C I T Y O F S A V A N N A H

L A N D S C A P E A N D T R E E

O R D I N A N C E C O M P L I A N C E

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INTRODUCTION

In August, 1993, the Metropolitan Planning Commission appointed the Chatham County - City of Savannah Tree Advisory Committee to help coordinate a broad study effort to establish specific visions, goals, objectives and policies affecting tree cover and landscaping standards prior to developing amendments to existing local ordinances. Members of the Committee were chosen from all areas of the City and County, and from varied business and interest groups. There was representation from builders, developers, utility companies, engineers, architects, landscape architects, arborists, foresters, land trusts, the Savannah Tree Foundation, the Developers' Council of Savannah Homebuilders Association, Savannah Economic Development Authority, City Park and Tree Commission, the County Tree Commission, the Georgia Forestry Commission, neighborhoods, with guidance from the City, County and MPC staff.

In late October, Charles Watson presented his study on the documentation of tree canopy changes in Chatham County from 1972-1992. This innovative study applied LANDSAT multispectral images together with geographical information system (GIS) techniques to analyze the changes in tree cover patterns. The study yielded four major conclusions:

- Twenty-seven percent of the total acreage within Chatham County lost significant amounts of tree cover over the 20-year period. The two types of loss were identified as "catastrophic," as in clear-cut areas, and "slow-thinning," as a result of attrition or death without replacement.
- The rate of tree cover loss accelerated in the later years of the study. Residential/mixed use development activities accounted for a large portion of the cover loss. Sixty percent of the county loss occurred in areas zoned for residential and/or mixed uses.
- Despite the tree loss, a 50 percent canopy cover remained County-wide.

The Study quantified the rates of change of tree loss, identified the greatest areas where trees were being lost, and expanded an understanding of how local land use patterns and activities had the greatest impact on trees. The study highlighted where the old ordinance was most deficient: loss rates were being accelerated with new development, and single-family residential development was exempt from review.

After three months of gathering information, the Committee prioritized two issues in a facilitated workshop: changes to the existing provisions of commercial, industrial and multifamily development with respect to trees, and incorporation of single-family development into the ordinance. Subcommittees were formed to work out these issues. In September, 1994, the Committee presented its final report to the Metropolitan Planning Commission, recommending changes that were incorporated into the new city and county tree ordinances.

The major changes to the 1995 Ordinance include:

- Single-family residential development is incorporated. This portion requires dedication of a tree easement for the planting and maintenance of public street trees, and the provision of 1,600 Tree Quality Points per acre, based upon the Committee's goal of maintaining a 50% canopy cover.
- The dedication of a Tree Easement, to be located outside the road right-of-way and separate from all utility and drainage easements, for the purpose of planting and maintaining street trees.
- A development-wide increase in the Tree Quality Point calculation from 800 to 1,600 points per acre in newly planted *large canopy trees* and/or preserved existing trees to maintain the 50% canopy cover minimum goal for the community. The former ordinance allowed any type or size

of tree to fulfill the requirement. Although a smaller tree, such as a crape myrtle, provides canopy, it does not match that type of shade which a larger tree provides. Here, the City of Savannah looked to its own precedent: those trees planted by the City Park and Tree Commission over the past century.

- By using large canopied trees, however, a larger ground area dedicated to root development is required. The International Society of Arboriculture recommends a minimum of 400 square feet of root area to be reserved for each newly-planted large tree. This has increased the required green space from 10 to 20 percent on commercial, industrial and multifamily development.
- The addition of 400 Landscape Quality Points per acre for the planting of medium trees, small trees, shrubs, ground cover and vines on commercial, industrial and multifamily development. The intent of this provision is to provide understory vegetation that will help moderate soil temperature, provide necessary moisture for new and existing trees planted in harsh environments, and provide visual screening to help reduce heat, glare and noise.
- Revision of the Plant List for trees, shrubs and ground covers, and the recalculation of Quality Point values based upon
  - Trees that provide canopy
  - Drought-resistant trees
  - Hardy, native species
  - Rarer species found only on marginal lands in Chatham County
- Retention of stands or clusters of trees to provide natural windbreaks, visual and physical buffers, ready-made canopy cover, and reduced heat and flooding.
- Above all, perceive and accept trees as part of the urban/suburban infrastructure

In the years since the passing of the previous Tree Ordinance, it became obvious that there needed to be more changes to keep up with the increased demand for development in the region and how it was impacting our communities. As a result, we followed similar steps as before, utilizing public input on various topics brought to light through professionals in the field, from the project's design to its implementation. Below is a list of the changes from the 1995 Tree Ordinance which affect the design and development community:

1. Name changed from Land Clearing and Tree Protection Ordinance to Landscape and Tree Ordinance. This will more accurately reflect the overall intent and scope of the ordinance, which is to protect and maintain the environmental and aesthetic assets of the community by requiring tree planting and landscaping for new development, and to ensure continuing compliance with standards.
2. Various sections have been revised so that related standards and requirements were more logically enumerated. For example, all permit application requirements are found in one section instead of in different sections. In addition the new sections general follow in order of the process, from general requirements to application requirements, tree protection requirements, design requirements, and post development requirements.
3. The statement of purpose has been simplified and revised to provide a general mission statement.
4. Definitions
   - Unnecessary definitions eliminated.
   - Wording changes made to several definitions for clarity

- Administrator of ordinance changed to City Manager or designee.

5. General Provisions
    - Designation of administrator moved from Sec. 4-10010 and changed from the Chatham County-Savannah Metropolitan Planning Commission to the City Manager or designee.
    - Added a list of specific categories of trees protected within the City.
    - Establishment of Tree Fund moved from Sec. 4-10010
    - Exemptions moved from Sec. 4-10004
    - Designation of exceptional trees moved from Sec. 4-10007
6. The following sections of the current ordinance have been eliminated and incorporated into revised sections in order to improve the logic and structure of the ordinance, and to reduce duplication.
    - 4-10007 Principles and standards for green space, tree protection, tree establishment and landscaping – General
    - 4-10008 Principles and standards for green space, tree protection, tree establishment and landscaping in commercial, industrial and multifamily development
    - 4-00009 Principles and standards for green space, tree protection, tree establishment and landscaping in new single family residential subdivision development.
7. Sec. 4-10011 Wetlands Protection – This section has been eliminated as it is beyond the jurisdiction and scope of the ordinance, and is a part of the environmental assessment required by Development Services.
8. 4-10006 Permit Application Requirements - New section incorporating all permit application requirements, which had been in three different sections.
9. 4-10007 Tree Protection Requirements – New section incorporating all tree protection requirements.
10. 4-10008 Design Requirements – New section incorporating all tree planting, landscaping and open space requirements.
11. 4-10009 Requirements for Certificate of Occupancy, Maintenance and Perpetual Compliance – New section incorporating all post project completion requirements, and adding revisions to coordinate with requirements of the Development Services Department.
12. 4-10010 Variance and Appeals – New section providing for requests for variance, and appeal of decisions to the Park and Tree Commission, as provided by Sec. 2-5061.
13. Other specific changes
    - Required size for new trees increased from 2” caliper to 2 ½”
    - Landscape Architect required to prepare tree and landscape plans for sites larger than one acre.
    - Protection zones for existing trees on development sites required to be at least one foot radius per inch of tree diameter.
    - Sites larger than one acre are required to have a diversity of tree species

- Greater protection provided for trees on public right-of-way.
- Addresses set-a-sides and stands of trees as viable Tree Quality Point/Landscape Quality Point sources for designs.
- Provides for subdivision developer to pay to the Tree Fund for the cost trees that will be installed by Park and Tree Department.
- Adds point value for preserved stands of trees and understory similar to Chatham County.
- Provides for notice of violation and stop work for continued non-compliance
- Adds perpetual compliance to the ordinance (already in existing Tree Ordinance, yet titled differently).

On May 10, 2007, the Savannah City Council approved the revised City of Savannah Landscape and Tree Ordinance on Second Reading. This manual was created to assist in understanding the requirements set forth in the new City of Savannah Landscape and Tree Ordinance.

2012 Revision

- Updated the Park and Tree Site Plan Review Checklist in the appendix.

HOW TO USE THE MANUAL

The Manual is a One-Stop Tree Protection and Planting guide. It explains the sections of the Landscape and Tree Ordinance and gives examples for the Ordinance's use under different conditions. It also supplies guidelines for tree protection, remedial care of trees damaged during the construction process, soils, xeriscape guidelines for water conservation, planting standards and the plant material that will grow in the City of Savannah. These are easily found under individual Tabs for each section.

- For Commercial property, follow the General and Typical Commercial Guidelines.
- For Industrial property, follow the General and Typical Industrial Guidelines.
- For Institutional property, follow the General and Typical Institutional Guidelines.
- For Multifamily property, follow the General and Typical Multifamily Guidelines.
- For Redeveloped Property, follow the General and Typical Redevelopment Guidelines.
- For developers of Single-family Subdivisions, follow Single-Family Development.
- For builders of Single-family Houses, follow the Individual Lot Example.

- **The Tree Protection Methods Section** discusses different ways to protect trees. Illustrations of various details and methods are provided for your use. These have been found to be the most effective for this geographical area and take into consideration the local soil types.

- **The Standards for Remedial Care** is a guide to procedures to help trees survive when they have been damaged during the construction process. These methods should be employed by a Certified Arborist. These professionals are trained in the most effective and up-to-date tree care. They are knowledgeable in how trees function and grow and are versed in proper pruning techniques. They have taken and passed a written examination given by the International Society of Arboriculture, and have correctly identified trees as part of their examination. In order to maintain their annual certification, these individuals must attend regular workshops, conferences, and demonstrate their expertise. Most companies which advertise tree removal or call themselves "tree surgeons" are not necessarily Certified Arborists.

- **Information on Soils and Xeriscape Principles** have been included for your use. These are helpful guides for development and planting. It is important to know what soil types are on site so that you can match the appropriate plants and irrigation systems to the soil. It is much more expensive and time-consuming to change the soil structure, although in some circumstances this may be necessary. Xeriscape principles are water conservation steps which are helpful in the landscape.

- **Planting Standards** are included in the Manual. These have been adapted from the American Nurserymen' Standards and help determine the best methods for planting in this area. Savannah is located in USDA Zone 8B; old planting references use Zone 9. This information may aid you in determining whether or not the plant is suitable for this area.

- **A Plant List** of trees, shrubs, ground cover and vines which have proven to be hardy in this coastal area is provided as reference. The listing provides the quality point value as well as information on the plant, such as for soils, sun/shade, flowers, fruit, etc.

TECHNICAL TERMS

Absorbing roots: Small and fibrous, they take up water and nutrients; usually found in the top several inches of the root zone.

Acre: An area of land measuring 43,560 square feet. A square 1-acre plot measures 209 feet by 209 feet; a circular acre has a radius of 117.75 feet.

American National Standards Institute (ANSI): The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector. ANSI A300 documents provide definitions and tree care maintenance standards for all aspects of tree health management, including proper pruning, fertilization and preservation of trees.

American Standard for Nursery Stock (ANSI Z60.1-2004): The purpose of the American Standard for Nursery Stock is to provide buyers and sellers of nursery stock with a common terminology in order to facilitate transactions involving nursery stock. The standards establish common techniques for (a) measuring plants, (b) specifying and stating the size of plants, (c) determining the proper relationship between height and caliper, or height and width, and (d) determining whether a root ball or container is large enough for a particular size plant.

Aeration: The exchange of air in the soil. Compaction reduces and cultivation improves soil aeration. Determined by a soil test.

Backfill: Soil used to fill in the excavated area around the newly planted tree or shrub.

Balled-and-burlapped: Trees and shrubs harvested with the root system enclosed in a soil ball that is held together with burlap and twine, a wire basket, or both.

Bare-root: Trees and shrubs harvested with an exposed root system with no soil covering their roots.

Barrier zone: An anatomical and chemical wall formed by the cambium tissue as part of the compartmentalization of decay within trees. It separates wood formed before wounding from wood that will form after wounding.

Best management practices (BMPs): A method or combination of methods that is an effective and practical way (technologically and economically) to prevent or reduce pollution.

Branch bark ridge: Ridge of bark that forms at the junction of the branch and stem. An upturned branch bark ridge indicates a strong branch union. An inrolled branch bark ridge indicates a weak branch union.

Branch collar: A “shoulder” or bulge formed at the base of a branch by the annual production of overlapping layers of branch and stem tissue.

Buttress roots: Large woody root extending trunk into the soil; part of root flare

Caliper: Diameter of a young tree measured at 6" (for trees up to and including 4" caliper) or 12" (for trees over 4" caliper) above the groundline.

Callus: Scar tissue formed around cut wounds, eventually covering them. Formation of callus is greatly aided by a smoothly finished pruning cut.

Cambium: Layer of living cells between the bark and wood surface that produces a new layer of wood each year responsible for the water and nutrient-conducting system in trees.

Cambial dieback: The irreparable radial or vertical interruption of a tree's cambium, usually caused by mechanical damage such as from "skinning" the bark or from excessive heat or cold.

Canker: Area of dead bark and cambium anywhere on the tree's surface. Cankers can be caused by fungi, insects, weather, or mechanical damage such as lantern-burns or mowers.

Canopy: The topmost layer of twigs and foliage in a tree or group of trees.

Cavity: Hollow area in stem, branch, or root where the wood has decayed and is now missing.

Certified arborist: Certified Arborist: an individual who has passed the certification examination sponsored by the International Society of Arboriculture and who maintains a current certification. A certified arborist must possess the technical competence to manage trees in the residential, commercial and private landscape. They must also earn the continuing education units (C.E.U) required by ISA.

Closure: Commonly refers to a complete covering of callus over a pruning cut or other tree wound.

Codominant stems: Stems that are equal in size and relative importance. Codominant stems can be a major structural defect.

Columnar: Describes a narrow upright tree form.

Compaction: Compression of the soil structure or texture by any means that creates an upper layer that is impermeable ('cap'). *Compaction* is injurious to roots and the health of a tree

Compartmentalization: A physiological process which creates chemical and mechanical boundaries to resist organisms, such as decay fungi.

Coniferous: Belonging to the group of cone-bearing evergreen trees and shrubs.

Conk: Fruiting body of a fungus. Fruiting bodies on a tree may indicate advanced decay.

Container-grown: Plant material grown in a nursery and placed in a container before shipping.

Crack: Separation of the wood, a fissure, or a deep split in the bark and wood of a tree.

Critical root zone: Defines the area of the root system nearest the stem that is critical for the stability and vitality of the tree. The area is determined by allowing 1.0 feet of root radius for each inch of stem diameter at breast height (d.b.h.).

Crotch: The angle or portion of the angle formed by the junction of parts of the tree, as by two branches, branch and stem, and twig and branch.

Crown: Portions of the tree above the main stem or trunk; the branches, twigs and leaves.

Cultivar: A cultivated variety that has noticeable differences from the species, but these differences can only be retained through propagation by vegetative means such as cuttings or grafting.

Dead Tree: A tree that is dead or that has been damaged beyond repair or is in an advanced state of decline (where an insufficient amount of live tissue, green leaves, limbs or branches, exists to sustain life). Typically, 50% of the crown is dead.

Deciduous: Not persistent; the annual shedding of leaves.

Deadwood: Non-living wood within a tree. Deadwood is structurally unsound because of pre-existing defects and/or rapid decomposition of the wood.

Decay: Fungal and bacterial decomposition of woody tissues. The decay process reduces structural soundness and stability over a period of years.

Decline: General loss of vigor. It is usually accompanied by crown symptoms, such as branch dieback.

Defect: Any structural weakness or deformity in the tree's branches, stem, or root system. Tree defects can be of two kinds: injury or disease that seriously weakens the stems, roots, or branches or trees, predisposing them to fail or structural problems arising from poor tree architecture, including V-shaped crotches in stems and branches that lead to weak unions, shallow rooting habits, inherently brittle wood, etc.

D.B.H: Diameter of the tree measured at breast height, 4.5 feet from the ground.

Deciduous: Not persistent; the annual shedding of leaves.

Dieback: Death of a branch or branches, generally from the tip towards the main stem.

Disorder: Significant insect, disease, environmental, and cultural disorders capable of impacting the overall health, longevity, and/or aesthetic value of a tree.

Dormant: A period of inactivity for a tree. Trees are dormant from the time the leaves fall until new ones appear.

Dripline: The area directly below the branches of a tree.

Evergreen: Persistent leaves or needles.

Epicormic branch: Branches that form on large, old stems or branches as a result of a serious disturbance, such as, improper pruning, disease or extensive dieback in the crown. Epicormic branches usually form weak unions with their stems.

Failure: Breakage of stems or branches or loss of mechanical support in the root system. Trees can fail due to defects or during severe storms.

Fair tree: A tree has 3-4 minor defects or disorders, or 1 major defect and is advancing with moderate vigor or other limitations.

Fertilization: The proper addition of correct amounts of essential elements for healthy growth.

Flush cuts: The removal of branch collars at the base of the branch during pruning. Flush cuts are unacceptable. They promote decay and structural weakness.

Fruiting bodies: Structures where fungal spores are produced. Examples are mushrooms, conks, and shelf fungi. They are indicators of decay.

Girdling: The cutting, removing, or clamping of bark completely around a branch or the trunk of a tree. Girdling can cause tree death or structural failure.

Girdling roots: Roots that encircle or run tangentially to a tree's stem, eventually compressing the woody and non-woody tissues of the stem Girdling roots can cause tree death or structural failure.

Good tree: The tree has no more than 1-2 minor defects or disorders and is advancing with vigor.

Ground Cover: Perennial plants, usually requiring minimum maintenance, which may be substituted for lawn grasses. Lawn grasses are distinguished from ground covers in that they require regular mowing. All though there are some exceptions (Liriope, Ophiopogon, etc.), most ground covers are not suitable for heavy foot traffic.

Guy wire: A wire used with support stakes to help support a newly planted tree.

Hardened off: gradually introduced to a new environment.

Hazard tree: A tree that has structural defects in the roots, stem, or branches that may cause the tree or tree part to fail, where such failure may cause property damage or personal injury.

Improper pruning: When removing branches, cutting into the branch collar, cutting flush to the stem, leaving long branch stubs, or removing too many branches at one time.

Included bark: Layers of bark that have formed inside the tree at a branch union or fork between codominant stems. These ingrown layers of bark make a branch union weak.

Inrolled crack: Process that occurs when two wound margins grow together and their bark and wood layers begin to turn inward. The inrolling tissues curl and from the "rams-horn" over a period of years.

Inspection: Systematic method of examining trees for visible defects and assessing risk of potential failure.

Leader: The central stem or trunk that is longer and more vigorous than the side branches or lateral stems.

Lean: Describes a tree trunk that is not growing perpendicular to the ground. If the angel is greater than 45 degrees, it may be hazardous.

Major Woody Roots: First order tree roots, originating at the "root collar" and growing horizontally in the soil to a distance of between 3 and 15 feet from the tree trunk. These roots branch and decrease in diameter to give rise to "rope roots." The primary functions of major woody roots include anchorage, structural support, the storage of food reserves, and the transport of minerals and nutrients.

Mulch: Any material laid on the soil surface to conserve soil moisture, moderate temperature and/or aid in weed control. Wood chips, bark chips, and shredded leaves are examples of organic mulches.

Mycorrhizae: Also called “fungus roots,” the mycorrhizae are a symbiotic association between plant roots and fungi partners which benefit each other. This association has developed naturally over millions of years: the fungi increase the surface area of the roots to improve water and nutrient absorption for the plant; the plants give the fungi simple carbohydrates or sugars from photosynthesis in return.

Natural Target Pruning: Method of removing branches that preserves the tree’s natural defenses. Only branch tissue is removed leaving the branch collar intact.

Poor architecture: Growth pattern indicates structural imbalance and weakness in the branch, stem, or tree.

Poor tree: the tree has several minor defects or disorders, or has 2 major defects or disorders and is declining in health.

Protective Tree Fencing: A temporary enclosure erected around a tree to be protected at the boundary of the tree protection zone. The fence serves three primary functions: 1) to keep the foliage crown, branch structure and trunk clear from direct contact and damage by equipment, materials or disturbances; 2) to preserve roots and soil in an intact and non-compacted state; and 3) to identify the tree protection
zone in which no soil disturbance is permitted and activities are restricted.

Root Collar: The base of the stem where the major woody roots first begin to branch away from the stem. Normally, this area appears swollen or flared and is located near or at the soil level.

Root plate: Area around the base of a tree in which the roots taper rapidly from pedestal roots to small transport roots. Damaging the root plate often leads to catastrophic failure, especially during windy conditions.

Root respiration: An active process occurring throughout the feeder root system of trees, and involving the consumption of oxygen and sugars with the release of energy and carbon dioxide. Root respiration facilitates the uptake and transport of minerals and nutrients essential for tree survival.

Rope Roots: An extensive network of woody second order roots arising from major woody roots, occurring within the surface 12 to 18 inches of soils, and with an average size ranging from .25 to 1 inch in diameter. The primary function of rope roots is the transport of water, nutrients and the storage of food reserves.

Scaffold branches: The large branches that form the main structure of the crown.

Slow-release fertilizer: A fertilizer that is available to plants over a long period of time in comparison to those that dissolve quickly and are immediately available to plants.

Soil Compaction: A change in soil physical properties which includes an increase in soil weight per unit volume, and a decrease in soil pore space. Soil compaction is caused by repeated vibrations, frequent traffic and weight. As related to tree roots, compacted soil can cause physical root damage, a decrease in soil oxygen levels and an increase in toxic gases, and can be impervious to new root development.

Staking: Bracing, support, or staking of newly planted trees.

Stress: An external force, such as drought, nutrient deficiency, pathogen, or insect defoliation, that limits the ability of plants to acquire essential nutrients, such as water and carbon dioxide, from the environment.

Stub: An undesirable short length of branch remaining after a break or incorrect pruning cut is made.

Stunted growth: Abnormally reduced growth of stems, branches, leaves, flowers, or roots.

Sucker: A shoot or stem that originates from the roots.

Sunscald: Injured, usually cracked, bark caused by sudden changes in temperature. This happens to thin-barked trees like maples in the early spring when a warm, sunny day is followed by a rapid drop in temperature after the sun goes down.

Target: A person or object within 1.5 times the tree height of a defective tree.

Tipping: Removal of branch tips, usually to decrease the tree's crown width.

Topping: The indiscriminate cutting back of tree branches to stubs or lateral branches that are not large enough to assume the terminal role. Topping is the most harmful tree pruning practice.

Transplant shock: A physiological condition occurring over an extended period of time of stress in woody ornamental plants brought about by the loss of fibrous roots and root hairs during transplant.

Tree Architecture: Natural growth habit or branching pattern that is characteristic for each tree species.

Tree lawns: The planting area that occurs between street curbs and sidewalks.

Trenching: Any excavation to provide irrigation, install foundations, utility lines, services, pipe, drainage or other property improvements below grade. *Trenching* within the TPZ is injurious to roots and tree health and is prohibited, unless approved.

Tunneling: Boring a hole under root zones; alternative to trenching to protect roots.

Vertical Mulching: Augering, hydraulic or air excavation of vertical holes within a tree's root zone to loosen and aerate the soil, typically to mitigate compacted soil. Holes are typically penetrated 4- to 6-feet on center, 2- to 3-feet deep, 2- to 6-inches in diameter and backfilled with either perlite, vermiculite, peat moss or a mixture thereof.

Vigor: Overall health; the ability to grow adequately and resist physiological stress. Vigor is measured by leaf production, leaf size and color. It is also measured by annual twig growth rate.

Watersprout: Vigorous shoot, originating above the ground, from the trunk or main branches.

Wilt: The loss of water turgor pressure in a leaf, causing it to droop or curl or to lose a degree of its normal color.

Wind throw: Toppling failure due to high winds.

Wound: The opening that is created any time the tree's protective bark is damaged, cut or removed. Pruning a live branch creates a wound, even when the cut is properly made.

BASICS OF TREE PROTECTION AND ESTABLISHMENT

The following standards apply to greenspaces and Tree Protection Zones established pursuant to City regulations.

1. **A minimum of 20% Green Space Required** on Commercial/Industrial/Institutional/Multi-family properties. This Green Space area must be permeable, unpaved ground because it corresponds with the minimum allowable area required to support the life of the tree by allowing air, water and nutrients to be absorbed by the plant's roots.

2. **Each Tree Protection Zone must be within 100 feet of a permanent water source** in order to receive Tree Quality Points. Newly-established trees require water for growth; all trees benefit from a supplemental source of water to natural rainfall, especially during drought conditions.

3. **How Much Green Space is Required for Trees:** In order to receive Tree Quality Points, any planted or protected tree must be provided with a minimum Green Space area based upon its mature size.

   Table 1 defines the minimum Green Space area which will allow the tree to reach its optimal mature size.

TABLE 1. MINIMUM GREEN SPACE AREA FOR PLANTED TREES

	Minimum Planting Areas for New Trees by Shape of Area		
Mature Tree Size	**Square**	**Rectangular**	**Circular**
Small	**4' x 4'**	**---**	**4.5' Diameter**
Medium	**8' x 8'**	**6' x 11'**	**9' Diameter**
Large	**20' x 20'**	**16' x 25'**	**22.5' Diameter**

4. **Minimum Greenspace Area for Preserved Trees:** Preserved trees on a site must be protected (i.e. tree protection fences; no grading, fill, or vehicular encroachment, etc.) within an area no less than its critical root zone. This zone is generally defined as a circle with a radius extending from the tree's trunk at a rate of one foot per inch diameter of the tree at breast height (42" above ground). For example: A tree with a 41 inch DBH has a critical root zone 41 feet from the edge of the tree.

HOW TO CALCULATE TREE/LANDSCAPE QUALITY POINTS

Tree and Landscape Quality Points quantify the relative value of one tree to another based upon four criteria:

1. **Species Quality:** this is a mixture of objective and subjective measures based upon maintenance records, scientific research, and the experience of experts in the field. The relative value of species has been determined specifically for the Savannah area and environment. Species quality is ranked in order of increasing desirability as Acceptable, Recommended or Preferred, with Preferred as the highest.

2. **Space Requirement:** this factor applies to trees that are retained on a site. Since large diameter trees require proportionally larger areas to be set aside as a Tree Protection Zone, Tree Quality Points are assigned in proportion to this space requirement.

3. **Expected Mature Size:** for trees that are planted on a site, Tree Quality Points assignment is in proportion to the potential size of the tree species and the minimum planting space in which that species can develop in a safe and healthy manner. The mature size is categorized in terms of small, medium or large trees.

4. **Drought Tolerance/ Suitability to Specific Site Conditions:** to encourage the growth of the tree and the decreased use of potable water for irrigation, it is encouraged that the property owner selects plants which are appropriate for the specific growing conditions. Where soils are sandy or have a low water table, drought tolerant plants should be selected. Where soils are moist or hold water, the easiest solution to growing plants is to select those which prefer that type of condition and to carefully design and monitor irrigation for those plants. The listing of plants at the end of the Manual includes information on drought and moisture preference.

How Many Tree Quality Points are required per acre?

The Tree Advisory Committee determined that a minimum of 50% canopy cover would be the goal of the 1995 Ordinance. It was also determined that canopy would be best achieved through the use of large trees (especially the “Preferred” trees). Optimal spacing between the trees, depending upon the species, ranges from 40 to 60 feet. The optimal canopy cover, or that point where the canopy of one tree touches but does not overlap the canopies of adjacent trees, to create continuous canopy on one acre of land over a 30 year period of time was calculated as 35 large trees per acre. Fifty percent canopy cover would be approximately 18 trees per acre. If the highest value of a tree were 90 Tree Quality Points, and each acre site were to have 18 of such valued trees, the site would be required to have

A minimum of 1,600 Tree Quality Points for each acre of the site

TABLE 2. TREE QUALITY POINTS FACTOR FOR PRESERVED TREES

Species Rating	Quality Points Factor
Acceptable	**0.5**
Recommended	**0.75**
Preferred	**1.5**
***Exceptional**	**2.5**

*Note: Exceptional trees must be certified by the City Council.

- **For preserved trees, Tree Quality Points are calculated as follows:**

(Diameter at Breast Height)^2 x (Quality Points Factor) = TQP

Question: A 10" DBH Live Oak, having a 1.5 factor, would have how many Tree Quality Points?

(10" DBH)(10" DBH) x (1.5) = 150 Tree Quality Points

- **For Preserved Areas of Trees, Tree Quality Points are calculated as follows:**

(Preserved Area in square feet) x (set-aside factor .25) = TQP

*The preserved area should be measured starting 10’ behind the tree protection fencing.

- **For Palm-Type Trees,** two Tree Quality Points will be assigned per foot of stem height of existing palms, with a maximum of 20 Tree Quality Points.

- **For Planted Trees, Tree Quality Point assignment can be found in the species list or the following chart.**

TABLE 3. QUALITY POINTS FOR PLANTED TREES*

Mature Size	Acceptable	Recommended	Preferred
Small	**3**	**5**	**10**
Medium	**5**	**15**	**30**
Large	**15**	**40**	**90**

*Note that only planted Large and Medium Trees qualify for Tree Quality Points. All planted Small Trees qualify for Landscape Quality Points only.

How Many Landscape Quality Points are required per acre?

The Tree Advisory Committee recommended the installation of smaller, understory trees, shrubbery,

ground covers and vines in addition to canopy trees to break up large areas of impervious area, reduce wind, flooding, glare, to beautify development, and to provide for softer, more natural buffers. Such landscape materials could be planted under new canopy trees or by themselves in buffers, within tree islands in parking lots, in front yard developmental setbacks, at entrances to developments and buildings, etc. It was decided that one quarter the canopy tree requirement or

400 Landscape Quality Points per acre

would be required. The planting could be evergreen, flowering and/or specimen material which would add seasonal color, texture, form and help to bring down the scale of development to a human level. Additionally, these points can fulfill the requirements of the City's Buffer Standards. Shrubbery is an effective way to provide a base for a building, as well as an attractive understory planting in conjunction with taller trees. It has been observed that such cluster planting helps to reduce wind damage, especially in parking lots. Ground covers provide color and texture to the aesthetic composition as well as providing a cover for newly-planted vegetation, aiding in the control of temperature, the absorption of air and water, and the stabilization of difficult slopes. Vines may be used as ground covers, on fences as screening where there is not enough room for shrubbery or trees, or as canopy on arbors and other man-made objects.

TABLE 4. LANDSCAPE QUALITY POINTS FOR PLANTED VEGETATION

Type of Plant	Landscape Quality Points
Small Tree (Preferred)	**10**
Small Tree (Recommended)	**5**
Small Tree (Acceptable)	**3**
Palm Type Trees	**2 points per foot of height, up to 20 Points**
Large Evergreen Shrub	**5**
Large Deciduous Shrub	**2.5**
Medium Evergreen Shrub	**3**
Medium Deciduous Shrub	**1.5**
Small Evergreen Shrub	**1**
Small Deciduous Shrub	**0.5**
Evergreen Ground Cover	**.10 points per plant at 1 gallon**

- **For Preserved Areas, Landscape Quality Points are calculated as follows:**

(Preserved Area in square feet) x (set-aside factor .10) = LQP

* Understory vegetation must be present and remain after construction to receive credit.

Where to Plant Vegetation:

Front Yard Development Setbacks: The Planned district standards do not allow any development in the front yard setbacks except for approved entrances/exits and surplus parking. This is a good place for 36" high evergreen shrubbery to meet the buffer requirements of parking lot screening. With some coordination of utilities, this is an appropriate place to plant or retain all types of vegetation.

Street Tree Easements: This is a special easement for planting trees if there is not space available in the right-of-way along roadways. Trees that are planted in an easement will count towards the site's Tree Quality Point requirement, and will be protected from removal by the City's Landscape and Tree Ordinance. However, the City will not be responsible for maintenance of trees in easements. Since the intent of the Landscape and Tree Ordinance is to encourage street tree canopy, planting trees within the right-of-way is preferred to using easements.

Parking Areas: On Commercial, industrial, institutional, and multifamily development, a minimum of 1,200 Tree Quality and 400 Landscape Quality Points are required within the parking areas alone. The intent of this requirement is to help shade, screen and break up the impervious surface, with the shrubs and ground covers providing shade for the roots of newly-planted trees.

> **Tree Islands:** The sizes of islands within parking lots are to be a minimum of 400 square feet to accommodate the minimum growing requirements for a large canopy tree (see Table 1). Islands shall occur at regular intervals, not to exceed 12 parking spaces in length. Islands shall be at the ends of drive aisles.
>
> **Medians:** A 10 foot wide median is required within areas with more than two longitudinal rows of parking. This allows for a continuous planting area as well as more efficient irrigation layout. Where medians are parallel to the building, sidewalks or pathways are to be provided across the medians to reduce root compaction by foot traffic. Here, the tree islands may be reduced to 16 feet in width because the median provides root growth area.

*Where existing trees are preserved in parking lots, some flexibility in the placement of tree islands and medians as an effort to better protect the existing trees may be made.

Areas Adjacent to the Building: Landscaping can be used as an attractive framing device for buildings. It can also be used to help cool the building through thoughtful placement of trees, shrubs and ground covers, screen views of less attractive sections of the site or building (such as dumpsters, loading docks, service areas) from the general public, etc.

Canopy Trees should be planted a *minimum* of 15 feet from the building, 25 feet if possible, so as to require less pruning and maintenance at maturity. Reserving large planting areas near the building, however, provide the opportunity to preserve or plant specimen trees which enhance the building's appearance. By preserving a wooded cluster of deciduous trees on the southwest side of the building, for example, one could reduce energy costs because the trees will shade the building in the summer and allow sun to heat the building in the winter.

Buffers: The City Buffer Standards (Section 8-3066 – See Appendix) allow for natural vegetation, planted trees and hedges as ways to satisfy the screening requirement.

A GENERAL EXAMPLE

A developer is planning a commercial site adjacent to single-family residential development.

Site Information:
The site is 1.2 acres in size.
The site is wooded. The developer wishes to retain the following trees:

Tree #1	15" DBH Live Oak, (*Quercus virginiana*)
Tree #2	12" DBH Pignut Hickory (*Carya glabra*)
Tree #3	10" DBH Sycamore (*Platanus occidentalis*)
Tree #4	8" DBH Sabal Palmetto, 12' high
Tree #5	6" DBH Devilwood (*Osmanthus americana*)
Tree #6	8" DBH Devilwood (*Osmanthus americana*)
Tree #7- 12	Five 2" Horse Sugars (*Symplocos tinctoria*)

1. How many Tree Quality Points are required?

1.2 acres x 1,600 Tree Quality Points = 1,920 Tree Quality Points Required

2. How many Tree Quality Points are provided by the preserved trees?

The following formula is used to calculate Tree Quality Points for preserved trees:

$$(DBH)^2 \times (\text{Quality Points Factor}) = \text{Tree Quality Points}$$

Note that the Quality Points Factor is provided for each species in the tree lists at the end of this Manual.

Tree #1	15" DBH Live Oak	$(15)^2$ x (1.5)	= 337.5 TQP
Tree #2	12" DBH Pignut Hickory	$(12)^2$ x (1.5)	= 216 TQP
Tree #3	10" DBH Sycamore	$(10)^2$ x (.75)	= 75 TQP
Tree #4	8" DBH Palmetto		= 20 TQP
Tree #5	6" DBH Osmanthus	$(6)^2$ x (1.5)	= 54 TQP
Tree #6	8" DBH Osmanthus	$(8)^2$ x (1.5)	= 96 TQP
Trees #7-12	Five 2" Horsesugars	(5) x $(2)^2$ x (1.5)	= 30 < (5) x (10), use 50

TOTAL = 848.5 TQP

3. How many additional trees are required to be planted?

Required TQP (1920) – Preserved TQP (848.5) = 1071.5 Additional TQP Needed

The tree lists give the number of Tree Quality Points assigned to any species of planted tree. If you consider that all large preferred trees are worth ninety (90) Tree Quality Points each, you would need an additional (12) large preferred trees to meet the minimum TQP required. This would provide you with 1080 TQP.

4. How many Landscape Quality Points would be required?

1.2 acres x 400 LQP/acre = 480 LQP are required.

5. How many Landscape Quality Points (LQP) are provided on the plan?

7 Crape Myrtle @ 10 LQP each	= 70 LQP
15 Wax Myrtle @ 10 LQP each	= 150 LQP
6' tall evergreen hedge or shrub massing as buffer	
(30 Ligustrum lucidum @ 5 LQP each)	= 150 LQP
72 Indian Hawthorns @ 1 LQP each)	= 72 LQP
Total LQP Shown on Plan	= 442 LQP
Total LQP required	= 480 LQP
Deficit of LQP	= 38

6. How could the deficit be corrected through planting? Name some plants which would fulfill the Landscape Quality Point requirement.

TYPICAL COMMERCIAL, INDUSTRIAL, INSTITUTIONAL, AND MULTI-FAMILY PROCEDURES:

1. **Schedule a pre-development site visit with the City Landscape Architect** to look at the natural site constraints and opportunities. Flag interesting or specimen trees or clusters of trees for keying into the topographical survey.

2. **Prepare plans for City and MPC review.** Include in this set the Tree Protection, Tree Establishment and the Landscape Plans. These plans shall be submitted to the City's Development Services Department for distribution to the City and MPC staff. All landscape and tree planting plans for sites over one acre shall be prepared by a registered Landscape Architect. Plans for sites of less than one acre may be prepared by other registered or certified professionals with competency in landscape design. The plans shall include the following information for review under the Landscape and Tree Ordinance:

    A. **The number of Tree Quality Points** (TQP) required on the total site.

    B. **Show how the TQP requirement will be accommodated** (planting and/or preservation). Indicate the botanical and common names and the corresponding Tree Quality Points. Show the sizes: if the tree is to be planted, indicate the caliper; if the tree is to be preserved, indicate the diameter breast height.

    C. **For trees to be preserved**, show the required tree protection zones, the method of tree protection, and a detail of the tree protection method on the drawing.

    D. **Where clusters of trees or set-asides are to be preserved for points** show the location on the plan and note or show how it will be protected. Please note that all set-asides will need to be converted to a conservation easement and shown on a plat.

    E. **Show all buffers,** screening and denote the botanical and common names, sizes and landscape quality points allotted to the plants.

    F. **Show all landscaping:** ground covers, vines, shrubs, and small trees. Specify botanical and common names, sizes, and landscape quality points.

    G. **Show the method of watering,** location of hose bibs, etc. If irrigation is to be included, a copy of the irrigation plan shall be submitted for review

    H. **Show all utility lines**, existing and proposed, on the plans. The consultant shall coordinate the location of utilities and landscaping with the utility companies to avoid conflicts between the two. This shall be coordinated prior to issuance of a Land Clearing Permit. If there is a potential conflict, new plans showing how the conflict may be resolved shall be submitted.

3. **The Preparer** of the Landscape, Tree Establishment and Tree Protection Plans shall attach

evidence of attendance at a **City-sponsored Tree Ordinance Workshop** prior to plan review.

4. **The Land Clearing Permit Applicant** shall submit evidence of attendance at a **City-sponsored Tree Ordinance Workshop** before the Land Clearing Permit can be issued.

5. **A Pre-Construction Meeting** shall be scheduled among the Owner, Agent(s), Contractors, City Landscape Architect and other appropriate City Staff prior to issuance of Land Clearing Permits. This meeting shall establish the location of temporary buildings or trailers, temporary utilities, installation of tree protection and erosion control devices, storage of materials, etc. Contact the Development Services Department to set up this meeting.

6. **A Pre-Installation Meeting** is called by the Owner/Agent prior to any landscaping being installed. This allows the Park and Tree Inspector to review the plans and discuss our tree selection and planting procedures with the landscape contractor prior to any work beginning.

7. **At the completion of the project**, the following items shall be submitted to the City Landscape Architect before inspections for Certificate of Occupancy shall be made:

    A. **Certification** that trees and landscaping have been properly installed and protected shall be made in writing by the Tree Protection/Tree Establishment/ Landscape Plan Preparer.

    B. **A Two-Year Landscape Warranty Bond** shall be posted by the Owner with the City Development Services Department. Trees and landscaping require at least two years before they become established on the site. During this period of time, watering, fertilizing, proper pruning and other good horticultural practices are crucial to the development of the landscape. The two-year Landscape Warranty Bond provides for the replacement of these plants in the event that they die. The landscaping must be installed prior to issuance of the Certificate of Occupancy; otherwise, the Owner shall post a temporary performance bond for the work not completed. A copy of the Two-year Tree Establishment Bond shall be sent to the City Landscape Architect for filing.

8. **Final Inspection:** The Owner shall notify the City Development Services Department that the site is ready for final inspection. Once a final inspection date is set, Park and Tree shall make a final inspection of trees and landscaping. At the time of the final inspection, if trees are suffering from transplant shock, Park and Tree may allow the trees in question to be bonded for three months after which time we will need to be called back out for a re-inspection.

    At the time of 3 month re-inspection, the following must be displayed by trees in question. Trees failing to meet these standards shall be replaced:

    A. Cambium must be green throughout affected branch area(s).
    B. New buds (terminals and laterals) must be flushing out throughout affected area(s).
    C. The central leader of the tree must be alive.
    D. No additional structural or health problems occurred since the initial inspection.

**Water sprouts and sucker growth do not constitute reversal of shock or acceptable new growth.*

9. **Bond Release:** At the end of the two year Tree Establishment Bond's life, Park and Tree shall re-inspect the site to determine if the vegetation has been established. If there are problems, they shall be corrected. If the problems are not corrected, the Bond will be forfeited to bring the property into compliance with the provisions of the Landscape and Tree Ordinance. Warranty inspections need to be set up through the Development Services Department.

COMMERCIAL EXAMPLE

POTENTIAL AREAS FOR TREES AND LANDSCAPING ON COMMERCIAL SITES:

1. **Entrance Drive**

2. **Front yard Development Setback:** Street Trees, screening of parking areas and other landscaping may be established in this area.

3. **36" high screening** of parking area/buffer

4. **Areas adjacent to building** may be planted to provide an attractive entrance to the building.

5. **Visitor/Employee Parking:**
   -1200 Tree Quality Points per acre required in parking areas

6. **Stormwater Detention Area**: planting in and/or around the pond may be suitable.

7. **Forested Set-asides** may count towards quality points because they preserve clusters of trees.

8. **Wetland Set-asides** may count towards quality points if they are wooded and the Administrator determines that the stand of trees qualifies for quality points.

GENERAL:

Parking Required: 1200 TQP per acre.

Maximum 12 parking spaces in a row (Required).

400 square feet of landscape island (Required).

10 foot wide landscape median (Required).

Buffer: 36" High (Required).

Frontyard Setback development (Required)

Street Tree Re-establishment/Tree Easement (Recommended)

INDUSTRIAL DEVELOPMENT EXAMPLE

POTENTIAL AREAS FOR TREES AND LANDSCAPING ON INDUSTRIAL SITES:

1. **Entrance Drive**

2. **Front yard Development Setback:** Street Trees, screening of parking areas and other landscaping may be established in this area.

3. **36" high screening** of parking area/buffer

4. **Areas adjacent to building** may be planted to provide an attractive entrance to the building.

5. **Visitor/Employee Parking:**
   -1200 Tree Quality Points per acre required in parking areas

6. **Stormwater Detention Area**: planting in and/or around the pond may be suitable.

7. **Forested Set-asides** may count towards quality points because they preserve clusters of trees.

8. **Wetland Set-asides** may count towards quality points if they are wooded and the Administrator determines that the stand of trees qualifies for quality points.

AREAS NOT RECOMMENDED FOR PLANTING:
Loading Dock Areas, Containerized Storage Areas, Semi-tractor Trailer Parking Areas, Drive Aisles, Scales, Work Areas, Utility Easements, Canal Access/clean-out areas

GENERAL:

Parking Required: 1200 TQP per acre.

Maximum 12 parking spaces in a row (Required).

400 square feet of landscape island (Required).

10 foot wide landscape median (Required).

Buffer: 36" High (Required).

Frontyard Setback development (Required)

Street Tree Re-establishment/Tree Easement (Recommended)

INSTITUTIONAL DEVELOPMENT EXAMPLE

POTENTIAL AREAS FOR TREES AND LANDSCAPING ON INSTITUTIONAL SITES:

1. **Entrance Drive**

2. **Front yard Development Setback:** Street Trees, screening of parking areas and other landscaping may be established in this area.

3. **36" high screening** of parking area/buffer

4. **Areas adjacent to building** may be planted to provide an attractive entrance to the building.

5. **Visitor/Employee Parking:**
   -1200 Tree Quality Points per acre required in parking areas

6. **Stormwater Detention Area**: planting in and/or around the pond may be suitable.

7. **Forested Set-asides** may count towards quality points because they preserve clusters of trees.

8. **Wetland Set-asides** may count towards quality points if they are wooded and the Administrator determines that the stand of trees qualifies for quality points.

GENERAL:

Parking Required: 1200 TQP per acre.

Maximum 12 parking spaces in a row (Required).

400 square feet of landscape island (Required).

10 foot wide landscape median (Required).

Buffer: 36" High (Required).

Frontyard Setback development (Required)

Street Tree Re-establishment/Tree Easement (Recommended)

MULTI-FAMILY RESIDENTIAL DEVELOPMENT EXAMPLE

POTENTIAL AREAS FOR TREES AND LANDSCAPING ON MULTI-FAMILY SITES:

1. **Entrance Drive**

2. **Front yard Development Setback:** Street Trees, screening of parking areas and other landscaping may be established in this area.

3. **36" high screening** of parking area/buffer

4. **Areas adjacent to building** may be planted to provide an attractive foundation and entrance to the building(s).

5. **Visitor/Tenant Parking:**
   -1200 Tree Quality Points per acre required in parking areas

6. **Stormwater Detention Area**: planting in and/or around the pond may be suitable.

7. **Forested Set-asides** may count towards quality points because they preserve clusters of trees.

8. **Wetland Set-asides** may count towards quality points if they are wooded and the Administrator determines that the stand of trees qualifies for quality points.

GENERAL:

Parking Required: 1200 TQP per acre.

Maximum 12 parking spaces in a row (Required).

400 square feet of landscape island (Required).

10 foot wide landscape median (Required).

Buffer: 36" High (Required).

Frontyard Setback development (Required)

Street Tree Re-establishment/Tree Easement (Recommended)

TYPICAL REDEVELOPMENT PROCEDURES:

Redevelopment sites are those properties which have already been developed, but are being modified to accept additions, such as buildings, parking, etc., or to establish a new use on the site which would effect exterior change. To encourage such development, and to allow for compliance with the Landscape and Tree Ordinance, *the area of the site which is affected by development is the only part of the site which will apply to the new regulations.* If the property was developed under the former tree ordinance, it must maintain the conditions of that approval as well. The following procedures are those to follow for redevelopment sites:

1. **Schedule a pre-development site visit with the City Landscape Architect** to look at the natural site constraints and opportunities. Flag interesting or specimen trees or clusters of trees for keying into the topographical survey.

2. **Prepare plans for City and MPC review.** Include in this set the Tree Protection, Tree Establishment and the Landscape Plans. These plans shall be submitted to the City's Development Services Department for distribution to the City and MPC staff. All landscape and tree planting plans for sites over one acre shall be prepared by a registered Landscape Architect. Plans for sites of less than one acre may be prepared by other registered or certified professionals with competency in landscape design. The plans shall include the following information for review under the Landscape and Tree Ordinance:

    A. **The number of Tree Quality Points** (TQP) required on the area to be disturbed by the proposed development (1,600 TQP and 400 LQP per acre of disturbed area).

    B. **Show how the TQP requirement will be accommodated** (planting and/or preservation). Indicate the botanical and common names and the corresponding Tree Quality Points. Show the sizes: if the tree is to be planted, indicate the caliper; if the tree is to be preserved, indicate the diameter breast height.

    C. **For trees to be preserved**, show the required tree protection zones, the method of tree protection, and a detail of the tree protection method on the drawing.

    D. **Where clusters of trees or set-asides are to be preserved for points** show the location on the plan and note or show how it will be protected. Please note that all set-asides will need to be converted to a conservation easement and shown on a plat.

    E. **Show all buffers,** screening and denote the botanical and common names, sizes and landscape quality points allotted to the plants.

F. **Show all landscaping:** ground covers, vines, shrubs, and small trees. Specify botanical and common names, sizes, and landscape quality points.

G. **Show the method of watering,** location of hose bibs, etc. If irrigation is to be included, a copy of the irrigation plan shall be submitted for review

H. **Show all utility lines**, existing and proposed, on the plans. The consultant shall coordinate the location of utilities and landscaping with the utility companies to avoid conflicts between the two. This shall be coordinated prior to issuance of a Land Clearing Permit. If there is a potential conflict, new plans showing how the conflict may be resolved shall be submitted.

3. **The Preparer** of the Landscape, Tree Establishment and Tree Protection Plans shall attach evidence of attendance at a **City-sponsored Tree Ordinance Workshop** prior to plan review.

4. **The Land Clearing Permit Applicant** shall submit evidence of attendance at a **City-sponsored Tree Ordinance Workshop** before the Land Clearing Permit can be issued.

5. **A Pre-Construction Meeting** shall be scheduled among the Owner, Agent(s), Contractors, City Landscape Architect and other appropriate City Staff prior to issuance of Land Clearing Permits. This meeting shall establish the location of temporary buildings or trailers, temporary utilities, installation of tree protection and erosion control devices, storage of materials, etc. Contact the Development Services Department to set up this meeting.

6. **A Pre-Installation Meeting** is called by the Owner/Agent prior to any landscaping being installed. This allows the Park and Tree Inspector to review the plans and discuss our tree selection and planting procedures with the landscape contractor prior to any work beginning.

7. **At the completion of the project**, the following items shall be submitted to the City Landscape Architect before inspections for Certificate of Occupancy shall be made:

   A. **Certification** that trees and landscaping have been properly installed and protected shall be made in writing by the Tree Protection/Tree Establishment/ Landscape Plan Preparer.

   B. **A Two-Year Landscape Warranty Bond** shall be posted by the Owner with the City Development Services Department. Trees and landscaping require at least two years before they become established on the site. During this period of time, watering, fertilizing, proper pruning and other good horticultural practices are crucial to the development of the landscape. The two-year Landscape Warranty Bond provides for the replacement of these plants in the event that they die. The landscaping must be installed prior to issuance of the Certificate of Occupancy; otherwise, the Owner shall post a temporary performance bond for the work not completed. A copy of the Two-year Tree Establishment Bond shall be sent to the City Landscape Architect for filing.

8. **Final Inspection:** The Owner shall notify the City Development Services Department that the

site is ready for final inspection. Once a final inspection date is set, Park and Tree shall make a final inspection of trees and landscaping. At the time of the final inspection, if trees are suffering from transplant shock, Park and Tree may allow the trees in question to be bonded for three months after which time we will need to be called back out for a re-inspection.

At the time of 3 month re-inspection, the following must be displayed by trees in question. Trees failing to meet these standards shall be replaced:

A. Cambium must be green throughout affected branch area(s).
B. New buds (terminals and laterals) must be flushing out throughout affected area(s).
C. The central leader of the tree must be alive.
D. No additional structural or health problems occurred since the initial inspection.

**Water sprouts and sucker growth do not constitute reversal of shock or acceptable new growth.*

9. **Bond Release:** At the end of the two year Tree Establishment Bond's life, Park and Tree shall re-inspect the site to determine if the vegetation has been established. If there are problems, they shall be corrected. If the problems are not corrected, the Bond will be forfeited to bring the property into compliance with the provisions of the Landscape and Tree Ordinance. Warranty inspections need to be set up through the Development Services Department.

SINGLE FAMILY DEVELOPMENT PROCEDURES:

For Subdivision Consideration, the following procedures are to be followed:

1. **Schedule a pre-development site visit** with the City Landscape Architect to look at the natural site. Observe site constraints and opportunities. Mark interesting or specimen trees or clusters of trees to be keyed into topographical survey.

2. **Prepare a conceptual Greenspace Plan for Staff/MPC review.** This plan is required before any permits for clearing or rights-of-way or utility easements may be granted. Include the following items on the plan:

   A. **The number of Tree Quality Points** (TQP) required on the total site (show on a chart or list);

   B. **The number of TQP within set-asides** which are included in the proposed development. Set-asides such as "open space", parkland, recreation areas, etc., may count towards the requirement if they are forested. These areas shall be shown in square feet. Please note that all set-asides will need to be converted to a conservation easement and shown on a plat.

   C. **The number of street trees needed along the proposed roadways** shall be determined. To do this:
   Take the linear footage of the street (both sides).
   Estimate that trees will be planted approximately 50 feet apart. These trees will be street trees, planted in street tree easements which are a minimum of 10 feet in width or within the R-O-W if allowed.
   Each street tree will have 90 TQP.
   Calculate the number of TQP in street trees.

      (Length of roadway) x 2 = Total Length of street on both sides
      Total Length of street / 50 = Number of street trees to be planted
      (Number of street trees to be planted) x 90 = TQP for street trees

   D. **Subtract the TQP in the set-asides and street trees from the total TQP requirement.**
   If there is a surplus of TQP, no more trees are required to be planted.
   If there is a deficit then either additional plantings within common areas, additional set-asides (on or off site), a payment to the Tree Fund (by Administrator approval only), or a combination of these will be necessary.

   E. **Existing trees may be counted towards the street tree requirement** if they meet all of the following criteria:
      i) The tree is located adjacent to the proposed right-of-way;
      ii) The tree's critical root system will be preserved in its entirety;
      iii) The tree is free of disease, pests and other serious injury;
      iv) The tree has a life expectancy of more than ten years;
      v) The tree is free from structural defects which would present a hazard to the

public;

vi) The tree is approved for use as a street tree by the Park and Tree.

Qualified trees count for existing tree quality points, based upon their species factor and DBH. The qualified trees shall be placed in a street tree easement and this shall be shown on the Subdivision Plat and recorded in the City Clerk's Office.

F. **Stands of trees preserved between the road right-of-way and houses** may be protected in either a conservation easement or a street tree easement. If the trees are to qualify as street trees, they must meet the qualifications in (E) above. If they qualify, the tree quality points may be calculated based upon a stand of trees: (Square foot area) x (Stand Factor).

G. **Protect all trees which are to qualify for TQP** and are located adjacent to areas to be cleared for rights-of-way, utility and drainage easement construction with tree protection fencing as shown in this Manual.

If any tree is within 100' of proposed clearing for rights-of-ways or utilities, it shall be protected by tree protection fencing. This must be shown before permits for clearing of right-of-ways or utility easements may be granted.

3. **Developers or their agents** must show evidence of having attended a **City-sponsored Tree Ordinance Workshop** in order to obtain a Land Clearing Permit.

4. **Stake the centerlines and rights-of-way** at 50 foot intervals prior to clearing.

5. **A Land Clearing Permit is required for tree removal and/or clearing** in the rights-of-way and easements. No individual lot clearing is allowed until all requirements of Individual lot procedures are followed (See Individual Lot Approval Procedures).

6. **Set up a Pre-construction Meeting** with the City Landscape Architect, the City Engineering Inspector, and other appropriate City Staff.

7. **Install tree protection and erosion control devices.** Then, call for an inspection of these devices with the appropriate City Staff. If the devices are correctly installed and in the proper location, the Land Clearing Permit for rights-of-ways and utility easements ONLY may be issued at this time.

FOR INDIVIDUAL LOT APPROVAL:

A specific Land Clearing Permit is required before any new single-family lot may be cleared. The following procedures must be completed before the permit may be granted:

1. **Attendance at a City-sponsored Tree Ordinance workshop.** Workshops are to be scheduled on a routine basis, such as quarterly. In the interim between such workshops, however, the applicant can schedule a personalized study by contacting the City Landscape Architect;

2. **Walk the site** with the City Landscape Architect prior to issuance of a Land Clearing Permit;

3. **Create a Plot Plan,** drawn to scale, which is to be submitted to the Permit Center with the following information:

    A. **Lot dimensions**;

    B. **Building(s): footprints, dimensioned**;

    C. **Driveways: labeled and dimensioned**;

    D. **Tree easement: labeled and dimensioned.** This is shown on the subdivision plat. Show its location on the Plot Plan to coordinate street tree and utility coordination;

    E. **Utility easements: labeled and dimensioned.** In addition to utility easements, show where the utilities will connect from the source or line to the house, especially where the utilities will cross the tree easement.

    F. **Other Easements: label and dimension.**

    G. **Location of existing trees to be retained for points.** Label the species and sizes of the trees. Show their locations on the plan. The future homeowner is encouraged to select trees to remain on the property so that adequate protection may be installed prior to site work.

    H. **Location of trees to be planted, to qualify for Tree Quality Points.** The builder can involve the future homeowner in the selection and placement of new trees for their property; such a tree can help reduce energy costs if it is located carefully, such as the placement of deciduous trees on the southwest side of the house so it can shade the house in the summer and allow sun to filter through the leafless branches in the winter.

    I. **Tree protection fencing to be shown around the trees to be retained.** The tree protection fencing protects the tree from damage during site construction. Storage of port-a-lets, construction material, construction trailers, etc. injures the trees and can cause them to become hazardous. This may not happen overnight. Most often, the tree dies over a period of years. By this time, the builder is long gone from the site and the homeowner is left with the burden of tree removal. By protecting the tree initially, the tree can contribute to the value of the site rather than work as a liability. By protecting the tree

initially, the builder enhances his good reputation in the building community.

J. **Have the tree protection fencing location inspected in the field by the City Landscape Architect prior to issuance of site permits.**

The following procedures must be completed before the Certificate of Occupancy may be granted:

1. **The specified trees on the Plot Plan have been planted and/or retained.** These have been inspected by the Park and Tree Department prior to issuance of a Certificate of Occupancy.

2. **The Builder/Applicant has the option of submitting a payment to the Tree Fund in lieu of planting,** payable to the City of Savannah, for the purchase and planting of street trees for the street tree easement. The money is deposited in the City's Park and Tree Department Tree Fund for the planting of the street trees in that specific development at the completion of that development (typically, this is 2 years after the commencement of building). The fee is paid to the City of Savannah Park and Tree Department.

TREE AND SITE RELATED DISTURBANCES - TREE PROTECTION

1. **Tree protection zones**: Individual stands of trees designated to be saved must be protected from the following damages during all phases of land disturbance and construction processes, in order to qualify for Tree Quality Points.

   A. **Direct Physical Root Damage:**
   This most frequently occurs during site clearing and grading operations, where transport or absorbing roots are cut, torn or removed.

      i) Transport and absorbing 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.

      ii) 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, from trenching for underground utilities, sanitary sewer, or storm sewer lines.

      iii) A more subtle form of root damage is the loss of absorbing roots. These normally occur in the surface four inches of soil, and can be damaged by the track action from a single bulldozer pass. The stripping of top soil within a tree's critical root zone can totally eliminate its feeder root system.

   B. **Indirect Root Damage:**
   Indirect root damage through site modification can result from positive grade changes, temporary storage of fill material, the sedimentation of erosion materials, soil compaction, and soil chemical changes.

      i) Positive grade changes from fill and sedimentation cause 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.

      ii) Anaerobic soil conditions are also produced by 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 root zones of trees.

      iii) Changes in soil chemistry will adversely affect tree survival. The most frequent occurrence is the change (decrease) in soil acidity by concrete washout. Trees native to the Savannah area prefer slightly acidic soils, and concrete residues are highly basic, or alkaline. The leakage or spillage of toxic materials such as fuels or paints can be fatal to trees.

C. **Trunk and Crown Disturbances**.

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.

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

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

iii) 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.

WATERWISE/XERISCAPE PRINCIPLES

Xeriscape comes from the word *xeris*, meaning dry, and refers to landscapes which are designed, built and maintained to require minimal amount of water. There are seven basic principles for creating such a landscape:

1. PLANNING AND DESIGN:

Developing a landscape plan is one of the first and most important steps in achieving a water-conserving landscape. A properly planned landscape takes into account the regional and micro climatic conditions of the site to be landscaped, the existing vegetation and topographical conditions, and intended uses by the property owners. You should identify three different water-use requirement zones (Low, Moderate, and High). Low use zones require little or no supplemental water after establishment. Moderate use zones require some supplemental water during dry periods. High use zones, the most water demanding of plant material, should be limited to areas where full water requirements can be easily met. High use zones are usually the most visible areas of the landscape, such as an entranceway or patio area.

2. SOIL ANALYSIS:

This step will also affect the planning and design of the landscape. Soils will vary from site to site, and even within a given site. A soil analysis based on random sampling will provide information that will enable proper selection of plants and, if needed, soil amendments. When properly used, soil amendments can enhance the health and growing capabilities of the landscape by improving water drainage, moisture penetration and water holding capacity, and can help encourage a strong healthy root system.

3. APPROPRIATE PLANT SELECTION:

Plant selection should be done based on the plants' adaptability to the landscape, the desired effect, ultimate size, color and texture. Plants should be arranged to achieve the aesthetic effect desired and grouped in accordance with their respective environmental needs. In this manner, you can reduce water consumption by isolating those plants which require a great deal of water to one area (preferably one that stay moist), or you can reduce water by selecting plants which require a minimal amount of supplemental watering (located in drier areas). Use of native plants will not only survive the extreme conditions of our climate, they also prevent water pollution by not requiring additional fertilizer and pesticides.

4. PRACTICAL TURF AREAS:

The type and location of turf areas should be selected in the same manner as all the other vegetation. Turf should not be treated as fill-in material, but rather as a major planned element of the landscape. Since most turf varieties require supplemental watering at frequencies different from those of trees, shrubs, groundcovers, perennials and annuals, turf should be placed so it can be efficiently and separately irrigated. While turf areas provide many practical benefits in a landscape, how and where it is used can result in a significant reduction of water use.

5. USE OF MULCHES:

Mulches applied and maintained at appropriate depths in planting beds will assist soils in retaining moisture, reducing weed growth, and preventing erosion. Mulch can also be used in places where conditions are not adequate or conducive to growing quality turf or ground covers. The best mulches to retain moisture are pine straw, pine bark mini-nuggets and shredded hardwood mulch, or chips. Avoid applying too much mulch (more than 4") because it encourages shallow root growth, which are easily damaged by excessive cold, heat, or drought.

6. EFFICIENT IRRIGATION:

If a landscape requires supplemental watering and/or if an irrigation system is desired, the system should be well-planned and managed. Properly-designed irrigation systems conserve water. For efficient water use, turf areas should be irrigated separately from other planting areas. In addition, planting areas should be divided and irrigated in accordance with the specific water needs of the plants. While turf is best watered by spraying, other plantings can be efficiently irrigated with low volume drip, spray and bubble emitters. For maximum water efficiency when using automatic irrigation systems, soil moisture and rain sensors should be incorporated into the system. You should water only when plants need water, and water deeply and less frequently to encourage deeper root growth. This will result in a healthier and more drought-tolerant landscape. Consult landscape and irrigation professionals when planning an irrigation system.

7. APPROPRIATE MAINTENANCE:

Proper landscape and irrigation maintenance will preserve your water-conserving landscape. Maintenance is easier and less expensive for a landscape when the first six principles have been followed. In addition, because plants are grouped according to their needs, less fertilizer, pesticides and other chemicals are required to maintain the plants.

APPENDIX

Guideline Specifications for Nursery Tree Quality

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance,* City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300. American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

C. American Standard for Nursery Stock, ANSI Z60.1-2004. American Nursery and Landscape Association, 1250 Eye Street. NW, Suite 500, Washington, D.C. 20005.

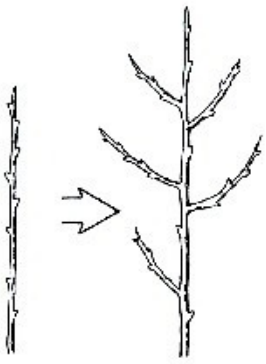
3. TREE CHARACTERISTICS AT THE TIME OF DELIVERY

A. TREE HEALTH

All trees shall be healthy, vigorous, with a normal habit of growth, even distribution of branches, a straight trunk which exhibits good trunk taper, with limbs not lower than four feet above the ground, dependent upon the species, and shall be free from disease, insect infestation, mechanical injury, girdling roots, or other objectionable features.

B. CROWN

1. **Central Leader:** Trees shall have a single, relatively straight central leader (unless specified by the landscape architect to accommodate specific species, i.e. crape myrtle, redbud, dogwood, Loquat, Ligustrum, Japanese maple, and river birch) and a tapered trunk.



Acceptable

Acceptable

Unacceptable

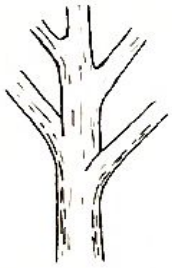
C. LEAVES

1. At the time of planting, leaves shall be in good color (green to dark green), appear healthy (turgid), and distributed evenly on the upper two-thirds of the tree. Trees displaying transplant shock may be rejected by Park and Tree or if agreed to, re-inspected 3 months after Final Inspection to determine viability. At time of re-inspection, the following conditions must be present for acceptance of trees :

-Cambium must be green throughout affected area(s).
-New buds (terminal and laterals) must be developing throughout affected area(s).
-The central leader of the tree must be alive.
-New leaves must be green and turgid.
-Water sprouts/sucker growth will not be considered shock reversal.

2. Main Branches (*scaffolds*): Branches should be distributed radially around and vertically along the trunk, forming a generally symmetrical crown typical for the species. Optimum angle of scaffold branching for shade trees is between 45-60 degrees. Branching angles may be more acute for columnar trees.

a) **Main branches**, for the most part, shall be well spaced.



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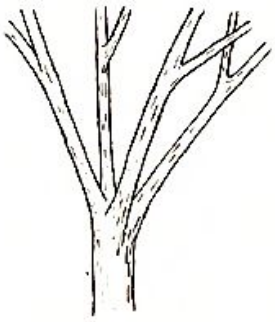


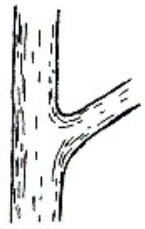
Unacceptable

b) Branch diameter shall be no larger than 2/3 (*two thirds*) the diameter of the trunk, measured 1" (*one inch*) above the branch.

Acceptable

Unacceptable

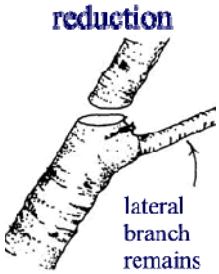
c) The attachment of scaffold branches shall be free of included bark.



Acceptable

Unacceptable

d) At time of installation, branches shall not be 'tipped' or 'rounded' over. Proper reduction cuts are acceptable if made for crown development purposes only.

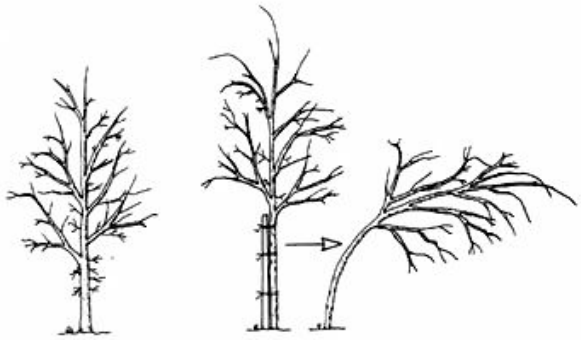


Appropriate Reduction Cut

Inappropriate Heading Cut

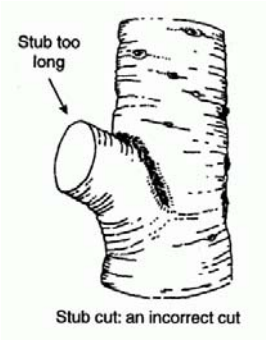
D. TRUNK

1. **Trunk diameter and taper** shall be sufficient so that the tree will remain vertical without the support of a nursery stake. Trunks shall be centered in the middle of the root ball or container.



2. **The trunk shall be free of wounds** (*except properly-made pruning cuts*), conks (*fungal fruiting-bodies*), cracks, sun scald, torn bark, bleeding areas, signs of boring insects, galls, cankers, and excessive lichen covering more than a ¼ of the trunk.

Unacceptable flush cuts

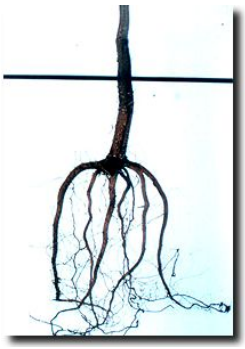


Unacceptable stubs

Unacceptable trunk wounds

E. ROOTS

1. The trunk, **root collar** (*root crown*) and large roots shall be free of circling and/or kinked roots. Soil removal near the root collar may be necessary to inspect for circling and/or kinked roots.



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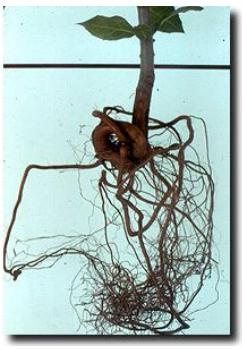


Unacceptable

2. The tree shall be **well rooted** in the soil mix. When the container is removed, the root ball shall remain intact. When the trunk is carefully lifted both the trunk and root system shall move as one.

3. The upper-most roots or root collar shall be within 1" (*one inch*) above or below the soil surface.

4. The root area periphery should be free of large circling and bottom-matted roots. Prune out small circling or kinked roots prior to planting.

Root ball standards

Trunk Caliper (Inches)	Min ball diameter on **field grown** shade trees	Min root ball diameter on **fabric container** grown trees	Min **container** size (gallons)	Min tree height on standard trees	Min tree height on slower grown trees	Max tree height
1	16	12	15	6	10	1
2.5	24	18	30	12	16	2.5
3	32	20	45	14	18	3

Height measurements shall be taken from ground level for field grown stock and from the soil line for container grown stock, which should be at or near the top of the root flare. Caliper measurement of the trunk shall be taken 6" above the ground up to and including 4" caliper size.

4. INSPECTION

The City reserves the right to reject trees that do not meet specifications as set forth in these guidelines. If a particular defect or substandard element or characteristic can be easily corrected, appropriate remedies shall be required.

TREE PLANTING SPECIFICIATION

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. PERSONNEL

All personnel will be supervised in a manner that assures work is performed in accordance with all applicable industry standards.

3. APPLICABLE STANDARDS

A. *The Landscape and Tree Ordinance* of the City of Savannah.

B. *American National Standards for Tree Care Operations*, ANSI A300. American National Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

C. *American Standard for Nursery Stock*, ANSI Z60.1-2004. American Nursery and Landscape Association, 1250 Eye Street. NW, Suite 500, Washington, D.C. 20005.

4. TREE CHARACTERISTICS AT THE TIME OF DELIVERY

Plants shall have the habit of growth that is normal for the species or cultivar and shall be sound, healthy, vigorous, free from insects, plant diseases and injuries or damage of any nature. All landscape stock must be nursery grown.

5. SHIPMENT, DELIERY, AND ACCEPTANCE

Acceptance at the nursery, in which the plant is growing, prior to transplanting, does not preclude rejection at the site for just cause. All plants shall be properly protected from weather and be adequately packed to avoid breakage, sun scald, windburn, desiccation and other damage during loading and shipment.

6. PLANTING PROCEDURES

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 lift trees by their trunk or use the trunk as a lever in positioning or moving the tree in the planting area.

B. Dig a shallow, broad planting hole at least twice (2x) as wide as the root ball. The sides of the excavation of all planting areas shall be sloped at a 45 degree angle. The bottom of the planting bed directly under the tree or shrub shall be horizontal such that the tree sits plumb. Tamp the bottom of the hole to prevent settling.

The depth of the planting hole should be approximately two inches (2”) less than the

depth of the tree from the bottom of the root system to the root flare. For example if root system is 17 inches, the depth of the hole should be 15 inches. This should ensure that the true root flare remains above the finished grade.

The root flare is not necessarily the top of the root ball. Due to production methods, the root flare is sometimes buried in the ball or container. If the root/trunk flare is not visible while still balled and burlaped or in the container, carefully remove access soil from the trunk until the flare is uncovered. Then proceed to plant. If more than 2 inches of soil must be removed to identify the flare, the tree should be rejected. The root flare must be partially visible above grade when all work is complete. If not the tree is too deep in the ground or in the root ball.

C. Confirm that tree is standing straight in hole and then add soil around the bottom of the root ball to keep it stable.

D. Once positioned, fill the hole about 1/3 full and gently but firmly pack the soil around the base of the root ball.

E. Remove all strapping, pinning nails, tree wrap, twine, plastic, paper, and bamboo. Burlap and wire baskets must be cut and removed from the top ½ of the root ball. Remove all small girdling and kinked roots using a sharp knife. Larger girdled and kinked roots requiring saws or loppers will adversely affect the overall performance of the tree and should be refused/not planted.

F. Fill the remainder of the hole taking care to firmly pack soil to eliminate air pockets that may cause roots to dry out. To avoid this problem, add the soil a few inches at a time and settle with water. Continue until hole is filled and tree is firmly planted.

G. Form a shallow (no more than 4") saucer of mulch outside the edge of the root ball. Do not use soil to form saucer. Leave a 6" gap between mulch and tree trunk.

H. The Park & Tree Department recommends staking only when conditions warrant tree support, such as in windy locations or in soil that is excessively sandy or wet or with container grown material. Poor-quality trees with cracked, wet, or loose root balls, poorly developed trunk-to-crown ratios, or undersized root balls shall be rejected if they require staking.

Production Method and Suggested Staking Requirements

Production method	Root ball weight	Need for staking
Container: above ground or pot-in-pot	light	frequently
Fabric containers in ground	light to moderate	usually
B&B not root pruned	heavy	sometimes
B&B root pruned	heavy	sometimes
Bare root	very light	usually

This chart compares production methods such as pot-in-pot systems with typical root ball weights and staking requirements. For example trees produced using the pot-in-pot system typically have a light root ball and frequently require staking, where as B&B trees usually have heavy root balls and require staking less frequently.

TREE MAINTENANCE GUIDELINES FOR NEWLY PLANTED TREES

The year after the tree is planted these specifications should be followed…

Water. Check soil moisture a few inches below the surface in the root ball. Trees provided with regular irrigation, 3 times per week, for the first 6 – 8 weeks during the growing season. Moisture should be monitored carefully for the remainder of the year. Establishment period is about 1 year for each inch of tree caliper (ex. 2.5" caliper = 2.5 years). 2-3 gallons of water is required for each caliper inch of tree. Irrigate root ball.

Mulch. Layer 2 – 4 inches above the ground around the tree but not touching the trunk. Mulch to the edge of the drip line. Proper mulching improves soil conditions and prevents damage from string trimmers and mower decks. Bark mulch is preferred to pine straw.

Prune. Prune the tree only if necessary to correct improper branch structure or remove dead wood. Pruning can inhibit root growth and establishment if not done carefully. Pruning should always follow ANSI A300 standards.

Stake. Remove all stake and guy material by the end of the first year – if not sooner.

Fertilize. Do not fertilize within the first year. Fertilizing newly transplanted trees can excessively dry roots (burning).

The second year after the tree is planted….

Water. Trees should be checked and watered. Monitor and water trees from spring to fall.

Mulch. The area surrounding the tree must be re-mulched every spring.

Prune. Only as necessary to continue good branch development and dead wood removal.

The third year after the tree is planted….

Water. Root systems are still being established and soil moisture needs to be checked on a regular basis from early spring to fall.

Mulch. Re-mulch trees in spring.

Prune. Only as necessary to continue good branch development and dead wood removal.

Fertilize. Trees may be fertilized in early spring or early fall if the need exists. Fertilizer should be applied based solely on prescriptive needs determined from soil and foliar analysis.

Research shows that it takes approximately three years for a transplanted tree to become well established on a new site. Maintaining a vigorous, healthy tree requires commitment well after the initial planting. The tree should have a healthy living environment and a structurally good form. Good form is obtained from quality planting stock and from developmental pruning. Trees should be mulched, watered as needed, free of insects and disease and protected from lawn care equipment injury.

METHODS OF TREE PROTECTION

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance,* City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300.* - Management of trees and shrubs during site planning, site development, and construction. *American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. PLANNING CONSIDERATIONS

Tree space is the most critical factor in tree protection throughout the development process. The root system of a tree can easily extend beyond the dripline of the tree canopy. Disturbance within this critical root zone can directly affect a tree's chances for survival and stability. To protect these critical zones, the following standards shall apply.

A. The minimum Tree Protection Zone, except for palm-type trees, shall be n area centered on each tree with a radius, in feet, equivalent to the tree diameter in inches, measured at breast height. Provided, however, in no case shall the area be less than the minimum Tree Protection Zone for a planted tree of the same species. Palm-type trees shall have a minimum Tree Protection Zone diameter equivalent to the diameter of the leaf crown.

B. If more than one tree is included in one preserved area, the total minimum preserved area shall include the minimum Tree Protection Zone for each tree in the preserved area.

C. For initial clearing of the site, an additional area of not less than twenty feet (20') in width shall be added to the perimeter of the Tree Protection Zone until approved tree protection devices are erected.

D. Layout of the project site utility and grading plans should accommodate the required Tree Protection Zones. Utilities must be placed along corridors between Tree Protection Zones.

E. Construction site activities such as parking, material storage, concrete washout, burnhold placement, etc., shall be arranged so as to prevent disturbances within Tree Protection Zones.

F. No disturbances shall occur within the Tree Protection Zone of trees or stands of trees without prior approval by the Administrator.

4. PROTECTIVE BARRIERS

A. The minimum tree protection device shall be 4’ temporary chain link fence constructed at and around the perimeter of the Tree Protection Zone. The fence shall be attached to galvanized metal posts, spaced no farther than 8’ apart unless authorized otherwise by the Administrator. The Administrator shall approve alternative fencing which provides an equivalent level of protection.

B. Tree protection devices shall be erected prior to the start of construction and shall remain n place until final inspection and approval of the project. Broken or dislodged tree protection devices shall be immediately repaired.

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

i) Silt screening must be placed along the outer uphill edge of Tree Protection Zones at the land disturbance interface.

ii) Silt screening shall be backed by 4’ chain link fence in areas of steep slopes.

D. All tree fencing and erosion control barriers shall be installed prior to and maintained throughout the land disturbance process, and shall not be removed until landscaping is installed. The Park & Tree Department shall be notified prior to removal of tree protection fencing.

E. No vehicles shall be parked, or construction material stored or substances poured or disposed of or placed, within any Tree Protection Zone at any time during clearing or construction of the project.

F. No change in grade within the Tree Protection Zone shall be allowed around existing trees except for a maximum additional of two inches of mulch unless approved by the Administrator.

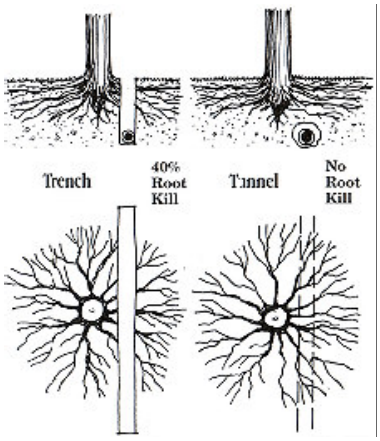
G. All retained or planted trees shall be protected or situated so as to prevent damage from environmental changes or land disturbance resulting from any building or facility construction within or immediately adjacent to the Critical Root Zone of the tree(s).

5. ENCROACHMENT

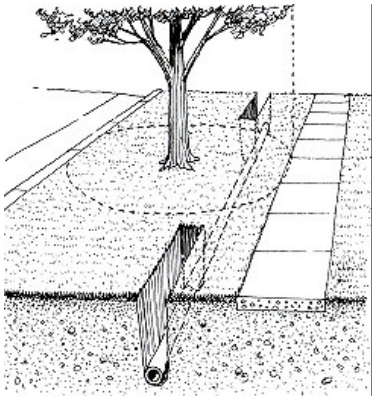
Most trees can tolerate only a small percentage of critical root zone loss. If encroachment is anticipated within the critical root zones of specimen trees, stands of trees or otherwise designated Tree Protection Zones, the following preventive measures shall be employed, subject to the Administrator’s approval.

A. **Soil compaction**: Where soil compaction might occur due to traffic or material storage, the tree protection zone must first be mulched with a minimum four (4) inch layer of processed pine bark or wood chips, or a six (6) inch layer of pine straw.

B. **Trenching**: The installation of utilities through a Tree Protection Zone shall occur by way of tunneling, jack or bore rather than trenching. If roots must be cut, proper root pruning procedures must be employed (See Root Pruning Specification in this manual).



Trenching vs. Tunneling



Avoiding root loss through tunneling

C. **Tree Removal and Replacement**
Where the Administrator has determined that irreparable damage has occurred to trees within the Tree Protection Zone, the trees must be removed and replaced.

D. **Removal and Replacement of Pavement or Sidewalk:**
Conflicts may occur when tree roots grow adjacent to paving, foundations, sidewalks or curbs (hardscape). Improper or careless extraction of these elements can cause severe *injury* to the roots and instability or even death of the trees. The following alternatives must first be considered before root pruning within the TPZ of *a Regulated Tree.*

Removal of existing pavement over tree roots shall include the following precautions: Break hardscape into manageable pieces with a jackhammer, pick, or small backhoe bucket and load the pieces onto a loader. The loader must remain on undisturbed pavement or off exposed roots. Do not remove base rock that has been exploited by established absorbing roots. Apply untreated wood chips over the exposed area within one hour, then wet the chips and base rock and keep moist until overlay surface is applied.

Replacement of pavement or sidewalk: An alternative to the severance of roots greater than 2- inches in diameter should be considered before cutting roots. If an alternative is not feasible remove the sidewalk, grind roots only as approved by the Park and Tree Department.

3. REMEDIAL PROCEDURES

Remedial site reclamation and tree care procedures shall be implemented when unauthorized encroachment within Tree Protection Zones has caused damage to either the tree or the tree's growing site, and that damage irreparable.

A. Reporting. Any damage or injury to trees (roots, trunk, or crown) shall be reported within one business day to the Park and Tree Department (651-6610).

B. Root injury: If roots 2-inches or larger are encountered they must be cleanly cut back to a sound wood lateral root. All exposed root areas shall be backfilled or covered within one hour.

C. Bark or trunk wounding: Current bark tracing and treatment methods shall be performed by a qualified tree care specialist within two days.

D. Scaffold branch or leaf canopy injury: Remove broken or torn branches back to an appropriate branch capable of resuming terminal growth within five days. If leaves are heat scorched from equipment exhaust pipes, consult the Park and Tree Department within one business day. All work shall be performed by an ISA Certified Arborist.

STANDARDS FOR REMEDIAL TREE CARE

The survivability of trees damaged through construction activities can be improved with the implementation of remedial procedures. The following practices shall be applied where appropriate.

Pruning Established Trees:

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

The specifications may be modified based on either species-specific requirements related either to structure or resistance to pests. Not all items are applicable to all projects. If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to the City of Savannah, Park & Tree Department (912-651-6610) by the arborist or the owner of the property.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance,* City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300. – Tree, Shrubs and Other Woody Plant Maintenance – Standard Practices (Pruning). American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. PRUNING TECHNIQUES

The following steps should ensure that pruning operations do minimal damage to the tree.

A. Not more than 25 percent of the foliage of a branch should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

B. Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

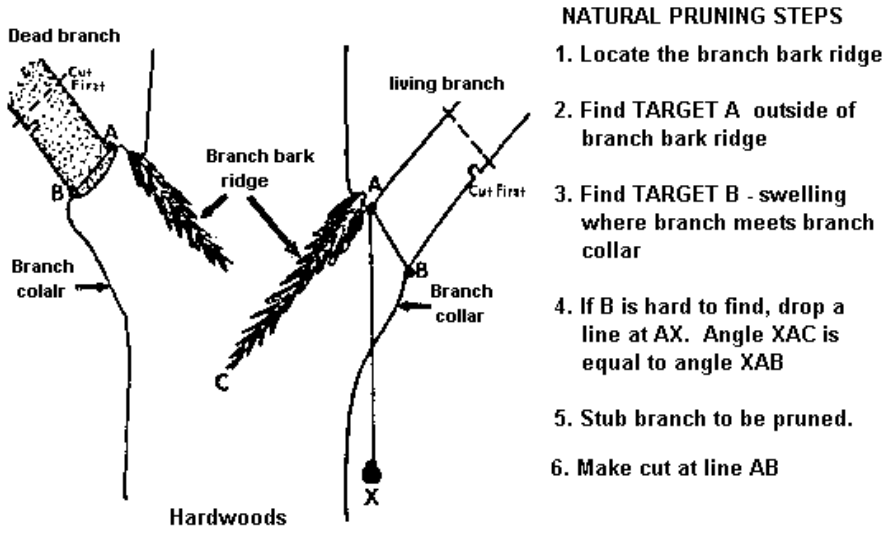
C. Interior branches shall not be stripped out i.e. lion-tailed.

D. Pruning cuts larger than 4-inches in diameter should be avoided unless otherwise directed.

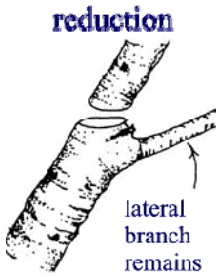
E. Pruning cuts shall be made ***outside*** the branch bark ridge. Flush cuts are not acceptable.

F. Where the length of branches must be reduced, cuts may be made only to lateral

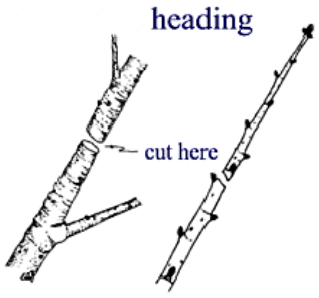
branches large enough to assume the position of the removed tissue. As a rule, lateral branches must be at least one-third the diameter of the removed limb, at the point of attachment between the two.



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. 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 are not considered appropriate in most instances in the landscape.



Appropriate Reduction Cut



Inappropriate Heading Cut

Fertilizer Application

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance,* City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300. – Tree, Shrubs and Other Woody Plant Maintenance – Standard Practices (Fertilization). American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. FERTILIZER APPLICATION

A. Fertilization should be based on the nutritional needs of the tree(s) on site. Soils can be analyzed to determine whether any of the essential minerals are deficient. If soil nutrients are deficient, supplemental fertilization may be indicated. It is advisable to keep application rates low until the root system has had time to adjust.

B. If a quick-release inorganic form of nitrogen fertilizer is used, applications should be limited to a period between late winter and late spring.

C. If a slow-release, organic form of nitrogen fertilizer is used, applications can be made any time of the year. Results will be maximized with applications made during dormancy (after leaf fall) through mid-spring.

D. The following methods of fertilizer-soil applications are recommended in order of desirability:

High pressure soil injection of fertilizer solution is injected into the soil at the prescribed rate of frequency. Soil injections are generally spaced approximately three (3) feet apart, and the solution is dispersed to a depth of 18 inches. Benefits of this method include its effectiveness in even distribution, improved soil aeration, and the immediate availability of nutrients to the soil.

Soil incorporation of granular fertilizers. With this method of application, granular fertilizer is placed at the prescribed rate and frequency in holes drilled within the target area. Holes should be approximately two inches (2”) wide, 12 to 18 inches deep, and 2-3 feet apart, radiating outward from the tree trunk in a bicycle spoke configuration. The fertilizer is apportioned among the holes. Benefits of this method include increased soil aeration, with a reduced loss of fertilizer from runoff.

Site Reclamation:

Root and Soil Invigoration Techniques

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance*, City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300.* - Management of trees and shrubs during site planning, site development, and construction. *American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. VERTICAL MULCHING

Compaction of soil and increases in grade, both have the effect of depleting the oxygen supply to tree roots. If the soil aeration can be improved, root growth and water uptake can be enhanced. The most common method of aeration of the root zone involves drilling holes in the ground and filling with material to increase aeration.

A. Holes are usually 2-4 inches in diameter and 3 feet on center, throughout the root zone.

B. Depth should be at least 12 inches, but may need to be deeper if the soil grade has been raised.

C. Holes are typically filled with peat moss, wood chips, pea gravel or other material that can maintain aeration and support root growth.

4. RADIAL AERATION

Another method of increasing oxygen and moisture levels in root zones affected by construction is radial aeration.

A. Narrow trenches are dug in a radial pattern throughout the root zone. The trenches appear similar to the spokes of a wagon wheel.

B. Begin trenches 4 - 8 feet from the trunk of the tree to avoid cutting major roots.

C. Trenches should extend at least as far as the drip line of the tree. They should be 1 foot in depth.

D. Trenches can be backfilled with topsoil or compost.

E. ONCE AN AREA HAS BEEN AERATED, IT MUST REMAIN FREE OF VEGETATION TO REMAIN EFFECTIVE.

5. IRRIGATION & DRAINAGE

One of the most important tree maintenance procedures following construction damage is to maintain an adequate, but not excessive supply of water to the root zone.

A. A slow, long soak over the entire root zone is preferred.

B. Keep the top 12 inches of soil moist, but avoid over watering.

Water:

The availability of water to trees on construction sites should be monitored. The construction site's environment is significantly different from the tree's original setting. Extremes in water-availability, ranging from drought to flood conditions, can occur quite readily as a result of grade changes. If grade changes or excessive rains cause water to accumulate near trees where this was not the case before construction, steps must be taken to improve drainage. Conversely, grading changes or prolonged periods without rain may cause a drought situation, and it may be necessary to water the trees or provide a temporary irrigation system. Adjustments should be made according to a species' moisture preference. Site-specific tree lists may be obtained from the Administrator or City Arborist.

TREE & STUMP REMOVAL

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. Landscape & Tree Ordinance, City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300. – Tree, Shrubs and Other Woody Plant Maintenance. American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. TREE REMOVAL PROCEDURES

When *Regulated Trees* are removed and adjacent trees that are to be preserved (as shown on the approved *site plans*) must be protected, then the following tree *removal* practices apply:

A. Tree Removal

Removal of trees that extend into the branches or roots of *Regulated Trees* shall not be attempted by demolition or construction personnel, grading or other heavy equipment. An International Society of Arboriculture, Certified Arborist shall oversee removal the tree carefully in a manner that causes no damage above or below ground to trees that remain.

B. Stump Removal

Before performing stump extraction, the developer shall first consider whether or not roots may be entangled with trees that are to remain. If so, these stumps shall have their roots severed before extracting the stump. *Removal* shall include the grinding of stump and roots to a minimum depth of 24-inches but expose soil beneath stump to provide drainage. In sidewalk or small planter areas to be replanted with a new tree, the entire stump shall be removed and the planting pit dug to a depth of 30-inches. If dug below 30-inches, compact the backfill to prevent settling. Large surface roots three feet from the outside circumference shall be removed and the area tamped to settle the soil.

ROOT PRUNING

1. GENERAL

This document has been issued to establish specific technical regulations, standards, and specifications necessary to implement the Landscape and Tree Ordinance of the City of Savannah.

2. APPLICABLE STANDARDS

A. *Landscape & Tree Ordinance,* City of Savannah.

B. *American National Standards for Tree Care Operations, ANSI A300. – Tree, Shrubs and Other Woody Plant Maintenance – Standard Practices (Pruning). American National* Standards Institute, 11 West 42nd Street, New York, N.Y. 10036.

3. REASONS FOR ROOT PRUNING

Root pruning will help damaged roots produce a new flush of roots, helping the tree recover from its injuries. Torn or broken roots (not properly pruned) may lead to decay and development of root rot, which in turn can lead to tree death and/or tree failure.

Certain trees should not be root pruned, such as trees in poor condition or trees that are leaning. In addition, some species do not respond well to root pruning, such as tulip tree (*Liriodendron tulipifera*), camphor (*Cinnamomum camphora*), Chinese or Lacebark elm (*Ulmus parvifolia*), and callery pear (*Pyrus calleryana*).

To minimize root-pruning impacts, a tree assessment should be conducted prior to pruning. Both tree and site conditions need to be evaluated to determine the potential for injury and structural stability loss. Following the assessment, a plan should be developed that identifies the maximum allowable size of roots to be cut, allowable proximity to the root plate for cuts, and the most suitable method for making cuts. Both the assessment and plan should be completed by a Certified Arborist. All root pruning shall be approved by the Park & Tree Department prior to commencement.

4. ROOT PRUNING TECHNIQUES

A. Roots that are one (1) inch in diameter or larger must be cleanly and sharply cut. There is no need to paint or treat the ends.

B. Use a sharp instrument to cleanly cut each root. Loppers, pruning saws, chain saws, and demolition saws may be used. Do not use shovels, pick axes, back hoe buckets, or stump grinders to prune roots.

City of Savannah Park and Tree Department Planting Notes

1. All planting shall adhere to the following standards as specified in:

   A. *The Landscape and Tree Ordinance* of the City of Savannah.

   B. *The Landscape and Tree Ordinance Compliance Manual* of the City of Savannah.

2. Plants shall be true to species and variety specified, and nursery-grown in accordance with good horticultural practices.

3. Any deviation from these plans in either species or layout must be specifically approved by the Landscape Architect for the City of Savannah or designee.

4. Plants shall conform to the measurements specified on the approved plan(s).

5. Contractors are responsible for inspection of existing conditions and must promptly report any discrepancies.

6. No large or medium tree species shall be planted within 10-feet of any underground utility line or underneath any overhead power lines, and small tree species must maintain a minimum 5-foot separation from underground utility lines.

7. All trees shall be healthy, vigorous, with a normal habit of growth, even distribution of branches, a straight trunk which exhibits good trunk taper, with limbs not lower than four feet above the ground, dependent upon the species, and shall be free from disease, insect infestation, mechanical injury, girdling roots, or other objectionable features that would cause the tree to decline or become structurally unsound. Trees shall be well-branched and densely foliated when in leaf.

8. Plants shall be subject to inspection for conformity to specifications requirements and approval by the City of Savannah Park and Tree Department. Such approval shall not impair the right of inspection and rejection during progress of the work. Acceptance at the nursery, in which the plant is growing, prior to transplanting, does not preclude rejection at the site for just cause.

9. Tree shall be planted at proper depth or shall be rejected at time of inspection.

10. Stake trees only when necessary. Staking and guying shall follow the City of Savannah's Park and Tree Department specifications when used.

11. Landscape contractors are required to attend a pre-planting meeting with the City of Savannah's Park and Tree Department prior to the start of the project. Please contact the Park and Tree Department Site Inspector at (912) 651-6610 to set up the meeting.

City of Savannah Park and Tree Department Tree Protection Notes

1. Tree protection shall adhere to the following standards specified in:

   A. *The Landscape and Tree Ordinance* of the City of Savannah.

   B. *The Landscape and Tree Ordinance Compliance Manual* of the City of Savannah.

2. The tree protection device (unless directed otherwise by the Landscape Architect for the City of Savannah or designee) shall be a 4' temporary chain link fence constructed at and around the perimeter of the Tree Protection Zone. The fence shall be attached to galvanized metal posts, spaced no farther than 8' apart.

3. Tree protection devices shall be erected prior to the start of construction and shall remain in place until all site and exterior building work is completed and landscape installation has begun. Broken or dislodged tree protection devices shall be immediately repaired.

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

5. Silt fencing shall be placed along the outer uphill edge of Tree Protection Zones at the land disturbance interface.

6. Silt fencing shall be backed by 4' chain link fence in areas of steep slopes.

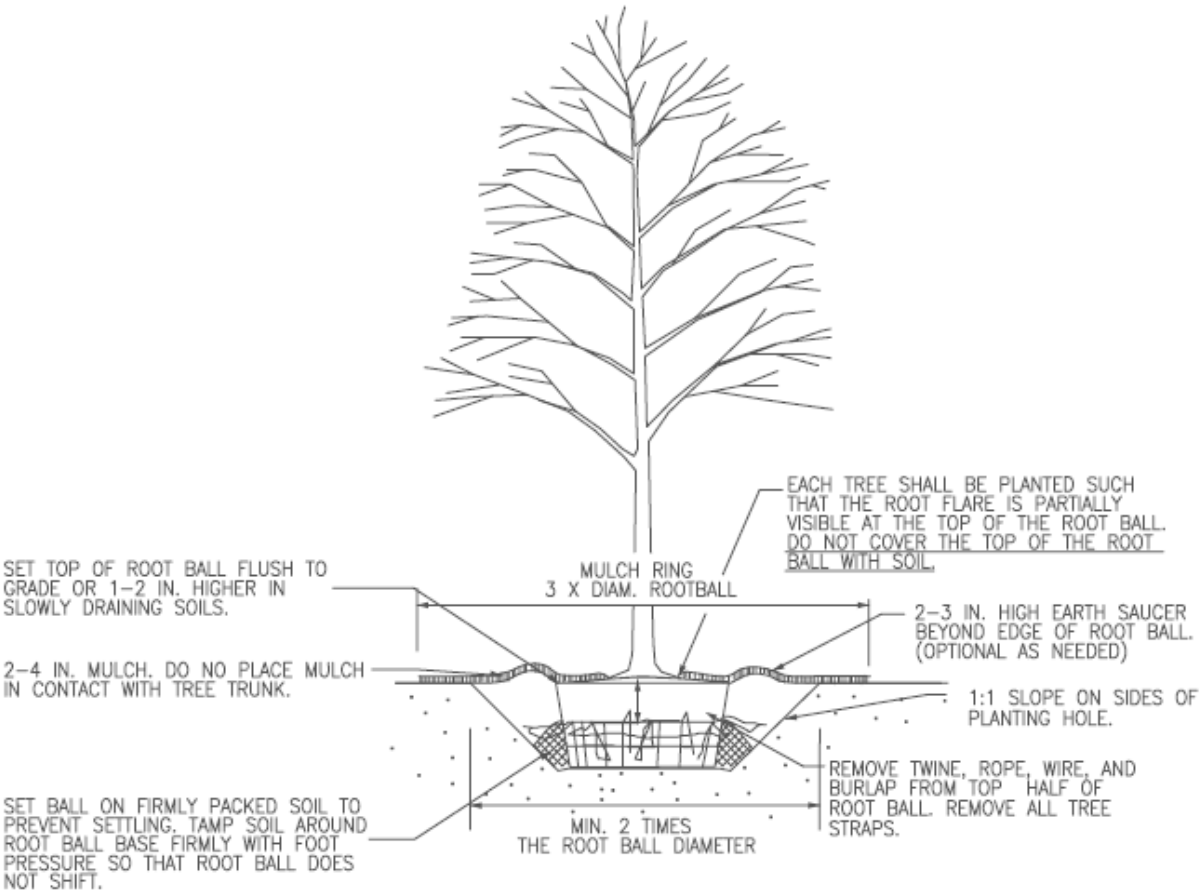
7. No vehicles shall be parked, or construction material stored or substances poured or disposed of or placed, within any Tree Protection Zone at any time during clearing or construction of the project.

8. No change in grade within the Tree Protection Zone shall be allowed around existing trees except for a maximum additional of two inches of mulch unless approved by the Landscape Architect for the City of Savannah or designee.

9. Trees within a Tree Protection Zone shall not be pruned or removed without prior knowledge and consent from the City of Savannah's Park and Tree Department.

10. All retained or planted trees shall be protected or situated so as to prevent damage from environmental changes or land disturbance resulting from any building or facility construction within or immediately adjacent to the Critical Root Zone of the tree(s).

11. Any damage or injury to trees shall be reported immediately to the City of Savannah's Park and Tree Department Site Inspector at (912) 651-6610.



NOTES

1. PRUNE ONLY CROSSOVER LIMBS, CO–DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN. ALL PRUNING SHALL CONFORM TO ANSI A300 STANDARDS. IMPROPERLY PRUNED TREES MAY BE REJECTED BY THE CITY.
2. STAKE TREES ONLY WHEN NECESSARY. SEE CITY TREE STAKING DETAILS.

CITY OF SAVANNAH

STANDARD CONSTRUCTION DETAILS

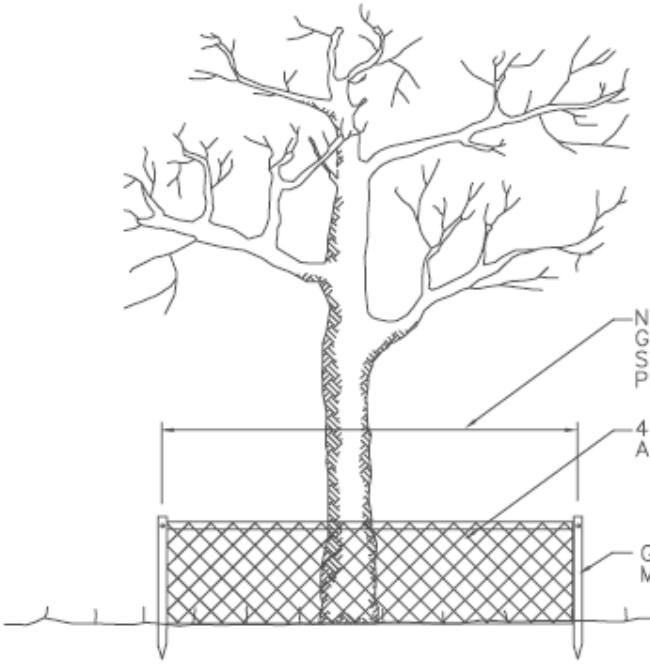
TREE PLANTING

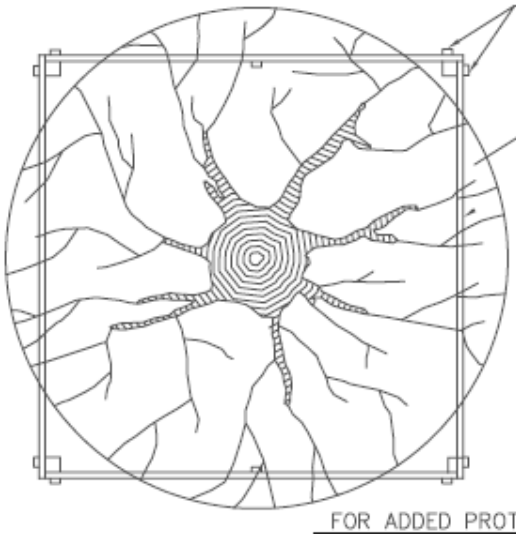
PLATE NUMBER: T1

APPROVED: SIGNATURE ON FILE
CITY ENGINEER

SCALE: N.T.S.

DATED: JULY 2007





FOR ADDED PROTECTION

- PROVIDE 4" DEEP WOOD CHIP MULCH OVER ANY UNPROTECTED ROOT ZONE.
- MAKE CLEAN CUTS ON ROOTS EXPOSED BY GRADING AND BACKFILL IMMEDIATELY.
- PROVIDE TEMPORARY IRRIGATION WHERE PRACTICAL AND FEASIBLE.

CITY OF SAVANNAH

STANDARD CONSTRUCTION DETAILS

TREE PROTECTION

PLATE NUMBER: T2

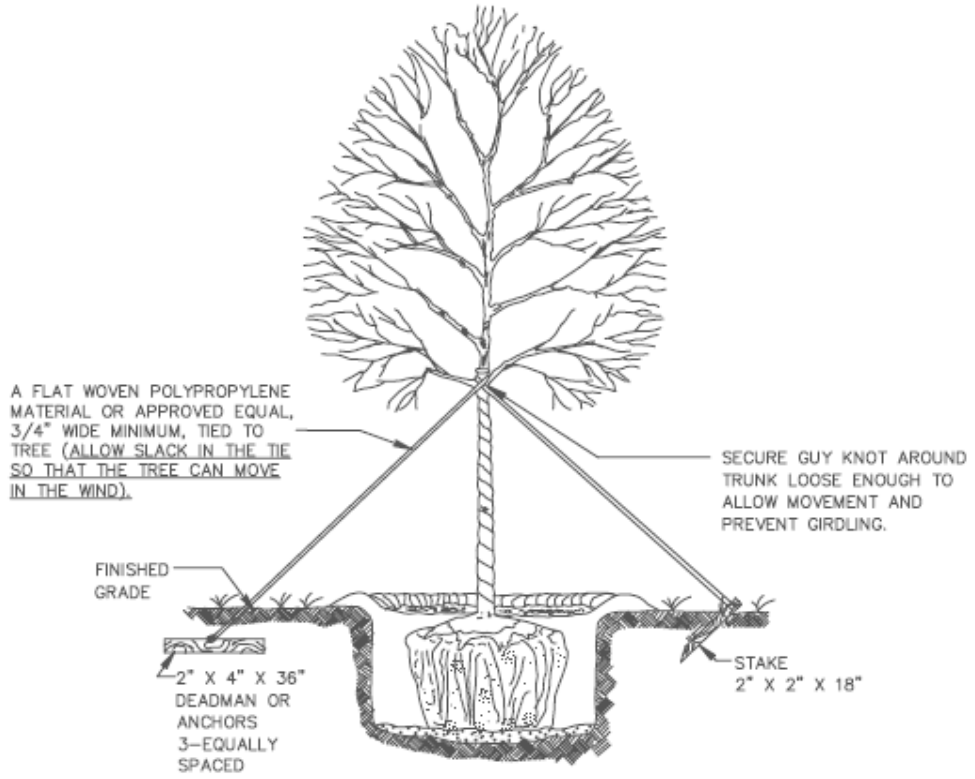
APPROVED:

SIGNATURE ON FILE

CITY ENGINEER

SCALE: N.T.S.

DATED: JULY 2007



NOTE:
–SELECT DEADMAN, ANCHORS, OR STAKES TO SECURE TREE

NOTES

1. STAKE TREES ONLY WHEN NECESSARY. STAKES SHALL BE REMOVED 6 MONTHS AFTER PLANTING.
2. TREES LARGER THAN 2" CALIPER SHOULD BE STAKED BY THREE GUY STRAPS WHEN NECESSARY.

CITY OF SAVANNAH

STANDARD CONSTRUCTION DETAILS

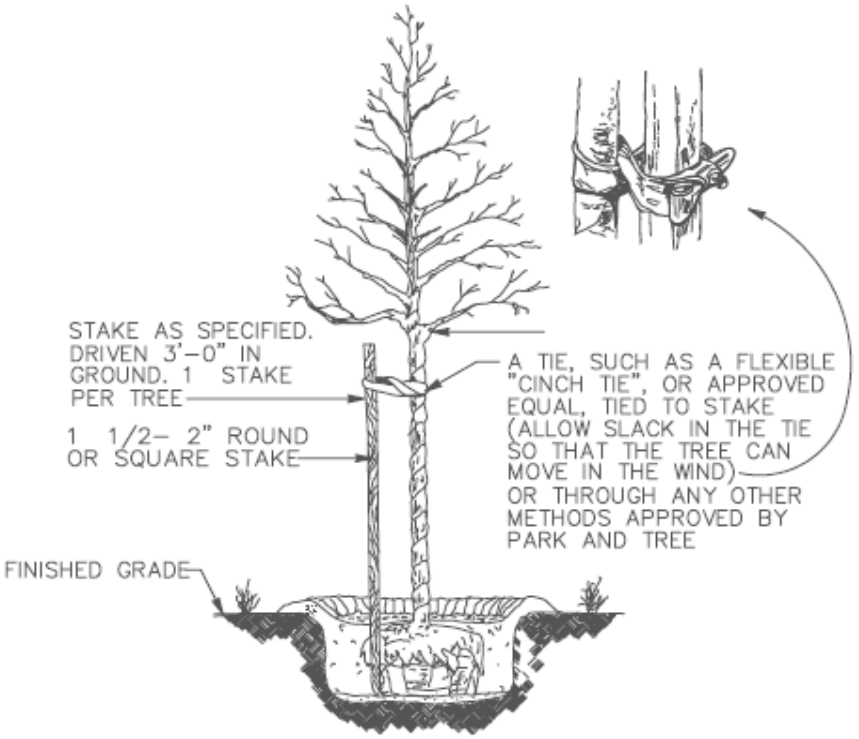
TREE STAKING

PLATE NUMBER: T3

APPROVED: SIGNATURE ON FILE
CITY ENGINEER

SCALE: N.T.S.

DATED: JULY 2007



NOTES

1. STAKE TREES ONLY WHEN NECESSARY. STAKES SHALL BE REMOVED 6 MONTHS AFTER PLANTING.
2. OTHER ALTERNATE STAKING METHODS MAY BE USED UPON APPROVAL BY PARK AND TREE.

CITY OF SAVANNAH

STANDARD CONSTRUCTION DETAILS

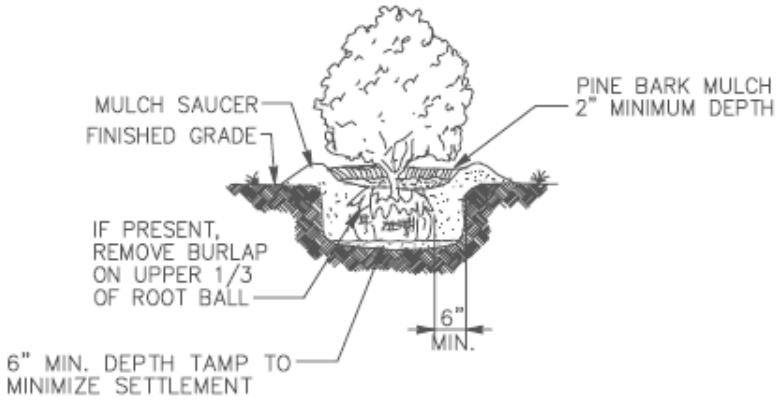
ALTERNATIVE TREE STAKING

PLATE NUMBER: T4

APPROVED: SIGNATURE ON FILE
CITY ENGINEER

SCALE: N.T.S.

DATED: JULY 2007



NOTES

1. CLEANLY PRUNE ONLY DAMAGED, DISEASED AND OR WEAK BRANCHES IF NECESSARY.
2. FINISHED GRADE AROUND PLANT TO BE THE SAME AS ORIGINAL GRADE OF PLANT WHEN GROWN.

CITY OF SAVANNAH

STANDARD CONSTRUCTION DETAILS

SHRUB PLANTING

PLATE NUMBER: T5

APPROVED: SIGNATURE ON FILE
CITY ENGINEER

SCALE: N.T.S.

DATED: JULY 2007

CITY BUFFER STANDARDS

Sec. 8-3066. Visual buffers and screening.

(a) *Generally.* Buffers shall be provided as set forth herein to effectively protect all property from the adverse effects of adjacent land use activity of a more intensive nature where such activity may result in nuisance, including visual blight, threat to safety, or noise or odor encroachment to an adjacent parcel or one located across a public right-of-way.
The provisions of this section shall not apply to uses or zoning districts where greater or more intense buffer elements are required elsewhere in these regulations for such uses or districts. Where a conflict in design standards exists, the most restrictive buffer and screening standard shall apply.

(b) *Buffer plan required.* A buffer plan shall be submitted with all applications for building permits, occupancy permits or site plan approvals for development of a site for which a buffer element is required hereunder.
The buffer plan shall show in detail the layout of the proposed development, including the arrangement of buildings, parking areas, permanent open spaces, and the lotting arrangement and location of buildings on adjacent properties which require buffering from the proposed development. The plan shall also show the location of proposed buffers, including a detailed description or sketch of such buffer materials to be used, including a provision for an irrigated water source within 50 feet of the buffer and landscaping areas.
All plans shall be reviewed for completeness prior to their being accepted for processing and shall be forwarded to the MPC staff for approval or denial. Appeals from the MPC staff review shall be made to the MPC board.

(c) *Certification of buffer plans.* The MPC staff shall certify approved buffer plans to the zoning administrator for the issuance of permits.

(d) *Required buffers.* Buffers shall be provided as follows:

(1) *One-family buffer requirements.* Buffers shall be provided as described below to protect one-family detached residential property (including one-family developed and undeveloped property zoned for residential use). The buffer types indicated for each circumstance are described in section 8-3066(f), Buffer Types.

a. A type "A" buffer shall be required where one-family detached residential property is adjoined by multifamily residential or by semidetached or end row dwellings or manufactured homes.

b. A type "B" buffer shall be required where one-family detached residential property is adjoined by institutional or nonretail commercial activity, including religious facilities, hospitals, care homes, public and private schools, day nurseries and kindergartens, banks, professional offices, and other uses of a like nature.

c. A type "C" buffer shall be required where one-family detached residential property is adjoined by lodging facilities or convenience or general retail commercial activity not accompanied by outside storage of goods or products or by service or repair of vehicles.

Examples of uses within this category include motels, clothing stores, specialty shops, restaurants, food and drug stores, laundromats, furniture stores, department stores, auto parts stores, auto filling stations, and other uses of a like nature.

d. A type "D" buffer shall be required where one-family detached residential property is adjoined by uses such as auto repair and paint shops, motorcycle sales and service, auto upholstery shops, sale or rental of autos, trucks, boats or trailers, mini-warehouses, drive-in restaurants, cocktail lounges, nightclubs, package stores and uses of a like nature.

(2) *Multifamily buffer requirements.* Buffers shall be provided as described below to protect multifamily residential property (including multifamily developed and undeveloped property zoned for multifamily residential use). The buffer types indicated for each circumstance are described in section 8-3066(f), Buffer Types.

a. A type "B" buffer shall be required where multifamily residential property is adjoined by institutional or nonretail commercial activity, including religious facilities, hospital and care homes, and public and private schools, day nurseries and kindergartens, banks and professional offices, and activities of a like nature.

b. A type "C" buffer shall be required where multifamily residential property is adjoined by lodging facilities or convenience or general retail commercial activity not accompanied by outdoor storage of goods, products, or the service or repair of vehicles. Examples of uses within this category include motels, clothing stores, specialty shops, restaurants, food and drug stores, laundromats, furniture stores, department stores, auto parts stores, auto filling stations, and other uses of a like nature.

c. A type "D" buffer shall be required where multifamily residential property is adjoined by uses such as auto repair and paint shops, motorcycle sales and service, auto upholstery shops, sale or rental of autos, trucks, boats, or trailers, mini-warehouses, drive-in restaurants, cocktail lounges, nightclubs, package stores, and other uses of a like nature.

(3) *Nonresidential service and storage area buffer requirements.* A type "E" buffer shall be provided where outdoor storage and salvage yards, outdoor vehicle repair and service areas, wrecker storage compounds, and uses of a similar nature, both principal and accessory, adjoin other properties with a dissimilar land use classification or where such uses abut a public right-of-way. Trees planted with a type "E" buffer shall be staggered to achieve a degree of opacity that prevents clear recognition of the use. All trees and shrubs within the buffer shall be of evergreen variety. Supplemental planting of evergreen vegetation may be required within preserved buffers so that the use is not clearly distinguishable through the buffer.

(4) *Manufacturing and industrial buffer requirements.* A type "F" buffer shall be required where any type of manufacturing or industrial use adjoins other properties with a dissimilar land use classification or where such use abuts a public road right-of-way. Trees planted within a type "F" buffer shall be staggered to achieve a degree of opacity that prevents clear recognition of the use. All trees and shrubs within the buffer shall be of the evergreen variety. Supplemental planting of evergreen vegetation may be required within preserved buffers so that the use is not clearly distinguishable through the buffer.

(5) *Off-street parking lot buffer requirements.* A type "G" buffer shall be required where a parking lot containing four or more parking spaces adjoins other properties or where a parking lot abuts a public or private road right-of-way.

(e) *Provisions for certain preexisting uses.* All outdoor material or equipment storage yards, outdoor vehicle repair and service areas, wrecker service storage compounds, vehicle parking lots, loading areas, dumpster pads and trash disposal areas, and uses of a similar nature, both principal and accessory, in existence on the date of adoption of this amendment (December 5, 1991) shall be brought into compliance with the buffer provisions of this section.
Within 90 days from receipt of notice from the city zoning administrator, the owner of a use or property receiving notice that the existing use or property is not in compliance with the buffer and screening provisions of this section shall bring the property into compliance.
The provision for a landscaped buffer or natural buffer located adjacent to the exterior of a screening fence may be waived for a use not in compliance, if the existing fence is in compliance with the intent and the design standards of this section, as determined by the director of inspections.

(f) *Buffer types.*

(1) *Minimum standards.* The following table contains the minimum standards for the various buffer types referenced in section 8-3066(d). Under each major type are options available to a developer. Some of the options include more than one element (e.g., according to table 3-12.5 below, a type "A" buffer may be a six-foot high fence and a five-foot planted buffer or a six-foot high hedge and a ten-foot wide planted buffer or a 20-foot wide preserved buffer).

TABLE 3-12.5

Buffer Type	*Fence height (feet)**	*Hedge height (feet)**	*Planted Width (feet)*	*Preserved Width (feet)*
A	6	-	5	-
	-	6	10	
	-	-	-	20
B	6	-	15	-
	6	-	-	15
C	6	-	20	-
	6		-	20
D	8	-	25	-
	6	-	-	25

E	8	-	30	-
	6	-	-	25
F	8	-	30	-
	6	-	-	40
G	3	-	-	-
	-	3	3	-

* The height of the fence, hedge, or other vegetation within the buffer shall conform to the requirement of section 8-3013, Vision Clearance at Intersections.

(2) *Design standards.*

a. *Fences and walls.*

1. The design of fence or wall shall be the same architectural style and materials as the principal building or buildings on the lot.

2. Except where otherwise allowed by these regulations, any fence or wall shall be opaque so as to prevent the passage of light and debris, and shall be constructed of textured or split-faced block, brick, stone, stucco over concrete block, architectural tile, decay-resistant wood, or similar opaque materials. Decay-resistant wood includes wood that is naturally decay resistant (e.g., cedar, cypress, redwood) or wood that has been chemically and/or mechanically treated (e.g., chromate copper arsenate [CCA]) to a retention rate such that the manufacturer provides a guarantee against decay for 40 years.

3. Unfinished concrete block shall not be permitted.

4. Chainlink or wire fences shall be permitted within nonresidential zoning districts to buffer similar uses, provided that plant material is planted immediately behind or front of the fence.

5. The height of a fence or wall shall not exceed eight feet, except as allowed by other subsections of this subsection (f). Fences and walls shall be interrupted at intervals not exceeding 25 feet by architectural features such as pilasters or columns or by various species of plants that are at least as tall as the fence or wall or taller.

6. The fence or wall shall be set back not less than five feet from the property line unless otherwise approved by the MPC.

7. The area between the property line and the fence or wall shall be landscaped and maintained as an open area in conformance with the City of Savannah property maintenance ordinance.

8. The height of a fence or wall shall be measured from the finished grade at the base of the fence or wall to the top of the fence or wall, but shall not include columns or posts.

b. *Hedges.*

1. For newly established hedges, plants shall be a minimum of three feet in height in order to achieve 50 percent of the required buffer at plant maturity.

2. The area between the property line and the hedge shall be grassed and shall be maintained in conformance with the City of Savannah property maintenance ordinance.

c. *Vegetative buffers.* In general, the purpose of a vegetative buffer is to achieve a degree of opacity that prevents clear recognition of the use being buffered. There shall be no encroachment of structures or paving within the area designated as a buffer. The buffer shall be maintained in conformance with the City of Savannah property maintenance ordinance.

1. *Trees.* Trees shall be planted in conformance with requirements of the City of Savannah land disturbing and tree protection ordinance. Standards for the size, planting, protection, and care of trees planted within a required buffer shall conform to the requirements of said ordinance regardless of whether tree quality points are requested for the trees.

2. *Shrubs.* Shrubs shall be planted in conformance with the requirements of the City of Savannah land disturbing and tree protection ordinance. Standards for the size, planting, protection, and care of shrubs planted within a required buffer shall conform to the requirements of said ordinance regardless of whether landscape quality points are requested for the shrubs.

3. *Preserved stands of vegetation within buffers.* Preserved stands of mature trees within buffers shall conform to the requirements of the City of Savannah land disturbing and tree protection ordinance. The acceptability of mature stands of trees as a buffer shall be determined by the City of Savannah arborist in conformance with the provisions of said ordinance regardless of whether tree or landscape quality points are requested for the stands. Provided, however, that selective hand clearing of underbrush may be permitted if approved by the MPC and the City of Savannah arborist.

(g) *Variances.* The planning commission may approve variances from these requirements at the request of the developer on a finding that such variances would:

(1) Be in keeping with the overall character of the area.

(2) Would not be contrary to the purpose and intent of these regulations.

(3) Would not be detrimental to existing or proposed surrounding uses.

(4) Serve the public purposes to a degree equal to or greater than the standards replaced.

(5) Variances may also be approved by the planning commission in special situations where serious security problems would be posed by construction of a buffer designed in strict conformance with the requirements of this section.

(Code 1977, § 8-3055; Ord. of 7-1-1999(1), § 1; Ord. of 6-27-2002(4), § 1; Ord. of 6-27-2002(5), § 1)

SITELINE CLEARANCE

Sec. 8-3013. Vision clearance at intersections.

On corner lots within all zoning districts, except in B-C-1, B-B, and R-I-P-A zoning districts, no fence, shrubbery or other obstruction to traffic sight vision, except utility poles or light or sign standards, shall encroach into an area as measured from three feet above the level of the adjacent driving surface to ten feet above the level of the adjacent driving surface, within a triangular area formed by the intersection of the right-of-way lines of two streets or railroads, or a street intersection with a railroad right-of-way line, and a diagonal line which intersects the right-of-way lines at two points, each 40 feet distance from the intersection of the right-of-way lines or, in the case of a rounded corner, from the point of intersection of their tangents except where site conditions require greater or lesser setbacks as determined by the city engineer.

Note: Section 3-7, Vision Clearance at Intersections, of the Chatham County Zoning Ordinance is also recommended to assure uniform zoning regulations for the city and county.

(Code 1977, § 8-3013; Ord. of 5-18-2000(1), § 1)

Park and Tree Site Plan Review Checklist

Each of the following areas must be addressed in accordance with the City of Savannah's Landscape and Tree Ordinance in order for a project to be accepted at the Specific Development Plan design review stage.

___ 1. Show total acreage of parcel on the plan.

___ 2. Show Calculation of Greenspace percentage (20% minimum).

___ 3. Show Calculation of total Tree Quality Points (TQP) and Landscape Quality Points (LQP) required.

___ 4. Show Calculation for TQP for planted trees.

___ 5. Show Calculation of TQP for retained trees.

___ 6. Show Calculation for LQP for planted landscape.

___ 7. Show Calculation of Tree Quality Points (TQP) required for parking areas.

___ 8. Show Calculation of Tree Quality Points (TQP) provided for parking areas.

___ 9. Accurately locate and identify all retained trees as well as adjacent City trees on the plans.

___ 10. Diameter of retained trees in inches (Diameter Breast Height) needs to be shown on the plan adjacent to each retained tree.

___ 11. Show the Tree Protection Zones for each retained tree as well as for all City trees in the right of way adjacent to construction sites or where construction is to occur within the Tree Protection Zone.

___ 12. Show all property lines, easements, building setback lines, utility corridors.

___ 13. All planted medium and large tree species need to be a minimum of 10 feet from underground utilities and structures. Small tree species require a minimum 5 foot separation. Show all existing and proposed utilities on the Landscape Plan.

___ 14. Show trees planted under overhead utility lines, and make sure that placement will not cause a future conflict between that tree's canopy and the overhead utility line.

___ 15. Show proposed utility corridors passing through the required Tree Protection Zone for a retained tree.

___ 16. Show a 10 foot Tree Easement to be established for trees in the front yard development setback area in new subdivision developments.

___ 17. Each large (canopy) tree species needs a minimum 400 square feet per tree of permeable land as its planting site.

___ 18. No more than 50% of trees shall be planted of the same species for sites over one acre.

___ 19. Provide a contingency planting plan for sites where 75% or more of the TQP are from one or more saved trees.

___ 20. Canopy trees planted in parking areas need a minimum tree island dimension of 20 feet by 20 feet or 16 feet wide if an extension of a minimum 10 foot wide landscape median.

___ 21. New arterial and collector streets must submit a plan showing new street trees planted at an average 75 feet on center long both sides of the street.

___ 22. Minimum tree and shrub sizes must meet requirements in Landscape and Tree Ordinance.

___ 23. Show a permanent water source within 100 feet of each tree or a Backflow Prevention Devices for an automated irrigation system.

___ 24. For sites over one acre the landscape plan must be prepared and stamped by a licensed Landscape Architect. Sites under an acre must be prepared by a registered or certified profession with competency in landscape design.

___ 25. Show the City of Savannah Tree Planting, Shrub Planting, and Tree Protection graphic details as well as the City of Savannah Park and Tree Department Planting Notes and the City of Savannah Park and Tree Department Tree Protection Notes.

TREE, SHRUB AND GROUND COVER LISTS FOR QUALITY POINTS

TABLE 6

LARGE CANOPY TREES FOR TREE QUALITY POINTS
(Trees with a mature height of greater than 40', with a minimum of 30' canopy)
*** R/O denotes trees which receive retention points only**

Minimum planting space for large trees is 400 square feet: 16' x 25' or 20' x 20'

Botanical Name Common Name	Drought- Tolerance	Planting Points	Retention Factor	Notes:
Acer floridanum (Acer barbatum) Florida Maple	X	90	1.5	Yellow fall color Native; Good for Parking Areas
Acer rubrum Red Maple	X ,M	90	1.5	Cvs. 'Summer Red,' 'Red Sunset'; Native
Carya aquatica Water Hickory	M	R/O	1.5	Large Taproot; Native
Carya cordiformis Bitternut Hickory	X	R/O	1.5	Large Taproot; Native
Carya glabra Pignut Hickory	X	R/O	1.5	Large Taproot; Native
Carya illinoensis Pecan	X	40	.50	Edible Nuts; Weak wooded; Native
Carya pallida Sand Hickory	X	R/O	1.5	Large Taproot; Native
Carya tomentosa Mockernut Hickory	X	R/O	1.5	Large Taproot; Native
Carya myristicaeformis Nutmeg Hickory	M	R/O	1.5	Large Taproot; Native
Cedrus atlantica 'Glauca' Blue Atlas Cedar		40	.50	Blue evergreen; Central leader dies back
Cedrus deodara Deodar Cedar	X	40	.50	Evergreen
Celtis laevigata Sugarberry	X	R/O	1.5	Small leaves; Gray bark; Tiny fruit
Cryptomeria japonica Japanese Cedar	X	40	.50	Evergreen; Hardy, stately tree
Cunninghamia lanceolata China Fir	M	40	.50	Blue-gray evergreen

LARGE CANOPY TREES, Continued

Botanical Name Common Name	Drought-Tolerance	Planting Points	Retention Factor	Notes:
x Cupressocyparis leylandii Leyland Cypress	X	15	.50	Susceptible to cankers
Cupressus sempervirens Italian Cypress		15	.50	Columnar tree; Evergreen; Slow-growing
Fagus grandifolia American Beech		90	1.5	Gray bark; Plant smaller tree
Fraxinus pennsylvanica Green Ash	M	90	1.5	cv. 'Marshall's Seedless'
Ginkgo biloba Maidenhair Tree	X	90	1.5	Pollution tolerant; Yellow fall lvs; Plant male trees - avoid smelly fruit
Gleditsia triacanthos Honey Locust		R/O	.50	Breaks up with age
Juglans nigra Black Walnut		R/O	.50	Edible nuts; Weak wooded tree
Juniperus virginiana Red Cedar	X	90	1.5	Evergreen; long-lived; Salt-tolerant
Liquidambar styraciflua Sweetgum	X	15	.50	Weak wooded when old; Messy Fruit
Liriodendron tulipifera Tulip Poplar or Yellow Poplar	X, M	90	1.5	Showy green-orange flowers; Sensitive roots
Magnolia grandiflora Southern Magnolia	X	90	1.5	Evergreen; White, fragrant flowers; Cvs: 'Bracken's Brown Beauty,' 'Claudia Wanamaker," "D.D. Blanchard'
Metasequoia glyptostroboides Dawn Redwood	X	40	.75	Medium-growing; Late introduction
Morus rubra Red Mulberry	X	R/O	.50	Messy fruit; weak wood; Historical significance (silk)
Nyssa aquatica Water Tupelo	M	R/O	1.5	Moist soils; Riverbanks
Nyssa sylvatica Black Tupelo or Black Gum	M	90	1.5	Good fall color
Pinus echinata Shortleaf Pine		15	.50	Evergreen

LARGE CANOPY TREES, Continued

Botanical Name Common Name	Drought- Tolerance	Planting Points	Retention Factor	Notes:
Pinus elliottii Slash Pine	X	15	.75	Evergreen; Stately tree
Pinus glabra Spruce Pine		40	1.00	Nice form/foliage; Evergreen
Pinus palustris Longleaf Pine	X	15	1.00	Fire-resistant; Evergreen
Pinus serotina Pond Pine	M	R/O	1.00	Evergreen; Native
Pinus taeda Loblolly Pine	X	15	.50	Evergreen
Platanus x acerifolia London Planetree		90	1.5	Large tree; Coarse texture
Platanus occidentalis American Sycamore	M	90	1.5	Exfoliating bark; Deciduous
Populus alba White Poplar	M	R/O	.50	Fuzzy seeds; Deciduous Native
Prunus serotina Black Cherry		R/O	.50	Dark bark; Wildlife planting; Deciduous; Native
Quercus acutissima Sawtooth Oak	X	90	.75	Medium sized tree; Excellent
Quercus alba White Oak		90	1.5	Deciduous; Strong-wooded
Quercus falcata Southern Red Oak	X	90	1.5	Deciduous; Sensitive roots
Quercus laurifolia Laurel Oak	X	90	1.5	Semi-evergreen
Quercus lyrata Overcup Oak	M	90	1.5	Native
Quercus macrocarpa Bur Oak	X	90	1.5	Deeply furrowed bark in older specimens
Quercus michauxii Swamp Chestnut Oak	M	90	1.5	Platy, gray bark; Orange fall color; Distinctive tree

LARGE CANOPY TREES, Continued

Botanical Name Common Name	Drought- Tolerance	Planting Points	Retention Factor	Notes:
Quercus nigra Water Oak	M	R/O	.50	Weak wooded Oak; Native
Quercus phellos Willow Oak	X	90	.75	Deciduous
Quercus Shumardii Shumard's Red Oak	X	90	1.5	Deciduous; Large spreading
Quercus stellata Post Oak	X	R/O	1.5	Large spreading
Quercus velutina Black Oak	X	R/O	1.5	Large spreading; Blackish colored bark
Quercus virginiana Live Oak	X	90	1.5	State Tree; Most majestic of southern oaks; Evergreen
Taxodium ascendens Pond Cypress	M	90	1.5	Grow in moist conditions; Use plants which are acclimated to the specific site soil condition
Taxodium distichum Bald Cypress	M	90	1.5	Adaptable to conditions; Better foliage than T. ascendens; Use plants which are acclimated to specific site conditions
Ulmus americana American Elm		90	.75	Susceptible to Dutch Elm Disease (Except cv ‘Princton’)
Ulmus parvifolia Lacebark Chinese Elm		90	.75	Cvs: 'Athena,' 'Drake' Exfoliating bark; good for smaller areas
Ulmus rubra Slippery Elm		R/O	.75	Bark used medicinally
Zelkova serrata Japanese Zelkova	X	40	.75	Cvs: 'Village Green,' 'Greenspire' Good for smaller areas

TABLE 7

MEDIUM CANOPY TREES FOR TREE QUALITY POINTS
(Trees with a mature height between 25’ - 40')
*** R/O denotes trees which receive retention points only**

Minimum planting space for medium trees is 225 square feet: 15' x 15' or 9’ Radius

Botanical Name Common Name	Drought-Tolerant	Planting Points	Quality Points (Retain)	Notes:
Acer Buergerianum Trident Maple	X	15	.75	
Amelanchier arborea Downy Serviceberry		R/O	1.5	White flowers in early spring
Amelanchier canadensis Shadblow Serviceberry		R/O	1.5	White flowers in early spring
Betula nigra River Birch	M	30	.50	Prefer moisture good cultivars: 'Heritage'
Carpinus caroliniana American Hornbeam	X	30	1.5	Blue, muscled wood
Castanea pumila Chinquapin		R/O	.75	Wind pollinated
Catalpa bignonioides Common Catalpa	X	R/O	.50	White flowers in May Coarse leaves; long pods
Fraxinus caroliniana Carolina Ash	X	R/O	.75	Native
Fraxinus profunda Pumpkin Ash	M	R/O	.75	Native
Gleditsia aquatica Water Locust	M	R/O	.75	Native
Gordonia lasianthus Loblolly Bay	M	30	1.5	White flowers in late summer, Moist, acid soil; evergreen
Halesia carolina Carolina Silverbell	X	30	1.5	Good Dogwood substitute White bell-like flowers
Ilex opaca American Holly	X	30	1.5	Evergreen; females produce berries Needs male pollinator
Juniperus salicicola Southern Red Cedar		30	1.5	Evergreen

MEDIUM CANOPY TREES, Continued

Botanical Name Common Name	Drought-Tolerance	Planting Points	Retention Factor	Notes:
Koelreuteria bipinnata Bougainvilla Goldenraintree	X	15	1.5	Red fall color; Golden flowers
Magnolia virginiana Sweet Bay Magnolia	X	30	1.5	White flowers in summer
Nyssa ogeche Ogeechee Lime	M	30	1.5	Moist soil; Native Riverbanks of Ogeechee
Ostrya virginiana Eastern Hophornbeam		30	1.5	Native
Oxydendrum arboreum Sourwood	X	30	1.5	Crimson-red lvs in fall; acidic soil White panicled flowers in summer
Parrotia persica Persian Parrotia	X	30	1.5	Good fall color; hardy street tree;
Pistacia chinensis Chinese Pistachio	X	30	1.5	Good fall color; hardy street tree; Strong-wooded; no nuts
Populus deltoides Eastern Cottonwood	X, M	R/O	.75	Native
Populus heterophylla Swamp Cottonwood	X, M	R/O	.75	Native
Prunus caroliniana Carolina Cherry Laurel	X	15	.75	Evergreen; reseeds readily, May become invasive
Prunus yedoensis Yoshino Cherry		30	.75	White flowering planted around Tidal Basin, Washington DC
Quercus myrsinifolia Chinese Evergreen Oak	X	30	1.5	Evergreen
Robinia pseudoacacia Black Locust		30	.50	Fragrant flowers
Salix babylonica Weeping Willow	M	15	.50	Short-lived Weeping habit
Salix nigra Black Willow	M	R/O	.50	Native
Sassafras albidum Sassafras	X	15	1.5	Native

TABLE 8

SMALL CANOPY TREES FOR LANDSCAPE QUALITY POINTS
(Trees with a mature height up to 25')
*** R/O denotes trees which receive retention points only**

Minimum planting space for small trees varies between 25 - 100 square feet (depending on species)

Botanical Name Common Name	Drought-Tolerant	PlantingQuality Points	Points (Retain)	Notes:
Acer palmatum Japanese Maple		5	.75	Plant in high shade Red fall color
Celtis Georgiana Georgia Hackberry	X,M	R/O	.50	Moist areas
Cercis Canadensis Hybrid Eastern Redbud	X	10	1.5	'Texensis' and 'Alba' = White flowers 'Forest Pansy' has burgundy leaves
Cercis chinensis Chinese Redbud	X	10	1.5	Pink flowers Sometimes available
Cercis reniformis 'Oklahoma' Oklahoma Redbud	X	10	1.5	Wine-red flowers Glossy leaves; available
Chionanthus retusus Chinese Fringetree	X, M	10	1.5	White, fringed flowers; Good ornamental tree
Chionanthus virginicus Fringetree	X, M	10	1.5	White, fringed flowers; Good ornamental tree
Cornus florida Flowering Dogwood		10	1.5	White bracts of flowers; Red berries; Semi-shade
Cornus kousa Kousa Dogwood		10	1.5	White bracts of flowers; Red berries; Semi-shade
Elliottia racemosa Elliottia, Southern Plume	X	R/O	1.5	Endangered species Moist, sandy areas
Eriobotrya japonica Loquat	X	5	.75	Edible fruit, may be messy; Evergreen; fireblight susceptible
Forestiera acuminata Swamp Privet	M	R/O	1.5	Rare Native Tree Black fruits
Franklinia alatamaha Franklinia		10	1.5	No longer found in the wild; Evergreen; white flowers
Ilex x attenuata 'East Palatka' East Palatka Holly	X	10	1.5	Evergreen foliage; provide male and female plants for berries

SMALL CANOPY TREES, Continued

Botanical Name Common Name	Drought-Tolerant	Planting Points	Quality Points (Retain)	Notes:
Ilex x attenuata 'Fosteri' Foster Holly	X	10	1.5	Good for narrow spaces; same comments as above.
Ilex x attenuata 'Savannah' Savannah Holly	X	10	1.5	Same as for East Palatka
Ilex cassine Dahoon Holly		5	1.5	Transparent red fruits on female plants; Evergreen
Ilex decidua Possumhaw	X	5	.75	Orange fruits on female plants; deciduous
Ilex latifolia Lusterleaf Holly	X	10	.75	Glossy green leaves; evergreen
Ilex myrtifolia Myrtle-leaf Holly		5	.75	Same as above
Ilex x 'Nellie R. Stevens' Nellie R. Stevens Holly		10	.75	One male needed w/females for fruit
Ilex vomitoria Yaupon Holly	X	10	1.5	Evergreen; Red fruits on female plants
Ilex vomitoria 'Pendula' Weeping Yaupon Holly	X	10	1.5	Same as above
Juniperus chinensis 'Torulosa' Hollywood Juniper	X	5	.75	Interesting form
Juniperus virginiana 'Burkii' Red Cedar	X	10	1.5	Evergreen; vertical accent
Lagerstroemia indica "Cherokee,' 'Muskogee,"Natchez,"Tuscarora,' etc.	X	10	1.5	Same as above but hybridized; Disease-resistant; Indian names
Ligustrum lucidum Glossy Privet	X	10	.50	Tree form; Glossy evergreen leaves Blue-black berries
Magnolia x soulangeana Saucer Magnolia	X	10	1.5	Pink-purple flowers, often burned by frosts; deciduous
Magnolia stellata Star Magnolia	X	5	.75	White, starlike flowers, often burned by frosts; deciduous
Morus alba White Mulberry	X	R/O	.50	Messy fruit; weak-wooded tree; Historic interest
Myrica cerifera Wax Myrtle	X	10	1.5	Evergreen aromatic leaves

SMALL CANOPY TREES, Continued

Botanical Name Common Name	Drought-Tolerant	Planting Points	Quality Points (Retain)	Notes:
Osmanthus americanus Devil Wood		10	1.5	Evergreen
Osmanthus x fortunei Fortune's Tea Olive		10	1.5	Fragrant small flowers in fall; No pests; border or as screen.
Osmanthus fragrans Fragrant Tea Olive		10	.50	Fragrant flowers October -January; no pests; fragrant specimen.
Osmanthus heterophyllus Hollyleaf Osmanthus		10	.75	Dark green foliage; spiny, holly-like leaves; fall fragrant blooms.
Planera aquatica Planertree	M	R/O	.75	Native
Podocarpus macrophyllus 'Maki' Southern Yew		10	1.5	Evergreen; Dark green color
Prunus angustifolia Chickasaw Plum	X	R/O	.50	Native
Prunus campanulata Taiwan Cherry		10	.75	Dark pink flowers in February
Prunus cerasifera 'Atropurpurea' Purple-leafed Plum	X	10	.75	Purple leaves; white-pink flowers
Prunus cerasifera 'Newport' Cherry Plum	X	10	.75	
Prunus mume Flowering Apricot		10	.75	Light pink flowers in Jan-Feb.
Prunus persica Flowering Peach		10	.50	
Prunus serrulata Japanese Flowering Cherry		10	.75	Many good cultivars: 'Kwanzan,' 'Okame;' early spring blooming
Prunus umbellata Hog Plum		R/O	.50	Native
Vaccinium arboreum Sparkleberry		10	1.5	Small blueberries; White flowers Good ornamental
Vitex agnus-castus Lilac Chastetree	X	10	.50	White to lilac flowers in summer Aromatic, deciduous leaves

TABLE 9

PALM-TYPE and CYCAD TREE AND SHRUB LIST (Note: All palm LQP are based on height, not DBH)

Botanical Name Common Name	Drought-Tolerant	Planting/Retention Points	Minimum Space	Notes:
Butia capitata Jelly or Pindo Palm	X	2 points/foot of height	8' x 8'	Treeform
Chamaerops humilis European Fan Palm	X	2 pts/foot of height	8' x 8'	Treeform
Cycas revoluta Sago Cycas	X	2 pts/foot of height	4' x 4'	Shrublike/ Small tree
Phoenix canariensis Canary Date Palm	X	2 pts/foot of height	8' x 8'	Treeform
Rapidophyllum histrix Needle Palm	M	2 pts/ft of height	8' x 8'	Shrubform; rare native
Sabal etonia Scrub Palmetto		3.0 new/ 1.5 retained		Shrublike; native
Sabal minor Dwarf Palmetto	M	3.0 new/ 1.5 retained		Shrublike; native
Sabal palmetto Cabbage Palmetto	X	2 pts/foot of height	8' x 8'	Treeform; native
Serenoa repens Saw Palmetto	X	5.0 new/ 1.5 retained		Shrublike; native
Trachycarpus fortunei Fortune's Windmill Palm	X	2 pts/foot of height	8' x 8'	Treeform
Washingtonia robusta Washington Palm	X	2 pts/foot of height	8' x 8'	Treeform

TABLE 10

LARGE EVERGREEN SHRUB SPECIES LIST

Shrubs 8-12 feet in height
All shrubs on this table are 5.0 points each

Botanical Name Common Name	Sun	Soil	Drought-Tolerant	Comments
Anise (See Illicium)				
Azalea sp. Southern Indica Azaleas:	PS	WD		Shade in summer and in afternoon; acid soil
Duc de Rohan				Orange-red
Duchess of Cyprus				Salmon-blush with reddish blotch
Fielder's White				White with chartreuse blotch
Formosa				Magenta
George L. Tabor				Orchid with magenta blotch
Mrs. G.G. Gerbing				White
Iveryana				White with red flecks
Judge Solomon				Watermelon pink
Lawrence A. Walker				Salmon
President Clay				Cherry red with magenta blotch
Pride of Mobile				Watermelon red
Pride of Summerville				Salmon
Red Formosa				Deep Magenta
Salmon Soloman				Salmon pink
Southern Charm				Watermelon pink
Bambusa multiplex Fernleaf Bamboo	S/Sh	WD		Good for screens; contained clump; fast-growing; Pest free
Banana Shrub (See Michelia)				
Callistemon lanceolatus Bottlebrush	S	WD	X	Red bloom spike in spring; thorny; pest-free; Use as background hedge or screen
Camellia japonica Camellia	PSh	M,WD	X	No wet feet; blooms in fall-winter; tea scale; Rich, humousy acid soil
Camellia sasanqua Camellia	PSh	M,WD	X	Same as above
Ceratiola ericoides Rosemary	S	Sandy	X	Native shrub with lavender flowers in early spring; well-drained sandy soil.
Cleyera japonica Cleyera	PS/Sh	WD	X	Upright; dark green leaves; pest-free
Elaeagnus pungens Elaeagnus	S,Sh	Tol.	X	Rampant grower, needs lots of room; silvery lvs; Natural hedge or border; wildlife plantings; no pest
Fatsia japonica Japanese Fatsia	Sh	WD	X	Coarse texture; white flowers in fall; blue berries in winter; tropical accent; dark green foliage.

LARGE EVERGREEN SHRUB LIST, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Feijoa sellowiana Pineapple Guava	S	WD	X	White flower in spring; edible fruit; pest-free Good shrub massing or screen.
Fortunella japonica Kumquat	S	WD	X	Creamy fragrant flowers; edible fruit
Ilex cornuta Chinese Holly	S/PSh	WD	X	Red or yellow fruit in fall; dark green leaves; scale a problem; Specimen or foundation planting.
Ilex cornuta 'Burfordii' Burford Holly	S/PSh	WD	X	Orange-red berries; rapid, dense foliage; scale; Specimen or hedge planting
Illicium anisatum Japanese Anise Tree	S/PSh	WD	X	Coarse, aromatic leaves; pest-free Upright; Specimen or foundation planting
Illicium floridanum Florida Anise Tree	S/PSh	M-WD	X	Moist to wet soil; deep red flowers in spring; Ornamental specimen
Illicium parviflorum Star Anise	S/PSh	M	X	Yellow-green flowers in June; aromatic leaves; Interesting fruit; Screen or hedge planting
Leucothoe populifolia Florida Leucothoe	Sh/PSh	M	X	White-pink flowers on old wood; irregular growth
Ligustrum japonicum Japanese Privet	S/PSh	WD	X	Coarse texture; white flowers in spring; fast growth 'Recurvifolium' and variegated form good as screen
Ligustrum japonicum 'Rotundifolium' Curlyleaf Ligustrum	S-PSh	WD	X	Dark green foliage; columnar plant; twisted; slow growing; easily pruned into tight spaces.
Ligustrum lucidum Waxleaf Privet	S-Sh	WD	X	Coarse textured; useful as screen or hedge, may be pruned into small tree; white flowers; blue fruits
Loropetalum chinense Evergreen Loropetalum	S-PSh	WD	X	Feathery white or pink flowers in spring; irregular form; no pests; screen, shrub massing use.
Lyonia ferruginea Fetterbush	S-PSh	M		Native; leathery leaves; pink flowers in spring
Lyonia ligustrina Fetterbush	S-PSh	M		Same as above
Michelia figo Banana Shrub	S-Psh	WD		Banana-scented cream flowers in April; Fragrant accent or shrub border.

LARGE EVERGREEN SHRUB LIST, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Myrtus communis True Myrtle	S	WD	X	White flowers in spring; aromatic berries on females; Fine textured specimen; hard to establish
Nerium oleander Common Oleander	S	WD	X	Red, pink, yellow, or white flowers in summer; toxic; Specimen; shrub border, hedge or screen use.
Photinia x 'fraseri' Fraser Photinia	S	WD	X	New leaves red; upright growth for screen, hedge or tree form; problems with disease.
Photinia glabra Redtip Photinia	S	WD	X	New leaves red; creamy-white summer flowers; red fruit in fall; use as hedge; do not plant near red brick; disease.
Photinia serrulata Chinese Photinia	S	WD	X	New leaves coppery red; flowers in spring; red summer fruit; rapid growth; use as specimen for large area.
Pineapple Guava (See Feijoa)				
Pittosporum tobira Pittosporum	S-PSh	WD	X	Interesting branching habit; variegated form; fragrant spring flowers; accent plant, shrub massing or hedge.
Pyracantha koidzumi Formosa Firethorn	S-PSh	WD	X	Bright red fall, winter fruit; specimen, screen, border; watch for scale; Cultivars: 'San Jose' spreading, 'Santa Cruz' is prostrate form, 'Low Dense' is mounding, 'Victory' has showy dark-red berries.
Raphiolepis umbellata 'Majestic Beauty' Indian Hawthorn	S-PSh	WD	X Tol.	Fragrant pink or white flowers in spring; slow growing; salt tolerant; specimen, foundation planting.
Ternstroemia gymnanthera Cleyera	PSh	WD	Tol.	White flowers; red fruit in late summer; often confused with Cleyera japonica.
Viburnum macrophyllum Viburnum	S-Sh	WD		Large, dark green leaves; upright; shrub borders, hedge use. May be damaged by extreme cold.
Viburnum odoratissimum Sweet Viburnum	S-PSh	WD	X	Large, glossy leaves; white flowers; red-black fruit
Viburnum suspensum Sandankwa Viburnum	S-PSh	WD	X	Dark green foliage; pest free; Shrub border or foundation planting; May be damaged by extreme cold.
Viburnum tinus Laurus tinus	S-PSh	WD	X,M	White to pink flowers in winter; upright; border or screen; May be damaged by extreme cold -- use in protected areas.
Yucca aloifolia Spanish Bayonet	S-PSh		X	White flowers in summer; pest free; spiny leaves; specimen or protective screen use.

TABLE 11

SHRUB SPECIES LIST (LARGE, DECIDUOUS)

Shrubs 8-12 feet in height
All shrubs on this table are 2.5 points each

Common Name Botanical Name	Sun	Soil	Drought	Comments
Althea (See Hibiscus)				
Baccharis halimifolia Groundsel Bush/Salt Myrtle	S	Tol.	X	Native to salt marshes and dry uplands; showy white flowers in fall; natural borders; salt tolerance.
Cassia splendida Cassia	Sun	WD	X	Yellow flowers in fall; may dieback when cold. (Also Cassia corymbosa and others are good for fall color)
Cephalanthus occidentalis Button Bush	Sun	M	Mod	Cream flowers; irregular form. Wet, natural areas
Chimonanthus praecox Wintersweet	S-PSh	WD	X	Fragrant yellow flowers in January; dark green leaves; Shrub border use.
Deutzia scabra Fuzzy Deutzia	S	WD		White flowers in May; tall and erect; shrub border or specimen; background for other plantings.
Exochorda racemosa Pearlbush	S-PSh	WD	X	White flowers in spring; mass planting use
Forsythia x intermedia Border Forsythia	S	WD	X	Yellow flowers in early spring; good along banks, specimen planting; rapid growth; prune old canes annually; no pests.
Hibiscus syriacus S Althea, Rose of Sharon	WD			Grown for flowers: white, rose, lavender, pink in summer; Use in shrub border; cut back in spring for increased bloom
Hydrangea quercifolia Oak Leaf Hydrangea	PSh	M-WD		Native with coarse oak-like leaves; large white flowers in spring; red fall color. 'Snow Queen' is upright cultivar.
Ilex ambigua Carolina Holly	S-PSh	WD		Translucent red fruit; not common in nurseries
Kolkwitzia amabilis Beautybush	S	WD	X	Pink flowers in spring; prune regularly to maintain shape; Shrub border use; pest free.
Lindera benzoin Spicebush	S-Sh	M-WD	M	Yellow flowers in early spring; yellow fall color; irregular form; shrub border or naturalistic setting.
Philadelphus coronarius Mock Orange	S	WD		Fragrant (orange blossom aroma) white flowers in spring; shrub border; irregular, rangy growth habit.

LARGE DECIDUOUS SHRUBS, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Rhododendron alabamense Alabama Azalea	PSh	WD		Early flowering; fragrant white with gold flowers
Rhododendron arborescens Sweet Azalea	PSh	WD		Mid to late flowering; fragrant white flowers
Rhododendron atlanticum Coastal Azalea	PSh	WD-M		Early, fragrant white flowers; stoloniferous
Rhododendron austrinum Florida Azalea	PSh	WD		Early, fragrant gold flowers
Rhododendron canascens Peidmont or Florida Pinxter	PSh	WD-M		Fragrant, early pink flowers; Native; to 8' in ht. and width
Rhododendron prunifolium Plumleaf Azalea	PSh	WD-M		Very late orange-red flowers
Rhododendron serrulatum Hammock-sweet Azalea	PSh	WD-M		Late fragrant white flowers
Rhododendron speciosum Oconee Azalea				
Rhododendron viscosum Swamp Azalea	PSh	M		Mid season; fragrant, white flowers
Rosa laevigata Cherokee Rose			X	State Flower; white blooms in April
Viburnum nudum Possumhaw Viburnum	S-PSh	Tol.		Flossy foliage; colorful fruit and fall foliage
Viburnum prunifolium Blackhaw Viburnum	S-PSh	Tol.	X	Creamy flowers in May; dark green foliage; bronze red fall color; blue fruit in fall; fast growing;

TABLE 12

SHRUB SPECIES LIST (MEDIUM EVERGREEN)

Shrubs 3-8 feet in height
All shrubs in table are 3.0 points each

Botanical Name Common Name	Sun	Soil	Drought	Comments
Abelia grandiflora Glossy Abelia	S-Sh	WD		Pink-white flowers in June; bronze winter foliage; medium hedge, border or background planting; attracts butterflies.
Aucuba japonica Japanese Aucuba	Sh	WD		Shade; rapid growth; pest-free; coarse texture; variegated cultivars with gold color: Gold Dust Plant
Azalea species	Sh-PSh	WD		Many cultivars: 'Red Ruffle,' ' Hino de Giri,' 'Snow,' 'Coral Bells,' etc.
Berberis julianae Wintergreen Barberry	S-PSh	WD		Yellow bloom in spring; blue fruits; bronze/wine red leaves in winter; thorny; good barrier plant or hedge.
Cephalotaxus Harringtonia 'Drupacea'	PSh-Sh	WD		Drooping branches with dark green foliage; ground cover or foundation planting
Euonymus japonicus Evergreen Euonymus	S-Sh	WD		Compact form in sun; variegated leaves in some cultivars Susceptible to scale, pests, diseases; limit use.
Gardenia jasminoides Cape Jasmine	S-PSh	WD		Fragrant white flowers in summer; Pests: scale, whitefly; Hedges, borders, specimen planting
Ilex cornuta 'Burfordii Nana' Dwarf Burford Holly	S-PSh	WD		Glossy foliage; red fruits; good screen, hedge use.
Ilex cornuta 'Carissa' Carissa Holly	S-Sh	WD		Hedge, edging; dense dwarf form
Ilex cornuta 'Needlepoint' S Needlepoint Chinese Holly		WD		Long, narrow, twisted leaves; fast growth; dense foliage.
Ilex cornuta 'Rotunda' Dwarf Chinese Holly	S-Sh	WD		Glossy, spiny foliage; tolerates hot, dry areas; tough plant; no pruning needed.
Ilex crenata 'Compacta' Roundleaf Holly	S-Sh	WD		Dark green foliage; no fruit; pests; foundation plantings
Ilex crenata 'Helleri' Heller's Holly	S-Sh	WD		Low spreading shrub with fine texture; scale, pests.
Ilex glabra Inkberry	S-Sh	Tol	X	Broad leaf; upright form; black berry; naturalistic plantings
Ilex vomitoria 'Nana' Dwarf Yaupon Holly	S-Sh	WD	X	Taller than I. v. 'Stokes'; same as above.

MEDIUM EVERGREEN SHRUBS, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Ilex vomitoria 'Stokes' Dwarf Schillings Holly	S-Sh	WD	X	Smaller than I. v. 'Nana'; compact shape; no pruning; some pests; drought resistant; fine texture.
Leucothoe axillaris Coastal Leucothoe	Sh-PSh	Acid		White or pink flowers in April; dark foliage; graceful form; mass plantings; acid conditions.
Lyonia lucida Fetterbush	S-PSh		M	Same as above
Jasminum mesnyii Primrose Jasmine	S-PS	WD		Mounding habit; pale yellow, semi-double flowers
Juniperus chinensis Juniper	S	WD	X	Silvery blue to gold foliage; rapid growth; horizontal Chinese spreading; pests are a problem; 'Armstrong' 'Blue Vase' 'Hetzi' 'Glauca' 'Hills Blue' 'Mint Julep' 'Old Gold' and 'Pfitzeriana' are preferred cultivars.
Ligustrum sinense 'Variegata' Variegated Chinese Privet	S-Sh	WD		Variegated forms available; weedy growth habit; pests.
Mahonia bealei Leatherleaf Mahonia	PSh-Sh	WD		Yellow flowers in March; blue grape-like clusters of berries; Holly-like leaves; specimen, foundation planting
Mahonia fortunei Chinese Mahonia	PSh-Sh	WD		Dark purple berries; moderate growth rate; specimen
Nandina domestica Heavenly Bamboo	S-PSh	WD		Bamboo-like foliage; cut out old canes; reddish foliage in winter; red berries in fall; white flowers in summer
Pittosporum tobira 'Wheeler's Dwarf' Dwarf Pittosporum	S-PSh	WD		Small white fragrant flowers; shiny dark green leaves; dense foliage; cold damage; 'Laura' is variegated form
Pyracantha coccinea Scarlet Firethorn	S	WD		Orange-red berries in fall; fast growth; thorns are toxic; pest problems; white flowers in spring; espaliers on walls.
Raphiolepis indica Indian Hawthorn	S-Psh	WD		White or pink flowers in spring; rounded leaves; shrub borders, foundation plantings.
Yucca gloriosa Spanish Dagger	S	WD	X	Greenish white flowers in September; spiny blue-green leaves; salt tolerant; barrier, specimen or accent plant.

TABLE 13

SHRUB SPECIES LIST (MEDIUM DECIDUOUS)

Shrubs 3-8 feet in height
All shrubs in this table are 1.5 points each

Botanical Name Common Name	Sun	Soil	Drought	Comments
Buddleia alternifolia Butterfly Bush	S	WD	X	Old fashioned plant with sprays of flowers; attracts butterflies
Buddleia davidii Butterfly Bush	S	WD		White, pink, red or purple flowers all summer; accent plant or shrub border; attracts butterflies
Callicarpa americana American Beautyberry	S-PSh	WD		Clusters of purple berries arranged around stem; color difficult to blend with other plants; naturalistic plantings.
Callicarpa japonicum Japanese Beautyberry	S-Psh	WD		White berried plant with smaller leaves, drooping form; naturalistic borders.
Calycanthus floridus Sweetshrub	S-Sh	WD		Fragrant purple flowers in spring; brown fruit; pest free; shrub border use.
Cassia corymbosa Flowery Senna	S	WD	X	Showy golden flowers in summer-fall; fast growth; pest free; specimen plant; winter dieback possible.
Chaenomeles japonica Flowering Quince	S-PSh	WD		White, pink or red flowers in winter-early spring; old fashioned plant
Chaenomeles speciosa Flowering Quince	S-PSh	WD		Red, white, orange or pink flowers in early spring; pest free; color in shrub border; 'Nivales' - white, 'Cameo' - peach, 'Texas Scarlet' - bright red. Old fashioned plant.
Clethra alnifolia Sweet Pepperbush	PSh-Sh	M		White flowers in summer; moist soil; pest free; shrub border, naturalized area use; looks good in winter.
Hibiscus mutabilis "Confederate Rose"	S	WD		Large, peony-shaped flower in pink, red, blooms in fall; Dies back to ground in winter, reappears in spring.
Hydrangea macrophylla Big Leaf Hydrangea	Sh-PSh	WD		White, pink or blue flower clusters in summer; bare stalks in winter.
Itea virginica Virginia Sweetspire	S-PSh	M		White flowers; moist soil; good red fall color; mass plantings; 'Henry's Garnet' has excellent color.
Kerria japonica Japanese Kerria	S-PSh	WD		Yellow flowers in spring; few pests; specimen or border plant; good against walls or fences.
Lantana camara Lantana	S	Tol	X	Blooms from spring to fall; rapid growth; color.
Lonicera fragrantissima Winter Honeysuckle	S	WD		Tiny white fragrant flowers in winter; no pests; specimen

MEDIUM DECIDUOUS SHRUBS, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Spiraea prunifolia 'Plena' Bridalwreath Spiraea	S-Sh	WD		White flower sprays in spring; rapid growth; informal use
Spiraea thunbergii Baby's Breath Spiraea	S-PSh	WD		White flowers in January-February; informal plantings
Spiraea vanhouttei Vanhoutte Spiraea	S-Sh	WD		White flowers in April; graceful specimen or border planting.
Tetrapanax papyriferus Rice Paper Plant	PSh	WD		Large, coarse leaves; greenish flowers in fall; winterkill; accent or specimen plant; suckers from roots
Vaccinium ashei Rabbiteye Blueberry	S	WD		Large, edible fruit; white bellshaped flowers in May; organic acid soil; shrub border or specimen.
V. corymbosum				
V. stamineum Deerberry				Purple fruit

TABLE 14

SHRUB SPECIES LIST (SMALL EVERGREEN)

Shrubs to 3 feet in height
All shrubs in this table are 1.0 points each

Botanical Name Common Name	Sun	Soil	Drought	Comments
Alexandrian-Laurel (See Danae)				
Ardisia crenata Coralberry	Sh	WD		Autumn red berries; loose upright form with twisted leaves; seeds itself
Ardisia japonica Japanese Ardisia	Sh	WD		Dark green foliage for ground cover use
Aucuba japonica 'Nana' Dwarf Aucuba	Sh	WD		Scarlet berries on female plants; need males and females for bloom/fruit; no pests; accent or border plant in shade.
Azalea (See also Rhododendron)				
Berberis thunbergii Barberry	S-Psh	WD		Semi-"evergreen" with reddish foliage; 'Rose Glow' and 'Crimson Pygmy' are good cultivars with rosy foliage
Buxus Harlandii Harland Boxwood	S-PSh	WD		Fine texture; low hedge or edging; requires pruning; upright growth
Buxus microphylla 'Japonica' Japanese Littleleaf Box	S-Sh	WD		Dark rich green color; mulch to provide moisture; pests; prune regularly; substitute for regular Boxwood; hedges.
Cephalotaxus Harringtonia 'Prostrata' Plum Yew	WD Sh-Psh			Dark green foliage, upright; hedges, foundation planting
Conradina canescens Dixie Rosemary	S-Psh	WD	X	Sandy soil; blue-gray leaves; shrub border Coastal dune native; aromatic foliage; endangered.
Cuphea hyssopifolia Mexican Heather	S-PSh	WD	X	White or purple tiny flowers; small leaves; self-seeds; borders, edges.
Danae racemosa Alexandrian Laurel	Sh	WD		Arching stems; dark corners
Daphne odora Winter Daphne	Sh-PSh	WD		Fragrant flowers in February; dark green or variegated leaves; slow growing; fungal problems
Euonymus fortunei 'Radicans' Wintercreeper	S-PSh	WD		Climbing shrub or groundcover; Susceptible to scale, pests; avoid wet soil; fungal diseases.
Euonymus japonicus Dwarf Japanese Euonymus	S-Sh	Tol		Erect, dense foliage; Susceptible to scale, fungus; edging.
Gardenia jasminoides 'Radicans' Dwarf Gardenia	WD S-PSh			Fragrant white flowers in June ;susceptible to scale, white fly;

SMALL EVERGREEN SHRUBS, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Hypericum calycinum St. John's Wort	S-PSh	WD		Reseeds; yellow flowers in late summer-fall; native.
Jasminum floridanum Showy Jasmine	PS-PSh	WD		Glossy leaves; yellow flowers.
Nandina domestica 'Harbour Dwarf' Harbour Dwarf Nandina	S-PSh	WD		Small white flowers; red berries; compact form of nandina; dense mound of foliage; pest free.
Nandina domestica 'Atropurpurea Nana' Dwarf Nandina	S-Psh	WD		Red fall color; mounded growth; cupped leaves
Rosmarinus officinalis Rosemary	S-PSh	WD	X	Green fragrant leaves; blue or white flowers; poor soil; lime needed
Ruscus aculeatus Butchers broom	S-Sh	WD	X	Red berries when male and female plants present; tolerates drought and neglect; pest free.
St. John's Wort (See Hypericum)				
Santolina chamaecyparissus Lavender Cotton	S	WD		Yellow flowers midsummer; silver-gray foliage; aromatic clumps
Santolina virens Green Santolina	S	WD		Finely textured green leaves; poor sandy soils; borders
Serissa foetida Serissa	S	WD		White flowers in spring-summer; fine texture; sandy soil; pest free; variegated form; massings or accents.
Serissa foetida 'Variegata' Variegated Serissa				See above
Skimmia japonica Japanese Skimmia	PSh-Sh	WD		Fragrant white flowers in spring; scarlet berries in fall; need male and female plants; mounded form; moist, rich, acid soil; pest free; foundation and shrub massing.
Yucca filamentosa Adam's Needle	S	WD	X	White flowers in summer; stiff blades; barrier, accent plant.

TABLE 15

SHRUB SPECIES LIST (SMALL DECIDUOUS)

Shrubs under 3 feet in height
All shrubs on this table are 0.5 points each

Botanical Name Common Name	Sun	Soil	Drought	Comments
Almond, (See Prunus)				
Deutzia gracilis Slender Deutzia	S-PSh	WD		White flowers in spring; pest resistant; slow growing Accent; shrub massing
Euonymus americanus Strawberry Bush	PSh	WD		Irregular form; native plant good for natural plantings; strawberry-like fruit
Fothergilla gardenii Dwarf Bottlebrush	S-PSh	WD		White fragrant flowers in April-May; yellow fall color; mass plantings or naturalistic settings.
Jasminum nudiflorum Winter Jasmine	S-Sh	WD		January-February bloom with yellow flowers; fountain-like form; pest free; plant on banks, trailing over walls, etc.
Plumbago capensis Plumbago	S	WD	X	Pale blue flowers in summer and fall; profuse bloomer; 'Alba' is white flower
Prunus glandulosa Flowering Almond	S	WD		White or pink flower in spring; accent or specimen plant
Punica granatum 'Nana' Dwarf Pomegranate	S	WD	X	Orange-red flowers in summer; red fruit in fall; salt tolerant hedges, borders or container use.

TABLE 16

EVERGREEN GROUND COVER **All plants on this table are .10 points per plant @ 1 gal.**

Botanical Name Common Name	Sun	Soil	Drought	Comments
Ajuga reptans Bugleweed	S-Sh	M, WD		Deep green to bronze foliage; grows by stolons; Grows 6" high; plant 8-12" apart. Crown rot.
Artemisia abrotanum Southernwood	S	WD	X	Gray-green foliage with feathery texture; prune annually; Grows to 36" or more; space 12-15" apart.
Aspidistra elatior Sh Cast-iron Plant	Tol			Dark green leaves grow erectly from ground; spreads by stolons; Grows to 24" high; plant 12" apart.
Asplenium platyneuron Ebony Spleenwort	S-Sh	Calcium		Small fern with black stems; Grows 6" high; space 12" apart; prefers some calcium in soil and some shade.
Chrysogonum virginianum Goldenstar	PSh	WD		Yellow daisy flowers in spring; grow in sandy loam; Grows to 6" high; Space plants 8" apart.
Cyrtomium falcatum Holly Fern	PSh-Sh	M		Dark green foliage; compact clumps; reseeds freely; Grows to 24"; Space plants 3' apart.
Daylily (See Hemerocallis)				
Galium odoratum Sh Sweet Woodruff	M			Tiny white flowers in spring; delicate whorled leaves; moist acid soil; good with bulbs; Grows 3-4"; Plant 6" apart.
Ginger, Wild (See Hexastylis)				
Hedera canariensis Algerian Ivy	Sh-PSh	WD		Green or variegated ('Canary Cream') leaves; shear annually; vigorous; Grows to 18"; Plant 18" apart.
Hedera helix English Ivy	Sh-PSh	WD		Glossy green leaves, some with color; Vigorous; grows to 18" high; Plant 12" apart or less.
Hemerocallis hybrida Daylily	S-PSh	WD		Flowers in red, coral, orange, yellow; bloom spring through September, depending upon variety; Mulch, water and fertilizer required; Grows to 18"; Plant 18-30" apart.
Hexastylis arifolium Wild Ginger	Sh-PSh	WD		Small red flower in spring; organic, moist soil; shade' Grows to 10"; Plant 12" apart.
Holly Fern (See Cyrtomium)				
Ivy (See Hedera)				
Juniperus conferta Shore Juniper	S	WD	X	Blue-green foliage; sandy soil; salt tolerant; mites; Grows to 16"; Space 3' apart; 'Blue Pacific' is blue-green, low-growing; 'Compacta' is light green color.

Evergreen Ground Cover, Continued

Botanical Name Common Name	Sun	Soil	Drought	Comments
Juniperus horizontalis Creeping Juniper	S	WD	X	Silver blue color; fast-growing; flat trailing habit; heat tolerant; 'Wiltonii' is blue rug juniper.
Juniperus procumbens 'Nana'	S	WD	X	Mounding habit; cascades; Grows to 6"; Space 3' apart.
Liriope muscari Big Blue Liriope	S-Sh	WD		Dark green grasslike leaves; Blue or white flower spike in summer; Grows to 12"; Plant 12" apart; 'Big Blue,' 'Evergreen Giant,' 'Monroe White,' 'Webster's Wide Leaf' and 'Silvery Sunspot' are recommended cultivars.
Liriope spicata Creeping Lily Turf	Sh-PSh	WD		Dark blue-green grasslike leaves; Violet flower spike in summer; Grows to 10"; Spreads rapidly, not for borders.
Pachysandra terminalis Japanese Pachysandra	Sh-PSh	WD		Green or silver-edged leaves for shade; insignificant white flower; Grows to 4"; space 5" apart.
Mitchella repens Partridge Berry	Sh	WD		Dark green leaves; red berries; trailing native plant; Grows to 3" high; plant 4" apart.
Ophiopogon jaburan Snakebeard	S	WD		Variegated tall grasslike leaves; sun-tolerant;
Ophiopogon japonicus Mondo Grass	Sh-PSh	WD		Dark green grasslike leaves; Grows to 6"; space 4-6".
Phlox divaricata Woodland Phlox	S-PSh	WD		Blue flowers in spring; delicate plant; Grows to 8"; Plant 6" apart.
Phlox pilosa Downy Phlox	S-PSh	WD		Pink, blue or white flowers in spring; Grows to 15"; Plant 6" apart.
Phlox stolonifera Creeping Phlox	S-PSh	WD		White, blue or pink flowers in spring; plant with bulbs; Grows to 12"; plant 6" apart.
Phlox subulata Moss Phlox	S-PSh	WD		Violet, blue or white flowers in spring; crown rot; Grows to 6"; plant 4" apart.
Polystichum acrostichoides Christmas Fern	Sh-PSh	WD-M		Evergreen, lacy foliage; Grows to 3'; Plant 12" apart.
Trachelospermum asiaticum Japanese Star Jasmine	Sh-PSh	WD		Creamy white flowers in late spring, fragrant; dark green foliage; grows to 12"; plant 3' apart.
Vinca major Bigleaf Periwinkle	Sh-PSh	WD		Blue flowers in spring; larger leaves than V. minor; Vigorous; Grows to 12"; plant 12" apart.
Vinca minor Common Periwinkle	Sh-PSh	WD		Blue flowers in spring; not as heat tolerant or vigorous as V. major; Grows to 8"; plant 8" apart.