

Office of Physical Plant Operating Procedure
Tree Replacement, Protection, and Inspection Operating Procedure
OPP-OP 11-01

A. Background/Purpose

Trees, particularly large trees on campus, are a valuable resource and reflect a substantial investment by the University. Trees provide shade, help delineate and define space, moderate air temperature, act as landmarks, aid in erosion control, and are aesthetically and socially significant to many students, faculty, staff, visitors and alumni. In addition, the campus trees are an invaluable teaching resource, providing a “living laboratory” for students. The contributed and perceived value of trees means that each generation has a responsibility to protect and enhance the University's investment in these important living resources.

Therefore, tree management must simultaneously plan for the care of existing landscape trees while planting new trees for the next generation. To be effective and stable, Kutztown University's landscape must include a mixed-age and species-diverse tree population. This means that trees must be properly maintained and planted routinely to complement new and existing facilities and to replace trees that perish or are removed. The University, through following this and other tree-related policies and procedures, should strive to minimize stresses that could negatively impact a tree's lifespan.

The primary purpose of this operating procedure is to outline the steps to be followed for selecting, planting, transplanting, and replacing removed trees; preserving and protecting trees in construction zones, and periodically inspecting and evaluating Kutztown University's tree resource for continued viability.

In addition, this operating procedure is intended to increase the number and diversity of trees on campus (in a planned manner), to use trees to enhance the beauty of the University's landscape, and to augment the on-campus tree resources used in educational programs.

This and other University tree-related policies and procedures should be used to guide all arboricultural activities. Following these policies and procedures will insure that activities, such as planting and tree care efforts, will be effective and comply with the vision outlined in the Kutztown University Heritage Tree Landscape Master Plan.

B. Definitions

1. **ANSI:** American National Standards Institute
2. **ANSI A300 Standards for Tree Care Operations:** The performance parameters established by industry consensus as a rule for the measure of extent, quality, quantity, value or weight used to write tree-related specifications. The standards are published in parts, based on topic, and include:
 - Part 1 - Pruning
 - Part 2 - Fertilization
 - Part 3 - Supplemental Support Systems
 - Part 4 - Lightning Protection Systems
 - Part 5 – Management of Trees and Shrubs during Site Planning, Site Development, and Construction
 - Part 6 - Transplanting
 - Part 7 - Integrated Vegetation Management
 - Part 8 - Root and Root Zone Management (under development as of 1/2011)
 - Part 9 - Tree Risk Assessment (under development as of 1/2011)
 - Part 10 - Plant Health Care (under development as of 1/2011)
 - Part 11 – Urban Wood Products (under development as of 1/2011)
3. **ANSI Z60.1 Standard for Nursery Stock:** This standard provides buyers and sellers with a common terminology in order to facilitate transactions involving nursery stock. The standard defines terms and numerical relationships among tree parts, *and is not meant to be a gauge of plant quality.*
4. **Bole:** A tree trunk.
5. **Caliper:** For nursery trees, the diameter of the tree measured at 6 inches above ground up to and including 4-inch caliper size, and 12 inches above ground for larger sizes.
6. **Critical Root Zone (CRZ):** A radius, measured from the tree's base that is equal to the greater of either (A) one foot for each 1 inch of the tree's DSH, or (B) equal to the nearest foot measurement of the tree's longest drip line radius plus 2 feet.
7. **Deciduous Trees:** Trees that lose or shed their foliage at some point during the year.
8. **Dripline:** The dripline is the area directly located under the outer circumference of the tree branches. This is where the tiny rootlets are located that take up water for the tree. Trees should be watered here, not by the base of the trunk, or the tree may develop root rot.
9. **DSH (Tree Diameter at Standing Height):** DSH: is a standard method of expressing the diameter of the trunk or bole of a standing tree at Standard Height, which is 54"

above grade. This measurement shall be converted from the tree's circumference. For multi-stem trees, the circumference of each trunk stem is measured at Standard Height, the square inch area for each stem is added together to calculate the total square inch area from which the equivalent diameter is calculated. When low branches preclude measuring the trunk at Standard Height, the circumference shall be measured at the smallest circumference below the lowest branch. For leaning trees and trees on slopes, the trunk measurement shall be made at the Standard Height above the average of the shortest and longest sides of the trunk. Measuring tree circumferences shall always be done at right angles to the trunk.

10. **Evergreen Trees:** Trees that hold their foliage throughout the year.
11. **Heritage Tree:** Tree that has exceptional historical, cultural, ecological or aesthetic value due to its size, age, provenance, legendary importance, contribution to the campus landscape, exemplary representation of genus or species, rarity, or association with an important event or person.
12. **ISA:** International Society of Arboriculture
13. **Landscape Architect:** A licensed professional providing professional services such as consultation, investigation, research, planning, design, preparation of drawings and specifications, or responsible observation of construction in connection with the development of land areas where, and to the extent that, the dominant purpose of such services is the preservation, enhancement or determination of proper land uses, natural land features, planting, naturalistic and aesthetic values, the settings and approaches to structures or other circulation improvements, the shaping and contouring of land and water forms, the setting of grades and determining drainage and providing for storm water management and determination of environmental impacts and problems of land including erosion and sedimentation, blight and other hazards.
14. **Legacy Tree:** An individual tree or grouping of trees that has, or potentially has, significant historical, cultural, ecological or aesthetic value in the aggregate, but which might be replaceable on an individual basis. Legacy trees may become Heritage Trees at such time as they meet the criteria for that classification.
15. **PA One Call System:** Excavators must contact PA One Call at least three (3) days prior to excavation, as required by law. PA One Call will then contact the Facilities Utility Manager to coordinate a site visit.
16. **PLNA:** Pennsylvania Landscape and Nursery Association.
17. **PLNA Pennsylvania Nursery Quality Standard:** This standard will be a voluntary guideline for anyone who is required to communicate identifiable characteristics for high quality nursery trees. As of December 2010, it is in draft, unreleased form.

18. **Professional Tree Service Company:** A tree service company meeting the University's minimum requirements for certificates of insurance and worker's compensation, as well as minimum technical qualifications for scope of work to be performed. A list of experienced and knowledgeable tree service providers is maintained by the Facilities Assistant Director for Campus Services.
19. **Qualified Arboricultural Professional:** A tree care professional, with a minimum of two years experience in the evaluation and care of trees, holding a professional license or certification documenting that minimum competency has been achieved in related subject areas including tree inventory, tree assessments, and tree care. Acceptable professional titles include: Certified Arborist, Registered Consulting Arborist, and Certified Forester.
20. **Shall:** Denotes a non-negotiable requirement in this procedure.
21. **Should:** Denotes an advisory recommendation in this procedure.
22. **Structural Roots:** Large, rapidly tapering woody roots that provide mechanical support to trees. Structural roots originate from the tree's base, and are seldom more than ten feet away from the edge of a tree's trunk.
23. **Trunk Flare:** Is the transition zone between the trunk's base and the root system where the trunk swells out to become buttress roots that enter the soil and support the tree. The trunk flare should be exposed to air and not buried or covered with mulch. Synonyms: root flare, root collar.
24. **Utility Free Zone:** Those areas of campus where either underground or overhead utilities are not present, or areas of the campus where trees may be planted that will not interfere with the utilities once the trees reach their mature size.

C. Tree Planting, Removal, and Placement Policy & Procedures

- **Tree Planting/Transplanting:** All tree planting and transplanting activities shall conform to the most recent version of **ANSI A300 Standards for Tree Care Operations (Part 6) - Transplanting**. All trees to be planted shall meet the **ANSI Z60.1 Standard for Nursery Stock** and the **PLNA Pennsylvania Nursery Quality Standard** when it becomes available. Trees not conforming to the quality requirements of these standards shall be rejected by the Facilities Assistant Director for Campus Services.

Requests to plant trees shall be forwarded to the Facilities Assistant Director for Campus Services who shall in turn select the species of tree(s) from the recommended tree list, in **Appendix A** of this document, or other tree species as approved by the Assistant Vice President for Facilities.

Data on newly planted or transplanted trees shall be forwarded to the Facilities Assistant Director for Campus Services by the project manager at project closeout for input into the Asset Manager™ database program used to track the campus tree inventory (or other tree-related software approved for use as the standard for this purpose). Data shall be submitted on the form to be found in **Appendix B** of this document. Data for all fields must be provided.

The soil surrounding a tree planting site shall be un-compacted to a depth of 12” unless underground utilities, bedrock, etc. are present. Rototilling is the preferred methodology. For larger areas a tractor-drawn winged subsoiler; tracked excavator subsoiling bucket, cultivator, or disk harrow; or subsoiling grapple rake is most effective.

An area of at least 40 square feet, with its center being the tree’s trunk, should be un-compacted. Smaller areas may be allowed at the discretion of the Facilities Assistant Director for Campus Services. About ½” depth of organic matter (compost, used mushroom soil, etc.) should be added and mixed into the soil. The un-compacted area should be off limits to pedestrians or equipment for at least one full growing season or until the tree becomes fully established.

Unless otherwise specified by the Facilities Assistant Director for Campus Services, replacement tree shall have a caliper of no less than two (2) inches for larger species of deciduous trees. Examples of larger deciduous trees are oaks, maples, ginkgo, beech and birch. Smaller deciduous replacement tree’s caliper shall be no less than one and one-half (1 1/2) inches. Examples of smaller deciduous tree are dogwood, crabapple,

hawthorn, ornamental plum and cherry. All coniferous replacement trees shall be a minimum height of no less than ten (10) feet.

If the tree's intended location is such that it is deemed to be a high probability target for rough treatment by students, then larger deciduous trees should have a caliper of at least four (4) inches and smaller deciduous trees should have a caliper of at least two (2) inches to reduce the probability of damage.

- **Tree Placement:** The Facilities Assistant Director for Campus Services has the responsibility for recommending potential tree planting locations. The Assistant Director will consult with the University Architect to avoid conflicts with future implementation of campus facility master plans. Proposed locations shall be approved by the Assistant Vice President for Facilities. Trees shall not be planted on or near underground or overhead utility services. Three days prior to any planting, the excavator must contact PA One Call for a site visit. Consideration of the overall mature size and spread of a deciduous tree shall be taken into account when planting near buildings, sidewalks, parking lots, roadways, lighting or any other barrier. Inappropriate planting of deciduous trees too close to these or other structures may cause structural damage when the tree reaches its full, mature size. Coniferous trees shall not be considered in locations where growth to maturity may overlap buildings, sidewalks, parking lots, roadways, lighting or any other barriers due to risk of inappropriate pruning of trees for safety reasons.
- **Tree Removal:** Trees that are removed from the campus for any reason shall be replaced on an "inch basis", not on a "one-for-one" basis. "Inch basis" may be understood through the following example: If a 20" diameter tree is removed, it may be replaced by four (4) 5" trees, or ten (10) 2" trees or five (5) 4" trees or any combination of trees totaling 20".

Standard tree removal approval protocol:

1. Requests for tree removal shall be in writing and will be directed to the Facilities Assistant Director for Campus Services. Requestor shall identify the tree(s) under consideration and state the reason(s) for the tree removal request.
2. The Facilities Assistant Director for Campus Services will inspect the tree and use Asset Manager or the most current University tree management software to determine whether the tree removal request is warranted. Supporting documentation (photographs, tree health or condition, Asset Manager health ratings, etc.) should be used to validate the removal request.
3. The Facilities Assistant Director for Campus Services will then forward a recommendation to the Director of Facilities Business and Campus Services for

- review and approval/rejection.
4. The Director of Facilities Business and Campus Services will forward approved tree removal requests to the Assistant Vice President of Facilities for final approval/rejection.
 5. For **Heritage** or **Legacy** trees, and trees for which the public may strenuously object to being removed, the Assistant Vice President of Facilities may forward the request and recommendation to the University Administration for the final tree removal approval/rejection.
 6. The Facilities Assistant Director for Campus Services will then make arrangements for the removal of the tree(s) by a **Professional Tree Service Company**.

Emergency tree removal approval protocol:

1. Requests for emergency tree removal will be accepted verbally or in writing by the Facilities Assistant Director for Campus Services. Emergencies are defined as trees that present an imminent danger to life and property. Requestor shall identify the tree(s) in question and describe the nature of the emergency. A written record of the request and subsequent recommendations will be prepared by the Assistant Director for record keeping purposes.
2. Within 48 hours of the emergency request the Facilities Assistant Director for Campus Services will inspect the tree and use Asset Manager or the most current University tree management software to determine whether the tree removal request is warranted. Supporting documentation (photographs, tree health or condition, Asset Manager health ratings, etc.) should be used to validate the removal request.
3. If the Facilities Assistant Director for Campus Services determines that a tree presents an imminent threat to life or property, he/she may authorize immediate remediation/removal efforts, except in the case of the remediation/removal of a **Heritage** or **Legacy** tree.
4. In the case of imminent threats to life or property involving **Heritage** or **Legacy** trees, the Facilities Assistant Director for Campus Services must seek approval from the Assistant Vice President of Facilities prior to remediating/removing the tree.
5. The Facilities Assistant Director for Campus Services will then make arrangements for the removal of the tree(s) by a **Professional Tree Service Company**.

Criteria for Tree Removal - any of the following:

- Trees that are dead or have either reached or exceeded their useful life span and may present clear and present danger to life and property (imminent threat)
 - Diseased or unhealthy trees
 - Trees that are growing in inappropriate locations such as too close to structures, sidewalks, parking lots, utilities and other components of a landscape
 - Damaged trees from natural causes such as lightning strikes and ice, wind and snow storms
 - Damaged trees from human activities such as inappropriate cultural practices, vehicular accidents and other human induced damage
 - Trees that detract from or are inconsistent with the University's overall landscapes design plans
 - Trees that must be removed because of construction projects
 - Invasive/exotic tree species that are known to invade and degrade natural ecosystems or trees highly susceptible to known threats
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- **Replacement Trees:** Replacement tree(s) will be selected by the Facilities Assistant Director for Campus Services from the University's recommended tree list found in **Appendix A**. The Assistant Director will determine a location for the tree(s) in a "utility free zone" taking into consideration the cultural requirements of the tree species, surrounding or adjacent landscaping, and future expansion of the University's infrastructure.

D. Trees and Construction Policy & Procedures

Trees in design and construction projects have additional requirements beyond those of everyday operations and maintenance. Existing trees designated to remain in place after construction must be protected during construction. New trees, to be planted as part of the project scope, must be planted according to the technical requirements delineated in Section C above. Each phase of a project offers opportunities to assure the successful introduction of new trees to the campus as well as care for the existing stock.

Project Phases:

1. Design Kickoff.

The Facilities Assistant Director for Campus Services will provide the design professional with background information on all existing trees in the proposed project area during the Kick-off meeting. **Heritage** and **Legacy** trees will be identified with the intent of preserving them. Trees of marginable value will be identified for possible removal as part of the project. The technical requirements of this policy are part of the **KU Design Guidelines** which will be forwarded to the design professionals by the Project Manager.

2. Preliminary Design/Schematic Design/Design Development.

Facilities Assistant Director for Campus Services will review design submittals and forward comments to the PM providing feedback to the design team. Design submittals shall include, but not be limited to, all requests on the part of the design team for the removal of trees shall be made to the Facilities Assistant Director for Campus Services via the Project Manager. The Assistant Director will review the requests and secure all necessary approvals. Final determinations will be relayed to the PM.

The landscape architect or design professional shall select tree species for the project from the University's recommended tree list found in **Appendix A** of this document. In addition to determining the locations for new trees, the landscape architect or design professional shall locate all transplanted and replacement trees associated with the project.

The landscape design documents, plans and specifications, will be reviewed by the Facilities Assistant Director for Campus Services during design reviews for compliance with this document. Replacement trees shall be included in the overall landscape design

of the project. Consideration of the overall mature size and spread of a deciduous tree shall be taken into account when planting near buildings, sidewalks, parking lots, roadways, lighting or any other barrier. Inappropriate planting of deciduous trees too close to these structures may cause subsequent structural damage when the tree reaches its full, mature size. Coniferous trees shall not be considered in locations where there are buildings, sidewalks, parking lots, roadways, lighting or any other barrier due to the risk of inappropriate pruning of the trees for safety reasons.

In addition to landscape plans, a **Tree Preservation Plan** shall be included in all design phase submittals if any construction activity is proposed within any tree's **Critical Root Zone (CRZ)** within the limits of construction including all contractor staging areas. The plan shall conform to the requirements of **ANSI A300 Standards for Tree Care Operations (Part 5) - Management of Trees and Shrubs during Site Planning, Site Development, and Construction**.

3. **Construction Documents.**

The **Tree Preservation Plan** shall be incorporated into the construction documents. It shall include a site plan documenting accurate trunk locations, tree identification numbers, **CRZ's** for all trees or groups of trees, trunk circumference for all **Heritage** and **Legacy** trees in and within 35' of the project area(s), haul routes, staging and laydown areas and any project related activities potentially impacting trees in and within 35" of the project area(s).

The **Tree Preservation Plan** shall include all standard details necessary to meet the requirements of the plan. The plan shall conform to the requirements of **ANSI A300 Standards for Tree Care Operations (Part 5) - Management of Trees and Shrubs during Site Planning, Site Development, and Construction** as well as other requirements required by this policy and procedure.

4. **Construction.**

The PM is responsible for assuring that all tree preservation and protection is in place prior to construction vehicles traversing the site and the start of any earth moving activities. Once all tree protection is in place, the PM will request a formal inspection of the safeguards by the Facilities Assistant Director for Campus Services. Mutually agreed upon modifications may be made to improve the viability of specific trees and/or to facilitate construction activities. The PM will then be responsible to see that the protection remains in place for the duration of the project. Requests to modify or relocate tree protection shall be forwarded to the Facilities Assistant Director for Campus Services by the PM for review and written approval which will not be unreasonably withheld.

- **Tree Protection Fencing:** The contractor shall erect fenced enclosures around all existing trees that are designated to remain within a project's limits of construction, haul routes, staging and laydown areas. Fencing is required around these trees to achieve three primary goals: (1) to isolate the tree canopy and branches from contact with construction equipment, materials and activities; (2) to preserve roots and soil conditions in an intact and non-compacted state, and; (3) to delineate the tree's **Critical Root Zone (CRZ)** in which no soil disturbance shall be permitted and in which project related activities are restricted.

The tree protection fencing shall be constructed of an 6' high chain link fence and shall be the responsibility of the contractor to erect and maintain. Posts shall be spaced no greater than 8' OC (on center) and shall be mounted on properly anchored and ballasted surface stations. The tree protection fence shall be established at 2' beyond the tree's **Critical Root Zone (CRZ)** for **Heritage** and **Legacy** trees; for all other trees it shall be established at the dripline.

Maintenance of the enclosed tree protection area shall be the responsibility of the contractor throughout the project. A secured personnel gate shall be included to facilitate access to the enclosed area for contractor maintenance purposes only or for allowable project activities within the **Critical Root Zone (CRZ)**.

No removals, clearing, stripping of soils, driving or parking of vehicles, storage of materials, or other construction activity is to take place within the **CRZ**.

If construction activities are required to take place within the **CRZ**, the PM shall arrange a meeting between the Facilities Assistant Director for Campus Service and the contractor one week prior to beginning the work to determine the best methods to be used to assure the long-term well-being of the tree.

- **Erosion Control:** If a tree is adjacent to or in the immediate proximity to a grade slope of 8% (23 degrees) or more, then approved erosion control or silt barriers shall be designed to be installed outside the **CRZ** to prevent siltation and/or erosion within the **CRZ**. The intent is to prevent the root system from becoming buried in silt. If there is no alternative, the Erosion & Sedimentation Plan Requirements take precedence.
- **Unavoidable Construction Activities within the CRZ:** Sometimes construction activities within the **CRZ** cannot be avoided. The contractor shall inform the PM a minimum of one week prior to the need to commence work within the **CRZ** so that the PM can arrange a meeting between the contractor and the Facilities Assistant

Director for Campus Services to discuss how best to minimize or avoid damage to the preserved tree.

Cutting or Disturbing Roots: If, due to unforeseen conditions, disturbing or cutting roots in a **CRZ** is unavoidable, the work should only be done with prior consultation and approval of methods by the Facilities Assistant Director for Campus Services. Root pruning, hand digging and tunneling under the roots shall be used if construction excavation must pass through a tree's **CRZ**. Measures to protect roots that are 1" in diameter and larger should be implemented since many feeder roots are attached to the larger roots. Roots of this size can occur both in and outside of the drip line, depending on the tree species and soil conditions.

Mulching: Install mulch in the **CRZ** to a depth of 3 inches to help inadvertent compaction and limit moisture loss. Mulch shall be kept 3"-6" away from the trunk and visibly above-ground roots. Mulch may be removed if improvements or other landscaping is required. Mulch material shall be 2-inch, dyed brown, wood chip mulch or approved equal.

Root Buffer: If **CRZ**'s cannot be fenced, a temporary buffer is required and shall cover the **CRZ** and remain in place at the specified thickness until final grading. Approved buffer materials include 12" depth of wood chips, or 8" depth of crushed stone. All buffers should be placed on a permeable landscape fabric and be removed during the final grading process.

Irrigation: During growing season (April-September) drought periods, supplemental watering may be necessary for trees within construction areas and protected **CRZ**'s. For existing trees within protected construction areas, the Facilities Assistant Director for Campus Services will coordinate with the Project Manager for access to the areas for purposes of irrigating the existing trees. In like manner, the contractor shall be responsible for providing irrigation as necessary to assure the health of all newly planted or transplanted trees which are part of the project.

Other permitted activities within the CRZ: Aeration, fertilization, or other beneficial practices that have been specifically pre-approved by the Facilities Assistant Director for Campus Services within the **CRZ**.

- **Tree Pruning and Removal:** All tree-related clearance activities shall be approved by the Facilities Assistant Director for Campus Services prior to construction. Tying back branches is preferred to pruning and should be considered on a case-by-case basis. The material used to tie back branches shall be ArborTie® or its approved

equivalent. If pruning is necessary, then the minimum amount shall be pruned to allow for the required clearance. No more than 25 percent of the functioning tree canopy may be removed within one calendar year. Pruning coniferous trees requires expertise, and care should be taken not to distort the natural growth or form of any tree nor cause the tree to look aesthetically unacceptable, as determined in consultation with the Facilities Assistant Director for Campus Services.

- **Tree Removal Procedure:** When trees are removed in the construction zone and adjacent trees are to be preserved and protected as shown on the approved site plans, then the following tree and stump removal practices apply:
 - A. **Tree Removal:** Trees to be removed that have branches contacting those from trees to be preserved, or roots within the **CRZ** of trees to be preserved, shall be carefully removed in such a way to cause no damage to the above or below ground parts of the preserved trees.
 - B. **Stump Removal:** If stumps to be removed may have their roots intermingled with trees to be preserved, those stumps shall have their roots severed before extraction. Removal shall include grinding the stump and roots to a minimum depth of 24-inches. Removal shall also include large surface roots three feet from the outside circumference and all stump grindings. The area shall be backfilled with a University-approved clay-loam textured topsoil and the area shall be hand-tamped so that the fill surface is flush with the surrounding grade.
- **Tree Replacement:** Trees that must be removed during construction projects, due to unforeseen conditions, shall be replaced. Depending on the type and value of the tree to be removed, the Facilities Assistant Director for Campus Services will inform the PM whether the replacement of the tree will be based on a “one-for-one” or “inch” basis. The replacement approach for “high value” trees, including but not limited to **Heritage** and **Legacy** trees, will typically be on the “inch” basis. “Inch” basis may be understood through the following example. If a 20” diameter tree is removed, it may be replaced by four (4) 5” trees, or ten (10) 2” trees or five (5) 4” trees or any combination of trees totaling 20”.

Project related tree replacement costs are the responsibility of the contractor. Replacement trees may be planted outside of the project limits of construction to preserve the project’s integrity of design.

- **Tree Transplanting:** Those trees whose size and species permit transplanting, and which cannot be protected during construction, shall be transplanted to other locations

as part of the scope of work identified in the construction project. Trees larger than 10” diameter at **DSH (Tree Diameter at Standing Height)** are difficult to transplant. Deciduous trees are generally easier to transplant than coniferous trees. Trees should be dug up and transplanted only when they are fully dormant, usually from the end of October through mid-April.

- **Tree Substitutions:** In the event that trees specified for a project are unavailable at the time of installation, the contractor shall notify the PM. The PM will then request alternative recommendations from the landscape architect and submit them to the Facilities Assistant Director for Campus Services. The Facilities Assistant Director for Campus Services will then submit the recommendations for consideration and comment to the appropriate stakeholders (if any) and for approval by the Assistant Vice President of Facilities. The Assistant Director will provide the PM with the final determination.
- **Tree Damage:** Tree damage caused by construction personnel or construction operations shall be brought to the immediate attention of the PM. The PM will then arrange a meeting with the contractor and the Facilities Assistant Director for Campus Services to determine the impact of the damage on the aesthetics of the tree and the viability of the tree to survive the damage long term and to determine whether replacement is necessary. Should tree replacement be necessary, restitution for tree damage caused by construction personnel or construction operations shall be the sole responsibility of the contractor.
- **Decompacting Soil:** After all construction activities are completed, and where not limited by underground utilities and bedrock, soil in the construction zone shall be decompacted to a depth of at least 8” before topsoil is added. The soil shall be moist enough so that decompaction activities do not create dust, but dry enough so that equipment does not create deep ruts. All gravel, concrete, and construction debris shall be removed from the area before decompaction activities occur.

5. **Construction Project Closeout.**

The PM shall contact the Facilities Assistant Director for Campus Services a minimum of two (2) weeks prior to developing a punchlist for tree and other landscape materials. The Facilities Assistant Director for Campus Services shall actively participate in the punchlisting process along with the PM, contractor and landscape architect. The contractor shall provide proof that all plant materials conform to the specification requirements of the project and with this document.

The PM is responsible for obtaining a comprehensive list from the contractor of all trees

removed, planted and/or transplanted as part of the project. This list must include tree identification, date planted, species, genus and any other information required by the form found in **Appendix B** of this document. The completed list is to be turned over to the Facilities Assistant Director for Campus Services to update tree inventory and condition records using Asset Manager TM or other software in use and approved for the purposes.

E. Tree Inventory and Assessment

- **Tree Inventory.** It is the responsibility of the Facilities Assistant Director for Campus Services to create and maintain an accurate and up-to-date inventory of all campus trees whether existing, newly planted, removed or transplanted. The Assistant Director utilizes Asset Manager TM for this purpose and creates records in the data base from information provided by contactors on the form found in **Appendix B** of this document. The form is to be used by both project and operations personnel.

The tree inventory shall be verified by the Facilities Assistant Director for Campus Services no less than annually. If the annual tree inventory is undertaken through a contract arrangement, assigned personnel must possess sufficient education, training and experience to accurately perform the work.

- **Tree Assessment.** It is the responsibility of the Facilities Assistant Director for Campus Services to coordinate and ensure that industry standard tree assessment procedures are followed and that tree assessments are performed only by appropriately qualified personnel.

There are three components to the Kutztown University tree assessment:

1. Tree inspection, where tree risk, hazard potential, tree care needs and other information is gathered and reported;
2. Remediation of hazardous tree conditions and conditions that may affect the tree's health in a timely way; and
3. Recording and documenting these related activities.

Tree Inspection. It is the responsibility of the Facilities Assistant Director for Campus Services to inspect campus trees on an annual or biannual basis for health, structure, risk rating, pests and disease. Changes in the condition of trees should be noted as well as recommendations for remedying deficiencies or other actions: The need and reason for more frequent followup inspections should be noted as appropriate. The frequency of inspections should be based on the tree risk zone categories delineated on the zoned map to be found in **Appendix C** of this document.

It is recommended that every 7-10 years a comprehensive assessment of all campus trees be performed by qualified outside professionals meeting the competency requirements of a Qualified Arboricultural Professional.

Tree Remediation. Based on the findings generated by the annual tree inspections, recommendations for remediation of tree-related risks shall be initiated by the Facilities

Assistant Director for Campus Services. If egregious hazards are found during the tree inspections, the Assistant Director will coordinate the appropriate remediation efforts to ensure the safety of students, staff, faculty and campus visitors.

Recording and Documenting. The tree assessment should be documented in an electronic format, with information including but not limited to the date, Tree ID number, tree health conditions, tree structural conditions, risk rating, further inspection recommendations, comments, pests and disease noted, and any relevant information. Additional documentation including tree hazard rating forms and photographs should be attached to the record. The Facilities Assistant Director of Campus Services is responsible for the accuracy and completeness of the assessment records whether the data is self-provided or provided by contracted professional.

<i>tree risk zone</i>	<i>color code</i>	<i>Tree Inspection cycle time</i>	<i>Recommended Inspection methods</i>	<i>Comments</i>
High Risk	red	annual	walking inspection	Consideration should be given to extending inspection cycle to 18 months so that leaf on-leaf off conditions can be inspected. Update tree inventory.
Moderate Risk	orange	biannual	walking inspection	Update tree inventory
Low Risk	green	every 5 yrs	walking/cart/driving inspection	Update tree inventory
All Zones	n/a	After storm conditions occur (high winds, heavy ice or snow loads)	walking/cart/driving inspection	If potentially hazardous trees are noted by a drive-by survey, follow up with a walk-by survey

APPENDIX A

Appendix A should be periodically reviewed. Comments note trees specifically adapted to the University's soil pH of 7-8.

1. STREET TREES (No Overhead Power Lines)

Scientific Name	Common Name	Comment
<i>Acer rubrum</i>	Red Maple	Overused
<i>Aesculus hippocastanum</i>	Horsechestnut	
<i>Ginkgo biloba</i>	Ginkgo	(male only)
<i>Gleditsia triacanthos</i> 'Inermis'	Thornless Honeylocust	
<i>Koelreuteria paniculata</i>	Goldenraintree	
<i>Quercus acutissima</i>	Sawtooth Oak	Adapted to pH
<i>Tilia cordata</i>	Littleleaf Linden	
<i>Zelkova serrata</i>	Japanese Zelkova	

2. STREET TREES (Under Power Lines)

Scientific Name	Common Name	Comment
<i>Acer campestre</i>	Hedge Maple	Adapted to pH
<i>Acer ginnala</i>	Amur Maple	Adapted to pH
<i>Crataegus</i> spp. ('Inermis')	Thornless Hawthorne	
<i>Malus</i> spp.	Crabapple	Use only varieties highly resistant to scab and rust, Adapted to pH
<i>Prunus serrulata</i> 'Kwanzan'	Kwanzan Cherry	
<i>Prunus</i> 'Okame'	Okame Cherry	Adapted to pH
<i>Styrax japonica</i>	Japanese Snowball	May be invasive
<i>Syringa reticulata</i>	Japanese Tree Lilac	Adapted to pH

3. EVERGREEN TREES

Scientific Name	Common Name	Comment
<i>Abies balsamea</i>	Balsam Fir	
<i>Cryptomeria japonica</i>	Japanese Cedar	
<i>Ilex opaca</i> var.	American Holly	
<i>Juniperus virginiana</i>	Eastern Red Cedar	Adapted to pH – good wildlife value – cedar apple rust

Picea abies	Norway Spruce	Overused
Picea omorika	Serbian Spruce	
Pinus nigra	Austrian Pine	Has problems with Diplodia tip blight
Pinus strobus	Eastern White Pine	
Pinus thunbergiana	Japanese Black Pine	
Pseudotsuga menziesii	Douglasfir	
Thuja occidentalis	Eastern Arborvitae	Adapted to pH
Tsuga canadensis	Canadian Hemlock	Plant in limited numbers- HWA

4. SHADE TREES (*Trees which at maturity will be greater than 30 feet high.*)

Scientific Name	Common Name	Comment
Acer rubrum	Red Maple	
Acer saccharum	Sugar Maple	Adapted to pH
Carpinus betulus	European Hornbeam	
Celtis occidentalis	Common Hackberry	Adapted to pH
Fagus grandiflora	American Beech	
Ginkgo biloba	Ginkgo	(male only) Adapted to pH
Gleditsia triacanthos 'Inermis'	Thornless Honeylocust	Adapted to pH
Gymnocladus dioicus	Kentucky Coffee Tree	Adapted to pH
Liquidambar styraciflua	Sweetgum	
Platanus x acerifolia	London Plane Tree	Adapted to pH
Quercus spp.	Oak	White, swamp white, bur adapted to pH
Salix spp.	Willow	
Sophora japonica	Japanese Scholar Tree	
Tilia spp.	Linden	(Except tilia americana – WHYnot?)
Ulmus spp	Elm	Only get DED resistant varieties
Zelkova serrata	Japanese Zelkova	

5. ORNAMENTAL TREES

Scientific Name	Common Name	Comment
Acer griseum	Paperbark Maple	Adapted to pH
Acer ginnala	Amur Maple	Adapted to pH

Amelanchier arborea	Downy Serviceberry	
Betula spp.	Birch	
Cercidophyllum japonicum	Katsura Tree	Adapted to pH
Cercis canadensis	Eastern Redbud	Adapted to pH
Cornus florida	Flowering Dogwood	
Cornus kousa	Kousa Dogwood	
Cornus mas	Cornelian Cherry Dogwood	Adapted to pH
Cotinus obovatus	American Smoke-tree	Adapted to pH
Crataegus spp.	Hawthorne	Adapted to pH
Halesia carolina	Carolina Silverbell	
Koelreutaria paniculata	Goldenraintree	
Maackia amurensis	Amur Maackia	Adapted to pH
Magnolia soulangeana	Saucer Magnolia	
Magnolia stellata	Star Magnolia	
Malus spp.	Crabapple	
Prunus spp.	Flowering Cherry	Adapted to pH
Prunus cerasifera	Plum	
Stewartia pseudo-camellia	Japanese Stewartia	
Styrax japonicum	Japanese Snowbell	

6. EDUCATIONAL TREES

Scientific Name	Common Name	Comment
Abies balsamea	Balsam Fir	
Abies nordmanniana	Nordman Fir	
Abies pinsapo		
Acer burgueranum	Trident Maple	
Acer miyabei	Elegant Maple	
Acer negundo	Boxelder	Adapted to pH
Aesculus flava	Yellow buckeye	
Aesculus glabra	Ohio Buckeye	
Aesculus parviflora	Bottlebrush Buckeye	
Aesculus pavia	Buckeye	
Alnus japonica	Japanese Alder	Adapted to pH
Aralia spinosa	Devil's Walking Stick	
Asima triloba	Pawpaw	Adapted to pH

Betula nigra	River Birch	
Carpinus betulus	European Hornbeam	Adapted to pH
Carpinus caroliniana	Ironwood	Adapted to pH
Carya spp.	Hickory	Adapted to pH
Castanea mollissima	Chinese Chestnut	Sharp fruit husks – edible seed
Catalpa spp	Catalpa	Adapted to pH
Cedrus atlantica	Blue Atlas Cedar	
Cercis canadensis	Eastern Redbud	
Chamaecyparis lawsoniana	False Cypress	
Chamaecyparis obtusa	False Cypress	
Chamaecyparis pisifera	False Cypress	
Chionanthus virginica	Fringetree	
Cladastris kentukea	Yellow Wood	Adapted to pH
Cornus mas	Cornelian Cherry	
Corylus colurna	Turkish filbert	
Diospyros virginiana	Persimmon	
Eucommia ulmoides	Hardy Rubber Tree	Adapted to pH
Fagus sylvatica	European Beech	
Fagus grandifolia	American Beech	
Franklinia altamaha	Franklinia	
Gymnocladus dioicus	Kentucky Coffee Tree	
Halesia carolina or monitcola	Silverbells	
Hamamelis virginiana	Witch Hazel	
Hamamelis vernalis	Spring Witch Hazel	
Juglans cinerea	Butternut	Adapted to pH
Juglans nigra	Black walnut	Adapted to pH – large fruit
Larix laricina T	amarix	
Larix kaempferi	Japanese Larch	
Liquidambar styraciflua	Sweet Gum	
Liriodendron tulipifera	Tuliptree	
Maclura pomifera	Osage Orange	Adapted to pH – thornless varieties available
Magnolia grandiflora	Bull Bay Magnolia	
Magnolia virginiana	Sweet Bay Magnolia	

Magnolia acuminata	Cucumber Tree	
Morus rubra	Red Mulberry	Hard to find
Nyssa sylvatica	Sourgum	
Ostrya virginiana	American Hop Hornbeam	Adapted to pH
Oxydendrum arboreum	Sourwood	
Parrotia persica	Persian Ironwood	Adapted to pH
Phellodendron amurense	Amur Cork-tree	Male only
Pinus bungeana	Lace Bark Pine	
Platanus occidentalis	American Sycamore	Adapted to pH
Quercus spp.	Oak	
Rhododendron spp.	Rhododendron	
Robinia pseudoacacia	Black Locust	Adapted to pH, varieties available
Sassafras albidum	Common Sassafras	
Sciadopitys vericillata	Umbrella Pine	
Sophora japonica	Scholar Tree	Adapted to pH-slippery fruit
Sorbus alnifolia	Korean Mountain Ash	
Stewartia koreana	Korean Stewartia	
Stewartia monadelphica		
Stewartia pseudo-camellia	Japanese Stewartia	
Taxodium distichum	Bald Cypress	
Thuja plicata	Giant Arbor Vitae	
Tilia americana	American Linden	
Ulmus camperdownii	Camperdown Elm	
Viburnum spp.	Viburnum	

Jason – we need an Appendix B [Form for Data on newly planted or transplanted trees](#)

Jason – we need an Appendix C [tree risk zone categories map](#)

Jason – don't use the heading feature of Word until the document is finalized

EFFECTIVE DATE:

Date of Approval Authority Signature

APPROVAL AUTHORITY:

Assistant Vice President of Facilities

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Office of Physical Plant Supervisory and Management Staff
University Vice President for Finance and Administration

H. SIGNATURES:

R. Jeff Grimm, PE
Assistant Vice President of Facilities

Date