

155.606. Tree Protection and Landscaping Regulations

155.606.1. Purpose, Applicability, and Use of Terms

A. PURPOSE. The purpose and intent of this section is to establish standards to protect and enhance the Town’s appearance by the installation of appropriate landscaping and buffering materials; to encourage the preservation of native plant communities and ecosystems; to maintain and increase the value of land by providing for restoration of disturbed areas and by incorporating adequate landscaping into development; to restrict the spread of invasive plant species that disrupt and destroy native ecosystems; to encourage skilled installation and continued maintenance of all plant materials; and, to establish procedures and standards for the administration and enforcement of these landscaping regulations at § 155.606.

B. APPLICABILITY. § 155.606 applies to all properties in business, office, industrial, multi-family, and mixed use districts, unless otherwise exempted, to any nonresidential use in a residential district, and to properties bordering designated portions of NC51.

C. USE OF TERMS. Many terms used throughout the Landscaping regulations section of this Chapter are defined in Chapter 1. Some definitions specific to this Section are provided here. Other words or phrases used in the Landscaping section of this Chapter shall be interpreted so as to give them the meaning they have in common usage and to give this Chapter its most reasonable application. Words, terms, and phrases shall have the meanings ascribed to them in the following definitions or in § 155.103.C., except where the context clearly indicates a different meaning.

Casualty Loss of Nature: shall mean a loss of value or property resulting from an act of nature, such as fire, winds, ice storms, etc., that is beyond normal human control.

Construction Period: shall mean the time period on a development site from the granting of a construction permit until the issuance of a final certificate of compliance.

Developed Properties: shall mean land that has been converted to a specific purpose by addition of planned and structured improvements.

Impervious Cover: shall mean buildings, structures, compacted gravel, and other paved or compacted surface areas, which by their dense nature do not allow the passage of sufficient oxygen and moisture to support and sustain healthy root growth.

Riparian Buffer: shall mean a biologically diverse community consisting of trees, woody shrubs, and groundcover that exists or is planted along the banks of rivers, creeks or intermittent and perennial streams.

Screening: shall mean a structure and/or plant material providing enclosure and a visual barrier between the area enclosed and the adjacent property.

155.606.2. General Planting and Screening Requirements

Planting or screening may be required to meet different standards depending on where on a property they are located. The types of required landscaping that may be applicable are as follows:

A. STREETScape LANDSCAPING: Trees shall be required in or along a public right-of-way on all developed properties in accordance with § 155.606.3.

B. PERIMETER LANDSCAPING: Existing or new trees and shrubs on developed properties other than single-family dwellings shall be required alongside and rear property boundaries in accordance with § 155.606.4.

C. INTERIOR LANDSCAPING: Existing or new trees and shrubs on developed properties shall be required in and around on-site parking lots and other interior structures in accordance with § 155.606.5.

D. SCREENING: Existing or new trees and shrubs and/or structures such as walls or fences shall be required in accordance with § 155.606.6:

1. Along all side and rear yard property boundaries abutting an existing residential use or residentially zoned area; and
2. Around loading areas, service areas or outdoor storage areas which are visible from a public right-of-way.
3. Along all side and rear yard boundaries of properties abutting a thoroughfare in all Traditional zoning districts except HUC, and within Conditional-Only districts R-VS, CrC, SRN, C-MF, B-1SCD, and AU. (Am. Ord. 2188, passed 11-14-16)

- E. TREE CANOPY REQUIREMENT. Landscaping in the form of trees shall either be retained or planted on site to meet minimum canopy coverage in accordance with § 155.606.7. These provisions may also assist in compliance with tree protection and planting standards in the Post Construction Storm Water Regulations in Chapter 8. [formerly known as § 153.075 (E)]

155.606.3. Streetscape Planting

Except for the Downtown Overlay District, the Highway Overlay District, and any other location with an adopted neighborhood or small area plan when it has its own streetscape requirements, the following shall be required for development of any property in Matthews:

- A. A planting strip whose total length shall be equal to the total length of the property line adjacent to the public right-of-way, or in the public right-of-way if sufficient room exists between curb and sidewalk, exclusive of access drives and their sight triangles. The width of the strip shall be a minimum of eight feet (8') and shall generally start immediately adjacent to the street side property line.
- B. Trees shall be planted, if not existing, within the planting strip with large maturing trees. Large maturing trees shall be spaced no greater than forty feet (40') apart with a minimum of one tree planted on all properties with frontage greater than thirty feet (30'). Each tree shall be a minimum of two inch (2") caliper and have a minimum height of eight feet from the ground surface. See § 155.606.14 for a selection of recommended large maturing trees.
1. If the use of large maturing trees is considered inappropriate for the site, then a written explanation of why they cannot be used shall be made to the Town.
 2. Where overhead power lines or other obstructions prevent the use of large maturing trees, then small maturing trees shall be used. Small maturing trees shall be spaced no greater than thirty feet (30') apart. See § 155.606.14 for a selection of recommended small maturing trees.
 3. No large maturing tree shall be planted within thirty five feet (35') of an overhead utility line as measured from the closest wire.
 4. Trees shall be selected so that a mixture of species shall be planted or preserved. If a property has greater than three hundred feet (300') of frontage on any one street, a minimum of three (3) different species shall be planted. If less than three hundred feet (300') of frontage exists, than only a single species shall be required.
 5. When an existing or proposed sidewalk is within one foot (1') of the property line, then trees must be located a minimum of four feet (4') from the sidewalk.
- C. The planting strip shall not be paved or used for automobile parking and shall have vegetative or organic ground cover and/or beds of flower plants or bulbs mulched and kept weed and litter free by the property owner or may be planted in grass and mowed on a regular basis. In addition to the required trees and surface treatment within the planting strip, shrubs and additional trees may be included at the option of the landowner. Xeriscape plantings are strongly encouraged.
- D. In the case of unusual site factors that would make the strict adherence to this section serve no useful purpose, the Planning Director may waive all or part of the requirements of this section. A waiver may be requested by a written statement explaining the mitigating circumstances on or off the site. It must be supported by documented facts. Waivers may be considered as long as the spirit and intent of this § 155.606 are maintained.
- E. Where streetscape trees are to be located in the public right-of-way, all planting standards in §155.606.12 must be followed. In addition, trees must be inspected by the Town's landscape manager before planting. See § 155.606.13 for landscape maintenance requirements. [formerly known as § 153.075 (F)]

155.606.4. Perimeter Planting

Plantings along those property boundaries not facing a public right-of-way are designed to provide a sense of boundary between nonresidential land uses. Perimeter landscaping is not mandatory in zoning districts such as the ENT district which are intended to create and achieve a mixed-use urban environment and where pedestrian connectivity between land uses and parcels is encouraged. Whenever practical, such plantings shall include preserved vegetation on the site. (Am. Ord. 2269, passed 11-13-17)

- A. A combination of trees and shrubs shall be arranged along the non-street rear and side perimeters. This landscaping will consist of a minimum of one tree and ten shrubs for each fifty (50) lineal feet, not including the streetscape-planting strip. The planting may be arranged in a single row, staggered, or may be clustered or otherwise arranged anywhere within fifteen feet (15') of the property line to allow for maximum flexibility and landscaping design.
- B. A combination of large and small maturing trees shall be planted with large trees comprising at least fifty percent (50%) of the total. Large maturing trees shall be a minimum of two inch (2") caliper and have a minimum height of eight feet (8') from the ground surface. Small maturing trees shall be a minimum of one and one-half inch (1½") caliper and have a minimum height of six feet (6') from the ground surface.
- C. Trees shall be selected so that a mixture of species shall be planted. A minimum of three different species shall be planted along every three hundred (300) lineal feet.
- D. As long as the space allows, shrubs shall be selected so that a mixture of species shall be planted. A minimum of five (5) different species shall be planted along every three hundred (300) lineal feet. Likewise, unless design elements require it, no more than ten (10) individuals of any one (1) species shall be planted in a group, row, or staggered row.
- E. The minimum depth of a perimeter landscape area shall be fifteen feet (15') from any property line. The minimum depth of a perimeter landscape area may be reduced to six feet (6') for a limited distance for parking space maneuverability or dumpster pad enclosure, or to zero feet (0') from a property line when a zero building setback is established, an access easement crosses or is parallel to the perimeter landscape area, or a private drive or other non-landscaped surface lies within the perimeter landscaping area, or strict adherence to this section serves no useful purpose or imposes an unnecessary hardship on the property owner. In those cases, the Planning Director may waive the fifteen foot (15') requirement as long as the spirit and intent of this section are maintained.
- F. The side or rear yard perimeter landscape area may be extended beyond fifteen feet (15') when unusual topography of a site, elevation of a site, the size of the parcel involved, the presence of a utility easement along the property edge, or other factors exist which make the strict adherence to this section serve no useful purpose. In those cases, the Planning Director may waive the location and/or depth of the perimeter landscape area as long as the spirit and intent of this section are maintained.
- G. Whenever feasible, preserved vegetation shall be used. For preserved plants to be used to satisfy part or whole of this requirement, the size, species, condition, and location on the site should be noted on the required landscape plan. The spacing requirement for planted trees and shrubs may be waived when the intent of the perimeter landscape requirement can be satisfied by preserved plants.
- H. No wall or fence may be placed within the established perimeter landscape zone when established at a fifteen foot (15') width. Where the established perimeter landscape area is less than fifteen feet (15'), a fence or wall may be used and can be located no closer than six feet (6') to the property line. The finished side of the fence shall face outward from the property. Any plant material required under this section shall be located between any fence and the property line. **[formerly known as § 153.075 (G)]**
- I. When a public-use pedestrian pathway is proposed to be located along a non-street property line of a parcel, or shared by more than one parcel along non-street property lines, the pathway may be located on top of the lot line and/or within the 15' perimeter planting area. Such pathway, however, shall not require removal of any existing trees over eight inches (8") DBH, and grading or other land disturbing activity for such pathway shall not take place within more than twenty percent (20 %) of the protected tree's dripline, unless construction methods to protect the tree are approved by the Town Landscape Manager. (Am. Ord. 2188, passed 11-14-16)

155.606.5. Interior Landscaping

Landscaping is required for parking lots and other impervious surface areas as follows:

- A. **PARKING LOT LANDSCAPING.** Landscaping is required for parking lots to reduce the aesthetic and environmental impacts resulting from paving or the removal of natural vegetation from large areas; to reduce the noise, heat, glare and dust associated with parking lots, and to control the direction and velocity of surface water runoff. Within the requirements of this section, parking lots should be visually minimized from view from public right-of-ways as much as possible.
 - 1. **APPLICABILITY.** Landscaping shall be required for all off-street parking facilities with ten (10) or more spaces.

2. LANDSCAPING REQUIRED.

- a. Landscaping required by § 155.606.5 shall be located within the perimeter of the parking lot. Parking lot landscaping areas, generally, are squared or rounded-off in shape, including the planting islands, curbed areas, corner islands, parking spaces and all interior driveways and aisles except those with no parking spaces located on either side.
- b. **PLANTING ISLANDS.** Planting islands, either separate or protruding from the perimeter of the parking lot, shall be appropriately located in the parking facility to create parking sub-areas and to help establish distinct patterns of traffic flow. Planting islands shall be integrated with pedestrian circulation in the parking lot to provide a landscaped pedestrian path through the parking lot between the street and the building entrance.
- c. **REQUIRED PLANTING.** At least one preserved or planted tree having a minimum caliper of two inches (2") and a minimum eight feet (8') height for large maturing trees and a minimum caliper of one and one-half inches (1½") and a minimum six feet (6') height for small maturing trees shall be provided for every ten (10) provided parking spaces, or fraction of ten (10) spaces.
- d. **MINIMUM LARGE MATURING TREES REQUIRED.** If less than thirty (30) parking spaces are present on the development site, then small maturing trees may be used. If there are thirty (30) to sixty (60) parking spaces on a development site, then at least thirty five percent (35%) of the trees shall be large maturing. If there are greater than sixty (60) parking spaces on the site, at least fifty percent (50%) of the trees planted must be large maturing species. When there are overhead utilities or other circumstances that require a lesser percentage of large maturing trees, a written explanation must be provided for a waiver of the above percentage requirements.
- e. **PLANTING ISLAND DESIGN REQUIREMENTS.** Any planted area in any island shall have all straight-line dimensions of at least twelve feet (12') and total area of at least two hundred fifty six (256) square feet for large maturing trees, or eight feet (8') straight-line dimensions and one hundred forty four (144) square feet area for small maturing trees. The depth of available soil for root growth shall be a minimum of thirty inches (30") before an impervious surface is encountered. Smaller protrusions from planting islands shall not have trees planted within them, however, shrubs or smaller types of vegetation can be used.
- f. **TREE LOCATION REQUIREMENT.** No parking space shall be located more than forty feet (40') from a tree either in an island or outside of the parking lot. Trees need not be uniformly distributed throughout the parking lot when existing trees are being preserved to meet the parking lot landscaping requirements. It is more important that the maximum root zone be made available to the trees planted or preserved on site, and that the maximum shading of parking lot surface area be achieved.
- g. **LANDSCAPING PROTECTION REQUIRED.** All parking lot landscaping shall be protected by bollards, curbs, or similar methods to prevent vehicles from overhanging planting islands or landscaped yards by more than two feet (2') or damaging adjacent fences or screens. Tree islands lacking a complete curbing and placed at or slightly below grade may be used to treat storm water runoff and fulfill the requirements of the Post Construction regulations of Chapter 8.
- h. **INCENTIVES.** For new development that requires twenty (20) or more parking spaces, or existing development that is expanding or revising its parking lot area by twenty (20) or more parking spaces, a reduction in parking spaces may be permitted as follows:
 - i. A five percent (5%) reduction in the total number of required parking spaces is permitted inside the new or disturbed parking area that preserves an existing tree(s) with a caliper of eight (8) inches in diameter or greater; and/or
 - ii. The applicant may reduce the amount of required parking spaces up to ten percent (10%) for the purpose of installing additional tree islands, when each tree island over the required number contains a large maturing tree. One (1) additional tree island equals a reduction of two parking spaces. Reduction in

parking for the disabled or required loading facilities is not permitted by this section. (Am. Ord. 2268, passed 11-13-17)

- i. **MINIMUM NUMBER OF TREE SPECIES REQUIRED.** The minimum number of different species that shall be used to meet these requirements shall be as follows:

Total Number of Trees Required	Minimum Number of Tree Species Required in a Parking Lot
1-11	1
12-23	2
24+	3

- j. If parking is within twelve feet (12') of a street property line, a row of shrubs shall be planted parallel to the street but not within the sight triangle of intersecting streets or a street and driveway or alley. The shrubs shall be planted no greater than five feet (5') on-center, and should be of a species that matures between one (1') and three feet (3') in height.
- k. Any development existing at the time of enactment of this Title which does not conform to the standards imposed in § 155.606.5.A.2. above but did meet required parking lot landscaping standards in effect at time of development, and subsequently desires to make further changes to the parking lot(s) on-site, shall not be required to come into compliance with the parking lot landscaping standards of § 155.606.5.A.2 unless more than fifty percent (50%) of the area of the existing parking lot(s) are disturbed. If more than fifty percent (50%) of the parking lot area(s) are disturbed, only those disturbed areas shall come into compliance with the above landscaping standards.

- B. **POST CONSTRUCTION REGULATIONS.** In addition to the provisions for tree canopy and landscaping on developed parcels, requirements of Chapter 8, the Post Construction Ordinance shall also apply. Where the requirements for undisturbed open space can be met with existing or new tree canopy requirements of this section, they may be counted toward each. The preference, as intended in Chapter 8, is the preservation of vegetation in place.
- C. **SWIM BUFFERS.** Preservation of vegetation along designated, riparian buffers shall comply with the requirements of § 155.703.
- D. **OTHER INTERIOR LANDSCAPING.** Areas of a development site left in existing natural state, foundation plantings, and other interior landscaping elements may be included when land disturbing activity is proposed on a site. **[formerly known as § 153.075 (H)]**

155.606.6. Screening

- A. **SITE PERIMETER SCREENING.** Screening is required along all side and rear yard property boundaries abutting an existing residential use or residentially zoned area. However, the screening requirement of §155.606.6 shall only apply to the exterior boundaries of the intended ultimate ENT district. Screening on all side and rear yard boundaries when a property abuts a thoroughfare shall use the provisions here or in §155.606.6.B below. Screening shall be designed and installed to provide a visual buffer of at least seventy five percent (75%) opacity to a height of six feet (6'). When screening is to be accomplished with plant materials, this height and opacity must be reached within four growing seasons. Whenever practical, plantings to achieve screening shall include preserved vegetation, especially trees and evergreen shrubs, existing on the site. (Am. Ord. 2188, passed 11-14-16) (Am. Ord. 2269, passed 11-13-17)

- 1. Screening shall normally be provided through one of four options, as listed in the table below.

OPTION	PLANT MATERIALS		PLANTING BED WIDTH
	Type	Quantity	
1	Large Trees	4	20 feet
	Small Trees	2	
	Shrubs	12	
2	Large Trees	4	15 feet
	Small Trees	2	
	Shrubs	16	
3	Large Trees	5	10 feet
	Small Trees	2	
	Shrubs	20	
	Wall or Fence at Minimum 10 feet from property line		
4	Large Trees	4	20 feet
	Large Shrubs*	10	

* planted in a triangular manner ten (10) feet apart at centers

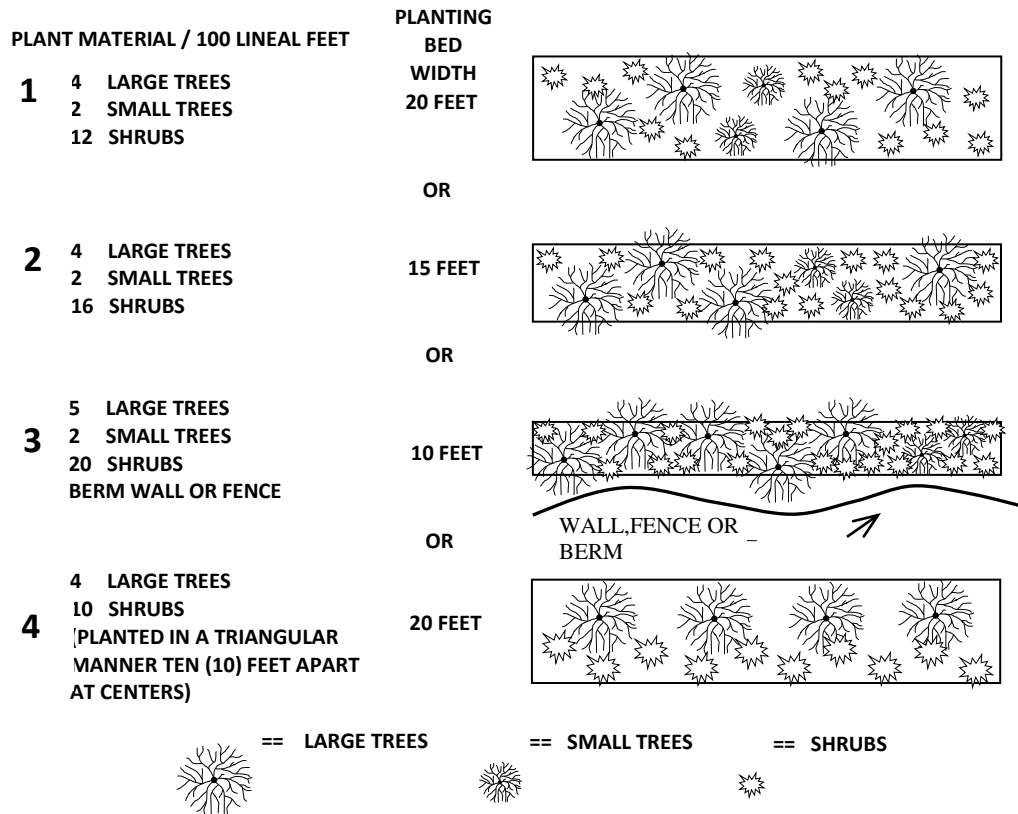


Figure §155.606.6. Site Perimeter Landscaping Requirement Options Illustrated.

2. To determine the total number and variety of plants required for each screening alternative, the length of each side of the property requiring a screen, minus the area covered by sight distance triangles, shall be divided by one hundred (100) and multiplied by the number of each kind of plant shown for the chosen required screen (rounded off to the nearest whole number).
3. Fences or walls within any nonresidential district or for any non-residential use in a residential district shall be placed behind the interior side of the required plant materials and shall not be over seven feet (7') in height.
4. In the event of unusual site disturbances, such that none of the four (4) options given in § 155.606.6.A.1 will create the intended level of screening, or where screening is not desired (generally for public safety) or is inappropriate, then an alternative screening plan may be presented to the Planning Director for review and approval. This alternative plan must include documentation describing how the proposed alternative will provide effective visual screening, or why there is no feasible way to adequately screen view of the subject site from the adjacent property due to, for example, pedestrian circulation, the proximity of a public plaza, or architectural features.

B. LOADING AREA, SERVICE AREA OR OUTDOOR STORAGE AREA SCREENING.

1. Screening around all loading and service areas and all outdoor storage areas which may be visible from a public right-of-way, shall be required in all nonresidential districts or for a nonresidential use in a residential district. Screening on all side and rear yard boundaries when a property abuts a thoroughfare shall use the provisions here or in §155.606.6.A above. The screening may be located anywhere on the property, subject to other pertinent provisions of this section. (Am. Ord. 2188, passed 11-14-16)
2. Any vegetation used to comply with the provisions of this section must be in a planting bed at least five feet (5') wide. This area may contain any type screening materials sufficient to visually block the view of the loading and storage use area.
3. If a wall or fence is used alone, then the area devoted to the screen need only be wide enough to accommodate the screen and allow for its maintenance. The composition of the screening material and its placement on the lot will be left up to the discretion of the property owner, so long as the purpose and requirements of this section are met.
4. Within nonresidential districts walls and fences used for screening purposes must be at least six feet (6') in height, measured from the ground level to the top of the structure, and measured along the entire length of the finished side of the structure.

C. SCREENING STANDARDS. The following list contains specific standards to be used in installing screening:

1. Fences and walls used for screening shall be constructed in a durable fashion of brick, stone, other masonry materials or wood post and planks with no more than twenty five percent (25%) of the fence surface left open. The finished side of the fence shall face the adjoining property. The restrictions on fences and walls in Chapter 9, Floodplain Regulations also apply.
2. Where a fence or wall is used as part of a required screen area, any required plantings accompanying the fence or wall shall be located on the side of such fence or wall opposite the new development.
3. Shrubs used in any screening must be at least three feet (3') tall when planted and no further apart than five feet (5'). A minimum of fifty percent (50%) of the required shrubs shall be evergreen. They must be of a species and variety and adequately maintained so that an average height of five (5') to six feet (6') could be expected as normal growth within four (4) years of planting. Shrubs planted on a berm may be of a lesser height, provided that the combined height of the berms and plantings is at least six feet (6') after four (4) years.
4. No part of a berm shall be left as bare soil. No slope of a berm shall exceed one foot (1') of rise for every three feet (3') in plane. No part of a berm shall intrude into the existing or transitional right-of-way. At least seventy five percent (75%) of required plantings shall be planted on the top of the berm and opposite the new development. Plant species on a berm shall be selected to adapt well to slope and drainage conditions found on the berm.
5. Screening requirements may be waived when screening is already provided. There may be cases where the unusual topography or elevation of a site, or the size of the parcel involved, or the

presence of required screening on adjacent property would make the strict adherence to § 155.606.6 serve no useful purpose. In those cases, the Planning Director may waive the requirements for screening so long as the spirit and intent of this section and the general provisions of this section pertaining to screening are adhered to. This waiver provision does not negate the necessity for establishing screening for uses adjacent to vacant property. **[formerly known as § 153.075(I)]**

6. When a public-use pedestrian pathway is proposed to be located along or near a property line of a parcel that is required to install and maintain screening, the pathway shall generally be located at least ten feet (10') to the interior side of the property line. Required amounts of planting material must be provided, although they may be located on both sides of the pedestrian path. This pathway shall not require removal of any existing tree over eight inches (8") DBH, and grading or other land disturbing activity for the pathway shall not take place within more than twenty percent (20%) of the protected tree's dripline, unless construction methods to protect the tree are approved by the Town Landscape Manager. When a pedestrian pathway crosses through a required screening, the crossing opening shall be at an angle between thirty and 70 degrees (30° to 70°), or in such a way as to not create a direct vision opening from the residential property or public right-of-way. (Am. Ord. 2188, passed 11-14-16)

155.606.7. Tree Canopy Requirements

A. CANOPY PRESERVATION REQUIREMENT.

1. PURPOSE. The amount of tree canopy covering a site is an indication of the site's ability to retard storm water run-off, mitigate air pollution, and contribute to site-cooling effects. The tree canopy requirements outlined here may also be applied to the minimum Undisturbed Open Space requirements of Chapter 8, the Post Construction Ordinance.
2. REQUIREMENTS. A minimum percentage of tree canopy is required to be maintained or created on any development site or on any site of any land disturbing activity. If a site over one (1) acre in size was formerly in a forested state and fifty percent (50%) or more of the land area was clear cut within three (3) years of the plan submittal date for any land disturbing activity, then the tree canopy preservation requirements must be applied as though the site was not clear cut. It will be the applicant's responsibility to provide proof that any clear cutting activity on the site took place greater than three years prior to the current submittal date.
 - a. The amount of existing canopy that must be preserved on the site during development is determined by two (2) factors: the zoning district classification; and the percentage of existing tree canopy present before any land disturbing activity, as indicated below:

TABLE OF MINIMUM TREE CANOPY REQUIREMENTS	
Zoning District	Required Tree Canopy
R-15, R-20	20%
R-9, R-12, R-MH, R-15MF, R-12MF, CrC, R/I, O, B-1, B-3, BD, AU	15%
B-1SCD, B-H,	12%
I-1, I-2, MUD, ENT, SRN	10%
R-VS, MUD, SRN, ENT	8%
HUC, C-MF, TS	5%

- b. Whenever the existing tree canopy is greater than twenty percent (20%) of the total property area, then a minimum canopy must be preserved, as defined in the above table at § 155.606.7.A.2.a.

- c. Whenever the existing tree canopy of the site prior to land disturbance is less than twenty percent (20%) of the total property area, then the percentage of canopy, as defined in § 155.606.7.A.2.a, must be achieved by a combination of preservation and new planting. Property within the ENT district may request minimum tree canopy preservation reduction through the use of Flexible Design Standards at §155.401.7. (Am. Ord. 2269, passed 11-13-17)
- d. Tree save areas that include mature trees over minimum planting calipers are strongly encouraged. Placement of proposed buildings, vehicle use areas, and other site improvements should be designed to reduce disturbance of existing vegetation.
- e. For all single-family detached homes recorded at Mecklenburg County Register of Deeds after November 13, 2017, large maturing trees must be placed on lots according to the table below. This functions to replenish the urban tree canopy in areas of new residential development. Large maturing trees may be placed within the front, rear, or side yard of the lot. If existing saved trees meet the below requirements then no additional plantings are necessary. No large maturing tree shall be planted within 35' of an overhead utility line as measured from the closest wire. If tree placement would put a tree within 35' of an overhead wire, a small maturing tree may be substituted.

RESIDENTIAL TREE CANOPY REPLACEMENT REQUIREMENTS	
Lot Size (sqft)	Required Number of Large Maturing Trees
7,500 - 10,000	1
10,001 - 15,000	2
15,001 - 20,000	3
Greater than 20,000	5

3. CALCULATION OF CANOPY AREAS.

- a. The baseline canopy measurements on a proposed development site shall be provided by the property owner and submitted as part of the vegetation survey and landscape plan. The percent canopy cover may be calculated by aerial photographs and verified, if feasible, by ground measurement. The area of existing dedicated rights-of-way, storm water facilities and easements that do not incorporate trees, utility easements, and existing ponds, lakes, or perennial streams shall be subtracted from the total property area before the tree preservation requirements are calculated. If root disturbance or construction activities occur within the drip line of any tree designated as protected, only the area actually being protected will be included in the calculated tree protection area
- b. Each large maturing tree, whether preserved or newly planted, is calculated to provide one thousand two hundred (1,200) square feet of tree canopy. Newly planted large maturing trees must be a minimum of two inch (2") caliper and eight feet (8') in height at time of planting.
- c. Each small maturing tree, whether preserved or newly planted, is calculated to provide four hundred (400) square feet of tree canopy. Newly planted small maturing trees must be a minimum of one and one-half inch (1½") caliper and six feet (6') in height at time of planting.
- d. Trees planted to meet canopy coverage requirements shall be planted no less than twenty feet (20') from any other proposed or existing small maturing tree and forty feet (40') from any other proposed or existing large maturing tree.
- e. Preserving a Specimen Tree is calculated to provide a tree canopy equal to six (6) times the actual square footage contained within its drip line.
- f. All preserved trees designated to meet this canopy coverage requirement must be

protected according § 155.606.9.D.

- g. All tree planting requirements cited in § 155.606.3 through § 155.606.6, inclusive, may be credited toward the minimum tree canopy requirement.
- h. **METHOD OF CALCULATION FOR TREE CANOPY:** The Tree Canopy shall be calculated by the following formulas:

$$(SA - U) \times 0.2 = RTC$$

Where:

- SA*: The total Site Area (square feet)
- U*: Any utility easements, road rights-of way or other area allowed to be excluded (in square feet)
- RTC*: Required Tree Canopy (square feet)

and,

(SA - U): Net land disturbance area (NLD) (square feet)

When Existing Tree Canopy as provided in the vegetation survey is calculated in excess of twenty percent (20%) of the NLD, then all of the RTC must be in preserved trees. When Existing Tree Canopy is calculated at less than twenty percent (20%) of the NLD, then all of the existing tree canopy must be preserved, and newly planted trees must be added to achieve the RTC. (Am. Ord. 2268, passed 11-13-17)

4. PAYMENT - IN- LIEU OF REQUIRED TREE CANOPY

- a. While achieving minimum tree canopy coverage through preserving existing canopy is strongly preferred, the Applicant may request to pay into the Town of Matthews Tree Canopy Fund in lieu of meeting on-site tree canopy requirements when the development site has unique or practical difficulties. In order to qualify for payment-in-lieu, the Applicant shall submit a letter outlining the unique hardship(s) that make the tree canopy requirement difficult to meet. Examples of unique hardships may include: conditions that are peculiar to the property; topography which does not allow ADA compliance or stub street connections; scattered location of large trees on the site; limited options for utility placement; and inability to achieve an appropriate development density. Personal hardships not directly related to the land do not justify use of this section. The Applicant must explain how the deviation from the tree canopy requirements are consistent with the spirit, purpose, and intent of the Town’s policies to preserve existing trees during development. Prior to submitting site plans for development, the Applicant shall schedule a meeting with the Planning office to discuss the project. Payment-in-lieu may be requested for a portion of the required tree save or its entirety. If Applicant requests more than thirty percent (30%) reduction of the tree save requirements listed in § 155.606.7.A.2.a for through payment-in-lieu, Board of Commissioners approval is required. If thirty percent (30%) or less reduction in tree canopy is requested, the Planning office may determine if hardship warrants a reduction in tree canopy requirements.
- b. The tax value per acre (TV) used to calculate the payment-in-lieu will not exceed ninety percent (90%) of the average tax value of land per acre in the Town of Matthews. The average tax value per acre will be determined by the Planning office using the current tax data from Mecklenburg County and will be calculated in October annually. See the formula below for calculation of payment-in-lieu.
- c. The primary objective of the Tree Canopy Fund is the installation and maintenance of trees on public property. The Town may also use funds for the cost associated with the implementation of this Chapter, the Tree Ordinance, Town sponsored tree management programs, and for the study, inventory, maintenance or treatment of public trees requiring the services of a certified arborist or other qualified consultants. Tree Canopy Funds will

not be used in lieu of General Fund support for existing landscaping and forestry programs.

- d. **METHOD OF CALCULATION FOR PAYMENT-IN-LIEU:** The payment-in-lieu shall be calculated by the following formula:

$$TV \times A = PIL$$

Where:

- TV: The tax value of the property per acre, or 90% of the average tax value per acre of land in Matthews, whichever is less (dollars)
 A: Reduction of required tree save area (acres)
 PIL: Required payment in lieu (dollars)

[formerly known as § 153.075 (J)] (Am. Ord. 2268, passed 11-13-17)

155.606.8. Vegetation Survey

- A. In order to assure that the location of existing trees and vegetation on the development site is acknowledged prior to preparing any design plans for development, a vegetation survey is required on all sites other than single-family residential. The vegetation survey must be submitted to the Planning Office in advance of, or with a Landscape Plan, and prior to any land disturbing activity or any applications for grading, building, or rezoning. The vegetation survey should be completed in conjunction with a Concept Plan to meet the PCO requirements, when applicable.
- B. Elements required as a part of the vegetation survey include: a map, drawn to scale, and a written component, identifying any potential Specimen Tree on site, and all existing trees and vegetation eligible to be preserved. Where clear cutting activity occurred within the previous three years, then all trees that were previously on the site need to be identified and quantified in some way. A general grade of the condition of each tree shall be provided.
- C. A certified arborist, landscape architect, or forester shall evaluate the vegetation survey to determine what existing vegetation will be preserved, and how it can be incorporated into the development plans for the site. Root protection zones for all trees to be preserved must be indicated on the vegetation survey.
[formerly known as § 153.075 (K)]

155.606.9. Tree Preservation Planning

- A. **CRITERIA FOR EVALUATING TREE PRESERVATION.** Healthy and structurally sound trees, either singularly or in stands, located anywhere on the construction site shall be considered for preservation, and shall be evaluated for designation as protected trees.
- B. Trees preserved to meet streetscape, screening, and buffer requirements can receive credits according to the following:

Preserved Trees (DBH in inches)	Credit toward planting requirements (Number of trees required)
2 – 5	1
6 - 17	2
18 +	4

- C. **TREE PRESERVATION SCHEDULE.** When it has been decided which vegetation is to be preserved, then this written and graphic information shall be included with the Landscape Plan submission: map locations where trees, shrubs and ground covers will be preserved, their species (botanical and common names), size (DBH), general condition rating, individual tag number and their contribution to any site-required landscaping will be provided both on a map drawn to scale and in an accompanying text. When included on an approved Landscape Plan, all trees listed in the schedule shall become Protected Trees.
1. Each tree to be preserved shall be tagged on-site with an identifying tree number.
 2. Trees with potential Specimen Tree status shall be marked as such in the field and noted on the Schedule.
 3. If the construction site contains existing trees that are not scheduled for preservation, a written

statement citing the reasons shall be included in the application materials. A map of the site must accompany the written statement.

- D. In any required landscape buffer or screen, and in any location within the site that will not be disturbed, all deciduous and coniferous trees at least three inches (3") caliper and all dogwoods, redbuds, and American hollies at least four feet (4') high shall be considered protected. Elsewhere on the site, trees of these sizes and larger are encouraged to be preserved and incorporated into required landscaping, but will not be considered protected.
- E. **PROTECTED TREES.** Protected trees include North Carolina Champion Trees, Matthews Specimen Trees, existing streetscape trees within the public right-of-way, and any other trees designated on an approved landscape plan to be preserved during any land disturbing activity. Preservation standards are outlined at § 155.606.11. [formerly known as § 153.075 (L)]

155.606.10. General Landscape Plan

A landscape plan is required for any land disturbing activity in any multi-family, mixed use, or nonresidential district, and for nonresidential uses in a residential district.

- A. **SUBMITTAL.** Landscaping plans shall be submitted to the Planning Director for administrative approval, with review by the Town Landscape Manager.
- B. **REQUIREMENTS.** Required elements to be included in this submittal, which may be combined on documents and maps for clarity, are:
 - 1. A development summary that includes total acres in development, proposed use(s), total building square footage, required parking and provided parking spaces.
 - 2. An accurate drawing of property boundaries.
 - 3. Name of the project, owner, name and address of engineer, scale, date and north arrow.
 - 4. Existing topography, watercourses and water bodies, floodplains and floodways, or other areas that would require extensive clearing and grading or alteration for development. This may be combined with the Vegetation Survey of the site.
 - 5. Location of proposed buildings, driveways and parking areas.
 - 6. Location of loading areas, service areas or outside storage areas and required screening.
 - 7. A copy of the Vegetation Survey map and written document and the Tree Preservation Schedule.
 - 8. Locations of all preserved trees and their root protection zones including all existing and finished grades at these locations.
 - 9. Locations of required screening buffer strips, riparian buffers, canopy preservation locations, streetscape, perimeter plantings, interior plantings, and screen landscaping.
 - 10. The Landscape Plan drawing shall depict with illustrations and written explanation of how all the root protection zone requirements as outlined in § 155.606.11.D will be applied to the site's Protected Trees.
 - 11. Details of required landscaping showing species, dimensions, and spacing of planted materials and the use and protection of existing vegetation. Plans shall normally include a scaled drawing and a written component that includes planting specifications.
 - 12. A completed irrigation plan or written statement citing the purpose for not complying with the irrigation requirement at § 155.606.13.F.
 - 13. Proposed location of any free-standing sign to be employed on the site.
 - 14. A completed Landscape Establishment Guarantee showing the calculations for the bond amount.
 - 15. A statement on the anticipated completion date of the installation or land disturbing activity. Owner shall notify the Town Landscape Manager not less than forty eight (48) hours prior to the start of any land disturbing activity on the site.
- C. **LANDSCAPE PLAN APPROVAL.**
 - 1. No land disturbing activities shall commence on site until the submitted Landscape Plan is approved by the Planning Director.

2. The Town may inspect the development site prior to plan approval. The property owner or developer will be notified prior to such a site visit and may accompany the inspection. The results of the inspection shall be provided to the owner or developer in writing within seven (7) days of the inspection. Any problems encountered or suggestions generated during the inspection shall be noted.
 - a. The Town may verify by inspection the Vegetation Survey and the Tree Preservation Schedule.
 - b. Any trees found by the Town's representative to be of potential North Carolina Champion or Matthews Specimen Tree quality will be brought to the attention of the developer. A tree determined to be a Champion or Specimen Tree shall be classified as a Protected Tree and the developer shall be required to incorporate its protected status into the Landscape Plan for the site.
 - c. CHANGES TO AN APPROVED PLAN. Minor changes or additions to existing development or approved plans may be submitted to the Planning Director as an abbreviated Landscape Plan.
 1. An abbreviated plan shall be allowed when the proposed change is physically limited to only a contained portion of the site. An abbreviated plan shall include, but not be limited to, items listed in § 155.606.10.B.2, 6, 8, and 9. The Planning Director shall determine when an abbreviated plan may be submitted for a detailed plan and what items must be included.
 2. Any substitutions in plant species and varieties cited in the original landscape plan to be planted must be approved by the Planning Director before installation.
[formerly known as § 153.075 (M)]
3. Prior to the commencement of any activities requiring a grading and/or construction permit, a pre-construction conference must be held with the Town Landscape Manager and Planning office to review all procedures for protection and management of all protected landscape elements identified in the landscape plan.

For all development other than single-family dwellings on individual lots, the following on-site supervision is required:

- a. The applicant shall designate one or more landscape protection supervisors who attended the pre-construction conference with the Town Landscape Manager and Planning office.
- b. It shall be the duty of the landscape protection supervisor to ensure the protection of new or existing landscape elements as defined in the landscape plan. The approved landscape protection supervisor(s) shall supervise all site work to assure the development activity conforms to provisions of the approved landscape plan. At least one (1) designated landscape protection supervisor shall be present on the development site at all times when activity that could damage or disturb soil and adjacent landscape elements occurs including but not limited to: any excavation, grading, trenching, or moving of soil; removal, installation, or maintenance of all landscape elements and landscape protection devices; or delivery, transporting and placement of construction materials and equipment on site.
- c. Sites shall be inspected as needed by the Town Landscape Manager and/or Planning office to assure work is conforming to the approved landscape plan. The landscape protection supervisor shall be in frequent communication with the Town Landscape Manager and Planning office during all land disturbance and planting activities. (Am. Ord. 2268, passed 11-13-17)

155.606.11. Preservation Standards

- A. SHRUB AND GROUND COVER VEGETATION. The ground surface under any preserved shrub and groundcover should be disturbed as little as possible, following the basic standards for tree preservation.
- B. TREES. Existing trees specified on an approved landscape plan to remain on site during any land disturbing activity are Protected Trees. In addition, any land disturbing activity that may come within the drip line of

any Protected Tree, or a tree having all or a portion of its trunk in or upon any public property, shall be identified on site and protected as explained below.

C. THE ROOT PROTECTION ZONE DESIGNATION:

1. For each inch of DBH a minimum of one foot (1') of protected space from the trunk is measured in all directions. This area is designated as the Root Protection Zone. Unless physical obstructions are encountered within this area, the entire zone will receive protection. For tree stands the Root Protection Zone shall extend five feet (5') beyond the perimeter drip line of the entire stand.
2. All grading, construction, and site layout plans shall show the vertical elevation of the trunk at the soil line, the existing topography, and proposed grade changes within and immediately surrounding the root protection zone.

D. PROTECTION REQUIREMENTS OF THE ROOT PROTECTION ZONE.

1. A durable fence of plastic or wood with a minimum height of four feet (4') shall protect the zone. No soil disturbance will occur in the zone. The fence will be maintained at all times during any land disturbing activity.
2. No storage of materials, piling of soil, parking of equipment, or dumping of debris shall occur in the zone.
3. The natural grade shall be maintained within the zone. Stripping topsoil from, or adding topsoil to, the zone is prohibited.
4. Excavation for buried utilities is prohibited. Boring may be permitted in individual situations.
5. No trenching for irrigation lines shall take place.
6. Removal of understory vegetation within the zone shall be restricted to hand-operated power equipment.
7. A minimum of one sign designating the Root Protection Zone shall be placed on the fence and should be visible for a minimum distance of thirty feet (30').
8. Minor pruning of branches to accommodate the construction of nearby buildings or planting of shrubs or ground covers within the zone may be allowed with the approval of the Town Landscape Manager.
9. The Town will evaluate any requests for encroachment into the zone. Review of the request shall consider the overall needs of the site development. Utility line encroachments will be considered if the encroachment is unavoidable and damage to existing root systems is kept to an accommodating level. In these cases, encroachment will only be allowed on one side of the tree and no closer than two thirds (2/3) of the distance from the edge of the zone to the trunk. A revised Landscape Plan drawing or a written document giving the dimensions and explaining the reasons for the encroachment shall be prepared and submitted by the developer, to be signed by the Town Landscape Manager and attached to the approved Landscape Plan,
10. The requirements of this section shall remain in effect throughout the construction period or the duration of the land disturbing activity. [formerly known as § 153.075 (N)]

155.606.12. Planting Standards

- A. Except for Streetscape Trees, which can be variable, the minimum distance to the nearest property line or public right-of-way for planting shall be six feet (6') for large maturing trees and three feet (3') for small maturing trees.
- B. The minimum distance to a sidewalk, curb, or other impervious surface is four feet (4') for large maturing trees and three feet (3') for small maturing trees.
- C. For large maturing trees a minimum planting area of two hundred fifty six (256) square feet with a minimum dimension of eight feet (8') and a tree center no closer than four feet (4') to the edge of the planting area is required. For small maturing trees a minimum planting area of one hundred forty four (144) square feet with a minimum dimension of eight feet (8') and a tree center no closer than three feet (3') to the edge of the planting area is required.
- D. Trees shall normally not be guyed or staked, except in an extreme situation to salvage a damaged tree after planting. If guying is employed, it must be removed as soon as possible or within one (1) year at the latest.

- Mulch shall be applied (two (2") to three inch (3") layer around the tree pit) in accordance with accepted practices in the landscape industry.
- E. Adequate drainage shall be provided for all planting areas and specific plant materials shall be chosen which can adapt to the anticipated drainage conditions. Whenever possible, natural surface drainage that flows into the root protection zone shall be considered for plant selection and location, and interrupted curbing or curbless planting islands may be used.
 - F. No trees identified as large maturing trees shall be located within thirty five feet (35') from the center-line of a power distribution line.
 - G. No planting identified as reaching a mature height of more than twenty feet (20') shall be placed within a transmission power line right-of-way.
 - H. Normally, trees should not be planted within a utility or access easement. When a tree is to be located within an easement, a written statement to the Planning Director should indicate why this is necessary. When the planting is within a dedicated easement for underground utilities, trees planted shall be of the small maturing size to minimize future root conflict. This statement shall become an attachment to the approved Landscape Plan.
 - I. At all points of egress from off-street parking areas to a road, and at corners of road intersections, unobstructed visibility for sight triangles shall be maintained as defined in § 155.601.13.
 - J. Tree holes shall normally be back-filled with the native soil that was excavated. Amending the soil with organic additives is permissible when extremely poor site conditions are encountered.
 - K. Planting trees within sidewalk space, particularly in concrete, and within parking lot tree islands, requires special techniques and procedures in order to provide enough growing space beneath the concrete for the tree to prosper and maintain the integrity and stability of the surrounding impervious pavement. The Landscape Manager will individually evaluate any landscape plan that includes trees in sidewalk pits and parking lots.
 - L. All trees and shrubs to be planted must comply with the American Standard for Nursery Stock, published by the American Association of Nurserymen (current edition).
 - M. Trees to be planted shall generally be on the Town's approved tree list, provided as § 155.606.13. The Planning Director, with Town Landscape Manager input, shall approve the use of trees not on the list. [formerly known as § 153.075 (O)] (Am. Ord. 2268, passed 11-13-17)

155.606.13. Landscape Maintenance Standards

- A. GENERAL PROVISIONS. The property owner and/or lessee shall maintain all landscape materials and landscape areas in accordance with the approved Landscape Plan. Maintenance shall include watering, weeding, mowing, fertilizing, treating, mulching, pruning, removal and replacement of dead or diseased trees and shrubs. Maintenance shall be performed on a regular basis in order to maintain plant vigor and stability and to present a neat and well-kept appearance at all times.
- B. DURATION OF MAINTENANCE. For preserved vegetation, maintenance shall begin at the time that the root protection zones are established (prior to rough grading) and shall continue indefinitely. For planted materials, maintenance shall begin at the time of planting and shall continue indefinitely.
- C. MITIGATION FOR LOSS OF PROTECTED TREES AND SHRUBS.
 - 1. If a Protected Tree is destroyed or dies within three (3) years after completion of construction, then replacement trees of total equal diameter shall be planted on the site. Tree destruction or death during this three (3) year period shall be assumed to be the result of the land disturbing activity unless the tree destruction is easily verified as due to a casualty loss of nature (storm, lightning strike, and the like) or the property owner provides documentation from a certified arborist of an alternate explanation for the tree's death. It is the intent of these mitigation provisions that a replacement tree will be located where the Protected Tree had grown prior to death or destruction.
 - 2. Any Protected Tree dying after the initial three (3) years shall be replaced with planted tree(s) of an approved species, with either a single tree of equal caliper to the lost tree or multiple new trees each with a minimum of two inch (2") caliper (for large maturing trees) or a minimum of one and one-half inch (1½") caliper (for small maturing trees). It is the intent of these mitigation provisions

that a replacement tree will be located where the Protected Tree had grown prior to death or destruction. If two inch (2") caliper tree(s) are planted, a total caliper equivalent to the lost tree determines the total quantity of replacement trees needed.

3. Where possible, replacement trees should be of the same species as the lost tree(s). When the same species is not proposed, an explanation for the alternate selection, and what replacement species is proposed, shall be submitted to the Planning Director for approval prior to replacement.
4. Replacement plantings shall normally be made within one (1) month of the loss or within the first month of the next planting season. Any shrubs indicated on the Landscape Plan to be preserved, which later die, shall be replaced with the same species at a minimum size of three (3) gallon, three foot (3') height. Replacements for casualty loss fatalities must be made within one calendar year after the event.

D. MITIGATION FOR LOSS OF PLANTED TREES AND SHRUBS.

1. Any planted tree or shrub dying during the first three (3) years after planting shall be replaced with a plant kind and size that was specified in the original plans.
2. Any planted tree dying during the fourth (4th) year or later shall be replaced in the same location, with a tree, or trees, of the same type or value (using the International Society of Arboriculture's Tree Evaluation Formula) of the loss, a minimum size of two inch (2") caliper for small maturing trees and four inch (4") caliper for large maturing varieties.
3. Any shrub which dies after three (3) years shall be replaced with the same species, minimum three (3) gallon and three feet (3') in height. Replacements for casualty loss fatalities of any trees or shrubs must be made within one calendar year after the event.

E. MISCELLANEOUS MAINTENANCE PROVISIONS.

1. **TOPPING, TREE PRUNING, AND LIMBING.** Trees and shrubs should generally be kept in their natural form and allowed to reach their mature height and spread.
 - a. Topping of any landscape tree in excess of twenty five percent (25%) of its canopy planted or preserved is prohibited.
 - b. **TREE PRUNING.** No more than twenty five percent (25%) of the canopy may be pruned. The natural canopy shape must be maintained, and all trees shall reach eighty five percent (85%) of their overall height at maturity. No pruning may commence until a request by the developer or owner of the property is approved by the Town Landscape Manager. Such signed document shall be attached to the approved Landscape Plan.
 - c. **LIMBING-UP.** Where necessary for public safety, visibility, or pedestrian or vehicular activity, limbing-up may take place on existing trees and shrubs, as long as at least seventy five percent (75%) of the tree canopy is maintained, and limbing-up does not exceed fifteen feet (15') above the adjacent ground elevation except where large vehicles are regularly required, in which case limbing-up shall not exceed the height of the required vehicles. No limbing-up activity shall commence until a request by the developer or owner of the property is approved by the Town Landscape Manager. Such signed document shall be attached to the approved Landscape Plan.
2. **PURPOSEFUL REMOVAL OF PROTECTED TREES.**
 - a. Purposeful removal of any tree approved in the original planting plan must be based on unsafe conditions from developing structural, insect, or disease problems. Only in the event of a written recommendation by a certified arborist or the Town' Landscape Manager, and approval by the Planning Director, should removal take place.
 - b. Prior to any replanting a replacement Landscape Plan must be submitted indicating trees by species and size at the time of removal. In addition, the plan should list any replacements by species, variety, and planting size. Generally a replacement Landscape Plan shall be considered an abbreviated plan, unless more than twenty percent (20%) of the preserved or planted trees and shrubs on the original approved plan are scheduled for replacement.
 - c. Where an existing protected tree is of a species that since its installation has become recognized as having substantial difficulty maintaining a full and safe canopy in an urban

environment, then a written request by a property owner or developer, with a written explanation of the tree conditions and status and a recommendation for replacement by a certified arborist, may be submitted to the Planning Director and Town Landscape Manager. A proposed tree replacement plan shall be submitted, showing replacement in substantially the same locations as trees proposed to be removed. Replacement trees shall be of a large maturing variety unless site conditions (overhead power lines, etc.) prohibit their placement. Replacement trees shall be equal to the caliper size of removed trees, up to four inches in DBH, and additional replacement trees shall be placed elsewhere on-site to replace the total DBH being removed.

3. **REMEDIES FOR DISTURBANCE, DESTRUCTION, OR REMOVAL OF VEGETATION AND REQUIRED LANDSCAPING.**
 - a. Any disturbance, destruction, or removal of any required landscaping or approved vegetation shall constitute a violation of § 155.606.
 - b. Any person who violates any of the tree protection or landscaping provisions of § 155.606 or any approved landscape/vegetation plan previously approved by the Town prior to enactment of this Title shall be subject to any one or combination of penalties prescribed at § 155.214.
- F. **IRRIGATION REQUIREMENT.** Unless otherwise approved, an irrigation system shall be provided to all landscaped, non-turf areas containing living plant materials.
 1. All irrigation systems shall be installed by a licensed master plumber, licensed sprinkler contractor or owner/builder and shall be maintained in proper operating condition.
 2. Low-volume irrigation systems such as drip or bubble systems are encouraged for use in order to conserve water.
 3. Sprinkler type irrigation systems are not encouraged within the Town limits; however, when installed, they shall be designed to avoid spray that will fall on sidewalks, neighboring properties, and adjacent buildings.
 4. Any sprinkler system installed shall be programmed to supplement normal rainfall, and shall be operated to conserve water.
 5. An operable rain sensor is required on all automatically controlled systems.
 6. The installation of an irrigation system is not required on new plantings of all native plant materials or Xeriscape plant species designated as such by the North Carolina State University, or on preserved vegetation when root protection zones have been identified and continuously maintained during all land disturbing activities.
 7. Before any irrigation system or portion of an irrigation system is installed within a public right-of-way or on any other public land, an encroachment permit must first be obtained from the Public Works Director or from NCDOT as applicable.
 8. Irrigation systems that water only landscape turf are not encouraged, but are not prohibited.
- G. **MAINTENANCE VIOLATIONS.** The property owner and/or occupant or lessee shall be held jointly liable for any infractions of the requirements set forth in § 155.606.13. Where purposeful removal, topping, severe pruning, limbing, or other disfiguration occurs to one (1) or more trees or shrubs on a site without prior approval of a replacement Landscape Plan, the developer, property owner and/or occupant or lessee shall jointly be held in violation and each one shall be subject to the penalty provisions of § 155.214.
- H. **LANDSCAPE ESTABLISHMENT GUARANTEE.** Prior to the issuance of a Certificate of Occupancy, proper maintenance of the planted and preserved trees and shrubs during the landscape establishment period shall be guaranteed by a Landscape Establishment Guarantee from the property owner to the Town. The bond amount shall be equal to: the retail cost of the new trees; the actual value of preserved trees; the labor costs for installation, plus an amount equal to twenty-five percent (25%) of the combined amount of the factors listed here. Values shall be calculated using The Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers (current edition). The project landscaper shall be responsible for providing these figures to the Town and County. The bonding period shall be for a three (3) year period commencing from the date of successful inspection of the installation and preservation as being in compliance with the approved Landscape Plan for the site. See also Section 155.405.10.C.3 (Am. Ord. 2231, passed 6-12-17;

Am. Ord. 2264, passed 10-9-17)

- I. **SEASONAL DEFERRAL OPTION.** During the months of April through August, or during a declared community-wide drought, a separate bond may be provided to the Town to allow a Certificate of Occupancy to be issued when all other construction requirements have been inspected and declared complete except for completion of landscaping. Such bond amount shall be equal to twenty thousand dollars (\$20,000) per each acre or fraction of acre of the total development site, plus the bid package price the property owner/developer received for completion of the landscaping elements of the development project. The Town Landscape Manager shall review the bid package price to determine it is appropriate to the amount of plant and landscape materials remaining to be installed, and the labor required to complete the unfinished landscaping elements. This bond shall be issued in the name of the property owner to the Town, and shall be in effect for up to six (6) months or no longer than thirty (30) days into the next planting season, whichever is less. No Certificate of Occupancy shall be issued for the site until the Town Landscape Manager confirms in writing to Mecklenburg County LUESA that the required bond has been accepted by the Town. Once the required landscaping is installed and approved by the Town Landscape Manager, the owner/developer can request the release of the bond for work completed. If such landscaping has not been installed within the given bond period, the Town reserves the right to cash such bond for the purpose of completing the required landscape installation. A seasonal deferral option shall be in addition to the required Landscape Establishment Guarantee.

155.606.14. Approved Tree and Shrub List

A list of approved trees and shrubs for planting is provided to increase the likelihood of survival and to reduce maintenance requirements. All trees utilized should be generally adapted to the normal climatic and environmental conditions expected for the Matthews area. The listed trees satisfy these general criteria. This list is not intended to be a comprehensive survey, but it will serve as a guide to plant selection. Plants on the approved plant list shall normally be used in a landscape plan.

- A. Plants materials that are not on this list may be used if it can be shown that the selected species satisfies one or more of the following criteria:
1. A species indigenous to the area that can be shown to be adapted to the proposed site conditions.
 2. A cultivated species that is well suited for use in this area.
 3. A non-indigenous species, meeting a specialized use that will not be adversely affected by normal climatic environmental conditions.
 4. Any plant species that has been previously approved for use in a similar site situation.
- B. The use of any plant not on the list shall be so noted on the Landscape Plan with a brief explanation of purpose.
- C. **PROHIBITED PLANT MATERIAL.** Any tree or plant material that is determined by the Town Landscape Manager as invasive, disease-prone, subject to infestation or fragile shall be prohibited from being approved on a Landscape Plan.
1. **STREET TREES IN RIGHT-OF-WAY.** Any tree species existing within the public right-of-way which is subsequently determined by the Town Landscape Manager to be a prohibited plant material may be removed by the Town and replaced with an appropriate alternate species. Replacement trees shall be a minimum of four inches (4") caliper and twelve feet (12') in height at time of planting whenever they replace trees of same or larger dimensions. Existing street trees being replaced under this provision which are less than four inches (4") caliper or twelve feet (12') in height shall be replaced with appropriate alternate species trees of at least two inches (2") in caliper and eight feet (8') in height. All replaced street trees shall be installed to industry standards.
 2. **STREET TREES WITHIN FIVE FEET OF RIGHT-OF-WAY LINE.** Any tree species existing within five feet (5') of the right-of-way or on private property and subsequently determined by the Town Landscape Manager to be a prohibited plant material may be assessed by the Town Landscape Manager for its health and survivability expectations. Upon finding of a need to replace such tree or trees, the Landscape Manager shall give written notice to the property owner detailing the tree(s) that need to be replaced along with a variety of desire species well suited for the location. The property owner shall have two (2) years from date of the written notice to remove the

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prohibited trees and replace them with approved alternate species. Minimum planting size of replacement trees shall be two inches (2”) caliper and twelve feet (12’) in height. If the property undergoes a change of use prior to the two (2) year period, then the tree replacement action shall be required prior to the new use obtaining a Certificate of Occupancy.

1. Large Maturing Deciduous Trees

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆ ◆	Ash, Green*	<i>Fraxinus pennsylvanica</i>	50-60
◆ ◆	Ash, White	<i>Fraxinus Americana</i>	50-80
	◆ Baldcypress	<i>Taxodium distichum</i>	50-70
	◆ Basswood	<i>Tilia americana</i>	60-75
◆ ◆	Beech, American	<i>Fagus grandifolia</i>	40-60
◆ ◆	Birch, Black	<i>Betula lenta</i>	50-60
◆ ◆	Birch, River	<i>Betula nigra</i>	40-60
◆ ◆	Black Gum*	<i>Nyssa sylvatica</i>	30-50
◆	Sweet Gum Rotundiloba	<i>Liquidambar sylvatica</i>	20-50
◆	Black Walnut	<i>Juglans nigra</i>	20-50
	◆ Cherry, Japanese	<i>Prunus subhirtella</i>	20-50
	◆ Chinese Elm & B Hybrids	<i>Ulmus parvifolia</i>	30-60
	◆ Chinese Pistache	<i>Pistachia chinensis</i>	25-35
	◆ Hackberry, Weeping	<i>Celtis occidentalis</i>	40-60
	◆ Hackberry, Common	<i>Celtis laevigata</i>	60-70
	◆ Hickory	<i>Carya spp.</i>	50-80
◆ ◆	Hornbeam, American hop	<i>Ostrya virginiana</i>	25-40
	◆ Sugar Ginkgo	<i>Ginkgo biloba</i>	50-80
	◆ Katsura Tree	<i>Cercidiphyllum japonicum</i>	40-60
◆ ◆	Maple, Red*	<i>Acer rubrum</i>	40-60
◆ ◆	Maple, Sugar*	<i>Acer saccharum</i>	60-75
◆ ◆	Oak, Black	<i>Quercus velutina</i>	60-80
◆ ◆	Oak, Chestnut	<i>Quercus prinus</i>	60-70
◆ ◆	Oak, Laurel	<i>Quercus hemisphaerica (laurifolia)</i>	40-60
◆ ◆	Oak, Northern Red	<i>Quercus rubra</i>	50-60
◆ ◆	Oak, Pin	<i>Quercus palustris</i>	60-70
◆ ◆	Oak, Post	<i>Quercus stellate</i>	30-50
◆ ◆	Oak, Sawtooth	<i>Quercus Acutissima</i>	40-60
◆ ◆	Oak, Scarlet	<i>Quercus coccinea</i>	65-100
◆ ◆	Oak, Shumard	<i>Quercus shumardii</i>	40-60

TOWN OF MATTHEWS UNIFIED DEVELOPMENT ORDINANCE

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆ ◆	Oak, Southern Red	<i>Quercus falcate</i>	70-80
◆ ◆	Oak, Swamp Chestnut	<i>Quercus michauxil</i>	60-100
◆ ◆	Oak, Water	<i>Quercus nigra</i>	50-80
◆ ◆	Oak, White	<i>Quercus alba</i>	50-80
◆ ◆	Oak, Willow	<i>Quercus phellos</i>	70-90
◆ ◆	Pagoda Tree, Japanese*	<i>Sophora japonica</i>	50-60
◆	Pecan	<i>Carya illinoensis</i>	40-60
◆	Persimmon	<i>Diospyrus virginiana</i>	40-60
◆	Sour Wood	<i>Oxydendron arboreum</i>	40-60
◆	Southern Catalpa	<i>Catalpa bignoniodes</i>	75-100
◆ ◆	Sycamore	<i>Platanus occidentalis</i>	75-100
◆ ◆	Tulip Poplar	<i>Liriodendron Tulipifera</i>	70-90
	White Willow	<i>Salix alba</i>	75-90
	Yellow Wood	<i>Cladrastis kentuckea</i>	30-50
	Zelkova, Japanese*	<i>Zelkova serrata</i>	50-80

* Many varieties available

2. Small Maturing Deciduous Trees

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆ ◆	Alder, Tag	<i>Ainus serrulata</i>	20-30
	Althea*	<i>Hibiscus syriacus</i>	8-12
	American Hazelnut	<i>Corylus Americana</i>	10-15
◆	Birch, River	<i>Betula nigra</i>	20-30
	Buckeye, Red	<i>Aesculus pavia</i>	10-20
	Chaste Tree	<i>Vitex negundo</i>	15-20
◆ ◆	Cherry, Japanese*	<i>Prunus serrulata</i>	15-25
◆ ◆	Cherry, Yoshino	<i>Prunus X yedoensis</i>	20-25
◆ ◆	Cherry, Laurel	<i>Prunus Caroliniana</i>	15-25
	Crabapple, Flowering*	<i>Malus sp.</i>	7-25
	Crepe Myrtle*	<i>Lagerstroemia sp.</i>	15-25
	Devil's Walking Stick	<i>Aralla spinosa</i>	10-20
◆ ◆	Dogwood, Flowering*	<i>Cornus florida</i>	15-30
	Dogwood, Kousa	<i>Cornus kousa</i>	10-15

TOWN OF MATTHEWS UNIFIED DEVELOPMENT ORDINANCE

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆	Dogwood, Redosier	<i>Cornus stolonifera</i>	15-30
◆	Eastern Serviceberry	<i>Amelanchier canadensis</i>	5-20
◆	Elm, Winged	<i>Ulmus alata</i>	20-30
◆	Goldenrain Tree*	<i>Koelreuteria paniculata</i>	20-30
◆	Hawthorn*	<i>Crataegus</i>	15-30
◆	Holly, American	<i>Ilex opaca</i>	20-30
◆	Holly, Possumhaw	<i>Ilex decidua</i>	20-30
◆	Ironwood	<i>Carpinus caroliniana</i>	20-30
◆	Hornbeam	<i>Carpinus betulus</i>	20-30
◆	Magnolia, Saucer	<i>Magnolia soulangiana</i>	20-30
◆	Magnolia, Sweetbay*	<i>M. Virginia</i>	10-20
◆	Magnolia, Star*	<i>M. Stellata</i>	15-20
◆	Maple, Amur	<i>Acer ginnala</i>	15-20
◆	Maple, Chalk	<i>Acer leucoderme</i>	25-30
◆	Maple, Hedge	<i>Acer Campestre</i>	15-25
◆	Maple, Japanese*	<i>Acer Palmatum</i>	15-25
◆	Myrtle, Wax	<i>Myrica cerifera</i>	10-15
◆	Paw Paw	<i>Asimina triloba</i>	20-30
◆	Redbud, Eastern*	<i>Cercis Canadensis</i>	20-30
◆	Sassafras	<i>Sassafras albidum</i>	20-30
◆	Serviceberry	<i>Amelanchier sp.</i>	10-20
◆	Silverbell, Carolina	<i>Halesia carolina</i>	20-30
◆	Snowbell*	<i>Americanus</i>	8-15
◆	Sparkleberry	<i>Vaccinium arboretum</i>	5-20
◆	White Fringetree	<i>Chionanthus virginicus</i>	12-20

* Many varieties available

3. Evergreen Trees

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆	Eastern Red Cedar	<i>Tsuga caroliniana</i>	20-30
◆	Hemlock, Carolina	<i>Juniperus virginiana</i>	20-30
◆	Holly, American*	<i>Ilex opaca*</i>	20-40
◆	Holly, Chinese (Tree Form)	<i>Ilex cornuta*</i>	8-15

TOWN OF MATTHEWS UNIFIED DEVELOPMENT ORDINANCE

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆	Holly, Foster	<i>Ilex x attenuate</i>	20-30
◆	Holly, Hume	<i>Ilex x attenuate</i>	25-35
◆	Holly, Nellie R Stevens	<i>Ilex x Nellie R Stevens</i>	15-25
◆	Holly, Yaupon*	<i>Ilex vomitoria</i>	15-20
◆	Holly, Savannah*	<i>Ilex x attenuate</i>	25-30
◆	◆ Magnolia, Southern*	<i>Magnolia grandiflora</i>	60-80
◆	◆ Pine, Loblolly	<i>Pinus taeda</i>	60-90
◆	◆ Pine, Shortleaf	<i>Pinus echinata</i>	80-100
◆	Pine, Virginia	<i>Pinus virginiana</i>	40-60
◆	Spruce, Norway	<i>Picea abies</i>	40-60
◆	Ti-ti or Leatherwood	<i>Cyrilla racemiflora</i>	8-25

* Many varieties available

4. Low Maintenance Shrubs

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆	Abelias++	<i>Abelia grandiflora</i>	6
◆	Azalea, Pinxter	<i>Rhododendron periclymenoides</i>	7
◆	Azalea, Swamp	<i>Rhododendron viscosum</i>	15
◆	Azalea, Sweet	<i>Rhododendron arborescens</i>	20
◆	Beautyberry, American	<i>Callicarpa americana</i>	8
◆	Blueberry, Highbush	<i>Vaccinium corymbosum</i>	10
◆	◆ Blackberry (various)++	<i>Rubus spp.</i>	6
◆	◆ Camelia Sasanquas++	<i>Camelia sasanqua</i>	6
◆	◆ Carolina Rose+++	<i>Rosa carolina</i>	6
◆	◆ Chokeberry, Red	<i>Aronia arbutifolia</i>	10
◆	Common Buttonbush	<i>Cephalanthus occidentalis</i>	8
◆	Hearts-a-bustin	<i>Euonymus americanus</i>	12
◆	Holly, Buford++	<i>Ilex cornuta</i>	8
◆	Holly, Inkberry++	<i>Ilex glabra</i>	12
◆	Holly, Winterberry	<i>Ilex verticillata</i>	15
◆	Loropetalum++	<i>Loropetalum chinensis</i>	6
◆	Otto Luykun Laurel++	<i>Prunus laurocerasus</i>	5

TOWN OF MATTHEWS UNIFIED DEVELOPMENT ORDINANCE

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Mature Height (feet)
◆	Spicebush	<i>Lindera benzoin</i>	16
◆	Sweet-pepperbush	<i>Clethra alnifolia</i>	9
◆	Sweetspire, Virginia+++	<i>Itea virginica</i>	6
◆	Upright Juniper++	<i>Juniperus chinensis</i>	6
◆	Viburnum (various)++	<i>Viburnum spp.</i>	8
◆	Viburnum, Arrowwood	<i>Viburnum dentatum</i>	8
◆	Viburnum, Blackhaw	<i>Viburnum prunifolium</i>	15
◆	Viburnum, Mapleleaf	<i>Viburnum acerifolium</i>	6
◆	Wax Myrtle++	<i>Morella (Myrica) cerifera</i>	12

++ Evergreen

+++ Semi-Evergreen

5. Groundcover & Vines

Recommended for use specifically in the Special Highway Overlay District			
Recommended for all other landscaping applications			
	Common Name	Botanical Name	Winter Leaves
◆	Coral Honeysuckle	<i>Lonicera sempervirens</i>	Evergreen/deciduous
◆	Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Deciduous
◆	Grape (various)	<i>Vitix spp.</i>	Deciduous
◆	Green Brier (various)	<i>Smilax spp.</i>	Deciduous
◆	Clematis (various)	<i>Clematis spp.</i>	Deciduous
◆	Winter Jasmine	<i>Jasminum nudiflorum</i>	Deciduous
◆	Crossvine	<i>Bignonia capreolata</i>	Evergreen/Deciduous
◆	Carolina Jessamine	<i>Gelsemium sempervirens</i>	Evergreen
◆	Passionflower	<i>Passiflora incarnate</i>	Deciduous

(These varieties to be retained in required screens.)

(Ord. 1598, passed 10-8-07; Am. Ord. 2141, passed 4-11-16, Am. Ord. 2382, passed 4-8-19)