

2022 TREE MANAGEMENT PLAN



ARBORETUM &
BOTANICAL GARDEN



I. Purpose and Objective

The University of Maryland - College Park has over 15,000 plants currently recorded in its GIS based inventory. These plants are the foundation of the campus landscape and critical to our accreditation as an Arbnet Level IV Arboretum. The purpose of the Campus Tree Management Plan of 2017 is to support the Mission Statement of the Arboretum and Botanical Garden and sustain a healthy, attractive and safe environment for the people and plants that are present on the campus at any given time.

Mission Statement:

“The University of Maryland campus is an Arboretum and Botanical Garden that strives to be an instrument of horticultural distinction, landscape design and interpretation and place-making reflecting the university’s education, research and service missions. The Arboretum and Botanical Garden incorporates the diverse heritage landscapes of the campus from its beginnings as an agricultural college founded in 1856 to its current urban setting befitting a distinguished research university. Through exemplary practices of environmental stewardship, horticulture and urban forestry, the Arboretum and Botanical Garden will enhance the campus’ aesthetic and promote awareness of conservation and preservation of our natural environment for the enrichment of the university community, the citizens of Maryland and our visitors.”

II. Responsible Department/ Governance

Facilities Management through the Division of Landscape Services accepts the responsibility to monitor and manage the health and condition of campus trees including taking the necessary action when approved to remove large specimen trees on campus. The Campus Tree Management Plan outlines steps taken in the care, and if needed, removal of trees.

III. Advisory Committee

The committee will consist of the following positions in Facilities Management (Assistant Director, Arboretum/Horticultural Services - Chair; Executive Director, Building and Landscape Services; Assistant Director, Landscape Services; Campus Arborist, Arboretum/Horticultural Services; Outreach Coordinator, Arboretum/Horticultural Services; Director, Facilities Planning; Coordinator, Campus Planning; Campus Landscape Architect) as well as representatives from the Department of Plant Science and Landscape Architecture, Resident Facilities, Campus Recreation Services and the Office of Sustainability. At least one student representative and one community representative will be maintained and additional interested parties are welcome. Committee member meet on a monthly basis to review tree canopy developments and impacts, proposed projects, outreach and similar issues.

IV. Goals

A. Arboriculture Practices

All work described below will be done in accordance with applicable ANSI A300 and Z133 Standards as well as related Best Management Practices. Any

companies contracted by the University for tree care shall be a Licensed Tree Expert by the State of Maryland. We anticipate updates to ANSI A300 standards this year, and will expect tree care on campus to follow any proposed changes.

I. 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 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.\
- Trees are cleared from cameras as requested by the Security Operations Center.

II. Pruning Practices

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

a. 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 not be used except in storm response and crown restoration procedures.
- Branch reduction or thinning should be used to achieve pruning objectives rather than making large (>8" diameter) branch removal cuts.
- No more than 20% of the living canopy of a tree should be removed in a single year. This number should be less than 10% for older, historic trees.

b .Cleaning

- Large branches should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.
- Assess how a tree will be pruned from the top down.
- Favor branches with strong, U-shaped angles 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 co-dominant stems.

c. Thinning

- Thinning shall be performed to reduce the density of branches, which increases light penetration, improves visibility, and decreases wind load.

d. 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 and proper taper.
- Remove basal sprouts and vigorous epicormic sprouts.

e. 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 the 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 the entire branch.

III. Planting

- Planting locations will be chosen with respect to potential longevity of the tree species, consistent with CPTED (crime prevention through environmental design) guidelines and utility right of ways as well as viewsheds, interaction with structures and relevance to landscape typologies and plant communities by campus district. Other uses of green space, such as club sports and events must also be considered.

IV. Maintenance

- Trees will be inspected on a continual basis by zone staff and IPM Specialist when available and any concerns addressed to the Campus Arborist promptly with regards to structural deficiency, nutrient deficiency, wounding or vandalism so inspection and remedial action can occur.

V. Removal

- Trees in the historic McKeldin Mall area of campus greater than 20" DBH will require assessment by 2 independent arborists before removal will be considered. All other removals require permission of the Campus Arborist and the Assistant Director, Arboretum/Horticultural Services.

VI. Recommended and Prohibited Species

- The University of Maryland College Park campus holds an arboretum/ botanic garden and exemption to the Invasive Plant Policy of the State of Maryland however it follows the list of prohibited plants with respect to new plant installations. Current collections are evaluated on a tree by tree basis for replacement of individual specimens on this list. All new plant recommendations are evaluated for invasive potential as well as value to the teaching collection, as well as relevance to LEED and Sustainable Sites Guidelines.

VII. Catastrophic Events

-Events such as hurricanes, tropical storms, blizzards, fires, tornados and other excessive wind events do occur from time to time and all effort will be made to protect the public safety during such events and to replant any lost trees or correct any damage resulting from such events. Response may include staff or contractor actions.

B. Damage Assessment, Enforcement and Penalties

Damage Assessment will be calculated through use of the book “Guide for Plant Appraisal”, most current edition, by the Council of Tree and Landscape Appraisers through the International Society of Arboriculture. This will be used as the base line for appraisals. The species rating that is included within the appraisal will come from the Mid-Atlantic Tree Species Rating Guide published by the Mid-Atlantic Chapter of the International Society of Arboriculture, most current edition.

Damages that occur to plant material will be compensated by payment or through replacement efforts at the recommendation of the Tree Advisory Committee.

Penalties will be directly related to replacement and appraisal value of the plant material damaged and will be enforceable to extent allowed by the applicable laws of the state of Maryland. All University contractors will be informed of enforcement and associated penalties during design and pre-construction phases of project lifetime.

C. Documentation

Landscape Services will assume the responsibility for maintain all documentation of campus tree inspections, pruning, removal and planting. These documents will only be made public through permission of the University Administration.

D. Inventory (Goals and Targets)

Efforts will be made to keep the Campus Plant Inventory as current as possible. All trees located within the campus landscape setting with a 6” diameter at breast height and larger are inventoried and documented to the species level with notes on health, defects, height, and crown radius. These trees also have a round aluminum tag with a unique identification number. Currently there are approximately 4,500 trees with these tags.

E. Tree Canopy and Campus Master Plan

Currently the Tree Canopy is at 24% over the campus with a canopy coverage goal of 40%. In order to progress multiple methods will be implemented. Tree removals will be limited to hazardous trees, trees that directly impact construction where preservation is not a viable option, severely damaged, diseased or dying trees. There will be an effort to plant replacement trees in the location of the removed tree if possible, practical and advisable. We will also work within the vision of the Campus Master Plan to ensure that replacements or new planted trees will not create conflict with future planned development and will instead reach a mature life stage and contribute to the canopy. The Campus Plant Inventory will also be used in conjunction with the composite utility maps to ensure predictable longevity of the newly planted material.

F. Tree Protection Policy During Construction (Protection and Preservation)

I. General

1. Intent:

- a. The University of Maryland - College Park (UMD) is committed to tree protection.
- b. The tree canopy/ tree root zones shall be protected during the entire construction process.
- c. Tree trunks and branches shall not be damaged by equipment and/or workers and tree root protection zones shall be protected from soil compaction, damage by trenching or excessive grade changes, and hazardous materials or waste products.

2. Protection of Existing Utilities:

- a. Prior to any work being performed the Contractor shall insure that all existing utilities within and surrounding the project site have been clearly marked in accordance with UMD excavation permit procedure.

3. Submittals:

- a. Prior to the start of any construction work the UMD Campus Arborist or designate will create a Tree Canopy/Tree Root Zone Protection Plan. Development of this plan may include input from the Campus Landscape Architect, Campus Horticulturist, Assistant Director of Arboretum/ Horticultural Services and Assistant Director of Landscape Services. This plan shall be of the entire site showing accurate trunk locations and drip-line dimensions of all trees on the project site, limits of disturbance (including all points of proposed excavation and overhead work), locations of tree canopy/tree root protection zones, and indicating all appropriate protective measures to be taken. This map will include estimated pre-construction valuation per accepted standards (see Section IV. B. - Damage Assessment, Enforcement and Penalties)
- b. The Contractor shall submit a written guarantee that he/she shall not enter the tree protection zones at any time during construction without first getting approval from the Campus Arborist.
- c. Tree work should be included into the Project Schedule

4. Tree Canopy/Tree Root Protection Zones

- a. Prior to the start of any site work the Contractor or designate will erect fencing around trees which are to be preserved and sensitive tree root zones which are to be protected within the construction site. Root pruning and soil injections maybe completed before the erection of the fence.
- b. Trees indicated on the plan to remain shall be protected from injury to their branches, trunks and root zones during the entire construction period. Protection of tree canopy/ tree root zones shall be by the placement of temporary fencing as outlined in Section IV. F. II. - Materials.

i. No removal or encroachment into tree protection enclosures shall be permitted unless coordinated with Campus Arborist.

c. The Contractor or designate shall be responsible for the installation and maintenance of all tree protection fencing. Protective fencing shall remain undisturbed until all construction activities have been completed. The Contractor or designate shall remove fencing upon completion of construction.

i. If protective fencing is damaged, the Contractor shall immediately execute the necessary repairs to re-establish the protective fencing to original configurations outlined on the Tree Canopy/Tree Root Protection Zone Plan.

ii. At the conclusion of the project, as tree protection fencing is being removed, the Contractor shall continue to identify and enforce tree canopy/ tree root protection zones using temporary measures until final acceptance. The use of these temporary protection methods is only acceptable for a period not to exceed 5 business days. A list of appropriate materials and methods for temporary protection are listed in Section IV. F. II. - Materials.

iii. The Contractor shall be held liable for any damages to protected trees and root zones caused by unauthorized intrusions into the protected areas during the construction period. Penalties to be enforced are outline in Section IV. F. IV - Liability.

d. Any pruning of trees that may be required during the course of construction shall be performed by the Campus Arborist, an appointee of the Campus Arborist or by a Contractor appointed or approved by the Campus Arborist. Requests for pruning shall be made through the Campus Arborist with at least two days (48 hours) notice.

e. Erosion control devices shall be installed as per the contract drawings with particular emphasis on preventing silting, erosion, and/or damage by runoff to the tree root protection zone. This includes placement of E&S materials outside the tree protection zone to avoid materials/chemicals traveling into it from construction activities.

II. Materials

1. Equipment and Materials:

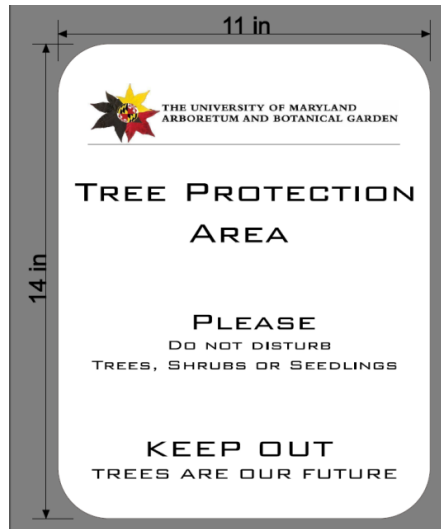
a. Equipment:

i. As selected by the Contractor, except as otherwise indicated, to complete work in a safe manner and to protect all personnel and bystanders involved.

b. Materials:

i. Protective fencing shall be 4 feet high chain link fence supported by 2 inch diameter galvanized iron posts set to a minimum depth of 2 feet. Posts shall be spaced a maximum of 10 feet on center and a 3 feet wide gate shall be provided to allow maintenance access to the protection zone. Movable fence panels may only be used upon approval from Campus Arborist. Fencing must completely encompass protected area.

ii. An 11" x 14" sign indicating the area as a "Tree Protection Area" shall be prominently displayed on each multiple sides of the fence. Signs may be obtained by contacting UMD Sign Shop or loaned out by the Arboretum Botanical Garden.



iii. Temporary protection measures shall be strictly enforced at the conclusion of the project, up until final acceptance. These methods may include, but are not limited to the use of signs, post and wire, or other methods approved by the Campus Arborist.

III. Execution

1. Scope of work within or around Tree Canopy Protection Zone:

- a. Trees to be removed that have branches extending into the canopy of trees to be preserved shall be removed under the continuous supervision of an Arborist certified through the International Society of Arboriculture and not by a demolition or construction contractor. The Arborist shall remove the tree (s) in a manner that causes no damage to the protected trees and landscape to remain after the construction period.
- b. Trees to be removed shall be felled so as to fall away from protection zones and to avoid pulling and breaking of roots or branches of trees indicated on remain on the Tree Canopy/Tree Root Protection Zone Plan.
- c. Any brush clearing required within or around the tree canopy/tree root protection zone shall be accomplished with hand operated equipment.
- d. The Contractor shall be held liable for damages incurred to any tree branches that extend over protective fencing and to any trees or other plant material located on the site and indicated on the plan to remain. The Contractor shall notify the Campus Arborist when any overhanging branches or other plant material interferes with the construction activity or pose potential risks to workers or bystanders.
- e. If plans and field situations do not match and work must occur closer to any existing tree (s) than planned, the Contractor shall notify the Campus Arborist to evaluate and to determine future viability of the existing tree (s) located within the area of proposed construction or excavation. Final evaluations shall be coordinated with Campus Arborist, Campus Landscape Architect, Campus Horticulturist, Assistant

Director of Arboretum/ Horticultural Services or Assistant Director of Landscape Services to determine if the tree (s) should remain, be relocated, or be removed.

2. Scope of work within or around Tree Root Protection Zone:

a. Any grading, construction, demolition, or other work that is expected to encounter tree roots shall be made in consultation with the Campus Arborist. i. Any digging that must occur within the Tree Root Protection Zone must be done with the Campus Arborist present and must utilize alternative excavation methods including, but not limited to air spading, hand excavation or other method approved by the Campus Arborist.

b. Any roots 2 inches in diameter or less that sustain damage during construction shall be exposed to sound tissue and cleanly pruned close to the tree side of the excavation. Clean cuts shall be made at all times. The cutting of tree roots greater than 2 inches in diameter must be approved and supervised by the Campus Arborist.

c. Trees to be removed adjacent to the tree root protection zones shall be cut near ground level and the stump ground out to avoid damaging existing roots by pulling and breaking.

d. For those construction projects requiring temporary access or haul roads through the protection zone, a roadbed shall be installed using a Geotextile designed for tree root protection covered with 6 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction, air spading may follow. In those cases approval shall be given by the Campus Arborist prior to the start of any construction activities. The roadbed material shall be maintained as necessary to maintain its original state.

e. No material shall be stored or piled within the tree root protection zone unless otherwise approved by the Campus Arborist. No gasoline, fuel oil, harmful chemicals or other deleterious materials shall be stored, spilled or deposited on the ground within the tree root protection zone.

f. There shall be no vehicular traffic or parking permitted within the tree root protection zone.

g. Foot traffic shall be kept to a minimum within the tree root protection zone. If temporary foot traffic must be directed over the tree root protection zone a pathway shall be installed using Geotextile designed for tree root protection covered with 3 inches (minimum) of mulch, wood chips or gravel to protect soil and minimize soil compaction. In those cases approval shall be given by the Campus Arborist prior to the start of any construction activities. The pathway material shall be maintained as necessary to maintain its original state.

h. Installation of curbs and sidewalks shall be completed in a manner least damaging to trees and tree root systems. Geotextile designed for tree root protection shall be considered a viable alternative to the specified sub-base in sensitive root zones. When unique site conditions not addressed in the contract documents results in

the opportunity for an alternative solution or a potential modification to the plan, the Contractor may present a proposal to the Campus Arborist.

IV. Liability:

1. The Contractor shall be held liable for any damage to protected trees. A dollar value shall be determined by the Campus Arborist or certified tree appraiser following criteria outlined in the "Guide of Plant Appraisal" (Council of Tree and Landscape Appraisal, Latest Edition). Liability amount is three times the equated appraisal amount or a prorated amount for proportional incurred damages. Damage to shrubs, perennials and annuals will result in liability of triple the appraised amount.

2. The Contractor shall be held liable for all remedial measures required to treat broken limbs, or damaged trees and roots, or for the unauthorized removal of existing trees or plant material. All remedial treatments will be accomplished by the Campus Arborist and/or their designee. Remediation treatments may include but will not be limited to:

- a. Air Spading
- b. Soil injections of Fertilizer and Mycorrhizae
- c. Root Pruning
- d. Crown Cleaning
- e. Pest Treatments Resulting from Secondary Invaders
- f. Removal Cost

Replacement of damaged trees will be done at 1-inch to 1-inch ratio per Diameter at Breast Height.

V. Definitions

Diameter, breast height (DBH) - The diameter of the main stem of a tree measured at 4.5 feet above base grade. If limbs or defects at this height prevent accurate measurement, the height of measurement may be adjusted above or below to the nearest point of normal diameter.

Campus Plant Inventory - Regularly updated GIS based database including species, size, condition, risk rating, significant information such as arboretum specimen, academic use, or commemorative status.

IPM - Integrated Pest Management relying on frequent monitoring of plant health and significant pest populations and selection of highly targeted low impact remedies, considering University sustainability goals.

Maryland Tree Expert Law- Anyone seeking to practice or advertise tree care services in the State of Maryland must obtain a license from the Maryland Department of Natural Resources.

Radar Inspection - Collection of structural data using the Tree Radar Unit (TRU™) which uses ground penetrating radar technology. Analysis allows assessment of the extent of decay or integrity in trunk and major root systems.

Risk Zones - Delineation of campus areas with respect to degree of pedestrian and vehicular traffic, historic character, security issues and other factors.

Roadside Tree Law - This law and its regulations were developed to protect roadside trees in Maryland by ensuring their proper care and protection and to ensure their compatibility with and efficient and dependable public utility system.

Tree Canopy - An aerial assessment of the total ground cover of the given space occupied by tree canopy. Percentages are derived from most recent comprehensive I-Tree Software (formerly UFORE) analysis of University land holdings.

VI. Communication Strategy

Campus Tree Care developments, including participation in the Tree Campus USA program will be placed in the student newspaper, *The Diamondback*, and publicized through several campus-wide email publications. Information will be included on the University of Maryland Facilities Management Arboretum and Botanical Garden website, Office of Sustainability website, Arboretum social media accounts, and appropriate press releases made to the local media through the office of University Marketing and Communications.