



-Tree Protection Plan-

VINTAGE at MILL CREEK

132nd Street SE
Mill Creek, WA

Prepared for: Vintage at Mill Creek, LLC.

Prepared by: Washington Forestry Consultants, Inc.

Date: February 2, 2015

Introduction

The project proponent is planning to construct a new 5 story residential facility on 3.96 acres at 132nd St SE in Mill Creek, WA. The proponent has retained WFCI to:

- Evaluate and inventory all trees on the site pursuant to the requirements of the City of Mill Creek Tree Protection Ordinance.
- Make recommendations for retention of significant trees, along with required protection and cultural measures.

Observations

Methodology

WFCI has evaluated trees 6 inches diameter at breast height (DBH) and larger in the proposed project area, and assessed their potential to be incorporated into the new project. All trees were numbered at their base.

The tree evaluation phase used methodology developed by Nelda Matheny and Dr. James Clark in their 1998 publication Trees and Development: A Technical Guide to Preservation of Trees During Land Development.

Site Description

The site is flat, vacant property that is stocked with scattered trees and pasture. It is bordered by a partially developed vacant lot to the west, residential homes to the south, a partially developed parcel with a home to the east, and 132nd Street SE to the north. The trees on the property are all

significant trees and are located around the perimeter of the property. The significant trees included mature Douglas-fir (*Pseudotsuga menziesii*) and western red cedar (*Thuja plicata*). Overall, tree quality is good, with a few double or triple stemmed trees that have a higher risk of failure. The trees on site are approximately 50 years old and older.

Soil Description

According to the USDA Web Soil Survey the soil type is the Alderwood gravelly sandy loam (AgC), a moderately deep, moderately well drained soil found on glacial till plains. It is formed in ablation till overlying basal till. A weakly cemented hardpan is at a depth of 20 to 40 inches. Permeability is moderately rapid above the hardpan and very slow in the pan. Available water capacity is low. The effective rooting depth for trees is 20-40 inches. A perched seasonal high water table is at a depth of 18-36 inches from November to March. The potential for windthrow of trees is **moderate** under normal conditions. New trees require irrigation for establishment.

In areas where grading brings the hardpan nearer to the surface, the hardpan must be fractured under new trees to provide soil volume for root development and to improve drainage around the tree.

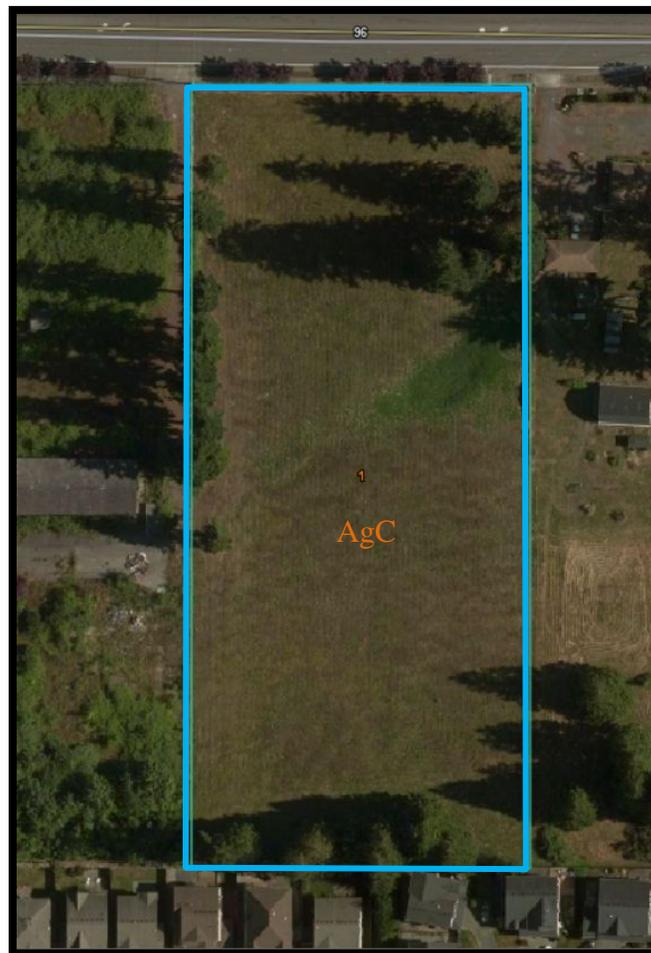


Figure 1. Soil survey for project area. AgC – Alderwood gravelly sandy loam.

Tree Conditions

The project area consists of three strips of trees, which can be described as one forest cover type for discussion purposes. An inventory of the trees was conducted to determine the composition and health of the forest type.

Type I. -- All of the trees in this type are native species. The species found in this type include Douglas-fir (*Pseudotsuga menziesii*), and western red cedar (*Thuja plicata*).

There are a total of 34 trees ranging in diameter from 22 to 68 inches DBH (diameter at 4.5 feet). Twenty-seven (27) of the trees were classified as sound, healthy, long-term trees in the dominant and Codominant crown class. The other 7 trees are not long-term trees due to structural defects or poor health (dead, diseased, or hazardous).

Table 1. Summary of Trees in Type I.

Species	DBH Range (in.)	Total # of Trees	# of Healthy Trees	# of Trees in Poor Health*	Species Composition of Stand
Douglas-fir	22-68	16	14	2	47%
Western Red Cedar	26-46	18	13	5	53%
Sum	22-68	34	27	7	100%

*Dead, diseased, or hazardous.

Off-Site Impacts

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

Discussion

Potential for Tree Retention

There are two potential areas of tree retention:

The first area has two Douglas-fir trees that could be saved (tree # 33 & 34) if space is provided in the project. They are in the northeastern corner of the property.

The other potential tree save area is along the southern property line. Given that the prevailing winds are from the south, and the roots would be impacted on the north side of the trees, this may be acceptable. Up to 20% of the roots can be impacted.

The proposed ‘save’ trees are illustrated on the proposed site plan in Attachment #2. A detailed list of all trees by species, DBH, crown position, condition, root protection zone (RPZ), drip line (D/L) radius, save/remove potential, and retention availability is provided in Attachment #3.

Tree Density Calculations

Chapter 15.10 of the Mill Creek Municipal Code requires that removal of any significant trees have approval by the City planning and development department. In the City of Mill Creek, there is no specific tree retention requirement, except that landowners retain as many significant trees as possible. The following is a summary of the potential tree retention:

Total Project Area	3.96 acres
Total Number of Significant Trees on Site (excluding critical areas)	34 trees
Trees Excluded from Retention Calculation:	
Trees that are Dead Diseased or Dangerous	7 trees
Healthy Trees in Proposed Public Streets	<u>13 trees</u>
Number of Healthy, Significant Trees in Buildable Area:	14 trees
Planned (potential) Tree Retention	7 trees

There are 14 healthy significant trees in the buildable area of the site. Seven of these can potentially be retained. The proposed plan retains 7 trees. No tree replacement will be required.

The landscape plan (prepared by others) should incorporate native conifer trees along with deciduous accent and shade trees to provide a mix of color, texture, and size.

Recommendations

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 Attachment #3).

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 impacted 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. 7 trees are proposed to be retained on the site in the buildable area. If the site plan does not provide space for these trees, then a revised plan will be necessary.
2. 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.
3. Stake and heavily flag the clearing limits.
4. 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.
5. Complete logging. Complete necessary hazard tree removals and invasive plant removals from the tree protection areas. No equipment should enter the tree protection areas during logging.
6. 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 drip line of the save tree or as otherwise specified by WFCI. Maintain fences throughout construction.
7. Complete clearing of the project.
8. Do not excavate stumps within 10' of trees to be saved. These should be individually evaluated by WFCI to determine the method of removal.
9. 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.
10. Complete grading and construction of the project.

Summary

The City of Mill Creek Municipal Code requires as many significant trees as possible to be retained on the buildable area of the site. This plan retains 7 trees, which can be modified if the site plan does not provide space.

Please give me a call if you have further questions.

Respectfully submitted,

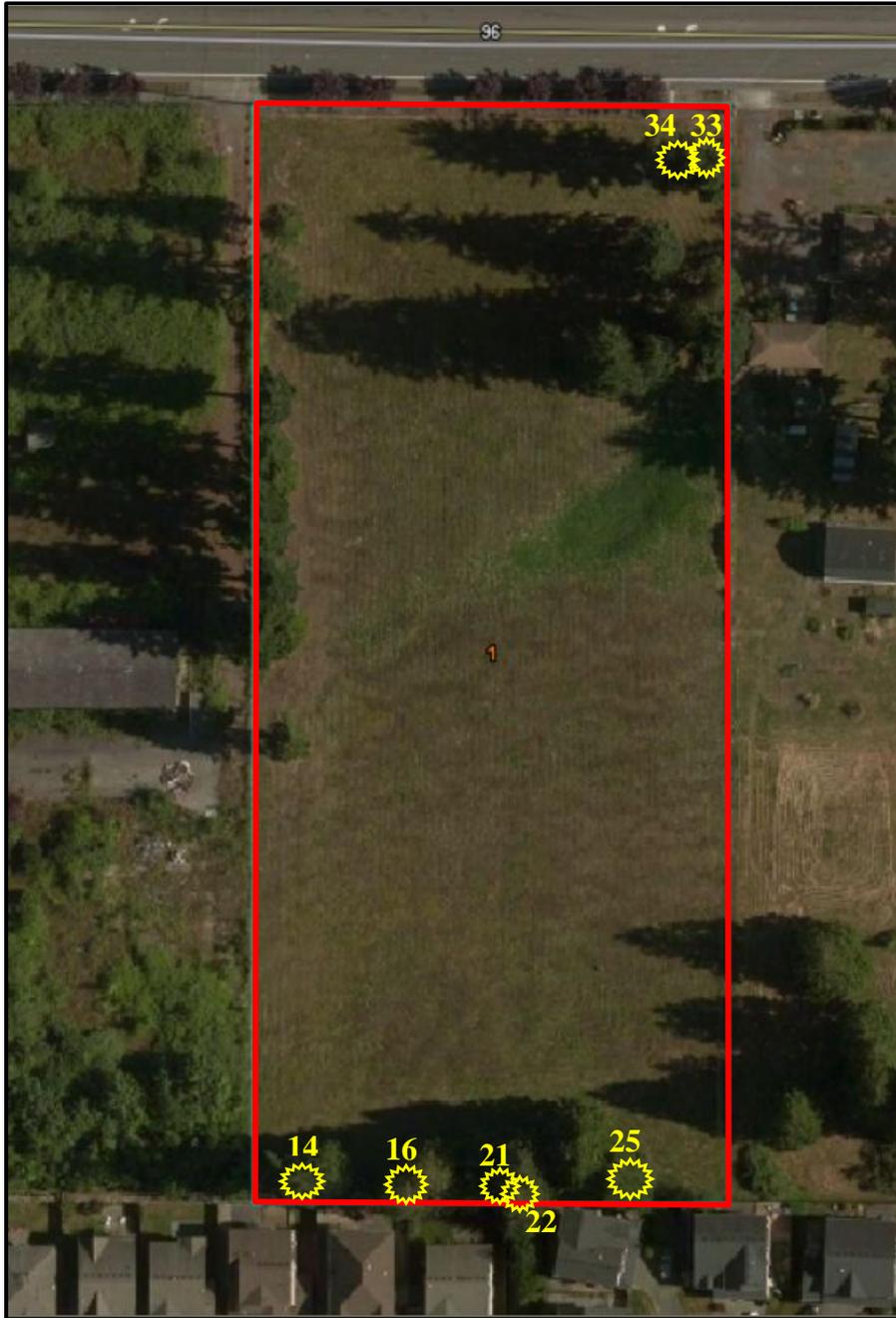
Washington Forestry Consultants, Inc.



Galen M. Wright, ASCA, ACF
ISA Board Certified Master Arborist PN-0129 BU
Certified Forester No. 44
ISA Tree Risk Assessor

attachments: 1) aerial photo with forest cover types
2) site plan with tree protection areas
3) tree list
4) individual tree condition rating key
5) description of tree evaluation methodology
6) glossary of forestry and arboricultural terms
7) tree protection fence detail
8) assumptions and limiting conditions

**Attachment #1: Aerial Photo of Vintage @ Mill Creek
with Potential Save Trees Identified
(USDA Web Soil Survey Photo)**



↑
NORTH
No Scale
↓

— Approximate Site Boundary
☀ Planned Save Trees

Attachment #3: Inventory list of project area trees

A detailed list of all trees by species, DBH, crown position, condition, root protection zone (RPZ), drip line radius, tree health status, and save/remove potential:

Tree #	Species	DBH (in)	Crown Position	Condition	Root Protection Zone (ft)	Drip Line Radius (ft)	Tree Condition: Potential Only to Save (Yes or No)	Potential Save trees in Project: Save or Remove
1	Cedar	40	Dominant	Good	30	16	Yes	
2	Douglas-fir	44	Dominant	Good	30	20	Yes	
3	Douglas-fir	40	Dominant	Good	30	20	Yes	
4	Douglas-fir	28	Codominant	Good	20	15	Yes	
5	Cedar	32	Codominant	Fair	25	20	Yes	
6	Douglas-fir	28	Codominant	Good	20	18	Yes	
7	Douglas-fir	22	Codominant	Good	16	20	Yes	
8	Douglas-fir	32	Dominant	Good	24	25	Yes	
9	Douglas-fir	35	Dominant	Good	26	18	Yes	
10	Cedar	29	Codominant	Good	20	22	Yes	
11	Cedar	12,16,25	Codominant	Poor	20	20	No	
12	Douglas-fir	30	Codominant	Good	24	22	Yes	
13	Cedar	32,27	Dominant	Poor	25	18	No	
14	Douglas-fir	32	Dominant	Good	24	20	Yes	Save
15	Cedar	22,28	Codominant	Fair	20	20	Yes	
16	Cedar	40	Codominant	Good	25	25	Yes	Save
17	Cedar	44	Codominant	Fair	30	25	Yes	
18	Cedar	38	Codominant	Poor	26	30	No	
19	Cedar	35	Codominant	Good	26	20	Yes	
20	Cedar	26	Codominant	Good	20	20	Yes	
21	Cedar	11,16	Codominant	Fair	14	12	Yes	Save
22	Cedar	38	Codominant	Good	26	25	Yes	Save
23	Cedar	26,42	Codominant	Poor	30	25	No	
24	Cedar	28,28	Codominant	Poor	30	25	No	
25	Cedar	46	Codominant	Good	25	25	Yes	Save
26	Douglas-fir	68	Dominant	Poor	50	30	No	
27	Douglas-fir	35	Codominant	Good	26	18	Yes	
28	Cedar	30	Codominant	Good	20	20	Yes	
29	Douglas-fir	26	Codominant	Fair	18	14	Yes	
30	Douglas-fir	32	Dominant	Good	25	20	Yes	
31	Cedar	34	Codominant	Good	25	20	Yes	
32	Douglas-fir	39	Dominant	Poor	30	20	No	
33	Douglas-fir	34	Codominant	Fair	25	20	Yes	Save
34	Douglas-fir	36	Codominant	Fair	25	20	Yes	Save

Note: some trees had multiple stems, thus a range of DBH's.

Attachment #4: Individual Tree Rating Key for Tree Condition

RATING	SYMBOL	DEFINITION
Very Good	VG	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Major branch loss – unsymmetrical crown • Greatly reduced growth • Several structurally important 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Dead

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: Measure of tree diameter at 6 inches above the ground line for nursery stock.

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.

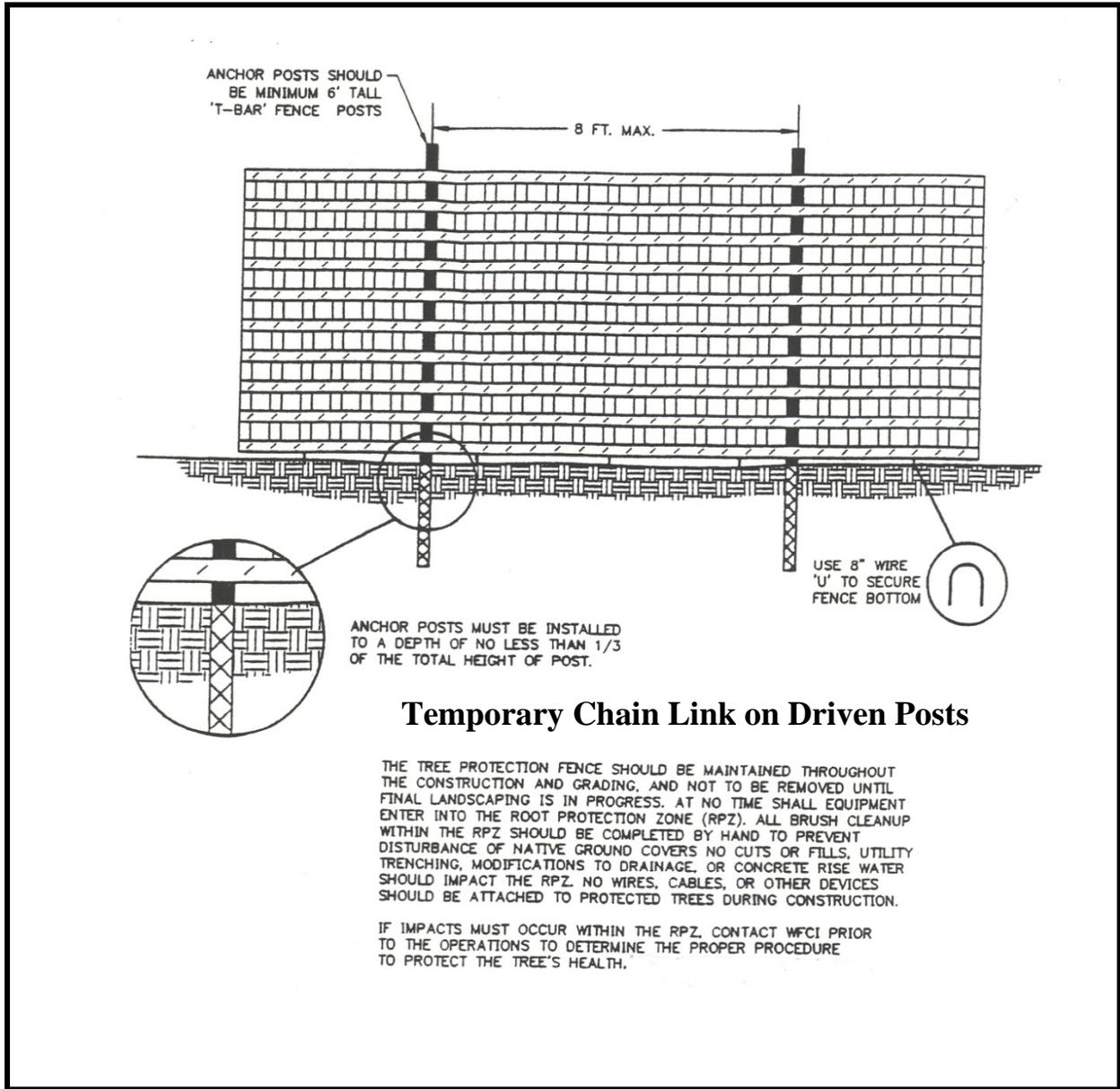
Dominant Crown Position: Receives light from above and from the sides.

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.