February 13, 2018

John Kenney, City Arborist

Cc: Robin Proebsting, Senior Planner

City of Mercer Island Development Services Group
9611 SE 36th Street, Mercer Island, WA 98040

Dear John,

Through our Tangled Ride Trust, we own the property at 6025 77th Avenue SE and plan to build a new single family home there. The property has a long, narrow driveway which is the only access point at the north end of the site (the site is a flag lot, as described in MICC (19.02.020)(F)(3)(e)(ii)(2)). We have worked carefully to design and locate the house to minimize tree removal: 10 of the 12 trees on the property (as outlined in the arborist report) will be retained. We have also worked to minimize the removal of large trees: 6 of the 8 trees over 10" diameter will be retained. We have worked to maximize on-site tree retention: 75% of the regulated trees on the site will be retained, and protected by tree protection fencing throughout the project as well as other steps to ensure compliance with MICC (19.10.080). For tree replacement we plan to use species native to the Pacific Northwest, as per MICC (19.10.070)(B)(2), and replacement trees will follow the other regulations outlined in MICC (19.10.070).

While we are maximizing tree retention, there are two trees at the north end of the property, a 35" Western Red Cedar (#1) and 22" Scots Pine (#9) that are intended to be removed for the construction of our new home. The 22" Scots Pine (#9) sits squarely within the buildable area and must be removed to enable a new house to be built. The 35" Western Red Cedar (#1) is located at the only entry to the buildable area of the lot. Per the Mercer Island city code, The 35" Western Red Cedar is considered an exceptional tree. It is located adjacent to the existing carport, which will be removed for construction. Based on the arborist report provided by certified arborist Anthony Moran, page 6, the Western Red Cedar is "*well into the decline cycle. The additional stress of any degree of construction impact will most likely result in this tree going into a rapid degeneration*." In addition, the removal of the existing carport will damage the tree roots. See page 4 of the arborist report: *"The demolition of the existing concrete could disrupt its SRP significantly*." Page 5 states:

> "*Even if the new garage is built exactly in the same footprint as the carport slab and the new house is pushed as much as 40' away, just the construction traffic of dump trucks and excavators would severely damage if not fully destroy the cedar's roots in the southern sector. There are no means to prevent further impact to this tree if a construction project is going to occur on this site. And any impact will be severely detrimental to this tree.*"

As stated above, any impact will be detrimental to this tree, creating an unavoidable overall hazardous situation for workers, neighbors, and property within three years. As defined by MI Code 19.10.060A3a, a tree that creates an unavoidable hazardous situation can be removed.

Anthony Moran has provided an additional addendum letter that provides further explanation for the removal of the 35" Western Red Cedar, #1. The included diagram illustrates the location of the tree's Structural Root Plate and Critical Root Zone. The Structural Root Plate and Critical Root Zone are better indicators of the tree's structural system than the Drip Line designation, as the tree's drip line may have been modified over the years by limbing and storms. The SRP extends radially 10'-0"; the CRZ extends radially out 35'-0". The diagram is a clear indicator that given its location adjacent to the only site access and its proximity to the carport, the tree will not be able to avoid impact from construction. Moran states in his cover letter:

> "*There is no way to work around this tree within the constraints of this site. The tree is in distress and limited rooting space. Disturbing it in any way will more likely than not result in the tree going into rapid decline. Just removing the existing slab will disturb the SRP. Building the footings for the new garage will damage even more critical roots. Driving through the yellow zone with construction equipment will damage close to 30% of the cedar's viable existing roots which will definitely push this tree over the edge*."

In our initial meeting with you on October 10th, 2017, you listed in the meeting notes: "Moving garage to previously compacted area may be an option to retain 38" c". The east side of the existing carport is a few feet beyond the east setback: in other words, out of the allowed buildable area. The remaining area is too narrow for a two car garage. In addition, new foundations per current structural codes will be deeper than the existing carport slab. These new foundations will cut more into the existing root system. While we appreciate the suggestion of ways to save the Western Red Cedar, it is impossible to proceed with construction on this site and not create a hazardous tree situation, per Mr. Moran's letter.

We have attached two diagrams created by Stuart Silk Architects with the aid of Anthony Moran.

The first diagram, Setback Diagram, illustrates the narrow and only buildable area of the property. Tree #1 is located at the only entry to the buildable area. Its CRZ covers the entire possible entry area to the site. Any construction on this site will send the tree into rapid decline and create an unavoidable hazardous situation. For this reason, MICC 19.10.060.A.3 permits this tree to be removed.

The second diagram, Site: Demo and Tree Retention Plan, illustrates the construction access, limits of excavation, trees to be retained, removed and new trees to be planted. The exceptional Western Red Cedar, #1 and the 22" Scots Pine are to be removed. However, the exceptional 37" Douglas Fir to the south of the property will be retained and not impacted by construction. The total diameter of trees to be retained is 75% (detailed in the Tree Inventory Submittal Form). The focus is to prioritize trees that have a 'greater likelihood of longevity', per MICC 19.10.010 C.2.

Our main concern, of course, is the health and safety of our family, neighbors and construction crew. We also share concern for the protection of our property as well as our neighbors. The arborist's report identifies that any construction in the CRZ of Western Cedar #1 will create an unavoidable hazardous situation. The stress and liability of constantly monitoring a distressed tree through its decline is not a comfortable strategy for our family. We have concerns the tree will fall down in a storm, which would likely result in considerable property damage and/or personal injury. This is an unnecessary risk to our family and neighbors.

The arborist report clearly outlines the reasons why tree # 1 must be removed. The tree creates an unavoidable overall hazardous situation for workers, neighbors, and property within

three years. As defined by MI Code 19.10.060A3a, a tree that creates an unavoidable hazardous situation can be removed. We request that the city comply with the arborist's recommendations and permit the removal of this tree.

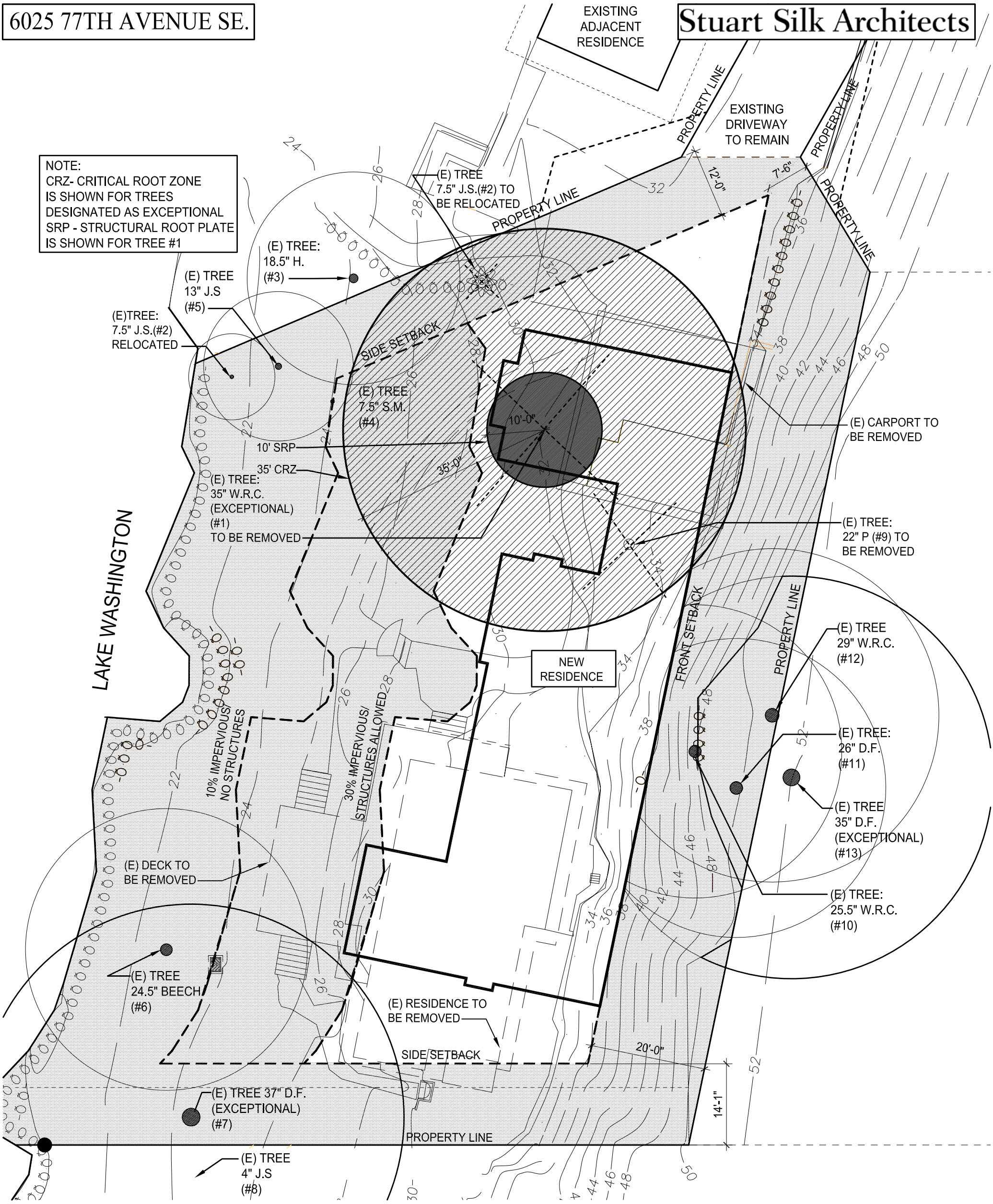
Thank you for reading this report. We look forward to hearing from you soon.

Signed,

Kristin and Greg Hart

6025 77TH AVENUE SE.

Stuart Silk Architects



THIS DIAGRAM ILLUSTRATES SETBACKS REQUIRED BY THE CITY OF MERCER ISLAND. ALL SETBACKS ARE SHOWN SHADED.

THE PROPERTY HAS ONLY POSSIBLE CONSTRUCTION AND PERMANENT ACCESS FROM THE NORTH.

THE POSSIBLE BUILDABLE AREA IS A NARROW STRIP RUNNING NORTH / SOUTH DUE TO SETBACK LIMITATIONS.

THE LOCATION OF TREE #1 WITH A CRZ OF 35' CREATES A SITUATION IN WHICH ANY CONSTRUCTION ACCESS AND HOUSE LOCATION ON THE SITE WILL UNDOUBTEDLY HARM THE TREE. PER THE ARBORIST REPORT, ANY CONSTRUCTION ON THE SITE WILL DISTURB THE TREE ROOTS AND SEND IT INTO RAPID DECLINE.

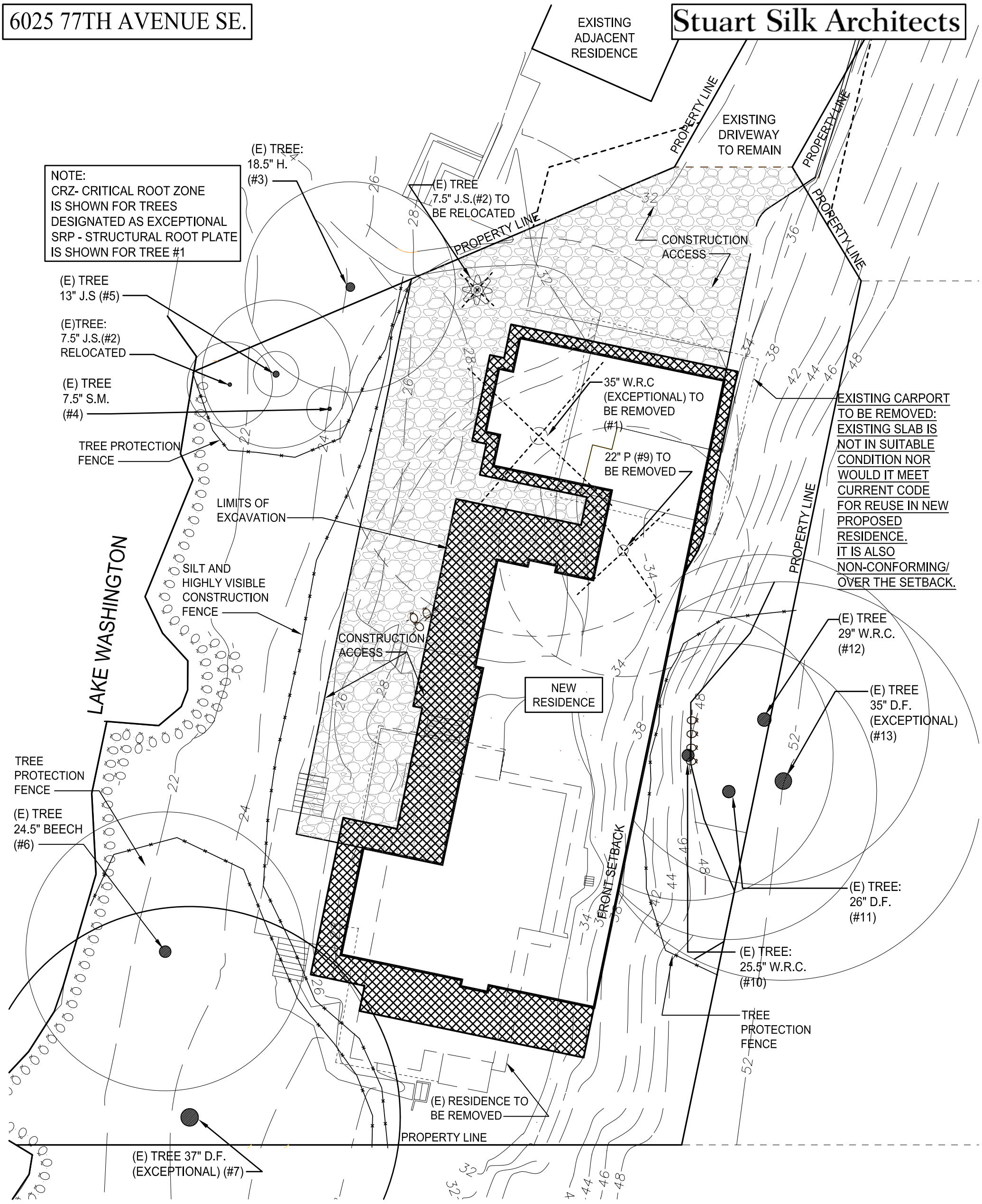
PER MICC 19.10.060.3.A.:
REMOVAL OF EXCEPTIONAL TREES WITH A DIAMETER OF 24 INCHES OR MORE,
SHALL BE LIMITED TO THE FOLLOWING CIRCUMSTANCES:
RETENTION OF AN EXCEPTIONAL TREE WITH A DIAMETER OF 24 INCHES OR MORE WILL RESULT IN AN UNAVOIDABLE HAZARDOUS SITUATION

1 SETBACK DIAGRAM

SCALE: 1/16" = 1'-0"

6025 77TH AVENUE SE.

Stuart Silk Architects



THIS DIAGRAM ILLUSTRATES CONSTRUCTION ACCESS, LIMITS OF EXCAVATION, TREES TO BE RETAINED, TREES TO BE REMOVED.
THE PROPERTY IS CONSIDERED A 'FLAG LOT' WITH ONLY POSSIBLE CONSTRUCTION AND PERMANENT ACCESS FROM THE NORTH.

PER MICC 19.10.010 C.2. TREE CODE OVERVIEW:
RETENTION OF SOME TREES IS REQUIRED. AT A MINIMUM, 30% OF TREES WILL NEED TO BE RETAINED. TREES THAT ARE EXCEPTIONAL, ARE LARGE, AND HAVE A HIGH LIKELIHOOD FOR LONG TERM SURVIVAL ARE PRIORITIZED FOR RETENTION. (SEE SECTION 19.10.060 FOR DETAILS)
(3) TREES THAT HAVE A GREATER LIKELIHOOD OF LONGEVITY;

REGULATED TREES TO BE RETAINED WITH GREATER LIKELIHOOD OF LONGEVITY: 6 TREES: EXCEPTIONAL TREE 37" D.F. #7, #5, #6, #7,#10, #11, #12.
TOTAL RETENTION IS 75% OF REGULATED TREES ON SITE. SEE TREE INVENTORY AND REPLACEMENT SUBMITTAL FORM
TREES TO BE REMOVED: #1, #2, #9. TREE #1 IS CONSIDERED EXCEPTIONAL BY SIZE BUT DOES NOT HAVE A LIKELIHOOD OF LONGEVITY.
PER THE ARBORIST REPORT, ANY CONSTRUCTION ON THE SITE WILL DISTURB THE TREE ROOTS AND SEND IT INTO RAPID DECLINE.

8 NEW TREES WILL BE PLANTED PER MICC 19.10.070 TREE REPLACEMENT. NEW TREES ARE LABELED WITH LETTERS A - H .

2 SITE : DEMO AND TREE RETENTION PLAN

SCALE: 1/16" = 1'-0"

Superior NW Enterprises

October 28, 2017

Project: Pre-construction assessment for lot re-development at 6025 77th Avenue SE, Mercer Island, WA. Parcel number 4097100075.

Contact: Lisa Sidlauskas – Stuart Silk Architects
2400 N 45th Street, Suite 200, Seattle, WA 98103
Phone – 206 728 9500 ext 117 Email – lisas@stuartsilk.com

Objectives: Evaluate health of existing trees and establish criteria for the preservation of those to be retained.

Description: The main layout of the 6025 parcel has been mostly undisturbed for more than forty years. The original home was built in 1944 along with detached garage/carport. The carport is about 40' north of the main house and sits in the 'bottleneck' of the lots shape (Figure 1). The largest of the trees currently onsite have most likely been in place since home was built. The 6005 house to the north was built in 1996 and few changes have taken place on that lot since the original construction. The 6027 house on the east side of the main part of the partial was built in 1975 and no changes have taken place since that time. The 6049 house on the south side of the subject property was recently demolished and excavation for a new house was occurring during the October 2017 site visit.

The property was purchased in May of 2017 and the new owners have proposed tearing down the existing house and replacing it with one having a somewhat different footprint (Figures 2 and 3). Superior NW Enterprise was contacted and asked to assess all the trees present on the lot as to their health, stability, and overall suitability for retention.

The following itemized tree list begins in the center of the north end of the property and their numerical designations are reflected in Figure 4. Diameters were measured at the standard height of 54" above grade (DSH) during the October 2017 site visits. Caliper measurements were made at 6" above grade. Heights were estimated. Trees were tagged with 1.5" orange circular markers near the 6' level.

1) Western Red Cedar (*Thuja plicata*) 35" DSH, 70' tall standing 6' W of the carport foundation and 7' N of the SW corner of the shop. It has large subordinates starting low on the west side which curl to the vertical (Figure 5). The densest part of its canopy is in the lower half of the column. There is evidence of root uplift under the entrance walk which runs between the tree and the garage. The tree exhibits below average new growth and poor color in the upper canopy, close to average in the lower. It bifurcates E/W near the 50' level as shown in Figure 6.

2) Japanese Snowbell (*Styrax japonica*) 7.5" DSH, 20' tall, 8' spread standing 18' NW of tree #1. The tree exhibits average new growth and color and is in fair condition.

3) Hornbeam (*Carpinus betulus* 'Fastigiata') 18.5" Cal, 35' tall, 9' spread mainly to the north standing 25' WNW of tree #2. It is most likely on the 6005 side of the angled property line in this area. The tree has 12 stems between 3" and 9" rising vertical after the 18" level. It exhibits average new growth and color and is in fair condition.

4) Star Magnolia (*Magnolia stellata spp*) 7.5" DSH, 25' tall, 7' spread standing 19' S of tree #3. The tree exhibits average new growth and color and is in fair condition.

5) Japanese Snowbell 7.5", 8", and 9.5" DSH, 25' tall, 14' spread standing 10' W of the #4 tree, 10' E of a property line marker post at the edge of the seawall. The stems separate at the 36" level coming off a 13" caliper trunk. The tree is in fair condition with average color and new growth. It is slightly one-sided to the NW most likely due to the over shadowing of a much larger tree which used to be to its south.

6) Beech (*Fagus sylvatica*) 24.5" DSH, 50' tall, 18' spread standing 39' N of the SW property corner marker and 12' E of the seawall. The tree separates at the 6' level into three main leaders. The connection point is strong with no signs of an active fracture plane. It is in good condition.

7) Douglas Fir (*Pseudotsuga menziesii*) 37" DSH, 90' tall standing 25'NE of the SW corner property marker stake and 20' E of the seawall. It is in average condition with a fairly full canopy extending below the halfway point of the column, normal new growth, and decent color. Has a good height to diameter ratio. The excavating on the 6031 property has done light disturbance 17' from the base of the tree in its SE quadrant. There is a silt/protection fence stretched out along that line. Did not appear to have torn into the roots.

8) Japanese snowbell 4", 6", 6", and 9.5" DSH (separating at the 22" level on a 13" caliper base), 15' tall, 10' spread standing 11' S of the #7 fir. It is in fair condition.

9) Scots Pine (*Pinus sylvestris*) 22" DSH, 45' tall standing 8' S of the foundation of the shop section of the existing carport and 12' E of its SW corner. Fair condition.

10) Western Red Cedar 25.5" DSH, topped or damaged near the 40' level, and has several spars rising 15-20' above this point (Figure 7). It has large (16" caliper) spar which comes off the south side near the 8' mark and extends out to the SW as shown in Figure 8. All its canopy is on the west side of the tree. It stands at the top of a double, stone, retaining wall system about 18' NE of the NE corner of the existing house (Figure 9 and 10). The first wall is around 8' east of the house foundation and rises 4-5' above grade. There is an 8-10' somewhat level area above it before the second rock wall rises another 6' or so. The upper wall is breaking down (Figure 11) and the roots from this tree have pushed through in a number of places as shown in Figures 12.

11) Douglas Fir 26" DSH, 80' tall standing 12' ESE of #10 and either on, or just over, the east property line. It is in average condition with a canopy extending below the halfway point on the column, normal new growth, and fair color.

12) Western Red Cedar 29" DSH, 65' tall standing 13' ENE of #10 and 11' N of #11. It is in good condition. It may be on, or just over, the property line.

13) Douglas Fir 35" DSH, 110' tall standing 8' E and slightly N of the #11 tree. It is showing decent new growth and color. It is fully over the east property line.

There are various other trees and large shrubs with diameters less than 6" interspersed throughout the yard. Some of them, namely two Laceleaf Japanese, are worth salvaging if any way possible.

Methods: Tree assessment is both an art and a science. To properly perform, an arborist must have an extensive background in biology, tree mechanics, and tree structure that is equal parts academic and field knowledge. It takes years of study to recognize and correctly diagnose the subtle signs trees exhibit before their failure, whether it be partial or total. The process begins with a visual inspection (visual tree assessment, VTA) which is followed up as necessary with soundings, core testing, and/or other detection means. Each tree is examined and evaluated according to several factors including species type, size, vigor, injuries present, root and grade disturbance, deadwood, location and extent of decay, stem taper, exposure, and targets that are at risk.

The International Society of Arboriculture (ISA) has recently published a Best Management Practices bulletin to aid in their tree risk assessment program. This methodology for risk matter assessment will take the place of the standard ISA model currently in use. While focusing on a qualitative analysis the program is still based on three aspects of tree risk; failure potential, size of part failing (potential of damage from impact), and target rating. The aspects are scaled as follows. Failure potential (FP) can be imminent, probable, possible, or improbable. Target rating (T) is based on frequency of occupancy and is listed as very low, low, medium, or high. Selections are made in each of the first two categories and a likelihood of target impact found. It can be rated as unlikely, somewhat likely, likely, or very likely (see Figure 13). Obviously a level of null risk does not exist if a tree is present. For practical purposes however, arborists assume that if there is no target, the tree poses little or no risk.

The consequences of the failure, usually a function of size of the failed part, are listed as negligible, minor, significant, or severe. Combining the likelihood of a tree failure event with the consequences of that event allows a trained arborist to assign a level of risk to a given tree's situation. There are four acceptable categories within the model; Low, Moderate, High, or Extreme. The highest level, extreme, can only be assigned when the likelihood of failure and impact is high (very likely) and the consequences are severe (see Figure 14).

Discussion: There are two levels of impact at this site, primary and secondary. The primary area includes the environs immediately within the boundaries of the proposed new construction and the regions within ten feet of those boundaries. Typically all trees within this area are removed as part of the demolition process because of impact concerns. In this case the #1, #9, and #10 trees are in the primary zone. The #1 and #10 are special cases and will be addressed below.

The secondary impact area includes the trees which have root systems extending within the construction area. This region, the Critical Root Zone (CRZ), is a radial area extending out from the tree a distance equal to one foot per inch of diameter. For example, the #7 fir, with a 37" DSH, has a 37' radial CRZ.

Typically intrusion within the Critical Root Zone is strongly discouraged by the tree care industry. However trenching type incursion, that is excavation that will occur along only one sector of a tree's CRZ, can reach significantly into the root growth area without having a detrimental long term effect. What does have to be absolutely protected is a tree's Structural Root Plate (SRP). This radial area is again related to the diameter inches of the tree in question but not quite in a direct proportion as in the CRZ. Figure 15 below illustrates the relationship.

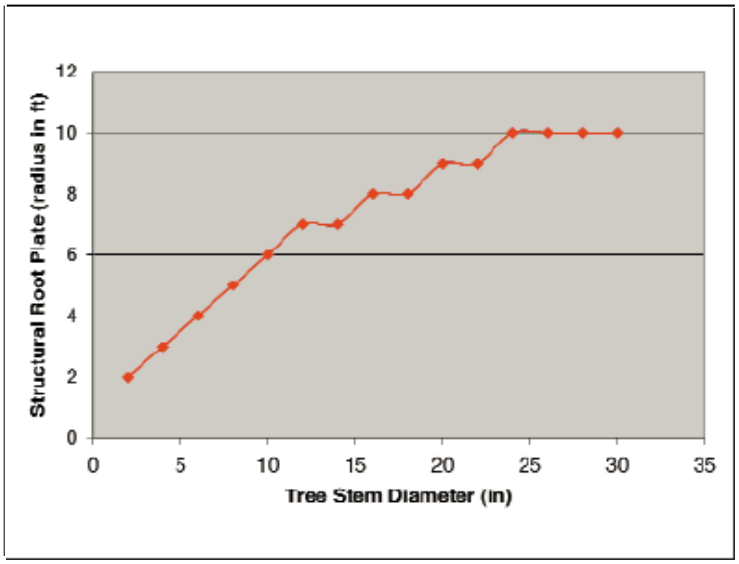


Figure 15. Size of the Structural Root Plate in relation to tree stem diameter. Note that the SRP levels off at 10' for any tree over 24" in diameter.

In the case of the #7 fir mentioned above, the demolition of the existing foundation could come as near as 28' to the base of the tree. From Figure 15 the Structural Root Plate for a 37" DSH tree is given as 10' so the foundation demolition should be well outside this tree's SRP.

Although the #10 cedar is within the primary impact zone it is being considered for retention. A new retaining wall is going to be built along the east side and it could come within 8' of this tree. However, in the area of the cedar it is slated to be only the height of the lower retaining wall. The existing upper rock wall is just 2' off the base of this cedar and it grew up with the wall in place. Even though the chart shows that the #10 tree should have a 10' SRP it is more likely than not the tree has adapted to its circumstances in such a manner that its west side structural roots do not extend to their full theoretical distance.

Looking at the #1 cedars situation, even though the existing carport slab is just 6' to its east and could be acting as a root barricade, the uplift of the walkway suggest that the tree is sending out structural roots in that direction. The demolition of the existing concrete could disrupt its SRP significantly. If the slab has been acting as a barricade than the structural roots for this cedar will most likely extend significantly further north and south than expected.

None of the other trees on site have SRPs which will be affected by the excavation work occurring on the site.

The chart shown in Figure 16 below is used to determine what percentage of a tree's Critical Root Zone will be affected by trenching type incursion. In general trees can sustain losses of up to 30% of the overall area within their CRZ without having long term detrimental results.

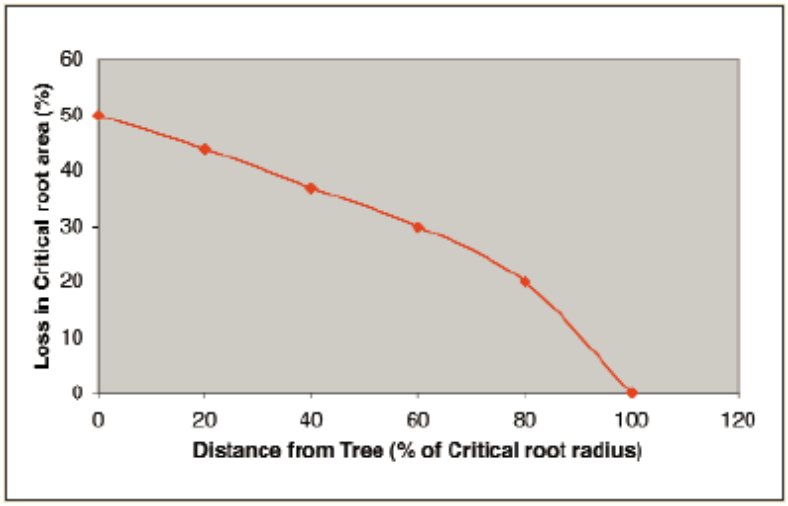


Figure 16. Chart giving the loss in critical root area as a function of the radial distance to the CRZ disturbance.

Using the #7 fir again as the example, with the foundation demolition being 28' from the tree's base and it having a 37" DSH, there will be impact at a linear distance equal to 62% of the fir's CRZ (28'/37'). The chart shows that this roughly equates to a 22% loss of the fir's Critical Root Area (CRA) putting it well within the maximum recommended impact guideline. The disruption in the SE quadrant from the neighbor's work has to be taken into account however. That work came to within 17' so perhaps 32% of the tree's CRA was impact initially.

The #10 cedar should have no net loss of CRA due to construction because it more likely than not has the majority of its root system above and to the east of the lower retaining wall.

The #1 cedar is worrisome because its feeder roots most likely fill to the north and south of the existing car port. They are probably concentrated to the south as the north side nutrient source is limited by the paved driveway and contained drainage of runoff water. While the original house is close to 60' away from the tree, giving it ample space for its roots, the foundation for the new one is just 16' south of the base of the tree. This cedar starts with an inherent 35% limitation because of the proximity of the slab. It loses another 10% due to the driveway cutting across the north side. If the new house is built as designed the tree would lose another 23% of its CRA which in reality would be closer to 35% because of the probable feeder root concentration to that side.

Even if the new garage is built exactly in the same footprint as the carport slab and the new house is pushed as much as 40' away, just the construction traffic of dump trucks and excavators would severely damage if not fully destroy the cedar's roots in the southern sector. There are no means to prevent further impact to this tree if a construction project is going to occur on the site. And any impact will be severely detrimental to this tree.

Recommendations: The #1 cedar should be removed during the demolition stage of the project. There is no possible way to preserve this tree with any expectation that it will survive more than five years post construction. While core tests taken did not show advanced center decay they did reveal quite limited new wood formation. This combined with the stunted new growth in the upper canopy suggests a tree that is well into its decline cycle. The additional stress of any degree of construction impact will most likely result in this tree going into a rapid degeneration.

The #9 pine has to be removed because it is directly in the way of doing anything on the site.

The #10 cedar can be retained but the retaining wall work around it will have to be monitored by a Certified Arborist as the work is occurring well within its CRZ. This tree also requires pruning mitigation to remedy the weakly attached upper spars and overweight subordinate. The spars should be cut back to near the original damage level and the subordinated should be headed back at least 15'. The hangers and deadwood also need to be extracted from the tree.

All the trees which are to be retained will have to be protected by laying down layers of mulch to cushion any impact to their roots and to prevent soil compaction. A rough rule of thumb would be 8-12" of mulch laid down out to 3' past the existing driplines as possible. Typically 6' chain link fencing is installed to designate no impact zones and is placed at the distance proscribed by the City of Mercer Island for non-incursion which is one linear foot per linear inch of tree diameter.

When the foundation demolition is being done a certified arborist will have to be on site to monitor the fence relocation and degree of root impact for the #7 tree and perhaps the #2 tree. If the work begins to expose roots, systematic hand root pruning, rather than tearing and shearing by machine, will have to be done. The number and caliper of any pruned roots will have to be documented.

Waiver of Liability Because the science of tree risk assessment is constantly broadening its understanding, it cannot be said to be an exact science. Every tree is different and performing tree risk assessment is a continual learning process. Many variables beyond the control, or immediate knowledge, of the arborist involved may adversely affect a tree and cause its premature failure. Internal cracks and faults, undetectable root rot, unexposed construction damage, interior decay, and even nutrient deficiencies can be debilitating factors. Changes in circumstance and condition can also lead to a tree's rapid deterioration and resulting instability. All trees have a risk of failure. As they increase in stature and mass their risk of breakdown also increases, eventual failure is inevitable.

While every effort has been taken to provide the most thorough and accurate snapshot of the trees' health, it is just that, a snapshot, a frozen moment in time. These findings do not guarantee future safety nor are they predictions of imminent events. It is the responsibility of the property owner to adequately care for the tree(s) in question by utilizing the proper professionals and to schedule future assessments in a timely fashion.

This report and all attachments, enclosures, and references, are confidential and are for the use of the Lisa Sidlauskas, Stuart Silk Architects, the Hart family, and their representatives only. It may not be reproduced, used in any way, or disseminated in any form without the prior consent of the clients concerned.

Anthony Moran, BS
ISA Certified Arborist
Qualified Tree Risk Assessor
#PN-5847A

Figure 1. Aerial overview of the subject (6025) and surrounding properties. Note the carport sits directly in the center of the only viable approach to the property (yellow circled area). The entrance is only 75' wide at this point, 15' of which is close vertical along the east side.

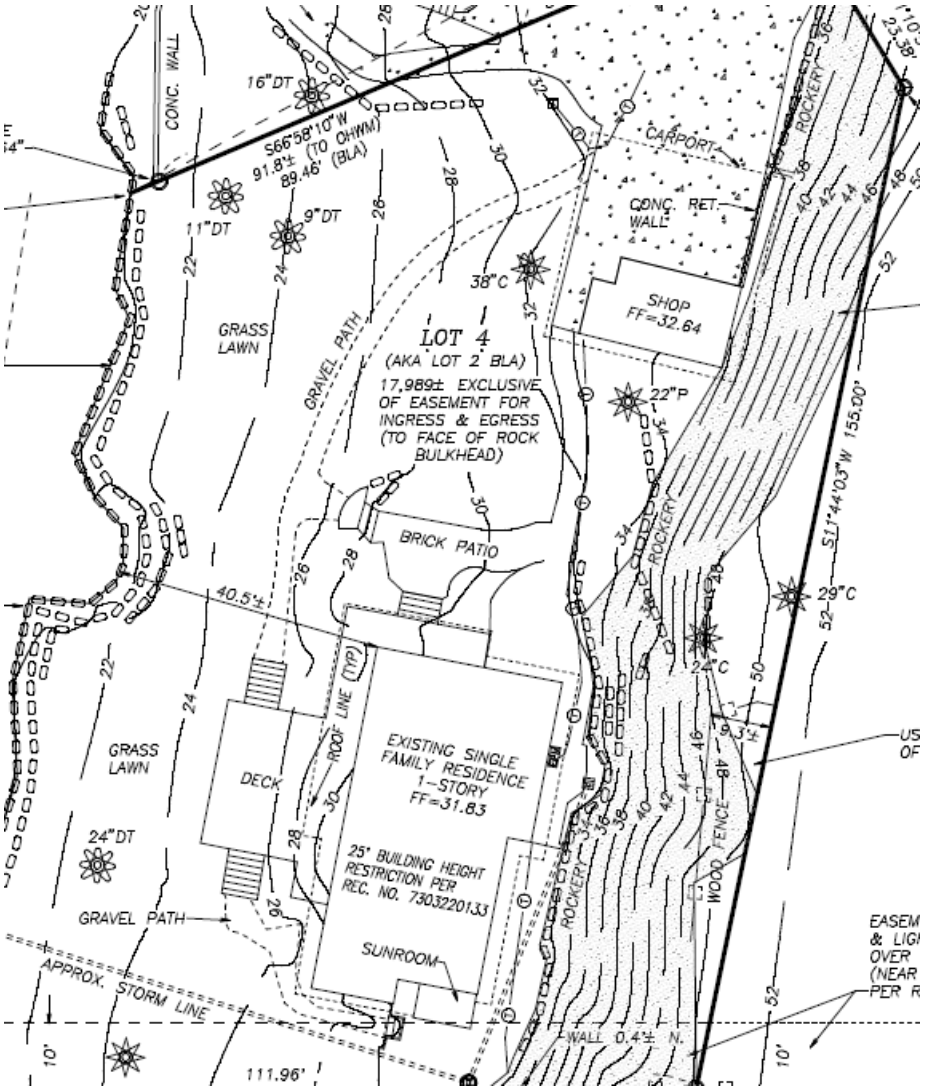


Figure 2. Excerpt from survey plans showing existing layout of property. Note steep section at right (east) side of the property and location of the carport at the top of the lot.

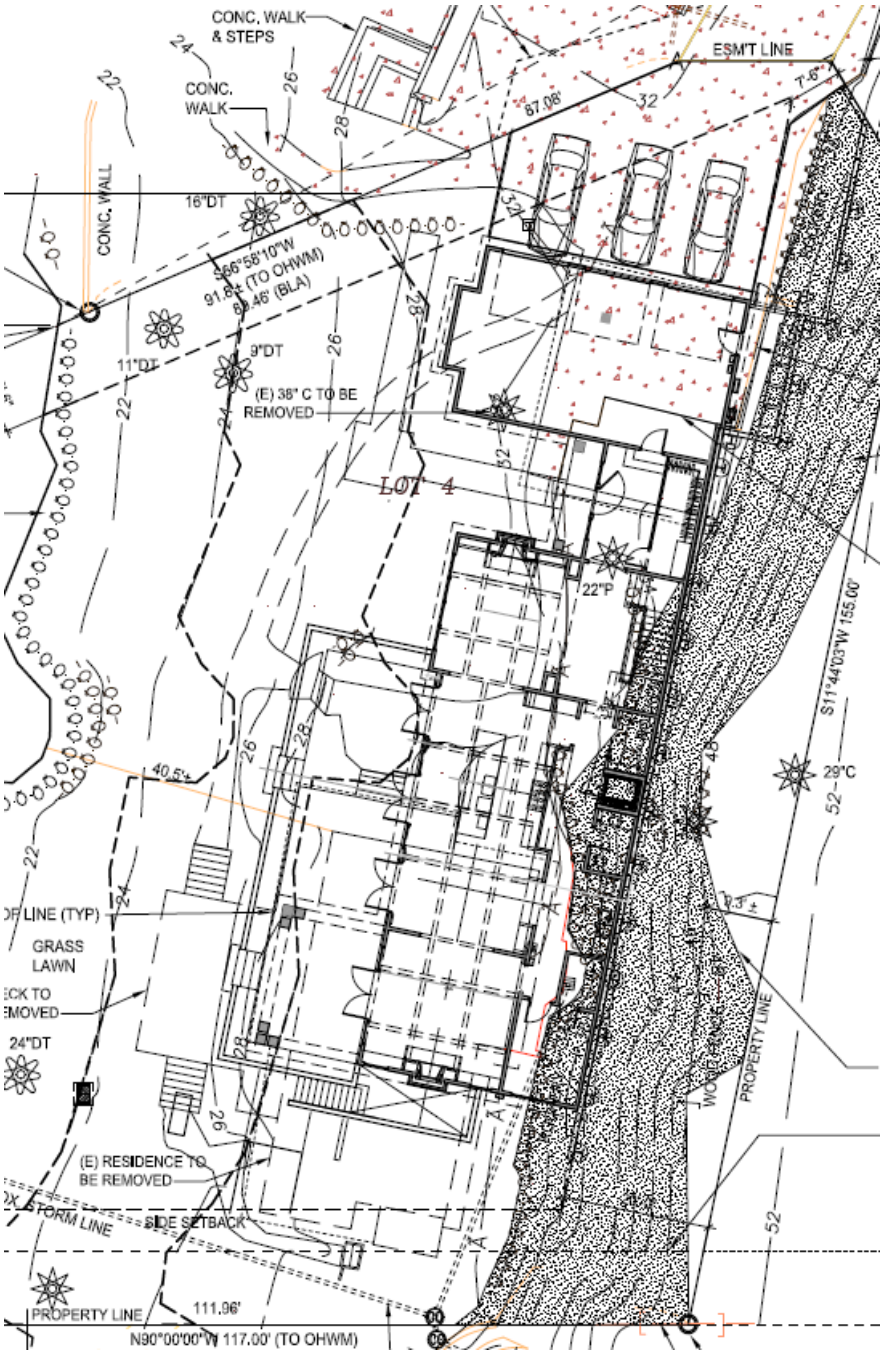


Figure 3. Excerpt from proposed plans showing layout for new home. The garage replacing the carport is about 15' wider than the original. The new house shifts about 10' to the east and is continuous with the garage.

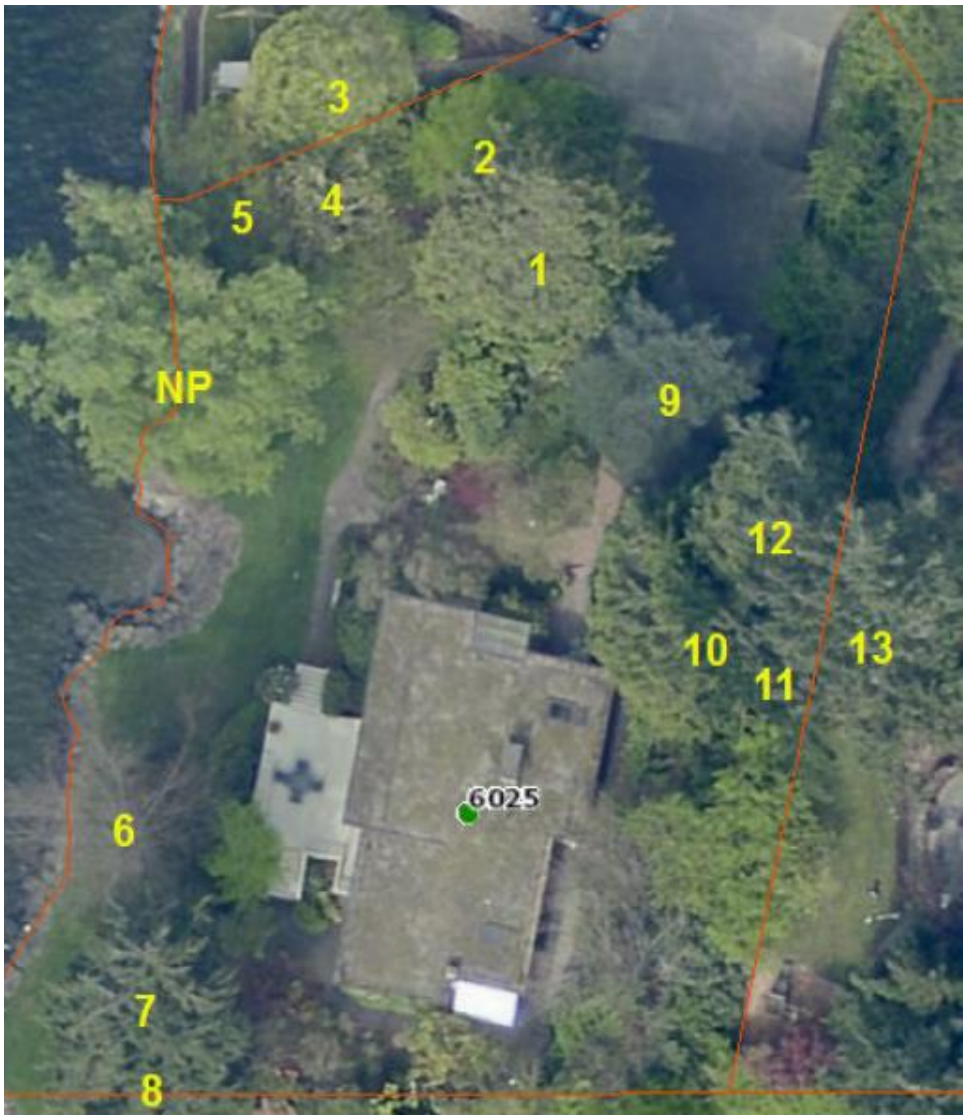


Figure 4. Aerial view of the subject property showing the approximate location of the trees listed in the description section (yellow numerals). Note that the #1 cedar is directly in the center of the approach to the construction area and the #9 pine will be in the middle of the proposed house. The tree labeled 'NP' was present in 2015 (time of this aerial photo) but is no longer present. There were no fresh cut signs or a fresh stump so it most likely was removed or failed in late 2015 or early 2016.

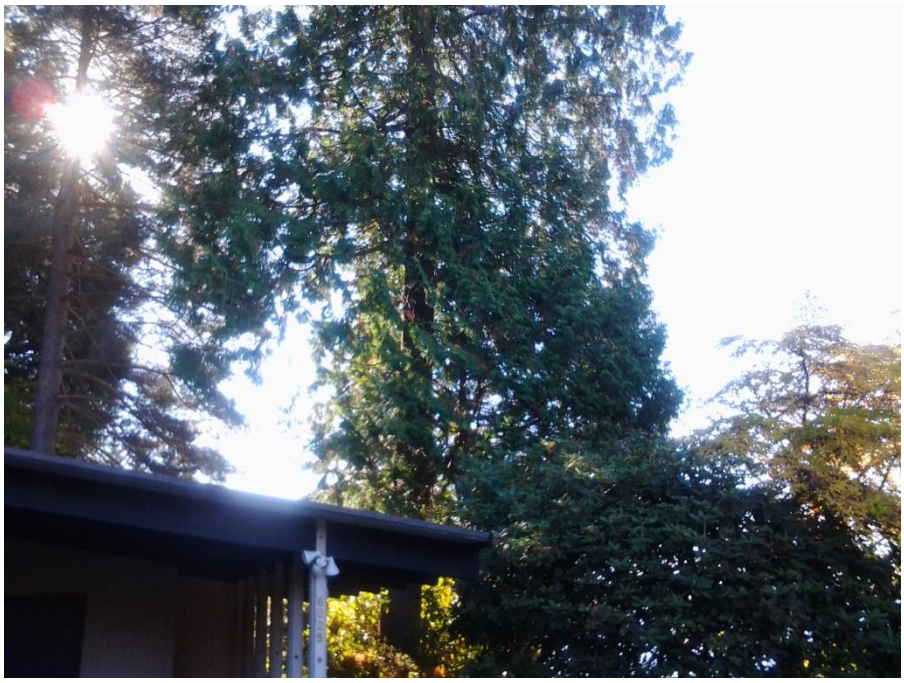


Figure 5. Photo of the #1 cedar showing the proximity to the carport and the density of the lower canopy.

Figure 6. Photo of the #1 cedar showing the sparse upper canopy and the bifurcated top.

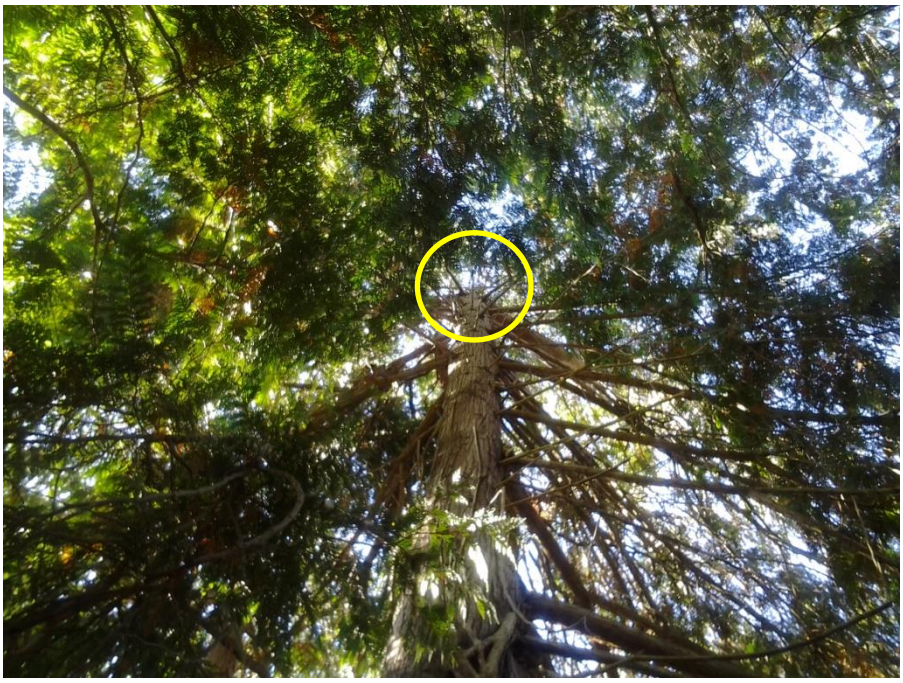


Figure 7. Photo looking up from the base of the #10 cedar. The main stem was damaged near the 40’ mark (yellow circle) and several spars grow up and out from this point at least two of which broke and are hanging in the tree.

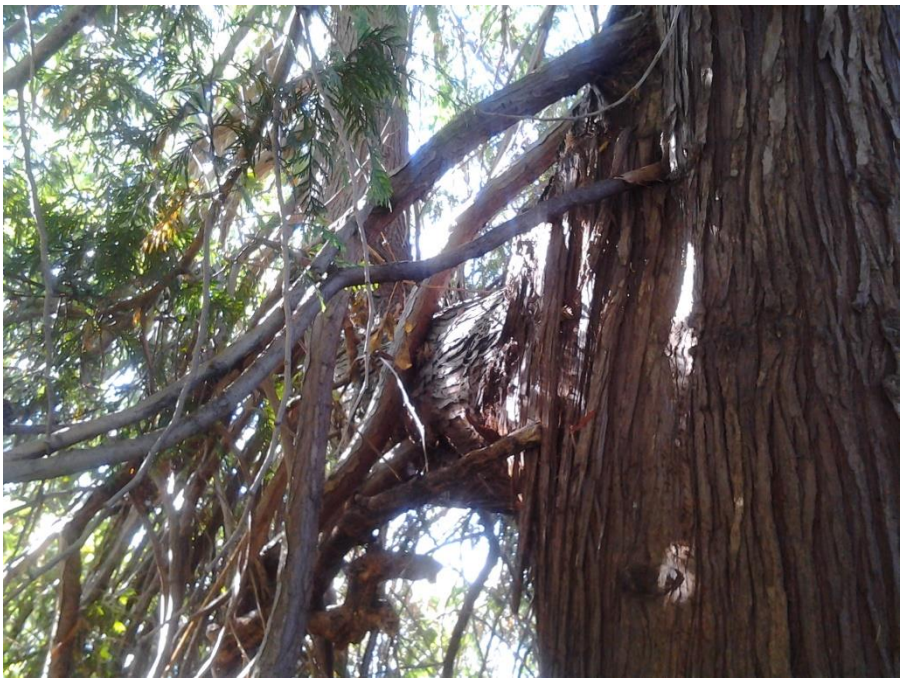


Figure 8. Photo showing large subordinate extending south from near the 8’ level. This spar forms close to a third of the tree’s biomass.

Figure 9. Photo showing the location of the #10 tree at the top of the second rock wall. Note the loose stones scattered at the base of the wall.

Figure 10. Photo showing close up of base of #10 cedar.

Figure 11. Photo showing one of the locations where the wall is breaking down.

Figure 12. Photo of one of the #10 cedar's roots coming through the wall.

Figure 13. The matrix used to estimate the likelihood of a tree failure impacting a specific target.

Likelihood of Failure	**Likelihood of Impacting Target**			
	Very Low	**Low**	**Medium**	**High**
Imminent	Unlikely	Somewhat Likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Figure 14. Risk rating matrix showing the level of risk as the combination of likelihood of a tree failing and impacting a specific target, and severity of the associated consequences.

Likelihood of Failure and Impact	**Consequences**			
	Negligible	**Minor**	**Significant**	**Severe**
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Superior NW Enterprises

January 22, 2018

RE: #1 Cedar Infographic

To Whom It May Concern:

This infographic shown on the following page was built to elucidate the case of the #1 cedar in the Hart arborist report. The tree in question is shown in the center of the image. The small black circle around the tree represents the tree's Structural Root Plate (SRP) and extends 10' radially. Note that the carport's slab impedes the SRP 6' out from the base on the east side of the tree. The larger green circle is the tree's theoretical Critical Root Zone set at a radial distance 35' out from the tree. The region designated by the red line shows the expected area in which the cedar's roots should be found. Roots may or may not exist below the slab, they are lifting the concrete pavers between it and the tree. The yellow striped region is the minimum expected construction impact which will occur during the proposed demolition and construction to the known viable section of the cedar's CRZ. There is no way to work around this tree within the constraints of this sight. The tree is in distress and has limited rooting space. Disturbing it in any way will more likely than not result in the tree going into rapid decline. Just removing the existing slab will disturb the SRP. Building the footings for the new garage will damage even more critical roots. Driving through the yellow zone with construction equipment will damage close to 30% of the cedar's viable existing roots which will definitely push this tree over the edge.

Referring to MICC 19.10.06(3)(a) the cedar in question meets the criteria for removal because attempting to retain it will create an unavoidable hazardous situation. It should be removed during the demolition portion of the project.

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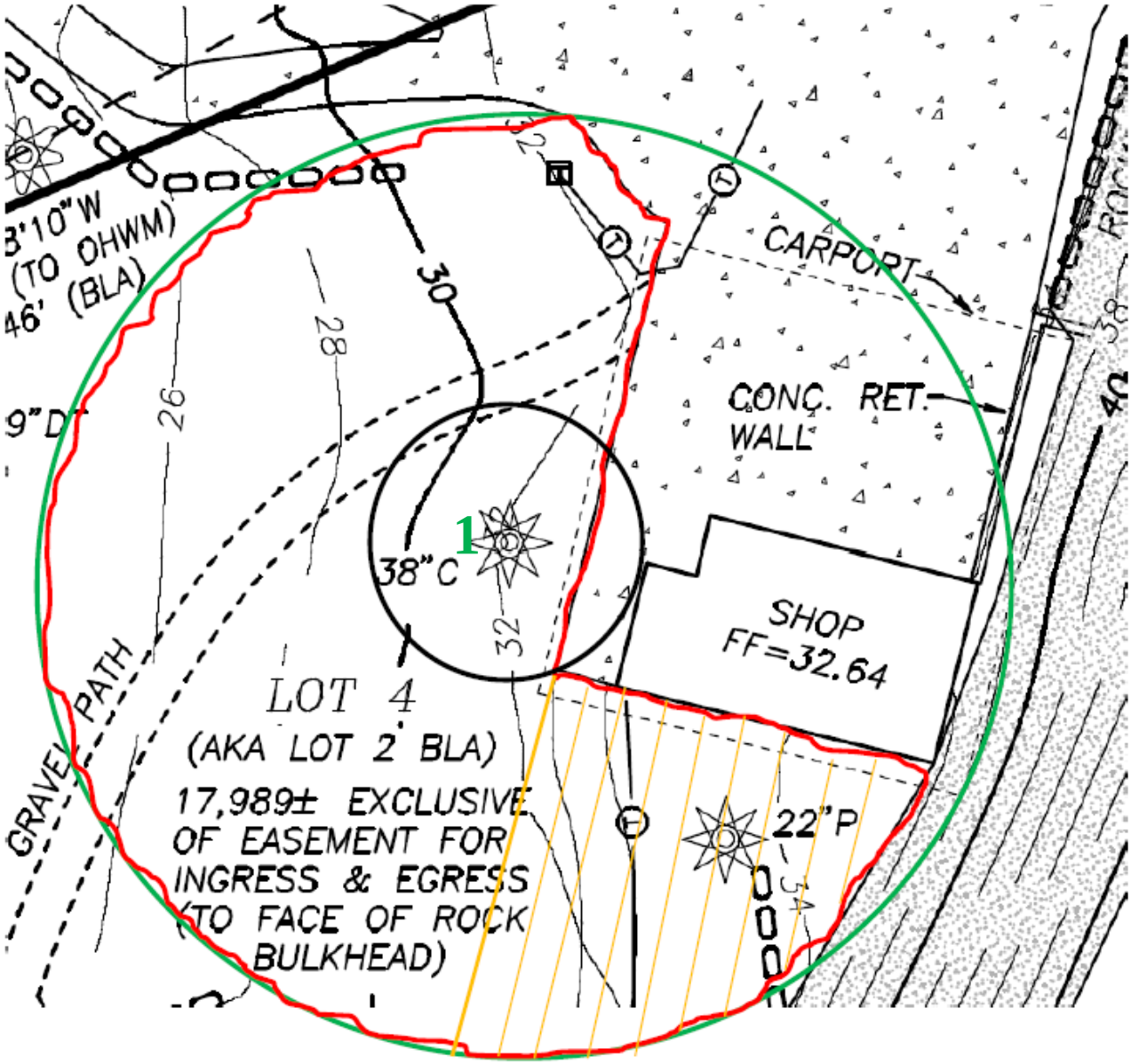

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February 11, 2018

RE: Replanting locations

To Whom It May Concern:

I looked through the replanting plan, both at the species selections and the tree placements. Cedars are excellent choices to install along the slope as their fibrous network type root systems greatly aid in stabilizing the soil. Planting them in close proximity to each other allows their systems to intertwine increasing stability even more. Placing Douglas fir around the cedars adds to the density of the system and promotes a more natural NW forest profile and species interaction.

The entire eight tree cadre will eventually create a more contiguous grove with the larger cedars and firs which are to be retained along the east side.

Taken together this neatly satisfies Mercer Island 19.10.070(B)(1)(a & b).

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