

Section 10 Buffer and Landscaping Requirements

10.1 Purpose and Applications

The standards of this section provide for the preservation of existing vegetation and for the installation and maintenance of new vegetation and other landscape architectural features. The purpose of these standards is to improve property and community appearance, allow for the ecological benefits provided by plant materials, prevent the overcrowding of land and enhance the privacy and welfare of citizens by separating land uses.

The landscaping and buffering standards of this section shall apply to all proposed development for which a site plan is required. All requirements shall run with the land use and shall apply against any owner or subsequent owner. Land used toward achieving the requirements of the section need not hold the same zoning designation as the use to which the landscaping and buffer applies but the landscaping shall either be on the same lot or on contiguous property under the same permanent possession or control as the lot on which the use is located.

Buffers: The intent of buffers is to provide a space to separate differing uses. The buffer width is the specified width of the area devoted to plant materials. The width is dependent on intensity of the use.

Landscaping: The plant types to be located in the buffer comprise the required landscaping.

There are four basic plant types referred to in this section, and all shall be locally adapted plants. They include large trees, small trees/large shrubs, evergreen trees, and shrubs, defined as follows:

Large trees: Deciduous shade trees with a mature height of 30 feet or greater and a mature spread of 30 feet or greater.

Small trees/large shrubs: Deciduous trees or shrubs with a mature height of 10 to 30 feet.

Evergreen trees: Trees or large shrubs at least 10 feet tall at maturity which usually have green foliage throughout all seasons of the year in the Durham region.

Shrubs: Prostrate or upright woody plants, either evergreen or deciduous, with a mature height usually less than 10 feet.

10.2 Buffer Areas

10.2.1 Permitted Uses within Buffer Areas

Buffers shall be left in an undisturbed natural vegetative state or provided with supplemental plantings. Selective thinning of vegetation under 1.5 inch caliper and removal of dead vegetation shall be permitted as long as the intent of the buffer requirement is maintained. Driveways or walkways may cross a buffer at as near a perpendicular angle as practical. Grading in the designated buffer may be allowed with site plan approval, if the revegetation plan is determined to meet the intent of this section.

10.2.2 Location of Buffers

Required buffers shall be provided along the perimeter of any lot or development unless alternate locations are approved. Buffers shall be designated and dimensioned on all site plans.

10.2.3 Application

1. These standards apply to all nonresidential and multifamily uses located next to property zoned for residential use. When nonresidential and multifamily uses submit a site plan for locations next to property zoned for residential use, buffers shall be provided near the perimeter of the nonresidential or multifamily property. These buffer requirements shall not apply when a public street or railroad right-of-way separates a nonresidential or multifamily property from a residential property, except as indicated in Section 10.3.
2. The required buffer width is dependent on the intensity classification given in the proposed use in the chart in Section 10.2.4.
3. Additionally, nonresidential or multifamily uses proposed next to property used for residential purposes, although non-residentially zoned, shall provide one half of the required buffer width along the perimeter of the property adjoining the property zoned for residential use.
4. If the adjacent property is zoned for residential use but is vacant at the time of the proposed development, one-half of the required buffer width shall be provided.

5. If the proposed development is nonresidential and the adjacent property is zoned or used for multifamily dwellings, the full buffer width shall be provided. However, if the adjacent property is vacant, one-half of the required buffer width shall be provided.
6. If the proposed development is for multifamily dwellings adjacent to property zoned or used for multifamily dwellings, one half of the buffer width shall be provided, whether the property is occupied or not.

10.2.4 Buffer Width

1. Buffer width is based on the following intensity classifications:

- Class 1 Cemeteries, golf courses, passive recreational areas, wholesale nurseries, day care homes [note: large homes as defined by NCAC 3U.0102 (14)]
- Class 2 Offices (3 stories or less), churches, schools, public facilities including playground ballfields, community swimming pools, and similar facilities, day care facilities multifamily (developed at less than or equal to 16 units per acre and/or less than 12 units total).
- Class 3 Neighborhood commercial and service activities, including but not limited to retail operations, restaurants (without drive-up windows), banks (without drive-up windows), convenience stores (without gasoline sales), offices (over 3 stories), multifamily (developed at greater than 16 units per acre).
- Class 4 Commercial activities with higher vehicle activities, including but not limited to vehicle repair, service stations, drive-up window restaurants and banks, car washes, hotels and motels, shopping centers. Also, light manufacturing activities and research facilities.
- Class 5 Heavy industrial uses, heavy manufacturing, truck terminals, mobile home sales, vehicle sales, heavy equipment sales, facilities involving outdoor storage and outdoor commercial recreation establishments.

Required Width	
Buffer Intensity	Buffer Width
Class 1	10 feet
Class 2	20 feet
Class 3	30 feet
Class 4	50 feet
Class 5	80 feet
Required yard spaces may be used to meet buffer requirements. Buffers shall be planted in conformance with Sections 10.2.5 and 10.7.	

2. No buffers shall be required for property in the CBD District.
3. The approving authority, at time of site plan approval, may reduce buffer widths and required plantings by up to 50% if the site plan indicates berming, alternate landscaping, walls, opaque fence or topographic features which will achieve the intent of this section and are designed to complement adjacent properties. Berms may not have a slope greater than 2 to 1 and must have a crown width of at least 2 feet. Reductions of more than 50% shall not be considered without written approval from the adjoining property owners.

REQUIRED BUFFER WIDTH IN FEET BASED ON BUFFER INTENSITY CLASSIFICATION AND ADJACENT PROPERTY USE AND ZONE					
Buffer Intensity Class (BIC)	ADJACENT PROPERTY USE AND ZONE				
	Developed Residential Zone *	Vacant Residential Zone *	Residential Use * in Nonresidential Zone	Developed Multifamily Zone	Vacant Multifamily Zone
BIC 1	10'	5'	5'	10'	5'
BIC 2 (NR)	20'	10'	10'	20'	10'
BIC 2 (MF < 12 total and/or < 16)	20'	10'	10'	10'	10'

units/ac)					
BIC 3 (NR	30'	15'	15'	15'	15'
BIC 3 (MF 12+ total and 16+ units/ac)	30'	15'	15'	15'	15'
BIC 4	50'	25'	25'	50'	25'
BIC 5	80'	40'	40'	80'	40'

NR = Nonresidential MF = Multifamily

* Residential in this table refers to single-family, two-family and three-family residences only

10.2. 5 Landscaping Requirements for Buffer Areas

1. Existing Vegetation

Buffers require provision of both physical separation and landscape elements to meet the intent of this ordinance. Existing vegetation shall be used to meet all or part of the requirements of this section wherever possible, if it provides the same level of obscurity as the planted buffer required below. Vegetation to be saved shall be identified on site plans along with protection measures to be used during grading and construction. See Section 10.9 for protection measures required and calculation of credits for existing trees.

2. Planted Vegetation

Required plantings allow for a mix of large shade trees, small trees/large shrubs, and smaller shrubs to provide variable height screening, and a variety of plantings and seasonal color. Evergreen trees are added to the wider buffers to provide a more opaque screen, as well as a more natural appearance to the buffer. The mix is designed to create a buffer which will give a satisfactory screen within 3 to 5 years of planting, under normal maintenance, while allowing room for the various plants to grow.

Planting requirements for buffers include both trees and shrubs as described below. In calculating buffer planting requirements, areas of driveways and sight distance triangles are excluded.

a. **Tree Standards:** This requirement may be satisfied as follows:

- Large trees with a minimum size of 1 1/2-2 inch caliper at planting at the following minimum rates:

Required Buffer Width

20 ft. or less
21 ft. to 30 ft.
31 ft. to 50 ft.
>50 ft.

One Tree Per

200 sq. ft. of buffer
300 sq. ft. of buffer
350 sq. ft. of buffer
400 sq. ft. of buffer

- Small trees/large shrubs are required to fulfill from no less than 20% to no more than 30% of the required number of trees in (1) above. Additionally, evergreen trees are required to fulfill at least 50% of required trees planted in buffer intensity classes 3, 4 and 5.
 - Evergreen trees and small trees/large shrubs, each with a minimum height of 8 feet, are to be planted at the same rates as the large trees; or,
 - Two evergreen or small trees/large shrubs for each one required above, with a minimum height of 4.5 feet at planting, may be substituted.
- Trees shall be distributed along the entire length of the buffer. Due to unique characteristics of a site, or design objectives, alternative plant mixes may be approved.
- Shrub Design Standards:** Evergreen shrubs, a minimum of 18 inches (12 feet) in height, of a variety that can be expected to reach 4 to 5 feet in height within 3 to 5 years of planting, shall be provided. Shrubs shall not normally be planted closer than 6 feet on center. Additionally, shrubs shall not normally be planted closer than 6 feet to planted trees, nor within the drip line of existing, protected trees. Shrubs shall be distributed along the entire length of the buffer. Evergreen shrubs shall be provided at the following rates:

Required Buffer Width

One Shrub Per

20 ft. or less	50 sq. ft. of buffer
21 ft. to 30 ft.	75 sq. ft. of buffer
31 ft. to 50 ft.	125 sq. ft. of buffer
>50 ft.	200 sq. ft. of buffer

Variations in quantities and spacing of buffer shrubs may be approved when larger plants are provided.

10.3 Landscape Screens/Buffer

The intent of a screen/buffer is to use plant materials and/or other landscape architectural elements to obscure views from adjacent properties. Breaks in screens shall be permitted to provide adequate ingress and egress as needed.

Loading docks for semi-trailers and trucks over 35 feet in length, miniwarehouses, correctional institutions, service courts, and outside storage of material stocks or equipment, not for sale on the premises, such as motor vehicles, farm equipment, or construction equipment, shall normally be screened from unobstructed off-site views. Uses requiring screening as noted in Section 7, shall be screened according to the requirements of this Section.

However, such features and uses need not be screened from similar features and uses on adjacent lots and within the CBD, CT, I-2 and I-3 zones, except as required under Section 10.2.

10.3.1 Landscape Screen Standards

Features and uses specified above as requiring screen/buffers shall provide a visual obstruction from adjacent properties in conformance with the following standards: The screen may be composed of view-obscuring vegetation, wall, fence, or berm. The items may be used individually or in combination. The result shall be a semi-opaque (75%) screen which obscures views from the ground to a height of the object being screened; however, the screen is not required to exceed 8 feet. Plant materials shall be at least 2 feet tall at the time of installation and reach the desired height within 3 to 5 years of planting. When a combination of features is proposed, one third of the surface area of all walls, fences or berms that face off-site must be covered with plant material within 3 to 5 years. Additionally, screen areas shall be sufficient to allow for the mature growth of plant materials when used.

10.4 Parking Lot Landscaping

10.4.1 Purpose

In order to reduce reflected sunlight and headlight glare from parked vehicles, as well as to maintain a separation between vehicles and other uses and to reduce the effects on the environment of vehicle parking facilities, the following standards are provided. Vehicle areas used for drive up windows and areas adjacent to gas pumps are included as vehicle parking facilities in this section.

10.4.2 Parking Visible From Streets (Street Yards)

Any new, or major (15 percent or greater) addition to off-street parking areas which have exposure to a public street and are located within 50 feet of a right-of-way shall provide a landscaped area meeting the requirements below.

1. Vehicle parking areas containing 4 or more parking spaces shall provide a landscaped area, adjacent to and outside of the street right-of-way, equal to 6 square feet for each linear foot of street frontage, less driveways and sight distance triangles. The landscaped area used for credit shall be a minimum of 3 feet and a maximum of 25 feet in width. Proposed locations of plants and parking spaces shall be arranged to protect plants from vehicle overhangs.
2. Buffers and/or screens provided adjacent to right-of-way, as required under Section 10.2.3, and/or 10.3, and located between parking lots and streets may be considered in fulfilling the requirements of this Section.

3. Required Landscape Materials

- a. Large trees (unless subject to overhead power lines) shall be planted at the rate of one 2-2 1/2 inch caliper tree per 30 lineal feet of property line abutting a public street, less driveways and sight distance triangles. This rate may be varied based upon size of installed trees and mature spread of proposed trees.

Areas with large trees shall be at least 10 feet deep from right-of-way to back of curb or pavement and provide 250 square feet of contiguous growing area for each tree unencroached upon by shrubs or impervious pavement.

Credit given for existing, healthy, protected trees shall be according to Section 10.9.

- b. Evergreen shrubs at the rate of one 15 to 18 inch height minimum shrub per 3 lineal feet of property line abutting public streets less driveways, of a species expected to reach a minimum height of 30 inches and a

minimum spread of 30 inches within 3 to 5 years of planting. This rate may be varied based upon size of installed plant materials.

Shrubs shall be planted such that no less than 50% of the length of the parking lot frontage, to a height of 30 inches, is obscured from view after 3 to 5 years of growth. Forty (40) percent of shrubs may be deciduous. Shrubs planted within sight distance triangles shall be of a type with a maximum mature height of 24 inches.

Additionally, shrubs shall not be planted within 6 feet of the trunk of a new tree, nor within the drip line of a protected, existing tree.

- c. A masonry wall, or fence, at least 30 inches tall and of a material compatible with the building, may be substituted for the requirements of shrubs, provided that one-third of the surface area of all fences or walls that faces off-site must be covered by plant material in all districts, except the CBD, within 3 to 5 years after installation.
- d. Berms may be installed within the street yards with a minimum 12 foot height, 2 foot minimum crown width, and side slopes of no greater than 2:1. Berms shall be planted with live vegetation, and may be used with smaller plants to meet the required screening area, provided that the combination of the berm and the shrubs obscures no less than 50% of the length of the parking area, to a height of 30 inches after 3 to 5 years of growth.
- e. Vehicle sales lots shall provide trees at the rate of one tree per 100 lineal feet, and shrubs at the rate of one shrub per ten lineal feet of display area. Plants may be grouped together, provided that at least 250 square feet of contiguous growing area, unencroached upon by shrubs or impervious surfaces, surrounds each planted tree.
- f. Trees planted to meet requirements for landscaping within parking lots which are also located within 25 feet of the right-of-way line may be counted toward both of these requirements.
- g. Areas used for vehicle service, parking, and business transactions such as areas adjacent to gasoline pumps (even if under a canopy) and areas for drive up service, shall be considered parking areas and shall comply with the requirements of Section 10.4.2. or 10.4.3.

10.4.3 Parking Visible from Adjacent Property: Side and Rear Property Lines

Any parking area, visible from adjacent property, containing four or more parking spaces, shall provide a landscaped area between the edge of the pavement and the side or rear lot lines of the property. The minimum size of this area shall be computed at the rate of three square feet per one linear foot of property line, but in no case shall the width of this required area be less than three feet. An additional three feet of width may be required by the approving authority when a narrower width would have a detrimental effect on the required plantings. Required landscaping shall consist of evergreen shrubs, 18 to 24 inch minimum height at the rate of one per four lineal feet of property line. This requirement does not apply to property lines falling within a parking lot in common use.

When computing the number of shrubs required, the full length of property line with an unobstructed view of parking area from adjacent properties shall be used. When adjoining properties are already developed with parking lots adjacent to the proposed site and with landscaping installed to meet this requirement, the new parking lot shall be screened with 50 percent of the required plantings. When an adjoining property is vacant, and/or being developed at the same time, 50 percent of the required plantings shall be provided.

Up to one half of the property line landscaping may be provided as follows:

- 1. Evergreen or deciduous trees, at the rate of one large tree per 25 linear feet of property line, to be planted within an area with a minimum dimension of 10 feet in the vicinity of the tree, and with a contiguous growing area of 250 square feet.
- 2. Small trees/large shrubs, at the rate of one tree/shrub per 18 feet, with a contiguous growing area of 125 square feet and a minimum dimension of 72 feet.

This required area may be crossed by drives or aisles for parking areas on adjacent properties. Installation of landscape materials shall take into consideration the maintenance of proper sight distances for safe traffic movement.

10.4.4 Landscaping within Parking Areas

1. Location

Development with parking areas (including accessory drives and aisles) exceeding 5,000 square feet on the same parcel shall provide and maintain landscaped areas based upon the surfaced parking area. Areas under canopies, loading and service areas, and portions of drives with no parking on either side for a distance longer than 25 feet and/or used exclusively as access to loading or service areas, are exempt from this requirement. The landscaping within parking areas shall be provided in addition to buffer requirements of this ordinance.

Areas used for landscaping shall be provided in the amount equivalent to at least 7.5% of the paved parking area, and shall be used for planting either trees or shrubs according to the credits below. Tree planting areas shall be located such that no parking space is farther than 75 feet from a tree trunk.

2. Required Landscaping Materials

- a. Trees shall be credited at the following rates, either in combinations of small and large trees, or with large trees only, to add up to the required landscape area:
 - 1. One 2-2 1/2 inch caliper, large tree per 250 square feet of required landscaped area. Each large tree shall be located within a minimum growing area of 250 square feet, unencroached upon by shrubs or impervious pavement, with a minimum dimension of 10 feet. Additional credit may be given for larger trees, up to 4" caliper, when larger growing areas are also provided.
 - 2. One small tree/large shrub or evergreen tree at the rate of one 8 foot tall tree per 125 square feet of required landscaped area. Small trees and evergreen trees shall be located within a minimum growing area of 125 square feet, with a minimum dimension of 72 feet, unencroached upon by shrubs or impervious pavement. Small trees/large shrubs may be used to fulfill up to one half of the required trees. Evergreen trees and large shrubs, when used, shall be either pruned or located to facilitate safe sight distances within parking lots.
- b. Shrubs shall be credited at the rate of one 15 to 18 inch minimum height evergreen or deciduous shrub per 35 square feet of required landscaped area. This rate may be varied based upon size of installed shrubs or groundcover. Shrubs to meet this requirement must be located within 15 feet of the paved area. Additionally, shrubs shall be located to facilitate safe sight distances within parking lots, and to protect them from overhangs of motor vehicles.
- c. Minimum curb radii of 3 feet are required on the corners of all tree islands and medians to allow for free movement of motor vehicles around planting materials. All islands shall have raised edging around them to further protect plants from being run over by motor vehicles. Medians without raised edging shall include devices to stop vehicles from driving into the planted areas.
- d. No more than one tree may be provided per island, unless there is at least the minimum growing area per tree as required in 10.4.4.2.a above. Large trees shall not normally be planted less than 18 feet apart, and small trees/large shrubs shall not normally be planted less than 12 feet apart.

10.5 Street Tree Standards

The primary objective of street tree standards is to create a built environment that benefits from the aesthetic and environmental qualities of an extensive tree canopy along streets and highways. Trees along streets are attractive amenities that improve the appearance of the community, providing shade and visual interest. Trees along streets improve air quality, reduce stormwater runoff, provide wildlife habitat and moderate the micro-climate impacts of heat absorbed by paved surfaces. Street tree standards promote an appropriate balance between the built environment and the preservation of natural vegetation.

10.5.1 Street Trees for Non-Residential Development

In all non-residential developments which do not have street yard plantings, the developer shall either retain or plant trees along any frontage with adjacent public rights-of-way such that there is an average at least 1 street tree for every 30 feet of street frontage. The location of trees may be varied, as long as there is a minimum of 1 tree every 100 feet of street frontage. Driveway widths may be subtracted from the frontage linear feet.

10.5.2 Street Trees for Residential Development

In all residential developments inside the Urban Growth Area, along both sides of all existing and proposed rights-of-way, the developer shall either retain or plant trees such that there is an average of at least 1 street tree for every 30 feet of street frontage; street trees shall not be required for residential developments outside the Urban Growth Area. The location of trees may be varied, as long as there is a minimum of 1 tree every 100 feet of street frontage. Property owners and developers shall be responsible for making a good faith effort to protect existing or installed street trees in accordance with standard horticultural practice and Section 10.10, Protection of Existing Vegetation. Such good faith efforts over 12 months from the issuance of a Certificate of Compliance shall be deemed to meet the requirements of Section 10.5.2, Street Trees for Residential Development.

10.5.3 Existing Trees

Developers are encouraged to use existing trees to meet the requirements of Section 10.5, Street Tree Standards, as long as existing trees are protected in accordance with the standards of Section 10.10, Protection of Existing Vegetation. Existing trees preserved to meet other requirements of the Zoning Ordinance may be used to meet the requirements of Section 10.5, Street Tree Standards as well. Street tree credit shall be granted to a development for preserving existing trees in public rights-of-way adjacent to the development provided that the root zone outside of the public right-of-way is protected.

10.5.4 Street Tree Installation

Street trees to be provided in accordance with Section 10.5, Street Tree Standards shall be clearly noted on any site plan, development plan, preliminary plat, final plat, major special use permit or minor special use permit. Street trees shall be of a species included on the list of acceptable street tree species adopted by the Planning Director or the Director's designee. Street trees shall be planted in accordance with Section 10.5, Street Tree Standards and shall be at least 2 1/2 inch caliper measured 6 1/2 inches [American National Standard for Nursery Stock] above the ground. The Planning Director or the Director's designee shall have the authority to vary on a case-by-case basis the amount and size of required street trees where an alternative requirement would address unique site conditions and allow design flexibility while still serving the objectives for street tree standards.

Street trees shall be located within the front setback area and within 25 feet of the street right-of-way and shall not be located within or within 4 feet of any street right-of-way or within any right-of-way easement. However, the Director of Public Works or the Director's appointee shall have the authority to approve street tree planting in the street right-of-way in situations where street trees will not conflict with public utilities or the provision of other public services.

At least 250 square feet of contiguous, un-encroached growing area shall be provided for each tree. The Director of Public Works or the Director's appointee shall have the authority to approve a street tree growing area of smaller size where special features are utilized in the site design to provide for adequate growth of street trees. Planting location shall take into consideration any roadway widening identified on approved thoroughfare plans but not provided by the development. Street trees required by Section 10.5, Street Tree Standards on any lot shall be planted before a Certificate of Compliance is issued, except where the planting may be postponed to the appropriate season in accordance with the requirements of Section 10.8, Request for Extension of Compliance with Landscaping Requirements.

10.5.5 Application of Street Tree Standards

After June 21, 1999 (City Jurisdiction) and June 28, 1999 (County Jurisdiction), all development and land disturbing activity shall be conducted in accordance with Section 10.5, Street Tree Standards, except as follows.

- a. Single family residential development inside the Urban Growth Area on lots platted prior to June 21, 1999 (City Jurisdiction) and June 28, 1999 (County Jurisdiction) for which a continuously valid building permit has not been issued shall be required to retain or plant least 1 street tree for every 30 feet of street frontage. (Examples: 60 feet of street frontage would require 2 street trees; 80 feet of street frontage would require 2 street trees.) Existing trees to be retained to meet this requirement shall be protected in accordance with Section 10.10, Protection of Existing Vegetation. New street trees shall be planted in accordance with Section 10.5.4, Street Tree Installation.
- b. Single family residential development on lots platted prior to June 21, 1999 (City Jurisdiction) and June 28, 1999 (County Jurisdiction) for which a continuously valid building permit has been issued as of June 21, 1999 (City Jurisdiction) and June 28, 1999 (County Jurisdiction) shall be exempt from the requirements to Section 10.5, Street Tree Standards.
- c. Additions to existing residential buildings on single family residential lots of record recorded prior to June 21, 1999 (City Jurisdiction) and June 28, 1999 (County Jurisdiction), shall be exempt from the provisions of Section 10.5, Street Tree Standards.

10.6 Variations

The approving authority may modify buffer and landscape standards where:

1. There are special considerations of site design and/or topography.
2. There is existing healthy vegetation that is sufficient to meet the requirements of this Section in part or in whole.
3. There exists a unique relationship to other properties.
4. The plantings or planting area would conflict with utilities, easements, or overhead power lines, or encroach upon City trees, as recommended by the Urban Forester.
5. Proposed street widening not provided by the developer will consume the landscaping area.

6. The additional screening or landscaping requirements of any other Section warrant a variance, in which case, the approving authority may vary the requirements of this Section so long as the intent of all Sections is met. The approving authority may require alternative buffers or landscaping when a modification to the requirements of this Section is warranted in order to meet the intent of the specified standards.

10. 7 Installation and Maintenance

10.7.1 Installation Standards

All plant material shall meet or exceed size and shape relationships specified in the latest edition of The American Standard for Nursery Stock published by the American Association of Nurserymen. All sizes specified refer to size at time of planting. No building permit shall be issued nor grading begun until a plan for buffers and landscaping has been approved.

10.7.2 Maintenance Responsibility

Unless otherwise stated, the owner of any property where landscaping is required shall be responsible for the maintenance of all required plant material and continued compliance with this Section.

10.8 Request for Extension of Compliance

It is recognized that land development occurs continuously and that vegetation used in landscaping or screening should be planted at certain times to insure the best chance of survival.

Section 10.8.1 Extensions for All Development except for Single Family Residential

In order to insure compliance and to reduce the potential expense of replacing landscaping or screening materials which were installed at an inappropriate time or under unfavorable conditions, a letter of request for extension of compliance with landscaping requirements may be filed with the Director of Inspections, which states the reasons why the request is being made. If the Director of Inspections finds that there are unfavorable conditions for planting, an extension of compliance with landscaping requirements may be allowed.

In addition, this letter shall acknowledge that the applicant for the Building Permit is aware of all landscaping and screening requirements, and will comply with those requirements within 90 days, or discontinue use of the property.

If the initial letter of request for extension of compliance with landscaping requirements has expired and conditions are still deemed unsuitable for planting, the applicant may request one additional extension of up to 90 days. During periods of extreme drought as evidenced by the official declaration of Stage 3 or greater mandatory water conservation requirements, the Planning or Inspections Director may authorize additional 90-day extensions beyond the one extension typically allowed. These extensions may be continued through the period in which the extreme drought conditions remain. Failure to comply with the provisions of this Section within the time noted in the letter of request for the extension of compliance with landscaping requirements shall be deemed a violation of this ordinance.

The applicant shall also acknowledge that while a Conditional Certificate of Compliance may be issued, no Final Certificate of Compliance will be issued while there is an active (pending) letter of request for extension of compliance with landscaping requirements unless a performance guarantee (such as a letter of credit or performance bond) sufficient to cover 120 percent of the installed landscaping costs has been posted with the Inspections or Planning Department.

10.8.2 Extensions for Single-Family Residential Development:

A homebuilder who wishes to delay planting of required street trees at a new single-family home and to receive a Certificate of Compliance on such home, may file an extension request with the designated Planning or Inspections staff. Except when sustained unfavorable planting conditions have existed in other months, such requests shall generally be received only during the period from May 15th to September 15th of each year. During periods of extreme drought as evidenced by the official declaration of Stage 3 or greater mandatory water conservation requirements, the Planning or Inspections Director may authorize requests for extensions beyond these dates so long as the extreme drought conditions remain. Separate extension requests must be filed for each lot and shall include: a) specific details identifying the property involved; b) the location, number, size, species and estimated installed cost of the street trees to be planted; c) a specific extension deadline date by which the trees shall be planted; d) an administrative fee handled by the Planning or Inspections Department for each lot for which an extension is granted; e) a homeowner affidavit (as appropriate) and f) posting of a performance guarantee. If all conditions of the extension request are properly met, and if the homebuilder does not have outstanding violations or compliance issues, then the planting extension will be granted. The Planning or Inspections Department shall adopt and maintain appropriate administrative guidelines to administer this program.

10.9 Existing Vegetation Credits for Required Landscaping

Existing healthy vegetation shall be retained when possible and may be credited toward landscape requirements. Vegetation to be saved shall be located and identified on site plans. Credit given for existing, healthy, protected trees shall be a number equal to the value of the diameter in inches of each protected tree divided by 2 inches, but no fraction thereof, as measured at 4 1/2 feet above grade. Trees so credited must be at least two (2) inch caliper and be uniformly encircled by a root zone protection area, shown on the grading, erosion control and landscape plans. The size, type and location of each tree shall be designated on the plan, with the root zone protection area shown graphically.

Protection of natural groups of trees is encouraged, with each tree within the grouping being credited as if standing alone. Root zone protection areas shall encompass all trees within the grouping. Large groupings of trees to be saved shall be identified and the tree save areas shall be credited towards landscaping if the tree save areas are sufficient. In addition, all small trees/large shrubs, evergreen trees and smaller shrubs shall also be identified, with size, species and quantities. The descriptions shall be shown clearly on the plans. Such trees whose root zone protection areas fall outside the protected area but are within larger groups of trees, shall not count toward any landscaping requirements but shall be left in place unless they are diseased or otherwise hazardous to the integrity of the buffer or the development. Removal of such diseased or hazardous materials otherwise shown to meet requirements of this section shall require approval by the Planning Director or the Director's designee.

10.10 Protection of Existing Vegetation

Any trees preserved on a development tract in order to meet ordinance requirements or otherwise indicated to be preserved shall meet the following protection standards. Protection measures to be used during grading and construction shall also be specified on all grading, erosion control, and landscape plans. Root zone protection areas shall be established around all trees to be preserved. Root zone protection areas are the greater of a 6 foot radius around the tree or 1 foot for every inch of tree diameter measured at a point 4 1/2 feet above the ground. Root zone protection areas shall also be clearly shown on all site plans.

At the start of grading involving the lowering of the existing grade around a tree or stripping of topsoil, a clean, sharp, vertical cut shall be made at the edge of the tree save area at the same time as other erosion control measures are installed. The tree protection fencing shall be installed on the side of this cut farthest away from the tree trunk. This procedure shall be incorporated as a note on the grading and erosion control plans.

No storage of materials, dumping of waste materials, fill, or parking of equipment shall be allowed within the root zone protection area, and no trespassing shall be allowed within the boundary of the root zone protection area, and shall be so noted on the grading and erosion control plans and posted on the protection fence. A protection fence constructed of a material resistant to degradation by sun, wind, and moisture for the duration of the construction, shall be installed at the same time as the erosion control measures, and shall remain in place until all construction is complete. This procedure shall be incorporated as a note on the grading and erosion control plans. Site plans and erosion control plans shall include a detail of the proposed tree protection fence and its location.

Additionally, all utility lines and drainage channels shall be minimized within the root zone protection areas of trees to be saved and preferably located adjacent to driveways and in groupings as allowed by good engineering practices. Shrubs shall also not be planted within the root zone protection areas of trees saved. When the provisions of Section 10.9, Existing Vegetation Credits for Required Landscaping are not fulfilled, existing trees will be considered unprotected and may not be used to satisfy landscape requirements of Section 10, Buffer and Landscaping Requirements or the tree coverage requirements of Section 10.11, Tree Coverage and Protection Standards.

10.11 Tree Coverage and Protection Standards

The primary objectives of tree coverage and protection standards are the preservation and maintenance of undisturbed tree cover and the provision of replacement tree cover on development sites in urban and suburban areas. Tree coverage serves to reduce glare, noise, air pollution, and soil erosion; to moderate temperatures; to reduce stormwater runoff; to preserve remnants of Durham's native ecology; to provide habitat for native plants and wildlife; to provide a healthy living environment; and to make Durham County a more attractive place to live.

10.11.1 Tree Coverage

After May 3, 1999 (City Jurisdiction) and May 10, 1999 (County Jurisdiction), new development inside the Urban Growth Area shall include tree coverage areas on a portion of the development tract. The percentage of a tract which shall have tree coverage is as indicated in the following table, except as indicated in Section 10.11.4, Reduction of Tree Coverage Requirements. Tree coverage standards may be met either by preserving existing trees on the site or by planting replacement trees. Preserving existing trees on the site is preferable to a combination of preservation and planting and is reflected in the lower requirements. For the purposes of calculating tree coverage requirements, the water surface area of ponds, lakes and other water bodies (excluding stormwater control structures) shall be excluded from the total land area of the development tract.

Tree Coverage Standard

Residential Development

Preserved Tree Coverage Area		Replacement Tree Coverage Area		Total Tree Coverage Area Required
20 %	plus	0 %	equals	20 %
15 %	plus	6 %	equals	21 %
10 %	plus	12 %	equals	22 %
5 %	plus	18 %	equals	23 %
0 %	plus	24 %	equals	24 %

Non-Residential Development

Preserved Tree Coverage Area		Replacement Tree Coverage Area		Total Tree Coverage Area Required
10 %	plus	0 %	equals	10 %
8 %	plus	3 %	equals	11 %
6 %	plus	6 %	equals	12 %
4 %	plus	9 %	equals	13 %
0 %	plus	14 %	equals	14 %

- a. Any portion of a development tract which is required to be left undisturbed by some other requirement of the Durham Zoning Ordinance shall be presumed to meet the requirements of Section 10.11.1, Tree Coverage, so long as the area meets the minimum size threshold. This may include land in the floodway, floodway fringe (unless filled or developed in accordance with Section 11.2.2.c.), preserved wetlands and wetland buffers, steep slope areas, stream buffers and Major Transportation Corridor (MTC) buffers and any portion of the tract left undisturbed in order to create required perimeter buffers.
- b. Tree preservation and tree replacement areas shall be shown on all preliminary plats, final plats, site plans, landscaping plans, development plans, major special use permits and minor special use permits in order to clearly assign tree replacement responsibility to future owners. Tree preservation and tree replacement areas on any individual lot shall be clearly shown on all plot plans for the lot.
- c. Property owners in developments other than single-family and duplex residential developments shall be responsible for protecting tree preservation and tree replacement areas in accordance with standard horticultural practice and Section 10.10, Protection of Existing Vegetation. Tree preservation areas located on single-family and duplex lots shall not be deemed to create an easement or enforceable obligation on owners who occupy a dwelling subsequent to issuance of a Certificate of Compliance.
- d. Where practicable, tree coverage areas in new subdivisions shall be located in common open space or buffers required by other provisions of the Durham Zoning Ordinance. Where this is not practicable, tree coverage areas may be located on individual lots in the subdivision, provided that the root zone protection areas can be adequately protected and that the trees can be reasonably expected to survive the construction process.

10.11.2 Preserved Tree Coverage

Tree preservation to meet the tree coverage standard in 10.11.1, Tree Coverage shall meet the following requirements.

- a. The tree coverage area for a group of trees is determined by the exterior boundary of the total root zone protection areas for all of the trees in the group. For parcels greater than 1 acre, no tree preservation area for a group of trees may be counted toward meeting the tree coverage standard unless it includes a minimum of 1,000 square feet and has no individual dimension of less than 25 feet. For parcels 1 acre or less, no single tree preservation area for a group of trees may be counted toward meeting the tree coverage standard unless it includes a minimum of 500 square feet and has no individual dimension less than 20 feet.
- b. The tree coverage area for an individual tree is determined by the tree's root zone protection area. Individual trees may be counted toward tree coverage credit provided that the tree's diameter is at least 10 inches or greater measured at a point 4 1/2 inches above the ground. Where specimen trees of 18 inches or greater in diameter are preserved outside of other required buffers, tree coverage credit shall be granted at 1 1/2 times the size of the root zone protection area.
- c. Tree preservation areas shall be located in floodway areas, floodway fringe areas, stream buffers, steep slope areas, wetlands and Durham Natural Inventory sites. Additional tree preservation areas may be located outside of these areas, in which case they should be located in order to preserve areas of predominantly hardwood forest, to preserve specimen trees and to preserve groupings of trees that add to the aesthetic quality of the development as viewed from the public right-of-way.
- d. At least 75 percent of the tree coverage included within any tree preservation area must be created by trees of greater than 2 1/2 inch caliper.

10.11.3 Replacement Tree Coverage

Tree replacement to meet the tree coverage standard in 10.11.1, Tree Coverage shall meet the following requirements.

- a. For parcels greater than 1 acre, no tree replacement area may be counted toward meeting the tree coverage standard unless it includes a minimum of 1,000 square feet and has no individual dimension of less than 25 feet. For parcels 1 acre or less, no tree replacement area may be counted toward meeting the tree coverage standard unless it includes a minimum of 500 square feet and has no individual dimension less than 20 feet.
- b. When replacement trees are provided in order to satisfy the requirements of Section 10.11.1, Tree Coverage, coverage credit shall be accrued in accordance with the following table. In meeting this standard, at least 50 percent of replacement trees shall be 2 1/2 inches or greater. A minimum of 50 percent of replacement trees shall be large maturing hardwood species native to this region.

Replacement Tree Credit	
Caliper of Tree	Amount of Credit (Square Feet)
2 1/2 inch	200
2 inch	175
1 1/2 inch	150
1 inch	100
Less than 1 inch	No credit

- c. The Development Review Board shall have the authority to approve replacement trees of different sizes or species in order to address unique site conditions, allow design flexibility and to better meet the objectives of Section 10.11 Tree Coverage and Protection Standards.
- d. Where a development tract is entirely in pasture use and has been continuously maintained in such use since January 1, 1980, the tree coverage standard indicated in Section 10.11.1, Tree Coverage may be reduced by 33 percent and the replacement tree requirement may be entirely met with trees of any size greater than 1 inch in caliper with tree coverage credit granted in accordance with the table in Section 10.11.3, Replacement Tree Coverage. Such tree coverage requirement reductions shall not apply to non-residential development and shall not be used in conjunction with any reduction indicated in Section 10.11.4, Reductions in Tree Coverage Requirement.
- e. Replacement trees shall be planted before any Certificate of Compliance is issued. However, for any lot other than an individual single-family or duplex residential lot, the planting may be postponed to the appropriate season in accordance with the requirements of Section 10.8, Request for Extension of Compliance with Landscaping Requirements.

10.11.4 Reduction of Tree Coverage Requirements

Durham is actively seeking more compact development in certain locations in order to support a more compact and efficient urban form, to support infill development, to take advantage of transit and to promote affordable housing. For these purposes, tree coverage requirements established in 10.11.1, Tree Coverage may be reduced, as follows.

- a. New developments shall be entitled to a reduction in the tree coverage requirement indicated in Section 10.11.1, Tree Coverage based on the development intensity, as indicated in the following tables. The tree coverage reductions indicated in the tables may be utilized only to the extent that the tree coverage requirement cannot be satisfied by tree preservation in the floodway, floodway fringe, preserved wetlands and wetland buffers, steep slope areas, stream buffers, Major Transportation Corridor buffers.

Tree Coverage Reduction for Non-Residential Development

Development	
Floor Area Ratio (FAR)	Tree Coverage Standard
FAR 0.29 or Less	No Reduction
FAR 0.30 to 0.49	33 % Reduction
FAR 0.50 to 0.99	66 % Reduction
FAR 1.0 and Greater	No Tree Coverage Requirement

Tree Coverage Reduction for Multi-Family Residential Development

Density	
(Dwelling Units per Acre)	Tree Coverage Standard
12.00 Du/Acre or Less	No Reduction
12.01 to 16.00 Du/Acre	33 % Reduction
16.01 to 22.00 Du/Acre	66 % Reduction
22.01 Du/Acre and Greater	No Tree Coverage Requirement

Tree Coverage Reduction for Single Family Detached Residential Development

Density	
(Dwelling Units per Acre)	Tree Coverage Standard
4.4 Du/Acre or Less	No Reduction
4.41 to 5.5 Du/Acre	33 % Reduction
5.51 Du/Acre and Greater	66 % Reduction

- b. Single family detached residential developments that qualify for the tree coverage reductions as indicated in the above table may satisfy the tree coverage requirement with trees of any size greater than 1 inch in caliper, with tree coverage credit granted in accordance with the table in Section 10.11.3, Replacement Tree Coverage.

10.11.5 Application of Tree Coverage Standards

After May 3, 1999 (City Jurisdiction) and May 10, 1999 (County Jurisdiction), all development and land disturbing activity shall be conducted in accordance with Section 10.11, Tree Coverage and Protection Standards, except as follows. Additions to existing residential buildings on single-family residential lots of record recorded prior to May 3, 1999 (City Jurisdiction) and May 10, 1999 (County Jurisdiction) shall be exempt from the provisions of Section 10.11, Tree Coverage and Protection Standards. Development and land disturbing activity shown on approved and continuously valid site plans, preliminary plats, final plats, development plans, minor special use permits and major special use permits may be constructed in accordance with those approved plans. Development for which a building permit has been issued and remains continuously valid may be constructed in accordance with the standards in effect at the time of issuance.

10.12 Penalties for Destruction of Existing Vegetation

Any trees preserved on a development tract in order to meet ordinance requirements or otherwise indicated to be preserved shall meet the standards of Section 10.10, Protection of Existing Vegetation. Damaging or destroying any tree preservation area which is indicated on any site plan, development plan, preliminary plat, final plat, major special use permit or minor special use permit shall constitute a violation of the Durham Zoning Ordinance. However, damage or destruction of trees by an act of God shall not be subject to the provisions of Section 10.12, Penalties for Destruction of Existing Vegetation.

1. Where any tree with a diameter greater than 10 inches measured at a point 4 1/2 feet above the ground in an area indicated on approved plans to be preserved is damaged, destroyed or removed, such violation shall be penalized as follows:
 - a. A fine in an amount equal to 1 1/2 times the monetary value of the trees damaged, destroyed or removed. For purposes of such determination the Planning Director or Director's designee shall apply the most current

- standards of the Council of Tree and Landscape Appraisers or a similar method in common use; and
- b. Trees shall be replaced by new trees of a similar species with at least a 2 1/2 inch caliper and a cumulative total caliper at least greater than the original tree.
2. Where tree preservation areas are damaged, destroyed or removed and no documentation exists about previous tree cover, such violation shall be penalized as follows:
- a. A fine of 2 dollars per square foot of disturbed area, not to exceed \$40,000 per violation; and
 - b. Replacement vegetation shall be provided in accordance with the buffer landscaping standards of Section 10.2.5.2, Planted Vegetation.

Any fine must be paid and required replacement trees planted before a Certificate of Compliance is issued. Enumeration of these penalties shall not be construed to prohibit the use of any other remedy authorized by ordinance or law.

10.13 Tree Survey

The primary objective of tree survey requirements is to provide better information about the presence and location of significant trees on sites proposed for development. This information is needed before plans for development are so far advanced that it is unreasonable and impractical to modify the plans to protect the trees identified on the tree survey. Tree survey requirements do not obligate a property owner or developer to save trees by modifying a plan for development. However, knowing the location and size of specimen trees helps the staff and governing bodies evaluate possible modifications to the proposed plans to preserve significant trees and improve the appearance of proposed development.

10.13.1 Specimen Tree Survey

- a. A specimen tree survey shall be required for any site plan, preliminary plat, development plan, major special use permit or minor special use permit. The specimen tree survey shall show the general location, species and size of any tree (except those in the Pinus genus) greater than 18 inches in diameter measured 4 1/2 feet above the ground. However, a specimen tree survey shall not be required for land in the floodway, floodway fringe (unless filled or developed in accordance with Section 11.2.2.c.), preserved wetlands and wetland buffers, steep slope areas, stream buffers and Major Transportation Corridor (MTC) buffers.
- b. For development plans where specific building locations are not shown, a more generalized survey of vegetation may be provided in lieu of a specimen tree survey. This survey shall describe existing forest stands, indicating the average species and size of trees on the tract.
- c. Having better information about the location of specimen trees is not especially useful where plans call for the preservation of large areas in undisturbed vegetation. An example is the pervious portions of developments in watershed protection districts. Producing such information adds to the project's cost without providing information that could result in project redesign. Where unique site conditions or a proposed development arrangement indicate that the required specimen tree survey would produce little useful information, the Planning Director or the Director's designee shall have the authority to waive the requirements of Section 10.13.1, Specimen Tree Survey for all or a portion of the tract.

10.13.2 Land Disturbance Tree Survey

A land disturbance tree survey shall be required for any site plan or preliminary plat. The land disturbance tree survey shall show the location, species, size and root zone protection area of any tree greater than 10 inches in diameter measured 4 1/2 feet above the ground that is within a tree protection area and within 30 feet of any land disturbing area.