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WFU Campus Tree Care Plan

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Purpose

The overall goal of this plan is to ensure a safe, attractive, healthy and sustainable campus forest. The following guidelines will further this goal by providing designers, construction firms, landscaping personnel and other members of the university community with the tools needed to minimize the negative impacts of their programs on the university forest. A major contributor to the success of this plan will be a program of public education about tree care issues and an annual spring celebration of North Carolina Arbor Day. By promoting thorough contemplation and conscientious action, this plan will provide for the proper care of the university's trees now to ensure optimal enjoyment and use of the university trees for generations to come.

Awareness and Responsibility: All persons working on Wake Forest University property will have knowledge of these guidelines before work begins. It is the contractor's or site manager's responsibility to ensure that his or her workers and sub-contractors understand and abide by these guidelines and any subsequent plans. Penalty assessments will be made in the event of any breach of these aforementioned guidelines and contractors may be required to reimburse Wake Forest for tree damages caused in failing to follow these guidelines.

Campus Boundary

The boundary for the Tree Care Plan includes all Wake Forest owned and operated properties, with the exception of the Medical School campuses.

Responsible Department

The Landscaping Services Department of the Facilities and Campus Services division is responsible for disseminating these guidelines, assessing tree damage, and for replacing trees as needed following necessary removals.

Campus Tree Advisory Committee

Implementation of the Tree Care Plan is advised by a formal standing committee sponsored by the Executive Vice President/Chief Financial Officer and his or her Capital Projects Advisory Committee. The Campus Tree Advisory Committee will advise the university on proposed modifications to campus open space and landscaping to ensure high aesthetic and functional quality; develop and maintain a list of satisfactory and desired species of trees; encourage the use of an appropriate variety of plant materials in new plantings; and make recommendations on landscape renovations and maintenance.

The Campus Tree Advisory Committee is composed of 8-12 members as follows:

Voting Members:
University Arborist (standing member)
Student representative (rotating member)
Faculty representative (rotating member)
Staff representative (rotating member)

VP for Facilities, Real Estate, and Planning (standing member)
Chief Sustainability Officer (standing member, chair)

Ex-Officio Members:
Director of Landscaping Services
Facilities Planning & Construction representative
Residence Life & Housing representative
Reynolda House representative

Representatives will serve renewable two-year terms, with the exception of the student member, who will serve for one year. The standing members will work together to identify and appoint members to the committee each year. The committee will meet once per semester, with additional meetings scheduled as needed.

The chair of the committee will notice committee vacancies, set and notice meetings, guide the development of the meeting agendas, and notify the campus community of major impending changes to the campus treescape. When possible, meetings will be scheduled to take place in advance of the Capital Projects Advisory Committee (CPAC) meetings, so that significant landscaping changes that extend beyond the scope of the Campus Tree Advisory Committee can be taken to CPAC as necessary. Meeting notes will be recorded each meeting. All agendas, meeting notes, and slide decks will be added to the Campus Tree Advisory Committee google drive for record keeping.

The Campus Tree Care Plan will be revisited by the committee every three years to maintain relevance.

Campus Arboriculture Practices

Planting and Landscaping
Tree species and/or cultivars included in the List of Recommended Trees shall be hardy to a minimum of USDA hardiness zone 7 and be pest resistant so as to minimize pesticide use and maintenance needs. Where possible, the planting of native species will be prioritized over non-native species in order to enhance the native habitat and local ecosystem. In order to remain on the cutting edge of tree breeding, the University Arborist and the Director of Landscaping Services will have the final say on the appropriateness of species introduced to campus so long as the species is not included in the list of prohibited trees (Appendix A of this document) or listed as a severe or significant threat on the NC Native Plant Society Invasive Non-Native Species List.

Tree Planting Standards

- *Holes* must be at least twice as wide as the diameter of the root ball of a tree.
- *Trunk Flare* should be visible after the tree has been planted and mulched.
- *Height:* Before placing the tree in the hole, check to see if the hole is deep enough. The top of the root ball should be 2-3 inches above grade.
    - Avoid damaging the tree when setting it in the hole by always lifting by the root ball.
- *Straighten* the tree in the hole, being sure to view the tree from several directions to confirm the tree is straight.
- *Fill:* Fill about one third of the hole, then gently pack the soil around the root ball. If using a

balled and burlap root ball, cut the twine, remove the top third of the wire basket and pull back the burlap to expose the top of the root ball. Fill in the remainder of the hole and gently pack to remove air pockets that may cause roots to dry out.
    - If the soil is poor or full of debris, it should be removed and replaced with fertile topsoil.
    - If the soil is compacted, it should be broken up, loosened and amended with composted organic material.
        - Composted organic material will improve the drainage and aeration of the soil.
        - This material should be incorporated at 25-50 percent of total soil volume in the rooting area.
- *Water:* thoroughly water in the root ball and add more soil if settling of backfill occurs
- *Mulch:* Cover the tree ring with 2-4 inches of mulch making sure the trunk is not covered. There should be a mulch free area of 1-2 inches from the trunk flare.

Trees Planted within Patio Spaces
- The minimum size for an in-pavement planter cutout is 4 feet by 4 feet in sidewalks, patios, and parking lots.
- If the soil is poor or full of debris, it should be removed and replaced with fertile topsoil.
- If the soil is compacted, it should be broken up, loosened and amended with composted organic material.
    - Composted organic material will improve the drainage and aeration of the clay soil.
    - This material should be incorporated at 25-50 percent of total soil volume in the rooting area.
- *Root Control Fabric* will be used when planting within a hardscape in order to control the growth of roots and prevent expensive damage of pavement and other landscaping details without permanent damage to the tree's root system.

Special Trees
Heritage Trees: individual trees on Wake Forest University campus that have developed exceptional historical, cultural, or aesthetic value because of their age, descent, legendary stature, contribution to the diversity of the campus landscape, exemplary representation of genus or species, rarity, or association with an important event or person. Our expectation is that these trees will not be affected by development of the campus.

- *Criteria:* The following will be seriously considered when designating a tree or group of trees as heritage trees.
    - Age is an important criterion and will vary by species.
    - Historic Significance is an association with an important event or person.
    - Location and Setting designates a contribution to a significant view or spatial structure of a setting.
    - Size or Habit designates an exemplary representation of a genus' or species' characteristics.
    - Diversity describes a significant contribution to the distinct plant life of campus.
- *Process:* The following process will be followed in order to designate trees not specified in this Tree Care Plan as heritage trees.

    - The campus arborist has determined initial designations after consultation with relevant university community members.
    - Subsequent nominations may be made by any member of the university community. Nominations should include a photo documentation of the candidate tree as well as a narrative explaining how the candidate tree fulfills a minimum of three criteria for heritage designation.
    - The Campus Tree Advisory Committee will review and evaluate all nominations. The university community will be notified of newly designated heritage trees.
    - To ensure appropriate protection of heritage trees and landmark space, Landscaping Services will maintain the list of heritage trees and their locations.
- For a listing of current heritage trees and their locations on campus, see Appendix B, "Heritage Trees."

Memorial Trees: There are a number of memorial trees on the University's campus (Appendix C). Since 2021, the Office of Donor Experience no longer offers the option to plant a memorial tree. Individuals and organizations seeking to dedicate a bench, brick, or swing in memory or honor of a member of the university community should consult the Office of the Donor Experience.

- Prior to 2021, a minimum donation of $2,500 was requested to plant a memorial tree. The donation covered the purchase and installation of the tree and provided funds for future maintenance. Memorial trees are not marked with plaques.
- The Administrative Committee for Honorifics serves in an advisory role regarding special naming proposals. The Capital Projects Advisory Committee may also review major landscape proposals and make recommendations to the Executive Vice President / Chief Financial Officer.
- *Recommended Tree Varieties for Memorial Trees*
    - *Ornamental Trees:* Japanese Maple (*Acer palmatum*); 'Oklahoma' redbud (*Cercis reniformis 'Oklahoma'*); Star Magnolia (*Magnolia stellata*)
    - *Deciduous Trees:* American Beech (*Fagus grandifolia*); White Oak (*Quercus alba*); Shumard Oak (*Quercus shumardii*); 'October Glory' Red Maple (*Acer rubrum* 'October Glory'); American Hornbeam (*Carbinus caroliniana*)
    - *Evergreen Trees:* American Holly (Ilex opaca); Deodar Cedar (*Cedrus deodara*); Southern Magnolia (*Magnolia grandiflora* 'Bracken's Brown Beauty' or 'Little Gem')
- For a listing of current Memorial Trees, and their locations on campus, see Appendix C, "Memorial Trees."

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 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.

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

- Pruning shall not be conducted without a clear objective. The order of significance of objectives is as follows:
    - 1. Safety
    - 2. Health of tree
    - 3. Aesthetics
- When removing branches, the pruning cut shall not damage the branch park 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 branch removal cuts.
- Large branches that are dead, diseased, dying or defective should be removed with the aid of ropes and rigging equipment to minimize the risk of tree injury from falling debris.
- *Thinning*: 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 strong, U-shaped angles of attachment. Remove branches with weak, V-shaped angles of attachment and/or included bark.
    - 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.
    - Do not remove more than one-quarter of the living crown of a tree at one time. If it is necessary to remove more, do it over successive years.
- *Raising*: performed to provide vertical clearance from thoroughfares, signs, street lights, and structures.
    - Maintain live branches on at least two-thirds of a tree's total height.
    - Remove basal sprouts and vigorous epicormic sprouts.
- *Reduction*: performed to decrease the overall height of a tree or to decrease the length of an individual branch.
    - Use 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.

Cultural Practices

- *Mulching:* Every two years for trees up to approximately 6". Periodically, drip lines of larger trees and tree grouping are mulched extensively with waste woodchips.
    - Six foot diameter mulch areas shall be maintained around all trees. Mulch shall be maintained at a depth of one to three inches.
- *Irrigation:* New shrub and tree planting is hand watered from a spigot or a mobile water tank. Although time consuming, hand watering or spot watering is very water wise as only the plants that need water receive water rather than the entire surrounding landscape. Newly planted trees shall receive one inch supplemental water per week in the absence of 1 or more inches rainfall, for the first two years through the automatic sprinkler system or through hand-watering.

    - The rest of campus irrigation is Pressure Compensator (PC) controlled. These new systems are linked to a "weather station" on campus which shuts the system off in the event of a significant rain.
    - There are also flow sensors that monitor and shut off the system should a major leak occur. A notification from the PC informs Landscaping Services that there is a problem with the irrigation system, allowing a repair to occur in a timely manner.
- *Fertilization:* There is no regular tree fertilization beyond treatment received as a result of lawn fertilization. Specimen or high-value trees may receive prescription fertilization when severe nutrient deficiencies are diagnosed.
- *Pest Management:* Most pest management is handled through the university's integrated pest management plan, as outlined in Appendix D. Specific trees may be treated for identified pest problems as needed. The university currently treats the following trees for the pests identified:
        - Carolina Hemlocks, treated for the Hemlock wooly adelgid
        - Nellie Stevens Hollies, treated for scale insects
        - American Holly, treated for Leaf Miners.
    - Should a pest infestation be suspected, please contact the University Arborist at 758-6072.

Removal

- Live trees are generally removed only when required to protect the public safety, when they interfere with construction, or detract from the quality of the landscape.
- Diseased trees are generally treated where the possibility of recovery is reasonable. Should the disease be irrecoverable, the tree will be removed for the publics' safety.
- Trees may only be removed after consultation with the Campus Tree Advisory Committee.
- To protect the health of campus trees, non-native invasive tree species (Appendix A) that are currently on campus will be removed procedurally at the University Arborist's discretion, and replaced when possible with appropriate species.
- A tree that is removed shall be replaced with an appropriate species or cultivar in the same location if:
    - The stump can be removed to the extent necessary to replant.
    - There are no utility or location conflicts.
    - The species is not on the list of Prohibited trees
    - There is adequate space to sustain a tree
- *Notification:* The campus community will be notified of the removal of significant trees by the Office of Sustainability via the Inside WFU portal. Notification will include reasons for removal and photos of the tree to be removed.
- Once a tree is identified to be removed, the Director or Manager of Landscaping Services and/or the University Arborist will confer with the Facilities Planning and Construction In House Construction Manager to discuss whether the tree would be a candidate for reuse as millwork, furniture, or other handmade items. If so, then a removal plan would be developed with the vendor contracted to remove the tree, such that the tree is cut appropriately for this use and delivered so that it can be milled into usable boards.

Emergency Situations

Storm response and recovery are generally accomplished in-house. Additional labor may be contracted. In a crisis, the first priority is to remove tree debris that blocks campus roads, disrupts operations, or poses hazards to the campus community. Once these needs are addressed, a recovery plan is implemented:

- Unsalvageable trees are systematically removed.
- Salvageable trees are pruned to restore their health and structure.
- Lost trees are strategically replaced under guidance from the University Arborist to restore the structure and function of the campus forest in a reasonable time frame.

Service Learning Opportunities

Each year, the Office of Sustainability collaborates with the University Arborist to identify a campus-wide service learning opportunity for students that supports the university's tree ecosystem. The service learning opportunity should align with the requirements for Tree Campus Higher Education certification. Listed project examples have included, but are not limited to: volunteer tree plantings or maintenance, establishment of a tree inventory, student-led efforts to have a community designated as a Tree City Higher Education, and more. Historically, the Office of Sustainability co-hosted an annual Campus Beautification Day following the annual Arbor Day celebration, providing a bridge between education and action.

Prohibited Practices

Wake Forest University trees may not be used for any purpose that would be detrimental to the trees. The restricted activities under this policy include but are not limited to:

- Posting of signs, artwork, or banners on trees The hanging of hammocks, or the employment of slacklines on trees smaller than 6 inches in diameter
- Locking bicycles to trees
- Leashing dogs to trees
- Attaching any object to a tree
- Cutting down or otherwise destroying or damaging trees

Protection and Preservation

Planning before Construction: In the early stages of construction planning, the Landscaping Services Department will be notified in order to assess the trees and other green spaces within the proposed work

site. Recommendations will be made based on this assessment and presented to the project manager and all appropriate personnel.

Any deviation from these standards must be approved in writing by the University Arborist or by the Director or Manager of Landscaping Services if the Arborist should be unavailable.

- City Ordinance: All construction projects and related tree protection measures will be executed in compliance with chapter B, article 3, section 4 of the City Council of the City of Winston Salem, North Carolina's Unified Development Ordinances; "Landscaping and Tree Preservation Standards." This ordinance became effective on 5 October 2009.
- The WFU Facilities and Campus Services Planning and Construction team must notify the Landscape Services team of any infrastructure project that may impact campus trees and work together to create a Tree Protection Plan for such trees.
- Prior to developing a cost estimate, all involved should be made aware of the Tree Protection Guidelines and the specific site recommendations. Design and bid specifications will incorporate these guidelines for awareness.
- Protection of trees that remain within a construction site is a high priority and the University requires contractors to use every reasonable measure to protect the root system and canopy of these trees. The Landscaping Services department is available to contractors for consultation on the best measures to protect individual trees and root systems.
- Vehicle access: set entrance and exit points on site will be determined prior to breaking ground on the project. Vehicles accessing the site will use only the designated entrances and exits so as to prevent damage to on-site trees.
    - Unless impractical, designate only one access route on and off the construction site.
    - The access drive should be restricted to an area that will later serve as a route for utility wires, water lines or roads/sidewalks.
        - If the access drive cannot be confined to a space to be used for utility wires, water lines, or roads/sidewalks, logging mats will be used to protect critical tree root areas.
        - This construction entry shall consist of 10' by 16' oak logging mats on 6" coarse, chipped, hardwood placed on a permeable structural filter fabric, top-dressed with an additional 10" of hardwood mulch. Mulch and logging mats shall be supplemented throughout the project to keep the access area structurally functional.
    - Parking: All contractors must be instructed where they are permitted to drive and park their vehicles. Contractors will not be authorized to park on landscape or sidewalks without express approval from Landscaping Services. Offsite parking for site personnel and visitors is available per WFU Transportation and Parking Services guidelines. Contractors are encouraged to maximize use of the off-side parking and use shuttle services to move work personnel to and from the site.

Protective Measures: Within a site, tree protection fencing will be installed around the root zone of each tree before any construction, excavation, demolition, land clearing, grading, or other land disturbance begins.

- The WFU arborist or a qualified member of the WFU landscaping department will determine which trees require protection and the area of protection and mark said area.
- The contractor or subcontractor or personnel responsible for the project will construct and maintain fencing, for each protected tree or group of trees on the site, encircling the outer limits of the critical

root zone to prevent unnecessary damage. Project managers will ensure that work sites do not spread onto nearby areas outside the designated work zone.

- Fencing: Chain link fencing or wood fencing of at least four feet height and supported at a maximum of ten-foot intervals by posts will be used. Wooden stakes and rebar posts are not considered an approved method sufficient enough to keep the fence upright and in place. See Appendix E, "Fencing" for illustrations of proper fencing techniques.
    - For every inch of trunk diameter measured at 4' above grade, fencing will be 1 foot from the tree trunk. For example: a five-inch diameter tree will have fencing at least 5 feet from the tree. All fencing will remain in place until construction is completed.
    - Within the fenced areas no materials, soil, gravel, etc. will be stored, no vehicles or equipment will be parked or maneuvered, neither excavations nor grade changes will occur and no new pavement will be installed.
    - If materials are stored outside the fenced area but within the drip line of trees, logging mats and mulch will be used to prevent compaction of the soil surrounding tree roots.
    - Vinyl construction fencing: such fencing will only be permitted as an exception for cases where metal or wood fencing is not feasible. Contractors must obtain written approval from the Director or Manager of Landscaping Services to use vinyl fencing for tree protection.
    - Stump removal: Trees cleared from the site and the perimeters of the site will have their stumps removed by grinding them out to protect and preserve nearby saved trees.

Construction Interference from Remaining Trees: When trees to remain on site after construction interfere with construction attempts, the following guidelines apply:

- Trenching: When trenching or digging near trees, every effort will be made to avoid damage to the tree's root system.
    - If utilities cannot be routed a safe distance from a tree as defined by the drip line, boring will be used to minimize damage and future risk.
    - Roots damaged by trenching or digging should be pruned by a professional arborist before the area is backfilled. Root pruning is a process in which clean cuts are made to allow for the fastest callusing of necessary wounds and healthy regrowth of lost root systems.

Examples of trenching.

- Silt fences: Silt fencing will be anchored above tree roots by folding one foot of the fencing to the uphill side of the tree and then covering this fold with six inches to one foot of gravel to hold it in place. Placing a silt fence as such should avoid unnecessary trenching of tree roots. The city of Winston-Salem will be notified when these protection measures are implemented in sensitive tree root areas. Silt fences placed must meet the city of Winston-Salem erosion control requirements.
- Above Ground Pruning: In the event limbs are causing a clearance issue for equipment or otherwise, the Landscape Department should be notified as soon as possible. All pruning of above ground branches will be performed by or under the supervision of the University Arborist.
- Root Pruning: As with above ground pruning; trees benefit from clean cuts on their roots as well. Notify the Landscape Department or University Arborist when encountering roots during construction. The Arborist may want to prune these cleanly before backfilling occurs.

Remediation and Recovery: The University will take steps to aid in the recovery of trees traumatized by construction in the surrounding area.

- Remove contaminated soil and aerate compacted soil.
- Keep the same grade as before construction – more than two additional inches of soil or sod can ultimately kill an otherwise healthy tree.
- Monitor trees for as long as needed, checking for insects or disease that can strike a weakened tree.
- Water trees during dry periods to help them recover from construction stress. Fertilize annually with a slow-release non-burning complete fertilizer.

Tree Damage Assessment

Any tree damage created by a contractor or outside source will be evaluated and the cost of damage, replacement or maintenance will be evaluated by the University Arborist with an option for WFU to engage an independent arborist if the contractor disputes the value as excessive. The party responsible for the damage will then be billed by the University for damage incurred by paying into the tree's replacement. If the damage was a result of a construction project, the cost will be billed to the contractor.

Tree Replacement & Maintenance

Dedicated annual budget lines exist for WFU's campus tree program, covering tree replacement, planting, equipment, and maintenance within the University's budget structure. For standard tree replacements, the funds come from the Landscaping Services Department operating budget. Capital construction projects include a landscaping budget that covers plant material, installation, and, in some cases, irrigation. The University Arborist has oversight of tree selections on landscape plans for construction projects, and makes changes when necessary. The contractor cannot deviate from the landscape plan without prior approval.

The standard requirement for tree replacement is a one-to-one ratio of tree basal circumference. For example, a tree with a basal circumference of four feet could be replaced with two trees of basal circumference two feet or four trees with basal circumferences of one foot, or any other combination of circumferences equal to four feet. In some areas space may not be available for a 1:1 ratio, or the area may be overplanted. In these situations, the replacement requirement is up to the University Arborist's sole discretion.

Goals and Targets

Tree Inventory
A partial tree inventory of the Reynolda Campus was created in the fall of 2008 and updated in 2012 and again in 2013. This spreadsheet database was hosted by the biology department and included the locations and basic details of all major trees on campus. This tree inventory is no longer updated, as technology has evolved and campus needs have evolved with it. Going forward, our efforts will be put toward creating an interactive campus map layer of our trees.

Interactive Campus Map Layer (Digital Arboretum)
We endeavor to update the interactive campus map (map.wfu.edu) with a Landscape layer that marks heritage and memorial trees, gardens, swings, and all significant landscaping features and trees on campus. The goal is to work with a Geographic Information Systems (GIS) class to create this layer so that students gain experience through this engaged learning project and opportunity. This layer will be useful for all members of the campus community as well as visitors and potential WFU students and families. The success of this goal will be measured by its successful implementation and utility for the campus community.

Communication Strategy

Notification: The campus community will be notified of the removal of significant trees by announcements on the Inside WFU portal. Whether a tree removal warrants notification will be determined by the Campus Tree Advisory Committee. Notification will include reasons for removal and photos of the tree to be removed.

All tree removals - both significant and procedural - are listed on the Tree Removals Master Google Sheet. When tree removals need to occur, the University Arborist provides the Office of Sustainability with all information including justifications, photos, location, and tree replacement details. The sheet is then updated by an Office of Sustainability team member. The sheet is available on the Office of Sustainability Landscaping and Tree Care web page and visible to all members of the WFU community at any time. Interested individuals can search for and view this sheet.

The Campus Tree Care Plan is available electronically on the Facilities and Campus Services Department and Office of Sustainability websites.

This plan is also e included in the WFU Design Guidelines so it will be available to WFU project managers, designers, and construction firms for inclusion in project specifications. Whenever the WFU Design Guidelines are updated, the most current text from this plan is expected to be included.

Glossary

Backfill: Material used to refill an excavated area

Basal Circumference: The circumference of a tree at 1.3 meters (approximately 4.2 feet) above the ground; used to determine replacement requirements for removed trees

Canopy Trees: A tree that will grow to a mature height of at least 40 feet with a spread of at least 30 feet

Hardiness Zone: Zones showing a geographically-defined area in which a species of tree is capable of growing, as defined by the climatic conditions, including its ability to withstand the minimum temperatures of the zone

Internode: a part or space between two knots or joints

***Integrated Pest Management (IPM) Plan*:** An effective and environmentally sensitive approach to pest management that relies on a combination of common-sense practices including knowledge about the lifecycles of pests, prevalence of weeds, and resistance of particular plants

Silt Fence: a temporary sediment control device used on construction sites to protect water quality in nearby streams, rivers, lakes and bays from sediment in stormwater runoff

Trenching: The process of digging long, narrow channels in the ground for the purpose of laying pipes and wires during construction projects

Trunk Flare: The base of a tree trunk where the root system begins. When planting, you should be able to see the part of the trunk where it spreads out to become roots above ground after backfilling.

Appendix A: Prohibited Trees

Note: *Any tree species that are not listed here but are listed on the NC Native Plant Society Invasive Non-Native Species List as a severe or significant threat are prohibited.*

Fraxinus americana, White Ash
Liquidambar styraciflua, Sweet Gum
Acer saccharinum, Silver Maple
Zelkova serrata, Zelkova
Ulmus parvifolia, Chinese Elm
X Cupressocyparis leylandii, Leyland Cypress
Crataegus phaenopyrum, Washington Hawthorn
Quercus acutissima, Sawtooth Oak
Pistacia chinensis, Chinese Pistache

The following prohibited trees are listed on The NC Native Plant Society Invasive Non-Native Species List as a Severe Threat:

Alianthus altissima, Tree of Heaven
Albizia julibrissin, Mimosa
Paulownia tomentosa, Princess Tree

The following prohibited trees are listed on The NC Native Plant Society Invasive Non-Native Species List as a Significant Threat:

Morus alba, White Mulberry
Pyrus calleryana 'Bradford', Bradford pear

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Appendix B: Heritage Trees

Scientific Name	Common Name	Location	Criteria
Quercos phellos	Willow Oak	Campus Perimeter	Age, History, Location
Acer palmatum	Japanese Maple	Bostwick Hall and Jasper Memory Lane	Diversity, Location
Magnolia grandiflora	Southern Magnolia	Manchester plaza, North Campus Apartment, Winston Hall, and Scales Fine Arts Center	History, Location, Age
Quercus alba	White Oak	Starling Hall, North Campus Apartments	Age, Size, History
Ilex opaca	American Holly	Hearn Plaza, University entrance	Location, Size
Metesequoia glyptostroboides	Dawn Redwood	West side of Winston Hall	Diversity, Size
Ginkgo biloba	Gingko	West side of Winston Hall	Diversity, Size
Fagus grandifolia	American Beech	Manchester Plaza	History, Location
Juniperus virginiana	Eastern Red Cedar	University Water Tower	Size, History
Ulmus Americana	American Elm	Davis Field	History, Age

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Appendix C: Memorial Trees

Scientific Name	Common Name	Location	In memoriam
Fraxinus americana 'Autumn Purple'	Ash	Hearn Plaza	Nell Adams Mason
Acer rubrum	Maple	Tribble Hall	Grace A. O'Neill
Acer palmatum	Maple	Babcock Hall	Matthew James Alexander
Cornus kousa	Dogwood	Hearn Plaza	Caroline Elizabeth McCullough
Cornus florida	Dogwood	Winston Hall	Robert Sullivan
Zelkova serrata	Zelkova	Tribble Hall	David Smiley
Acer rubrum	Maple	Divinity and Religious Studies Building	Presence of Judaism
Acer rubrum	Maple	Scales Fine Arts Center	Allen Watson
Prunus serrula 'Kwanzan'	Cherry	Taylor Hall	Benjamin Cooke Kellogg
Quercus shumardii	Oak	Hearn Plaza	The "Howler"
Magnolia grandiflora	Magnolia	Starling Hall	Thomas Hearn
Prunus serrula 'Kwanzan'	Cherry	Davis Field	Rebecca Street
Cornus florida	Dogwood	West side of Wait Chapel	Rosemary Bernard Groves
Prunus subhirtella 'Weeping Higan'	Cherry	Kentner Stadium	Maria Whitehead
Acer saccharum 'Legacy'	Maple	Benson Center	Sylva Billue
Prunus x yedoensis	Cherry	Manchester Plaza	Gabiden Kourman
Cornus florida	Dogwood	Martin Hall	Canda Kinney

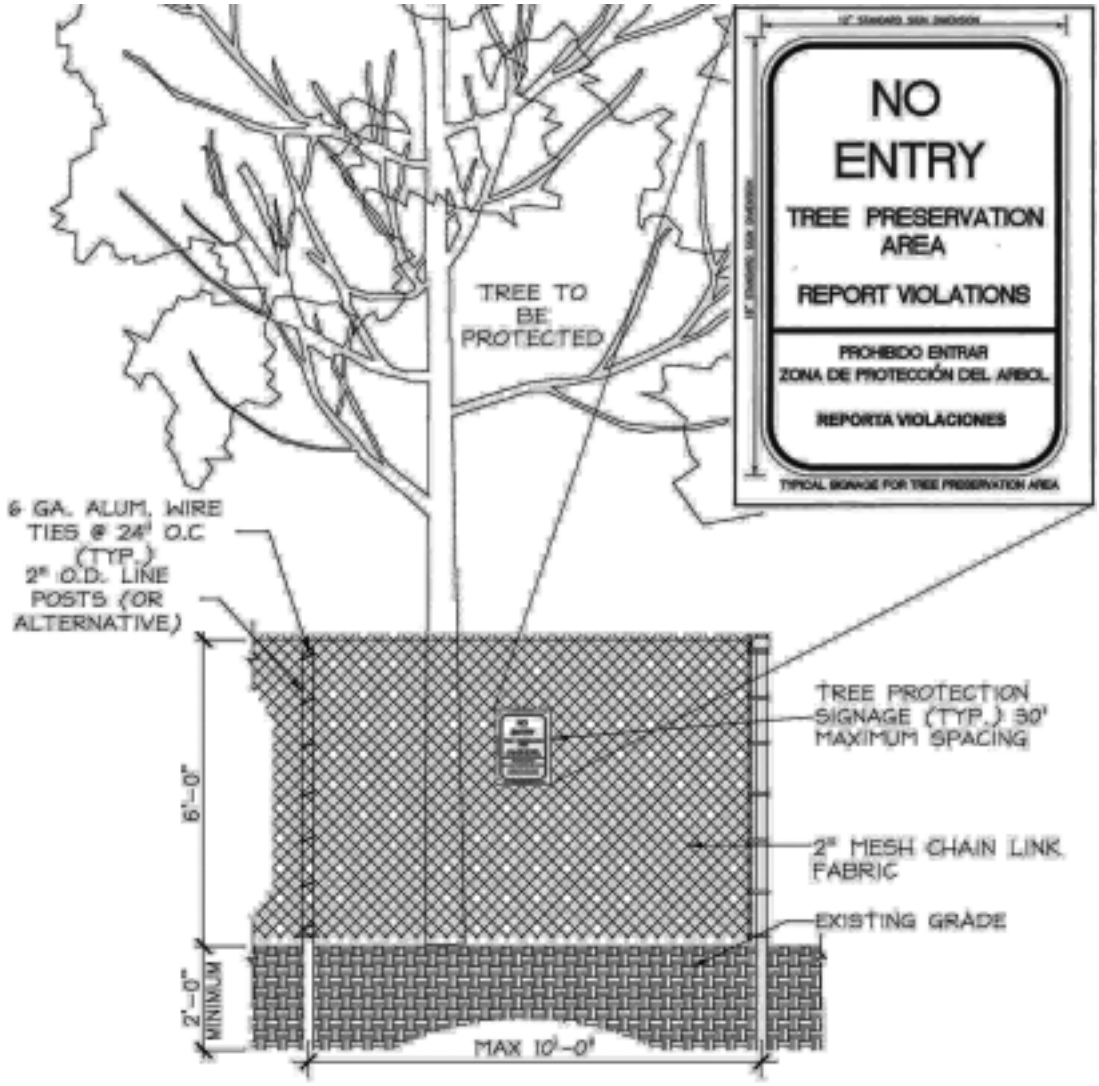
Appendix D: Integrated Pest Management

Integrated Pest Management (IPM) is a pest management strategy in which a combination of means including design choices, cultural practices and chemical controls are used to manage pests in the landscape. The university employs an integrated pest management system in all landscaping performed on the Reynolda Campus. A healthy sustainable landscape is dependent upon choosing the right plant for the site. The Landscaping Services department strives to use improved cultivars, disease resistant varieties and proven species whenever possible.

Several cultural practices are implemented in a successful IPM program. Soil is amended to promote healthy vigorous plants. Mulches are used to suppress weeds, insulate the soil and regulate moisture. Turf is mowed at regular intervals at the proper height and fertilized per North Carolina Department of Agriculture recommendations. Proper pruning is practiced on all trees and shrubs in accordance with the specifications outlined in the Campus Tree Care Plan. A wide variety of species are planted not only for visual interest but for genetic diversity. Older, more disease prone varieties are gradually removed and replaced with disease and insect resistant varieties.

As a last resort chemical means are used to control pests. Chemical controls are generally used only as a curative measure, however there are some circumstances where less chemicals used in a preventative application are more effective than a greater quantity of chemicals when curatively applied. The university is committed to using the least toxic chemicals available to control particular pests. Organic pesticides are used whenever possible.

Appendix E: Fencing



A proper Tree Protection Area features chain link fencing and clearly labeled tree protection signage. Fencing must be at least 4 feet in height.

WAKE FOREST UNIVERSITY

Appendix F: Adoption and Revision History

The Tree Care Plan was adopted in July 2011.

The plan was reviewed and revised in March 2015.

The plan was reviewed and revised in November 2023.