ARBORIST REPORT

Dolores 7 SW of 13th

Construction Impact Report

Submitted to:

Sara Davis
City Forester
P.O. Box CC
Carmel by the Sea
CA 9329

August 13, 2020

Tree Care Professionals Serving Communities Who Care about Trees www.WCAINC.com

Prepared by:

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Summary

West Coast Arborists Inc. is contracted with City of Carmel-by-the-Sea for arborist services. I was requested to assess trees impacted by construction at Dolores 7 SW of 13th, by the city forester Sara Davis. The assessment was requested to include a risk assessment and appraisal of trees most impacted by construction. 12-trees were included in the assessment, 7-trees were determined to have significant severe impact from construction and are recommended for removal or further assessment. The seven trees were appraised for their value and the **assignment result** [1] total value was $26,100.00. Risk assessment of affected trees determined that 3 of the trees pose a high risk to surrounding property/people and 2 trees pose a moderate risk. 6-trees are recommended for removal, although additional trees may require removal upon further investigation.

Background

West Coast Arborists was contacted by the City of Carmel-by-the-Sea's forester Sara Davis for arborist services in July of 2020. Ms. Davis requested I assess established trees at Dolores 7 SW of 13th, that had been impacted by construction. I visited the site on July 21, 2020 and have included my findings as follows.

Assignment

The City of Carmel-by-the-Sea has contracted West Coast Arborists Inc. to perform the following services.

1. Visit the site and preform a general tree condition and observation report.
2. Provide an estimated value for trees that display signs of significant-severe root damage.
3. Provide a risk assessment of established trees on the site.
4. Summarize findings in a formal report.

Limitations of assignment

My assessment is limited to what was visible at grade level on the day of my assessment and information provided to me by the city. Diameters of trees was measured using a D-Tape when no obstructions were present, diameters of trees with tree protection boards were estimated by measuring across the long side of the trunk visible through the boards.

[1] Terms in **Bold** are defined in the glossary.

Observations

A total of 12-trees were present on the property including; 8-Coast Live Oaks (*Quercus agrifolia*), 2-Coastal Redwoods (*Sequoia sempervirens*), 1-Holly Tree (*Ilex spp.*) and 1-Victorian Box (*Pittosporum undulatum*). Most of the Coast Live Oaks displayed moderate decline in the canopies, but significant dieback of the upper canopy was present in Tree-12. Coastal redwoods displayed normal vigor for the species and had no signs of pest or diseases. The Holly displayed poor structure and a declining canopy. The Victorian box appeared to be healthy but had sustained substantial damage from poor pruning.

Extensive grading around the foundation of the house appeared to have been performed and roots up to 12-Inches were seen cut (Tree-2). Root zone disturbances accounted for up to 75% of the dripline (Tree-12) at a depth of up to 2-feet from the presumed previous grade level. Storage of construction materials on root zones and extensive compaction could be seen on Tree-3 and the construction of the driveway is suspected to have impacted the southern root zone. Excavated soils from the north and eastern portion of the properties were deposited on the root zones of trees to the south and west including Trees 5, 6, 7 and 8.

Several trees suggested that more root damage was done than was visible including trees 3 and 5. What appeared to be new concrete foundations, where seen in close proximity of the root flairs, and though damage is was not clearly visible, it is likely that roots were removed that could jeopardize the stability of the trees. The extent of grade changes that impacted trees could only be estimated due to no documented information of previous grade levels.

Construction Impact

A total of 12 trees where noted on the property or near the property line. Excavation is believed to have impacted on all trees on the site. Excavation is also anticipated to have impacted trees on adjacent lots to the west as well, but the extent of damage is unknow at this time. The table below shows anticipated impact of from construction based on the following definitions.

Negligible- little to no impacts observed.

Minor - Impact limited to compacted and or contaminated soil or minor canopy damage such as exhaust burning from heavy machinery. Trees with *minor* may require corrective maintenance such as trimming, soil treatments, watering, and mulching.

Significant- Root damage suspected to have impacted large structural roots. Decline in health and/or stability likely with in a given amount of time. Trees with *significant* root damage may require extensive corrective measures such as canopy reduction for retention and continued monitoring for signs of decline or structural instability.

Severe- stability of tree jeopardized with extensive roots loss. Damage to **CRZ,** may result in main stem/trunk decay. Failure and/or tree mortality likely as result of damage. Trees with *severe* root damage may require removal to reduce risk to life and property.

Tree #	Species	DSH	Construction Impact	Impact Concern	Recommendation
1	Coast Live Oak	20”	Severe	Stability/Health	Remove
2	Coast Live Oak	24”	Severe	Stability/Health	Remove
3	Coast Live Oak	19”	Minor	Stability/Health	Monitor
4	Coastal Redwood	13”	Negligible	Health	Monitor
5	Coast Live Oak	18”	Minor-Significant	Stability/Health	Further Evaluation
6	Coastal Redwood	7”	Negligible	Health	Monitor
7	Holly	11”	Minor	Health	Remove
8	Coast Live Oak	17”	Minor	Health	Monitor
9	Coast Live Oak	12”	Minor	Stability/Health	Remove/Crown Reduction
10	Pittosporum	8”	Minor	Health	Remove
11	Coast Live Oak	12”	Significant	Stability/Health	Remove
12	Coast Live Oak	23”	Severe	Stability/Health	Remove

Risk assessment

The International Society of Arboriculture *Tree Risk Assessment* program is a system in which to derive an understanding of the risks associated with a given tree and/or tree stand. Factors including *Likelihood of Failure, Likelihood of Impacting Target* and *Consequences of Failure* are determined from information collected during the field assessment. These factors are then run through two matrices to produce a risk rating. (Dunster, 2013)

Limitations of Tree Risk Assessment

According to the *Tree Risk Assessment Manual,* published by the International Society of Arboriculture (ISA), it is impossible to maintain trees free of risk: "There is no way to guarantee that a tree will not fail. Tree benefits increase as the age and size of trees increase; however, some level of risk must be accepted to experience the benefits provided. The goal in assessing and managing trees is to strike a balance between the risk that a tree poses and the benefits that individuals and communities derive from trees."

"A considerable level of uncertainty is typically associated with tree risk assessment due to our limited ability to predict natural processes (rate of progression of decay, response growth, etc.), weather events, traffic and occupancy rates, and potential consequences of failure."

"Conditions affecting trees change constantly; none of us will ever be able to predict every tree failure. Conducting a tree risk assessment neither ensures nor requires perfection. Risk assessment should, however, ensure that all reasonable efforts have been made to identify the *likelihood of failure*, the *likelihood of impact*, and the *consequences of failure* present at the time of assessment."

"Abnormally extreme storms, such as tornadoes, hurricanes, earthquakes and heavy freezing rain, are not predictable and, in most cases, are not considered for categorizing *likelihood of failure*."

Risk Assessment Table - Time Frame 5-Years

Risk assessments could not account for people in the area as no formal occupancy rate survey could be completed and the property is still under construction. Consequences mostly reflect damage to property, but it is important to understand that any tree part impacting persons in the area would likely result in severe consequences such as permanent injury or death.

Tree #	Failure Concern	Target	Likelihood of Failure	Likelihood Impacting Target(s)_	Consequences	Risk Rating
1	Root Failure	Street/Utilities	Probable	High	Significant	High
2	Root Failure	Street	Probable	High	Significant	High
3	Root Failure	Street	Possible	High	Significant	Moderate
4	No Concern w/in Timeframe	N/A	Improbable	Very Low	Negligible	Low
5	Root Failure	Fence	Possible	Medium	Minor	Low
6	No Concern w/in Timeframe	N/A	Improbable	Very Low	Negligible	Low
7	Trunk/Root Failure	Western Neighbor back yard/house	Possible	High	Minor	Low
8	Branch Failure	Fence	Improbable	High	Minor	Low
9	Root/Trunk Failure	Northern Neighbor Back Yard	Possible	High	Minor	Low
10	No Concern w/in Timeframe	N/A	Improbable	Very Low	Negligible	Low
11	Root Failure	Main House	Probable	Medium	Significant	Moderate
12	Root Failure	Main House	Probable	High	Significant	High

Tree Appraisal

The appraisal was determined using guidelines set forth by the Council of Tree & Landscape Appraisers in the *Guide for Plant Appraisal, 10th Edition.* In addition to the Western Chapter of the International Society of Arboriculture book titled *Species Assignment and Classification and Group Assignment* was used to determine the most commonly available replacement tree size, replacement price and average installation costs. The **Reproduction Method** by **Trunk Formula Technique**, where the value of the tree is determined by extrapolating the purchase cost of a nursery-grown tree up to the size of the size of the subject tree being valued. Appendix-C of this report provides an example of the process used to produce the estimate of value.

Criteria for Appraisal

The seven trees most impacted by construction were chosen for appraisal. These values may be used by the city for code enforcement purposes. Appraisal of the remaining trees can be provided upon request.

Tree #	Species	DSH	Construction Impact	Appraised Value
1	Coast Live Oak	20”	Severe	$4,400.00
2	Coast Live Oak	24”	Severe	$6,000.00
3	Coast Live Oak	19”	Minor	$4,300.00
5	Coast Live Oak	18”	Minor-Significant	$3,700.00
10	Pittosporum	8”	Minor	$1,300.00
11	Coast Live Oak	12”	Significant	$2,400.00
12	Coast Live Oak	23”	Severe	$4,000.00

Discussion

Significant damage has been inflicted to the trees on site from negligent construction operations. While it is impossible to quantify exactly the exact impact from the construction, time will undoubtedly reveal the impact, resulting in tree mortality or sudden failure. Trees #'s 1, 2, 11 and 12 sustained extensive visible root loss, through lost volume of root space or clearly visible roots up to 12-inches cut, as seen on tree #2. These four trees will require removal mitigate risks to property on site and adjacent including the roadway, pedestrians, and motorists. Tree #10, the small pittosporum sustained significant canopy damage as well as impacts to the growing space and will also require removal. Tree #5 located on the south side of the house has a strong southern lean and the extent of impact was not clear and further assessment or review of construction operations may be required to determine if it should be removed. Trees #'s 7 and 9 are also recommended for removal based on issues that are likely unrelated to construction.

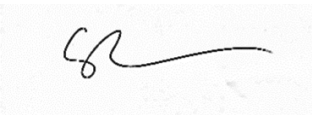
Tree #6, 7, 8 and 9 had soils deposited on root systems, as much as 2-feet deep. Buried root systems can result in tree decline and the soils will need to be carefully removed to insure tree health. Tree 3 also had construction materials stored on the root system that can cause compaction of soils and limit root growth. Tree 3 and 5 may require root crown excavations to ensure sufficient roots are present and undamaged to support the leaning lopsided/leaning canopies. These trees will likely require monitoring and soil fertility improvements to ensure that the tree can recover, as well as weight reduction pruning.

Recommendation

1. Remove trees #'s 1, 2, 7, 9, 10, 11 and 12
2. Further assessment of tree #s 3 and 5 to determine if roots were impacted significantly.
    a. Root crown excavation advised.
3. Remove excess soils deposited on root zone of tree #s 6 and 7.
4. Establish mulch around retained trees soil injections with low nitrogen/fungicidal blend to improve soil fertility and assist in recovery.
5. Annual inspection of any tree retained for 5-years to monitor for monitor for signs of decline.

Thank you for the opportunity to assist you in your tree assessment needs. If there are any questions or concerns feel free to contact me directly at (408) 835-0438, greeve@wcainc.com

Respectfully,



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Glossary

Air-spade- specialist excavation tool that uses compressed air to remove and break up soil with minimal damage to roots and underground utilities. It can be used for a variety of reasons including the alleviation of compaction, soil improvement, root inspection and root location.

Buttress Roots- roots at the trunk base that help support the tree and equalize mechanical stress.

Critical Root Zone (CRZ)- An area where roots are present around a tree that are crucial to health and stability of the tree. Tree roots expand far beyond the canopy of the tree; most roots grow within the top 6-8" of the soil. Roots grow where conditions are most favorable, seeking oxygen water and nutrients. There is no industry standard to for measuring the *Critical Root Zone,* but for the purpose of this report it shall be defined as the **DSH** multiplied by 8-inches. All excavation should be completed by hand and with an **Air-spade** in the defined **CRZ.** No root larger than 2-inches in diameter shall be cut without approval from certified arborist within the **CRZ.**

Fibrous roots- small hair like roots that absorb nutrients and water.

Depreciation- a loss in value from any cause; typically caused by either physical, economic, or external factors.

Reproduction cost- the cost to replace an improvement with an exact replica. Referred to in previous editions of the *Guide* as *replacement cost.*

Trunk formula technique (TFT): a technique for developing a cost basis that involves extrapolating the purchase cost of a nursery -grown tree up to the size of the subject tree being valued.

Value: the monetary worth of a property, good or service to buyers and sellers at a given point in time. Expectation or present worth of future benefits. Economic value is created by scarcity restricting supply and utility enhancing demand. Not to be confused with cost or price.

Value estimate: an assignment result in which the plant appraiser estimates the economic value of a plant or landscape item based on its market supply and demand.

Bibliography

Richard F. Gooding, J. R. (2019). *Guide for Plant Appraisal, 10th Edition.* Atlanta : International Society of Arboriculture .

Tree Care Industry Association, Inc. (2017). *Tree, Shrub, and Other Woody Plant Management- Standard Practices (Pruning).* New Hapshire : Tree Care Industry Association, Inc.

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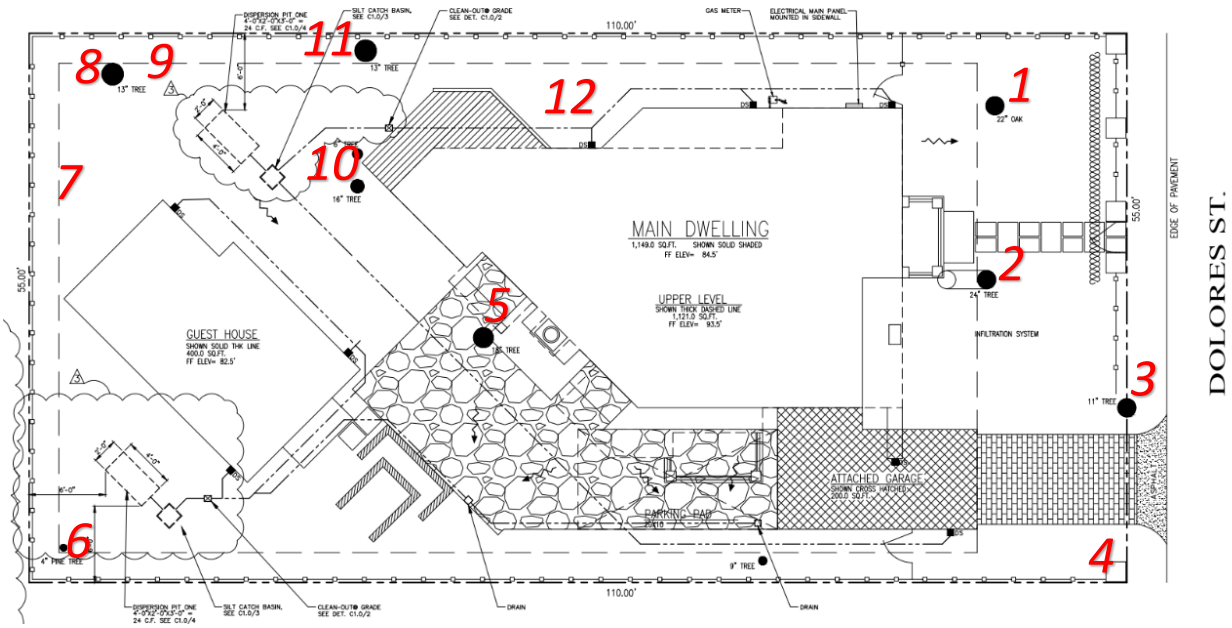
Appendix A- Map (Approximate Tree locations)



Appendix B- Observation Photos

Tree 1

Figure 1: Tree 1 looking west, note thinning canopy.

Figure 2: Excavation shown around tree 1, approximately 75% of the root zone was removed to a depth of almost 2-feet.

Tree 2

Figure 3: Tree 2 looking west at front of house, note canopy leaning towards roadway.

Figure 4: 12- inch root cut at the backside the lean on tree two noted by red arrow.

Trees 3 and 4

Figure 5: Tree-3 noted by red arrow seen leaning towards roadway, with construction materials mounded on root system noted by blue arrow.

Figure 6: Tree-4 seen looking north, note limited growing space.

Tree 5

Figure 7: Tree-5 seen looking west, note strong southern lean.

Figure 8: Looking down at base of tree, new concrete suggests root damage to the north side of the tree.

Tree 6 and 7

Figure 9: Tree-6 seen looking west, note soil deposited on root system.

Figure 10: Tree-7 seen looking west, note declining canopy and damage to trunk circled in red.

Trees 8 and 9

Figure 11: Tree 8 noted by red arrow.

Figure 12: Tree-8 seen leaning over fence.

Tree 10 and 11

Figure 13: Tree-10 seen looking east, note western leader removed circled in red, and minimal canopy.

Figure 14: Tree-11 seen looking east, note 50% of root system removed to a depth of almost 2-feet.

Tree 12

Figure 15: Tree-12 seen looking west. Decline in canopy noted by red circle. 75% of root system can be seen removed to a depth of almost 2-feet.

Figure 16: Excavated area near tree-12, roots up to 1-inches in diameter were found, along with many fibrous roots.

Appendix C- Risk Rating Matrices

In deriving an estimate of risk, you must consider the targets, the likelihood of a tree failure impacting a target, and the consequences of failure. These factors are used in conjunction with the tables below to derive an estimated risk rating.

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Likelihood of Failure and Impact	Consequences			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Extreme –The tree risk assessor should recommend that mitigation measures be taken as soon as possible. In some cases, this may mean immediate restriction of access to the target zone area to avoid injury to people.

High – The decision for mitigation and timing of treatment depends on the risk tolerance of the tree owner or risk manager. In populations of trees, the priority of high-risk trees is second only to extreme-risk trees.

Moderate- The decision for mitigation and timing of treatment depends on the risk tolerance of the tree owner or risk manager**.** In populations of trees, moderate-risk trees represent a lower priority than high – or extreme risk trees.

Low- Mitigation treatments may reduce future risk, but the categorized risk rating is already at the lowest level.

Appendix D- Appraisal Calculations (Shown for Tree #1)

Depreciation Factors

Health (*Fair 75% Rating)* [2]

Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twit dieback, defoliation, discoloration, and/or dead branches may comprise up to 50% of the crown.

Structure (*Good 75% Rating)*

Well-developed structure defects are minor and can be corrected.

Form (*Good 61% Rating*)

Minor asymmetries/deviations from species norm. Mostly consistent with the intended use. Function and aesthetics are not compromised.

Functional Limitations (FL): 75*% Rating*

Large maturing tree near property line (Minor Impact).

External Limitations (EL): *75% Rating*

Patterns of decline of the species locally, attributed to poor soil fertility, pests, and diseases. (Minor Impact.

The bellow table shows factor values applied to all trees appraised in this assessment.

Tree #	Health	Structure	Form	FL	EL	DSH	Replacement	After care
1	60%	75%	61%	75%	75%	20”	$250	$600
2	75%	60%	75%	75%	75%	24”	$250	$600
3	75%	65%	75%	75%	75%	19”	$250	$600
5	75%	60%	75%	75%	75%	18”	$250	$600
10	75%	50%	75%	75%	75%	8”	$250	$600
11	75%	80%	75%	75%	75%	12”	$250	$600
12	40%	60%	75%	75%	75%	23”	$250	$600

[2] Ratings are used for tree appraisal, and our calculated from table 4.1 on page 44 of the *Guide for Plant Appraisal, 10th edition.*

Appraisal Calculations Tree #1 (continued)

Subject Tree (Tree #1)

Species: Coast Live Oak (*Quercus agrifolia*)

1. Trunk Diameter:	**20-in**
2. Cross- Sectional Area (line 1) ² x 0.7854:	**314-in²**
3. Condition Rating:	**60%**
(Lowest Individual rating to establish overall condition rating)	
a. **Health: 60%**	
b. **Structure: 75%**	
c. **Form: 61%**	
4. Functional Limitations: near property line	**75%**
5. External Limitations: poor soils in area/patterns of decline.	**75%**

Replacement Tree

Species: Coast Live Oak (*Quercus agrifolia*)

6. Trunk Diameter:	**2.46-in**
7. Cross-Sectional area (line 6) ² x 0.7854**:**	**5.16-in²**
8. Replacement Tree Cost (24-in Box)**:**	**$172.73**

(*Lines 6-8 Source: Species Classification and Group Assignment 9th Edition*)

Calculations

9. Unit tree cost (Line 8 / Line 7):	**$33.47**
10. Basic reproduction cost (line 2 x line 9):	**$10,509.58**
11. Depreciated reproduction cost:	**$3,546.98**
(line 10 x line 3 x line 4 x line 5)	

Additional Costs

Clean up: (Property owner responsibility)	**N/A**
Replacement Tree Installation: (City standard)	**$250.00**
Aftercare: (weekly watering for 1 year during summer months)	**$600.00**

(*Additional costs are low estimates sourced from previous experience and similar projects*)

12. Total additional costs:	**$850.00**
13. Total reproduction cost (line 11 + line 12):	**$4,396.98**
14. Rounded:	**$4,400.00**

ASSUMPTIONS AND LIMITING CONDITIONS

1. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the Consultant can neither guarantee nor be responsible for the accuracy of information provided by others. Standard of Care has been met with regards to this project within reasonable and normal conditions.

2. The Consultant will not be required to give testimony or to attend court by reason of this report unless subsequent contractual agreements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

3. Loss or alteration of any part of this report invalidates the entire report.

4. 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 written consent of the Consultant.

5. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a stipulated result, a specified value, the occurrence of a subsequent event, nor upon any finding to be reported.

6. Unless expressed otherwise: 1) information contained 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, or coring, unless otherwise stated. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree(s) or property in question may not arise in the future.

7. Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. It is highly recommended that you follow the arborist recommendations; however, you may choose to accept or disregard the recommendations and/or seek additional advice.

8. Arborists cannot detect every condition that could possible lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time.

9. Any recommendation and/or performed treatments (including, but not limited to, pruning or removal) of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, site lines, disputes between neighbors, and any other related issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist can then be expected to consider and reasonably rely on the completeness and accuracy of the information provided.

10. The author has no personal interest or bias with respect to the subject matter of this report or the parties involved. He/she has inspected the subject tree(s) and to the best of their knowledge and belief, all statements and information presented in the report are true and correct.

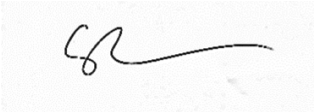
11. Unless otherwise stated, trees were examined using the risk assessment criteria detailed by the International Society of Arboriculture's publications *Best Management Practices – Tree Risk Assessment* and the *Tree Risk Assessment Manual*.

Appendix E - Certification of Performance

I, Glenn O. Whitlock-Reeve, Certify that:

1. I have personally inspected the tree(s) and property referred to in this report and have stated my findings accurately.
2. I have no current or prospective interest in the tree or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
3. The analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts.
4. My analysis, opinions and conclusions were developed, and this report has been prepared according to commonly accepted arboricultural practices and standards.
5. No one provided significant professional assistance to me, except as indicated within the report.
6. My compensation is not contingent upon the reporting of predetermined conclusion that favors the cause of the client or any other party nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the American Society of Consulting Arborists and a Board-Certified Master Arborist with the International Society of Arboriculture (ISA). I have been a Certified Arborist since 2013 and in the practice of arboriculture for over 10 years.

Signed: 

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Date: 08/13/20