Engineering Department
Manual Of
Practice

HICKORY
North Carolina
Life. Well Crafted.

700 Landscaping

DIVISION 700 LANDSCAPING

A. GENERAL NOTES

1. Areas within buffers not covered by screening devices shall have permanent ground cover established. Ground cover shall include seeded grass or sod, low growing evergreen or shrubs, rock, brick or wood mulch or any combination.

2. All planting which materially impairs vision between 2 ½ and 8 feet in height shall be sited outside of intersection sight triangles.

3. Areas within easements or right-of-way limits that are unpaved shall have permanent ground cover established prior to the City accepting the construction or development. Seeded vegetation shall be established on a mowable surface. Areas presently wooded shall be retained and restored.

(a) Seeding specs shall be based on proposed planting season and vegetation needs.

(b) Soil tests should be performed to determine the proper amount of fertilizer and soil amendments required.

(c) Areas shall be ripped and spread with available topsoil minimum 3" deep. Total seedbed prepared depth shall be 4" to 6" deep or as required.

4. The planting season for the Hickory Area generally extends from November 15th until April 15th of the following year.

5. The following list is the recommended distances for planting trees around obstacles.

Plant Tree:
- 5 feet from water meters
- 15 feet from fire hydrants
- 20 feet from utility poles
- 25 feet from driveways
- Outside the required intersection sight triangle

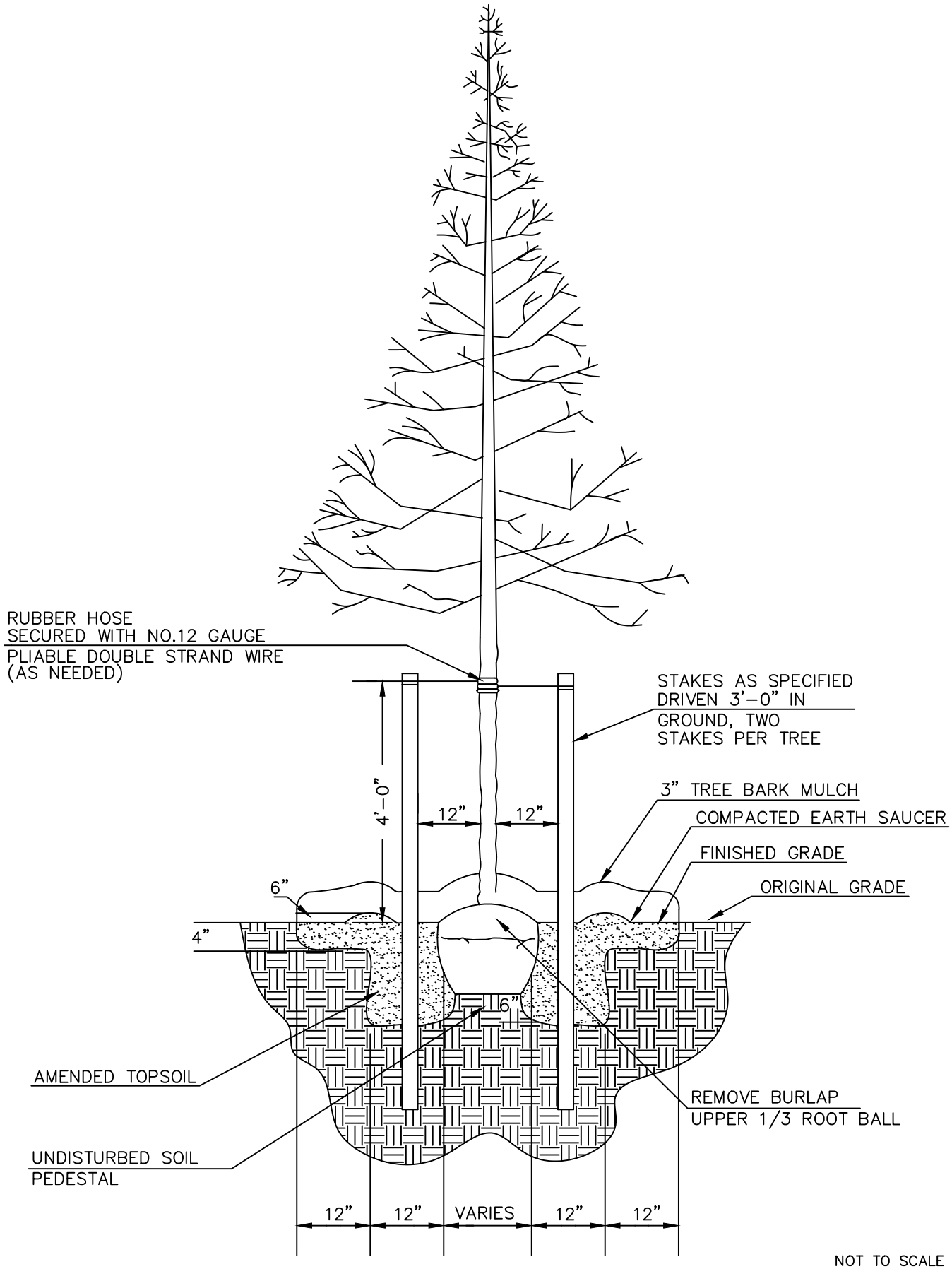
When planting directly under overhead power lines use a tree with a mature height of less than 20 feet.

B. PLANTING LIST

This list indicates plantings which will meet the screening and buffer requirements of the zoning ordinance. This list is by no means comprehensive and is intended merely to suggest the types of flora which would be appropriate for screening and buffer purposes. Plants were selected for inclusion of the list according to three principal criteria: general suitability for the climate and soil conditions of the area, ease of maintenance, and availability from area nurseries.

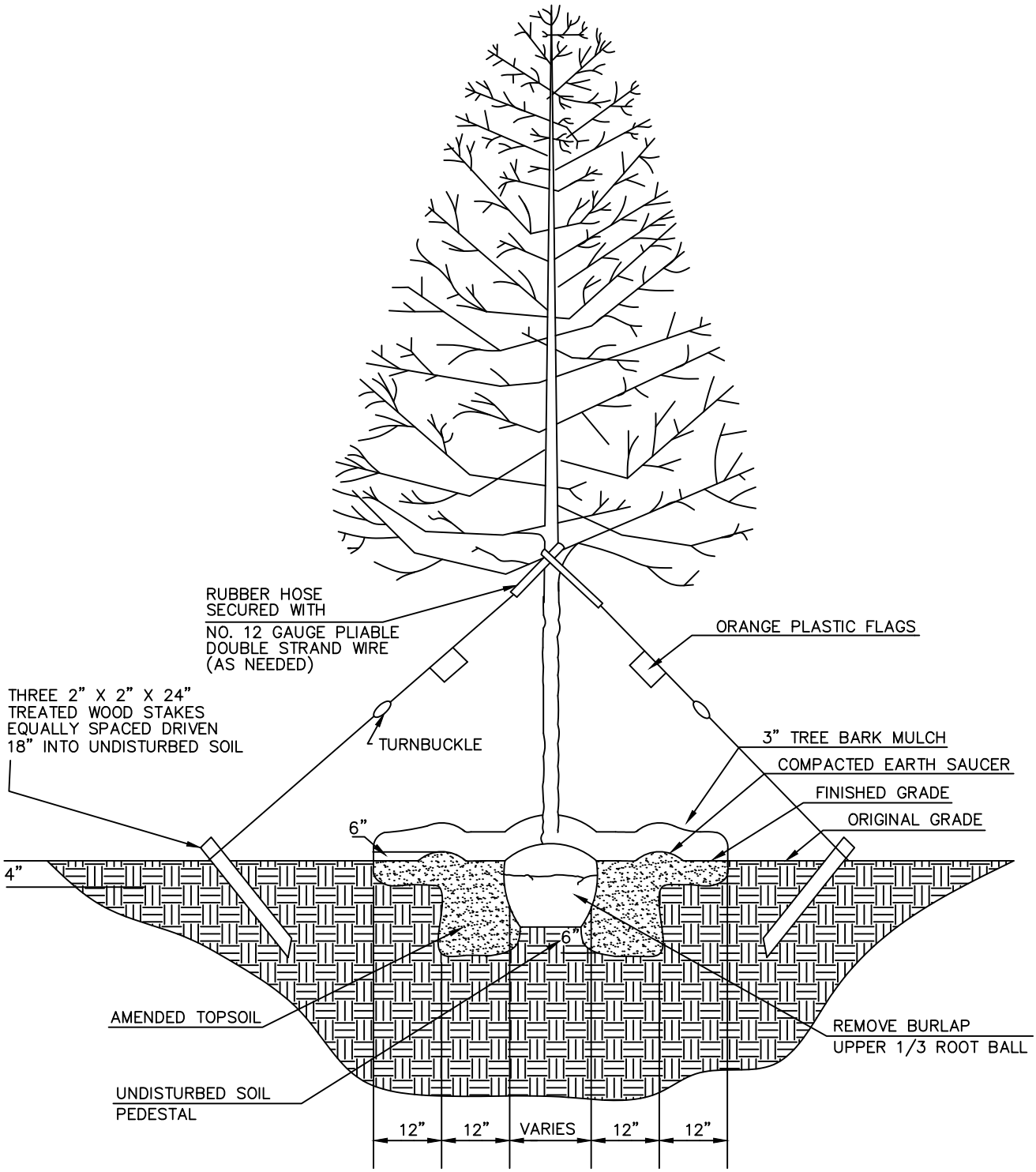
NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.	CITY OF HICKORY		
	GENERAL NOTES FOR LANDSCAPING		SHEET 1 OF 1
		DATE: 2-1-07	STD. NO. 701



NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.	CITY OF HICKORY		
	PLANTING SMALL TREES UP TO AND INCLUDING 2 INCH CALIPER		SHEET 1 OF 1
		DATE: 2-1-07	STD. NO. 702



NOT TO SCALE

HICKORY North Carolina Life. Well Crafted.	CITY OF HICKORY		
	PLANTING LARGE TREES GREATER THAN 2 INCH CALIPER		SHEET 1 OF 1
		DATE: 2-1-07	STD. NO. 703

City of Hickory
Landscape Ordinance
And Tree Preservation
Handbook

OVERVIEW

The City of Hickory's Landscape Ordinance and Tree Preservation Handbook was created to provide a tool for developers, contractors, and designers to use when planning construction on a site. This booklet contains guidelines for tree preservation during construction and landscape requirements for buffers and parking areas. Updated lists of recommended trees and shrubs are also included.

By combining the landscape section from the City of Hickory's Manual of Practice and the requirements of the Land Development Code, this handbook contains the pertinent information needed to comply with regulations in the City of Hickory.

Our hope with this handbook is to encourage development which preserves and protects the existing tree canopy on a site and throughout the City of Hickory.

For further information about tree preservation in the City of Hickory please contact Tammy Teague, City Arborist at 828.323.7585. For information about landscape requirements, please contact the Planning and Zoning Department at 828.323.7422. This handbook was funded by a grant from the North Carolina Division of Forest Resources and the USDA Forest Service through the Urban and Community Forestry Grant Program.

Landscape Ordinance and Tree Preservation Guidelines

Purpose and Applicability

Landscape and Tree Preservation Requirements

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b. Sample – Landscape Plan
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10.11.1 Purpose

The provisions of this section are intended to:

(a) protect and enhance the visual appearance and natural beauty of the City of Hickory and its' ETJ by encouraging the preservation of existing trees and requiring the planting of new trees and vegetation;

(b) protect property values by providing a transition between dissimilar land uses and/or zoning districts and minimizing the impacts of development on the community; and

(c) provide ecological benefits including: reduced stormwater runoff, decreased erosion, improved water quality, air quality benefits, creation of shade for cooling, and the protection of wildlife habitat.

10.11.2 Applicability

(a) Landscape requirements involve the provision of plant materials and other screening and buffering techniques in the following situations:

(1) Along the perimeter of dissimilar land uses,

(2) Around open storage and mechanical equipment, and

(3) Inside and along the perimeter of parking areas.

(b) Landscape requirements shall apply to the following activities:

(1) All new development, except as exempted in Paragraph (c) below.

(2) All expansions or changes in use which result in an increase of more than twenty-five (25%) percent of existing floor and/or parking area shall be brought into full compliance for the entire project.

(3) All renovations to a principle structure where the total value of the renovations exceeds fifty (50%) percent of the buildings' value according to County tax records. The total cost of repairs shall be determined by the value of construction measured by all building permits issued within any period of eighteen (18) consecutive months. The full property shall be brought up to current standards.

(c) Landscape requirements shall not apply to the following development:

(1) Single-family and two-family residences on single lots, and

(2) Parking provided underground or within structures.

(d) Additional landscape requirements may be required for projects within certain neighborhood overlay zones and NC zoning districts. Refer to those sections of the Land Development Code for further requirements.

Landscape Plan Required

10.11.3 Landscape Plan Required

The landscape plan shall be drawn to scale, contain a north arrow, and include the following:

(a) Location of existing and proposed buildings, all driveway and parking lots, walkways and public sidewalks, and connections to existing street or adjacent lots.

(b) Location, type, size, and quantity of existing plant materials to be preserved and location of tree protection fencing (if applicable).

(c) Location of all existing and proposed overhead and underground utilities.

(d) Zoning designation and use of all adjacent properties.

(e) Location and description of all landscape improvements, including all perimeter landscape areas and perimeter and interior parking lot landscaping.

(f) Table of all plants used with botanical and common name, quantity and size of all proposed landscape material.

(g) Location of all other landscape improvements, including berms, walls, fences, courtyards, lights, and paved areas.

(h) Required open space, and all streams, wetlands, and associated setback buffers.

Tree Preservation

10.11.4 Tree Preservation

(a) The preservation of existing trees on a site can improve the aesthetic quality of the site, improve property values, provide environmental benefits, and mitigate the impacts of development. Existing vegetation shall be preserved whenever feasible and must be preserved in certain circumstances as outlined below.

(b) Where a natural perimeter buffer exists, it is to remain undisturbed, except for the removal of dead wood and invasive vines and plants. No limbing up is allowed and understory shall not be removed. The Planning Director may require the retention of other existing mature vegetation on a site wherever such vegetation contributes to required screening and buffering or for the preservation of significant trees.

(c) Existing trees and wooded areas may be counted toward buffer and screening and parking area landscape requirements. Existing trees may be counted for fulfilling parking area requirements only if they are located within one hundred (100) feet of the parking area. Existing trees shall be credited at the following rate according to the diameter measured at four and a half (4.5) feet above the ground:

6” to 12” = 2 trees

13” to 18” = 3 trees

19” to 24” = 4 trees

25”+ = 5 trees

(d) When using existing trees, they must be protected and undisturbed during the entire construction process using, at a minimum, the techniques proved in the City of Hickory Manual of Practice and as may be required by the City Arborist. Applicants shall seek the assistance of a professional urban forester or landscape architect to properly preserve existing trees for credit. If protective measures are not used during construction, existing vegetation cannot be counted toward landscape requirements.

(e) **For all trees required by this Land Development Code, tree topping is prohibited.** See Section 10.11.10 of the Land Development Code and the Manual of Practice for more information about tree topping and proper tree pruning.

Steps for Tree Preservation During Development

Existing trees, on a development site, should be regarded as a resource that will enhance the monetary as well as aesthetic value of the finished project. Large and small trees can be preserved on a site when an effort is made to ensure protection of the proper amount of space needed for the tree to survive. All parties involved in the project should be aware that the trees are to remain and that certain activities are not permitted within a certain area around the tree.

The following steps must be taken when preserving trees and on a construction site:

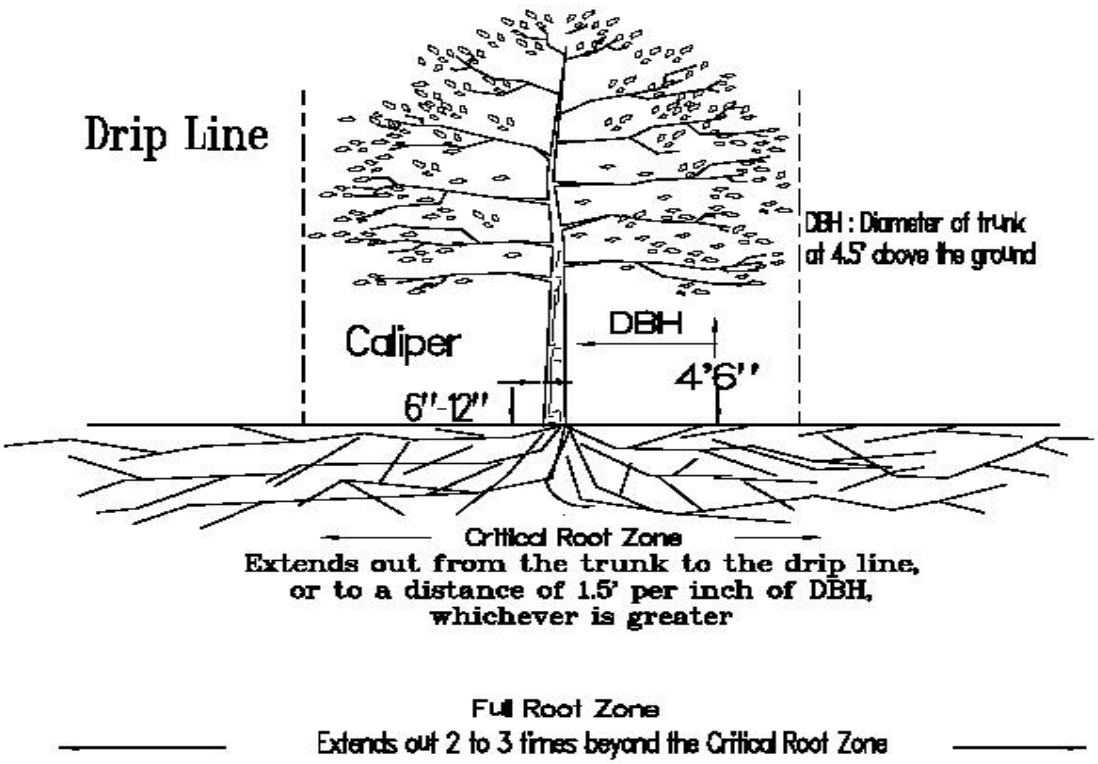
STEP 1: Inventory Existing Trees. By completing an inventory of trees on the site showing condition, size, location and species, determinations can then be made whether or not the trees can be preserved. During the inventory process, keep the following in mind:

- **Move smaller caliper trees to another area on the site where they will not be subjected to construction activity.** If young trees are to be kept on site, be sure enough area is maintained for future growth.
- **Trees with defects, decay, and extensive dieback in the crown or other problems should be removed.** They most likely will not survive the damage from construction activity.
- **Trees that are in the way of utility lines, proposed building, or any grading or drainage changes that would damage a large area of the root system should also be considered for removal.**
- **Trees growing in stands or groups should be preserved together if possible.** The root systems of these trees have intertwined through their development and should not be disturbed.

Steps for Tree Preservation During Development

STEP 2: Determine the amount of space needed for the tree protection area. This is done by calculating the **critical root zone** of individual and groups of trees. A measurement of the trunk should be taken at **diameter breast height (DBH)** or 4.5 feet above the ground. Then measuring outwards from the trunk 1.25 feet for every inch of trunk diameter, the resulting area is the **critical root zone.** For example, a 20-inch diameter tree would require a 30-foot area of protection around the tree for the **critical root zone.** This is a minimum area of protection and a larger area is preferred. A minimum of 6 feet must be protected around trees regardless of diameter.

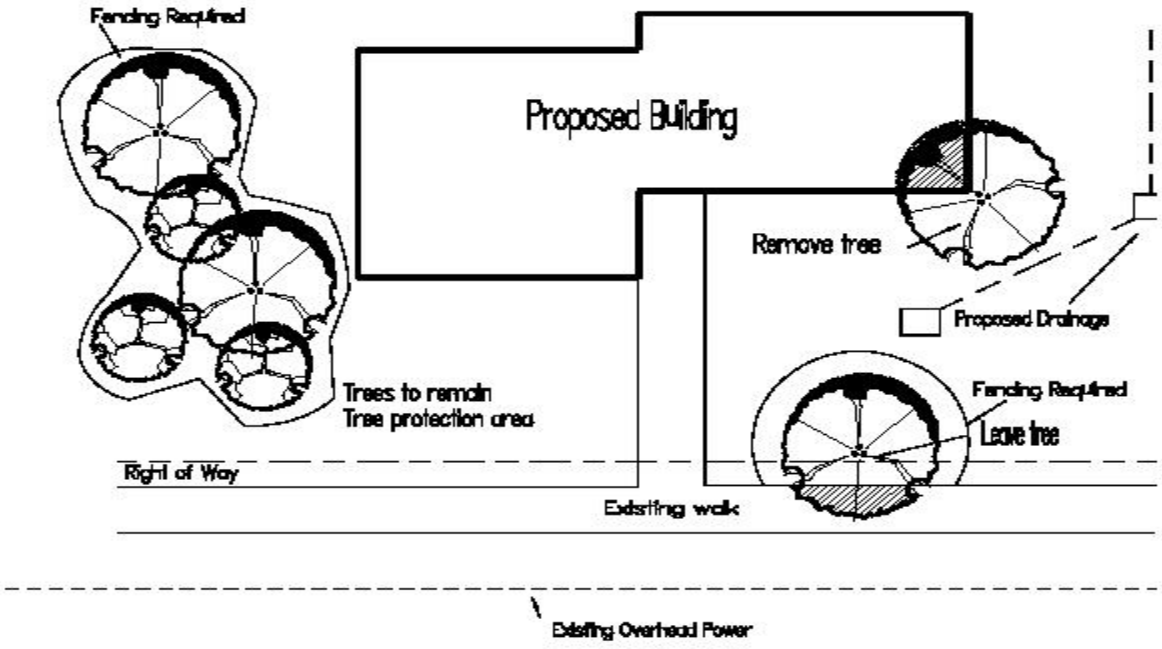
Determining Critical Root Zone



Steps for Tree Preservation During Development

STEP 3: Create a site plan showing all existing trees to be preserved, site features, property lines, utility lines, ROW, proposed building and grading and drainage. See Section 10.11.3 for full plan requirements.

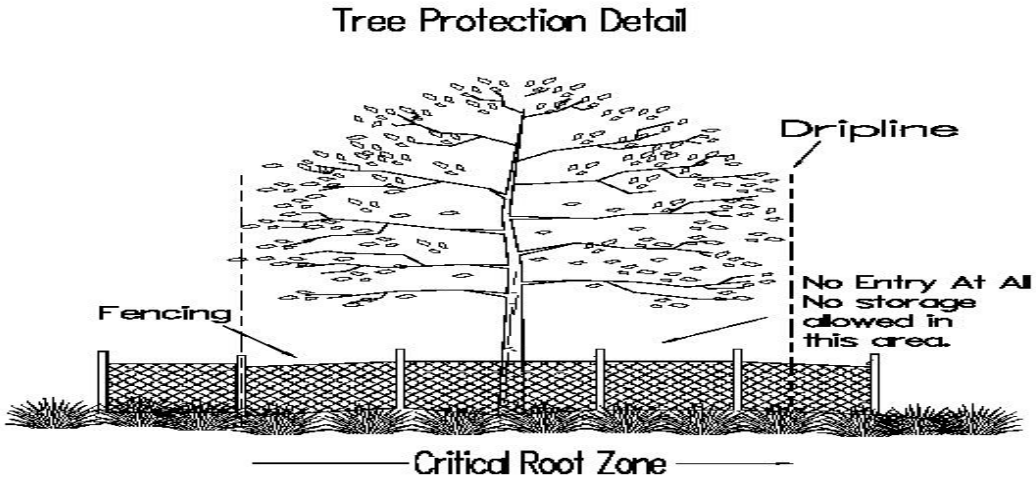
Example Site Plan



Steps for Tree Preservation During Development

Step 4: Fencing must be placed around the tree to protect the Critical Root Zone.

- Fencing must be composed of metal that is four to six feet in height - examples include hog wire and chain link. Fencing must be secured to the ground with metal posts. Flags may be placed on fencing to ensure visibility.
- Signs must then be placed noting that this is a **tree protection area** and any entry, storage, parking, cleaning of equipment, or any other construction activity is not permitted within the fencing.
- Any damage to fencing must be immediately repaired or replaced.
- If groups of trees are to be protected, fencing and signs must be placed around the perimeter of the group. This **tree protection area** is calculated by measuring the **DBH** of the outermost trees and extending our 1.5 feet per inch of diameter of trees located on the edge of the stand.
- When saving a group or cluster of trees maintain the natural undergrowth and avoid excessive pruning.
- Any trees which are dead or decayed within the group, that need removal, should be done by hand with minimal disturbance to the root zone. No heavy equipment shall be used to clean underbrush out of the area.
- Communication between all parties involved is essential in preserving trees. Penalties may be enacted to ensure the tree protection area remains undisturbed.



Tree Species Resistant To Construction Damage

Resistant	Moderate	Susceptible
Ash - Green	Ash - White	Basswood (Tilia)
Bald Cypress	Carolina Silverbell	Birch - Paper
Bayberry	Catalpa	Beech
Birch - River	Crabapple	Black Cherry
Black Gum	Deodar Cedar	Black Walnut
Cypress	Dogwood	Hemlock
Eastern Red Cedar	Fringetree	Katsura
Elm	Hawthorn	Maple - Silver, Sugar
False Cypress	Hickory	Sourwood
Ginkgo	Hophornbeam	Yellow Poplar
Hackberry	Magnolia	Yellowwood
Holly	Oak - Chestnut, Post, Black White, Southern Red, Pin Willow	
Kentucky Coffee Tree	Pine - Shortleaf	
Locust	Redbud	
Maple - Red	Spruce	
Oaks - Swamp, Overcup, Bur, Water, Shumard, Nuttall, Northern Red	Sweetgum	
Pawpaw	Sycamore	
Persimmon	Willow	
Pines - Loblolly, Longleaf, Slash		
Sassafras		
Serviceberry		
Willow		

Trenching and Tunneling

Whenever soil is disturbed, nearby trees can show reduced growth rates, dieback, dead branches, general reduction of vigor, loss of health, invasion by insects, infection from disease and even death.

Roots provide mechanical support for the tree and are the part that absorbs water and nutrients from the soil. Roots need oxygen to survive and this is absorbed through pores in the soil. When equipment runs over the soil, compaction occurs. Compaction is the elimination of pore space in the soil and this leads to root death.

When trenches are dug to install underground lines, there are certain guidelines to follow to ensure minimal impact to a tree's root system.

Trenching

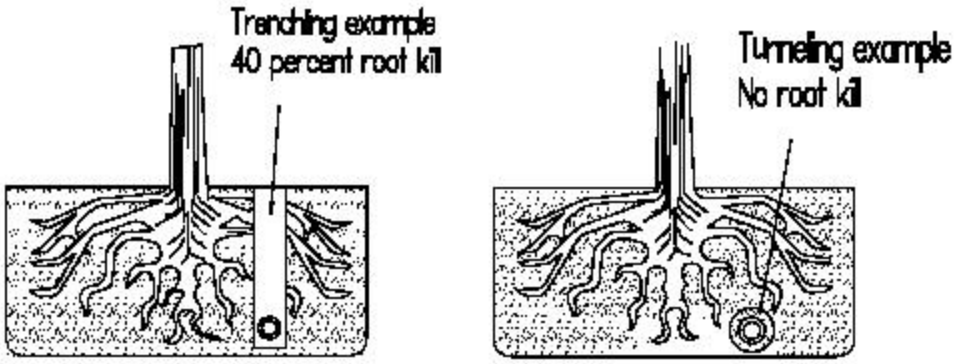
- **The further away from the trunk of the tree the root is cut, the less the amount of root loss.** Trench outside of the drip line. The location of the roots cut determines the percentage of the tree's life system that is removed. The further away from the trunk of the tree the root is cut, the less the amount of root loss.
- **Pile excavated soil on the opposite side of the trench from the tree.** This will eliminate root disturbance when backfilling and reduce any extra fill being piled over the existing roots.
- **If roots over 2 inches in diameter are cut when trenching, the roots should be re-cut with a handsaw to remove jagged edges.** Crushed or torn roots lead to decay. By having a cleanly cut root, the tree can then re-grow new roots.
- **Backfill trenches as soon as possible.** Dried roots are dead roots. On a warm day, small roots can dry out in 10 to 15 minutes. If time does not allow for backfilling, place damp burlap, peat or similar material over the roots to keep them moist. Water the trench after it has been backfilled.
- **If trenching is the only option, try to adjust the route by curving or moving away from the tree to avoid excessive root damage.**
- **Compaction to the root zone can be minimized by placing 4 to 12 inches of wood chips over the root zone.** If equipment then runs over this, soil compaction is lessened. Another method is by placing railroad ties and steel plate over the root system, thus bridging over the root area.

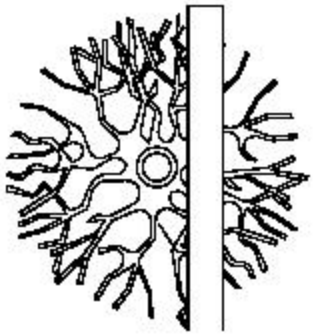
Trenching and Tunneling

Tunneling

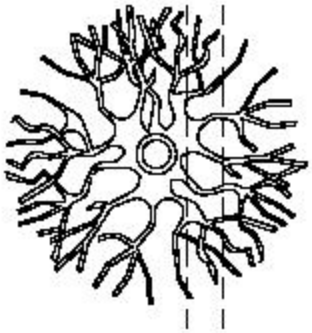
- **Trenching near a tree can kill 40-50% of the roots. A tunnel in the same place will do minimal damage.** Most roots are in the top 18 inches of soil. A tunnel 24 inches deep will do little damage to the roots.
- **If the tree is less than 12 inches in diameter, tunnel 3 feet below the soil surface.** If the tree is over 12 inches in diameter, tunnel 4 feet below the surface. When tunneling go 1 to 2 feet on either side of the center of the tree. This will avoid cutting taproots.
- **When tunneling the trench should come no closer to the tree than the drip line.** The rest of the area through the root area should then be tunneled.
- **Compaction to the root zone can be minimized by placing 4 to 12 inches of wood chips over the root zone.** If equipment then runs over this, soil compaction is lessened. Another method is by placing railroad ties and steel plate over the root system, thus bridging over the root area.

Trenching and Tunneling





Trenching near a tree can kill as much as 40-50 percent of the roots. This generally leads to poor health, root failure or death of the tree.



A tunnel in the same place will do little damage to the tree.

Stop! Don't Top That Tree

Tree topping is the removal of all if not most of the large limbs on a tree. This practice leaves large stubs and a trunk. The result is a tree, which over time, if it does not die, will become dangerous. There are many reasons why topping is a bad practice, some of them are as follows:

- **Topping does not reduce the size of the tree.** After deciduous trees are topped, they actually replace the lost growth with rapidly growing sprouts. Within several years, the tree can actually be larger than its original size when topped.
- **Topping is expensive.** If the tree does not have to be removed because it died, it will have to be pruned again to control growth. A nice landscape can add up to 20% to the value of your property. A topped tree actually reduces that value.
- **Topping is dangerous.** After trees are topped, the rapid growth, which forms, has weak branch attachment. The limbs generally fail and fall from the tree especially during wind. The decay in the limb from the incorrect pruning also causes branch failure. Topping can also kill a tree since it removes all of the trees ability to manufacture food. This places the tree under stress and the result is a struggling tree that is more susceptible to insects and disease.
- **Topping is not the proper way to prune crape myrtles.** These small trees have been bred to grow in a variety of sizes. Pick the correct cultivar for the particular need. Pruning these trees severely is topping and is not the correct way to prune them.
- **Topping is ugly.** A topped tree is a disfigured tree. Even with its regrowth, it never regains the grace and character of its species.

NO TOPPING!

Perimeter Landscape Buffers Requirements

10.11.5 Perimeter Landscape Buffers Requirements

(a) A perimeter landscape buffer is a strip of land around the outer perimeter of those portions of a lot adjacent to other land uses that may only be occupied by screening, underground utilities, retention areas and landscaping materials. If underground utilities need to be located along a property line where a buffer is required, the utility lines shall be located along the edge of the buffer. A wider buffer may need to be provided, if necessary, to accommodate required vegetation and utilities.

(b) Buffer Matrix. The required buffering distance between the proposed land uses and the existing adjacent land use on adjoining zoning lots is set forth in the Buffer Matrix, Figure 10-1, below. If the land next to the proposed development is vacant, the buffering required shall be determined by the existing zoning on the adjacent vacant parcel. If the adjacent parcel is vacant, but is zoned for a more intensive zoning district, no buffer area shall be required of the less intensive use. The relative degree of intensity shall be determined as follows:

(1) Single-family shall be the least intensive.

(2) Two-family and multiple-family, 6 units or less per acre, shall be the next least intensive.

(3) Multiple-family, 7 units or more per acre, shall be the next least intensive.

(4) Group 1 shall be the next least intensive.

(5) Group 2 shall be the next least intensive.

(6) Group 3 shall be the most intensive.

Perimeter Landscape Buffers Requirements

Figure 10-1 Buffer Matrix - Required Buffer Width [feet]						
Proposed Use	**Abutting Use or Zoning and Required Buffer Width (feet)**					
	Single-Family	**Two-Family & Multi-Family**		**Group 1**	**Group 2**	**Group 3**
		2–6 UPA	**7+ UPA**			
2-Family/ Multi-Family 2 –6 UPA	10	0	0	0	0	0
2-Family/ Multi-Family 7+ UPA	10	10	0	0	0	0
Group 1 Use	10	10	10	0	0	0
Group 2 Use	15	15	15	10	0	0
Group 3 Use	30	30	30	20	15	0

UPA = Dwelling Units per Acre

Land Use Groups

Group 1

Art Galleries
Child Care Center
Church/Synagogue
Museums
Libraries
Schools/College/University

Group 2

Animal Hospital/Veterinary Clinic
Banking and Automatic Teller
Bicycle Sales and Repair
Business Services
Communication Facilities
Dry Cleaners
Electrical/Electronic Repair – Small
Funeral Parlor
Furniture Refinishing and Repair
Gas Station
General Retail and Services
Health Services
Hospitals
Hotels/Motels
Manufactured Home Sales
Motor Vehicle Sales/Repair/Rental
Liquor Stores
Lumber And Other Building Materials
Mail Order Office
Medical and Dental Laboratories
Nursing, Extended Care, Rehab Facilities
Parking, Off-Street
Photography Studio
Places of Assembly
Professional Services
Public Facilities
Radio, Television and Movie Studio
Recreation and Amusement Services
Rental of Light Equipment
Repair Services
Restaurants
Service Station
Telecommunications Tower

Group 3

Adult Uses
Car Wash (Primary Use)
Crematorium
Electrical/Electronic Repair – Large
Exterminator
Heavy Equipment – Sales and Rental
Junkyards
Landscape Company/Lawn Care
Lumberyard
Manufacturing, Processing and Assembly
Open Storage
Open Uses of Land – Heavy
Publishing and Printing
Sign Painting Services
Stadium
Transportation Facilities
Truck Terminal
Warehouse
Wholesale Distribution

General Buffer Requirements

(d) **General Buffer Requirements**

1) Screening and buffering shall be required as outlined below and further described in the City of Hickory's Manual of Practice.

(2) Screening, such as hedges, fences or walls, as described in this section, shall not be over four (4) feet tall within front yards unless otherwise expressly allowed in the Land Development Code.

(3) Where a natural buffer exists, it shall remain undisturbed, except for the removal of dead wood and invasive vines and plants. In cases where topography or other site conditions make it unfeasible to retain the natural buffer, a waiver of this requirement must be given by the Planning Director. No limbing up is allowed and understory shall not be removed. Additional trees and shrubs may be required to bring the natural buffer up to the full perimeter buffer requirements.

(4) All exposed areas of soil within the buffer area must be covered with mulch, groundcover vegetation or grass.

(5) Refer to Section 10.11.10 of the Land Development Code and the City of Hickory's Manual of Practice for plant specifications for recommended plant lists and planting diagrams.

(6) **Ten-Foot Wide Buffers**

For buffers that are required to be ten (10) feet in width, screening shall consist of at least the following measures, together with any additional specifications which may be required as a condition of a development permit:

(a) A row of canopy and/or large evergreen trees planted an average of thirty (30) feet on center; and

(b) One (1) understory trees or evergreen trees planted between each canopy tree; and

(c) Fifteen (15) shrubs (per 100 linear feet of buffer) interspersed among the trees, at least 75% of which shall be evergreen. A mix of shrub species may be used to create visual interest and diversity (see Manual of Practice).

(7) **Fifteen-Foot Wide Buffers**

For buffers that are required to be fifteen (15) feet in width, screening shall consist of at least the following measures, together with any additional specifications as may be required as a condition of a development permit:

(a) A double, staggered row of evergreen trees planted no more than ten (10) feet apart; or

(b) A mixed buffer which for every 100 linear feet contains at a minimum:

i. four (4) canopy trees, spaced approximately every twenty-five (25) feet apart, and

ii. four (4) understory trees or evergreen trees interspersed between the larger trees, and

iii. fifteen (15) shrubs (at least 75% evergreen).

(c) A fifteen-foot mixed buffer shall be designed to form a densely planted semi-opaque visual buffer. Plants shall be spaced to cover the length of the entire buffer area. See the Manual of Practice for plant spacing.

(8) **Thirty-Foot Wide Buffers**

For buffers that are required to be thirty (30) feet in width, screening shall consist of the following measures together with any additional specifications which may be required as a condition of a development permit:

(a) A double, staggered row of evergreen trees planted no more than ten (10) feet apart, and

(b) four (4) canopy trees planted approximately every twenty-five (25) feet on center, planted on the outward-facing side of the evergreens; or

(c) A mixed buffer which for every 100 linear feet contains at a minimum:

i. four (4) canopy trees,

ii. seven (7) understory trees or evergreen trees, and

iii. thirty (30) shrubs (at least 75% evergreen).

(d) A mixed buffer shall be designed to form a densely planted substantially opaque visual buffer. Plants shall be spaced to cover the full length of the buffer area. See Manual of Practice for examples of plant spacing.

9. **Fences, Walls, and Berms**

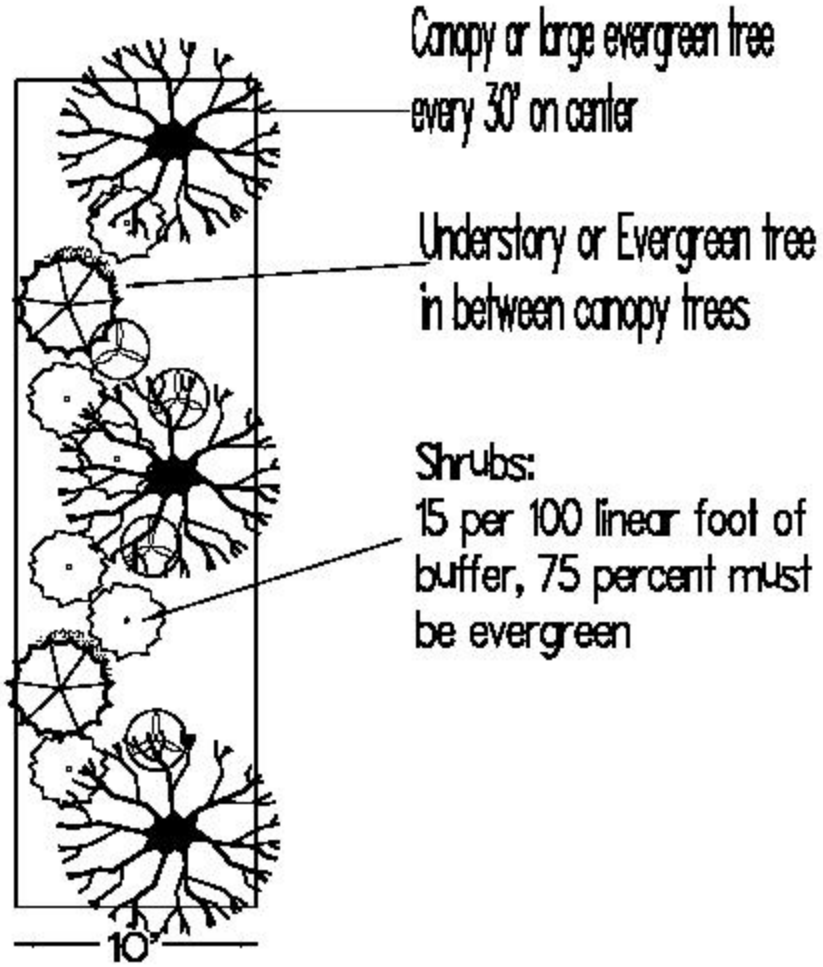
When a buffer is required, fences, walls and/or berms may be substituted for half of the vegetation requirements outlined above.

(a) All fences shall be a minimum of six (6) feet high with the finished side facing outwards.

(b) Walls shall be stone or brick-faced and shall be six (6) feet high, unless built in combination with an earthen berm,

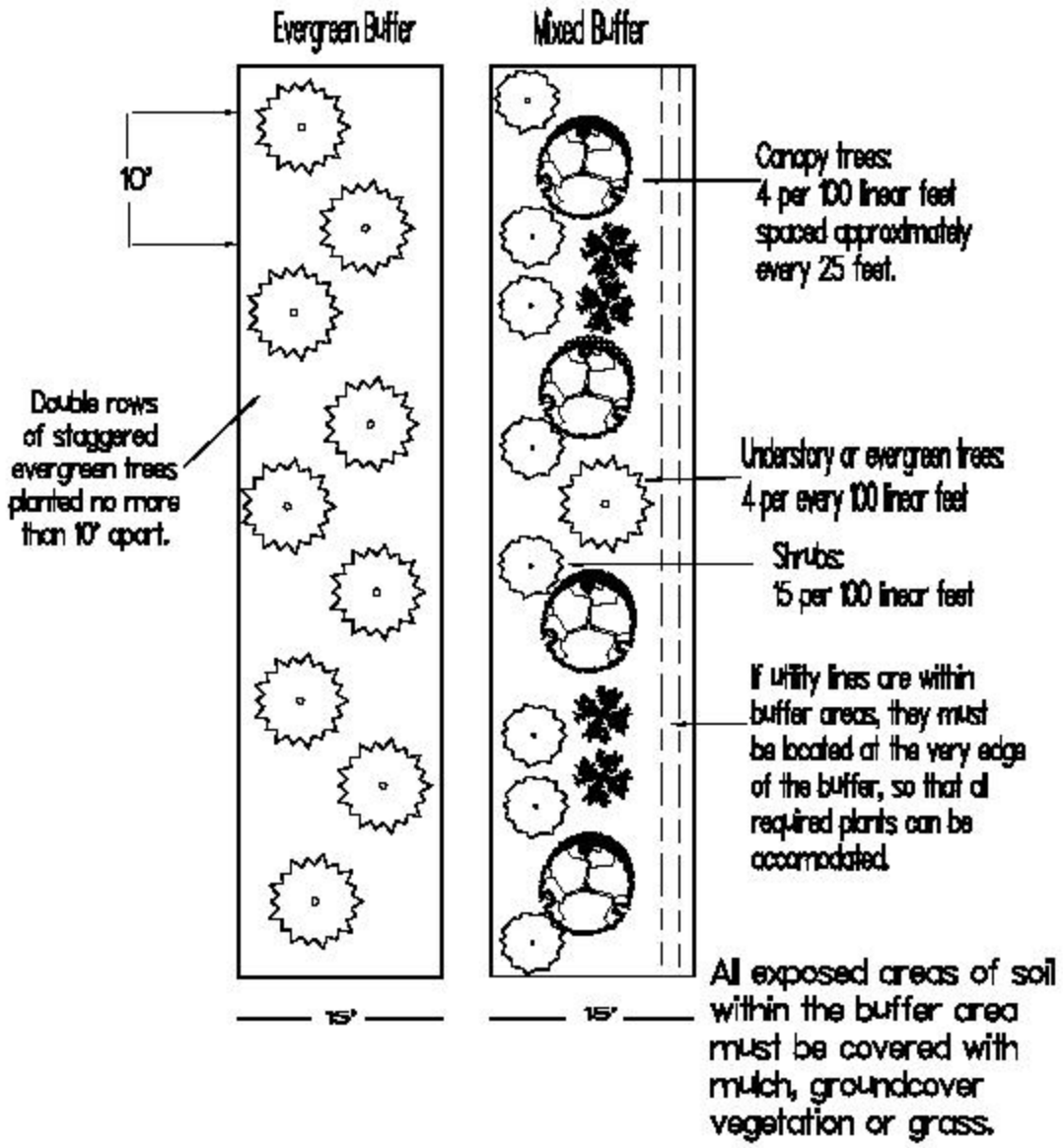
(c) If provided, berms shall not exceed a slope with a maximum rise of one (1) foot to a run of two (2) feet, a maximum height of four (4) feet and a maximum width of 40% of the required buffer width. All berms shall be stabilized with ground cover (mulch or vegetation) that provides permanent slope retention.

10–Foot Perimeter Landscape Buffer

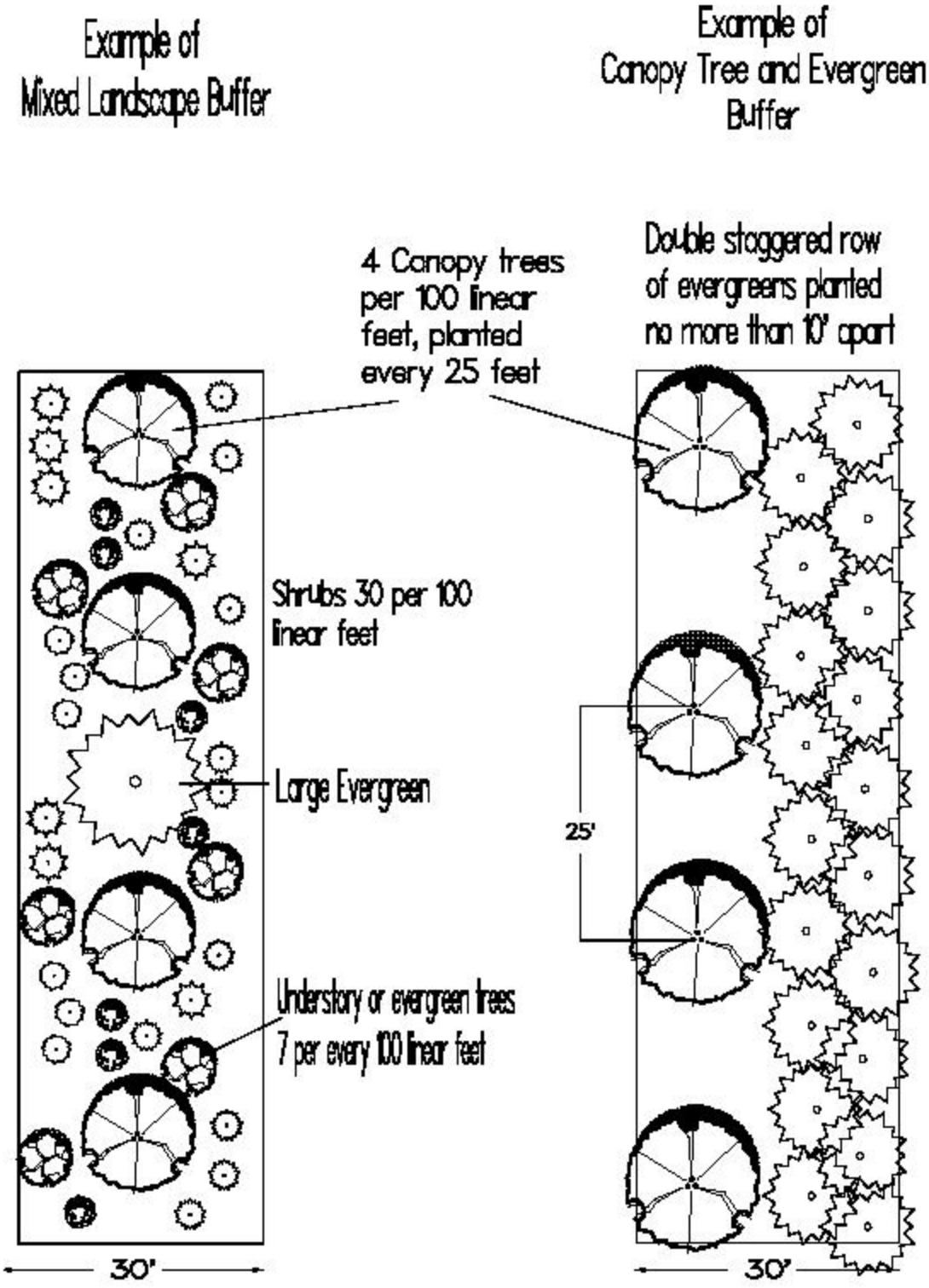


All exposed areas of soil within the buffer area must be covered with mulch, groundcover vegetation or grass.

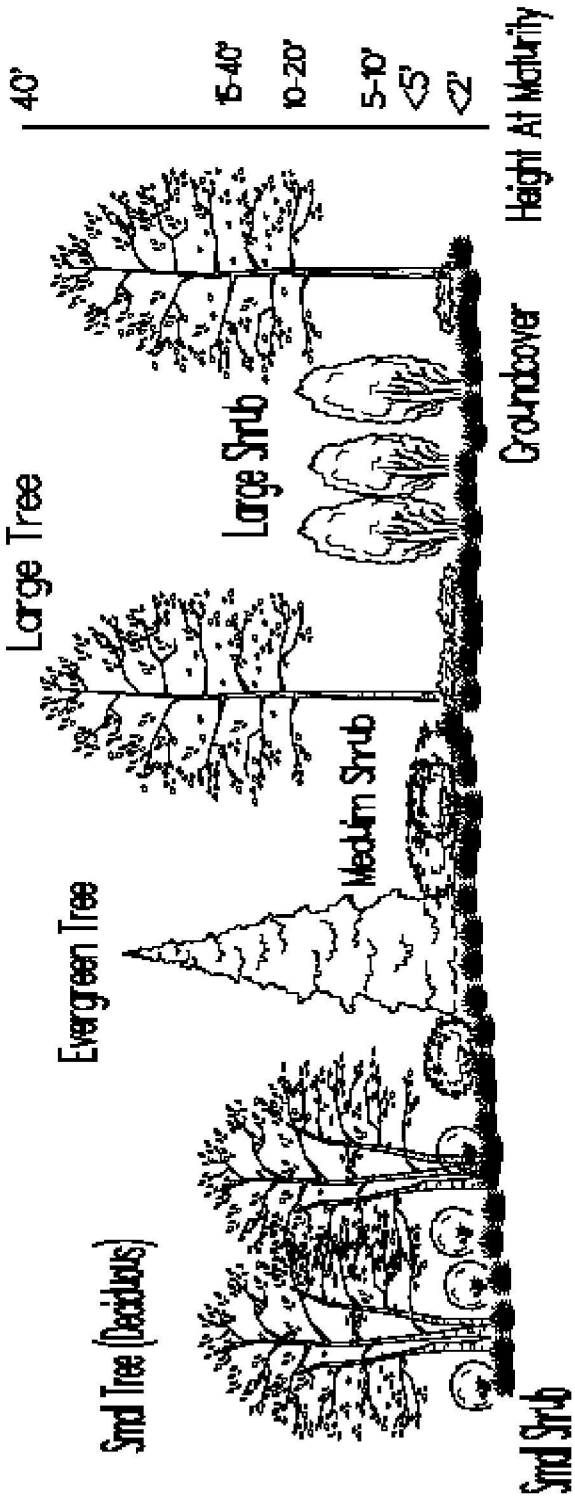
15-Foot Perimeter Landscape Buffer



30–Foot Perimeter Landscape Buffer



Landscape Buffer Showing Plant Diversity



This is a good example of a buffer showing a variety of landscape material in various heights.
This example provovides a more aesthetically pleasing visual impact.

Other Required Screening

10.11.6 Other Required Screening

(a) Screening of Open Storage

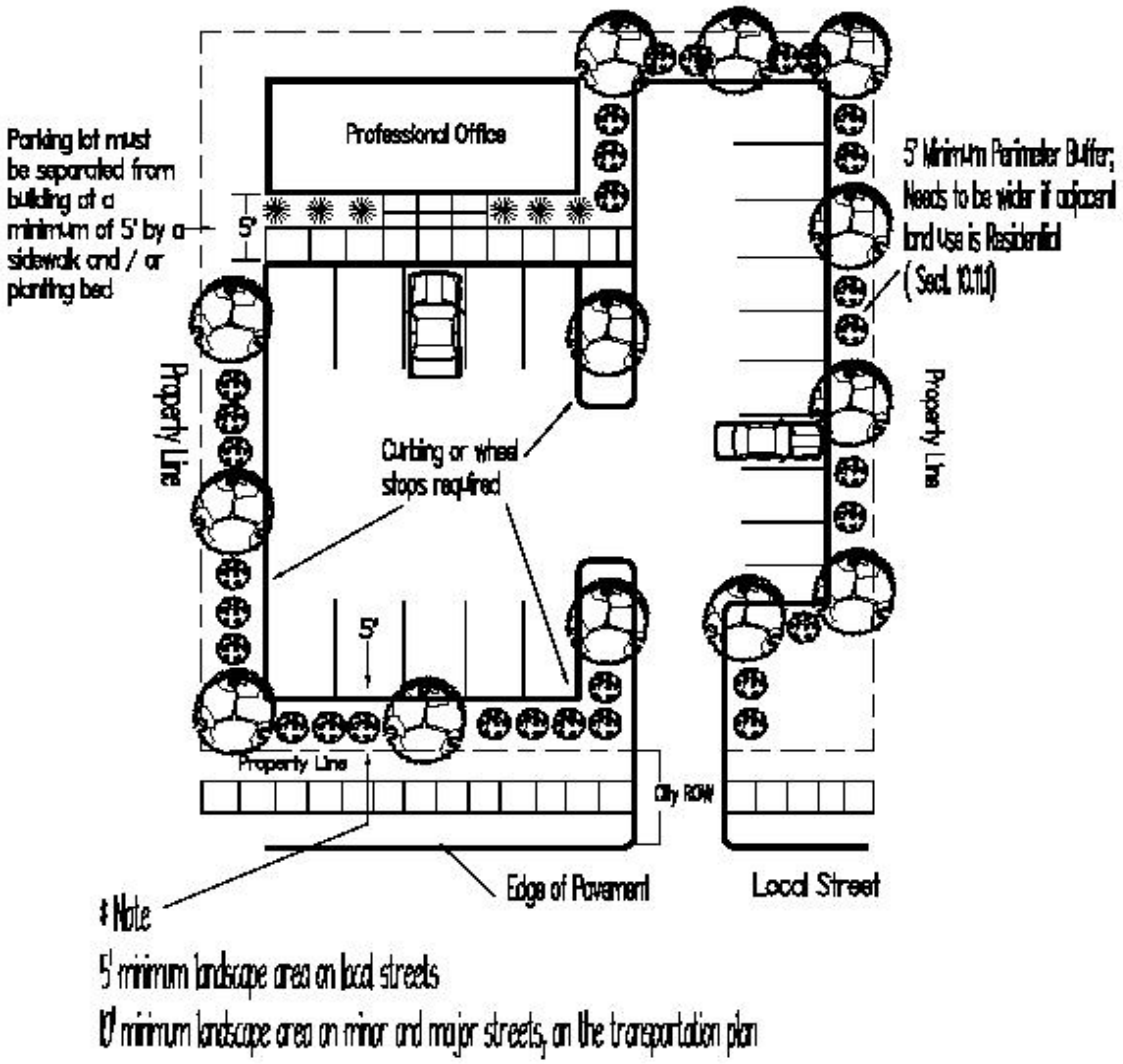
Open storage areas, as a principal or accessory use, shall be screened from view of any major and/or minor transportation roadway as shown on the Hickory By Choice Future Land Use and Transportation Plan Map and from all residentially zoned land through the installation of a minimum six (6) foot tall solid wall or fence, which with vinyl slats is ninety (90%) percent opaque, or dense evergreen landscaping, such as Leyland Cypress, Nellie Stevens Hollie, etc. Dense landscaping shall be used to the maximum extent practicable. The Planning Director shall have the discretion to determine the screening requirements on individual circumstances. Existing open storage areas shall be required to comply with these requirements within three (3) years of the adoption of this ordinance (September 5, 2007).

(b) Screening of Mechanical Equipment

All nonresidential uses shall screen from view from public places and neighboring properties, all mechanical equipment such as, but not limited to, ground or roof-mounted air conditioners or heat pumps through the use of features such as, fences, false facades or dense landscaping.

Nellie R. Stevens Holly

Perimeter Parking Area Buffer Requirements



Landscape Requirements for Parking Areas

10.11.7 Landscape Requirements for Parking Areas

(a) General Requirements

(1) All parking areas with six (6) or more spaces, except those located entirely underground shall comply with the requirements of this section.

(2) Parking area shall be defined as all vehicular use areas, including all parking spaces, vehicle storage areas, access and maneuvering areas and the like.

(3) Landscaping shall not obstruct the view of motorists using any street, private driveway, parking aisles, or the approach to any street intersection so as to constitute a traffic hazard. See the Manual of Practice for site triangle requirements.

(4) Refer to Section 10.11.10 for plant specifications and to the Hickory Manual of Practice for recommended plant species and other information.

(5) Additional parking area landscape standards are required for developments within NC-1 zoning districts and several overlay districts. Refer to those sections for additional requirements.

(6) When calculating the number of trees and shrubs required, any fraction of a number shall be rounded up to the next whole number.

(b) Perimeter Parking Area Buffer Requirements

(1) Parking area shall be separated and screened from all adjoining properties, streets and rights-of-way by a landscape buffer. The buffer area shall be at least five (5) feet in width along adjoining properties and local streets and ten (10) feet in width along minor and major streets on the Transportation Plan.

(2) Within the buffer area, canopy trees must be planted an average of thirty (30) feet on center and shrubs must be planted an average of every five (5) feet on center. For properties that are within an NC-1 zoning district along Hwy 127 or Springs Road, shrub spacing shall be one (1) shrub every three (3) feet on center.

(3) Parking areas shall be separated from the exterior wall of a structure by a raised, paved pedestrian sidewalk or a landscaped buffer strip at least five (5) feet in width.

(4) Driveways into parking areas include a landscape buffer strip at least five (5) feet in width along each side of the driveway. At a minimum, the driveway landscape buffer shall include one (1) large deciduous tree for every thirty (30) foot of linear drive or two (2) small deciduous trees for every twenty (20) feet of linear drive. A minimum of one (1) shrub shall

be planted for every five (5) linear feet of driveway entrance. The plant materials may be grouped as an entrance planting rather than a linear border.

(c) Interior Parking Area Landscape Requirements – New Parking Areas

(1) All rows of parking shall be terminated by a canopy tree planted within a landscape island. The landscape island shall be a minimum dimension of six (6) feet by eighteen (18) feet for single-loaded parking rows and six (6) feet by thirty-six (36) feet for double-loaded parking rows. Trees planted within perimeter landscape strips may be used to satisfy this requirement.

(2) One (1) canopy tree shall be required for every fifteen (15) parking spaces, and one (1) shrub shall be provided for every ten (10) parking spaces. All vehicular parking spaces must have at least one (1) tree within sixty (60) feet of each parking space.

(3) At least seventy-five (75%) percent of all trees required by this section shall be canopy trees as listed in the Manual of Practice. When planting under overhead utility lines, two (2) understory trees must be substituted for every required canopy tree. Refer to the Manual of Practice for a list of trees that are approved for planting under utility lines.

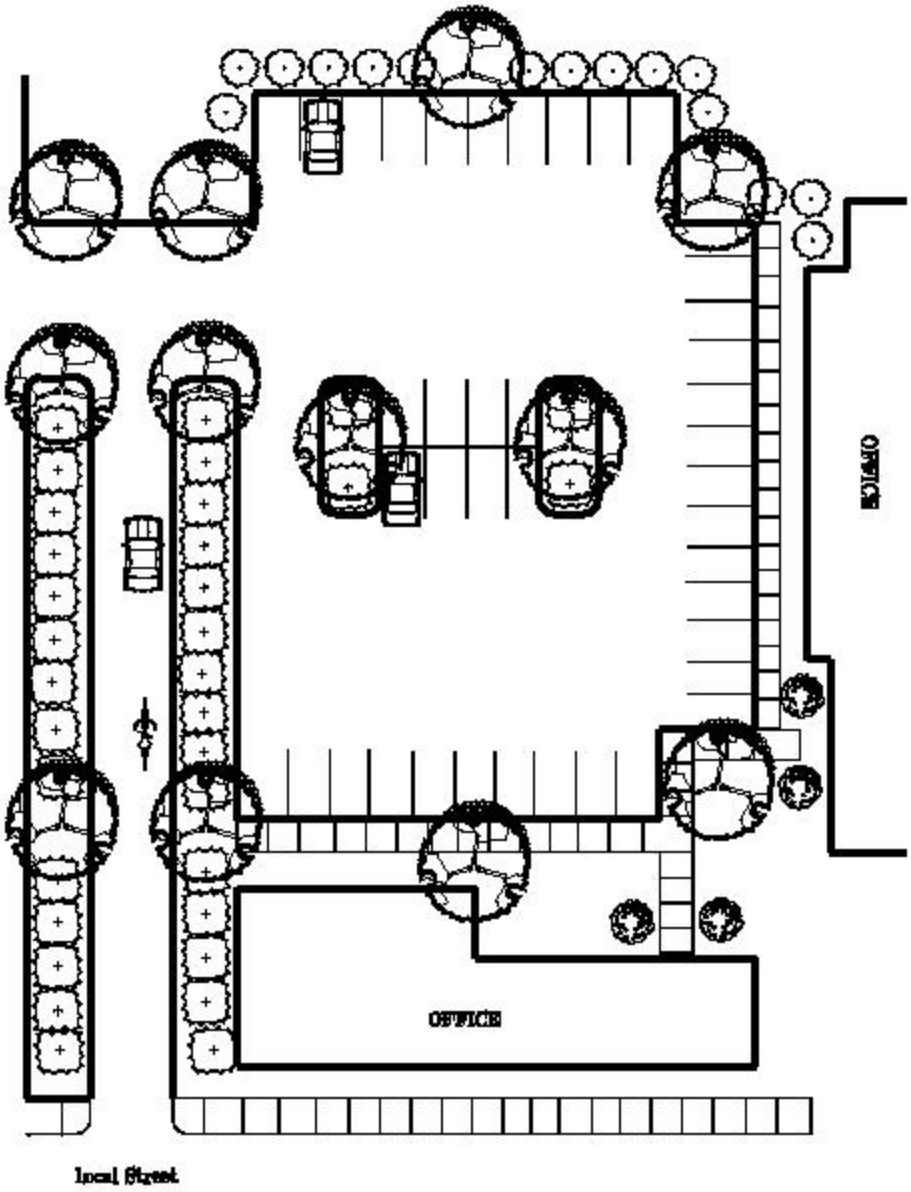
(4) For parking areas over forty thousand (40,000) square feet, a minimum ten (10) foot wide continuously planted median shall be installed along the length of the longest interior parking row to break up large areas of pavement. More than one such median may be required depending the size of the parking area and the layout. This does not apply to vehicular sales or rental areas.

(5) Landscape islands and planting areas shall be protected from vehicular encroachment by curbing or wheel stops at least six (6) inches high.

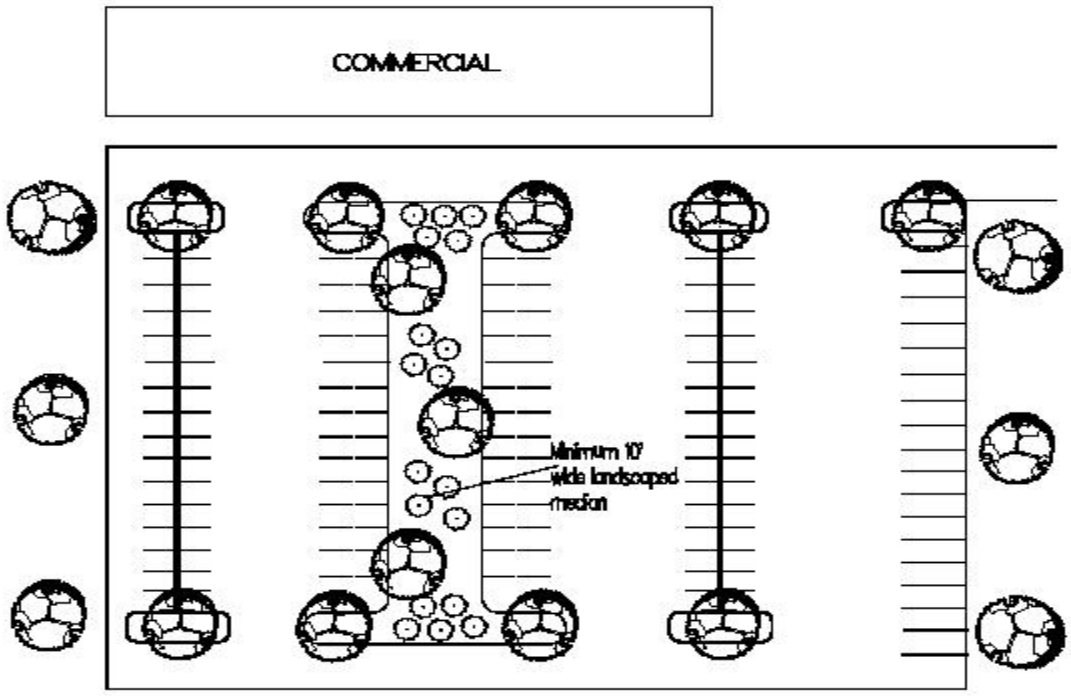
(d) Interior Parking Area Landscape Requirements – Existing Parking Areas

For expansion or renovation projects that are required to follow landscape requirements on all or part of the site (per Section 10.11.2), the standards as outlined in Paragraph (c) above are applicable. Under circumstances where the application of these requirements is infeasible or unworkable, the applicant may submit an alternative landscape plan, as outlined in Section 10.11.8.

Interior Parking Area Landscaping



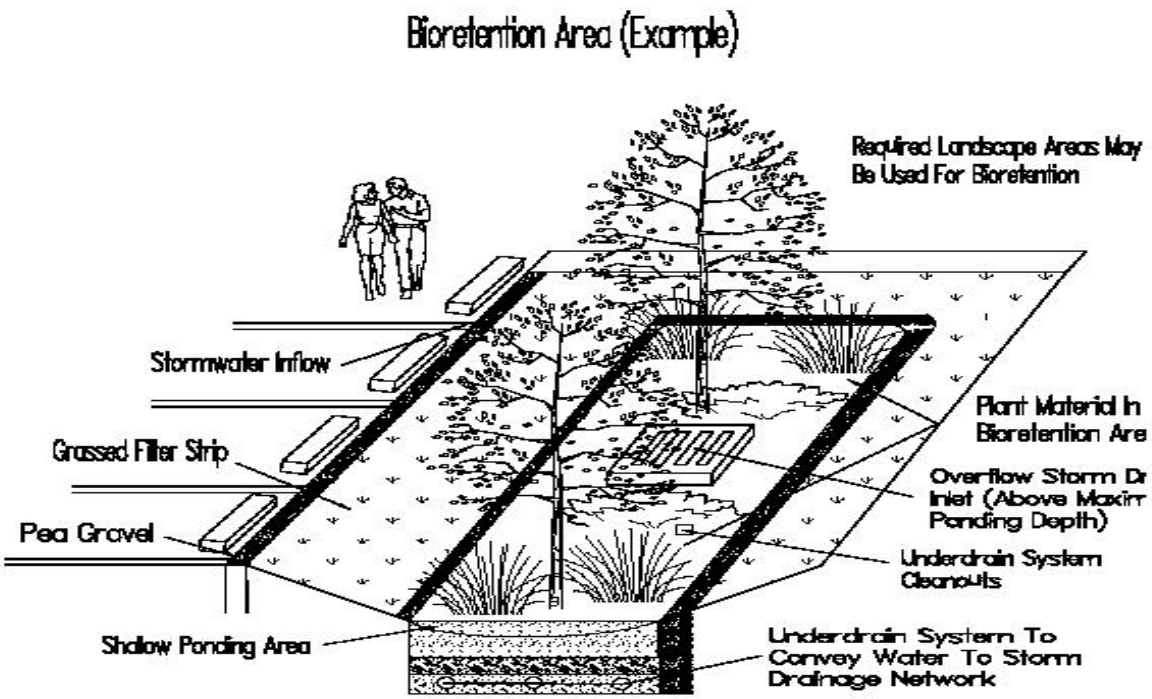
Conceptual Diagram of Landscaped Medians for Parking Lots Over 40,000 Square Foot



Alternate Methods of Compliance

10.11.8 Alternative Methods of Compliance

The landscape requirements of this section are intended to set minimum standards for high quality development, the protection of property values and environmental protection. They are not intended to be arbitrary or inhibit creative solutions. Difficult or unique site conditions or other reasons may justify the need to request an alternative method of compliance with the landscape requirements. The Planning Director may approve alternative landscape plans (for required perimeter landscape buffers or parking areas) as long as the alternative plan complies with the intent of this section. If the Planning Director does not approve an alternative plan, the applicant may appeal the decision to the Board of Adjustment.



Plant Specifications

10.11.9 Plant Specifications

(a) Plant Species. Plants shall be chosen from the recommended plant species lists in the Manual of Practice. Plants which are not on the list may be used if approved by the Planning Director. Invasive, exotic plant species (see chart in Manual of Practice) shall not be used to meet the landscape requirements of this Land Development Code.

(b) For the purpose of measuring required canopy trees for this section, the caliper of a tree is the diameter measured six (6) inches above the ground, if that measurement does not exceed four (4) inches. If the measurement does exceed four (4) inches, the measurement is taken twelve (12) inches above the ground.

(c) Minimum Plant Size Requirements.

(1) Canopy trees shall be two (2) inches in caliper and a minimum of eight (8) feet in height at time of planting.

(2) Understory trees shall be at six (6) feet in height at time of planting. Understory trees may be single or multi-stemmed.

(3) Only certain understory trees shall be planted under overhead utility lines. An approved plant list is in the Manual of Practice. When overhead utility lines are present, two (2) understory trees shall be planted for every one (1) canopy tree required.

(4) Evergreen trees shall be a minimum of five (5) feet in height at planting.

(5) Shrubs (evergreen or deciduous) required for parking areas shall be a minimum of a three (3) gallon container with a height of at least twenty-four (24) inches at time of planting.

(6) Shrubs required as part of a ten (10) foot or greater buffer shall be a minimum of a five (5) gallon container with a height of at least thirty-six (36) inches at time of planting.

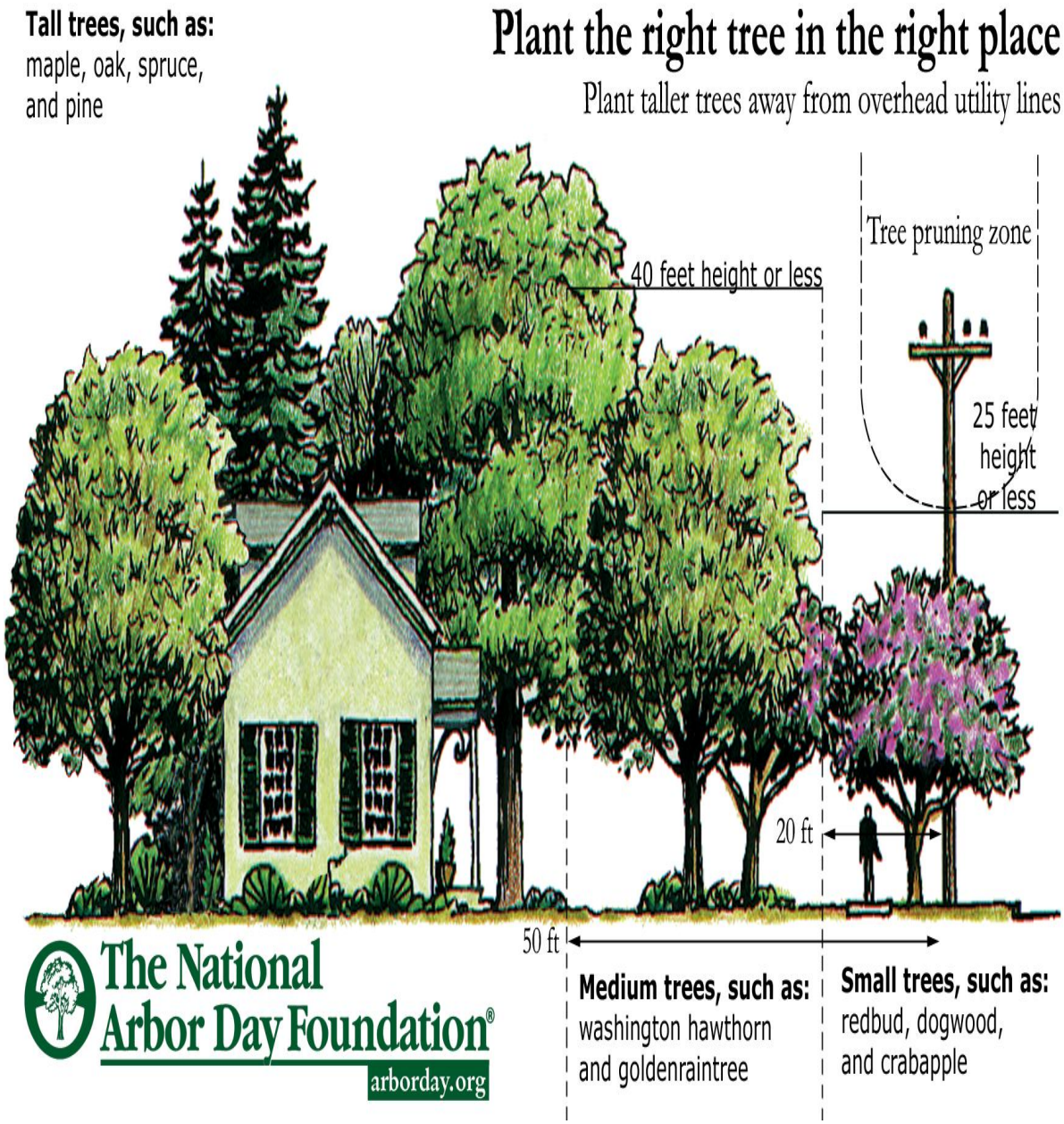
(d) Ground Cover. All ground surfaces, not otherwise required to be paved, shall be maintained with ground cover such as grass or mulch.

(e) Plant materials shall conform to the requirements described in the latest edition of American Standard for Nursery Stock, published by the American Association of Nurseryman. Plants must be healthy, well-formed, and free of disease and insects.

Right Tree Right Place

When determining where to plant trees be sure that utility lines are located. In order to eliminate future conflicts with utility lines choose proper species to plant in certain areas.

The diagram below illustrates the proper placement of trees around buildings and under utility lines. The plant list in this booklet gives approximate mature size as well as examples recommended for planting under power lines.



Canopy Trees

CANOPY TREES (Large deciduous trees)					
Scientific Name	**Common Name**	**H2O Wise**	**Height**	**Requirements**	**Cultivars/Notes**
Acer rubrum	Red Maple	Yes	40-60	Sun/Part Shade	Autumn Blaze', 'Oct. Brill.'
Acer saccharum	Sugar Maple	No	60-75	Sun/Part Shade	Commemoration'; 'Legacy'
Betula nigra	River Birch	No	40-70	Sun/Part Shade	Heritage; 'Duraheat'
Carpinus betulus	European Hornbeam	Yes	40-60	Sun	Fastigiata'
Carpinus caroliniana	American Hornbeam	Yes	20-30	Sun/Part Shade	
Celtis laevigata	Hackberry	Yes	60-80	Sun	
Cercidiphyllum japonicum	Katsuratree	No	40-60	Sun	
Cladrastis kentukea	American Yellowwood	Yes	30-50	Sun	
Fagus grandifolia	American Beech	No	50-80	Sun/Part Shade	
Ginkgo biloba	Ginkgo	Yes	50-80	Sun	Plant male trees only
Gynmocladus dioicus	Kentucky Coffeetree	Yes	60-75	Sun	
Liquidambar s. rotundiloba	Fruitless Sweetgum	Yes	60-75	Sun/Part Shade	
Metasequoia glyptostroboides	Dawn Redwood	Yes	50-90	Sun	
Nyssa sylvatica	Black Gum	No	40-60	Sun/Part Shade	
Quercus alba	White Oak	Yes	60-100	Sun	
Quercus bicolor	Swamp White Oak	Yes	50-60	Sun/Part Shade	
Quercus coccinia	Scarlet Oak	Yes	50-80	Sun	
Quercus falcata	Southern Red Oak	Yes	70-90	Sun	
Quercus lyrata	Overcup Oak	Yes	35-45	Sun	
Quercus nuttallii	Nuttall Oak	Yes	40-60	Sun	
Quercus shumardii	Shumard Oak	Yes	40-60	Sun	
Sassafras albidum	Sassafras	Yes	30-60	Sun/Part Shade	
Sophora japonica	Japanese Pagoda/Scholar Tree	Yes	50-75	Sun	Regent'
Taxodium distichum	Bald Cypress	Yes	50-100	Sun	
Tilia americana	American Linden	Yes	60-100	Sun	
Tilia cordata	Littleleaf Linden	Yes	30-70	Sun	
Ulmus americana	American Elm	Yes	75-125	Sun/Part Shade	Liberty'; 'Valley Forge'
Ulmus parvifolia	Lacebark Elm	Yes	40-50	Sun	
Zelkova serrata	Japanese Zelkova	Yes	50-80	Sun/Part Shade	Village Green'

Understory Trees

UNDERSTORY TREES (Small Deciduous Trees)					
Scientific Name	**Common Name**	**H^20 Wise**	**Height**	**Exposure**	**Cultivars/ Notes**
Acer buergeranum	Trident Maple	Yes	25-35'	Sun	
Acer campestre	Hedge Maple	Yes	25-35'	Sun/Lt. Shade	
Acer griseum	Paperbark Maple	No	20-30'	Sun/Part Shade	Specimen Tree
Acer palmatum	Japanese Maple	No	15-25'	Sun/Part Shade	Specimen Tree
Amelanchier alnifolia	Serviceberry	No	15-25'	Sun/Part Shade	Grown as small tree or large shrub
Amelanchier canadensis* **	Shadblow Serviceberry	No	6-15'	Sun/Part Shade	Grown as small tree or large shrub
Amelanchier x grandiflora	Apple Serviceberry	No	20-25'	Sun/Part Shade	Autumn Brilliance'
Cercis canadensis	Eastern Redbud	Yes	20-30'	Sun/Part Shade	
Chionanthus retusus	Chinese Fringe Tree	Yes	15-25'	Sun/Part Shade	
Cornus florida	Flowering Dowgood	No	15-20'	Part Shade	
Cornus kousa	Kousa Dogwood	No	20-30'	Sun/Part Shade	
Cornus mas	Cornelian Ch. Dogwood	Yes	20-25'	Part Shade	
Cotinus coggygria* **	Smoketree	Yes	13-15'	Sun	
Crategus phaenopyrum	Washington Hawthorne	Yes	25-30'	Sun	
Halesia carolina	Carolina Silverbell	No	20-40'	Sun/Part Shade	
Koelreuteria paniculata	Golden Raintree	Yes	20-40'	Sun	
Lagerstroemia indica* **	Crape Myrtle	Yes	18-30'	Sun	Under power lines choose cultivars that do not exceed 15': Acoma, Apalachee, Caddo, Comanche, Hopi, Lipan, Osage, Pecos, Sioux, Tonto, Yuma, Zuni
Magnolia stellata	Star Magnolia	No	13-20'	Sun	
Magnolia soulangeana	Saucer Magnolia	No	15-25'	Sun/Part Shade	
Malus hybrid	Flowering Crabapple	Yes	15-25'	Sun	
Ostrya virginiana	American Hophornbeam	Yes	25-40'	Sun/Part Shade	
Oxydendrum arboreum	Sourwood	Yes	20-30'	Sun/Part Shade	
Parrotia persica	Persian Ironwood	No	20-40'	Sun/Light Shade	
Pistachia chinensis	Chinese Pistache	Yes	25-40'	Sun	
Prunus species	Flowering Cherry	No	15-30'	Sun	
Prunus 'Hally Jolivette'* **	Hally Jolivette Cherry	Yes	10-15'	Sun/Part Shade	
Stewartia pseudocamellia	Japanese Stewartia	No	20-40'	Sun/Part Shade	
Styrax japonica	Japanese Snowbell	No	20-30'	Sun/Part Shade	
Viburnum prunifolium* **	Blackhaw Viburnum	Yes	12-20'	Sun/Part Shade	
**** These trees have been approved by Duke for planting under utility lines.**					

Evergreen Trees

EVERGREEN TREES RECOMMENDED FOR SCREENING (Also see shrub list)						
Scientific Name	**Common Name**	**H2O Wise**	**Height**	**Exposure**	**Cultivars/Notes**	
Large Evergreen Trees						
Cedrus deodara	Deodar Cedar	Yes	40-70'	S/PS		
Cryptomeria japonica	Japanese Cedar	Yes	50-60'	S		
X Cupressocyparis leylandii	Leyland Cypress	Yes	50-60'	S/PS	Over-used, give other plants a try	
Ilex opaca	American Holly	Yes	20-40'			
Juniperus virginiana	Eastern Red Juniper	Yes	30-50'	S/PS	Tough, tolerates drought	
Magnolia grandiflora	Southern Magnolia	Yes	40-80'	S/PS	Little Gem'; 'Margaret Davis'	
Pinus taeda	Loblolly Pine	Yes	30-40'	S/PS		
Pinus virginianna	Virginia Pine	Yes	40-60'	S		
Tsuga canadensis	Canadian Hemlock	No	30-80'	S/PS	problem with adelgids	
Medium Evergreen Trees						
Ilex x attenuata 'fosteri'	Fosters Holly	Yes	20-30'	S/PS		
Magnolia virginiana	Sweetbay Magnolia	No	20-30'	S/PS		
Small Evergreen Trees						
Illicium parviflorum	Anise	Yes	10-15'	S/SH	Grown as shrub or small tree	
Ilex x 'Nellie R. Stevens'	Nellie Stevens Holly	Yes	15-25'	S/PS		
Ilex vomitoria	Yaupon Holly	Yes	10-20"	S/PS		
Thuja species	Arborvitae	Yes	15-25'	S	Many species available; can be grown as small tree or large shrub; bagworms can be a problem	

Shrubs

SHRUB LIST					
Scientific Name	Common Name	H20 Wise	Height	Site Requirements	Cultivars/Notes
DECIDUOUS					
Abelia grandiflora	Glossy Abelia	Yes	3-6'	Sun	Many cultivars available; deciduous & evergreen
Callicarpa dictoma	Beautyberry	Yes	3-5'	Sun/Part Shade	
Carypoteris x clandonesis	Blue Spirea	Yes	2-3'	Sun	
Clethra alnifolia	Summersweet Clethra	Yes	3-8'	Sun/Shade	
Forsythia x hybrids	Forsythia	Yes	Varies	Sun/Part Shade	Many cultivars available
Hamamelis species	Witch hazel	Yes	Varies	Sun/Part Shade	Many cultivars available
Hydrangea species	Hydrangea	Yes	4-6'	Sun/Part Shade	Many cultivars available
Itea virginica	Virginia Sweetspire	Yes	3-15'	Sun/Part Shade	
Viburnum acerfolium	Mapleleaf Viburnum	Yes	4-6'	Shade	
EVERGREEN (These shrubs are recommended for screening; also see Evergreen Tree List)					
Aucuba japonica	Aucuba	Yes	6-10'	Part Shade/Shade	
Camellia japonica	Camellia	Yes	6-15'	Part Shade/Shade	Many cultivars available
Camellia sasanqua	Camellia	Yes	5-10'	Sun/Part Shade	Many cultivars available
Cephalotaxus harringtonia	Japanese Plum Yew	Yes	5-10'	Part Shade	
Chamaecyparis pisifera	Japanese False Cypress	Yes	4-15'	Sun	Many cultivars available
Ilex species	Hollies	Yes	Varies	Sun	Many cultivars available
Ilex cornuta 'burfordi'***	Compact Burford Holly	Yes	10-15'	Sun/Part Shade	
Illicium parvifolium	Anise	Yes	8-15'	Sun/Part Shade	
Juniperus species	Juniper	Yes	Varies	Sun	Many cultivars available
Loropetalum species	Loropetalum	Yes	4-12'	Sun/Part Shade	
Mahonia species	Mahonia	Yes	3'+	Part Shade	
Osmanthus x fortunei	Osmanthus	Yes	15-20'	Sun/Shade	
Picea species	Dwarf Spruce	Yes	Varies	Sun	
Prunus laurocerasus	English Laurel	Yes	3-6'	Sun/Shade	
Rhaphiolepis hybrids	Hawthorn	Yes	3-6'	Sun	Gulfgreen'
Rhapiolepis x delacourii	Indian Hawthorn	Yes	3-4'	Sun/Part Shade	
Spirea species	Spirea	Yes	2-8'	Sun/Part Shade	Many cultivars available
Taxus canadensis	American yew	Yes	3-6'	Sun/Part Shade	
Thuja occidentalis	Arborvitae, White-cedar	Yes	varies	Sun/Part Shade	Many cultivars available; sizes vary widely
Viburnum species	Viburnum	Yes	Varies	Sun/Part Shade	Many species available; choose natives
***** This large shrub is approved by Duke to plant under powerlines**					

Plant Species Not Recommended for Planting

Plant Species Not Recommended For Planting		
Scientific Name	**Common Name**	**Problems**
Acer ginnala	Amur Maple	Non-native invasive
Acer negundo	Box Elder	Weak wood, weedy
Acer platanoides	Norway Maple	Invasive
Acer saccharinum	Silver Maple	Weak wood, shallow roots
Ailanthus altissima	Tree of Heaven	Weak wood, weedy, invasive
Eleagnus angustifolia	Russian Olive	Diseases, invasive
Eleagnus umbellata	Autumn Olive	Invasive
Fraxinus pennsylvanica	Green Ash	Anthracnose, borers
Gleditisia species	Honeylocust	Too hot for this species
Hedra helix	English Ivy	Invasive
Lespedeza species	Lespedeza	Invasive
Ligustrum japonicum	Japanese Privet	Invasive, seeds spread to natural areas and form thickets.
Ligustrum sinense	Chinese Privet	"
Ligustrum obtusifolium	Border Privet	"
Ligustrum vulgare	Common Privet	"
Lonicera japonica	Japanese Honeysuckle	Invasive
Lonicera maakii	Amur Bush Honeysuckle	Invasive
Morus species	Mulberry	Messy fruit, shallow roots
Paulownia tomentosa	Paulownia	Weak wood, weedy
Pyrus calleryana 'Bradford'	Bradford Pear	Poor form, splits
Spirea japonica	Japanese spirea	Invasive
Ulmus pumila	Siberian Elm	Weak wood
Viburnum dentatum	Arrowwood Viburnum	Non-native invasive, but many good native viburnums exist
Viburnum lantana	Wayfaring Tree	Non-native invasive, but many good natives exist

Invasive Exotic Plants - Many introduced plants have become naturalized in North Carolina and some are replacing our native plant species. Not all exotic species are considered harmful. Invasive plants are usually characterized by fast growth rates, high fruit production, rapid vegetation spread and efficient seed disperal and germination. Not being native to NC, they lack the natural predators and diseases which would naturally control them in their native habitats. The rapid growth and reproduction of invasive plants allows them to overwhelm and displace existing vegetation and, in some cases, form dense one-species stands. Invasive species are especially problematic in areas that have been disturbed by human activities such as road building, residential development, forest clearing, logging, grazing, mining, ditching, mowing, erosion control and fire control activities. For more information see www.ncwildflower.org/invasives or www.se-eppc.org/weeds.cfm.

Maintenance / Pruning

10.11.10 Maintenance/Pruning

(a) It shall be the responsibility of the property owner, or in the event of a property transfer, the subsequent property owner's responsibility to maintain and ensure the survival of the plant material in perpetuity. Plants and trees that do not survive planting or for some reason succumb to injury, disease and/or insect infestation must be replaced during the first planting season following the death of the plant(s) in accordance with the specifications of this Land Development Code.

(b) Tree topping shall be prohibited on all trees that are required by the provisions of this Land Development Code, including perimeter buffer trees and parking lot landscaping. Topping is the severe cutting back of limbs larger than three (3") inches in diameter to stubs within the tree's crown so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees that interfere with or are imminent threats to utility wires or other obstructions where other pruning practices are impractical may be exempted from this ordinance at the determination of the Planning Director. All trees and shrubs shall be pruned in accordance with American National Standards Institution (ANSI) Standards. For more information about tree topping, refer to the City of Hickory Manual of Practice.

(c) If plants or other screening materials are removed to repair underground utilities they must be replaced at the next appropriate growing season at the owners' expense.

Pruning and Post Construction Tree Care

Remove all protective fencing after all construction activity is finished.

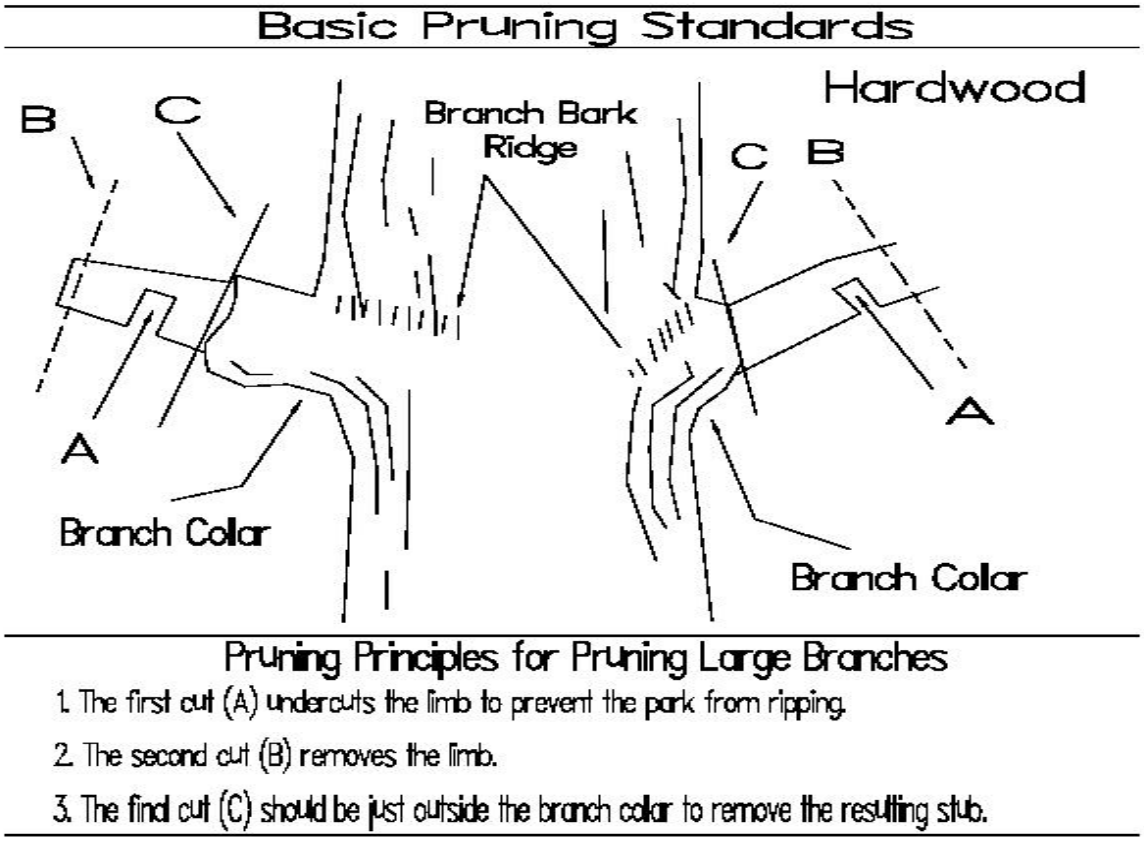
Be sure that the tree or trees have been mulched. Placing 2-4 inches of hardwood mulch around the tree as far out to the drip line as possible. Leave a space 1-2 inches away from the trunk of the tree free from mulch. You do not want to place mulch on the trunk.

Watering of the trees is essential during and after construction if there has not been adequate rainfall.

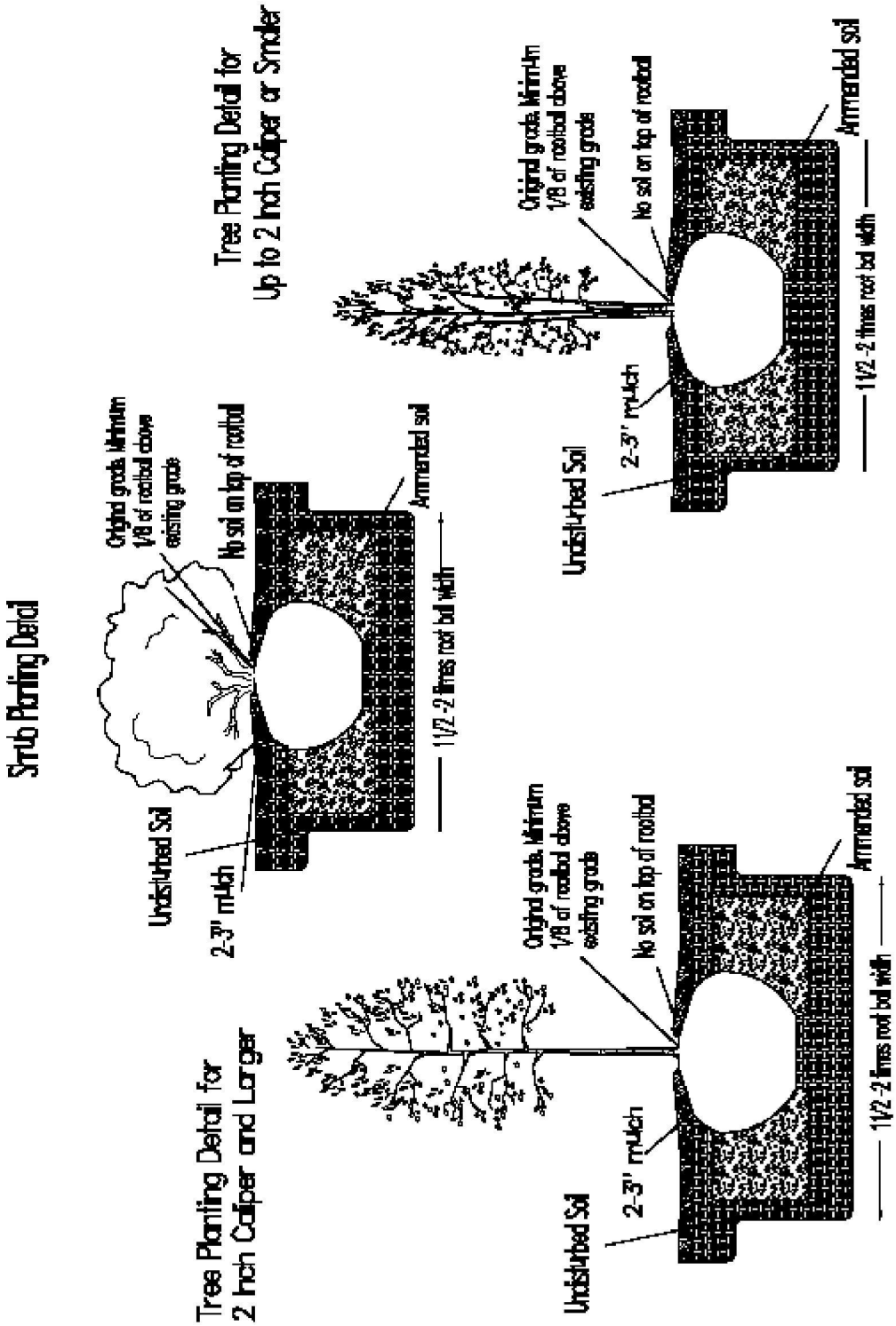
Prune any broken or dead branches from the tree.

Do not prune any live limbs from the tree unless damaged.

If roots were cut or damaged during construction, be sure to prune the ends back to live tissue to ensure proper wound closure. Be sure these are then covered with soil and mulched.



Tree and Shrub Planting Detail



Miscellaneous

10.11.11 Performance Guarantee

(a) Landscape and tree planting requirements may be deferred to an appropriate planting season, based on a decision made by the Planning Director, in order to facilitate a property owner's desire to obtain a certificate of occupancy. This provision is meant to allow for seasonal extremes in weather and soil conditions that may be incompatible to landscaping. It is not, however, meant to be used in any way to circumvent the intent and purpose of the Land Development Code.

(b) No Certificate of Occupancy shall be approved by the Planning and Development Department until:

(1) The required landscaping is completed in accordance with the approved plan; or

(2) A bond or certified check, payable to the City of Hickory, in the amount of 110% of the estimated cost to assure installation of the required landscaping.

(c) An irrevocable letter of credit issued by a bank in the form approved by the City Attorney may be accepted in lieu of bond under the terms and conditions applicable to bonds in Subsection (b) above.

(d) No surety or portion thereof, as provided for in this section shall be released by the City until all landscaping has been installed, inspected and approved.

10.11.12 Permit Required for Pruning, Planting and Removal of Trees on Public Property

(a) Maintenance

(1) No person shall cut, prune (including the root system), spray or treat any tree or shrub having its trunk in or upon any public property or contract with another person to perform such acts without first obtaining a written permit from the Planning Director, or his designee, and without complying strictly with the provisions of the permit and of this Ordinance.

(2) Public and private utilities, including the City of Hickory, cable TV, natural gas, electric and telephone companies, may submit written specifications they will follow for the review and approval of the City Arborist. The Planning Director may issue a city-wide permit upon the recommendation of the City Arborist. Upon receiving approval, a utility shall not be required to obtain a permit for routine trenching and pruning operations affecting trees or shrubs having their trunks in public rights-of-way or property as long as such work is done in strict accordance with the approved specifications. Failure to comply with the approved specifications is a violation of this Ordinance.

(b) Removal

(1) Requests for removal of trees shall be handled on an individual permit basis.

(2) The city shall have the right to remove trees, plants and shrubs within the lines of all streets, rights-of-way and public places, as may be necessary to ensure public safety or to preserve or enhance the symmetry and beauty of such public places subject to recommendation from the City Arborist and approval of the Planning Director.

(3) No persons shall plant, or contract with another to plant, any tree or shrub in any public street right-of-way or public place without a permit from the city.

(4) Individual permits will not be required for the city and/or the North Carolina Department of Transportation projects as long as tree preservation and protection requirements are included in the project plans and/or contract provisions and are approved by the City Arborist.

10.11.13 Injuring Trees or Shrubbery on Public Property

(a) Any person or company performing, or contracting with another to perform construction work (including the operation or storage of equipment or materials) within the drip line of any tree or shrub on public property shall place the appropriate guard or protective barrier around the plant to the protect the drip line of the tree or shrub. If the activities require the trimming, pruning or removal of any tree located on public property, a written permit shall be obtained from the Planning Director after verification of approval from the City Arborist.

(b) It shall be unlawful for any person to attach any object including but not limited to rope, wire, chain, or sign to any tree or shrub on public property or rights-of-way, or to the guard of stake intended for the protection of such tree except for the purpose of protecting it or the public.

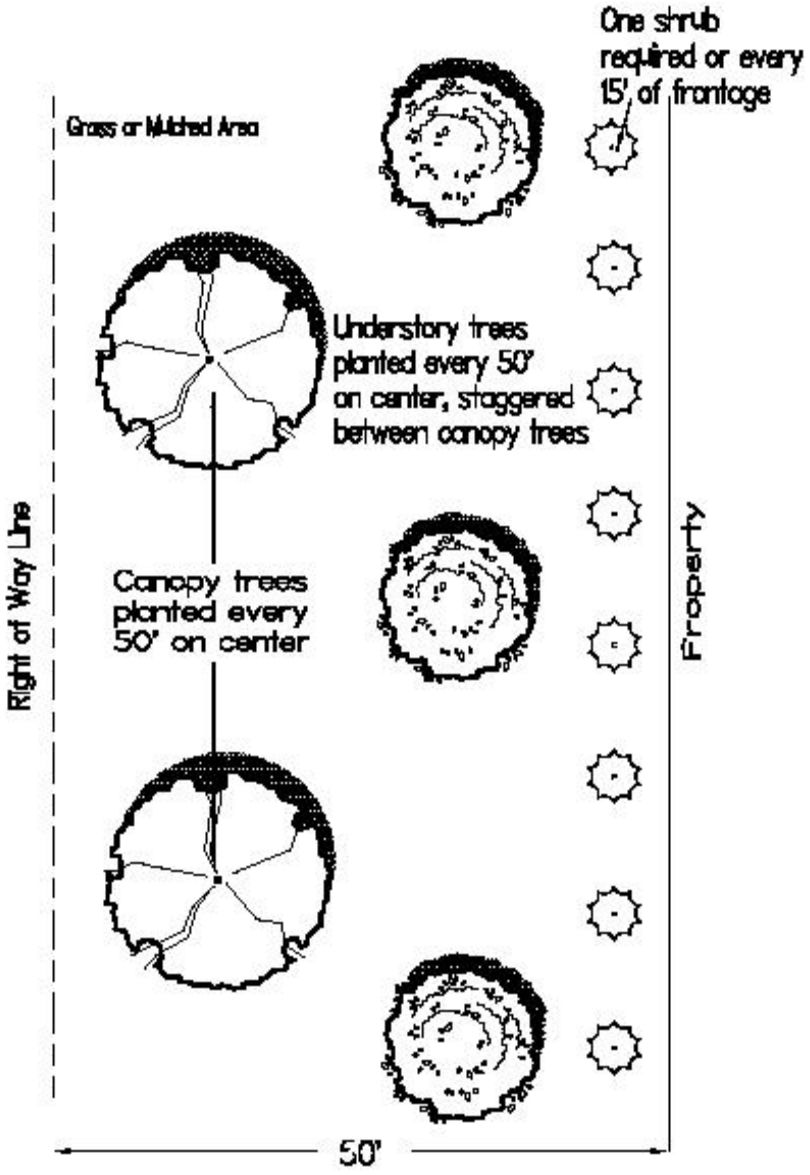
(c) It shall be unlawful as normal practice, except as described in this section, for any person to top any street tree, park tree or other tree on public property or rights-of-way. Topping is the severe cutting back of limbs larger than three (3) inches in diameter to stubs within the tree's crown so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees that interfere with or are imminent threats to utility wires or other obstructions where other pruning practices are impractical may be exempted from this ordinance at the determination of the Planning Director.

(d) All stumps of trees on public property or rights-of-way shall be removed so that the top of the stump shall not project above the surface of the ground.

10.11.14 Tree Board

The Planning Director may consult with the Community Appearance Commission in the event that conflict occurs or interpretation is required in the application of this Ordinance. The Community Appearance Commission will act in the capacity of a Tree Board. The Community Appearance Commission may meet in regular session or they may form a sub-committee to act in their behalf. It shall be the responsibility of the Community Appearance Commission to review specifications and plans for the care, preservation, pruning, planting and removal of trees in City-owned areas. In addition the Community Appearance Commission may investigate available grants, loans, or contributions from other governmental agencies, public or private corporations or individuals.

50’ Buffer for Planned Developments on US 321



Definitions

Caliper – A standard trunk diameter measurement for nursery grown trees. Measurement is taken 6 inches above the ground for trees up to and including 4 inches. Measurement of trees over 4-inch caliper is taken 12 inches above the ground.

Critical root zone (CRZ) – The minimum volume of roots necessary for maintenance of tree health and stability.

DBH – Diameter at breast height – The tree trunk diameter measured in inches at a height of 4.5 feet above the ground.

Deciduous – Plants that lose their leaves annually.

Drip Line – An imaginary line that extends from the outermost edge of the branches to the ground.

Evergreen – Plants that retain their foliage throughout the year.

Site survey – A map showing relevant, existing site features and vegetation on a site proposed for development.

Tree inventory – A comprehensive list of individual trees providing descriptive information on all or a portion of the project area.

Tree protection zone - A space above and below ground within which trees are to be retained and protected.

Tree protection zone barriers – Devices such as fencing, berms, or signage installed to limit access to tree protection zones.

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This document was compiled by City Staff in conjunction with the 2008 Urban Forestry Grant:

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