ILLUSTRATED GUIDE
to Implementing the Augusta Tree Ordinance (IGO)

Adopted By
Augusta Commission
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ILLUSTRATED GUIDE TO IMPLEMENTING THE AUGUSTA TREE ORDINANCE (IGO)

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I. PURPOSE

This document provides standards and specification for use in determining whether or not a development project as defined in Section 8-4-13 of the Augusta Tree Ordinance is in compliance with the provisions of that Ordinance. Specifically, the standards and specifications contained herein shall be used to determine compliance with the tree protection and tree establishment provisions of the Greenspace Plan as required by 8-4-13 of the Augusta Tree Ordinance.

II. MINUMUM CANOPY REQUIREMENT

All land undergoing development shall provide for thirty percent (30%) minimum tree canopy coverage. Tree canopy coverage is the sum total of preserved trees and replacement trees at their anticipated canopy coverage ten (10) years from the time that the site is developed. As set forth in the IGO.

The canopy may be achieved by preserving existing trees, by planting new trees according to the minimum standards in this Ordinance, or by a combination of the two. Minimum tree canopy shall be calculated and established pursuant to the formula and analysis set forth in the Augusta Ordinance and illustrated in the Illustrated Guide (IGO). Any existing tree, from the approved list in the IGO, of not less than six inches (6") diameter at breast height (DBH) left in good growing condition on the property is eligible to be counted toward the minimum required canopy and has to be protected. The property owner shall be subject to the minimum tree canopy requirement set forth in this section. The property owner shall base the canopy calculation on the gross site area.

- If a site over one (1) acre in size was formerly in a forested state and fifty percent (50%) or more the land area was clear cut within three (3) years of the plan submittal date for any land disturbing activity, without a Reforestation Plan, as per the GA E&S Law, then the property will be prohibited from developing for three (3) years. It will be the applicant's responsibility to provide proof that any clear cutting activity on the site took place greater than three years prior to the current submittal date.

(1) Calculation of Tree Canopy Coverage

(a) The baseline canopy measurements on a proposed development site shall be provided by the developer/property owner and submitted as part of the tree survey and Tree Protection / Tree Establishment Plan. The percent canopy cover preserved may be calculated by actual ground measurement (field survey) or by aerial photographs from Augusta, Georgia's GIS, to scale.

(b) All trees to be preserved shall follow tree preservation guidelines established by this Ordinance.

(c) The Minimum Canopy Requirement shall be calculated using the following formula see APPENDIX A.

(2) Tree Mitigation Policy for Minimum Canopy Requirements for Replacement Trees

If a tree designated as a protected tree on a tree survey or a Tree Protection/Establishment Plan is required to be removed due to building footprint, damage from construction, or dies during development, the developer shall be required to replant or a monetary sum equal to the value of the trees may be paid to a tree planting fund maintained by the Augusta for the purpose of planting and maintaining trees throughout the jurisdiction of the City. This Tree Mitigation Policy is described and illustrated in APPENDIX B.

III. DEFINITIONS.

(a) **Director.** The Director of the Augusta Planning & Development Department.

(b) **Arboricultural Standards:** Accepted professional practices and techniques for tree installation and maintenance established to keep trees in a safe and healthy condition.

(c) **Caliper.** The diameter or thickness of the main stem of a young tree or sapling as measured at six inches (6") above soil level. This measurement is used for nursery-grown trees having a diameter of four inches (4") or less.

(d) **Code Enforcement Officer.** A member of the Unified Code Enforcement & Inspections Team of the Augusta Planning & Development Department.

(e) **Commission.** The Augusta Commission.

(f) **Certified Arborist**. A professional tree care specialist that currently retains the designation of Certified Arborist as defined and governed by the International Society of Arboriculture (ISA).

(g) **Critical Root Zone (CRZ).** A circular area surrounding a tree, of which the center is the center of the tree trunk and the radius, is the distance from outside of the trunk to any point is one and a half feet (1.5') per inch of diameter at breast height (DBH). The resulting points constitute the circumference of the critical root zone. The critical root zone shall extend to a depth of three feet (3') below surface ground level.

(h) **Diameter Breast Height (DBH)**. The diameter or width of the main stem of a tree as measured four and one-half feet (4.5') above the natural grade at the base of a tree. Whenever a branch, limb, defect, or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below four and one-half feet (4.5') at which a normal diameter occurs.

(i) **Dripline.** An imaginary circuitous line of the ground that designates the outermost point to which the tree branches extend.

(j) **Exotic/Invasive Species:** Are plant species that become established in natural or semi-natural ecosystems or habitats and threaten native plants. When such species spread, they threaten biological diversity.

(k) **Greenspace.** Any area retained as permeable unpaved ground and dedicated to supporting vegetation.

(l) **IGO**. (Illustrated Guide to Implementing the Augusta Tree Ordinance) A document providing standards and specifications for tree protection and tree establishment per Section 8-4-13 of the Augusta Tree Ordinance.

(m) **Landmark Tree.** Any tree determined by the Tree Commission and the Augusta Commission, to be of notable historic interest, high aesthetic value, or of unique character because of species, type, age, or size and therefore designated as a public landmark.

(n) **Land Clearing.** The removal of all vegetation six inches (6") or greater.

(o) **Land Disturbance Permit.** Any permit other than a Land Development Permit or Building Permit that authorizes clearing and grading activities only on a site or portion of a site. Said permit may be a Clearing and Grubbing, or Land Disturbing Permit only as defined and authorized under the State Environmental Law and/or the Georgia Erosion and Sedimentation Act.

(p) **Tree Establishment Bond.** A three (3) year bond that shall be posted prior to the issuance of a Certificate of Occupancy and released after three (3) years upon a determination that required trees and landscaping are healthy and have a reasonable chance of surviving to maturity. A fee as established by Augusta is required for all tree-related inspections.

(q) **Minimum Canopy Requirement (MCR).** The minimum percentage (30%) of tree canopy required to be preserved or planted on any tract of land being developed.

(r) **Official Tree List**. A listing of various tree species, classified by size grouping, to be used to determine the quality rating of trees to be preserved or planted as well as the Minimum Canopy Requirement.

(s) **Park:** All public land set aside for space and recreation purposes.

(t) **Permanent Water Source:** A flow able source of water from a water device that is located within one hundred feet (100') of newly planted trees to assure water availability for watering trees to assure tree survivability.

(u) **Performance Guarantee**. A statement of surety in the form of cash, performance bond, letter of credit, or certificate of deposit, in an amount equal to 120 percent of the total value of all plant materials, installation, and maintenance shall be posted with the City.

(v) **Planting Island.** An unpaved landscaped area located within a vehicle parking area that is defined physically by curbing or otherwise in such a way that it cannot be driven over or parked upon and which must contain a medium or large tree.

(w) **Planting Strip.** A ground surface located outside of any public right-of-way that is free of impervious cover and/or paved material and is reserved for landscaping purposes.

(x) **Planting Yard:** A strip of land (of various widths) provided along the perimeter of a site for the installation of plant material in a combination of canopy trees and/or under story trees and shrubs.

(y) **Protected Tree.** Includes all public trees and all trees conserved or planted to meet the requirements (regardless of size), and all trees six inches (6") diameter at breast height (DBH) and greater on a site to be developed. This protected tree class includes trees that were designated as significant, specimen and landmark.

(z) **Public Hazard.**

- Any tree, plant, shrub or vegetation which so overhangs any sidewalk or public street either dedicated or proposed to be dedicated, or which is growing thereon (or adjacent thereto), in such a manner as to obstruct or impair the free and full use of the sidewalk or public street by the public as determined by the City Administrator or his/her designee.

- Any tree, plant, shrub, or vegetation within the sight triangle of street intersections which obstructs clear and reasonable view of traffic safety or other public safety lights, signals, and signs; as defined by the Traffic Engineer; or Any tree, plant, shrub, or vegetation in the vicinity of utility lines which has the potential to interfere with the provisions of reliable utility service as determined by the City Administrator or Traffic Engineer.

(aa) **Public Property.** Any property owned by Augusta, Georgia.

(bb) **Public Tree.** Any tree located on public property.

(cc) **Regulated Tree:** A tree located on public right-of-way or private property and whose establishment and/or maintenance is required in order to acquire a Certificate of Occupancy for a proposed use.

(dd) **Right-of-Way.** A strip of land over which Augusta, Georgia has the right, by ownership or otherwise to construct a public street, sidewalk, or use for public utilities.

(ee) **Root Protection Zone.** The minimum area beneath a tree which must be left undisturbed in order to preserve a sufficient root mass to give a tree a reasonable chance of survival. The circular area above and below ground with a radius equivalent to the greater of the

dripline or one and a half feet (1.5') for every inch in trunk diameter at four and a half feet (4.5') above the ground**.**

(ff) **Sight Triangle.** The triangular area formed by a diagonal line connecting two points located on intersecting property lines (or a property line and the curb or a driveway), each point being at a minimum twenty-five feet (25') from the point of intersection.

(gg) **Significant Tree.** Significant Tree. A tree 10" in diameter or greater at DBH, except for Live Oaks which are considered significant at 8" DBH.)

(hh) **Specimen Tree.** Any Historic or Specimen Tree that has been determined to be of high value, because of its species, size, age, or other professional criteria. Criteria for the determination of historic or specimen trees or stands of trees shall be determined by a certified arborist, registered forester, or landscape architect and has been so designated in administrative standards established by Augusta.

(ii) **Street Yard.** A greenspace parallel to the street right-of-way whose total area is equal to at a minimum ten (10) times the length of the right-of-way in square feet.

(jj) **Tree Canopy Cover.** The square footage of the aggregate of the canopy of all Trees contained on a property.

(kk) **Tree Commission.** An appointed board of twelve (12) members with designated duties as outlined herein with the Director, or his/her designee, serving as the Secretary

(ll) **Tree Condition.** Reflects the present structural integrity of a tree, as well as its state of health.

(mm) **Tree Density.** Means the spread of tree canopy on a square footage area of greenspace.

(nn) **Tree Disturbance Permit**. Shall mean a Land Disturbance Permit (from Augusta Planning & Development).

(oo) **Tree Establishment Element.** A topographic survey map and supporting documentation which describes for a particular site where trees are to be planted in compliance with the requirements of these regulations, the types of trees and their corresponding minimum canopy spread in square footage.

(pp) **Tree Evaluation Formula**. Method of determining the value of ornamental trees and shrubs as published by the International Society of Arboriculture (ISA).

(qq) **Tree Inventory.** Is the gathering of accurate information on the health and diversity of the community forest on a development site or within Augusta

(rr) **Tree Lawn.** That part of a street or highway, lying between the property line and that portion of the street or highway usually used for vehicular traffic.

(ss) **Tree Mitigation Fund.** A provision allowing for the payment of fees, in lieu of preservation or reforestation, into the City's Tree Mitigation Fun.

(tt) **Tree Protection Element.** A topographic survey map and supporting documentation which describes for a particular site where existing trees are to be retained in compliance with the requirements of these regulations.

(uu) **Tree Protection / Tree Establishment Plan**. A Plan that identifies Tree Protection Area(s) where existing trees are to be preserved and where proposed replacement trees are to be planted to meet the minimum requirements of this ordinance, as well as methods of tree protection to be undertaken on the site and other pertinent information.

(vv) **Tree Protection Zone (TPZ).** The area surrounding a preserved or planted tree that is essential to that tree's health and survival, and is protected within the guidelines of this Ordinance.

(ww) **Vehicle Display Area.** Areas where vehicles are displayed for sale or lease.

(xx) **Vehicular Service Area.** Any paved or unpaved area utilized by vehicles.

(yy) **Xeriscaping.** Landscaping with native plants that utilizes the existing environmental conditions to the best advantage, conserving water and protecting the native environment.

IV. CALCULATIONS FOR TREE PROTECTION AND TREE ESTABLISHMENT ELEMENTS OF A GREENSPACE PLAN

A. Standard – It must be demonstrated that land to be cleared for development or land being proposed for development shall have, after development, a minimum of thirty percent (30%) canopy coverage on a given site (Ref. Section 8-4-13 of Augusta Tree Ordinance). In order to receive canopy square footage, any planted tree must be provided with a minimum Tree Protection Zone based upon its mature size as defined in the tree list. Trees that are to be preserved on a site must be protected (i.e. tree fences, no grading, fill or vehicular encroachment) within an area that is defined by a diameter in feet that is one and one half times the DBH of the tree in inches in order to qualify for Minimum Canopy Coverage. For example:

- A tree with a 40 inch DBH must be protected within a radius of 30 feet from the tree. (Refer to Illustration 1: Tree Protection Zone)

40" x 1.5' = 60 foot diameter
Radius = ½ x diameter
= ½ x 60 = 30 feet

- The area of this Tree Protection Zone is calculated as follows:

$$\begin{aligned} \text{Area} &= (\text{pi})(r)^2 \\ &= 3.141\ (30)^2 \\ &= 2826.9 \text{ square feet} \end{aligned}$$

Guidelines for tree protection are found in Section IV – VI of this Guide.

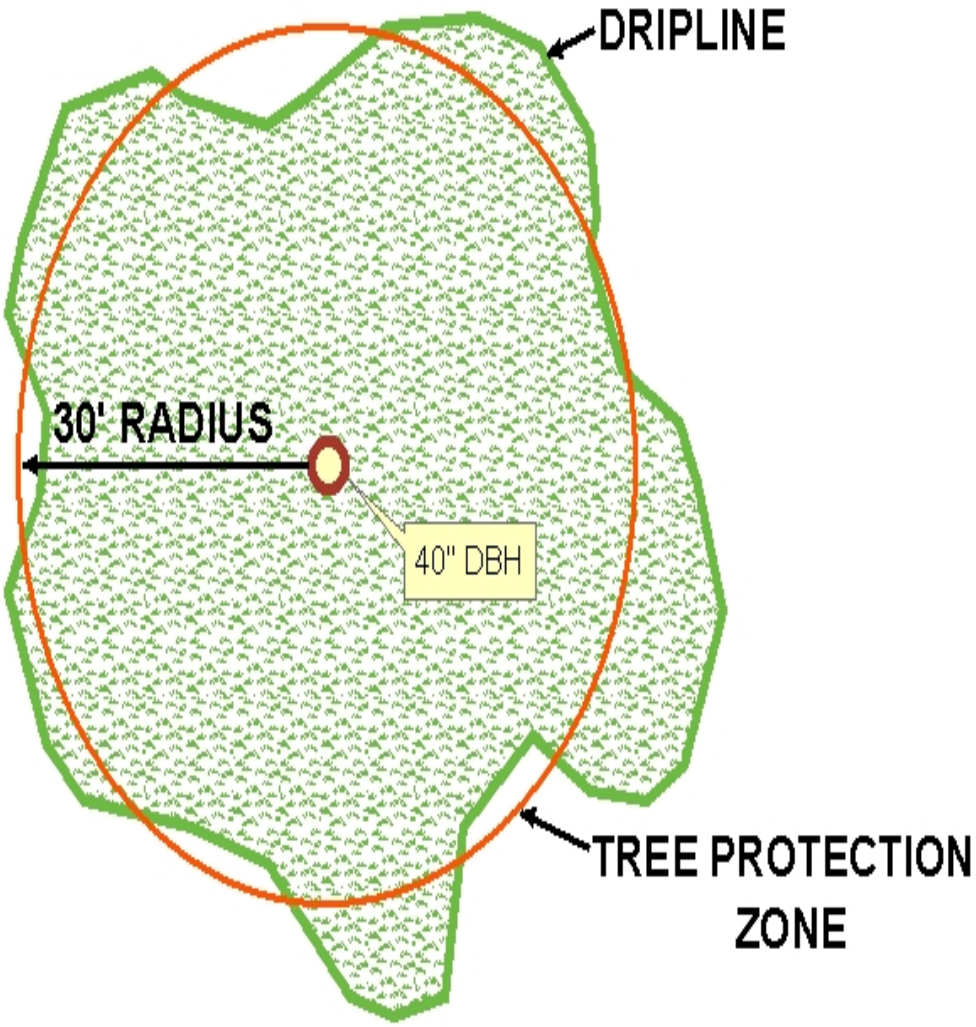


ILLUSTRATION 1. TREE PROTECTION ZONE

V. TREE AND SITE RELATED DISTURBANCES – TREE PROTECTION

A. Trees protection zones, exceptional trees or stands of trees designated to be saved must be protected from the following damages during all phases of land disturbances and construction processes, in order to qualify for Minimum Tree Canopy.

1. Direct physical root damage.
2. Indirect root damage.
3. Trunk and crown disturbances.

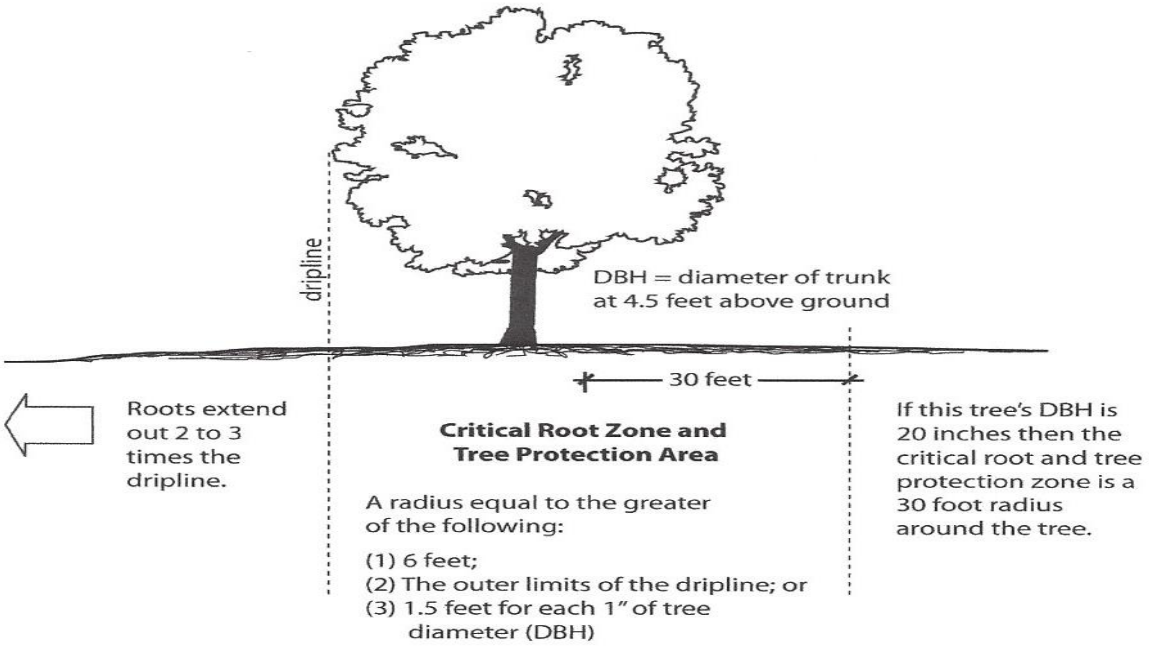
B. Direct physical root damage most frequently occurs during site clearing and grading operations where transport or feeder roots are cut, torn, or removed.

1. Transport and absorptive roots tend to tangle and fuse among the roots of adjacent trees, the removal of trees with heavy machinery along the outer periphery of a tree save area can result in considerable damage within the tree save area.

2. The most substantial form of physical root damage for all root types occurs in the form of cut roots. Roots are cut in grade reduction, or from trenching for underground utilities, sanitary sewer, or storm sewer lines.

3. A more subtle form of root damage is the loss of absorptive roots. Absorptive roots normally occur in the top four inches of soil, and can be damaged by any vehicular traffic. The stripping of top soil within a tree's critical root zone can totally eliminate its feeder root system. Critical root zone is illustrated in Illustration 2:

Illustration 2: Critical Root Zone Area



C. Indirect root damage through site modification can result from positive grade changes, temporary storage of fill materials, the sedimentation of erosion materials, soil compaction, and soil chemical changes.

1. Grade changes from fill and sedimentation causes a decrease in soil oxygen levels. An increase in soil carbon dioxide and other toxic gases can also occur, leading to large areas of anaerobic conditions. Anaerobic soil conditions cause a decrease in the root respiration process which is essential for the uptake and transport of minerals and nutrients.

2. Anaerobic soil conditions are also produced soil compaction, the increase in soil bulk density with a decrease in soil pore space. Compacted soil is also impervious to root penetration, and thus inhibits root development. Soil compaction is generally caused by the weight and vibrations of heavy machinery, vehicle parking, and the storage of fill and/or construction materials within the critical roots zones of trees.

3. Changes in soil chemistry will adversely affect tree survival. The most frequent occurrence is the change (decrease) in soil acidity by concrete washout which is highly basic. The leakage or spillage of toxic material such as fuels or paints can be fatal to trees.

D. Trunk and crown disturbances are generally mechanical in nature and are either caused directly by clearing and grading machinery, or indirectly by debris being cleared and falling into trees marked for protection.

1. Common forms of damages include stripped bark and cambium, split trunks, and broken limbs.

2. Damage also occurs from the posting of signs such as building permits, or survey markers on trees.

3. Indirect damage can be caused by the placement of burn holes or debris fires too close to trees. The possible range of damages include scorched trunks with some cambial dieback, the loss of foliage due to evaporative heat stress (leaf desiccation), and completely burned trunks and crowns.

VI. TREE PROTECION PLAN PROCEDURE

1. Tree Disturbance Permit: A tree disturbance permit is an official authorization, which shall be issued by the City simultaneous and as a part of the issuance of a Land Disturbing Permit and prior to any tree disturbing activities. Tree disturbing activities include cutting and/or damage to the Critical Root Zone (CRZ) of live trees six (6) inches DBH or greater on sites not accompanied by a Site Plan / Development Plan, except as stated in Exemptions.

2. Requirements for a Tree Disturbance Permit:
   a. Identify the Tree Protection Zone (TPZ) for each tree to be preserved on the site.
   b. Submit a Tree Protection / Establishment Plan as specified by Section 8-4-13 of the Augusta Tree Ordinance for the site

3. Tree Protection Plan Approval:
   Approval of a Tree Protection Plan is required for all projects, except those listed in Exemptions, and shall be submitted along with all other necessary drawings to the Planning and Zoning Department. Tree protection items shall be included on all land disturbance plans, erosion control plans and tree disturbance permit plans.

4. Drawings shall identify the following items:
   a. Boundaries of the required TPZ
   b. Required planting yards
   c. Protected trees within the TPZ including tree size and species CRZ of each proposed protected tree or group of trees
   d. Limits of clearing
   e. Grading
   f. Trenching
   g. Required tree protection measures including protective fencing and signage
   h. Overhead and underground utilities, rights-of-way and easements
   i. Areas of reforestation, if any
   j. Stream buffers, if any
   k. A complete survey of all trees on the site (outside the labeled TPZ) that exceed 6 inches DBH, including tree size and species

5. The following required notes shall be indicated on tree preservation plans, erosion control plans, land disturbance plans and Tree Disturbance Permit plans in CAPITAL LETTERS:

   a. Contact the Planning Department to set up a pre-construction meeting prior to any tree disturbance.
   b. All tree protection devices must be installed prior to inspection by the Code Inspection Officer and prior to any tree disturbance activities.
   a. Removal or damage of trees in the conservation area will be subject to the penalties established in the Penalties section of this Ordinance.
   b. These plans shall be reviewed by the Code Inspection Officer for conformance with applicable provisions of this section and for tree and vegetation viability. The plans will either be approved or returned for revisions. Reasons for return shall be noted on the proposed plan.
   c. All tree protection measures shall be installed prior to inspection of Code Inspection Officer and prior to tree disturbance.
   d. The Code Inspection Officer will conduct follow-up site inspections for enforcement of the tree protection requirements.

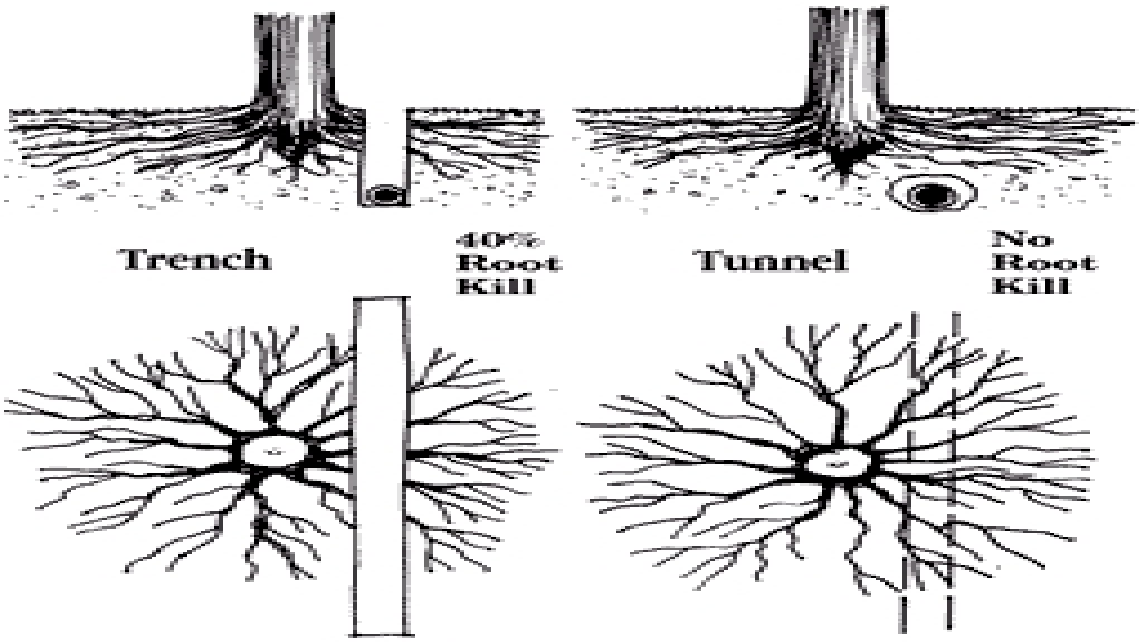
B. Provisions for Preservation of Existing Trees:

1. General: Any existing tree or group of trees which stands within or near a required planting area and meets or exceeds the standards of this Ordinance may be used to satisfy the tree requirements of the planting area. The protection of tree stands, rather than individual trees, is strongly encouraged.

2. Protection of Existing Trees: To receive credit, trees must be protected from direct and indirect root damage and trunk and crown disturbance. The following standards shall apply:

   a. The TPZ shall include land within the CRZ as provided in this section.
   b. Construction site activities such as parking, material storage, dirt stockpiling, concrete washout and other similar activities shall not be permitted within the TPZ.
   c. Changes that significantly raise the grade of soil adjacent to the TPZ shall be avoided.
   d. Utility line trenches and similar uses shall avoid the TPZ. Due to certain site conditions, where disturbance within the TPZ is unavoidable, underground tunneling or directional boring of utilities is preferred (see Illustration 3). Trenching shall be used only as the last alternative and root-pruning equipment specifically designed for that purpose shall be used. The Code Inspection Officer shall be notified prior to this type of activity and an on-site meeting shall be performed to ensure compliance.

Illustration 3: Tunneling vs. Trenching.



e. Protective fencing shall be installed around the TPZ prior to any tree disturbing activities. This fencing will be erected at a radius of 1.5 feet away from the trunk of tree for every inch in stem diameter. Diameter is measured 4.5 feet above the ground. For trees 4 inches or less in diameter the measurement will be at 6 inches above the ground. This radial distance is termed the "critical root zone" and will serve as the Tree Protection Zone (TPZ). Fencing will consist of heavy duty chain link. Fencing will be rigidly supported and maintained during all construction periods at a minimum height of 4.0 feet above grade.

3. Such fences shall be at least four (4) feet high and shall consist preferably of chain link or of orange polyethylene safety fencing (see Illustration 4). Fencing shall remain in place until construction is complete and other landscaping has been installed, and the Code Inspection Officer has approved its removal. Broken or dislodged tree protection devises shall be immediately repaired.

Illustration 4: Example of tree protection fencing surrounding the Critical Root Zone

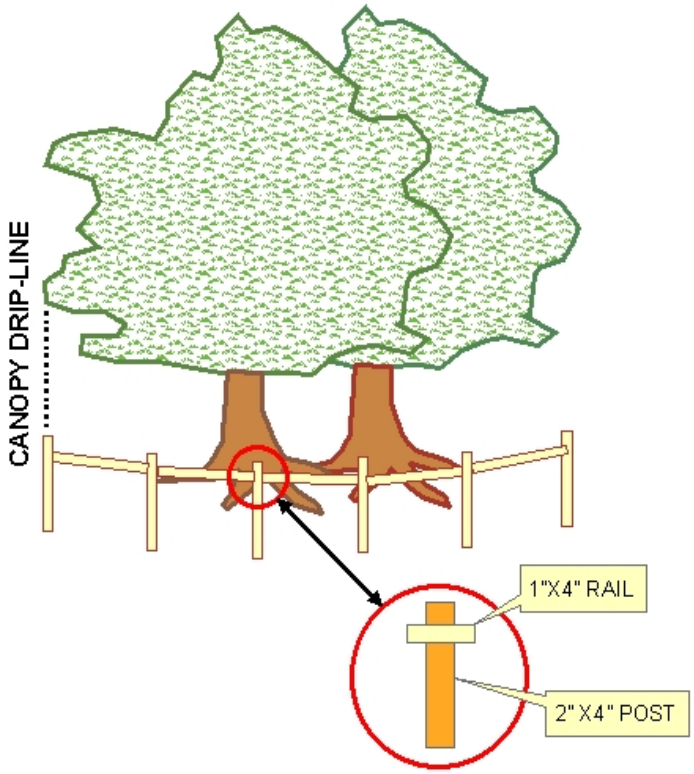


ILLUSTRATION 4. PROTECTIVE TREE FENCING

4. The TPZ should be designated as such with "Tree Protection Zone" signs posted visibly on the outside of the fenced-in area (see Illustration 5). Signs may not be posted on the trees. These signs are intended to inform subcontractors of the tree protection process. Signs requesting subcontractor cooperation compliance with tree protection standards are recommended for site entrances.

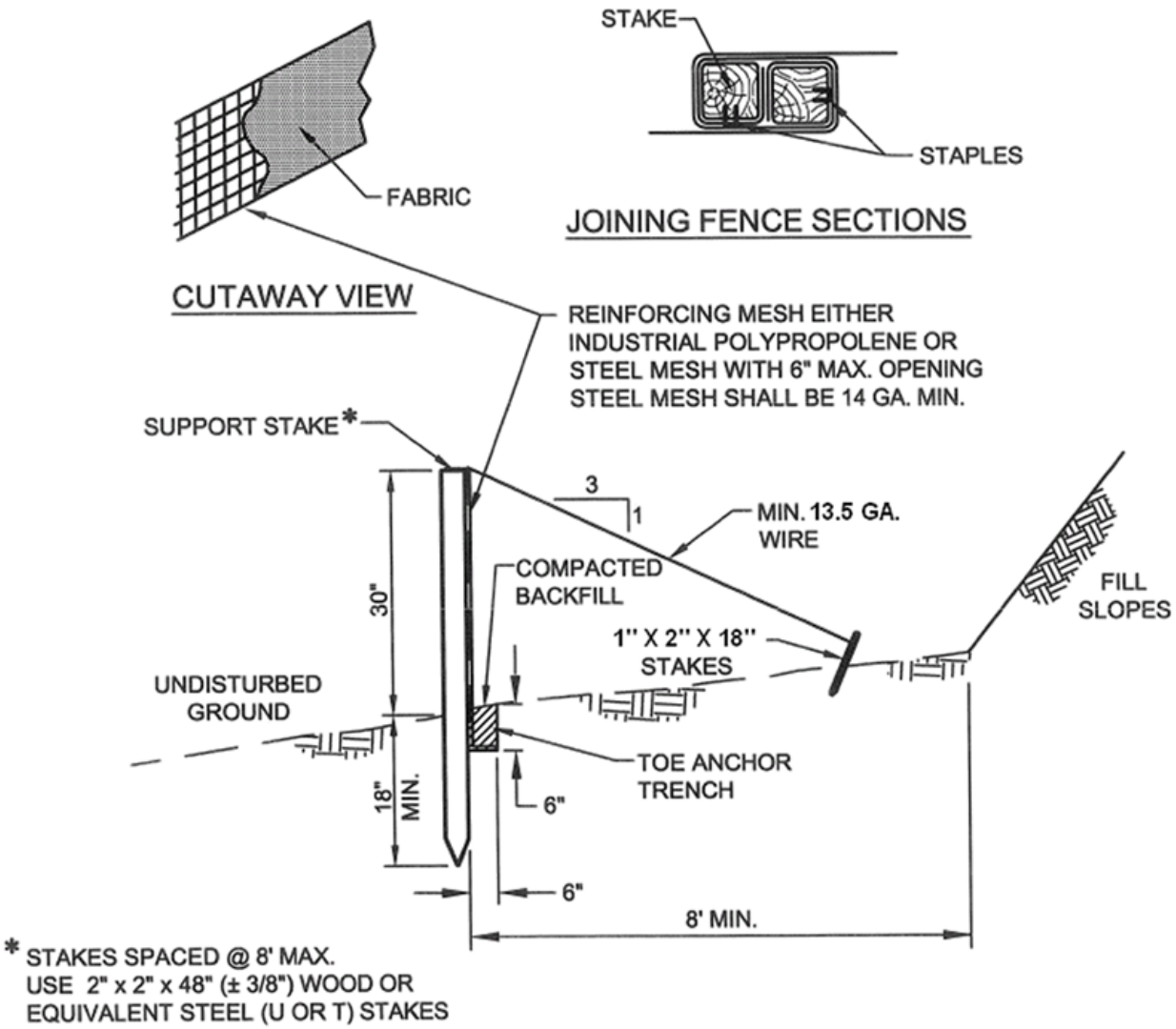
Illustration 5: Tree Protection Zone Signage

C. All designated Tree Protection Zones must be protected from the sedimentation of erosion material.

1. Erosion and sediment control measures should be located at the limits of clearing and grading to avoid sediment deposition within the TPZ's of preserved trees. When planning sediment basins, retention basins, or ponds, avoid locations requiring extensive grading and tree removal. Trenchless silt fence construction should be used in Critical Root Zone / TPZ area (see Illustration 6).

2. Silt screening must be placed along the outer uphill edge of the Tree Protection Zone. Minimum fence height shall be four feet. The Director shall approve protective fencing which provides an adequate level of protection.

Illustration 6. Silt Fence Construction



C. Evaluation of Specimen Trees and Stands of Trees: Existing specimen trees and stands of trees must meet the following conditions to be considered for the TPZ:

1. A life expectancy of greater than ten (10) years

2. A relatively sound and solid trunk with no extensive decay

3. No major insect or pathological problems

D. Dead or Unhealthy Trees:

1. No credit will be allowed for any dead, poor condition or damaged trees.

2. Except for storm damage, the death of any tree used for preservation credit within five (5) years of site development shall require the landowner to plant new trees equal to the number of credited trees.

3. The Director may require trees left standing outside of the TCZ to be removed if improperly protected or determined to be hazardous.

D. Tree Removal Inside the TPZ:

1. Trees less than six (6) inches DBH not being preserved, undergrowth and plant material in poor condition may be removed from the TPZ. No roots shall be removed from the TPZ. Stumps may be removed only by grinding. All requests for tree removal within the TPZ must have prior approval by the Director or Code Inspection Officer pursuant to the provisions of this chapter. However, in an emergency situation due to storm damage; to alleviate an immediate hazard to the health, safety and welfare of the citizens; or to repair property damage, prior approval for tree removal in previously approved designated areas is not required.

2. All removal of said material shall be done or supervised by an experienced Urban\Forester, Landscape Architect or ISA Certified Arborist, who will certify that the tree and root removal or pruning was done in accordance with standard arboricultural practices.

3. Any tree within the TPZ including the CRZ, which the landowner/developer chooses to remove or that must be removed due to poor health or impractical means of preservation shall be removed in a manner that is in accordance with standard arboricultural practice (See ANSI Standards) so as to cause as little disturbance or harm to those trees intended to be saved as practical.

VII. STANDARDS FOR REMEDIAL TREE CARE

1) GENERAL.

Pruning is the most common tree maintenance procedure. The objective of pruning is to produce strong, healthy, attractive plants. In the urban environment most pruning is done for “people reasons”. Pruning cuts must be made with an understanding of tree biology and their basic requirements in order to optimize the health and structure of trees through pruning.

2) APPLICABLE STANDARDS.

All pruning of City trees shall conform to American National Standards Institute (ANSI) Standards for Tree Care Operations, *ANSI A300. – Tree, Shrub, and Other Woody Plant*

Maintenance – Standard Practices (Pruning), and ANSI Z133.1-2006 Pruning, Repairing, Maintaining and Removing Trees and Cutting Brush – Safety Requirements and International Society of Arboriculture (ISA) Best Management Practices (BMPs) guidelines for pruning.

3) PRUNING REQUIREMENTS

A. Avoid pruning off more than 20 to 25% of a tree's leaf area in any year. The percentage and distribution of foliage to be removed shall be adjusted according to the tree's species, age, health, and site.

B. Pruning should be bases on pruning objectives. Pruning objectives (why to prune) determine methods (how to prune) to be used, which in turn determine the type of pruning cuts made.

C. In pruning, there are three primary types of pruning cuts, ***removal cuts, reduction cuts,*** and ***heading cuts***, each giving different results in growth and appearance.

D. Pruning should maintain the tree's natural shape.

E. In an ideal world, all pruning cuts would be two inches in diameter or smaller. Pruning cuts larger than 4-inches in diameter should be avoided unless otherwise directed.

F. All pruning cuts shall be made outside the branch bark ridge and branch collar. Flush cuts are not acceptable.

G. Avoid "lion-tailing" where the small twiggy inner foliage is cleaned-out on the lower scaffold branches and secondary trunks.

H. Any person pruning a public street tree by removing branches shall be required to apply for and procure a Tree Disturbance Permit. Permits will only be granted to individuals, businesses or companies who employ a Certified Arborist to perform or supervise all tree work.

4) TYPES OF PRUNING CUTS

Pruning cuts may be classified by where they are made on the branch or stem. The preferred place to make a cut is to the parent branch or trunk, just to the outside of the branch collar. There are three general cuts used in arboricultural pruning: branch removal cut, reduction cut, and heading cut.

A. Branch Removal Cut (Thinning Cut)

Removal cuts (also known as thinning and collar cuts) remove side branches back to the larger parent branch or trunk (see Illustration 7). Removal cuts reduce the canopy density but generally have little influence on height. The primary use of removal cuts is in structural pruning of small, medium and older trees.

Illustration 7. Removal cuts eliminate a side branch back to the trunk or parent branch.

When removing a dead branch, the final cut should be just outside the branch collar of live bark. If the branch collar has begun to grow out along the branch, remove only the dead stub, leaving the collar intact. Do not cut into living tissue (see Illustration 8).

Illustration 8. Removal of Dead Branch

B. Reduction Cut (Cutting to a Lateral, Lateral Cut, Drop-Crotch Cut)

A reduction cut (also referred to as a drop-crotch cut) removes a stem back to a lateral branch that is at least one-third the diameter of the cut stem (see Illustration 9). Sprouts commonly follow a reduction cut, especially if a large portion (greater than about one-quarter) of the live

foliage was removed with the cut. If the branch that remains is less than about one-third the diameter of the cut stem, the cut is considered a *heading cut*. Reduction cuts are used to reduce the length of a stem or branch. **Heading cuts** (Topping) are not considered appropriate in most instances in the landscape.

Appropriate Reduction Cut **Inappropriate Heading Cut**

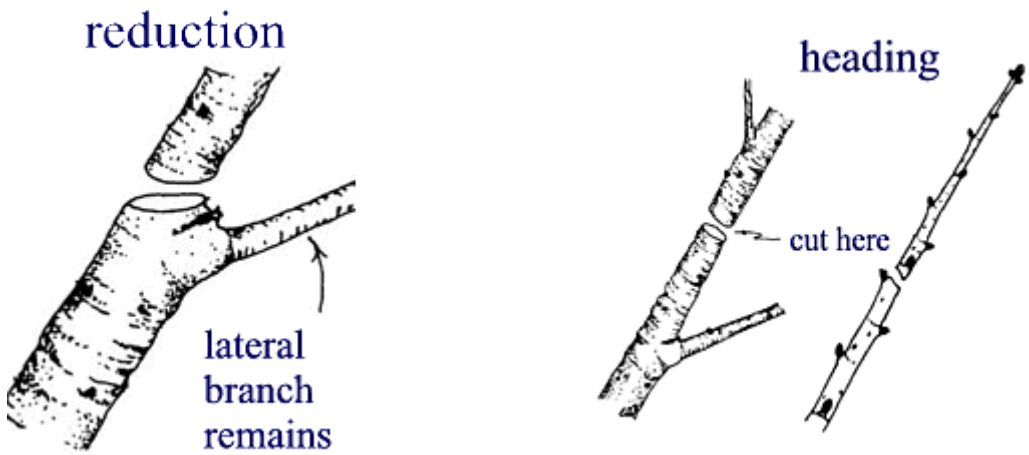


Illustration 9: Reduction Cut

NO TREE TOPPING ALLOWED

Topping is defined as the severe cutting back of major limbs to stubs larger than three inches in diameter within the tree's crown to such a degree as to remove the normal canopy and disfigure the tree.

C. Three Cut Method for Large Branches

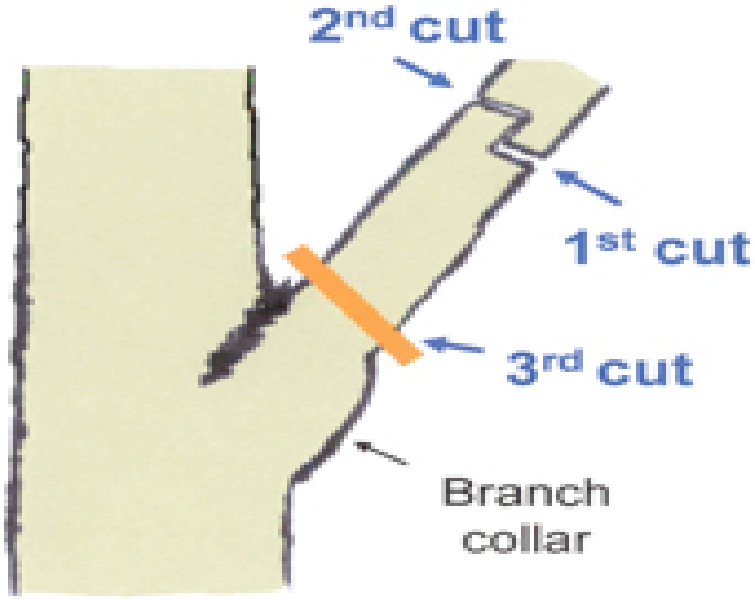
When removing any branch larger than one inch in diameter, use a three-cut method to protect the bark from tearing (see Illustration 10).

- ✓ **Cut 1.** Coming out 12 to 15 inches from the branch union (crotch), make an undercut approximately one-third to halfway through the branch.

- ✓ **Cut 2.** Moving a couple of inches out past the first cut, make the second cut from above, removing the branch. This double cut method prevents the weight of the branch from tearing the bark below the collar.

- ✓ **Cut 3.** Make the third and final cut at the correct pruning point. For example, on a *removal cut*, just outside the branch collar. For *woundwood* growth, take extra caution not to cut into or otherwise injure the branch collar.

Illustration 10: Three Cut Method of Branch Removal



5) PRUNING TECHNIQUES

Specific types of pruning may be necessary to maintain a mature tree in a healthy, safe and attractive condition. These techniques should be used, for whatever the pruning goals.

A. **Crown cleaning** is the removal of dead, dying, diseased, crowded, weakly attached and low-vigor branches from the crown of a tree.

B. **Crown thinning** is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, without compromising the tree's natural shape.

C. **Crown lifting** removes the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians and vistas.

D. **Crown reduction** reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Tree topping is not an accepted pruning method.

E. **Crown Restoration** is intended to improve the structure and appearance of trees that have sprouted vigorously after being broken, topped or severely pruned using heading cuts. Crown restoration may require several pruning's over a number of years.

F. **Utility Pruning** of a tree's growth under utility lines is most economically managed by directional pruning (thinning cuts). Directional pruning is the removal of a branch to the trunk or a significant lateral branch growing away from the conductor.

6) WOUND TREATMENT

Pruning paints and wound dressings shall not be used to cover pruning cuts. Research has shown that wound dressings do not improve wound closure and may actually promote disease at site of application

7) TRAINING YOUNG TREES

Structural pruning shall consist of selective pruning to improve tree and branch architecture primarily on young- and medium-aged trees. Begin developmental pruning of deciduous trees 2-3 years after planting. Structural training of young shade trees is based on five pruning objectives.

A. Pruning Objectives – 5 steps

1. **Remove broken, dead, dying, diseased, or damaged branches.** Inspect the canopy and remove or cut back these branches.

2. **Select and establish a central leader.** There should be only one leader. Select the strongest and most vertical stem as the leader and remove or cut back competing stems.

3. **Select and establish the lowest permanent branch.** Look for a well-attached branch at the desired height (determined by location and use), and remove closely spaced, competing branches. The diameter of the lowest permanent branch should be no more than one-half that of the central leader or trunk (at the point of attachment). Smaller temporary branches should be left close to the lowest permanent branch. Larger temporary branches should be pruned back to one or two buds.

4. **Select and establish scaffold branches.** Look for well-attached branches above the lowest permanent branch that are no more than one-half the diameter of the central leader. Scaffold branches should be well spaced both vertically and radially. Vertical spacing should be 18 inches or more for large trees and 12 inches for smaller trees. Radial spacing should allow for balanced branch distribution around the central leader. Leave small branches close to scaffolds as temporary branches and remove or cut back larger branches.

5. **Manage temporary branches, removing them over time.** Manage growth on temporary branches by keeping them short and removing them over time as the tree grows in height. Ideally, temporary branches are pruned back to a few buds. If a temporary branch is more than the diameter of the trunk, cut it back by at least 50% to discourage excess growth**.** *Temporary branches are removed before they reach a two inch diameter.*

VIII. STANDARDS FOR TREE REMOVAL

1) All removals of street trees shall require a Tree Disturbance Permit from the Planning and Zoning Department. Persons performing tree removals must meet all insurance and bonding requirements set forth in the Tree Ordinance.

2) Appropriate street and sidewalk barriers shall be placed where removals may endanger the public. The Department of Public Works shall be notified of any street blockages.

3) Care shall be taken in dropping trees to prevent sidewalk and curb damage.

4) The stumps of all trees shall be removed to at least eight inches below ground level and the cavity shall be filled with clean topsoil and the area leveled and seeded.

IX. STANDARDS FOR TREE PLANTING SPECIFICATIONS

1) GENERAL

The Standards for Tree Planting Specifications guides the planting of trees on all City owned public properties and new development sites. This includes the street tree planting plan, tree planting standards and best practices, tree planting operations, and maintenance of newly planted trees. This document should be referenced for all inquiries regarding the City's tree planting program.

2) APPLICABLE STANDARDS

All trees planted to meet tree canopy replacement requirements shall meet ANSI Z60.1 Standards for Nursery Stock and all planting shall be done in accordance with current ANSI A300 Standards for Tree Care Operations, ANSI Z133 Safety Standards and industry best management practices, as well as the administrative standards that accompany the tree ordinance. All trees planted should be 3" caliber.

3) RECOMMENDED TREE SPECIES

Tree species selected for the Recommended Tree Planting List (Appendix E) are hardy for the plant hardiness zone 8 and adaptable to the less than perfect growing conditions in urban soils. This list is separated into three size breakdowns to accommodate various site locations and growing situations. This tree species list should be periodically updated as new tree varieties become available or when listed trees are no longer appropriate for planting. Plants shall be grown within one cold hardiness zone of the project site.

4) UNDESIRABLE TREE SPECIES

Undesirable tree species (Appendix F) are those that have been found to be poor selections for right-of-way plantings, have poor growth habits, have nuisance aspects, are susceptibility.

to insect or disease, and for safety reasons. This tree species list should be periodically updated as trees are no longer appropriate for planting.

5) TRANSPLANTING STANDARDS

A. Lift plants only from the bottom of the root balls or with belts or lifting harnesses of sufficient width not to damage the root balls. Do not use the trunk as a lever in positioning or moving the tree in the planting hole.

B. Before digging, find the topmost root growing from the trunk of the tree. This is called the root flare area. Remove any soil above that point across the entire root ball. Measure from the topmost root to the base of the root ball to determine its height.

C. Dig the planting hole roughly three times wider than the diameter of the root ball. Dig no deeper or slightly less deep than the height of the root ball. The hole should be bowl-shaped with the sides sloped. Save the soil. Planting illustration Appendix F.

D. Place the tree in the hole so that the top of the ball (root flare) is even with the soil level or slightly higher. Don't cultivate the bottom of the hole; it may cause the root ball to settle and the tree to be planted too deep. Remove any burlap, wire, twine or strapping.

E. On container grown plants cut the root ball to eliminate girdling root development.

F. Back fill with the soil that was removed from the hole. Don't amend the soil with compost, peat moss, other soil, or fertilizer. Tamp soil lightly but do not compact.

G. Form a one-to-two-inch berm of soil around the edge of the planting hole to hold water. Fill the "saucer" with water once or twice.

H. Mulch the root ball surface and planting area. Use three to four inches of organic material. Keep the mulch one or two inches away from the trunk.

I. Staking is only necessary when conditions warrant tree support, such as in windy locations or in soils that is excessively sandy or wet with container grown material.

J. Keep the tree watered for the first year. Water every day for 2 weeks and every other day for two months and then weekly until the tree is established.

6) MAINTENANCE GUIDELINES FOR NEWLY PLANTED TREES

A. Water routinely: Trees provided with regular irrigation, 3 times per week, for the first 6 to 8 weeks during the growing season to stimulate greater root growth. One

inch of water each week for the first season is a good rule of thumb, but monitoring soil moisture and applying water as needed is preferable. Establishment period is 12 months for each inch tree caliper (ex. 3” caliper = 36 month establishment period).

B. Mulch: Replace mulch every two years or so to maintain a 3-ich thick layer. Mulch rings may be widened as tree grows. No mulch shall be placed up against tree trunk of over tree flare roots.

C. Staking material: Remove any staking and ties as soon as tree can stand upright on its own. Regardless remove all staking material at one year.

D. Fertilize: Do not fertilize for the first year. If soil conditions calls for fertilizer use a WIN 50% slow release fertilizer.

E. Prune: Prune only to remove dead or broken branches. No pruning for the first year after planting. Pruning can inhibit root growth and establishment. Structural pruning will start at the third year to develop good branch development.

X. CRITERIA FOR LANDMARK TREES.

The designation of a Landmark Tree shall be based upon an evaluation of the tree in relation to the criteria set forth:

1. The tree is demonstrated to have an association with a documented historical event, or is located on an historic site.

2. The tree has unusually high aesthetic value.

3. The tree is of unique character because of its age, species, variety, location, or because of the size and development of its crown, trunk, or main stem.

4. The tree is free of contagious diseases, pests and other serious injury.

5. The tree has a life expectancy of more than ten years.

6. The tree is free from structural defects which would present a hazard to the public.

7. The tree is recognized by the Georgia Urban Forest Council as landmark or historic.

APPENDIX A

***CANOPY* ANALYSIS**

A basic condition of the Augusta Tree Protection Ordinance is that all applicable sites *have a potential minimum canopy (MC) of 30% by area*. The *canopy* requirement must be met whether or not a site had trees prior to development. The *canopy* may be achieved by counting existing trees to be preserved *or actual canopy of preserved trees or groupings*, planting new trees, or some combination of the two. For canopy analysis, the following formula shall apply:

PROCEDURE FOR CALCULATING THE REQUIRED TREE REPLACEMENT:
CR=SA x MC (30%)

Where:

CR = canopy area requirement
SA = site area
MC = 30%

Step 1: *Area of total site from boundary survey*
Step 2: *Multiply total area (in square feet) by .30*
Step 3: *Subtract preserved tree area from Step 2*
Step 4: *Select enough over story and understory trees to equal area in Step 3. (**Note: not more than 3 understory trees for each over story tree. Not more than 15% of one species and not more than 40% of one genus.**)*

NOTE: All replacement trees must be three (3) inch caliper or greater. Replacement trees must have minimum area for growth.

Square footage value placed on a 3" caliper tree for calculating replacement trees:

a) Over story trees values;
   1) Large growth trees = 1400 sq. ft./tree planted
   2) Medium growth trees = 750 sq. ft./tree planted
b) Understory trees value;
   1. Small growth trees = 300 sq. ft./tree planted

Example 1: Following site to be developed:
Step 1: 10 acre site = 435,600 sq. ft.
Step 2: 30% Minimum Canopy Requirement
435,600 x .30 = 130,680 sq. ft. to meet 30% canopy cover
Step 3: Preserved trees left on site = 108,900 sq. ft. (2.5 acres)
130,680 minus 108,900 = **21,780 sq. ft. of replacement trees required**
Step 4: Replacement trees required to meet **30% *CR*** *(canopy area requirement)*
CR = canopy area requirement

- **21,780 sq. ft.** of area to planted in trees
  a. Over story trees = 1400 sq. ft./tree planted
     - ✓ 15 over story (large canopy trees) x 1400 sq. ft. = 21,000 sq. ft.
     - ✓ 5 medium growth trees x 750 sq. ft. = 3,750 sq. ft.

APPENDIX A

✓	5 small growth trees x 300 sq. ft.	=	1,500 sq. ft.
b.	**Total square footage of trees planted:**		**26,250 sq. ft.**

<u>THE 26,250 SQ, FT. OF PLANTED TREES HAS MET 30% CANOPY AREA REQUIREMENT</u>

Step 5. Trees planted or replanted to achieve canopy requirements shall be selected from the Augusta Tree Species Selection list set forth in this Illustrated Guide (IGO). In addition, replanting / new planting shall be at the ratio of not less than one overstory tree for every three understory trees. Canopy credit may be met by planting all overstory trees, but not by planting only understory trees. All replacement trees shall be maintained for a period of three years under a Tree Establishment Bond (see Section 8-4-15 of the Augusta Tree Ordinance) to ensure their survivability. Required trees on the site must be maintained / retained in perpetuity or replacement plantings of the same size and species must be planted should the tree become diseased, die, become a public health hazard, or is removed for any reason.

APPENDIX B

MITIGATION POLICY FORMULA FOR REPLACEMENT TREES OR DAMAGED TREES

Contribution calculations are based on three (3) inch caliper replacement trees with a value updated semi-annually, and on file with the City, representing the average size and cost of materials, labor and guarantee for trees planted in the Augusta area.

Example: Based on unit value of tree replacement of $500.00 (amount subject to change)

To determine the appropriate **CR (***canopy area requirement*) contribution, first calculate the *Implantable Square Footage (ISF)* of tree space which cannot be planted on the site.

Divide the ISF by 1400 sq. ft. (the sq. ft. value of a 3" caliper over story replacement tree) and multiply by $500.00.

Example 2: From Example 1 the total sq. ft. of 30% **CR** required is 108,900 sq. ft.

Due to space limitation and other site problems, the site only has 84,500 sq. ft. of Plantable Area (PA) for replacement trees.

To determine the amount of space on site that cannot be planted, use the following formula:

ISF = CR – PA

In this example:

CR (108,900 sq. ft.) – PA (84,500 sq. ft.) = 24,400 sq. ft. of ISF

CR = ISF ÷ 1400 sq. ft.

CR = 24,400 ÷ 1400 sq. ft. = 17.428 replacement trees X 2 = 34.856 or 35 replacement trees

This means that a total of 35 trees are to be planted at a remote site (approved by the Director) as a form of alternative compliance (a 3-year Tree Establishment Bond in the amount of $500 per tree is required) OR the developer may elect to contribute to the Augusta Tree Mitigation Fund the value of 18 trees (17.428 from the calculation above, rounded up) per the requirements in the Tree Ordinance. Determine the acceptable contribution amount as follows:

18 x $1,500.00 **= $27,000 TOTAL CONTRIBUTION TO TREE MITIGATION FUND**

APPENDIX C

TREE DISTURBANCE PERMIT APPLICATION

City of Augusta Georgia – Planning and Development Department

Augusta GEORGIA

PLANNING DIVISION

www.augustaga.gov

Tree Disturbance Permit Application

APPLICANT / COMPANY NAME _____

NAME AND LICENSE NUMBER OF ARBORIST _____

ADDRESS _____

PHONE NUMBER _____ EMAIL _____

ADDRESS OF PROJECT _____

NATURE OF PROJECT _____

GENERAL INFORMATION: ☐ INSTALL PLANT MATERIAL* ☐ PERFORM MAINTENANCE

☐ REMOVE PLANT MATERIAL * **NOTE: THIS PERMIT MUST BE APP'D BEFORE WORK BEGINS**

TREE SPECIES _____ TREE SIZE _____

TREE CONDITION _____

FUNCTION AND VALUE OF TREE _____

CURRENT TREE CANOPY COVER PROVIDED _____

TYPE OF TREE DISTURBANCE _____

AMOUNT OF CANOPY REDUCTION _____

EXTENT OF TREE DISTURBANCE _____

IMPACT OF PLANNED ACTIVITIES ON TREE HEALTH AND STABILITY

_____

TREE PROTECTION METHODS TO BE EMPLOYED _____

IF REMOVAL, ARE THERE ALTERNATIVES TO REMOVAL? (DESCRIBE)

_____

TYPE AND SIZE OF TREE TO BE REPLACED _____

This permit is required before any tree disturbance activity (pruning, treating, or removing) street or park trees or trees within City owned land or City owned public rights-of-way. Such Permit will only be granted to individuals, businesses or companies who employ a Certified Arborist to perform or supervise such tree work. Applicants must agree to abide by ANSI 300 Standards for tree care. "Topping" of trees shall be prohibited except in cases where the top of the tree has been injured beyond repair by a storm or related incident. Applicant certifies that he is in possession of liability insurance and workman's compensation insurance in the minimum amounts as required by the City of Augusta; indemnifying the City of any person injured or damage resulting from the pursuit of such endeavors as herein described. The Applicant understands that, at the recommendation of the Planning & Development Director, in conjunction with the City Arborist, the Code Enforcement Officer is authorized to suspend or revoke the right of any person or business to perform work for the City of Augusta that engages in work practices which do not comply with tree care standards as specified in the Augusta Tree Ordinance and the related ANSI Standards. Fines as outlined in the Augusta Tree Ordinance may be imposed for violations of the Augusta Tree Ordinance.

APPLICANT SIGNATURE _____ DATE _____

P&D SIGNATURE _____ DATE _____

*** DIGG System must be notified before any excavation begins; Augusta Engineering must be notified 24 hours before commencement of work**

APPENDIX D

AUGUSTA, GEORGIA RECOMMENDED TREE SPECIES LISTING

Large Canopy Trees for over story: (Count for 1400 sq. ft. of area for planting – minimum 3" caliper)

Large Trees >50' Suitable for areas with more than 400 square feet of total planting area; in a planting strip at least 16' x 25' or 20' x 20'

Species Latin Name	Species Common Name	Deciduous (D) Evergreen (E)	Sun/ Shade	Growth Rate	Medians	Parking Lots or Similar 'Hardscapes'	Near Sidewalks	Under Utility Lines***	Visibility Concern Areas **	Street Yards	Buffer Yards
Magnolia grandiflora	Southern Magnolia	E	PS/FS	F	NO	NO	NO	NO	NO	NO	YES
Cedrus deodora	Deodar Cedar	E	FS	F	NO	NO	NO	NO	NO	YES	YES
Cryptomeria japonica; radicans; 'Yoshino'	Cryptomeria	E	FS	M	NO	NO	NO	NO	YES	YES	YES
Ginkgo biloba	Ginkgo (male only)	D	PS/FS	S	YES	YES	YES	NO	NO	YES	YES
Juniperus virginiana (to include Brodie and Burkii)	Eastern Red Cedar	E	FS	F	YES	NO	NO	NO	NO	YES	YES
Liquidambar styraciflua 'Rotundiloba', 'Slender Silhouette'	Sweetgum fruitless	D	PS/FS	M	YES	YES	YES	NO	YES	YES	YES
Liriodendron tulipifera	Tulip Popular	D	FS	F	YES	YES	NO	NO	YES	NO	YES
Nyssa sylvatica various cultivars	Black Gum 'Green Gable,' 'Wildfire'	D	PS/FS	M	YES	YES	YES	NO	YES	YES	YES
Pistacia chinensis	Chinese Pistache	D	FS/PS	M	YES	YES	YES	NO	YES	YES	YES
Quercus alba	White Oak	D	PS/FS	M	YES	YES	NO	NO	YES	YES	YES
Quercus falcata	Southern Red Oak	D	FS	M	YES	YES	NO	NO	YES	YES	YES
Quercus lyrata	Overcup Oak	D	FS	M	YES	YES	YES	NO	YES	YES	YES
Quercus michauxii	Swamp Chestnut Oak	D	PS/FS	M	YES	YES	NO	NO	YES	YES	YES
Quercus nuttallii	Nutall Oak	D	FS	F	YES	YES	NO	NO	YES	YES	YES
Quercus phellos	Willow Oak	D	PS/FS	F	YES	YES	YES	NO	YES	YES	YES
Quercus rubra	Northern Red Oak	D	FS	F	YES	YES	NO	NO	NO	YES	YES
Quercus shumardii	Shumard Oak	D	FS	F	YES	YES	YES	NO	YES	YES	YES
Quercus virginiana	Live Oak	SE	PS/FS	M	NO	NO	NO	NO	YES	YES	YES
Taxodium ascendens	Pond Cypress	D	PS/FS	M	YES	NO	NO	NO	YES	YES	YES
Taxodium distichum	Bald Cypress	D	FS/PS	F	YES	NO	YES	NO	YES	YES	YES

Ulmus americana various cultivars	American Elm 'Princeton', 'Jefferson'	D	FS	F	YES	YES	YES	NO	YES	YES	YES
Ulmus parvifolia various cultivars	Chinese Elm Lacebark Elm 'Ailee,' 'Everclear,' 'Bosque'	D	FS	F	YES	YES	YES	NO	YES	YES	YES

Key:

	Sun/shade exposure:	**Growth rate:**	**Type:**	**Problems**
** Tree placement and maintenance procedures should be respectful of sight distance	FS = Full sun	S = Slow (less than 1' per year)	D = Deciduous	A. Large fruit
	PS = Part shade	M = Medium (1-2' per year)	E = Evergreen	B. Use of hybrids recommended
*** Under power lines, please see list of Small Canopy Trees	S = Shade	F = Fast (more than 2' per year)	SE = Semi Evergreen	

The Director may approve the use of additional species and/or cultivars not listed, upon recommendation / approval of the Tree Commission

APPENDIX D

AUGUSTA, GEORGIA RECOMMENDED TREE SPECIES LISTING

Medium Canopy Trees: (Count for 750 sq. ft. of area for planting – minimum 3" caliper)

Medium Trees 30' - 50' Suitable for spaces with 100 to 200 sq. ft. of total planting space; in a planting strip at least 4-7 feet wide; or place at least 4' from pavement or wall.

Species Latin Name	Species Common Name	Deciduous (D) Evergreen (E)	Sun/ Shade	Growth Rate	Medians	Parking Lots or Similar 'Hardscapes'	Near Sidewalks	Under Utility Lines	Visibility Concern Areas **	Street Yards	Buffer Yards
Acer buergerianum various cultivars	Trident Maple 'Valynor,' 'Aeryn'	D	PS/FS	M	YES	YES	YES	NO	YES	YES	YES
Ilex 'Nellie R. Stevens'	Nellie R. Stevens Holly	E	FS	M	YES	YES	NO	YES	YES	YES	YES
Ilex opaca	American Holly	E	FS	S	YES	YES	NO	NO	NO	YES	YES
Ilex x attenuata 'East Palatka'	East Palatka Holly	E	FS	M	YES	YES	NO	NO	NO	YES	YES
Ilex x attenuata 'Savannah'	Savannah Holly	E	FS	M	YES	YES	NO	NO	YES	YES	YES
Magnolia virginiana	Sweetbay Magnolia	D	PS	M	NO	YES	NO	NO	NO	YES	YES
Ostrya virginiana	American Hophornbeam	D	PS	S	NO	NO	YES	NO	YES	YES	YES
Lagerstroemia Natchex	Crape Myrtle	D	FS	F/M	YES	YES	YES	YES	YES	YES	YES

Key:

	Sun/shade exposure:	**Growth rate:**	**Type:**	**Problems**
** Tree placement and maintenance procedures should be respectful of sight distance	FS = Full sun	S = Slow (less than 1' per year)	D = Deciduous	A. Large fruit
	PS = Part shade	M = Medium (1-2' per year)	E = Evergreen	B. Use of hybrids recommended
	S = Shade	F = Fast (more than 2' per year)	SE = Semi Evergreen	

The Director may approve the use of additional species and/or cultivars not listed, upon recommendation / approval of the Tree Commission

APPENDIX D

AUGUSTA, GEORGIA RECOMMENED TREE SPECIES LISTING

Small Canopy Trees – Understory: (Count for 300 sq. ft. of area for planting – minimum 3" caliper)

Small Trees < 25' Useful under utility lines; areas with < 100 sq. ft. of total planting area; a planting strip with a width of at least 4'.

Species Latin Name	Species Common Name	Deciduous (D) Evergreen (E)	Sun/ Shade	Growth Rate	Medians	Parking Lots or Similar 'Hardscapes'	Near Sidewalks	Under Utility Lines	Visibility Concern Areas **	Street Yards	Buffer Yards
Acer ginnala	Amur Maple	D	PS/FS	M	YES	YES	YES	YES	YES	YES	YES
Acer palmatum species and various cultivars excluding weeping	Japanese Maple, 'Sango Kaku', 'Bloodgood'	D	PS	S	YES	NO	NO	YES	YES	YES	YES
Cercis canadensis various cultivars	Eastern Redbud	D	PS/FS	M	YES	NO	YES	YES	YES	YES	YES
Chionanthus retusus	Chinese Fringetree	D	PS/FS	S	YES	YES	YES	YES	NO	YES	YES
Cornus kousa	Kousa Dogwood	D	PS/FS	S	YES	YES	YES	YES	YES	YES	YES
Crataegus viridis	'Winter King' Hawthorn	D	FS	M	YES	YES	NO	YES	NO	YES	YES
Ilex vomitoria	Yaupon Holly	E	PS/FS	M	YES	YES	YES	YES	YES	YES	YES
Lagerstroemia indica x Lagerstroemia fauriei	Crape Myrtle	D	FS	F/M	YES	YES	YES	YES	YES	YES	YES
Magnolia grandiflora 'Little Gem'	'Little Gem' Magnolia	E	PS/FS	S	YES	YES	YES	YES	YES	YES	YES
Magnolia x soulangeana	Saucer Magnolia	D	PS/FS	M	YES	NO	YES	YES	YES	YES	YES
Morella cerifera	Waxmyrtle	E	PS/FS	F	YES	YES	NO	YES	NO	YES	YES
Parrotia persica	Persian Ironwood	D	FS	M	YES	YES	YES	YES	YES	YES	YES
Thuja occidentalis various cultivars	Arborvitae 'Emerald Green', 'Green Giant'	E	FS	M	NO	NO	NO	NO	NO	NO	YES
Vitex agnus-castis	Chastetree	D	PS/FS	M	YES	YES	NO	YES	YES	YES	YES

Key:

	Sun/shade exposure:	**Growth rate:**	**Type:**	**Problems**
** Tree placement and maintenance procedures should be respectful of sight distance	FS = Full sun	S = Slow (less than 1' per year)	D = Deciduous	A. Large fruit
	PS = Part shade	M = Medium (1-2' per year)	E = Evergreen	B. Use of hybrids recommended
	S = Shade	F = Fast (more than 2' per year)	SE = Semi Evergreen	

The Director may approve the use of additional species and/or cultivars not listed, upon recommendation / approval of the Tree Commission

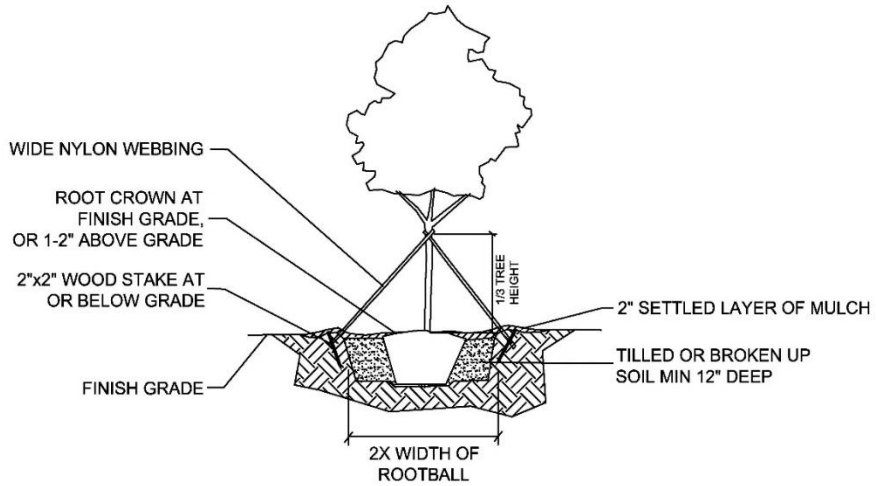
APPENDIX E

AUGUSTA, GEORGIA – TREES NOT RECOMMENDED FOR PLANTING

The following species are not recommended because they are poor or marginal performers.

Common Name	Scientific Name	Problem
Box Elder	*Acer negundo*	Aggressive shallow roots, weak wood
Bradford Pear	P*yrus calleryana 'Bradford'*	Genetic flaw, splits apart, susceptible to breakage; Invasive; Seedlings produce thorns.
Catalpa	*Catalpa bignonoides*	Weak wooded
Chinese Tallowtree	*Sapiun sebiferum*	Aggressive shallow roots, susceptible to breakage
Female Ginkgo	*Ginkgo biloba*	Foul smelling fruit. Saplings that were produced via cuttings are more assuredly male.
Green Ash	*Fraxinus pennsylvanica / All trees in Fraxinus genus*	Anthracnose, Aggressive shallow roots, emerald ash borer (all ash trees)
Hackberry	*Cercis spp.*	Large diameter surface roots, susceptible to breakage
Leyland Cypress	*Cupressus x leylandii*	Susceptible to canker-related dieback
Mimosa	*Albizia julibrissin.*	Prone to disease, weedy tree, susceptible to breakage
Princess Tree	*Paulowina tomentosa*	Aggressive shallow roots, Weedy tree, messy, weak wooded
Russian Olive	*Elaegnus angustifolia*	Poor form, disease
Silver Maple	*Acer saccharinum*	Aggressive shallow roots, weak wood
Sweetgum	*Liquidambar styraciflua*	Aggressive surface roots, fruit a litter nuisance
Tree-of-Heaven	*Ailanthus altissima*	Aggressive shallow roots, Weedy tree, seeds, weak wood
Water Oak	*Quercus nigra*	Large diameter surface roots, susceptible to breakage
Southern Dogwood	*Cornus florida*	Dogwood is under attack by Dogwood Anthracnose, a disease that is threatening our native dogwood populations. Trees planted in full sun and in harsh urban environments are particularly susceptible and can spread the disease to more properly sited plants.

APPENDIX F



TREE PLANTING

NOT TO SCALE

The University of Georgia
Cooperative Extension
College of Agriculture and Environmental Sciences & Family and Consumer Sciences

NOTES:

1. ALL PLANT MATERIALS SHALL BE IN ACCORDANCE WITH THE AMERICAN STANDARDS FOR NURSERY STOCK (ANSI 260.1-2004). PLANT ACCORDING TO ANSI A300 PART 6.

2. DIG THE PLANTING HOLE A MINIMUM OF 2x WIDTH OF ROOTBALL FOR AT LEAST THE FIRST 12 INCHES OF DEPTH. BELOW 12 INCHES, DIG HOLE WIDE ENOUGH TO PERMIT ADJUSTING. DO NOT DIG THE HOLE DEEPER THAN ROOT BALL DEPTH.

3. SCARIFY THE SUBGRADE AND SIDES OF THE PLANTING HOLE.

4. LIFT AND SET THE TREE BY ROOT BALL ONLY. DO NOT LIFT USING THE TREE TRUNK AND DO NOT USE TREE TRUNK AS A LEVER.

5. SET THE TOP OF THE ROOT BALL LEVEL WITH THE SOIL SURFACE OR SLIGHTLY HIGHER IF THE SOIL IS PRONE TO SETTLING.

6. AFTER THE TREE IS SET IN PLACE, REMOVE ALL BURLAP, ALL WIRE AND ALL STRAPS FROM AT LEAST THE UPPER 1/2 OF THE ROOTBALL.

7. BACKFILL WITH EXISTING SOIL THAT HAS BEEN WELL-TILLED OR BROKEN UP. DO NOT ADD AMENDMENTS TO THE BACKFILL SOIL. AMEND THE SURFACE WITH MULCH.

8. STAKING OPTIONAL/NOT ENCOURAGED: IF STAKING USE THREE 2" X 2" WOOD STAKES DRIVEN INTO UNDISTURBED SOIL A MINIMUM OF 16 INCHES. SPACE STAKES EQUALLY AROUND THE TREE. REMOVE STAKES WITHIN TWO YEARS OF PLANTING.

9. STAKING OPTIONAL/NOT ENCOURAGED: IF STAKING ATTACH 3/4" NYLON WEBBING TO CONNECT THE TREE TO STAKES. ATTACH WEBBING AT 1/3 THE TREE HEIGHT.

10. APPLY A 2-3" (SETTLED) DEPTH OF PINE STRAW OR BARK MULCH TO THE PLANTING SURFACE. LEAVE A 2" SPACE AROUND THE TRUNK FOR AIR CIRCULATION.

11. PRUNING SHALL BE LIMITED TO DEAD, DISEASED, OR BROKEN LIMBS ONLY AND SHALL BE IN ACCORDANCE WITH ANSI A300 SPECIFICATIONS.

12. REMOVE ANY TRUNK WRAP OR TAGS REMAINING AT TIME OF PLANTING. NO WRAPS OR TAGS SHALL BE PLACED ON TRUNK.

Tree details available on https://secure.caes.uga.edu/extension/publications/files/html/C989/TypicalTreePlanting.pdf . Tree notes have been changed to reflect Augusta Tree Commission Requirements.

REFERENCES FOR FURTHER INFORMATION

American National Standard Institute. American National Standards for Arboricultural Operations – Pruning, Repairing, Maintaining and Removing Trees, and Cutting Brush – Safety Requirements (Z133.1).

American Nursery and Landscape Association, Washington D.C. American National Standard Institute. *American National Standards for Tree Care Operations – Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices (A300)*.

Georgia Forestry Commission: http://www.gfc.state.ga.us/

Gilman, Edward F. *Trees for Urban and Suburban Landscapes*. Delmar Publishers, 1997.

Shigo, Alex L. *Modern Arboriculture: A Systems Approach to the Care of Trees and Their Associates*. Shigo & Trees Associates, LLC, 1991.

University of Georgia Extension – Forestry: http://extension.uga.edu/topic-areas/environment-natural-resources/forestry.html

Urban, James. *Up by Roots: Healthy Soils and Trees in the Built Environment*. ISA, 2008