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Section 1500 Purpose and Intent

This Article has been developed to benefit the environmental and aesthetic quality of Shelby County. The purpose is to preserve and promote the health, safety and general welfare for the citizens of Shelby County through these standards, and the intent is to create an opportunity and promote preservation of the natural resources and grow in a way that will provide a healthy environment for Shelby County's future. The County has an abundant resource and amenity with the tree and vegetation cover located within the County. Development often requires the removal of this resource in order to accommodate new structures, parking and vehicular access.

Certain land uses by their nature are not compatible with other land uses. These uncomplimentary land uses can create adverse visual impacts, noise, light, and air pollution, which could potentially diminish the quality of life and the health, safety and welfare of the community. This Article shall serve to mitigate these impacts and hazards and improve the visual character of the community through buffer zones. Landscaping also provides a separation between parking areas and buildings which defines pedestrian and vehicular circulation areas and lessens the visual impact and mass of continuous building facades. Therefore, this Article requires landscape material to be planted between uses, around buildings, within and around parking lots, around signs and along street frontages in order to:

- A. Provide visual buffering between land uses, reduce visual impacts to adjoining properties and public rights-of-way, create a transition between dissimilar land uses, and enhance beautification of the County.
- B. Moderation of storm water runoff, and improve water quality.
- C. Protect and attempt to enhance property values, thus safeguarding private and public investment.
- D. Control soil erosion.
- E. Reduction of some air pollutants and interception of airborne particulate matter.
- F. Encourage the preservation of existing trees and vegetation and replenish vegetation that is removed.
- G. Improve the visual quality of the County by minimizing negative impacts of development such as dirt, litter, noise, dust, glare of lights, signs, parking lots, traffic, outside storage, loading docks, and buildings.

- H. Establish standards for the location, spacing, quantity, type, size, protection, planting and maintenance of landscape materials in order to accomplish the objective of this Article.

Section 1501 Review Procedure

This Article applies to all developments subject to Development Plan review as required by Article XIII. The requirements stated in this Article shall be addressed during the applicable Development Plan procedures outlined within Article XIII for all sites listed below:

- A. New Development

No new site development, building, or structure shall be constructed or vehicular use area created or used unless landscaping and buffer zones are provided as required by this Article. Agricultural, single-family, and two-family (duplexes) residential uses permitted in the Agricultural, RE, R-1, R-2, R-3, R-4 and Residential Rehabilitation zoning districts are exempt from these regulations with the exception of Section 1509.

- B. Changes to Existing Development

Improvements to an existing site that include building additions, vehicular use area expansions or loading/unloading area expansion shall be required to bring only the new improvements into compliance with this Article. Agricultural, single-family, and two-family (duplexes) residential uses permitted in the Agricultural, RE, R-1, R-2, R-3, R-4 and Residential Rehabilitation zoning districts are exempt from these regulations with the exception of Section 1509.

Section 1502 Landscape Plan Requirements

- A. A Landscape Plan shall be required as part of the Development Plan review procedure as required by Article XIII, a part of the Subdivision Plat review procedure, a part of the Planned Unit Development procedure and shall be prepared and sealed by a Registered Landscape Architect, a Licensed Professional Engineer or a Licensed Professional Architect (KRS 323A.030) in the Commonwealth of Kentucky. The information required on the Landscape Plan shall be on a separate drawing which includes, as a minimum, the following:

1. Name, address, and phone number of owner of record and applicant.
2. Boundary lines of the property labeled with lengths and bearing, streets adjoining the property, total area of the property, north point, graphic scale, and date of preparation.
3. Adjacent land uses and zoning classifications.
4. Location of proposed buildings, structures and paved areas.
5. Location of all existing and proposed storm, sanitary, and utility lines.
6. Location of all existing and proposed contours (2 foot minimum).
7. A landscape schedule that specifies plant species, number of plants per species, plant size at installation, and mature plant size. A scale sufficient to clearly show all details shall be used.
8. Show site calculations:
 - a. Total site area;

- b. Number of shade/canopy trees, understory/flowering trees and large shrubs required and number provided in plan;
 - c. Number of evergreen and deciduous shrubs and number provided in plan (denote evergreens in planting schedule);
 - d. Total linear footage of perimeter planting requirements for parking areas required to be landscaped;
 - e. Total number of internal landscape islands;
 - f. Total linear footage of landscape planting strips along the entire frontage of the public right-of-way (do not include driveway widths);
 - g. Total square footage and width of buffer zones required; and
 - h. A list of existing trees on site prior to development with size, location and type; and a list of existing trees to be preserved and protected.
9. Include temporary tree protection fencing or taped areas around existing trees to be preserved and protected which will be used to protect the trees during site disturbance.

10. The following note shall be indicated in bold letters on the Landscape Plan:

"Where landscaping areas adjoin grassed rights-of-way, such areas shall be considered part of the landscaped area for purposes of maintenance. As of completion of site improvements, the property owner shall have an implied easement on rights-of-way extending from the site to the road pavement in order to complete the required maintenance."

11. The following "Owner's Certification" shall be provided on the Landscape Plan:

I (We) certify that I (we) are the owners of the property shown hereon and that we hereby adopt this landscape plan as the official plan to be completed in its entirety prior to receiving a Certificate of Occupancy from the State or Local building official or a security bond, certified check, cash or certificate of deposit will be provided to the Triple S Planning Commission to provide surety that the improvements listed on the landscape plan will be completed within six (6) months after the date of posting said surety. I (we) also ensure and understand that any material installed will be maintained in a proper, neat and orderly appearance, free from refuse and debris at all times and will replace any dead plant material by the next planting season or within one (1) year, whichever comes first. I (We) also understand that if work is required within the utility easements causing removal or damage of landscape materials (including any fences, walls or earthen mounds), I (we) shall be responsible for replacement of materials according to the approved landscape plan.

Owner/Owners

Date

12. The following "Certificate of Conformance" shall be provided on the Landscape Plan:

I hereby certify that this Landscape Plan has been prepared in conformance with Article XV of the Shelby County Zoning Regulations and that the plant materials and spacing of said plant materials are suitable (hardiness) to the central Kentucky zone (USDA Zone 6A)

*Landscape Architect/Professional Engineer
/Professional Architect*

Date

Section 1503 General Requirements

A. Installation and Maintenance

The owner of the property is responsible for proper installation and maintenance of all landscaping materials, and shall maintain all plants in a proper, neat and orderly appearance, free from refuse and debris at all times. All dead plant material shall be replaced by the next planting season (seasons can differ depending on the type of plant) or within one (1) year, whichever comes first.

B. Certificate of Occupancy

Where landscaping is required, no building permit shall be issued until the required Landscape Plan has been submitted and approved by the Planning Commission, and no Certificate of Occupancy shall be issued until the landscaping is completed as certified by an on-site inspection by the Zoning Enforcement Officer. In instances where the State will issue the Certificate of Occupancy, the development plan shall not be certified until the required landscaping is bonded as outlined below. If the required landscaping has not been completed and a Temporary Certificate of Occupancy is issued, a security bond, certified check, cash or certificate of deposit shall be submitted to the Planning Commission. The amount of the bond shall be based upon the cost of the proper installation of the uninstalled landscape material shown in the submitted plan with the cost certified by a landscape contractor. Where a buffer zone is required for a subdivision plat, certification or bonding is required prior to approval of the Final Plat.

C. Surety of Improvements

After a security bond, certified check, cash or certificate of deposit has been posted the landscaping material required in the approved landscaping plan shall be installed within six (6) months after the date of posting the security bond, certified check, cash or certificate of deposit for the development plan, or twelve (12) months after the same date for Final Plats. Extensions of the planting period may be granted by the Planning Commission upon a demonstration by the property owner or developer that such an extension is warranted because of adverse weather conditions or unavailability of required plant materials. No more than three (3) such one (1) month extensions may be granted. The security bond, certified check, cash or certificate of deposit shall be used if the required landscaping has not been installed by the end of the approved planting period and the Planning Commission shall apply the proceeds of the security bond, certified check, cash or certificate of deposit to have the work completed.

D. Time Period for Installation

All plant material must be installed according to the approved landscaping plan by no later than the next planting season or within six (6) months from the date that a certificate of occupancy is issued, season permitting. If no certificate of occupancy is required, all plant material must be installed by the next planting season from the date of approval for the landscaping plan.

E. Plant Materials

All trees, shrubs, and other planting materials shall be living plants (not artificial) and shall be suitable (hardy) to the central Kentucky zone (USDA Zone 6A) with minimal winter damage and specific conditions of the site in question and shall meet the following:

1. Quality – Plant materials used in conformance with provisions of these Regulations shall conform to the standards of the American Association of Nurserymen and shall have passed any inspections required under State Regulations. Bare root plants, with the exception of shrubs and hedges, vines

and ground covers shall be prohibited.

F. Outside Review of Landscape Plan

The Planning Commission may require review of the proposed Landscape Plan from the U.S. Soil Conservation Service, the applicable County Agricultural Extension Service, or a consulting landscape architect.

Section 1504 Enforcement

Inspections will be conducted by a designee from the Triple S Planning Commission before and after construction to assure compliance with the submitted and approved Landscape Plan and in accordance with Article XIII.

Section 1505 Perimeter Planting Requirements for Parking Areas

Perimeter planting requirements shall be provided for all parking areas in accordance with the following standards:

- A. The perimeter of all parking areas shall be landscaped.
- B. No permanent structures are permitted within the perimeter planting requirements for parking areas that prohibit the required plant material from being planted in accordance with these regulations.
- C. Except where otherwise stated in the Zoning Regulations, a continuous perimeter-planting strip, exclusive of access driveways or other openings as allowed, with a width of eight (8) feet, measured from the back of curb of the parking lot to the abutting property/right-of-way line shall be provided. This planting strip may be reduced to five (5) feet if the masonry wall option, described in Section 1505(F) below, is used. If the proposed planting strip is adjacent to an existing parking lot developed with the reduced five (5) foot landscape strip with a masonry wall option, then the proposed planting strip must use the eight (8) foot planting strip requirement.
- D. Perimeter plantings shall include the following:
 - 1. One (1) shade/canopy tree a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and eight (8) to ten (10) feet high planted for every fifty (50) linear feet or one (1) understory/flowering tree minimum of two (2) inches in caliper size and six (6) to eight (8) feet high planted or large shrubs a minimum of four (4) feet high planted for every twenty-five (25) linear feet. A mixture of shade/canopy trees, understory/flowering trees and large shrubs may be used after consultation with the designee of the Triple S Planning Commission. Along a common internal property line with a similar use this requirement may be reduced by fifty (50) percent to eliminate overcrowding and over-planting.
 - 2. One (1) shrub at least fifteen (15) inches to thirty (30) inches tall at installation to create a three (3) foot average height continuous planting hedge, but not farther than five (5) feet on center; be shrub species that shall attain an average normal growth height of three (3) to six (6) feet within four (4) years; and be mostly evergreen species with twenty-five (25) percent of the required shrubs may be deciduous. If the masonry wall option, described in Section 1505(F) below is used, then one (1) shrub at least fifteen (15) inches to thirty (30) inches tall at installation per thirty (30) linear feet shall be required. If a continuous three (3) foot earthen mound with a two (2) foot minimum crown width or if a three (3) foot decrease in elevation from the common internal property line with

a similar use to the vehicle use area then this requirement for shrubs to be installed shall not be applicable.

3. Trees shall be planted a minimum of three (3) feet from any curb, so as to prevent injury to trees by vehicle bumpers. Where landscaped areas are located adjacent to vehicle overhangs, the trees shall be planted in line with the striping between parking spaces in order to avoid injury to trees by vehicle bumpers.
 4. Shrubs shall be planted a minimum of two and one-half (2 ½) feet from any curb, so as to prevent injury to shrubs by vehicle bumpers, and shall not normally be planted closer than six (6) feet to planted trees, nor within the drip line of existing trees.
- E. Existing vegetation which meets, in whole or in part, the purposes of perimeter landscaping, described above, may be applied toward the requirements if approved by the designee of the Triple S Planning Commission.
- F. If walls are used, they shall:
1. Be three (3) to six (6) feet in height; and
 2. Be constructed in a durable fashion of brick, stone, or other decorative masonry materials.

Section 1506 Internal Planting Requirements for Parking Areas

Internal planting requirements shall be provided for all parking areas in accordance with the following standards:

- A. Parking areas shall install interior landscape islands so that no more than sixteen (16) contiguous parking spaces are permitted without a landscaped separation of at least eight (8) feet in width (back of curb to back of curb).
- B. There shall be a minimum curb radii of three (3) feet required on the corners of all landscape islands and medians to allow for free movement of motor vehicles around planting materials. All islands and medians shall have a six (6) inch-high vertical concrete curb around them to protect parked vehicles, provide visibility, confine moving traffic to aisles and driveways, provide space for landscaping, and to direct storm drainage. Striping of parking islands is not permitted.
- C. Landscape islands shall, at a minimum, contain one-hundred forty (140) square feet for single-aisle parking spaces and two-hundred fifty (250) square feet for double-aisle parking spaces of unobstructed landscape area at a minimum unobstructed width of eight (8) feet (back of curb to back of curb).
- D. All rows of parking spaces shall be provided a terminal landscaped island to protect parked vehicles, confine moving traffic to aisles and driveways, and provide space for plantings. A terminal island for a single row of parking spaces shall be planted with at least one (1) tree. A terminal island for a double row of parking spaces shall contain not less than two (2) trees.
- E. All landscape islands shall be planted with at least one (1) shade/canopy tree a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and eight (8) to ten (10) feet high planted. No more than twenty-five (25) percent of the interior landscaped islands shall contain understory/flowering trees a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and six (6) to eight (8) feet high planted or large shrubs a minimum of four (4) feet high planted.

- F. All medians within vehicle use areas shall be planted with shade/canopy trees a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and eight (8) to ten (10) feet high planted every fifty (50) linear feet, or one (1) understory/flowering tree a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and six (6) to eight (8) feet high planted or large shrubs a minimum of four (4) feet high planted for every twenty-five (25) linear feet. A mixture of canopy/shade trees, understory/flowering trees or large shrubs may be used after consultation with the designee of the Triple S Planning Commission.
- G. All landscape islands within parking lots shall be mulched or grassed.
- H. No permanent structures are permitted within the interior landscape islands/medians that prohibit the required plant material from being planted in accordance with these regulations.
- I. Areas used principally for storage of vehicles or display areas do not require interior islands if such areas are screened from adjacent properties and public streets.

Section 1507 Landscape Planting Strip Requirements Along The Entire Frontage of the Public Street Right-of-Way

Landscape planting strips shall be used along the entire frontage of the public street right-of-way to provide vegetation in developed areas, and enhance the appearance of individual properties along the public right-of-way. The following minimum requirements shall apply to landscape planting strips along the entire frontage of the public street right-of-way:

- A. A continuous perimeter-planting strip with a width of eight (8) feet which is adjacent to any street right-of-way abutting the property and running the length of the entire property frontage shall be provided, except where otherwise stated in the Zoning Regulations, where a building is allowed to have a zero (0) to eight (8) foot front yard setback based on the zoning district requirements, or where Section 1505 – Perimeter Planting Requirements for Parking Areas would be required and will be more restrictive.
- B. No permanent structures are permitted within these landscape planting strips that prohibit the required plant material from being planted in accordance with these regulations.
- C. Landscape strips shall contain one (1) shade/canopy tree for each fifty (50) linear feet of strip length and shall be at least one and one-half (1 ½) inches to two (2) inches in caliper size and eight (8) to ten (10) feet high planted, or one (1) understory/flowering tree a minimum of one and one-half (1 ½) inches to two (2) inches in caliper size and six (6) to eight (8) feet high planted or large shrubs a minimum of four (4) feet high planted for every twenty-five (25) linear feet. A mixture of canopy/shade trees, understory/flowering trees or large shrubs may be used after consultation with the designee of the Triple S Planning Commission. Clumping is permitted provided that adequate spacing is allowed for future growth of the trees.
- D. Landscape strips shall contain at a minimum five (5) shrubs for each fifty (50) linear feet of strip length; shall be fifteen (15) inches to thirty (30) inches tall at installation; and be mostly evergreen species with twenty-five (25) percent of the required shrubs may be deciduous. Clumping is permitted provided that adequate spacing is allowed for future growth.
- E. The remaining ground area shall be sodded, seeded, or hydro-seeded with grass, and/or planted with groundcover species.
- F. Where landscaping areas adjoin grassed rights-of-way, such areas shall be considered part of the landscaped area for purposes of maintenance. As of completion of site

improvements, the property owner shall have an implied easement on rights-of-way extending from the site to the road pavement in order to complete the required maintenance.

Section 1508 Screening Requirements

Screening shall be used as a buffer around outside storage and loading/unloading areas, dumpsters and trash storage/collection areas, heating and cooling units or other mechanicals to soften the visual effects, noise, and other objectionable activities. The following minimum requirements shall apply to screening:

- A. Screening shall be installed around outside storage and loading/unloading areas, dumpsters and trash storage/collection areas, heating and cooling units or other mechanicals so as not to be visible from streets and/or adjacent properties regardless of adjacent land use or zoning classification for commercial, industrial and professional offices developments.
- B. Screening may consist of a solid fence or wall, an earthen mound with vegetation, a six (6) foot tall non-solid fence with vegetation, and/or a mix of any or all of the foregoing except dumpsters and trash storage/collection areas shall only be required to have a six (6) foot tall solid fence or wall with gates. Earthen mounds must be a minimum three (3) feet high, two (2) foot minimum crown width, and side slopes of no greater than three (3) to one (1) with vegetation planted to create a total screen of six (6) feet in height. Walls shall be constructed in a durable fashion of brick, stone, or other decorative masonry materials.
- C. All vegetation used for screening shall consist of evergreen trees, shrubs, or combination thereof. All plantings shall be a minimum two (2) feet planted, shall be a species which will achieve a height of at least six (6) feet at maturity, and shall be planted no further than ten (10) feet on center.
- D. Plants shall be spaced so as to provide for effective visual screening within three (3) growing seasons.

Section 1509 Buffer Zone Requirements

Buffer zones shall be provided for the purpose of minimizing the friction between uncomplimentary land uses and improving the aesthetic and functional quality of new development.

- A. Buffer zones are intended to separate different land uses and zoning districts from each other and are intended to eliminate or minimize potential nuisances such as dirt, litter, noise, glare of lights, signs, and unsightly buildings or parking areas. There shall be five (5) different buffer types based on acreage of the project and zoning districts. Each buffer identifies the minimum width, minimum tree spacing standards, minimum shrub spacing standards, and minimum/maximum wall and/or fence standards.
- B. Buffer zone widths for each buffer type will be based on the following project acreage:
 - **Area 1** consists of those developments with an area smaller than one (1) acre;
 - **Area 2** consists of those developments with an area larger than one (1) acre.
- C. The following is a list of the five (5) buffer zone types and the width requirement for each buffer zone type for the project area:

Type A Buffer Zone:
Area 1 = 5 feet

Type B Buffer Zone:
Area 1 = 10 feet

Area 2 = 10 feet

Area 2 = 15 feet

Type C Buffer Zone:

Area 1 = 15 feet
Area 2 = 20 feet

Type D Buffer Zone:

Area 1 = 20 feet
Area 2 = 25 feet

Type E Buffer Zone:

Area 1 = 25 feet
Area 2 = 30 feet

- D. The following matrix determines the type of buffer zone required based on the zoning of the proposed project and the adjacent zoning:

		Adjacent Property																								
	Zoning Classification	A	RE	R	R-1	R-2	R-3	R-4	ROS	RRD	MHP	C	C-1	C-2	C-3	C-4	P-1	P-2	X-1	X-2	I-1	I-2	Shelbyville Bypass*	Arterial Streets**		
Subject Property	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	RE	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10'	10'	
	R	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30'	10'	
	R-1	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30'	10'	
	R-2	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30'	10'	
	R-3	B	B	B	B	A	-	-	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	30'	10'	
	R-4	B	B	B	B	A	A	-	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	30'	10'	
	ROS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	RRD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	MHP	B	B	B	B	B	B	B	B	B	B	-	B	B	B	B	B	B	B	B	B	B	B	B	30'	10'
	C	C	C	C	C	C	C	B	B	B	B	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'
C-1	C	C	C	C	C	C	B	B	B	B	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
C-2	C	C	C	C	C	C	B	B	B	B	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
Subject Property	C-3	D	D	D	D	D	C	C	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	C-4	D	D	D	D	D	C	C	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	P-1	C	C	C	C	C	B	B	B	B	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	P-2	C	C	C	C	C	B	B	B	B	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	X-1	D	D	D	D	D	C	C	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	X-2	D	D	D	D	D	C	C	C	C	-	-	-	-	-	-	-	-	-	-	-	-	-	20'/25'	10'	
	I-1	E	E	E	E	E	E	D	D	D	D	-	B	B	B	B	A	B	B	A	A	-	-	30'	10'	
I-2	E	E	E	E	E	E	E	E	E	D	-	C	C	C	C	B	C	C	B	B	-	-	30'	10'		

*20' wide enhanced landscaped buffer strip between US 60 and the RJ Corman Railroad and a 25' wide buffer zone for the remainder of the Shelbyville Bypass.

**When the rear of a residential, commercial, professional, interchange and/or industrial zoned lot/building backs up to an arterial street a buffer zone shall be required. Arterial Street is defined as a street having a Federal or State Highway number.

- E. The minimum planting requirements for a buffer zone shall be provided as follows:

- One (1) shade/canopy tree of evergreen species shall be at least one and one-half (1 1/2) inches to two (2) inches in caliper size and eight (8) to ten (10) feet high planted for every three hundred (300) square feet of buffer zone. Buffer zones required to be twenty (20) feet in width or larger may provide thirty (30) percent of the required shade/canopy trees with understory/flowering trees of evergreen species a minimum of one and one-half (1 1/2) inches to two (2) inches in caliper size and six (6) to eight (8) feet high planted or large shrubs of evergreen species a minimum of four (4) feet high planted. For those areas adjacent to the Shelbyville Bypass, 50% of the planted material may be non-evergreen species.

2. The number of planting rows determined by the buffer width:

Buffer Width	Minimum Planting Rows
5' to 19.99'	1 row
20' to 30'	2 rows

3. All trees, shrubs, and other planting materials shall be living plants (not artificial) and shall be suitable (hardy) to the central Kentucky zone (USDA Zone 6A) with minimal winter damage area and specific conditions of the site in question and shall meet the following:
 - a. Quality – Plant materials used in conformance with provisions of these Regulations shall conform to the standards of the American Association of Nurserymen and shall have passed any inspections required under State regulations. Bare root plants, with the exception of shrubs and hedges, vines and ground covers shall be prohibited.
4. No permanent structures are permitted within the buffer zone that prohibits the required plant material from being planted in accordance with these regulations.
5. Buffer zone planting requirements shall be guaranteed for the lifetime of the development. Necessary trimming and maintenance shall be performed to maintain the health of the plant materials, to provide an aesthetically pleasing appearance, and to ensure that the buffer zone serves the purpose for which it is intended.
6. All trees, shrubs, and other planting materials used to buffer incompatible uses next to agricultural uses shall be of a non-noxious type.

Section 1510 Planting Manual

A. Plant Type

Each acceptable plant material is designated as either deciduous (D) or evergreen (E). This is essential since only specific plant types can meet these Regulations.

B. Height

Height of plant materials shall be given in ranges because dimensions vary depending on cultural conditions, climate, temperature, and how well plants adapt to these conditions. For example, under ideal conditions, a plant may reach a height of up to twenty (20) feet, but because of cultural conditions at a specific site, the same tree may be limited to a height of just ten (10) feet. Maximum height is also restricted by limited room for root growth in certain areas. Such areas include raised planters, parking lots, streets or areas where there is considerable competition between plants. Plants that tolerate pruning well may be kept to a smaller than normal size.

If overcrowding of plants does occur, extra maintenance may be required. Spacing shall be based on the average mature size of the selected tree species. Plantings for screens or barriers may be placed closely together in order to increase the opacity or denseness of a planting.

It shall be advisable to consult with landscape architects, local nurserymen, and horticulturalists in determining the mature height of selected tree species.

C. Spread

Spread refers to the width of a tree's mature crown. Plants with wide, spreading crowns emphasize horizontal features. In contrast, plants with narrow crowns emphasize the vertical lines. Spread partially determines the suitability of a plant for a particular site. Plants with wide-spreading forms require a large area to develop. Upright forms are used effectively where space is limited. All plants shall be allowed ample room to develop. Spread shall be measured in feet, with the average mature spread of the plant indicated. Spread is normally listed as a range because of its variability.

D. Form

Form is generally referred to as the outline of the crown, but includes much more. Form shall be determined by the line, direction, and arrangement of branches and twigs. Form has mass and volume since it projects in all directions: upward, downward, and sideways. The form of a plant shall be typical of the species at the time of installation, but may be altered to create a desired effect as long as the plant still meets ordinance requirements.

E. Urban Tolerance

A plant tolerant of urban conditions must be able to withstand a variety of adverse conditions, including air pollution, poor and infertile soils, compacted soils, heat and drought, and other similar conditions, but the ones that have relatively few problems shall be considered to be urban tolerant.

F. Disease and Insect Tolerance

Disease and insect problems affect all trees to some extent. Some problems are barely noticeable and exert little effect on a tree's health. Disorders can restrict the tree's growth, cause gradual decline in health, and eventually lead to the tree's death. The severity of a problem depends on the type of tree, conditions of the tree, type of disorder, time of year, immediate weather conditions, along with many other factors. Disorders that are frequent, widespread, or highly destructive should greatly limit the use of a particularly susceptible tree species.

G. Density

Density refers to the quantity of the foliage and branching and is measured by comparing positive space to negative space. Positive space includes all tree characteristics that are perceived when the tree is viewed as two-dimensional silhouette, the greater the density. Negative space is the space that appears between the branching and the foliage. It is the open area through which the sky and background can be seen. The greater the amount of negative space, the less the apparent density.

H. Plant Palette

Any plants which are not in the Plant Palette shall be considered on an individual basis to determine the suitability of the specific plant in the proposed location. A plant not listed in the Plant Palette shall be permitted only upon the expressed approval of the Planning Commission.

PLANT PALETTE

CANOPY/SHADE TREES

CANOPY/SHADE TREES	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Acer campestre</u> Hedge Maple	D	25' to 35'	25' to 35'	Rounded	X	X	X	5'+	X	X	X	X	Excellent medium size tree; useful in areas where space is limited; attractive dark green foliage.
<u>Abies concolor</u> White Fir	E	30' to 50'	15' to 30'	Pyramidal	X	X			X				Can be used as a screen between conflicting land uses; doesn't meet other ordinance requirements because of low branch pattern; best used in large areas where there is room for plant development
<u>Acer platanoides</u> Norway Maple 'Columnare' 'Crimson King' 'Summershade' 'Erectum'	D	40' to 50'	30' to 40'	Rounded	X		X	5'+	X	X	X		Very adaptable maple; best reserved for use in large areas; numerous cultivars can be selected for use.
<u>Acer rubrum</u> Red Maple 'Armstrong' 'Autumn Flame' 'Columnar' 'October Glory' 'Red Sunset' 'Scarlet Sentinel'	D	40' to 60'	40' to 50'	Oval	X	X	X	5'+	X	X	X		Excellent tree but requires room to develop; won't tolerate heavily polluted urban streets; numerous cultivars are superior to the straight species and should be considered for use.
<u>Acer saccharum</u> Sugar Maple	D	60' to 75'	50' to 60'	Rounded	X	X	X	5'+	X	X	X		One of the best larger lawn and shade trees; not for downtown or other crowded areas. Possible use in suburban areas as a street tree.
<u>Acer saccharum sub. nigrum</u> Black Maple	D	60' to 75'	50' to 60'	Oval to Rounded	X				X	X	X		Outstanding native tree; outstanding fall color; best used in large areas.
<u>Alnus glutinosa</u> Black Alder	D	40' to 60'	20' to 40'	Pyramidal to Oval	X	X			X	X	X		Good tree for any wet or difficult site; tolerates most adverse conditions.
<u>Betula lenta</u> Sweet Birch	D	40' to 50'	30' to 40'	Pyramidal to Rounded					X	X			Intolerant of polluted urban areas; best birch for yellow fall color; good for large, naturalized areas.

CANOPY/SHADE TREES	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Betula nigra</u> River Birch	D	40' to 70'	40' to 60'	Oval to Rounded		X			X	X			More adaptable and disease resistant than other birch trees; handsome tree; good for wet areas.
<u>Carpinus batulus</u> European Hornbeam 'Asplenifolia' 'Columnaris' 'Fastigiata'	D	40' to 60'	30' to 50'	Oval		X			X	X	X		Must be limbed up to meet requirements; outstanding specimen tree; there are many cultivars that deserve use.
<u>Carpinus caroliniana</u> American Hornbeam	D	20' to 30'	20' to 30'	Rounded		X			X	X	X		Often must be limbed up to meet regulation requirements; requires moist, well-drained soils; interesting native tree.
<u>Cedrus atlantica</u> Atlas Cedar 'Argentea' 'Glauca' 'Fastigiata'	E	40' to 50'	30' to 50'	Pyramidal	X	X			X	X	X		Handsome evergreen specimen tree; numerous excellent cultivars; needs shelter from strong winds; difficult to transplant.
<u>Celtis laevigata</u> Sugar Hackberry	D	60' to 80'	50' to 60'	Rounded	X	X	X	4'+	X	X	X		Used extensively farther South; best used in large areas; far superior to Common Hackberry.
<u>Cercidiphyllum japonicum</u> Katsura Tree	D	40' to 60'	30' to 50'	Oval to Columnar	X	X	X	4'+	X	X	X	X	Extremely variable in spread and form; male forms are narrow and upright while female forms are round and spreading; handsome tree; has to be limbed up to meet ordinance requirements.
<u>Chamaecyparis obtuse</u> Hinoki Falsecypress	E	50' to 75'	10' to 20'	Pyramidal		X			X				Very dense evergreen; needs moist, humid conditions and protection from wind; many cultivars but most are a smaller size.
<u>Chamaecyparis pisifera</u> Sawara Falsecypress	E	50' to 70'	10' to 20'	Pyramidal		X			X	X			Requires moist, humid conditions; numerous outstanding cultivars but they are a smaller size, loses beauty with age.
<u>Cladrastis lutes</u> Yellowwood	D	30' to 50'	40' to 50'	Vase-shaped		X		5'+	X	X	X		Excellent flowers and foliage; tolerates moist soil conditions; poor branching angles often require corrective pruning.

CANOPY/SHADE TREES	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Corylus colurna</u> Turkish Filbert	D	40' to 50'	20' to 30'	Pyramidal	X	X	X	5'+	X	X	X		Tolerates most adverse conditions; excellent tree but not well known, might be hard to find commercially.
<u>Eucumia ulmoides</u> Hardy Rubber Tree	D	40' to 60'	40' to 50'	Rounded	X	X	X	4'+	X	X	X	X	Virtually problem free, outstanding dark green foliage; lacking in other ornamental qualities; excellent street tree.
<u>Fagus grandifolia</u> American Beech	D	50' to 70'	100' to 120'	Rounded		X							
<u>Fagus sylvatica</u> European Beech 'Asplenifolin' 'Fastigata' 'Riversii' 'Rohanii' 'Rotundifolia'	D	50' to 60'	35' to 45'	Oval to Rounded		X							Doesn't meet most regulation requirements because of low branching pattern, many excellent cultivars that could be used as a large screen; needs room to develop.
<u>Fraxinus americana</u> White Ash 'Autumn Purple'	D	50' to 80'	40' to 60'	Oval	X								Vigorous growing but requires a lot of care because of numerous insect and disease problems; best used in large areas.
<u>Fraxinus pennsylvanica</u> var. lanceolata Green Ash 'Marshall's Seedless'	D	50' to 60'	30' to 40'	Oval	X				X	X	X		Very adaptable to adverse conditions where other trees have trouble growing; somewhat messy and can require extra maintenance.
<u>Ginkgo biloba</u> (Male) Cinkgo 'Autumn Gold' 'Fastigata'	D	50' to 80'	30' to 50'	Pyramidal to Rounded	X	X	X	7'+	X	X	X		Tolerates adverse conditions; excellent tree for streets and other urban uses; outstanding ornamental qualities.
<u>Gleditsia triacanthos</u> var. inermis Thornless Honeylocust 'Moriane' 'Shademaster' 'Skyline' 'Sunburst'	D	30' to 50'	30' to 50'	Rounded	X		X	5'+	X	X	X		Only thornless cultivars are acceptable; cultivars have less disease and insect problems than straight species; provides a light, filtered shade; widely used.
<u>Helesia carolina</u> Carolina Silverbell	D	30' to 40'	20' to 35'	Oval to Rounded		X		5'+	X	X	X		Prefers rich, well drained, acidic soils; intolerant of adverse conditions; often must be limbed up to meet regulations.

CANOPY/SHADE TREES	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Ilex opaca</u> American Holly 'Xanthocarpa'	E	40' to 70'	20' to 40'	Pyramidal					X	X	X		Normally 20' to 30' in height; can be used as a large screen; must be limbed up to meet most regulation requirements.
<u>Juniperus virginiana</u> Eastern Redcedar	E	40' to 50'	10' to 20'	Pyramidal	X	X			X	X			Can be used as a screen between conflicting land uses; cultivars are superior to straight species, but most are smaller in size; best used in large areas; doesn't meet other regulation requirements because of low branching pattern.
<u>Koelreutaria paniculata</u> Golden-Raintree	D	30' to 40'	30' to 40'	Rounded	X	X	X	5'+	X	X	X		Beautiful dense tree; tolerates most adverse conditions; excellent late yellow flowers; somewhat weak-wooded but can be used as a street tree.
<u>Larix deciaua</u> European Larch	D	70' to 75'	25' to 30'	Pyramidal					X	X	X		Nice specimen tree for large areas; intolerant of adverse conditions; messy winter appearance; does well in wet areas.
<u>Liquidamber styracifelia</u> Sweetgum 'Festival' 'Moraine'	D	60' to 70'	40' to 50'	Pyramidal to Oval		X	X	7'+	X	X	X		Excellent tree for large areas; extensive root system needs room to develop; avoid polluted areas.
<u>Liriodendron tulipifera</u> Tulip Poplar Yellow Poplar	D	70' to 90'	35' to 50'	Oval to Rounded			X	8'+	X	X	X		Can grow to 150' or taller, not for small areas.
<u>Magnolia grandiflora</u> Southern Magnolia 'St. Mary'	D	60' to 80'	80' to 50'	Oval to Rounded		X			X	X			Handsome broadleaf evergreen; often has winter damage in Kentucky; used extensively further South; requires room to develop.
<u>Nyssa sylvatica</u> Tupelo Black Gum	D	30' to 50'	20' to 30'	Oval to Rounded	X	X	X	5'+	X	X	X		One of the most beautiful native trees; intolerant of high ph soils and heavily polluted areas; difficult to transplant.
<u>Ostrya virginiana</u> Hophornbeam	D	25' to 40'	20' to 30'	Rounded	X	X	X	5'+	X	X	X	X	Good tree where space is limited; somewhat slow to establish; occasionally must be limbed up.
<u>Oxydendrum arboretum</u> Sourwood	D	25' to 30'	20' to 25'	Pyramidal	X	X	X	5'+	X	X	X	X	Requires rich, acidic soils; attractive in all seasons; somewhat difficult to transplant.

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<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Parrotia persica</u> Persian Parrotia	D	20' to 40'	15' to 30'	Oval	X	X	X	5'+	X	X	X		Outstanding bark and foliage color; excellent for a variety of uses although not very well known.
<u>Phellodendron amurense</u> Cork Tree	D	30' to 45'	30' to 40'	Rounded	X	X			X	X	X		Very adaptable, withstands most adverse conditions; useful in largest settings; picturesque oriental-like appearance.
<u>Picea abies</u> Norway Spruce	E	40' to 60'	25' to 30'	Pyramidal					X				Loses form with age; commonly used as a windbreak; can be pruned into a hedge.
<u>Picea glauca</u> White Spruce	E	40' to 60'	10' to 20'	Pyramidal	X				X				Very adaptable; tolerates adverse conditions better than other spruce trees.
<u>Picea omorika</u> Serbian Spruce	E	50' to 60'	20' to 25'	Pyramidal	X				X				Excellent dark green foliage; tolerates city conditions; does well in almost any urban area.
<u>Picea orientalis</u> Oriental Spruce	E	50' to 60'	20' to 30'	Pyramidal	X				X				Outstanding ornamental evergreen; needs protection from winter winds; low branching pattern restricts use.
<u>Picea pungens</u> Colorado Spruce	E	50' to 70'	20' to 30'	Pyramidal					Yes				Tolerates dry conditions better than other spruce; best used in large areas because of overplanting silvery-blue foliage color.
<u>Pinus bungeana</u> Lacebark Pine	E	35' to 50'	30' to 40'	Pyramidal	X				X				Striking mottled white bark; tolerates high ph soils; slow growth rate limits use; multi-trunked form.
<u>Pinus cembra</u> Swiss Stone Pine	E	30' to 40'	15' to 25'	Pyramidal	X				X	X	X		Handsome evergreen; slow growth rate limits use; requires an open area with good air movement; transplants easier than most pines.
<u>Pinus nigra</u> Austrian Pine	E	50' to 60'	20' to 40'	Pyramidal	X				X	X	X		Withstands city conditions better than other pines; very hardy and adaptable; acceptable use depends on maintained branching height.

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<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Pinus parviflora</u> Japanese White Pine	D	25' to 50'	25' to 50'	Rounded	X				X				Develops a low-branched, wide-spreading form; tolerates most soils; good tree for small areas, slow growth rate.
<u>Pinus resinosa</u> Red Pine	E	50' to 80'	20' to 40'	Pyramidal to Oval	X				X				Tolerates adverse conditions; does best farther North; develops a picturesque, symmetrical form with age.
<u>Pinus strobes</u> White Pine	E	50' to 80'	20' to 40'	Pyramidal					X				Soft, feathery appearance because of foliage, extremely intolerant of air pollution; one of the most beautiful native pines.
<u>Pinus sylvestris</u> Scotch Pine	E	30' to 60'	30' to 40'	Irregular	X				X				Unusual picturesque appearance; loses lower branches sooner than other pines; tolerates poor dry sites.
<u>Pinus thunbergii</u> Japanese Black Pine	E	20' to 50'	Var .	Pyramidal to Irregular	X				X				Variable in size and spread; tolerates salt spray and poor soils.
<u>Platanus x acerifolia</u> London Planetree 'Bloodgood'	D	70' to 100'	60' to 80'	Pyramidal to Rounded	X		X	7'+	X	X	X		Tolerates adverse conditions; best used in large areas because of size; disease and insect problems can be serious.
<u>Platanus occidentalis</u> American Sycamore	D	75' to 100'	75' to 100'	Irregular			X	8'+	X	X			Excellent floodplain tree.
<u>Prunus sargentii</u> Sargent Cherry 'Counnaris' 'Kwanzan'	D	40' to 50'	30' to 50'	Rounded	X	X			X	X	X		Tolerant of adverse conditions; one of the best large cherries for ornamental use; fruit can be messy.
<u>Prunus subhirtella</u> Higan Cherry 'Autumnalis' var. pendula	D	20' to 40'	15' to 30'	Rounded	X	X			X	X	X		Variable in form and flower colors; striking when in flower; numerous cultivars.
<u>Prunus yedoensis</u> Yoshino Cherry	D	20' to 40'	15' to 30'	Rounded	X	X			X	X	X		Outstanding pinkish-white flowers; not common and could be hard to find commercially.
<u>Pseudotsuga menziesii</u> Douglas Fir 'Glauca'	E	40' to 80'	10' to 20'	Pyramidal					X				Requires abundance of atmospheric moisture; intolerant of high winds; handsome evergreen.

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<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Pyrus calleryana</u> (Cult.) Callery Pear (Cultivar) 'Aristocrat' 'Chancellor'	D	30' to 50'	20' to 35'	Pyramidal to Oval	X	X	X	4'+	X	X	X	X	Only cultivars are acceptable for use; very adaptable; excellent for a variety of uses; 'Bradford' has poor branching angles and requires extra maintenance therefore is unacceptable. Resistant to fireblight which troubles common pear.
<u>Quercus acutissima</u> Sawtooth Oak	D	35' to 45'	30' to 40'	Rounded	X	X			X	X	X		Slow growth rate limits use; lustrous dark green foliage; not widely known but deserves more use.
<u>Quercus alba</u> White Oak	D	60' to 100'	50' to 80'	Rounded	X	X	X	7'+	X	X	X		Drought resistant.
<u>Quercus imbricaria</u> Shingle Oak	D	50' to 60'	40' to 60'	Oval to Rounded	X	X	X	7'+	X	X	X		Nice tree when allowed room to develop; easier to transplant than most oaks; tolerates most adverse conditions.
<u>Quercus nigra</u> Water Oak	D	50' to 80'	40' to 60'	Oval to Rounded	X	X	X	7'+	X	X	X		Used extensively in the South; adaptable to moist, wet sites; leaves persist in winter.
<u>Quercus palustris</u> Pin Oak 'Crown Rite' 'Sovereign'	D	60' to 70'	25' to 40'	Pyramidal	X	X	X	5'+	X	X	X		Most popular and widely used oak; intolerant of high ph soils; pendulous lower branches frequently must be removed.
<u>Quercus phellos</u> Willow Oak	D	40' to 60'	50' to 40'	Pyramidal to Oval	X	X	X	7'+	X	X	X		Very handsome tree; widely used in South; finer texture than other oaks.
<u>Quercus robur</u> English Oak 'Fastigata'	D	60' to 80'	50' to 60'	Pyramidal to Rounded	X		X	7'+	X	X	X		Widely used in Europe; too large for most settings; tolerates high ph soils.
<u>Quercus rubra</u> Red Oak	D	60' to 75'	40' to 50'	Rounded	X	X	X	7'+	X	X	X		Widely-used; fast growing oak; transplants easily; valuable for a variety of landscape uses.
<u>Quercus shumardii</u> Shumard Oak	D	40' to 60'	40' to 50'	Rounded	X	X	X	7'+	X	X	X		Not widely known and difficult to find commercially.
<u>Stephanolobium japonicum</u> Japanese Pagoda 'Princeton Upright'	D	50' to 70'	40' to 60'	Rounded	X		X	7'+	X	X	X		Excellent flowers; adaptable to moist conditions; good tree for a variety of uses; should be used more extensively.

CANOPY/SHADE TREES	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Stewartia pseudo-camellia</u> Japanese Stewartia	D	20' to 35'	20' to 30'	Oval		X			X	X	X		Superb specimen tree; requires rich, moist soils; difficult to transplant; hardiest of the stewartias; hard to find commercially.
<u>Syringa reticulata</u> Japanese Tree Lilac	D	20' to 30'	15' to 25'	Oval			X	3'+	X	X	X		Most trouble-free lilac; more adaptable than other lilacs; spectacular white flower display.
<u>Taxodium distichum</u> Bald Cypress 'Shawnee Brave'	D	50' to 70'	20' to 30'	Pyramidal	X	X	X	7'+	X	X	X		Often must be limbed up to meet regulation requirements; intolerant of reflected heat and drought; handsome specimen tree.
<u>Thuja occidentalis</u> American Arborvitae	E	40' to 60'	10' to 15'	Pyramidal	X	X			X				Very dense evergreen; requires considerable atmospheric moisture; numerous cultivars but most are much smaller.
<u>Tilia cordata</u> Littleleaf Linden 'Chancellor' 'Greenspire' 'June Bride'	D	60' to 70'	30' to 50'	Oval	X		X	7'+	X	X	X	X	Tough, adaptable tree, excellent choice for street or urban use; most popular linden for landscape use.
<u>Tilia tomentosa</u> Silver Linden	D	50' to 70'	30' to 50'	Oval to Rounded	X		X	5'+	X	X	X	X	Tolerates heat and drought better than other lindens; beautiful ornamental tree; somewhat similar to <u>Tilia cordata</u> .
<u>Tilia x euchlora</u> Crimean Linden 'Redmond'	D	40' to 60'	20' to 30'	Oval	X		X	5'+	X	X	X	X	Similar to <u>Tilia cordata</u> except for foliage; best foliage of any Linden; a grafted hybrid.
<u>Tsuga canadensis</u> Canadian Hemlock	E	40' to 70'	25' to 35'	Pyramidal					X				Very dense, low-branched evergreen; responds well to pruning; sensitive to drought and polluted environments.
<u>Tsuga caroliniana</u> Carolina Hemlock	E	45' to 60'	20' to 25'	Pyramidal	X				X				Tolerates city conditions better than <u>Tsuga canadensis</u> ; intolerant of drought conditions; not well known.
<u>Ulmus parvifolia</u> Lacebark Elm	D	40' to 50'	40' to 50'	Rounded	X	X	X	5'+	X	X	X		Resistant to Dutch Elm disease; often confused with <u>U. pumila</u> , but is a much superior ornamental tree.

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<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Zelkova serrata</u> Japanese Zelkova 'Village Green'	D	50' to 80'	40' to 70'	Vase-shaped	X		X	7+	X	X	X	X	Outstanding ornamental tree; has been used as a replacement for American Elm; tolerates wind and drought; excellent street tree.

UNDERSTORY/FLOWERING TREES AND LARGE SHRUBS

UNDERSTORY/ FLOWERING TREES AND LARGE SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Acer ginnala</u> Amur Maple	D	15' to 18'	15' to 20'	Rounded	X	X	X	3+	X	X	X		Handsome multi-stemmed shrub tree; withstands heavy pruning inconsistent fall color; very adaptable.
<u>Acer palmatum</u> Japanese Maple 'Atropurpureum' 'Bloodgood' 'Burgandy Lace' 'Crispum'	D	15' to 25'	15' to 25'	Rounded					X	X	X		Outstanding ornamental tree; infrequently used because of slow growth and need for winter protection; recommended for private use.
<u>Acer pennsylvanicum</u> Striped Maple	D	15' to 20'	12' to 20'	Rounded		X			X	X	X		Shrub or tree form prefers partial shade; intolerant or adverse conditions; lovely white striped bark.
<u>Acer tataricum</u> Tatarian Maple	D	15' to 18'	15' to 20'	Rounded	X	X	X	3+	X	X	X		See Acer ginnala.
<u>Aesculus parviflora</u> Bottlebrush Buckeye	D	8' to 12'	8' to 15'	Rounded		X			X	X			Excellent multi-stemmed shrub for shady areas; dense, compact forms are superb screens, but they require adequate room; can be kept much smaller.
<u>Amelanchier arborea</u> Seviceberry	D	15' to 25'	15' to 25'	Rounded	X	X	X		X	X	X		Easily grown in average, medium wet, well-drained soil in full sun to part shade. Root suckers are common, and if not removed, will result in a shrubby growth habit for the plant.

UNDERSTORY/ FLOWERING TREES AND LARGE SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>Amelanchier laevis</u> Allegheny Serviceberry	D	15' to 25'	15' to 25'	Rounded		X			X	X	X		Attractive multi-stemmed tree; often must be limbed up to meet regulation requirements; possible use in site triangle if single-stemmed forms are selected.
<u>Carpinus caroliniana</u> American Hornbeam	D	20' to 35'	20' to 35'	Rounded	X	X	X		X	X	X		Easily grown in average, medium wet soil in part shade to full shade. Prefers moist, organically rich soils.
<u>Cercis candensis</u> Eastern Redbud 'Flame' 'Forest Pansy' 'Royal'	D	20' to 25'	20' to 30'	Rounded	X	X		3'+	X	X	X		Excellent native tree; graceful ascending branches, normally must be limbed up to meet regulation requirements; showy pink-purple flowers.
<u>Chionanthus virginicus</u> Fringe Tree	D	10' to 20'	10' to 15'	Variable	X	X			X	X			With its sparse foliage that gives a light, airy effect this understory tree makes a great addition to any landscape as a single planted specimen or as a group planting.
<u>Cornus alternifolia</u> Pagoda Dogwood	D	15' to 25'	20' to 30'	Rounded		X			X	X	X		Low branched tree or shrub; interesting horizontal branching; must be limbed up to meet regulation requirements.
<u>Cornus florida</u> Flowering Dogwood 'Cherokee Chief' 'Cherokee Princess' var. <i>rubra</i> 'White Cloud'	D	20' to 25'	20' to 30'	Rounded		X			X	X	X	X	Excellent low-branched ornamental tree; must be limbed up to meet regulation requirements; spectacular when flowering; recommended for private use.
<u>Cornus kousa</u> Kousa Dogwood 'Milky Way'	D	15' to 20'	15' to 20'	Rounded		X			X	X	X		Possibly use if limbed up, but naturally develops a low branching structure; recommended for private use.
<u>Cornus mas</u> Cornelian Cherry Dogwood	D	20' to 25'	15' to 20'	Oval to Rounded	X	X			X	X			Usually branches to ground; possible if limbed up; attractive yellow flower display; recommended for private use.
<u>Crataegus crusgalli</u> Cockspur Hawthorn	D	20' to 25'	20' to 30'	Rounded	X				X	X			Dense, low-branched tree; numerous long, sharp thorns; excellent screen and barrier plant.

UNDERSTORY/ FLOWERING TREES AND LARGE SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>Crataegus phaenopyrum</u> Washington Hawthorne	D	20' to 30'	20' to 25'	Oval to Rounded	X		X	4'+	X	X	X	X	Dense, thorny tree; acceptable as a street tree but thorns can limit use; often must be limbed up; excellent large hedge when pruned.
<u>Crataegus viridis</u> 'Culti.' Green Hawthorne 'Cult.' 'Winter King'	D	20' to 30'	20' to 30'	Rounded	X		X	4'+	X	X	X	X	Dense, thorny-tree; v- shaped branching; occasionally must be limbed up; excellent small specimen tree; thorns might limit use.
<u>Crataegus x lavallei</u> Lavalley Hawthorne	D	15' to 25'	10' to 20'	Oval to Rounded	X		X	4'+	X	X	X	X	Small dense tree, essentially thornless; normally must be limbed up to meet regulation requirements; possible use in sight triangle if limbed up.
<u>Euonymus alata</u> Winged Euonymus	D	15' to 20'	15' to 20'	Rounded	X	X			X	X			Large broad shrub; excellent hedge and screen plant; can be kept much smaller with pruning; very adaptable, numerous smaller cultivars.
<u>Forsythia x intermedia</u> Border Forsythia	D	8' to 10'	10' to 12'	Rounded	X	X			X	X			Benefits from selective pruning of larger branches. Can be kept smaller with pruning.
<u>Ilex attenuata</u> x 'Fosteri' Foster's Holly	E	10' to 20'	5' to 10'	Pyramidal	X	X			X	X			Dense, handsome evergreen; excellent year-round screen; possible winter damage.
<u>Ilex pedunculosa</u> Longstalk Holly	E	10' to 15'	10' to 15'	Oval to Rounded	X	X			X	X			One of the hardiest evergreen hollies, not well known; very adaptable; can become leggy with age.
<u>Ilex opaca</u> American Holly	E	40' to 50'	15' to 40'	Pyramidal	X	X			X	X			An evergreen small tree; densely pyramidal when young with branches to the ground becoming slightly more open with maturity, but still maintains roughly a pyramidal shape
<u>Juniperus chinensis</u> Chinese Juniper	E	12' to 25'	Var .	Varied	X				X	X			Only cultivars are acceptable; uses depend on the size, shape, and growth habit of each cultivar; dense evergreen forms.
<u>Koelreuteria paniculata</u> Goldenrain Tree	D	30' to 40'	30' to 40'	Rounded	X	X			X	X			Branching is upright- spreading to irregular.

UNDERSTORY/ FLOWERING TREES AND LARGE SHRUBS													
<u>BOTANICAL NAME</u> Common Name 'Cultivar'	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>Magnolia soulangiana</u> Saucer Magnolia	D	20' to 30'	20' to 30'	Rounded		X			X	X	X		Low-branched and normally must be limbed up to meet regulation requirements although this destroys form; seldom used to meet landscaping requirements, but recommended highly for private use.
<u>Magnolia stellata</u> Star Magnolia	D	15' to 20'	10' to 15'	Rounded		X			X	X			Small tree or large shrub; needs winter protection; avoid southern exposure.
<u>Magnolia Virginiana</u> Sweetbay Magnolia	D	10' to 20'	10' to 20'	Oval		X			X	X	X		Large multi-stemmed shrub; better in wet soils than other magnolias, possible use if central leader forms are used.
<u>Malus (varieties)</u> Flowering Crabapple	D	10' to 25'	10' to 30'	Varied	X	X	X	3'+	X	X	X	X	Only disease and insect resistant cultivars are acceptable; possible use depends on branching height; often must be limbed up; valued for foliage; fruit, flowers and variations in size and form; numerous cultivars and landscape uses.
<u>Pinus densiflora</u> Japanese Red Pine	E	10' to 15'	10' to 15'	Rounded	X				X	X			Only cultivars are acceptable in this size group; dense evergreen form; slow growing; interesting small specimen trees.
<u>Pinus mugo</u> Mugho Pine	E	15' to 20'	20' to 30'	Varied	X				X	X			Variable in form, although normally low and broad-spreading; can be pruned yearly to keep dwarf; straight species seldom used; numerous cultivars, but most are smaller.
<u>Platycladus orientalis</u> Oriental Arborvitae	E	15' to 25'	10' to 12'	Pyramidal to Oval	X	X			X	X			Dense evergreen form; tolerates heat and adverse soils; needs wind protection.
<u>Prunus 'Hally Jolivette'</u> Hally Jolivette Cherry	D	10' to 15'	10' to 15'	Rounded					X	X			Densely branched large shrub; attractive pinkish-white flowers; wide-spreading and requires ample room; seldom used as a landscape requirement but one of the nicest cherries.

UNDERSTORY/ FLOWERING TREES AND LARGE SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	STREET TREE	PLANTING STRIP WIDTH	PROPERTY PERIMETER	PERIMETER PARKING AREA	INTERNAL PARKING AREA	SIGHT TRIANGLE	COMMENTS
<u>Prunus serrula</u> Oriental Cherry 'Kwanzan' 'Shirofugen'	D	15' to 20'	15' to 20'	Vase- shaped	X				X	X	X		Straight species is inferior and seldom used, but there are numerous outstanding cultivars; excellent flower display.
<u>Stewartia ovata</u> Mountain Stewartia	D	10' to 15'	10' to 15'	Oval		X			X	X			Open, shrubby form; recommended for private use; outstanding ornamental features.
<u>Taxus cuspidate</u> Japanese Yew	E	10' to 20'	10' to 30'	Varied	X	X			X	X			Only cultivars are acceptable for this group; responds well to pruning and can be kept much smaller than size listed; excellent dense hedges.
<u>Viburnum opulus</u> Cranberrybush Viburnum	D	8' to 10'	10' to 15'	Oval to Rounded	X	X			X	X	X		Attractive fruit and flower display; very common viburnum and one of the most popular; good screen for large areas.
<u>Viburnum plicatum var. tomentosum</u> Doublefile Viburnum	D	8' to 10'	9' to 12'	Rounded	X	X			X	X	X		Interesting horizontal branching, adaptable; outstanding flower display; excellent screen for large areas.
<u>Viburnum rhytidophyllum</u> Leatherleaf Viburnum	E	10' to 15'	10' to 15'	Rounded	X	X			X				Blends well with other evergreens; tolerates heavy shade; best used in large areas.
<u>Viburnum sieboldii</u> Siebold Viburnum	D	15' to 20'	10' to 15'	Rounded	X	X			X				Large, coarse shrub; requires ample moisture; best used in large areas.
<u>Viburnum trilobum</u> American Cranberry Bush	D	8' to 12'	8' to 12'	Rounded	X	X			X	X			Multi-stemmed shrub; transplants easily; needs well drained moist soil, good screen for large areas.

MEDIUM, SMALL AND LOW SHRUBS

MEDIUM, SMALL AND LOW SHRUBS													
BOTANICAL NAME Common Name 'Cultivar'	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>Abelia x grandiflora</u> Glossy Abelia	D	3' to 5'	3' to 5'	Rounded to Wide-spreading	X	X	Dense	X	X				Often killed back in severe winters unless protected; handsome pink flower display; blends well with broadleaf evergreens.
<u>Abeliophyllum distichum</u> Korean Abelialeaf	D	3' to 5'	3' to 4'	Rounded to Wide-spreading	X	X	Intermediate	X	X				Excellent early spring flower display; requires winter protection.
<u>Acanthopanax sieboldian</u> Fiveleaf Aralia	D	8' to 10'	8' to 10'	Rounded	X	X	Dense	X	X	X			Erect shrub with arching branches; extremely adaptable; numerous sharp-pointed thorns that are effective for stopping circulation.
<u>Aronia arbutifolia</u> Red Chokeberry	D	6' to 10'	3' to 5'	Oval to Columnar	X	X	Intermediate	X	X	X			Somewhat leggy, develops a rounded crown; requires a low facer plant to be effective for screening; must be planted closely together to achieve required density.
<u>Berberis julianae</u> Wintergreen Barberry	D	6' to 10'	6' to 10'	Columnar to Rounded	X	X	Dense	X	X	X			Semi-evergreen; numerous small thorns; excellent screen or barrier plant; hardiness is sometimes a problem.
<u>Berberis Koreana</u> Korean Barberry	D	4' to 6'	3' to 5'	Oval	X	X	Very Dense	X	X				Multi-stemmed form; suckers profusely and can become unkempt with age; size limits its use; excellent as a barrier.
<u>Berberis thunbergii</u> Japanese Barberry	D	4' to 5'	5' to 7'	Columnar to Rounded	X	X	Dense	X	X				This popular barberry withstands drought conditions; excellent screen or hedge; many smaller cultivars deserve use.
<u>Berberis thunbergii (Cultivar)</u> Japanese Barberry (Cultivar) 'Crimson Pygmy'	D	3' to 5'	4' to 7'	Rounded	X	X	Very Dense	X	X				Good hedge or barrier; numerous sharp, spiny thorns; 'Crimson Pygmy' seldom gets above 2.5' in height; very adaptable.
<u>Berberis x mentorensis</u> Mentor Barberry	D	5' to 7'	5' to 7'	Columnar	X	X	Dense	X	X	X			Semi-evergreen; withstands cold and hot conditions better than other barberries; outstanding hedge because of uniform growth rate; size limits use.

MEDIUM, SMALL AND LOW SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Berberis verruculosa</u> Warty Barberry	D	3' to 5'	3' to 6'	Rounded to Wide-spreading	X	X	Dense	X	X				Excellent low barrier or screen; lustrous, dark green foliage; possible winter damage if not protected.
<u>Buxus microphylla</u> Littleleaf Boxwood 'Compacta' var. <i>koreana</i> 'Tide Hill' 'Wintergreen'	E	3' to 4'	3' to 4'	Rounded	X		Very Dense	X	X				Handsome, compact evergreen; protect from drying winds and very low temperatures; excellent hedge or screening.
<u>Buxus sempervirens</u> Common Boxwood 'Northland' 'Vardar Valley' 'Welleri'	E	5' to 6'	6' to 8'	Rounded	X		Very Dense	X	X	X			Straight species can achieve a height of 30', but cultivars are normally much smaller in size; excellent medium-sized evergreen hedge.
<u>Calycanthus floridus</u> Carolina Allspice	D	6' to 9'	6' to 12'	Rounded	X	X	Dense	X	X	X			Very fragrant flowers with a sweet strawberry scent; adaptable; does well in shade.
<u>Chaenomeles speciosa</u> Flowering Quince	D	6' to 10'	6' to 10'	Rounded	X		Dense	X	X	X			Dense, twiggy form with spiny branches; used mainly because of flower display; good barrier plant.
<u>Chamecyparis obtuse</u> (Cultivar) Hinoki Falsecypress 'Compacta' 'Grachs' 'Nana Gracilis'	E	4' to 6'	4' to 6'	Rounded		X	Very Dense	X	X	X			Straight species can grow to 60' or more in height; only cultivars are acceptable; thick, dark green foliage.
<u>Chamecyparis pisifera</u> Sawara falsecypress	E	6' to 8'	6' to 7'	Varied		X	Very Dense	X	X	X			Only cultivars are acceptable for this size group; numerous outstanding cultivars; all prefer moist, humid conditions; large variety of forms, colors and textures.
<u>Clethra alnifolia</u> Summersweet Clethra	D	3' to 8'	4' to 6'	Oval to Rounded		X	Dense	X	X	X			Good shrub for wet areas; attractive, fragrant flowers appears late in summer; very clean plant.
<u>Cotoneaster apiculata</u> Cranberry Cotoneaster	D	2.5' to 3'	3' to 6'	Wide-spreading	X	X	Dense	X	X			X	Used as a low screen or as a tall ground cover; handsome fishbone branching pattern.
<u>Cotoneaster horizontalis</u> Rock Cotoneaster	D	2' to 3'	5' to 8'	Wide-spreading	X	X	Dense	X	X			X	Flat and wide spreading; excellent ground cover for a large area.

MEDIUM, SMALL AND LOW SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>Cotoneaster lucida</u> Hedge Cotoneaster	D	5' to 10'	6' to 10'	Rounded	X	X	Dense	X	X	X			Frequently used as a hedge; handsome dark green foliage; vigorous, durable shrub.
<u>Cotoneaster divaricata</u> Spreading Cotoneaster	D	5' to 6'	6' to 8'	Rounded	X	X	Dense	X	X	X			Outstanding ornamental shrub with many uses; excellent glossy, dark green foliage; blends well with other plants.
<u>Cotoneaster multiflora</u> Many flowered Cotoneaster	D	8' to 12'	12' to 15'	Rounded	X	X	Dense	X	X	X			Develops a fountain-like appearance; somewhat difficult to transplant; attractive white flowers; requires room to develop.
<u>Deutzia gracilis</u> Slender Deutzia	D	2' to 4'	3' to 4'	Rounded	X	X	Intermediate	X	X				Very adaptable; best of the Deutzias; good flower display; use as a low hedge or screen.
<u>Euonymus alata</u> Winged Euonymus	D	6' to 8'	6' to 8'	Rounded	X	X	Dense	X	X	X			Develops to a larger size than most people expect, but much more compact than straight species; excellent hedge.
<u>Forsythia suspense</u> Weeping Forsythia	D	8' to 10'	10' to 15'	Fountain-like	X	X	Dense	X		X			Branches can be trained along a wall, fence or other structure.
<u>Fothergilla gardenii</u> Dwarf Fothergilla	D	2' to 4'	3' to 4'	Rounded		X	Intermediate	X	X				Requires moist, acidic soils; handsome flowers and foliage; possible for a variety of uses.
<u>Fothergilla major</u> Larger Fothergilla	D	6' to 10'	5' to 8'	Pyramidal to Rounded		X	Dense	X	X	X			Requires acid soil and good drainage; attractive dark green foliage.
<u>Hamamelis vernalis</u> Vernal Witchhazel	D	6' to 10'	6' to 10'	Rounded	X	X	Dense	X	X	X			Neat, multi-stemmed form, smallest witchhazel; durable, adaptable plant; flowers early.
<u>Hypericum prolificum</u> Shrubby St. Johnswort	D	2' to 4'	2' to 4'	Rounded	X	X	Dense	X	X			X	Tolerates a variety of adverse conditions; attractive bright yellow flowers add color in summer.
<u>Ilex crenata</u> Japanese Holly	E	5' to 8'	5' to 8'	Rounded	X	X	Dense		X				Slow growth rate limits use as a large screen; possible winter damage depending on cultivar; best used as a low shrub or hedge.

MEDIUM, SMALL AND LOW SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Ilex crenata</u> (Cultivar) Japanese Holly 'Glory' 'Green Luster' 'Helleri' 'Hatzi'	E	2' to 4'	2' to 4'	Rounded to Spreading		X	Dense	X	X			X	Straight species is too large for this size group, numerous outstanding evergreen cultivars; possible need for winter protection depending on cultivar; excellent for a variety of uses.
<u>Ilex glabra</u> Inkberry	D	6' to 8'	8' to 10'	Oval to Rounded	X	X	Dense		X				Becomes somewhat open with age, but responds well to heavy pruning; slow growth rate; many uses.
<u>Ilex verticillata</u> Winterberry	D	6' to 9'	6' to 9'	Oval to Rounded	X	X	Dense	X	X	X			Excellent for wet areas; requires both male and female plant for fruit; prefers rich acid soils; slow growing.
<u>Ilex x meserve</u> Meserve Holly	E	6' to 10'	6' to 10'	Varied	X	X	Dense	X	X	X			Shrubby evergreen form; seldom any winter damage; one of the hardiest and most ornamental holly; can be kept smaller by pruning.
<u>Juniperus chinensis</u> var. <u>sargentii</u> Sargents Chinese Juniper	E	1.5 to 2.5'	7' to 9'	Wide-spreading	X	X	Very Dense		X			X	One of the most adaptable junipers; salt-tolerant and blight resistant; excellent evergreen ground cover.
<u>Juniperus horizontalis</u> (Cultivar) Creeping Juniper (Cultivar) 'Plumosa' 'Plumosa' 'Compacta' 'Youngstown'	E	2' to 2.5'	6' to 10'	Wide-spreading	X	X	Very Dense		X			X	Compact evergreen form; one of most popular junipers.
<u>Kalmia latifolia</u> Mountain-laurel	E	7' to 10'	7' to 10'	Rounded			Dense		X				Can grow to 30' in farther south; handsome broadleaf evergreen; requires rich, moist, acid soil, somewhat difficult to grow.
<u>Leucothoe fontanesiana</u> Dropping Leucothoe	E	3' to 6'	3' to 6'	Weeping		X	Intermediate		X				Fountain-like appearance; intolerant of drought or winds; good undergrowth plant; broadleaf evergreen.
<u>Lonicera fragrantissima</u> Fragrant Honeysuckle	D	6' to 10'	6' to 10'	Rounded	X		Dense	X	X	X			Tangled mass of branches; good hedge; very adaptable; fragrant white flowers.

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<u>BOTANICAL NAME</u> Common Name 'Cultivar'													
<u>Myrica pensylvanica</u> Northern Bayberry	D	5' to 12'	5' to 12'	Rounded	X	X	Dense	X	X	X			Semi-evergreen; extremely adaptable; combines well with broadleaf evergreens; many uses.
<u>Picea abies (Cultivar)</u> Norway Spruce (Cultivar) 'Nidiformis'	E	3' to 5'	4' to 5'	Rounded to Wide-spreading			Very Dense		X				Straight species is too large for this size group; handsome birds nest shaped evergreen.
<u>Pieris japonica</u> Japanese Pieris	E	9' to 12'	6' to 8'	Oval			Dense	X	X	X			Broadleaf evergreen; requires rich, moist, acid soil; difficult to grow; requires winter protection; highly recommended for use with other broadleaf evergreens; should only be used in protected areas.
<u>Pinus mugho (Cultivar)</u> Mugho Pine (Culti.) 'Compacta' var. <i>mugho</i> 'Slavinii'	E	4' to 7'	7' to 12'	Varied	X		Very Dense	X	X	X			Slow-growing; cultivars seldom become large enough to meet some landscape screening requirements; excellent low evergreen screens.
<u>Potentilla fruticosa</u> Bush Cinquefoil 'Farreni' 'Moonlight'	D	1' to 4'	2' to 4'	Rounded	X	X	Inter-mediate		X				Graceful, refined appearance; requires pruning every 2 to 3 years to keep from becoming straggly; handsome low shrub.
<u>Prunus laurocerasus (Cultivar)</u> Common Laurelcherry (Cultivar) 'Otto Luyken' 'Rotundifolia' 'Zabeliana'	E	3' to 6'	3' to 6'	Rounded to Wide-spreading			Dense		X				Broadleaf evergreen shrub; possible winter damage; handsome when used as a hedge; withstands pruning well.
<u>Rhamnus frangula Cult.</u> Glossy Buckthorn	D	8' to 12'	8' to 12'	Columnar to Oval			Dense	X	X	X			Popular as a tall, narrow hedge; straight species is unacceptable; intolerant of compacted soil.
<u>Rhododendron (Varieties)</u> Rhododendron (Var.)	E	Var	Var	Varied			Dense	X	X	X			Requires shade and protection from winter and wind damage; excellent plant where it will grow; blends well with other broadleaf evergreens.
<u>Rhodotypos scandens</u> Jetbread	D	3' to 6'	4' to 9'	Rounded	X	X	Inter-mediate	X	X	X			Tough, durable plant withstanding most adverse conditions; good selection where other plants have trouble growing.

MEDIUM, SMALL AND LOW SHRUBS	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>Rhus aromatica</u> Alpine Currant	D	3' to 6'	6' to 9'	Rounded	X		Dense	X	X				Size can vary; develops into a low, spreading mound; good plant for difficult sites.
<u>Ribes alpinum</u> Alpine Currant	D	3' to 6'	6' to 9'	Rounded	X		Dense	X	X	X			Responds well to pruning and makes a excellent hedge; tolerant of adverse conditions.
<u>Spiraea x bumalda</u> Bumalda Spirea 'Anthony Watereri'	D	2' to 3'	3' to 5'	Rounded to Wide-spreading	X		Dense		X				Often used as a facer plant for tall, leggy screens; tolerates all but wet soils.
<u>Spiraea nipponica</u> Nippon Spirea 'Snowmound'	D	3' to 6'	3' to 6'	Rounded	X		Dense	X	X				Uniform growth pattern; excellent as a low hedge; responds well to pruning.
<u>Stephanandria incise</u> Cutleaf Stephanandra 'Crispa'	D	4' to 7'	4' to 7'	Rounded	X	X	Dense	X	X				Cultivar 'Crispa' is most popular and tends to be smaller than the straight species; excellent low screen when mounded.
<u>Syrinya microphylla</u> Littleleaf Lilac	D	4' to 7'	4' to 7'	Rounded	X		Dense	X	X				Handsome, broad-spreading shrub; good plant for a low screen; can be pruned into a hedge.
<u>Taxus baccata</u> (Cultivar) English Yew (Cultivar) 'Repandens'	E	2' to 4'	3' to 5'	Rounded to Wide-spreading	X	X	Very Dense		X				Straight species exhibits frequent winter damage; 'Repandens' is a dwarf cultivar and is hardy.
<u>Taxus x meda</u> Anglojap Yew	E	5' to 12'	Var .	Varied	X	X	Very Dense	X	X	X			Can eventually grow to 10' tall if not pruned; responds extremely well to pruning and can be kept as low as 2' to 3' tall indefinitely; makes an excellent hedge.
<u>Viburnum dentatum</u> Arrowwood Viburnum	D	6' to 8'	6' to 12'	Rounded	X	X	Dense	X	X	X			Most durable viburnum; not as attractive as most viburnums; good for a hedge; suckers freely and can become unkempt.
<u>Viburnum x burkwoodii</u> Burkwood Viburnum	D	8' to 10'	6' to 8'	Oval to Rounded	X	X	Inter-mediate	X	X	X			Blends well with broadleaf evergreens; somewhat unkempt in appearance and usually requires pruning; very fragrant flowers.

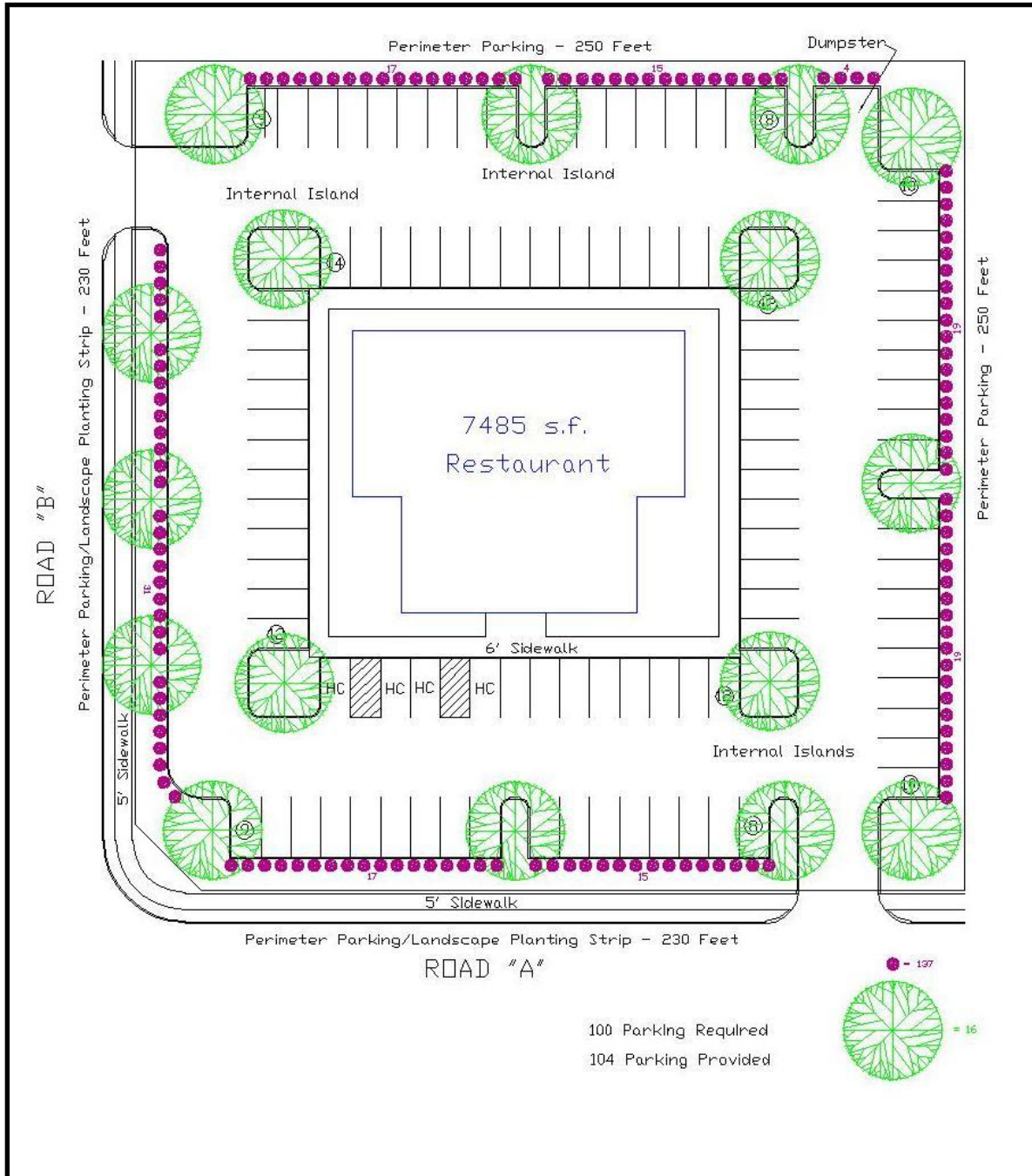
GROUND COVER

GROUND COVER													
<u>BOTANICAL NAME</u> Common Name 'Cultivar'	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>Aiuga genevensis</u> Geneva Bugle	E	4" to 12"	Var .	Wide-spreading	X	X	Dense	X	X	X	X	X	Tolerates sun or shade; evergreen; easily crushed if walked on.
<u>Aiuga reptans</u> Carpet Bugle	E	4" to 12"	Var .	Wide-spreading	X	X	Dense				X	X	Very adaptable; numerous outstanding cultivars; excellent evergreen ground cover.
<u>Arctostaphylos uva-ursi</u> Bearberry	D	6" to 12"	2' to 4'	Wide-spreading	X	X	Dense				X	X	Thick, broad, evergreen mat; does best in poor sandy soils; excellent ground cover for adverse situations.
<u>Calluna vulgaris</u> Scotch Heather	D	4" to 24"	2' to 3'	Wide-spreading		X	Dense				X	X	Requires rich, acidic soils; very exacting cultural requirements; only lower growing cultivars are acceptable for use in sight triangle; one of the most beautiful ground covers.
<u>Cornilla varia</u> Scotch Heather	D	18" to 24"	Var .	Wide-spreading	X	X	Dense					X	Excellent for steep, sunny slopes; spreads rapidly; deciduous and becomes unsightly in winter.
<u>Cotoneaster adpressa</u> Creeping Cotoneaster 'Praecox'	D	12" to 18"	4' to 6'	Wide-spreading	X	X	Intermediate				X	X	Handsome horizontal branching; roots where branches touch the soil.
<u>Cotoneaster dammeri</u> Bearberry cotoneaster 'Skogholmen'	D	12" to 18"	6' to 8'	Wide-spreading	X		Intermediate				X	X	Branches creep along the ground; vigorous and fast growing; excellent ground cover.
<u>Erica carnea</u> Spring Heath 'Fortunei'	D	6" to 18"	2' to 3'	Wide-spreading	X		Dense				X	X	Seldom grows over 12" tall; fine textured evergreen ground cover; similar to C. vulgaris.
<u>Euonymus fortune</u> Wintercreeper Euonymus Var. coloratus 'Emerald Gaiety' 'Emerald and Gold'	D	4" to 6'	Var .	Wide-spreading Vine	X		Intermediate				X	X	Handsome evergreen ground cover or climbing vine; tolerates all but wet conditions; numerous outstanding cultivars.
<u>Forstythia viridissima</u> (Cultivar) Bronze Forsythia (Cultivar) 'Bronxensis'	D	12" to 18"	2' to 3'	Rounded to Wide-spreading	X	X	Intermediate				X	X	Straight species is too large for use; 'Bronxensis' is a dwarf cultivar; excellent foliage and early spring flowers.
<u>Hedra Helix</u> English Ivy	E	6" to 8"	Var .	Wide-spreading Vine	X	X	Intermediate				X	X	Can be an evergreen vine or ground cover; tolerates heavy shade; excellent plant for a variety of uses.

GROUND COVER													
<u>BOTANICAL NAME</u> Common Name 'Cultivar'	PLANT TYPE	HEIGHT	SPREAD	FORM	URBAN TOLERANT	DISEASE AND INSECT TOLERANT	DENSITY	PROPERTY PERIMETER	PERIMETER PARKING AREA	Service Area Screening	SIGHT TRIANGLE	GROUND COVER	COMMENTS
<u>Hypericum calycinum</u> St. Johnswort	D	12" to 18"	18" to 24"	Rounded to Wide-spreading	X	X	Intermediate				X	X	Experience frequent winter damage; semi-evergreen depending on the weather.
<u>Juniperus conferta</u> Shore Juniper 'Blue Pacific' 'Emerald Sea'	E	12" to 18"	6' to 9'	Wide-spreading	X	X	Very Dense				X	X	Possible winter damage; very adaptable; one of the most handsome juniper ground covers.
<u>Juniperus horizontalis</u> Creeping Juniper 'Bar Harbour' 'Blue Chip' 'Blue Mat' 'Douglasi' 'Procumens' 'Wiltoni'	E	12" to 24"	4' to 8'	Wide-spreading	X	X	Very Dense				X	X	Only lowest cultivars are acceptable for use in sight triangle; very adaptable; excellent for any dry, sunny area; numerous outstanding cultivars.
<u>Juniperus sabina</u> (Cultivar) Savin Juniper (Cultivar) 'Arcadia' 'Broadmoor' var. tamariscifolia	E	12" to 18"	3' to 5'	Wide-spreading	X	X	Very Dense				X	X	Straight species is of little value, but numerous outstanding cultivars; withstands adverse conditions.
<u>Liriope muscari</u> Liriope	E	12" to 18"	Var .	Wide-spreading	X	X	Intermediate				X	X	Tolerates almost any type of adverse condition; attractive, fine-textured grass-like appearance.
<u>Pachysandra terminalis</u> Japanese Spurge	E	0" to 12"	Var .	Wide-spreading	X	X	Intermediate				X	X	Semi-evergreen ground cover excellent for heavily shaded areas; avoid exposed locations.
<u>Parthenocissus tricuspidata</u> Boston Ivy	E	4" to 6"	2.5' to 3.5'	Wide-spreading Vine	X	X	Intermediate				X	X	Fast growing evergreen vine; likes partial shade and will cling to wall and fences.
<u>Rosa wichuriana</u> Memorial Rose	D	12" to 18"	Var .	Wide-spreading	X	X	Intermediate				X	X	Semi-evergreen ground cover or vine; excellent for preventing soil erosion.
<u>Spiraea japonica var. alpine</u>	D	8" to 12"	2' to 3'	Rounded to Wide-spreading	X		Intermediate				X	X	Very fast growing delicate, fine-textured plant; handsome pink flowers.
<u>Thymus serpyllum</u> Mother-of-thyme	D	1" to 3"	Var .	Wide-spreading	X	X	Intermediate				X	X	Often dies back in winter and is used as a perennial.
<u>Vinca minor</u> Periwinkle	D	3" to 6"	Var .	Wide-spreading Vine	X		Intermediate				X	X	Excellent evergreen ground cover; handsome lilac blue flowers.
<u>Xanthoxiza simplicissima</u> Yellowroot	D	12" to 24"	Var .	Wide-spreading		X	Intermediate					X	Suckers freely from roots; good ground cover for moist areas.

EXAMPLE LAYOUTS

LAYOUT #1



LAYOUT #2

