

ARTICLE 11. TREE PRESERVATION, PROTECTION, & REFORESTATION

11.1 Purpose of Tree Preservation and Protection Requirements

The purpose of this Section is to promote health, safety, order, aesthetics, and general welfare within the City of Archdale's zoning jurisdiction by providing a more attractive urban environment, assuring adequate open space, reducing noise, night lighting, objectionable views, and other adverse impacts of development through the preservation and protection of existing trees, and the planting of new trees.

11.2 Applicability

The terms and provisions of this Section of the Ordinance shall apply to any development activity that requires a Zoning Permit. These requirements shall also apply to any major subdivision of land as defined in the City of Archdale Subdivision Ordinance.

These requirements **do not** apply to parcels of land containing a single, owner occupied, single-family dwelling within a residentially zoned district.

11.3 Exemptions

The following shall be exempt from the requirements of this Section:

1. The removal of any tree which has become or threatens to become a danger to human life or property.
2. The **necessary** removal of trees by a utility company within dedicated utility easements.
3. The removal of trees causing the blockage or improper operation of stormwater control facilities.
4. Bona fide forestry activities as defined in NCGS 160D-921, provided that development approval shall be denied for a period of three years on any parcel where all, or substantially all, of the trees required to be preserved by this Ordinance are removed, per the authority of NCGS 160D-921(c)(1)(a)

11.4 Criteria for Determining Monumental Trees and Stands

1. A Monumental Tree is any tree in fair or better condition which equals or exceeds the following diameter sizes:

- a. 24" DBH – Large hardwoods such as oaks, sweetgums, etc....
 - b. 30" DBH – Large softwoods such as pines, cedars, etc....
 - c. 4" DBH – Small trees such as dogwoods, redbuds, etc....
2. A tree in fair or better condition must meet the following minimum standards:
- a. A life expectancy of greater than 15 years.
 - b. A structurally sound trunk, not hollow and having no extensive decay, and less than 20% radian trunk dieback.
 - c. No more than 1 major and several minor dead limbs (hardwoods only).
 - d. No major insect or pathological problems.
3. Monumental Tree Stands are a continuous grouping of trees which has been determined to be of high value in the opinion of the Inspector. Determination is based upon the following criteria:
- a. A relatively mature, even-aged stand.
 - b. A stand with purity of species composition or of a rare or unusual nature.
 - c. A stand of historical significance.
 - d. A stand with exceptional quality.

11.5 Minimum Tree Density Requirements

1. A basic condition of this Section of the Ordinance is that all applicable sites maintain an average minimum tree density of 20 units per acre. The term "unit" is an expression of basal area, and is not synonymous with "tree". The density requirement must be met whether or not a site had trees prior to development for the issuance of a Zoning Permit or subdivision approval.
2. The density may be achieved by counting existing trees to be preserved, by planting new trees according to the minimum standards in this Ordinance, or by a combination of the two.

3. Trees required as a condition of development in a zoning or overlay district, as a Supplemental Use Standard, or as part of a Conditional Zoning District may be counted towards the density requirements. However, all required trees must be planted regardless of whether the minimum density requirement is exceeded.
4. Minimum tree density shall be calculated and established pursuant to the formula and analysis set forth in Section 11.14.
5. Notwithstanding the foregoing, it is required that all reasonable efforts be made to save monumental trees. Reasonable efforts shall include, but are not limited to, alteration of building design, alternate location of building, parking area, water retention, or drainage pipes, and/or relocation of utilities.

11.6 Application Requirements

When a person applies for a Zoning Permit or major subdivision, such person shall also file an application for a tree removal permit providing the following information:

1. A complete Tree Protection Plan, as specified in Section 11.8. This plan shall be an integrated site plan showing monumental trees, the tree protection areas, those trees to be saved, and utilities to be installed, grading, the approximate location of all structures, driveways and curb cuts, proposed tree planting, and other landscaping.
2. A complete Tree Replacement Plan as specified in Section 11.9. Replacement trees used in density calculation must be ecologically compatible with the intended growing site. A list of unacceptable replacement trees is provided in Section 11.15.
3. Minor additions to existing developments require that a sketch showing proposed changes be submitted to the Inspector designated by the City, hereafter known as the Inspector in this document for review and approval.

11.7 Tree Survey Inspection

Following the receipt of the completed tree removal application and supporting data, the Inspector shall schedule and conduct an inspection of the proposed development site within 10 working days. The applicant or his/her designee shall be advised as to the date and time of the inspection and given an opportunity to participate. Following inspection, the Inspector, consistent with the purpose of this Ordinance, shall advise the applicant of any recommended changes in the applicant's proposed tree removal, protection or replanting plans.

11.8 Tree Protection Plan – Documents Required

1. A Tree Protection Plan is required:
 - a. Before the commencement of any alteration, defoliation, or land disturbing activity which requires the issuance of a Zoning Permit or major subdivision approval, a Tree Protection Plan is required.
 - b. The Tree Protection Plan shall be a detailed plan designed to protect and preserve trees before, during, and for a period of 2 years after construction.
2. Required specifications for a Tree Protection Plan include, but are not limited to, the following:
 - a. The identity of the tract of land upon which tree(s) sought to be removed are located.
 - b. The name, address, and phone number of the owner of the land and the name, address, and phone number of any tenant of the property.
 - c. The type, location, and size as measured at the diameter breast height (DBH) of the tree(s) constituting those to be protected. Only trees designated on the Tree Protection Plan will be counted toward density requirements.
 - d. Location of all monumental trees to be preserved and their critical root zones (CRZ's).
 - e. Indication of staging areas for parking, including buffer areas, material storage, concrete washout, debris burial holes, and other areas where tree protection may be affected.
 - f. A delineation of tree save areas in which trees have been inventoried for density calculation.
 - g. Location and details for all permanent tree protection measures (tree wells, permeable paving, retaining walls, bollards, etc.).

11.9 Tree Replacement Plan – Standards and Revegetation

1. A separate Tree Replacement Plan indicating the location of all proposed trees for revegetation is required. This plan will be included as a part of the Tree Protection Plan.

2. The Tree Replacement Plan is to include planting schedules with proposed tree names (botanical and common), quantity, size, spacing, and any special planting notes.
3. The use of flowering ornamental trees or plants classified as large shrubs may be included in the Tree Replacement Plan, but shall not be used for the purpose of meeting density calculations for the site unless approved by the Inspector.
4. All replanted overstory trees shall be a minimum of 8 feet tall and have a trunk of not less than 2 caliper inches. All replanted understory trees shall be a minimum of 6 feet tall and have a trunk of not less than 1.5 caliper inches. In order to provide sufficient growing area for planted trees, the following minimum criteria must be observed unless otherwise approved by the Inspector. Overstory Trees - 200 square feet of pervious root zone. Understory Trees - 75 square feet of pervious root zone.
5. Planting and staking details are to be provided on the plan.
6. Trees must be relocated or replaced onsite in accordance with the provisions of this Ordinance.
7. Debris removed. All debris from trees cut or substantially damaged shall be removed from the site in a timely fashion including the removal of any portion of the tree stump above the original natural grade or elevation of land unless excepted by the Inspector for a specific reason such as, but not limited to unusually large size or age.

11.10 Permit Procedures

1. Prior to the issuance of a Zoning Permit or major subdivision approval, a Tree Protection Plan must be submitted to the Administrator.
2. All Tree Protection plans and related documentation shall be reviewed by the Administrator for conformance to the provisions of this Ordinance and either approved, returned for revision, or denied. If denied, the reasons for denial shall be annotated on the Tree Protection Plan or otherwise stated in writing.
3. All tree protection measures shall be installed prior to any land disturbance and the Administrator shall be contacted for a pre-construction conference prior to land disturbance. Land disturbance may proceed only after a permit is obtained and tree protection measures have been approved by the Administrator.

4. After completion of construction, the Administrator will conduct an on-site inspection of the site to ensure compliance with the Tree Protection Plan.
5. The Administrator shall make unscheduled inspections before and during development to ensure protection of trees, critical root zones, and buffer zones.

11.11 Removal of Trees – Conditions and Exceptions

1. Tree removal shall be prohibited in the following circumstances:
 - a. Soil erosion or runoff problems will result due to topography, soil type, or proximity to flood plain or watershed protection areas; and the removal will substantially alter the existing soils adversely with regard to runoff and erosion. Information submitted by the City Engineer or other environmental specialist may be used by the Inspector in his/her evaluation.
 - b. Monumental trees are located on site and cannot be adequately protected or replaced. Additionally, removal may be disallowed if reasonable accommodations can be made to alter the proposed project to save monumental trees and have not been made.
 - c. Property degradation. The removal will have a significant adverse effect on property values of any adjoining property.
 - d. Pruning. Any substantial amount of pruning which results in unsightly appearance or predisposing the tree to pathogens, reducing the health and vigor of the tree.
2. Tree removal from a site may be allowed if:
 - a. The tree is located in an area where a structure or improvement will be placed and the tree cannot be relocated on the site because of age, type, or size of tree.
 - b. The tree interferes with existing utility service.
 - c. The tree creates an unsafe vision clearance for vehicular movement.

11.12 Tree Protection During Construction

1. No person in the construction of any structure(s) or improvement(s) or any activity shall encroach or place solvents, material, construction machinery, or temporary soil deposits with 6 feet of the area outside the drip line, as defined herein, of any monumental tree or any tree within a tree protection zone.

2. Before development, land clearing, filling, or any land alteration, the developer shall be required to erect suitable protective barriers as required by the Inspector, including tree fences, tree protection signs, and erosion barriers until completion of site landscaping. Authorization to remove the protective devices shall be in writing by the Inspector or by the issuance of a final Certificate of Occupancy. Inspection of tree protection barriers is required prior to any land disturbance or development. The Inspector shall be contacted to schedule an inspection time.
3. Materials for active tree protection shall consist of chain link, orange laminated plastic, wooden post, and rail fencing or other equivalent restraining material. In addition to fencing, where active tree protection is required, each tree to be saved shall be marked at the base of the trunk with blue colored water-based paint.
4. Materials for passive tree protection shall consist of heavy mil, plastic flagging, a minimum of 4 inches wide with dark letters reading "Tree Protection Area - Do Not Enter" or equivalent signage on a continuous, durable restraint.
5. All tree protection devices must remain in functioning condition until the Certificate of Occupancy is issued.

11.13 Emergencies

In case of emergencies, such as hurricane, windstorm, flood, freeze, or other disaster, the requirements of these regulations may be waived by the Inspector or other designated official, upon a finding that such waiver is necessary so that public or private work to restore order in the City will not be impeded.

11.14 Calculating Tree Density

A basic condition of the Archdale Tree Protection Requirements is that all applicable sites maintain a minimum tree density of 20 units per acre. The term "unit" is an expression of basal area and is not synonymous with "tree".

The density requirement must be met whether or not a site had trees prior to development. The density may be achieved by counting existing trees to be preserved, planting new trees, or some combination of the two.

For density factor analysis, the following formula shall apply:

$$\text{SDF} = \text{EDF} + \text{RDF}$$

Where:

- SDF (Site Density Factor) The minimum tree density required to be maintained on a developed site (20 units per acre).
- EDF (Existing Density Factor) The density of existing trees to be preserved on a site.
- RDF (Replacement Density Factor) The density of new trees to be planted on a site.

11.14.1 PROCEDURE FOR CALCULATING THE REQUIRED TREE REPLACEMENT:

1. Calculate the Site Density Factor (SDF):

- a. The SDF is calculated by multiplying the number of site acres by 20.

EXAMPLE: A 2.2 acre site has a SDF of $2.2 \times 20 = 44$

2. Calculate the Existing Density Factor (EDF):

- a. The Existing Density Factor, EDF, is determined by converting the diameter breast height (DBH) of individual trees to density factor units as shown in the following *Table 1*. These units are totaled to determine the EDF for the site.

- b. EXAMPLE: A total of 8 trees will remain on the 2.2 acre site in Step 1. These trees include: 3 - 14" pines, 3 - 18" oaks, 1 20" hickory, and 1 - 30" oak.

When converted to density factory units using *Table 1*, we arrive at the following values:

<u>DBH</u>	<u>UNITS</u>	<u>X</u>	<u>NUMBER OF TREES</u>	
14"	3.1	x	3	= 9.3
18"	3.8	x	3	= 11.4
20"	4.2	x	1	= 4.2
30"	6.9	x	1	= 6.9
				31.8 units total

The total of the units. 31.8. is the EDF (Existing Density Factor).

Tab

DBH	Units	DBH	Units	DBH	Units
2-4	2.0	22	4.6	37	10.5
5-7	2.3	23	4.9	38	10.9
8-9	2.5	24	5.1	39	11.3
10	2.6	25	5.4	40	11.7
11	2.7	26	5.7	41	12.2
12	2.8	27	6.0	42	12.6
13	2.9	28	6.3	43	13.1
14	3.1	29	6.6	44	13.6
15	3.2	30	6.9	45	14.0
16	3.4	31	8.2	46	14.5
17	3.6	32	8.6	47	15.0
18	3.8	33	8.9	48	15.6
19	4.0	34	9.3	49	16.1
20	4.2	35	9.7	50	16.6
21	4.4	36	10.1	51+	20

3. Calculate the Replacement Density Factor (RDF):

Replacement Density Factor (RDF) is determined by subtracting the EDF from the SDF.

EXAMPLE: 44 (SDF) - 31.8 (EDF) = 12.2

This means that 12.2 tree units are required as replacements for the total site to meet the requirement of 20 units per acre.

The Density Factor credit for each caliper size of replacement (new) trees is shown in the following *Table 2*.

Table 11.2: Converting Replacement Trees to Density Units

Caliper	Units	Caliper	Units
1"	0.4	8"	2.3
2"	0.8	9"	2.5
3"	1.6	10"	2.7
4"	1.7	11"	2.9
5"	1.9	12"	3.1
6"	2.0	13"	3.3
7"	2.2	14" +	3.5

11.15 Unacceptable Replacement Trees

The following list specifies trees that are unacceptable for use in meeting any requirements of this Section of the Ordinance.

Table 11.3: Unacceptable Replacement Trees

Common Name	Scientific Name
Box elder	<i>Acer negundo</i>
Bradford Pear 'Bradford'	<i>Pyrus calleryana</i>
Catalpa	<i>Catalpa bignonioides</i>
Green ash 'Marshalls seedless'	<i>Fraxinus pennsylvanica</i>
Honeylocust	<i>Gleditsia spp.</i>
Mulberry	<i>Morus spp.</i>
Norway maple	<i>Acer platanoides</i>
Princess tree	<i>Paulownia tomentosa</i>
Russian olive	<i>Elaeagnus angustifolia</i>
Scarlet oak	<i>Quercus coccinea</i>
Siberian elm	<i>Ulmus pumila</i>
Silver maple	<i>Acer saccharinum</i>
Tree-of-heaven	<i>Ailanthus altissima</i>
White pine	<i>Pinus strobus</i>

11.16 Unauthorized Tree Removal

In the event that 1 or more protected trees, as indicated on the tree protection plan, are removed or damaged following the issuance of a tree removal permit the tree or trees must be replaced in accordance with the table below. In addition to the replacement of trees the responsible party shall also be subject to the general remedies and penalties for the violation of this Ordinance.

Table 11.4: Remedy for Tree Removal

DBH of Tree Removed or Damaged	Reforestation (2 inch DBH minimum)
4 -11.9 inches	1 tree
12 - 20.9 inches	2 trees
21 - 28.9 inches	3 trees
29 - 35.9 inches	4 trees
36 + inches	5 trees