

Development Tree Plan – Valentin Residence

February 23, 2019

Helena Kjellander Valentin and Johan Valentin

4350 E. Mercer Way, Mercer Island, WA 98040

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Arborist Report

Dated: January 19, 2019

Revised February 23, 2019

Valentin Property

4350 E. Mercer Way, Mercer Island, WA 98040

Parcel Numbers: 004610-0150 and 004610-0151

Southeast Quarter of the Northeast Quarter of Section 18,

Township 24N, Range 5E

Prepared for: Johan Valentin & Helena Kjellander Valentin

I was contacted in my capacity as an ISA Certified Arborist by Johan Valentin to identify and assess the trees on his and his wife's property prior to new home construction. This assessment addresses the impact of the excavation for construction of a single-family residence. The proposed development is a single-family residence on a net lot area greater than 6,000 sqf. As such, per MICC 19.10.060(A)(1)(b), the development is subject to, and requires, tree retention.

Consistent with MICC Chapter 19.10, the goal of the owner is to protect, enhance and maintain as many trees as possible to contribute to the residential character of Mercer Island, while at the same time balancing reasonable use and provide reliable utility service.

The property consists of two tax parcels that currently have 22 large regulated trees. There is one exceptional tree on the property consisting of a 36" Weeping Willow. There is also one exceptional tree, 66" Coast Redwood, on the neighboring property to the east with dripline overhanging onto the subject property. Both of these will be retained and protected, i.e. no exceptional trees are proposed for removal. Special care has been taken in the site design to prioritize retention of these exceptional trees over other trees recommended for removal. 11 trees are proposed for removal, consistent with MICC 19.10.060(A)(2)(b)(ii) prioritization and 19.10.060(A)(2)(b)(iii) driveway access and utilities. Tree retention will be achieved at a rate of 50%, 67% greater than approval criteria per city code.

All trees in the tree inventory attached to this Arborist report have been tagged on-site per the picture below in Figure 1. The limits of allowable disturbance have been determined by using the critical root zone based on the maximum extension of the dripline (see illustration below Figure 2).



Figure 1: On-Site tagging method

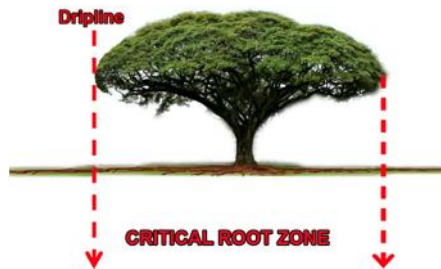


Figure 2: Illustration of how limits of allowable disturbance has been calculated using the critical root zone method.

General comments regarding the property and trees:

The lot is relatively long and narrow. Along the north side of the property, there is an on-site stream and associated Critical Area. There are several trees of various species growing in the Critical Area on the north side. As such, in order to protect the Critical Area and these trees, development is recommended in the south part of the property which is limited by a utility / sewer easement on the south side.

The eastern part of the parcel hosts one Western Red Cedar (1). The neighboring property to the East hosts one exceptional Coast Redwood (23) that will be within safe distance from any excavation. I recommend that these trees be further protected by a clearly marked limit of disturbance and associated tree protection fencing during construction. The Birch trees (8,9) on the north side have English Ivy growing up the trunks. The Birch trees appear to be healthy. I recommend removal of the ivy from the entire trunk to encourage the trees to thrive in the future as the ivy adds unnecessary weight to the trees which could lead to premature trunk failure.

As part of a recent Critical Area Determination (CAO17-003), approved Oct 22, 2018, an extensive Critical Area Study has been performed by certified biologist firm J. S. Jones & Associates, Inc. The Critical Area Study has been peer reviewed by the City's biologist consultant ESA. The Critical Area Study has taken into consideration Best Available Science in determining the location, layout, and alignment of the driveway to access the property with minimum impact to the onsite stream and critical area buffers. The site consists of two parcels. One of the parcels is an access parcel for ingress and egress. Per MICC 19.10.060(A)(2)(b)(iii) and in order to accommodate driveway access and fire safety regulations, six regulated trees have been identified for removal in this area (17,18,19,20,21,22).

Priority of the site design has been given to the Critical Area on the north side and the trees and vegetation in this area, and exceptional trees. Hence the location of the proposed residence is towards the center of the south side of the subject property. Growing close to the southeast

property line, within the existing utility/sewer easement, there are two over-mature Poplars (5,6) and three Pines (2,3,4).

- J) Poplars are a very fast-growing species with a short life span. Consistent with MICC 19.10.060(A), the two Poplars (5,6) should be removed as they are considered hazardous. Trees of this size and age constantly shed spear-like branches and pose a safety and liability issue to both this property and neighbors. I recommend these for removal. They would be replaced per the replacement ratio in MICC 19.10.070.
- J) There are three Pines (2,3,4) on the south side of the property, one with trunk lean and growing into the southern neighbor's property. They are less than 24" and are growing within the existing utility/sewer easement which make them lesser of a priority than the other trees on the property. I consider the pines on the south side a potential hazard to the proposed residence. The root system would be damaged by foundation and connection to the sewer would likely require them to be removed. For these reasons, I recommend removing the pines. They would be replaced per the replacement ratio in MICC 19.10.070.

The resulting tree retention ratio per MICC 19.10.060(A)(2)(a) will be 50%, 67% greater than approval criteria per city code.

All of the trees, with the exception of the above-mentioned trees, are healthy with no visible defects. Care should be taken to protect these trees during the construction process. Please see tree protection plan below.

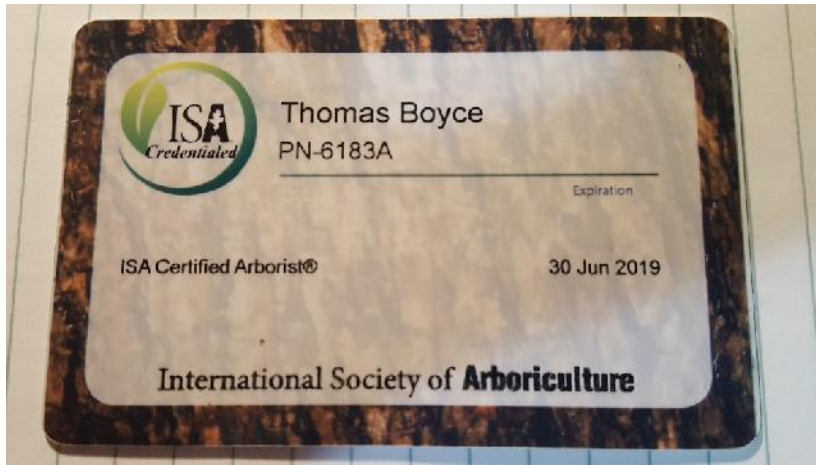
Thomas Boyce
ISA Certified Arborist PN 6183A
ISA Tree Risk Assessor 290

Huckleberrylandworks.com

12227 Huckleberry Lane
Arlington WA 98223








Qualified Arborist statement:

"I am a certified arborist since 2007 with ISA Certification PN 6183A and ISA Tree Risk Assessor 290. I have 5 years of experience working with protection of trees during construction and their likelihood of survival after construction. I have attached a copy of my certification and references to several projects I have been working on in King County is available. For further information, certification and testimonials see me online at: www.Huckleberrylandworks.com"



Tree Inventory - Valentin Property

No.	Species	Common Name	DBH	RDL (Radial Dripline)	Comments	Retain/ Remove	Picture
1	Thuja plicata	Western Red Cedar	28in	12ft	Normal vigor	Retain	
2	Pinus sp.	Pine	22in	6ft	Poor vigor	Remove	
3	Pinus sp.	Pine	16in	6ft	Poor vigor	Remove	
4	Pinus sp.	Pine	18in	6ft	Poor vigor	Remove	
5	Populus trichocarpa	Lombardy Poplar	32in	10ft	Poor vigor	Remove	
6	Populus trichocarpa	Lombardy Poplar	35in	9ft	Poor vigor	Remove	
7	Salix babylonica	Weeping Willow	36in	20ft	Poor vigor	Retain	
8	Betula papyrifera	Paperbark Birch	16in	12ft	Fair vigor	Retain	
9	Betula papyrifera	Paperbark Birch	12in	12ft	Normal vigor	Retain	
10	Prunus blireana	Flowering Plum	8in	15ft	Senescent	Retain	
11	Prunus blireana	Flowering Plum	12in	15ft	Senescent	Retain	

12	<i>Thuja plicata</i>	Western Red Cedar	12in	10ft	Normal vigor	Retain	
13	<i>Thuja plicata</i>	Western Red Cedar	14in	15ft	Normal vigor	Retain	
14	<i>Thuja plicata</i>	Western Red Cedar	10in	10ft	Normal vigor	Retain	
15	<i>Betula papyrifera</i>	Paperbark Birch	12in	15ft	Normal vigor	Retain	
16	<i>Betula papyrifera</i>	Paperbark Birch	12in	15ft	Normal vigor	Retain	
17	<i>Betula papyrifera</i>	Paperbark Birch	10in	10ft	Normal vigor	Remove	
18	<i>Betula papyrifera</i>	Paperbark Birch	12in	10ft	Normal vigor	Remove	
19	<i>Pinus sp.</i>	Pine	18in	15ft	Fair vigor	Remove	
20	<i>Pinus sp.</i>	Pine	12in	10ft	Fair vigor	Remove	
21	<i>Calocedrus decurrens</i>	Incense Cedar	16in	10ft	Good vigor	Remove	
22	<i>Pinus sp.</i>	Pine	22in	15ft	Normal vigor	Remove	
23	<i>Sequoia sempervirens</i>	Coast Redwood	66in	20ft	On neighbor property. Dripline onto subject property.	Retain	

Tree Retention and Replacement Plan





















In addition to meeting the tree retention requirements in MICC 19.10.060(A)(2), a tree replacement plan is required as outlined in MICC 19.10.070. The ratio of replacement is outlined in the table below:

Diameter of removed tree	Number of replacement trees required
Less than 10 inches	1
10 inches up to 24 inches	2
24 inches up to 36 inches	3
More than 36 inches and any exceptional tree(s)	6

The applicant proposes to replace the removed trees with trees that are native to Washington. 24 trees will be replanted (see separate MICC Tree Removal and Replacement Worksheet). The replanting will take place within the on-site Critical Area and adjacent to the watercourse for maximum ecological benefit to the watercourse and to improve surface water quality.

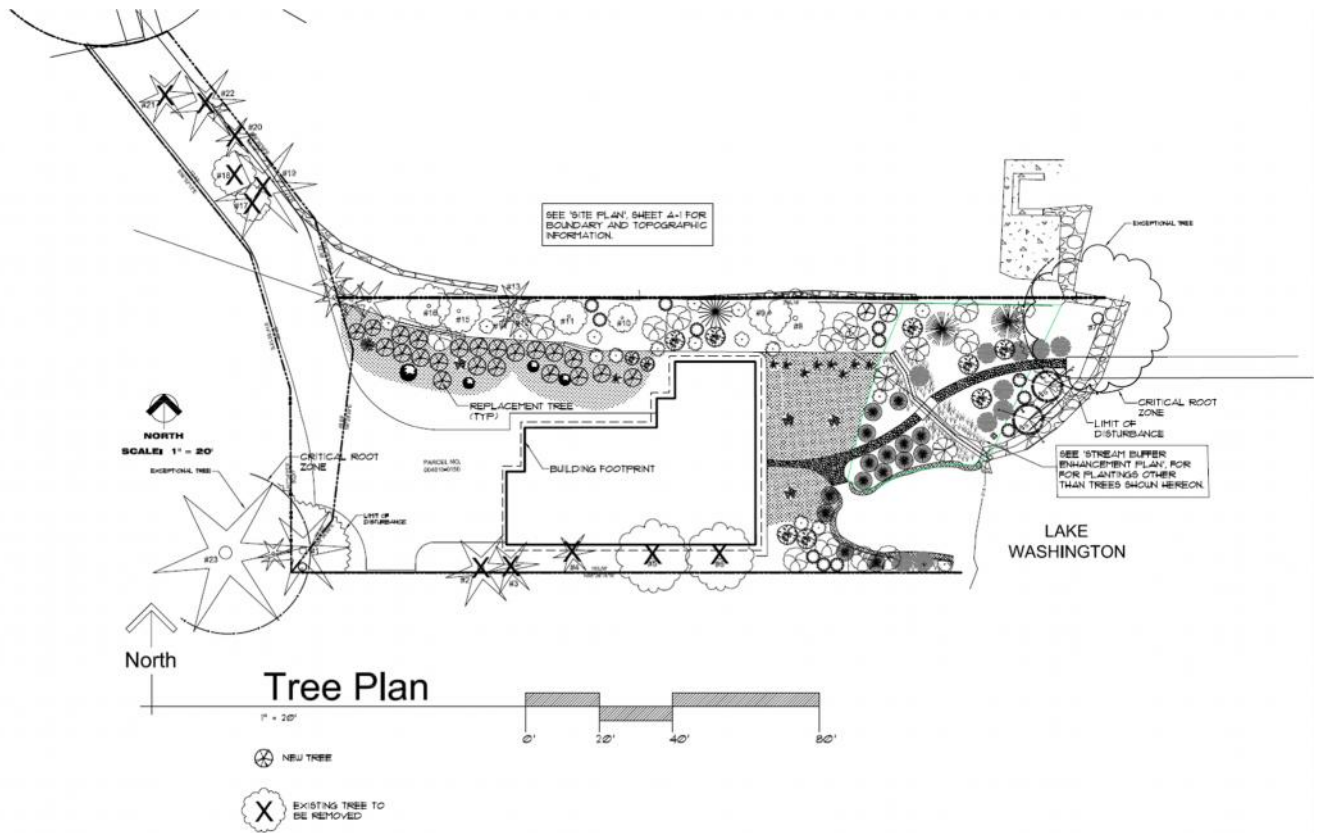
As part of the Critical Area Study, the applicant has intentionally selected a large degree of native trees. So, in addition to the 24 trees being replanted per MICC 19.10.070 there are 34 trees being added as part of the on-site mitigation for the buffer reduction, as approved in CAO17-003. Worth noting is that the property will be enhanced with 6,850 sqf of native vegetation, and a five-year monitoring plan.

Trees being planted as part of Critical Area Study and Buffer Reduction:

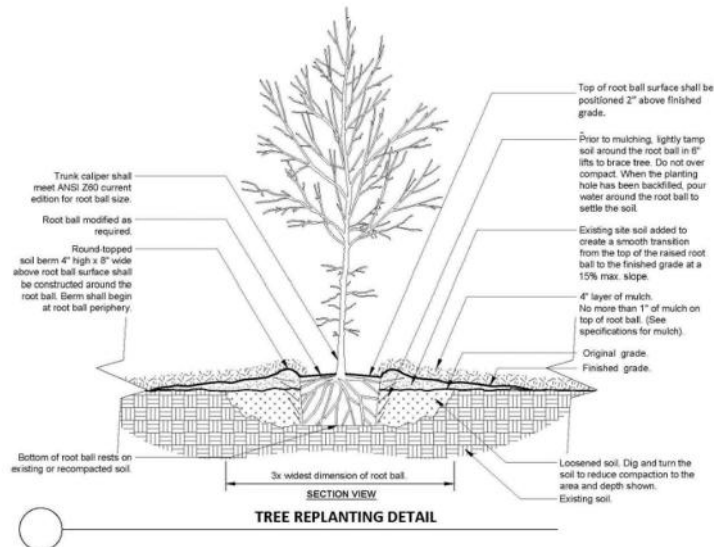
PLANT SCHEDULE									
SYMBOL	COMMON NAME	SCIENTIFIC NAME	SIZE	Qty. Wetland Area #1	Qty. Wetland Area #2	Qty. Buffer Area #1	Qty. Buffer Area #2	Qty. Buffer Repl. Area	TOTAL
	OREGON LASH	FRAXINUS LATIFOLIA	2 GAL	0	0	0	2	0	2
	SITKA SPRUCE	PICEA SITCHENSIS	2 GAL	1	0	0	0	0	1
	PAPER BIRCH	BETULA Papyrifera	2 GAL	3	0	6	0	1	10
	PACIFIC DOGWOOD	CORNUS NUTTALLII	2 GAL	3	0	4	0	0	7
	RED TWIG DOGWOOD	CORNUS SERICEA	2 GAL	0	0	1	0	0	1
	BEAKED HAZEL NUT	CORYLUS CORNUTA	2 GAL	0	0	7	0	0	7
	SWORD FERN	POLYSTICHUM MUNITUM	1 GAL	0	0	4	0	0	4
	WILD STRAWBERRY	FRAGARIA VIRGINIANA	4 INCH	0	0	3	0	0	3
	BIG-LEAF MAPLE	ACER MACROPHYLLUM	2 GAL	0	0	0	0	2	2
	DOUGLAS FIR	PSEUDOTSUGA MENZIESII	2 GAL	0	0	1	0	2	3
	MOCK ORANGE	PHILADELPHUS LEWISII	1 GAL	2	0	6	1	2	11
	OCEANSPRAY	HOLODISCUS DISCOLOR	1 GAL	2	2	8	0	0	12
	RHODODENDRON	RHODODENDRON MACROPHYLLUM	1 GAL	4	0	8	0	3	15
	NOOTKA ROSE	ROSA NUTKANA	1 GAL	0	2	8	3	0	13
	VINE MAPLE	ACER CIRCINATUM	1 GAL	0	0	8	0	3	11
	OVAL-LEAVED BLUEBERRY	VACCINIUM OVALIFOLIUM	1 GAL	12	2	0	2	0	16
	HIGHBUSH CRANBERRY	VIBURNUM TRILOBUM	1 GAL	6	2	0	2	0	10
	KINKINNICK	ARCTOSTAPHYLOS LVA-URSI	4 INCH	0	0	126	24	72	222
	SLOUGH SEDGE	CAREX OBNUPTA	PLUGS	36	16	0	0	0	52
	ORANGE HONEYSUCKLE	LONICERA CILIOSA	4 INCH	5	0	0	0	0	5

The replacement trees will be located in proximity to the other native trees to form a grove of trees. See the tree retention and replacement plan below.

Tree Retention and Replacement Plan:



The replacement trees will be replanted per the detail below:



The replanting schedule calls for 24 replacement trees. Per MICC 19.10.070(B)(4) the City Arborist can allow a reduction of replacement trees. Since 34 new trees are already being planted as part of the buffer enhancement of the Critical Area (see Overall Tree Planting Schedule below), it would be reasonable to reduce the number of replacement trees to a 1:1 ratio or that the 34 new trees satisfies the replacement plan completely. This would mean 11 or 0 replacement trees for a total of 45 or 34 new trees on the property.

Overall Tree Planting Schedule inclusive of CAO17-003 and MICC 19.10.070

No.*	Species	Common Name	Reason
1	Fraxinus Latifolia	Oregon Ash	Critical Area Study
2	Fraxinus Latifolia	Oregon Ash	Critical Area Study
3	Picea Sitchensis	Sitka Spruce	Critical Area Study
4	Betula papyrifera	Paperbark Birch	Critical Area Study
5	Betula papyrifera	Paperbark Birch	Critical Area Study
6	Betula papyrifera	Paperbark Birch	Critical Area Study
7	Betula papyrifera	Paperbark Birch	Critical Area Study
8	Betula papyrifera	Paperbark Birch	Critical Area Study
9	Betula papyrifera	Paperbark Birch	Critical Area Study
10	Betula papyrifera	Paperbark Birch	Critical Area Study
11	Betula papyrifera	Paperbark Birch	Critical Area Study
12	Betula papyrifera	Paperbark Birch	Critical Area Study
13	Betula papyrifera	Paperbark Birch	Critical Area Study
14	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
15	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
16	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
17	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
18	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
19	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
20	Cornus Nuttallii	Pacific Dogwood	Critical Area Study
21	Acer Macrophyllum	Big-leaf Maple	Critical Area Study
22	Acer Macrophyllum	Big-leaf Maple	Critical Area Study
23	Pseudotsuga Menziesii	Douglas Fir	Critical Area Study
24	Acer Circinatum	Vine Maple	Critical Area Study
25	Acer Circinatum	Vine Maple	Critical Area Study
26	Acer Circinatum	Vine Maple	Critical Area Study
27	Acer Circinatum	Vine Maple	Critical Area Study
28	Acer Circinatum	Vine Maple	Critical Area Study
29	Acer Circinatum	Vine Maple	Critical Area Study
30	Acer Circinatum	Vine Maple	Critical Area Study
31	Acer Circinatum	Vine Maple	Critical Area Study
32	Acer Circinatum	Vine Maple	Critical Area Study
33	Acer Circinatum	Vine Maple	Critical Area Study
34	Acer Circinatum	Vine Maple	Critical Area Study
35	Populus tremuloides	Quaking Aspen	Tree replacement

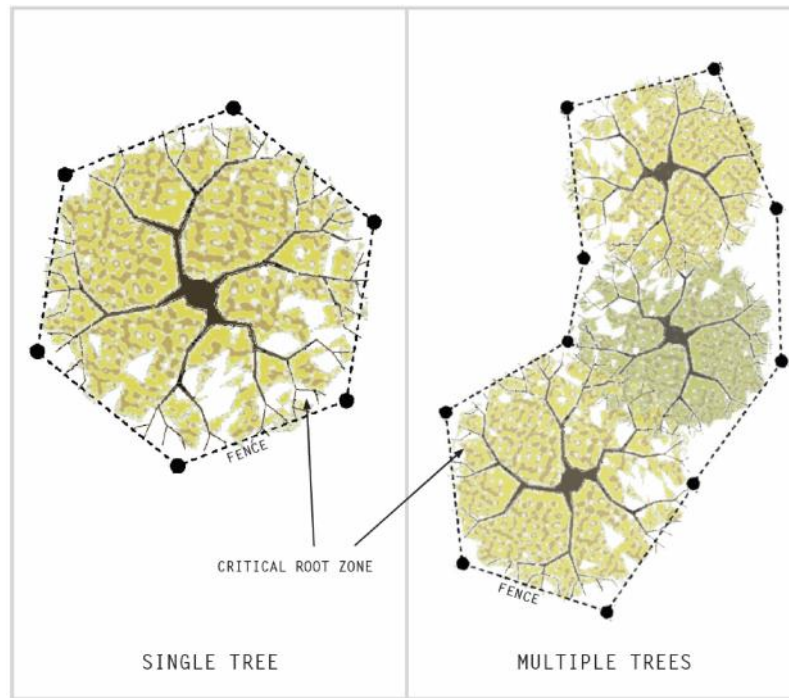
36	Populus tremuloides	Quaking Aspen	Tree replacement
37	Populus tremuloides	Quaking Aspen	Tree replacement
38	Populus tremuloides	Quaking Aspen	Tree replacement
39	Populus tremuloides	Quaking Aspen	Tree replacement
40	Populus tremuloides	Quaking Aspen	Tree replacement
41	Populus tremuloides	Quaking Aspen	Tree replacement
42	Populus tremuloides	Quaking Aspen	Tree replacement
43	Populus tremuloides	Quaking Aspen	Tree replacement
44	Populus tremuloides	Quaking Aspen	Tree replacement
45	Populus tremuloides	Quaking Aspen	Tree replacement
46	Populus tremuloides	Quaking Aspen	Tree replacement
47	Populus tremuloides	Quaking Aspen	Tree replacement
48	Populus tremuloides	Quaking Aspen	Tree replacement
49	Populus tremuloides	Quaking Aspen	Tree replacement
50	Populus tremuloides	Quaking Aspen	Tree replacement
51	Populus tremuloides	Quaking Aspen	Tree replacement
52	Populus tremuloides	Quaking Aspen	Tree replacement
53	Betula papyrifera	Paperbark Birch	Tree replacement
54	Betula papyrifera	Paperbark Birch	Tree replacement
55	Betula papyrifera	Paperbark Birch	Tree replacement
56	Betula papyrifera	Paperbark Birch	Tree replacement
57	Betula papyrifera	Paperbark Birch	Tree replacement
58	Betula papyrifera	Paperbark Birch	Tree replacement
<i>*Not numbered on tree plan</i>			

Tree Protection Plan

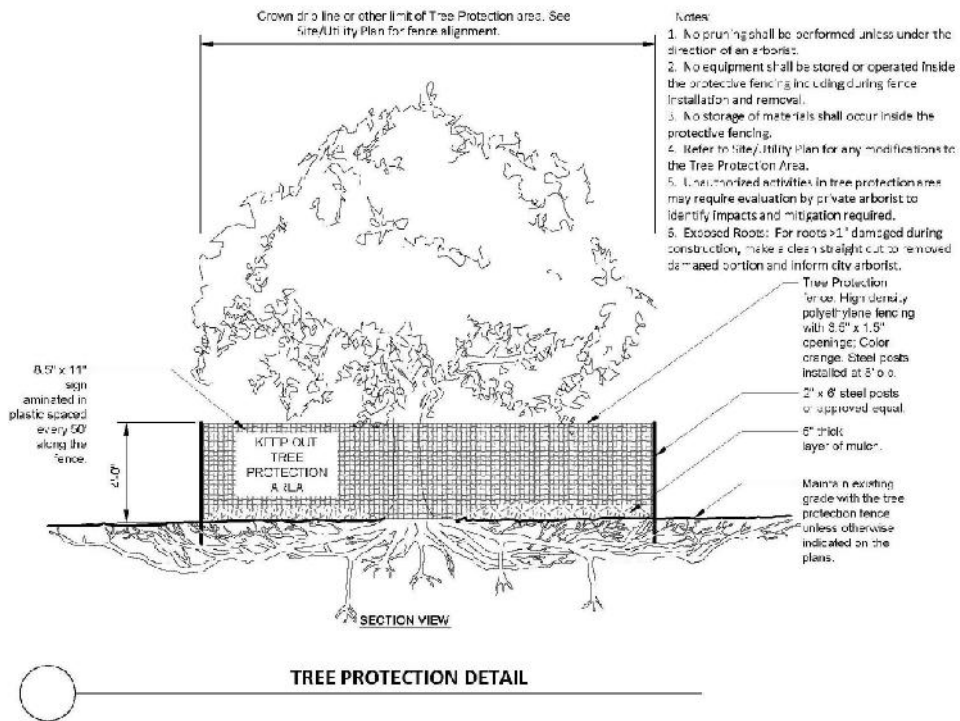
The trees can be preserved on this property if proper tree protection plans are followed. The trees are numbered (see Tree Retention and Replacement Plan).

Signage should be posted indicating the tree protection zone which is typically the edge of the drip line.

Fencing should be provided at no closer to the trunk than the dripline to prevent soil compaction by unnecessary foot traffic or construction machine activity. The fence should be 4 feet high. The fence posts should be located as not to damage any large anchor roots. The addition of 6 inches of bark mulch may be needed in some areas to prevent compaction. Soil compaction damages surface roots making them unable to absorb water and air normally. No building materials should be stored under the trees.



Protect the *Critical Root Zone* (CRZ) by erecting fencing which protects the tree and root system by keeping out all detrimental construction activity



WARNING

TREE PROTECTION ZONE (TPZ)

- This fence shall not be removed/moved from the approved location without written authorization from the City Arborist and supervision by the Project Arborist.
- No pruning shall be performed unless under the direction of a Project Arborist.
- No grading, excavation, storage (materials, equipment, vehicles, etc.), or other unpermitted activity shall occur inside the protective fencing.
- Unauthorized activities in tree protection areas may require immediate evaluation by the Project Arborist to identify impacts and potential mitigation.
- Penalties for damaging or removing a saved tree may be a fine up to three times the value of the tree plus restoration (MICC 19.10.160).
- Any work in approved TPZ must be with the permission of the City Arborist (206) 275-7713, john.kenney@mercergov.org.

Tree Maintenance Plan

For the long-term health and longevity of the trees on the Valentin property, there are several ongoing tasks that should be carried out.

Tree inspection

Inspections should be taking place on an annual basis. It is recommended that an arborist or arborist trainee visually inspect each tree before beginning any work. The inspection should consider damage, thinning, overgrowth, parasitic species and general health of all trees on the property.

Pruning

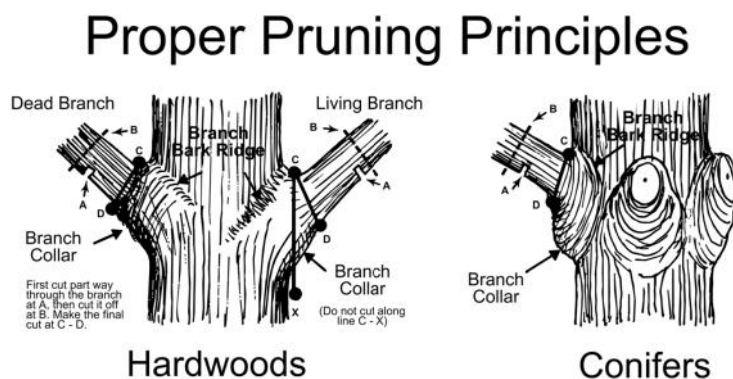
Tools and equipment:

Equipment and work practices that damage living tissue and bark beyond the scope of the work should be avoided.

-) Pruning tools used in making pruning cuts shall be sharp.
-) Climbing spurs shall not be used when climbing and pruning trees.
-) Exceptions: a) when limbs are more than throwline distance apart and there is no other means of climbing the tree. And b) when the bark is thick enough to prevent damage to the cambium.

Pruning cuts:

A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb without cutting into the branch bark ridge or collar, or leaving a stub (see Figure below). A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem. The final cut shall result in a flat surface with adjacent bark firmly attached. When removing a dead branch, the final cut shall be made just outside the collar of living tissue.



Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark. Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground. A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb. Severed limbs shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease, insect, mistletoe, or sprout control, or for cosmetic reasons. Wound treatments that are damaging to tree tissues shall not be used. When tracing wounds, only loose, damaged tissue should be removed.

Pruning objectives:

Pruning objectives shall be established prior to beginning any pruning operation. To obtain the defined objective, the growth cycles and structure of individual species and the type of pruning to be performed should be considered.

Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site. Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

Heading should be considered an acceptable practice for shrub or specialty pruning when needed to reach a defined objective. Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

Cleaning:

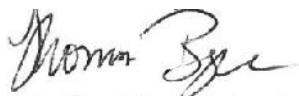
Cleaning shall consist of selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.

Ivy

Special care should be taken to remove ivy growing along any of the trees on the property. Ivy will eventually cause undue weight on the tree.

Cut the ivy at the bottom of the tree and remove carefully from the tree without damaging any branches.

Thomas Boyce



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ISA Tree Risk Assessor 290
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