



Greenforest Incorporated



Consulting Arborist

TO: Ye Sun
Robert Edson Swain, Inc.
2300 West Commodore Way, Ste. 201
Seattle WA 98199

REFERENCE: Arborist Report

SITE ADDRESS: 3310 97th Ave SE, Mercer Island WA

DATE: January 26, 2021

PREPARED BY: Favero Greenforest, ISA Certified Arborist # PN -0143A
ISA Tree Risk Assessment Qualified
ASCA Registered Consulting Arborist® #379

You contacted me and contracted my services as a consulting arborist. My assignment is to inspect trees at the above referenced site. The purpose of this *arborist report* is to establish the condition of the significant trees to satisfy City of Mercer Island permit submittal requirements.

You provided me a topographic survey, and a site plan. I visited the site 1/20/2021 and visually inspected the trees on this site, which are the subject of this report.

SUMMARY

	<i>Onsite</i>	<i>Offsite</i>
<i>Small</i>	<i>9</i>	<i>0</i>
<i>Large</i>	<i>2</i>	<i>0</i>
<i>Exceptional</i>	<i>2</i>	<i>1</i>

LIMITATIONS AND USE OF THIS REPORT

This document provides required tree attributes for a *tree inventory* and *arborist report*. This inventory shall be used in the building permit process for the subject parcel, and as an aid in tree retention with City planners.

This tree report establishes, via the most practical means available, the existing conditions of the trees on the subject property. Ratings for health and structure, as well as any recommendations are valid only through the development and construction process. This report is based solely on what is readily visible and observable, without any invasive means.

There are several conditions that can affect a tree's condition that may be pre-existing and unable to be ascertained with a visual-only analysis. No attempt was made to determine the presence of hidden or concealed conditions which may contribute to the risk or failure potential of trees on the site. These conditions include root and stem (trunk) rot, internal cracks, structural defects or construction damage to roots, which may be hidden beneath the soil. Additionally, construction and post-construction circumstances can cause a relatively rapid deterioration of a tree's condition.

TREE ASSESSMENT

I visually inspected each tree from the ground. I performed a Level 1 risk assessment.¹ This is the standard assessment for populations of trees near specified targets, conducted in order to identify obvious defects or specified conditions such as a pre-development inventory. This is a limited visual assessment focuses on identifying trees with imminent and/or probable likelihood of failure, and/or other visible conditions that will affect tree retention.

I recorded tree species and size (DBH). I estimated the average dripline of each tree. I rated the condition of each tree, both health and structure/form. A tree's structure/form is distinct from its health. This inspection identifies what is visible with both.

High-risk trees can appear healthy in that they can have a dense, green canopy. This may occur when there is sufficient sapwood or adventitious roots present to maintain tree health, but inadequate strength for structural support.

Conversely, trees in poor health may or may not be structurally stable. For example, tree decline due to root disease is likely to cause the tree to be structurally unstable, while decline due to drought or insect attack may not.

¹ Companion publication to the ANSI A300 Part 9: Tree Shrub and Other woody Plant Management – Standard Practices, Tree Risk Assessment. 2011. ISA.

One way that tree health and structure/form are linked is that healthy trees are more capable of compensating for structural defects. A healthy tree can develop adaptive growth that adds strength to parts weakened by decay, cracks, and wounds.

This report identifies unhealthy trees based on existing health conditions and tree structure, and specifies which trees are most suitable for preservation.²

No invasive procedures were performed on any trees. The results of this inspection are based on what was visible at the time of the inspection.

The attached inventory summarizes my inspection results and provides the following information for each tree:

Proposed Action – indicates if tree is to be removed or retained.

Threshold – for exceptional designation.

Regulated Tree Category – indicates if tree is small, large or exceptional as defined by Municipal code.

Grove tree – indicates 8 or more trees, 10" DBH or larger that comprise a contiguous canopy.

> 24" – indicates trees with DBH equal to or greater than 24".

Tree number as shown on tag in the field, and on attached exhibit.

DBH stem diameter in inches measured 4.5 feet from the ground. Multiple-stemmed trees are reported as a single integer, using quadratic mean.

Tree Species common name.

Dripline average branch extension from the trunk as radius in feet.

Health and Structure/Form ratings '1' indicates good to excellent condition; no visible health-related problems or structural defects, '2' indicates fair condition; minor visible problems or defects that may require attention if the tree is retained, and '3' indicates poor condition; significant visible problems or defects and tree removal is recommended.

Comments on Condition obvious structural defects or diseases visible at time of inspection.

Tree type – indicates if tree is coniferous (C), deciduous (D) or broadleaf (B) and/or evergreen (E).

Viability - a determination by the arborist whether the tree is viable for retention.

² Companion publication to the *ANSI A300 Part 5: Tree Shrub and Other woody Plant Maintenance – Standard Practices, Managing Trees During Construction*. 2008. ISA.

SUBJECT TREES

The subject trees are a mix of native and ornamental species. Common names are listed in the attached inventory, and latin binomials below. All of the surveyed trees are of a species that are regulated by the municipality.

Douglas-fir	<i>Pseudotsuga menzeisii</i>
Western red-cedar	<i>Thuja plicata</i>
Oregon ash	<i>Fraxinus latifolia</i>
Paperbark maple	<i>Acer griseum</i>
Jacquemontii birch	<i>Betula jacquemontii</i>
Red maple	<i>Acer rubrum</i>
Katsura	<i>Cercidiphyllum japonicum</i>
Alaska weeping cedar	<i>Cupressus nootkatensis</i>

Four trees are listed as non-viable for retention. Two of the birch trees (5 & 6) are infested with the insect Bronze birch borer, and show signs of dieback that preclude death of the entire tree. I understand that the other two adjacent birch trees have been treated with insecticide to prevent them from being infested.

The rootplate of tree 4 has failed the tree is in the (slow motion) process of falling over. Soil is heaving at the rootplate on the opposite side of the tree as the lean. The tree's trunk is less than a foot from the eave of the garage.

Near the shoreline, tree 12 is an exceptional native cedar. Bark is peeling from the buttress roots in multiple locations, and there is a vertical line of visible decay on the SW side of the trunk up past 30 feet from grade. The bark is recessed, and woodpeckers have been actively excavating the dead wood beneath the bark.

Based on this visual assessment of this report, this tree appears to be at increased risk of failure, and has multiple targets within striking distance. If the tree is to be retained, I recommend a level 3 assessment to determine the extent of the wood decay in trunk, and the risk posed to the residence and other targets.

If tree 12 is removed because of unacceptable risk, trees 13 and 14 will then be put at an increased risk of failure because of their asymmetric canopies and changes in wind loads.

LIMITS OF ALLOWABLE DISTURBANCE

Limits of Disturbance (LOAD) are calculated for all the significant trees (and for one tree on the adjoining parcel with overhanging dripline). They are provided in the attached inventory as radii in feet from the trunk for the side of the tree to be impacted by construction.

They are determined using rootplate³ and trunk diameter,^{4,5,6} and ISA Best Management Practices.⁷ These are the minimum distances from the trees for any soil disturbance, and represent the area to be protected during construction.

These LOAD are malleable and may be adjusted during the design and construction process. The adjustment may be larger or smaller depending on the extent of the proposed disturbance.

These limits assume impact on only one side of the tree – the side toward construction, and no soil disturbance is proposed around the entire tree. LOAD are listed for all trees in attachment 3.

IMPACTS OF TREE REMOVAL

Tree removal is proposed for only 3 existing small trees: 2 birches that are dying, and a maple. The removal of these trees will have no impact on trees that remain on this or abutting parcels.

TREE PROTECTION MEASURES AND SPECIAL INSTRUCTIONS AROUND RETAINED TREES

1. Prior to any site work or demolition, tree protection fencing (TPF) shall be erected around retained trees as shown.
TPF shall be six (6) foot temporary chain-link fence and shall be installed completely encircling the retained trees.
2. A City planner must approve any modifications to the fencing material and location.
3. The area protected by the TPF is off limits to all construction related activity.
4. No stockpiling of materials, vehicular or pedestrian traffic, material storage or use of equipment or machinery shall be allowed within the protective fencing.

³ Coder, Kim D. 2005. *Tree Biomechanics Series*. University of Georgia School of Forest Resources.

⁴ Smiley, E. Thomas, Ph. D. *Assessing the Failure Potential of Tree Roots, Shade Tree Technical Report*. Bartlett Tree Research Laboratories.

⁵ Fite, Kelby and E. Thomas Smiley. 2009. *Managing Trees During construction; Part Two*. Arborist News. ISA.

⁶ Andrew R. Benson, Andrew Koeser, Justin Morgenroth. *Responses Of Mature Roadside Trees To Root Severance Treatments*. 2019. Journal of Urban Forestry & Urban Greening.

⁷ Companion publication to the ANSI A300 Series, *Part 5: Managing Trees During Construction*. 2008. ISA.

5. Any work, activity or soil disturbance within the protection fencing, or critical root zone, shall be reviewed, approved and monitored by the project arborist.
6. Fencing shall not be moved or removed unless approved by a City planner.
7. To reduce branch injury from equipment, the current gardener, or an approved ISA certified arborist, shall perform pruning where limbs overhang the TPF.

No work is proposed within the critical root zone of any retained tree.

RECOMMENDED PRUNING

Pruning of branches to create clearance above the proposed temporary construction driveway, and also the existing driveway, is required on trees 7, 8, 9, & 10.

Pruning shall be completed prior to TPF installation, and shall be consistent with a natural pruning system, and with the sole objective of creating vehicle/equipment clearance (to prevent injury to the branches during construction).

Heading cuts should be avoided, and made only if necessary. This pruning operation shall be performed in compliance with ANSI A-300 (Part 1)- 2017: *Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (Pruning)*, and shall follow ISAs *Best Management Practices – Tree Pruning* (2002)

SUPPLEMENTAL REPLACEMENT TREES

No supplemental trees are required.

Attachments:

1. Assumptions and Limiting Conditions
2. Certification of Performance
3. Significant Tree Inventory
4. Tree Retention Plan

Attachment No. 1 - Assumptions & Limiting Conditions

1. A field examination of the site was made 1/20/2021. My observations and conclusions are as of that date.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/arborist can neither guarantee nor be responsible for the accuracy of information provided by others.
3. I am not a qualified land surveyor. Reasonable care was used to match the trees indicated on the sheets with those growing in the field.
4. Construction activities can significantly affect the condition of retained trees. All retained trees should be inspected after construction is completed, and then inspected regularly as part of routine maintenance.
5. Unless stated other wise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied that problems or deficiencies of the subject tree may not arise in the future.
6. All trees possess the risk of failure. Trees can fail at any time, with or without obvious defects, and with or without applied stress. A complete evaluation of the potential for this (a) tree to fail requires excavation and examination of the base of the subject tree. Permission of the current property owner must be obtained before this work can be undertaken and the hazard evaluation completed.
7. 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.

Attachment No. 2 - Certification of Performance

I, Favero Greenforest, certify that:

- I have personally inspected the trees and the property referred to in this report and have stated my findings accurately.
- 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.
- The analysis, opinion, and conclusions stated herein are my own and are based on current scientific procedures and facts.
- My analysis, opinion, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.
- No one provided significant professional assistance to me, except as indicated within the report.
- My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client of 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 International Society of Arboriculture (ISA), and the ISA PNW Chapter, I am an ISA Certified Arborist (#PN-0143A) and am Tree Risk Assessment Qualified, and am a Registered Consulting Arborist® (#379) with American Society of Consulting Arborists. I have worked as an independent consulting arborist since 1989.

Signed:


GREENFOREST, Inc.
By Favero Greenforest, M. S.



Date: January 26, 2021

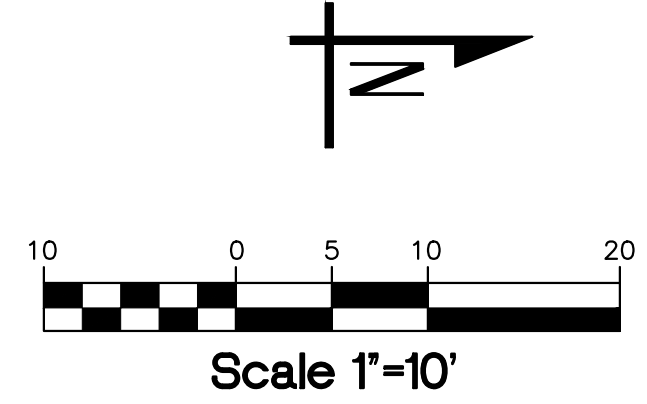
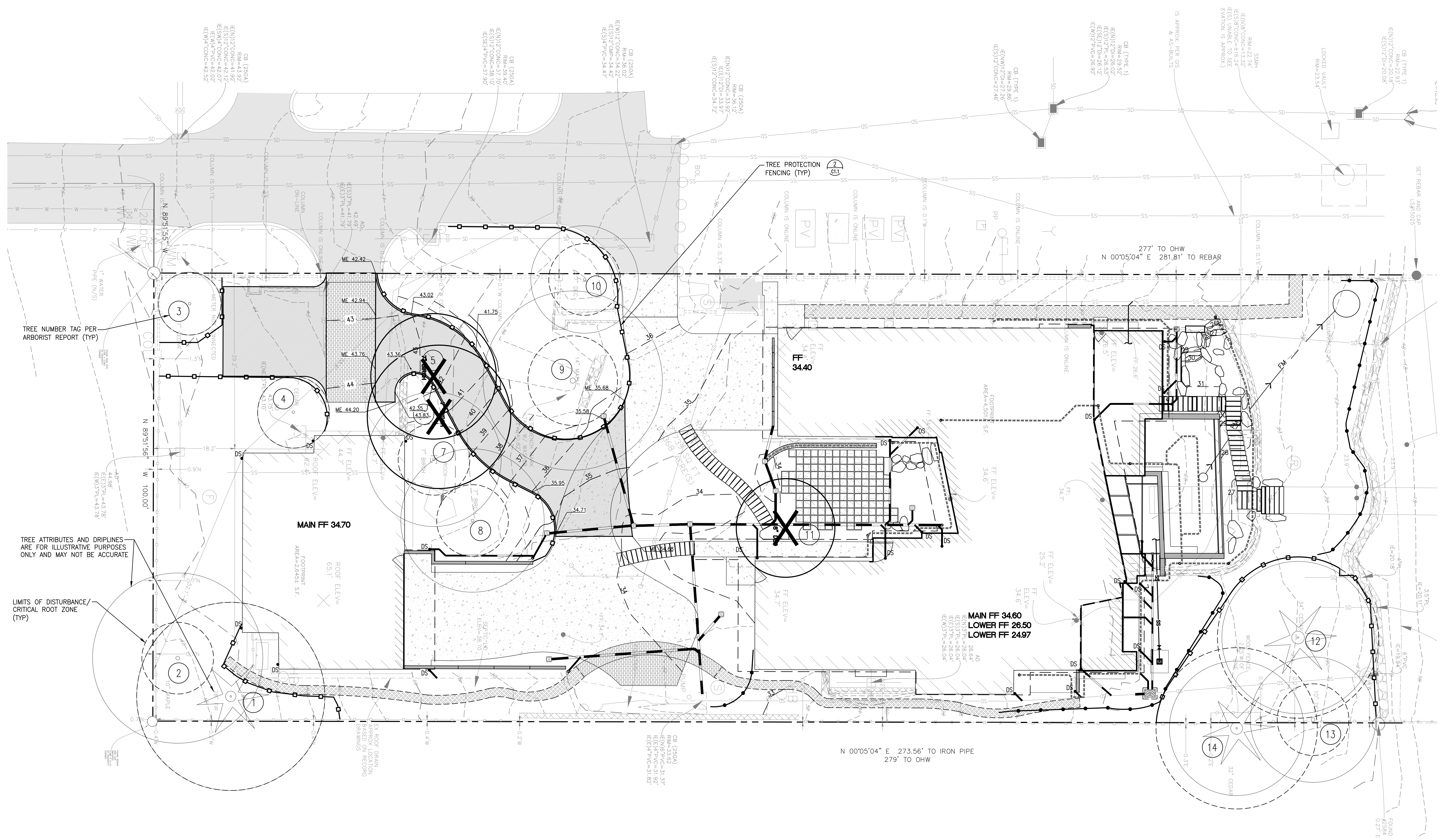


Attachment No. 3 – Significant Tree Inventory

Proposed Action	Exceptional Threshold	Category	Grove	≥ 24" DBH	Tree No.	DBH (in.)	Species	Dripline (R')	Health	Structure	Comments on Condition	Tree Type	LOAD (R')	Viable Tree
RETAIN	30"	Excep.	No	✓	1	32	Douglas-fir	21	1	2	Roots at soil surface	CE	21	Yes
RETAIN	25"	Large	No		2	13	Red maple	19	1	2	Roots at soil surface	BD	8	Yes
RETAIN	36"	Small	No		3	7	Alaska weeping cedar	7	1	1		CE	7	Yes
RETAIN	36"	Small	No		4	7	Alaska weeping cedar	8	1	3	Rootplate failure, soil heaving, tree leaning toward roof	CE	8	No
REMOVE	36"	Small	No		5	9.8	Jacquemontii birch	14	3	2	Bronze birch borer injury/dieback	BD	8	No
REMOVE	36"	Small	No		6	7.4	Jacquemontii birch	16	3	2	Bronze birch borer injury/dieback	BD	8	No
RETAIN	36"	Small	No		7	8.8	Jacquemontii birch	15	2	2	Roots at soil surface	BD	8	Yes
RETAIN	36"	Small	No		8	8.5	Jacquemontii birch	16	2	2	Roots at soil surface	BD	8	Yes
RETAIN	25"	Large	No		9	16.5	Red maple	20	1	2	Roots at soil surface	BD	10	Yes
RETAIN	30"	Small	No		10	8.6	Katsura	12	1	2	Roots at soil surface	BD	8	Yes
REMOVE	36"	Small	No		11	9.5	Paperbark maple	11	1	1		BD	6	Yes
RETAIN	30"	Excep.	No	✓	12	32	Western red-cedar	17	2	3	Decay/loose bark at base of trunk, decay visible along lower 30' of trunk, woodpecker holes	CE	18	No*
RETAIN	24"	Small	No		13	9.6	Oregon ash	14	2	3	Dieback, asymmetric canopy, anomalous bumps on trunk	BD	8	Yes*
RETAIN	30"	Excep.	No	✓	14	30	Western red-cedar	15	2	2	Thin foliage, double leader cut to grade	CE	18	Yes*

*See text page 4.





LEGEND

	PROPERTY LINE
	EX CONTOUR (INDEX)
	PROPOSED CONTOUR (INDEX)
	PROPOSED CONTOUR
	EX BUILDING
	PROPOSED BUILDING
	CONCRETE PAVEMENT
	DRIVEWAY PAVERS
	STONE TERRACE PER ARCH
	MULCH
	SITE WALL
	AREA/YIELD DRAIN
	TRENCH/CHANNEL DRAIN
	CATCH BASIN TYPE 1
	STORM DRAINAGE PIPE
	FOOTING/SUBSURFACE DRAIN
	SDCO • STORM DRAIN CLEANOUT
	FDCO • FOOTING DRAIN CLEANOUT
	DS • DOWNSPOUTS
	SEWER BACKWATER VALVE
	SIDE SEWER PIPE
	EXCEPTIONAL TREE LARGER THAN 24"
	EX TREE TO REMAIN
	EX TREE TO BE REMOVED
	TREE PROTECTION
	SILT FENCE

TESC NOTES

- CONTRACTOR TO VIDEO INVESTIGATE EX SD DRAIN TO VERIFY LOCATION AND INVERT ELEVATION. CONTRACTOR TO PROVIDE VIDEO TO ENGINEER FOR REVIEW OF EXISTING CONDITION PRIOR TO CONSTRUCTION.
- PROVIDE 1,750 GALLON BAKER TANK AS NECESSARY FOR STORMWATER SEDIMENT CONTROL PRIOR TO BIOCHARGE FROM THE SITE.
- CONTRACTOR TO PROVIDE CONSTRUCTION FENCING AS NECESSARY TO SECURE MATERIALS, EQUIPMENT AND ALL AREAS BEING DISTURBED.
- FOR ANY UTILITY TRENCHES OR OTHER IMPROVEMENTS WITHIN THE CRITICAL ROOT ZONE OF AN EXISTING TREE, THE CONTRACTOR SHALL AIR SPADE OR DIG BY HAND EXCAVATIONS. CONTRACTOR SHALL ONLY CUT REQ'D ROOTS LESS THAN 2" THAT INTERFERE WITH THE INSTALLATION OF THE PROPOSED IMPROVEMENTS.

ADDITIONAL NOTES

- PER ARBORIST REPORT, NO WORK IS CURRENTLY PROPOSED WITHIN CRITICAL ROOT ZONE OF TREE. ANY DISTURBANCE WITHIN CRITICAL ROOT ZONE SHALL BE REVIEWED, APPROVED AND MONITORED BY PROJECT ARBORIST.
- TREE PROTECTION SHALL BE APPLIED TO TREES ADJACENT TO THE SITE DEVELOPMENT. FENCING SHALL BE PLACED ALONG TREE DRIP LINE.
- SEE SHEET C1.0A FOR TESC PLAN.
- SEE SHEET C2.0 FOR PROPOSED DRAINAGE PLAN.
- SEE SHEET C3.0 FOR PROPOSED UTILITY PLAN

TREE PROTECTION MEASURES AND SPECIAL INSTRUCTIONS AROUND RETAINED TREES

- PRIOR TO ANY SITE WORK OR DEMOLITION, TREE PROTECTION FENCING (TPF) SHALL BE ERECTED AROUND RETAINED TREES AS SHOWN. TPF SHALL BE SIX (6) FOOT TEMPORARY CHAIN-LINK FENCE AND SHALL BE INSTALLED COMPLETELY ENCIRCLING THE RETAINED TREES.
- A CITY PLANNER MUST APPROVE ANY MODIFICATIONS TO THE FENCING MATERIAL AND LOCATION.
- THE AREA PROTECTED BY THE TPF IS OFF LIMITS TO ALL CONSTRUCTION RELATED ACTIVITY.
- NO STOCKPILING OF MATERIALS, VEHICULAR OR PEDESTRIAN TRAFFIC, MATERIAL STORAGE OR USE OF EQUIPMENT OR MACHINERY SHALL BE ALLOWED WITHIN THE PROTECTIVE FENCING.
- ANY WORK, ACTIVITY OR SOIL DISTURBANCE WITHIN THE PROTECTION FENCING, OR CRITICAL ROOT ZONE, SHALL BE REVIEWED, APPROVED AND MONITORED BY THE PROJECT ARBORIST.
- FENCING SHALL NOT BE MOVED OR REMOVED UNLESS APPROVED BY A CITY PLANNER.
- BRANCH PRUNING SHALL BE PERFORMED, BY THE CURRENT GARDENER OR AN APPROVED ISA CERTIFIED ARBORIST, WHERE LIMBS OVERHANG THE TPF TO REDUCE INJURY FROM EQUIPMENT.

811 Know what's below.
Call before you dig.
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PROJECT NO.:	1811
DRAWN:	
ISSUE:	DATE:
	12-18-2020
REVISIONS:	DATE: