



"Hands On Tree Care"



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2/11/2019

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RECEIVED

FEB 12 2019

TOWN OF LOS GATOS
PLANNING DIVISION

Re: Arborist Report for Proposed Development Project 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:

The proposed project comprises demolition of the current house and construction of a new house with approximately the same footprint, plus an added garage. Fourteen trees are present in or near the project area.

Two trees are recommended for removal: Chinese juniper #4A and coast live oak #7. Tree #4A lies at the corner of the existing house and would be substantially damaged during demolition. Tree #7 is dead. Each tree's canopy is approximately 15 feet in width, so the total replacement requirement is six 15-gallon trees.

Coast live oak #6 appears likely to decline irrespective of construction activities, but retention is desired by the property owner. This tree would benefit greatly from the removal of girdling roots and application of a growth regulator in the short term, and substantial site remediation after construction.

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.

Background

I previously prepared an arborist report for an earlier version of this project. This report is intended to replace that earlier report.

Introduction and City Regulations:

Many factors influence how a tree will be impacted by construction activities, including the extent of the activity; tree species; and tree health. Construction plans should accommodate trees insofar as practical, with the intent of preserving as many trees as reasonably possible.

In the Town of Los Gatos, trees are protected based on DBH (diameter at breast height). For development projects, all trees are protected starting at 4 inches. This includes dead trees. Oaks¹, buckeyes, and madrones are designated as “large protected trees” at 24 inches.

Tree Replacement

When a tree is removed for development, the Town of Los Gatos requires that it be replaced with new trees based on its canopy spread. The following table is taken from the document titled “TREE PROTECTION REQUIREMENTS FOR PLANNING APPLICATIONS,” available on the Town of Los Gatos website:

¹ I believe the intent of the ordinance is to protect California native oaks, not exotic oak species

Canopy Size of Removed Tree ¹	Replacement Requirement ^{2, 4}	Single Family Residential Replacement Option ^{3, 4}
10 feet or less	Two 24-inch box trees	Two 15-gallon trees
More than 10 feet to 25 feet	Three 24-inch box trees	Three 15-gallon trees
More than 25 feet to 40 feet	Four 24-inch box trees; or Two 36-inch box trees	Four 15-gallon trees
More than 40 feet to 55 feet	Six 24-inch box trees; or Three 36-inch box trees	Not Available
Greater than 55 feet	Ten 24-inch box trees; or Five 36-inch box trees	Not Available

Notes

¹ To measure an asymmetrical canopy of a tree, the widest measurement shall be used to determine canopy size.

² Often, it is not possible to replace a single large, older tree with an equivalent tree(s). In this case, the tree may be replaced with a combination of both the Tree Canopy Replacement Standard and in-lieu payment in an amount set forth by Town Council resolution paid to the Town Tree Replacement Fund.

³ Single Family Residential Replacement Option is available for developed single family residential lots under ten thousand 10,000 square feet that are not subject to the Town's Hillside Development Standards and Guidelines. All fifteen gallon trees must be planted on-site. Any in-lieu fees for single family residential shall be based on twenty-four-inch box tree rates as adopted by Town Council.

⁴ Replacement Trees shall be approved by the Town Arborist and shall be of a species suited to the available planting location, proximity to structures, overhead clearances, soil type, compatibility with surrounding canopy and other relevant factors. Replacement with native species shall be strongly encouraged. Replacement requirements in the Hillside Development Standards and Guidelines Appendix A and section 29.10.0987 Special Provisions—Hillside.

Observations:

Fourteen trees are located in or near the work area: four coast live oaks (*Quercus agrifolia*); two deodar cedars (*Cedrus deodara*); one coast redwood (*Sequoia sempervirens*); one linden (*Tilia* sp.); one Chinese juniper (*Juniperus torulosa*); one olive (*Olea europaea*); two California bays (*Umbellularia californica*); one wild cherry (*Prunus* sp.); and one valley oak (*Quercus lobata*) (**Images 1-10**).

A new backyard fence will be installed within the tree protection zones of trees #1 and 11. I have assumed this will likely occur fairly late in the construction process, after the house is finished.

A decomposed granite path between Chestnut Ave. and the front door will be installed within the tree protection zones of trees, #2 and 6.

Water utility trenching will occur within the tree protection zone of tree #3.

Tree #4A lies approximately 2 feet from the corner of the existing house to be demolished (**Image 5**).

Tree #6 is a large and apparently quite old coast live oak. This tree's health appears poor, evidenced by a relatively thin canopy and slow reaction growth around large wounds (**Image 7**). Several girdling roots are present at the base of the trunk.

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 discussion with the town of Los Gatos, and will be addressed in a separate addendum. Regardless of the footprint, tree #6 will be impacted to some degree.

The house footprint also lies within a portion of the tree protection zone of tree #6; however, as the existing house is in approximately the same location, the loss of root volume for this reason will be small.

Trees #6A-9 are separated from the project area by existing features: a substantial grade change, a concrete retaining wall, and a chicken coop (**Images 8-10**).

Tree #7 is dead, though it was alive at my 2018 site visit (**Image 10**).

The new backyard patio lies slightly within the tree protection zone of tree #10. This tree's canopy is highly asymmetrical (**Image 11**) and will overhang a substantial portion of the patio and barbecue area.

No gas line work is shown on the plans provided to me. I anticipate tree impacts from such work, as tree protection zones cover the bulk of the property frontages.

Methods & Limits to Analysis:

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

All DBH's were taken using a diameter tape measure except those of trees #7-11, which were estimated visually as their trunks were difficult to access. All other observations were made visually. No aerial inspections or root crown excavations were performed.

The driveway footprint is the topic of ongoing discussion between the project team and the town. It will be addressed in a separate arborist report by me.

The project information given in this report is based on the set of construction drawings provided to me via email by Studio3. Features on the plans were not staked or otherwise marked at the time of my site visit, so I estimated all distances visually.

Locations shown on the below inventory map for trees, project features, and tree protection features are approximate.

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.

The optimal size of the area around a tree which should be protected from disturbance depends on the tree's size, species, and health, as shown in the following table (taken from *Trees & Construction*, Matheny and Clark, 1998):

Species tolerance	Tree age	Distance from trunk (feet per inch trunk diameter)
Good	Young	0.5
	Mature	0.75
	Overmature	1
Moderate	Young	0.75
	Mature	1
	Overmature	1.25
Poor	Young	1
	Mature	1.25
	Overmature	1.5

Excavation, Trenching, and Grading within CRZ's

Excavation 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.

Traffic within CRZ's

Driving or heavy foot traffic on bare soil around trees destroys roots, both by crushing them directly and by compacting the soil. Compaction removes pore spaces which allow oxygen to reach the roots. Without oxygen, the roots cannot transpire (break down stored food for the tree to use). 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 effectively mitigates the effects of traffic. However, installing new pavement of any kind within a tree's root zone can substantially disrupt roots. Permeable pavers create a more hospitable root environment than do traditional paving materials; however, some disruption of existing roots is unavoidable during installation.

Materials Storage within CRZ's

Trees can be harmed by materials storage within their CRZ's in several ways. Placement of materials may result in soil disturbance or trunk wounding; heavy materials can compact the soil; and materials with high pH (such as concrete mix) can leach into the soil, disrupting soil chemistry.

Unfortunately, areas under trees are attractive for storage, as they offer shade and a soft ground surface. Tree protection fencing is therefore necessary to discourage use.

Root Zone Remediation and Growth Regulation

The most reliable way to ensure ongoing tree health during and after construction is to install appropriate tree protection prior to beginning construction. However, after a tree undergoes damage, steps can be taken to improve its chances of survival.

Tree root zones which have undergone compaction 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. Applying wood chips within the CRZ helps hold water in the soil, and also improves overall soil quality.

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.

Conclusions:

Trees #1 and 11 will likely undergo minor impacts from fence installation. It should be practical to exclude construction personnel and equipment as needed for the duration of house construction.

Tree #2 will likely undergo minor impacts from installation of the decomposed granite walkway. It should be practical to exclude construction personnel and equipment as needed for the duration of house construction.

Tree #3 will likely undergo minor impacts from water line installation if care is taken to preserve roots as detailed below.

Trees #4 and 5 are unlikely to undergo impacts from the project as proposed if proper tree protection measures are implemented.

Tree #4A must be removed in order for the project to proceed as proposed, as it conflicts directly with demolition of the existing corner of the house.

Tree #6 will likely undergo moderate impacts from installation of the driveway and decomposed granite walkway. This tree appears likely to decline in health irrespective of construction activities. It would benefit from removal of its girdling roots, and remediation of its root zone.

Trees #6A-9 are unlikely to undergo impacts from the project as proposed, as they are separated from the work area by existing site features.

Tree #7 should be removed irrespective of construction activities, as it is dead.

Tree #10 will likely undergo minor impacts from backyard patio installation.

Recommendations:

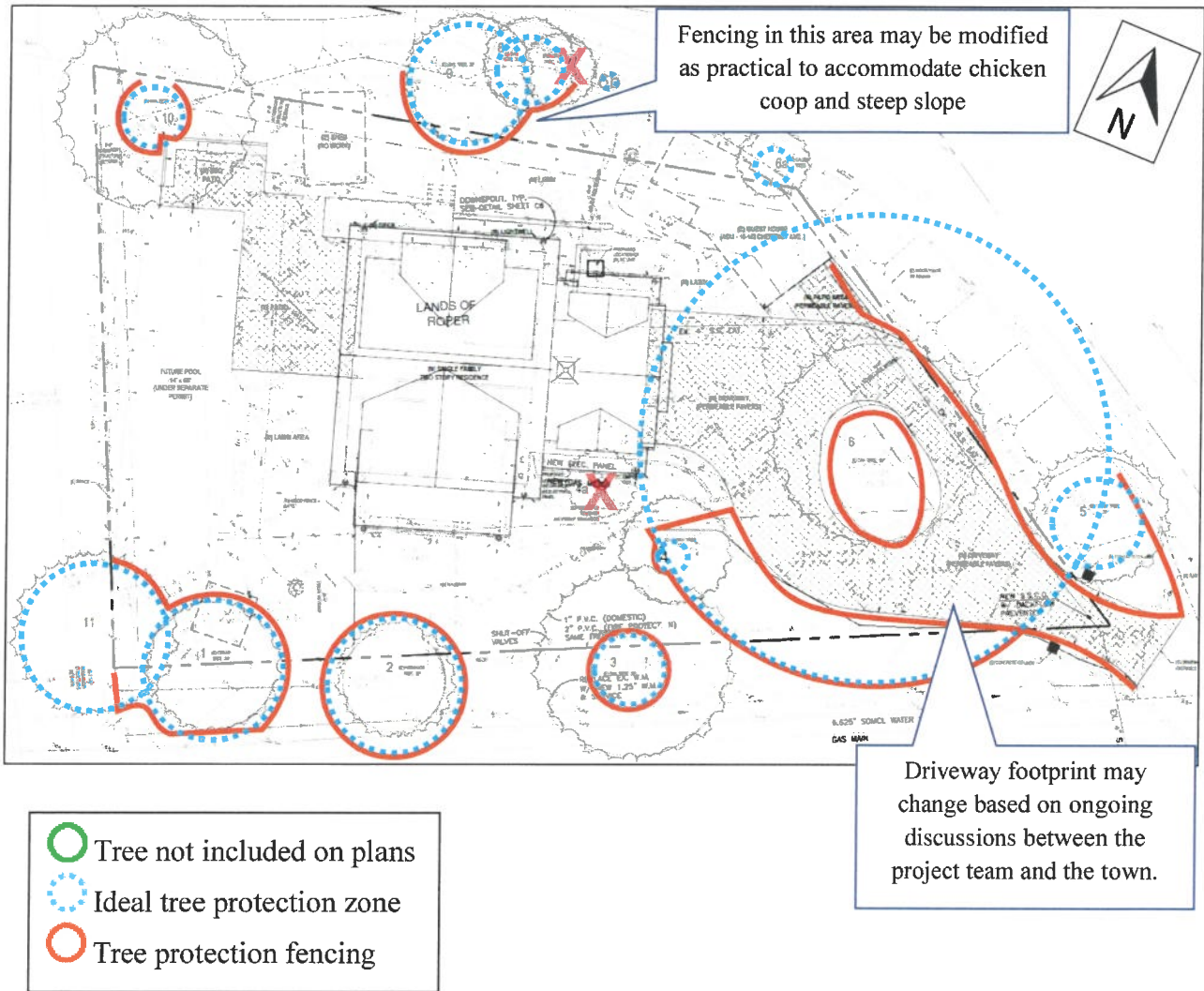
1. Remove trees #4A and 7 prior to commencing construction.
2. All tree removal and limb pruning must be performed by trained tree work personnel under the direction of an ISA-Certified Arborist.
3. Apply a growth regulator to tree #6.
4. Remove visible girdling roots from tree #6.
5. Install tree protection fencing for all other trees, conforming to the following specifications put forth in the Los Gatos Town Code, Section 29.10.1005:²
 - a. Fencing shall consist of six (6) foot high chain link fencing, mounted on two-inch diameter galvanized iron posts, shall be driven into the ground to a depth of at least two (2) feet at no more than 10-foot spacing. For paving area that will not be demolished and when stipulated in a tree preservation plan, posts may be supported by a concrete base.

² Adapted for clarity in report context, and relevance to this project. Relevant portion of Town Code available online at <https://www.losgatosca.gov/DocumentCenter/View/148/Tree-Protection-Ordinance-Handout?bidId=> (pp. 13-14)

- b. Fencing shall be installed around the tree protection zones (TPZ) specified in this report, approximately as shown on the Tree Map below.
- c. Fencing shall be erected before demolition, grading or construction permits are issued and remain in place until the work is completed. Contractor shall first obtain the approval of the project arborist on record prior to removing a tree protection fence.
- d. Each tree fence shall have prominently displayed an 8.5 x 11-inch sign stating: "Warning—Tree Protection Zone-this fence shall not be removed and is subject to penalty according to Town Code 29.10.1025".
- e. All persons, shall comply with the following precautions:
 - i. Prior to the commencement of construction, install the fence at the dripline, or tree protection zone (TPZ) when specified in an approved arborist report, around any tree and/or vegetation to be retained which could be affected by the construction and prohibit any storage of construction materials or other materials, equipment cleaning, or parking of vehicles within the TPZ.
 - ii. Prohibit all construction activities within the TPZ, including but not limited to: excavation, grading, drainage and leveling within the dripline of the tree unless approved by the Director.
 - iii. Prohibit disposal or depositing of oil, gasoline, chemicals or other harmful materials within the TPZ of or in drainage channels, swales or areas that may lead to the TPZ of a protected tree.
 - iv. Prohibit the attachment of wires, signs or ropes to any protected tree.
 - v. Design utility services and irrigation lines to be located outside of the dripline when feasible.
 - vi. Retain the services of a certified or consulting arborist who shall serve as the Project Arborist for periodic monitoring of the project site and the health of those trees to be preserved. The Project Arborist shall be present whenever activities occur which may pose a potential threat to the health of the trees to be preserved and shall document all site visits.
 - vii. The Director and Project Arborist shall be notified of any damage that occurs to a protected tree during construction so that proper treatment may be administered.
- 6. Spread wood chips within tree protection fencing to a depth of 3-6 inches.
- 7. Notify project arborist when gas line location has been determined.
- 8. Do not demolish driveway until all other construction is complete.
- 9. Driveway specifications will be addressed in a separate addendum to this report.
- 10. For new backyard fence
 - a. Do not install until the house and new hardscape are complete.
 - b. Tree protection fencing may be removed prior to fence installation if condition (a) is met.
 - c. Excavate only to place fence posts. Place panels above grade to minimize root disturbance.
- 11. If live roots over one inch in diameter are encountered at any time, in any location, halt work in this area and contact the Project Arborist immediately.
- 12. After construction is complete:
 - a. Install six 15-gallon trees to replace trees #4A and 7.
 - b. Perform root zone remediation in all unpaved areas within the CRZ of tree #6:
 - i. Decompact the soil with an air spade,
 - ii. Incorporate compost into the soil with the air spade, and

iii. Spread wood chips over the top of the decompacted soil to a depth of 3-6 inches.

Tree Map (my features in color; scale roughly estimated)³



³ Base imagery taken from plans provided to me by client via email

Tree Table

Tree #	Common Name	Species Name	DBH (in.)	Species Tolerance ⁴ (if to remain)	Apparent Maturity (if to remain)	TPZ Coefficient (ft./in. DBH) (if to remain)	TPZ Radius (ft.) (if to remain)	Canopy Spread	Protected Tree	Large Protected Tree	Appraised Value	Anticipated Impacts	Tree Protection/ Replacement Recommendations
1	Deodar cedar	Cedrus deodara	38.2	Good	Mature	0.75	28'8"	40	X	-	\$26,500.00	None	Tree protection fencing
2	Coast redwood	Sequoia sempervirens	27.3	Good	Mature	1 ⁵	27'4"	30	X	-	\$11,300.00	Traffic, storage within TPZ if not protected	Tree protection fencing
3	Coast live oak	Quercus agrifolia	19.1	Good	Mature	0.75	14'4"	35	X	-	\$9,300.00	Traffic, storage within TPZ if not protected	Tree protection fencing
4	Linden	Tilia sp.	8.4	Good-Moderate	Young	0.75	6'4"	20	X	-	\$2,290.00	Traffic, storage within TPZ if not protected	Tree protection fencing
4A	Chinese juniper	Juniperus torulosa	11.8, 5.5 (13.0 adjusted ⁶)	-	-	-	-	15	X	-	\$2,360.00	Remove for addition footprint	Replace with 3 15-gallon trees
5	Olive	Olea europaea	23.7	Good ⁷	Mature	0.75	17'9"	25	X	-	\$13,700.00	Traffic, storage within TPZ if not protected	Tree protection fencing
6	Coast live oak	Quercus agrifolia	63.5	Good	Over-mature	1.5 ⁸	95'3"	60		X	\$52,300.00	Traffic, storage within TPZ if not protected	Tree protection fencing, growth regulator, root zone remediation

⁴ Taken from Matheny & Clark, *Trees and Development*, 1998

⁵ Increased from 0.75 to 1, as tree was somewhat stressed prior to construction

⁶ Adjusted by finding the diameter of a circle with an area equal to the combined areas of both trunks

⁷ Based on my own observations and experience with this species

⁸ Increased from 1 to 1.5, as tree was substantially stressed prior to construction

Tree #	Common Name	Species Name	DBH (in.)	Species Tolerance ⁴ (if to remain)	Apparent Maturity (if to remain)	TPZ Coefficient (ft./in. DBH) (if to remain)	TPZ Radius (ft.) (if to remain)	Canopy Spread	Protected Tree	Large Protected Tree	Appraised Value	Anticipated Impacts	Tree Protection/ Replacement Recommendations
6A	California bay	Umbellularia californica	5.0	Moderate	Young	0.75	3'9"	10	X	-	\$850.00	None	None (protected by existing guest house)
6B	Wild cherry	Prunus sp.	6 (est.)	Good	Young	0.5	3'	10	X	-	\$410.00	None	None (protected by existing guest house)
7	Coast live oak	Quercus agrifolia	12 (est.)	-	-	-	-	15	X	-	\$0.00	None	Dead
8	Coast live oak	Quercus agrifolia	18 (est.)	Good	Mature	0.75	13'6"	20	X	-	\$7,600.00	None	Tree protection fencing
9	California bay	Umbellularia californica	24 (est.)	Moderate	Mature	1	24'	25	X	-	\$12,500.00	None	Tree protection fencing
10	Valley oak	Quercus lobata	12 (est.)	Moderate	Mature	1	12'	30	X	-	\$6,000.00	None	Tree protection fencing, to be moved for patio installation
11	Deodar cedar	Cedrus deodara	40 (est.)	Good	Mature	0.75	30'	60	X	-	\$26,100.00	None	Tree protection fencing

Supporting Photographs

Image 1: deodar cedar #1



Image2: coast redwood #2



Image 3: coast live oak #3



Image 4: Linden #4



Image 5: Chinese juniper #4A



Image 6: olive #5



Image 7: coast live oak #6 (partially obstructed by olive #5 in foreground)



Thin canopy
for species



Decay cavity
with little
reaction growth



Girdling
roots

Image 8: California bay #6A



Image 9: wild cherry #6B, coast live oaks #7 and 8, and California bay #9 (right to left above, left to right below; photos taken in 2018.)



Image 10: coast live oak #7 (photo taken in 2019)



Image 11: valley oak #10



Image 12: deodar cedar #11



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 consultant/appraiser, and the consultant/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,



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