Tree Solutions Inc
Consulting Arborists

Project No. TS - 8218

Arborist Report

To:	Ryan Asdourian
Site:	5300 Butterworth Rd, Mercer Island, WA 98040
Re:	Tree Inventory
Date:	November 27, 2023
Project Arborists:	Charlie Vogelheim ISA Certified Arborist #PN-9375 ISA Qualified Tree Risk Assessor
Reviewed By:	Katherine Taylor ISA Certified Arborist #PN-8022A ISA Qualified Tree Risk Assessor
References:	Asdourian Residence, Civil Plans, Patrick Harron & Associates LLC, 11/22/2023
Attached:	Table of Trees Demolition and TESC Plan (Tree Protection Measures)

Summary

We inventoried and assessed one tree on this lot for a future development project. Based on the Mercer Island City Code (MICC) large (regulated) and exceptional trees must be assessed for development projects. Mercer Island defines a large tree as any tree greater than 10 inches in diameter. We used an alphabetical tree identifier for all trees.

The sole regulated tree did not meet the exceptional tree criteria outlined in the MICC.

There were ten adjacent trees that required documentation for this property. Trees on neighboring properties were documented if they appeared to be greater than 10 inches diameter and their driplines extended over the property line. All trees on adjacent properties were estimated from the subject site or public property such as the adjacent right-of-way.

Of the offsite trees assessed, three appeared to meet the exceptional tree criteria outlined in the MICC.

Assignment and Scope of Work

This report outlines the site inspection by Charlie Vogelheim of Tree Solutions Inc, on March 9, 2023. I was asked to visit the site and provide a report including findings and management recommendations. Ryan Asdourian requested these services for future property development.

Observations and Discussion

Site

This site was 19,624 square feet and was located on Butterworth Rd in Mercer Island. There was a single-story house on the property with an attached garage. According to the City of Mercer Island GIS Portal, the site is located in a landslide-prone environmentally critical area.

The site was a mixture of lawn and landscaping with well-trimmed ornamental hedges.

Trees

I assessed one large western redcedar (*Thuja plicata*) tree on site. I found the tree to be in good health with fair structure as it was codominant at the base with six stems and maintained as a 20-foot-high hedge.

I identified ten large, off-site trees that overhung the property line. They included western redcedar, redbud (*Cercis canadensis*), and one corkscrew willow (*Salix matsudana 'Tortuosa'*). All offsite trees appeared to be in good health and most had good structure. Three of the offsite western redcedar trees appeared to be exceptional by size (Trees D, G, and I). Trees D, E, and F were a part of a row of western redcedar trees on the northern property boundary. These trees were growing adjacent to the property's hardscaped driveway and there appeared to be some cracks in the driveway, especially near tree D, suggesting large roots immediately below the hardscaping.

I have attached an aerial photograph to serve as the site map and a table of trees that has detailed information about each tree.

Proposed Plans

Proposed plans call for the demolition and clearing of all existing structures onsite and the construction of a single-family home. Plans do not call for the removal or replacement of the driveway and all construction staging will be on existing hardscape.

Discussion- Construction Impacts

All large trees are regulated in Mercer Island; therefore, the project will be subject to the tree protection regulations outlined in MICC 19.10.060.

The city of Mercer Island prioritizes the retention of exceptional trees greater than 24 inches in diameter; MICC 19.10.060 requires the retention of all exceptional trees greater than 24 inches in diameter, unless tree retention results in an unavoidable, hazardous situation or if tree retention limits the constructable gross floor area to less than 85 percent of the maximum gross floor area allowed. Removal of any large tree as part of a development proposal will require a tree replacement plan pursuant to MICC 19.10.070.

Tree protection measures are outlined in the Demolition and TESC Plan. Tree protection measures are consistent with existing best management practices (BMPs) as outlined by the International Society of Arboriculture (ISA). For this site the recommended limits of disturbance (RLOD) equate to eight times trunk diameter. No construction or demolition activities plan to be within recommended limits of disturbance for any trees.

This site has several offsite trees directly adjacent to where there may be some construction impacts (trees B, D, E, F, & G). Current plans do not currently suggest that offsite trees will be impacted by this project. Impacts to or removal of offsite trees would need to be negotiated with the neighboring landowner.

Plans do not call for the removal or replacement of the driveway hardscape. If plans change to remove and replace the driveway, the roots of trees D, E, F, and G would all be impacted and the project arborist should be consulted to determine the demolition and construction methods that cause the least impacts to these trees.

Recommendations

- All retained trees must be protected by tree protection fencing consistent with the specifications outlined in Appendix F and the Construction Impacts discussion section of this report and the tree protection measures outlined in the Demolition and TESC plan.
- Specific tree protection measures including alternate excavation, soil protection, and arborist monitoring must be called out on all pertinent plan sheets.
- Any required clearance pruning must be completed by an ISA certified arborist according to the relevant best management practices outlined in the ANSI A300.
- All tree retention and removal regulations must be followed and are outlined in MICC Chapter 19.10 Trees.
- Obtain all necessary permits and approval from the City prior to commencement of site work.

Appendix A **Glossary**

DBH or DSH: diameter at breast or standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Council of Tree and Landscape Appraisers 2019)

tree grove: a group of eight or more trees each 10 inches or more in diameter that form a continuous canopy. Trees that are part of a grove shall also be considered exceptional trees unless they also meet the definition of a hazardous tree. (MICC 19.16.010)

exceptional tree: a tree measuring 36 inches DSH or greater or with a diameter that is equal to or greater than the diameter listed in the Exceptional Tree Table (MICC 19.16.010)

ISA: International Society of Arboriculture

large tree (regulated): A tree measuring 10 inches or greater DSH (MICC 19.16.010)

RLOD (Recommend Limits of Disturbance): As outlined in ISA Best Management Practices: Managing Trees During Construction, this is calculated as a radial distance 8 times the trunk diameter. Some cases require 12 times the trunk diameter. For the purpose of this report, this represents the critical root zone (CRZ).

Visual Tree Assessment (VTA): method of evaluating structural defects and stability in trees by noting the pattern of growth (Mattheck & Breloer 1994)

Appendix B **References**

Accredited Standards Committee A300 (ASC 300). ANSI A300 (Part 1) Tree, Shrub, and Other Woody Plant Management – Standard Practices (Pruning). Londonderry: Tree Care Industry Association, 2017.

Council of Tree and Landscape Appraisers, Guide for Plant Appraisal, 10th Edition Second Printing. Atlanta, GA: The International Society of Arboriculture (ISA), 2019.

Fite, Kelby and Dr. E. Thomas Smiley. Best Management Practices: Managing Trees During Construction, Second Edition. Champaign, IL: International Society of Arboriculture (ISA), 2016.

Mattheck, Claus and Helge Breloer, The Body Language of Trees.: A Handbook for Failure Analysis. London: HMSO, 1994.

Mercer Island Municipal Code (MICC) 19.16.010. Definitions

Mercer Island Municipal Code (MICC) 19.10. Trees

Appendix C **Photographs**

Photo 1. Tree C is the shrub in the center of the photo. It is the only regulated tree on the property. It is maintained as a 20 foot shrub.

Photo 2. Exceptional tree D is on the right and trees E and F are a part of the hedgerow to the left. These trees are offsite but growing close to the driveway to the house. There is cracking in the hardscape (outlined by yellow) suggesting these trees have structural roots close to the surface under the hardscape. Plans do not call for the removal or replacemen of these trees.

Appendix D **Assumptions & Limiting Conditions**

1 Consultant assumes that the site and its use do not violate, and is in compliance with, all applicable codes, ordinances, statutes, or regulations.

2 The consultant may provide a report or recommendation based on published municipal regulations. The consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.

3 Any report by the consultant and any values expressed therein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.

4 All photographs included in this report were taken by Tree Solutions, Inc. during the documented site visit, unless otherwise noted. Sketches, drawings, and photographs (included in, and attached to, this report) are intended as visual aids and are not necessarily to scale. They should not be construed as engineering drawings, architectural reports, or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by the consultant as to the sufficiency or accuracy of the information.

5 Unless otherwise agreed, (1) information contained in any report by consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.

6 These findings are based on the observations and opinions of the authoring arborist, and do not provide guarantees regarding the future performance, health, vigor, structural stability, or safety of the plants described and assessed.

7 Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.

8 Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.

9 Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

Appendix E **Methods**

Measuring

I measured the diameter of each tree at 54 inches above grade, diameter at standard height (DSH). If a tree had multiple stems, I measured each stem individually at standard height and determined a single-stem equivalent diameter by using the method outlined in the city of Seattle Director's Rule 16-2008 or the Guide for Plant Appraisal, 10th Edition Second Printing published by the Council of Tree and Landscape Appraisers. A tree is regulated based on this single-stem equivalent diameter value. Because this value is calculated in the office following field work, some unregulated trees may be included in our data set. These trees are included in the tree table for informational purposes only and not factored into tree totals discussed in this report.

Tagging

I tagged each tree with a circular aluminum tag at eye level. I assigned each tree a numerical identifier on our map and in our tree table, corresponding to this tree tag. I used alphabetical identifiers for trees off-site.

Evaluating

I evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which the tree produces in reaction to a weak spot or area of mechanical stress. A tree reacts to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. An understanding of the uniform stress allows the arborist to make informed judgments about the condition of a tree.

Rating

When rating tree health, I took into consideration crown indicators such as foliar density, size, color, stem and shoot extensions. When rating tree structure, I evaluated the tree for form and structural defects, including past damage and decay. Tree Solutions has adapted our ratings based on the Purdue University Extension formula values for health condition (*Purdue University Extension bulletin FNR-473-W - Tree Appraisal*). These values are a general representation used to assist arborists in assigning ratings.

Excellent - Perfect specimen with excellent form and vigor, well-balanced crown. Normal to exceeding shoot length on new growth. Leaf size and color normal. Trunk is sound and solid. Root zone undisturbed. No apparent pest problems. Long safe useful life expectancy for the species.

Good - Imperfect canopy density in few parts of the tree, up to 10% of the canopy. Normal to less than ¾ typical growth rate of shoots and minor deficiency in typical leaf development. Few pest issues or damage, and if they exist, they are controllable, or tree is reacting appropriately. Normal branch and stem development with healthy growth. Safe useful life expectancy typical for the species.

Fair - Crown decline and dieback up to 30% of the canopy. Leaf color is somewhat chlorotic/necrotic with smaller leaves and "off" coloration. Shoot extensions indicate some stunting and stressed growing conditions. Stress cone crop clearly visible. Obvious signs of pest problems contributing to lesser condition, control might be possible. Some decay areas found in main stem and branches. Below average safe useful life expectancy

Poor - Lacking full crown, more than 50% decline and dieback, especially affecting larger branches. Stunting of shoots is obvious with little evidence of growth on smaller stems. Leaf size and color reveals overall stress in the plant. Insect or disease infestation may be severe and uncontrollable. Extensive decay or hollows in branches and trunk. Short safe useful life expectancy.

Appendix F **Tree Protection Specifications**

The following is a list of protection measures that must be employed before, during and after construction to ensure the long-term viability of retained trees.

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and ISA Tree Risk Assessment Qualification.
2. **Tree Protection Zone (TPZ):** The city of Mercer Island requires a tree protection zone (TPZ) congruent with the Recommend Limits of Disturbance (RLOD) established by the project arborist. The RLOD must be consistent with current ISA BMPs. In some cases, the TPZ may extend outside tree protection fencing. Work within the TPZ must be approved and monitored by the project arborist.
3. **Tree Protection Fencing:** Tree protection shall consist of 6-foot chain-link fencing installed at the TPZ as approved by the project arborist. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces.
    a. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the grove.
    b. Per arborist approval, TPZ fencing may be placed at the edge of existing hardscape within the TPZ to allow for staging and traffic.
    c. Where work is planned within the TPZ, install fencing at edge of TPZ and move to limits of disturbance at the time that the work within the TPZ is planned to occur. This ensures that work within the TPZ is completed to specification.
    d. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing.
4. **Access Beyond Tree Protection Fencing:** In areas where work such as installation of utilities is required within the TPZ, a locking gate will be installed in the fencing to facilitate access. The project manager or project arborist shall be present when tree protection areas are accessed.
5. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2’ x 2’ in size, with 3” tall text. Signage will note: “Tree Protection Area – Do Not Enter: Entry into the tree protection area is prohibited unless authorized by the project manager.” Signage shall include the contact information for the project manager and instructions for gaining access to the area.
6. **Filter / Silt Fencing:** Filter / silt fencing within the TPZ of retained trees shall be installed in a manner that does not sever roots. Install so that filter / silt fencing sits on the ground and is weighed in place by sandbags or gravel. Do not trench to insert filter / silt fencing into the ground.
7. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the TPZ, including where the TPZ extends beyond the tree protection fencing.
8. **Soil Protection:** No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the TPZ. Heavy machinery shall remain outside of the TPZ. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include applying 3/4-inch plywood over 4 to 6 inches of wood chip mulch or use of AlturnaMats® (or equivalent product approved by the project arborist). Retain existing paved surfaces within or at the edge of the TPZ for as long as possible.
9. **Soil Remediation:** Soil compacted within the TPZ of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.
10. **Canopy Protection**: Where fencing is installed at the limits of disturbance within the TPZ, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not

damage canopy parts. Exhaust from machinery shall be located five feet outside the dripline of retained trees. No exhaust shall come in contact with foliage for prolonged periods of time.

11. **Duff/Mulch:** Apply 6 inches of arborist wood chip mulch or hog fuel over bare soil within the TPZ to prevent compaction and evaporation. TPZ shall be free of invasive weeds to facilitate mulch application. Keep mulch 1 foot away from the base of trees and 6 inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.
12. **Excavation:** Excavation done at the edge of or within the TPZ shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation, and cleanly sever roots. The project arborist shall monitor all excavation done within the TPZ.
13. **Fill:** Limit fill to 1 foot of uncompacted well-draining soil, within the TPZ of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
14. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
15. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear polyethylene sheeting and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent back fill.
16. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the TPZ. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at edge of TPZ if soil exposed by hardscape removal will remain for any period of time.
17. **Tree Removal:** All trees to be removed that are located within the TPZ of retained trees shall not be ripped, pulled, or pushed over. The tree should be cut to the base and the stump either left or ground out. A flat front bucket can also be used to sever roots around all sides of the stump, or the roots can be exposed using hydro or air excavation and then cut before removing the stump.
18. **Irrigation:** Retained trees with soil disturbance within the TPZ will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
19. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
20. **Plan Updates:** All plan updates or field modification that result in impacts within the TPZ or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
21. **Materials:** Contractor shall have the following materials onsite and available for use during work in the TPZ:
    - **Sharp and clean bypass hand pruners**
    - **Sharp and clean bypass loppers**
    - **Sharp hand-held root saw**
    - **Reciprocating saw with new blades**
    - **Shovels**
    - **Trowels**
    - **Clear polyethylene sheeting**
    - **Burlap**
    - **Water**

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Table of Trees

5300 Butterworth Rd, Mercer Island, WA

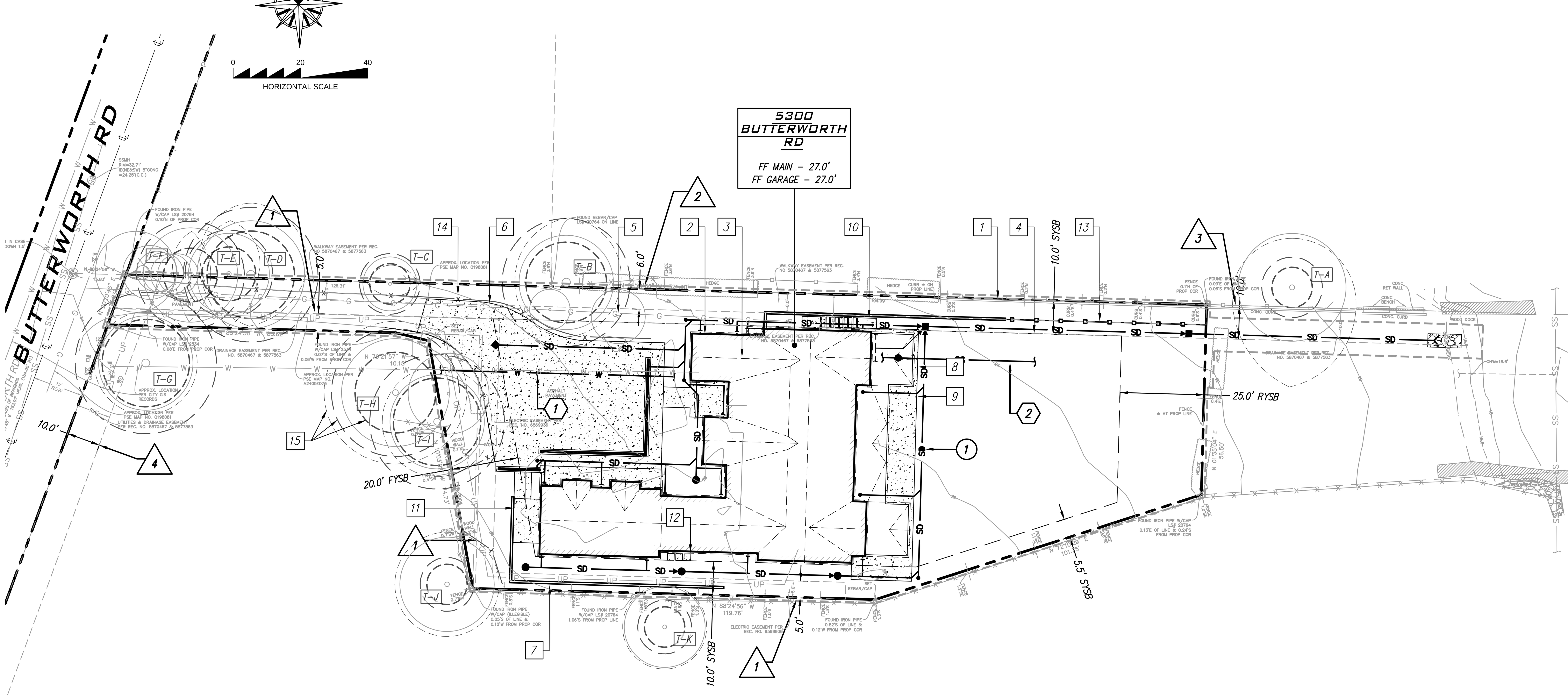
Arborist: Charlie Vogelheim
Date of Inventory: 3/9/2023
Table Prepared: 3/10/2023

DSH (Diameter at Standard Height) is measured 4.5 feet above grade, or as specified in the Guide for Plant Appraisal, 10th Edition, published by the Council of Tree and Landscape Appraisers.
DSH for multi-stem trees are noted as a single stem equivalent, which is calculated using the method defined in the Guide for Plant Appraisal, 10th Edition.
Letters are used to identify trees on neighboring property with overhanging canopies.
Minimum Limit of Disturbance (MLOD) is defined as 5 times trunk diameter or 6 feet, whichever is greater.
Recommended Limit of Disturbance (RLOD) is 8 times trunk diameter or greater depending on tree species and/or condition.
Dripline is measured from the center of the tree to the outermost extent of the canopy.

						Dripline Radius (feet)										
Tree ID	**Scientific Name**	**Common Name**	**DSH** (inches)	**Health Condition**	**Structural Condition**	**N**	**E**	**S**	**W**	**Exceptional Threshold**	**Exceptional**	**24-Inch DSH or Greater**	**MLOD** (feet)	**RLOD** (feet)	**Proposed Action**	**Notes**
A	*Salix matsudana 'Tortuosa'*	*Corkscrew willow*	14.0	Good	Fair	14.6	18.6	29.6	17.6	-		-	6	9		Lean to south, narrow structural branch attachments.
B	*Thuja plicata*	*Western Redcedar*	29.1	Good	Good	19.2	16.2	16.2	15.2	*30.0*		Yes	12	19		Corrected lean to north, codominant at base.
C (onsite tree)	*Thuja plicata*	*Western Redcedar*	13.9	Good	Fair	5.6	8.6	3.6	6.6	*30.0*		-	6	9		Codominant at base with 6 stems. Maintained as 20 foot hedge.
D	*Thuja plicata*	*Western Redcedar*	30.0	Good	Good	21.3	16.3	15.3	14.3	*30.0*	Exceptional - Size	Yes	13	20		Lean too north, corrected at 30 feet. Cracks in asphalt to the south suggest surface roots, wildlife hole at 6 feet.
E	*Thuja plicata*	*Western Redcedar*	20.0	Good	Good	15.8	8.8	15.8	8.8	*30.0*		-	8	13		
F	*Thuja plicata*	*Western Redcedar*	24.0	Good	Good	13.0	6.0	14.0	5.0	*30.0*		Yes	10	16		
G	*Thuja plicata*	*Western Redcedar*	32.0	Good	Good	15.3	15.3	15.3	15.3	*30.0*	Exceptional - Size	Yes	13	21		Corrected lean to East, surface roots.
H	*Cercis canadensis*	*Redbud*	28.0	Good	Good	21.2	21.2	21.2	21.2	-		Yes	12	19		Surface roots, soil has been blown away.
I	*Thuja plicata*	*Western Redcedar*	30.0	Good	Good	16.3	16.3	16.3	16.3	*30.0*	Exceptional - Size	Yes	13	20		
J	*Cercis canadensis*	*Redbud*	12.0	Good	Good	15.5	15.5	15.5	15.5	-		-	6	8		Surface roots, obstructed view.
K	*Cercis canadensis*	*Redbud*	12.0	Good	Good	12.5	12.5	12.5	12.5	-		-	6	8		Surface roots, obstructed view.

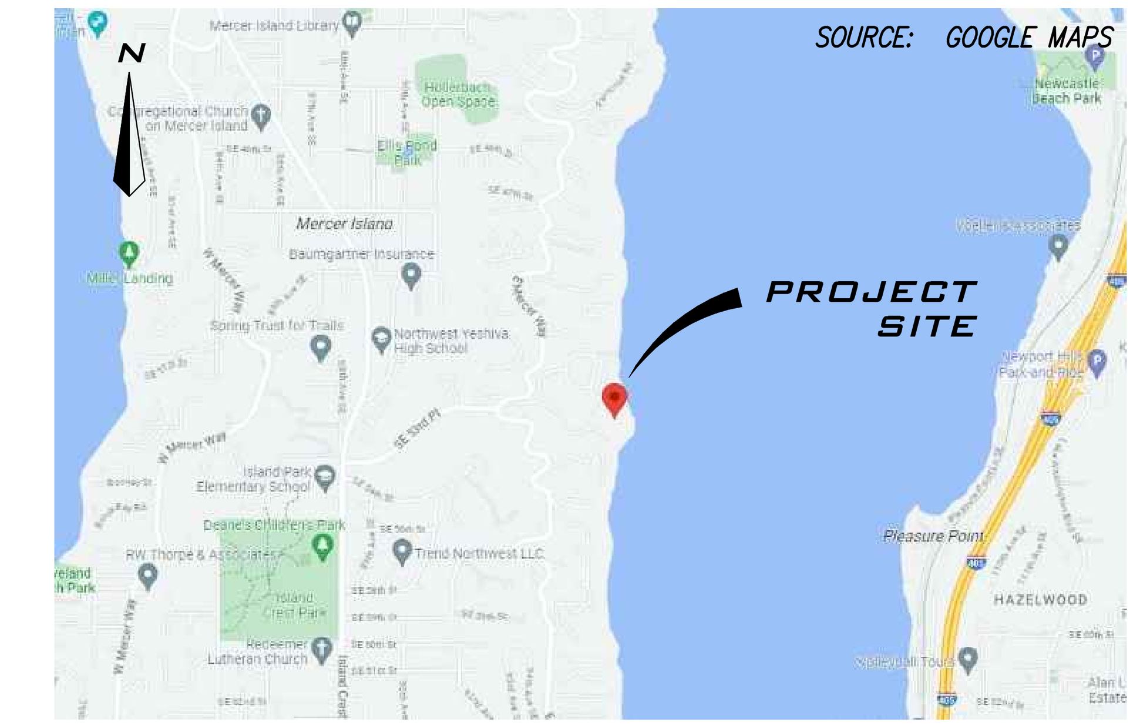
ASDOURIAN RESIDENCE

SE 1/4, NE 1/4, SEC 19, T 24 N, R 05 E, W. M.



SITE PLAN

SCALE: 1"=20'



VICINITY MAP

SCALE: NTS

PROJECT TEAM:

OWNER:
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5300 BUTTERWORTH RD
MERCER ISLAND, WA 98040
EMAIL: RASDO@MICROSOFT.COM

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EMAIL: CHARLIE@TREESOLUTIONS.NET

PROJECT INFORMATION:

DEVELOPMENT DATA:	
PROJECT NAME	ASDOURIAN RESIDENCE
PROPERTY AREA	20076 SF (0.46 AC)
SITE ADDRESS	5300 BUTTERWORTH RD MERCER ISLAND, WA 98040
PARCEL NUMBER	8661400020
ZONED	R-15
BUILDING SETBACKS:	
FRONT YARD	20.0 FT
SIDE YARD	10.0 FT
REAR YARD	25.0 FT
LOT COVERAGE (BLDG)	40% (MAX)
UTILITIES:	
SEWER	MERCER ISLAND PUBLIC WORKS
WATER	MERCER ISLAND PUBLIC WORKS
POWER	PUGET SOUND ENERGY
SCHOOLS	LAKE WASHINGTON #414
FIRE DISTRICT	MERCER ISLAND FIRE DEPARTMENT

LEGAL DESCRIPTION:

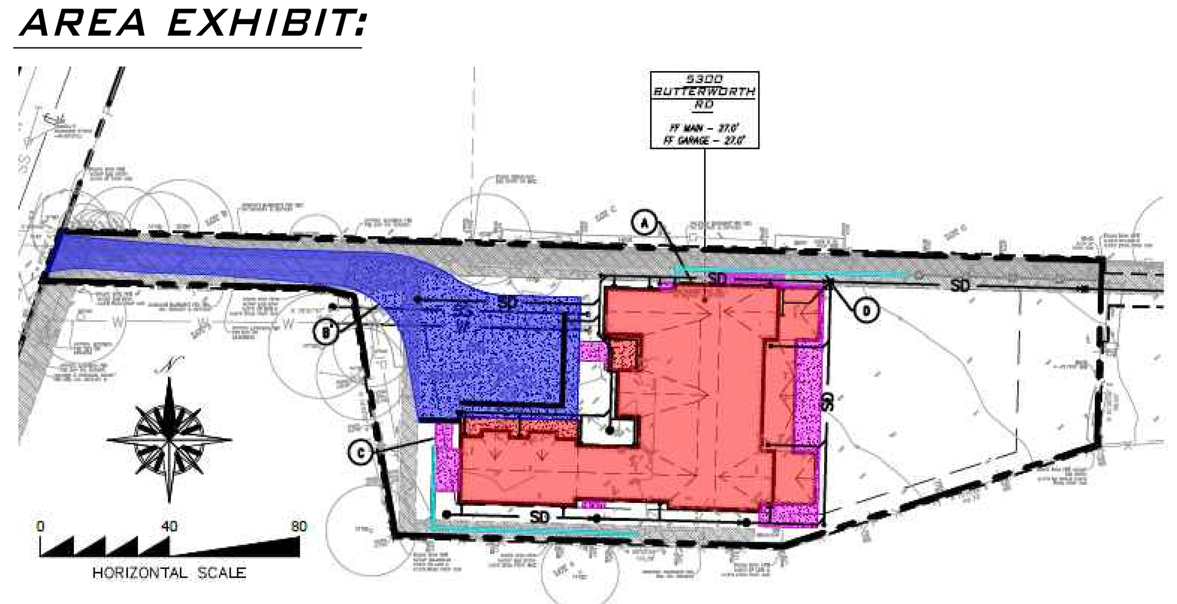
LOT 2, TONJA ESTATES, AS PER PLAT RECORDED IN VOLUME 77 OF PLATS, PAGE 64, RECORDS OF KING COUNTY, WASHINGTON; TOGETHER WITH THAT PORTION OF LOT 3 OF SAID PLAT DESCRIBED AS FOLLOWS; BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 3; THENCE SOUTH 1°35'04" WEST ALONG THE EASTERLY LINE OF LOT 3, A DISTANCE OF 75.31 FEET; THENCE NORTH 10°03'02" WEST A DISTANCE OF 74.73 FEET; THENCE NORTH 76°21'57" WEST A DISTANCE OF 10.15 FEET, MORE OR LESS, TO THE NORTH LINE OF SAID LOT 3, THENCE SOUTH 88°24'56" EAST ALONG SAID NORTH LINE 25.00 FEET TO THE POINT OF BEGINNING. TOGETHER WITH AN UNDIVIDED 1/7 TH INTEREST IN LOT 1 OF SAID PLAT.

DATUM:

VERTICAL DATUM – NAVD 88 PER CITY OF MERCER ISLAND BENCHMARK NO. 1934
DESCRIPTION: ½" BRASS PLUG IN 4"X4" CONC (DN 1.6') LOCATION: OPP D/W HSE #5210 ON BUTTERWORTH RD. ELEVATION: 32.14'

HORIZONTAL DATUM (BASIS OF BEARINGS)
ACCEPTED THE BEARING OF S20°10'45"W BETWEEN MONUMENTS FOUND ALONG THE CENTERLINE OF BUTTERWORTH ROAD, PER REFERENCE NO. 1.

AREA EXHIBIT:



AREA INVENTORY:

Proposed Surface Coverage Summary (Onsite)			
Callout	Description	(sf)	(ac)
	Total Property	20,076	0.461
A	New House Roof	5,203	0.119
B	Driveway	3,300	0.076
C	Walkways & Patio	727	0.017
D	Walls	110	0.003
	Total Proposed Hard Surface	9,340	0.214
	Total Pervious Surface (Lawn)	10,736	0.246

SITE CALLOUTS:

1. PROPERTY BOUNDARY, TYP.
2. PROPOSED BUILDING FOOTPRINT, TYP.
3. PROPOSED BUILDING ROOFLINE, TYP.
4. BUILDING SETBACK LINE, TYP. SEE DEVELOPMENT DATA NOTES FOR MINIMUM SETBACKS.
5. EXISTING TREES TO BE PROTECTED-IN-PLACE UNLESS OTHERWISE NOTED, TYP (SEE ARBORIST REPORT AND SHEET C2.0 FOR LIMITS OF DISTURBANCE AND TREE PROTECTION).
6. PROPOSED ON-SITE CONCRETE DRIVEWAY/PARKING, TYP (SEE SHEET C3.0 FOR GRADING PLAN).
7. PROPOSED STACKED BLOCK RETAINING WALL (< 4.0').
8. PROPOSED IMPERVIOUS DECK, TYP.
9. PROPOSED CONCRETE OR PAVER PATIO, TYP.
10. PROPOSED PAVER PATH.
11. PROPOSED CONCRETE TRASH PAD.
12. PROPOSED MECHANICAL/ELECTRICAL PAD, TYP.
13. PROPOSED PRIVACY FENCE, TYP.
14. TREE PROTECTION FENCING, TYP (SEE SHEET C2.0).
15. TREE DRIPLINE/RLOD/MLOD, TYP (SEE SHEET C2.0).

SITE NOTES:

1. SOILS OF DISTURBED PERVIOUS AREAS TO BE AMENDED.

STORM CALLOUTS:

1. PROPOSED STORM DRAINAGE SYSTEM, TYP (SEE SHEET C3.1 FOR DRAINAGE PLAN).

SEWER & WATER CALLOUTS:

1. PROPOSED DOMESTIC WATER SYSTEM, TYP (SEE SHEET C3.0 FOR WATER PLAN).
2. PROPOSED SANITARY SEWER SYSTEM, TYP (SEE SHEET C3.0 FOR SEWER PLAN).

EASEMENT CALLOUTS:

1. 5.0' ELECTRIC EASEMENT.
2. 6.0' WALKWAY EASEMENT.
3. 10.0' DRAINAGE EASEMENT.
4. 10.0' UTILITIES & DRAINAGE EASEMENT.

SHEET LIST

SHEET #	NAME	DESCRIPTION
1	C1.0	COVER SHEET & SITE PLAN
2	C2.0	DEMOLITION & TESC PLAN
3	C2.1	TESC DETAILS
4	C3.0	GRADING & UTILITY PLAN
5	C3.1	STORM DRAINAGE PLAN
6	C3.2	STORM DRAINAGE DETAILS
7	C3.3	UTILITY DETAILS

REFERENCES:

1. ARCHITECTURAL PLANS BY STURMAN ARCHITECTS.
2. BOUNDARY AND TOPOGRAPHIC SURVEY BY TERRANE.
3. GEOTECH REPORT BY GEOTECH CONSULTANTS, INC.
4. ARBORIST REPORT BY TREE SOLUTIONS, INC.

CALL 48 HOURS BEFORE YOU DIG 811

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-424-5555 OR 811 (CELL) A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION.

R#	DATE	DESCRIPTION	BY

11/22/23

CITY OF MERCER ISLAND BUILDING PERMIT

COVER SHEET & SITE PLAN

PATRICK HARRON & ASSOCIATES, LLC
Civil Engineering & Planning
14900 Interurban Ave. S, Suite 279, Seattle, WA 98168
Phone: 206.674.4659
Web: patrickharron.com

PROJ. NO.	DSN. BY:
23109	CC
DWN. BY:	CHK. BY:
CC	SC

ASDOURIAN RESIDENCE
ASDOURIAN RESIDENCE
5300 BUTTERWORTH RD
MERCER ISLAND, WA 98040

DATE: 11/22/23
SCALE: AS SHOWN
DRAWING NO. C1.0
1 OF 7

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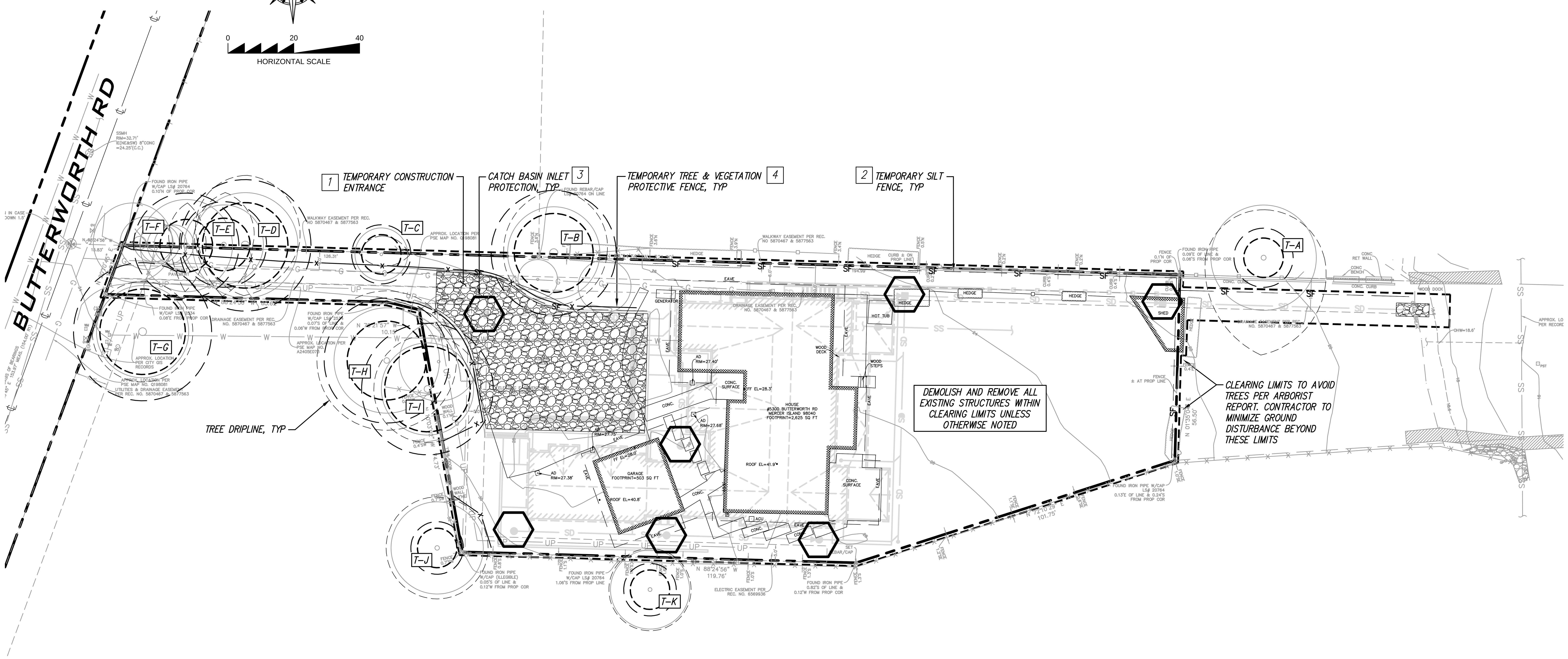
ASDOURIAN RESIDENCE

SE 1/4, NE 1/4, SEC 19, T 24 N, R 05 E, W. M.



DEMOLITION & TESC PLAN

SCALE: 1"=20'

TESC LEGEND:

- X — REMOVE TREE
- Hexagon — CATCH BASIN INLET PROTECTION
- SAWCUT
- TEMPORARY SILT FENCE
- TEMPORARY TREE & VEGETATION PROTECTIVE FENCE
- CLEARING LIMITS
- TEMPORARY CONSTRUCTION ENTRANCE

DEMOLITION & TESC CALLOUTS:

1. TEMPORARY CONSTRUCTION ENTRANCE (SEE DETAIL 1, SHEET C2.1). COORDINATE WITH SITE INSPECTOR FOR LOCATION AND EXTENTS.
2. TEMPORARY SILT FENCE, TYP (SEE DETAIL 2, SHEET C2.1 AND TESC NOTE 4). ALTERNATIVELY, STRAW WATTLES MY BE USED TO LESSEN IMPACTS ON TREE ROOT SYSTEMS IMPLEMENTATION OF SEDIMENT CONTROL SYSTEMS TO BE COORDINATED WITH PROJECT ARBORIST FOR AREAS WITHIN TPZ.
3. CATCH BASIN INLET PROTECTION, TYP (SEE DETAIL 3, SHEET C2.1).
4. TEMPORARY TREE & VEGETATION PROTECTIVE FENCE, TYP (SEE DETAIL 4, SHEET C2.1). SEE DEMOLITION & TESC NOTES, THIS SHEET, FOR ADDITIONAL TREE PROTECTION GUIDELINES.
5. SOILS OF DISTURBED PERVIOUS AREAS THROUGHOUT THE DURATION OF THE PROJECT ARE TO BE AMENDED, TYP.

DEMOLITION & TESC NOTES:

1. REFER TO ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION ON TREE PROTECTION.
2. PRIOR TO BEGINNING ANY CONSTRUCTION, COORDINATE INSTALLATION OF TREE PROTECTION FENCING WITH GENERAL CONTRACTOR, CITY AND OWNERS REPRESENTATIVE PROJECT ARBORIST. COORDINATE GRADING AND SOIL PREPARATION ACTIVITIES AROUND EXISTING TREES TO REMAIN WITH GENERAL CONTRACTOR, OWNERS REPRESENTATIVE, PROJECT ARBORIST AND CITY.
3. TREE PROTECTION BARRIERS SHALL BE INITIALLY ERECTED AT 5 FEET OUTSIDE OF THE DRIP LINE PRIOR TO MOVING ANY HEAVY EQUIPMENT ON SITE.
   - TREE PROTECTION FENCING SHALL ONLY BE MOVED WHERE NECESSARY TO INSTALL IMPROVEMENTS, BUT ONLY AS CLOSE AS THE LIMITS OF DISTURBANCE, AS INDICATED IN THE ARBORIST REPORT.
   - EXCAVATION LIMITS SHOULD 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 ARBORIST SHALL MONITOR EXCAVATIONS WHEN WORK IS REQUIRED AND ALLOWED UP TO THE "LIMITS OF DISTURBANCE."
   - TO ESTABLISH SUB GRADE FOR FOUNDATIONS, CURBS AND PAVEMENT SECTIONS NEAR THE TREES, SOIL SHOULD 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.
   - AREAS EXCAVATED WITHIN THE DRIP LINE OF RETAINED TREES SHOULD BE THOROUGHLY IRRIGATED WEEKLY DURING DRY PERIODS.
   - PREPARATIONS FOR FINAL LANDSCAPING SHALL BE ACCOMPLISHED BY HAND WITHIN THE DRIP LINES OF RETAINED TREES. PLANTINGS WITHIN THE DRIP LINES SHALL BE LIMITED. LARGE EQUIPMENT SHALL BE KEPT OUTSIDE OF THE TREE PROTECTION ZONES.
4. FILTER/SILT FENCING WITHIN THE TPZ OF RETAINED TREES SHALL BE INSTALLED IN A MANNER THAT DOES NOT SEVER ROOTS. INSTALL SO THAT FILTER/SILT FENCING SITS ON THE GROUND AND IS WEIGHED IN PLACE BY SANDBAGS OR GRAVEL. DO NOT TRENCH TO INSERT FILTER/SILT FENCING INTO THE GROUND. REFER TO PROJECT ARBORIST TREE PROTECTION SPECIFICATIONS ON C2.1.

TABLE OF TREES:

REFERENCE ARBORIST REPORT

Tree Solutions Inc — Consulting Arborists

Table of Trees

5300 Butterworth Rd, Mercer Island, WA

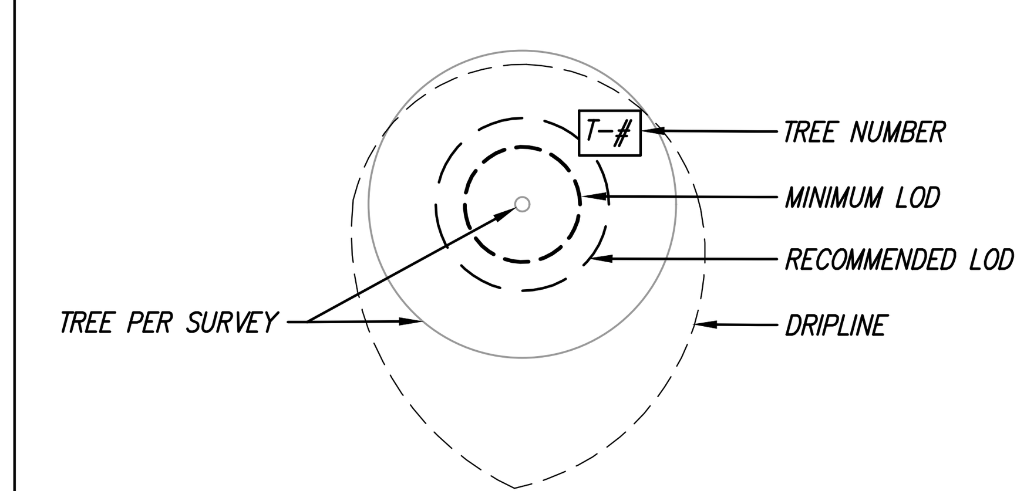
Arborist: Charlie Vogelheim
Date of Inventory: 3/9/2023
Table Prepared: 3/10/2023

DSH (Diameter at Standard Height) is measured 4.5 feet above grade, or as specified in the Guide for Plant Appraisal, 10th Edition, published by the Council of Tree and Landscape Appraisers.
DSH for multi-stem trees are noted as a single stem equivalent, which is calculated using the method defined in the Guide for Plant Appraisal, 10th Edition.
Letters are used to identify trees on neighboring property with overhanging canopies.
Minimum Limit of Disturbance (MLOD) is defined as 5 times trunk diameter or 6 feet, whichever is greater.
Recommended Limit of Disturbance (RLOD) is 8 times trunk diameter or greater depending on tree species and/or condition.
Dripline is measured from the center of the tree to the outermost extent of the canopy.

Tree ID	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Dripline Radius (feet) N	E	S	W	Exceptional Threshold	Exceptional	24-Inch DSH or Greater	MLOD (feet)	RLOD (feet)	Proposed Action	Notes
A	*Salix matsudana 'Tortuosa'*	*Corkscrew willow*	14.0	Good	Fair	14.6	18.6	29.6	17.6	-		-	6	9		Lean to south, narrow structural branch attachments.
B	*Thuja plicata*	*Western Redcedar*	29.1	Good	Good	19.2	16.2	16.2	15.2	*30.0*		Yes	12	19		Corrected lean to north, codominant at base.
C (onsite tree)	*Thuja plicata*	*Western Redcedar*	13.9	Good	Fair	5.6	8.6	3.6	6.6	*30.0*		-	6	9		Codominant at base with 6 stems. Maintained as 20 foot hedge.
D	*Thuja plicata*	*Western Redcedar*	30.0	Good	Good	21.3	16.3	15.3	14.3	*30.0*	Exceptional - Size	Yes	13	20		Lean too north, corrected at 30 feet. Cracks in asphalt to the south suggest surface roots, wildlife hole at 6 feet.
E	*Thuja plicata*	*Western Redcedar*	20.0	Good	Good	15.8	8.8	15.8	8.8	*30.0*		-	8	13		
F	*Thuja plicata*	*Western Redcedar*	24.0	Good	Good	13.0	6.0	14.0	5.0	*30.0*		Yes	10	16		
G	*Thuja plicata*	*Western Redcedar*	32.0	Good	Good	15.3	15.3	15.3	15.3	*30.0*	Exceptional - Size	Yes	13	21		Corrected lean to East, surface roots.
H	*Cercis canadensis*	*Redbud*	28.0	Good	Good	21.2	21.2	21.2	21.2	-		Yes	12	19		Surface roots, soil has been blown away.
I	*Thuja plicata*	*Western Redcedar*	30.0	Good	Good	16.3	16.3	16.3	16.3	*30.0*	Exceptional - Size	Yes	13	20		
J	*Cercis canadensis*	*Redbud*	12.0	Good	Good	15.5	15.5	15.5	15.5	-		-	6	8		Surface roots, obstructed view.
K	*Cercis canadensis*	*Redbud*	12.0	Good	Good	12.5	12.5	12.5	12.5	-		-	6	8		Surface roots, obstructed view.

TREE LEGEND:

REFER TO TABLE OF TREES PER ARBORIST REPORT



CALL 48 HOURS BEFORE YOU DIG 811

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R#	DATE	DESCRIPTION	BY

SCHWIN CHAOSILAPAKUL, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER — 11/22/23

CITY OF MERCER ISLAND BUILDING PERMIT

DEMOLITION & TESC PLAN

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PROJ. NO. 23109 | DSN. BY: CC | DWN. BY: CC | CHK. BY: SC

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ASDOURIAN RESIDENCE
5300 BUTTERWORTH RD
MERCER ISLAND, WA 98040

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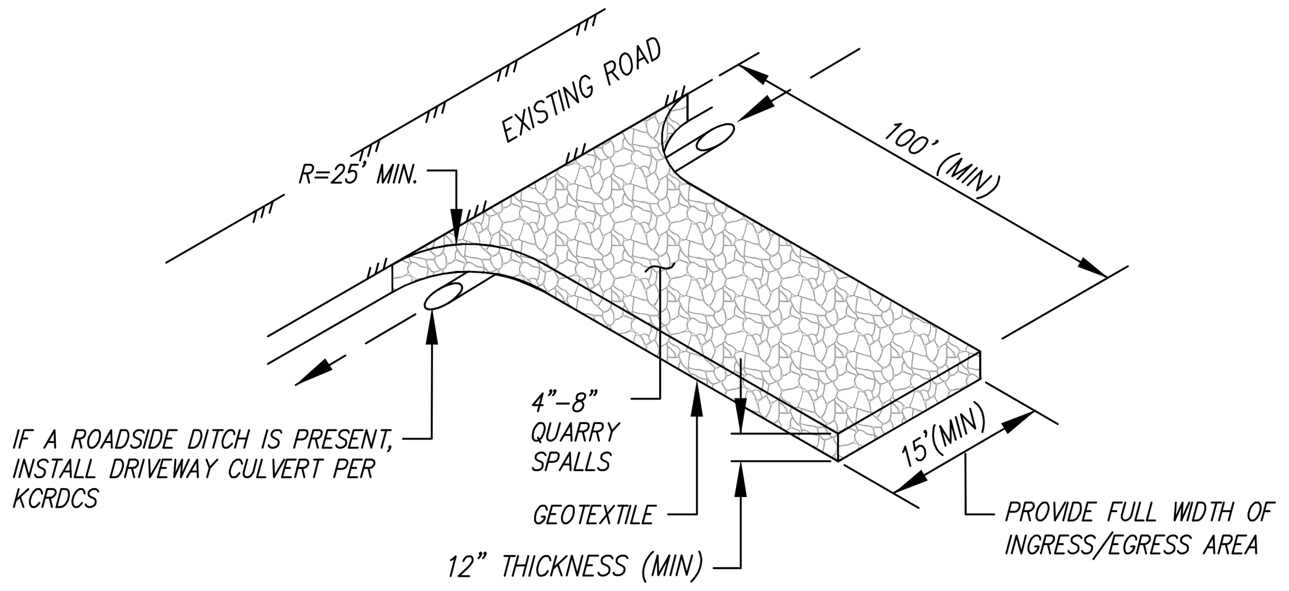
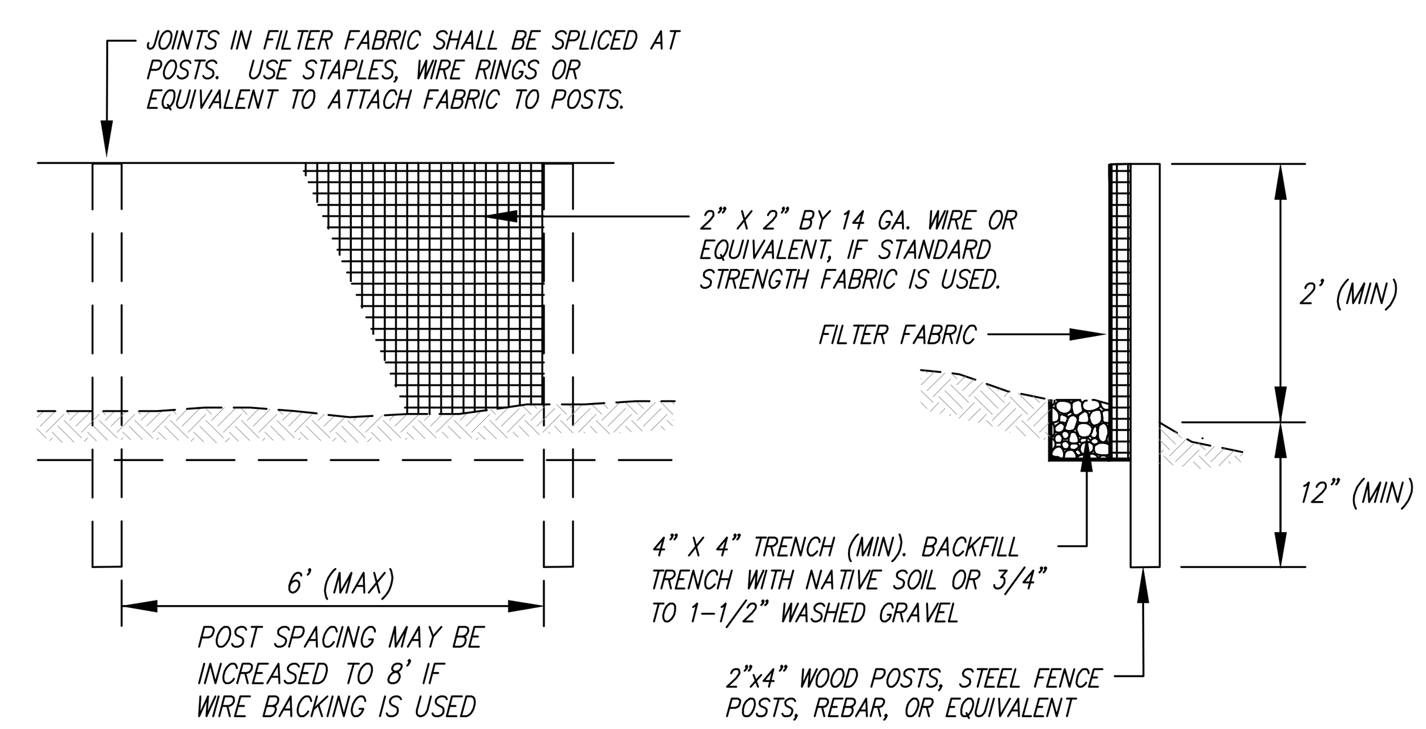


NOTES:

1. PER KING COUNTY ROAD DESIGN AND CONSTRUCTION STANDARDS (KCRDCS), DRIVEWAYS SHALL BE PAVED TO EDGE OF R-O-W PRIOR TO INSTALLATION OF THE CONSTRUCTION ENTRANCE TO AVOID DAMAGING OF THE ROADWAY.
2. IT IS RECOMMENDED THAT THE ENTRANCE BE CROWNED SO THAT RUNOFF DRAINS OFF THE PAD.

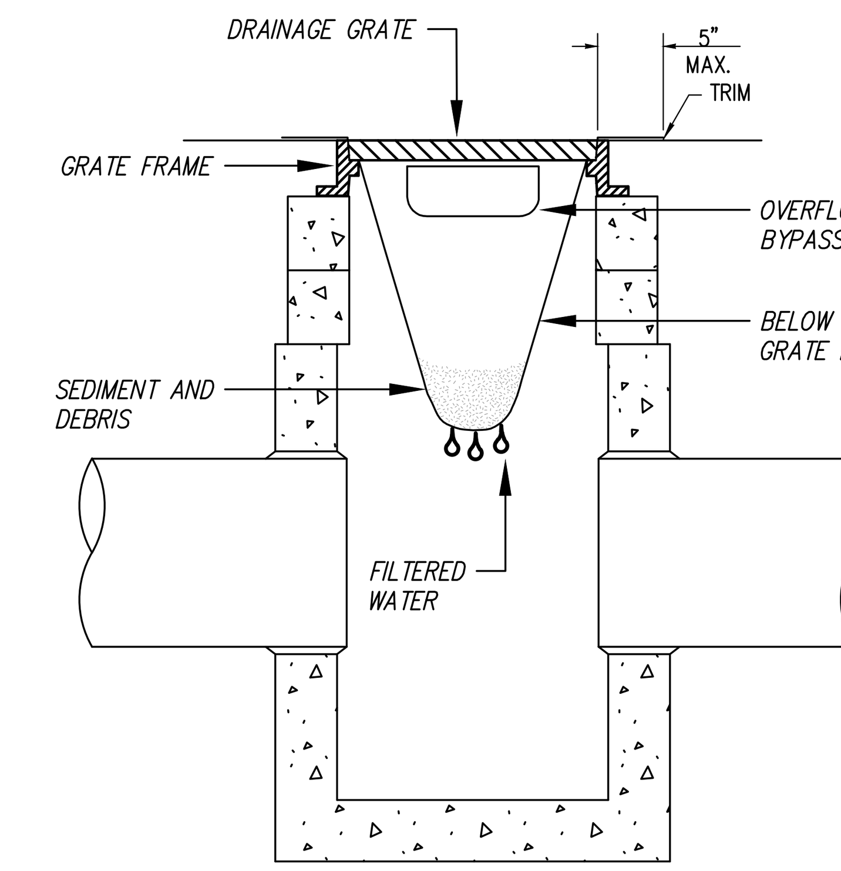
1 CONSTRUCTION ENTRANCE
C2.0 SCALE: NTS

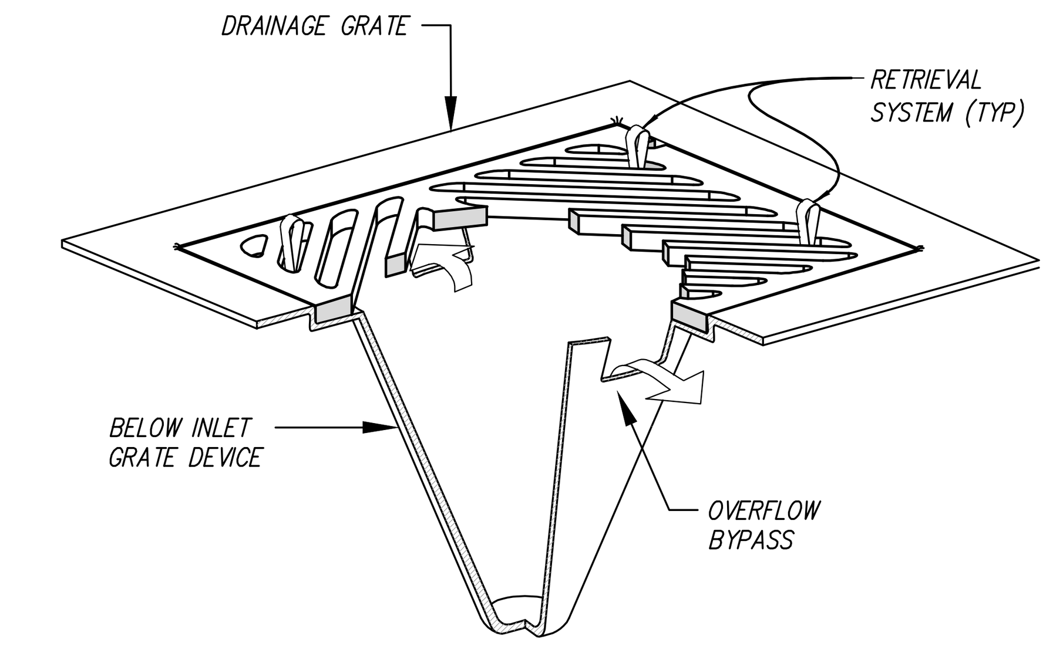


NOTE:

1. SILT FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOURS WHENEVER POSSIBLE

2 SILT FENCE
C2.0 SCALE: NTS

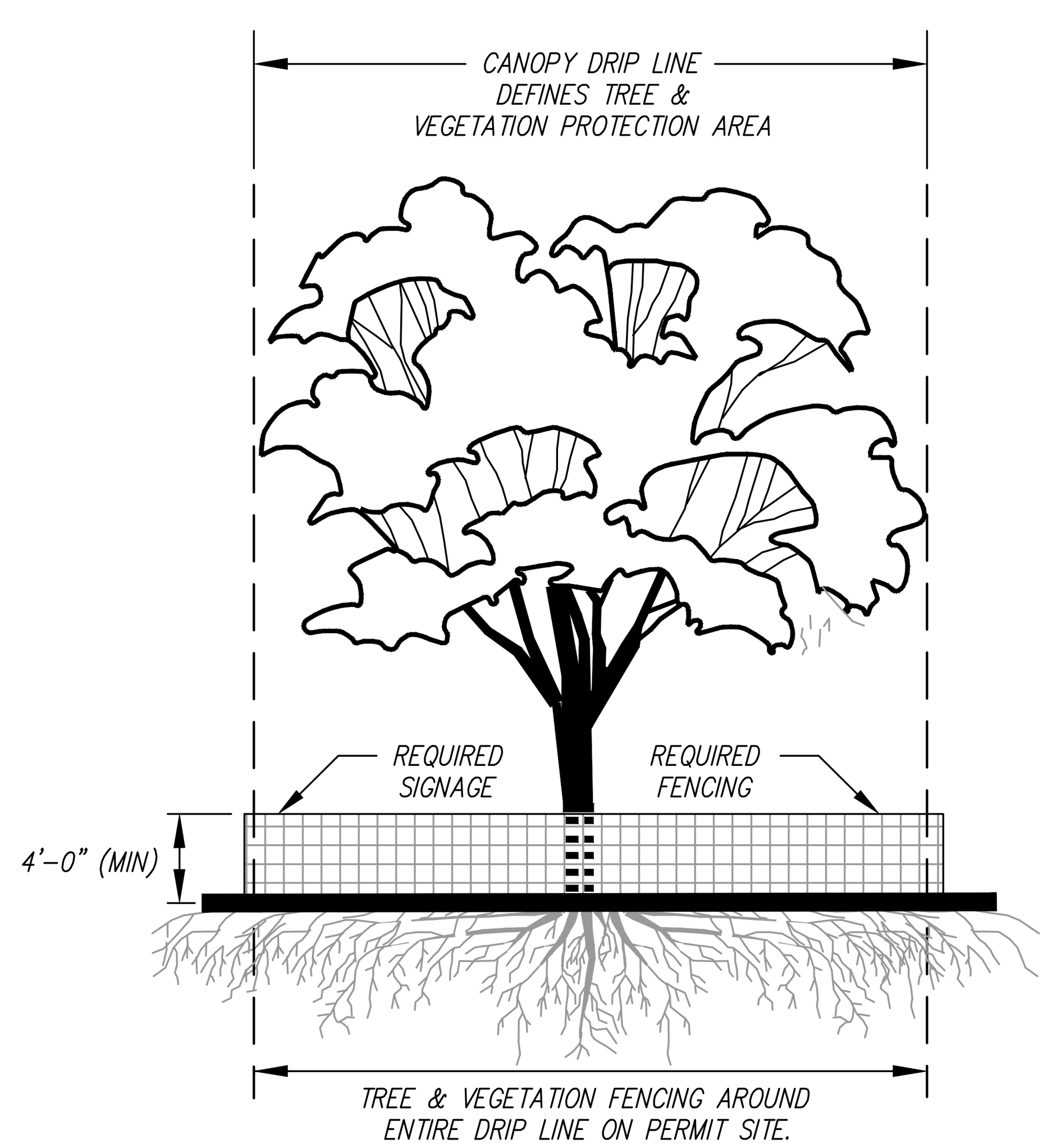




NOTES:

1. SIZE THE BELOW INLET GRATE DEVICE (BIGD) FOR THE STORM WATER STRUCTURE IT WILL SERVICE.
2. THE BIGD SHALL HAVE A BUILT-IN HIGH-FLOW RELIEF SYSTEM (OVERFLOW BYPASS).
3. THE RETRIEVAL SYSTEM MUST ALLOW REMOVAL OF THE BIGD WITHOUT SPILLING THE COLLECTED MATERIAL.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH WSDOT STANDARD SPECIFICATION 8-01.3(15).

3 CATCH BASIN INLET PROTECTION
C2.0 SCALE: NTS



TREE PROTECTION FENCING AND SIGN

1. CHAIN LINK, WIRE MESH, OR SIMILAR OPEN RIGID MATERIAL (NO PLYWOOD)
2. MUST BE INSTALLED PRIOR TO DEMOLITION OR GROUND DISTURBANCE
3. KEPT IN PLACE FOR THE DURATION OF CONSTRUCTION
4. NO SOIL DISTURBANCE OR ACTIVITY ALLOWED WITHIN FENCED AREA: MATERIAL STORAGE/STOCKPILING, PARKING, EXCAVATION, DUMPING, OR WASHING
5. MODIFICATIONS OF THESE REQUIREMENTS BY APPROVAL OF SDCI PLANNER ONLY
6. IF ROOTS GREATER THAN 2 INCH FOUND OUTSIDE OF FENCING, PROTECT BY HAND EXCAVATION AND, IF NECESSARY, CUT CLEANLY AND KEEP MOIST
7. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS

VEGETATION PROTECTION

1. ORANGE MESH OR SIMILAR OPEN MATERIAL
2. MINIMIZE CONSTRUCTION ZONE
3. PROTECT VEGETATION OUTSIDE CONSTRUCTION ZONE WITH FENCING AS SHOWN
4. USE 3 INCHES OR DEEPER WOOD CHIP MULCH OUTSIDE FENCED AREAS TO PROTECT FEEDER ROOTS

4 TREE & VEGETATION PROTECTIVE FENCE
C2.0 SCALE: NTS

Arborist Report
Asdourian: 5300 Butterworth Rd, Mercer Island, WA 98040 3.13.2023

Appendix F **Tree Protection Specifications**

The following is a list of protection measures that must be employed before, during and after construction to ensure the long-term viability of retained trees.

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and ISA Tree Risk Assessment Qualification.
2. **Tree Protection Zone (TPZ):** The city of Mercer Island requires a tree protection zone (TPZ) congruent with the Recommend Limits of Disturbance (RLOD) established by the project arborist. The RLOD must be consistent with current ISA BMPs. In some cases, the TPZ may extend outside tree protection fencing. Work within the TPZ must be approved and monitored by the project arborist.
3. **Tree Protection Fencing:** Tree protection shall consist of 6-foot chain-link fencing installed at the TPZ as approved by the project arborist. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces.
   a. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the grove.
   b. Per arborist approval, TPZ fencing may be placed at the edge of existing hardscape within the TPZ to allow for staging and traffic.
   c. Where work is planned within the TPZ, install fencing at edge of TPZ and move to limits of disturbance at the time that the work within the TPZ is planned to occur. This ensures that work within the TPZ is completed to specification.
   d. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing.
4. **Access Beyond Tree Protection Fencing:** In areas where work such as installation of utilities is required within the TPZ, a locking gate will be installed in the fencing to facilitate access. The project manager or project arborist shall be present when tree protection areas are accessed.
5. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2' x 2' in size, with 3" tall text. Signage will note: "Tree Protection Area – Do Not Enter: Entry into the tree protection area is prohibited unless authorized by the project manager." Signage shall include the contact information for the project manager and instructions for gaining access to the area.
6. **Filter / Silt Fencing:** Filter / silt fencing within the TPZ of retained trees shall be installed in a manner that does not sever roots. Install so that filter / silt fencing sits on the ground and is weighed in place by sandbags or gravel. Do not trench to insert filter / silt fencing into the ground.
7. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the TPZ, including where the TPZ extends beyond the tree protection fencing.
8. **Soil Protection:** No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the TPZ. Heavy machinery shall remain outside of the TPZ. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include applying 3/4-inch plywood over 4 to 6 inches of wood chip mulch or use of AlturnaMats® (or equivalent product approved by the project arborist). Retain existing paved surfaces within or at the edge of the TPZ for as long as possible.
9. **Soil Remediation:** Soil compacted within the TPZ of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.
10. **Canopy Protection**: Where fencing is installed at the limits of disturbance within the TPZ, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not

Tree Solutions Inc., Consulting Arborists Page 10

Arborist Report
Asdourian: 5300 Butterworth Rd, Mercer Island, WA 98040 3.13.2023

damage canopy parts. Exhaust from machinery shall be located five feet outside the dripline of retained trees. No exhaust shall come in contact with foliage for prolonged periods of time.

11. **Duff/Mulch:** Apply 6 inches of arborist wood chip mulch or hog fuel over bare soil within the TPZ to prevent compaction and evaporation. TPZ shall be free of invasive weeds to facilitate mulch application. Keep mulch 1 foot away from the base of trees and 6 inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.
12. **Excavation:** Excavation done at the edge of or within the TPZ shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation, and cleanly sever roots. The project arborist shall monitor all excavation done within the TPZ.
13. **Fill:** Limit fill to 1 foot of uncompacted well-draining soil, within the TPZ of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
14. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
15. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear polyethylene sheeting and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent back fill.
16. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the TPZ. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at edge of TPZ if soil exposed by hardscape removal will remain for any period of time.
17. **Tree Removal:** All trees to be removed that are located within the TPZ of retained trees shall not be ripped, pulled, or pushed over. The tree should be cut to the base and the stump either left or ground out. A flat front bucket can also be used to sever roots around all sides of the stump, or the roots can be exposed using hydro or air excavation and then cut before removing the stump.
18. **Irrigation:** Retained trees with soil disturbance within the TPZ will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
19. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
20. **Plan Updates:** All plan updates or field modification that result in impacts within the TPZ or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
21. **Materials:** Contractor shall have the following materials onsite and available for use during work in the TPZ:
    - **Sharp and clean bypass hand pruners**
    - **Sharp and clean bypass loppers**
    - **Sharp hand-held root saw**
    - **Reciprocating saw with new blades**
    - **Shovels**
    - **Trowels**
    - **Clear polyethylene sheeting**
    - **Burlap**
    - **Water**

Tree Solutions Inc., Consulting Arborists Page 11

5 TREE PROTECTION SPECIFICATIONS
C2.0 (PER ARBORIST REPORT BY TREE SOLUTIONS, INC.)

CALL 48 HOURS
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811

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CITY OF MERCER ISLAND
BUILDING PERMIT

TESC DETAILS

PATRICK HARRON & ASSOCIATES, LLC
Civil Engineering & Planning
14900 Interurban Ave. S, Suite 279, Seattle, WA 98168
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3 OF 7

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