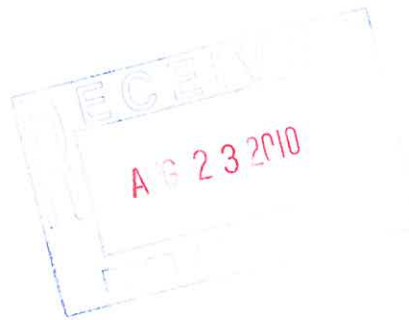


August 18, 2010



✓ Diahann Howard  
Port of Benton County  
3100 George Washington Way  
Richland, WA 99352

Pete Rogalsky  
City of Richland  
PO Box 190  
505 Swift Blvd.  
Richland, WA 99352

RE: Cooperative Agreement  
WSU C#18959

Enclosed is one (1) original of the above referenced agreement for your respective files. If you have any questions, please feel free to contact us at the number below.

Sincerely,

  
Genesis Gavino  
Confidential Secretary

gg  
Enclosure

**COOPERATIVE AGREEMENT  
BETWEEN  
CITY OF RICHLAND  
AND  
PORT OF BENTON COUNTY  
AND  
WASHINGTON STATE UNIVERSITY**

THIS AGREEMENT (the "Agreement") is made by and between the CITY OF RICHLAND, hereinafter City, the PORT OF BENTON COUNTY, hereinafter Port, and WASHINGTON STATE UNIVERSITY through its Tri-Cities Campus, hereinafter called WSU, upon the following terms and conditions:

1. Description of Premises and Project:

Upon execution of this Agreement, the Port and City shall have the right to use an area located along First Street on the north edge of the WSU-Tri-Cities Campus, as shown on Attachment "A, for the purpose of the planting and maintaining Washington Hawthorn and Thornless Honeylocust trees, all as more fully described herein.

2. City's Responsibilities:

- a. The CITY shall provide the trees to be planted.
- b. The CITY shall provide irrigation water to the Port for the purpose of irrigating the trees.

3. Port's Responsibilities:

The Port shall, at its cost, plant the trees, and maintain the landscaping, including the trees, grass and any other plantings, in accordance with standards established by WSU, to include but not limited to tree trimming, adequate irrigation, mowing, weed control, and irrigation system installation and repairs.

4. WSU'S Responsibilities:

- a. WSU shall cooperatively, with the City and Port, allow access to the Premises for the purposes provided 1, 2, and 3 above.
- b. Review, revise, and approve, as appropriate, the plans for the planting, caring and maintaining the trees and the Premises.
- c. WSU shall not remove or move the trees without the consent of the City and the Port.

5. TERM:

The initial term of this agreement shall be three years from July 1, 2010 through June 30, 2013, and may be renewed for similar periods thereafter by mutual agreement of the Parties.

6. RECORDS MAINTENANCE:

- a. The parties to this Agreement shall each maintain books, records, documents and other evidence, which sufficiently and properly reflect it responsibilities hereunder.
- b. These records shall be subject to inspection, review or audit by personnel of each party, other personnel duly authorized by each party, and the Office of the State Auditor.
- c. All books, records, documents and other material relevant to this Agreement shall be retained applicable retention periods.

7. USE OF TRADEMARKS:

No Party may use another Party's trademarks without the prior written consent of the Party whose trademark is sought to be used, except, each Party grants to the other Parties the limited right and license to use their trademarks for the sole purposes of identifying the involvement of the Parties in this Agreement or otherwise to carry out their obligations under this Agreement.

8. DISPUTES:

In the event that a dispute arises under this Agreement which cannot be resolved by the parties, the parties agree to allow the dispute to be resolved by a Dispute Panel in the following manner: each party shall appoint one (1) member to the Dispute Panel, and those members so appointed shall jointly appoint an additional member to the Dispute Panel. The Dispute Panel shall review the facts, contract terms, applicable statutes and rules and make a determination of the dispute. The determination of the Dispute Panel shall be final and binding on the parties hereto.

9. DAMAGES:

If any repair or restoration work to the Premises is needed as a result of the activities of the City or the Port under this Agreement, the Party causing the damage shall repair and restore the property so damaged.

10. LIABILITY AND INDEMNIFICATION:

Each Party shall defend, indemnify, and hold harmless the other Party(ies), and their agents and employees, from any and all liability, litigation, damage, loss, injury, expense or cost arising out of its acts or omissions in the performance of this Agreement.

11. NOTICES:

All official notices required under this agreement shall be given as follows:

WSU-Tri-Cities  
Attn: Lori Selby, Vice Chancellor  
WSU Tri-Cities  
2710 University Drive  
Richland, WA 99345-1671

City of Richland  
Attn: Pete Rogalsky  
Public Works Director  
P.O. Box 190  
505 Swift Blvd.  
Richland, WA 99352

Port of Benton County  
Attn: Diahann Howard  
Port of Benton  
3100 George Washington Way  
Richland, WA 99352

Washington State University  
Attn: Richard Heath, Sr. Assoc VP  
P.O. Box 641045  
Pullman, WA 99164-1045

16. GOVERNING LAW:

This Agreement shall be governed by and construed in accordance with the laws of the State of Washington.

19. AMENDMENTS/ENTIRE AGREEMENT:

No alteration or variation of terms of this Agreement shall be valid unless made in writing and signed by the parties hereto. Oral understandings or agreements, not incorporated herein, shall not be binding, and this writing constitutes the complete and final agreement of the parties with respect to the subject matter hereof.

**Recommended by:**

**Washington State University-Tri-Cities**

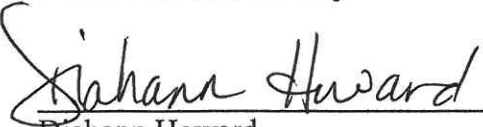
 8/12/10  
\_\_\_\_\_  
Lori Selby Date

**Approved by:**

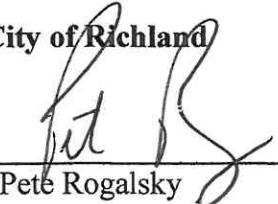
**Washington State University**

 8/17/10  
\_\_\_\_\_  
Richard A. Heath Date

**Port of Benton County**

 8-9-10  
\_\_\_\_\_  
Diahann Howard Date

**City of Richland**

 8/10/10  
\_\_\_\_\_  
Pete Rogalsky Date





## PART 1 – GENERAL

*The intent of this document is to provide guidelines that will be used for all WSU facilities and property that require tree installation as part of Landscape Architectural Landscaping design and construction.*

### **Related Sections:**

<b><u>CSI (2004)</u></b>	<b><u>WSU Titles</u></b>
31 00 00	Earthwork
32 90 00	Landscaping
32 91 00	Soil
32 92 00	Seeded Grass, Sod and Turf

### 1.01 INTRODUCTION

- A. **To the designer:** All italicized text shall be used as direction and information to the Primary Consultant and to the Landscape Architect (LA) developing the design. All non-italicized text preceded by "Specify:" shall be included in project specifications as written.
- B. **Section 32 90 00 (Landscaping).** Section 32 93 43 augments Section 32 90 00 , Landscaping. All standards found in Section 32 90 00 shall apply to all work specified under Section 32 93 43. Some standards for trees, including inspections, planting and warranty, differ from those for other plants, and are specifically addressed in Section 32 93 43.
- C. **Project Emphasis.** Design and construction shall emphasize safety, security, accessibility, efficient maintenance, quality control & assurance, and longevity.

### 1.02 SCOPE OF WORK

- A. **Scope.** Work covered by this section includes all of the planning, compliance, design, installation, and warranty elements for new landscaping using trees. This work shall include all associated horticultural practices, best management practices, construction and installation activities, as well as site preparation, oversight, maintenance, quality assurance and administrative activities.
- B. **"Scope of Work" Statement.** A scope of work statement shall occur at the beginning of the specification section describing to the Contractor the work encompassed under this section. It shall be similar to:

Scope: Contractor shall furnish all materials, equipment, supervision and labor necessary for site preparation, installation/application, fertilizing, mulching, watering and protection needed for complete installation of trees. Scope shall include coordination of work with all landscaping and landscape systems.

*Project specific requirements may be added in subsequent paragraphs.*

**1.03 DESIGN CONSIDERATIONS** *Also Use 32 90 00*

**A. Specific Design Considerations:**

1. **Safety:** *Human health, safety, security and welfare shall be the primary considerations in all Landscape Architecture design.*
2. **Visibility:** *Trees shall not inhibit area lighting and visibility or provide hiding places. Consideration shall be given to visibility requirements at vehicular traffic and pedestrian sight lines. Vehicular traffic sightlines shall not be inhibited by existing or future tree growth.*
3. **Pedestrian Hazards:**
  - a. **Trip Hazards.** *Fruiting and cone-bearing trees create pedestrian hazards and increase maintenance costs when planted near constructed pedestrian surfaces. These types of trees shall be avoided over constructed pedestrian surfaces. Their use is allowed in pedestrian areas that are not hardscape.*
  - b. **Root Damage.** *In selecting species for placement next to constructed surfaces, ensure that trees will not eventually damage surfaces. As needed, use vertical root barriers to minimize root growth beneath surfaces. Ensure roots will not become pedestrian hazards as trees mature.*
4. **Tree Placement:** *Site trees a minimum of 1 ½ times their mature radius of dripline, or 10 feet (whichever is greater) away from any constructed vehicular surfaces. Design placement of large trees so they are sited away from buildings a minimum of 1 ¾ times their mature radius of dripline. Exceptions may be coordinated with PM and professional staff where physical function of trees requires closer placement. (Example: placement of trees to create shade in a parking lot.)*
5. **Maintenance Considerations:** *All design standards shall be developed with the efficiency and economy of tree maintenance in mind. WSU has increasingly limited maintenance budgets and limited Grounds staff.*

**1.04 SAFETY AND SECURITY.** *Use 32 90 00, 1.04*

**1.05 QUALITY CONTROL AND QUALITY ASSURANCE.** *Use 32 90 00, 1.05*

- A. Pre-Installation Conference.** *Conduct conference at the project site in accordance with requirements of Section 01 20 00 (01200) containing "Project Meetings. All subcontractors involved in installation and maintenance of trees shall be included. Write specifications in accordance with 32 90 00, 1.05, C, Quality Control and Quality Assurance, Pre-Installation Conference.*

**1.06 PROJECT SPECIFICATION REQUIREMENTS.** *Use 32 90 00, 1.06*

- A. **Common Considerations .** *In general, specifications for trees shall cover all elements of plant quality, health, handling and shipping, certification, tagging, inspection, substitution, temporary storage, installation, irrigation, fertilization and maintenance. These shall be tailored to each project in accordance with requirements specific to each campus, project scope, site conditions, physical functions and design intent and species used.*

**Part 2 – Products and Materials**

**2.01 Silva Cells**

*Use manufacturers specifications. Choose products based on site conditions, intended functions (tree rooting, water retention, runoff collection and storage, etc.) and product characteristics. Ensure design of silva cells coordinates with mechanical, electrical and engineering.*

**2.02 Soil:**

- A. For tree planting: *Soil for planting trees shall be clean soil and topsoil as specified in 32 90 00. Clean soil shall be prepared from soil taken from the planting pits or from the immediate site and brought to standards of clean soil.*
- B. Silva Cells: *Soil for silva cells shall meet or exceed manufacturer's specifications.*

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- 2.03 Trees:** *Specify trees having a caliper of two inches, or less. If physical function in design or species characteristics require larger planting stocks, consult PM for variance.*

**Part 3 – EXECUTION**

**3.01 Existing Site**

- A. **Protection of Trees Intended To Remain On and Near Site**

1. **Inventory of Existing Trees:** *WSU has inventoried the majority of Pullman campus trees. By request and on a project by project basis, WSU can provide to the LA the location, description, and an assessment value for existing trees. This shall be requested as part of Inventory and Analysis, at the beginning of the Design Development Phase.*



2. **Protected Trees.** *Prior to the beginning of construction, the LA shall document the condition of trees that are to be protected. Provide document as part of site conditions in construction contract documents. The PM or designated representatives shall document construction related damages. In general, if any tree has lost more than 25% of its initially viable, aboveground structure as a consequence of non-specified construction activities, it shall be considered for replacement. These determinations shall be made by the LA in conjunction with PM and assigned professional staff. See: Appendix-A, this section*

*Specify:* The Contractor shall be responsible for the health and protection of trunks, limbs and roots of existing trees that are to remain on the project site until substantial completion and site stabilization. These include trees that are adjacent to the project site. Value shall be determined in accordance with the WSU Tree Removal and Replacement Policy. If a tree is to be replaced, WSU shall determine whether Direct Replacement, Assessed Valuation, or a combination will be used.

- a. **Tree Assessment Valuation.** *The tree assessment and replacement value shall be established using the International Society of Arboriculture Guidelines and will be accomplished by CPD in accordance with the WSU Tree Removal and Replacement Policy, Appendix-A, this section.*
- b. **Direct Replacement of Trees.** *If direct replacement is chosen, then it shall be coordinated with the PM, using the same procedures, specifications, grading standards, and warranty as required for initial installation of new plants.*

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*Specify:* Replacement plants shall be installed using the same procedures, specifications, grading standards, and warranty as are required for initial installation of new plants.

- B. **Valuation of Trees Intended for Removal by Design.** *The total value of trees intended to be removed by design shall be replaced by the plan to meet or exceed that total value.*
- C. **Valuation of Trees to be Salvaged and Relocated.** *If by design a tree has been identified for relocation, either within the project boundaries or elsewhere on campus, the project shall be credited with the value of that tree. The contractor shall be responsible for digging, maintaining, handling, protecting and replanting relocated trees in the same manner as specified herein for new trees. Relocated trees shall be subject to the same warranty conditions as new trees.*

*If, at the discretion of WSU, a tree designated to be removed by the design is instead salvaged by WSU and relocated, that tree shall not be valued, and the contractor shall bear no responsibility for that tree. Any such salvage and relocation of trees by WSU shall be accomplished prior to notice to proceed.*

### 3.02 Prior to Construction

#### A. **Protective Fencing.**

*Specify:* Existing trees, including those newly planted, within the construction zone shall be protected using 5 foot high chain link fencing placed to entirely enclose driplines of any protected trees. The area inside the fence is to be protected. The dripline may be approximated by measuring the trunk-to-tip distance for the limb reaching farthest away from the tree, and using that distance as the radius of a circle centered on the tree trunk.

- For a group of trees, place fence at, or beyond, the outside driplines of the outside trees in the groups.
- For single trees greater than 6" caliper, place the fence at, or beyond, 1.5 times the radius of the dripline.
- For single, columnar trees place fence at, or beyond, 2-times the radius of drip line.

#### B **Temporary Work Within Protected Areas.** *Use standards for Temporary Work Within Protected Areas, found in Section 32 90 00.*

#### C. **Protect Roots.** *Avoid compaction or contamination of feeder roots of trees, which lie in the upper 2–3 feet of soil. See 32 90 00 for standards of root protection for all plants, including trees.*

#### D. **Pruning.** *Removal of Interfering Branches and Trimmings. See (1), below.*

*Specify:* No pruning shall be done until approved by PM or designated representative. Removal of interfering branches will be supervised by PM or their designated representative. Removal of branches shall conform to Best Management Practices. All trimmings shall be removed from the site by the Contractor, and either taken to the WSU Compost Facility, or disposed of in a legal manner at an off-campus site.

(1) *As examples for LA, see:*

*ANSI A300, American National Standard for Tree Care Operations*

*[http://forestry.about.com/od/arboriculture/ss/why\\_prune.htm](http://forestry.about.com/od/arboriculture/ss/why_prune.htm) or at*

*<http://hort.ufl.edu/woody/pruningcuts.html>.*

*[http://www.seattle.gov/transportation/docs/EnglishonlyTreePruning%20Guide12\\_05.pdf](http://www.seattle.gov/transportation/docs/EnglishonlyTreePruning%20Guide12_05.pdf)*

**NOTE:** *These and all following are examples for LA's use only. They are not definitive. LA must conduct independent, detailed Inventory & Analysis and establish Best Management Practices specific to their project and design.*

- E. **Trenching.** Do not trench within dripline. See (2), below.

*Specify:* Open trenches shall not be routed within the dripline of trees that are to be preserved. Where construction documents require trenching within driplines, damage shall be minimized by careful placement of trenches to avoid large roots, or by hand tunneling under roots. As a last resort, roots shall be cleanly cut. If any root is greater than 1 ½ inch in diameter cutting shall be done under the supervision of the PM, or a designated representative. Cutting roots shall be performed using Best Management Practices. Immediately after cutting cover ends of cut roots with wet burlap, tie in place, keep burlap wet during exposure, then remove burlap as trench is backfilled. Cutting of roots does not relieve the Contractor from responsibility if the tree dies, entirely or in part, within the two Warranty Growing Season period.

(2) As examples for LA, see:

ANSI A300, *American National Standard for Tree Care Operations*  
<http://www.extension.umn.edu/distribution/housingandclothing/DK6135.html>, or  
<http://extension.missouri.edu/xplor/agguides/hort/g06885.htm#Types>, or  
<http://www.ext.colostate.edu/Pubs/garden/07420.html>.

- F. **Protect Plants from Water Stress.** Require preparation and submittal of a watering plan and schedule and a contingency watering plan in accordance with Section 32 90 00.
- G. **Holding Nursery.** The contractor shall assure trees are protected and maintained in a holding nursery in accordance with specifications in Section 32 90 00.
- H. **Acclimatization.** The LA shall identify and determine specifications for any trees that will require acclimatization at any time during project. The standards for acclimatization are found in 32 90 00.
- I. **Planting Season.** The LA shall establish specifications that ensure holding nurseries can successfully protect all trees through extreme conditions of sun, high temperatures, wind, and drought. The LA shall specify that no planting occurs on any site where irrigation is not available or where conditions cannot support plant survival. Standards for planting season are found in 32 90 00.

**3.03 Construction.** Use Section 32 90 00.

**3.04 Quality Assurance**

- A. **Condition of Trees.** In addition to general standards addressed in Section 32 90 00, and found in "American Standards For Nursery Stock" ANSI Z60.1, trees shall be graded. The LA shall use "Grades and Standards for Trees" from Division of Plant Industries, Florida Department of Agriculture; downloadable at:  
[http://www.tqlinside.com/grades\\_standards.htm](http://www.tqlinside.com/grades_standards.htm)

**B. Inspections.** During the course of selection, planting and acceptance, several formal and informal inspections will occur. These are to be included on the Contractor's Quality Assurance & Control Program checklist. A minimum of eight, formal inspections shall be specified for all trees. Inspections shall be conducted by the PM or their designated representatives in conjunction with the LA and Contractor, or their representatives. Reports are to be distributed to PM, LA, Contractor, WSU professional staff and Grounds supervisor in accordance with specifications in 32 90 00.

- 1) The first inspection shall be at the nurseries of origin for plant stocks.
- 2) The second shall be at the time of delivery of plants to the project site.
- 3) The third inspection is during installation: the LA, PM, or their representatives, shall continuously monitor conditions and make on-site changes and corrections as plants are being installed. Interim acceptance will be ongoing as trees are installed.
- After installation, the LA, PM or their representatives, shall monitor and document site and tree conditions and make corrections.
- 4) A final walk-through inspection shall be required for acceptance of plants.
- 5 - 8) Trees shall have a minimum of four inspections through their warranty period, which encompasses two Warranty Growing Seasons. The spring inspections shall be each June, and the fall inspections each October.

Specifications shall reflect conditions for plant replacement. Replacement shall be as soon as general site and seasonal conditions allow.

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1. **Inspection at Nursery.** Use Section 32 90 00.

2. **Inspection of Nursery Stock at Time of Delivery to Project Site.** Inspection of trees at the time of delivery and delivery standards shall meet those set forth in Section 32 90 00. Additionally,

Specify: At time of delivery to project site, trees shall meet standards stated in "American Standards For Nursery Stock" ANSI Z60.1, and grade to equivalent, or better than, Florida Fancy or Florida #1; as specified in "Grades and Standards for Trees" from division of Plant Industries, Florida Department of Agriculture; downloadable at:  
[http://www.tqlinside.com/grades\\_standards.htm](http://www.tqlinside.com/grades_standards.htm)

3. **Standards After Installation of Trees.** After trees have been delivered, stored, and planted, their conditions should continue to grade to meet Florida Fancy or Florida #1 grade specifications. Contractor shall ensure that monitoring of all plant materials and care is performed regularly.

Specify: After planting, trees shall grade equivalent to, or better than, Florida Fancy or Florida #1; as specified in "Grades and Standards for Trees". If at any time during the warranty period, the condition of any tree is determined to grade as



Florida #2, that tree shall be placed on a watch list to determine if it is continuing to deteriorate. If by the second Warranty Growing Season the tree's condition has not further deteriorated it shall be removed from the watch list. WSU Professional staff shall review periodically through warranty and advise PM of any issues noted.

4. **Standards for Warranty Period for Trees.** *At the end of warranty the grade of all trees shall meet Florida Fancy, Florida #1 or Florida #2 grade specifications, and shall not be on a watch list and demonstrating continued deterioration. Some deterioration of plants is to be anticipated, and the somewhat less stringent standards for grading reflect this. However, any tree demonstrating continued deterioration through two growing seasons shall be evaluated for replacement under warranty. Any tree that deteriorates to a grade of "Cull" should be evaluated for replacement under warranty without delay.*

*Specify:* At end of warranty period, for final acceptance, trees shall grade equivalent to, or better than, Florida Fancy, Florida #1 or Florida #2; as specified in "Grades and Standards for Trees"; and not be on a watch-list for continued deterioration. Any tree on a watch list that has shown continued deterioration, or has deteriorated to a grade of "Cull", shall be evaluated for replacement under warranty.

### 3.05 Tree Planting

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- A. **Tree Planting.** *LA shall specify best management practices for installation of trees. Specifications shall be appropriate to plant type, location, season and root-ball handling/shipping mode (bare-root, containerized, or B&B stocks).*

*Reference:*

- 1) *ANSI A300, American National Standard for Tree Care Operations, and*
  - 2) *Best Management Practices: Tree Planting. By G. Watson and E.B. Himelick, Printec Press, Champaign, IL, 2005.*
1. **General.** *The requirement to hydrate soil around tree planting pits shall require location and digging of pits and conduct of infiltrations in advance of plant installation. Ensure planting is not delayed because planting pits have not been dug far enough in advance. Scheduling of all steps should be reflected in the Worksite Staging Plan. The LA shall ensure coordination of these activities.*

*Specify:* Protect trees at all times during planting operations. Prevent roots from drying out. Tree planting pits shall be prepared far enough in advance so they can be filled with water and allowed to completely infiltrate water into surrounding soil before plants are removed from shipping materials for planting. One or more times, fill each excavated pit with water and allow the water to completely infiltrate into surrounding soil. At least one infiltration shall occur not more than

24 hours prior to planting. If a flooded pit does not completely infiltrate within 24 hours, do not plant the tree and immediately notify PM.

3. **Excavation of Planting Pit.**

- a. **Excavations.** *LA shall ensure that planting pits are situated so that tree roots can reach clean sub-soil and allow full, natural root growth sufficient to support trees at normal, mature sizes.*

*Specify:* At location designated on planting plan, excavate a planting pit as specified in planting details. Excavate pits sufficiently in advance of planting to accommodate requirements for water infiltration. The pit shall have a diameter not less than twice the diameter of root ball. Ensure that pits are deep enough to reach clean subgrade soils and are not located in or over materials that do not support vigorous plant growth. Soil excavated from the planting pits shall be brought to standards of clean soil and used in planting the trees.

- b. **Eliminate Glazed Soil Surface.**

*Specify:* Roughen sides of each planting pit to eliminate 'glazed' surfaces that are difficult for roots to penetrate.

- c. **Keep Excavation Site Clean and Clear.**

*Specify:* Remove all foreign material excavated from planting holes, and dispose of legally off campus.

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B. **Preparation of Stocks for Planting.**

*Specify:* Prevent damage to roots or disturbance of root ball. Do not remove trees from containers by pulling on the main stem. Handle B&B stocks using only the basket or binding. Do not break containers or remove shipping materials until tree is at site of placement.

- C. **Placement.** *LA shall specify how to excavate planting pit and place trees, by type, both on level ground and on slopes as found on project site. This should include orientation of main stem, elevation of root flair, orientation of root ball on uphill and downhill sides, and orientation and depth of backfill and rain basin relative to root flair and root ball. Provide planting detail graphics that represent actual site conditions, not simply generic graphics.*

*Specify:* Expose the root flair and remove damaged or adventitious roots with a clean cut. At the time roots are exposed, plant without delay.

*Specify:* Set trees in the center of planting pits in a natural position. Place in accordance with planting details for each plant type and location.

**D. Remove Shipping Materials from Root Ball and from Pit.**

*Specify:* Remove all shipping materials from tree, root ball and pit, including burlap and twine, wires, wire baskets, wooden boxes, tags, flags, and pots. Remove shipping materials so as not to disturb the root ball. Dispose of legally off campus.

**E. Backfill and Watering.** *LA shall specify clean soil and topsoil as backfill. See specifications in Section 32 90 00.*

**1. Root Flair.** *Place plant so that root flair is at, or slightly above, finish grade.*

*Specify:* Adjust placement of root ball so that root flair elevation is at, or not more than one inch above, surrounding elevation of finish grade. Do not place root flair below finish grade. After backfill, topsoil shall meet finish grade and extend at this elevation to a diameter of at least twice the diameter of the root ball. Topsoil shall be in firm contact with entire top outer edge of root ball.

*Specify:* If placed on a slope, place backfill and rain basin in accordance with planting details. Ensure down slope berm fully surrounds and covers downhill portion of root ball at elevation of root flair, extending laterally to a distance of at least twice the diameter of the root ball. Compact fill and place rain basin on top of berm so as to ensure that rain basin will hold water without washout, or otherwise failing. Slope downhill sides of berm to meet grade without becoming unstable.

**2. Backfill.** *Backfill with clean soil in 6 inch lifts, using firm, manual tamping and watering each lift. Backfill up to one foot below finish grade with clean soil taken from the planting pit, or if substandard, using clean soil prepared from the immediate site. Backfill the top one foot in the same manner, using topsoil.*

*Specify:* During backfilling, gently work clean soil in and around the root ball in 6 inch lifts, filling all voids, and moistening soil as needed to avoid roots coming in contact with dry soil. Manually, do firming and tamping of soil around plants so as not to damage the plants or their roots. Do not churn wet soil or create a mud slurry. Ensure that root ball is entirely in firm contact with moist soil. Bring clean soil to an elevation one foot below root flair. Continue backfilling the top one foot using topsoil to finish grade as specified in planting detail. Water slowly and thoroughly until the root ball and backfill are saturated. Avoid runoff. If settling occurs in backfill, add topsoil to bring back to finish grade without delay.

**F. Temporary Basin.** *LA to specify which plants are to receive rain basins and when they shall be removed.*

*Specify:* Trees shall be provided a temporary, shallow rain basin consisting of a ridge or berm of topsoil 3 to 4 inches high and slightly smaller than the diameter of



the planting pit. Immediately fill each basin with water. Continue watering until all backfill is saturated. After first watering, fill basins with bark mulch. Water additionally as needed to keep soil moist without flooding. Maintain basin structures to assure they does not wash out, or otherwise fail to retain water. Coordinate with PM when rain basins are to be removed and site leveled to finish grade.

- G. **Support All Trees Over 6 Feet in Height.** *Use an approved commercial support system appropriate to the situation, writing specifications based on manufacturer's recommendations and instructions. Coordinate with PM. If staking is chosen as a support system, specify as follows.*

*Specify:* At planting, stake all trees over 6 feet in height, unless otherwise specified. Place three, equally spaced stakes adjacent to the planting pit and drive a minimum of 36 inches into the soil. Guy as needed to ensure stability without interfering with any landscaping systems or furnishings, traffic, maintenance requirements or pedestrian safety. Anchor each trunk in one or more places so that the trunk does not rub against the posts. Ensure the tree ties do not choke the trunk or interfere with plant growth. If trees have small caliper leaders (less than 4 inches), or are planted in windy locations, trunks shall be supported with poles to prevent wind and ice-load damage during winter. Use only approved nursery tree ties or other support materials.

*Specify:* At the beginning of the second warranty growing season, tree stakes shall become the responsibility of WSU.

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- H. **Wrapping Trees.** *LA shall specify which trees are to be wrapped based on site, susceptibility, species characteristics and time of planting. Consult WSU professional staff.*

*Specify:* Trees should be wrapped by contractor from the root flair upward to the second scaffold branch. Overlap each wrap at least ¼ inch, so that wraps shed water. Use twine to secure the last turn of the wrap. Trees shall be wrapped in the fall of each warranty growing season, before the average date of first frost, and the wrap removed by contractor in the spring within 20 work days after the average date of last frost.

### 3.06 Warranty

- A. **Warranty Periods.**

*Specify:* The Contractor shall be responsible for the protection of all plants brought onto the project site. Warranty on trees shall be for a continuous period encompassing not less than two, complete Warranty Growing Seasons after date of project completion. For purposes of warranty protection, the Warranty Growing Seasons on all WSU campuses is the period from 1 JUNE through 15 OCTOBER,



inclusive. Inspections through warranty shall be in accordance with Contractor's Quality Assurance & Control Program.

**B. Plant Stocks.**

*Specify:* If at any time during the warranty period a tree is determined to require replacement, then removed trees shall be replaced using direct replacement. All certifications, standards and grades that apply to original plant stocks shall apply to replacement stocks. Replacement trees shall accrue an additional two complete Warranty Growing Seasons warranty, starting at the time of each replanting. If more than one replacement tree is required at any location, each replacement tree shall carry the full warranty period, starting at the time of latest replanting.

**C. Initial Care.** *Care of trees through the initial 90 day warranty period shall be in accordance with Part 3 of Section 32 90 00 .*

**D. Sustained Care.** *Care of trees after initial 90 days of warranty period shall be in accordance with standards for all plants, as stated in Part 3 of Section 32 90 00. Sustained care requirements shall be developed by the Contractor and provided to WSU for implementation. Distribution shall be to the LA, PM, CPD professional staff and Grounds.*

*Specify:* The contractor shall document standards for operation and maintenance of all landscaping, including care of plants throughout warranty, and shall provide such standards to WSU for implementation.

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**E. Ongoing Inspections.** *Scheduled inspections shall be conducted by representatives of the Contractor, LA, PM, Grounds, and professional staff, as specified in Section 32 90 00.*

**1 First Warranty Growing Season.**

*Specify:* In accordance with Contractor's Quality Assurance & Control Program, scheduled inspections of all Landscape Architecture elements shall be conducted during the first year after Landscaping Substantial Completion. Defects in materials and workmanship shall be the responsibility of the Contractor and covered under warranty. Defects from other causes shall be the responsibility of WSU.

**2. Second Warranty Growing Season.**

*Specify:* During the second Warranty Growing Season, two scheduled inspections of trees shall be conducted. The final inspection shall be at the end of the second Warranty Growing Season and constitute the final inspection before acceptance. Defects in materials and workmanship resulting in continued decline of trees (or trees that have declined to the grade of Cull) shall be the responsibility of the Contractor, and replaced under warranty. All other defects shall be the responsibility of WSU.

- F. **Inspection Reports.** Report shall be prepared in accordance with specification in section 32 90 00.

## APPENDIX

### A – WSU Tree Removal and Replacement Policy.

## WSU Tree Removal & Replacement Policy

May 27, 2010

Washington State University recognizes the importance of preserving and protecting our campus trees whenever and wherever possible. Trees are a valuable resource and reflect a substantial investment by the University. Trees provide shade, help delineate space, moderate the microclimate, act as landmarks, aid in erosion control, and are socially significant to many students and staff. Each generation has a responsibility to protect and enhance the University's investment.

However, in reality, many Major and Minor Capital Projects or University department or college-funded projects require the removal of trees or at a minimum may have an impact on trees. In addition, trees reach the end of their normal life span and deteriorate. The following procedures identify the required steps prior to any tree removal, including those funded by University departments or colleges, and the policies to fund Tree Replacements.

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### REMOVALS

PROCEDURES: During a Major Capital Project, Minor Capital Project or a University department or college-funded project, trees will be retained and preserved whenever possible, and protection provided during construction as specified in the WSU Uniform Design Standards (found on the Capital Planning and Development website: <http://www.cpd.wsu.edu/UDCS/>, under Division 2 – Sitework, 02900 Landscaping).

#### Major Capital Projects

*The Project Manager will walk the project site with the Campus Tree Committee at the start of the Pre-Design phase to solicit advice to the desirability of removing trees and of options for retaining existing trees on the site. The Campus Tree Committee shall provide the Project Manager with a list of historic, memorial, or significant trees on or near the project site, if such information exists.*

*Designs will be presented to the Campus Tree Committee at 100% Schematic Design stage, 100% Design Development stage, and 50% Construction Document stage for comment on tree removals, tree protection, and proposed new tree plantings. The Project Manager will be responsible to notify the Campus Tree*



*Committee in writing a minimum of two weeks prior to any submission deadlines, to allow for adequate review and response time.*

*The Project Manager will provide the Campus Tree Committee with a detailed written justification for tree removals prior to the start of construction, and at least two weeks prior to any tree removal.*

*If change orders or unexpected situations arise during construction that may adversely impact a tree previously scheduled for protection, the Campus Tree Committee will be contacted for comment prior to continuation of that work.*

#### Minor Capital Projects

*The Project Manager will walk the project site with the Campus Tree Committee at the start of the Site Plan Development phase to solicit advice to the desirability of removing trees and of options for retaining existing trees on the site. The Campus Tree Committee shall provide the Project Manager with a list of historic, memorial, or significant trees on or near the project site, if such information exists.*

*Designs will be presented to the Campus Tree Committee at 90% Construction Document phase, or more often as needed, for comment on tree removals, tree protection, and proposed new tree plantings. The Project Manager will be responsible to notify the Campus Tree Committee in writing a minimum of a week prior to any submission deadlines, to allow for adequate review and response time.*

*The Project Manager will provide the Campus Tree Committee with a detailed written justification for tree removals prior to the start of construction, and at least two weeks prior to any tree removal.*

*If change orders or unexpected situations arise during construction that may adversely impact a tree previously scheduled for protection, the Campus Tree Committee will be contacted for comment prior to continuation of that work.*

#### University department or college-funded projects

*A University department or college representative will walk the project site with the Campus Tree Committee to solicit advice to the desirability of removing trees and of options for retaining existing trees on the site. The Campus Tree Committee shall provide the University department or college representative with a list of historic, memorial, or significant trees on or near the project site, if such information exists.*

*A University department or college representative will be responsible to notify the Campus Tree Committee chair in writing a minimum of two weeks prior to any submission deadlines, to allow for adequate review and response time.*

*The University department or college representative will provide the Campus Tree Committee with a detailed written justification for tree removals prior to the start of construction, and at least two weeks prior to any tree removal.*

*If unexpected situations arise after the Campus Tree Committee has provided comment on the project that may affect other nearby trees, the Campus Tree Committee will be contacted for comment prior to the continuation of that work.*

COMMITTEE RECOMMENDATIONS: All recommendations provided by the Campus Tree Committee will be documented in writing within a week after the review. If the Campus Tree Committee disagrees with the need for tree removal, a final decision may be made by the Vice President for Business and Finance through the Associate Vice President of Capital Planning and Development.

TREE RELOCATION: Where existing trees interfere with proposed construction or renovation, tree relocation shall be considered as an option. The viability of tree relocations should be made based on the value of the tree, the cost of relocation, and the probability of survival after the relocation.

WEEKEND REMOVAL: Due to safety concerns, trees may be removed on weekends and on holidays.

CAMPUS ANNOUNCEMENTS: The Project Manager or the administration of the campus unit responsible for removing the tree, if no Project Manager is associated with the project, will place a notice on WSU Today, WSU Announcements and myFacilities work order system (<https://myfacilities.wsu.edu/>) of all tree removals. Such notice shall be displayed on WSU Today, WSU Announcements and myFacilities at least five working days prior to removal, unless life safety issues or imminent facility damage dictate immediate removal. The announcement will include tree location, tree species, justification for removal, and estimated time frame for removal, and if there will be a replacement in the same vicinity or elsewhere. The Project Manager or administration of the responsible campus unit will be listed as the contact person in the notice.

In the case of a tree associated with one or more facilities, the Project Manager or administration of the responsible campus unit will notify in writing the Dean and/or Chair of the building programs with the same information placed in the announcement.

TREE VALUATION: When trees are to be removed as part of a Major Capital Project, Minor Capital Project, or University department or college-funded project, they will be identified and valued by the campus arborist, a designated member of Facilities Operation's Plant Services, or a designated member of Capital Planning Department's Planning/Landscape Architecture staff prior to removal. Tree values will be calculated based on best management practices, and should



consider the age, location, and condition of the tree as well as any special or unusual characteristics.

REUSE OF WOOD: Consideration shall be given to the reuse of the wood from trees with particular value to the campus or to the community. If such reuse has been advocated by the Tree Committee, then any additional costs incurred by the project to reuse the wood as recommended by the Tree Committee will be added to the replacement landscape costs of the project.

1. Wood from trees having cultural, historic, or memorial value may be recycled for use in a prominent location on the project (eg, as a bench, a table, a wall surface/decoration, an art piece, etc).
2. Valuable wood may be sold via Surplus Stores or other means available to the University.

## TREE REPLACEMENT

TREE REPLACEMENT FUND: When the value of trees to be removed exceeds the cost of plant materials and irrigation for a proposed project, the project budget will fund the difference between the tree value and the landscape cost. These moneys will be put into a Tree Replacement fund(s) that will be used only for the purchase and installation of future trees and associated irrigation, if necessary, to support tree survivability, growth and vigor.

The landscape program for a Project includes ONLY tree replacement, other plant materials (excluding athletic and playfield turf), and irrigation.

*Example 1: The Plant and Irrigation portion of the landscape costs for Project N is \$50,000. The value of trees and irrigation to be removed is \$65,000. The difference of \$15,000 will be charged to the project and placed into a Tree Replacement fund.*

*Example 2: The Plant and Irrigation portion of the landscape costs for Project L is \$50,000. The value of trees and irrigation to be removed is \$35,000. No funds remain to be placed into a Tree Replacement fund since the landscape program exceeds the value of lost trees.*

At the end of the Project, the Project Manager or Department or College representative will compile the final cost of trees, other plant material, and irrigation and provide that information to the Campus Tree Committee. The amount of moneys going into the Tree Replacement Fund(s) shall also be identified.

Tree Replacement moneys that exceed the landscape costs of Major Capital Projects will be placed into a Tree Replacement Fund managed by Capital Planning and Development. Tree Replacement moneys that exceed the landscape costs of Minor Capital Projects will be placed into a Tree Replacement Fund managed by Facilities Operations. Tree

Replacement moneys that exceed the landscape costs of University departments or colleges projects will be placed into the Tree Replacement Fund managed by either Facilities Operations or Capital Planning and Development, depending on which organization supervised the project.

Upon a request from the Campus Arboretum Committee, the Campus Tree Committee, and/or Campus arborists, and upon recommendation from Capital Planning and Development and/or Facilities Operations staff, the University Architect may approve utilization of the Tree Replacement funds to purchase and install trees in appropriate locations on the campus. Written notification will be given to the Campus Tree Committee in the event of such usage regardless of the source of requests or recommendations.

**REPLACEMENT LOCATION:** It is understood that it may not be feasible to replace trees on a one-to-one ratio, or that trees removed from a site may not be replaced at that same site. The purpose of this policy is to facilitate preservation of trees on WSU's campus in the spirit of no net loss of tree canopy and, when possible, increasing the amount of canopy. Thus, moneys from the Tree Replacement funds may contribute to trees in a location on the Pullman campus separate from a construction project.

**REMOVAL DUE TO DISEASE:** Tree removal that is necessitated by disease, death or emergency safety concerns are not subject to the Tree Replacement Fund requirements.

**DEPARTMENT OR COLLEGE REQUESTS:** Live tree removals requested by departments or colleges other than those responsible for Major or Minor Capital Projects will subject that department or college to comply with this Tree Removal and Replacement Policy and to fund tree replacements.

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#### B - Standards for Tree Grading

*Insert standards here after approval.*

**END OF SECTION 32 93 43**