

City Tree Manual



Arboricultural Specifications and Standards of Practice

Raleigh, North Carolina Companion to Municipal Code Part 9, Chapter 8. Trees and Vegetation.

CITY TREE MANUAL

Arboricultural Specifications and Standards of Practice

**Companion to Municipal Code
Part 9, Chapter 8. Trees and Vegetation**

City of Raleigh

Parks, Recreation and Cultural Resources Department

Urban Forestry

P.O. Box 590 Raleigh, NC 27602-0590

www.raleighnc.gov

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TABLE OF CONTENTS

PURPOSE OF THE CITY TREE MANUAL	3
CONTACT INFORMATION	3
CHAPTER 1	
PERMITS AND PROCEDURES	4
CHAPTER 2	
TREE PLANTING AND MAINTENANCE	6
Tree Quality Standards	7
Tree Planting Standards	10
Maintenance and Warranty	14
Tree Protection Standards	17
CHAPTER 3	
DEVELOPMENT & LANDSCAPE PLAN REQUIREMENTS	18
CHAPTER 4	
ENFORCEMENT	19
CHAPTER 5	
TREE PRUNING AND CLEARANCE STANDARDS	23
Clearance Standards	25
Utility Clearance Standards	27

CHAPTER 6	
TREE REMOVAL POLICY	29
DEFINITIONS	32

PURPOSE

Raleigh is called ‘The City of Oaks.’ Let’s keep it that way.

Mission Statement

The City of Raleigh Urban Forestry Division shall plant, manage, and protect trees on city properties maximizing the environmental, economic and social benefits the urban forest provides while managing risk through safe, purposeful and efficient work, effective permitting and oversight, and through cooperative partnerships.

Purpose of the City Tree Manual

The City Tree Manual contains specific regulatory provisions developed by the Urban Forester pursuant to the City of Raleigh Municipal code Trees and Vegetation, Part 9 Chapter 8. The code allows the Urban Forester to implement best management practices as reflected in the professional tree care and landscape industry for the planting, maintenance, removal, protection, pruning, and preservation of trees on city owned or controlled property, as well as to enforce the provisions of the city code. Authority extends to private property in the event of the failure of a property owner to prevent private trees from encroaching onto public ground, nuisance abatement and other cases as described in the code.

The City of Raleigh acknowledges that trees provide environmental, aesthetic, social and economic benefits. Specifically, trees increase property values, provide aesthetic value, provide shade and cooling, reduce energy costs, decrease wind velocities, provide erosion control, conserve energy, reduce stormwater runoff, and act as filters for

airborne pollutants, reduce noise, provide privacy, provide wildlife habitat and food, sequester carbon and release oxygen. The urban forest shall be prudently protected and managed to secure these benefits.

The policies and standards contained in this document are subject to change at the Urban Forester's discretion as advances in industry best practice and technology warrant. Review and approval shall be conducted by the Director of the Parks, Recreation and Cultural Resources Department and the Parks, Recreation and Greenway Advisory Board.

CONTACT INFORMATION

VISIT OUR WEBSITE

www.raleighnc.gov search ‘Tree’

TREES ON CITY PROPERTY

Urban Forester
Parks, Recreation and Cultural Resources Department
P.O. Box 590 Raleigh, NC 27602
919-996-4115
Trees@raleighnc.gov

FOR PLAN REVIEW QUESTIONS

Development Services Customer Service Center

CHAPTER 1 PERMITS AND PROCEDURES

A. Tree Impact Permit

1. A Tree Impact Permit is required for activities impacting trees existing on the city right of way and city owned or controlled property. This includes but is not limited to removal, pruning, trenching, boring, excavating, filling, fertilizing, treating for disease or insects, planting or attaching anything to a tree.
2. The Tree Impact Permit fee will be calculated at issuance based on the City of Raleigh Fee Schedule
3. Permits shall be issued by the Urban Forester or designee. Any work performed under this permit must be done in strict accordance with the conditions of the permit, the provisions of the City Code Part 9 Chapter 8: Trees and Vegetation and the standards set forth in this document.
4. For tree planting permits the applicant shall provide documentation of approval from any applicable regulatory agency. Examples include but not limited to approved development plans, planting along or adjacent to State roads, sight distance hazards, conflict with lighting plans, overhead utility lines or other infrastructure.
5. Denial of permit: If a Tree Impact Permit is denied, the Urban Forester or designee shall provide a written denial to the applicant. Denials may be appealed in accordance with City Code Section 9-8005 “Activities Impacting City Trees; Tree Impact Permit Required” of Part 9 Chapter 8.
6. Violating any provision of the permit shall be subject to the provisions as described in Chapter 4 Enforcement and City Code Section 9-8009 “Enforcement” of Part 9 Chapter 8.
7. All development related Tree Impact Permits are issued through the development review process.

B. Permit Applications

1. Submit a Tree Impact Permit Request online at www.raleighnc.gov – search Tree Impact Permit. Submit one application for all city tree related activities associated with a specific property or project.
2. See the Unified Development Ordinance for specific requirements associated with development projects.
3. All Development related Tree Impact Permits are issued as part of the development review process.

C. Municipal Code

1. The municipal code that governs this document is located in Part 9, Chapter 8: “Trees and Vegetation”.

2. In cases where other sections of the city code conflict with Part 9, Chapter 8 “Trees and Vegetation” and the City Tree Manual, these documents take precedence.

D. Appeals

1. Any appeal to a notice of violation, civil penalty assessment or permit denial shall be made in writing to the Director of Parks, Recreation and Cultural Resources within (10) business days following the receipt of notice per Section 9-8009 F “Enforcement” of Chapter 8 Section 9 of Raleigh City code.
2. Any appeal of a permit decision shall include justification for the appeal and an independent report from an ISA Certified Arborist if applicable.

CHAPTER 2 TREE PLANTING AND MAINTENANCE

This chapter outlines the standards for planting and maintaining trees on property owned or controlled by the City of Raleigh.

A. Purpose

1. To contribute to the vitality of Raleigh as the “City of Oaks” and to enhance the appearance of the urban forest for continued prosperity and economic growth.
2. To improve air and water quality, reduce noise pollution, energy costs, and stormwater runoff, increase property values, and foster a sense of community.
3. To promote tree species diversity and phase out species and cultivars deemed inappropriate due to being invasive, lack of vigor, susceptibility to insects and disease, and/or poor performance.
4. To enhance public safety by properly locating trees in order to reduce conflicts with existing infrastructure and sight visibility.
5. To plant healthy, vigorous nursery stock that is superior in form and disease resistance using proven industry standards.

B. Tree Planting on City Property

The Parks, Recreation and Cultural Resources Department is responsible for plan review, inspection, monitoring and enforcement associated with tree planting and maintenance on property owned or controlled by the City.

1. Development, private citizen or contract planting on city owned or controlled property by any individual or organization other than the City. These projects are at the expense of the requestor and require a Tree Impact Permit.
2. Partnership planting undertaken by non-profit organizations, public-private partnerships, and civic groups. Unless work is done under strict guidance and oversight by the Urban Forester, these projects are at the expense of the requestor and require a Tree Impact Permit.

C. Requests for Tree Planting

1. Requests for tree planting and Tree Impact Permits are evaluated in the order in which they are received.
2. Tree planting is contingent on the planting season, availability of plant material, site suitability, staffing, and funding.
3. The Urban Forester or designee will prioritize tree planting requests according to the following criteria:
 - a. Needs Based: Areas identified with the greatest tree canopy deficits
 - b. Pre-Identified Locations: Areas earmarked for beautification improvements
 - c. On Demand: City departments, volunteer groups, neighborhoods, citizens, and development

D. Tree Quality Standards

1. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated on drawings and complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning and a visible root flare. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
2. Trees with multiple leaders, unless specified, will be rejected. Trees with damaged or crooked leaders, bark abrasions, sunscald, disfiguring knots, insect damage, or cuts on limbs over 1/2 in. in diameter that are not completely closed, or root flare more than 2" below surface of root ball will be rejected.
3. Species Selection
 - a. Selected tree species shall be of a cultivar that is superior in form and disease resistance. Preference will be given to street trees grown specifically for urban conditions.
 - b. Exotic invasive species are not permitted.
 - c. Trees to be installed under overhead powerlines shall have a mature height of no greater than 30ft.
 - d. All species selections shall be reviewed by the Urban Forester or designee.
 - e. Species diversity is encouraged to improve overall urban forest health (Table 2).
- f. All plant material and installation work shall conform to the standards detailed in this manual, the American National Standards for Tree Care Operations, ANSI A300 and Nursery Stock, ANSI Z60.1 and approved City standard details.
4. All plant material shall be free of all pests, diseases, and cankers, in healthy condition, and free of mechanical damage at the time of planting as determined by Urban Forestry staff.
5. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of larger size may be used if acceptable to Urban Forester, with a proportionate increase in size of roots or balls.
6. Label each plant of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name. Include nomenclature for hybrid, variety, or cultivar, if applicable.
7. When more than one plant of any species is planted, all plant material shall be uniform in size and shape when possible. All plant material shall have full form with even-spaced branching. One-sided plants or tight row plants are not acceptable if the growth habit is adversely affected.
8. Tree and Shrub Measurements
 - a. Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes.

b. Installation size for right of way trees

1. Shade trees shall be a minimum of 3" caliper and 10' tall.
2. Understory trees shall be a minimum of 1.5" caliper for single stem and 6' tall for both single and multi-stemmed trees.

9. Balled and Burlap (B&B), Container and Bare Root Plant Materials

- a. Trees designated B&B shall be properly dug with firm, natural balls of soil with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree, retaining as many fibrous roots as possible. Balls shall be firmly wrapped with biodegradable burlap and secured with nails as recommended by ANSI Z60.1.
- b. The root flare shall be apparent at the surface of the root ball, or the contractor will be responsible for removing excess soil from the top of the root ball in order to establish the correct grade. Trees shall be rejected if the root flare has been buried long enough for the stem to sprout adventitious roots. Trees with loose, broken, processed, or manufactured root balls will not be accepted.
- c. Container-Grown Stock shall be healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. The root flare shall be apparent at surface of ball, or the contractor will be responsible for

removing excess soil from the top of the root ball in order to establish the correct grade. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for kind, type, and size of exterior plant required.

- d. Bare root material shall be grown in the ground in the nursery without artificial root restriction devices, such as containers or fabric bags, under favorable growing conditions and which have received the proper cultural treatment to develop a well-branched root system. After harvest, the soil is removed from the roots.

10. Delivery, Storage and Handling

- a. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.
- b. Handle planting stock by root ball. Heavier material shall be handled with straps on the root ball and appropriate equipment such as a small skid steer loader.
- c. Deliver bare-root stock plants freshly dug. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

- d. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
 - i. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
 - ii. Do not remove container-grown stock from containers before time of planting.
 - iii. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly-wet condition.
 - iv. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.

11. Nursery

- a. Plants shall be grown within one cold hardiness zone of the project site.
- b. Provide digital photos from the nursery with height identified for review by the Urban Forester or designee prior to digging or shipping. All trees shall also be reviewed and approved prior to installation either at place of purchase, nursery, holding yard or work site by the Urban Forester or designee.

12. Observation and Rejection

- a. Urban Forester or designee may observe trees at place of purchase, nursery holding yard, or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Urban Forester retains right to observe trees further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees immediately from Project site.

13. Substitutions

- a. Requests for substitution for the listed plant material must be made to the Urban Forester in writing. The request shall include a minimum of 5 nurseries attempted for location and contact information. Substitutions will be considered if the listed material cannot be located or confirmed by known suppliers. Plant suppliers must be researched and located prior to submittal. If plant material substitutions are to be made after award of the contract or permit, the substitution must be of similar growth habit, form, and characteristics; similar in specified size; and equal in price and subject to approval or rejection by the Urban Forester.
- b. If for any reason trees cannot be installed according to the plans a request shall be made to the Urban Forester in writing. The Contractor shall inform the city and alternate planting locations shall be selected for approval by the Urban Forester.

E. Tree Planting Standards

1. Please refer to City of Raleigh standard details located at raleighnc.gov
2. Linear Spacing and Location
 - a. Trees will be planted in accordance with spacing requirements detailed in the Unified Development Ordinance unless otherwise directed by the Urban Forester or designee
 - b. Trees to be installed under overhead utility lines shall have a mature height of no greater than 30ft.
 - c. Grouped Plantings
 1. Grouping trees wherever possible and designing tree pits or mulch areas that allow shared root space provides a number of benefits to the health and longevity of urban trees. Designs that group trees are favored over individual plantings.
3. Execution
 - a. Tree and Shrub excavation
 1. Planting hole: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
 2. Excavate approximately three times as wide as ball diameter for all plant material.
 3. Planting holes shall be no deeper than the root flare of the tree or plant which shall be installed at grade, a maximum of 2 inches above grade, and never below grade.
 4. Soil removed from excavations may be used as backfill provided it meets the specified planting soil mix requirements.
 5. Obstructions: Notify Urban Forester if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
 6. Drainage: Planting holes not associated with a drain system shall drain fully within a 12-hour period. Notify Urban Forester if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

Table 1. Guidelines for Proximity from Center of Tree to Infrastructure

Recommended Minimum Distance from Walks, Curbs and Utilities	
Sidewalk	2'
Back of curb	2'
Driveways	10'
Structures	10'
Manholes and catch basins	10'
Fire hydrants	10'
Water meters and other utility boxes	5'
Traffic signs	10'
Stop signs	30'
Light poles	20'
Other trees	15' or 25' variable depending on species
Water & sewer lines that cross the planting strip	10'
Sewer easements	Planting prohibited
All other services that cross the planting strip	10'

b. Tree and Shrub Planting

1. Ball and Burlap

- a. Set balled and burlapped stock plumb and in center of pit or trench with root flare at grade, a maximum of 2 inches above adjacent finish grades, and never below grade. Do not maneuver by trunk. Handle by root ball only.
- b. Remove burlap and wire baskets from the top ½ of root ball, cut off and discard from hole, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
- c. Place planting soil mix around root ball in layers, tamping gently to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

2. Container

- a. Set container-grown stock plumb and in center of pit or trench with root flare at grade, a maximum of 2 inches above adjacent finish grades, and never below grade. Do not maneuver by trunk. Handle by root ball only.
- b. Carefully remove root ball from container without damaging root ball or plant. Gently loosen the roots and cut any girdling roots in at least two places.
- c. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

3. Bare Root

- a. Follow the method for container planting. Staking required.

c. Trees in sidewalks, pits, grates and tree lawns

a. Tree grates

a. 4' x 6' gray iron, ADA compliant

b. Tree grates shall have a provision for trunk expansion of the tree, such as pop out concentric rings in the grate around the trunk.

c. No utilities or electrical conduits are permitted within the tree pit or grate. Utilities may run below and through the subsurface root expansion infrastructure.

b. Trees shall be centered in the pit.

c. Tree pits shall accommodate a depth of 3' of planting soil.

d. High quality planting soil shall be used in the pit directly below the grate.

e. Drainage shall be provided.

d. Tree Lawn

1. Minimum 6 feet wide tree lawn.

2. Tree centered in area.

3. 600 cubic feet of high-quality planting soil in the immediate area where tree is to be placed.

e. Required Subsurface Root Expansion

1. High-quality planting soil or structural soil shall be used to accomplish the soil volume requirement.
2. 600 cubic feet of subsurface root expansion area required per tree.
 - a. Structural Soil
 - b. Subsurface Soil containment structure
 - c. Root pathways
 - i. May only be used in combination with other options or in cases where connections to available soil space achieves the 600 cubic feet requirement.
 - ii. 20-foot minimum extension for each path. Connect to adjacent root paths when possible.
 - iii. When root expansion paths extend under the sidewalk ensure minimum density requirements are met.
 - d. Suspended pavement
 - e. Exceptions and design alternatives are encouraged to achieve soil volume: Urban Forester review required.

Designs that group trees and connect root spaces will be favored as well as the introduction of LID materials and technology.

f. Organic Mulching

1. Apply 3 inch average thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems. Root flare shall be visible at base of all plant material.
2. Mulch shall be the responsibility of the adjacent property owner to refresh as needed and keep free of debris and trash.

g. Soil

1. Backfill directly in tree pit or planting area shall be high-quality planting soil suitable for successful growth.
2. If soil on site is suitable it may be mixed at a rate of 50% with high-quality planting soil.
3. Soil must be free of subsoil, hard clods, stone, residues or undesirable materials, sticks, weed seed and uniform in quality.
4. The Urban Forester or designee may reject unsuitable soil.

h. Guying and Staking

1. Do not stake unless the tree becomes unstable or it is a high wind area.
2. Remove all staking material after 1 year.
3. Leave slight slack in tie to promote trunk taper.
4. Upright Staking and Tying: When required use a minimum of 3 stakes. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections or arborist tape at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Space stakes equally around trees and attach flags to each guy wire for visibility.

F. Maintenance and Warranty Standards

A Tree Impact Permit is required for maintenance activities.

It is the adjacent property owner's responsibility to maintain the mulch ring or tree grate around trees in the right of way and prevent string trimmer or mower damage.

A 2-year warranty and maintenance period is required after the final inspection of permitted planting.

1. Tree and Plant Maintenance

- a. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep plants free of insects and disease.
- b. Fill in as necessary soil subsidence that may occur because of settling, rutting or damage by equipment or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- c. Apply treatments as required to keep plant materials, planted areas and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

2. Watering Instructions

- a. Provide and maintain temporary piping, hoses, and watering equipment to convey water from sources.
- b. Schedule watering to comply with the City of Raleigh Water Conservation Ordinance.

- c. Watering volumes should be based upon delivery of 1 inch of moisture per week to the plant if precipitation does not meet that amount during the active growing season defined as April 1 through November 1.
- d. Supplemental water shall be applied during the establishment period as frequently as 3 times per week and during periods of drought or excessive heat.
- e. Use a slow flow hose end device and water each tree at the base for several minutes. Commercially available water bags are acceptable. At each visit make sure the bag is empty, thoroughly soak the root ball, then refill the bag checking the emitters allow free flow of water to ensure the bag will drain. All watering bags shall be removed from trees starting November 1 until April 1 of following year.

3. Mulch

- a. Maintain a 3-inch average thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Typical material is shredded hardwood, pine bark, wood chips or pine straw (not permitted within 10' of structures).
- b. Mulch to the drip line of mature trees.
- c. Do not place mulch within 3 inches of trunks or stems. Root flare shall be visible at base of all plant material.

- d. Keep mulch free of weeds, trash and debris.
- e. The mulch ring prevents string trimmer, mower and other mechanical damage. It also improves soil quality, moisture and temperature exchange, aesthetics and overall health and longevity of the urban tree.

4. Tree Grates

- a. Tree grate maintenance is the responsibility of the adjacent property owner. Maintain grates free of weeds, trash and debris.
- b. Replenish gravel as needed to maintain an even surface. Gravel shall match existing material; typically gray pea gravel/ #67 washed stone gravel.
- c. Notify Urban Forester if the tree grate is girdling tree or causing damage to tree.

5. Pesticide and Herbicide Application

- a. Apply pesticides and other chemicals and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with city operations and others in proximity to the Work. Notify Urban Forester before each application is performed or as specified in permit.
- b. Pre-Emergent Herbicide: Apply to tree, shrub and ground-cover areas in accordance with manufacturer's

written recommendations. Do not apply to seeded areas.

- c. Post-Emergent Herbicide: Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

6. Tree Pruning

- a. All tree pruning shall be done by or under the supervision of an ISA Certified Arborist.
- b. ANSI A-300 Pruning Standards shall apply (Chapter 6).

7. Root Pruning

- a. Area for root pruning must be approved by an ISA Certified Arborist to prevent a hazardous tree condition (Chapter 6).
- b. Acceptable methods of cutting are by sharp hand pruners, loppers, hand saw or hydraulic tools. Implement must leave a clean cut.
- c. If excavation causes pruned roots over 1.5" in diameter to remain exposed for more than 24 hours, roots on tree side shall be kept moist. Backfill with topsoil, moist mulch, or drape with wet burlap.

- d. Where concrete is poured adjacent to pruned roots heavy duty plastic shall be installed against the tree side of the pruned roots to prevent uptake (toxic to tree).

8. Tree Replacement of Warrantied Trees

- a. Trees shall be replaced in the next planting season if they are more than 25% dead, in rapid decline, are infested by insects or disease, have lost the natural shape due to dead branches, excessive pruning including vandalism, inadequate or improper maintenance, or are failing due to other causes.
- b. Replacement trees installed after the 1st year of a 2-year warranty/maintenance period shall get a full 1 year of warranty/maintenance from the time of planting.
- c. Dead, dying, diseased or vandalized trees that are destroyed shall be removed within 15 business days.
- d. Replacement tree species may be changed with approval from Urban Forester or designee.

G. Tree Protection

A Tree Protection Plan is required for any activity impacting city trees intended to remain.

1. Tree Protection Plan
 - a. Submit project plans showing tree protection with the Tree Impact Permit Request.
 - b. Tree Protection Plan shall include all that apply
 - i. Existing trees on site
 - ii. Critical root zones of protected trees
 - iii. Tree protection fencing delineation and specification
 - iv. Other products for protection (mulch/matting/etc.)
 - v. Remediation
2. Tree protection fencing shall be installed at a minimum radius of the Critical Root Zone (CRZ) of trees (CRZ defined as radius 1.25' feet per caliper inch at DBH from trunk of tree).
3. Tree protection signage required every 50 feet.
4. If construction occurs within the CRZ at least 12" of mulch shall be placed and/or logging mats where machinery maneuvers to reduce soil compaction in this zone and identify on plan.
5. The tree protection fencing shall not be violated for the duration of the project without approval from Urban Forestry staff.
6. There will be zero tolerance for storing or parking vehicles, supplies, or equipment under protected trees.
7. Remediation includes but is not limited to replacement, pruning, supplemental water, mulch, nutrition (fertilizer, organic matter, etc.), insect/disease control, staking and compaction mitigation.
8. After construction or impact protection devices shall be removed. Mulch or other materials used for a root buffer shall be removed by hand within the critical root zone. It may be removed mechanically beyond this zone. There shall be 3" of mulch left on site as described in section F.3 of this chapter.

CHAPTER 3 DEVELOPMENT AND LANDSCAPE PLAN REQUIREMENTS

- A. The Urban Forester or designee shall review all development plans with trees in the right of way and on city owned or controlled property. This application process describes the requirements for plan review, permitting, tree protection, standard specifications, tree quality, installation and maintenance.
- B. Requirements for development are addressed in the Unified Development Ordinance and its companion documents.
- C. Required trees shall not be planted on existing or proposed water and sewer easements.
- D. Where development abuts a street controlled by the North Carolina Department of Transportation required trees shall also meet the landscape requirements of the State. The city is still required to review and approve all proposed trees in the right of way.
- E. Permitting Process

This is the application process for activities impacting city trees. Impacts include but are not limited to removal, pruning, trenching, boring, excavating, filling, fertilizing, treating for disease or insects, installing decorations and planting.

1. An approved Tree Impact Permit will be issued through the development review process.
2. Plan Requirements

- a. Identify property boundaries and rights of way
- b. Label streets and other plan elements
- c. Overhead utilities and lighting plan
- d. Identify trees for demolition and preservation
- e. Depict the required site distance triangles
- f. Depict tree protection zones and fencing detail
- g. Tree species including botanical name, installation size and counts
- h. Urban tree pit detail and subsurface root treatment if applicable.
- i. Adherence to tree quality specifications (Chapter 2)
- j. Adherence to tree planting and maintenance specifications and detail

3. Fees

- a. All Development related fees are located in the Development fee schedule

CHAPTER 4 ENFORCEMENT

It is a violation of City code for any person to remove, kill, or damage a street, park or greenway tree whether intentionally or accidentally.

A. Enforcement on City Owned or Controlled Property

Any person desiring to undertake a tree disturbing activity on a City tree or any land disturbance within 15 feet of a City tree on City owned or controlled property must have a Tree Impact Permit

Anyone who suspects an unauthorized removal or injuring of a tree should report such activity immediately. Call 919-996-4115 or email Trees@raleighnc.gov to notify the Urban Forestry Division.

1. The violation of any provision of this chapter shall result in a Notice of Violation and the assessment of any costs incurred by the City to remedy the violation. This action also constitutes a misdemeanor as provided by G.S. 14-4 and Part 14 of the Code.
2. Permit Violation or Failure to Obtain Permit
 - a. Persons failing to obtain the appropriate permits before beginning tree work are subject to civil penalties, fees, and/or replacement costs including the application for a permit pursuant to City Code and this manual.
 - b. Violation of or deviation from any element of a permit shall be considered sufficient grounds for the suspension or revocation of the entire permit

as well as grounds for immediate issuance of a Stop Work Order. Resumption of work shall be at the discretion of the Urban Forester or designee.

- c. Each tree shall be considered a separate violation.

3. Liability for Tree Disturbing Activity

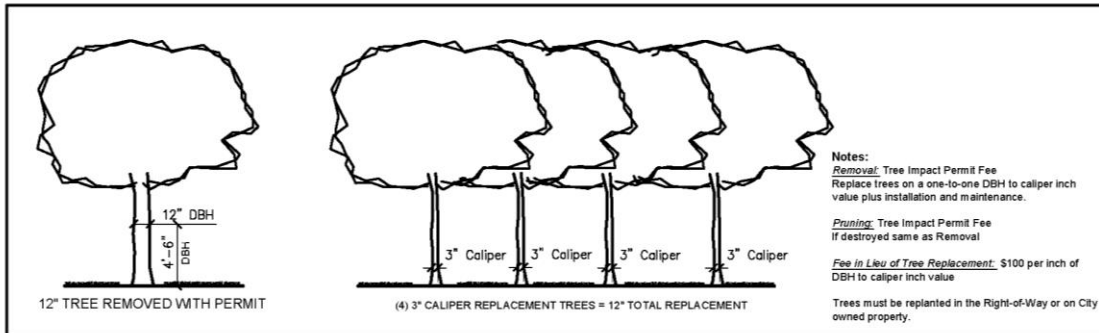
- a. Any tree damage shall be repaired and any tree shall be replaced to the satisfaction of the Urban Forester at no expense to the city. Trees damaged beyond repair, excessively trimmed or destroyed as determined by the Urban Forester are to be removed and the stumps ground to 6" below grade by the violator within 15 days of notice. Trees shall be remediated in accordance with this chapter at the discretion of the Urban Forester or designee.
- b. Replacement trees shall be installed on city owned or controlled property by the violator or permit holder in accordance with requirements of City Code and this manual. If unable to make the replacement, a fee in lieu shall be paid to the City in addition to an Administrative Fee and any other applicable fees or remediation as determined by the Urban Forester or designee. Fees shall be paid to the City within 30 days of notice.

4. Value assessment for tree disturbing activity

- a. Removal: Administrative Fee, replace trees on a one-to-one diameter inch value (Figure 1) plus installation and 2-year maintenance.

- b. Fee in lieu: \$100 per inch of diameter if unable to be remediated or replaced.
- c. Excessive Pruning: Administrative Fee, remediation, and/or replacement on a one-to-one diameter inch value (Figure 1) plus installation and 2-year maintenance.

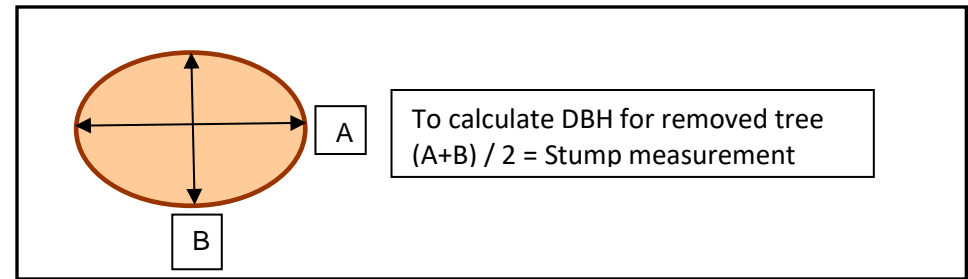
Figure 1. One-to-one DBH to caliper inch value



5. Measuring removed trees and stumps (Figure 2)

- a. Trees shall be measured at DBH
- b. Stumps shall be measured twice across the top of the stump at right angles. The measurements shall be added together and divided by two.
- c. Stumps that are ground below grade shall default to 10" DBH

Figure 2. Stump measurement to calculate DBH for removed tree



6. Remediation for Remaining Tree(s)

- a. All remediation shall be prescribed or approved by the Urban Forester. Remediation shall be in accordance with ANSI A-300 Standards for Tree Care Operations and applicable industry standards. Timelines shall be established and enforced for application of remediation.
- b. Remediation includes but is not limited to:
- c. Pruning: Corrective pruning shall be done by or under the supervision of an ISA Certified Arborist in accordance with ANSI A300 pruning standards.
- d. Supplemental water, mulch, nutrition (fertilizer, organic matter, etc.), insect/disease control, staking.
- e. Compaction mitigation: Tilling soil with high pressure air hose, vertical mulching, horizontal mulching

B. Enforcement on Private Property

1. Nuisance Abatement

- a. This section describes requirements for trees and vegetation originating on private property that impedes onto or endangers the city right of way or city property.
- b. The property owner is responsible for maintaining trees and vegetation originating on private property to ensure clear and safe passage for vehicular and pedestrian traffic in the right of way. Clearance requirements are described in Chapter 5: Tree Pruning Standards.

2. Failure to Maintain Trees on Private Property

- a. If the owner of the property fails to keep this growth or hazard from projecting into or on public ground, then the Urban Forester shall have the authority to order its removal. The order shall be acted upon within fifteen (15) days from the time of the receipt of the notice. If, after fifteen (15) days, the owner has not responded or acted to remove the projecting growth or hazard from said trees, then the Urban Forester or designee shall have the authority to enter upon the owner's property to perform the work. The cost of such action shall be charged against the property owner to include labor, equipment and materials.
- b. The Parks, Recreation and Cultural Resources Department shall notify the property owner where the nuisance is located with the following action:

- i. The conditions identified in the notice of violation exist which constitute a public nuisance.
- ii. The Code provision(s) identified by section 9-8007 are violated by the stated conditions on the property.
- iii. The property may be posted on the date of the nuisance notice of violation, in a prominent location on the street facing facade of any building, with a placard or other appropriate means of notice declaring the property is a public nuisance property.
- iv. Unless the public nuisance is abated within fifteen (15) days from the mailing of the notice, the Parks, Recreation and Cultural Resources Department will initiate the procedures to abate the conditions constituting a nuisance and apply the cost to the property owner.

c. Methods of Service

- i. Nuisance abatement notices of violation issued by an inspector shall be served upon persons personally, by first class mail, or by posting on the property in conjunction with first class mail.
- ii. Assessments of civil penalties and administrative fees, and appeal decisions shall be served upon persons personally or by first class mail.

d. Appeals see code section 9-8009

e. Administrative Fee and Abatement Costs

- i. Any owner of a property within the City and one (1) mile beyond the City limits failing to comply within fifteen (15) days shall be subject to an administrative fee. Additionally, the property owner shall be responsible for the cost of the abatement, including the cost of labor, equipment, and materials based on current FEMA rates.

f. Visual Obstructions and Encroachments

- i. Any vegetation that poses a visual obstruction for pedestrian or vehicular traffic shall be reviewed by the Raleigh Department of Transportation. Requests for trees that require pruning or removal utilizing equipment and expertise beyond the capability of the Transportation Department staff shall be turned over to the Urban Forestry Division via the work order system.
- ii. Shrubs, hedges and other vegetation encroaching into the public right of way shall be referred to the Housing and Neighborhoods Department for compliance measures.

g. Authority to Remove Trees on Private Property

- i. When necessary for the immediate preservation of the public health or safety, the Urban Forester may cause or order the removal of any tree or part hereof on private ground which is in an unsafe condition, or which by reason of its nature is injurious to sewers or other public improvements, or which is affected with any injurious fungus, insect or other pest which may spread to public or other private property.
- ii. Reasonable effort shall be made to notify the property owner on the day of removal including but not limited to knocking on the door, phone, or contacting a neighbor.
- iii. When not immediately necessary, but when still amounting to a public nuisance, unsafe trees as defined above may be removed, pruned or otherwise treated, and the cost of such action shall be charged against the subject property pursuant to the procedure set forth in this chapter.

CHAPTER 5

PRUNING & CLEARANCE STANDARDS

This chapter describes the standards for pruning trees on property owned or controlled by the City of Raleigh. All pruning shall comply with the guidelines set forth in the American National Standards Institute A-300 standards for Tree Care Operations and ANSI Z133.1

Any person desiring to undertake a tree disturbing activity on a City tree or any land disturbance within 15 feet of a City tree on City owned or controlled property must have a Tree Impact Permit

A. Tree Pruning Categories

1. Pruning on City Property

- a. City arborists are responsible for pruning trees on city owned or controlled property for pedestrian and vehicular clearance, health, form and routine maintenance.
- b. Service Requests
 - i. To request tree maintenance, submit a Tree Request online at www.raleighnc.gov – search ‘Tree Request’. The Urban Forester will send an ISA Certified Arborist to evaluate the tree and notify you with a timeline for action.

- ii. Utility Clearance: Private utility companies and designated contractors prune trees for utility clearance with a Tree Impact Permit.
- iii. Private contractors and property owners may prune city trees with an approved Tree Impact Permit.

2. Pruning on Private Property

- a. It is the property owner’s responsibility to prune trees and vegetation originating on private property for the clear and safe passage of pedestrian and vehicular traffic in the right of way and adjacent public property.
- b. Private trees shall be pruned by the city only when there is an imminent danger to the right-of-way or other public property including but not limited to: Obstruction of safe passage of motor vehicles, cyclists, pedestrians, traffic signs, signals, or streetlights; immediately hazardous or structurally unsound trees or portions of trees that will impact city property.
- c. All other private trees that may impact city property and not considered an immediate public safety threat

shall be mitigated through the nuisance abatement process in Chapter 4.

- d. Utility Clearance: Private utility companies and designated contractors prune trees for utility clearance.

B. Pruning Standards

1. All pruning shall comply with the guidelines set forth in the American National Standards Institute A-300 standards for Tree Care Operations and ANSI Z133.1
2. Prune to maximize clearance and visibility for vehicular and pedestrian traffic.
3. Prune to improve tree form and structure by removing co dominant stems, dead and crossing branches.
4. All final cuts shall be made without cutting into the branch collar or leaving protruding stubs.
5. Cuts made to reduce the branch length or influence the direction of growth shall be made to a lateral branch no smaller than 1/3 the diameter of the parent limb.
6. Clean cuts shall be made at all times with sharp tools.
7. Root Pruning

- a. Trees identified for root pruning must be approved by an ISA Certified Arborist to prevent a hazardous tree condition.
- b. Acceptable methods of cutting are with sharp hand pruners, loppers, hand saws or hydraulic tools to leave a clean cut.
- c. If excavation causes pruned roots over 1.5" in diameter to remain exposed for more than 24 hours, roots on tree side shall be kept moist. Backfill with topsoil, moist mulch, or drape with wet burlap.
- d. Where concrete is poured adjacent to pruned roots heavy duty plastic shall be installed against the tree side of the pruned roots to prevent uptake (toxic to tree).

8. Clean-up

- a. Limbs that are no longer attached to the tree shall be removed immediately both in the tree and on the ground.
- b. All debris from tree pruning shall be cleaned up each day, unless permission is given by Urban Forester to do otherwise. All lawn areas must be raked and all streets and sidewalks swept or blown clean.
- c. Remove and legally dispose of all logs, brush, and debris resulting from the tree pruning operation.

9. Prohibited Practices

- a. Prohibited practices include but are not limited to topping, tipping, flush cuts, excessive pruning, and the use of climbing irons, spurs or spikes.
- b. Excessive Pruning: The pruning, cutting, or otherwise damaging the natural form of a tree when it meets one (1) or more of the following:
 - i. Removes more than twenty-five (25) per cent of the crown of a tree.
 - ii. Removes, cuts, or covers more than twenty-five (25) per cent of the root system of a tree.
 - iii. Fails to conform to the pruning methods set forth in the current edition of ANSI A-300 standards for Tree Care Operations and this document.

10. Exceptions

- a. Spurs or spikes are allowed to perform an aerial rescue or if the tree is approved for removal.
- b. Excessive pruning is allowed to access critical utilities or infrastructure in emergency situations. This must be followed by notifying the Urban Forester. The responsible party may be required to conduct corrective pruning or tree removal.

c. Emergency Pruning

- i. In the aftermath of weather related emergencies in which tree damage has occurred on a large scale it may be necessary to deviate from this policy because of safety and the urgency of travel and energy restoration. Following the emergency notify the Urban Forester. Corrective pruning shall be done as necessary in accordance with ANSI A300.

C. Clearance Standards

Trees shall be pruned to maximize clearance and visibility for vehicular and pedestrian traffic. The right of way shall be kept free and clear of trees and vegetation to the property line.

No large maturing trees shall be planted beneath overhead power lines.

1. Sight Distance Requirements

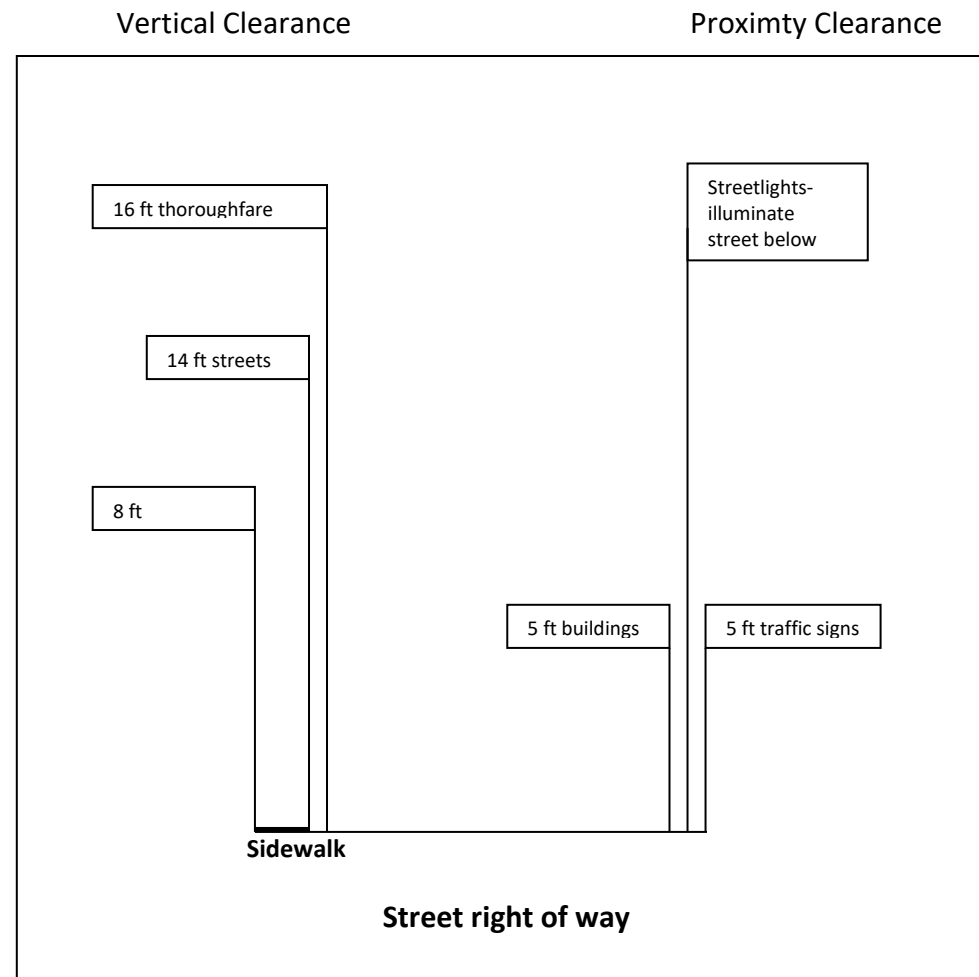
- a. Sight Triangle: Landscaping shall not obstruct the views of motorists using any street, driveway, parking aisles or the approach to any street intersection.
- b. All landscaping installations must comply with the sight triangle requirements of the Raleigh Street Design Manual and/or the North Carolina Department of Transportation guidelines.
- c. All trees and vegetation within the sight triangle, both on city and private property shall be kept pruned so as not to substantially obstruct the view of traffic.

- d. Vegetation shall be maintained lower than 24 inches and higher than 8 feet in accordance with the Raleigh Street Design Manual.

2. Minimum Clearance Requirements (Figure 3)

- a. Pedestrian ways and yards
 - i. 8 feet of vertical clearance
- b. Streets
 - i. 16' vertical clearance over thoroughfares
 - ii. 14' vertical clearance over all other streets
- c. Streetlights
 - i. Prune to allow for the optimal designed illumination of the street below. Any illumination of private property is incidental to the primary function of the streetlight and shall not require pruning.
- b. Traffic Signage and Signals: 5 feet of clearance and not hidden from view.
- c. Other Structures: Other structures and sites shall be kept pruned as determined on an individual basis by Urban Forestry staff.
- d. Clearance Over and Adjacent to Buildings: 5 feet of clearance from roof and façade of adjacent buildings.

Figure 3. Minimum Clearance Requirements



C. Utility Clearance

1. These standards apply to maintaining, installing, or improving utility lines near trees on city owned or controlled property.
 - a. All standards outlined in this document apply.
 - b. A Tree Impact Permit is required.
2. New utility construction and installation operations must adhere to the standards in the same manner as line clearance operations unless an additional Tree Impact Permit is obtained expressly allowing the contractor to deviate from the standards put forth in this chapter.
3. Notification Requirement
 - a. Utility companies or designated contractor shall notify the Urban Forester of the maintenance schedule within the city limits.
 - b. Supply digital maps and contact information necessary to achieve compliance.
4. Utility Clearance Standards
 - a. All pruning shall comply with the guidelines set forth in the American National Standards Institute A-300 standards for Tree Care Operations.
 - b. No more than 25% of the canopy shall be removed from the tree within an annual growing season.
 - c. Limbs may be cut at the first suitable lateral beyond the clearance limit. Pruning cuts beyond the first suitable lateral shall be approved by the Urban Forester or designee.
 - d. Trees conflicting with critical utility equipment may be removed with approval from the Urban Forester or designee on a case-by-case basis.
 - e. Utility companies and designated contractors shall adhere to the Pruning Box clearance requirements for overhead utilities per the City of Raleigh standard detail. For below ground utilities see Root Pruning in this chapter.
 - f. Transmission Lines are exempt, however notifying the Urban Forester when pruning occurs on city owned or controlled property is mandatory.

g. Pruning Box (Overhead Lines) Clearance (Figure 4)

i. Primary Lines

- | | |
|-------------|----------|
| 1. Overhead | 8 Feet |
| 2. Side | 7.5 Feet |
| 3. Below | 6 Feet |
| 4. Neutral | 2 Feet |

ii. Secondary Lines

- | | |
|-------------|--------|
| 1. Overhead | 6 Feet |
| 2. Side | 4 Feet |
| 3. Below | 4 Feet |
| 4. Neutral | 2 Feet |

iii. Communication Lines (Service/Phone/Cable/Fiber Optic Lines, etc.)

- | | |
|-------------|--------|
| 1. Overhead | 2 Feet |
| 2. Side | 2 Feet |
| 3. Below | 2 Feet |

CHAPTER 6 TREE REMOVAL POLICY

The city will remove a city tree if it is dead, dying, carrying a virulent disease, or is endangering life and/or property as determined by the Urban Forester or designee.

A. Hazard Tree Evaluation

1. Trees that are candidates for removal will be examined by an ISA Certified Arborist.
2. The tree shall be evaluated based on size, species, proximity to targets, extent of damage or decay and the presence of insects, disease or other defect using tools common to the arboriculture profession.
3. Except in the case of trees that are dangerous to public health or safety, the tree shall be posted for removal a minimum of 24 hours in advance and reasonable effort shall be made to contact the adjacent property owner.
4. Private trees shall be removed by the city without notice to the property owner when there is an imminent danger to public health or safety including obstruction of safe passage of motor vehicles, cyclists, pedestrians, traffic signs, signals, or streetlights; immediately hazardous or structurally unsound

trees or portions of trees that are a danger to public health or safety.

- a. All other private trees that may impact city property and not considered an immediate public health or safety danger shall be mitigated through the nuisance abatement process in Chapter 4.

B. Removal Requests

1. To request removal, submit a Tree Request online at www.raleighnc.gov – search ‘Tree Request’. The Urban Forester will send an ISA Certified Arborist to evaluate the tree and notify you with a timeline for action.
2. Requests to remove trees for construction, development and major improvements shall follow the procedures outlined in Chapter 3 Development and Landscape Plan Requirements.
3. Requests to remove trees that are not dead, dying, carrying a virulent disease, or endangering life and/or property are typically denied but will be reviewed on a case-by-case basis.
 - a. The requestor may request a Tree Impact Permit to remove the tree with the following requirements:
 - i. The tree shall be removed in its entirety at the requestor’s expense.

- ii. The stumps shall be removed and filled in with soil and seeded with grass or ground to 6” below grade, backfilled with soil and seeded to match surrounding grades.

b. Clean-up

- i. All debris from tree pruning shall be cleaned up each day, unless permission is given by Urban Forester to do otherwise. All lawn areas must be raked and all streets and sidewalks swept or blown clean.
- ii. Remove and legally dispose of all logs, brush, and debris resulting from the tree pruning operation.
- iii. Restore surrounding grade and any damaged turf areas.
- iv. Any damage or unauthorized disturbance to any public or private property including pavements, utilities or facilities shall be the responsibility of the permit holder.

4. Emergency Removals

- a. City staff will remove fallen trees and/or limbs from streets, public rights of way and other city owned or controlled property.
- b. Trees that fall during an emergency or inclement weather are the responsibility of the property owner where they fall. The portion of the tree that comes to rest, regardless of the origin is the responsibility of the property owner.
- c. City of Raleigh staff is prohibited from entering upon private property to remove all or part of a fallen tree regardless of where the tree originates or what caused it to fall on private land.
- d. In cases where all or part of a tree has come to rest on both public and private property each owner shall be responsible for the part that is on their property. If the tree is resting on private property where further damage may occur through the removal of the part on public property, the city will take no action until the private property owner has removed the portion on their property.

- e. Claims for property damaged may be filed via the Risk Management Division at Raleighnc.gov
5. For Appeals see code Part 9, Chapter 8 “Trees and Vegetation”
Section 9-8009

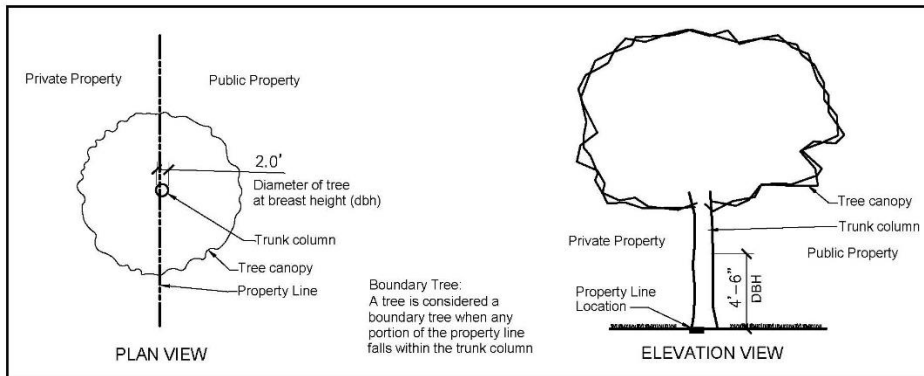
DEFINITIONS

A

1. **AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):** The recognized agency responsible for setting standards of professional conduct and practice. The A-300: Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices and ANSI Z60.1. Standard for Nursery Stock has been adopted as the accepted standard governing arboricultural practices within the City of Raleigh.

B

2. **BOUNDARY TREE:** A tree which, when viewed in cross section at DBH has any portion of its trunk located on a property line between private property and public property. A boundary tree is a city tree.



C

3. **CALIPER:** The American Association of Nurserymen standard for trunk diameter measurement of nursery stock. Caliper is measured six inches above grade for trees up to 4 inches in diameter and measured 12 inches above grade for trees greater than 4 inches in diameter.
4. **CERTIFIED ARBORIST:** A person who has successfully completed the requirements set by the Arborist Certification Board of the International Society of Arboriculture and maintains good standing in this organization.
5. **CITY:** City of Raleigh, North Carolina
6. **CITY-OWNED OR CITY-CONTROLLED PROPERTY:** Property owned or leased by the city upon which the city has an easement or street, sidewalk, greenway, park, alley, or other public purpose except utilities.
7. **CITY RIGHT-OF-WAY:** Land upon which the city has the right to construct a street, sidewalk, bicycle path, use for public utilities, landscape with plants or to carry out any other public purpose.
8. **CITY TREE:** A tree that has its trunk located entirely or in part on city owned or controlled property including any boundary tree.

9. **CRITICAL ROOT ZONE (CRZ):** A protected circular area to remain undisturbed around a tree with a radius equal to 1.25 feet per inch of tree DBH measured at 4.5 feet above grade with the tree trunk at the center of the circle. The main structural and functional portion of the root system.

D

10. **DESTROY:** Any intentional or negligent act or lack of protection that will cause a tree to die or become structurally unstable as determined by Urban Forestry staff. Such acts include, but are not limited to: Cut or fill grade changes that effect the Critical Root Zone; severing or exposing roots in the Critical Root Zone; trenching across or otherwise severing the Critical Root Zone; cutting, girdling, or inflicting other mechanical injury to the trunk, roots or other sections of the tree; cambial injury which will result in potential stem failure; removal of the live crown of the tree; damage inflicted upon the root system of a tree by application of toxic substances, including solvents, oils, gasoline and diesel fuel; damage caused by the operation of heavy machinery; damage caused by the storage of materials; and damages from injury or from fire inflicted on trees which result in death or pest infestation.
11. **DIAMETER AT BREAST HEIGHT (DBH):** The diameter of the tree trunk measured at 4.5 feet above the soil. Commonly referred to diameter at breast height or DBH. DBH is accurately measured with a diameter tape.

E

12. **EXCESSIVE PRUNING:** The pruning, cutting, or otherwise damaging the natural form of a tree when it meets one (1) or more of the following:
- Removes more than twenty-five (25) per cent of the crown system of a tree.
 - Removes, cuts, or covers more than twenty-five (25) per cent of the root system of a tree.
 - Fails to conform to the pruning methods set forth in the current edition of ANSI A-300 standards for Tree Care Operations or City Tree Manual.

F

13. **FEE IN LIEU OF STREET TREE DEVELOPMENT:** The street tree fee in lieu and payment process is listed in the City of Raleigh Development Fee Schedule.
14. **FEE IN LIEU OF TREE REPLACEMENT:** \$100 per inch of DBH. Fee in lieu shall only be granted when the site does not accommodate required tree replacement and shall be granted at the discretion of the Urban Forester.

O

15. **ONE-TO-ONE DBH TO CALIPER INCH:** Replace trees on a one-to-one DBH value plus installation and maintenance: Install tree(s) including installation and two years of maintenance.

- a. Calculation Example: To remove one 12” DBH tree replace with 12 caliper inches of new trees. Replacement required is four (4), 3” caliper trees to equal 12”, or three (3) 4” caliper trees rounding up to the next inch (Fig. 1).

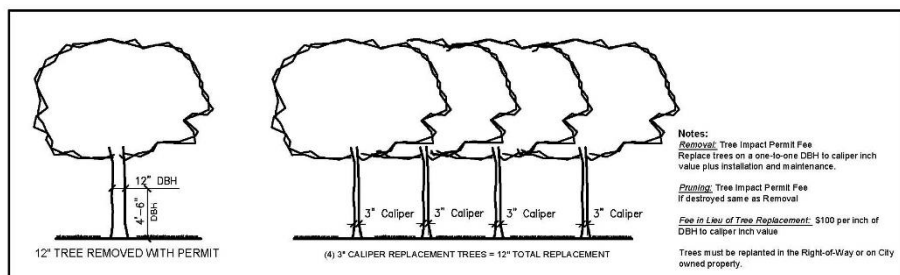


Figure 1: One-to-one DBH to caliper inch

P

16. PLANTING SOIL: ASTM D 5268, pH range of 5.5 to 7, a minimum of 20 percent organic material content; free of stones 1/2 inch or larger in any dimension and other extraneous materials harmful to plant growth.

16. PRIVATE TREE: A tree that has its trunk column located entirely on private property.

17. PRUNING BOX: Required clearance for pruning trees around overhead utilities.

R

18. REMEDIATION: The requirement by the Urban Forester to restore or replace and impacted City tree including but not limited

to replacement, corrective pruning, supplemental mulch, water or nutrition and compaction mitigation.

19. ROOT FLARE: The part of the tree near the base that transitions from trunk to root. Area where the trunk expands and tapers outward into the ground. Must be visible at grade for new plantings and avoid covering with mulch, soil or other materials.

S

20. SHADE TREE: An evergreen or deciduous tree whose mature height can be expected to exceed 35 feet and which has an expected crown spread of 30 feet or more or is considered a shade tree in accordance with “American Standards of Nursery Stock”, set forth by the American Association of Nurserymen.

- a. All shade trees planted to meet the landscaping requirements must be a locally adapted species with an expected mature height of 35 feet or greater and an expected mature crown spread of at least 30 feet or greater unless subject to an overhead power line in which case the mature height may be less.

- b. All shade trees planted to meet the landscaping requirements must have a minimum caliper of three inches and be at least 10 feet tall at time of planting.

21. SHRUB: Any woody perennial that attains an overall height of less than 20’ at maturity, usually with multiple stems.

22. **STUMP MEASUREMENT:** Average of two measurements taken at right angles on cross section of stump in inches. Used to establish DBH in absence of tree trunk.
23. **SUBSURFACE ROOT EXPANSION:** Structure or mechanism containing a minimum of 600 cubic feet of additional volume of high-quality planting soil or structural soil beneath the sidewalk or hardscape to promote the sustainability of urban trees. This system should allow the root systems of adjacent trees to join and share soil space where available.

T

24. **TREE CONSERVATION ORDINANCE:** Regulates tree conservation on private property through the Unified Development Ordinance
25. **TREE DISTURBING ACTIVITY:**
- a. The movement of soil, compaction of soil, chemical or physical alteration of soil, or a change in the soil cover (both vegetative and non-vegetative) and/or the existing soil topography within the critical root zone, including but not limited to: chemical application, clearing, grading, filling, and excavation or stabilization of structures, and road or walkway construction.
 - b. Chemical or physical alteration of a tree in any way that diminishes its health and vigor, including but not limited to removal, cutting, root and branch pruning, topping, bark scraping, application of chemical or biological agents, and placing permanent or temporary fixtures (lights, signs, etc.).

- c. The placement within the critical root zone of any permanent or temporary encroachment, including but not limited to: application of impervious surfaces; storage of equipment, materials, or earth; parking or circulation of vehicles or equipment.

26. **TREE IMPACT PERMIT (TIP):** Consent given in writing by the Urban Forester or designee to an individual, private, or public entity to do anything that would affect a city tree including but not limited to removal, pruning, trenching, boring, excavating, filling, planting or attaching anything to a tree. A TIP fee applies.

27. **TREE PROTECTION PLAN:** A written document that must accompany and Tree Impact Permit request to establish mechanisms for potentially impacted trees which are intended to remain on the property.

28. **TRUNK:** The main stem of a tree apart from limbs, roots and root flare.

U

29. **UNDERSTORY TREE:** An evergreen or deciduous tree whose mature height can be expected to range between 15 feet and 35 feet and which has an expected crown spread range between 15 feet and 25 feet as determined by the latest edition of “American Standards of Nursery Stock” as set forth by the American Association of Nurserymen.

- a. Understory trees planted to meet the landscaping requirements must be a locally adapted species with an expected mature height of at least 15 feet and an expected mature crown spread of at least 15 feet.

- b. Single-stem understory trees planted to meet the landscaping requirements must have a minimum caliper of 1½ inches and be at least six feet tall at time of planting.
- c. Multi-stem understory trees planted to meet the landscaping requirements must be at least six feet tall at time of planting.

30. URBAN FORESTRY: The management and maintenance of trees for their contribution to the environmental, sociological, and economic well-being of urban society. Includes wooded areas, groups of trees, and individual trees.