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Date: July 14, 2023

Subject: Arborist Report - Covenant Living at the Shores

Dear Mr. Gross;

Enclosed please find a report of my field investigation for the trees located 9150 Fortuna Drive SE, Mercer Island, WA 98040. This report summarizes my observations of trees that may be impacted by the proposed development along with recommendations for tree management protection. Please note that this information is preliminary and is based on conceptual plans and the site survey I received from your team. As construction plan details become available, I can provide more specific tree protection and retention recommendations.

Please contact me if you have any questions or need further information.

Respectfully submitted,

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Tree Risk Assessment Qualified
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Summary

Forty-nine (49) trees were assessed at the above addressed site that are in the vicinity of proposed construction. Mercer Island City Code (MICC) requires large and exceptional trees to be assessed for development projects and a permit is required for their removal. Of the 49 trees inventoried 21 trees meet the definition of a large tree and 11 are exceptional trees according to the criteria outlined in MICC 19.10. I did not find any exceptional groves in the area of proposed construction, and there were no large trees on the neighboring property with driplines that extend into the subject property.

Mercer Island City Code requires replacement trees be planted when a large (regulated) tree is removed. Upon review of the conceptual site plan for this development, I estimate a total of 20 regulated trees, 8 of which are exceptional, will be negatively impacted by construction impacts and will likely need to be removed. Removal of these trees for development will require 72 replacement trees.

Introduction

Assignment and Scope of Report

This report outlines the site inspection by Ashley Adams of Adams Tree Consulting on April 12 and July 7, 2023. My assignment was to prepare a tree inventory and arborist report that satisfied the requirements outlined in the Mercer Island City Code (MICC) Chapter 19.10.020(2). George Lenes, a consultant to Covenant Living, requested these services to acquire information for project planning purposes. This information is preliminary as I was only provided with a proposed site conceptual plans and site survey. I have not reviewed any construction plans with specific details about the project. As construction plans become available, I can provide more specific tree protection and retention recommendations.

Purpose and Use of Report

The purpose of this report is to document my assessment of the subject trees and provide information on the trees' health, structural condition, and viability for retention during development. This report is intended to be used by Covenant Living Community and Services and their associates to assist in management decisions for the subject trees located at 9150 Fortuna Drive SE, Mercer Island, WA 98040.

Arborist Competence

I have over 25 years experience working in the fields of environmental and forest sciences and over seven years working directly with the protection of trees during construction. I'm an ISA Certified Arborist and Tree Risk Assessment Qualified (TRAQ), as well as a member of the American Society for Consulting Arborists (ASCA). I also have a Master of Science degree in Environmental and Forest Sciences from the University of Washington. Prior to establishing my consulting firm, I worked as the City Arborist for Lake Forest Park (LFP) where I provided critical information about tree rules and regulations in the city and reviewed all incoming development permits for compliance with the LFP tree code.

Observations

Investigation Methods

I visited the site on April 12, 2023 and again on July 7, 2023, where I performed a ground-based, 360-degree visual assessment of the subject trees. I assessed the condition to the standards of the ISA level two tree risk assessment (*Smiley et. al. 2017*). This examination included evaluation of size, vigor, canopy and foliage condition, trunk and root collar health, and any notable defects such as decay, deadwood, or disease. I utilized standard field equipment to complete my analysis, including an arborist's diameter tape to measure the diameter at standard height (DSH), a mallet to assess for decay, and binoculars to observe the conditions in the canopy of the tree.

I tagged each tree with a 1" x 3" aluminum tag placed approximately 4.5' above the ground on the west side of the tree for consistency. I measured the diameter at standard height (DSH) which is 4.5' above the ground. When multiple trunks were present and split below 4.5', I measured the diameter of each trunk at 4.5' and took the square root of the sum of all squared stem DBHs. For trees that branch below 4.5', I measured the smallest circumference below the lowest branch.

I used the critical root zone (CRZ) method to determine the limits of allowable disturbance. The CRZ is defined as one foot radius for every one inch DSH. For example, a tree with a DSH of 10" would have a CRZ of 10' from the outer trunk of the tree. In the field of arboriculture, protection of the entire CRZ is considered the ideal protection level and should result in no adverse impacts to the tree. However, this level of protection is often infeasible during construction due to root conflicts with building footprints, associated infrastructure and access requirements. As such, it's advised that the minimum area for protection of a tree is the Interior Critical Root Zone (ICRZ), which is one half the radius of the CRZ. It should be noted that protecting only the area within the ICRZ could cause significant negative impacts to the tree and would likely require maximum post-care treatment to retain the tree. For this phase of the development, I'm recommending retained trees be protected at the CRZ when possible and that protection of a tree's ICRZ is the absolute minimum. If any disturbance is proposed within the ICRZ of a tree, then removal of that tree is recommended.

Site Description

Covenant Living at the Shores is a retirement living community located on an existing 12.4 acre site (parcel #0724059016) located at 9150 Fortuna Drive SE, Mercer Island, WA 98040. It is situated on the north shore of Mercer Island and is zoned MF-3 according to the Mercer Island Zoning Map (*MIZM 2023*). There are 10 existing buildings onsite with associated access driveways, parking and open space. The existing lodge building is located within the shoreline buffer of Lake Washington and is situated in the northeast corner of the property. The area around this lodge is relatively flat with gentle sloping toward the lake.

Subject Trees

I inventoried a total of 49 trees within the vicinity of proposed construction. Of these trees, 17 are small (non-regulated) trees, 21 meet the definition of a large tree and 11 meet the requirements of an exceptional tree according to the criteria outlined in MICC 19.16.010. Because trees smaller than 10” DSH that are not exceptional do not require a permit for removal, I didn’t evaluate these trees for construction impacts and they are not included in the body of this report. However, these trees were tagged and are included in the table below as well as in Appendix A - Site and Tree Inventory Map and Appendix B - Tree Inventory, for reference and use by the client. Photographs of all large and exceptional trees are shown in Appendix C.

The tree inventory is summarized in Table 1 below. Note that if the species is listed in the exceptional tree list, then the minimum size to be classified as exceptional immediately follows the species name in the table. If no number is shown, then the species is not included in the exceptional tree list and it is considered exceptional at the standard 30” DSH.

Table 1- Inventory Summary

		Status		
Species	**Botanical**	**Small**	**Large**	**Exceptional**
Paper Birch (20")	*Betula papyrifera*		1	
Western Red Cedar (30")	*Thuja plicata*	2		2
Flowering Cherry (23")	*Prunus serrulata*	4		1
Flowering Dogwood (12")	*Cornus florida*	1		
American Elm (30")	*Ulmus spp.*	1		2
Siberian Elm	*Ulmus pumila*		1	
Katsura (30")	*Cercidiphyllum japonicum*		4	
Honey Locust	*Gleditsia triacanthos*		1	
Japanese Maple (12")	*Acer palmatum*	4	1	2
Norway Maple	*Acer platanoides*	1		
Red Maple (25")	*Acer rubrum*		5	3
Austrian Black Pine (24")	*Pinus nigra*		2	
Japanese Red Pine	*Pinus densiflora*		1	
Dawn Redwood	*Metasequoia glyptostroboides*		3	
Rhododendron	*Rhododendron spp.*	1	1	
Fragrant Snowbell	*Styrax obassia*	2		
Japanese Snowbell (12")	*Styrax japonicus*	1		
American Sweetgum (27")	*Liquidambar styraciflua*		1	
Weeping Willow (24")	*Salix babylonica*			1
	TOTAL	17	21	11

Tree 1 is a dawn redwood (*Metasequoia glyptostroboides*) that measures 13.7” DSH and is located near the shoreline. It has good health and structural condition. Proposed site plans show construction of a turnaround that extends within approximately 50% of the tree’s CRZ. At this time, it does not appear that this tree can be retained with the proposed construction.

Tree 2 is a dawn redwood (*Metasequoia glyptostroboides*) that measures 12” DSH. It has good health and structural condition. The trunk of this tree is located approximately 10’ from a proposed water line and directly adjacent to a proposed access road. The level of disturbance to this tree will be significant and it is not suitable for retention.

Trees 3-6 are katsuras (*Cercidiphyllum japonicum*) that measure between 13 and 18.5” DSH. They are in good health and structural condition. The proposed development would include extensive disturbance of the roots on the west side of these trees. This species has a poor tolerance to construction impacts and I don’t believe it would be possible to retain these trees.

Trees 7 and 8 are Austrian black pines (*Pinus nigra*) that measure 17.3” and 12.9” DSH, respectively. These trees are in good health and structural condition. The proposed development would include extensive disturbance of the roots on the west side of these trees and will need to be removed.

Trees 10-14 are red maples (*Acer rubrum*) that measure between 17” and 26” DSH. Trees 10, 11, 13, and 14 are in good health and structural condition. Trees 10 and 11 are located well within the proposed construction limits and will need to be removed. Tree 12 has some heartwood decay in the lower trunk and a slight lean. The trunks of trees 12, 13 and 14 are located approximately 12’ from the proposed access driveway. If the rock retaining wall can be left intact then trees 12-14 can be retained, as the impacts will be outside the ICRZs.

Tree 15 is a Western red cedar (*Thuja plicata*) that measures 30” DSH and has a CRZ of 30’. It is in fair health and structural condition and meets the definition of an exceptional tree. It has multiple stems and splits at approximately 1’ above the ground into 5 trunks. There is included bark in the lower 2' between 3 of the stems. The canopy of the tree is thinning with top-down dieback. The trunk of this tree is located approximately 10’ from a proposed water line and directly adjacent to a proposed access road. The level of disturbance to this tree will be significant and it is not suitable for retention.

Tree 16 is an American elm (*Ulmus americana*) that measures 30” DSH and meets the size threshold of an exceptional tree.This is a tall, stately tree located directly in front of the existing lodge building. Overall, this tree appears to be in good health and structural condition despite the compacted and confined root spacing. The trunk of this tree is located well within the proposed building footprint and would need to be removed for construction.

Tree 21 is a flowering cherry (*Prunus spp.*) that measures 23.4” DSH and is an exceptional tree. I observed a fungal fruiting body at the base of the trunk, however there was no indication of serious decay when I sounded the trunk with a mallet. Overall, this tree is in good health and

structural condition. The trunk of this tree is located well within the proposed building footprint and would need to be removed for construction.

Tree 24 is a Japanese maple (*Acer palmatum*) that measures 11.5” DSH. It is in good health and structural condition with no noticeable defects. The trunk of this tree is located well within the proposed building footprint and would need to be removed for construction.

Tree 27 is a honey locust (*Gleditsia triacanthos*) that measures 19” DSH. The trunk splits at 6' and the junction has a strong, u-shaped union. Overall, this tree is in good health and structural condition. The trunk of this tree is located approximately 20’ from the building footprint, but grading and heavy equipment presence in this area will cause significant damage. This tree will need to be removed for construction.

Tree 28 is an American elm (*Ulmus americana*) that measures 34” DSH and meets the size threshold of an exceptional tree. Overall, this tree appears to be in good health and structural condition despite the compacted and confined root spacing. Proposed conceptual plans show the trunk of this tree well within the proposed building footprint and would need to be removed for construction.

Tree 31 is a Japanese maple (*Acer palmatum*) that measures 14.5” DSH and is an exceptional tree. Overall, this tree is in good health and structural condition. However, the proposed construction will negatively impact more than 50% of the tree’s roots and crown. This tree would not be expected to survive this level of disturbance and would need to be removed for construction.

Tree 33 is a weeping willow (*Salix babylonica*) that measures 41.3” DSH and is an exceptional tree. It has been recently topped at 10' above ground, however there was no indication of serious decay at the location of topping nor when I sounded the trunk with a mallet. Overall, this tree is in good health and fair structural condition. The proposed development shows several utility lines running well within the ICRZ of this tree. It will need to be removed for construction.

Tree 34 is a dawn redwood (*Metasequoia glyptostroboides*) that measures 21.3” DSH. It has some exposed surface roots, but overall it’s in good health and structural condition. The proposed conceptual plans show installation of a new storm drain approximately 12’ from the tree trunk, which is outside the ICRZ of this tree. This tree can be retained.

Tree 36 is a Western red cedar (*Thuja plicata*) that measures 35.5” DSH and is an exceptional tree. It has good health and fair structural condition. The proposed conceptual plans show installation of a new storm drain approximately 20’ from the tree trunk, which is outside the ICRZ of this tree. This tree can be retained.

Tree 37 is a red maple (*Acer rubrum*) that measures 18” DSH. It has good health and good structural condition with no noticeable defects. The proposed conceptual plans show installation

of a new storm drain approximately 18’ from the tree trunk, which is well outside the ICRZ of this tree. This tree can be retained.

Tree 38 is a Japanese red pine (*Pinus densiflora*) that measures 18” DSH. It has good health and good structural condition with no noticeable defects. The proposed conceptual plans show installation of a new water line approximately 18’’ from the tree trunk, which is outside the CRZ of this tree. This tree can be retained.

Tree 39 is a Japanese maple (*Acer palmatum*) that measures 18” DSH and is an exceptional tree. It has good health and good structural condition with no noticeable defects. The proposed plans show installation of a water line outside the CRZ of this tree. This tree can be retained.

Tree 40 is a red maple (*Acer rubrum*) that measures 41.8” DSH and is an exceptional tree. It has fair health and fair structural condition with a thinning canopy and heartwood decay at previous scaffold branch locations. The proposed plans show installation of a new water line, which connects to an existing water main outside the ICRZ of this tree. This tree can be retained.

Tree 42 is an American sweetgum (*Liquidambar styraciflua*) that measures 22” DSH. It has good structural condition and fair health with a thin canopy. The proposed plans show installation of a new storm drain approximately 20’ from the tree trunk, which is well outside the ICRZ of this tree. This tree can be retained.

Tree 45 is a rhododendron (*Rhododendron spp.*) that measures 13.5” DSH and has a tree-like form. It has fair health and fair structural condition with a large girdling root around the base of the tree. The proposed plans show installation of a new side sewer approximately 15’ from the tree trunk, which is well outside the CRZ for this tree. This tree can be retained if grading is kept to a minimum within the ICRZ.

Tree 47 is paper birch (*Betula papyrifera*) that measures 10.3” DSH. It has good health and good structural condition. The proposed plans show grading and installation of a new parking area within the ICRZ of this tree. It will need to be removed for construction.

Tree 48 red maple (*Acer rubrum*) that measures 28” DSH and is an exceptional tree. It has fair health and fair structural condition with a thin canopy, sap drip at the base of the trunk, dead branches, and crossing trunks. The proposed plans include installation of a stormwater detention vault within a few feet of the tree trunk, as well as grading and parking lot construction around the tree. This tree will need to be removed for construction.

Tree 49 is a Siberian elm (*Ulmus pumila*) that measures 17.5” DSH. It has good health and good structural condition with no noticeable defects. The proposed plans show construction impacts approximately 14’ from the tree trunk, which is outside the ICRZ for the tree. This tree can be retained.

Discussion

Mercer Island Tree Removal Regulations

MICC 19.10.60 (B) states that tree removal in multifamily zoning designations, including MF-3, will be granted if it meets any of the following criteria:

a. It is necessary for public safety, removal of hazardous trees, or removal of diseased or dead trees;
b. It is necessary to enable construction work on the property to proceed and the owner has used reasonable best efforts to design and locate any improvements and perform the construction work in a manner consistent with the purposes set forth in MICC 19.10.005;
c. It is necessary to enable any person to satisfy the terms and conditions of any covenant, condition, view easement or other easement, or other restriction encumbering the lot that was recorded on or before July 31, 2001; and subject to MICC 19.10.090(B);
d. It is part of the city's forest management program or regular tree maintenance program and the city is the applicant;
e. It is desirable for the enhancement of the ecosystem or slope stability based upon professional reports in form and content acceptable to the city arborist.

Proposed Construction

The proposed development includes demolition of the existing lodge building and the addition of additional residential units and a new common area (Appendix A). Construction for these buildings would also include extensive grading and installation of underground utility lines. Since the project is in the initial development stages, specific construction details have not yet been developed. However, the conceptual plan shows the anticipated limits of disturbance which I used to evaluate the expected viability of tree retention.

Impact Analysis

I analyzed the expected construction impacts to all regulated trees within this report based on the conceptual plans I received from the project team. It is my recommendation that 20 of the 32 trees will need to be removed due to the negative impacts from construction within the ICRZ of these trees. Of these 20 trees to be removed, 8 of them are exceptional. The remaining 12 trees should be able to be retained and protected following recommendations contained in this report.

Trees on Adjacent Properties

There are no large trees on adjacent properties with driplines extending over the subject property line near the area of proposed construction.

Tree Groves

There are no tree groves within the study area of this report. Mercer Island City Code 19.16 defines a tree grove as *a group of eight or more trees each ten inches or more in diameter that form a continuous canopy. Trees that are part of a grove shall also be considered exceptional trees, unless they also meet the definition of a hazardous tree.* Although there are some large trees within continuous canopies in the study area, they do not meet the criteria for a tree grove.

Recommendations

Tree Removal and Retention

As stated previously, it is my recommendation that 20 of the 32 regulated trees should be removed based on the conceptual plans I reviewed. The remaining 12 trees can be retained and protected utilizing the tree protection recommendation described below. If the client would like to retain additional trees, then it will require that no disturbance occurs within the ICRZ of the tree, at a minimum.

Tree Protection Measures

To ensure long-term viability of trees and stands identified for protection, all work shall comply with the minimum requirements set forth in the ISA publication Best Management Practices (BMPs) Managing Trees During Construction (*Fite & Smiley 2016*).

Tree Protection Plan

The tree protection plan will be prepared at a later date in collaboration with the engineering team and other project team members. The plan will be prepared in accordance with MICC 19.10.080 and will show all minimum required tree protection measures as well as the tree replanting plan.

Pre-construction Site Meeting

Before beginning work, the contractor shall meet with the consulting arborist at the site to review all work procedures and tree protection measures.

Tree Protection Fencing

Tree protection fencing shall be installed around retained trees prior to any land disturbance and shall remain in place for the duration of the project. Tree fencing shall be installed at the locations shown on the approved plans with the ICRZ being the minimum protection area. Fencing shall consist of 4-6’ tall chain-link solidly anchored into the ground with steel posts at 8’ intervals. Laminated signage shown in Appendix D shall be attached to the fence at 10’ intervals. Fencing shall not be moved without City Arborist permission and there shall be no access, materials storage (including soil), or equipment storage within this protection area.

Tree Pruning

It may be necessary to prune the limbs of some trees that are selected for retention in order to provide the necessary clearance for safety and equipment. When this is the case, all pruning shall be performed by an ISA Certified Arborist following current industry standards. No spikes or gaffs are allowed to be used to climb into the canopies, and all pruning should entail the smallest cuts possible to achieve the pruning goals.

Excavation

During excavation,the consulting arborist shall be onsite to monitor any demolition or construction activities within the critical root zone of retained trees to minimize root and soil disturbance and determine potential impacts to the tree.

Root Pruning

Any root over 1” inch in diameter that is encountered during excavation and grading shall be cut cleanly with a sharp blade and shall not be torn or ripped by heavy equipment. Cutting roots over

2” inches diameter or greater should be avoided. If any root over 4” inches diameter is encountered, work shall stop, and the consulting arborist shall be called to the site to evaluate and provide recommendations.

Final Inspection
The consulting arborist shall make a final site visit to inspect retained trees following completed work.

Replacement Tree Requirements
Mercer Island City Code 19.10.070 outlines the replacement requirements for removed trees. The number of replacement trees required to be planted is dependent on the diameter of the tree being removed. Tree replacement ratios and number of required replacement trees is outlined in the table below.

Diameter of Removed Tree	Tree Replacement Ratio	Number of Trees Proposed for Removal	Number of Tree Required for Replacement Based on Size/Type
Less than 10”*	1	0	0
10” up to 24”	2	12	24
Greater than 24” up to 36”	3	0	0
Greater than 36” and any Exceptional Tree	6	8	48
TOTAL TREE REPLACEMENTS			**72**

*no replacement tree is needed if the tree fits all of the following; Less than 10 inches in diameter, not an exceptional tree, and not a replacement tree from another tree permit. *

Mercer Island City Code 19.10.070 states that all replacement trees shall be at least 6’ tall for conifers and at least 1.5” diameter at the base for deciduous trees. Smaller replacement trees may be allowed if the applicant can demonstrate that smaller trees are more suitable to the site and will be planted in sufficient quantities to meet the intent of MICC 19.10. Replacement trees shall primarily be those species native to the Pacific Northwest.

The location of replacement trees shall follow the order of priority from most important to least important outlined in MICC 19.10.70(B)(1):

a. On-site replacement adjacent to or within critical tree areas as defined in chapter 19.16 MICC;
b. On-site replacement outside of critical tree areas adjacent to other retained trees making up a grove or stand of trees;
c. On-site replacement outside of critical tree areas; and
d. Off-site in adjacent public right-of-way where explicitly authorized by the city.

All replacement trees should be planted according to industry standards and shall be maintained in a healthy condition for a period of five years after planting as described in MICC 19.10.070(D).

Replacement tree replanting detail shown in Appendix E should be included on the replanting plan and all other relevant plans.

Glossary

ANSI: American National Standards Institute.

ASCA: American Society of Consulting Arborists.

Co-dominant stems: Stems or branches of nearly equal diameter, often weakly attached (*Matheny et al. 1998*).

Crown: The leaves and branches of a tree from the lowest branch on the trunk to the top (*MICC 2023*).

Defects: Flaws, decay, or other faults in the trunk, branches, or root collar of a tree, which may lead to failure (*Lilly 2001*).

DSH: Diameter at standard height; the diameter of a trunk measured at 54 inches (4.5 feet) above grade (*Matheny et al. 1998*).

Exceptional tree: A tree or group of trees that because of its unique historical, ecological, or aesthetic value constitutes an important community resource. An exceptional tree is a tree that is rare or exceptional by virtue of its size, species, condition, cultural/historic importance, age, and/or contribution as part of a tree grove. Trees with a diameter of more than 36 inches, or with a diameter that is equal to or greater than the diameter listed in the Exceptional Tree Table, are considered exceptional trees (*MICC 2023*).

ISA: International Society of Arboriculture.

Included bark: Bark that becomes embedded in a crotch between branch and trunk or between co-dominant stems and causes a weak structure (*Lilly 2001*)

Large tree (regulated): Any tree with a diameter of ten inches or more, and any tree that meets the definition of an exceptional tree (*MICC 2023*).

References

Lilly, Sharon. 2001. *Arborists' Certification Study Guide*. International Society of Arboriculture, Champaign, Illinois, USA.

Matheny, N.P. and J.R. Clark. 1998. *Trees and Development: A Technical Guide to Preservation of Trees During Land Development.* International Society of Arboriculture, Champaign, Illinois, USA.

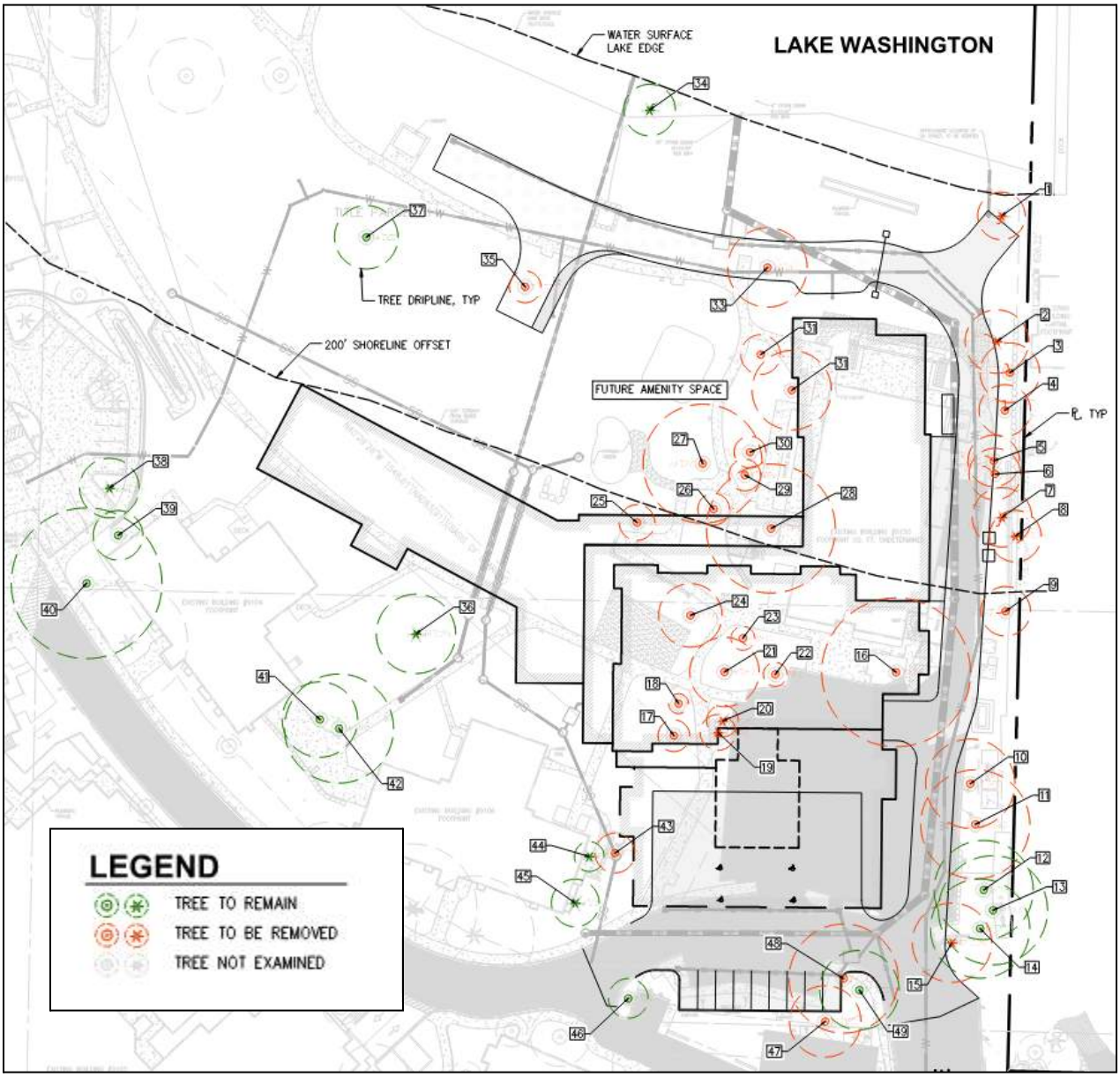
Mercer Island City Code (MICC).https://library.municode.com/wa/mercer_island/codes/city_code. (Accessed April 13, 2023).

Mercer Island Zoning Map. https://mercerislandgis.maps.arcgis.com/apps/webappviewer/index.html?id=f4464290a9b24d6496b43b39dea42a84. (Accessed April 13, 2023).

Nelda Matheny, E. Thomas Smiley, Ryan Gilpin, and Richard Hauer. 2023. *Best Management Practices: Managing Trees During Construction (3rd edition).* International Society of Arboriculture, Champaign, Illinois, USA.

Smiley, E.T., N.P. Matheny and S.J. Lilly. 2017. *Best Management Practices: Tree Risk Assessment* (2nd edition). International Society of Arboriculture, Champaign, Illinois, USA.

APPENDIX A - PROPOSED SITE PLAN AND TREE INVENTORY MAP



APPENDIX B - TREE INVENTORY

Note: Highlighted trees are small, non-regulated trees.

Tree ID	Scientific Name	Common Name	DSH (in)	CRZ (ft)	ICRZ (ft)	Health Condition	Structural Condition	Large	Exceptional	Viability for Retention	Replacement Trees Required	Notesf
1	*Metasequoia glyptostroboides*	Dawn Redwood	13.7	13.7	6.9	Good	Good	Yes	No	Not Viable	2	Invasive ivy at base and up trunk.
2	*Metasequoia glyptostroboides*	Dawn Redwood	12	12	6	Good	Good	Yes	No	Not Viable	2	Small circling roots. Crown-raised - flush cuts w/good wound closure.
3	*Cercidiphyllum japonicum*	Katsura	18.5	18.5	9.3	Good	Good	Yes	No	Not Viable	2	Multi-stem tree: 11.8, 10.7, 9.4. Crown-raised - flush cuts w/good wound closure.
4	*Cercidiphyllum japonicum*	Katsura	14.7	14.7	7.4	Good	Good	Yes	No	Not Viable	2	Multi-stem tree: 8.2, 9, 8.3. Crown-raised - flush cuts w/good wound closure.
5	*Cercidiphyllum japonicum*	Katsura	13.8	13.8	6.9	Good	Good	Yes	No	Not Viable	2	Multi-stem tree: 6.5, 5.7, 5.2, 7, 6.4. Crown-raised - flush cuts w/good wound closure. Soil pile over roots.
6	*Cercidiphyllum japonicum*	Katsura	13	13	6.5	Good	Good	Yes	No	Not Viable	2	Multi-stem tree: 5.2, 6.7, 7.5, 6.4. Crown-raised - flush cuts w/good wound closure. Soil and equipment over roots.
7	*Pinus nigra*	Austrian Black Pine	17.3	17.3	8.7	Good	Good	Yes	No	Not Viable	2	Crown-raised - flush cuts w/good wound closure. Trunk splits at 15'. Rock pile against trunk of tree. Compaction over roots.
8	*Pinus nigra*	Austrian Black Pine	12.9	12.9	6.5	Good	Good	Yes	No	Not Viable	2	Crown-raised - flush cuts w/good wound closure. Rock pile against trunk of tree. Compaction over roots.
9	*Ulmus americana*	American Elm	8.9	8.9	4.5	Poor	Fair	No	No	Not Viable	0	Multi-stem tree: 3.6, 3.7, 2.4, 3.4, 6. Stockpile at base of tree. Compaction and pavement over roots.
10	*Acer rubrum*	Red Maple	20.5	20.5	10.3	Good	Good	Yes	No	Not Viable	2	Trunk splits at 12'. Compaction and pavement over roots. Exposed surface roots. Large container 6' from base of tree.

Tree ID	Scientific Name	Common Name	DSH (in)	CRZ (ft)	ICRZ (ft)	Health Condition	Structural Condition	Large	Exceptional	Viability for Retention	Replacement Trees Required	Notes
11	*Acer rubrum*	Red Maple	26	26	13	Good	Good	Yes	Yes	Not Viable	6	Trunk splits at 5'. Crown-raised - flush cuts w/good wound closure. Compaction and pavement over roots. Exposed surface roots.
12	*Acer rubrum*	Red Maple	17.8	17.8	8.9	Fair	Fair	Yes	No	Viable	N/A	Trunk splits at 5'. Heartwood decay in lower trunk. Slight lean.
13	*Acer rubrum*	Red Maple	19.8	19.8	9.9	Good	Good	Yes	No	Viable	N/A	Trunk splits at 15' into 4 co-dominant stems. Compacted roots. Trunk is 2' from fence.
14	*Acer rubrum*	Red Maple	17	17	8.5	Good	Good	Yes	No	Viable	N/A	Trunk splits at 6'. Slight phototrophic lean.
15	*Thuja plicata*	Western Red Cedar	30	30	15	Fair	Fair	Yes	Yes	Not Viable	6	Multi-stem tree: 14.8, 13.3, 14.8, 16.7. Included bark in lower 2' between 3 stems. Top canopy dieback w/overall thinning canopy. Pavement over roots.
16	*Ulmus americana*	American Elm	30	30	15	Good	Good	Yes	Yes	Not Viable	6	Trunk splits at 8'.
17	*Cornus florida*	Flowering Dogwood	6.7	6.7	3.4	Good	Good	No	No	Not Viable	0	No noticeable defects.
18	*Acer palmatum*	Japanese Maple	4.6	4.6	2.3	Good	Good	No	No	Not Viable	0	No noticeable defects.
19	*Thuja plicata*	Western Red Cedar	8.5	8.5	4.3	Good	Good	No	No	Not Viable	0	Thinning canopy. Compacted and confined roots.
20	*Thuja plicata*	Western Red Cedar	7.8	7.8	3.9	Good	Good	No	No	Not Viable	0	Thinning canopy. Compacted and confined roots.
21	*Prunus serrulata*	Flowering Cherry	23.4	23.4	11.7	Good	Good	Yes	Yes	Not Viable	6	Mature tree. Fungal fruiting body at base of trunk. No indication of serious decay when sounding trunk.
22	*Styrax obassia*	Fragrant Snowbell	4.5	4.5	2.3	Good	Good	No	No	Not Viable	0	No noticeable defects.
23	*Styrax obassia*	Fragrant Snowbell	3.4	3.4	1.7	Good	Good	No	No	Not Viable	0	No noticeable defects.

Tree ID	Scientific Name	Common Name	DSH (in)	CRZ (ft)	ICRZ (ft)	Health Condition	Structural Condition	Large	Exceptional	Viability for Retention	Replacement Trees Required	Notes
24	*Acer palmatum*	Japanese Maple	11.5	11.5	5.8	Good	Good	Yes	No	Not Viable	2	No noticeable defects.
25	*Acer palmatum*	Japanese Maple	6.7	6.7	3.4	Good	Good	No	No	Not Viable	0	No noticeable defects.
26	*Prunus serrulata*	Flowering Cherry	7	7	3.5	Fair	Fair	No	No	Not Viable	0	Thin canopy. Minimal scaffold branches in canopy.
27	*Gleditsia triacanthos*	Honey Locust	19	19	9.5	Good	Good	Yes	No	Not Viable	2	Trunk splits at 6' w/u-shaped union. Pavement over roots.
28	*Ulmus americana*	American Elm	34	34	17	Good	Good	Yes	Yes	Not Viable	6	Compacted and confined roots. Minimal growing space. Large canopy. Near building.
29	*Prunus serrulata*	Flowering Cherry	7.3	7.3	3.7	Fair	Fair	No	No	Not Viable	0	Thin canopy. Minimal scaffold branches in canopy.
30	*Prunus serrulata*	Flowering Cherry	7.5	7.5	3.8	Fair	Fair	No	No	NotViable	0	Thin canopy. Minimal scaffold branches in canopy.
31	*Acer palmatum*	Japanese Maple	14.5	14.5	7.3	Good	Good	Yes	Yes	Not Viable	6	No noticeable defects.
32	*Prunus serrulata*	Flowering Cherry	9.2	9.2	4.6	Fair	Fair	No	No	Not Viable	0	Thin canopy. Minimal scaffold branches in canopy.
33	*Salix babylonica*	Weeping Willow	41.3	41.3	20.7	Good	Fair	Yes	Yes	Not Viable	6	Recently topped at 10'. No indication of trunk rot when sounded.
34	*Metasequoia glyptostroboides*	Dawn Redwood	21.3	21.3	10.7	Good	Good	Yes	No	Viable	N/A	Exposed surface roots.
35	*Acer platanoides*	Norway Maple	8.3	8.3	4.2	Good	Good	No	No	Not Viable	N/A	No noticeable defects.
36	*Thuja plicata*	Western Red Cedar	35.5	35.5	17.8	Good	Fair	Yes	Yes	Viable	N/A	Topped at 20'. Large, heavy leaders from topping.
37	*Acer rubrum*	Red Maple	18	18	9	Good	Good	Yes	No	Viable	N/A	No noticeable defects.
38	*Pinus densiflora*	Japanese Red Pine	18	18	9	Good	Good	Yes	No	Viable	N/A	No noticeable defects.
39	*Acer palmatum*	Japanese Maple	12	12	6	Good	Good	Yes	Yes	Viable	N/A	Trunk splits at 2'. Small,adjacent tree cabled to trunk.

Tree ID	Scientific Name	Common Name	DSH (in)	CRZ (ft)	ICRZ (ft)	Health Condition	Structural Condition	Large	Exceptional	Viability for Retention	Replacement Trees Required	Notes
40	*Acer rubrum*	Red Maple	41.8	41.8	20.9	Fair	Fair	Yes	Yes	Viable	N/A	Trunk splits at 6'. Thin canopy. Sapwood and heartwood decay at previous scaffold branch locations.
41	*Styrax japonica*	Japanese Snowbell	8.4	8.4	4.2	Good	Good	No	No	Viable	N/A	No noticeable defects.
42	*Liquidambar styraciflua*	American Sweetgum	22	22	11	Fair	Good	Yes	No	Viable	N/A	Thin canopy.
43	*Acer palmatum*	Japanese Maple	8	8	4	Good	Good	No	No	Not Viable	0	Trunk splits at 1'. Some exposed surface roots. Trunk is approximately 5' from existing sewer access cover.
44	*Rhododendron spp.*	Rhododendron	9.2	9.2	4.6	Fair	Fair	No	No	Viable	N/A	Thin canopy. Heartwood decay at base of trunk.
45	*Rhododendron spp.*	Rhododendron	13.5	13.5	6.8	Fair	Fair	Yes	No	Viable	N/A	Trunk splits at 1'. Large girdling root around trunk. Uneven canopy.
46	*Acer palmatum*	Japanese Maple	6.6	6.6	3.3	Good	Good	No	No	Viable	N/A	Trunk splits at 3'.
47	*Betula papyrifera*	Paper Birch	10.3	10.3	5.2	Good	Good	Yes	No	Not Viable	2	Some exposed surface roots. Trunk located approximately 6' from 2' tall retaining wall.
48	*Acer rubrum*	Red Maple	28	28	14	Fair	Fair	Yes	Yes	Not Viable	6	Trunk splits at 4'. Thin canopy. Sap drip at base of trunk. Dead branches. Crossing trunks.
49	*Ulmus pumila*	Siberian Elm	17.5	17.5	8.8	Good	Good	Yes	No	Viable	N/A	No noticeable defects.

APPENDIX C - PHOTOGRAPHS

Photo 1 - Tree 1, a dawn redwood near the shoreline.

Photo 2 - Trees 2, 3, 4, 5, 6; a dawn redwood and 4 katsuras (left to right).

Photo 3 - Trees 7 and 8, two Austrian black pines in the foreground of this photo.

Photo 4 - Trees 10, 11, 12, 13 and 14, all red maples.

Photo 5 - Tree 12, a red maple with decay in trunk and slight root plate uplifting.

Photo 6 - Tree 15, an exceptional Western red cedar with thinning canopy and top-down dieback.

Photo 7 - Tree 21, an exceptional flowering cherry.

Photo 8 - Tree 16, an exceptional American elm tree.

Photo 9 - Tree 21, an exceptional flowering cherry.

Photo 10 - Tree 24, a Japanese maple.

Photo 11 - Tree 27, a honey locust (left) and tree 28, an exceptional American elm (right).

Photo 12 - Tree 31, an exceptional Japanese maple.

Photo 13 - Tree 33, an exceptional weeping willow.

Photo 14 - Tree 34, a dawn redwood.

Photo 15 - Tree 36, an exceptional Western red cedar.

Photo 16 - Tree 37, a red maple.

Photo 17 - Tree 38 (left) and 39 (right), a Japanese red pine and an exceptional Japanese maple.

Photo 18 - Tree 40, an exceptional red maple.

Photo 19 - Tree 42, an American sweetgum.

Photo 20 - Tree 45, a rhododendron.

Photo 21 - Tree 47, a paper birch.

Photo 22 - Tree 48 (right) and 49 (left), an exceptional red maple and a Siberian elm.

APPENDIX D - TREE PROTECTION FENCING DETAIL

TREE PROTECTION AREA (TPZ)

KEEP OUT!

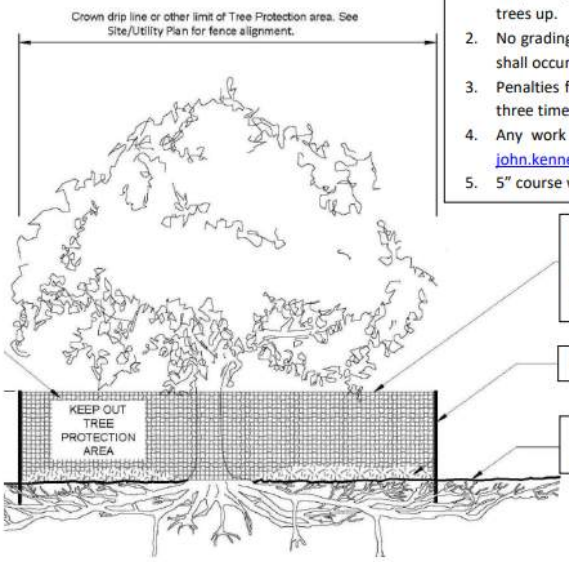
DO NOT REMOVE OR ADJUST THE APPROVED LOCATION OF THIS TREE PROTECTION AREA

Trees enclosed by this fence are protected and are subject to the conditions of the tree permit. Violation of tree conditions may lead to:

1. Correction Notices or Stop Work Orders until compliance is achieved
2. RE Inspection Fees/financial penalties
3. Arborist reports recommending mitigation

Notes

1. No pruning shall be performed unless under the direction of the Project Arborist. Including limbing trees up.
2. No grading, excavation, storage (materials, equipment, vehicles, etc.), or other unpermitted activity shall occur inside the protective fencing.
3. Penalties for damaging by root damage/compaction or removing a saved tree may be a fine up to three times the value of the tree plus restoration (MICC 19.10.160).
4. Any work in approved TPZ must be with the permission of the City Arborist (206) 275-7713, john.kenney@mercergov.org.
5. 5" course woodchips within the tree protection zone, but not against the tree trunk.



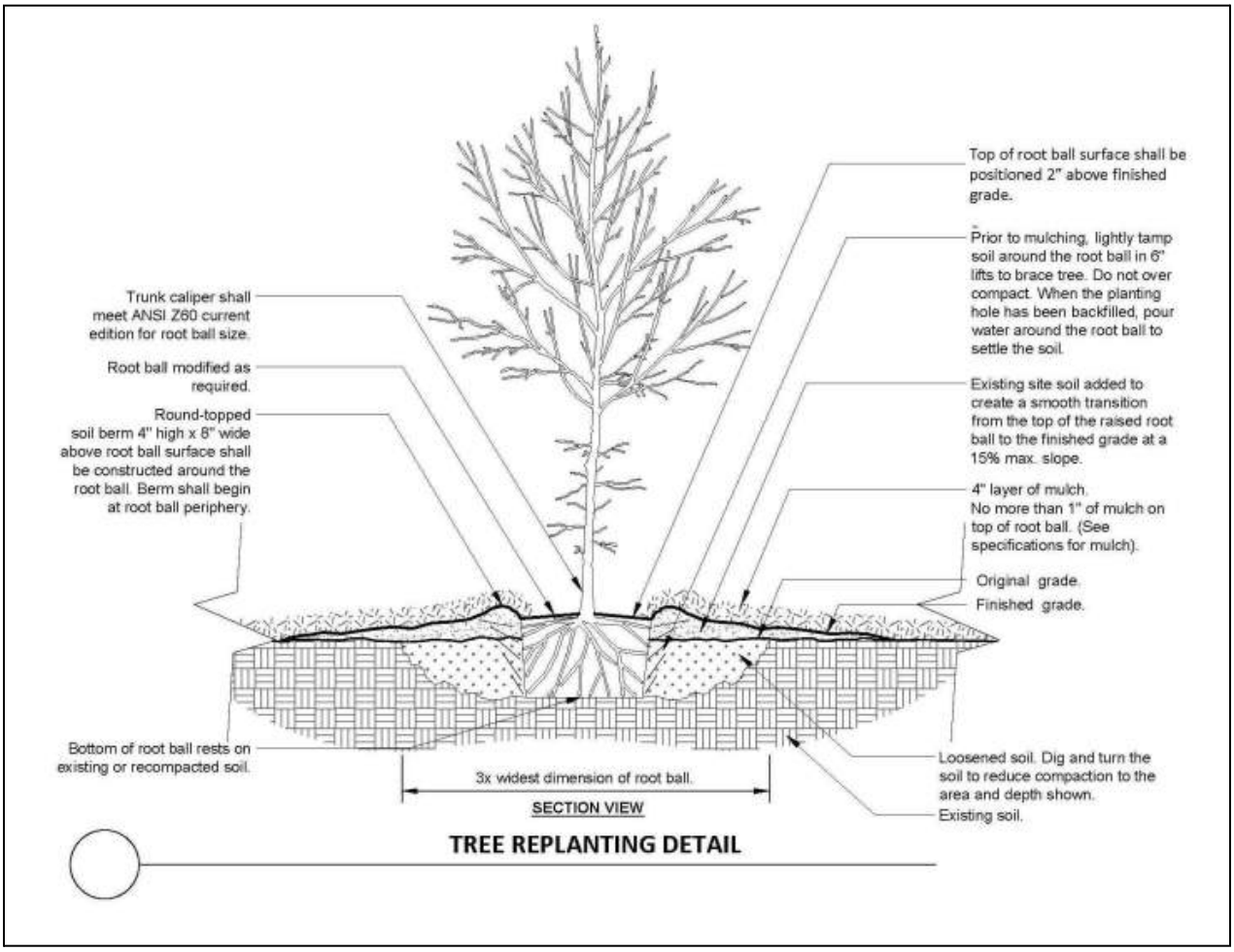
Tree protection fence: 4-6" **chain link** fence, solidly anchored into the ground, or if authorized High-density polyethylene fencing with 3.5" x 1.5" openings; color orange. Steel posts installed at 8' o.c.

2" x 6" steel posts or approved equal

Maintain existing grade with the tree protection fence unless otherwise indication on the plans

Any Work in the protected area must be with the permission of the City Arborist john.kenney@mercergov.org

APPENDIX E - REPLACEMENT TREE PLANTING DETAIL



APPENDIX F - ASSUMPTIONS AND LIMITING CONDITIONS

The information contained in this report is my professional opinion and judgment based on years of experience, knowledge of tree species, structural and environmental factors.

Any legal description provided to the consultant is assumed to be correct. Any titles or ownership of properties are assumed to be good and marketable. All property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

All property is presumed to be in conformance with applicable codes, ordinances, statutes, or other regulations.

Care has been taken to obtain information from reliable sources. The consultant cannot guarantee nor be responsible for the accuracy of information provided by others.

The consultant shall not be required to give testimony or to attend meetings, hearings, conferences, mediations, arbitrations, or trials by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services.

Sketches, drawings, and photographs in this report are intended for use as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is only for coordination and ease of reference. Inclusion of said information with any drawings or other documents does not constitute a representation of Consulting Arborist, LLC as to the sufficiency or accuracy of said information.

Unless otherwise expressed: a) this report covers only the examined items and their condition at the time of inspection; and b) 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 structural problems or deficiencies of plants or property may not arise in the future.

APPENDIX G - CERTIFICATION OF PERFORMANCE

I, Ashley Adams, certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report and have stated my findings accurately. The extent of the evaluation and stated in the attached report and the Scope of Assignment;
- That I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;
- That the analysis, opinions, and conclusions stated herein are my own;
- That my analysis, opinions, and conclusions were developed independently and this report has been prepared according to commonly accepted arboricultural practices;
- That no one provided significant professional assistance to me, except as indicated within the report;
- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party.

I further certify that I am a member of the American Society of Consulting Arborists, and acknowledge, accept, and adhere to the ASCA Standards of Professional Practice. I am also an International Society of Arboriculture Certified Arborist and have been involved in the practice of arboriculture and the study of trees for over twenty five years.

Signed: Ashley Adams

Date: July 14, 2023