ARTICLE 7
LANDSCAPING AND BUFFERING STANDARDS

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7.1. GENERAL STANDARDS FOR LANDSCAPING AND BUFFERING.

7.1.1. PURPOSE.

The purpose of these landscaping, screening, and buffer requirements is to provide standards that will protect the health, safety and general welfare of the public, enhance property values, improve the appearance of the community, and preserve natural resources, trees, and native plants. Planting yard regulations are established herein to minimize potential conflicts between abutting developments, enhance the appearance of buildings and parking lots, and create a unified and attractive streetscape. These requirements will be applied to all new development, redevelopment or building expansion projects including streetscaping of rights-of-ways. These minimum requirements will:

- Reduce soil erosion and increase infiltration in permeable land areas essential to storm water management and aquifer recharge;
- Mitigate adverse grade changes between adjacent properties;
- Enhance the City's streetscapes by separating the pedestrian from motor vehicles; abating glare and moderating temperatures of impervious areas; filtering air of fumes and dust; providing shade; attenuating noise; and reducing the visual impact of large expanses of pavement;
- Address the design of entryways into the City to express the community's values;
- Promote innovative and cost-conscious approaches to the design, installation, and maintenance of landscaping while encouraging water and energy conservation;
- Screen unsightly equipment or materials from the view of persons on public streets or adjoining properties and buffering from uncomplimentary land uses;
- Maintain and increase property values by requiring site appropriate landscaping to be incorporated into development that is designed and installed by a qualified landscape professional;
- Improve the quality of the built and natural environments through air quality enhancements; energy conservation; reductions in the amount and rate of stormwater runoff and erosion; stormwater runoff quality improvements; and increase in the capacity for groundwater recharge.

7.1.2. GENERAL STANDARDS.

A. Retention of Existing Vegetation. Existing trees, shrubs and ground cover shall be retained and incorporated into the landscape plan to the extent possible.

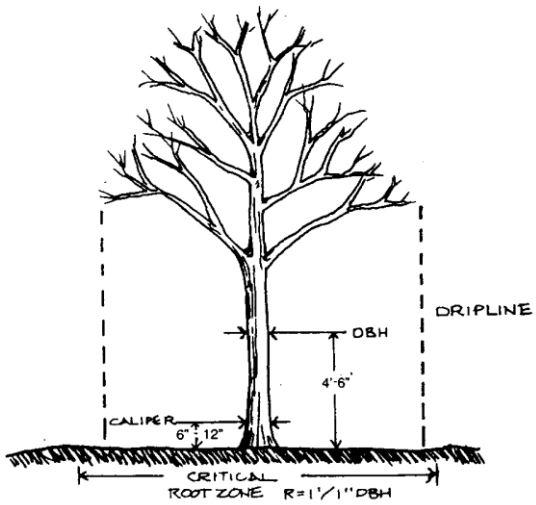
B. Qualified Designer and Installer Required. Landscape materials shall be installed in conformance with the approved landscape plan prepared by a professional designer in accordance with § 7.2.

7.1.3. INTERPRETATION OF LANDSCAPING TERMS.

Where necessary to interpret the precise meaning of technical landscaping terms used in this Section, reference shall be made to American Nursery and Landscape Association ("ANLA")(formerly the American Association of Nurserymen), *The American Standard For Nursery Stock*, (1996), which document is hereby incorporated by reference.

A. Definitions. In addition to the definitions set forth in Appendix A to this Ordinance, the following definitions shall apply to the regulation and control of landscaping within this Section.

Figure 7.1-1Tree Descriptive Terms



ARBORIST: A qualified professional who has studied the science or art of cultivating trees especially for ornamental use.

CALIPER: A standard trunk diameter measurement for trees taken six inches above ground for up to and including four-inch caliper size and twelve inches above ground for larger sizes.

CRITICAL ROOT ZONE (CRZ): A circular region measured outward from a tree trunk representing the essential area of the roots that must be maintained in order for the tree's survival. The critical root zone is one foot of radial distance for every inch of tree DBH with a minimum of eight feet.

CROWN: The upper mass or head of a tree, shrub, or vine, including branches with foliage. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York: Van Nostrand Reinhold & Co., 1988), at 790).

DBH: Diameter-at-breast-height is the tree trunk diameter measured in inches at a height of 4.5 feet above ground level.

DECIDUOUS: Plants that lose their leaves annually.

DECIDUOUS TREE: A tree which sheds or loses foliage at the end of the growing season. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York: Van Nostrand Reinhold & Co., 1988), at 790).

DRIP LINE: A vertical line from a tree canopy or shrub branch extending from the outermost edge to the ground.

EVERGREEN: Plants that retain their foliage throughout the year.

EVERGREEN SCREEN: A dense vegetative screen that grows to a minimum of 8 feet in height at maturity and retains foliage year round used for purposes of visual mitigation between zoning districts and/or uses.

EVERGREEN TREE: A tree which holds green leaves, either broadleaf or needle-shaped, throughout the year. (Source: G. Hightshoe, *Native Trees, Shrubs, and Vines for Urban and Rural America* (New York; Van Nostrand Reinhold & Co., 1988) at 791).

GABION: A wire basket containing primarily stones deposited to provide protection against erosion.

GROUND COVER: A prostrate plant growing less than 2 feet in height at maturity that is used for: a) ornamental purposes, b) alternatives to grasses, and c) erosion control on slopes.

HORTICULTURIST: A qualified professional who has studied the science or art of cultivating plants especially for ornamental use.

LANDSCAPE ARCHITECT: A landscape architect licensed pursuant to the North Carolina General Statutes.

LANDSCAPE CONTRACTOR: A landscape contractor, or nurseryman, certified pursuant to the NC Landscape Contractors Registration Board.

LANDSCAPING: The process or product of site development including grading, installation of plant materials and seeding of turf or ground cover.

NON-LIVING MATERIALS: Landscaping materials used to complement plants such as river rock, stone, bark, and similar materials.

NUISANCE: Any tree or shrub or part thereof that grows upon private or public property which 1) interferes with the use of any public area; 2) is infected with an infectious plant disease or insects; 3) is invasive and damaging to other plants; or 4) which endangers the life, health, or safety of persons or property.

PLANTING YARDS: The required installation of landscaping and/or screening material between zoning districts and certain individual uses. The four Planting Yards are as follows:

- **Perimeter Buffer Yard:** A planting yard comprised of a strip of land containing landscaping and/or screening materials, having a varying minimum width, located along side and rear property lines between zoning districts and/or between certain individual uses, as specified in this Article.
- **Building Yard:** A planting yard comprised of a strip of land containing landscaping materials located along the front and/or sides of a building and having a varying minimum width, as specified in this Article.
- **Parking Lot Yard:** A planting yard comprised of a strip, or strips of land containing landscaping materials located around and within a parking lot and having a varying width, as specified in this Article.
- **Street Yard:** A planting yard comprised of a strip of land containing landscaping materials located along and parallel to a public street, or streets and having a varying minimum width, as specified in this Article.

SCREEN: Vegetation, fence, wall, berm or a combination of any or all of these which partially or completely blocks the view of and provides spatial separation of a portion or all of a site from an adjacent property or right-of-way.

SHRUB, LARGE: An upright plant growing to a mature height of more than 8 feet for use as natural ornamentation or screening.

SHRUB, MEDIUM: An upright plant growing to a mature height of 4 to 8 feet.

SHRUB, SMALL: An upright plant growing to a mature height of less than 4 feet.

SIGNIFICANT STANDS OF TREES OR SHRUBS: A massing or group of trees or shrubs which are (1) in good condition and are established on the site, or (2) which may be among the earliest grown species of the area, or (3) which have been identified by the community with a particular area.

STREET TREE: A tree planted along a public street or roadway behind or within the right-of-way.

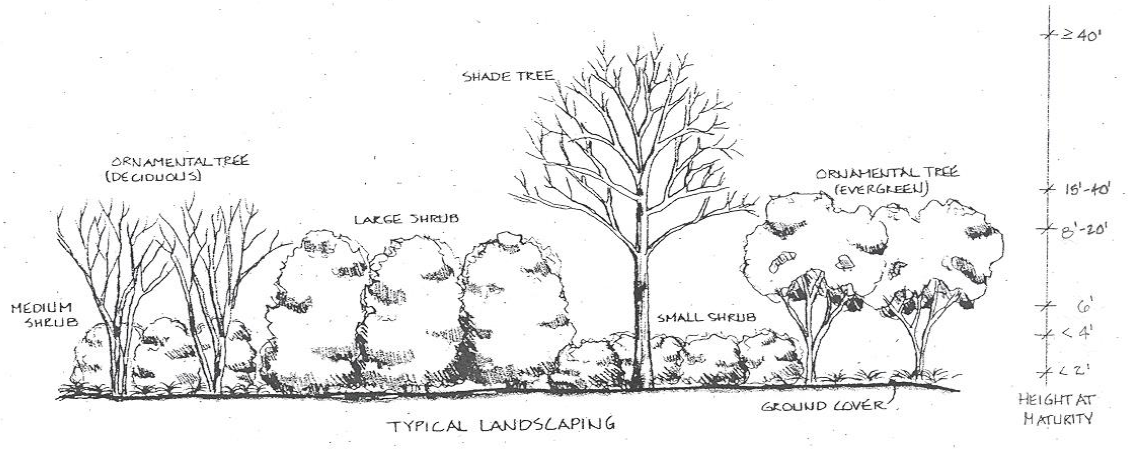
TREE, ORNAMENTAL: A small to medium tree, growing to a mature height of 15 to 40 feet and characterized by specific aesthetic qualities, such as colorful flowering, interesting bark or brilliant fall foliage.

TREE, SHADE: A large tree growing to a height of 40 feet or more at maturity, usually deciduous, and characterized by its ability to provide canopy cover shade.

VINES: A woody plant that spreads as it grows over the ground, walls or trellises.

XERISCAPE: a landscaping method that employs drought-resistant plants in an effort to conserve resources, especially water.

FIGURE 7.1.-2 LANDSCAPE PLANTS TYPICAL SIZES



7.2. LANDSCAPE PLAN.

7.2.1. PLAN REQUIRED.

Landscape plans shall accompany any application for site plan approval. Landscape plans shall include such criteria that are required by the Department of Planning & Zoning to determine compliance with this code. These criteria shall include, but are not limited to:

- Show all buildings, walkways, vehicular use areas, utility areas, retention/detention areas, sight triangles, and miscellaneous site structures (Minimum scale of 1" = 40').
- Show current zoning and land use of all adjacent property.
- Planting areas drawn to scale with a list of the botanical and common names, and size of all plants designated for each area.
- Location, name, and size of all existing trees, shrubs, groundcover, and other plant materials that are to be incorporated as a part of the landscape plan.
- Location and width of landscaped buffer strips, including height of berms.
- All landscape plans shall include a summary tabulation of all landscape requirements.
- Show all existing and proposed paved surfaces, curbs, steps, and grade changes.
- Location and sizes of any irrigation facilities used to maintain planting areas.
- Location of any overhead powerlines or easements on the property.

7.2.2. PERMITS REQUIRED.

All required landscaping materials shall be in place prior to the time of issuance of a final Certificate of Compliance (as required in Article 3).

A. Performance Guarantee. Subject to the conditions as specified in § 3.2.5.2.6 of this Ordinance, a temporary Certificate of Compliance may be issued for occupancy of a structure or initiation of a use prior to the completion of installation of all required planting yards.

1. If water is rationed or watering prohibited, the owner may request a deferment for the landscaping installation and extension of the temporary Certificate of Compliance equal in time to the length of the City imposed prohibition. In the event a deferment is granted, a performance guarantee shall be submitted to the Administrator and include the following information:

a. A specific description of the factor(s) hindering completion or installation of the required improvement(s); and

b. A written estimate from a licensed contractor of the cost of materials and labor for completing the work.

The performance guarantee shall be in the amount of 125% of the total cost provided in the estimate and may be submitted in the form of a certified check, cashier's check, bond, or letter of credit. The duration of the performance guarantee shall be one year unless the developer determines that the scope of work necessitates a longer duration. If the improvements are not completed to specifications, and the performance guarantee is likely to expire prior to competition of the required improvements, the performance guarantee shall be extended or a new guarantee issued in an amount equal to 125% of the estimated cost of incomplete improvements for the duration necessary to complete the required improvements,. The performance guarantee shall be released after the improvements, as guaranteed, are inspected by the Administrator and determined to be in full compliance with the approved plan

7.2.3. VIOLATIONS.

Failure to maintain required landscaping or to adhere to an approved landscaping plan shall constitute a zoning violation, subject to any and all remedies set forth in § 1.6 of this Ordinance.

7.3. PLANTING YARDS.

7.3.1. PURPOSE.
Planting yards are intended to aesthetically enhance and separate different land uses and zoning districts from each other, as well as to beautify individual sites, the roadside or streetscape, and are intended to eliminate or minimize potential nuisances such as dirt, litter, glare of lights, and unsightly buildings or parking areas. Planting yards shall include the following:

- Perimeter Buffer Yards (see § 7.4)
- Building Yards (see § 7.5)
- Parking Lot Yards (see § 7.6)
- Street Yards (see § 7.7)

7.3.2 APPLICABILITY.
Planting yards shall be required for all uses except:

- single-family detached homes;
- duplexes and triplexes;
- agricultural uses as listed in Table 4.6-1 of this Ordinance;
- developments in the CC District (except that the Parking Lot yard requirements of § 7.6 shall apply);
- sites containing unoccupied public utility equipment that are less than 1,000 square feet in area, except that all electrical substations shall install a minimum Type B buffer per § 7.4.

A. Additions, Expansions and Change in Use. If there is a categorical change of use resulting in an increase of greater than 40% in required off-street parking and/or loading area, or an expansion to the heated square footage of an existing structure greater than twenty percent (20%), the lot shall fully comply with all landscaping requirements of Article 7.)If there is a categorical change of use resulting in an increase less than or equal to 40% in off-street parking and loading area, or an expansion to the heated square footage of an existing structure less than or equal to 20%, the lot shall fully comply with all landscaping requirements of Article 7, except that the provisions of Section 7.6.2.B. shall not apply.

B. Expansions to the parking and loading areas shall comply with the following:

1. An increase of the total area equal to or less than 40% of the existing parking or loading area square footage shall be required to comply with)the landscaping requirements of Article 7, except that buffer yard widths shall be reserved, but plantings are not required, and the provisions of Section 7.6.2.B shall not apply.
2. An increase of the total area greater than 40% shall be required to comply with all applicable requirements of Article 7.

C. Different uses require different planting yards. Minimum dimensions shall apply and be measured horizontally. Plant quantities, in most cases, shall be based upon a point system.

D. For the purpose of this section, building setbacks (as listed in § 4.7-1) shall supersede planting yard requirements.

E. Buffer yard areas shall be counted towards required building setbacks.

F. Landscaping as required within a planting yard shall be counted for only that planting yard and shall not be used in calculating the minimum quantity for any other planting yard.

G. The point system, as partially illustrated in Table 7.3-1, is established to ensure that a minimum level of landscaping is achieved during development. It sets forth the points attributable to the five different plant types that are required in the three planting yards subject to the point system. Table 7.3-1 is to be used in conjunction with the other tables in this Article to determine total landscaping required. This table is applicable to planting yards, as well as in determining credits for tree preservation.

H. When calculating points, or quantities of plants, fractions shall be rounded upward to the higher whole number for decimals of .5 and higher. Decimals below .5 shall be rounded downward to the lower whole number.

TABLE 7.3-1: POINTS FOR INDIVIDUAL PLANT TYPES

Type of Plant	Points
Shade Tree	12
Ornamental Tree	6
Large Shrub	3
Medium Shrub	2
Small Shrub	1

Total landscaping required for buffer yards, building yards and street yards is determined by multiplying the length of the respective planting yard by the minimum required points per linear foot shown in the landscaping requirements tables for each of the three planting yards subject to the point system. The resultant total point figure determines the total amount of landscaping required for the respective planting yard. In some cases, the tables which set forth the planting yard landscaping requirements include a minimum required number of individual plant types, such as shade trees, or large shrubs. In those instances, the minimum number of individual plants types required shall be considered included as part of the total landscaping required.

7.3.3 RELIEF FROM PLANTING REQUIREMENTS.

A. In the event the unusual topography, location of existing buildings, or location or size of the parcel to be developed would make strict adherence to the requirements of this Section serve no meaningful purpose or would make it physically impossible to install and maintain the required landscaping, the Administrator may alter the requirements of this Section, provided the spirit and intent of the Section are maintained. Such an alteration may occur only at the request of the developer, who shall submit a plat to the Administrator showing existing site features that would screen the proposed use and any additional screen materials the developer may propose to install.

B. The vacancy or non-use of an adjoining parcel shall not constitute grounds for providing relief to the landscaping requirements contained in this Ordinance. Neither shall the desire of an owner to make a more intensive use or greater economic use of the property be grounds for reducing the landscaping requirements.

7.4. PERIMETER BUFFER YARDS.

7.4.1. PURPOSE. The purpose of perimeter buffer yards is to:

- provide a transitional buffer between uses that may differ in development intensity and density; or
- provide a minimum buffer between uses of similar intensity and density.

These landscaped planting yards are intended to ensure that a natural area of appropriate size and density of plantings is planted or preserved between zoning districts and/or uses. Perimeter buffer yards shall be of different types, based upon the zoning classifications of adjacent parcels along which the perimeter buffer yard is to be located. The width of the perimeter buffer yard and the density of plantings shall increase as the difference between adjacent land uses increases. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective property line, except where perimeter buffer yards are permitted to straddle property lines, as set forth in § 7.4.4.7. Where perimeter buffer yards turn at property corners, the length measurements determining plant quantities shall not be required to overlap.

7.4.2. YARD TYPES.
There shall be six (6) different categories used to determine Perimeter buffer yard requirements. The categories shall be based upon the specific zoning designation of the property.

A. Table 7.4-1 identifies the perimeter buffer yard type required for a given development, based on the relationship between the adjacent zoning designations. Table 7.4-2 contains the required plantings and dimensions of the respective perimeter buffer yard types. The width of the perimeter buffer yard and the density of plantings increase as the difference in the nature and intensity of development in the respective adjacent zoning designations increases.

7.4.3 EXEMPTIONS
In addition to the exemptions as set forth in § 7.3.2, certain uses are exempt from the buffer requirements as described in this section. Exemptions include, but are not limited to the following:

- Lot or parcels on which the uses or buildings demonstrate compatible design elements and are linked to adjacent lots or buildings by a common system of sidewalks or other pedestrian walkways across property lines; and
- Lots or parcels separated by a public street right-of-way greater than 30 feet in width;
- Lots or parcels separated by a railroad right-of-way.

7.4.4. STANDARDS FOR PERIMETER BUFFER YARD DEVELOPMENT.

A. Each perimeter buffer yard can fluctuate in both width and the amount of required plant materials based on the "Unit Multiplier". The minimum widths, plants required, and structure requirements are provided in Tables 7.4-2 through 7.4-6.

1. When a computation using the "Unit Multiplier" results in a fraction of five tenths (0.5) or greater, the planting requirements shall be rounded up to the next whole number.

B. Plant Substitutions. One (1) ornamental tree may be substituted for four (4) shrubs. If more than 8 feet is available, one (1) shade tree may be substituted for four (4) shrubs.

C. Prohibited Uses. The construction of any building or the placement of any mechanical equipment within the perimeter buffer yard is not permitted except for equipment necessary for the provision of public utilities. Signs may be placed within the buffer yard consistent with the Sign Regulations of this Ordinance. Active recreational uses, such as play fields, swimming pools, racquetball and tennis courts or other active, structured recreational uses, or circulation drives and parking lots, shall not be permitted in the perimeter buffer yard.

D. Permitted Uses. The following other uses may be permitted in a perimeter buffer yard provided that none of the required plant material is eliminated, the intended screening is accomplished, the total width of the buffer yard is maintained, and all other requirements of this Section are met:

- passive recreation;
- sculpture, outdoor furniture, picnic areas; pedestrian, bike or equestrian trails; golf courses,
- storm water retention basins; parks and open space

E. Reduction in Required Perimeter Buffer Yard Permitted. Where a dedicated perimeter buffer yard exists on an abutting property, a reduction or elimination in a perimeter buffer yard for a property to be developed may be allowed subject to the following

- the adjoining property owners have provided a written agreement restricting the use of the dedicated perimeter buffer yard to uses provided for in this Section
- maintenance of the existing perimeter buffer yard consistent with the requirements of this Section, the Administrator may approve a reduction in the required perimeter buffer yard for the property to be developed
- the "net" perimeter buffer yard satisfies the minimum perimeter buffer yard requirements of this Section. The net buffer shall include the cumulative total for both required buffers.

F. Existing Vegetation. Existing healthy vegetation may be counted toward required landscaping. In order to do so, the landscape plan shall indicate the type, number and size of existing plants which are sufficient to comply with the respective perimeter buffer yard. It shall not be necessary to indicate the total inventory of existing plants. Only plants required to meet the provisions of this Ordinance shall be required to be listed.

G. Designation of Perimeter Buffer Yard as Landscaped Area. Perimeter buffer yards shall be designated as landscaped areas on the application for development approval and as landscape easements when shown on a subdivision plat. The perimeter buffer yard shall be recorded with the title of the property as a landscape perimeter buffer yard easement.

H. Perimeter Buffer Yard On Property Line (Residential Subdivisions). When platting abutting lots, the applicant may dedicate a perimeter buffer yard that straddles the property line, provided the cumulative buffer width is maintained for both yards.

I. Visual Separation. Where complete visual separation is required, that may be accomplished through the use of landscaping which provides year-round opaque screening, earth berms, masonry walls, or fences constructed of vinyl, pressure-treated wood or other wood resistant to deterioration due to exposure to weather, moisture and insects, or a combination of two or more of these techniques

Screening must provide visual separation to a minimum of six (6) feet in height. Landscaping provided to meet the requirements of this Section must provide complete visual separation within three (3) years of planting.

J. Exceptions.

1. In instances where a parking lot is directly adjacent to a property line, the parking lot yard shall be used in place of the required perimeter buffer yard (unless abutting residential uses).

2. Where non-residential uses are a part of a mixed-use development, perimeter buffer yards are not required between lesser intense uses.

3. Perimeter buffer yards are not required for internal property boundaries of a planned community with mixed-uses, but shall be required around the perimeter of the project.

7.4.5. ALTERNATIVE BUFFER YARD.

In the event of unusual topography or elevation of a development site, soil or other sub-surface condition on the site, or the presence of existing vegetation, the Zoning Administrator may alter the perimeter buffer yard requirements as long as the existing features of the development site comply with the spirit and intent of Section 7.4. Such an alteration may occur only at the request of the property owner, who shall submit a plan showing existing site features that would buffer the proposed use and any additional buffer yard materials the property owner will plant or construct to buffer the proposed use. The Plan Reviewer shall not alter the requirements of the buffer yard unless the developer demonstrates that existing features and any additional buffer yard materials will buffer the proposed use as effectively as the required buffer yard. Future development or changes to the site shall be reviewed on a case by case basis to ensure the spirit and intent of this Section 7.4 is maintained. If the Zoning Administrator determines the spirit and intent

of the ordinance is no longer met, the site shall be required to meet the perimeter buffer yard requirements of Section 7.4.

7.4.6. BERM STANDARDS.

A. Berms shall be permitted as a means of meeting the required perimeter buffer yard standards providing that they:

1. Are designed and constructed with an undulating appearance which mimics as much as is practicable a natural topographical feature of the site.

2. Are fully installed, planted and stabilized prior to certificate of zoning compliance.

3. Are not permitted along public streets as a means of meeting the buffering requirements of this section.

4. Shall meet the following specifications:

a. Have a height of 3 feet, a minimum crown width of 8 feet, and a side slope of no greater than 3 to 1 (3:1); or

b. Have a height of 6 feet, a minimum crown width of 8 feet, and a side slope of no greater than 4 to 1 (4:1)

5. Are substantially planted and covered with live vegetation. No berm shall consist entirely of turf grass, mulch, or similar material.

6. Are free of structures, including fences, unless approved by the City as part of the landscaping requirements for a development site.

7. Are not used for the display of vehicles or other merchandise.

8. Are designed to prevent standing water or to impede the flow of stormwater from adjacent properties.

9. Are held and maintained by a legally constituted homeowners association if located in a residential development and shall not be used as a part of any outdoor living space by adjacent property owners within the development.

TABLE 7.4-1 PERIMETER BUFFER YARD CHART

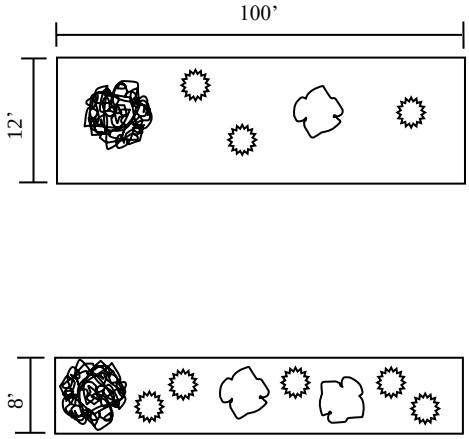
Perimeter Buffer Yard Types for Adjacent Zoning Districts							
	Adjacent Zoning District						
	Zoning District	**AG RE RL**	**RM-1 RM-2**	**RV RC**	**O-I B-1 C-1**	**C-2 CD PID PUD TND**	**I-1 I-2**
Project Site Zoning District	**AG RE RL**	N/A	N/A	N/A	N/A *	N/A*	N/A*
	RM-1 RM-2	N/A	N/A	N/A	N/A* (1)	N/A* (2)	N/A* (3)
	RV RC	1	1	1	2	3	4
	O-I B-1 C-1	2	2	2	1	1	3
	C-2 CD PID PUD TND	3	3	3	2	1	2
	I-1 I-2	4	4	4	3	2	N/A

***New single-family subdivisions shall provide the required perimeter buffer yard, if they abut existing non-residential developments which were constructed before the adoption of this Ordinance and lack the required perimeter buffer yard. If an adjacent non-residential development includes the required perimeter buffer yard, none shall be required of the residential subdivision.**

TABLE 7.4-2

PERIMETER BUFFER YARD
TYPE 1

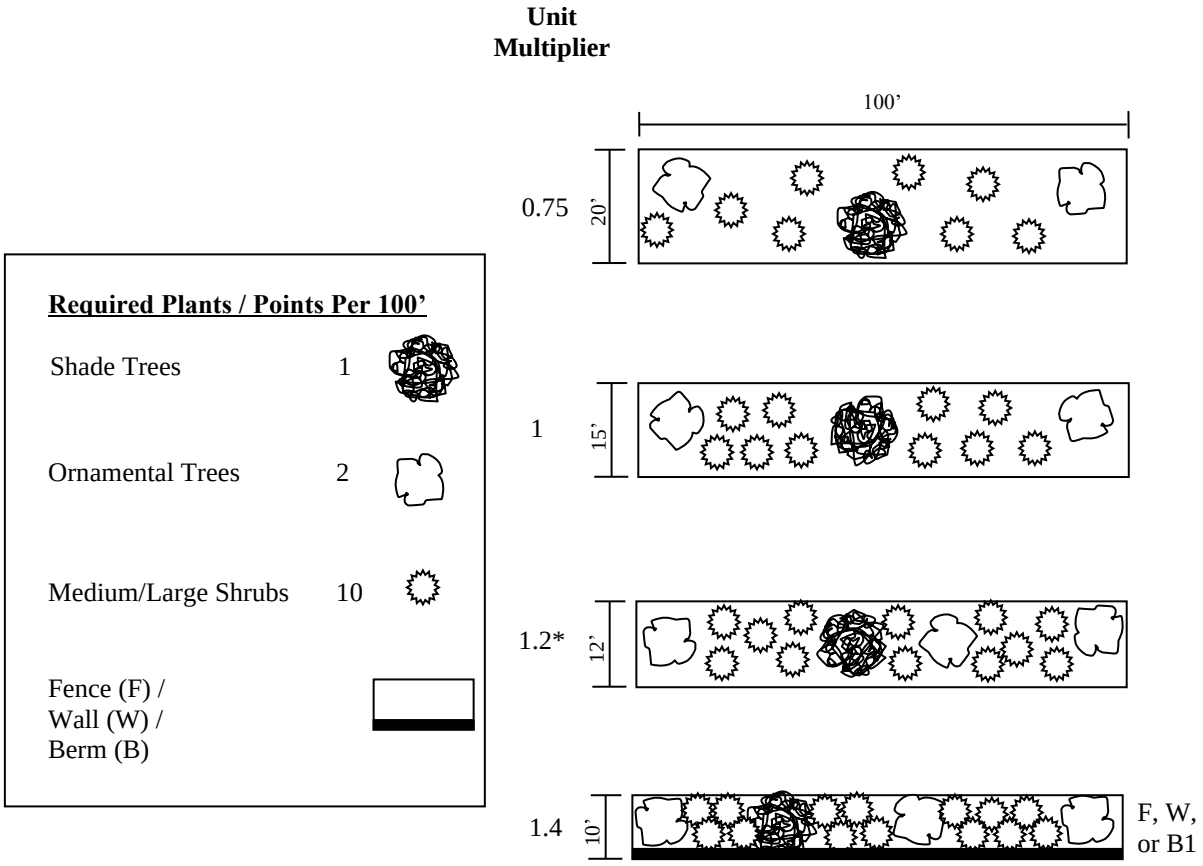
Required Plants / Points Per 100'		**Unit Multiplier**
Shade Trees	1	0.6
Ornamental Trees	2	
Medium/Large Shrubs	5	
Fence (F) / Wall (W) / Berm (B)		1



* Fence or wall required adjacent to residential use

TABLE 7.4-3

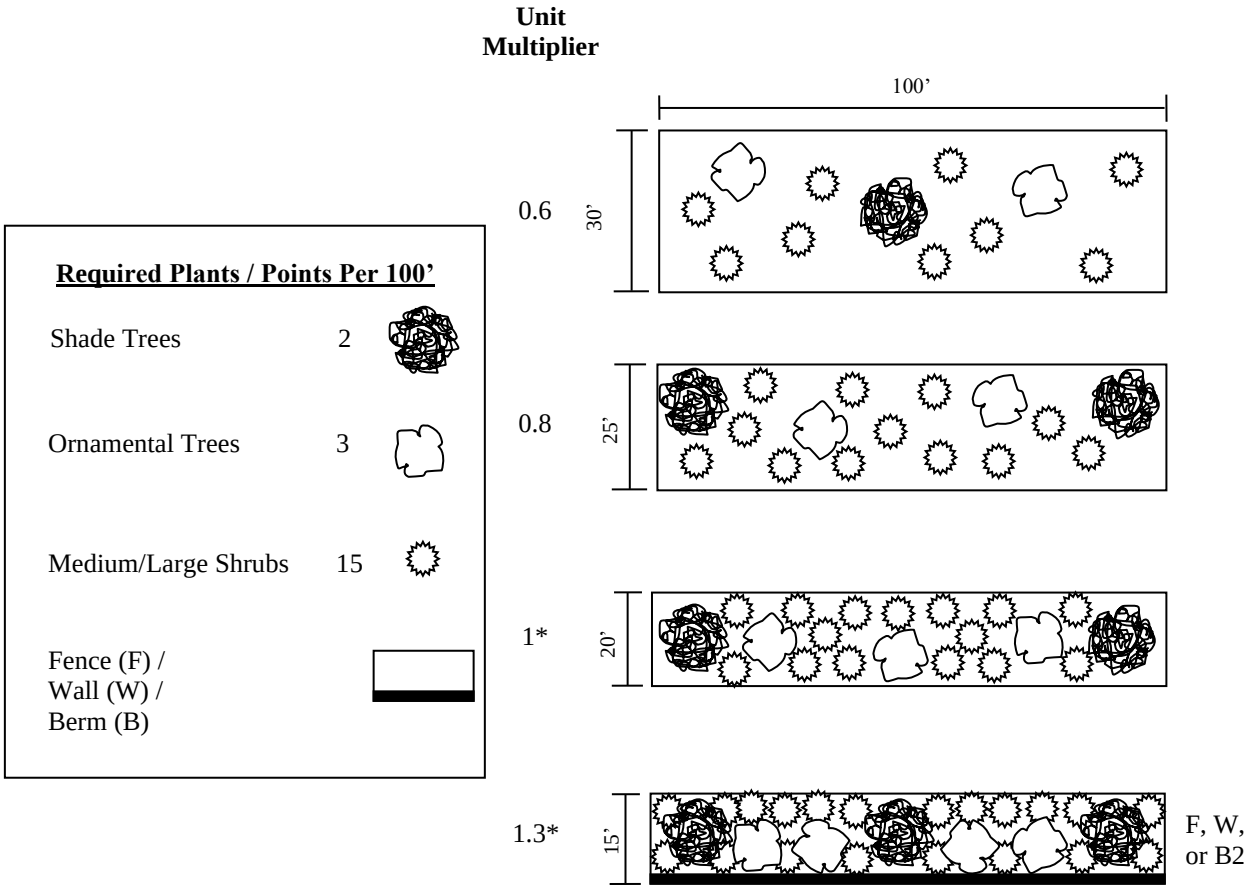
PERIMETER BUFFER YARD
TYPE 2



* Fence or wall required adjacent to residential use

TABLE 7.4-4

PERIMETER BUFFER YARD
TYPE 3



* Fence or wall required adjacent to residential use

TABLE 7.4-5

PERIMETER BUFFER YARD
TYPE 4

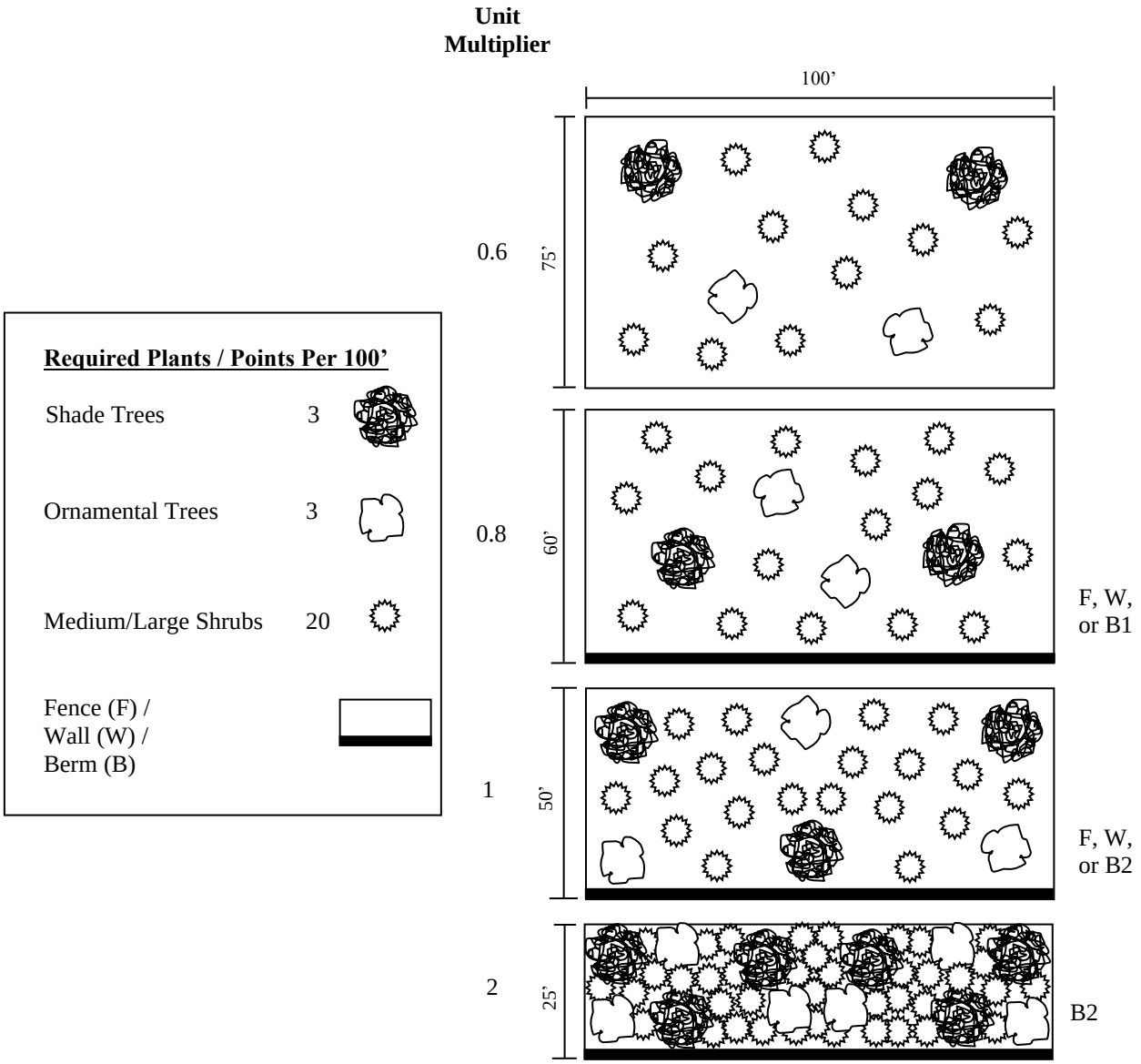
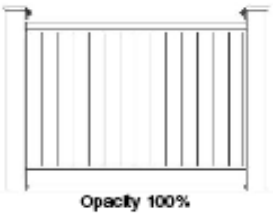


Table 7.4-6

STRUCTURE REQUIREMENTS

FENCES



Opacity 100%

Symbol	Height	Materials Allowed
F	6'	Brick, Stone, Concrete
* May also be required in certain instances where abutting residential uses		Pressure treated wood
		Vinyl
		Metal (chain link, sheet metal, barbed and razor wire are prohibited)

BERMS

Symbol	Height	Material	Specifications
B1	3'	Earth	Minimum height of 3 feet Minimum crown width of 8 feet Side slope no greater than 3:1
B2	6'	Earth	Minimum height of 6 feet Minimum crown width of 8 feet Side slope no greater than 4:1

7.5 BUILDING YARDS.

7.5.1 PURPOSE AND APPLICABILITY. The purpose of building yards is to aesthetically and visually enhance the appearance of buildings. Building yards shall be provided along the portion(s) of the building facing any adjacent off-street parking area, excluding loading/unloading areas. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective building front wall. Where building yards turn at building corners, the length measurements determining plant quantities shall not be required to overlap. Building yards shall be of different types, based upon the size of the structure around which the building yard is to be located. The width of the building yard and the density of plantings shall increase as the size of the structure around which the building yard is to be located increases. Entrance walkways to buildings may cross building yards. The width of the entrance walkway shall not be calculated as part of the length of the building yard for purposes of determining the total required landscaping, provided, however, that the width deducted for the entrance walkway shall not exceed the width of the entrance to the building.

7.5.2 YARD TYPES.
There shall be four different categories of building size for purposes of determining the building yard type:

Category 1
Less than 2,500 Square Feet GFA (Gross Floor Area)

Category 2
2,500 Square Feet to 9,999 Square Feet GFA

Category 3
10,000 Square Feet to 99,999 Square Feet GFA

Category 4
100,000 Square Feet GFA and over

7.5.2.1 Table 7.5-1 identifies the building yard required for a given development, based on the size of the structure around which the building yard is to be located, and specifies the required plantings and dimensions of the respective building yard.

EXCEPTION: Buildings located in the I-1, I-2 or CD zoning district, where the building yard is not visible from an interstate or state numbered highway, may have a reduced building yard, regardless of building size. The reduced building yard shall not be less than six (6) feet (Category 1); Building orientation and building yard location, in relation to the interstate or state numbered highway, must be clearly depicted on the required landscape/site plan to determine visibility.

TABLE 7.5-1: BUILDING YARD LANDSCAPING REQUIREMENTS

Building Yard Category	Minimum Width	Min. Required Ornamental Trees	Min. Required Small or Medium Evergreen Shrubs	Min. Required Points per Linear Foot
1	6 feet	1 per 30 lin. feet	1 per 3 linear feet	0.4
2	8 feet	1 per 30 lin. feet	1 per 3 linear feet	0.5
3	12 feet	2 per 50 lin. feet	1 per 2 linear feet	0.8
4	16 feet	2 per 50 lin. feet	1 per 2 linear feet	1.0

7.6 PARKING LOT YARDS.

7.6.1 PURPOSE AND APPLICABILITY. The purpose of parking lot yards is to aesthetically and visually enhance the appearance of parking lots. Parking lot yards shall be located around and within parking lots and shall be of different sizes, based upon the size of the respective parking lot. The size of the parking lot yard shall increase as the size of the respective parking lot increases. Minimum dimensions shall apply, and be measured, horizontally. The requirements of this section shall apply to all new and expanded parking lots. Lots with less than 5 total parking spaces shall be exempt from the parking area landscaping requirements of this section.

7.6.2 DESIGN CRITERIA.

A. Minimum Perimeter Landscaping Requirements. Screening shall be provided by installing along the perimeter of the parking lot a continuous row of evergreen shrubs with a maximum separation of 6 feet on center (minimum 2 foot height at installation with an expected height of 3-5 feet at maturity) and/or a masonry wall 3 feet to 5 feet in height. In addition, shade trees shall be planted at a rate of 40 feet on center (see Figure 7.7-3 for reference).

1. Existing vegetation which meets, in whole or in part, the purposes of perimeter landscaping above, may be applied toward the requirements.

2. Areas lying under overhead power lines shall use ornamental trees in the place of shade trees. In such instances, ornamental trees shall be planted at a rate of 20 feet on center.

B. Minimum Interior Landscaping Requirements. The following requirements shall be applied to the interior of all parking lots as required by Section 7.3.2 (A):

1. Minimum Quantity of Landscape Plantings. Interior landscaping of parking lots shall consist of shade trees placed such that each section of parking (maximum of 35 spaces per section) is enclosed by trees (or building wall) with a maximum spacing of 40 feet on center (see Figure 7.7-3 for reference).

2. Minimum Planting Area Dimensional Requirements. Planting areas and islands shall be not less than nine (9) feet in width and shall include a minimum of 200 square feet of open planting area. Shrubs, or ground covers may be planted within the required open planting area for trees without increasing the area. Planting areas and islands shall have a minimum prepared depth of 18 inches. Landscaped areas shall be covered with mulch, ground cover or grass between shrub and tree plantings.

3. Curbing Required. All landscaped areas shall be protected from vehicular encroachment by concrete curb and gutter.

4. Location of Trees. Required trees shall be located within parking lots as tree islands, medians, at the end of parking bays, traffic delineators, or between rows or parking spaces in a manner such that no parking space is located more than 60 feet from a parking lot tree.

5. Structures and Mechanical Equipment. Dumpsters shall be set on a concrete pad and shall be screened with an opaque fence or wall of sufficient height, as required in Section 11.1.2.2.2, to screen the container and any appurtenances. Trash containers shall not be located abutting residential property. All mechanical equipment shall be screened from view with an opaque screen.

7.6.3. EXCEPTIONS.
In instances where the strict application of this Section will seriously increase stormwater runoff, create ponding of water so as to impair the habitability of buildings, or interfere with traffic circulation, the Administrator may permit a portion of the required landscaping to be located in other planting yard locations on the site. The relocated planting yard landscaping shall not be used to meet the requirements of other required planting yards.

7.7 STREET YARDS.

A. PURPOSE AND APPLICABILITY. The purpose of street yards is to provide continuity of vegetation along the street right-of-way, creating a pleasing view from the road, and establishing a transition from vehicular thoroughfares, pedestrian areas or the built environment. Minimum dimensions shall apply, and be measured, horizontally. Widths shall be measured from the respective right-of-way/property line. Where street yards turn at street corners, the length measurements determining plant quantities shall not be required to overlap. Street yards shall be of different types, based upon the zoning of the property. The width of the street yard and the density of plantings shall increase as the intensity of the development increases.

1. New single-family home subdivisions shall require street yards, provided, however, that the street yard may be located in the right-of-way in the required planting strip between the curb and the sidewalk in accordance with the design specifications in Appendix B of this Ordinance.

2. In areas where the parking lot is directly adjacent to the street, parking lot yards shall take the place of required street yards.

B. YARD TYPE.
There shall be five (5) different categories used to determine the street yard type. The categories shall be based upon the specific zoning designation of the property as follows:

Class 1
AG Agricultural
RE Rural Estate
RL Residential Low Density
RM-1 Residential Medium Density
RM-2 Residential Medium Density

Class 2
RV Residential Village
RC Residential Compact

Class 3
O-I Office-Institutional
B-1 Neighborhood Commercial/Office
C-1 Light Commercial and Office

Class 4
C-2 General Commercial
CD Campus Development
PID Public Interest District
PUD Planned Unit Development
TND Traditional Neighborhood Development

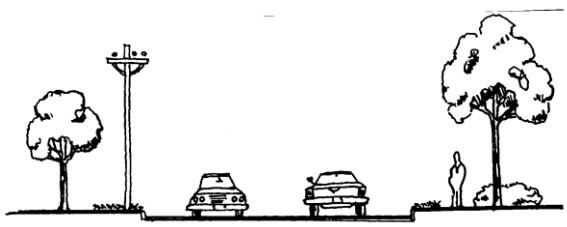
Class 5
I-1 Light Industrial
I-2 Heavy Industrial

1. Table 7.7-1 contains the required plantings and dimensions of the respective street yard types.

C. DESIGN CONSIDERATIONS.

1. Overhead Power Lines. The presence of overhead power lines requires street yard trees to be ornamental trees. Larger shade tree varieties are encouraged where overhead power lines are not present. (see Fig. 7.7-1, below).

Figure 7.7-1



2. Site Triangles. Corner lots, and in situations where driveways and alleys intersect with street rights-of-way, shall be kept free of landscaping and plant materials that interfere with the vision of a motorist or pedestrian. The triangular area (site triangle) of corner lots, driveways and alleyways abutting rights-of-way shall conform to the requirements of Appendix C of this ordinance.

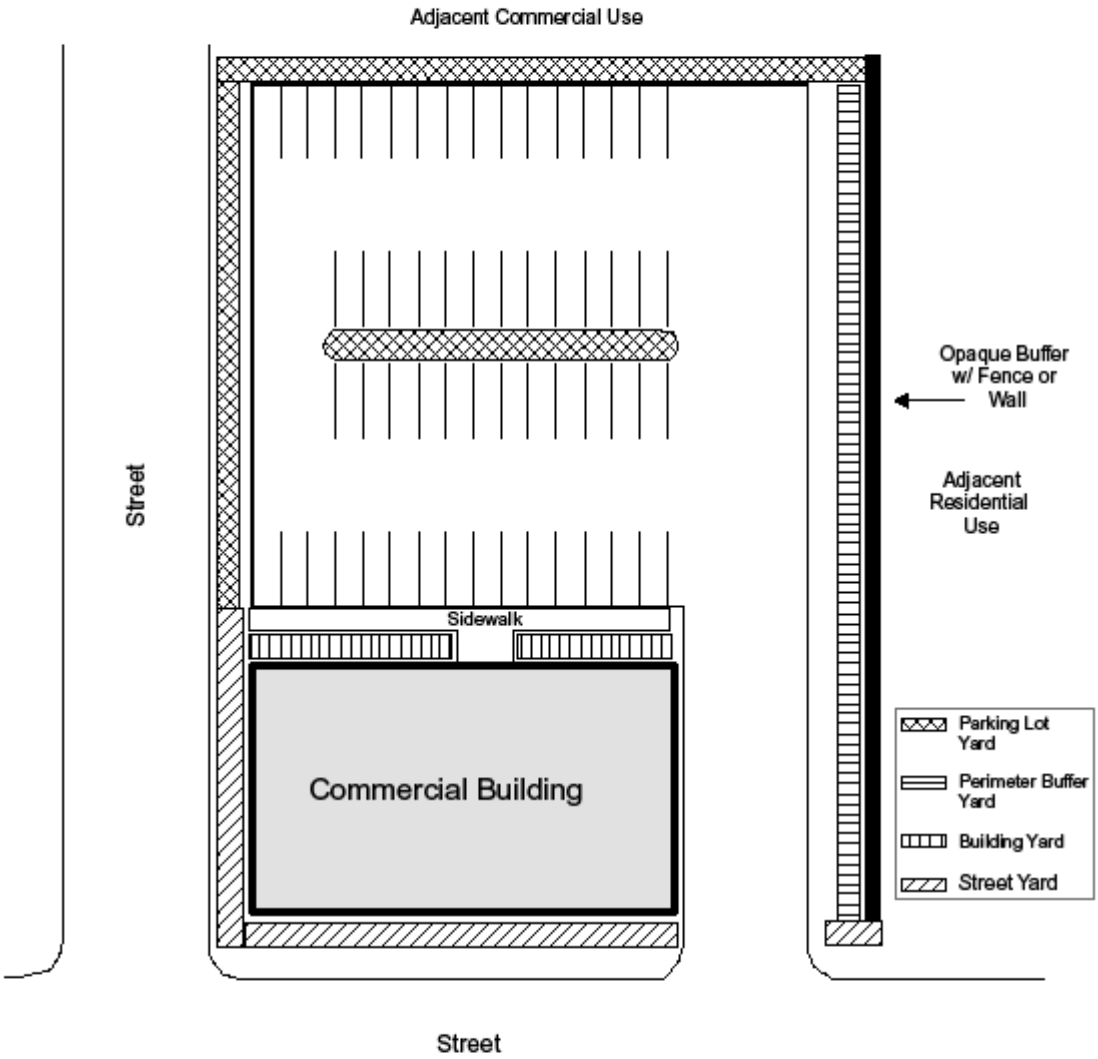
TABLE 7.7-1: STREET YARD LANDSCAPING REQUIREMENTS

Zoning District	Minimum Width	Min. Required Shade* or Ornamental Trees	Min. Required Points per Linear Foot
AG, RE, RL, RM-1, RM-2**	6’	1 per 100’ or 2 per 100’	---
RV, RC	6’	1 per 100’ or 2 per 100’	---
O-I, B-1, C-1	8’	1 per 75’ or 2 per 75’	0.4
C-2, CD, PID, PUD, TND	8’	1 per 50’ or 2 per 50’	0.5
I-1, I-2	12’	1 per 50’ or 2 per 50’	0.6

***Shade trees may not be planted under over-head power lines**.
****This standard shall only apply to new subdivision streets and along existing streets with curb and gutter that provides access to the subdivision**..

Figure 7.7-2

Typical Planting Yard Illustration



Parking Lot Yard - To enhance the aesthetic appearance of parking lots

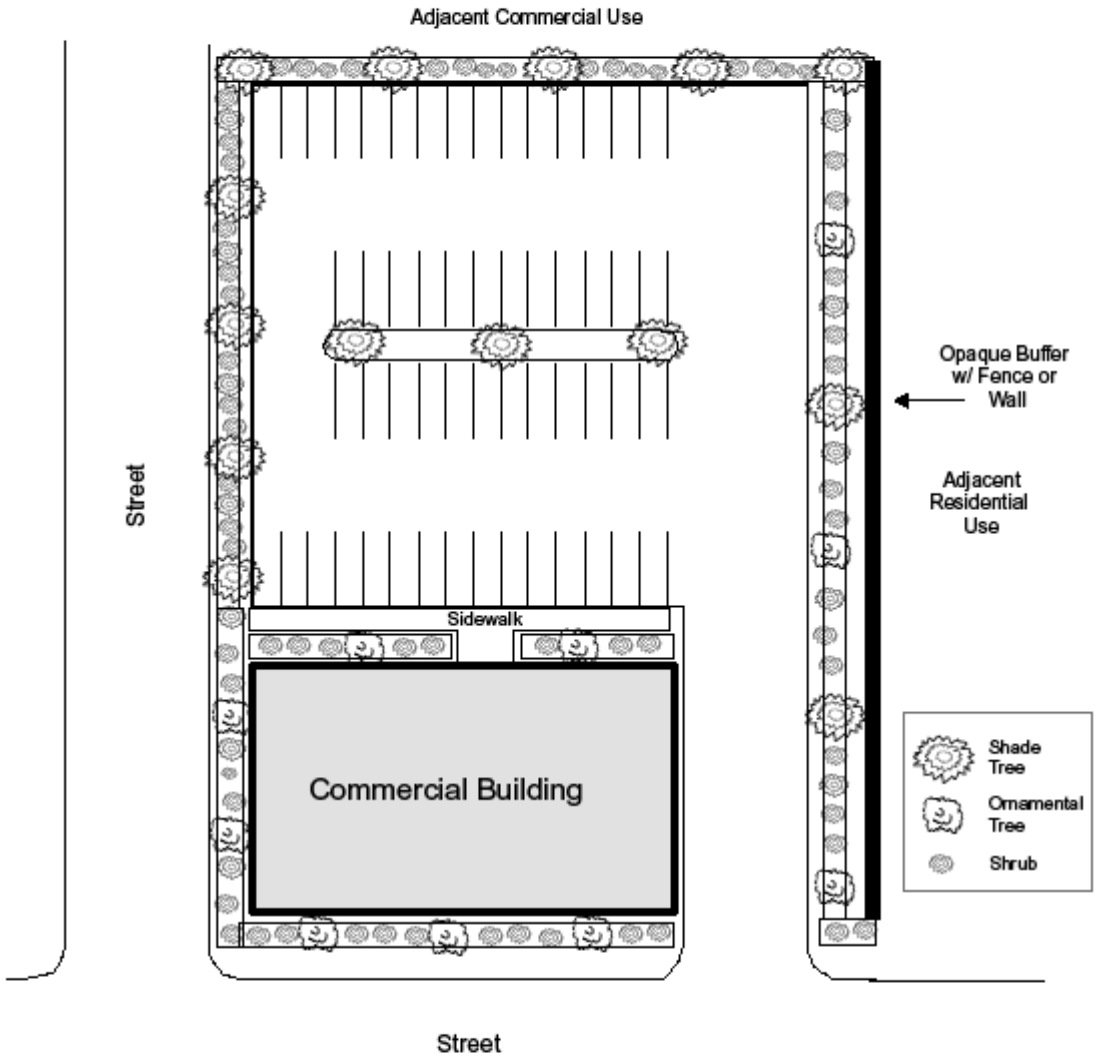
Perimeter Buffer Yard - To separate and buffer different land uses

Street Yard - To establish a coordinated pattern of tree plantings and other landscaping along streets

Building Yard - To enhance the aesthetic appearance of buildings

Figure 7.7-3

Typical Planting Yard Illustration



Planting Yards - Commercial abutting residential and commercial

Parking Lot Yard - Shade trees planted a maximum of 40 ft. on center;
Continuous row of shrubs planted a maximum of 6 ft. on center

Perimeter Buffer Yard - Type 4 between commercial and adjacent residential use

Street Yard - Class 4 (areas of parking lot abutting the street require a parking lot yard but no street yard)

Building Yard - Classification dependent of building square footage. Required between building and sidewalk

7.8. SPECIFICATIONS FOR PLANT MATERIALS AND INSTALLATION.

A. SIZE STANDARDS.

The minimum allowable plant size for new installations shall be as set forth herein. Due to the variation between genus and species, the caliper or height necessary for newly installed plant materials may vary. As a general rule, the caliper or diameter of trees shall be measured 6 inches from the ground level up to a 4-inch caliper diameter and at 12 inches for 4-inch caliper diameter or greater. The height of shrubs shall be a minimum of 24 inches as measured at ground level to the top of the densest portion of the top of the shrub or hedge.

1. **Shade Trees.** Shade trees shall measure a minimum 2 to 2.5-inches in caliper, and 10 to 12 feet in height at the time of planting.

2. **Ornamental Trees.** Ornamental trees shall measure a minimum 1.5 to 2-inches in caliper for single-stem trees or 1 to 1.5-inches in caliper for multi-stem trees, and 6 to 8 feet in height at the time of planting.

3. **Large Shrubs.** Large shrubs, normally planted for screening, shall measure a minimum of 3 to 3½ feet in height at the time of planting. Shrubs planted for screening purposes shall form the required density to block visibility within three (3) years from the date of installation.

4. Small Shrubs. Small shrubs shall measure a minimum of 18 to 24 inches in spread and/or height at the time of planting. A mix of deciduous and evergreen shrubs is encouraged in order to obtain a variety of color and texture throughout the year.

5. **Ground Cover (Organic).** Organic ground covers shall provide 100 percent coverage on the ground within three (3) years of installation. Except for seeding, grass or turf shall provide 100 percent coverage upon installation. Organic mulch may be used around plantings to maintain soil moisture and prevent the growth of weeds.

6. **Ground Cover (Inorganic).** Inorganic ground covers consisting of river rock or similar materials may be used provided they do not exceed 20 percent coverage of the required landscape planting area.

B. SELECTION OF PLANT MATERIALS.

All plant material, except Ground Covers, shall be selected from Table 7.8-1 Acceptable Plant Species. Consideration shall be given to the environmental conditions of the site, such as soil, topography, climate, microclimate, pattern of sun movement, prevailing winds and precipitation, and air movement to ensure that plant materials will be established successfully. Tree selection for street yards, or other locations within utility rights-of-way, shall consider the presence or planned addition of overhead utility lines. Such trees shall be small and medium trees that are pest- and disease-resistant and are slow growing.

1. **Substitution of Plant Materials.** The Administrator shall have the authority to approve the installation of comparable substitution plant materials to satisfy the requirements of the approved landscape plan when the approved plants and landscape materials are not available at the time that installations are to occur, or when other unforeseen conditions prevent the use of the exact materials shown on the approved landscape plan. Significant changes that require the replacement and relocation of more than 25 percent of the plant materials shall require a new landscape plan and approval through the plan review process.

2. **Mix of Genus and Species Encouraged.** Except for Street Yard trees (§ 7.7), a mix of genus and species of trees, shrubs, ground covering, perennials and annuals is encouraged in order to avoid potential loss due to infectious disease, blight, or insect infestation. Street Yard Tress should retained a reasonably uniform pattern along both sides of a street within the same block or corridor.

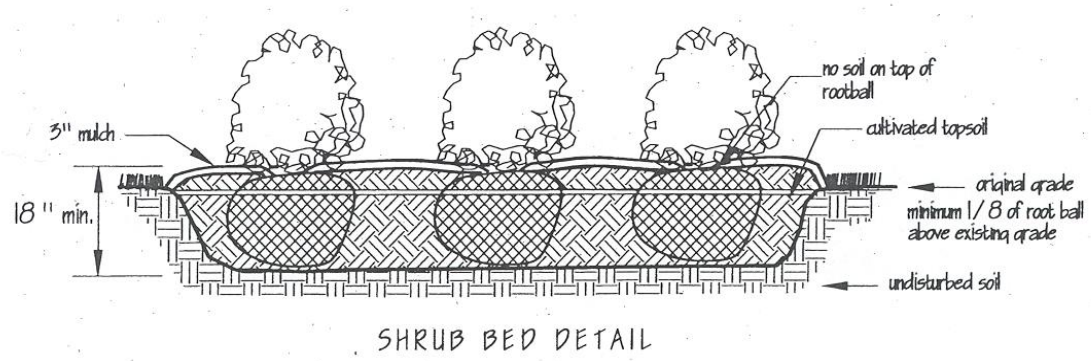
C. STANDARDS FOR INSTALLATION OF LANDSCAPING MATERIALS.

1. Plant Pit, Hedge Trench and Shrub Bed Preparation. Preparation of plant pits, hedge trenches and shrub beds shall be done in conformance with Leaflet No: 601, *Planting Techniques for Trees and Shrubs*, North Carolina Cooperative Extension Service, (1997), which is

incorporated by reference hereto and the following procedures:

2. Site Maintenance During Construction. Equipment, wood and similar objects shall not be stored or laid upon the critical root zone area during or after construction. Chemicals and liquid construction wastes shall not be dumped, poured or spilled in the area of any plant materials. Washing of concrete mixers shall not be done near the site.

Figure 7.8-1



- Excavate pits with vertical sides approximately the depth of the rootball and with a circular outline which shall be approximately 2 to 3 times wider than the rootball. For planting pits, beds or trenches which are to be developed where paving existed previously, all paving and base stone shall be removed as part of the excavation.

- Remove rock, debris, inorganic compositions and chemical residues from soil in planting pits.

- Cultivate shrub planting pits to a minimum depth of 18 inches. Ground cover and vine planting pits shall be cultivated to a minimum depth of 12 inches.

- Install root ball on a flat, compact surface of undisturbed soil and remove any inorganic ties on top of the rootball. Remove the top 1/3 of wire baskets.

- Leave the top of the tree root ball exposed, to be covered by mulch only.

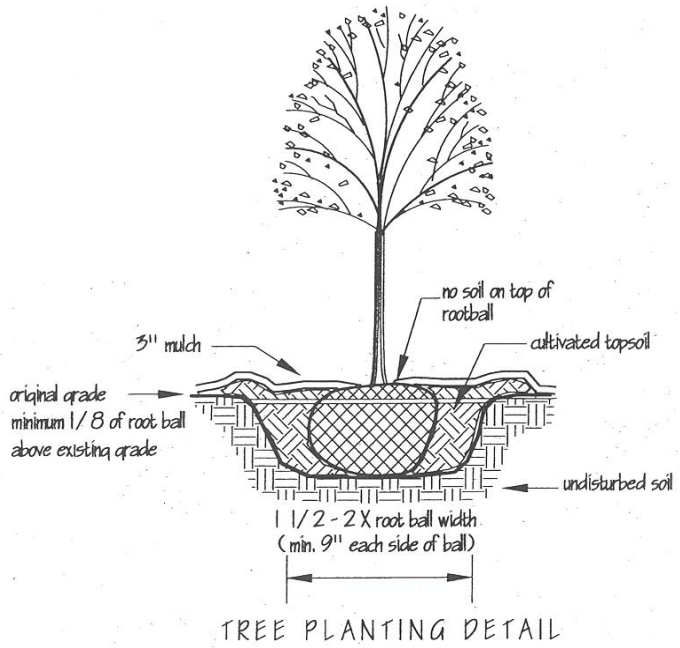
- Finish the planting with a minimum 3-inch layer of mulch of pine needles, tree bark or similar materials distributed around the tree trunk.

- Prepare soil, plant, fertilize, mulch, and control insects and disease in conformance with the North Carolina Cooperative Extension Service, *Landscape Management Calendar*, which is incorporated by reference hereto.

- Re-establish native plants salvaged from the site or relocated as a result of grading in conformance with the recommendations of the North Carolina Cooperative Extension Service.

- Support trees and shrubs adequately when planted in order to avoid interference with their typical growing patterns.

Figure 7.8-2



D. GENERAL MAINTENANCE OF LANDSCAPING AND SITE.

1. The applicant, property owner, and/or subsequent or successor owner, and their agents, including tenants, shall be jointly and severally responsible for maintenance of landscaping on the property on a continuing basis for the life of the development as specified in this Section. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include, but not be limited to, mowing, edging, pruning, fertilizing, watering, weeding and other activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other materials or plants not a part of the landscaping.

2. Required landscaping shall be maintained in perpetuity, in accordance with § 7.8.4.1. After initial installation, it shall be the responsibility of the owner and/or tenant of the property upon which the landscaping is installed to maintain all required plantings in a healthy, vigorous and attractive state, or replace dead, diseased or deteriorated plants. Within residential subdivisions, the maintenance of street trees in planting strips between curbs and sidewalks which are within the street right-of-way shall be the responsibility of the respective homeowners association, or the abutting homeowner, in the absence of a homeowners association.

3. If after three (3) years following installation of required screening plant materials, the plants have not formed an effective screen, or if an effective screen is not maintained, the Administrator may require that another type of screen be added or additional plantings be installed. Landscaped areas shall require protection from vehicular encroachment. The Administrator shall inspect all landscaping and no Certificate of Occupancy or similar authorization

will be issued unless the landscaping meets the requirements of this Ordinance.

4. All required plant material shall be maintained in a healthy, growing condition as is appropriate for the season. Plant materials which exhibit evidence of insect pests, disease and/or damage shall be appropriately treated. Dead plants shall be promptly removed and replaced within the next planting season after removal. If replacement is necessary, all plants and other non-living landscape materials shall be equal in size, density and appearance as originally required at the time of the approval of the development permit.

E. UTILITY RIGHT-OF-WAY TREE TRIMMING.

Utility crews and companies are encouraged to do directional pruning of branches interfering with utility lines to prevent damage, disfigurement and heavy suckering and reduce future pruning needs. Utility tree trimmers are encouraged to remove branches to laterals in order to direct tree growth away from utility lines. Directional pruning includes top trimming, side trimming, under trimming and through trimming.

TABLE 7.8-1 ACCEPTABLE PLANT SPECIES

The following list of plant species includes shade trees, ornamental trees and shrubs which are acceptable for landscaping in this area of North Carolina. A few species are labeled as "discouraged" due to marginal hardiness in this zone, to disease susceptibility, or to overuse.

SMALL SHRUBS

Botanical Name	Growth Rate	Height	Common Name
Aucuba jabonica*	Slow	3-4 ft.	Dwarf Aucuba
*Azalea hybrida**	Slow	3.5 ft.	Glenndale Azalea
*Berberis thunbergii**	Medium	3-5 ft.	Japanese Barberry
*Buxus microphylla**	Slow	3-4 ft.	Japanese Boxwood
*Deutzia gracilis**	Medium	2-4 ft.	Slender Deutzia
*Gardenia radicans**	Slow	2-4 ft.	Creeping Gardenia
*Hydrongea arborescens**	Fast	3-5 ft.	'Annabelle' Smooth Hydrangea
Hypericum hypericoides	Medium	2-3 ft.	St. Andrew's Cross
*Ilex cornuta**	Slow	3-4 ft.	'Carissa' Holly
*Ilex cornuta**	Slow	3-4 ft.	'Rotunda' Dwarf Chinese Holly
*Ilex crenata**	Medium	3-4 ft.	'Compacta' Compact Holly
*Ilex crenata**	Medium	3-4 ft.	'Green Lustre' Holly
*Ilex vomitoria**	Slow	3-4 ft.	'Nana' Dwarf Yaupon Holly
Itea virginica	Medium	3-5 ft.	Virginia Sweetspire
*Jasminum nudiflorum**	Fast	3-4 ft.	Winter Jasmine
Juniperus davurica	Medium	2 ft.	'Expansa' Parsons Juniper
Juniperus hoirizontalis	Slow	2 ft.	'Plumosa' Andorra Juniper
*Kerria japonica**	Medium	3-5 ft.	Japanese Kerria
*Lonicera pileata**	Medium	2-3 ft.	Privet Honeysuckle
*Nandina domestica**	Medium	2-3 ft.	Nandina
*Pittosporum tobira**	Medium	3-4 ft.	'Nana' Dwarf Pittosporum
*Pyracantha koidzumii**	Medium	2-3 ft.	'Santa Cruz'
*Rhaphiolepis indica**	Slow	2-4 ft.	Indian Hawthorne
Spirea x burmalda	Fast	2-3 ft.	Bumald Spirea
Spirea nipponica	Fast	3-5 ft.	'Snowmound' Spirea
Spirea thunbergii	Medium	3-4 ft.	Thunberg Spirea

***Denotes Evergreen Shrub**

MEDIUM SHRUBS

Botanical Name	Growth Rate	Height	Common Name
*Abelia x grandiflora**	Slow	4-5 ft.	Abelia
*Aucubajaponica**	Medium	6-8 ft.	Japanese Aucuba
*Azalea indica**	Medium	5-8 ft.	Southern Indian Azalea
*Berberis julianae**	Slow	5-6 ft.	Wintergreen Barberry
*Cytissus scoparius**	Medium	5-6 ft.	Scotch Broom
Forsythia intermedia	Fast	5-7 ft.	Border Forsythia (Hybrid)
*Hydrangea macrophylla**	Fast	5-8 ft.	'Big Leaf' Hydrangea
Hydrangea quercifolia	Medium	6-8 ft.	'Oak Leaf' Hydrangea
*Ilex cornuta**	Slow	5-6 ft.	'Burfodii Nana' Dwarf Buford Holly
*Ilex glabra**	Medium	6-8 ft.	Inkberry Holly
Lespedeza thunbergii	Fast	5-6 ft.	Thunberg Lespedeza
Lonicera fragrantissima	Medium	6-10 ft.	Sweet Breath of Spring
*Mahonia bealei**	Medium	6-7 ft.	Leatherleaf Mohonia
*Nandina domestica**	Medium	5-6 ft.	Nandia or Heavenly Bamboo
Spiraea prunifolia	Medium	5-7 ft.	'Plena' Bridalwreath Spirea

Spiraea vanhouttei	Medium	5-7 ft.	Vanhoutte Spirea
Vaccinium corymbosum	Medium	6-12 ft.	Smooth Bush Blueberry
Vaccinium fuscatum	Medium	6-12 ft.	Black Highbush Blueberry
*Yucca filamentosa**	Medium	5-6 ft.	Adam's Needle Yucca

***Denotes Evergreen Shrub**

LARGE SHRUBS

Botanical Name	Growth Rate	Height	Common Name
Buddleia davidii	Fast	10-15 ft.	Butterfly Bush
Calycanthus floridus	Medium	8-12 ft.	Sweetshrub
*Camellia japonica**	Slow	8-10 ft.	Camellia
*Camellia sansanqua**	Slow	8-10 ft.	Sansanqua Camellia
Chaenomeles speciosa	Medium	8-10 ft.	Flowering Quince
*Cupressocyparis lylandii**	Fast	60-70 ft.	Leyland Cypress
*Elaeagnus x ebbingii**	Fast	8-10 ft.	Elaegnus
Eunonymus alatus	Slow	10-15 ft.	Winged Burning Bush
Hamamllis vernalis	Medium	8-12 ft.	Vernal Witchhazel
Hibiscus syriacus	Medium	8-12 ft.	Shrub Althea (Rose of Sharon)
*Ilex x attenuate**	Slow	8-10 ft.	'Fosteri' Foster Holly
*Ilex cornuta**	Medium	8-10 ft.	'Burfordii' Buford Holly
*Ilex vomitoria**	Medium	8-12 ft.	Yaupon Holly
Juniperus chinesis	Fast	12-15 ft.	'Hetzi' Hetz Juniper
Juniperus chinesis	Fast	8-10 ft.	'Pfitzeriana' Pfitzer Juniper
*Leucothoe populufolia**	Medium	8-12 ft.	Fetterbush
*Ligustrum japonicum**	Medium	8-12 ft.	Japanese Privet
*Ligustrum lucidum**	Medium	10-20 ft.	Waxleaf Privet
*Ligustrum sinense**	Medium	10-15 ft.	Chinese Privet
*Ligustrum vulgare**	Medium	10-15 ft.	European Privet
*Ligustrum x vicaryi**	Medium	10-12 ft.	Vicary Golden Privet
Magnolia stellata	Medium	10-15 ft.	Star Magnolia
*Myrica cerifera**	Medium	8-10 ft.	Southern Waxmyrtle
*Osmanthus fortunei**	Slow	8-10 ft.	Fortunes Osmanthus
Philadelphis coronarius	Medium	10-12 ft.	Sweet Mockorange
*Pittosporum tobira**	Fast	8-10 ft.	Japanese Pittosporum
*Podocarpus macrophyllus**	Medium	8-12 ft.	Southern Yew
*Pyrancantha coccinea**	Fast	10-12 ft.	Scarlett Firethorn
Rhus typhina	Fast	15-25 ft.	Staghorn Sumac
*Ternstoemia gymnathera**	Slow	8-10 ft.	Cleyera
Viburnum lantana	Medium	10-15 ft.	Wayfaringtree, Viburnum
Viburnum opulus	Medium	8-12 ft.	European Cranberrybush, Viburnum
Viburnum plicatum	Medium	8-10 ft.	Doublefile Viburnum
Viburnum x pragnese	Medium	10-12 ft.	Prague Viburnum

*** Denotes Evergreen Shrub**

ORNAMENTAL TREES

Botanical Name	Growth Rate	Height	Common Name
Acer buergeranum	Slow	20-25 ft.	Trident Maple
Acer palmatum	Medium	20-25 ft.	Japanese Maple
Arbutus unedo	Slow	15-30 ft.	Strawberry Tree
Castanea pumila	Medium	20-25 ft.	Chinquapin
Cercis canadensis	Medium	25-30 ft.	Eastern Redbud
Chionanthus virgincus	Slow	10-20 ft.	Fringe Tree or Grancy Graybeard
Continus coggygria	Medium	10-15 ft.	Common Smoketree

Cornus florida	Medium	15-25 ft.	Flowering Dogwood
Cornus kousa	Medium	15-25 ft.	Kousa Dogwood
Crataegus phaenopyrum	Medium	25-30 ft.	Washington Hawthorn
Cupressocyparis leyiandii	Fast	60-70 ft.	Leyland Cypress
*Eriobotrya Japonica**	Medium	10-20 ft.	Loquat
Halesia carolina	Medium	20-30 ft.	Carolina Silverbell
Ilex decidua	Medium	25-30 ft.	Possumhaw Holly
*Ilex latifolia**	Medium	20-25 ft.	Lusterleaf Holly
*Ilex opaca**	Medium	20-30 ft.	American Holly
*Ilex x attenuate**	Medium	25-30 ft.	Savannah Holly
*Ilex x 'Nellie R. Stevens'**	Medium	15-25 ft.	'Nellie R. Stevens' Holly
Koelreutaria paniculata	Medium	20-30 ft.	Golden Rain-tree
Lagerstroemia indica	Fast	20-30 ft.	Crape Myrtle
Maclura promifera	Fast	20-30 ft.	Osage-orange
Magnolia x soulangiana	Medium	20-30 ft.	Saucer Magnolia
Magnolia stellata	Medium	15-20 ft.	Star Magnolia
Malus hybrids	Medium	15-30 ft.	Flowering Crabapple
Malus x domestica	Fast	10-25 ft.	Apple
Oxydendrum arboreum	Medium	25-30 ft.	Sourwood
*Pinus virginiana**	Slow	25-30 ft.	Virginia Pine
Prunus avium	Medium	10-25 ft.	Bing Cherry
Prunus armeniaca	Fast	15-20 ft.	Moorpark Apricot
*Prunus caroliniana**	Fast	20-30 ft.	Carolina Cherry Laurel
Prunus cerasifera pissardii	Medium	20-25 ft.	Purpleleaf Plum
Prunus persica	Fast	15-25 ft.	Peach
Prunus serrulata	Medium	20-30 ft.	Japanese Flowering Cherry
Prunus subhirtella pendula	Medium	10-15 ft.	Weeping Cherry
Prunus x yedoensis	Medium	10-15 ft.	Yoshino Cherry
Pyrus calleryana	Medium	35-40 ft.	Bradford Pear
Pyrus communis	Fast	12-20 ft.	Common Pear
Vitex agnuscastus	Medium	15-20 ft.	Chaste Tree

*** Denotes Evergreen Tree**

SHADE TREES

Botanical Name	**Growth Rate**	**Height**	**Common Name**
Acer floridanum	Medium	40-50 ft.	Florida Maple or Southern Sugar Maple
Acer rubrum	Medium	40-50 ft.	Red Maple
Acer saccharum	Medium	60-80 ft.	Sugar Maple
Betula nigra	Fast	40-70 ft.	River Birch
Carya illinoesis	Medium	50-60 ft.	Pecan
Castanea mollissima	Medium	40-60 ft.	Chinese Chestnut
*Cunninghamia lanceolata**	Slow	30-75 ft.	Common China Fir
Cupressocyparis leylandii	Fast	60-70 ft.	Leland Cypress
Diospyros virginiana	Medium	30-60 ft.	Persimmon
Fagus grandiflora	Slow	50-70 ft.	American Beech
Franxius pennsylvanica	Medium	50-60 ft.	Green Ash
Ginko biloba	Slow	50-70 ft.	Ginko or Maiden Tree
Juglans nigra	Medium	50-75 ft.	Black Walnut
Juniperus virginiana	Medium	40-50 ft.	Eastern Red Cedar
Liriodendron tulipifera	Fast	70-90 ft.	Tuliptree (Yellow Poplar)
Liquidambar styraciflua	Fast	60-75 ft.	American Sweetgum
*Magnolia grandiflora**	Slow	60-80 ft.	Southern Magnolia
Metasequoia glyptosfroboides	Fast	40-50 ft.	Dawn Redwood

*Pinus echinata**	Fast	70-80 ft.	Short Leaf Pine
*Pinus elliottii**	Fast	80-100 ft.	Slash Pine
*Pinus taeda**	Fast	80-100 ft.	Loblolly Pine
Quercus acutissima	Medium	35-45 ft.	Sawtooth Oak
Quercus falcata	Medium	70-80 ft.	Southern Red Oak
Quercus nigra	Medium	80-90 ft.	Water Oak
Quercus palustris	Medium	70-80 ft.	Pin Oak
Quercus phellos	Medium	80-100 ft.	Willow Oak
Quercus shumardii	Medium	40-60 ft.	Shumard Oak
*Quercus virginiana**	Medium	60-80 ft.	Live Oak
Taxodium distichum	Medium	50-70 ft.	Common Bald Cypress
Ulmus parvifolia	Fast	40-50 ft.	True Chinese Elm (Lacebark Elm)
Zelkova serrata	Fast	50-80 ft.	Jamanese Zelkova

*** Denotes Evergreen Tree**