

LAYTON TREE CONSULTING, LLC

ARBORIST REPORT/TREE PLAN

7216 93rd AVE SE Mercer Island, WA



Report Prepared by:

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October 29, 2019 Updated March 6, 2021

It's all about trees.....

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Tree Plan Map

93rd AVE SE Row Maps

Tree Inventory & Replacement Worksheet

Assignment

Layton Tree Consulting, LLC was contacted by Barcelo Homes Inc., and was asked to compile an Arborist Report for a property on Mercer Island. The subject property is located at 7216 93rd AVE SE. My assignment is to prepare a written report on present tree conditions, and to provide appropriate recommendations for the protection of retained trees during development.

This report encompasses all of the criteria set forth under the City of Mercer Island's tree regulations, particularly Chapter 19.10 Trees, of the Unified Development Code Title 19. A 'Regulated' tree is any tree with a diameter of more than 10-inches or any tree that meets the definition of an 'Exceptional' tree.

Dates of Field Examination: October 28, 2019 and March 3, 2021

Description

43 'regulated' trees were identified and assessed on the subject property. These are comprised almost entirely of native species; primarily bigleaf maple which account for 39 of the 43 identified trees.

Seven off-site or neighboring trees were also assessed. These exist within a close proximity of property lines on the properties to the east and north. There are no neighboring tree issues on the south property line. An additional eight trees were assessed within the 93rd Avenue SE right-of-way near the proposed storm utility improvements.

A numbered aluminum tag was attached to the lower trunks of all assessed trees. These tag numbers correspond with the numbers on the Tree Summary Table and attached maps. The Tree Summary Table provides detailed information for all of the subject trees.

Methodology

Each tree in this report was visited. Tree diameters were measured by tape. The tree heights were measured using a Spiegel Relaskop. Each tree was visually examined for defects and vigor. The tree assessment procedure involves the examination of many factors:

- The crown or canopy of the tree is examined for current vigor/health by examining the foliage for appropriate color and density, the vegetative buds for color and size, and the branches for structural form and annual shoot growth; and the overall presence of limb dieback and/or any disease issues.
- The trunk or main stem of the tree is inspected for decay, which includes cavities, wounds, fruiting bodies of decay (conks or mushrooms), seams, insect pests, bleeding or exudation of sap, callus development, broken or dead tops, structural defects and unnatural leans. Structural defects can include but are not limited to excessive or unnatural leans, crooks, forks with V-shaped crotches, multiple attachments.
- The root collar and exposed surface roots are inspected for the presence of decay, insect damage, as well as if they have been injured or wounded, undermined or exposed, or the original grade has been altered.

Based on these factors a determination of condition is made.

Judging Condition

The three condition categories are described as follows:

Good – free of significant structural defects, no disease concerns, minor pest issues, no significant root issues, good structure/form with uniform crown or canopy, foliage of normal color and density, average or normal vigor, will be wind firm if isolated or left as part of a grouping or grove of trees, suitable for its location

Fair – minor to moderate structural defects not expected to contribute to a failure in near future, no disease concerns, moderate pest issues, no significant root issues, asymmetric or unbalanced crown or canopy, average or normal vigor, foliage of normal color, moderate foliage density, will be wind firm if left as part of a grouping or grove of trees, cannot be isolated, suitable for its location

Poor – major structural defects expected to cause fail in near future, disease or significant pest concerns, decline due to old age, significant root issues, asymmetric or unbalanced crown or canopy, sparse or abnormally small foliage, poor vigor, not suitable for its location

Observations

43 large (regulated) trees were identified within the parcel boundaries. 39 of these are bigleaf maple which form a continuous grove over much of the property. Maple trees range from semi-mature to mature, estimated at 50 to 100 years of age. These have not developed ideal form due to past growing conditions. Trees have developed poor stem taper under heavy competition with each other for sunlight and space. Overall vigor is fair. Some are in moderate decline, evident by upper crown dieback. Three of the subject maples are in poor condition. These have developed extensive trunk decay. Another seven are rated as 'fair to poor' condition due to structural defects, low vigor and general decline.

There are a couple of young to semi-mature Western red cedar trees on the property. These are in fair to good condition. Only one Douglas fir on the property is greater than 10-inches in diameter. This is a young specimen, estimated at around 30 years of age. Condition is fairly good. There are several smaller Douglas fir trees scattered around the property. Most are in poor condition due to suppression (heavy shading) and are over-topped by the larger maple.

The property has a major infestation of English laurel, which is found throughout. It is quite dense in places. There is also a moderate component of invasive English holly and a minor component of Himalayan blackberry. Most of the native vegetation is found in the southeast portion of the property. Here there are minor to moderate components of sword fern, Oregon grape, beaked hazelnut and oceanspray.

Neighboring Trees

Trees #101, #102 and #103 are located on the neighboring property to the north. #101 and #102 are approximately 10-feet off of the property line and not likely to be impacted by re-development of the

property. Tree #103 which is located closest to the property line is in poor condition. This is a semimature bigleaf maple cluster in ultimate decline. The tops have broken out in the past.

Neighboring trees #104, #105, #106 and #107 are located on the neighboring property to the north. #104 is a mature bigleaf maple. This exceptional tree has developed good form and is of good vigor. #105 is a mature European white birch. It is of fairly good vigor. Only minor top decline was observed. #106 is an exceptional Japanese maple in good condition. #107 is a cluster of English holly near the northwest property corner. It has developed typical form and is in fair condition.

Trees #108 > #115 are in the right-of-way of 93rd Avenue SE. These are within a proximity of the proposed storm utility improvement work. There has been work on the existing storm utility in the recent past. The asphalt pr pavement has been cut in the recent past. These are primarily native species of Douglas fir, bigleaf maple and one red alder. The two Douglas fir are of 'exceptional' size. Both appear sound and in good condition. The maple has developed typical form. All appear to be of fairly good vigor. The alder is also of decent vigor with no concerning defects.

Discussion/Recommendations

The grove of trees within the southeast portion of the site will be retained. Some of these are in poor condition with a high potential for failure in the future. However, there are few targets in the area. Tree parts are likely to fall into the wooded tree retention area. The retention of the poor condition trees within the preserved grove is feasible at this time as they are considered low risk and provide valuable wildlife habitat.

The extent of driplines (farthest reaching branches) for the subject trees can be found on the tree summary table at the back of this report. The driplines are shown for trees at the edges of the grove to be retained and for neighboring trees.

The recommended Limit of Disturbance (LOD) measurements can also be found on the tree summary table for trees that may be potentially impacted by proposed improvements and have been delineated on the attached tree plan map. The LOD measurements are based on species, age, condition, drip-line, prior improvements, proposed impacts and the anticipated cumulative impacts to the entire root zone. This is the maximum allowable encroachment. Encroachment (soil excavations) beyond the LOD is likely to cause decline or compromise long-term structural stability. These measurements shall be referenced when determining tree retention feasibility.

Tree protection barriers are shown on the final tree plan sheet. Protection fencing shall be located beyond the driplines of retained trees where possible. In no case shall the fencing be located closer than the LOD. The attached tree plan provides adequate protection for all affected trees.

In order to adequately protect neighboring Trees #105 and #106, provide a 10-foot protection zone from the property line. #106 is 'exceptional' and warrants protection. Tree #104 is not likely to be impacted because of existing steep slopes. If the slope is landscaped in the future, all work shall be done by hand within the driplines of retained and off-site protected trees. Soils shall not be disturbed. No grading is allowed within the LOD.

Trees #108 > #115 in the right-of-way of 93rd AVE SE are not likely to be impacted. This utility was recently excavated and improved. The pavement adjacent to it has been cut and patched in the recent past. So long as work is kept to those same limits, there shouldn't be any further impacts to nearby trees.

Tree #35 has an asymmetric crown to the north which will slightly impact the new residence. The condition of this tree has not changed to a noteworthy degree since the initial inspection. Crown reduction pruning is recommended to make the tree safer or more structurally sound. The total height of the tree needs to be reduced to roughly 40 to 50-feet in height. The canopy on the north side will be pruned back to provide adequate building clearance and to more uniformly shape the canopy. Pruning the tree back on the north side will help to reduce the risk of a large stem failure. After the tree is properly pruned, it can be feasibly retained.

The project arborist shall be on-site to monitor any excavation within the driplines of retained and/or protected trees so necessary precautions can be taken to maintain these in a viable condition. Care shall be taken when working near trees to protect soils and surface roots that likely extend beyond the drip-line. Cover areas with a protective 6 to 8-inch layer of wood chips or hog fuel to protect soils from compaction and damage to surface roots.

Tree Protection Measures

The following guidelines are recommended to ensure that the designated space set aside for the preserved trees are protected and construction impacts are kept to a minimum. Standards have been set forth under MICC 19.10.080. Please review these standards prior to any development activity.

- Tree protection fencing shall be erected per the final tree plan prior to moving any heavy equipment on site. Doing this will set clearing limits and avoid compaction of soils within root zones of retained trees.
- Excavation limits shall be laid out in paint on the ground to avoid over excavating.
- Excavations within the drip-lines shall be monitored by a qualified tree professional so necessary
 precautions can be taken to decrease impacts to tree parts. A qualified tree professional shall
 monitor excavations when work is required and allowed within the drip-line or critical root zone.
- To establish sub grade for foundations, curbs and pavement sections near the trees, soil shall be removed parallel to the roots and not at 90-degree angles to avoid breaking and tearing roots that lead back to the trunk within the drip-line. Any roots damaged during these excavations should be exposed to sound tissue and cut cleanly with a saw. Cutting tools should be sterilized with alcohol.
- Areas excavated within the drip-line of retained trees shall be thoroughly irrigated weekly during dry periods.

 Preparations for final landscaping shall be accomplished by hand within the drip-lines of retained trees. Large equipment shall be kept outside of the tree protection zones at all times.

Tree Retention Calculation

A minimum of 30-percent retention of large, regulated trees is required over a rolling five-year period. Of the 43 regulated trees identified on the property; 18 will be removed. 25 trees or 58% will be retained.

Tree Replacement

Replacement trees will be required per 19.10.070 Tree Replacement. The replacement ratios per tree removed are as follows:

Trees less than 10-inches in diameter = 1:1 (8) = 8 replacement trees Trees 10-inches to 23-inches = 2:1 (11) = 22 replacement trees Trees 24-inches to 36-inches = 3:1 (4) = 12 replacement trees Any 'Exceptional' tree = 6:1 (2) = 12 replacement trees

A total of 46 replacement trees are required based on the proposal which includes the removal of Trees #1 > #17 and #40. There are also 8 small (non-regulated) trees that will also be removed. A total of 54 replacement trees is required. Consult with your City planner for final tree replacement requirements. All replacement trees are to be planted on site. Replacement trees shall be at a minimum -1 % inch caliper for deciduous species and 6 feet in height for coniferous species.

The most appropriate locations for tree replacement are on the undisturbed perimeters of the site and within openings in the preserved grove. These areas can be enhanced with native tree plantings of coniferous species to provide screening between residential properties and to maintain the wooded character of the area. Recommended species on the perimeters where more sunlight is available is Douglas fir and shore pine. Shade tolerant species shall be used within the preserved grove to include Western red cedar, Western hemlock and grand fir.

Arborist Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training and experience to examine and assess trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risks associated with living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that grow, respond to their environment, mature, decline and sometimes 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 and/or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed. Treatment, pruning and 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 other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Photo Documentation





Front or west side of property



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Subject maple, typical of maples on property



Upper crowns



Middle portion of property, dense English laurel



Maples in southeast portion of property



Neighboring trees #101, #102 and #103



Neighboring tree #104



Neighboring trees #105 and #106



Neighboring tree #107



93rd AVE SE ROW, Tree #109 on left, #110 on right



 93^{rd} AVE SE ROW, Tree #112 on left, #113, #114 and #115 in background



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Layton Tree Consulting LLC

For: Barcelo Homes Inc. Site: 7216 93rd AVE SE

Tree Summary Table
Date: 10/24/2019

Tree/ Tag #	Species Common Name	Species Scientific Name	DBH (inches)	Height (feet)	Drip-Li		s of Distuet)	ırbance	Condition	Exceptional Yes/No	l Comments	Proposal	Replacement Trees
					N	S	Е	W					
1	bigleaf maple	Acer macrophyllum	32	96	30	10	22	18	Fair	Yes	asymmetric crown to north, deadwood	Remove	6
2	bigleaf maple	Acer macrophyllum	26	98	12	14	10	18	Fair	No	forked top, moderate included bark	Remove	3
3	bigleaf maple	Acer macrophyllum	11	75	18	0	16	0	Fair	No	asymmetric crown to NE, suppressed	Remove	2
4	bigleaf maple	Acer macrophyllum	24	105	0	22	20	6	Fair	No	asymmetric crown to southeast	Remove	3
5	bigleaf maple	Acer macrophyllum	22	32	Х	Х	Х	Х	Poor	No	broken, 90% dead	Remove	0
6	bigleaf maple	Acer macrophyllum	37	108	24	8	8	34	Fair	Yes	trunk forks at 8 feet, codominant stems	Remove	6
7	bigleaf maple	Acer macrophyllum	18	105	8	12	5	16	Fair	No	leans west, decent vigor	Remove	2
8	bigleaf maple	Acer macrophyllum	14	98	11	6	6	9	Fair	No	poor trunk taper	Remove	2
9	bigleaf maple	Acer macrophyllum	18	102	11	6	14	5	Fair	No	poor trunk taper, forked top	Remove	2
10	bigleaf maple	Acer macrophyllum	23	116	6	28	16	12	Fair	No	natural lean south, forked top, deadwood	Remove	2
11	bigleaf maple	Acer macrophyllum	22	102	10	6	14	17	Fair	No	natural lean west	Remove	2
12	Western red cedar	Thuja plicata	26	64	14	13	13	16	Fair	No	sparse top foliage, suppressed by #11	Remove	3
13	bigleaf maple	Acer macrophyllum	19,15,9 (26)	95	9	20	18	12	Fair-poor	No	moderate trunk decay, crown dieback	Remove	3
14	bigleaf maple	Acer macrophyllum	20	86	9	12	0	28	Fair	No	natural lean west, forked top	Remove	2
15	bigleaf maple	Acer macrophyllum	18	85	8	14	16	15	Fair	No	forked top, compact crown	Remove	2
16	bigleaf maple	Acer macrophyllum	22	80	5	18	20	10	Fair-poor	No	significant crown dieback	Remove	2
17	bigleaf maple	Acer macrophyllum	14	86	6	8	14	6	Fair	No	compact crown	Remove	2
18	bigleaf maple	Acer macrophyllum	26	95	16/16	24	5	22/16	Fair	No	forked top, moderate included bark	Save	
19	bigleaf maple	Acer macrophyllum	25	97	16	22	18	5	Fair	No	forked top, moderate included bark	Save	
20	bigleaf maple	Acer macrophyllum	28	94	8	18	12	14	Fair	No	typical	Save	
21	bigleaf maple	Acer macrophyllum	27	98	14	5	14	10	Fair	No	trunk seam, moderate deadwood	Save	
22	bigleaf maple	Acer macrophyllum	25	94	18	4	0	22	Fair	No	natural lean west, asymmetric crown	Save	
23	bigleaf maple	Acer macrophyllum	22	96	26	0	0	16	Fair	No	natural lean northwest	Save	
24	bigleaf maple	Acer macrophyllum	24	84	35	0	0	0	Fair-poor	No	trunk decay, heavy lean north	Save	
25	bigleaf maple	Acer macrophyllum	25	83	Х	Χ	Х	Х	Poor	No	extensive trunk decay, leans north	Save	
26	bigleaf maple	Acer macrophyllum	16,12 (20)	82	34	18	14	12	Fair	No	moderate trunk decay, moderate deadwood	Save	
27	bigleaf maple	Acer macrophyllum	37	88	22	16	18	16	Fair-poor	*No	large trunk cavity, trunk split, decent vigor	Save	
28	bigleaf maple	Acer macrophyllum	18	86	0	20	6	16	Fair	No	significant natural lean south	Save	
29	bigleaf maple	Acer macrophyllum	34	94	26	8	20	10	Fair	Yes	natural lean north	Save	
30	bigleaf maple	Acer macrophyllum	26,20 (33)	92	6	26	16	13	Fair-poor	No	significant trunk decay, natural lean south	Save	
31	bigleaf maple	Acer macrophyllum	13	38	10	14	15	0	Fair	No	topped in past, low risk	Save	
32	bigleaf maple	Acer macrophyllum	8,7 (11)	34	14	4	16	4	Fair	No	suppressed, natural lean north	Save	
33	bigleaf maple	Acer macrophyllum	15	32	Х	X	Х	Х	Poor	No	broken, extensive decay	Save	
34	bigleaf maple	Acer macrophyllum	13	34	12	8	10	10	Fair	No	broken, failed top, decent vigor, low risk	Save	
35	bigleaf maple	Acer macrophyllum	40,34 (52)	78	28/20	12	22	18/20	Fair-poor	*No	extensive basal rot, broken top	Save	
36	bigleaf maple	Acer macrophyllum	14	71	18/12	0	8	6	Fair	No	natural lean north	Save	
37	bigleaf maple	Acer macrophyllum	8,8 (11)	58	16/10	10	16	8	Fair	No	natural lean north	Save	
38	Western red cedar	Thuja plicata	15	49	12	12	11	12/12	Good	No	full crown, good vigor	Save	
39	Douglas fir	Pseudotsuga menziesii	10	61	8	7	8	8/8	Fair-good	No	somewhat suppressed by maple	Save	



Layton Tree Consulting LLC

For: Barcelo Homes Inc. Site: 7216 93rd AVE SE

Tree Summary Table

Date: 10/24/2019

Tree/ Tag#	Species Common Name	Species Scientific Name	DBH (inches)	Height (feet)	Drip-Li	ne / Limit		urbance	Condition	Exceptional Comments		Proposal	Replacement Trees
Tag #	Common Name	Ocientino Name	(Inches)	(ICCI)	N	S	et) E	W	Condition	163/140	Comments	Порозаг	11003
40 k	oigleaf maple	Acer macrophyllum	11,9 (14)	47	13	13	15	6	Fair	No	fork at base, decent vigor	Remove	2
	pigleaf maple	Acer macrophyllum	9,8,5 (13)	42	14	12	6	12/12	Fair	No	tight cluster, typical	Save	
42 k	pigleaf maple	Acer macrophyllum	32	74	27/16	10	32/16	12/16	Fair	No	leans northeast, end weight prune	Save	
43 p	olum (fruit)	Prunus americana cv	9,8 (12)	21	14	7	9	12/10	Fair-poor	No	topped, not maintained	Save	
Neighbo	oring Trees												46
101 k	oigleaf maple	Acer macrophyllum	20	56	NA	NA	NA	6/6	Fair	No	multiple tops, approx 10 feet off pl	Protect	
102	Douglas fir	Pseudotsuga menziesii	24	86	NA	NA	NA	5/5	Good	No	approx 10 feet off pl , old broken top	Protect	
103 k	oigleaf maple	Acer macrophyllum	19,18	42	NA	NA	NA	10/5	Poor	No	approx 5 feet off pl, broken top	Protect	
104 k	oigleaf maple	Acer macrophyllum	46	103	NA	20/20	NA	32/20	Good	Yes	sound, good form		
105 E	European white birch	Betula pendula	18	78	NA	10/10	10	12	Fair	No	incipient top decline		
106	Japanese maple	Acer palmatum	14,10	36	NA	16/10	17	16	Good	Yes	no concerns		
107 E	English holly	Ilex aquifolium	8,7,6	20	NA	6/4	8	8/6	Fair	No	typical Pro		
108	Austrian pine	Pinus nigra	18	53	10	12	8	NA	Good	No	above keystone retaining wall Pro		
109	Douglas fir	Pseudotsuga menziesii	30	104	10	14	14	NA	Good	Yes	appears sound, good vigor	Protect	
110	Douglas fir	Pseudotsuga menziesii	45	120	16	14	NA	10	Good	Yes	appears sound, good vigor	Protect	
111 r	red alder	Alnus rubra	12,13	70	14	12	12	NA	Fair	No	decent vigor		
112 k	oigleaf maple	Acer macrophyllum	26	66	18	22	20	NA	Good	No	decent form, approx. 12-feet to retaining wall		
113 k	oigleaf maple	Acer macrophyllum	14,8	60	8	12	8	NA	Fair	No	a few feet above rockery, decent form		
114 k	oigleaf maple	Acer macrophyllum	9,8,7	64	10	8	13	NA	Fair	No	at edge of rockery, typical Pro		
115 k	oigleaf maple	Acer macrophyllum	12,10,7	76	10	12	18	NA	Fair	No	a few feet off driveway edge	Protect	

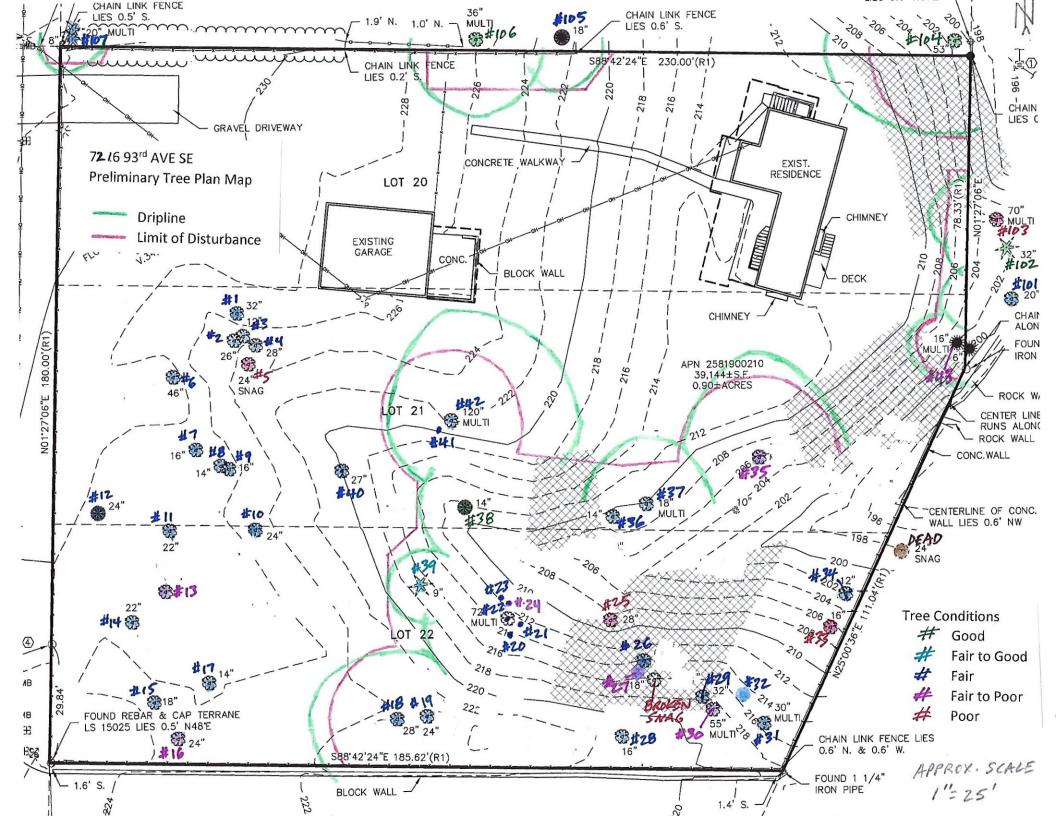
^{*-}meets exceptional size threshold but is in poor condition

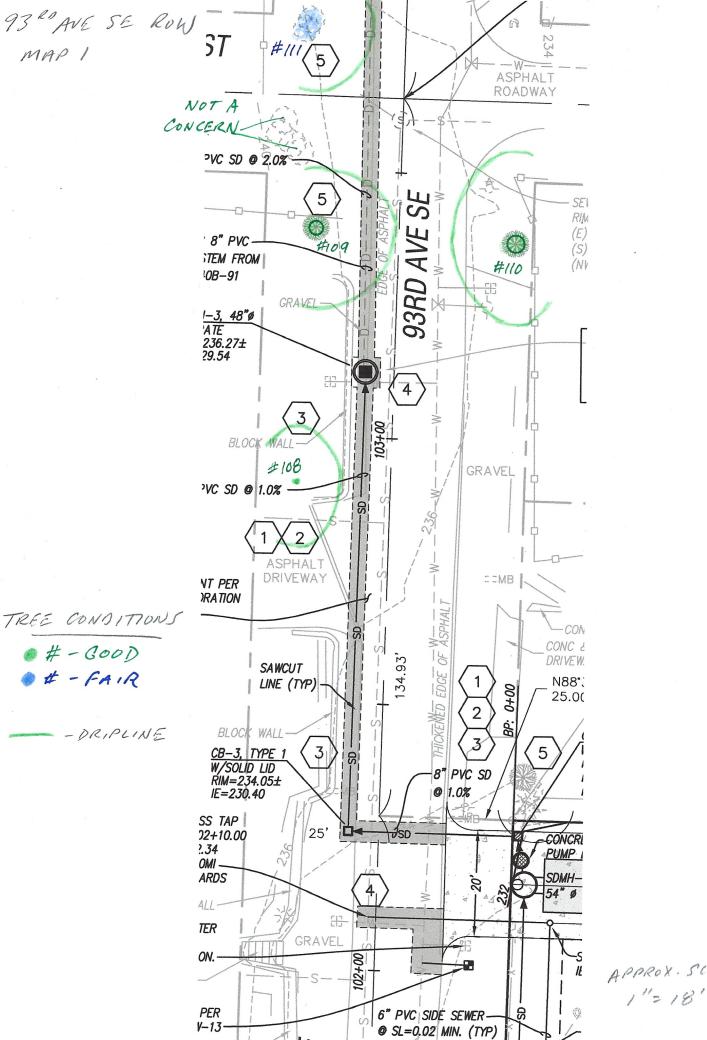
Calculated DBH: the DBH is parenthesis is the square root of the sum of the dbh for each individual stem squared (example with 3 stems:

dbh = square root [(stem1)2 + (stem2)2 + (stem3)2]).

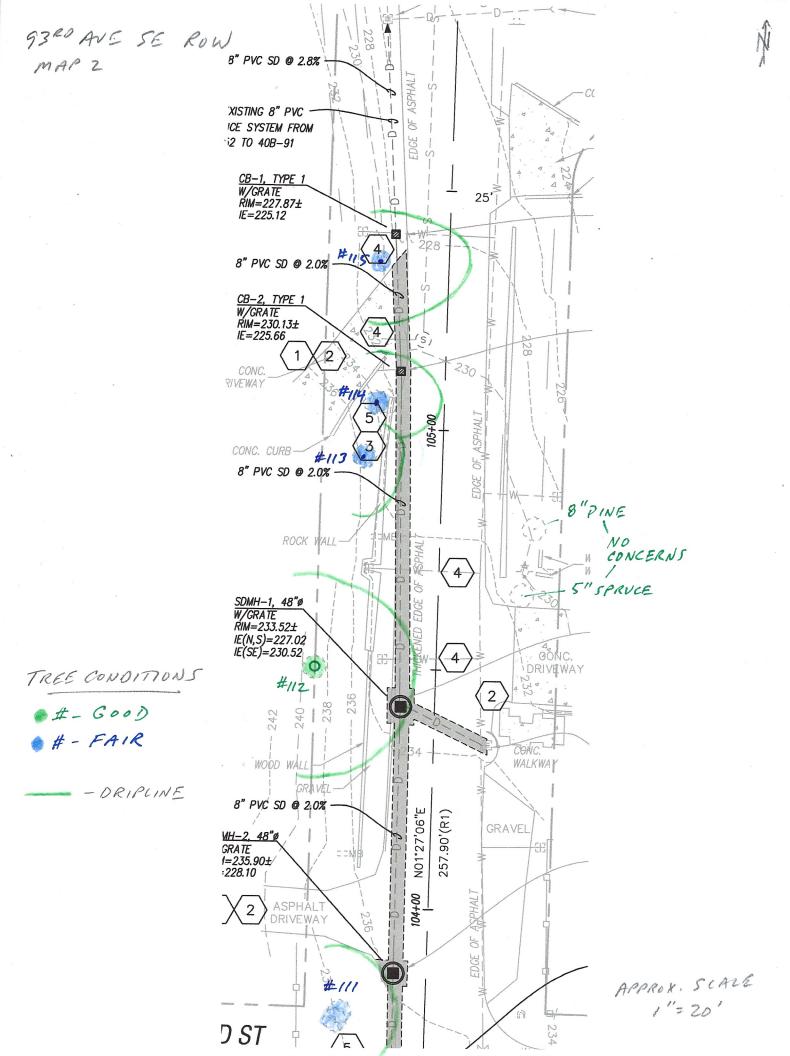
Drip-Line and Limits of Disturbance measurements from face of trunk

Drip-Line and Limits of Disturbance measurements for Neighboring trees from fence/property line





APPROX. SCALE 1"= 18'



CITY OF MERCER ISLAND

COMMUNITY PLANNING & DEVELOPMENT

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EXCEPTIONAL TREES



TREE INVENTORY & REPLACEMENT SUBMITTAL INFORMATION

Exceptional Trees- means a tree or group of trees that because of its unique historical, ecological or aesthetic value constitutes an important community resource. A tree that is rare or exceptional by virtue of its size, species, condition, cultural/historical 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 shown in MICC 19.16 under Tree, Exceptional. List the total number of trees for each category and the tree identification numbers from the arborist report. Number of trees 36" or greater List tree numbers: Number of trees 24" or greater (including 36" or greater) List tree numbers: Number of trees from Exceptional Tree Table (MICC 19.16) List tree numbers: **LARGE REGULATED TREES** Large Regulated Trees- means any tree with a diameter of 10 inches or more, and any tree that meets the definition of an Exceptional Tree. Number of Large Regulated Trees on site (A) List tree numbers: Number of Large Regulated Trees on site proposed for removal (B) List tree numbers: Percentage of trees to be retained ((A-B)/Ax100) note: must be at least 30% **RIGHT OF WAY TREES** <u>Right of Way Trees</u>- means a tree that is located in the street right of way adjacent to the project property. Number of Large Regulated Trees in right of way List tree numbers: Number of Large Regulated Trees in right of way proposed for removal

List tree numbers:	
Reason for removal:	
•	

TREE REPLACEMENT

Tree replacement- removed trees must be replaced based on the ratio in the table below. Replacement trees shall be conifers at least six feet tall and or deciduous at least one and one-half inches in diameter at base.

			Number of Tree
	Tree	Number of	Required for
Diameter of Removed Tree (measured 4.5'	replacement	Trees Proposed	Replacement Based
above ground)	Ratio	for Removal	on Size/Type
Less than 10"	1		
10" up to 24"	2		
Greater than 24" up to 36"	3		
Greater than 36" and any Exceptional Tree	6		
	TOTAL TOE	DEDI ACENAENTO	