



2/6/2019

Ana Maria Manzo  
Designer + Job Captain  
Studio3  
638 University Ave.  
Los Gatos, CA 95032  
(408) 292-3252  
ana@studio-three.com

RECEIVED  
S-17-047  
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TOWN OF LOS GATOS  
PLANNING DIVISION

Re: Arborist Addendum for Proposed Driveway at 16 Chestnut Ave. in Los Gatos

Dear Ana,

At your request, I have visited the property referenced above to evaluate the trees present with regard to the planned single family home construction.

**Summary:**

As part of the ongoing construction project at this address, the existing driveway will be demolished, and a new driveway will be installed in approximately the same location.

Three driveway footprint options have been presented to me: (1) retain approximately the existing footprint; (2) reconfigure the driveway to enter on Chestnut Avenue; and (3) reconfigure the driveway to enter on Hernandez Avenue. Two materials have been proposed to me for the new driving surface: (A) pervious pavers, and (B) crushed rock.

The option least impactful to the tree would be to (1) retain approximately the existing footprint, and to use (B) crushed rock for the driving surface. Options 2 and 3 would involve large grading cuts near the trunk of tree #6, necessitating tree removal. Option (A) pervious pavers would impact the tree more than option B, but would not necessitate tree removal.

Tree #6 is in poor health and poor overall condition. If option 1B or 1A is selected, this tree would benefit from substantial site remediation to improve growing conditions.

### **Assignment:**

I have been asked to identify trees which may reasonably be expected to be impacted by the proposed construction, and to provide recommendations for their management consistent with both tree care industry standards Town of Los Gatos regulations.

### **Purpose & Use of the Report:**

This report is intended to satisfy Town of Los Gatos requirements for initial arboricultural reporting for this project. Any change orders or new information will be addressed in addenda.

The property owner, architect, and contractor are all responsible for knowing the information included in this arborist report and adhering to the conditions provided herein.

### **Observations:**

The existing driveway will be demolished, and a new driveway will be installed in approximately the same location. The exact driveway footprint is the topic of ongoing discussions between the town of Los Gatos and the construction team, as the current driveway footprint is inconsistent with some town design guidelines.

The grade of the new house and garage will be approximately 24 inches below existing, necessitating a substantial sloped grading cut in this area of that depth, plus the depths needed for the new sub base. Raising the house and garage any higher than this would require a variance.

#### ***Footprint option 1: similar to existing (Figure 1)***

The driveway footprint recommended by the construction team is largely the same as the existing footprint. The bare dirt area around the trunk would be expanded slightly. No grading would be needed immediately around the tree, and the existing sub base for the existing asphalt would remain in place, to be re-compacted and used for the new driveway material. A small amount of fill and additional sub base would be necessary in portions of the driveway between the tree and the street.

#### ***Footprint option 2: entry from Chestnut Ave. (Figures 2.1 and 2.2)***

Reconfiguring the driveway to enter from Chestnut Avenue would require substantial grading in all areas. It would also require bringing the edge of pavement closer to tree #6, resulting in substantial root loss. Two versions of this option exist, both with the same issues.

The project engineer does not recommend this option, as it may create conflict between the driveway and underground utilities.

***Footprint option 3: entry from Hernandez Ave. (Figure 3)***

Reconfiguring the driveway to enter from Hernandez Avenue would require substantially more grading than entering from Chestnut Avenue. Because the existing grade change is so great, it is unclear whether it would even be possible to implement this footprint safely.

This driveway footprint would require bringing the edge of pavement closer to tree #6.

The project engineer does not recommend this option, as the existing grade change and poor visibility would make vehicle ingress and egress difficult and potentially dangerous.

***Material option A: pervious pavers***

In areas not undergoing grading, no new sub base would be needed to install pavers. In newly graded areas, a sub base comprising eight inches of crushed rock would be needed.

One inch of sand would be placed over the sub-base. The pavers themselves are two inches thick and pervious.

***Material option B: crushed rock***

Four inches of crushed rock would be sufficient from an engineering standpoint, with no sub base needed. Compaction of the native material would be necessary. Existing crushed rock sub base in areas not undergoing grading would remain in place.

Using crushed rock would be less impactful to the tree than using pervious pavers.

***Tree health and critical root zone (Image 1)***

Tree #6 is in poor condition. It appears over mature, with low vigor. Its critical root zone encompasses nearly the entire driveway area, and a substantial distance beyond. For a more detailed analysis of this tree's condition, please see the Tree Protection Report for this project.

**Methods & Limits to Analysis:**

I visited the site on 8/13/2018 and 1/24/2019. All tree observations included in this report were taken on those dates.

I met with design captain Ana Maria Manzo and engineer Velimir Sulic on 1/28/2019 to discuss this project. The figures below are photographs of the site plans we reviewed together at that meeting, the color of which has been edited for clarity.

## **Discussion:**

### ***Critical Root Zone (CRZ)***

Tree roots grow where conditions are favorable, and their spatial arrangement is therefore unpredictable. Favorable conditions vary among species, but generally include the presence of moisture, and soft soil texture with low compaction.

Contrary to popular belief, roots of all tree species grow primarily in the top two feet of soil, with a small number of roots sometimes occurring at greater depths. Some species have taproots when young, but these almost universally disappear with age. At maturity, a tree's root system may extend out from the trunk farther than the tree is tall.

### ***Excavation, Trenching, and Grading within CRZ's***

Removal of soil near trees can impact their roots substantially. Every point at which a root is injured is a potential avenue for infection by decay-causing organisms, which can lead to tree decline.

Excavation equipment can pull on roots, damaging them for several feet past the edge of excavation. Damage can be minimized by severing roots cleanly at the edge, after excavating the top three feet of soil with less-invasive methods. After root pruning at the edge of excavation, the remaining soil on the side away from the tree may be removed using any equipment desired.

### ***Compaction within CRZ's***

Compaction within CRZ's destroys roots, both by crushing them directly and by eliminating soil pore spaces. Without pore spaces, oxygen cannot reach the roots, so transpiration (the breakdown of stored food for the tree to use) is impeded. This results in slowing or cessation of the tree's life processes, which can lead to localized dieback or whole-tree death.

The presence of existing asphalt or concrete within a tree's root zone does not prevent root growth. However, installing new pavement or driveway material of any kind within a tree's root zone can substantially disrupt roots. Permeable pavers and crushed rock create a more hospitable root environment than do traditional paving materials; however, some disruption of existing roots is unavoidable during installation.

### ***Root Zone Remediation and Growth Regulation***

The most reliable way to ensure ongoing tree health is to create a hospitable growth environment while the tree is still healthy, but after a tree begins declining, steps can be taken to improve its chances of survival.

Tree root zones which have undergone compaction in the past can be remediated to some degree by incorporating compost into the soil with an air spade. This decompacts the soil and provides nutrients to help the tree recover root mass destroyed by compaction.

Ongoing irrigation is also essential for regrowing root mass, even in drought-tolerant species or specimens which have never before required irrigation. Some species are highly sensitive to seasonal weather patterns, and this should be taken into account when establishing irrigation regimens.

Spreading wood chips within the CRZ helps hold water in the soil, and also increases biological activity in the soil.

Applying the systemic growth regulator paclobutrazol can also be useful in helping trees repair damage. This chemical causes the tree to direct few resources into leaf growth, which it then redirects into chlorophyll production and root growth. This makes the tree more efficient at making food and using water, respectively, which improves its overall health.

### ***Fertilization***

Fertilizer is not generally recommended for stressed trees, as it can reduce trees' ability to take up water. It may be appropriate to apply specific nutrients or soil amendments to mitigate deficiencies discovered through laboratory testing.

### **Conclusions:**

The least impactful driveway installation option is 1B: retain the existing footprint insofar as practical, and use crushed rock for the new driving surface.

Option 1A is more impactful to the tree than 1B due to the need for a sub base beneath the pavers, but tree retention is still feasible.

Driveway footprint options 2 and 3 would necessitate removal of tree #6 due to grading cuts very close to the trunk.

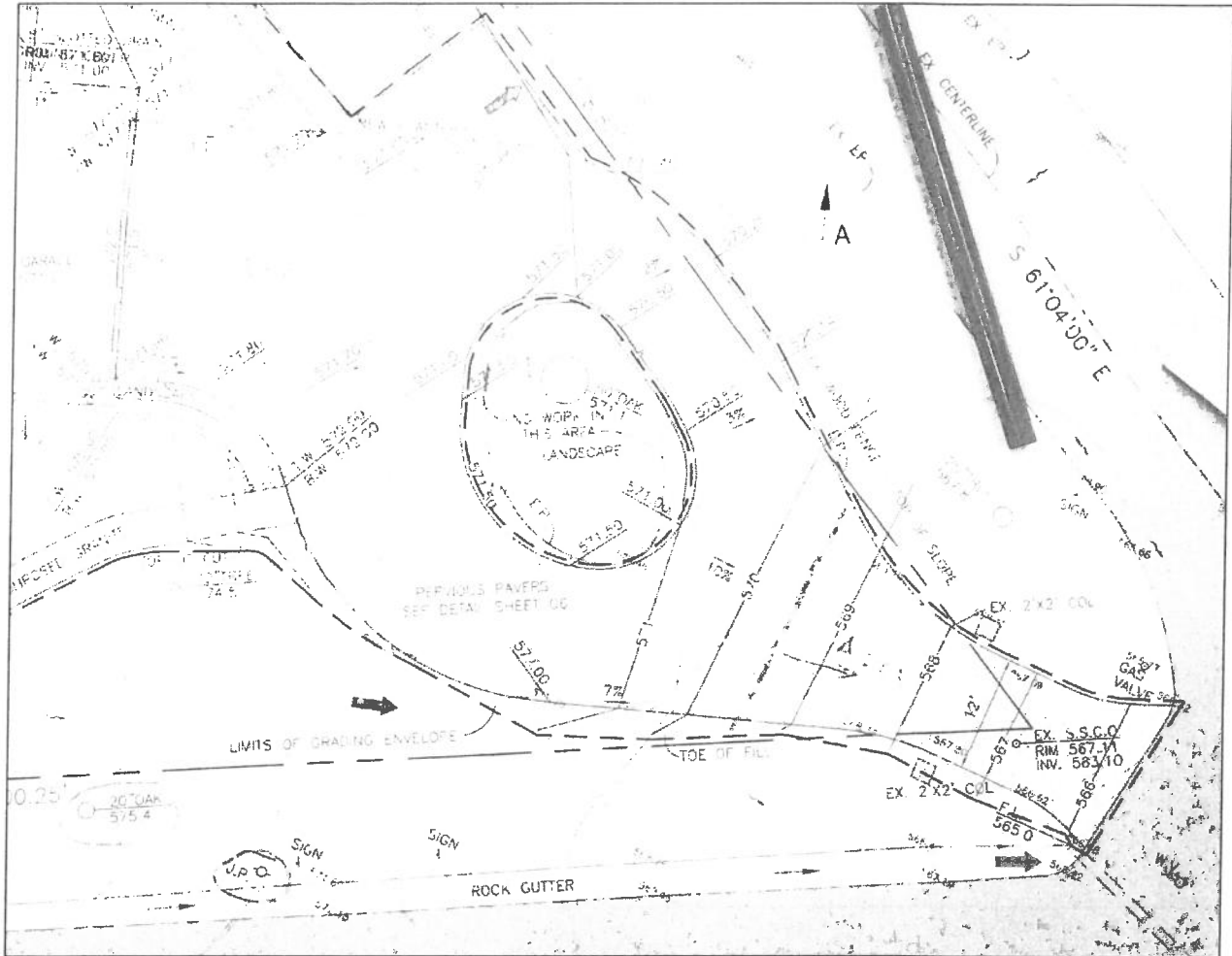
Tree #6 appears to be in decline and is unlikely to recover under current site conditions even in the absence of construction impacts. Substantial site remediation would improve its chances of survival.

## **Recommendations:**

1. If feasible, implement option 1B for driveway installation: retain approximately the existing footprint, and use crushed rock for the new driving surface. Option 1A is also acceptable: retain approximately the existing footprint, and use pervious pavers for the new driving surface.
  - a. Follow all care and protection measures recommended for tree #6 in the Tree Protection Report for this project.
  - b. After construction is complete, perform root zone remediation in all unpaved areas within the CRZ of tree #6, as recommended in the Tree Protection Report:
    1. Decompact the soil with an air spade,
    2. Incorporate compost into the soil with the air spade, and
    3. Spread wood chips over the top of the decompacted soil to a depth of 3-6 inches.
2. If driveway options 2 or 3 are used (entry from Chestnut Ave. or Hernandez Ave., respectively), remove tree #6 prior to making grading cuts.

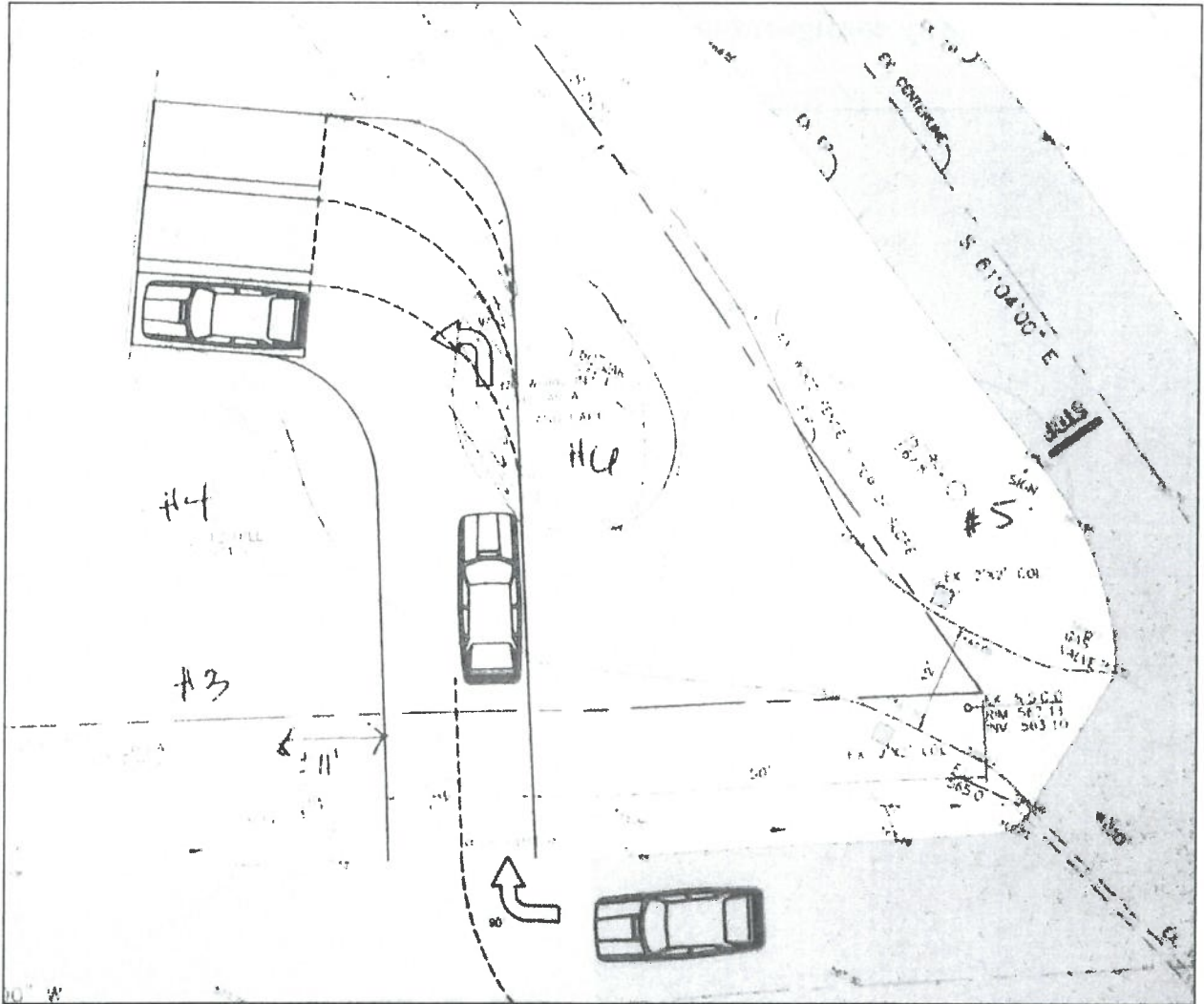
## Appendix: Figures and Images

**Figure 1: driveway configuration option #1, retaining approximate original footprint**



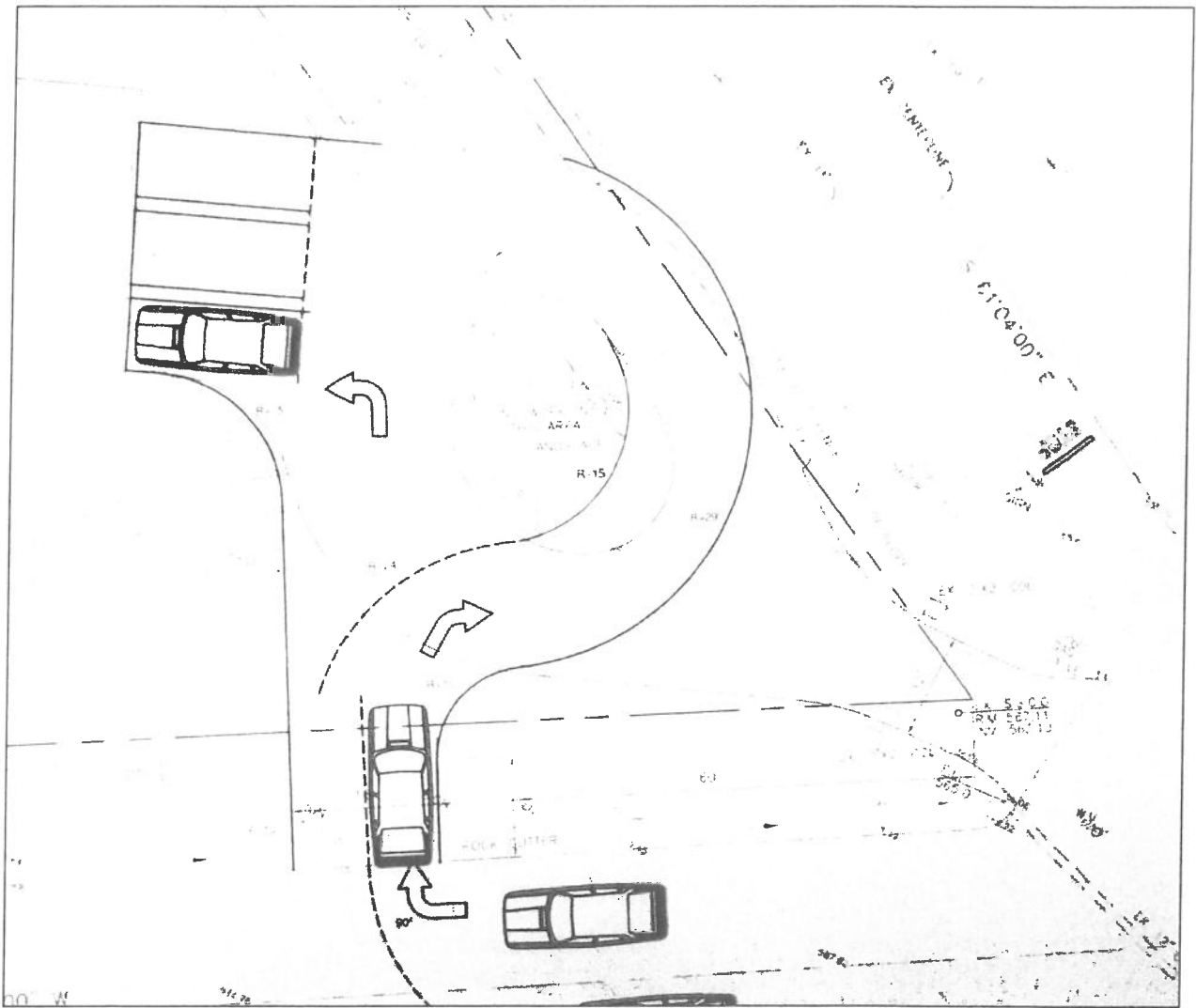


**Figure 2.1: driveway configuration option 2 (first version)**

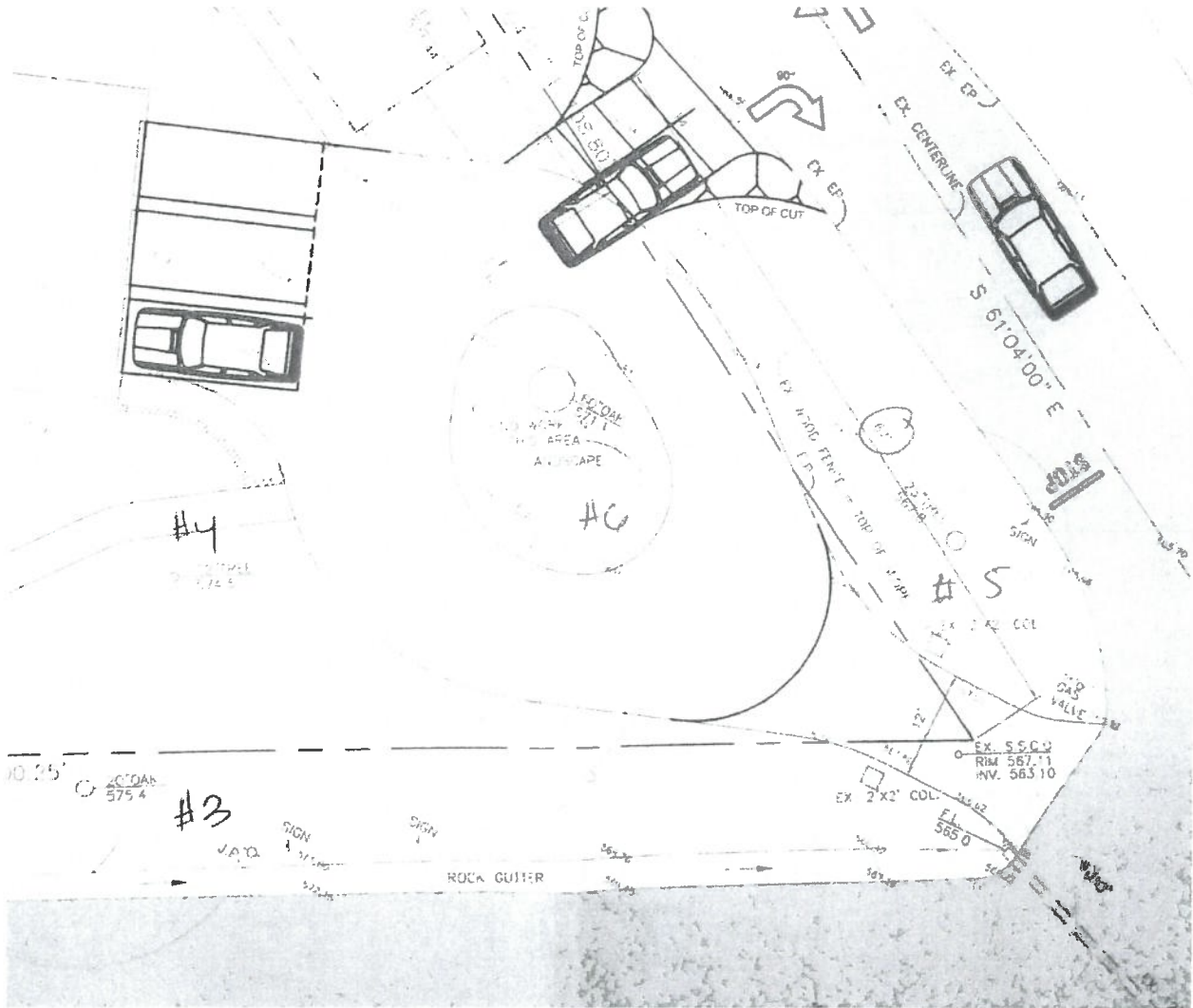




**Figure 2.2: driveway configuration option 2, with entry from Chestnut Avenue (second version)**



**Figure 3: driveway configuration option #3, with entry from Hernandez Avenue**



**Image 1: tree #6 (from my original arborist report)**



Thin canopy  
for species



Decay cavity  
with little  
reaction growth



Girdling  
roots



## ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other government regulations.
3. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.
4. The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
5. Loss, alteration, or reproduction of any part of this report invalidates the entire report.
6. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.
7. Neither all nor any part of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant/appraiser particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society or initialed designation conferred upon the consultant/appraiser as stated in his qualification.
8. This report and the values expressed herein represent the opinion of the consult/appraiser, and the consult/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
9. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
10. Unless expressed otherwise: 1) information in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in future.

Respectfully submitted,



Katherine Naegele  
Consulting Arborist  
Anderson's Tree Care Specialists, Inc.  
A TCIA Accredited Company  
Master of Forestry, UC Berkeley  
ISA Certified Arborist #WE-9658A  
ISA Tree Risk Assessment Qualified  
American Society of Consulting Arborists, Member  
Office: 408 226-8733  
Cell: 408 590-5976

[www.andersonstrecare.com](http://www.andersonstrecare.com)



