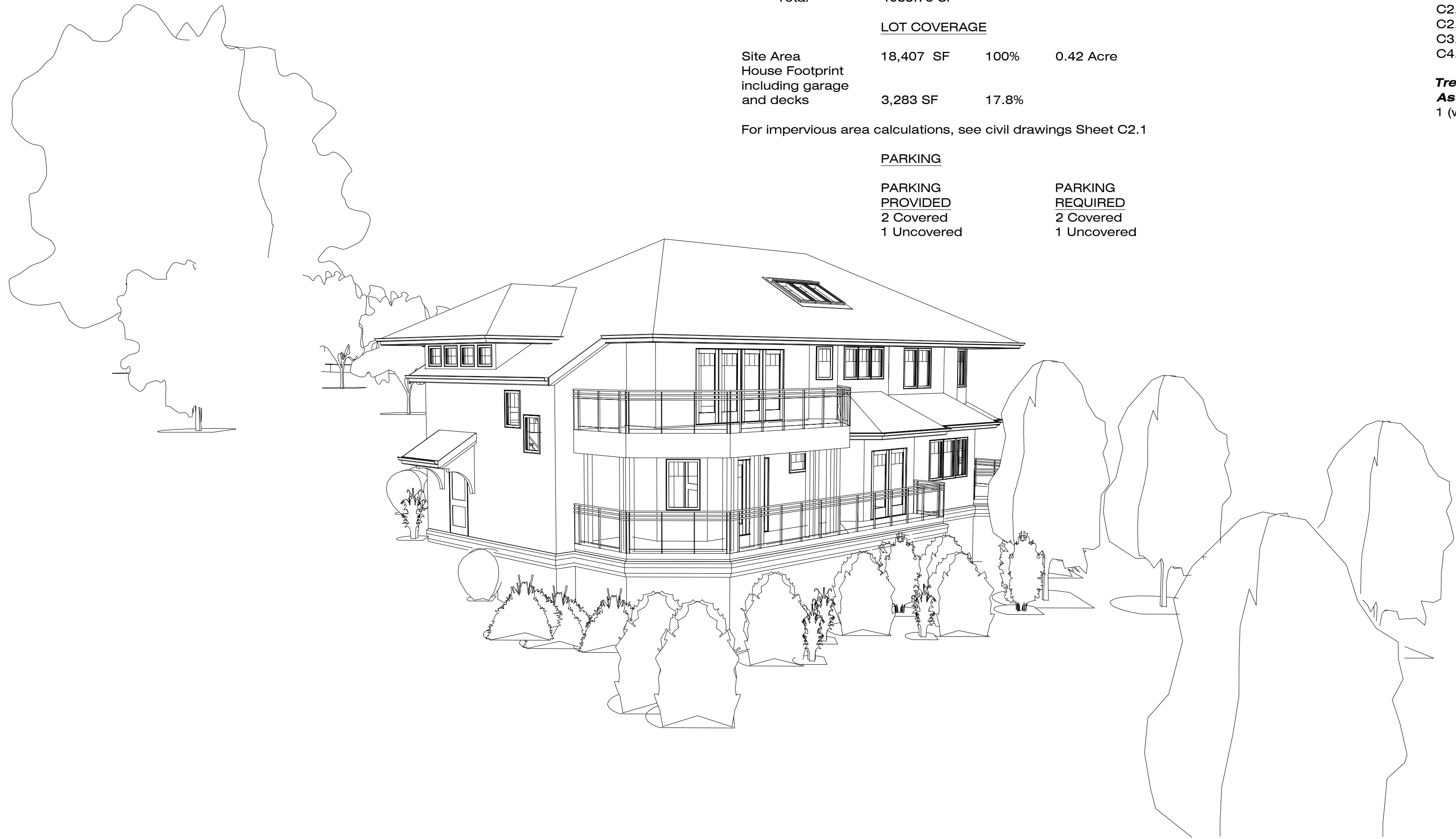
Cover Sheet
Existing and Demolition Plan
Grading and Drainage Profiles
Profiles
Erosion Control Plan
Construction Details

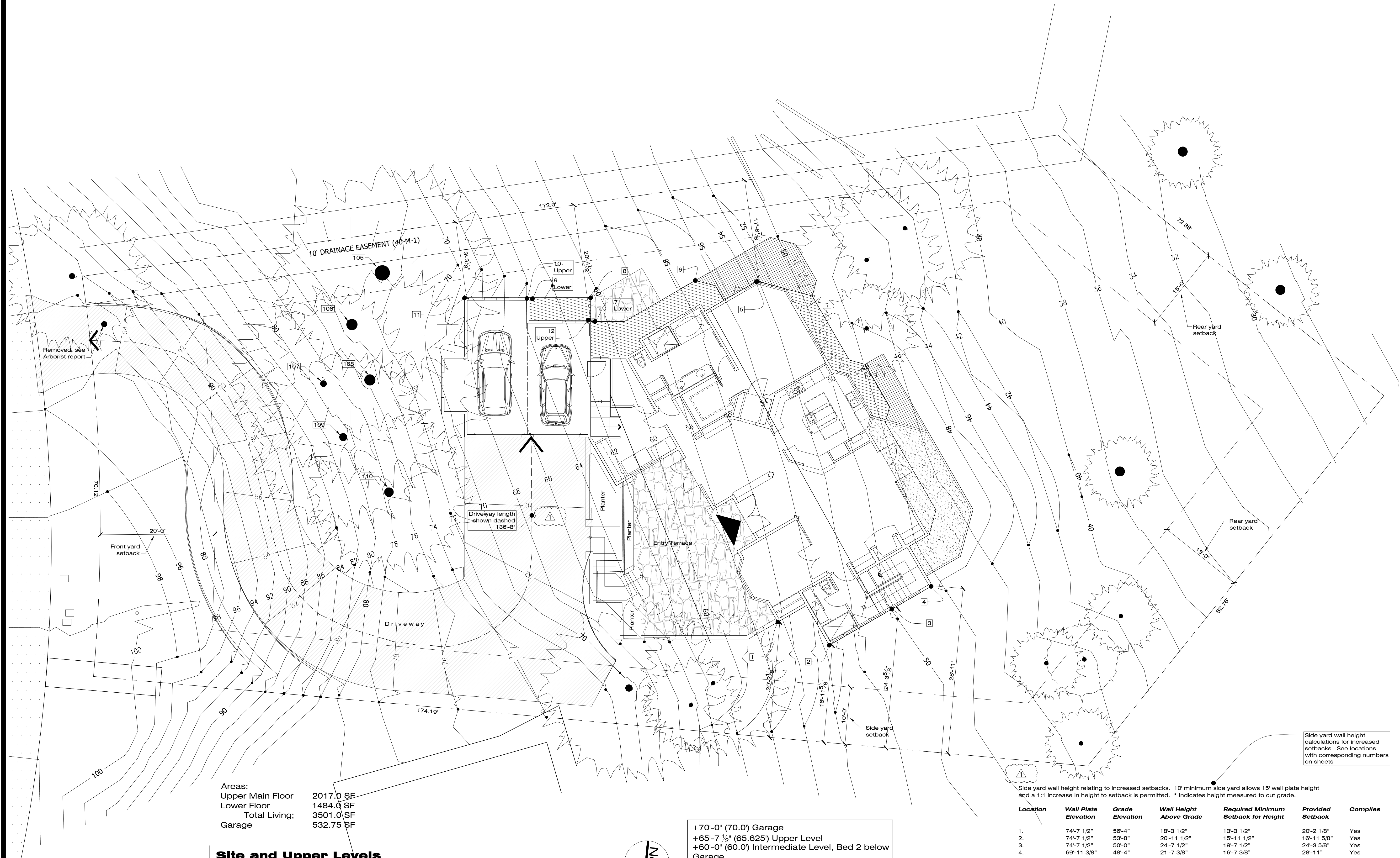
Tree Resource

Assessment:
1 (with attached report)

(previously submitted)

Tree Assessment, Construction Analysis and Tree Protection Plan

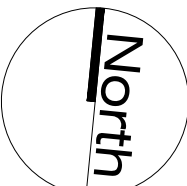




Areas:
Upper Main Floor 2017.0 SF
Lower Floor 1484.0 SF
Total Living; 3501.0 SF
Garage 532.75 SF

Site and Upper Levels
See Sheet A-2.1 for dimensioned floor plans.

1/8" = 1'-0"



+70'-0" (70.0') Garage
+65'-7 1/2" (65.625') Upper Level
+60'-0" (60.0') Intermediate Level, Bed 2 below Garage
+55'-7 1/2" (55.625') Lower Level

Location	Wall Plate Elevation	Grade Elevation	Wall Height Above Grade	Required Minimum Setback for Height	Provided Setback	Complies
1.	74'-7 1/2"	56'-4"	18'-3 1/2"	13'-3 1/2"	20'-2 1/8"	Yes
2.	74'-7 1/2"	53'-8"	20'-11 1/2"	15'-11 1/2"	16'-11 5/8"	Yes
3.	74'-7 1/2"	50'-0"	24'-7 1/2"	19'-7 1/2"	24'-3 5/8"	Yes
4.	69'-11 3/8"	48'-4"	21'-7 3/8"	16'-7 3/8"	28'-11"	Yes
5.	74'-7 1/2"	52'-0"	22'-7 1/2"	17'-7 1/2"	17'-8 7/8"	Yes
6.	65'-1 1/2"	55'-0"	10'-1 1/2"	N/A (10'-0")	16'-0 7/8"	Yes
7.*	68'-5 1/2"	59'-0"	9'-5 1/2"	N/A (10'-0")	20'-4 1/2"	Yes
8.*	68'-5 1/2"	59'-0"	9'-5 1/2"	N/A (10'-0")	16'-4 3/4"	Yes
9.*	68'-5 1/2"	59'-0"	9'-5 1/2"	N/A (10'-0")	14'-10 1/2"	Yes
10.	79'-0"	64'-0"	15'-0"	10'-0"	14'-10-1/2"	Yes
11.	79'-0"	69'-0"	10'-0"	N/A (10'-0")	13'-3"	Yes
12.*	79'-0"	59'-0"	20'-0"	15'-0"	20'-4 1/2"	Yes

Side yard wall height calculations for increased setbacks. See locations with corresponding numbers on sheets

Side yard wall height relating to increased setbacks. 10' minimum side yard allows 15' wall plate height and a 1:1 increase in height to setback is permitted. * Indicates height measured to cut grade.

a New Residence for
Jennie Martha Flores
115 Blueberry Drive
Scotts Valley California
APN 021-292-03

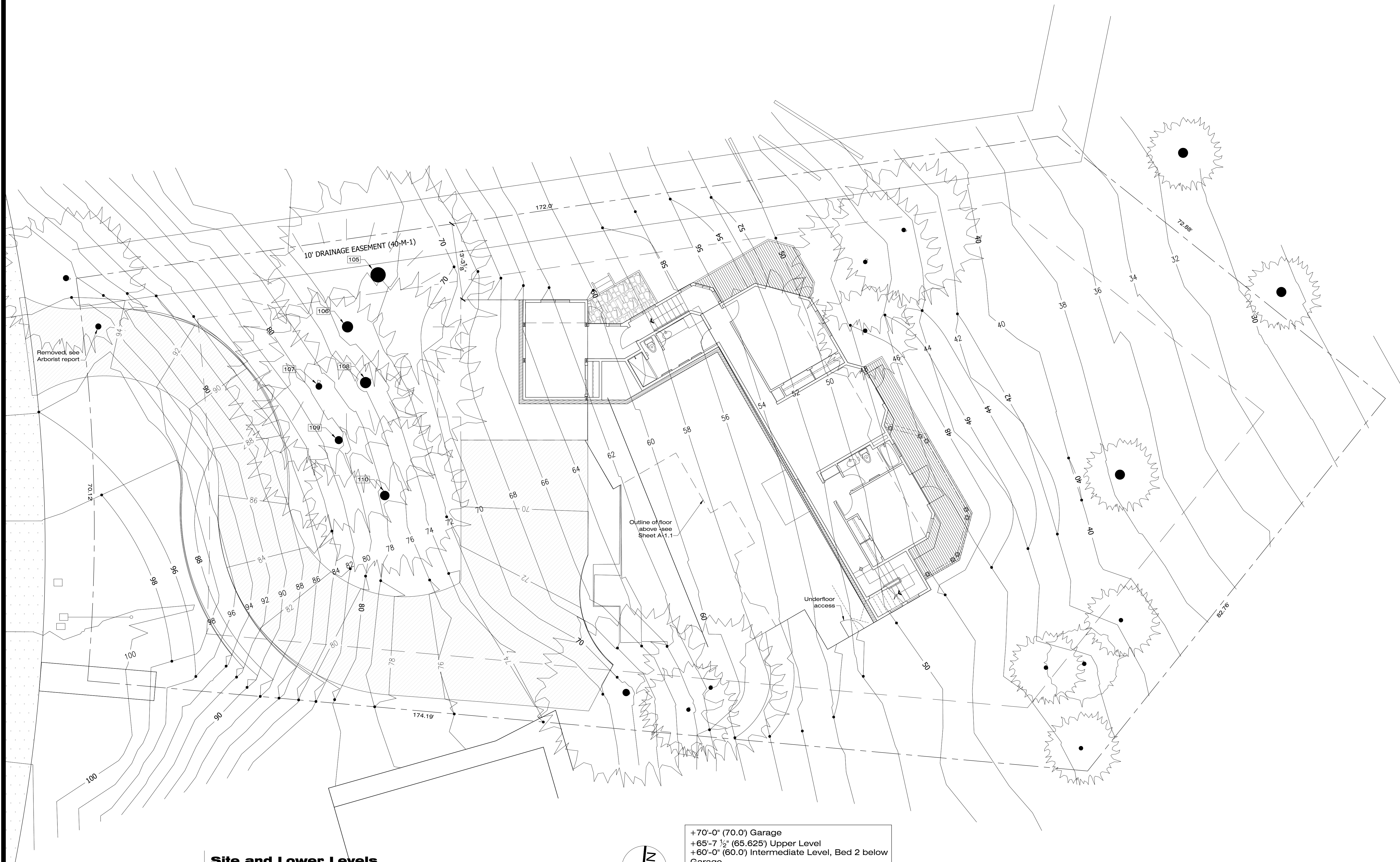
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2018-11-15.Δ

SHEET NO.
A-1.1
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Ed Glatfelter-Jones, Architect
Andrew Decker, Designer/Managing Partner
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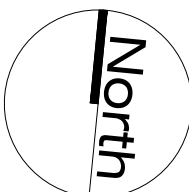
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Andrew: 831/840-5652
email: gjd.architecture@gmail.com



Site and Lower Levels

See Sheet A-2.1 for dimensioned floor plans.

1/8" = 1'-0"



+70'-0" (70.0') Garage
+65'-7 1/2" (65.625') Upper Level
+60'-0" (60.0') Intermediate Level, Bed 2 below Garage
+55'-7 1/2" (55.625') Lower Level

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SHEET NO.
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a New Residence for
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115 Blueberry Drive
Scotts Valley California
APN 021-292-03

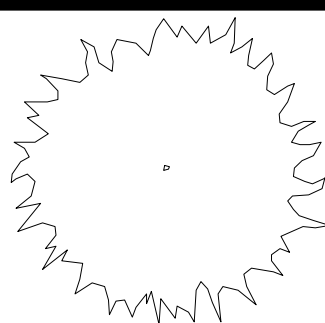
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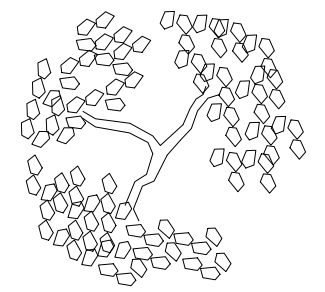
ALL LIGHT FIXTURES INSTALLED IN DAMP LOCATIONS TO BE LABELED 'SUITABLE FOR WET LOCATIONS' OR 'SUITABLE FOR DAMP LOCATIONS'. ALL LIGHT FIXTURES INSTALLED IN WET LOCATIONS TO BE LABELED 'SUITABLE FOR WET LOCATIONS'.

LUMINAIRES INSTALLED IN WET OR DAMP LOCATIONS SHALL BE INSTALLED SUCH THAT WATER CANNOT ENTER OR ACCUMULATE IN WIRING COMPARTMENTS, LAMP HOLDERS OR OTHER ELECTRICAL PARTS.

- Lighting with landscaped areas
- Lighting attached to building/ wall



Existing trees remaining on site. See Arborist plan and report by James Allen



Western Redbud - *Cercis Occidentalis*
15 gallon, 5 Locations



White Wisteria - *Longissima Alba*
1 gallon, 8 locations
at Entry Arbor and masking driveway retaining walls



1 Choisya - Mexican Orange
5 gallon, 13 Locations

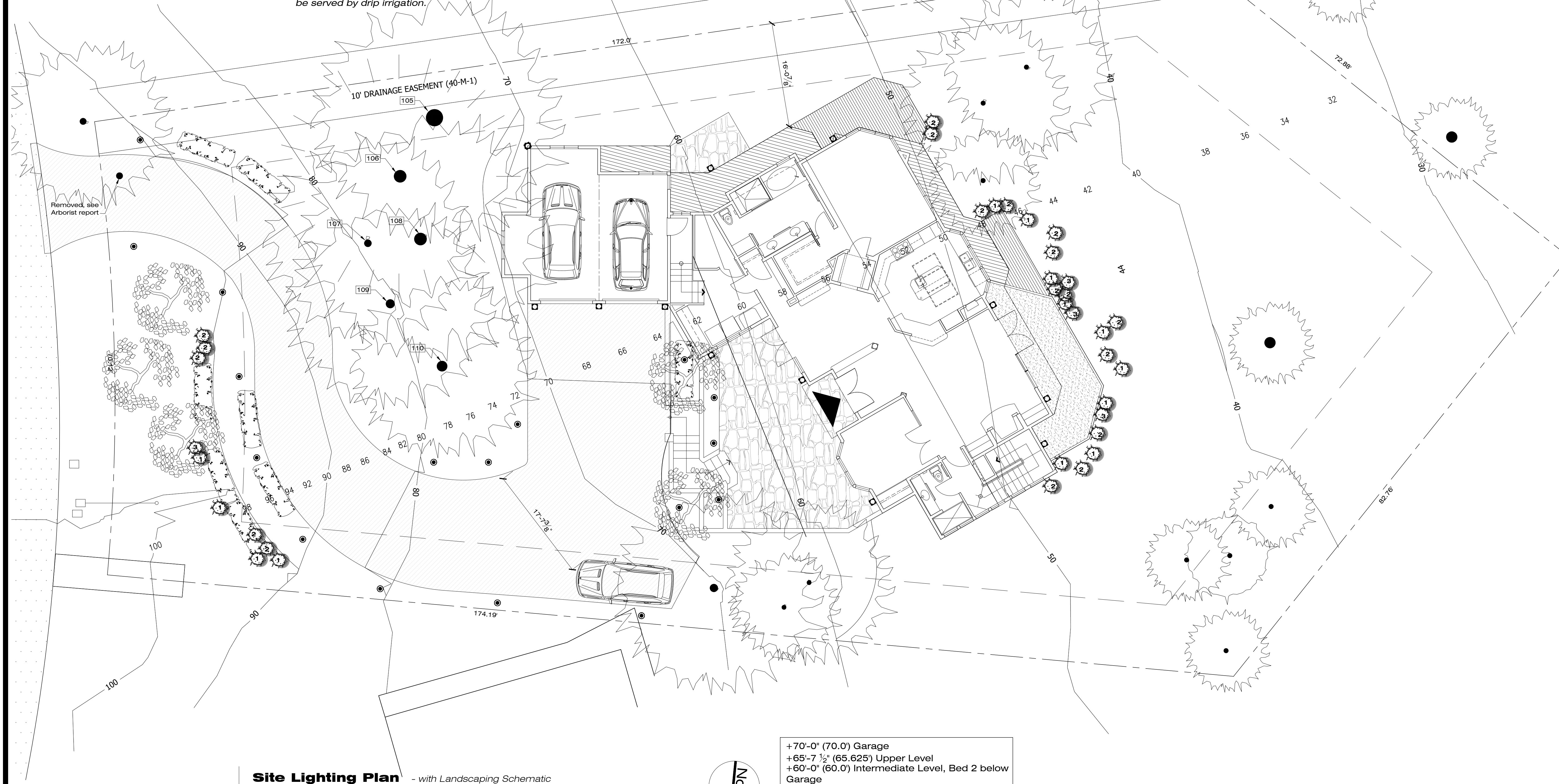


2 Phormium - New Zealand Flax
2 Gallon, 18 locations



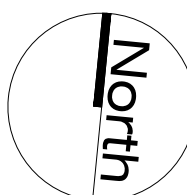
3 Artemisia Californica - California Sagebrush
1 Gallon, 3 locations

Note: The site is to remain in its natural state to protect the June Beetle/ Ponderosa Pine habitat wherever practical. Limited plantings are proposed away from the existing trees in order to mask retaining walls at locations of construction disturbance at the base of the building. No lawns are proposed, new plantings are to be served by drip irrigation.

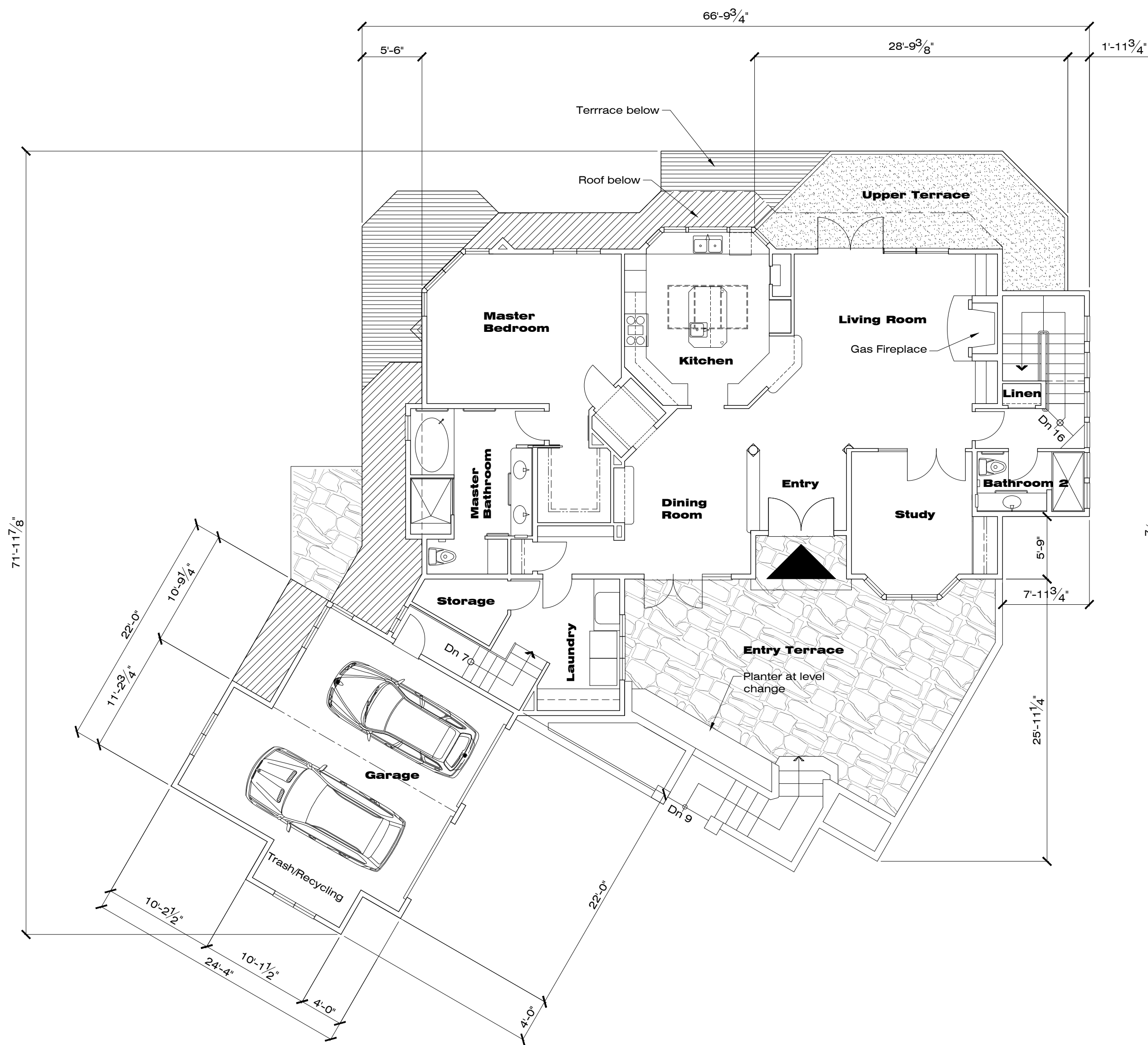


Site Lighting Plan - with Landscaping Schematic

1/8" = 1'-0"



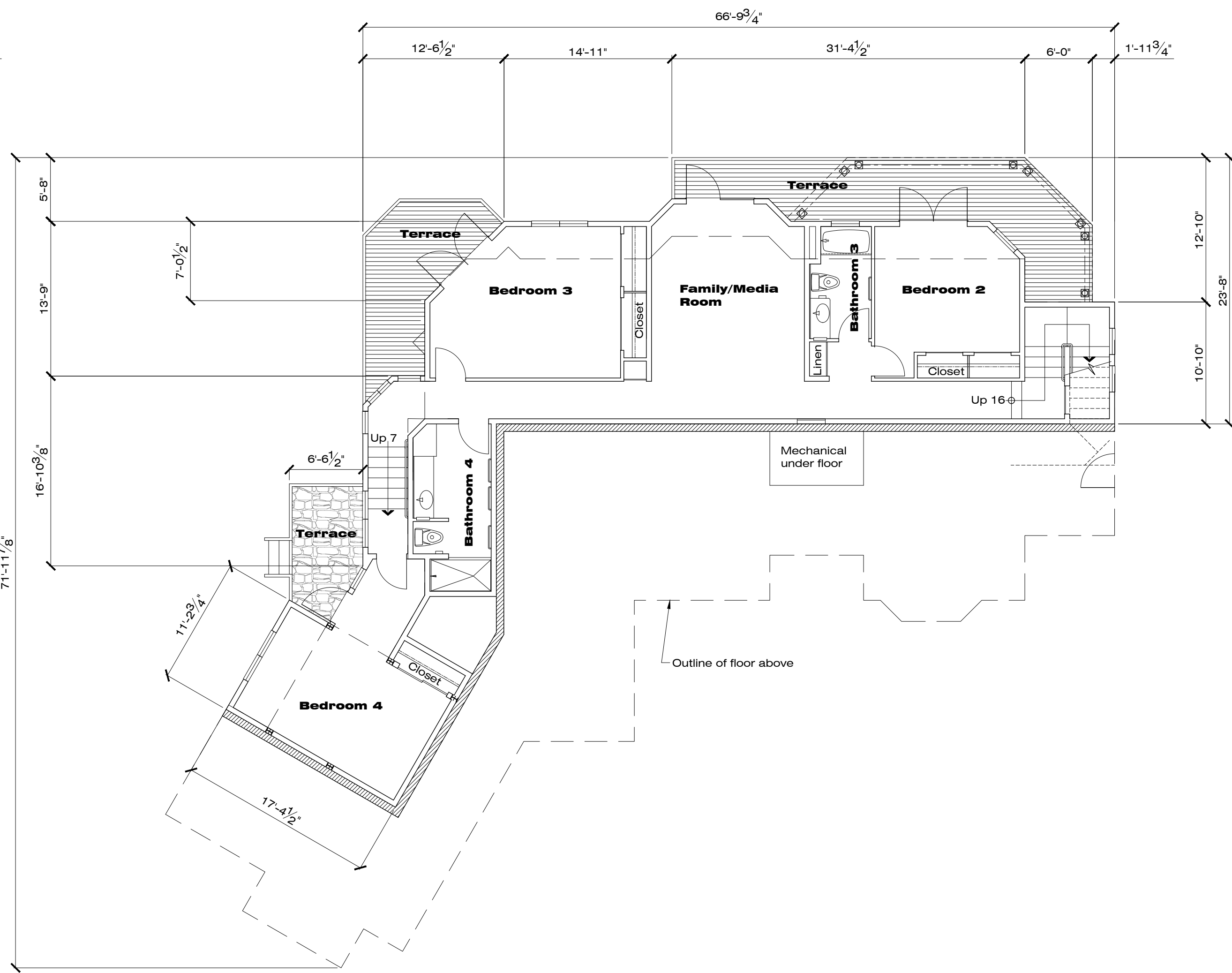
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+60'-0" (60.0) Intermediate Level, Bed 2 below Garage
+55'-7 1/2" (55.625) Lower Level



Upper Floor Plan

1/8" = 1'-0"

Areas:	
Upper Main Floor	2017.0 SF
Lower Floor	1484.0 SF
Total Living;	3501.0 SF
Garage	532.75 SF



Lower Floor Plan

1/8" = 1'-0"

a New Residence for
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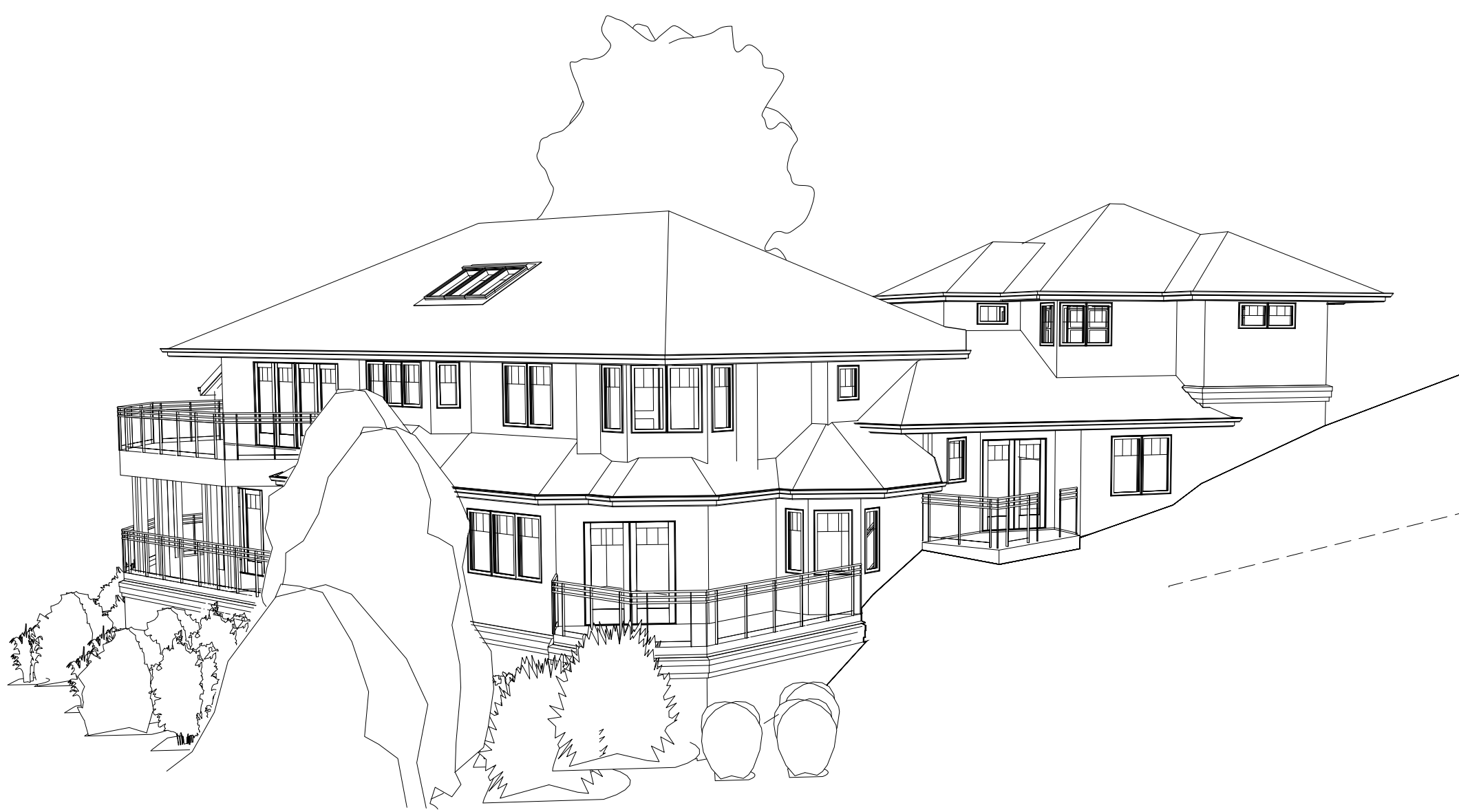
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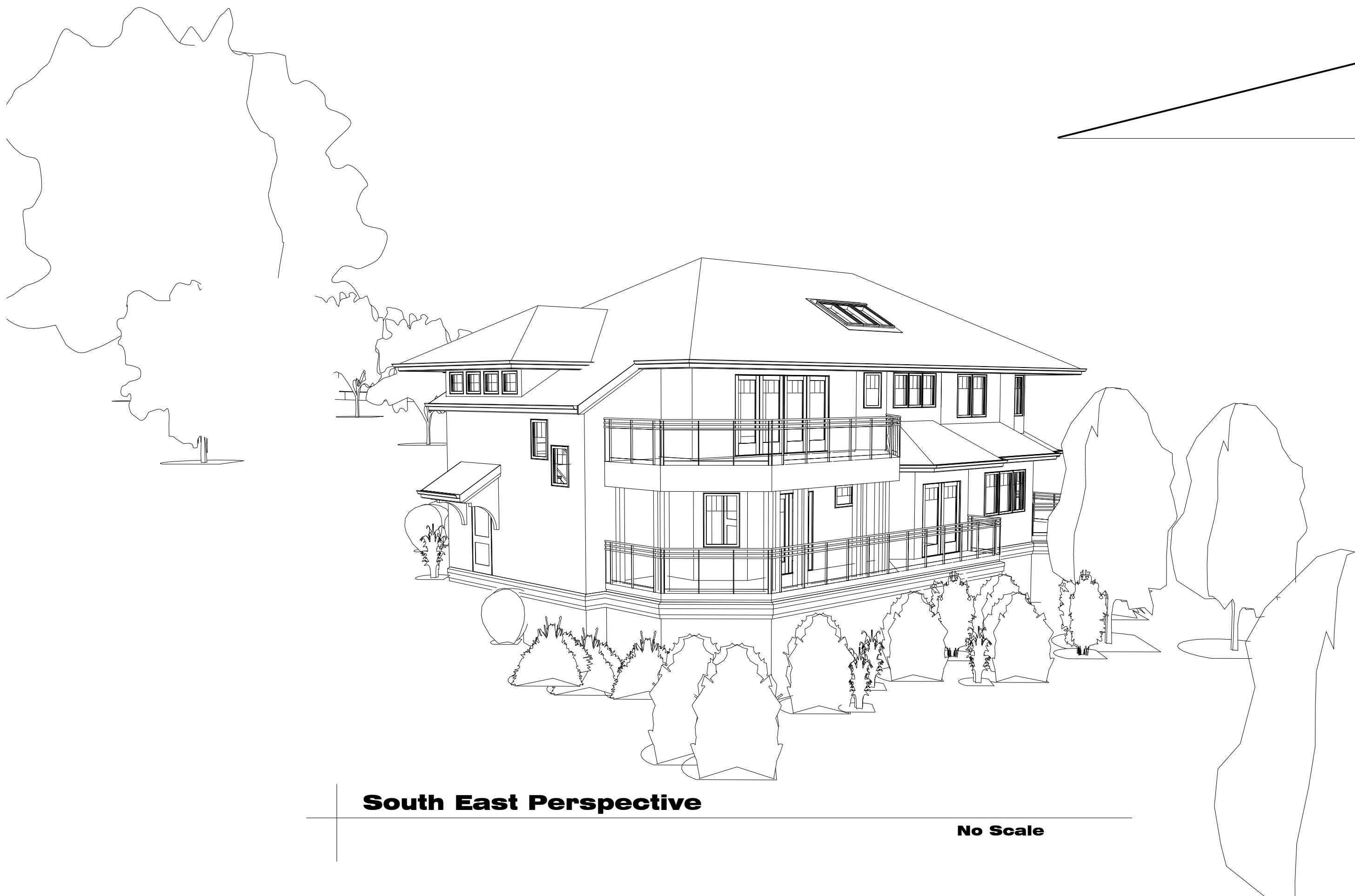
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 Ed Glatfelter-Jones, Architect
 Andrew Decker, Designer/Managing Partner
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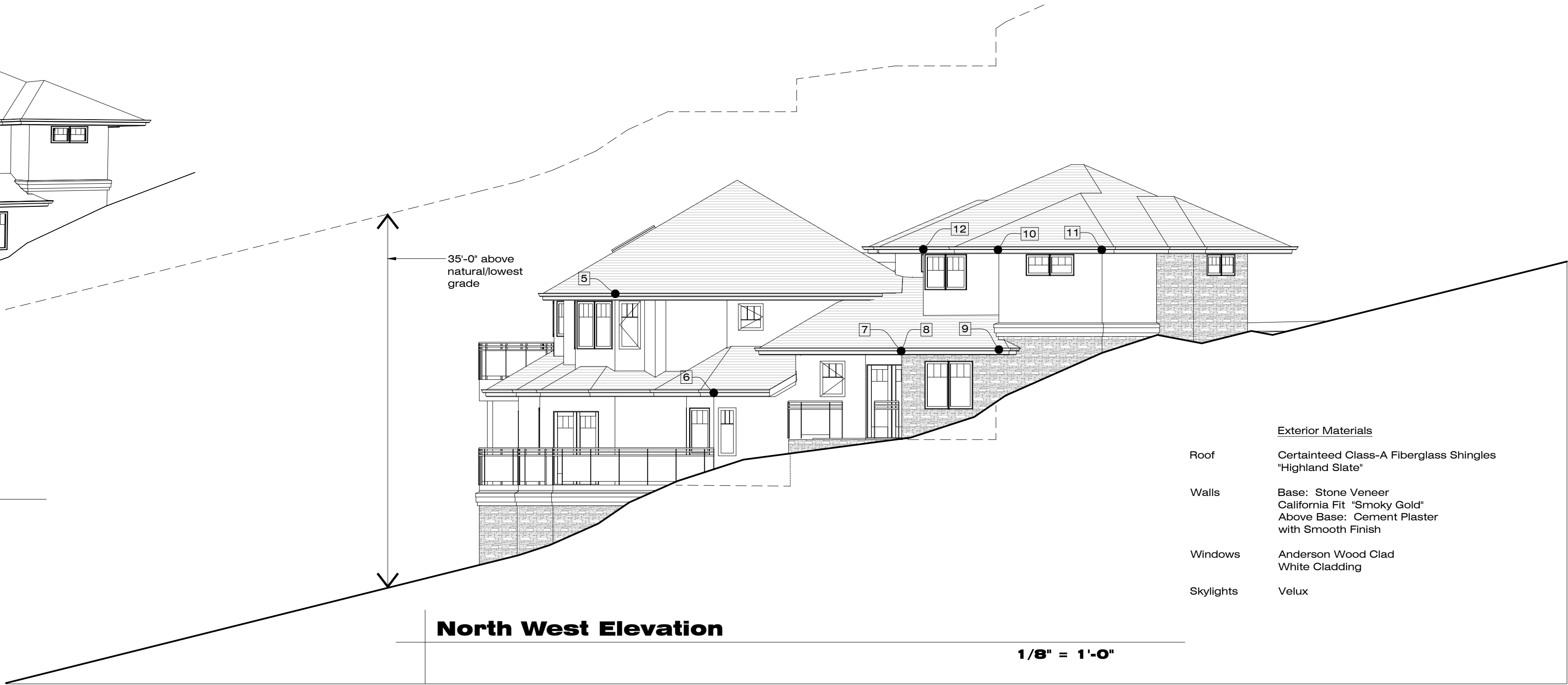
North East Perspective

No Scale



South East Perspective

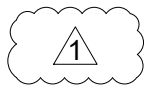
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North West Elevation

1/8" = 1'-0"

Exterior Materials	
Roof	Certainteed Class-A Fiberglass Shingles "Highland Slate"
Walls	Base: Stone Veneer California Fit "Smoky Gold" Above Base: Cement Plaster with Smooth Finish
Windows	Anderson Wood Clad White Cladding
Skylights	Velux



Side yard wall height relating to increased setbacks. 10' minimum side yard allows 15' wall plate height and a 1:1 increase in height to setback is permitted. * Indicates height measured to cut grade.

Location	Wall Plate Elevation	Grade Elevation	Wall Height Above Grade	Required Minimum Setback for Height	Provided Setback	Complies
1.	74'-7 1/2"	56'-4"	18'-3 1/2"	13'-3 1/2"	20'-2 1/8"	Yes
2.	74'-7 1/2"	53'-8"	20'-11 1/2"	15'-11 1/2"	16'-11 5/8"	Yes
3.	74'-7 1/2"	50'-0"	24'-7 1/2"	19'-7 1/2"	24'-3 5/8"	Yes
4.	69'-11 3/8"	48'-4"	21'-7 3/8"	16'-7 3/8"	28'-11"	Yes
5.	74'-7 1/2"	52'-0"	22'-7 1/2"	17'-7 1/2"	17'-8 7/8"	Yes
6.	65'-1 1/2"	55'-0"	10'-1 1/2"	N/A (10'-0")	16'-0 7/8"	Yes
7.*	68'-5 1/2"	59'-0**	9'-5 1/2**	N/A (10'-0")	20'-4 1/2"	Yes
8.*	68'-5 1/2"	59'-0**	9'-5 1/2**	N/A (10'-0")	16'-4 3/4"	Yes
9.*	68'-5 1/2"	59'-0**	9'-5 1/2**	N/A (10'-0")	14'-10 1/2"	Yes
10.	79'-0"	64'-0"	15'-0"	10'-0"	14'-10-1/2"	Yes
11.	79'-0"	69'-0"	10'-0"	N/A (10'-0")	13'-3"	Yes
12.*	79'-0"	59'-0"	20'-0"	15'-0"	20'-4 1/2"	Yes

Side yard wall height calculations for increased setbacks. See locations with corresponding numbers on sheets

a New Residence for
Jennie Martha Flores
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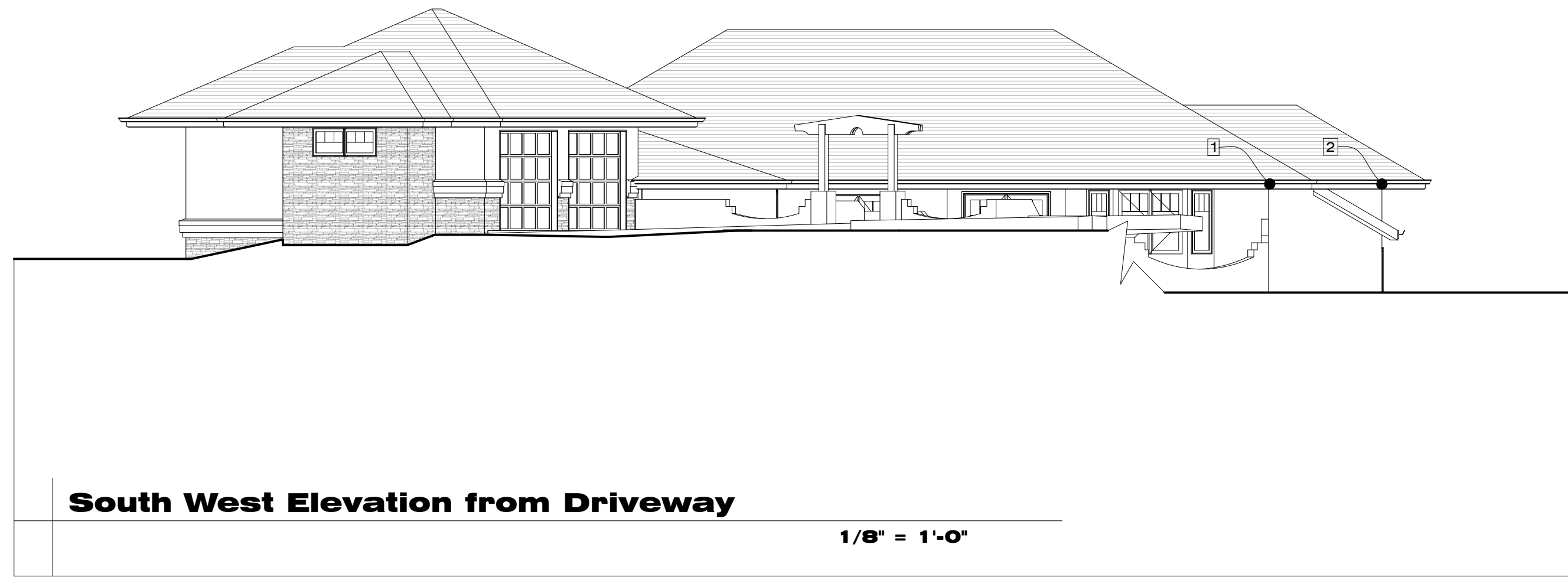
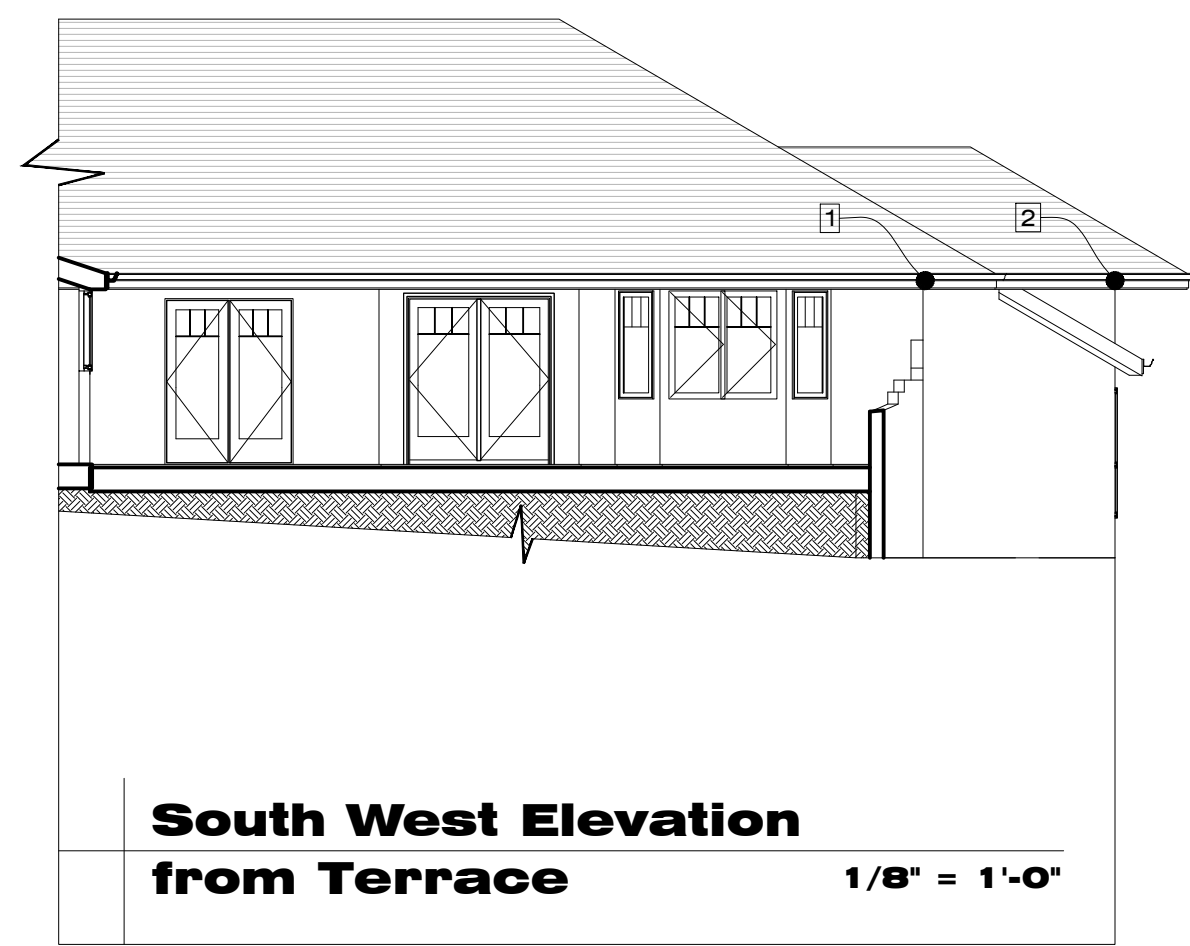
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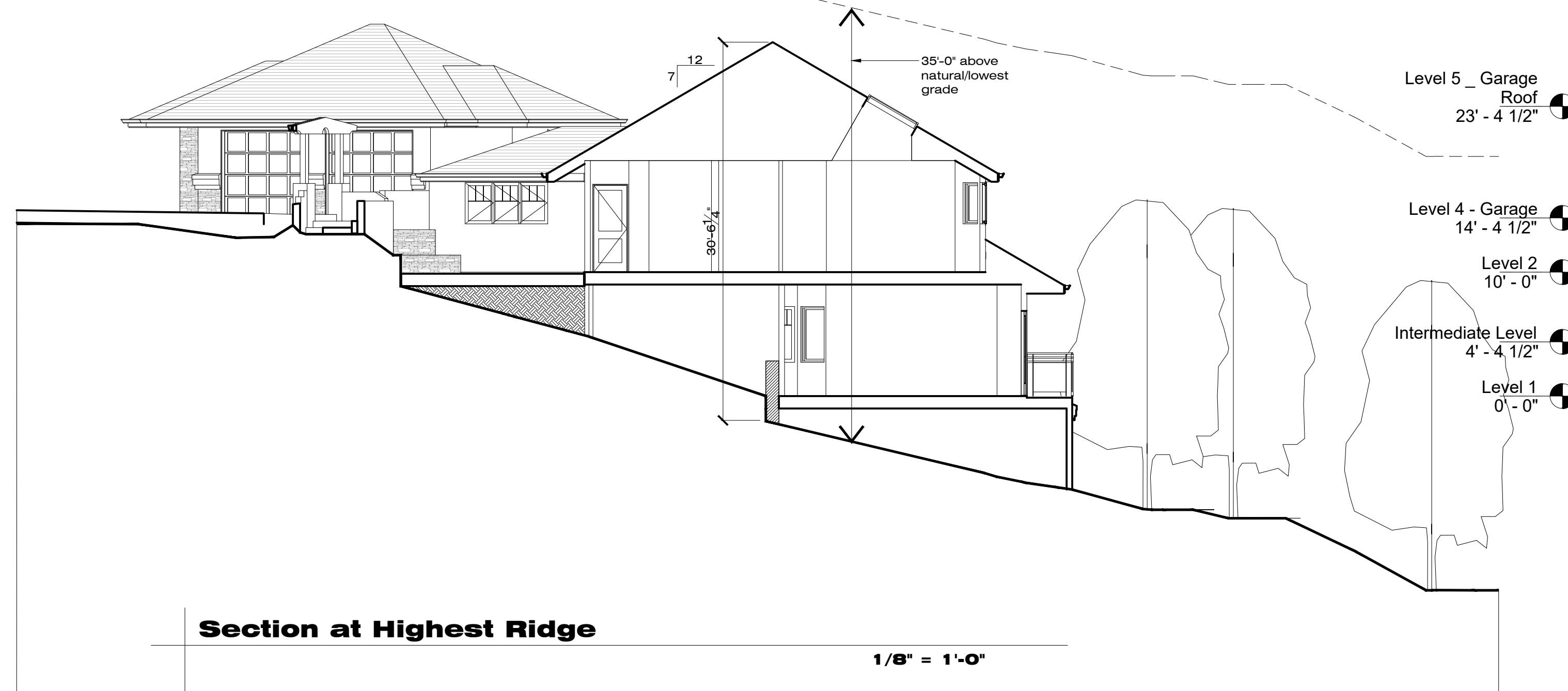
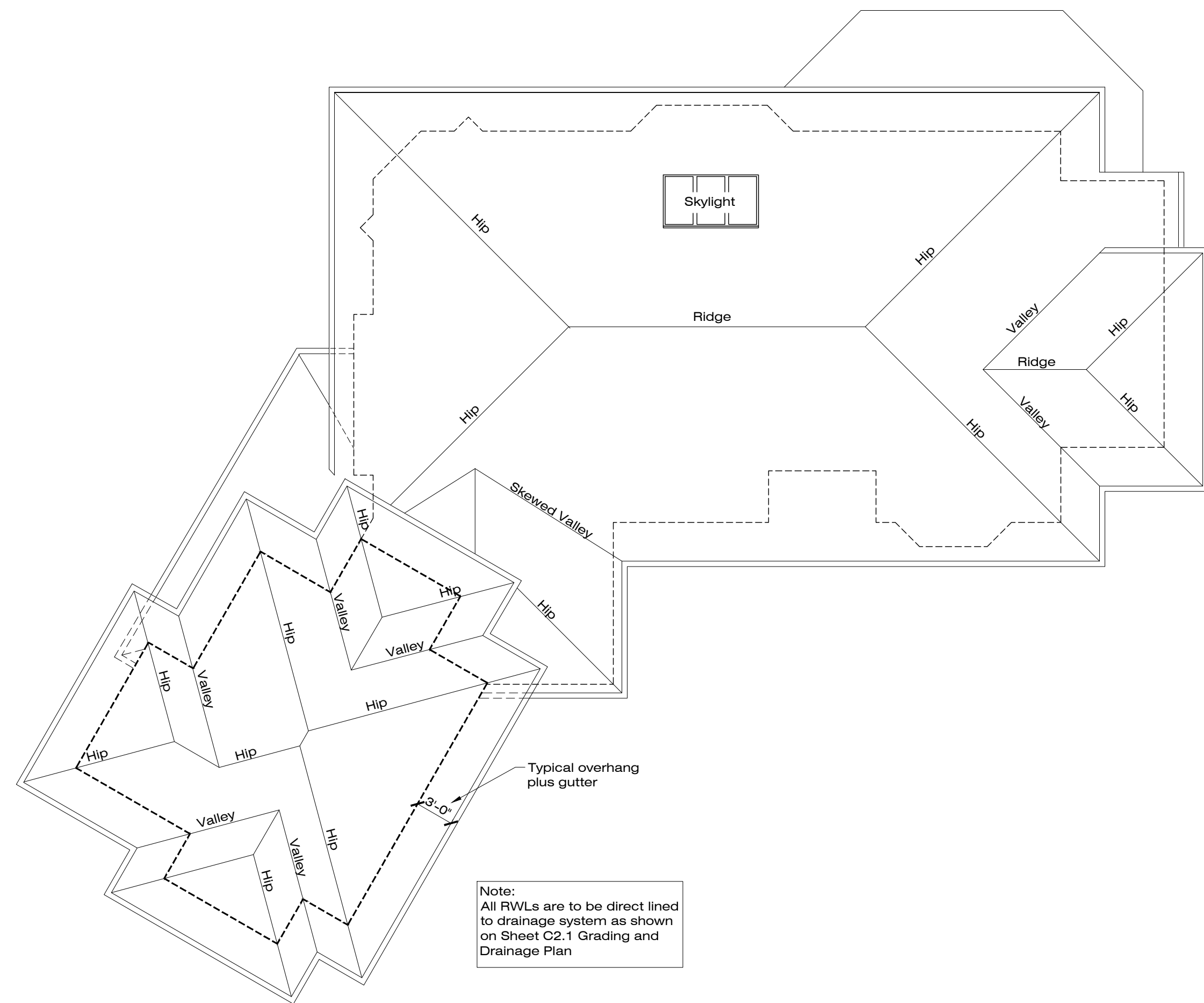
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- Level 5 _ Garage Roof 23' - 4 1/2"
- Level 4 - Garage 14' - 4 1/2"
- Level 2 10' - 0"
- Intermediate Level 4' - 4 1/2"
- Level 1 0' - 0"



- Level 5 _ Garage Roof 23' - 4 1/2"
- Level 4 - Garage 14' - 4 1/2"
- Level 2 10' - 0"
- Intermediate Level 4' - 4 1/2"
- Level 1 0' - 0"



a New Residence for
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A-3.2
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