City of Fairfax

Tree Preservation and Landscaping Guide

PUBLISHED JULY 2024

DEPARTMENT OF COMMUNITY DEVELOPMENT & PLANNING

DEPARTMENT OF PUBLIC WORKS

INTRODUCTION

City of Fairfax's Tree Preservation and Landscaping Guide is designed to facilitate the implementation of development standards for tree conservation and landscaping requirements on site plans, and other plans and permits requiring approval by city staff.

Developers, design engineers, project managers, and contractors may use this guide when designing and constructing a project. Each may use it differently depending on the project phase.

The guide begins with an overview of urban forestry considerations during submission and review of land development plans. The guide then provides an overview of tree preservation considerations that should be considered in initial planning and integrated throughout each phase. Finally, the guide includes more detailed submission checklists, example tables and worksheets, and specific standards. Users should refer to these detailed resources as appropriate for their particular projects and project phases.

Downloadable construction details, narratives, and plant lists that complement the information in this guide are available elsewhere in the City of Fairfax's Public Facilities Manual.

Specifications in this guide are supported by the regulations, policies, and best practices of the following:

- City of Fairfax Chapter 110 Zoning Ordinance
- International Society of Arboriculture Best Management Practices
- American National Standards Industry (ANSI) A300 Tree Care Standards
- ANSI Z60.1 Nursery Stock Standards
- Virginia Department of Conservation and Recreation Riparian Buffers Modification & Mitigation Guidance Manual
- Virginia Stormwater Best Management Practices (BMP) Clearinghouse
- Virginia Department of Environmental Quality - Chesapeake Bay Preservation Act - Local Program Regulations and Guidance

The tree conservation and landscape standards detailed in this guide are effective as of July 2024. Projects under review prior to this may, subject to approval by the City Fairfax Urban Forester, use other standards.

CONTENTS

LAND DEVELOPMENT PLAN SUBMISSION AND REVIEW

OVERVIEW

Tree conservation during land development promotes the proper preservation, planting, and care of vegetation and trees throughout the city; replenishes tree stock; and provides for appropriate screening. These actions are intended to contribute to the health, safety, and welfare of the city by enhancing pedestrian facilities; decreasing flooding, urban heat islands, soil erosion, air pollution and noise; and improving aesthetics in accordance with the Comprehensive Plan and the requirements of city code. Transitional yard and screening requirements are intended to improve compatibility of uses by providing privacy and enhancing the aesthetic transition between uses. Tree preservation, replacement, and establishment is a designated component in protecting the city's resource protection and management areas in accordance with the Chesapeake Bay Preservation Act.

PRELIMINARY DESIGN REVIEW

During this phase, city staff confirm design consistency with the Comprehensive Plan and any applicable Small Area Plans and policies. Staff also assess the intent of compliance with city code. Proposed plans must submit sufficient information to review completeness.

FINAL DEVELOPMENT PLAN

Information provided from the preliminary design submission must be further detailed in the final plan submission to meet all requirements of Chapter 110 of city code. Revisions and additions may include a final 10-Year tree canopy calculation with planting schedule, tree protection and landscape details, and applicable narratives. Review confirms consistency amongst all plan sheets.

CONSTRUCTION AND INSPECTION REVIEW

Plans and permits approved by the city are subject to enforcement during all phases of construction to ensure compliance. Pre-construction meetings may be included to review requirements and confirm field conditions. Construction inspections may be warranted to review ongoing practices and changes needed. Final inspections are required to confirm that final development conditions meet the approved plan or permit and to identify any correctional actions needed.

TREE PRESERVATION OVERVIEW

Tree preservation must be considered in initial project planning and integrated throughout each phase. Projects should incorporate the following considerations to the extent possible.

DURING PLANNING

- Prioritize preservation of indigenous vegetation located within resource protection areas to the maximum extent practicable per *code section 4.18*.
- Mature trees in resource protection areas may only be removed where necessary to allow for the proposed use or development per *code section 4.18*.
- Prioritize preservation of specimen and heritage trees contributing high historical, cultural, or environmental value due to their attributes such as age, size, rare native-species, or high location value.
- Protect trees offsite or with shared ownership.
- Preserve screening vegetation to neighboring properties or differing land use types.
- Prioritize preservation of healthy natural forested areas with minimal existing disturbance.

DURING DESIGN

- Limit land disturbance to the minimum area needed to construct the proposed use.
- Locate temporary storage and staging areas, access roads and entrances, other temporary structures in a manner to minimize damage and impact to root systems and aboveground tree structures.
- Minimize changes to environmental conditions directly adjacent to vegetation to remain that impact survival and growth such as significant changes in grade/drainage, light exposure, use of infill soil, and temperature fluctuations.
- Identify invasive species threatening the health, safety, and survival of trees/forests.

DURING CONSTRUCTION

- Review construction activities (E&S control installation, demolition, access, etc.) and take steps to minimize adverse impacts (e.g., soil compaction, drainage changes, offsite tree considerations).
    - Example practices: tree protection fencing, bilingual tree protection signs, root pruning, temporary or permanent root aeration matting, mulching, invasive vegetation management, clearance pruning, trenchless siltation fencing, soil management.
- For dead trees and trees to be removed beyond the limits of disturbance within natural areas – Consider snagging to an appropriate height and retaining for increased wildlife value. Also consider leaving trunks in place/in natural areas.

In addition, staff will review an application and proposed tree removals based on the demonstration of the following factors (*code section 4.5.6.A.1*):

- Tree preservation would prevent development of uses and densities otherwise allowed by city code.
- Predevelopment condition of existing vegetation does not meet standards for health and structural conditions.
- Construction activities could be reasonably expected to impact existing vegetation to the extent that it would not survive in a healthy and structurally sound manner.

TREE CONSERVATION PLAN REQUIREMENTS

TREE CONSERVATION PLAN CHECKLIST

1. Drawn and matched to scale.
2. Pre- and post- development conditions: structures, utilities, easements, paved surfaces, fences, resource protection areas, property lines, topography.
3. Location of construction features: limits of clearing and grading or disturbance, cut/fill lines, construction entrance, stockpile area, erosion and sedimentation devices including tree protection measures.
4. Existing vegetation summary with forest cover types, primary species, general conditions, and pre-existing canopy area by percentage and square feet.
5. Existing vegetation map locating tree canopy line and areas denoted by forest cover types.
6. Location of existing trees with tree numbers, critical root zones, denote trees to be removed, saved, offsite, shared, and right-of-way (ROW).
7. An invasive management plan for trees or tree save areas for 10-year tree canopy credit and with levels of invasives species threatening long-term tree health, safety, and survival per *code section 4.5.9.D*. (*may be finalized at site plan submission)*.
8. Tree inventory table of all trees greater than five (5) inches measured at DSH both on- and off-site if the critical root zone is to be impacted by the proposed land development per *code section 6.10*.
    A. Tree number
    B. Tree name (common and scientific name)
    C. DSH and number of stems when more than one exists at four and one-half feet.
    D. Condition. Criteria for evaluating structure, health, and overall condition using the most current edition of the Council for Tree and Landscape Appraisal (CTLA) Tree Condition Rating System or equivalent.
    E. Proposed tree conservation measures.
    F. Notation for off-site, shared, or right of way trees.
    G. Any assessment notes as necessary for justification of removal or protection measures.
    H. Date of data collection.
9. 10-year tree canopy calculation *(if applicable by Zoning Ordinance §4.5 and may be included on Landscape Plan)*.
    A. Parcel lot's zoning district
    B. Zoning district's required percent 10-year minimum tree canopy requirement
    C. Parcel lot size by square feet (SF)
    D. Parcel lot's 10-year canopy requirement (SF)
    E. Total 10-year tree canopy credit by tree preservation areas (SF)
    F. Total 10-year tree canopy credit by plantings (SF) (see Landscape Plan instructions if proposed)
    G. Total 10-year tree canopy credit provided (SF)
10. Authorization signature by all tree owners for any offsite or shared trees proposed for removal per *code section 6.10*.
11. Tree protection details and preservation narrative. (*may be finalized at site plan submission)*.
12. Name and signature of ISA Certified Arborist, or other qualified professional as approved by the zoning administrator, certifying tree conservation plan per *code section 4.5.4.B*.
13. Legend, map scale, north arrow.

TABLE 1. SAMPLE TREE INVENTORY

Tree Inventory[1]					
Tree	Common & Scientific Name	DSH	Condition	Preservation Measures	Shared/Offsite
1	Willow oak *Quercus phellos*	35	Good (85%)	To be saved; root prune at LOC, mulch, install fencing	Shared (S)
2	Silver maple *Acer saccharinum*	20	Fair (60%)	Remove – within the buildable area and LOC	
3	Red maple *Acer rubrum*	5	Good (85%)	To be saved; install fencing and root matting	Offsite (N)
4	Bradford Pear *Pyrus calleryana*	12	Poor (45%)	Remove – decline, will not survive construction, undesirable species	

[1] Zoning Ordinance code section 4.5.9.D.1

Collected by and signature:
ISA Certified Arborist #:
Date collected:

TABLE 2. 10-YEAR TREE CANOPY CALCULATION WORKSHEET

10-Year Minimum Tree Canopy Calculation Worksheet[1]		
A. Tree Canopy Requirement		
A1	Identify site's zoning district =	
A2	Identify total site area (SF) =	
A3	Percent 10-year minimum tree canopy required =	
A4	Calculate area (SF) of 10-year canopy requirement (A2 X A3) =	
B. Tree Preservation		
B1	Total canopy area provided through tree preservation =	
(If total of B1 does not equal or exceed A4 then remainder must be met through tree planting)		
C. Tree Planting		
C1	Total canopy area provided through tree planting =	
D. Total 10-Year Tree Canopy Provided		
D1	Total canopy area provided through tree preservation and planting (B1 + C1) (SF)	
D2	Total site's percent canopy area provided through preservation and planting	

[1] Zoning Ordinance code section 4.5.6

INVASIVE VEGETATION MANAGEMENT

A management plan may be required if non-native invasive species (NNI) or populations are identified on site and at levels threatening long-term tree/forest health, safety, and survival per *code section 4.5.9.D*. The City's *Invasive Plant List,* located on the city's website in the Public Facilities Manual, includes common NNIs causing harm in the region and ineligible for tree canopy credit. Provide the following when a management plan is required.

1. Treatment area limits – depicted on the plan set as either NNI management areas and/or identified as the limits of disturbance, whichever is greater and inclusive of tree save areas
2. NNI species to be managed
3. Treatment timing, duration, frequency, and monitoring – treatment should occur during construction, planting, and warranty period
4. Control and disposal methods
5. Management and warranty narrative notes when applicable

LANDSCAPE PLAN REQUIREMENTS

LANDSCAPE PLAN CHECKLIST

1. Drawn and matched to scale.
2. Proposed post-development conditions: structures, utilities, easements, fences, retaining walls, paved surfaces, signs and signals, transit features, any features in the landscape buffer, and site topography.
3. Location of landscape materials to remain by tree number and tree canopy line, proposed plants by species and 10-year maturity size, and denoting ground cover types or seed mixes. Spacing shall meet *code section 4.5* requirements and PFM standards.
4. Planting schedule by scientific and common name with caliper at planting, count, canopy credit per tree. Note any specific cultivars or varieties and adjust canopy credit as needed. (*may be finalized at site plan submission)*.
5. RPA vegetation replacement per acre disturbed, including planting density by forest layer and nursery stock size, scientific and common names, spacing, and totals. A sample planting design detail may be provided in lieu of mapping all plant materials but planting areas should be clearly located.
6. Tabulation of street trees required and total provided by linear feet.
7. Tabulation of transitional yard required and provided with minimum fence or wall by width and length, and vegetation by canopy, understory, and shrub.
8. New tree plantings for 10-year canopy credit shall be drawn to scale with limited canopy overlap to other existing or newly planted vegetation and shall be located onsite.
9. Soil volume calculations if not clearly shown by landscape plan design or details.
10. Legend, plant list, key, map scale, north arrow, and all applicable planting details and narratives. (*may be finalized at site plan submission)*.

TABLE 3. EXAMPLE PLANTING SCHEDULE

Planting Schedule						
Key	Botanical Name	Common Name	Size	QTY	10-YR Tree Canopy (SF)	Tree Canopy Subtotal (SF)
Category IV Deciduous						
QA	*Quercus alba*	White oak	2" cal.	3	200	600
LT	*Liriodendon tulipifera*	Tulip poplar	2" cal.	1	200	200
UA	*Ulmus americana*	American elm (resistant hybrid)	2" cal.	2	200	400
Category I Evergreen						
MG	*Magnolia grandiflora* 'Little Gem'	'Little Gem' Southern magnolia	8' height	1	50	50
			TOTAL	7		1250

NOTE: Tree species may vary due to availability. Any alterations to the approved planting schedule shall be submitted in writing for review and approval to Fairfax City Urban Forester prior to installation.

TABLE 4. EXAMPLE STREET TREE SUMMARY TABLE

Street Tree Calculations[1]				
Street Name	Requirement	Linear Feet	Street Trees Required	Street Trees Provided
Armstrong Street	1 per 40 feet	615	15	15
Chainbridge Road	1 per 40 feet	545	14	14
George Mason Blvd	1 per 40 feet	510	13	13
		TOTAL	42	42

[1] Zoning Ordinance code section 4.5.6.B

TRANSITIONAL YARD REQUIREMENTS

The following are the four classifications with specifications that may exist depending on the proposed and adjacent development district. Applicants shall refer to *code section 4.5.5* for all Transitional yard requirements. Alternative compliance may be approved per *code section 4.5.10*.

TABLE 5. SUMMARY OF TRANSITIONAL YARD CLASSIFICATIONS [1]

Specifications	TY1	TY2	TY3	TY4
Minimum Yard Width	7.5	10	15	30
Minimum Fence/Wall Height	6	6	6	6
Minimum Trees (per 100 feet)				
Canopy	None	3	4	4
Understory	4	3	4	5
Minimum Shrubs (per 100 feet)	None	None	4	5

[1] Zoning Ordinance code section 4.5.5.

PLANTING NOTES AND STANDARDS

- All plantings shall be in accordance with ANSI standards and the approved Landscape Plan.
- Plantings shall be installed only within the following planting seasons:
    - **Spring season:** March 15 – May 31
    - **Fall season:** September 15 – November 30
    - Installation date subject to proof of verification
- All plant material shall be guaranteed for a minimum of 1-year, unless a longer warranty is required, from the date of acceptance by Fairfax City Urban Forester. Material must meet minimum ANSI Z60.1 standards through the warranty period. If within the warranty period plant material dies or is found in significant decline, then the contractor shall replace it in accordance with the approved plan and above standards.
- Any existing tree or save area from the approved Tree Conservation Plan found to be in poor or dead condition may require replacement per *code section 6.10*.
- **Any deviations to these standards or planting seasons are subject to approval by Fairfax City Urban Forester.**

TABLE 6. PLANT SCHEDULE SPECIES DIVERSITY [1]

Number of plant materials	Minimum number of species
Less than 3	1
3-5	2
6-9	3
10-29	4
30+	less than 10 percent of any one species and less than 20 percent of any one genus

[1] Zoning Ordinance code section 4.5.9.E

CITY APPROVED PLANTING LISTS

Lists are provided as separate excel sheets in the Public Facilities Manual on the city's website.

Master Tree List includes recommended species for preservation and planting with eligibility for canopy credit. Conditions of approval apply to all species and any species not on this list is subject to approval by Fairfax City Urban Forester per *code section 4.5.9.E*. List includes the following information by species:

- Soil volume requirements
- Size category to determine canopy credit
- Plant type classification and use recommendations

Conditions of approval may include location within a natural setting, proximity to streets, buildings, infrastructure, easements, or other high-trafficked areas, site line or safety conflicts, tree condition and life expectancy, species tolerance to construction, presence of invasive tendencies, extent of surrounding disturbance or site changes, proposed preservation methods, and planting standards.

Invasive Species List specifies ineligible plant species for tree canopy credit. A management plan may be required if identified on site and at levels threatening long-term tree health, safety, and survival.

10-YEAR CANOPY CREDIT – TREE PLANTING

Canopy credit is based upon tree species' anticipated canopy area 10-years after planting in this region's urban growing conditions. Planting stock sizes between 1.5 and 3-inch caliper are found to be comparable in size within 3-5 years after planting and so 10-year canopy credit is consistent for all planting sizes within this range. Select a size at planting best suited for the landscape needs of the project. Any size larger than 3-inch caliper at planting requires approval by Fairfax City Urban Forester prior to installation.

In addition, proposed growth spaces and soil volume are reviewed to confirm that 10-year tree canopy credit is fully met. Tree growth and mature size are directly related to available soil volume and site constraints. Trees proposed in restricted growth spaces may use alternative design practices, such as suspended pavement or root breakout zones, to meet the requirements below. Traffic sight line and utility conflicts should be considered in the placement and species selection. Refer to VDOT standards and the city's Public Facilities Manual for further information.

TABLE 7. CREDIT BY PLANT SIZE CATEGORY

DECIDUOUS TREES (minimum size at planting, canopy credit in ft^2, plant type)		
Category I – Trees 40 feet or less in height and with a spread less than one-half their height (all columnar cultivars)		
2.0-2.5-inch caliper	50	varies
Category II – Trees with a mature height of 25 feet or less and with a spread approximately equal to their height		
1.5-2.0-inch caliper	100	Understory
Category III – Trees with a mature height of 25 to 50 feet and with a spread equal to or greater than their height, and trees over 50 feet in height and with a spread less than their height		
2.0-2.5-inch caliper	150	Canopy
Category IV – Trees with a mature height of 50 feet or greater and with a spread equal to or greater than their height, and trees over 75 feet in height and with a spread less than their height		
2.0-2.5-inch caliper	200	Canopy
EVERGREEN TREES (minimum size at planting, canopy credit in ft^2, plant type)		
Category I – Trees with a mature height less than 30 feet with a spread less than 15 feet		
6-feet	50	Understory
Category II – Trees with a mature height of 30 to 40 feet with a spread of 15 to 20 feet		
6-feet	100	Canopy
Category III – Trees with a mature height of 40 to 50 feet with a spread of 20 to 30 feet		
6-feet	150	Canopy
Category IV – Trees with a mature height of 50 feet or greater with a spread over 30 feet		
6-feet	200	Canopy

TABLE 8. SOIL VOLUME BY PLANT SIZE CATEGORY

Minimum Soil Volume (cubic feet, calculated at maximum depth of 3 feet)		
Category	Single tree	Two or more – continuous soil
I	500	400
II	500	400
III	700	600
IV	1000	800

RESOURCE PROTECTION AREAS (RPA) ESTABLISHMENT OR RESTORATION

OVERVIEW

Resource Protection Areas – vegetation within RPAs will be managed and replaced in accordance with the Chesapeake Bay Preservation Act *code section 4.18* and Tree Removal Permits *code section 6.10*. Plantings shall include a variety of overstory and understory trees, shrubs, and herbaceous ground cover plant types. Native species shall be used to the maximum extent possible per *code section 4.18*.

Modification and Restoration/Establishment Mitigation – Plant types, densities, and standards may use the Virginia Department of Conservation and Recreation's Riparian Buffer Manual, or the below worksheet using the planting density table by Fairfax County's Chesapeake Bay Preservation Ordinance. (Note – Planting density below is comparable to DRC's Restoration/Establishment Table A – Option A density per 400 square feet unit).

Tree canopy requirements of Chapter 110 – may be met through RPA replanting so long as all standards are met.

Maintenance and warranty – narrative should include inspection intervals; maintenance tasks such as mulching, staking, pruning, invasive management, and deer management; warranty duration with minimum survival rate of each vegetation species by plant stock size; and replacement requirements and timing.

Provide a planting summary with plant quantities by each size type and forest layer.

TABLE 9. EXAMPLE RPA PLANTING SUMMARY TABLE

RPA Planting Summary							
RPA Area Disturbed Acres:							
Forest Layer	Plant Quantities by Size Type[1]						
	1.5" caliper	3/4" caliper	1-quart	1-gallon	Tubling	Bare Root	Mix (lbs.)
Overstory							
Understory							
Shrub							
Ground Cover							

[1] See worksheet for allowable plant types for each forest layer

TABLE 10. RPA ESTABLISHMENT/RESTORATION PLANTING DENSITY PER ACRE WORKSHEET

RPA Establishment/Restoration Planting Density per Acre Worksheet						
Forest Layer [3]	RPA Area Disturbed in Acres:					
	Size, Rate[1]					
	Quantities					
	Stock Size	1.5" caliper	3/4" caliper	1-gallon	Tubling	Bare root[5,6]
Overstory	[2] Density per acre	109	164	218	400	1210
	Acres per size					
	% of total					
	Total count					
	Stock Size	1.5" caliper	3/4" caliper	1-gallon	Tubling	
Understory	Density per acre	N/A	218	435	800	
	Acres per size					
	% of total					
	Total count					
Shrub	Stock Size	1-Gallon (shrubs)		1-Quart (herb/forbs)		
	Density per acre	654		2616		
	Acres per size					
	% of total					
	Total count					
Ground Cover[4]	Seed Mix	Perennial (lbs.)		Annual (lbs.)		
	Density per acre	30		60		
	Acres per size					
	% of total					
	Total count					

[1] Each forest layer can be any combination of stock sizes for the per acre requirement. Understory and overstory trees do not need to be the same stock size.
[2] Densities shown by stock size per acre are if 1-acre were planted with only 1-stock size type. i.e. 1-acre site plants (109) 1.5" caliper overstory trees or 1-acre site plants (55) 1.5" caliper and (82) ¾" caliper overstory trees. This applies to all forest layers.
[3, 4] Each forest layer must be mitigated. Both seed mix types should be used and alternatives such as leaf litter or mulch may be requested.
[5] Bare root seedlings density per acre is a combined total of overstory and understory trees. Combination of overstory and understory to be determined based on site conditions.
[6] Restoration with only bare root seedlings is not recommended and subject to approval by the City's Urban Forester.