

§4-5 LANDSCAPING AND BUFFERS

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[See Commentary]

§4-5-1 PURPOSE

It is the purpose of this Ordinance to provide environmentally sound landscape amenities and buffers which promote a positive community image by promoting quality development, enhancing property values, providing for landscape improvements in the City [County] and promoting orderly growth and aesthetic quality in the City [County]. It is also the intent to promote a healthy, natural environment whenever possible by protecting and enhancing existing vegetation.

Landscaping enhances a community's environmental and visual character and improves the overall quality of life. Vegetation can also improve air and water quality, reduce soil erosion, reduce noise and glare, provide habitat for wildlife, moderate the climate and enhance property values, thus protecting the health, safety and welfare of the community.

However, inappropriate landscaping can degrade the quality of the natural environment by requiring excess water and pesticides, or by creating unnecessary conflicts with sewers, sidewalks and vehicle access. Thus it is important to promote environmentally sound landscaping, including the use of low-maintenance, drought-resistant and native or non-invasive plants, and to ensure that the right tree is planted in the right place. Environmentally sound landscaping also means prohibiting the use of invasive and potentially invasive species. Although well-mannered non-native species can be welcomed additions to a landscape, invasive species can cause severe economic and environmental harm (including crop damage and degradation of native habitats) and can engender significant control costs.

This Ordinance also establishes standards for buffers. Buffers between two incompatible uses minimize harmful impacts such as transmission of noise, dust and glare. Buffers can also lessen visual pollution, establish a greater sense of privacy from visual or physical intrusion, and thus protect the public health, safety and welfare of the community. The presence of trees and other vegetation aids in storm water management, helps to prevent erosion, improves air

quality, conserves energy, provides wildlife habitat and preserves and enhances property values.

Additionally, this Ordinance is intended to require the landscaping of new parking lots in order to reduce the harmful effects of wind and air turbulence, heat and noise, and the glare of motor vehicle lights; to prevent soil erosion; to provide shade; and to enhance the appearance of parking lots.

§4-5-2 DEFINITIONS

For the purposes of this Ordinance, the following words are defined:

Arborist: The agent(s) of the City [County] having the primary responsibilities for administering and enforcing this code section.

Berm: An earthen mound designed to provide visual interest, screen undesirable views and/or decrease noise.

Buffer: A combination of physical space and vertical elements, such as plants, berms, fences or walls, the primary purpose of which is to separate and screen incompatible land uses from each other.

Deciduous: A plant with foliage that is shed annually.

Diameter Breast Height (dbh): The standard measure of tree size for those trees existing on a site that are at least four-inch caliper at a height of four and one-half (4.5) feet above the ground. If a tree splits into multiple trunks below four and one-half (4.5) feet, then the trunk is measured at its most narrow point beneath the split.

Evergreen: A plant with foliage that persists and remains green year-round.

Frontage: The length of a property abutting a street, or the length of a building fronting a street.

Ground Cover: Living material planted in such a way as to form an eighty (80) percent or more ground cover at the time of planting and a continuous cover over the ground that can be maintained at a height of not more than eighteen (18) inches.

Hedge: An evenly spaced planting of shrubs that forms a compact, dense, visually opaque living barrier. Hedges inhibit passage or obscure views.

Invasive Species: A non-native species that can cause environmental or economic harm, or harm to public health.

Landscaping: Any combination of living plants, such as trees, shrubs, vines, ground covers, flowers, or grass, and which may include natural features such as rock, stone, bark chips or shavings, and structure features, including but not limited to fountains, pools, outdoor artwork, screen walls, fences or benches.

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Landscape Plan: A graphic and written document containing criteria, specifications and detailed plans to arrange and modify the effects of natural features. A landscape plan consists of a site plan showing the boundaries of the property and the location of proposed plant materials, in relation to surroundings and improvements, along with a planting schedule and any additional specifications required by the Land Use Officer.

Natural Area: An area containing natural vegetation that will remain undisturbed when the property is fully developed.

Perimeter Landscaping: The use of landscape materials adjacent to the outer boundary of a parcel, or the outer boundary of a lease line, or the outer boundary of the developed area of a parcel.

Revegetation: The replacement of trees and landscape plant materials.

Screen: A method of reducing the impact of noise and unsightly visual intrusions with plants, berms, fences, walls or any appropriate combination thereof, to provide a less offensive or more harmonious environment in relation to abutting properties.

Shrub: A woody plant, smaller than a tree, consisting of several small stems from the ground or small branches near the ground and generally obtaining a height less than eight (8) feet; a shrub may be deciduous or evergreen.

Tree: Any self-supporting, woody perennial plant usually having a single trunk diameter of three (3) inches or more that normally attains a mature height of a minimum of fifteen (15) feet.

Woodland: A tract of land or part thereof dominated by trees but usually also containing woody shrubs, grasses and other vegetation.

§4-5-3 APPLICABILITY

For parking lots of five spaces or more, the developer shall provide landscaping along the street right-of-way(s) to which the property has frontage, the parking lot perimeter and the parking lot interior as specified in this Ordinance.

Developers of new, nonresidential buildings shall provide landscaping between the building and the street right-of-way(s) to which the property has frontage, as specified in this Ordinance. Buffers and screening shall also be provided in accordance with this Ordinance.

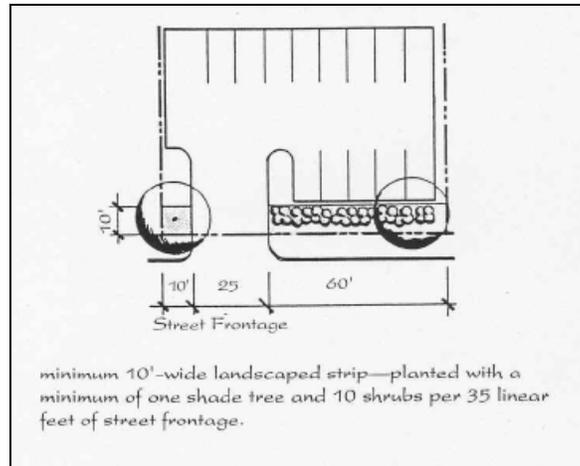
No land use permit or building permit shall be issued, and it shall be unlawful to commence development or construction, until it is determined that the proposed development or building is in conformance with the provisions of the Ordinance, as applicable.

§4-5-4 LANDSCAPE ADJACENT TO STREET RIGHT OF WAY

One of the following five planting specifications shall apply to all parking lots established after the adoption of this Ordinance. The applicant may choose but shall comply with one of the five following options for landscaping adjacent to the public right of way. The landscape requirement shall not apply to vehicle access areas and shall not include any other paved surfaces with the exception of pedestrian sidewalks or trails and areas approved for stormwater

management. The topography of a particular site may necessitate the use of a combination of options along a given length of frontage.

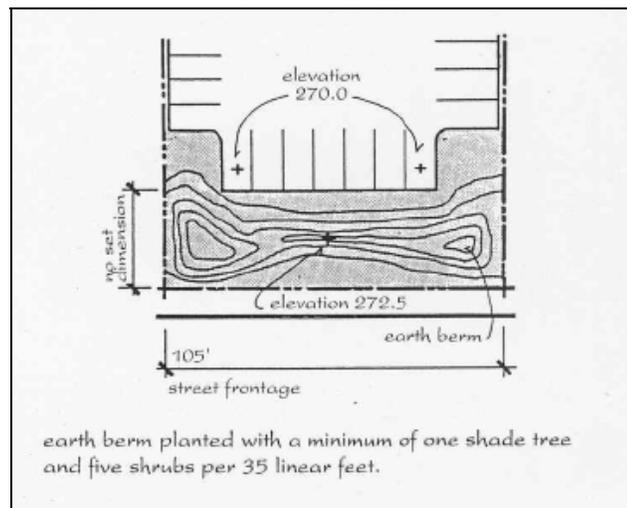
Option 1. Minimum 10-foot wide landscape strip, planted with a minimum of one shade tree and 10 shrubs per 35 linear feet of street frontage, excluding driveway openings (Figure 4-5-1).



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Figure 4-5-1
Option 1, Landscape Adjacent to Street Right-of-Way

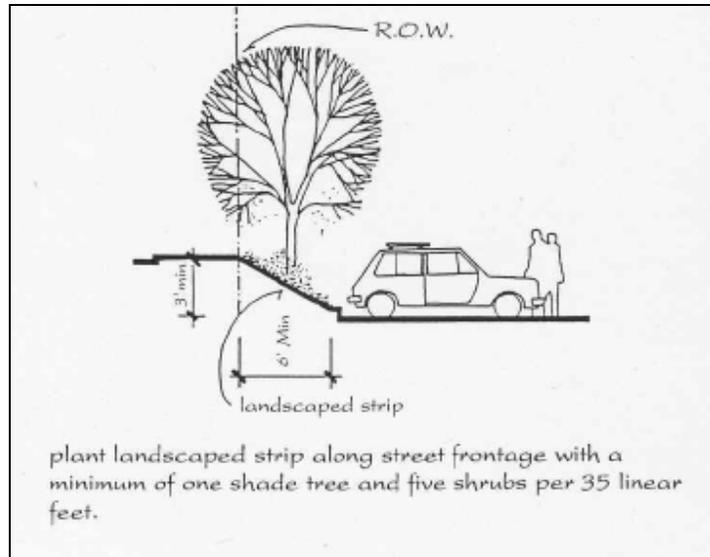
Option 2. An earth berm at least 2.5 feet higher than the finished elevation of the parking lot, with one shade tree and five shrubs for every 35 linear feet of frontage (Figure 4-5-3).



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Figure 4-5-2
Option 2, Landscape Adjacent to Street Right-of-Way

Option 3. A six-foot landscaped strip with a minimum three-foot grade drop from the right-of-way to the parking lot. One shade tree and five shrubs are required for every 35 linear feet (Figure 4-5-3).

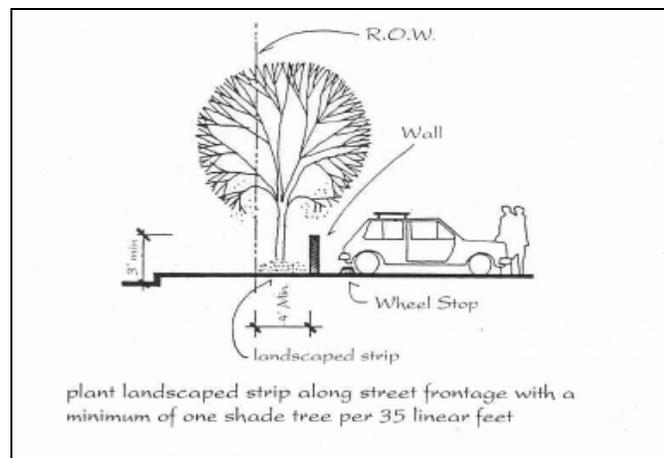


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Figure 4-5-3

Option 3, Landscape Adjacent to Street Right-of-Way

Option 4. A three-foot high fence of brick, stone, or finished concrete wall, with a four-foot buffer strip, planted with a minimum of one shade tree per 35 linear feet of frontage (Figure 4-5-4).

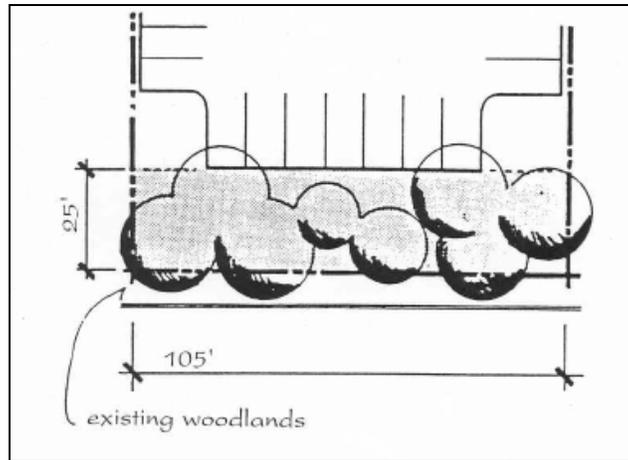


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Figure 4-5-4

Option 4, Landscape Adjacent to Street Right-of-Way

Option 5. If existing woodlands are determined by the Arborist to be sufficient to meet the intent of this Resolution [Ordinance], the applicant may preserve a 25-foot wide natural buffer strip to satisfy the requirements of this Code, subsection (Figure 4-5-5).

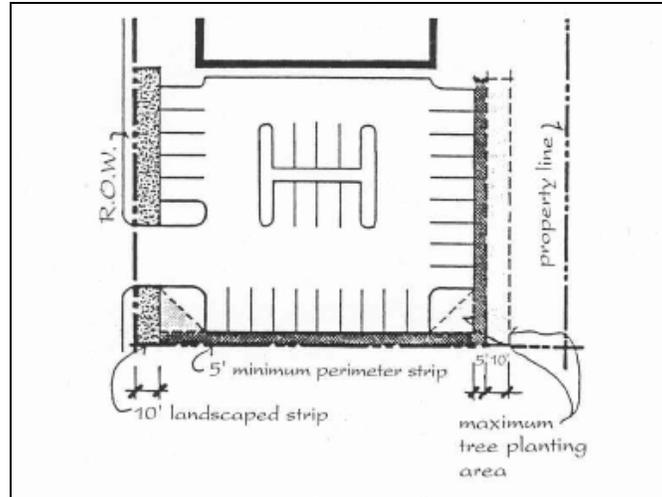


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Figure 4-5-5
Option 5, Landscape Adjacent to Street Right-of-Way

§4-5-5 PARKING LOT LANDSCAPE ALONG OTHER PROPERTY LINES

Along all property lines not abutting a street right-of-way, or along the perimeter of the developed portion of the lot in case the development does not extend to a property line, parking lots subject to the requirements of this subsection shall include a perimeter landscape strip at least five (5) feet wide. The perimeter landscape strip shall not apply to interparcel access points but shall not include any other paved surfaces with the exception of pedestrian sidewalks or trails and areas approved for stormwater management. Within the perimeter landscape strip, the applicant shall install one (1) tree and three (3) shrubs for each 35 linear feet of property boundary along the perimeter to which this code subsection applies, unless the Arborist approves the use of existing woodlands or other vegetation as meeting the intent of this Resolution [Ordinance]. See Figure 4-5-6.

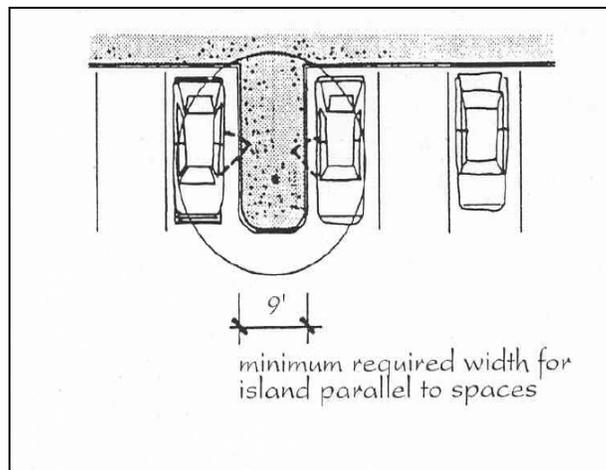


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Chicago: American Planning Association, 1990. Figure 6, page 7.

Figure 4-5-6
Perimeter Landscape Strip

§4-5-6 PARKING LOT INTERIOR LANDSCAPING

Interior lot landscaping shall be required for any parking lot subject to the requirements of this resolution [ordinance]. An interior parking lot landscape island at least nine (9) feet wide (Figure 4-5-7) and at least 150 square feet in area shall be provided for every ten (10) spaces in each row of parking spaces abutting the perimeter or within the interior of the parking lot. Within each interior parking lot landscape island, a minimum two-inch (2") caliper tree shall be required to be planted and maintained.



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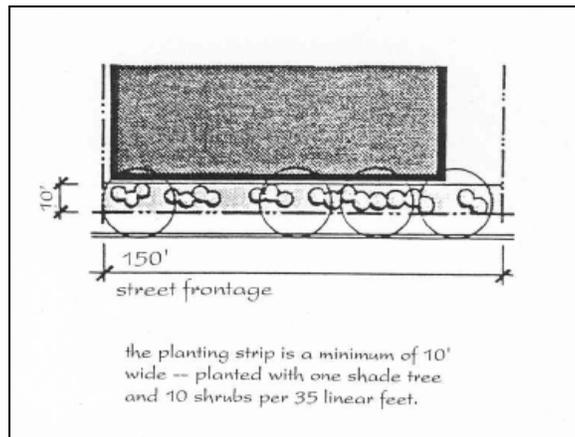
Figure 4-5-7
Illustrative Interior Parking Lot Landscape Island

§4-5-7 LANDSCAPE BETWEEN BUILDINGS AND STREET RIGHT-OF-WAY

A landscape strip shall be required along the entire building frontage of any office, institutional, commercial or industrial building located within fifty (50) feet of a street right-of-way, between said building and the street right-of-way, except for approved pedestrian and vehicle access areas. For pedestrian retail districts or other areas where the requirements of this section may interfere with pedestrian access, a streetscape plan incorporating landscaping appropriate to the context, approved by the Arborist, may satisfy this requirement.

There shall be the following three (3) options that may be used singly or in any appropriate combination to comply with this code subsection, as proposed by the developer and approved by the Arborist.

Option 1. A minimum ten (10) foot wide landscape strip, with a minimum of one shade tree and 10 shrubs for every 35 feet of linear street frontage (Figure 4-5-8).

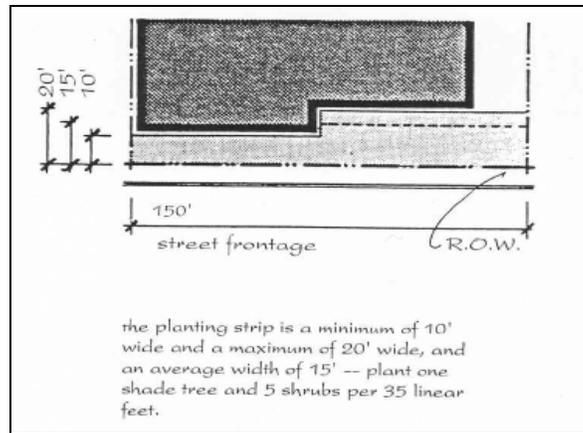


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Figure 4-5-8
Option 1, Landscape between Nonresidential Building
and Street Right-of-Way

Option 2. A strip of varying width, but with a minimum of (ten) 10 feet and averaging at least (fifteen) 15 feet wide, with a minimum of one shade tree and 5 shrubs per 35 linear feet (Figure 4-5-9).

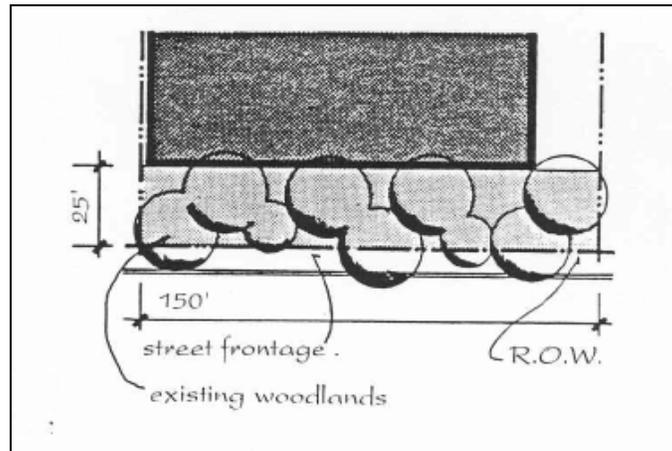
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Figure 4-5-9
Option 2, Landscape between Nonresidential Building and Street Right-of-Way

Option 3. Existing woodlands at least 25 feet wide (Figure 4-5-10).



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Figure 4-5-10
Option 3, Landscape Between Nonresidential Building and Street Right-of-Way

§4-5-8 **BUFFERS REQUIRED**

Buffers for individual uses shall be provided according to the requirements of Table 4-5-3, as applicable, based on existing, adjoining uses.

Table 4-5-3
Minimum Required Buffer Width

PROPOSED USE	ADJOINING USE					
	Single-Family, Detached	Single-Family Attached (Townhouses)	Multi-Family Residential	Office or Institutional	Commercial	Industrial
Single-Family, Detached	None	None	None	None	None	None
Single-Family Attached (Townhouses)	10'	None	10'	20'	30'	40'
Multi-Family Residential	20'	10'	None	10'	20'	40'
Office or Institutional	20'	20'	10'	None	10'	30'
Commercial	30'	30'	20'	10'	None	20'
Industrial	40'	40'	40'	30'	20'	None

§4-5-9 SCREENING AND BUFFER SPECIFICATIONS

Screening shall be established within all buffers that are required by this Code, Section 4-5, along side and rear lot lines. The Arborist may require additional screening outside landscape strips and buffers that are required along side and rear lot lines, for purposes of obscuring features such as rear entrances, utility and maintenance structures, and loading facilities. Landscaping shall be used whenever possible to screen objectionable views, noises, or nuisances, such as service areas, refuse containers, air conditioning units, transformers, etc.

All required screening shall consist of shrubs and/or trees but may be supplemented with walls, fences or earth berms. Screening shall be of such nature and density to screen activities on the lot from view from the normal level of a first story window on an abutting lot and shall provide year-round maximum opacity from the ground to a height of at least six (6) feet. Trees and shrubs shall be installed to not only provide maximum opacity, but to allow for proper plant growth and maintenance.

To achieve maximum opacity within buffers, the following alternatives, or combination thereof, shall be considered by the applicant and applied, subject to the approval of the Arborist:

- (a) Six-foot high evergreen screening shrubs planted four (4) feet on center.
- (b) Tall evergreen trees stagger-planted with branches touching ground.
- (c) Combination of small shrubs planted thirty inches (30") on center, small trees planted thirty (30) feet on center, and large trees planted forty (40) feet on center.
- (d) Six-foot (6') high masonry wall.

In selecting materials and the size of plantings to be installed, the applicant and the Arborist shall consider the purpose of the landscape and the following required materials:

Purpose

Very dense sight barrier
Visual separation between uses
Visual separation of uses
Provide visual relief
Visual relief/shade in parking areas

Materials

Evergreen trees, sight-obscuring fence
Evergreen and deciduous trees, shrubs
Evergreen and deciduous trees, shrubs, berms
Ground covers and shrubs lower than 36 inches
Trees, ground cover, decorative mulch, pavers

§4-5-10 GENERAL PROVISIONS

§4-5-10.1 Visibility. Landscaping shall not restrict visibility of motorists or pedestrians (e.g., tall shrubs or low-lying branches of trees).

§4-5-10.2 Clearance. Trees must have a clear trunk at least six (6) feet above finished grade to allow a safe clearance beneath the tree, except as otherwise provided by this Code Section.

§4-5-10.3 Curb Stops. A curb or wheelstop shall be provided along interior parking lot landscape islands, perimeter landscape strips, and landscapes adjacent to street rights-of-way, to prevent cars from encroaching on trees, shrubs, and landscapes, as approved by the Arborist.

§4-5-11 LANDSCAPE PLAN

A landscaping plan approved by the Arborist shall be required prior to the issuance of a land use permit or building permit to demonstrate compliance with the provisions of this Code, Section 4-5. The landscape plan shall be based on an accurate boundary survey of the site or reasonable property description and shall include the following:

- (a) Location and general type of existing vegetation;
- (b) Existing vegetation to be saved;
- (c) Methods and details for protecting existing vegetation during construction;
- (d) Locations and labels for all proposed plants and a plant list or schedule showing the proposed and minimum required quantities;
- (e) Location and description of other landscape improvements, such as earth berms, walls, fences, screens, sculptures, fountains, street furniture, lights, and courts or paved areas;

§4-5-12 APPROVAL OF LANDSCAPING AND OTHER MATERIALS

Approval of all landscaping and other materials by the Arborist shall be required. The Arborist shall have broad discretion in approving the specific types of landscaping and other materials provided in the landscape requirements of this Code Section 4-5. However, the following general guidance is provided and specific lists of approved species are provided in this Code:

- (a) The use of native plants as landscaping materials is encouraged wherever possible.
- (b) Invasive or potentially invasive plants are not permitted. However, well-mannered non-native plants are acceptable if they are not considered invasive or potentially invasive.
- (c) Existing tree cover and natural vegetation shall be preserved, whenever possible, or replaced with suitable vegetation.

- (d) Ground cover(s) should be used to supplement landscaping in appropriate areas to reduce the need for extensive grass lawns, which would require regular watering in drought conditions.
- (e) Grass areas shall be sodded. However, if grass seed must be used, it shall be a variety suitable to the area that produces complete coverage.
- (f) No artificial plants, trees, or other vegetation shall be installed.

§4-5-13 TREE PLANTING GUIDELINES

- (a) Only healthy trees with a well developed root system and a well formed top, characteristic of the species, should be planted.
- (b) Trees selected for planting must be compatible with the specific site conditions.
- (c) The ability of a species to regenerate a new root system and to become reestablished should be considered. Generally, deciduous trees should be planted in the fall after leaf drop, or in early spring before bud break. There are indications that bare root trees will re-establish more readily if planted in early spring just prior to bud break.
- (d) Trees should not be planted deeper than they were in their former location or container.
- (e) Once the transplanted tree is set, the hole should be backfilled with soil of good texture and structure. Backfill material should be comprised of a mix of native soil, organic matter such as peat, and inorganic material such as perlite or vermiculite in a 1:1:1 ratio, although a back fill with native soil alone may be adequate.
- (f) The addition of fertilizer to backfill soil can cause root injury and is therefore not recommended. If fertilizer must be added, a small amount should be used. Approximately 1.5 pounds of nitrogen per cubic yard of back fill is recommended for bare root plants, and 2.5 pounds of nitrogen per cubic yard of back fill for balled and burlaped trees.
- (g) The back fill should be gently tamped (but not compacted) and soaked for settling. The soil should be slightly mounded to allow for settling; a ridge or dike around the perimeter of the hole can facilitate watering.
- (h) Pruning. The amount of pruning necessary for newly planted trees depends upon the trees' response to planting. A decrease in leaf surface area from pruning can result in a reduction of the production of food, thus ultimately inhibiting root development. Pruning for vigor or to train young trees should therefore be delayed until after the first growing season.
- (i) Staking should be used on newly planted trees only where determined necessary. The extent of staking will depend upon tree strength, form and condition at planting, expected wind conditions, the amount of vehicle or foot traffic and the level of follow-up maintenance. Staking can cause tree damage. Periodic follow-up inspections are required to prevent serious treestaking problems. Staking should be removed as soon as the tree is capable of providing its own anchorage and support.
- (j) Mulching newly planted trees will reduce competition from weeds and moderate soil moisture and temperature extremes.
- (k) Trees selected for planting must be free from injury, pests, disease or nutritional disorders.
- (l) Trees selected for planting must be free of root defects.

§4-5-14 LANDSCAPE MAINTENANCE AND LANDSCAPE BOND

The owner, occupant, tenant and respective agent of each, if any, shall be jointly and severally responsible for the maintenance and protection of all landscaping required to be installed pursuant to this Code, Section 4-5. Prior to issuance of a certificate of occupancy, the developer or owner shall post a performance bond or cash escrow guaranteeing all landscaping materials and work for a period of two (2) years after approval or acceptance thereof by the city in a sum established by the Arborist. The bond will be in the amount of 100 percent of the estimated cost of replacing all of the landscaping required by these specifications, unless otherwise specified by the Arborist. At the end of two years, the Arborist shall make an inspection and notify the owner or developer and the bond company of any corrections to be made. If no maintenance is required, or if maintenance is provided by said responsible party, the Arborist shall release the bond.

§4-5-15 LISTS OF APPROVED LANDSCAPING MATERIALS

[See References]

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§4-5-14.1 Vines

Vines							
Taxa/Zone*	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
Anisostichus capreolatus/6b-8b; Cross Vine (Bignonia)	X	X	-	-	-	X	Semi-Evergreen
Aristolochia durior 6b-8b; Dutchman's Pipe	X	-	X	-	-	-	Deciduous
Campsis radicans/ 6b-8b; Trumpet Vine	X	X	X	X	-	X	Deciduous
Clematis hybrida/ 6b-8b; Large-Flowered Clematis	-	X	-	-	-	X	Deciduous
Fatchedera lizei/ 8a-8b; Bush Ivy	X	-	X	-	-	X	Evergreen
Ficus pumila/ 8a-8b; Climbing Fig	X	-	X	-	X	X	Evergreen
Gelsemium sempervirens/ 6b-8b; Carolina Jessamine	X	X	X	-	-	X	Evergreen
Hydrangea anomala/ 6b-8b; Climbing Hydrangea	-	X	-	-	-	X	Deciduous
Lonicera sempervirens/ 6b-8b; Honeysuckle	X	X	X	-	-	X	Deciduous
Menispermum canadense/ 6b-8b; Common Moonseed	X	-	X	X	-	X	Deciduous
Parthenocissus quinquefolia/ 6b-8b; Virginia Creeper	X	X	X	X	X	X	Deciduous
Rosa banksiae/ 6b-8b; Banks Rose	X	-	-	-	-	-	EV-Deciduous
Smilax lanceolata/ 6b-8b; Smilax	X	-	-	-	X	X	Evergreen
* 6b-8b = entire state/Piedmont; 8a-8b = Coastal Plain							

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§4-5-14.2 Ground Covers

Ground Covers							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Aspidistra elatior</i> / 8a-8b; Cast-Iron Plant	X		X		X	X	Evergreen
<i>Cyrtomium falcatum</i> / 8a-8b; Holly Fern		X		X		X	Evergreen
<i>Helleborus orientalis</i> / 6b-8b; Lenten Rose	X	X				X	Evergreen
<i>Hemerocallis spp.</i> / 6b-8b; Daylily (*)	X	X	X	X	X	X	Deciduous
<i>Hosta spp.</i> /6b-8b; Plantain Lily		X		X		X	Deciduous
<i>Hypericum calycinum</i> / 6b-8b; Aaronsbeard (St. Johnsort)	X		X	X			Evergreen - Deciduous
<i>Iberis sempervirens</i> / 6b-8b; Candytuft	X		X	X		X	Evergreen
<i>Juniperus confertal</i> / 6b-8b; Shore Juniper	X		X	X	X		Evergreen
<i>Liriope muscaril</i> / 6b-8b; Lily Turf	X				X	X	Evergreen
<i>Liriope spicata</i> /6b-8b; Creeping Lily Turf	X			X	X	X	Evergreen
<i>Ophiopogon jaburan</i> / 6b-8b; Snakesbeard	X		X		X	X	Evergreen
<i>Ophiopogon japonicus</i> / 6b-8b; Mondo Grass	X			X		X	Evergreen
<i>Pachysandra procumbens</i> / 6b-8b; Alleghany Pachysandra				X		X	Semi-Evergreen
<i>Pachysandra terminalis</i> / 6b-8b; Japanese Spurge	X			X		X	Evergreen
<i>Paxistima canbyil</i> 6b-8b; Rat-stripper	X						Evergreen
<i>Phlox subulata</i> / 6b-8b; Thrift	X		X	X			Evergreen
<i>Rosa wichuraiana</i> / 6b-8b; Memorial Rose	X			X			Semi-Evergreen
<i>Rosmarinus officinalis</i> / 6b-8b; Rosemary	X		X				Evergreen
<i>Santolina chamaecyparissus</i> / 6b-8b; Lavender Cotton	X		X		X		Evergreen
<i>Santolina virens</i> / 6b-8b; Green Santolina	X		X		X		Evergreen
<i>Sarcoccca hookerana humilis</i> / 6b-8b; Small Himalyan Sarcoccca			X			X	Evergreen
<i>Sedum acre</i> /6b-8b; Gold Moss Stonecrop	X		X	X		X	Evergreen
<i>Sedum spectabile</i> / 6b-8b; Gold Moss Stonecrop	X		X	X		X	Evergreen

(*) except for “*Hemerocallis Fulva*” (Orange Daylily) which is invasive.

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§4-5-14.3 Shrubs 1 - 4 Feet

Shrubs 1-4 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Abelia x grandiflora</i> / 6b-8b; Dwarf Abelia	X		X	X	X		Evergreen
<i>Berberis candidula</i> / 6b-8b; Paleleaf Barberry	X		X	X		X	Evergreen
<i>Berberis verruculosa</i> / 6b-8b; Warty Barberry	X			X		X	Evergreen
<i>Ceanothus americanus</i> / 6b-8b; Wild Snowball (New Jersey Tea)	X		X			X	Deciduous
<i>Danae racemosa</i> / 6b-8b; Alexandrian Laurel		X				X	Evergreen
<i>Deutzia gracilis</i> / 6b-8b; Slender Deutzia	X		X	X			Deciduous
<i>Euonymus japonicus</i> 'Microphyllus' / 6b-8b; Dwarf Japanese Euonymus		X			X	X	Evergreen
<i>Hesperaloe parviflora</i> / 6b-8b; Red Yucca	X		X				Evergreen
<i>Hydrangea arborescens</i> 'Grandiflora'/ 6b-8b; Snowhill Hydrangea		X				X	Deciduous
<i>Hypericum kalmianum</i> / 6b-8b; Kalm St. John's-Wort	X		X	X			Deciduous
<i>Hypericum patulum</i> / 6b-8b; St. John's-Wort	X		X	X			Semi-Evergreen
<i>Hypericum prolificum</i> / 6b-8b; Shrubby St. John's-Wort	X		X	X			Deciduous
<i>Ilex cornuta</i> 'Rotunda'/ 6b-8b; Dwarf Chinese Holly	X				X	X	Evergreen
<i>Ilex crenata radicans</i> / 6b-8b; Japanese Holly	X		X	X			Evergreen
<i>Ilex vomitoria</i> 'Nana'/ 6b-8b; Dwarf Yaupon			X		X	X	Evergreen
<i>Jasminum nudiflorum</i> / 6b-8b	X		X	X			Deciduous
<i>Juniperus davurica</i> 'Parsoni'/ 6b-8b; Parsons Juniper	X		X	X			Evergreen
<i>Lavandula officinalis</i> / 6b-8b; English Lavender			X				Evergreen
<i>Leucothoe axillaris</i> / 6b-8b; Coastal Leucothoe		X				X	Evergreen
<i>Leucothoe fontanesiana</i> / 6b-8b; Drooping Leucothoe		X				X	Evergreen
<i>Lonicera pileata</i> / 6b-8b; Privet Honeysuckle	X		X				Semi-Evergreen
<i>Potentilla fruticosa</i> / 6b-8b; Bush Cinquefoil	X			X			Deciduous

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Shrubs 1 - 4 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Ruscus aculeatus</i> / 6b-8b; Butcher's Broom	X		X	X		X	Evergreen
<i>Skimmia reevesiana</i> / 6b-8b; Reeves Skimmia		X				X	Evergreen
<i>Spiraea x bumalda</i> ; Bumald Spirea	X		X	X			Deciduous
<i>Spiraea nipponica</i> 'Snowmound' / 6b-8b; Snowmound Nippon Spirea	X		X	X			Deciduous
<i>Xanthorrhiza simplicissima</i> / 6b-8b; Yellowroot	X	X	X	X		X	Semi-Evergreen
<i>Yucca filamentosa</i> / 6b-8b; Adams Needle Yucca	X		X	X	X		Evergreen

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§4-5-14.4 Shrubs 4 - 6 Feet

Shrubs 4-6 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Abelia x grandiflora</i> / 6b-8b; Glossy Abelia	X		X	X	X		Evergreen
<i>Cephalanthus occidentalis</i> / 6b-8b; Buttonbush		X					Deciduous
<i>Chaenomeles speciosa</i> / 6b-8b; Flowering Quince	X		X				Deciduous
<i>Clethra alnifolia</i> / 6b-8b; Summersweet Clethra		X			X	X	Deciduous
<i>Dirca palustris</i> / 6b-8b; Leatherwood		X				X	Deciduous
<i>Euonymus americanus</i> / 6b-8b; American Strawberry Bush	X		X			X	Deciduous
<i>Fatsia japonica</i> / 8a-8b; Japanese Fatsia	X	X			X	X	Evergreen
<i>Hamamelis vernalis</i> / 6b-8b; Vernal Witch-Hazel	X	X	X	X			Deciduous
<i>Hydrangea macrophylla</i> / 6b-8b; Bigleaf Hydrangea					X	X	Deciduous
<i>Hydrangea quercifolia</i> / 6b-8b; Oakleaf Hydrangea	X	X				X	Deciduous
<i>Ilex crenata</i> 'Compacta'/ 6b-8b; Compacta Japanese Holly				X		X	Evergreen
<i>Jasminum floridum</i> / 8a-8b; Flowering Jasmine	X		X		X		Evergreen
<i>Juniperus squamata</i> 'Meyeri' / 6b-8b; Singleseed Juniper	X		X	X	X		Evergreen
<i>Mahonia aquifolium</i> / 6b-8b; Oregon Grape Holly	X			X		X	Evergreen
<i>Opuntia spp.</i> / 6b-8b; Prickly Pear	X		X		X		Evergreen
<i>Pieris floribunda</i> / 6b-8b; Mountain Andromeda				X		X	Evergreen
<i>Pieris japonica</i> / 6b-8b; Japanese Andromeda				X		X	Evergreen
<i>Raphiolepis umbellata</i> / 8a-8b; Yedda Hawthorn	X		X	X	X		Evergreen
<i>Rhododendron carolinianum</i> / 6b-8b; Carolina Rhododendron		X				X	Evergreen
<i>Rhus aromatica</i> / 6b-8b; Fragrant Sumac	X		X	X			Deciduous
<i>Spiraea cantoniensis</i> / 6b-8b; Reeves Spirea	X			X			Deciduous
<i>Spiraea thunbergii</i> / 6b-8b; Thunberg Spirea	X		X	X			Deciduous
<i>Spiraea x vanhouttei</i> / 6b-8b; Vanhoutte Spirea	X		X	X			Deciduous
<i>Taxus cuspidata</i> / 6b-8b; Japanese Yew	X			X		X	Evergreen
<i>Viburnum acerifolium</i> / 6b-8b; Mapleleaf Viburnum			X	X		X	Deciduous
<i>Viburnum carlesii</i> / 6b-8b; Koreanspice Viburnum			X				Deciduous

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Shrubs 4 - 6 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Viburnum suspensum</i> / 8a-8b; Sandankwa Viburnum	X				X	X	Evergreen
<i>Yucca gloriosa</i> / 6b-8b; Mound Lily Yucca	X		X	X			Evergreen

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§4-5-14.5 Shrubs 6 -12 Feet

Shrubs 6-12 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Aesculus parviflora</i> / 6b-8b; Bottlebrush Buckeye		X				X	Deciduous
<i>Aronia arbutifolia</i> / 6b-8b; Red Chokeberry	X	X	X				Deciduous
<i>Calycanthus floridus</i> / 6b-8b; Sweetshrub	X		X	X		X	Deciduous
<i>Chimonanthus praecox</i> / 6b-8b; Wintersweet	X		X	X			Semi- Evergreen
<i>Chionanthus virginicus</i> / 6b-8b; Fringetree			X	X			Deciduous
<i>Cleyera japonica</i> / 6b-8b; Cleyera (Ternstroemia)			X			X	Evergreen
<i>Cornus amomum</i> / 6b-8b; Silky Dogwood		X	X			X	Deciduous
<i>Cornus racemosa</i> / 6b-8b; Gray Dogwood		X	X			X	Deciduous
<i>Cornus sericea</i> / 6b-8b; Red-osier Dogwood	X	X		X		X	Deciduous
<i>Cotinus obovatus</i> / 6b-8b; American Smoketree	X		X	X			Deciduous
<i>Cyrilla racemiflora</i> / 6b-8b; Leatherwood		X					Evergreen
<i>Deutzia scabra</i> / 6b-8b; Fuzzy Deutzia	X		X	X			Deciduous
<i>Exochorda racemosa</i> / 6b-8b; Pearlbush	X		X	X			Deciduous
<i>Feijoa sellowiana</i> / 8a-8b; Pineapple Guava			X		X		Semi- Evergreen
<i>Forsythia x intermedia</i> / 6b-8b; Border Forsythia	X		X	X	X		Deciduous
<i>Hamamelis virginiana</i> / 6b-8b; Common Witch Hazel		X	X	X		X	Deciduous
<i>Hibiscus syriacus</i> / 6b-8b; Rose of Sharon	X	X	X	X	X		Deciduous
<i>Ilex glabra</i> / 6b-8b; Inkberry Holly		X			X		Evergreen

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Shrubs 6 - 12 Feet							
Taxa/Zone	Tolerant to:						Evergreen or Deciduous
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	
<i>Viburnum x rhytidophylloides/ 6b-8b;</i> Lantanaphyllum Viburnum	X			X			Semi-Evergreen
<i>Viburbnum rhytidophyllum/ 6b-8b;</i> Leatherleaf Viburnum		X				X	Evergreen
<i>Vitex agnus-castus/ 6b-8b;</i> Chaste Tree	X		X		X	X	Deciduous
<i>Weigela florida/ 6b-8b;</i> Weigela	X			X			Deciduous
<i>Yucca aloifolia/ 8a-8b;</i> Spanish Bayonet	X		X	X	X		Evergreen

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§4-5-14.6 Small Trees 15 - 40 Feet

(Note: soils and urban stress information was not included in some of the source data. However, these trees can generally tolerate urban stress and soils.)

Small Trees 15 - 40 Feet					
Taxa/Zone	Tolerant to:				Evergreen or Deciduous
	Wet sites	Dry sites	Salt	Shade	
<i>Acer buergeranum</i> / 6b-8b; Trident Maple*	-	X	-	-	Deciduous
<i>Acer campestre</i> / 6b-8b; Hedge Maple		X			Deciduous
<i>Acer floridanum</i> /6b-8b; Florida Maple				X	Deciduous
<i>Acer griseum</i> / 6b-8b; Paperbark Maple					Deciduous
<i>Acer palmatum</i> / 6b-8b; Japanese Maple*		X		X	Deciduous
<i>Acer tataricum</i> /6b-8b; Tatarian Maple		X			Deciduous
<i>Acer truncatum</i> / 6b-8b; Purpleblow Maple		X			Deciduous
<i>Amelanchier arborea</i> / 6b-8b; Downy Serviceberry					Deciduous
<i>Amorpha fruticosa</i> / 6b-8b; Indigobush Amorpha		X			Deciduous
<i>Asimina triloba</i> / 6b-8b; Common Pawpaw	X		X		Deciduous
<i>Bumelia lanuginosa</i> / 6b-8b; Chittamwood		X		X	Deciduous
<i>Carpinus caroliniana</i> / 6b-8b; American Hornbeam	X			X	Deciduous
<i>Chioanthus retusus</i> /6b-8b; Chinese Fringetree*		X		X	Deciduous
<i>Chioantus virginicus</i> /6b-8b; White Fringetree or Grancy Gray-Beard*		X		X	Deciduous
<i>Cornus florida</i> / 6b-8b; Flowering Dogwood*				X	Deciduous
<i>Cornus mas</i> /6b-8b; Corneliancherry Dogwood					Deciduous
<i>Davidia involucrata</i> / 6b-8b; Dove Tree				X	Deciduous
<i>Eriobotrya japonica</i> / 8a-8b; Loquat			X		Evergreen
<i>Evodia daniellii</i> / 6b-8b; Korean Evodia		X			Deciduous

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Small Trees 15 - 40 Feet					
Taxa/Zone	Tolerant to:				Evergreen or Deciduous
	Wet sites	Dry sites	Salt	Shade	
<i>Halesia carolina</i> / 6b-8b; Carolina Silverbell	X	-	-	X	Deciduous
<i>Halesia diptera</i> var. <i>magniflora</i> / 6b-8b; Two-winged Carolina Silverbell*				X	Deciduous
** <i>Ilex cassine</i> / 6b-8b; Dahoon	X	-	X	-	Evergreen
<i>Ilex decidua</i> / 6b-8b; Possum Haw	X	X	-	-	Deciduous
<i>Ilex vomitoria</i> /7-8; Yaupon Holly*		X		X	Evergreen
<i>Ilex myrtifolia</i> / 6b-8b; Myrtle-leaved Holly	X		X		Evergreen
<i>Ilex opaca</i> cvs./ 6b-8b; American Holly	X		X	X	Evergreen
<i>Ilex x attenuata</i> / 6b-8b; Savannah Holly**					Evergreen
<i>Koelreuteria bipinnata</i> / 6b-8b; Chinese Flame Tree	-	X	X	-	Deciduous
<i>Koelreuteria paniculata</i> / 6b-8b; Golden Raintree	-	X	-	-	Deciduous
<i>Lagerstroemia indica</i> / 6b-8b; Crape Myrtle*	-	X	X	-	Deciduous
<i>Maclura pomifera</i> /6b-8b; Osage Orange	X	X	-	-	Deciduous
<i>Magnolia grandiflora</i> / 7-8; Little Gem Magnolia*					Evergreen
<i>Magnolia x soulangiana</i> / 6b-8b; Saucer Magnolia	X		-	-	Deciduous
<i>Magnolia stellata</i> / 6b-8b; Star Magnolia*	-	-	-	-	Deciduous
<i>Magnolia virginiana</i> / 6b-8b; Sweetbay Magnolia	X	-	-	X	Semi-Evergreen
<i>Myrica cerifera</i> / 7-8; Southern Waxmyrtle*	X	X	X	X	Evergreen
<i>Osmanthus americanus</i> / 6b-8b; Devilwood or Wild Olive*		X			Evergreen
<i>Ostrya virginiana</i> / 6b-8b; American Hophornbeam*		X		X	Deciduous
<i>Parrotia persica</i> / 6b-8b; Persian Parrotia	-	-	-	-	Deciduous
<i>Pinus virginiana</i> / 6b-8b; Virginia Pine	-	X	X	-	Evergreen
<i>Photinia serratifolia</i> / 7-8; Chinese or Oriental Photinia*		X			Evergreen

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Small Trees 15 - 40 Feet					
Taxa/Zone	Tolerant to:				Evergreen or Deciduous
	Wet sites	Dry sites	Salt	Shade	
<i>Prunus campanulata</i> cross with <i>Prunus incisa</i> /6b-8b; Okame Cherry*					Deciduous
<i>Prunus caroliniana</i> /6b-8b; Cherry Laurel	-	X	X	-	Evergreen
<i>Prunus mume</i> /6b-8b; Japanese Apricot*					Deciduous
<i>Prunus x yedoensis</i> /6b-8b; Yoshino Cherry	-	-	-	-	Deciduous
<i>Pterocarya fraxinifolia</i> /6b-8b; Caucasian Wingnut	X	X	-	-	Deciduous
<i>Quercus myrsinifolia</i> /6b-8b; Chinese Evergreen Oak	-	X	-	-	Evergreen
<i>Rhus copallina</i> /6b-8b; Flameleaf Sumac	-	X	-	-	Deciduous
<i>Sabal palmetto</i> /8; Cabbage Palm*	X	X	X	X	Evergreen
<i>Vaccinium arboreum</i> /7-8; Farkleberry*		X		X	Deciduous
<i>Vitex agnus-castus</i> /7-8; Chastetree*		X			Deciduous

* = Trees noted with an asterisk (*) are recommended by Garber and Ruter (2002) as small trees for use in landscape ordinances in Georgia.

** = several other types of holly species, cultivars, and hybrids may be appropriate, for example, Nellie R. Stevens holly and East Palatka holly.

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§4-5-14.7 Large Trees 40+ Feet.

Large Trees 40+ Feet							
Taxa/Zone	Tolerant to:						
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	Evergreen or Deciduous
<i>Acer negundo</i> /6b-8b; Boxelder	X	X	X	X			Deciduous
<i>Acer rubrum</i> /6b-8b; Red Maple		X		X		X	Deciduous
<i>Alnus glutinosa</i> / 6b-8b; European Alder		X	X	X			Deciduous
<i>Betula nigra</i> /6b-8b; River Birch	X	X		X			Deciduous
<i>Castanea mollissima</i> / 6b- 8b; Chinese Chestnut	X		X	X			Deciduous
<i>Catalpa bignonioides</i> / 6b- 8b; Southern catalpa	X		X	X	X		Deciduous
<i>Celtis laevigata</i> / 6b-8b; Sugar Hackberry		X		X			Deciduous
<i>Celtis occidentalis</i> / 6b-8b; Hackberry	X		X	X			Deciduous
<i>Cladrastis kentukea</i> / 6b- 8b; American Yellowwood	X			X			Deciduous
<i>Cunninghamia lanceolata</i> / 6b-8b; Chinafir	X		X			X	Evergreen
<i>Firmiana simplex</i> / 6b-8b; Chinese Parasol Tree	X		X				Deciduous
<i>Fraxinus americana</i> / 6b- 8b; White Ash	X			X			Deciduous
<i>Fraxinus pennsylvanica</i> / 6b-8; Green Ash	X	X	X	X			Deciduous
<i>Ginkgo biloba</i> (male)/ 6b- 8b; Ginkgo	X		X	X			Deciduous
<i>Gymnocladus dioica</i> / 6b- 8b; Kentucky Coffee Tree	X		X	X			Deciduous
<i>Juniperus virginiana</i> / 6b- 8b; Eastern Red Cedar	X	X	X	X	X		Evergreen
<i>Liquidambar styraciflua</i> / 6b-8b; Sweet Gum		X		X	X		Deciduous
<i>Liriodendron tulipifera</i> / 6b-8b; Tulip Tree		X		X			Deciduous
<i>Magnolia grandiflora</i> / 6b- 8b; Southern Magnolia		X		X	X	X	Evergreen

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(Note: preferred for coastal areas; can be slightly invasive in other regions)							

Large Trees 40+ Feet

Taxa/Zone	Tolerant to:						
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	Evergreen or Deciduous
<i>Metasequoia glyptostroboides</i> / 6b-8b; Dawn Redwood	X		X				Deciduous
<i>Morus rubra</i> / 6b-8b; Red Mulberry	X		X	X			Deciduous
<i>Nyssa sylvatica</i> / 6b-8b; Black Tupelo	X	X					Deciduous
<i>Ostrya virginiana</i> / 6b-8b; American Hophornbeam	X		X	X			Deciduous
<i>Populus alba</i> / 6b-8b; White Poplar	X	X	X	X	X		Deciduous
<i>Quercus alba</i> /6b-8b; White Oak			X				Deciduous
<i>Quercus bicolor</i> / 6b-8b; Swamp Oak	X	X		X			Deciduous
<i>Quercus coccinea</i> / 6b-8b; Scarlet Oak	X			X			Deciduous
<i>Quercus falcata</i> / 6b-8b; Southern Red Oak	X		X	X			Deciduous
<i>Quercus imbricaria</i> / 6b-8b; Shingle Oak			X	X			Deciduous
<i>Quercus laurifolia</i> / 6b-8b; Laurel Oak	X	X		X	X		Deciduous
<i>Quercus lyrata</i> / 6b-8b; Overcup Oak	X	X	X				Deciduous
<i>Quercus macrocarpa</i> / 6b-8b; Bur Oak	X		X	X			Deciduous
<i>Quercus marilandica</i> / 6b-8b; Blackjack Oak	X		X	X			Deciduous
<i>Quercus muehlenbergii</i> / 6b; Chinquapin Oak	X		X	X			Deciduous
<i>Quercus nigra</i> / 6b-8b; Water Oak	X	X	X	X	X		Deciduous
<i>Quercus palustris</i> / 6b-8b; Pin Oak		X	X	X			Deciduous
<i>Quercus phellos</i> / 6b-8b;		X		X			Deciduous

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Willow Oak							
<i>Quercus prinus</i> / 6b-8b; Chestnut Oak		X	X				Deciduous
<i>Quercus robur</i> /6b-8b; English Oak		X					Deciduous
<i>Quercus rubra</i> /6b-8b; Northern Red Oak	X		X	X			Deciduous
Large Trees 40+ Feet							
Taxa/Zone	Tolerant to:						
	Poor soils	Wet sites	Dry sites	Urban stress	Salt	Shade	Evergreen or Deciduous
<i>Quercus shumardii</i> / 6b-8b; Shumard Oak	X		X	X			Deciduous
<i>Quercus stellata</i> / 6b-8b; Post Oak	X		X	X			Deciduous
<i>Quercus velutinal</i> / 6b-8b; Black Oak		X	X				Deciduous
<i>Quercus virginiana</i> / 8a-8b; Live Oak	X	X	X	X	X	X	Evergreen
<i>Sophora japonica</i> / 6b-8b; Japanese Pagodatree			X	X			Deciduous
<i>Taxodium ascendens</i> /6b-8b; Pond Cypress	X	X	X				Deciduous
<i>Taxodium distichum</i> / 6b-8b; Bald Cypress	X	X	X	X			Deciduous
<i>Tilia americana</i> /6b-8b; American Linden			X	X			Deciduous
<i>Tilia cordata</i> /6b-8b; Littleleaf Linden				X			Deciduous
<i>Ulmus parvifolia</i> / 6b-8b; Lacebark Elm	X		X	X			Deciduous
<i>Zelkova serrata</i> / 6b-8b; Japanese Zelkova	X		X	X			Deciduous
<i>Ziziphus jujuba</i> / 6b-8b; False Date	X		X				Deciduous