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- Preliminary Tree Protection Plan -

43rd AVENUE MULTI-FAMILY

701 43rd Avenue SW
Puyallup, WA

Prepared for: Apex Engineering

Prepared by: Washington Forestry Consultants, Inc.

Report Date: August 29, 2024

Introduction

The project proponent is planning to construct a 40-unit multi-family project on one parcel totaling 1.67-acres in Puyallup, WA. The proponent has retained WFCI to:

- Evaluate and inventory all trees over 15 inches DBH on the site with the exception of red alder and black cottonwood.
- Make recommendations for retention of significant trees, along with any required protection and cultural measures.

Observations

Methodology

WFCI has evaluated all 'Significant' trees 15 inches diameter at breast height (DBH) and larger in the proposed project area and assessed their potential to be incorporated into the new project. Red alder (*Alnus rubra*) and black cottonwood (*Populus trichocarpa*) are not considered significant by the City of Puyallup and were noted but not evaluated as part of this project.

The tree evaluation phase used methodology developed by Matheny and Clark in their 1998 publication[1] and the International Society of Arboriculture Best management Practices for tree risk assessment[2]

[1] Nelda Matheny and Dr. James Clark. 1998. *Trees and Development: A Technical Guide to Preservation of Trees during Land Development.* International Society of Arboriculture. Champaign, IL.
[2] Smiley, E. Thomas, Nelda Matheny, and Sharon Lilly. 2011. *Best Management Practices: Tree Risk Assessment.* International Society of Arboriculture. Champaign, IL.

Site Description

The project area consists of 1 forested parcel totaling 1.67 acres. The Pierce County parcel number is 4320000160. The site is bordered by an apartment complex to the north, 7th Street SW to the east, 43rd Avenue SW to the south and two single-family homes to the west. The topography of the site is generally flat across the main area of the parcel with short, steep ridges running north and south. A steep slope is located along the north property line that drops down to the adjacent parcel. There are no improvements on the site.

Soil Depth and Productivity

According to the USDA Web Soil Survey, the one soil type on the site is the Everett very sandy loam, a very deep, somewhat excessively drained soil found on terraces and outwash plains. It formed in glacial outwash. Permeability is rapid. Plant available water capacity is low. The effective rooting depth is 60 inches or more and the hazard of runoff and erosion is slight. The potential for windthrow of trees is slight under normal conditions. Seedling mortality is severe and new trees require irrigation to establish.

Figure 1. 43rd Avenue Multi-family Soils Map.

13B – Everett very gravelly sandy loam

Tree Conditions

There is one forest cover type on this site for the purpose of description. WFCI has conducted a variable plot inventory on the project site to determine the number, distribution and condition of existing trees. The inventory was completed using 4 variable area plots installed on a systematic grid across the site. Non-significant species and sizes (<15 inches DBH) exist on site as well.

Type I. -- This 1.67-acre type covers the entire project area. There are 136 significant trees in the type. All the significant trees are Douglas-fir (*Pseudotsuga menziesii*) between 15- and 38-inches diameter at breast height (DBH). A stand summary report is in Attachment 3. All the trees were classified as sound, healthy, long-term trees. Non-significant trees in the type include black cottonwood (*Populus trichocarpa*) and small diameter bigleaf maple (*Acer macrophyllum*).

Photo 1. View of trees in Type I of the 43rd Avenue Multi-family site.

Table 1. Summary of Trees in Cover Type I.

Species	DBH Range (in)	Condition Range	# of Healthy Trees	# of Trees in Poor Health*	Total # of Trees
Douglas-fir	15 – 38	Dead - Good	131	5	136
Sum	**15 – 38**	Dead - Good	**131**	**5**	**136**

**Dead, diseased, or hazardous*

The understory plants include western hazelnut (*Corylus cornuta*), Oregon grape (*Mahonia nervosa*), trailing blackberry (*Rubus ursinus*), common snowberry (*Symphoricarpos alba*), and English ivy (*Hedera helix*).

Off-Site Impacts

Tree removal on this parcel will not impact any trees on the surrounding parcels.

Recommendations

Tree Retention

The provided site plan shows a tree retention area on the northern property line. There were no property corners or lines located in the field to determine the limits of the retention area. Vegetation in this area has few significant trees and is mostly small diameter trees including vine maple (*Acer circinatum*) and bird cherry (*Prunus avium*). The tree tract boundaries and grading plan are needed to establish a final count of trees to be retained.

Tree Protection Measures

Trees to be saved must be protected during construction by a six-foot-high chain link fencing (Attachment #7), located at the edge of the critical root zone (CRZ). Placards shall be placed on the fencing every 50 feet indicating the words, "NO TRESPASSING - Protected Trees". The individual CRZ are a radius of one foot for each one inch of DBH (6 feet minimum), unless otherwise delineated by WFCI (see tables).

Tree protection fences should be placed around the edge of the critical root zone (CRZ). The fence should be erected after logging but prior to the start of clearing. The fences should be maintained until the start of the landscape installation.

There should be no equipment activity (including rototilling) within the critical root zone. No irrigation lines, trenches, or other utilities should be installed within the CRZ. 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.

If roots are encountered outside the CRZ during construction, they should be cut cleanly with a saw 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 WFCI to determine if the tree can be saved with mitigating measures, or if the tree should be removed.

Pruning and Thinning

All individual trees to be saved near or within developed areas should have their crowns raised to provide a minimum of 8 feet of ground clearance over sidewalks and landscape areas, 15 feet over parking lots or streets, and at least 10 feet of building clearance.

All pruning should be done according to the ANSI A300 standards for proper pruning and be completed by an International Society of Arboriculture Certified Arborist®, or be supervised by a Certified Arborist®.

Conclusions and Timeline for Activity

1. The final, approved tree protection plan map should be included in the construction drawings for bid and construction of the project and should be labeled as such.
2. Stake and heavily flag the clearing limits.
3. Contact WFCI to attend pre-job conference and discuss tree protection issues with contractors. WFCI can verify all trees to be saved and/or removed are adequately marked for retention.
4. Complete logging. Complete necessary hazard tree removals from within the tree protection areas along with invasive plant removals from the tree protection areas. No equipment should enter the tree protection areas during logging.
5. Install tree protection fences along the 'limits of construction'. The fences should be located at the limits of construction or 5 feet outside of the dripline of the save tree or as otherwise specified by WFCI. Maintain fences throughout construction.
6. Complete clearing of the project.
7. Do not excavate stumps within 10’ of trees to be saved. These should be individually evaluated by WFCI to determine the method of removal.
8. Complete all necessary pruning on save trees or stand edges to provide at least 8’ of ground clearance near sidewalks and trails, and 15’ above all driveways or access roads.
9. Complete grading and construction of the project.

Summary

Most of the 136 significant trees onsite will be removed to complete the construction of the project. The tree retention tract and property lines need to be staked and a grading plan provided to verify the number of trees being retained.

Please give us a call if you have any questions.

Respectfully submitted,

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Certified Forester No. 44
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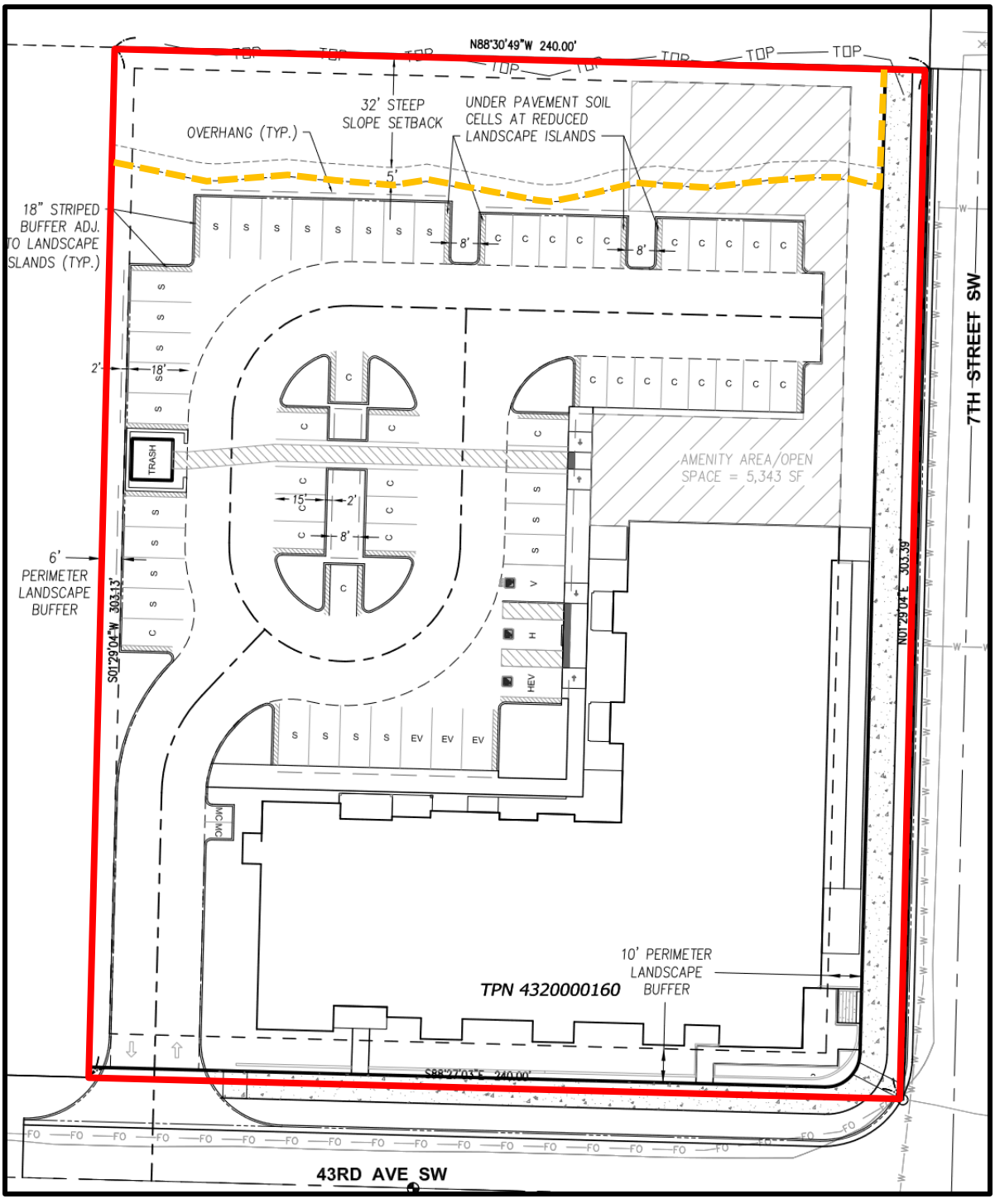
Attachment #1: Aerial Photo of 43rd Avenue Multi-Family

(Pierce County PublicGIS 2023)

Project Boundary

Attachment #2. 43rd Avenue Multi-family Site Plan



Parcel Boundary

Tree Protection Fence Location

Attachment #3. Stand Summary Report

Stand Summary Report

State, County: WA PIERCE
Species: GEN WEST
Page: 1/1

Project: PIERCE COUNTY
Plots: 4
Sort: ACI SORTS-SPECIES
Date: 10/17/2023

Tract: 43RD AVE MF
Trees: 44
Grade: NW SCALE GRADES
Cruised: 10/12/2023

Stand: 1
Measured Trees: 44
Price: ACI-2018
Grown To:

Acres: 1.57
Count Trees: 0
Cost: ACI-2023
Edited: 10/12/2023

											Net Per Log		Net Per Acre			BdFt	Total Net		
Spp	St	Dbh	Smpl Trees	Avg Age	Avg FF	Avg Total Ht	Trees /Ac	BA /Ac	Logs /Ac	Ht/D Inches	CuFt	BdFt	Tons	CuFt	BdFt	Def %	Tons	Ccf	Mbf
DF	4	15	0	50		0	4.074	5.00	0.000	0.0						0.0			
DF	4	16	0	50		0	10.743	15.00	0.000	0.0						0.0			
DF	4	17	0	50		0	3.172	5.00	0.000	0.0						0.0			
DF	4	18	0	50		0	19.806	35.00	0.000	0.0						0.0			
DF	4	19	0	50		0	5.079	10.00	0.000	0.0						0.0			
DF	4	20	0	50		0	4.584	10.00	0.000	0.0						0.0			
DF	4	22	0	50		0	11.364	30.00	0.000	0.0						0.0			
DF	4	24	0	50		0	7.958	25.00	0.000	0.0						0.0			
DF	4	25	0	50		0	2.934	10.00	0.000	0.0						0.0			
DF	4	26	0	50		0	8.137	30.00	0.000	0.0						0.0			
DF	4	27	0	50		0	1.258	5.00	0.000	0.0						0.0			
DF	4	28	0	50		0	4.677	20.00	0.000	0.0						0.0			
DF	4	30	0	50		0	1.019	5.00	0.000	0.0						0.0			
DF	4	34	0	50		0	0.793	5.00	0.000	0.0						0.0			
DF	4	36	0	50		0	0.707	5.00	0.000	0.0						0.0			
DF	4	38	0	50		0	0.635	5.00	0.000	0.0						0.0			
DF-4			**0**	**50**	**0**	**0**	**86.939**	**220.00**	**0.000**	**0.0**	**0**	**0**				**0.0**			
Stands/Project:			**0**	**50**	**0**	**0**	**86.939**	**220.00**	**0.000**	**0.0**	**0**	**0**				**0.0**			

Attachment #4 Individual Tree Rating Key for Tree Condition

RATING	SYMBOL	DEFINITION
Very Good	**VG**	• Balanced crown that is characteristic of the species • Normal lateral and terminal branch growth rates for the species and soil type • Stem sound, normal bark vigor • No root problems • No insect or disease problems • Long-term, attractive tree
Good	**G**	• Crown lacking symmetry but nearly balanced • Normal lateral and terminal branch growth rates for the species and soil type • Minor twig dieback O.K. • Stem sound, normal bark vigor • No root problems • No or minor insect or disease problems – insignificant • Long-term tree
Fair	**F**	• Crown lacking symmetry due to branch loss • Slow lateral and terminal branch growth rates for the species and soil type • Minor and major twig dieback – starting to decline • Stem partly unsound, slow diameter growth and low bark vigor • Minor root problems • Minor insect or disease problems • Short-term tree 10-30 years
Poor	**P**	• Major branch loss – unsymmetrical crown • Greatly reduced growth • Several structurally import dead or branch scaffold branches • Stem has bark loss and significant decay with poor bark vigor • Root damage • Insect or disease problems – remedy required • Short-term tree 1-10 years
Very Poor	**VP**	• Lacking adequate live crown for survival and growth • Severe decline • Minor and major twig dieback • Stem unsound, bark sloughing, previous stem or large branch failures, very poor bark vigor • Severe root problems or disease • No or minor insect or disease problems • Mortality expected within the next few years
Dead	**DEAD**	• Dead

Cultural Care Needs:

ABBRV.	ACTIVITY	DESCRIPTION
CC	**Crown Cleaning**	Pruning of dead, dying, diseased, damaged, or defective branches over 1/2 inch in diameter –includes removal of dead tops
CT	**Crown Thinning**	Pruning of branches described in crown cleaning, plus thinning of up to 20% of the live branches over ½ inch diameter. Branch should be 1/3 to ½ the diameter of the lateral branch. Thinning should be well distributed throughout crown of tree, and should release healthy, long-term branches.
RC	**Crown Reduction**	Reduction of the crown of a tree by pruning to lateral branches. Generally used to remove declining branches or to lighten end weight on long branches.
CR	**Crown Raising**	Pruning of lower branches to remove deadwood or to provide ground or building clearances.
RMV	**Remove**	Remove tree due to decline or hazardous conditions that cannot be mitigated by pruning.
RS	**Remove Sprouts**	Remove basal sprouts from stem of tree.
Rep	**Replace**	Tree is small – is in decline or dead. Replace with suitable tree species.
HT	**Hazard Tree**	Tree is hazardous and cannot be mitigated by pruning. Recommendation is to remove tree.
None	**No Work**	No work necessary at this time.

Attachment #5: Description of Tree Evaluation Methodology

The evaluation of the tree condition on this site included the visual assessment of:

1. Live-crown ratio,
2. Lateral and terminal branch growth rates,
3. Presence of dieback in minor and major scaffold branches and twigs,
4. Foliage color,
5. Stem soundness and other structural defects,
6. Visual root collar examination,
7. Presence of insect or disease problems.
8. Windfirmness if tree removal will expose this tree to failure.

In cases where signs of internal defect or disease were suspected, a core sample was taken to look for stain, decay, and diameter growth rates. Also, root collars were exposed to look for the presence of root disease.

In all cases, the overall appearance of the tree was considered relative to its ability to add value to either an individual lot or the entire subdivision. Also, the scale of the tree and its proximity to both proposed and existing houses was considered.

Lastly, the potential for incorporation into the project design is evaluated, as well as potential site plan modifications that may allow otherwise removed tree(s) to be both saved and protected in the development.

Trees that are preserved in a development must be carefully selected to make sure that they can survive construction impacts, adapt to a new environment, and perform well in the landscape. Healthy, vigorous trees are better able to tolerate impacts such as root injury, changes in soils moisture regimes, and soil compaction than are low vigor trees.

Structural characteristics are also important in assessing suitability. Trees with significant decay and other structural defects that cannot be treated are likely to fail. Such trees should not be preserved in areas where damage to people or property could occur.

Trees that have developed in a forest stand are adapted to the close, dense conditions found in such stands. When surrounding trees are removed during clearing and grading, the remaining trees are exposed to extremes in wind, temperature, solar radiation, which causes sunscald, and other influences. Young, vigorous trees with well-developed crowns are best able to adapt to these changing site conditions.

Attachment #6: Glossary of Forestry and Arboricultural Terminology

DBH: Diameter at Breast Height (measured 4.5 ft. above the ground line on the high side of the tree).

Caliper: In Issaquah - Caliper is referring to diameter measurement at DBH.

Live Crown Ratio: Ratio of live foliage on the stem of the tree. Example: A 100' tall tree with 40 feet of live crown would have a 40% live crown ratio. Conifers with less than 30% live crown ratio are generally not considered to be long-term trees in forestry.

Crown: Portion of a trees stem covered by live foliage.

Crown Position: Position of the crown with respect to other trees in the stand.

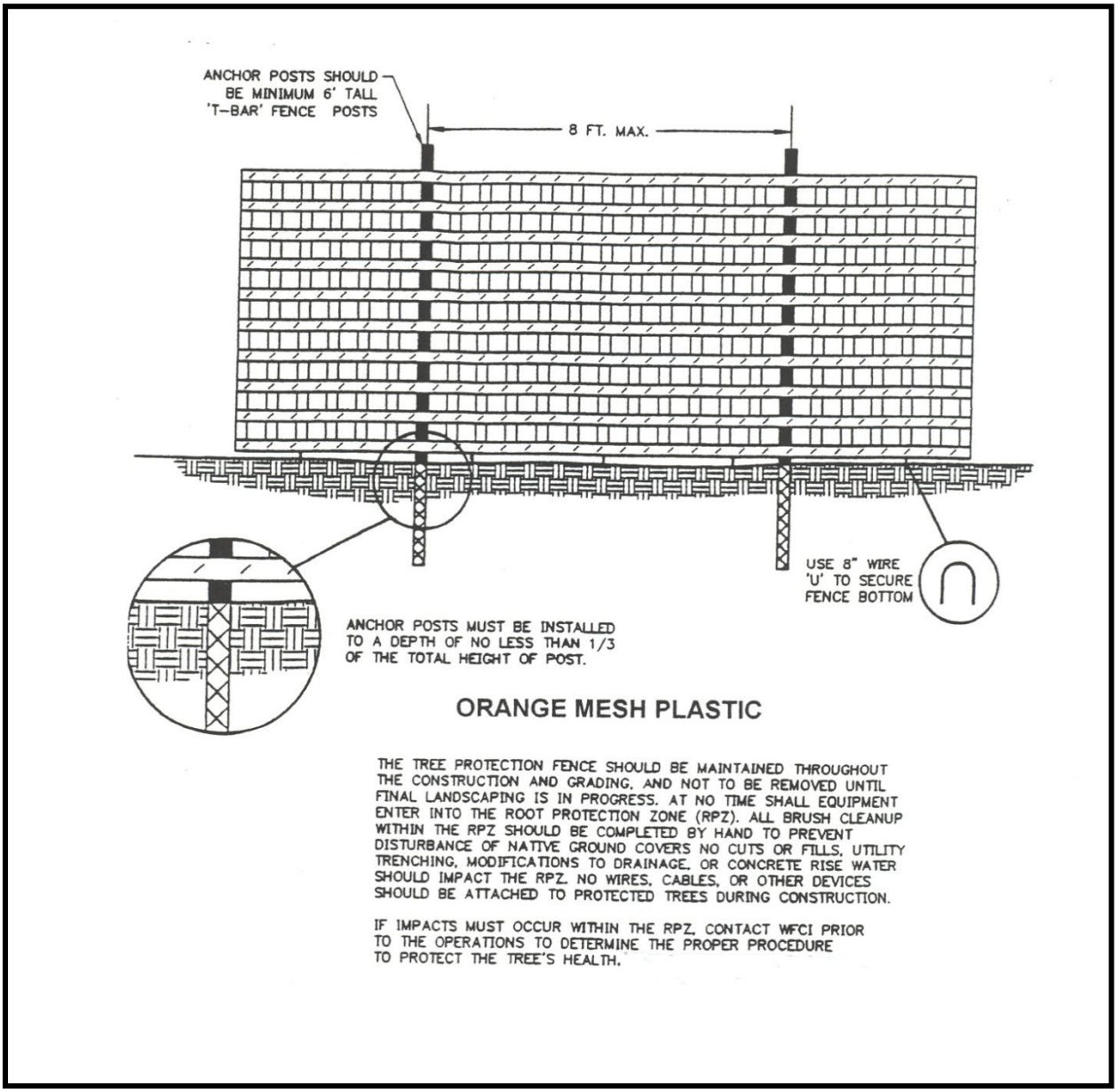
Dominant Crown Position: Receives light from above and from the sides.

Codominant Crown Position: Receives light from above and some from the sides.

Intermediate Crown Position: Receives little light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Suppressed Crown Position: Receives no light from above and none from the sides. Trees tend to be slender with poor live crown ratios.

Attachment #7: Tree Protection Fence Detail



Attachment #8: Assumptions and Limiting Conditions

1) Any legal description provided to the Washington Forestry Consultants, Inc. is assumed to be correct. Any titles and ownership's to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

2) It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations, unless otherwise stated.

3) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, Washington Forestry Consultants, Inc. can neither guarantee nor be responsible for the accuracy of information.

4) Washington Forestry Consultants, Inc. shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

5) Loss or alteration of any part of this report invalidated the entire report.

6) Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc.

7) Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc. -- particularly as to value conclusions, identity of Washington Forestry Consultants, Inc., or any reference to any professional society or to any initialed designation conferred upon Washington Forestry Consultants, Inc. as stated in its qualifications.

8) This report and any values expressed herein represent the opinion of Washington Forestry Consultants, Inc., and the fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence neither of a subsequent event, nor upon any finding in to reported.

9) Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

10) Unless expressed otherwise: 1) information contained in this report covers only those items that were 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, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

Note: Even healthy trees can fail under normal or storm conditions. The only way to eliminate all risk is to remove all trees within reach of all targets. Annual monitoring by an ISA Certified Arborist or Certified Forester will reduce the potential of tree failures. It is impossible to predict with certainty that a tree will stand or fail, or the timing of the failure. It is considered an 'Act of God' when a tree fails, unless it is directly felled or pushed over by man's actions.