

University of Missouri –St. Louis Campus Tree Care Plan 2018

Purpose:

The purpose of the University of Missouri at St. Louis campus tree care plan is to identify the policies, procedures, and practices that are used in establishing, protecting, maintaining and removing trees on the UMSL campus. The overall goal of the plan is to ensure safe, attractive and sustainable campus urban forest. The specific objectives of the plan are:

- Ensure proper species selection, high-quality nursery stock acquisition and industry consensus planting procedures.
- Promote species diversity and proper age structure in the tree population
- Protect high-value campus trees during construction and renovation projects
- Promote tree health and safety by utilizing ISA's best management practices when maintaining campus trees
- Ensure trees are reasonably replaced when there is mortality due to weather, pest infestations, injury, or construction displacement
- Encourage campus community members to respect and value the campus urban forest
- Increase the use of the campus forest as an educational and outreach tool for the campus and surrounding community.
- Establish a campus tree advisory committee.
- Maximize the benefits of carbon sequestration and air pollutant removal provided by campus trees.

Tree Campus USA

This plan is being established, in part, to fulfill one of the requirements for UMSL to achieve recognition by the Arbor Day Foundation as a Tree Campus USA.

Responsible Department:

The UMSL Grounds Department within Facilities Management under the direction of the Grounds Supervisor and Associate Vice Chancellor of Facilities Management is responsible for the implementation of the Campus Tree Care Plan.

Campus Tree Advisory Committee:

2018 Initial Members Include:



FACILITIES MANAGEMENT

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 Rachel Craft, PhD- Department of Sociology, Gerontology & Gender- UMSL
 Doug Seely- Beyond Housing, Community Forester
 UMSL Student

The University of Missouri at St. Louis Campus Tree Advisory Committee is tasked with providing important input into the care and improvement of the campus landscape with a primary focus on the health and maintenance of the campus tree population.

The Committee will voluntarily serve for a period of one academic year with a renewal option. Members will appoint team members to conduct day-to-day business of the committee. Members are expected to actively participate and contribute in guideline and policy related issues along with research and information to review current maintenance practices including but not limited to pruning, fertilization, installation/replacement, removal and protection.

Campus Arboriculture Practices:

I. Installation Practices

Plant Selection

Tree species installed on UMSL Campus and properties will come from a list of acceptable species as developed by the Campus Tree Advisory Committee. This list will contain both native and non-native species that have been thoroughly screened for adaptability and serviceability to the physical conditions based on site orientation, drainage, soil, etc. Consider the restrictions of the planting site, the purpose for the tree, and each tree's unique growing requirements before selecting the type of tree to be purchased. Whenever possible and when landscape plans allow, native species will be the preferred choice for both new installation and replacement.

Planting Seasons

The season for planting shall be as follows:

Deciduous Trees and Shrubs Fall October 15- December 15
Spring March 15- May 15

Evergreen Trees and Shrubs Fall September 1- October 30
Spring March 15- May 15

Nursery Stock

Nursery stock used on UMSL campus shall conform to the most current American Standard for Nursery Stock, ANSI Z60.1.

Planting

Stake out location for all plants and outlines for planting areas on the ground and obtain approval before an excavation is made. Make adjustments in locations and outlines as directed.

Tree planting shall conform to the most current ANSI A300 Part 6: Tree, Shrub and Other Woody Plant Maintenance- Standard Practices (Transplanting). The planting process will conform to these standards and to the most current Best Management Practices (BMP) for Tree Planting published by the International Society of Arboriculture.

II. Maintenance Schedule

Establishment Maintenance Schedule

Establishment maintenance shall be provided consisting of a minimum of supplemental irrigation during dry periods, mulch, corrective pruning and staking or guying for a period of 24 months after planting or as determined by the Grounds Maintenance Department. Staking or guying is not normally required or recommended unless a tree is unable to stand without supplemental support. Where staking or guying is required the BMP for Tree Planting shall be followed. The BMP for Tree Planting shall be referenced for the best practices concerning establishment maintenance practices.

Maintenance Pruning Schedule

- The maintenance pruning schedule shall be dictated by tree species, age, function and placement.
- Trees less than 7 years old should receive structural pruning on an annual or biennial basis
- Trees 7-20 years old should receive structural pruning every two to five years
- Trees 20 years old and older should receive maintenance pruning every five to seven years to clean dead, diseased, dying and defective branches from the crown
- Trees adjacent to roadways, walkways, signs and street lights are annually inspected for safety and clearance issues and maintenance pruned as necessary

III. Pruning Methods

To encourage the development of a strong, healthy tree, the following guidelines shall be followed when pruning

General

- Pruning shall not be conducted without a clear objective or outcome
- Prune first for safety, next for health and finally for aesthetics
- When removing branches, the pruning cut shall not damage the branch bark ridge and branch collar
- Internode (heading) cuts should be used to achieve pruning objectives rather than making large (>8" diameter) branch removal cuts

Cleaning

- Thinning shall be performed to remove dead, diseased, dying and defective branches, which reduces hazards, promotes, health and improves appearance
- Large branches should be removed with the aid of ropes and rigging equipment to minimize the risk of tree root injury from falling debris

Thinning

- Thinning shall be performed to reduce the density of branches, which increases light penetration, improves visibility and decreases wind load.
- Assess how a tree will be pruned from the top down
- Favor branches with a strong, U-shaped angle of attachment. Remove branches with weak V- shaped angles of attachment and/or included bark
- Ideally, lateral branches should be evenly spaced on the main stem of young trees
- Remove any branches that rub or cross another branch
- Make sure that lateral branches are no more than one-half to three-quarters of the diameter of the main stem to discourage the development of codominant stems
- Do not remove more than one-quarter of the living crown of a tree at one time. If it necessary to remove more, do it over successive years

Raising

- Raising shall be performed to provide vertical clearance from thoroughfares, signs, street lights and structures
- Always maintain live branches on at least two-thirds of a tree's total height. Removing too many lower branches will hinder the development of a strong main stem.
- Remove basal sprouts and vigorous epicormics sprouts

Reduction

- Reduction shall be performed to decrease the overall height of a tree or to decrease the length of an individual branch

- Use reduction pruning only when absolutely necessary. Make pruning cut at a lateral branch that is at least one-third the diameter of the stem to be removed
- If it is necessary to remove more than half of the foliage from a branch, remove entire branch.

Timing

- Pruning for most species should be done during dormancy.
- Exceptions are Spring flowering trees and conifers.

IV. Cultural Methods (Types)

Mulching and Irrigation

- Tree mulching- every two years for trees up to approximately 6". Periodically, drip lines of larger trees and tree groupings are mulched extensively with waste wood chips.

Fertilization and Pest Management

- Trees are treated for pest problems as needed. There is an extensive EAB presence on campus currently affecting our Ash trees. Currently, we do not have an EAB treatment regimen.
- There is no regular tree fertilization beyond treatment received as a result of fall lawn fertilization. Specimen or high-value trees may receive prescriptions fertilization when severe nutrient deficiencies are diagnosed.

V. Other Practices

Tree Removals

- Live trees are generally removed only when required to protect the public safety or are detracting from the quality of the landscape.
- Trees may only be removed after consultation with the Campus Tree Advisory Committee where the committee reaches a consensus.
- Where the committee cannot reach a consensus, an independent assessment by a qualified arborist may be required and submitted to the committee for review

Planting and Tree Diversity

- As the campus is an extension of indoor learning space, increasing the diversity of tree species is extremely important. However species selection must be dictated by site conditions.

- A ‘species list’ for campus planting does not exist, but Campus Tree Advisory Committee are consulted regularly to recommend species for specific site conditions. Committee members often request use of new cultivars and species that are absent or underrepresented on campus to assist in their teaching activities. Based on the vernacular of the site, some landscapes will be planted in native species while others may include exotics. Known invasive woody plants are consciously avoided in tree planting plans.

VI. Managing for Catastrophic Events

Storm Response and Recovery

Storm response and recovery are generally accomplished in-house. In a crisis, the first priority is to remove tree debris that blocks campus thoroughfares, disrupts campus operations, or poses hazards to the campus community. Once these critical needs are addressed, a prioritized recovery plan is implemented during which unsalvageable trees are systematically removed and salvageable trees are pruned to restore their health and structure. As the tree planting budget permits, lost trees are strategically replaced to restore the structure and function of the campus urban forest in a reasonable time frame. During storm response and recovery, trees requiring specialized equipment not available in-house are addressed by an outside contractor.

Inspection and removal

VII. Protection and Preservation

Protection procedures- See attachment one at the end of this document.

I. Preservation During Design Phase

On the site survey map, identify all trees whose root systems are likely to be impacted by construction equipment, cut and fill activities, utility corridors, proposed walks and roads and potential construction staging areas; and whose branches may be damaged by construction equipment

NOTE: if trees are grouped in a forest or woodlot, then only the location of the woodlot and any trees greater than 24 inches diameter at 4.5 feet above the ground (DBH) need to be identified

A. Not Salvageable

- a. All trees that are within the footprint or in close proximity to the footprint of a proposed building. (Note: alternative footprints to save large, valuable trees should be considered, provided that the alternatives maintain the desired features and costs of the proposed building)

- b. Trees of undesirable species or in very poor health. Examples include, but are not limited to species that have low landscape and educational value and heavily diseased or damaged trees that have little chance of recovering desirable form and function, even if protected from construction damage.
 - B. Low priority for protecting
 - a. Small trees (less than 10 inches DBH) that fall outside of the building footprint, but are likely to be impacted by construction activities
 - b. Larger trees outside of the building footprint with relatively low landscape value. Example include but are not limited to, trees with poor form, species of relatively low landscape and educational value, or trees with inadequate space to accommodate current or future growth even if the site is ameliorated.
 - C. High priority for protecting
 - a. Medium (>10 inches DBH) to large (>24 inches DBH) trees of desirable species with good form, good health and room to continue to grow.
- II. Avoid locating the general construction site around low and high priority trees where possible by:
 - a. Planning all construction activities including new utility corridors, staging areas, new sidewalks and new roads for a minimum clearance of 15 feet away from the base of the trees and not within the edge of the canopy drip line. Greater distances are desirable.
 - b. High priority trees should receive more consideration than low priority trees in planning corridors, staging areas, walks and roads.

VIII. Goals and Targets

Tree Inventory

- The last time a digital tree inventory was completed was January 2007. An updated version as well as new software making the tree population available to the campus community is needed. When the next tree inventory update is completed, this information will be placed on a web-based server. The inventory may be used for campus planning purposes, tree management, academic exercises (read only access), and the general public (read only access).

Increase Spring Flowering Tree Population

- Developed five-year, 100 spring flowering tree installment plan. Implemented Fall 2017

with 16 trees planted.

Increase Campus Hardwood Canopy

- Develop plan to increase hardwood canopy

Develop Integrated Tree Replacement Plan 2018

- As trees need to be removed due to disease, construction or structural defect, a plan to replace those ecological benefits will be enforced.

IX. Tree Damage Assessment, Enforcement and Penalties

Assessment on low profile trees is performed via the Campus Tree Advisory Committee. Higher profile trees are assessed in-house by the campus ISA certified arborist or by an outside consultant (such as Davey Tree Company). Enforcement of protection measures is performed by grounds supervisor, project managers and on-site engineers.

X. Prohibited Practices

I. Bike Locking

Bicycles are required to park in areas designated solely for that purpose.

Disciplinary Fines and Actions

A fine of \$25 is assessed for improper parking as defined in Section IV in Rules and Regulations.

II. Destruction of Trees

Code of St. Louis County § 616.030 - Injuring Trees, Shrubbery, Natural Life, and Other Property.

It shall be unlawful for any person to disfigure, damage, or in any way injure or destroy either in whole or in part, or carry away any tree, shrub, plant, flower, stone, or stone work, bench, chair, seat, stand, structure, fence or property, or thing whatsoever in any park; or molest any bird, bird's nest, fish, or animal or anything belonging to or kept therein; or paste or affix or inscribe any handbill, poster, card, device, or inscription to or upon any tree, fence, or structure, within any County park.

(O. No. 1614)

§ 716.050 - Damaging Certain Properties.

A person shall not deface, injure or damage any building, fence or other enclosure, ornamental, or shade tree, tree box, lamppost, awning post, fireplug, hydrant, railing or other property belonging to St. Louis County, Missouri, or any property holder thereof, either by cutting,

hacking, breaking, daubing with paint or other substance, marking with chalk, or in any other way or manner defacing, tearing down or injuring such property.

(O. No. 3729, 10-28-65)

III. Topping of Trees

Topping, heading, hat-racking, or any other form of inappropriate crown/branch reduction pruning shall not be permitted except in emergency situations or in executing a crown restoration procedure.

XI. Definitions

DBH- Diameter at breast height

XII. Communication Strategy

The campus should make every effort to communicate this plan to all members of the campus community who might be impacted by or have an impact on not only campus landscape but also specifically trees. This includes students, faculty, staff, visitors and the surrounding community. Notice of the plan's adoption should be placed in The Current newspaper. The plan should be communicated to target groups in the following ways

1. Students and Faculty

The tree care plan should be placed on the website of UMSL Facilities Management, Sustainability and other appropriate campus offices and department. This will allow students and faculty to easily access the plan at all times. Data from the tree inventory will also be placed online in order to be available to students. Environmentally-focused student groups should be made aware of this plan.

2. Staff

Facilities Management should keep copies of the plan in its offices for consultation by employees, contractors and visitors and place a copy on their website.

3. Contractors

Any company contracted to perform work that may directly or indirectly affect campus trees should be given a copy of the plan, either as a hard copy or in electronic format. Contractors will need to be especially aware of portions of the plan concerning tree preservation and damage assessment.

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4. Community and Visitors

The community should be made aware of the plan through a press release that coincides with UMSL's announcement of Tree Campus USA designation. The announcement should include information on how they can become involved in management of the campus landscape through service projects and other activities.

Attachment #1:**TREE PROTECTION FENCING (TREE PROTECTION ZONES)**

- Tree protection fencing must be installed around all existing trees noted to remain on plans within the fenced staging area. Fencing shall extend a distance from the trunk of 1.25 feet per each inch of trunk diameter or 6", whichever is greater. For example, a tree with a 12" trunk diameter shall be fenced 15" from the trunk (30" diameter)
- Area within tree protection fencing must be mulched with shredded hardwood or wood chips to depth of 4".
- Fencing must be installed prior to any equipment arrival on the site. Work may not begin until fencing is installed.
- Fencing shall be galvanized chain link as specified below, 4" minimum height. Plastic fencing and wood stakes, or snow fencing are NOT acceptable.
- Fence shall be maintained for the duration of the project, and shall not be removed without the owner's permission.
- No material storage, vehicles or any other activity shall occur at any time within tree protection fencing. Contractor may be required to pay tree replacement and/ or soil compaction remediation costs if there is any incursion to tree protection zones.

FENCE DESIGN AND MATERIALS

- The minimum height for all temporary fencing shall be 4 feet.
- The fencing shall be of galvanized 11-1/2 ga. chain-link construction with a minimum of 1-5/8" O.D. tubular steel posts and top rails.
- Surface mounted fence panels may be used with the approval of the owner and are to be adequately braced to resist wind and ice loading and shall be continuously connected to prevent access by the public.
- Privacy netting to screen construction activities shall be used on all "core campus" projects, or as specified in the contract documents.
- Privacy screen material shall be green, equal to the weave of "US Netting"s Windscreen," polyethylene netting.
- Barbed wire shall not be used

Attachment #2:**Campus Forest****Areas**

The proposed campus forest areas consist of existing wooded areas and open areas proposed for reforestation. There are four long-term objectives for the forest areas. The first is to maintain stands of large native trees with associated understory and ground layer plants that will provide a regionally fitting visual theme for beautifying and unifying the University owned area surrounding the core campus. The second is to provide the environmental benefits of cooling, enhanced storm water management, erosion control and water quality protection, increased species diversity and reduced water consumption and energy expenditure for grounds maintenance. The third is to provide areas for research, education, and passive recreation in close proximity to the campus. And, the fourth is to provide an example of environmental responsibility that will serve to heighten public awareness of the relationship between human society and the natural environment. In balancing these objectives, it should be recognized that in areas of high visual sensitivity along roadways, the aesthetic quality of the forest should be given priority. Research activities that may result in “unattractive” landscapes or the dominance of invasive exotic species over extended periods of time should be located in areas with limited public exposure. The forest areas along roadways should be designed and managed to enhance and unify the campus image over the long-term with a minimum of short-term unattractiveness during periods of canopy establishment. The detailed planning of reforestation initiatives should also include, as an overarching design parameter, the maintenance of campus safety and security, and the preservation of significant views. The forest areas should not be designed as strict restorations of the forest communities that naturally occur or occurred in the region during previous times. Rather, the forest areas should be designed to simulate the general structure and ecosystem functions of naturally occurring forest communities of the region, with a composition of species that may not necessarily replicate the original forests of the area. The designs and the management methods for each forest area should respond to the existing vegetation soils, hydrology, exposure, size, shape and context of each site. The methods for establishing new forests should be adapted to the site conditions and budget available for each site. The preferred method of forest establishment in areas of high public visibility is to plant canopy trees at densities and proportions of species similar to their final desired configuration sizes, species transplant characteristics, and the matching of tree types to field conditions.

Acer saccharum — Sugar

Maple *Acer rubrum* — Red

Maple *Betula lenta* — Sweet

Birch *Carya sp* — Hickory

Fagus grandifolia — American Beech

Liriodendron tulipifera — Tuliptree

Nyssa sylvatica -

BlackTupelo

Prunus serotina — Black

Cherry *Pinus rigida* — Pitch

Pine

Pinus strobus — White Pine

Pinus echinata — Short-leaf

Pine *Quercus alba* — White

Oak

Q. coccinea — Scarlet Oak

Q. prinus — Chestnut Oak

Q. borealis — Northern Red Oak

Q. velutina — Black Oak

Tilia americana — Basswood

Ilex aquifolium- American Holly

In the interest of minimizing the period for canopy establishment and increasing their immediate visual effect, trees should be planted at the largest sizes practical. Weed and grass competition should be reduced in the immediate area around the planted trees until such time that the new planting can successfully compete. Existing grass and forbes should be allowed to grow without mowing in the remainder of the project area, until they are ultimately shaded out and colonized by woody plants. The grass should be removed if rodent control becomes necessary to protect young trees from girdling. To maintain a neat edge along roadways, a narrow strip of lawn, free of trees, may be maintained during the establishment years, and later be phased out or maintained as a grass shoulder. Other methods of planting may be employed in situations where less immediate visual effects are acceptable, or where soil conditions, exposure or the project budget will not allow planting large canopy trees at ultimate densities. These methods include: planting desired canopy trees at lower densities in loose savanna configurations that will, over time, naturally close or can be supplemented with future planting; planting desired canopy trees at higher than ultimate densities (probably with smaller size planting stock for cost reasons) to increase the rate of canopy establishment and the opportunity for development of an understory layer; and planting fast-growing pioneer tree and shrub species at medium to high densities to rapidly establish a canopy followed by inter-planting with longer lived shade tolerant canopy

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species. Variations of these methods are also feasible. The planting of fast growing temporary shelter belts and hedgerows may also be desirable to provide protection for the new forests during the first several decades of their establishment. In proposed forest areas along the edges of large parking areas it would be desirable to include a large proportion of conifers for visual and wind screening. For example, the University Place Drive edge between West Drive and Florissant Road should be planted in this way to supplement the street trees that are already there.