



# A.B.C Consulting Arborists LLC

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## **Pathak Remodel Tree Protection Plan**

**August 16, 2023**

Updated November 22, 2024

### **PREPARED FOR:**

Rahul & Sev Pathak  
8541 SE 82<sup>nd</sup>  
Mercer Island, WA 98040

### **PREPARED BY:**

**A.B.C. Consulting Arborists LLC**

Daniel Maple,  
*Registered Consulting Arborist #627*  
*ISA Municipal Specialist # PN-7970AM*  
*ISA Tree Risk Assessment Qualified (TRAQ)*  
*ISA Board Certified Master Arborist #PN-7970BM*

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## CONSULTING ARBORIST

Daniel J. Maple / A.B.C. Consulting Arborists, LLC  
Email: [Daniel@AbcArborist.Com](mailto:Daniel@AbcArborist.Com) Cell Phone: (509) 953-0293

### Certifications

ASCA Registered Consulting Arborist (RCA)	# 627
ISA Board Certified Master Arborist	PN-7970BM
ISA Certified Arborist Municipal Specialist	PN-7970AM
ISA Tree Risk Assessment Qualified (TRAQ)	June 30, 2020
AFF Qualified Tree Farm Inspector	# 169449
Commercial Applicator	# 92432
Commercial UAV Airman Pilot (Drone)	# 4135495

## ASSIGNMENT

Provide arborist report Per [MICC 19.10.090 \(C – 2\)](#) for the remodel to existing home.

## LIMITATIONS OF ASSIGNMENT

This report is limited to a Visual Assessment of the site and the trees. It is not a comprehensive risk assessment, structural assessment, or health assessment; it is limited to the scope of the assignment.

## METHODOLOGY

To evaluate the trees, as well as to prepare this report, I drew upon my 30+ years of experience in the field of arboriculture and my formal education. I followed the protocol of the International Society of Arboriculture (ISA) and I performed my assessment using and/or considering the following Best Management Practices:

- ANSI A300 Part 2** – *Soil Management a.) Modification b.) Fertilization & c.) Drainage.*
- ANSI A300 Part 5** – *Managing Trees During Site Planning, Site Development, and Construction.*
- ANSI A300 Part 9** – *Tree Risk Assessment (Second Edition).*
- ISA BMP’s** – *Tree Inventories (Second Edition 2013)*

Best Management Practices were developed to aid in the interpretation of professional standards and guide work practices based upon current science and technology. Using this process, I performed my assessment, which included looking at the overall health of the trees as well as the site conditions.

## SITE

**Parcel** 362550-0050 / 16,600 sq. ft. (0.38-acre) site, **Zoned** SF R-9.6. [Mercer Island GIS](#) shows a critical slope/buffer and landslide hazard on the Southern portion of the site, it is a protected slope. Soils are moderate in depth and well drained. No other relevant site conditions were noted.

## TREES

[MICC 19.16.01](#) Defines a small tree = any tree < 10-inches DBH (unless exceptional). Large (regulated) Any tree ≥ 10-iches or that meets the definition or exceptional. Exceptional Tree List.

There were 17 trees 6” and greater DBH. They were tagged with aluminum tags 26-42. There were 0 trees ≥ 6” DBH in the ROW. [Attachment 1, Site Images](#) for approximate location of the trees.

Tree Summary

	Total Trees	Hazard Non-Viable	Conflict W/ plans	Trees Retained	Viable Trees Removed	Replacement Ratio	Required Replant
>36+&Exceptional	6	0	0	6	0	6:1	0
Lg 24-36	4	0	0	4	0	3:1	0
Lg 10-24	6	0	0	6	0	2:1	0
Small < 10 <sup>1</sup>	1	0	0	1	0	1:1	0
Small < 10	0	0	0	0	0	Exempt	0
<b>TOTAL</b>	17	0	0	17	0		0

Please refer to [Attachment 2- Tree Summary, TPZ/Instructions](#) for a summary of the tree data.

<sup>1</sup> In a Critical Area or Critical Area Buffer or On Public Property.

### Non-Viable Trees

There were 0 dead, dying, or hazardous/non-viable trees.

### Trees That Conflict with Proposed Improvements

0 large regulated and 0 <10” trees conflict with improvements. 0 will be removed.

### Viable Trees to be Retained

There were 16 large regulated and 1 <10” viable trees: they are currently proposed for retention<sup>2</sup>.

### Trees Adjacent to the Site

There were no offsite trees near the proposed improvements. No offsite trees will be impacted or require tree protection measures..

### Impact

By following the tree protection measures outlined in *Attachment-3* and the installation of fencing prior to construction activity, the impacts to the trees onsite as well as those nearby should be minimal.

## **TREE RETENTION**

[MICC 19.10.060](#) (A)<sup>3</sup>, **1**) In the R-8.4, R-9.6, R-12, and R-15... **2**) A minimum of 30% of the trees ≤ 10-inches shall be retained over a 5-year rolling period. Tree removal not associated with development is exempt (if outside a critical area or its buffer).

The proposed short-plat had 31 trees (25 large regulated, 6 <10”). Of the 25 large regulated trees, 8 were non-viable and are excluded from the calculations; leaving 17 viable large regulated trees. We are proposing to remove 7 of the 17 viable large regulated trees; leaving 10 or 41%.

## **EXEMPTIONS – MICC [19.10.020](#)**

Except where undertaken within critical areas and associated buffers, or on public property, the following activities *are exempt from the permitting, replacement, retention, and protection provisions of this chapter*:

- A. Small tree *removal*. Removal of trees with a diameter of less than ten inches that meet the definition of small trees, except if the small tree is an exceptional tree, as defined, or was previously planted as a replacement tree.
- B. Removal of species identified in the weeds of concern, noxious, or invasive weed lists established by Washington State or King County, as amended.

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<sup>2</sup>; As this is a conceptual plan; additional trees may need to be removed pending final design and layout.

<sup>3</sup> Required for, **a.** An addition or remodel to an existing single-family dwelling that will result in the addition of more than 500 square feet of gross floor area on a lot with a net lot area of 6,000 square feet or more; **b.**A new single-family dwelling on a lot with a net lot area of 6,000 square feet or more; **c.**A subdivision or short subdivision.

## REPLANTING

MICC [19.10.070 Table A](#); trees that are remove shall be replanted at the ratio:

<10” 1:1, 10” to 24” 2:1, 24” to 36” 3:1 >36” and exceptional trees 6:1

	Total Trees	Hazard Non-Viable	Conflict W/ plans	Trees Retained	Viable Trees Removed	Replacement Ratio	Required Replant
>36+&Exceptional	6	0	0	6	0	6:1	0
Lg 24-36	4	0	0	4	0	3:1	0
Lg 10-24	6	0	0	6	0	2:1	0
Small < 10 <sup>4</sup>	1	0	0	1	0	1:1	0
Small < 10	0	0	0	0	0	Exempt	0
<b>TOTAL</b>	17	0	0	17	0		0

No additional trees are required to be planted<sup>5</sup>. See *Attachment 6-Tree Inventory and Replacement*

## TREE PROTECTION ZONES (TPZ)

In order for trees to survive the stresses placed upon them in the construction process, tree protection must be planned in advance of equipment arrival on site. With proper preparation, often costing little or nothing extra to the project budget, trees can survive and thrive after construction. This is critical for tree survival because damage prevention is the single most effective treatment for trees on construction sites. Once trees are damaged, the treatment options available are limited.

### General

1. The TPZ is the optimal protection zone set to preserve trees during construction. The TPZ radius generally is 8-Inches to 18-Inches of protection for every 1-Inch of DBH, based on the trees size, vigor and construction tolerances (*ANSI A300 Part 5 BMP, Matheny, Clark, 1998*).
2. The TPZ can usually safely be reduced by 20% as long as it does not impact the CRZ. Greater than 20% reductions may be possible, pending review, written permission, and direct over site of the work, by the Consulting Arborist.
3. The trees to be saved, must be protected during construction by temporary 6’ tall chain-link, or like fencing, located 10’ beyond the edge of the trees farthest extending limbs on all sides (dripline). The individual tree protection zones (TPZ) are 10’ past the driplines of the tree(s), unless otherwise delineated by A.B.C. Consulting Arborist LLC. See **Attachment 2** for tree specific TPZ and CRZ.
4. No irrigation lines, trenches, or other utilities shall be installed within the TPZ, without detailed written instructions and the oversight of the Consulting Arborist, to reduce the impacts to the tree roots, and construction related stressors. Cuts or fills should impact no more than 20% of a tree’s root system. If topsoil is added to the root zone of a protected tree, the depth should not exceed 2 inches of a sandy loam or loamy fine sand topsoil and should not cover more than 20% of the root system.
5. If roots are encountered outside the TPZ during construction, they shall be cut cleanly with a saw (not ripped or torn) and covered immediately with moist soil. Noxious vegetation within the critical root zone should be removed by hand. If a proposed save tree must be impacting by grading or fills, then the tree should be re-evaluated by A.B.C. Consulting Arborist LLC to determine if the tree can be saved with mitigating measures, or if the tree should be removed. See **Attachment 3** for tree protection instructions.

<sup>4</sup> In a Critical Area or Critical Area Buffer or On Public Property.

<sup>5</sup> Replacement trees SHALL primarily be native / Conifers ≥6-feet / Deciduous ≥ 1.5-inch caliper. Landscape plan to be provided by client.

## CRITICAL ROOT ZONES (CRZ)

1. The CRZ is the area where the roots vital for the tree's survival are located, the CRZ is generally ½ of the TPZ. At no time or for any reason shall the roots within the CRZ be impacted.

## FENCING

1. 6' tall chain link (or like fencing) shall be installed the TPZs prior to commencement of site clearing and shall remain in place for the duration of the project. When possible, it is preferred that trees be fenced as a group, rather than individuals. At no time shall any vehicle or equipment be allowed inside the TPZ/Fencing. No placing or stock-piling of any material of any kind shall be allowed inside the TPZ.
2. Removal of any vegetation within the TPZ shall be done by hand. Should any disturbance be required inside the TPZ to install utilities or any other needs during the construction period, they will require project specific instructions by the Consulting Arborist and approval by the city prior to undertaking any said activity in the TPZ.

## ROOT PROTECTION

1. Any roots encountered of 1" in diameter or greater, shall be cut with loppers, pruners, reciprocal saw or like device to provide a clean smooth cut. At no time, shall 1" or greater diameter roots be ripped or torn. Exposed roots shall be covered with wet burlap, or like item, to keep roots from drying out and shall be covered with soil as soon as reasonably possible.
2. Protect tree root systems from damage due to noxious materials caused by runoff or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations. Protect root systems from damage due to removal of adjacent trees.

**SEE ATTACHMENT 3** For Complete Tree Protection Instructions – Including specific instructions for tree #29 and offsite tree #38

Thank you for contacting A.B.C. Consulting Arborists LLC for your arboricultural needs.

Sincerely,

*Daniel Maple*

Daniel Maple, Consulting Arborist

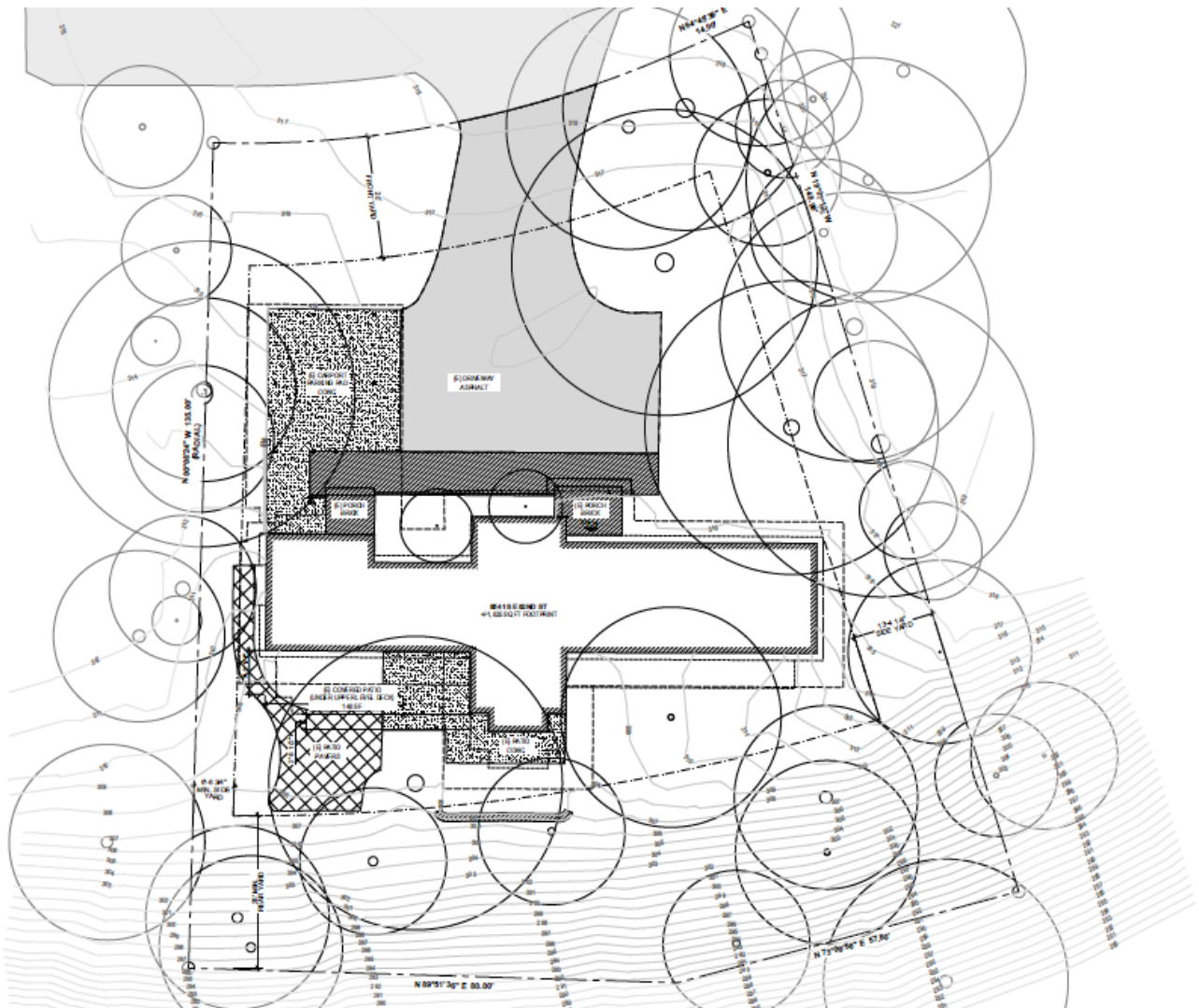
*Registered Consulting Arborist #627  
ISA Municipal Specialist #PN-7970AM  
ISA Tree Risk Assessment Qualified (TRAQ)  
ISA Board Certified Master Arborist #PN-7970BM*



# ATTACHMENTS

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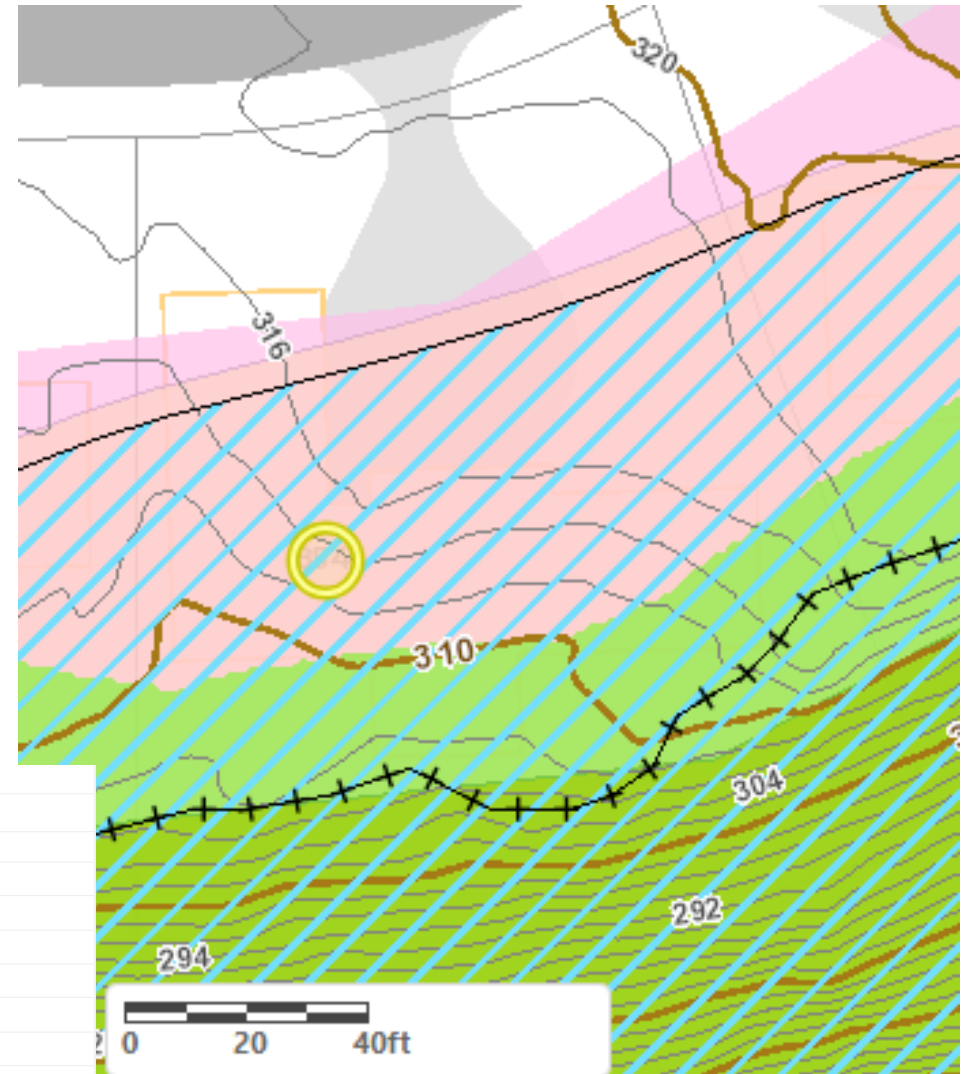
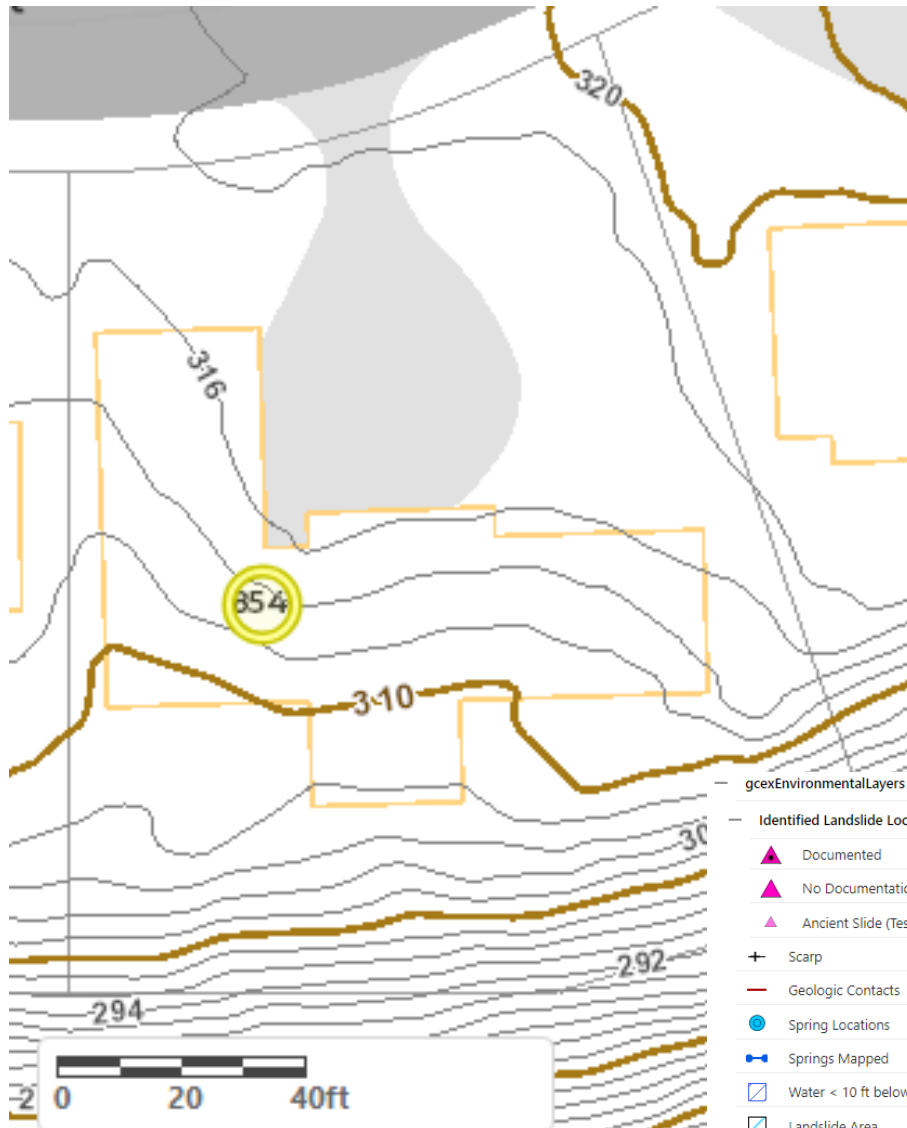
Conceptual Plan



**ATTACHMENT 1 - SITE IMAGES**

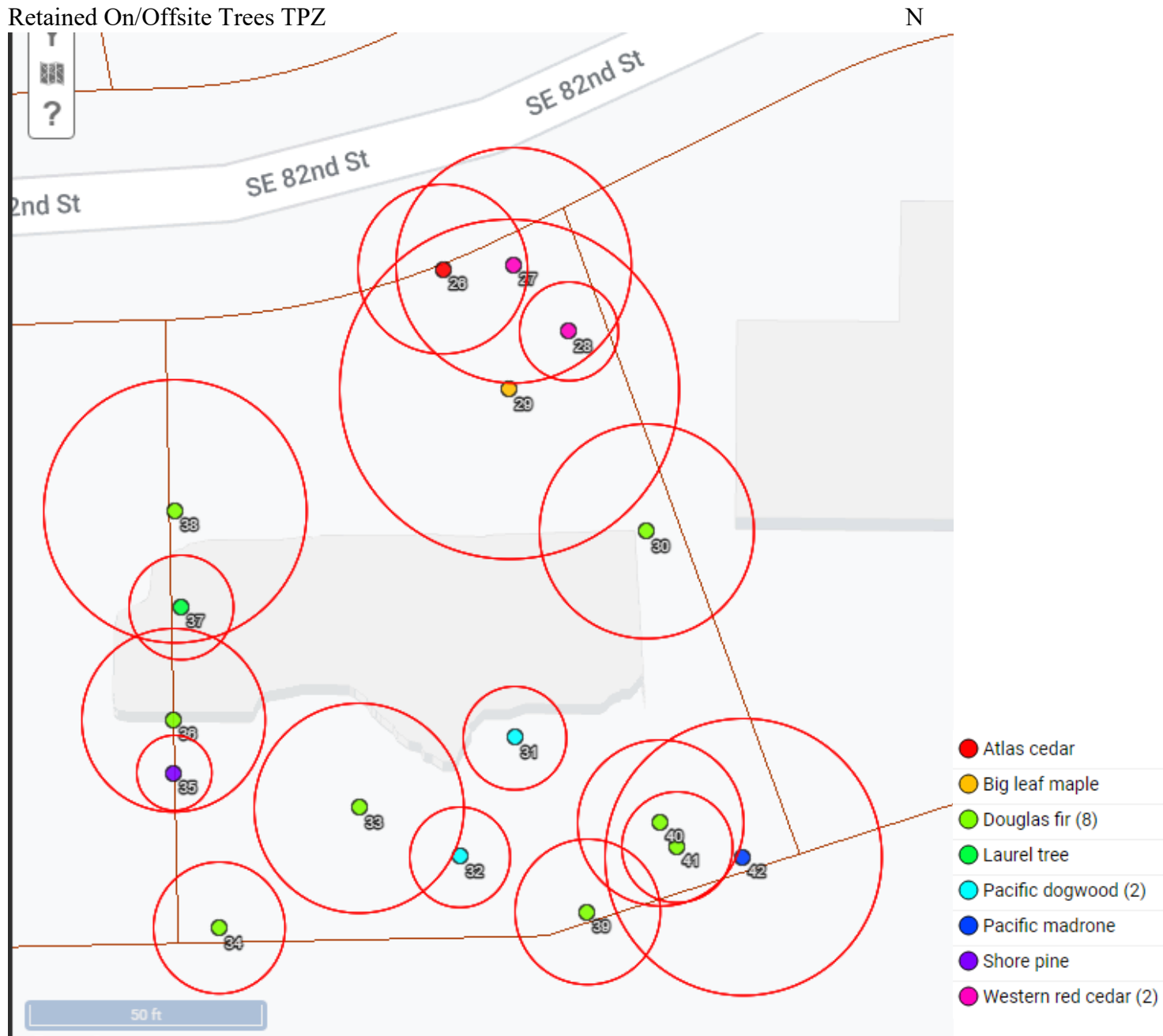
Mercer Island GIS

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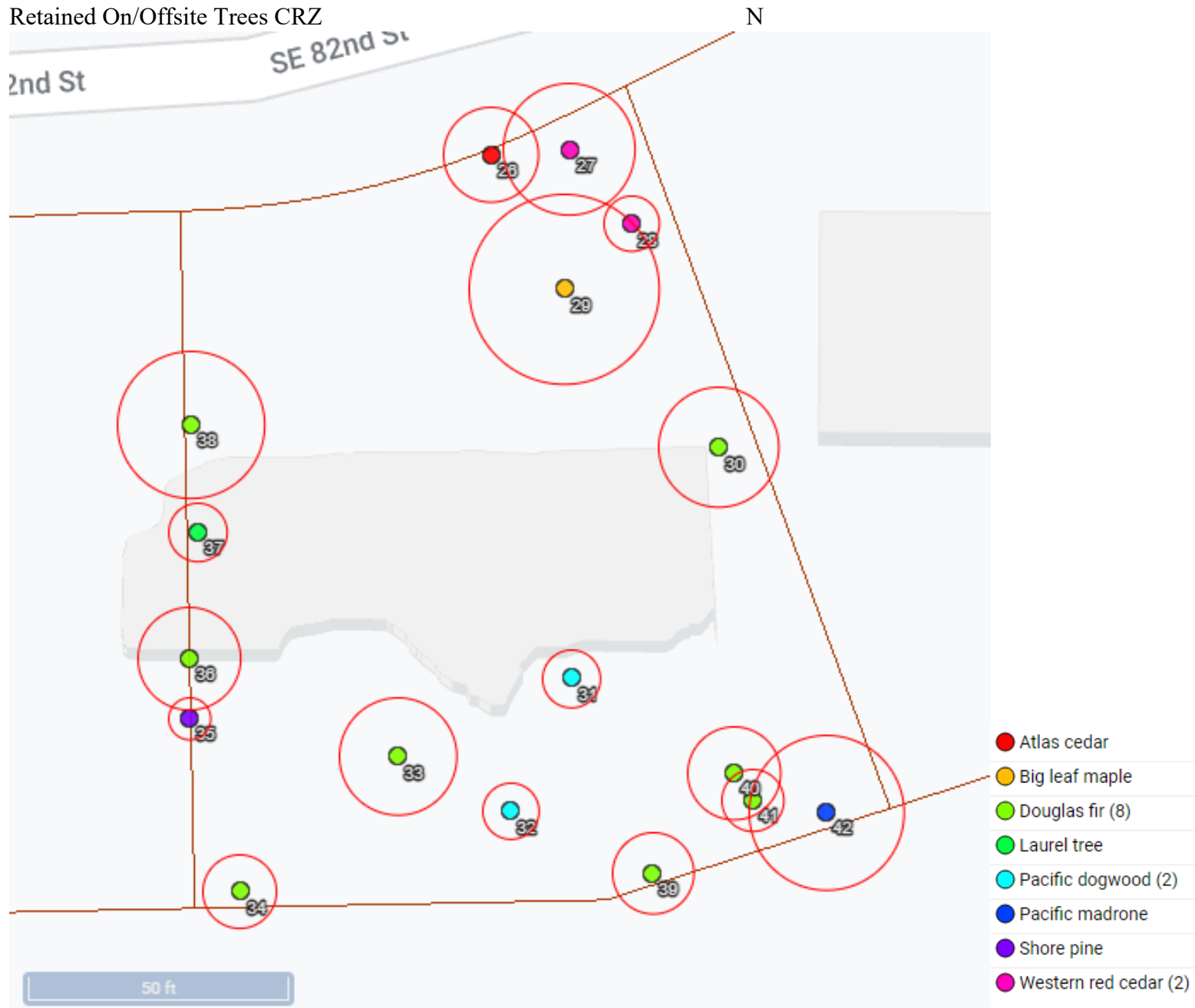


- gcexEnvironmentalLayers
- Identified Landslide Location
    - ▲ Documented
    - ▲ No Documentation
    - ▲ Ancient Slide (Test Pit)
  - + Scarp
  - Geologic Contacts
  - Spring Locations
  - Springs Mapped
  - Water < 10 ft below ground surface
  - Landslide Area
  - ⚡ Exploration Point
  - GeoTech Document
  - 10ft Lidar Contours (2016)
  - 2ft Lidar Contours (2016)

Retained On/Offsite Trees TPZ



Retained On/Offsite Trees CRZ



**ATTACHMENT 2 - TREE SUMMARY, TPZ, CRZ**

ID	Species	Latin	DBH	Spread	Condition - Health	Condition - Structure	Landmark Grove <sup>6</sup> Exceptional	Development	TPZ-Radius [ft]	CRZ - Radius [ft]	Notes
26	Atlas cedar	<i>Cedrus atlantica</i>	24.5	30	Good	Good	NO	R-Viable	18.375	9.1875	Viable
27	Western red cedar	<i>Thuja plicata</i>	25.5	Good	Poor	Fair to poor Risk assess	No	R-Assess	25.5	12.75	Woodpecker holes noted assessment recommended
28	Western red cedar	<i>Thuja plicata</i>	10.7	12	Fair	Good	NO	R-Viable	10.7	5.35	Crowded
29	Big leaf maple	<i>Acer macrophyllum</i>	36.8	40	Good	Good	Exceptional	R-Viable	36.8	18.4	Nice specimen tree
30	Douglas fir	<i>Pseudotsuga menziesii</i>	31	40	Good	Good	Exceptional	R-Viable	23.25	11.625	Good health and vigor
31	Pacific dogwood	<i>Cornus nuttallii</i>	14.92	16	Fair	Good	Exceptional	R-Poor Condition	11.19	5.595	S fork in poor condition
32	Pacific dogwood	<i>Cornus nuttallii</i>	14.5	15	Fair	Poor	NO in Poor Condition	R-Poor Condition	10.875	5.4375	Tree is declining. Decay in the trunk.
33	Douglas fir	<i>Pseudotsuga menziesii</i>	30.3	33	Good	Good	Exceptional	R-Impacted	22.725	11.3625	May conflict with plans, arborist oversight, required during any earth work inside the TPZ
34	Douglas fir	<i>Pseudotsuga menziesii</i>	19	21	Good	Good	NO	R-Viable	14.25	7.125	asymmetrical. In good health at this time
35	Shore pine	<i>Pinus contorta</i>	6.5	8	Fair	Fair	NO	R-Poor Condition	8.125	4.0625	Suppressed
36	Douglas fir	<i>Pseudotsuga menziesii</i>	26.5	30	Good	Good	NO	R-Viable	19.875	9.9375	Good health and vigor
37	Laurel tree	<i>Laurus nobilis</i>	11.31	12	Good	Fair	NO	R-Viable	11.31	5.655	unmaintained
38	Douglas fir	<i>Pseudotsuga menziesii</i>	38	37	Good	Good	Exceptional	R-Viable	28.5	14.25	Good health and vigor
39	Douglas fir	<i>Pseudotsuga menziesii</i>	21	26	Good	Good	NO	R-Viable	15.75	7.875	Limbed for a view window
40	Douglas fir	<i>Pseudotsuga menziesii</i>	24	26	Good	Good	NO	R-Viable	18	9	Good health and vigor
41	Douglas fir	<i>Pseudotsuga menziesii</i>	16	20	Fair	Fair	No	R-Viable	12	6	Suppressed limbed for view
42	Pacific madrone	<i>Arbutus menziesii</i>	22	30	Fair	Fair	Exceptional	R-Viable	30	15	Fair condition

1. The TPZ listed shall be the TPZ that is used. 2. The TPZ can be reduced to the CRZ, unless noted otherwise, as long as the TPZ is not reduced by more than 20%. 3. This may be further reduced on a case-by-case basis, upon review, approval, and under the direct oversight of A.B.C. Consulting Arborists LLC. 4. Install Fencing Per Attachment 3, prior to starting construction activity.

	Total Trees	Hazard Non-Viable	Conflict W/ plans	Trees Retained	Viable Trees Removed	Replacement Ratio	Required Replant
>36+&Exceptional	6	0	0	6	0	6:1	0
Lg 24-36	4	0	0	4	0	3:1	0
Lg 10-24	6	0	0	6	0	2:1	0
Small < 10 <sup>7</sup>	1	0	0	1	0	1:1	0
Small < 10	0	0	0	0	0	Exempt	0
<b>TOTAL</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>		<b>0</b>

<sup>6</sup> **MMCC 19.16.010 Grove** = 8 or more trees ≥ 10-inches DBH that form a continuous canopy (exceptional unless hazardous).

<sup>7</sup> In a Critical Area or Critical Area Buffer or On Public Property.

## ATTACHMENT 3 - TREE PROTECTION

The following minimum Tree Protection Measures can be copied and introduced into all relevant documents such as site plans, permit applications and conditions of approval, and bid documents so that everyone involved is aware of the requirements.

1. Tree Protection Fencing Shall Be Continuous 6' min. Chain Link or like Fencing and.:
  - a. Tree Protection Fences will need to be placed around each tree or group of trees to be retained.
    - i. Tree Protection Fences are to be placed according to the attached drawing (bottom of attachment) at a distance of not less than 10' feet outside the dripline of the tree or group of trees to be saved, **or at the designated TPZ See Attachment 2 for TPZ/CRZ**
    - ii. Tree Protection Fences must be inspected prior to the beginning of any demolition or construction work activities.
    - iii. Nothing must be parked or stored within the Tree Protection Fences—no equipment, vehicles, soil, debris, or construction supplies of any sorts.
  - b. Signs:
    - i. The Tree Protection Fences need to be clearly marked with the following or similar text in four inch or larger letters every 40'

**TREE PROTECTION FENCE, DO NOT ENTER!**  
DO NOT PARK OR STORE MATERIALS WITHIN THE PROTECTION AREA

**Questions contact** Daniel Maple of A.B.C. Consulting Arborists LLC.  
**Cell:** (509) 953-0293    **Email:** Daniel@AbcArborist.Com

**Signs along the TPZ may be waived at the discretion of the City and/or its officials.**

2. Cement Trucks/Washout:
  - a. Cement trucks must not be allowed to deposit waste or wash out materials from their trucks within the Tree Protection Fences.
  - b. No waste, wash out, or contaminated water shall be allowed to flow into the Tree Protection Area.
3. Canopy Pruning:
  - a. The canopies of some of the trees may need to be properly pruned to allow Sight lines (vehicular), access of equipment, materials, or building and construction clearance.
  - b. If so, the pruning must be done by an International Society of Arboriculture, (ISA) Certified Arborist using current industry standard pruning techniques. (ANSI A300 Pruning Standards and ANSI Z131.1 Safety Standards as well as all OSHA, WISHA, and local standards must be followed.)
  - c. Plant debris can be chipped and utilized on site for the mulch under the trees.

5. When excavation occurs near trees that are scheduled for retention, the following procedure must be followed to protect the long-term survivability of the tree:

- a. An International Society of Arboriculture, (ISA) Certified Arborist must be working with all equipment operators.
  - i. The Certified Arborist should be outfitted with an Airspade™, shovel, hand pruners, a pair of loppers, a handsaw, and a power saw (a “saws all” type reciprocating saw is recommended).
- b. The hoe must be placed to “comb” the material directly away from the trunk as opposed to cutting across the roots.
  - i. Combing is the gradual excavation of the ground cover plants and soil in depths that only extend as deep as the tines of the hoe.
- c. When any roots of one-inch diameter or greater, of the tree to be retained, is struck by the equipment, the Certified Arborist should stop the equipment operator.
- d. The Certified Arborist should then excavate around the tree root by Airspade™ (recommended) or by hand/shovel and cleanly cut the tree root.
  - i. The Certified Arborist should then instruct the equipment operator to continue.

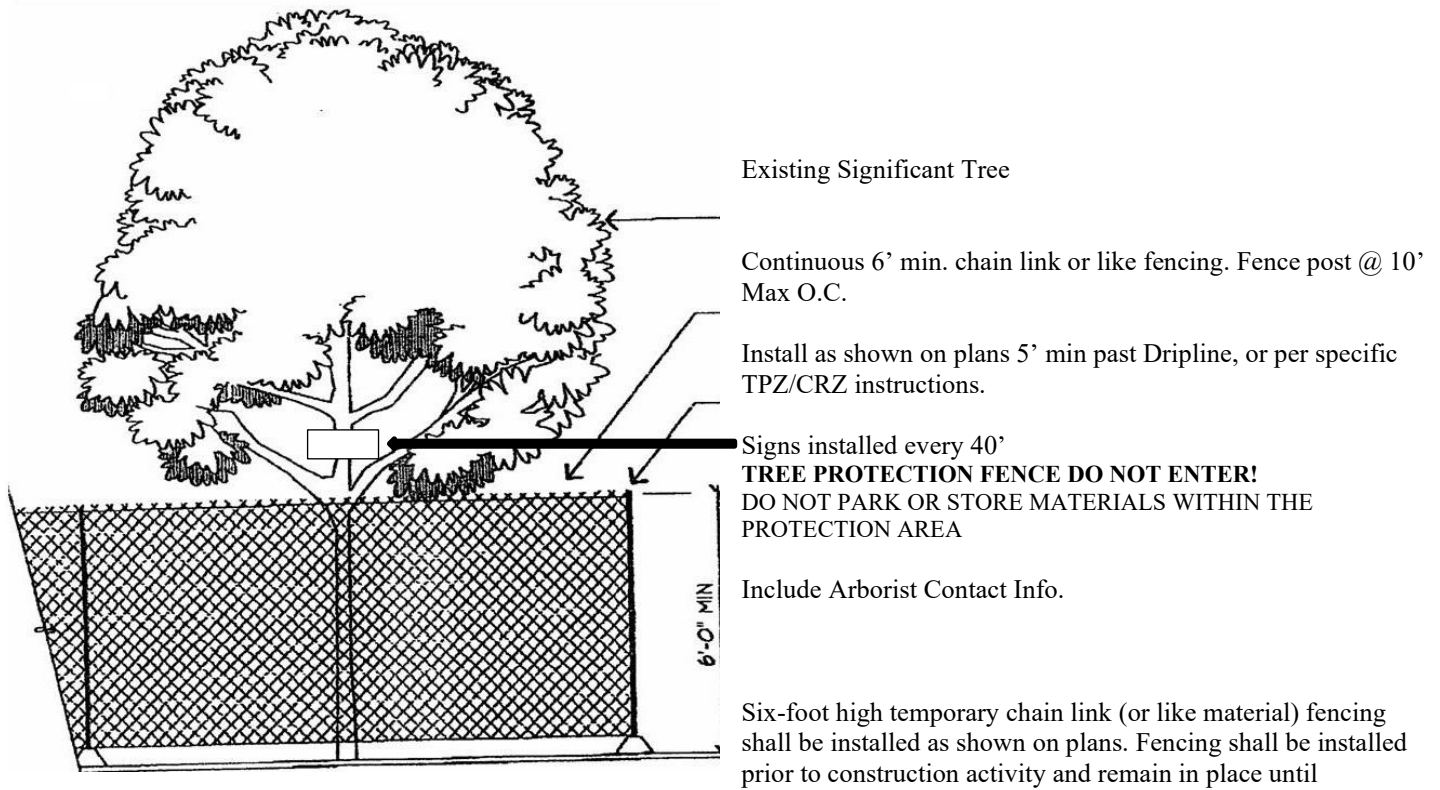
6. Putting Utilities Under the Root Zone:

- a. Boring under the root systems of trees (and other vegetation) shall be done under the supervision of an ISA Certified Arborist. This is to be accomplished by excavating a limited trench or pit on each side of the critical root zone of the tree and then hand digging or pushing the pipe through the soil under the tree. The closest pit walls shall be a minimum of 7 feet from the center of the tree and shall be sufficient depth to lay the pipe at the grade as shown on the plan and profile.
- b. Tunneling under the roots of trees shall be done under the supervision of an ISA Certified Arborist in an open trench by carefully excavating and hand digging around areas where large roots are exposed. No roots 1 inch in diameter or larger shall be cut.
- c. The contractor shall verify the vertical and horizontal location of existing utilities to avoid conflicts and maintain minimum clearances; adjustment shall be made to the grade of the new utility as required.

7. Watering:

The trees will require significant watering throughout the summer and early fall in order to survive long-term. An easy and economical watering can be done using soaker hoses placed three feet from the trunk of the tree and spiraled around the tree. One 75-foot soaker hose per tree is adequate. It is best to place the soakers using landscape staples, (available from HD Fowler in Bellevue for pennies apiece) then cover the area with three to six inches of mulch. The mulch will minimize evaporation and will also stimulate the microbial activity of the soil which is another benefit to the health of the tree.

- a. Water the tree to a depth of 18 to 20 inches. I recommended leaving the water on the soaker hoses for six to eight hours and then digging down to determine how deep your water is penetrating. Then adjust accordingly. It may take a good two days of watering to reach the proper depth.
- b. Once the water reaches the proper depth, turn off the hoses for four weeks and then water again. Water more often when temperatures increase— every three weeks when temperatures exceed 80 degrees and every two weeks when temperatures exceed 90 degrees. This drying out of the soil in between watering is important to prevent soil pathogens from attacking the trees.



construction is completed. Fencing panels are recommended. Fencing shall completely encircle the tree(s). Install fence posts using pier blocks. Avoid driving posts or stakes into major roots.

Make a clean straight cut, using loppers, reciprocal saw, or like tool, to remove damaged portion of root(s) over 1" inch diameter that are damaged during construction. **ALL** exposed roots shall be temporarily covered with damp burlap and covered with soil the same day, if possible, to prevent drying out. If not possible, the burlap must be kept moist at all times.

Work within the protection fencing shall be done manually. No stockpiling of materials, soil, debris, vehicular traffic, or storage of machinery or equipment shall be allowed within the limits of the fencing.

Cement trucks must not be allowed to deposit waste or wash out materials from their trucks within the tree protection fences, or in a manner that would allow the waste or wash out material to enter the TPZ.

The area within the tree protection fencing should be covered with wood chips, hog fuel, or similar materials, to a depth of 3 to 6 inches. The materials should be placed prior to beginning construction and remain until the tree protection fencing was taken down.

Should the tree protection fencing need to be installed inside the TPZ to allow for construction activity, then the following shall be done.

For construction equipment, cover the area from the tree protection fencing to the outer edge of the TPZ with 8 to 10 inches of wood chips, hog fuel, or similar materials, to reduce compaction cover area with steel plates.

For foot traffic' cover the area from the tree protection fencing to the outer edge of the TPZ with 6 inches of wood chips, hog fuel, or similar materials, to reduce compaction, cover with ¾ inch to 1-inch plywood.

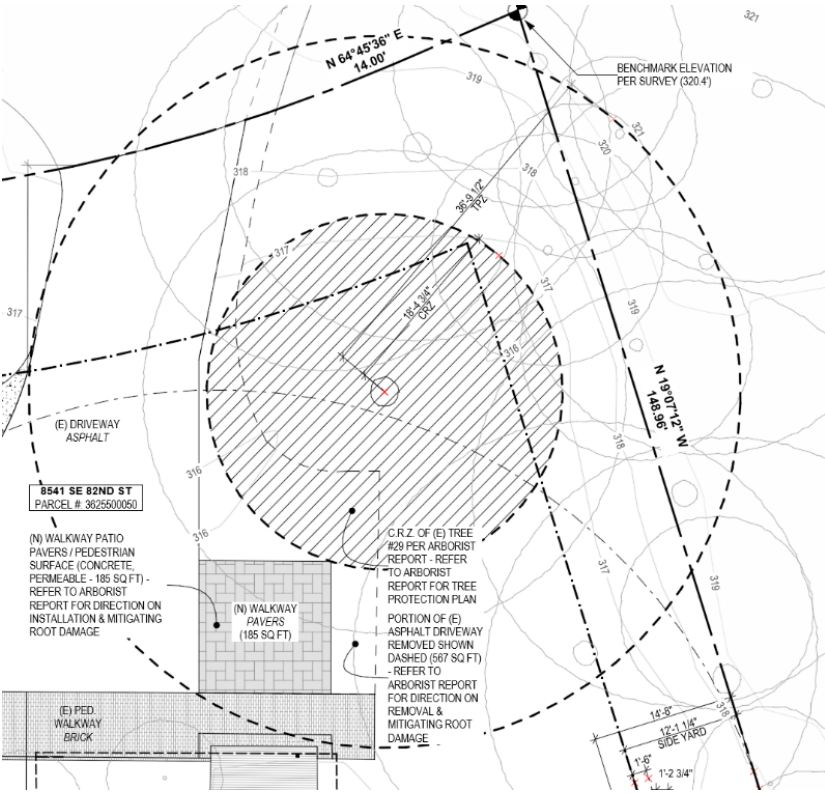
The steel plates, plywood and wood chips are to remain in place until all construction activity is completed. The steel plates, plywood and woodchips shall then be removed and the tree protection fencing installed along the outer edge of the tree protection zone.

**TREE 29 Additional Required Tree Protection Measures.**

I D	Species	Latin	DB H	Spre ad	Condition - Health	Condition - Structure	Landmark Grove <sup>8</sup> Exceptional	Develop ment	TPZ- Radius [ft]	CRZ - Radius [ft]	Notes
2 9	Big leaf maple	<i>Acer macrophyllum</i>	36.8	40	Good	Good	Exceptional	R-Viable	36.8	18.4	Nice specimen tree

Big leaf maples have a low tolerance to construction and are not tolerant of fill. (Mathey, Clark). Removal of the asphalt under the tree is required. If done with care the removal of the asphalt will have many health benefits for the tree and greatly increase its long-term viability. Originally it was proposed to remove the asphalt and install pavers. The installation of the pavers has been removed from the plans. The following shall be done to ensure that the maple tree has little to no impact from the proposed work.

- 1) All work within the trees CRZ and TPZ shall be overseen by a Qualified ISA or ASCA Arborist. The Arborist shall have the authority to stop all work needed to protect the tree.
- 2) The asphalt shall be removed with a small to medium sized track hoe or mini excavator.
- 3) The asphalt shall be removed slowly so as not to injure any roots that may be near the surface, and in such a manner that the equipment stays on the undisturbed asphalt.
- 4) Immediately upon completion of the asphalt removal; the 6’ tall chain link tree protection fencing shall be installed along the TPZ, and inspected, prior to any additional construction activity commencing.
- 5) 4-inches of woody mulch or bark shall be installed under the tree’s dripline (keep mulch a min. of 8-inches away from the tree’s trunk). Watering with roughly 1 to 1.5-inches of water is recommended as well.
- 6) Supplemental watering shall be done bi-monthly June – September as needed.
- 7) These requirements are in addition to the tree protection details found in Attachment-3.



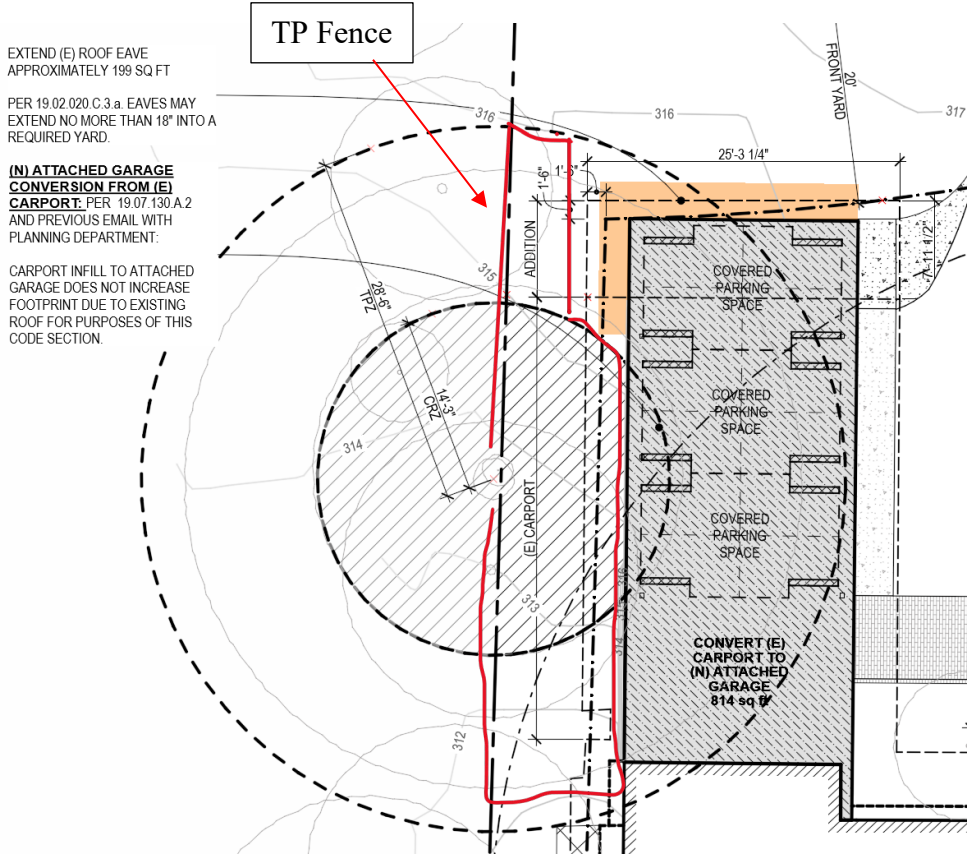
<sup>8</sup> [MMCC 19.16.010](#) Grove = 8 or more trees ≥ 10-inches DBH that form a continuous canopy (exceptional unless hazardous).

**TREE #38 Additional Required Tree Protection Measures.**

38	Douglas fir	<i>Pseudotsuga menziesii</i>	38	37	Good	Good	Exceptional	R-Viable	28.5	14.25	Good health and vigor
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Douglas fir trees are listed as moderately tolerant to construction and tolerant to root pruning (Mathey, Clark). Tree #38 was in good health and vigor at the time of my assessment. As the proposed work<sup>9</sup> is outside the CRZ, will only impact a small portion of the TPZ, and minimal root pruning is anticipated; it is my professional opinion that the proposed work is viable and should have little to no long-term impact of tree #38, provided:

- 1) Install 6' tall chain link fencing along the TPZ/CRZ. Fencing shall be installed, and inspected, prior to any construction activity. (Install as shown below).
- 2) A Qualified ISA or ASCA Arborist Shall oversee ALL work that is done within the TPZ.
- 3) The Arborist shall prune any roots 1-inch in diameter or greater with a Sawzall or like device.
- 4) The Arborist shall have the authority to stop any and all work within the (as needed) to protect the tree.
- 5) These requirements are in addition to the other tree protection details listed.



<sup>9</sup> In lieu of over excavations below the new garage footings, we understand that the footings will be supported on 2-inch diameter pin piles, as shown on Sheet S2.1 of the current structural plans, with revisions dated October 1, 2024. Our recommendations for 2-inch pin piles are provided in our geotechnical report, with revisions dated June 5, 2024. We anticipate that the construction excavations for the new footing construction will be limited to no more than about 2 to 3 feet below existing grades. In our opinion, the excavations will not negatively impact the tree root zones site. As such, no mitigation measures are required.

**ATTACHMENT 4 - MULCHING**

Mulching is one of the easiest and most effective ways to improve urban soil quality entry health. Mulching is the application materials to the soil surface to improve or protect the tree and/or soil. Most materials can be organic or inorganic. When selecting mulch, organic materials are usually preferred over inorganic materials. Organic mulches moderate soil temperatures reduce soil compaction and erosion, and increase soil organic matter; thereby stimulating microbial activity, soil aggregation, and nutrient availability. Inorganic mulches may be fire resistant, do not decompose, reflect, or transfer heat more readily into the soil, and tend to be more stable when exposed to high wind or flooding.

**Table 2) Potential uses and limitations of typical mulches for urban trees.**

Mulch	Uses									Limitations					
	Prevent compaction	Prevent erosion	Limit evaporation	Deter past	Control weeds	Promote aggregation	Increase organic matter	Increase nutrients	Expensive or limited availability	Crusting or matting	Unstable	Anaerobic soils	Salts or contaminants	Potential N immobilization	Temporary or unknown effects
Grass clippings		X				X	X	X		X	X				X
Fresh leaves		X				X	X	X		X					X
Needles		X	X			X	X	X							
Hay/straw		X	X			X	X	X						X	
*Arborist woodchips	X	X	X		X	X	X	X						X	
Bark	X	X	X	X	X	X	X	X						X	
Eucalyptus		X	X	X		X	X	X	X						
Cypress		X	X	X		X	X	X	X						
Pecan shells		X	X			X	X	X	X						
Leaf mold		X	X			X	X	X		X					
Compost		X	X			X	X	X				X			
Fabrics		X			X				X		X				
Recycled rubber	X	X		X	X				X			X			
Stone/gravel	X	X			X				X						
Black plastic		X	X		X				X		X				

\*Arborist woodchips are less costly and hold up better, they are the preferred mulch, in moderate to high traffic areas.

## Mulching guidelines for urban landscapes

1. Depth of mulch application is dependent upon mulch texture, density, material decomposition rate, and climate. Wooden chip mulch should be applied and maintained at depths of 3-6 inches for trees. Materials that are finer, denser, and slower to decompose should be applied at lesser depths. thicker mulch layers should be applied in arid regions to retain more water in the soil.
2. Apply a sufficiently thick layer of mulch, usually 2-4 inches, to kill existing weeds and prevent new weed seeds from germinating or reaching the soil surface. If thinner layers are applied, kill or remove weeds prior to installing mulch.
3. Do not place impervious plastic sheeting or fabric barriers under mulch. Impervious barriers stop water movement and limit incorporation of organic matter into the soil.
4. The mulch area should cover as much of the tree root zone as possible, from near the trunk to the dripline, is considered ideal.
5. For recent transplants, mulch beyond the root ball. The minimum recommended radius is 3 feet. Maintain mulch for at least three years to facilitate root growth and protect trees from mechanical damage.
6. For larger existing trees, the minimum radius for mulch is at least three times the trunk diameter.
7. Mulch applied as a continuous bed around multiple trees is more effective than single rings around individual trees.
8. Average chip size of most organic mulches should be 1-2 inch.
9. Avoid woodchips from trees that are known to have allelopathic affects (e.g., *Juglans nigra*) and from individual trees that may have soil transmittable diseases (e.g., Verticillium wilt).

On wet sites, soil drying can be promoted by removing organic mulches. Be aware of some other potential negative impacts of mulches, including: toxicity (allelopathy and “sour” anaerobic mulches with pH of <2.5), slime molds (unsightly, but mostly harmless), matting (hydrophobic layers from fungal mats and mulches), flammability, and some fungus problems (e.g., *Sphaerobolus*, *Mutinuscaninu*, and *M. elegans*).

**ATTACHMENT 5 - TREE INVENTORY AND REPLACEMENT**

**TREE INVENTORY & REPLACEMENT SUBMITTAL  
 INFORMATION**

**EXCEPTIONAL TREES**

*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	2
List tree numbers: 29, 38	
Number of trees 24” or greater (including 36” or greater)	7
List tree numbers:	26, 27, 29, 33, 36, 38, 40
Number of trees from Exceptional Tree Table (MICC 19.16)	
List tree numbers: 29, 30, 31, 33, 38, 42	

**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	16 (A)
List tree numbers: 26-34 36-42	
Number of Large Regulated Trees on site proposed for removal	0 (B)
List tree numbers:	
<b>Percentage of trees to be retained ((A-B)/Ax100) note: must be at least 30%</b>	<b>100 %</b>

**RIGHT OF WAY TREES**

*Right of Way Trees- 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	0
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.

Diameter of Removed Tree (measured 4.5' above ground)	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	0	0
Greater than 24" up to 36"	3	0	0
Greater than 36" and any Exceptional Tree	6	0	0
<b>TOTAL TREE REPLACEMENTS</b>			0

	Total Trees	Hazard Non-Viable	Conflict W/ plans	Trees Retained	Viable Trees Removed	Replacement Ratio	Required Replant
<b>&gt;36+&amp;Exceptional</b>	6	0	0	6	0	6:1	0
<b>Lg 24-36</b>	4	0	0	4	0	3:1	0
<b>Lg 10-24</b>	6	0	0	6	0	2:1	0
<b>Small &lt; 10<sup>10</sup></b>	1	0	0	1	0	1:1	0
<b>Small &lt; 10</b>	0	0	0	0	0	Exempt	0
<b>TOTAL</b>	17	0	0	17	0		0

<sup>10</sup> In a Critical Area or Critical Area Buffer or On Public Property.

**ATTACHMENT 6 - EXCEPTIONAL TREE LIST**

[MICC 19.16.01](#) (T) for Exceptional Tree List

<b>Native Species</b>	<b>DBH</b>	<b>Non-native</b>	<b>DBH</b>
Oregon ash –Fraxinus latifolia	2-ft	APPLE -Malussp.	1 ft 8 in
Quaking Aspen-Populus tremuloides	1-ft	European ASH - Fraxinus excelsior	1ft 10in
Paper Birch-Betula Papyrifera	1-ft 8in	GreenASH—Fraxinus pennsylvanica	2ft 6in
Cascara-Rhamnus purshiana	8 in	RaywoodASH—Fraxinus oxycarpa	2ft
Western red cedar-Thuja plicata	2 ft 6 in	EuropeanBEECH—Fagus sylvatica	2ft 6in
Pacific crab apple-Malus fusca	1 ft	European White BIRCH — Betula pendula	2ft
Pacific Dogwood-Cornus nuttallii	6 in	Atlas CEDAR—Cedrus atlantica	2ft 6in
Douglas fir-Pseudotsuga menziesii	2 ft 6 in	Deodor CEDAR—Cedrus deodara	2ft 6in
Grand fir-Abies grandis	2 ft	Incense CEDAR—Calocedrusdecurrens	2ft 6in
Black Hawthorn-Crataegus douglasii	6 in	Flowering CHERRY — Prunus sp.	1ft 11 in
Western hemlock-Tsuga heterophylla	2 ft	Lawson CYPRESS—Chamaecyparis lawsoniana	2ft 6in
Madrona-Arbutus menziesii	6 in	Kousa & Eastern dogwood-Cornus kousa/florida	1ft
Big leaf Maple-Acer macrophyllum	2 ft 6 in	AmericanELM—Ulmus americana	1ft
Dwarf / Rocky Mountain Maple Acer glabrum var. Douglasii	6 in	EnglishELM—Ulmus procera	2ft 6in
Vine Maple-Acer circinatum	8 in	GINGKO—Ginkgobiloba	2ft 6in
Oregon white or Garry oak Quercus garryana	6 in	HAWTHORN Crataegus laevigata	2ft
Lodge pole pine-Pinus contorta	6 in	WashingtonHAWTHORN—Crataegusphaenopyrum	1 ft 4 in
Shore pine - Pinus contorta	1 ft	EuropeanHORNBEAM—Carpinus betulus	9in
Western white pine-Pinus monticola	2 ft	KATSURA — Cercidiphyllum japonicum	1ft 4 in
Western serviceberry-Amelanchier alnifolia	6 in	Little leaf LINDEN—Tiliacordata	2ft 6in
Sitka spruce – Picea sitchensis	6 in	HoneyLOCUST—Gleditsiatriancanthos	2ft 6in
all native willows – Salix ssp.	8 in	SouthernMAGNOLIA—Magnoliagrandidiflora	1ft 8 in
Pacific yew – Taxus brevifolia	6 in	PaperbarkMAPLE—Acergriseum	1ft
		JapaneseMAPLE—Acerpalmatum	1ft
		RedMAPLE—Acer rubrum	2ft 1 in
		SugarMAPLE—Acer saccharum	2ft 6in
		SycamoreMAPLE—Acerpseudoplatanus	2ft
		MONKEY PUZZLE TREE—Araucaria araucana	1ft 10in
		MOUNTAIN-ASH—Sorbusaucuparia	2ft 5 in
		PinOAK—Quercus palustris	2ft 6in
		RedOAK—Quercus rubra	2ft 6in
		CalleryPEAR—Pyrus calleryana	1ft 1 in
		Austrian BlackPINE—Pinus nigra	2ft
		PonderosaPINE—Pinus ponderosa	2ft 6in
		Scot'sPINE—Pinus sylvestris	2ft
		LondonPLANE—Platanus acerifolia	2ft 6in
		Flowering PLUM—Prunus cerasifera	1ft 9 in
		Coastal REDWOOD—Sequoiasempervirens	2ft 6in
		GiantSEQUOIA—Sequoiadendron giganteum	2ft 6in
		Japanese SNOWBELL—Styrax japonica	1ft
		AmericanSWEETGUM—Liquidambar styraciflua	2ft 3 in
		TULIPTREE—Liriodendron tulipifera	2ft 6in
		WILLOW(All nonnative species)	2ft

## **ATTACHMENT 7 - ASSUMPTIONS AND LIMITING CONDITIONS**

1. A field examination of the site was made for this report (date referenced in report). Reasonable care has been taken to obtain information from reliable sources, however, the certified/consulting arborist cannot guarantee the accuracy or validity of information provided by any outside sources.
2. Information provided in this report covers only tree's that were indicated for examination in the assignment and reflects the apparent condition of those tree(s) at the time of inspection. This inspection is limited to a visual method of the trees in question, excluding any core sampling, probing, dissection, aerial inspection, or excavation unless noted in writing and is contingent upon the appropriate fee for such services having been authorized in writing. There is no guarantee nor warranty, expressed or implied that any problems with any trees may not arise in the future.
3. All drawings, sketches, and photographs submitted with this report, are intended as visual aids only, and are not exact to scale. They should not be construed as engineering or architectural report or surveys unless noted and specified.
4. The certified/consulting arborist is not required to give any testimony or to attend meetings or dispute resolution proceedings relating this report unless subsequent contractual arrangements and fee agreements are made.
5. Any alterations made to this report automatically invalidates this report.
6. This document is protected by copy right laws©. Unless otherwise required by law, possession of this report or a copy of this report does not imply a right of publication or use for any purpose by anyone other than the person for whom it was created without prior expressed written permission and verbal consent of the certified/consulting arborist.
7. The report and values/opinions expressed, represent the work of the certified/consulting arborist, and the arborist's fees are in no way contingent upon the reporting of any specified values, stipulated results, or occurrence of a subsequent event.

## ATTACHMENT 8 - REFERENCES

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