CITY TREE MANUAL

Arboricultural Specifications & Standards of Practice

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

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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

2014

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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.

Acknowledgments

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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
Planning and Development Department
One Exchange Plaza, Suite 400, Raleigh, NC 27601
919-516-2495

Tree Conservation Ordinance Questions
(Private Property)
Forestry Specialist
City Of Raleigh Planning Department—Tree Conservation
P.O. Box 590 Raleigh, NC 27602
919-516-2552

RELATED LINKS

Submit a service request using our Tree Request Form

www.raleighnc.gov search 'Tree'

For other departments SeeClickFix
http://www.raleighnc.gov/ext/SeeClickFix

FREQUENTLY ASKED QUESTIONS

A. General

1. **Who in the City is responsible for street, park and greenway trees?**

    a. The Parks, Recreation and Cultural Resources Department Urban Forestry Division has jurisdiction over all trees growing in the public right of way, including trees along streets, greenways, and in city parks.

    b. To request tree maintenance submit a Tree Request online at www.raleighnc.gov – search 'Tree Request'. Urban Forestry staff will notify you with a timeline for action.

2. **Are there any rules or regulations governing street trees other than the City Tree Manual?**

    a. Yes. Regulations are noted in this document in Chapter 1: Permits and Procedures.

    b. The Unified Development Ordinance requirement for new development is in Chapter 3: Development and Landscape Plan Requirements.

    c. Also see the municipal code Part 9, Chapter 8. Trees and Vegetation.

3. **What is City Owned or Controlled Property? What is the right of way?**

    a. Property owned or leased by the city; or for which the city has a vegetation easement or planting contract; or upon which the city has an easement or street, sidewalk, greenway, park, alley, utility or other public purpose. Also commonly referred to as the "right of way".

    b. Citizens can identify the City's right of way on their property by locating their property iron or referencing their plat or survey, but generally, this is the property located behind the water meter or sewer clean out on their property to the street.

4. **What is a boundary tree?**

    a. A tree which, when viewed in cross section at DBH (Diameter at Breast Height) has its trunk located on a property line between private property and public property. A boundary tree is a city tree and all provisions of this chapter shall apply including maintenance, removal and protection. See appendix A.

B. Maintenance and Service Requests for City Trees

1. **How do you manage and care for trees in the City of Raleigh?**

    a. Raleigh's team of arborists are responsible for maintaining city trees, administering tree planting programs and volunteer opportunities, urban forestry education and outreach, hazard tree evaluation, response to citizen requests, storm response, tree protection and new development permitting.

2. **How do I request tree pruning, dead tree, hazard tree or stump removal?**

    a. To request tree maintenance submit a Tree Request online at http://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, if deemed appropriate.

3. **What is an ISA Certified Arborist?**

    a. 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.

4. **I need to report overgrown shrubs and vegetation encroaching into the sidewalk, curb or street.**

    a. Contact Housing and Environmental code enforcement and complete the online Code Enforcement Request Form or call 919-807-5110.

C. What Permit is Required for Work On or Near City Trees?

1. **What are the criteria for tree removal?**

    a. A tree must be dead, dying, diseased, dangerous or be part of an approved development plan to be considered for removal. Please submit a Tree Request online at www.raleighnc.gov – search Tree Request. An ISA Certified Arborist will evaluate the tree and provide notification.

2. **What permit is required?**

    a. A Tree Impact Permit is required before any impacts to City trees existing on the public right of way. This applies to removal, pruning, trenching, boring, excavating, filling, planting and placing temporary fixtures on City property (Appendix F).

    b. A Tree Impact Permit Request is available at http://www.raleighnc.gov search Tree Impact Permit.
    c. There is a fee associated with the Tree Impact Permit.

3. **Why does Urban Forestry require a permit for tree work?**

    a. The Parks, Recreation and Cultural Resources Department has jurisdiction over trees growing in the city right of way including trees on streets, greenways, in city parks and other property owned or controlled by the city. The permit process allows the Urban Forester to review proposed work to ensure it follows the city code and current best practice for tree planting, removal, maintenance, and protection.

b. The city is committed to protecting and preserving the urban forest because it provides numerous benefits. Trees increase property values, reduce air and water pollution, reduce energy use, and improve human health and well-being.

4. **What happens if I don't get a permit or violate a permit condition?**

   a. Any person failing to obtain a permit are subject to fees and civil penalties as outlined in Chapter 4 of this document and Part 9, Chapter 8 Section 9-8009 of the city code.

   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.

   c. Violations may result in the payment to the City of any costs incurred by the City, including but not limited to tree replacement cost, a fee in lieu of replacement and applicable administrative fees per code Appendix (H).

   d. Tree replacement
      1. Violators shall replace the tree on a one to one diameter basis where replacement is required.

   e. Fee in lieu of tree replacement
      1. If the violator is unable to make a full replacement of a tree or trees as required by City Code and this manual, a fee in lieu of $100 per diameter inch shall be assessed.

D. How do I Plant a City Tree?

1. **What is NeighborWoods?**

   a. NeighborWoods is a free tree program that partners with citizens to plant trees in the street right of way.

2. **How can I have a NeighborWoods tree planted in front of my property?**

   a. To request a street tree on city property complete the online Tree Request form at www.raleighnc.gov – Tree Request or call the Tree Planting Coordinator at 919-996-4115. When a specific tree planting request is received the Tree Planting Coordinator will assess the site and contact you with further information. You can also apply for a permit to plant the tree yourself (see # 5 below).

3. **Can I choose which species is planted in front of my house?**

   a. The Tree Planting Coordinator will provide a suitable list of trees for you to choose from. The available species are selected based on appropriate mature size for the site as well as urban tolerance, disease resistance, form and aesthetics.

4. **Can I request to have an entire block planted with trees?**

   a. Yes, to request a street tree on city property fill out the online Tree Request at www.raleighnc.gov – Tree Request.

5. **How can I plant a city tree in the right of way?**

a. To plant a tree yourself submit a Tree Impact Permit request online at www.raleighnc.gov – search Tree Impact Permit. The planting site is evaluated by an arborist. If approved a Tree Impact Permit with planting provisions is issued to plant and establish the tree at the applicant's expense.

E. Development and Plan Review

1. **What is the process of obtaining a Tree Impact Permit for new buildings and other development projects?**

   a. Apply online for a Tree Impact Permit

   b. See Chapter 3 Development Plan and Landscape Requirements

2. **What is an urban tree pit and why is it required?**

   a. The urban tree pit expands the tree root area beneath the sidewalk a minimum of 600 cubic feet for sustainable street trees.

      1. Providing these resources in the tree pit improves the health and vigor of the tree and reduces replacement and maintenance costs. As a result the tree grows and provides more benefits in air and water quality, storm water mitigation, energy reduction and cooling.

   b. Find the specifications in Appendix B

3. **What are the recommended street tree species?**

   a. See Appendix D

4. **What is the minimum requirement in cubic yards for subsurface tree root space under the sidewalk?**

   a. 600 cubic feet minimum
   b. Find the specifications in Appendix B and C

5. **Where can I find the tree installation and maintenance specifications?**

   a. Chapter 2 Tree Planting Policy and in Appendix B

F. Sidewalks

1. **Am I responsible to repair the sidewalk in front of my house if the city tree damages it?**

   a. No, if your sidewalk is heaved by a city tree the city will make the repair. Contact Public Works at 919-996-6446 or complete the online form.

G. Tree Health

1. **How can I protect the tree in front of my house from getting damaged?**

   a. Provide a maximum of 3" thick mulch ring around the tree (avoid piling around base) and avoid string trimmer or mower damage to the roots or trunk. Provide supplemental water during periods of drought or excessive heat. Do not cut, drive over or park on roots. See Chapter 2 Section F for maintenance requirements.

2. **What if I see someone harming a city tree?**

a. Contact the Urban Forester immediately at 919-996-4115 or Trees@raleighnc.gov. This is destruction of city property and subject to penalties.

3. **The tree in front of my house just looks unhealthy. What should I do?**

   a. Submit a Tree Request online at www.raleighnc.gov – search Tree Request or call 919-996-4115. An ISA Certified Arborist will evaluate the tree and notify you with a timeline for action.

4. **What do I do if I find insects in a tree (e.g. beetles, caterpillars, bees)?**

   a. The city typically does not apply pesticides to city trees.

   b. Submit a Tree Request online at www.raleighnc.gov – search Tree Request. An ISA Certified Arborist will evaluate the tree.

      1. This is especially important for insects you have not seen before. There are several invasive pests that threaten our urban forests. Call for an evaluation.

   c. Certain insects have different life cycle stages that may cause them to be a nuisance for a brief period of time. They may have little to no long term effects on the overall tree health and longevity.

   d. Please note that it is illegal to kill honey bees.

H. Trees and Existing Infrastructure

1. **811 Call Before You Dig**

   a. **How do I locate underground utilities?**

      1. Call 811 or visit http://nc811.org for free locator service

2. **My sewer is clogged or broken and I suspect that roots from the street tree in front of my house are the cause. Can I have the tree removed?**

   a. The City of Raleigh is responsible for breaks in water and sewer mains in the street, but the property owner is responsible for breaks on private property. For breaks contact the Public Utilities Operations Division at 919-250-2737. For more information contact publicutilityinfo@raleighnc.gov or 919-996-4540.

   b. The Parks, Recreation and Cultural Resources Department does not give permission to remove healthy trees, even if their roots are growing into a sewer line on private property. Tree roots may grow into a sewer line if there is already a leak because they follow water availability. The best way to prevent this from occurring is to have your sewer line repaired. Please be aware that removing a tree is prohibited without a permit.

CHAPTER 1 PERMITS AND PROCEDURES

A. Tree Impact Permit

A. 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.

B. The Tree Impact Permit fee is $100. The permit fee is waived for individual residential tree planting.

C. 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.

D. For tree planting permits the applicant shall provide documentation of approval from any applicable regulatory agency. Examples include approved development plans, planting on State roads, sight distance hazards, conflict with lighting plans, overhead utility lines or other infrastructure.

E. Denial of permit: If a Tree Impact Permit is denied, the Urban Forester shall provide a written denial to the applicant. See 9-8009 of code (Appendix G) for appeals process.

F. Violating any provision of the permit shall be subject to the provisions as described in Chapter 4 Enforcement and Section 9-8011 Enforcement of the City of Raleigh code (Appendix G).

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.

2. **Development and Landscape Plan Requirements** are described in Chapter 3.

C. Municipal Code

1. The municipal code Part 9, Chapter 8: Trees and Vegetation is located in Appendix G.

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

D. Appeals

1. In the event any person is dissatisfied with a decision of the Urban Forester involving the application or interpretation of this document or the city code, such person may make a written request to the Parks Superintendent for review within ten (10) days.

2. If the Parks Superintendent further denies the permit, the applicant may appeal the decision in writing to the Parks, Recreation and Cultural Resources Director within ten (10) days.

3. Appeal of permit denial: The appeal shall include justification for the appeal and an independent report from an ISA Certified Arborist to support the app

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**

   a. 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**

   a. 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. Examples of partnership plantings include but are not limited to the following:

   b. Trees Across Raleigh: A non-profit organization that collaborates with the City of Raleigh to plant in the city rights-of-way and city parks.

   c. Adopt-a-Park / Adopt-a-Stream: Cooperative agreements between the City and volunteer groups to plant trees along greenways and other city rights-of-way.

   d. NeighborWoods Street Tree Planting Program: A cooperative program between the City and its residents to plant trees along city right of ways. Participation in this program does not 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. Large maturing species are not permitted under overhead power lines.

    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 Appendix B and C and the American National Standards for Tree Care Operations, ANSI A300 and Nursery Stock, ANSI Z60.1.

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 Burlapped (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 shall observe trees and shrubs 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 or shrubs 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. **Detailed Tree Specifications** Appendix B

   a. Tree Planting
   b. Urban Tree Planting
   c. Tree Grate
   d. Tree Protection Fence

2. **Linear Spacing and Location**

   a. Street trees shall be planted 40' on center unless otherwise specified in the Unified Development Ordinance or NeighborWoods program.

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

   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

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’
Table 1. Continued **Buried Utility Lines that Traverse the Planting Strip**	
Water & sewer	10'
Sewer easements	Planting prohibited
All other services	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. No utilities or electrical conduits are permitted within the tree pit or grate. Utilities may run below and through the subsurface root expansion infrastructure.
4. 600 cubic feet of organic soil in the immediate area where tree is to be placed.

e. **Required Subsurface Root Expansion**

1. High quality top soil or structural soil shall be used to accomplish the soil volume requirement.
2. Require **minimum 600 cubic feet**. Select one or more options below (Appendix C specifications).

a. Structural Soil

b. Subsurface Soil containment structure

c. Root pathways

1. Use in areas only where connections to available soil space achieves the 600 cubic feet requirement.

2. 6 paths from each tree, 20’ minimum extension for each path. Connect to adjacent pit path.

3. 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 top soil suitable for successful growth.

2. If soil on site is suitable it may be mixed at a rate of 50% with high quality top 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.

Table 2: Suggested Trees for the City of Raleigh

Large Maturing Trees	Medium Maturing Trees	Small Maturing Trees
Not appropriate under power lines	Not appropriate under power lines	Appropriate under power lines
Mature in excess of 60' in height	**Mature between 40' and 50' in height**	**Mature between 15' and 35' in height**
**American elm, *Ulmus americana*	American holly, *Ilex opaca*	Carolina silverbell, *Halesia tetraptera, H. carolina*
Bald cypress, *Taxodium distichum*	**Chinese elm, *Ulmus parvifolia*	Chinese pistache, *Pistachia chinensis*
Black gum, *Nyssa sylvatica*	European hornbeam, *Carpinus betulus*	Crepe myrtle, *Lagerstroemia spp., L. hybrids*
*Gingko, *Gingko biloba*	**Hackberry, *Celtis occidentalis*	**Dogwood, *Cornus spp.*
Magnolia, *Magnolia grandiflora*	Musclewood, *Carpinus caroliniana*	**Eastern redbud, *Cercis canadensis*
Oaks, *Quercus spp.*	Trident maple, *Acer buergerianum*	**Flowering cherry, *Prunus spp.*
**Red maple, *Acer rubrum*	**Zelkova, *Zelkova serrata*	Fringetree, *Chionanthus spp.*
River birch, *Betula nigra*		Japanese maple, *Acer palmatum*
Sugar maple, *Acer saccharum*		**Japanese snowbell, *Styrax japonica*
Tulip poplar, *Lirodendron tulipifera*		***Magnolia, *Magnolia spp.*
		**Oklahoma redbud, *Cercis reniformis*
*Male/Fruitless only		Purple blow maple, *Acer truncatum*
**Cultivars or hybrids must be selected for form and/or disease resistance		Serviceberry, *Amelanchier grandiflora*
***Small maturing species/cultivars only		
		Approximate spacing between trees: Mature crown spread and rooting area must be considered when spacing between trees and in proximity to infrastructure.
Minimum spacing requirements		
Small maturing trees 15'+		
Medium maturing trees 25'+		
Large maturing trees 30'+		

E. Maintenance and Warrantee 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 warrantee 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**

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 the 2 year warrantee/maintenance period shall get a full 1 year of warrantee/maintenance from the time of planting.

c. Dead, dying, diseased or vandalized trees that are destroyed shall be removed within 15 business days.

d. Species may be changed with approval from Urban Forester or designee.

F. 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. Signage necessary every 50' *Do Not Enter Tree Protection Zone.*

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

1. 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.

2. Other requirements for development are addressed through the Development Services Guide, Unified Development Ordinance and the Street Design Manual.

3. Required trees shall not be planted on existing or proposed water and sewer easements.

4. 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.

5. For residential and commercial construction projects that also impact driveways, sidewalks, street cuts and street closings (with or without parking) see Right of Way Permits.

6. **Application 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.

   a. Submit Tree Impact Permit Request to the Urban Forester

   b. Plan Requirements

      i. Identify property boundaries and rights of way

      ii. Label streets and other plan elements

      iii. Overhead utilities and lighting plan

      iv. Identify trees for demolition and preservation

      v. Depict the required site distance triangles

      vi. Depict tree protection zones and fencing detail (Appendix C, PRCR 01-02)

      vii. Tree species including botanical name, installation size and counts

      viii. Urban tree pit detail and subsurface root treatment if applicable. (Appendix C, PRCR 07-08)

      ix. Adherence to tree quality specifications (Chapter 2)

      x. Adherence to tree planting and maintenance specifications and detail (Appendix C, PRCR 03)

c. Timeline

   i. Allow approximately 10 business days for permit review and processing.

d. Fees

   i. $100 Tree Impact Permit fee due prior to permit issue.

   ii. The street tree fee in lieu and payment process is listed in the City of Raleigh 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

No person is allowed to impact a city tree without 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 Forester.

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 (9-8009, Appendix G).

   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.

   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 a $100 Administrative Fee and any other applicable fees or remediation as determined by the Urban Forester. Fees shall be paid to the City within 30 days of notice.

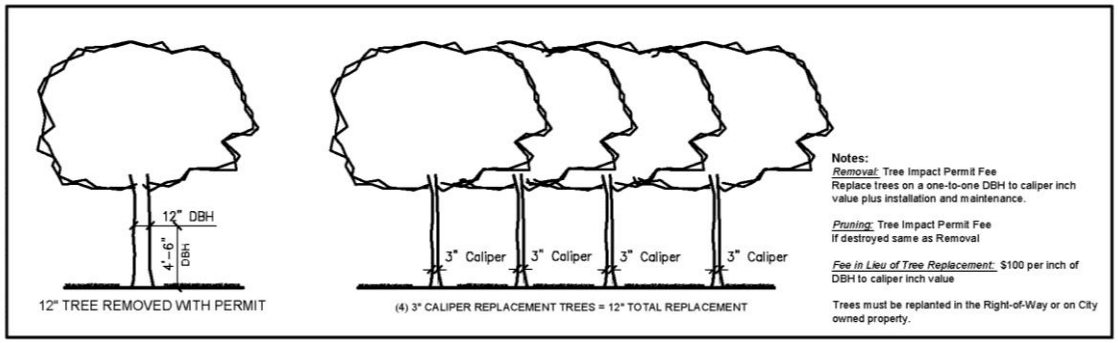
4. **Value assessment for tree disturbing activity**

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

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.

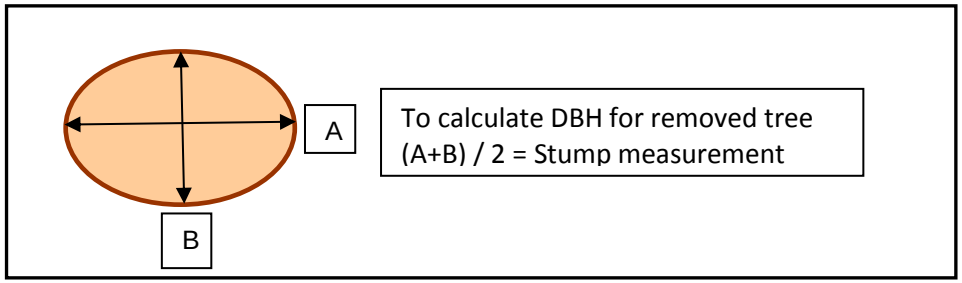
b. Remediation includes but is not limited to:

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

Figure 2. Stump measurement to calculate DBH for removed tree



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 (9-8007, 9-8008, Appendix G).

   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 Appendix G

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 of one hundred dollars ($100). 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 Public Works Department. Requests for trees that require pruning or removal utilizing equipment and expertise beyond the capability of the Transportation Division 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 Housing and Environmental Code Enforcement 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

A Tree Impact Permit is required to perform work on city trees

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. **Street Lights**

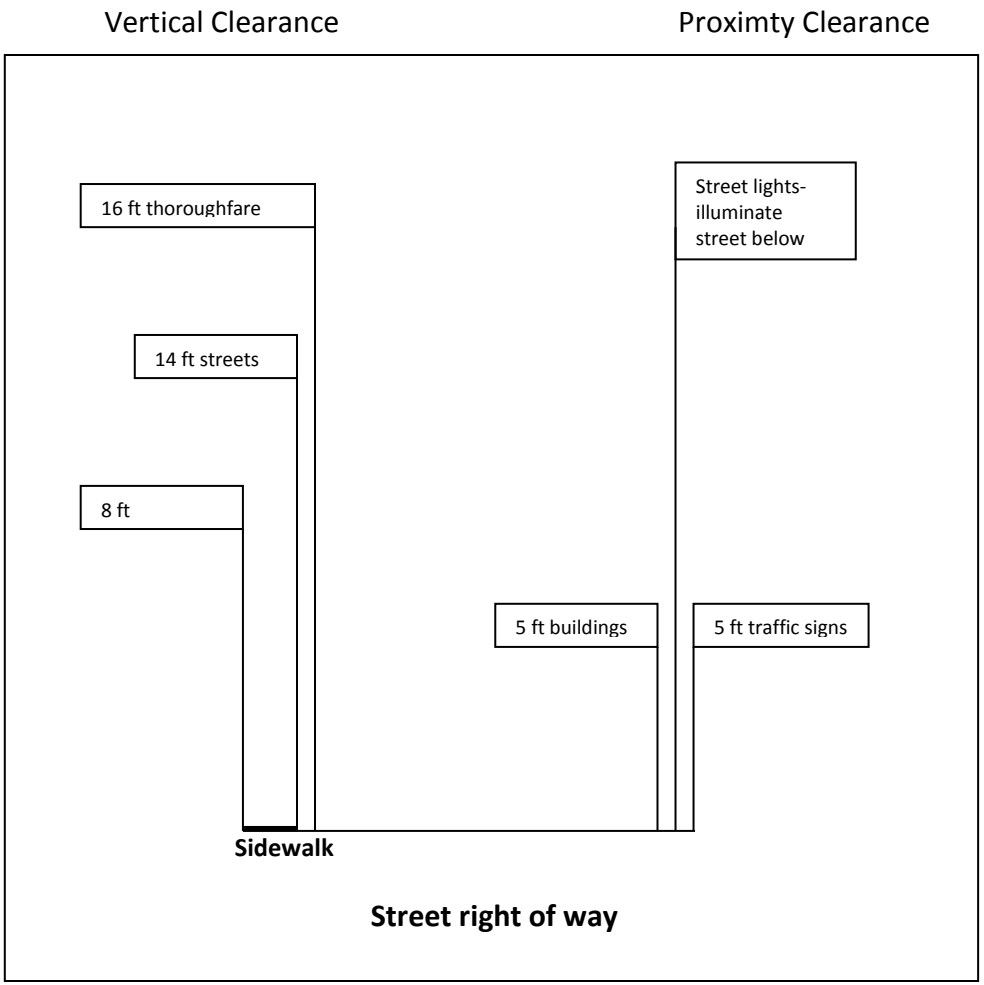
   i. Prune to allow for the optimal designed illumination of the street below. Any illumination of private property is incidental to the primary function of the street light and shall not require pruning.

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



D. 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 (Figure 4- PRCR 05). 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

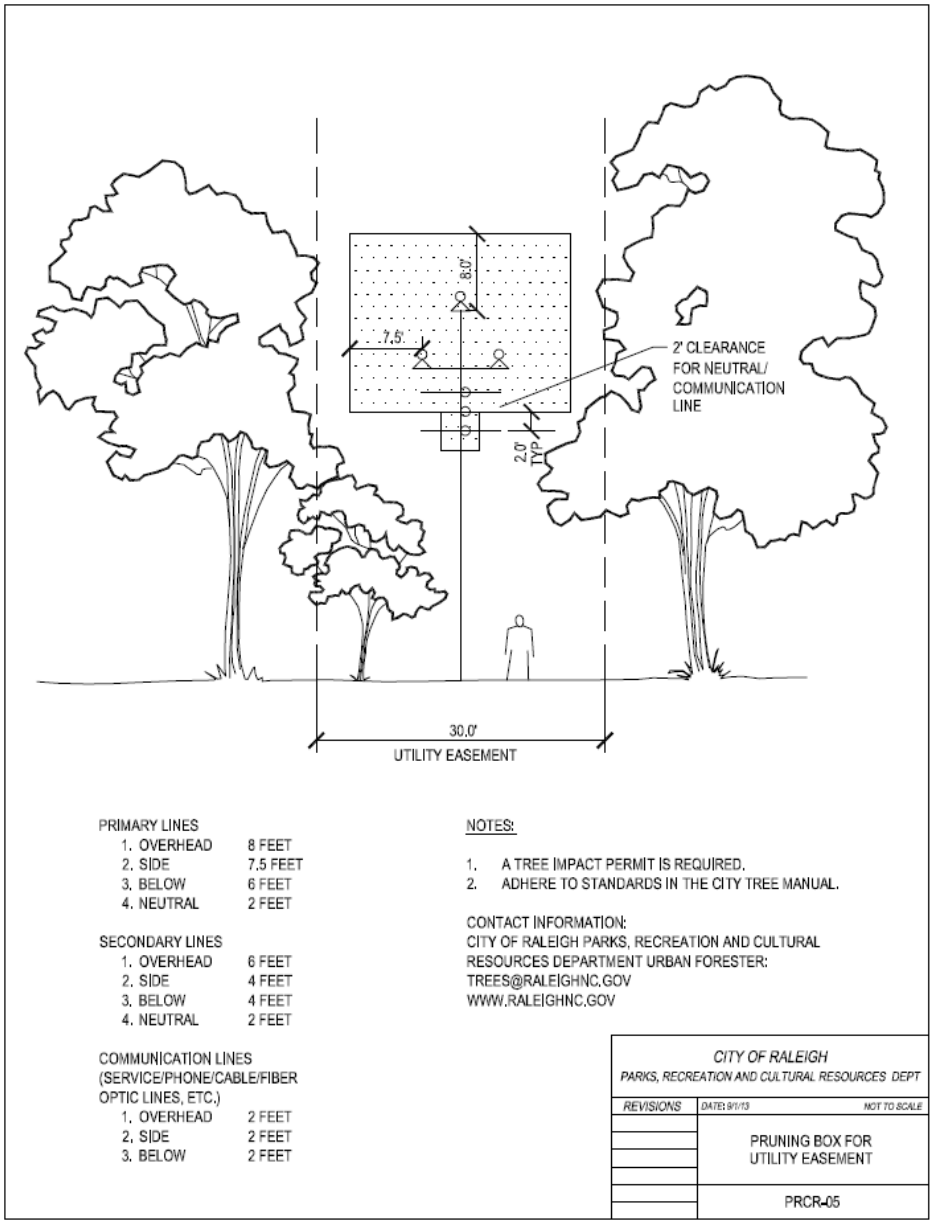
ii. Secondary Lines

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

Figure 4. Pruning standards applied to trees adjacent to utilities



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. The property owner may file a claim with Risk Management 919-996-2240 (Administrative Directive September 9th, 1999).

5. For Appeals see code section 9-8009, Appendix G.

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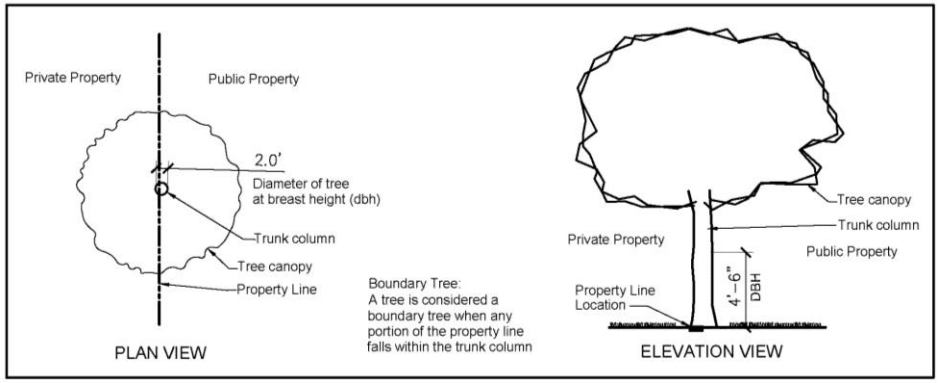
APPENDIX A DEFINITIONS

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:

    a. Removes more than twenty-five (25) per cent of the crown system of a tree.
    b. Removes, cuts, or covers more than twenty-five (25) per cent of the root system of a tree.
    c. 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).

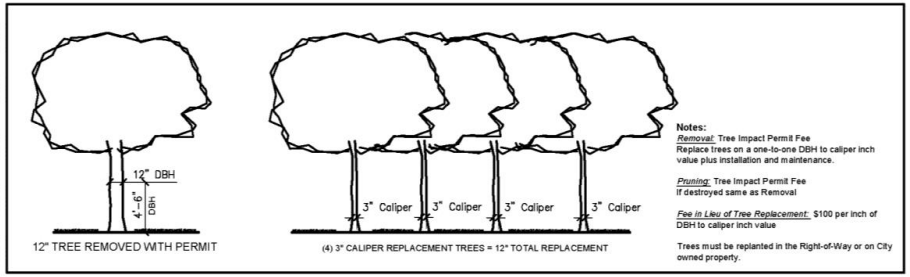


Figure 1: One-to-one DBH to caliper inch

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: Administered by Urban Forestry Specialists in the Planning Department. Regulates tree conservation on private property.

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.

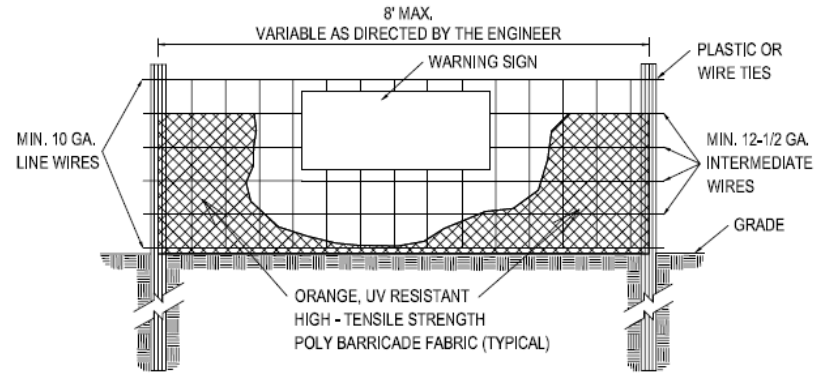
b. Single-stem understory trees planted to meet the landscaping requirements must have a minimum caliper of 1½ inches and be at least six feet tall at time of planting.

c. Multi-stem understory trees planted to meet the landscaping requirements must be at least six feet tall at time of planting.

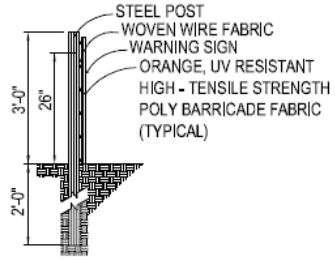
30. URBAN FORESTRY: The management and maintenance of trees for their contribution to the environmental, sociological, and economic well-being of urban society. Includes wooded areas, groups of trees, and individual trees.

APPENDIX B TREE DETAILS AND SPECIFICATIONS FOR PLAN

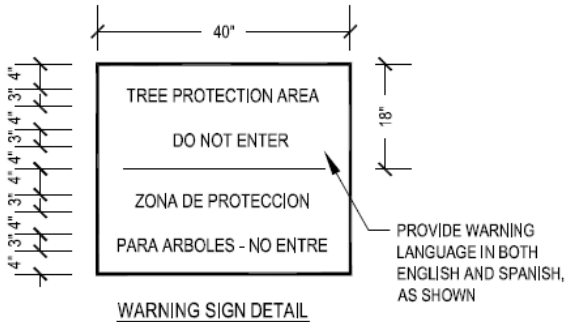
***Details and specifications are subject to updates as technology improves. The most current versions shall be used. Current versions are available**



FRONT VIEW



SIDE VIEW



WARNING SIGN DETAIL

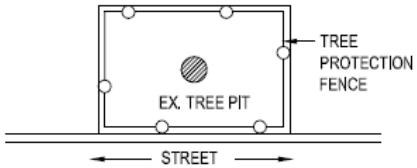
NOTES;

1. TREE PROTECTION FENCING MUST BE INSTALLED AT A MINIMUM RADIUS OF THE CRITICAL ROOT ZONE (CRZ) OF TREES. (CRZ DEFINED AS RADIUS x 1.25' (FT) PER INCH AT DBH FROM TRUNK OF TREE, SEE TREE PROTECTION FENCE LAYOUT DETAIL)
2. IF CONSTRUCTION OCCURS WITHIN THE CRZ AT LEAST 12" OF MULCH AND/OR LOGGING MATTS SHALL BE PLACED WHERE MACHINERY MANEUVERS TO REDUCE SOIL COMPACTION IN THIS ZONE.
3. THE TREE PROTECTION FENCING MUST NOT BE VIOLATED FOR THE ENTIRE DURATION OF THE PROJECT WITHOUT APPROVAL FROM URBAN FORESTRY STAFF.
4. THERE WILL BE ZERO TOLERANCE FOR STORING OR PARKING VEHICLES, SUPPLIES, OR EQUIPMENT UNDER PROTECTED TREES.
5. IMPACT PROTECTION DEVICES MUST BE REMOVED AFTER CONSTRUCTION.
6. WARNING SIGNS TO BE MADE OF DURABLE, WEATHERPROOF MATERIAL. LETTERS TO BE 3" HIGH MINIMUM, CLEARLY LEGIBLE AND SPACED AS SHOWN.
7. SIGNS SHALL BE PLACED AT 50' MAXIMUM INTERVALS. PLACE A SIGN AT EACH END OF LINEAR TREE PROTECTION AND 50' ON CENTER THEREAFTER, FOR TREE PROTECTION AREAS LESS THAN 200' IN PERIMETER, PROVIDE NO LESS THAN ONE SIGN PER PROTECTION AREA.
8. ATTACH SIGNS SECURELY TO FENCE POSTS AND FABRIC. MAINTAIN TREE PROTECTION FENCE THROUGHOUT DURATION OF PROJECT.
9. A TREE IMPACT PERMIT IS REQUIRED.
10. ADHERE TO STANDARDS IN THE CITY TREE MANUAL.

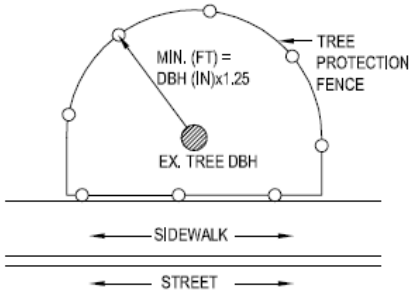
CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER:
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH
PARKS, RECREATION AND CULTURAL RESOURCES DEPT

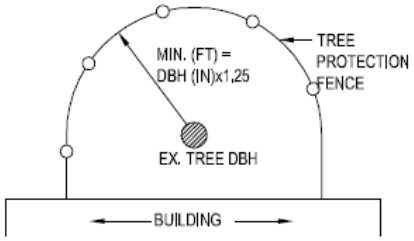
REVISIONS	DATE: 6/30/13	NOT TO SCALE
	TREE PROTECTION FENCE	
	PRCR-01	



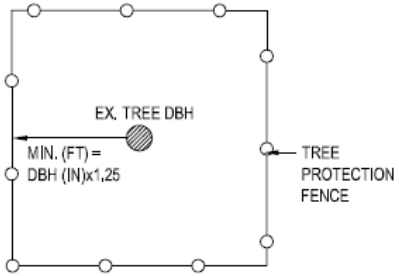
A. IN TREE PIT



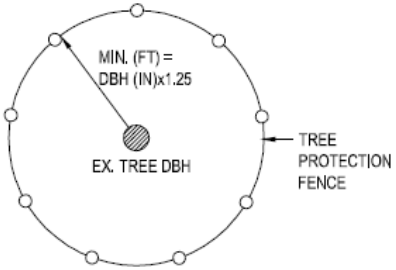
B. BY SIDEWALK



C. BY BUILDING



D. SQUARE LAYOUT



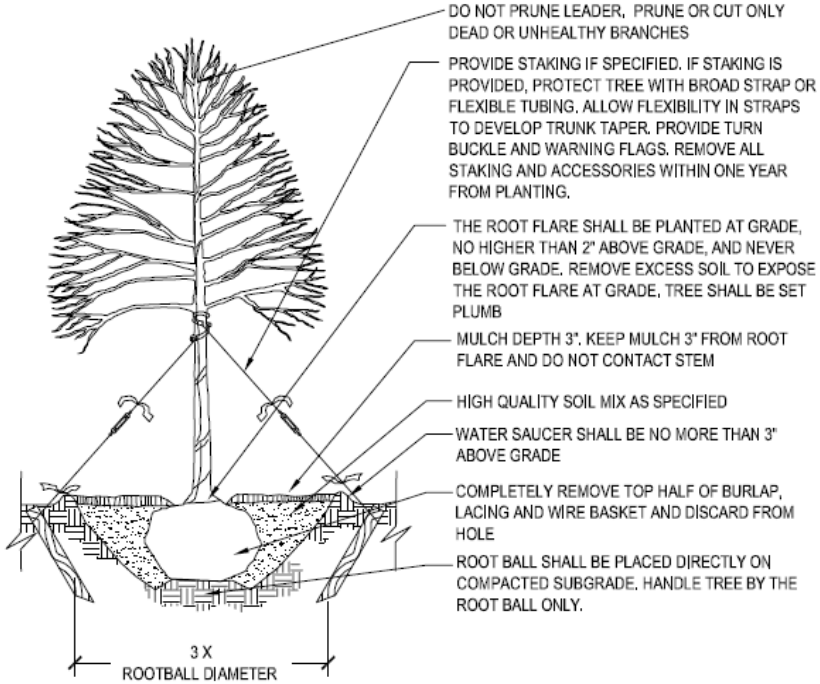
E. CIRCULAR LAYOUT

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND
CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER: TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

NOTES:

1. CONTRACTOR MUST PROVIDE AND INSTALL TREE PROTECTION SIGNAGE.
2. A TREE IMPACT PERMIT IS REQUIRED PRIOR TO INITIATION OF CONSTRUCTION IF ANY TREES ON CITY PROPERTY ARE TO BE IMPACTED BY PRUNING, TRENCHING, BORING, REMOVAL, PAVING, PLANTING, ETC.

CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPT	
REVISIONS	DATE: 6/30/13 NOT TO SCALE
	TREE PROTECTION FENCE LAYOUT
	PRCR-02

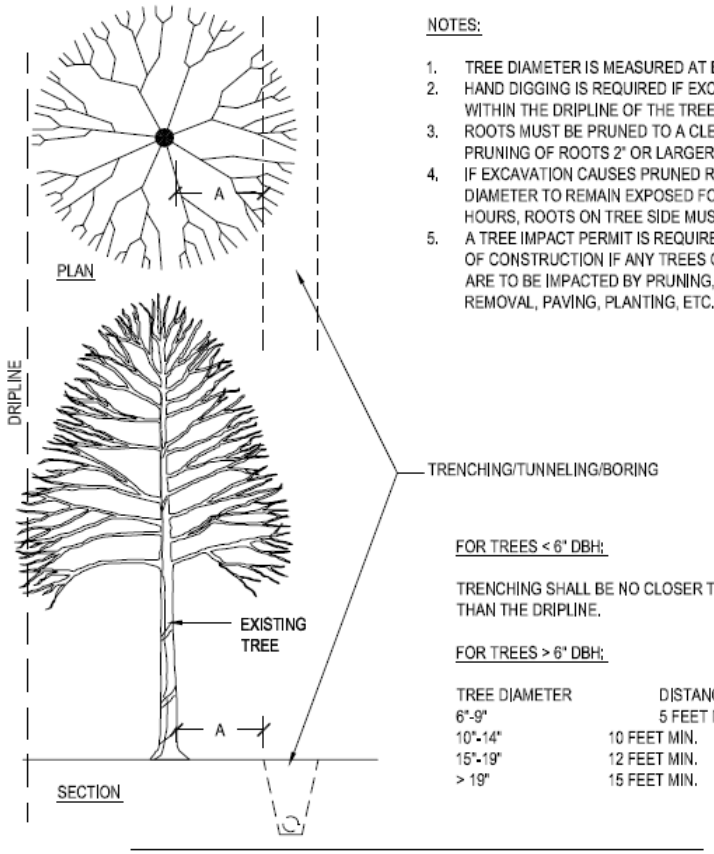


NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR ADEQUATE DRAINAGE OF ALL PLANTING PITS. (POSITIVE DRAINAGE AWAY FROM PIT)
2. ADHERE TO STANDARDS IN THE CITY TREE MANUAL.
3. STREET TREES MUST BE 3" CALIPER AT INSTALLATION WITH A 5' MINIMUM FIRST BRANCH HEIGHT.
4. PLANTING SEASON OCTOBER - APRIL.
5. A TREE IMPACT PERMIT IS REQUIRED.
6. ELECTRICAL OUTLETS AND OTHER UTILITIES ARE PROHIBITED IN THE PLANTING AREA IMMEDIATELY SURROUNDING THE TREE.

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT URBAN FORESTER:
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPT	
REVISIONS	DATE: 9/1/13 NOT TO SCALE
	TREE PLANTING DETAIL
	PRCR-03



NOTES:

1. TREE DIAMETER IS MEASURED AT BREAST HEIGHT (DBH).
2. HAND DIGGING IS REQUIRED IF EXCAVATION OCCURS WITHIN THE DRIPLINE OF THE TREE.
3. ROOTS MUST BE PRUNED TO A CLEAN CUT. CUTTING OR PRUNING OF ROOTS 2" OR LARGER IS PROHIBITED.
4. IF EXCAVATION CAUSES PRUNED ROOTS OVER 1.5" IN DIAMETER TO REMAIN EXPOSED FOR MORE THAN 24 HOURS, ROOTS ON TREE SIDE MUST BE KEPT MOIST.
5. A TREE IMPACT PERMIT IS REQUIRED PRIOR TO INITIATION OF CONSTRUCTION IF ANY TREES ON CITY PROPERTY ARE TO BE IMPACTED BY PRUNING, TRENCHING, BORING, REMOVAL, PAVING, PLANTING, ETC.

FOR TREES < 6" DBH:

TRENCHING SHALL BE NO CLOSER TO THE TREE THAN THE DRIPLINE.

FOR TREES > 6" DBH:

TREE DIAMETER	DISTANCE "A"
6"-9"	5 FEET MIN.
10"-14"	10 FEET MIN.
15"-19"	12 FEET MIN.
> 19"	15 FEET MIN.

CONTACT INFORMATION:
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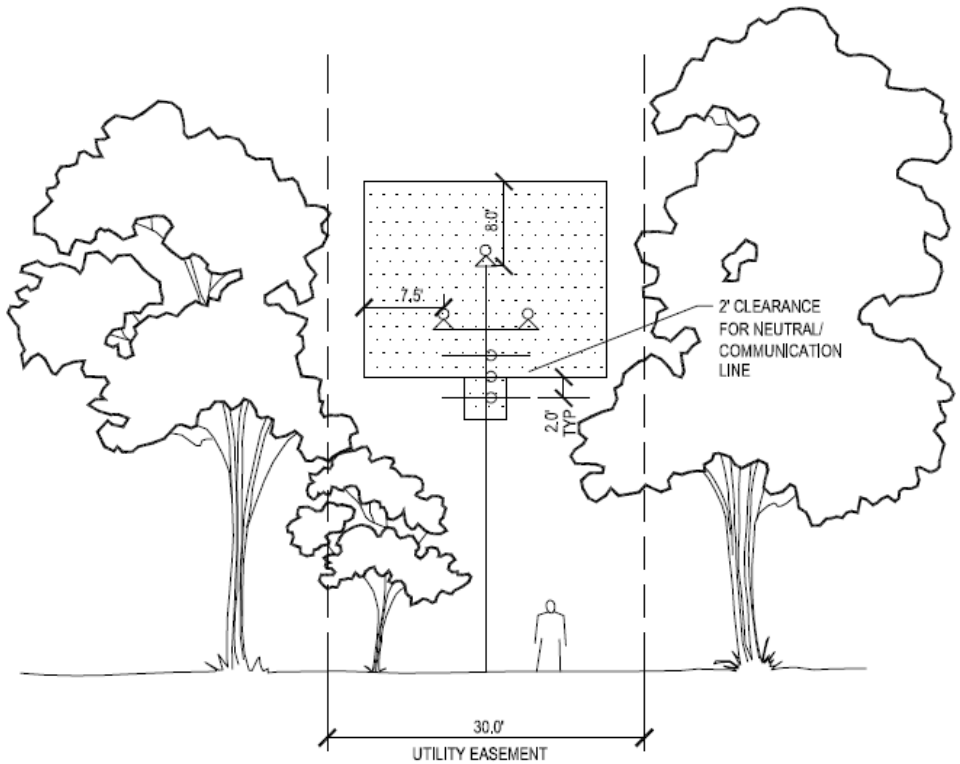
WWW.RALEIGHNC.GOV

CITY OF RALEIGH
PARKS, RECREATION AND CULTURAL RESOURCES DEPT

REVISIONS	DATE: 9/1/13 NOT TO SCALE
	TRENCHING/TUNNELING NEAR EXISTING TREES
	PRCR-04



PRIMARY LINES

1. OVERHEAD	8 FEET
2. SIDE	7.5 FEET
3. BELOW	6 FEET
4. NEUTRAL	2 FEET

SECONDARY LINES

1. OVERHEAD	6 FEET
2. SIDE	4 FEET
3. BELOW	4 FEET
4. NEUTRAL	2 FEET

COMMUNICATION LINES
(SERVICE/PHONE/CABLE/FIBER
OPTIC LINES, ETC.)

1. OVERHEAD	2 FEET
2. SIDE	2 FEET
3. BELOW	2 FEET

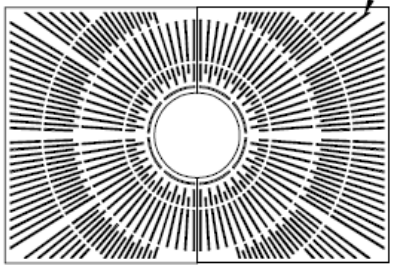
NOTES:

1. A TREE IMPACT PERMIT IS REQUIRED.
2. ADHERE TO STANDARDS IN THE CITY TREE MANUAL.

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL
RESOURCES DEPARTMENT URBAN FORESTER:
TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH
PARKS, RECREATION AND CULTURAL RESOURCES DEPT

REVISIONS	DATE: 9/1/13 NOT TO SCALE
	PRUNING BOX FOR UTILITY EASEMENT
	PRCR-05



GREY IRON, RECTANGULAR 4'X6', 1.5" MIN. THICK, WITH 1/2" OPENING OR LESS

NOTES:

1. GRATE DESIGN MUST BE ADA COMPLIANT.
2. GENERAL PATTERN DESIGN MUST BE AS SHOWN.
3. EXCEPTIONS OR PERSONALIZATION MUST BE REVIEWED AND APPROVED BY THE CITY OF RALEIGH.
4. A TREE IMPACT PERMIT IS REQUIRED.
5. ADHERE TO STANDARDS IN THE CITY TREE MANUAL.
6. ELECTRIC OUTLETS AND OTHER UTILITIES ARE PROHIBITED IN THE GRATE AREA.

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT URBAN FORESTER;TREES@RALEIGHNC.GOV
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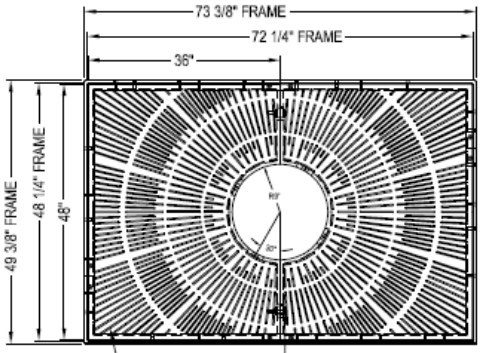
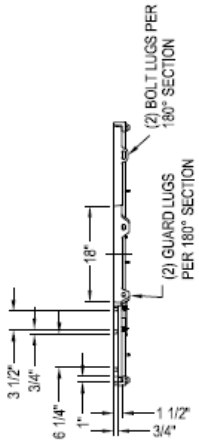
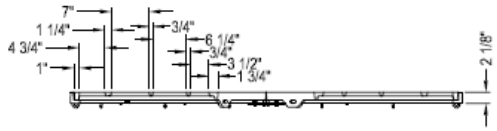


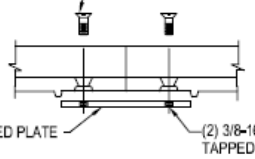


BOLT TREE GRATE HALVES TOGETHER w/ (2) 1/2"-13 x 3" STNL. STL. HEX BOLTS, GALV, FLAT WASHERS AND STNL, STL, HEX NUT



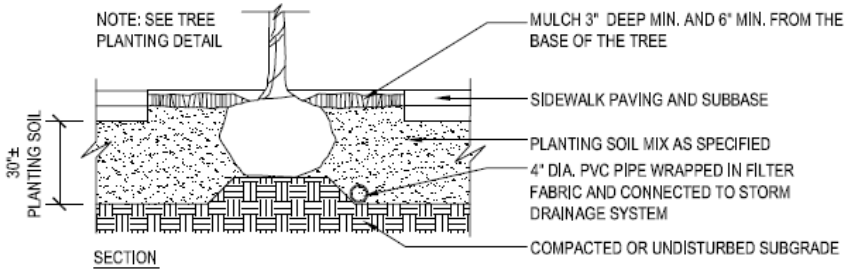
NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 608#/SET

FRAMES ARE ASSEMBLED USING A 6" X 1 1/4" X 1/4" THICK STEEL PLATE BOLTED TO FRAME w/ (2) 3/8-16UNC X 1 STNLS STL. FLAT HD. CAP SCREWS



ASSEMBLY DETAIL

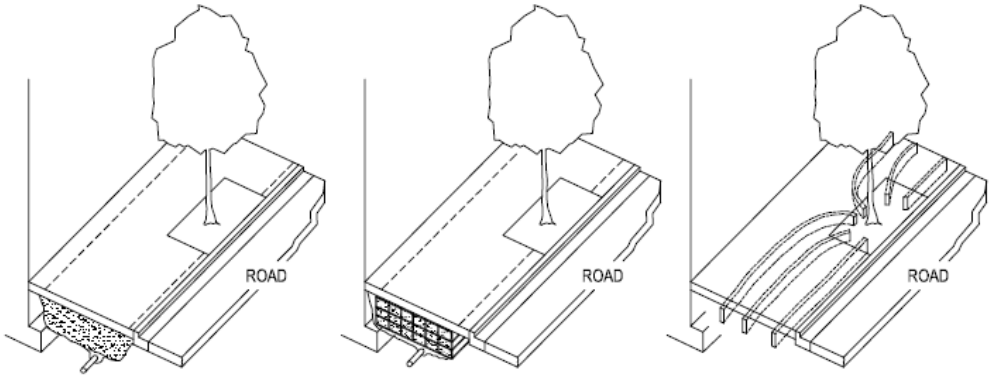
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPT	
REVISIONS	DATE: 6/30/13 NOT TO SCALE
	TREE GRATE IN SIDEWALK WITHIN ROW
	PRCR-06



SECTION

NOTES:

1. A SITE SPECIFIC PLAN MUST BE DEVELOPED TO ENSURE THAT:
   - 1.1. EACH TREE IS PROVIDED A MIN. ROOT-ACCESSIBLE SOIL VOLUME OF 600 CUBIC FEET OR A MINIMUM OF 6 ROOT PATHS.
   - 1.2. THE TREE ROOT AREA BENEATH THE SIDEWALK IS EXPANDED TO MAXIMIZE ROOT ACCESSIBLE SOIL SPACE UNDER THE PAVEMENT.
   - 1.3. CONNECT SOIL SPACE FOR ROOT EXPANSION WHERE POSSIBLE TO ALLOW ROOT SYSTEMS OF TREES TO OVERLAP AND COLONIZE A SHARED SOIL SPACE.
   - 1.4. ANY COMBINATION OF STRUCTURAL SOILS, SOIL CONTAINMENT SYSTEM (e.g., SILVA CELL), OR ROOT CHANNELING (e.g., SOIL STRIP DRAIN/AERATION SYSTEM) THAT PERFORMS AS SPECIFIED IS ACCEPTABLE.
3. 40' X 6' WIDTH MINIMUM APPLIES TO BOTH STRUCTURAL SOILS AND SUBSURFACE SOIL CONTAINMENT SYSTEMS.
4. SUBSURFACE APPLICATION SHALL BE REVIEWED AND APPROVED BY CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES URBAN FORESTRY DIVISION PRIOR TO INSTALLATION.



STRUCTURAL SOIL SYSTEM | SOIL CONTAINMENT SYSTEM | ROOT CHANNELING/PATHWAYS

CONTACT INFORMATION:
CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPARTMENT
URBAN FORESTER: TREES@RALEIGHNC.GOV
WWW.RALEIGHNC.GOV

CITY OF RALEIGH PARKS, RECREATION AND CULTURAL RESOURCES DEPT	
REVISIONS	DATE: 9/1/13 NOT TO SCALE
	TREE PLANTING IN SIDEWALK WITHIN R.O.W.
	PRCR-07

APPENDIX C TREE PIT AND SUBSURFACE ROOT EXPANSION FOR SUSTAINABLE TREES

- REQUIRED FOR ALL TREE PITS IN SIDEWALK AND HARDSCAPE
- Pre-approval by the Urban Forester is required.
- High quality top soil or structural soil shall be used to accomplish the minimum 600 cubic feet soil volume requirement.
- Exceptions are encouraged to achieve soil volume.
- Designs that group trees and connect root spaces will be favored.
- The following options show examples only.

1 STRUCTURAL SOIL Pg. 56

Products Pg. 57
Installation Pg. 58

2 ROOT PATHWAYS Pg. 60

3 SOIL CONTAINMENT AREA & SUSPENDED PAVEMENT Pg. 62

1 STRUCTURAL SOIL (Example Product Specifications)

Structural soil is designed to support the weight of walks, roads, pedestrians and vehicles, as well as provide a well-aerated soil substrate for tree root growth. In structural soil, weight is transferred from one aggregate to another with enough soil to almost fill the space between the aggregates.

EXPANDED SLATE STRUCTURAL SOIL FOR TREES

PART 1 - GENERAL

DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.
B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
C. Planting Soil: Standardized topsoil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
D. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
E. Subsoil: Usually all soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
F. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

ACTION SUBMITTALS

A. Product Data: For each type of product indicated.
B. Expanded Slate Structural Soil:
    1. Include product label and manufacturer's installation instructions specific to this Project.

INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer.

1. Product Certificates: For soil amendments and fertilizers from manufacturer.
2. Material Test Reports: For imported or manufactured topsoil.

B. Submit manufacturer's technical product data and certified laboratory test results for the following:

1. 3/4" Expanded Slate
2. Sandy Clay Loam
3. Backfill topsoil

C. Sample: Provide one (1) quart of each kind of structural soil in heavy duty clear resealable plastic freezer storage bags labeled, “Structural Soil”, and the type and the project name.

QUALITY ASSURANCE

A. Provide structural soil mix prepared by a firm regularly engaged in the production of the specified items.

B. Pre-installation Conference: Conduct at the Project site.

DELIVERY, STORAGE AND HANDLING:

A. When stockpiling finished planting mix, cover with plastic tarps to prevent drying out or soil separation from rainfall.

B. Install planting mix within 48 hours of mixing.

C. Do not deliver or place soil in frozen, wet, or muddy conditions.

PART 2 – PRODUCTS

2.1 GENERAL PRODUCT REQUIREMENTS

A. Provide a structural planting soil using the two components listed below that meet ASTM standards as follows:

1. 3/4” Expanded Slate 80%
2. Sandy Clay Loam 20%
3. Percentages of sand and clay may vary to meet test requirements.

B. Compaction: When calculating the volume necessary for the project, add approximately 18% to the calculated volume to allow for compaction which occurs during installation due to driving small equipment over the product, in addition to the natural settling process.

2.2 STRUCTURAL SOIL COMPONENTS:

A. Size 3/4” Rotary Kiln Expanded Slate

1. Only non-hazardous fuels such as coal or natural gas may be used to process the slate.

2. Unit Dry Weight loose: 48 lb./c.f. to 55 lb./c.f. (ASTM C29)(Saturated surface loose: 55 lbs./c.f. to 60 lbs./c.f.)

3. Specific Gravity: 1.45 to 1.60, Dry bulk (ASTM C127)
4. Gradation: 3/4” - #4 size

Sieve Size	% Passing
1”	100

3/4”	90-100
3/8”	10-50
#4	0-10

5. Test for degradation loss using Los Angeles Abrasion testing in accordance with ASTM C-131 modified method FM 1-T096. No more than 28% of the weight of the aggregate must be lost to degradation.

B. Sandy Clay Loam:

Sandy Clay Loam is for mixing with structural soil only and not to be confused with “Planting Soil”

Texture:

40 - 65% sand
15 – 25% silt
20 – 35% clay
2 – 5 % organic matter

3.0 PREPARATION:

A. General:

1. Structural Soil is shown in a public right-of-way or easement. Obtain approvals from proper authorities before and after placing Structural Soil
2. Achieve 90% of maximum dry density for the subgrade. (ASTM D698)

B. Preparing Subgrade:

1. The subgrade shall be prepared according to the following procedure: Remove all organic matter, debris, loose material and large rocks.
2. Dig out soft and mucky spots and replace with suitable material.
3. Loosen hard spots; uniformly compact subgrade to 95% of its maximum dry density.

C. Perforated Underdrain System (if used):

1. Install under drain system, with sock or soil separator fabric, according to drawings and connected to storm drain.

3.3 INSTALLATION OF STRUCTURAL SOIL MIX:

A. General:

1. Install the soil drains ensuring the structural soil is properly compacted under and around each pipe.
2. Consider using root barriers if it is desired to avoid root penetration into adjacent utilities.

B. Placing and Compacting Structural Soil:

1. Place structural soil mix in horizontal lifts not exceeding 12 inches depth. Compact using a vibratory plate compacting machine. Perform a minimum of two passes, of not less than 10 seconds per pass, before moving the vibratory plate to the next adjacent location. Additional passes may be required should the field engineer determine additional compaction is necessary to insure stability of the layer. Continue placing and compacting 12 inch lifts until the specified depth is reached.

2. For large spaces, a vibratory steel roller weighing no more than 12 tons static weight can be used. Horizontal lifts should not exceed 12 inches compacted. The minimum number of passes is two and maximum number is four. Additional passes may be required should the field engineer determine additional compaction is necessary to insure stability of the layer.

3.4 CONCRETE PLACEMENT

B. The concrete sub base for the unit pavers or sidewalk can be placed as specified directly on the approved compacted structural soil.

3.5 TREE PIT PREPARATION:

A. Tree Pit Excavation:

1. Excavate the tree pit using the following procedure:

a. Excavate the structural soil mix to a depth equal to the height of the root ball of the tree to be planted. Remove the structural soil to within no more than one foot of the edge of the paved area.
b. Place the tree in the pit and backfill as described below as soon as possible.
c. No tree pit shall remain excavated for more than 2 hours unless forms are used.

B. Tree Pit Backfill Planting Mix:

Backfill tree pit using the following procedure:

a. Remove any wooden forms. Immediately place the tree in the pit as detailed and replace the excavated structural soil with either of the following:

b. Planting soil for trees as specified

c. Hand tamp the planting mix in 12 inch lifts until the pit is filled to the specified grade.

d. Do not use excavated soil as engineered fill to support paving or structures. Excess excavated structural soil mix may be used for other planting backfill operations.

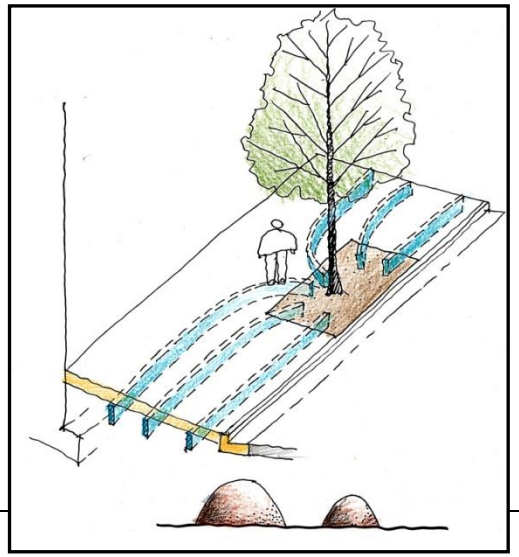
http://hort.ifas.ufl.edu/woody/documents/EP309.pdf
Photo and illustration Jim Urban, Urban and Associates

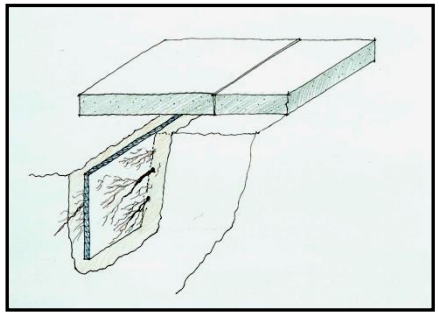
2 ROOT PATHWAYS

The following is adapted from Dr. Ed Gilman's Urban Design for a Wind Resistant Urban Forest publication number ENH 1056 at the University of Florida.

Root paths are narrow channels of loose soil that provide a small path for air that encourages root growth under pavement. A trenching machine is used to cut a trench through the compacted soil.

Aeration mats are then placed in the trenches, which are backfilled with loose soil once the mat is in place. Roots tend to follow the paths because they provide a channel for airflow adjacent to the mat; roots follow the air.





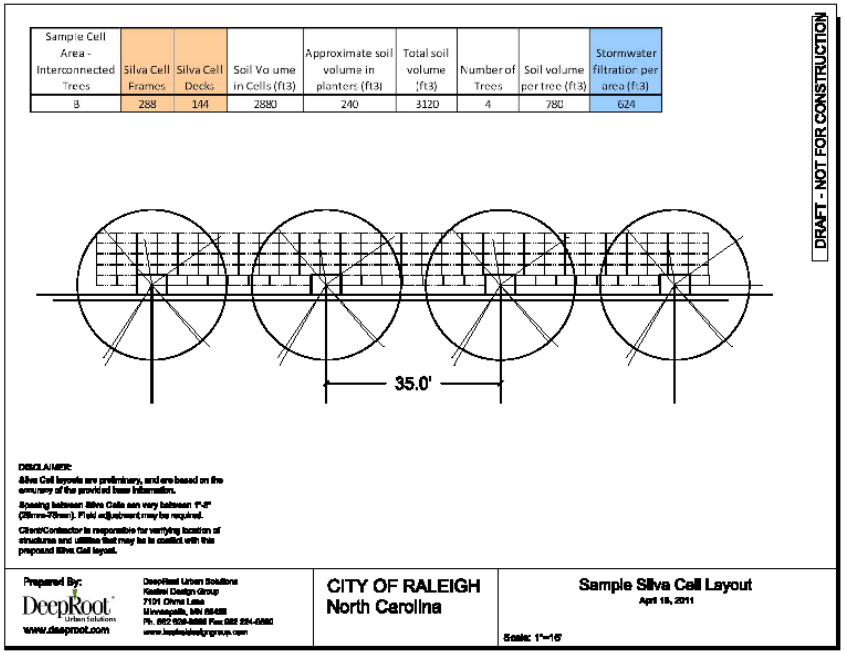
Photos provided by Alex Johnson, City of Durham Urban Forester

3 SOIL CONTAINMENT AREA AND SUSPENDED PAVEMENT

Sidewalk suspension or cantilever dramatically increases soil volume for trees and addresses the issue of compaction. There is no contact between the bottom of the sidewalk slab and the soil; the slabs rest on supports and pilings.

This allows the planting pit to be filled with well-aerated high quality soil. Suspending the sidewalk avoids issues with soil compaction so that roots can spread without interrupting the hardscape.

There are products available that both suspend the pavement and contain soil below the surface for root growth.

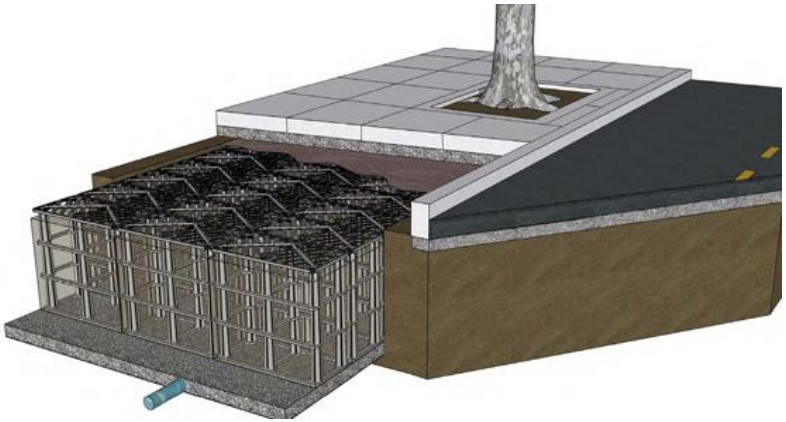


Sample Cell Area - Interconnected Trees	Silva Cell Frames	Silva Cell Decks	Soil Volume in Cells (ft3)	Approximate soil volume in planters (ft3)	Total soil volume (ft3)	Number of Trees	Soil volume per tree (ft3)	Stormwater filtration per area (ft3)
8	288	144	2880	240	3120	4	780	624

Sample only

Resources and references

1. Silva cell http://www.deeproot.com/



APPENDIX D RECOMMENDED TREES

Suggested Trees for the City of Raleigh

Large Maturing Trees	Medium Maturing Trees	Small Maturing Trees
Not appropriate under power lines	Not appropriate under power lines	Appropriate under power lines
Mature in excess of 60' in height	**Mature between 40' and 50' in height**	**Mature between 15' and 35' in height**
**American elm, *Ulmus americana*	American holly, *Ilex opaca*	Carolina silverbell, *Halesia tetraptera, H. carolina*
Bald cypress, *Taxodium distichum*	**Chinese elm, *Ulmus parvifolia*	Chinese pistache, *Pistachia chinensis*
Black gum, *Nyssa sylvatica*	European hornbeam, *Carpinus betulus*	Crepe myrtle, *Lagerstroemia spp., L. hybrids*
*Gingko, *Gingko biloba*	**Hackberry, *Celtis occidentalis*	**Dogwood, *Cornus spp.*
Magnolia, *Magnolia grandiflora*	Musclewood, *Carpinus caroliniana*	**Eastern redbud, *Cercis canadensis*
Oaks, *Quercus spp.*	Trident maple, *Acer buergerianum*	**Flowering cherry, *Prunus spp.*
**Red maple, *Acer rubrum*	**Zelkova, *Zelkova serrata*	Fringetree, *Chionanthus spp.*
River birch, *Betula nigra*		Japanese maple, *Acer palmatum*
Sugar maple, *Acer saccharum*		**Japanese snowbell, *Styrax japonica*
Tulip poplar, *Lirodendron tulipifera*		***Magnolia, *Magnolia spp.*
		**Oklahoma redbud, *Cercis reniformis*
*Male/Fruitless only		Purple blow maple, *Acer truncatum*
**Cultivars or hybrids must be selected for form and/or disease resistance		Serviceberry, *Amelanchier grandiflora*
***Small maturing species/cultivars only		
		Approximate spacing between trees: Mature crown spread and rooting area must be considered when spacing between trees and in proximity to infrastructure.
Minimum spacing requirements		
Small maturing trees 15'+		
Medium maturing trees 25'+		
Large maturing trees 30'+		

APPENDIX E NUISANCE TREES

Nuisance Trees and Invasive Species			
Use restricted for street trees		**Invasive species prohibited**	
Botanical name	Common name	*Botanical name*	Common name
Acer negundo	Boxelder	*Ailanthus altissima*	Tree of heaven
Acer saccharinum	Silver maple	*Albizia julibrissin*	Mimosa/Silk tree
Betula papyrifera	Paper (white) birch	*Eleagnus angustifolia*	Russian olive
Catalpa spp.	Catalpa	*Laburnum anagyroides*	Golden chain tree
Carya illinoinensis	Pecan	*Melia azedarach*	Chinaberry
Crateagus spp.	Hawthorn	*Paulownia tomentosa*	Princess tree
Diospyros virginiana	Persimmon	*Sapium sebiferum*	Chinese Tallow
Fraxinus pennslyvanica	Green Ash	*Sorbus* spp.	Mountain Ash
Ginkgo biloba	Ginkgo - female only	*Ulmus pumila*	Siberian Elm
Gleditsia tricanthos	Honey locust		
Juglans nigra	Black Walnut		
Liquidamabar styraciflua	Sweetgum		
Maclura pomifera	Osage Orange		
Malus spp.	Crabapple		
Morus spp.	Mulberry		
Pinus strobus	White pine		
Populus alba	White poplar		
Prunus spp.	Plum		
Pyrus calleryana 'Bradford'	Bradford pear		
Robinia pseudoacacia	Black Locust		
Quercus acutissima	Sawtooth Oak		
Salix spp.	Willow		

Restricted street trees: Species are restricted due to fruit or growth habit that may obstruct or impede vehicular and pedestrian traffic or routinely fail due to lack of hardiness.

Invasive plants: Exotic invasive plants are prohibited. You can find more information at the USDA National Invasive Species Information Center for North Carolina http://www.invasivespeciesinfo.gov/unitedstates/nc.shtml.

APPENDIX F TREE IMPACT PERMIT REQUEST

City of Raleigh, North Carolina
Parks & Recreation Department, Urban Forestry Division

Tree Impact Permit Request

A permit is required for any tree impact in the public right of way

Date Submitted	
Scheduled work date & duration	
Address of project	
Name Permit Applicant	
Company/Contractor Name	
Contact Telephone(s)	
Email	
Specific Location of Tree(s) (Attach landscape plan if applicable)	

Tree Impact	Yes	No	Notes
Pruning			ANSI A-300 Pruning required. Work shall be done by or under supervision of ISA Certified Arborist
Removal			May require stump grinding and/or tree replacement
Trenching/Boring			Requires tree protection plan
Grading/Excavation			Requires tree protection plan
Installing Decorations			Any decorations require a permit. Lights are permitted November-February only, then removed.
Pest management			Spraying for the control of insects and disease must be completed by a licensed professional
Planting trees			City tree quality, planting & maintenance standards apply
# of trees impacted, size (DBH), and species			
Planting: Number, size (caliper/container size), and species (include botanical name)			

General Information: Fax or email to Trees@Raleighnc.gov or mail the City of Raleigh Parks and Recreation Urban Forestry Division P.O. Box 590 Raleigh, NC 27602. Ph) 919-996-4115 Fax) 919-872-4137

Permits shall be issued at the discretion of the Urban Forester. The fee for this permit is $100 payable to the City of Raleigh upon issuance. Conditions may apply including but not limited to tree preservation, remediation, and replacement. Violation of any provision of the permit shall be grounds for one or both of the following actions by the City: Issuance of a stop-work order, issuance of a criminal misdemeanor citation. Each tree shall be considered a separate violation.

APPENDIX G CITY CODE
CHAPTER 8. TREES AND VEGETATION

ORDINANCE NO. ( ) TC

BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF RALEIGH, NORTH CAROLINA: that

Section 1. Chapter 8 of Part 9 of the Raleigh City Code is hereby deleted and replaced in its entirety as follows:

9-8001 PURPOSE AND INTENT

(a) The purpose of this chapter and the City Tree Manual, which is hereby incorporated into this chapter by reference, is to regulate and control the planting of trees and vegetation, to encourage the protection of existing trees and vegetation on the streets and public and private grounds within the City, and to establish the standard arboricultural specifications and practices for existing and future trees and vegetation in the City and on City-owned property outside the corporate limits.

(b) The City 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, act as filters for airborne pollutants, reduce noise, provide privacy, provide wildlife habitat and food value, sequester carbon and release oxygen. By enacting these regulations, it is the intent of the City to prudently protect and manage the urban forest to secure these benefits.

9-8002 DEFINITIONS

As used in this chapter, the following terms *shall* be defined as follows:

Boundary tree. A tree which, when viewed in cross section at diameter at breast height (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.

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 four (4) inches in diameter, and measured twelve (12) inches above grade for trees greater than four (4) inches in diameter.

Certified arborist. A person who has successfully completed the requirements for certification set by the Arborist Certification Board of the International Society of Arboriculture, and maintains good standing in this organization.

City-owned or city-controlled property. Property owned or leased by the City; or for which the city has a vegetation easement or planting contract; or upon which the city has an easement for a street, sidewalk, greenway, park, alley, utility or to care out any other public purpose.

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.

City tree. A tree that has its trunk located entirely or in part on city-owned or city-controlled property including any boundary tree.

Critical Root Zone or ***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.

Diameter at breast height or ***DBH***. The diameter of the tree trunk measured at 4.5 feet above the soil.

Person. Any individual, firm, partnership, association, institution, corporation, municipality and other political subdivision, and governmental agencies.

Private Tree. A tree that has its trunk located entirely on private property excluding boundary trees.

Remediation. The requirement by the Urban Forester to cause the restoration or replacement of an impacted City tree including but not limited to corrective pruning, supplemental mulch, water or nutrition and compaction mitigation.

Root flare. The part of the tree near the base of a tree where the trunk transitions to root that may be visible for established trees and that must be visible at grade for new plantings.

Shrub. Any woody perennial that attains an overall height of less than 20' at maturity, usually with multiple stems.

Stump measurement. Average of two measurements taken at right angles on the cross section of stump as measured in inches, which is used to establish DBH in absence of a tree trunk.

Tree disturbing activity. 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; or

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.); or

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.

Tree impact permit or ***TIP***. Consent given in writing by the Urban Forester or his designee to a person to undertake any tree-disturbing activity.

Tree protection plan. A written document that must accompany any tree impact permit application to establish mechanisms for the protection of potentially impacted trees which are intended to remain on the property following the completion of the activity for which the permit request was made.

Trunk. The main stem of a tree apart from limbs, roots and root flare.

Urban Forestry. The management and maintenance of trees, including wooded areas, groups of trees, and individual trees, for their contribution to the environmental, sociological, and economic well-being of urban society.

9-8003 CREATION OF POSITION OF THE URBAN FORESTER

(a) The position of Urban Forester *shall* be created within the Department of Parks, Recreation and Cultural Resources. The Urban Forester, as the agent of the Department, *shall* direct, regulate and control the planting and management of trees on all city-owned or city-controlled property.
(b) For the purpose of carrying out the provisions of this chapter, the Urban Forester *shall* have the authority, control, supervision and direction over all trees growing on city-owned or city controlled street rights-of-way and the planting, removal, care, maintenance and protection thereof.

9-8004 DUTIES OF THE URBAN FORESTER

(a) The Urban Forester *shall* direct, supervise, regulate and control the planting, maintenance and removal of all the trees growing now or hereafter on city-owned or city-controlled property.
(b) The Urban Forester *shall* have full power and authority to enforce the terms of this chapter.
(c) The Urban Forester *shall* have the authority to review all requests for permits for any activity impacting city trees including planting, removal and pruning on all city-owned or controlled property. The Urban Forester *shall* also have authority to attach reasonable conditions to these permits and to grant or deny them.
(d) The Urban Forester, under the supervision and direction of the Director of the Department of Parks, Recreation and Cultural Resources, *shall* prepare the City Tree Manual governing the planting and maintenance of city trees on city-owned or city-controlled property which should include:

(1) Planting and managing trees for their functional use as well as for the aesthetic qualities;
(2) Recycling trees and fiber;
(3) Suggested tree list for the city, with priorities, the purpose of which would be to guide the voluntary efforts of citizens in selecting trees for planting on private property or for donation to the city, such list to distinguish generally among the conditions or places of use;
(4) A tree education program for the public, including advisory guidelines, planting and maintenance details, costs and benefits of trees in the city;
(5) A tree and landscape inventory and analysis;
(6) Standards and procedures for tree planting, pruning, removal, and protection, including specific procedure and criteria for utility companies and new development.
(7) Emergency response to provide clear and safe passage for pedestrian and vehicular traffic including inclement weather and emergency events; and
(8) Procedures for the implementation of the Tree Impact Permit program authorized by §9-8005 of this Code, including any applicable fees.

The City Tree Manual, and any changes to the same, must be approved by the Director of the Parks, Recreation and Cultural Resources and the Parks, Recreation and Greenway Advisory Board before submission to the Raleigh City Council for its approval.

(e) The Urban Forester *shall* review and provide advice regarding all private and city-initiated development and re-development projects to plan for and manage the city's urban forest.

Sec. 9-8005 ACTIVITIES IMPACTING CITY TREES; TREE IMPACT PERMIT REQUIRED.

(a) Any person desiring to undertake any tree disturbing activity or any land disturbing activity within fifteen (15) feet of a City tree *shall* first obtain a written permit pursuant to procedures and standards set forth in the City Tree Manual, including the payment of any such fees required therein.

(b) Any work performed under such permit must be done in strict accordance with the conditions of the Tree Impact Permit, the provisions of this chapter and the City Tree Manual. Violation of or deviation from any element of a Tree Impact Permit or failure to obtain a Tree Impact Permit where required by this chapter *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) Before a permit to plant trees will be issued, the applicant *shall* provide documentation of the approval of the planting plan from any other regulatory agency with approval authority over such plans.

(d) If a Tree Impact Permit is denied, the Urban Forester *shall* provide a written denial to the applicant including the reasons for such denial. A person who is denied a Tree Impact Permit may appeal such denial pursuant to §9-8013 of this chapter.

Sec. 9-8006 TREES TO BE MAINTAINED; RESPONSIBILITY OF OWNER.

(a) Trees and shrubs standing in or upon any lot or land adjacent to any city-owned or city-controlled property and having branches, limbs, trunks, or other parts projecting into the public street or place *shall* be kept trimmed by the owner of the property on which such trees and shrubs originate so as not to interfere with the free and safe passage along the public way by pedestrians and vehicular traffic.

(b) If the owner of the property does not 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) business 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 any member of his/her staff *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 pursuant to the procedures set forth in the Chapter 6 of Part 12 of this Code.

(c) The City, its agents and contractors are required to adhere to all regulations of this section in the same manner as private property owners. They may be challenged in the same manner by the Urban Forester or designee on the personal complaint of either, or by any citizen of Raleigh.

Sec. 9-8007 TREATMENT AND REMOVAL OF TREES ON PRIVATE PROPERTY.

(a) When necessary for the immediate preservation of the public health or safety, the Urban Forester, under the power herein given, 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 the City's utility system 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.

(b) 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 procedures set forth in Part 12, Chapter 6, of this Code.

Sec. 9-8008 UTILITY LINE CLEARANCE STANDARDS

(a) No person *shall* engage in utility line clearance, new utility construction or installation on city-owned or city-controlled property without first obtaining a Tree Impact Permit pursuant to §9-8005 above.

(b) Utility line clearance practices *shall* conform to the standards in the most current edition of the American National Standards Institute (ANSI) A300 (Part 1) – Tree Care Operations – Tree, Shrub and Other Woody Plant Maintenance – Standard Practices. Pruning for overhead utilities *shall* also adhere to standards outlined in the City Tree Manual.

Sec. 9-8009 ENFORCEMENT

(a) Whenever the Director of Parks, Recreation and Cultural Resources or his designee finds that any person has violated or is violating this chapter, any permit issued pursuant to this chapter, or any regulation, standard, rule or order adopted in furtherance of this chapter, the Director of Parks, Recreation and Cultural Resources or his designee may serve upon such a person a written notice stating the nature of the violation, any administrative fee assessed and if applicable, an assessment of any costs incurred by the City to remedy the violation and if applicable, a fee in lieu of replacement calculated in accordance with §9-8012 below. If requested by the Director of Parks, Recreation and Cultural Resources or his designee, a remediation plan *shall* be submitted to the Director of Parks, Recreation and Cultural Resources or his designee within fifteen (15) days. Submission of a remediation plan does not relieve the person of liability for any violations occurring before or after receipt of the notice of violation. In the event of an emergency that requires the City to take immediate action to correct the violation, the City is not required to provide an opportunity for the violator to correct the violations and may assess penalties and costs pursuant to this section without prior notice.

(b) Any person who is found to have failed to comply with any provision of this chapter, any permit issued pursuant to this chapter, or any regulation, standard, rule or order adopted in furtherance of this chapter, *shall* be subject to a civil penalty as follows:

(1) Two hundred and fifty dollars ($250) for a first time violation.
(2) Five hundred dollars ($500) for any repeat violation within the previous 12-months.

The notice of the civil penalty assessment *shall* be issued in writing and *shall* set forth with reasonable care the basis of the civil penalty, any administrative fee assessed and the costs to the *City* of rectifying the noncompliance that are assessed.

(c) Any person violating any section of this chapter must pay to the City all expenses incurred by the City caused in whole or in part by such violation including the cost of labor, equipment, and materials based on current FEMA rates.

(d) Any person violating any section of this chapter and who receives a notice of violation pursuant to this section *shall* be subject to an administrative fee of one hundred dollars ($100) in addition to any other charge authorized by this chapter.

(e) From and after the expiration of the time period specified in the notice of violation issued pursuant to subsection (a) above of this section for correcting a violation of this chapter, each subsequent day that the violation continues in existence shall constitute a separate and distinct offense subject to additional civil penalties.

(f) Any appeal from 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 (ten) days of receipt of the notice of violation or civil penalty assessment issued pursuant to subsection (a) of this section or permit issued or denied pursuant to §9-8005 of this chapter. Any appeal of a permit decision shall include justification for the appeal and an independent report from a certified arborist to support the appeal if applicable. The Director of Parks, Recreation and Cultural Resources shall use all reasonable efforts to notify the appellant in writing of his or her decision within 30 (thirty) days of receipt of the notice of appeal.

(g) All notices required by this subsection may be served by certified mail or hand-delivery to the violator; certified mail or hand-delivery to the owner of the property in violation; or posting the notice at the property in violation. When service is made by certified mail, a copy of the notice may also be sent by First Class U.S. Mail. Service shall be deemed sufficient if the notice sent by First Class U.S. Mail is not returned by the U.S. Post office seven (7) days after mailing.

(h) If payment is not received or equitable settlement reached after 30 (thirty) days after demand for payment is first made, the matter shall be referred to the City Attorney for institution of a civil action in the name of the City in the appropriate division of the general court of justice of Wake County for recovery of fees, costs and/or penalties.

(i) Any person who violates any of the provisions of this chapter, any permit, or any regulation, standard, rule or order duly adopted in furtherance of this chapter, or who fails to obtain a permit or written permission as required by this chapter, shall be guilty of a misdemeanor punishable by imprisonment to the maximum number of days prescribed by law.

(j) Whenever the City Council has reasonable cause to believe that any person is violating or threatening to violate any of the provisions of this chapter, any permit, or any regulation, standard, rule or order duly adopted in furtherance of this chapter, the City may, either before or after the institution of any other action or proceeding authorized by this Code, institute a civil action in the name of the City for injunctive relief to restrain the violation or threatened violation. The institution of an action for injunctive relief under this subsection shall not relieve any party to such proceeding from any civil or criminal penalty prescribed for violations of this Code.

(k) The penalties and enforcement provisions established by this chapter may be applied in addition to or in lieu of the penalties established by other sections of this Code and applicable ordinances. The remedies provided for in this chapter are not exclusive. The Director of Parks, Recreation and Cultural Resources or his designee may take any, all, or any combination of these actions against a violator.

Sec. 9-8010 TREE REPLACEMENT; FEE IN LIEU OF TREE REPLACEMENT

(a) Any person who destroys a City tree *shall* replace such City tree at no cost to the City and accordance with the standards of this chapter and the City Tree Manual. The responsible party *shall* maintain the tree for two years following the installation date of the tree. If the tree fails to survive at any point during the two year period following the installation date of the tree, the responsible party *shall* replace the tree at no cost to the City and in accordance with the standards of this chapter and the City Tree manual.

(b) A City tree requiring replacement *shall* be replaced on a one to one DBH basis or caliper basis, as appropriate.

(c) If any person is unable to replace a tree that such person destroyed, the person who destroyed the City tree *shall* pay a fee in lieu of replacement at the rate of one hundred dollars ($100) per inch of DBH. In the event the site is only able to accommodate a tree smaller than the City tree that was destroyed, the responsible party *shall* pay a fee in lieu equal to the DBH or caliper of the destroyed City tree measured in inches, minus the total DBH or caliper of the replaced tree(s) measured in inches multiplied by hundred dollars ($100).

(d) A 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.

Section 2. All laws and clauses of laws in conflict herewith are hereby repealed to the extent of said conflict.

Section 3. If this ordinance or application thereof to any person or circumstance is held invalid, such invalidity *shall* not affect other provisions or applications of the ordinance which can be given separate effect and to this end the provisions of this ordinance are declared to be severable.

Section 4. This ordinance *shall* be enforced as provided in N.C.G.S. 160A-175 or as provided in the Raleigh City Code. All criminal sanctions *shall* be the maximum allowed by law notwithstanding the fifty dollar limit in G.S. 14-4(a) or similar limitations.

Section 5. This ordinance *shall* become effective five days following its adoption.

ADOPTED:

EFFECTIVE:

DISTRIBUTION:

This ordinance prepared by the Raleigh City Attorney's Office

CITY OF RALEIGH
ESTABLISHED 1792
NORTH CAROLINA

RALEIGH
Parks,
Recreation *and*
Cultural Resources
parks.raleighnc.gov