

TO: Bob Baldwin, Project Manager

JOB SITE: 10613 NE 38<sup>th</sup> Place, Kirkland, WA 98033

SUBJECT: Tree Inventory & Viability Assessment

DATE: July 14, 2014

PREPARED BY: Scott Baker,  
ASCA Registered Consulting Arborist #414, ISA Board Certified  
Master Arborist PN-0670B, ISA Qualified Tree Risk Assessor

Haley Galbraith,  
ISA Certified Arborist PN-7512A, ISA Qualified Tree Risk Assessor

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- Table of Trees*
- Marked-up Site Plan*
- Kirkland Tree Protection Specifications*

## Summary

We identified sixteen significant trees on site that will be impacted by proposed site work activities; four, or possibly eight, of them should be retained and protected throughout all phases of construction, pending required root exploration. Eight trees are not viable due to the location of proposed site work.

None of the trees designated to remain should be negatively impacted by the removal of non-viable trees on site.

## Assignment & Scope of Report

This report outlines the site inspection by Scott Baker and Haley Galbraith of Tree Solutions Inc., on July 9, 2014. We were asked to visit the site and inventory all significant trees with complete descriptions of the species, size, condition, and viability of each tree. We were asked to develop a formal Arborist Report addressing tree retention possibilities for the site throughout construction.

Included in this report are observations from the site located at 10613 NE 38<sup>th</sup> Place, discussion, and recommendations. Bob Baldwin, Project Manager for Eastside Preparatory School, requested these services to acquire information for project planning in accord with requirements set by the city of Kirkland.

#### Limits of Assignment

Unless stated otherwise: 1) information contained in this report covers only those trees that were examined and reflects the condition of those trees at the time of inspection; and 2) the inspection is limited to visual examination of the subject trees without dissection, excavation, probing, climbing, or coring unless explicitly specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

Additional Assumptions and Limiting Conditions can be found in Appendix A.

#### **Methods**

We measured the diameter of each tree at standard height (DSH), typically 54-inches above grade. The species, size, condition, limits of disturbance for trees to be retained, proposed actions, and other notes for each tree can be found in the attached Table of Trees.

We tagged each tree assessed with a small, numbered aluminum tag on the project side. Also attached, is a Marked-up Site Plan showing the proposed limits of construction, tree locations, and tag numbers corresponding to the table.

Photographs taken during our visit to the site can be found in Appendix B.

We evaluated tree health and structure utilizing visual tree assessment (VTA) methods. The basis behind VTA is the identification of symptoms, which trees produce in reaction to weak spots or areas of mechanical stress. Trees react to mechanical and physiological stresses by growing more vigorously to re-enforce weak areas, while depriving less stressed parts. (Mattheck & Breloer 1994) Understanding uniform stress allows us to make informed judgments about the condition of a tree.

#### **Observations & Discussion**

The existing slab-on-grade structure will be demolished, and excavation, well below existing grade, will be required for the new structure. Most of the trees slated for removal are located in the western half of the site.

We identified two groves on site, defined by the City as three or more significant trees with canopies touching or overlapping. These groves are identified on the attached site plan with a red cloud-like outline. Only one tree within the groves is slated for removal. It is our opinion that as long as the stump of tree 535 is not pulled, but either cut flush with grade or ground out, there will be no significant negative impacts to the grove or other trees nearby.

Four of the trees we assessed will be retained and protected, following the attached Kirkland Tree Protection Specifications and the limits of disturbance outlined in the table. It is possible that four additional trees, for a total of eight, could be retained following root exploration via air excavation as described in the table. This action is required, and a qualified arborist shall be present to either supervise or take a look once roots in the subject areas have been uncovered.

If it is determined that cutting roots of the four potentially retainable trees at the necessary locations will either destabilize them, or cause irreparable damage to health, then the trees will require removal. If roots to be cut are not critical to the health and stability of the four trees, then tree protection measures shall be installed and maintained throughout all phases of site work as with the other four trees to remain.

We observed the use of bark mulch in some areas on site. We advise against further use of bark mulch as it repels moisture, is low in nutrient content, and breaks down slowly. Instead, we highly recommend the use of woodchip mulch, which retains moisture, regulates soil temperature, and adds nutrients to the soil as it breaks down.

We observed invasive ivy as landscaping in many areas on site. Due to the invasive nature of this plant, it is our opinion that this project should be viewed as an opportunity to carefully remove ivy in as many places as possible and replace with more desirable ground cover plants. We are happy to provide more detailed recommendations regarding this process by request.

### Recommendations

- Perform required root exploration for trees 532, 533, 534, and 544 prior to commencement of site work activities.
- Install tree protection for trees to be retained prior to heavy equipment arriving on site.
- Trees to be retained should not be damaged by trees that will be removed.

### Glossary

**air excavator:** device that blows air at high force; used to remove soil from the root zone of trees (Lilly 2001)

**arborist wood chips:** a mulch consisting of woody tissue from a tree, obtained during tree-trimming operations.

**canopy:** the aboveground portions of a tree (Lilly 2001)

**co-dominant stems:** stems or branches of nearly equal diameter, often weakly attached (Matheny *et al.* 1998)

**DSH:** diameter at standard height; the diameter of the trunk measured 54 inches (4.5 feet) above grade (Matheny *et al.* 1998)

**ISA:** International Society of Arboriculture

### References

ANSI A300 (Part 1) – 2008 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2008.

Lilly, Sharon. Arborists' Certification Study Guide. Champaign, IL: The International Society of Arboriculture, 2001.

Matheny, Nelda and James R. Clark. Trees and Development: A Technical Guide to Preservation of Trees During Land Development. Champaign, IL: International Society of Arboriculture, 1998.

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

## **Appendix A – Assumptions & Limiting Conditions**

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.
3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein 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.
8. Sketches, drawings 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. 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 Consultant as to the sufficiency or accuracy of the information.
9. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of the 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. Consultant makes no warranty or guarantee, express or implied, that the problems or deficiencies of the plans or property in question may not arise in the future.
10. Loss or alteration of any part of this Agreement invalidates the entire report.

**Appendix B – Photographs**



**Photo 1: Limits of disturbance for tree 531 represented by red line – careful root pruning necessary & acceptable**



**Photo 2: Limits of disturbance for trees 532, 533, & 534 represented by red line – tree 535 to be removed (red circle with X)**



**Photo 3: Trees to be removed at west end of site (left to right: 537, 538, & 539)**



**Photo 4: Tree 543 to be retained**



Photo 5: Base of tree 544 – root exploration required to determine if tree can be retained



Photo 6: Looking northwest from southeast corner of site at grouping of non-significant Japanese maple trees (circled in red) – advisable to tie back canopies during site work activities in order to avoid damage from machinery

**Attachments:**

- Table of Trees**
- Marked-up Site Plan**
- Kirkland Tree Protection Specifications**

**Table of Trees**  
Eastside Preparatory School

Date of Inventory: 07.09.2014  
Table Prepared: 07.14.2014

Tree #	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip Line Radius (feet)				Proposed Actions	Credits	Notes
							North	South	East	West			
531	<i>Platanus x acerifolia</i>	London plane	26.0	Good	Good	Retaining wall to southwest (continuation of line after slants to grade)	32	28		25	Retain; prune for clearance as necessary	9	Eastern drip line overhangs existing structure; surface roots; elevated approximately 8 feet above grade behind slanted retaining wall to southwest; some roots from this tree may be cut, but far enough from the tree that health & stability are not likely to be jeopardized
532	<i>Tsuga heterophylla</i>	Western hemlock	11.0	Fair	Fair	Sidewalk to southeast	14		11		Possibly retain; root exploration required	1	Shared canopy with 533 to southwest; previously climbed with spurs; root exploration along existing sidewalk to southeast would be required if attempting to retain
533	<i>Tsuga heterophylla</i>	Western hemlock	13.0	Fair	Fair	Sidewalk to southeast			20		Possibly retain; root exploration required	2	Shared canopy with 533 to northeast & 534 to southwest; previously climbed with spurs; root exploration along existing sidewalk to southeast would be required if attempting to retain
534	<i>Pinus jeffreyi</i>	Jeffrey pine	21.5	Good	Good	Sidewalk to southeast			25		Possibly retain; root exploration required, subsequent clearance pruning may be necessary	6	Shared canopy with 534 to northeast; previously climbed with spurs; root exploration along existing sidewalk to southeast & along closest extent of proposed excavation would be required if attempting to retain
535	<i>Tsuga heterophylla</i>	Western hemlock	14.0	Fair	Fair	N/A			14		Remove	3	Shared canopy with 534 to northeast; previously climbed with spurs; not viable for retention due to location of planned excavation; removal of this tree is not likely to negatively impact 534 or others in Grove - do not pull stump, cut it flush with grade or grind it out
536	<i>Prunus serrulata</i>	Flowering cherry	7.0	Fair	Fair	N/A	10	11	4	11	Remove	1	Surface roots with damage along entire planting strip; not viable for retention, located within proposed area of excavation
537	<i>Acer platanoides</i>	'Columnare' Norway maple	20.5	Good	Good	N/A	16	16	18	15	Remove	6	Grows on mound next to northwest corner of existing structure; bark mulch present; not viable for retention, located within proposed area of excavation

**Table of Trees**  
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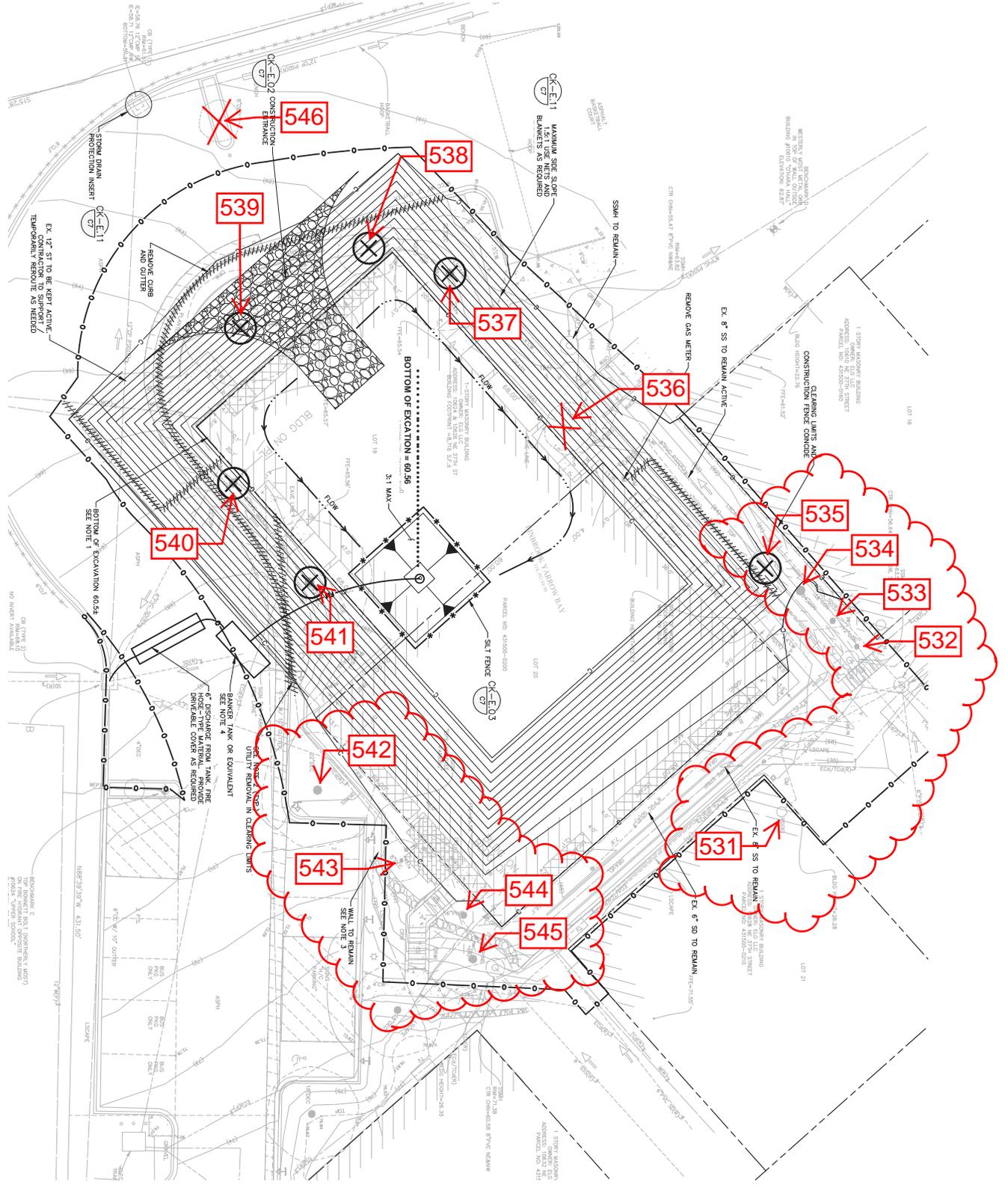
Tree #	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip Line Radius (feet)				Proposed Actions	Credits	Notes
							North	South	East	West			
538	<i>Prunus serrulata</i>	Flowering cherry	11.0	Poor	Poor	N/A	10	10	10	14	Remove	1	Surface roots; brown rot observed; poor past pruning; not viable for retention, located within proposed area of excavation
539	<i>Platanus x acerifolia</i>	London plane	17.0	Good	Good	N/A	30	24	25	30	Remove	4	Surface roots throughout growing space; not viable for retention, located within proposed area of excavation
540	<i>Cedrus deodara</i>	Deodar cedar	20.0	Good	Good	N/A	17	17	17	17	Remove	6	Grows less than 2 feet from southeast corner of existing structure; previously climbed with spurs; poor past pruning, including flush cuts; not viable for retention, located within proposed area of excavation
541	<i>Platanus x acerifolia</i>	London plane	24.0	Good	Good	N/A	22	24	28		Remove	8	Grows approximately 4 feet from south side of existing structure; not viable for retention, located within proposed area of excavation
542	<i>Platanus x acerifolia</i>	London plane	17.0	Good	Good	Retaining wall to north	25	24	29	30	Retain; prune for clearance as necessary	4	Western drip line overhangs existing structure; grows south of existing retaining wall, elevated above proposed area of excavation; tree circle exists to approximately 1 foot from base with bare soil - turf beyond; appears that past trenching occurred southeast of tree; roots may have taken advantage of that disturbance
543	<i>Acer palmatum</i>	Japanese maple	9.0*	Good	Good	Edge of existing structure, as possible	10	10	10	10	Retain; prune for clearance as necessary	1	*DSH measured at narrowest point below union; poor past pruning; establish tree protection box around this tree - may be advisable to tie back branches to avoid damage from machinery
544	<i>Pinus jeffreyi</i>	Jeffrey pine	16.0	Good	Good	Edge of existing structure, as possible		14	16	16	Possibly retain; root exploration required, subsequent clearance pruning may be necessary	4	Northern drip line overhangs existing structure; existing stairway to southwest will remain; likely that roots from this tree are heavily invested in rocky above to east

**Table of Trees**  
Eastside Preparatory School

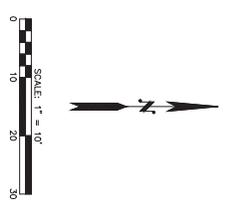
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Tree #	Scientific Name	Common Name	DSH (inches)	Health Condition	Structural Condition	Limits of Disturbance	Drip Line Radius (feet)				Proposed Actions	Credits	Notes
							North	South	East	West			
545	<i>Pinus jeffreyi</i>	Jeffrey pine	20.0	Good	Fair -	Edge of existing structure, as possible	21	10	21	21	Retain; plan for structural support/ improvements	6	Multiple co-dominant unions narrowly attached - will be problematic eventually, advisable to subordinate weaker lead of highest union, perhaps the installation of a cabling system would also be wise
546	<i>Acer platanoides</i> 'Crimson King'	'Crimson King' Norway maple	6.0	Good	Good	N/A	10	10	10	10	Remove	1	Not viable for retention due to site access alterations
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**TESC AND UTILITY DEMOLITION PLAN**  
 1"=10'



- GENERAL NOTES**
1. PER SITE PLAN REPORT DURING EXCAVATION OF EXISTING FOUNDATION, CONTRACTOR DOES NOT INCLUDE OVER EXCAVATION.
  2. CONTRACTOR TO REMOVE ALL UTILITIES LABELLED TO REMAIN. EXCEPT UTILITIES FINAL LANDSCAPE PLANS.
  3. WALL MAY BE REMOVED. DEPENDS ON
  4. SEDIMENT TRAP/BANKER TANK STORAGE SHALL BE AT LEAST FLOOD DRAINAGE OR PLUMBING TO-TW STORED WAST (0.078' CFS PER SQ. FT.) SEDIMENT TRAP SHALL BE PER CFS 503.03.



DATE	DESCRIPTION

FOR REFERENCE ONLY  
 SCHEMATIC  
 2 JUNE 2014  
 RICHARD WILSON  
 DEMOLITION ENGINEER



**EASTSIDE PREP SCHOOL - SCIENCE + GYM PROJECT**  
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 PROJ NUMBER: 14003

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**Kirkland Tree Protection Specifications – as stated in Chapter 95.34 of KZC**

6. Tree Protection during Development Activity. Prior to development activity or initiating tree removal on the site, vegetated areas and individual trees to be preserved shall be protected from potentially damaging activities pursuant to the following standards:

a. Placing Materials near Trees. No person may conduct any activity within the protected area of any tree designated to remain, including, but not limited to, operating or parking equipment, placing solvents, storing building material or soil deposits, or dumping concrete washout or other chemicals. During construction, no person shall attach any object to any tree designated for protection.

b. Protective Barrier. Before development, land clearing, filling or any land alteration, the applicant shall:

1) Erect and maintain a readily visible temporary protective tree fencing along the limits of disturbance which completely surrounds the protected area of all retained trees or groups of trees. Fences shall be constructed of chain link and be at least four feet high, unless other type of fencing is authorized by the Planning Official.

2) Install highly visible signs spaced no further than 15 feet along the entirety of the protective tree fence. Said sign must be approved by the Planning Official and shall state at a minimum "Tree Protection Area, Entrance Prohibited" and provide the City phone number for code enforcement to report violations.

3) Prohibit excavation or compaction of earth or other potentially damaging activities within the barriers; provided, that the Planning Official may allow such activities approved by a qualified professional and under the supervision of a qualified professional retained and paid for by the applicant.

4) Maintain the protective barriers in place until the Planning Official authorizes their removal.

5) Ensure that any approved landscaping done in the protected zone subsequent to the removal of the barriers shall be accomplished with light machinery or hand labor.

6) In addition to the above, the Planning Official may require the following:

a) If equipment is authorized to operate within the critical root zone, cover the areas adjoining the critical root zone of a tree with mulch to a depth of at least six inches or with plywood or similar material in order to protect roots from damage caused by heavy equipment.

b) Minimize root damage by excavating a two-foot-deep trench, at edge of critical root zone, to cleanly sever the roots of trees to be retained.

c) Corrective pruning performed on protected trees in order to avoid damage from machinery or building activity.

d) Maintenance of trees throughout construction period by watering and fertilizing.

c. Grade.

1) The grade shall not be elevated or reduced within the critical root zone of trees to be preserved without the Planning Official's authorization based on recommendations from a qualified professional. The Planning Official may allow coverage of up to one half of the area of the tree's critical root zone with light soils (no clay) to the minimum depth necessary to carry out grading or landscaping plans, if it will not imperil the survival of the tree. Aeration devices may be required to ensure the tree's survival.

2) If the grade adjacent to a preserved tree is raised such that it could slough or erode into the tree's critical root zone, it shall be permanently stabilized to prevent suffocation of the roots.

3) The applicant shall not install an impervious surface within the critical root zone of any tree to be retained without the authorization of the Planning Official. The Planning Official may require specific construction methods and/or use of aeration devices to ensure the tree's survival and to minimize the potential for root-induced damage to the impervious surface.

4) To the greatest extent practical, utility trenches shall be located outside of the critical root zone of trees to be retained. The Planning Official may require that utilities be tunneled under the roots of trees to be retained if the Planning Official determines that trenching would significantly reduce the chances of the tree's survival.

5) Trees and other vegetation to be retained shall be protected from erosion and sedimentation. Clearing operations shall be conducted so as to expose the smallest practical area of soil to erosion for the least possible time. To control erosion, it is encouraged that shrubs, ground cover and stumps be maintained on the individual lots, where feasible.

d. Directional Felling. Directional felling of trees shall be used to avoid damage to trees designated for retention.

e. Additional Requirements. The Planning Official may require additional tree protection measures that are consistent with accepted urban forestry industry practices.