

BILL NO. ~~2545~~

ORDINANCE NO. _____

AN ORDINANCE REPEALING CITY OF CHESTERFIELD ORDINANCE 2335 AND REPLACING IT WITH A NEW TREE MANUAL ORDINANCE THAT REVISES THE PROCEDURES AND REQUIREMENTS FOR TREE PROTECTION SURETIES, ESCROWS AND LANDSCAPE INSTALLATION BONDS (P.Z. 12-2007 CITY OF CHESTERFIELD/TREE MANUAL)

WHEREAS, The City of Chesterfield seeks to revise the requirements for when tree protection sureties, escrows and landscape installation bonds are required and to amend how the City of Chesterfield calculates the amount of the surety or cash escrow as described in Ordinance 2335; and,

WHEREAS, the Planning Commission voted to recommend said amendments by a vote of 9-0; and,

WHEREAS, the City Council recommended approval with an amendment to the maximum amount of tree canopy coverage to be calculated for the surety or cash escrow.

NOW THEREFORE BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF CHESTERFIELD, ST. LOUIS COUNTY, MISSOURI, AS FOLLOWS:

~~Section 1.~~ The City of Chesterfield Zoning Ordinance is hereby amended and agrees to make necessary changes thereto, as set out in Attachment "A" which is attached hereto and made a part hereof.

~~Section 2.~~ The City Council, pursuant to the petition filed by the City of Chesterfield in P.Z. 12-2007, requesting the amendment embodied in this ordinance, and pursuant to the recommendations of the City of Chesterfield Planning Commission that said petition be granted and after public hearing, held by the Planning Commission on April 23, 2007, does hereby adopt this ordinance pursuant to the power granted to the City of Chesterfield under Chapter 89 of the Revised Statutes of the State of Missouri authorizing the City Council to exercise legislative power pertaining to planning and zoning.

~~Section 3.~~ This ordinance shall be codified within the Municipal Code of the City of Chesterfield.

Section 4. This ordinance shall be in full force and effect from and after its passage and approval.

Passed and approved this _____ day of _____, 2007

MAYOR

ATTEST:

CITY CLERK

FIRST READING HELD: _____

The Planning and Zoning Committee recommended by a vote of 4-0 that the following change is made to the Attachment A:

AMENDMENT 1

Section XVI Surety and Escrow Procedures, page 21. Add the following:

- B. The amount of the surety or cash escrow shall be in the amount of \$10,000 per 100 lineal feet, or portion thereof, of wooded canopy perimeter to be preserved adjacent to any proposed clearing, grading, or other disturbance; or \$20,000 per acre to be preserved which ever is less. **When the \$20,000 per acre calculation method is used and the developer is protecting more than the required 30% of existing tree canopy, the amount of the surety or cash escrow shall not exceed the cost of protecting the required 30% of existing tree canopy.**



DEPARTMENT OF PLANNING

TREE MANUAL



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APPENDIX B SAMPLE TREE STAND DELINEATION MAP

I. INTRODUCTION.

The purpose of this section is to provide a detailed guide for the preservation and planting of trees within the City of Chesterfield. Tree preservation and planting in the City of Chesterfield represents an ongoing effort to maintain the character and benefits derived from trees. Whether trees exist as a natural occurrence of native tree species or as planted trees around older developments, their protection can only be assured when developers utilize tree protection measures. By selecting the trees that will be preserved before the final stages of planned development, tree protection design standards can be created and included prior to the early stages of development of the site. Planting of new trees should be used to supplement a site's landscaping, not replace it.

II. APPLICABILITY.

- A. The terms and provisions of the City of Chesterfield Tree Manual shall apply to all vacant or undeveloped land and all property to be redeveloped including additions and alterations.

- B. The Tree Stand Delineation and Tree Preservation provisions of the City of Chesterfield Tree Manual shall apply to all vacant or undeveloped land and all property to be redeveloped including additions and alterations with 5,000 or more square feet of wooded area or any site that contains a monarch tree.

- C. Single Residential Lots of less than one (1) acre that have been subdivided for more than two (2) years, are exempt from the provisions of this Tree Manual.

III. DEFINITIONS.

The following list of definitions has been developed to clarify the usage of specific terminology.

- 1. **Afforestation**. The conversion of open land into forest through tree planting.

- 2. **Buffer Strip**. A strip of land with natural or planted vegetation intended to separate and partially obstruct the view of two adjacent land uses or properties from one another.

- 3. **Caliper**. The diameter of the trunk of a tree as measured at six (6) inches above natural grade.

- 4. **Canopy Tree**. Deciduous trees that have a minimum height of thirty (30) feet at maturity.

- 5. **City's Tree Specialist**. A Tree Specialist retained by the City to review tree protection and preservation issues at the City's request.

6. **Critical Root Zone (CRZ)**. The critical root zone is defined by a circle around the tree with one (1) foot of radius for each one (1) inch of trunk diameter at D.B.H.
7. **Diameter at Breast Height. (DBH)** The size of the trunk of a tree, in inches of diameter, measured at “breast height” four-and-one-half (4.5) feet above the original soil or natural grade. If a tree forks or separates into two or more trunks below 4.5 feet, then the trunk is measured at its narrowest point below the fork.
8. **Disturb**. Shall include the intentional, unintentional or negligent removal, destruction, or killing of any tree, or causing the loss of the tree canopy coverage or critical root zone of individual trees or group of trees.
9. **Do Not Disturb Zone**. An area within which all existing vegetation shall be preserved for the purpose of retaining the natural character of the area and providing screening from adjacent uses on public or private street. Protective fencing is to be provided along the edge of this area.
10. **Drip line**. The location on the ground which is just below the outer extent of the tree branches.
11. **Grading**. Clearing, excavation or fill or any combination thereof and shall include the conditions resulting from any excavation or fill.
12. **Grove**. A group of trees similar in species or size and significant enough to be given special attention. See also Monarch Tree Stands.
13. **Limit of Disturbance**. A line that identifies the location on the ground where fencing will be installed to protect the trees from clearing, grading, soil filling, storage of materials, parking of vehicles, utility installation or other construction activity of any kind.
14. **Monarch Tree**. A tree in fair or better condition, with a life expectancy of more than fifteen (15) years, and equals or exceeds the following diameter sizes:
 1. Hardwoods (oak, hickory, maple, ash, etc.) - 24” DBH
 2. Softwoods (pine, spruce, fir, including bald cypress, etc)-20” DBH

A lesser-sized tree can be considered a Monarch Tree if:

1. It is a rare or unusual species, or
2. It is of exceptional quality, or
3. It has historical significance, or
4. It will be specifically used by the developer as a focal point in a project or landscape.

15. **Monarch Tree Stand** A contiguous grouping of at least eight trees which has been determined to be of high value or comprised of Monarch Trees. Determination is based on the following criteria:
 1. A relatively mature even aged stand of trees, or
 2. A stand of trees with a purity of species composition, or
 3. A stand of trees which are rare or unusual in nature, or
 4. A stand of trees with historical significance, or
 5. A stand of trees with exceptional aesthetic quality or size that is a principle feature of a site.
16. **Ornamental Tree**. A small highly visual tree species that can attain a mature height of 20-35 feet.
17. **Openspace**. Areas consisting of pervious surfaces. They may include all water ponds, grassy, treed, landscaped, floral, sod, and other pervious surfaces.
18. **Public Tree**. Any tree located on City owned or controlled property including parks, street right-of-ways, parkways, public facilities, etc.
19. **Sight Distance Triangle**. The triangular area of a corner lot bound by the property lines and a line connecting the two (2) points on the property lines thirty (30) feet from the point of intersection of the projected property lines.
20. **Street Tree**. Any tree that is currently located or proposed for planting as part of the row of trees required along streets and highways.
21. **Tree Canopy**. The upper portion of a tree or trees made up of branches and leaves.
22. **Tree Canopy Coverage**. The area in square feet of a tree's spread. Existing tree canopy is determined by measuring the ground's surface area that is covered by the branch spread of a single tree or clump or grove of trees. When trees are relatively close together, but the branches are not touching, the general area covered by this group can be used to determine the area of tree canopy coverage.

23. **Tree Specialist.** A person who meets one of the following criteria:

1. **Arborist** – a person who is a full-time owner or employee of a commercial tree service with at least five (5) years of field experience.
2. **Certified Arborist** – a person certified through the International Society of Arboriculture.
3. **Forester** – a person with a degree in forestry and at least five (5) years of field experience.
4. **Certified Forester**– a person certified through the Society of American Foresters.

If a person reviewing a submittal does not meet the five (5) years experience criteria, then a certified supervisor, with at least five (5) years experience, shall sign off on the work completed by his/her employee.

24. **Tree Topping.** Drastic removal or cutting back of large branches in mature trees, leaving large open wounds which subject the tree to disease and decay, and encourage weak, superficial, and hazardous growth

25. **Ultimate Tree Canopy.** Ultimate tree canopy is determined by assigning the following area values for planted trees, and the tree sizes may be used in combination to attain the necessary density for tree planting.

1. Large tree - 400 sq. ft.
2. Medium tree - 300 sq. ft.
3. Small tree - 200 sq. ft.

26. **Understory Tree.** Understory trees shall be deciduous trees that have a maximum height of less than thirty (30) feet at maturity.

27. **Wooded Area.** 5,000 sq. ft. or more of tree canopy coverage and where the tree canopy is primarily comprised of trees equal to or larger than five (5) inches in DBH. The 5,000 sq. ft. may be in a single grouping or comprised of several single trees or groupings of scattered trees in old yards or old fields, as well as land with thick tree cover or forested lands. The 5,000 sq. ft. need not be contiguous.

IV. OVERVIEW OF SUBMITTAL PROCESS.

City of Chesterfield Development Phase	Plan Submittal*	Entity Review	Decision Making Authority
Rezoning	Tree Stand Delineation	Staff Review, City's Tree Specialist to review site at the request of the Department of Planning.	Planning Commission to approve plans and make recommendations for trees to be preserved
Preliminary Plan/ Site Development Concept Plan	Tree Stand Delineation, Tree Preservation Plan, Conceptual Landscape Plan	Staff Review	Planning Commission
Site Development Plan	Tree Stand Delineation, Tree Preservation Plan, Landscape Plan	Staff Review	Planning Commission
Site Development Section Plan	Tree Stand Delineation, Tree Preservation Plan, Landscape Plan	Staff Review	Planning Commission
Subdivision Plan	Tree Stand Delineation, Tree Preservation Plan, Landscape Plan	Staff Review	Planning Commission
Municipal Zoning Approval[^]	Tree Stand Delineation, Tree Preservation Plan	Staff Review	City Staff
Grading Permit	Approved Tree Preservation Plan with no modifications from approved TPP plan	Staff Review, City's Tree Specialist to review Tree Protection measures prior to approval of permit	City Staff – If no modifications from approved TPP
Grading Permit	Approved Tree Preservation Plan with modifications from approved TPP plan	Staff Review, City's Tree Specialist to review Tree Protection measures prior to approval of permit	City Staff- if modifications less than 10% reduction in preserved canopy
Grading Permit	Tree Preservation Plan with modifications from approved TPP plan	Staff Review, City's Tree Specialist to review Tree Protection measures prior to approval of permit	Planning Commission Review- if modifications more than 10% reduction in preserved canopy; or if new reduction total is greater than 70% removal of existing canopy; or when removing a monarch tree previously shown as preserved.
Bond Release	No plan submittal required	City's Tree Specialist to review trees approved to be preserved are saved	City Staff Review

* The Tree Stand Delineation and Tree Preservation provisions of the City of Chesterfield Tree Manual shall apply to all vacant or undeveloped land and all property to be redeveloped including additions and alterations with 5,000 or more square feet of wooded area or any site that contains a monarch tree.

[^] Single residential lots of less than 1 acre that have been subdivided for more than two years are not required to submit any of these items.

V. PROTECTION OF PUBLIC OR PRIVATE TREES.

- A. It is unlawful for any person to attach any sign, advertisement, notice, fence or any other man made object to any tree in the public right-of-way, park, or any other City property. Exception: temporary devices used for normal installation or maintenance of planted trees or as permitted by the City of Chesterfield.
- B. It is unlawful for any person to damage, cut down, destroy, top or injure any tree, shrub or plant. This provision shall not apply to any ordinary care and maintenance or removal of hazardous trees or tree parts by a governmental entity or its designee authorized to exercise jurisdiction over the right-of-way, park, other infrastructure, public property, or to provide regular road maintenance.
- C. The Director of Planning has the authority to order the removal of trees or shrubs on private property which may endanger life, health, safety, or property of the public. The Director of Public Works has the authority to order the removal and disposal of trees or shrubs within the City of Chesterfield right-of-way or other public property.
 - 1. Removal shall be done by said owners at their own expense within sixty (60) days after the date of notice served.
 - 2. Disposal of trees with communicable diseases shall be performed in a manner which prevents the spread of disease.
 - 3. In the event owners fail to comply with such provisions, the City shall have the authority to remove such trees and charge the costs of removal as well as any costs for fees to record or release any lien as a special assessment represented by a special tax bill against the real property affected, and shall be filed by the City Clerk and deemed a personal debt against the property owner and shall remain a lien on the property until paid.
- D. The Director of Public Works may authorize the removal of street trees for public or private construction projects on a case by case basis.

VI. TREE STAND DELINEATION (TSD).

The purpose of a TSD is to provide a general accounting of existing vegetation so that a conceptual design of the proposed development can be done.

- A. TREE STAND DELINEATION (TSD) CRITERIA.
 - 1. Detailed description and location of individual trees and groups of trees including specific size and estimated number of trees within a natural area.
 - 2. Identification of existing roads, building footprints, parking lots, stormwater structures and utilities.
 - 3. Signed by a tree specialist.

4. For trees larger than 5" DBH, either BAF-10 study or ocular estimate method may be utilized.
5. As directed by the City of Chesterfield, submit a site plan with a tree stand delineation overlay. An overlay is defined as a transparent sheet containing the proposed TSD linework which will be superimposed over the proposed site plan.
6. The City's Tree Specialist may be asked to verify the tree information, including tree locations in the field, shown on the TSD at the request of Planning Commission or the Department of Planning.

VII. TREE PRESERVATION PLAN (TPP).

A TPP is a plan based upon information provided by a tree specialist that delineates areas where trees are to be saved and details the measures to be taken to ensure protection and survivability of trees to be saved, prior to and during construction, and also complies with guidelines which are listed in this Manual.

A. TREE PRESERVATION PLAN CRITERIA.

1. A minimum 30% of any wooded canopy shall be maintained as wooded area without disturbing the roots of trees in the protected wooded area.
2. The developer should save tree groupings within wooded areas to maintain the trees' structural integrity and natural aesthetics.
3. The developer shall not include any trees or wooded area in easements, building areas, or rights-of-way as "preserved" or "protected" to satisfy the canopy coverage requirements.

B. TREE PRESERVATION PLAN REQUIREMENTS.

The following is a list of all items and information that must be included in the TPP.

1. Provide detailed description and location of individual and groups of trees to be preserved and the proposed protection measures.
2. Plan must be at the same scale as the Site Development Plan or grading plan.
3. Signed and sealed by a Missouri Landscape Architect.
4. Table listing the following:
 - i. Total site area
 - ii. Existing tree canopy, in square feet
 - iii. Tree canopy coverage proposed for removal, in square feet
 - iv. Tree canopy coverage provided for preservation, in square feet
5. Existing and proposed contours.
6. Location of existing tree canopy.
7. Locations of all improvements with proposed utilities as shown on the Site Development Plan, including building areas, easements, or rights-of-way.
8. Limit of Disturbance Line.
9. General or conceptual locations of all sediment control devices and structures.

10. The location, type, size, and proposed removal or preservation, of all Monarch Trees as shown on the Tree Stand Delineation and the critical root zone for those trees within fifty feet (50') of the limit of disturbance.
11. Tree protection notes shall include the following language:
 - i. Clearing limits shall be rough staked or marked by the Developer's surveyor in order to facilitate location for trenching and fencing installation.
 - ii. No clearing or grading shall begin in areas where tree treatment and preservation measures have not been completed.
 - iii. Protective devices with details (aeration systems, retaining walls, etc.).
 - iv. Early maintenance schedule (i.e. pruning, injection fertilizing, etc.).
 - v. Name of tree specialist and company.

VIII. CONSTRUCTION STANDARDS FOR FIELD PRACTICE.

- A. Protective fencing shall be installed along the Limit of Disturbance Line to prevent damage to the roots, trunk, and tops of protected trees. This protective fence shall protect the tree and its roots from clearing, grading, soil filling, storage of materials, parking of vehicles, utility installation or other construction activity of any kind.
- B. Signs designating required tree protection areas shall be posted along the Limit of Disturbance Line.
- C. Root Pruning or trenching shall occur when roots, within the critical root zone of a protected tree, will be damaged as a result of nearby excavation or the addition of fill over the root system.
- D. Trenches are not permitted inside the drip line of a tree's canopy.
- E. Sediment and Erosion Control Structures must be used to keep eroded soil from covering roots of protected trees. Siltation screens, etc., are appropriate.
- F. Tunneling may be required when utilities are to run through a tree's critical root zone. Tunneling is required for permitted work within a tree's canopy coverage. Tunneling must adhere to the requirements set forth in Table 1.

TABLE 1: TUNNELING STANDARDS	
<i>Tree Diameter (DBH)</i>	<i>Tunnel Distance from trunk of tree measured in all directions</i>
Less than six inches (6’')	3’
6-9’	5’
10-14’	10’
15-19’	12’
Over 19’	15’

IX. PRESERVATION REQUIREMENTS ON CONSTRUCTION SITE.

A. TREE PROTECTIVE MEASURES AND PROTECTED AREAS.

1. No plant material shall be removed or planted in a Do Not Disturb Zone without approval from the City of Chesterfield. The location of Do Not Disturb Zones shall be determined during the establishment of the site specific ordinance or as established on the approved Tree Preservation Plan.
2. The Developer shall not disturb the critical root zone area of any tree to be preserved.
3. A tree specialist shall be named and employed by the Developer. Said tree specialist should be available for on-site inspections as directed by the City of Chesterfield.
4. During the erection, altering, or repairing of any building structure, street, sidewalk, underground pipe or utility, the contractor shall place guards, fences, or barriers to prevent injury to the trees.

B. Prior to the issuance of any occupancy permits, should any preserved tree die or be damaged beyond repair as a result of grading or construction damage the developer will pay a fine to the City equal to the value of the trees that die or are damaged beyond repair as certified and determined by the City’s Tree Specialist. Said cost shall include the cost of appraisal incurred by the City of Chesterfield. The City will withhold occupancy permits and/or any other required permits until the fine is paid. Tree values shall be based on procedures in “Guide for Plant Appraisal”, latest edition, published by the International Society of Arboriculture. Monies collected from fines will be placed in the Tree Preservation Account according to Section XV of this Tree Manual.

C. Should any tree die, or be damaged beyond repair, as a result of grading or construction within a two (2) year period after cessation of grading or completion of the required improvements which ever is less the Developer shall be responsible

for replacing the tree. Failure to replace shall constitute default and the City of Chesterfield shall be entitled to proceed against the surety or the cash escrow.

D. Refer to Section XIV for Surety and Escrow Procedures.

X. SPECIAL CONDITIONS.

The Department of Planning, upon written application by the Developer for consideration of special conditions, may consider granting special conditions modifying the requirements of this Tree Manual with the procedures and limitations as set forth below. Modifications will require that a minimum of 30% of the wooded canopy on the tract must be preserved or be replanted with acceptable tree species. Special conditions may be granted in whole, or in modified form with conditions or denied by the Department of Planning, after consideration of the requisites presented.

A. Qualifying Projects.

1. Property for which:

- i. an ordinance, detailing development requirements, has been in existence as a result either by the City of Chesterfield or St. Louis County (prior to the City's incorporation), and;
 - ii. a valid Site Development Concept Plan, Site Development Plan, Site Development Section Plan or a Final Development Plan has been approved prior to the adoption of the original Tree Ordinance Number 1345 enacted on November 17, 1997; or
2. Property zoned commercial or industrial which will allow for clearing of the lot for the development of the square footage as previously approved by the current ordinance in place by the City of Chesterfield or the St. Louis County on the date of the adoption of the original Tree Ordinance number 1345 enacted on November 17, 1997; or
 3. Property for which a tree specialist determines that the applicant is unable to provide tree preservation in accordance with this manual due to highly unique and severe circumstance such as extremely poor quality of trees, extreme topography, unusual lot shape, or other similar condition.

B. Application for Special Conditions.

The information to be submitted as a part of the application for special conditions shall include, but not be limited to the following:

1. A Tree Stand Delineation with an overlay of the existing conditions.
2. An engineering plan and/or drawings which depicts and describes that development of the structures as proposed or authorized is impracticable because of the unique character of the site which is not generally applicable to other sites.

3. A statement certified by a tree specialist that development cannot preserve the existing trees because of species or condition, but a minimum 30% of the original wooded canopy will be replanted to permanent tree cover.
 4. Each applicant seeking mitigation or a variance from the terms and conditions of this Tree Manual shall pay, as a fee to offset the cost of administration, an amount equal to the value of each tree that is removed from the required minimum 30% tree preservation area. The value of each tree is to be determined by the tree specialist.
 5. A reforestation bond shall be posted to cover mitigation cost.
- C. Refer to Section XIV for Surety and Escrow Procedures.

XI. MITIGATION PLAN.

The purpose of a Mitigation Application is to deter removal of trees. If the applicant/owner has established special conditions in accordance with Section X, then mitigation in accordance with an approved mitigation plan as authorized by the Department of Planning shall include the following:

- A. Selective clearing and supplemental planting shall be displayed on an overlay plan.
- B. An on site afforestation plan using larger or smaller stock; the number of trees will depend on the species selected and the ultimate tree canopy; based on tree sizes noted in the list of trees in Appendix A of this manual.
 1. 400 sq. ft. for large trees
 2. 300 sq. ft. for medium trees
 3. 200 sq. ft. for small trees

Planting must achieve a minimum of 30% of the area of original tree canopy coverage.

- C. Applicants submitting mitigation plans must utilize a mix of trees that vary in species, size, growth rate, and life span and consists of no more than 20% of one category.
- D. Where site constraints or other factors prevent replacement on or off site, the developer shall make a cash contribution to the Tree Preservation Account, according to Section XV of this manual, in an amount equal to the cost of replacing the trees which are not able to be preserved. Said costs shall include labor and plant material.

XII. PLANT SELECTIONS.

- A. All trees shall be selected from the Recommended Tree List in the City of Chesterfield's Tree Manual.
- B. All trees within five (5) feet of existing or proposed rights-of-way or public sidewalks shall be taken from the Street Tree category in the Recommended Tree List in the City of Chesterfield's Tree Manual.
- C. A variety of trees from the Recommended Tree List must be utilized so that there is a mix of tree species, growth rate, and tree size.
- D. A minimum of thirty percent (30%) of the trees must be of a species with a slow or medium growth rate.
- E. For projects in which more than fifty (50) trees will be installed, a variety of tree species within each category of deciduous, evergreen, and ornamental trees must be utilized. Each category shall provide a minimum of twenty (20%) of the total trees to be planted. For projects that require only street trees, each category of deciduous and ornamental shall provide a minimum of twenty (20%) of the total trees to be planted.

XIII. LANDSCAPE PROPOSALS.

Landscape plans must be submitted to the Director of Planning in conjunction with a proposed development or redevelopment. A Conceptual Landscape Plan shall be submitted with the Site Development Concept Plans. A Conceptual Landscape Plan indicates the proposed landscaping along arterial and collector roadways. The City of Chesterfield requires the use of a mix of trees that vary in species, size, growth rate, and life span to promote the enhancement of the community.

A. LANDSCAPE PLAN REQUIREMENTS.

The information to be submitted as a part of the landscape plan shall include but not be limited to the following:

- 1. A map prepared to a scale not greater than one (1) inch equals one hundred (100) feet.
- 2. The landscape plan shall be of the same size and scale as the applicable site plan(s) submitted to the City.
- 3. A plan produced by a Missouri Landscape Architect, whose name and seal are attached.
- 4. Trees shall be selected from the Recommended Tree List included in Appendix A.

5. All proposed trees shall be a minimum caliper of 2.5 inches.
6. Tree locations, species, and numbers which shall be identified on the scaled drawing.
7. Elevations and plan views of proposed landscaping as requested by the City of Chesterfield.
8. A map legend identifying the symbols for the various types of trees.
9. Protection measures must be employed around all trees required to be retained.
10. List the percent of openspace in relation to total area.
11. A summary table for all plant materials listing Common and Scientific name and variety, Deciduous, Evergreen or Ornamental, Quantity, Maturity, Height and Caliper.

B. LANDSCAPE BUFFERS, SETBACKS, BERMS, OR WALLS

1. Landscape buffers are required per the criteria set forth in Table 2 below. Landscape buffers shall contain a combination of deciduous trees, evergreen trees, and shrubs and should enhance and preserve native vegetation.

TABLE 2: LANDSCAPE BUFFER REQUIREMENTS	
TYPE OF SUBDIVISION *	LANDSCAPE BUFFER REQUIRED
When a Residential Subdivision Abuts a Residential Subdivision	Minimum 20 foot wide buffer strip, 10 feet of which may be satisfied by landscaping on the abutting property if provided.
When a Residential Subdivision Abuts a Non-Residential Subdivision	Minimum 30 foot wide buffer strip.
When a Non-Residential Subdivision Abuts a Residential Subdivision	Minimum landscaped buffer strip 30 feet in width. Up to 10 feet may be satisfied by landscaping on the abutting property.
When a Residential Subdivision Abuts a non-subdivision street	Minimum of 30 foot wide buffer strip.
For all property zoned as an “E” District	Minimum of 30 foot wide buffer strip. The buffer strip shall not be counted towards minimum lot size.
Development along collector or arterial roadway	Minimum of 30 foot wide buffer strip.

* For the purpose of this section, if the abutting property is zoned NU Non-Urban, the Comprehensive Plan is to be consulted to determine if the abutting property should be considered residential or nonresidential

2. Landscaped berms, walls or fences are required to screen automobile headlights from areas zoned residential or non-urban.
3. Flexible residential landscape buffer requirements may be granted in cases where it can be demonstrated that the proposed landscape buffer encourages a creative design solution to the issue of buffering adjacent land uses.
4. For all districts, landscape buffers must be outside of the right-of-way dedication.
5. For all districts, no plantings are allowed within drainage swales or ditches.
6. For all districts, entrance islands and cul-de-sacs shall be landscaped as directed by the City of Chesterfield.

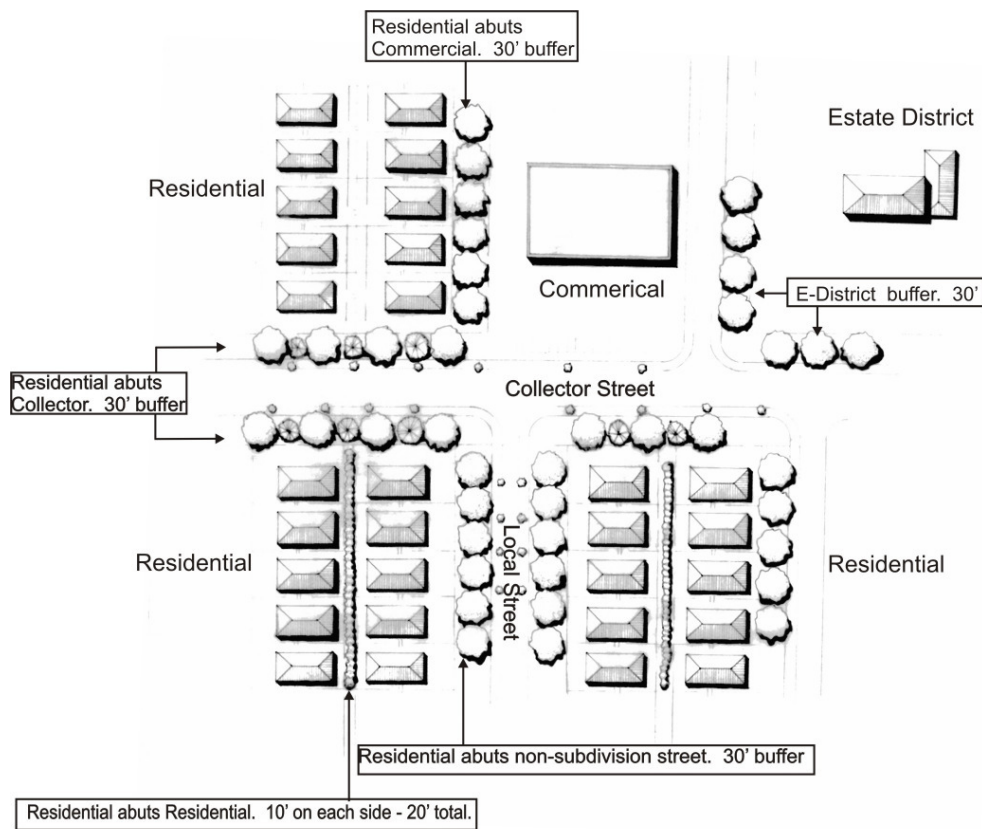


Figure 1: Buffer Requirements

C. LANDSCAPING FOR PARKING LOTS AND TREE ISLANDS.

1. Tree Islands:
 - i. Landscaped islands shall be placed at the ends of parking aisles and within aisles.

- ii. Islands shall have plantings consisting of ground covers such as shrubs, ivy, flowers, and grasses.
- iii. Tree Islands shall be landscaped in accordance with Table 3 below:

TABLE 3: LANDSCAPE REQUIREMENTS FOR TREE ISLANDS	
Type of Island	Landscaping Required
Single Island	One deciduous tree required. Minimum landscape width of six (6) feet.
Single Island at end of single row of parking	A minimum area of one-hundred (100) square feet placed at the ends of a single row of parking. Two (2) deciduous trees are required that do not block required line of sight for vehicles.
Double Island	Two (2) deciduous trees are required per double landscaped island.
Double Island at end of double row of parking	There shall be a double island of two-hundred-ten (210) square feet placed at the ends of a double row of parking. Two (2) deciduous trees are required that do not block required line of sight for vehicles.

- 2. Parking Lots:
 - i. No parking space shall be further than fifty (50) feet from a tree.
 - ii. All vehicular areas should have minimum fifteen (15) feet landscape setback from existing or proposed rights-of-way lines.
 - iii. Parking islands are not required to have a tree in instances where the adjacent parking spaces are within fifty (50) feet of a tree in other areas of the development.
 - iv. Trees planted in parking islands at no time shall block the required sight lines for motorist.

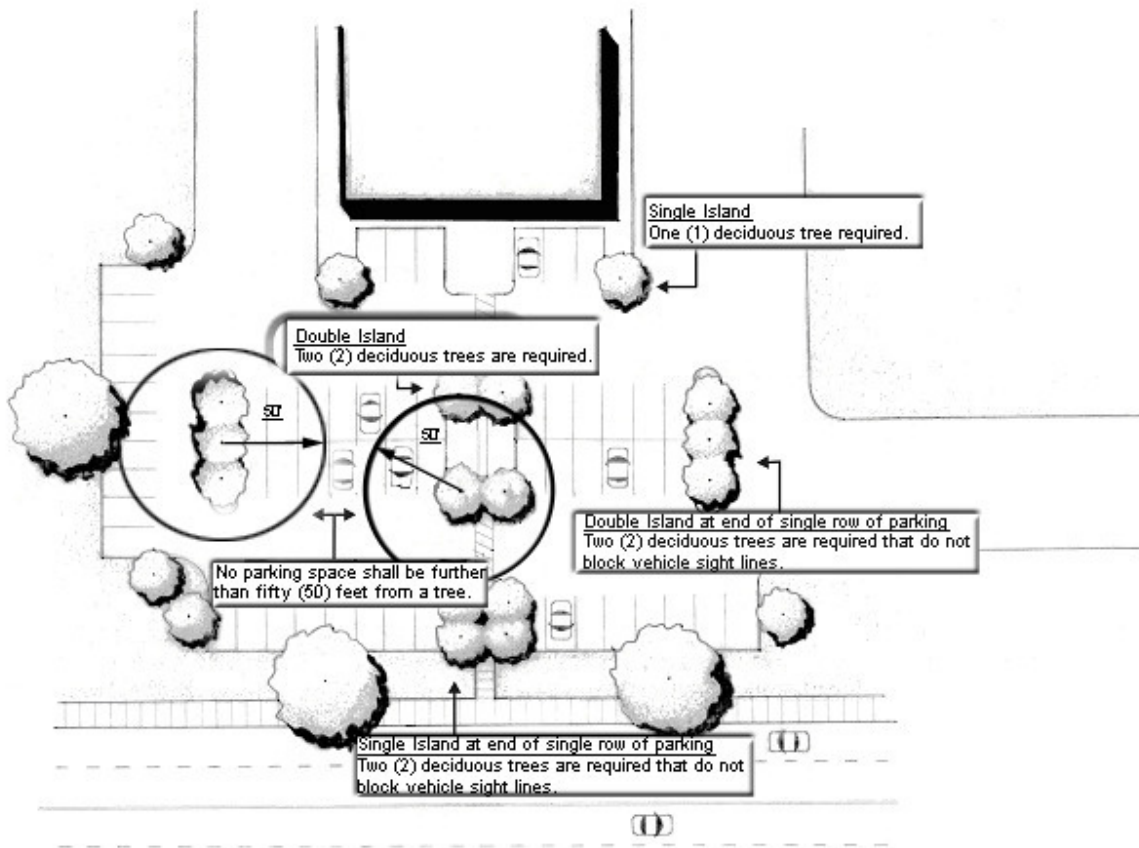


Figure 2: Typical Parking Lot Planting

D. STREET TREES, SHRUBS AND PLANTINGS.

1. The use of street trees and shrubs in landscaping for residential and non-residential subdivisions shall adhere to the requirements set forth by Table 4. Acceptable street trees for residential and non-residential subdivisions are approved by Council policy and are listed in Appendix A.
2. The Director of Planning may require that street trees be provided for all public streets within and adjacent to any proposed development where insufficient street trees presently exist. Proper approvals and permits must be obtained from the applicable agency. Planting locations will be guided by specifications found herein.

TABLE 4: STREET TREE PLACEMENT FOR RESIDENTIAL AND NON-RESIDENTIAL SUBDIVISIONS	
	PLACEMENT
Tree Frontage Requirement	A minimum of one (1) street tree for every forty (40) feet of lot frontage for single family subdivisions and fifty (50) feet of street frontage for multi-family subdivisions, including common land, and non-residential subdivisions.
Tree Size	Street trees shall be at least two and one-half (2 ½) inches in caliper.
Tree Species Utilized	A maximum of twenty (20) percent of one species may be utilized for street trees.
Location of tree to right-of-way	Street trees shall be located within a street right-of-way unless so approved by variance.
Location of tree to curb	Street trees shall not be planted closer than three (3) feet to any curb.
Location of tree to street lights	Street trees shall not be placed within twenty-five (25) feet of street lights.
Location of tree to street inlets or manholes.	Street trees shall not be planted within ten (10) feet of street inlets or manholes.

3. For all districts, landscaped entrance islands shall not block required lines of sight.
4. For all districts, no tree, shrub or planting shall be placed within the sight distance triangle or the area of adjacent right of way bounded by the street pavement and the extension of the sight distance triangle.*
5. Shrubs at mature size shall not extend over pavement or sidewalks. Trees shall be placed such that they can be trimmed to provide a minimum clearance of ten (10) feet over City-maintained sidewalks. Trees shall not obstruct the view of street signage.*

*These requirements apply to shrubs and plantings that at mature height exceed three (3) feet above the elevation of the adjacent pavement or sidewalk and trees that at mature height have bottom branches less than seven (7) feet above the adjacent pavement.

E. INSTALLATION AND MAINTENANCE.

1. Consideration must be given to year round appearance.
2. All landscaped areas, including islands, shall be provided with mechanical, in-ground irrigation system.

3. All landscaped areas should be curbed or protected by parking stops. Consideration should be given to access for mowing equipment.
4. Burlap and twine shall be removed from at least top one third of the root ball before backfilling.
5. Mulch may be used instead of grass or in combination with grass. When mulch is used, it shall completely cover the root ball with a maximum of 2-4 inches of mulch.

F. LANDSCAPE BONDS.

Prior to the signing of any mylar for a record plat or approval of any Municipal Zoning Authorization other than for a display house, a landscape bond shall be posted. The requirements for landscape installation and landscape maintenance bonds in the City of Chesterfield are set forth in Table 5. Alternatively landscape installation surety may be included in the subdivision escrow, as approved by the Director of Planning.

TABLE 5: LANDSCAPE BOND REQUIREMENTS	
Type of Landscape Bond	Requirements
Landscape Installation Bond	When the estimated materials costs for new landscaping shown on the site development plan exceeds one thousand (\$1,000) dollars, as determined by a plant nursery, the petitioner shall furnish a two (2) year bond or escrow sufficient in amount to guarantee the installation of said landscaping.
Landscape Maintenance Bond	Upon release of the Landscape Installation Bond, a two (2) year Landscape Maintenance Bond is required.

G. SPECIAL STUDIES.

When deemed appropriate due to the nature of the existing vegetation on the site, the Planning Commission may require the developer to provide a landscape or forestry study by an Independent Urban Forester or a Missouri Landscape Architect.

XIV. SURETY AND ESCROW PROCEDURES.

A. Prior to the issuance of any grading permit or improvement plan approval, a surety or cash escrow shall be posted to account for trees that die, or are damaged beyond repair, as a result of grading or construction damage. The surety or cash escrow will remain for:

1. Two (2) years after the issuance of the cessation of grading or completion of the required improvements whichever is later.

- B. The amount of the surety or cash escrow shall be in the amount of \$10,000 per 100 lineal feet, or portion thereof, of wooded canopy perimeter to be preserved adjacent to any proposed clearing, grading, or other disturbance; or \$20,000 per acre to be preserved which ever is less.
- C. The number of replacement trees is determined by matching the total caliper inches of trees to be planted with the total DBH inches of the trees that were lost.
- D. A Landscape Plan shall be developed for the replacement trees according to specifications shown in this Tree Manual.
- E. Failure to replace trees shall constitute default and the City of Chesterfield shall be entitled to proceed against the surety or cash escrow. Monies collected from fines will be placed in the Tree Preservation Account according to Section XV of this Tree Manual.

XV. TREE PRESERVATION ACCOUNT.

There is hereby established a "Tree Preservation Account" which shall be held as a separate account from the City's general fund. The monies paid as a result of fines or payments under the mitigation provisions of this ordinance or monies paid into this account pursuant to any other term of this ordinance, shall be used only for tree plantings on public property in the City of Chesterfield.

XVI. APPEAL.

- A. Decisions of the Director of Planning regarding the application of this ordinance may be appealed to the Board of Adjustment in accordance with applicable procedures as established by the Board of Adjustment.
- B. Decisions of the Director of Public Works regarding the application of this ordinance may be appealed to the Public Works Board of Variance in accordance with the applicable procedures as established by the Department of Public Works.

XVII. ADMINISTRATION AND ENFORCEMENT.

Administration and enforcement of the provisions of this manual shall be in accordance with the Zoning Ordinance of the City of Chesterfield Section 1003.200 which is adopted herein by reference. Subject to the exceptions noted in this manual, any person, firm, organization, society, association or corporation, or any agent or representative thereof who violates any section of this Tree Manual is subject to the penalties shown in Section XVIII. The removal of each tree in violation of this ordinance shall constitute a separate punishable offense. Violations occurring in the right of way shall be subject to the penalties as described in Chapter 26 of the City of Chesterfield Municipal Code.

XVIII. PENALTY FOR VIOLATION.

- A. A violation of this section shall be a municipal violation and, in addition to any fines or other requirements of this manual, punishable by a fine of not less than five (\$5) dollars and not more than one thousand dollars (\$1,000) or by imprisonment for a period not to exceed three (3) months or by both fine and imprisonment. Each occurrence, location, and failure to conform to the requirements of this ordinance shall constitute a separate offense, and each and every day that such violation shall continue shall be an additional violation with each violation being punishable by a separate fine and/or imprisonment.

- B. In addition to the penalties herein above and authorized and established, the City Attorney shall take such other actions at law or in equity, as may be required to halt, terminate, remove or otherwise eliminate any violations of this section.

- C. The City of Chesterfield shall withhold occupancy permits until the fine is paid.

APPENDIX A *City of Chesterfield Recommended Tree List*

<i>Scientific Name</i>	<i>Common Name</i>	<i>Street Tree*</i>	<i>Parking Lot or Island</i>	<i>Valley Sites</i>	<i>Evergreen</i>	<i>Ornamental</i>	<i>Mature Height feet</i>	<i>Growth Rate and Size class</i>
<i>Abies concolor</i>	Fir, White (Concolor)		x		x		45+	Slow/Med (Large)
<i>Acer ginnala</i>	Maple, Amur		x			x	20-25	Med (Small)
<i>Acer platanoides</i>	Maple, Norway	x		x			45+	Med (Large)
<i>Acer platanoides 'Columnare'</i>	Maple, Norway, Columnar		x	x			45+	Med (Large)
<i>Acer rubrum</i> Varieties	Maple, Red and Varieties	x	x	x			45+	Fast (Large)
<i>Acer saccharinum</i>	Maple, Silver			x			45+	Fast (Large)
<i>Acer saccharum</i> Varieties	Maple, Sugar and Varieties	x	x				45+	Slow/Med (Large)
<i>Acer tataricum</i>	Maple, Tatarian		x	x			15-25	Med (Small)
<i>Acer x freemanii 'Jeffersred'</i>	Maple, Hybrid, Autumn Blaze		x	x			45+	Med/Fast (Large)
<i>Acer x freemanii 'Scarsen'</i>	Maple, Scarlet Sentinel		x	x			45+	Fast (Large)
<i>Aesculus glabra</i>	Buckeye, Ohio		x	x		x	25-35	Slow (Medium)
<i>Aesculus hippocastanum</i>	Horsechestnut			x		x	30-45	Med (Medium)
<i>Aesculus pavia</i>	Buckeye, Red		x			x	20-30	Slow (Slow)
<i>Alnus glutinosa</i>	Alder, European	x		x			45+	Med/Fast (Large)

*Street tree information included for informational purposes only. Street trees are approved by the Public Works/Parks Committee of City Council and the City Council and can be amended from time to time.

Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size class
<i>Amelanchier arborea</i>	Serviceberry, Downy		x			x	25-30	Slow/Med (Medium)
<i>Amelanchier laevis</i> 'Cumulus'	Serviceberry, Cumulus		x			x	25-30	Slow/Med (Medium)
<i>Amelanchier x grandiflora</i> 'Robin Hill'	Serviceberry, Robin Hill		x			x	25-30	Slow/Med (Medium)
<i>Carpinus betulus</i>	Hornbeam, European	x	x	x			35-40	Slow/Med (Medium)
<i>Carpinus caroliniana</i>	Hornbeam, American	x	x			x	20-35	Med (Small)
<i>Carya illinoensis</i>	Pecan			x			45+	Med/Fast (Large)
<i>Carya laciniosa</i>	Hickory, Shellbark			x			45+	Slow/Med (Large)
<i>Carya ovata</i>	Hickory, Shagbark			x			45+	Slow (Large)
<i>Catalpa speciosa</i>	Catalpa, Northern			x			45+	Fast (Large)
<i>Celtis laevigata</i>	Sugarberry	x		x			45+	Fast (Large)
<i>Celtis occidentalis</i> Varieties	Hackberry, and Varieties	x		x			45+	Med/Fast (Large)
<i>Cercidiphyllum japonicum</i>	Katsura		x			x	45+	Med/Fast (Large)
<i>Cercis canadensis</i>	Redbud, Eastern		x	x		x	25-30	Fast (Medium)
<i>Cladrastis kentukea</i>	Yellowwood	x					30-50	Slow/Med (Large)

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Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size class
<i>Cornus florida</i>	Dogwood, Flowering		x				15-25	Slow/Med (Small)
<i>Crataegus crus-galli</i>	Hawthorn, Cockspur		x			x	15-20	Med (Small)
<i>Crataegus laevigata</i> 'Superba'	Hawthorn, Crimson Cloud	x	x	x		x	15-20	Med (Small)
<i>Crataegus phaenopyrum</i>	Hawthorn, Washington		x			x	20-30	Med (Small)
<i>Crataegus viridis</i>	Hawthorn, Green			x		x	25-30	Med (Small)
<i>Crataegus viridis</i> 'Winter King'	Hawthorn, Winter King		x	x		x	25-30	Med (Small)
<i>Eucommia ulmoides</i>	Rubbertree, Hardy	x	x				45+	Med (Large)
<i>Fagus grandifolia</i>	Beech, American	x		x			45+	Slow/Med (Large)
<i>Fagus sylvatica</i>	Beech, European			x			45+	Slow/Med (Large)
<i>Fraxinus Americana</i> Varieties	Ash, White and Varieties	x	x				45+	Med/Fast (Large)
<i>Ginkgo biloba</i>-Male	Ginkgo (male)	x	x				45+	Slow/Med (Large)
<i>Gleditsia triacanthos inermis</i>-Thornless, Podless Varieties	Honeylocust-Varieties that are Thornless and Podless	x	x	x			45+	Fast (Large)
<i>Gymnocladus dioicus</i>	Kentucky Coffeetree		x				45+	Med/Fast (Large)
<i>Halesia carolina</i>	Silverbell		x	x		x	20-30	Slow (Medium)

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Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size Class
<i>Ilex decidua</i>	Holly, Deciduous		x	x		x	45+	Slow (Large)
<i>Ilex opaca</i>	Holly, American			x	x		45+	Slow (Large)
<i>Juniiperus virginiana</i>	Redcedar, Eastern		x	x	x		30-40	Med (Medium)
<i>Juniperus chinensis</i>	Juniper, Chinese		x		x		20-30	Slow/Med (Small)
<i>Koelreuteria paniculata</i>	Goldenrain Tree	x	x				25-40	Med/Fast (Medium)
<i>Liquidambar styraciflua</i>	Sweetgum			x			45+	Fast (Large)
<i>Liriodendron tulipifera</i>	Tuliptree			x			45+	Fast (Large)
<i>Magnolia acuminata</i>	Cucumbertree		x				45+	Slow/Med (Large)
<i>Magnolia grandiflora</i>	Magnolia, Southern			x		x	45+	Med (Large)
<i>Magnolia virginiana</i>	Magnolia, Sweetbay		x	x		x	15-25	Med (Small)
<i>Magnolia x soulangiana</i>	Magnolia, Saucer		x	x		x	20-30	Slow/Med (Medium)
<i>Ostrya virginiana</i>	Hophornbeam	x	x				30-40	Slow/Med (Medium)
<i>Oxydendron arboreum</i>	Sourwood, (Sorrel Tree)		x	x			20-30	Slow/Med (Medium)
<i>Picea glauca</i>	Spruce, White		x	x	x		30-40	Med (Medium)
<i>Picea pungens</i>	Spruce, Colorado Blue		x	x	x		30-40	Med (Medium)

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Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size Class
<i>Pinus densiflora</i>	Pine, Japanese Red		x		x		45+	Med (Large)
<i>Pinus flexilis</i>	Pine, Limber		x		x		30-40	Med (Large)
<i>Pinus resinosa</i>	Pine, Red			x	x		45+	Med (Large)
<i>Pinus strobus</i>	Pine, Eastern White		x	x	x		45+	Fast (Large)
<i>Pinus thunbergiana</i>	Pine, Japanese Black		x	x	x		45+	Med (Large)
<i>Platanus occidentalis</i>	Sycamore			x			45+	Fast (Large)
<i>Platanus x acerifolia</i>	Planetree, London	x		x			45+	Fast (Large)
<i>Platycladus orientalis</i>	Arborvitae, Oriental		x		x	x	30-40	Slow (Medium)
<i>Prunus cerasifera</i>	Plum, Purple-leaf		x			x	15-25	Med (Small)
<i>Prunus sargentii</i> 'Columnaris'	Cherry, Sargent, Columnar		x			x	30-40	Med (Medium)
<i>Prunus serrulata</i>	Cherry, Flowering, Japanese		x			x	25-35	Med (Medium)
<i>Pyrus calleryana</i> 'Chanticleer'	Pear, Callery, Chanticleer			x		x	15-25	Med (Small)
<i>Pyrus calleryana</i> 'Redspire'	Pear, Callery, Redspire		x			x	35-45	Med (Medium)
<i>Quercus acutissima</i>	Oak, Sawtooth	x		x			45+	Med (Large)
<i>Quercus alba</i>	Oak, White			x			45+	Med (Large)
<i>Quercus bicolor</i>	Oak, Swamp White	x		x			45+	Med (Large)

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Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size Class
<i>Quercus coccinea</i>	Oak, Scarlet	x		x			45+	Med/Fast (Large)
<i>Quercus var.pagodafolia</i> <i>falcata</i>	Oak, Cherrybark			x			45+	Med (Large)
<i>Quercus imbricaria</i>	Oak, Shingle	x		x			45+	Med (Large)
<i>Quercus macrocarpa</i>	Oak, Bur			x			45+	Slow/Med (Large)
<i>Quercus michauxii</i>	Oak, Swamp Chestnut	x		x			45+	Med (Large)
<i>Quercus muehlenbergii</i>	Oak, Chinkapin	x		x			45+	Med (Large)
<i>Quercus robur</i>	Oak, English,	x		x			45+	Med (Large)
<i>Quercus rubra</i>	Oak, Northern Red	x	x				45+	Med/Fast (Large)
<i>Quercus stellata</i>	Oak, Post			x			45+	Slow (Large)
<i>Quercus velutina</i>	Oak, Black			x			45+	Med (Large)
<i>Quercus shumardii</i>	Oak, Shumard	x		x			45+	Med/Fast (Large)
<i>Quersus prinus</i>	Oak, Chestnut			x			45+	Med (Large)
<i>Salix nigra</i>	Willow, Black			x			30-40	Fast (Medium)
<i>Sassafras albidum</i>	Sassafras			x			30-40	Med (Medium)
<i>Sophora japonica</i>	Pagodatree, Japanese			x		x	45+	Med (Large)

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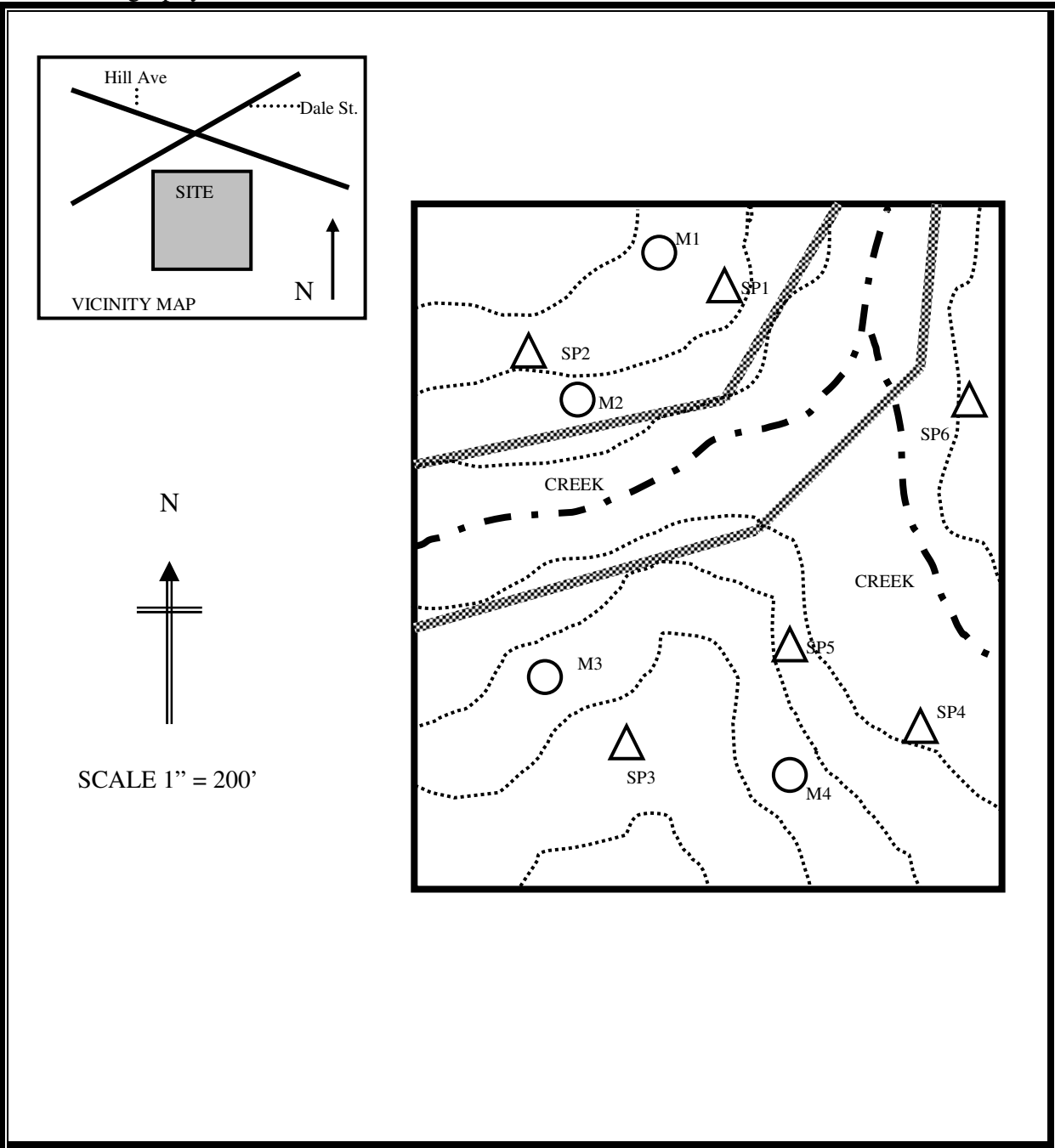
Scientific Name	Common Name	Street Tree*	Parking Lot or Island	Valley Sites	Evergreen	Ornamental	Mature Height feet	Growth Rate and Size Class
<i>Syringa reticulata</i>	Lilac, Japanese Tree		x			x	25-30	Med (Small)
<i>Taxodium distichum</i>	Baldcypress			x			45+	Med (Large)
<i>Tilia americana</i>	Basswood, American (Linden)	x		x			45+	Med/Fast (Large)
<i>Tilia cordata</i> Varieties	Linden, Littleleaf and Varieties	x	x				45+	Slow/Med (Large)
<i>Tsuga canadensis</i>	Hemlock, Canadian		x	x	x		45+	Slow/Med (Large)
<i>Ulmus americana</i> Varieties	Elm, American and Varieties	x		x			60-80	Med/Fast (Large)
<i>Ulmus parvifolia</i>	Elm, Chinese (Lacebark)	x		x			45+	Med/Fast (Large)
<i>Zelkova serrata</i> Varieties	Zelkova and Varieties	x		x			45+	Fast (Large)

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APPENDIX B

SAMPLE TREE STAND DELINEATION MAP

Aerial Photography/BAF 10 Method



SAMPLE TREE STAND DELINEATION MAP

Ocular Estimate Method

