

COUNTY OF YORK

MEMORANDUM

DATE: November 20, 2024

TO: York County Board of Supervisors

FROM: Mark L. Bellamy, Jr., County Administrator 

SUBJECT: Continued Discussion on Landscaping, Buffer, and Greenbelt Regulations – December 3 Board Meeting

ISSUE

At the August 6, 2024 Work Session, the Board received a staff presentation on current zoning ordinance landscaping regulations. Discussion points included landscape plan requirements, planting standards, and transitional buffer regulations. Board members raised several concerns, including the need for stricter vegetation replacement requirements, denser planting for approved buffer reductions, examination of buffer sizes, clearer language with flexibility for special circumstances, and an evaluation of the landscape credits system's effectiveness. Due to time constraints, the Board paused the discussion and scheduled its continuation for a future work session. After the Board's December 3 meeting, staff will incorporate the Board's recommendations into proposed text amendments for consideration by the Planning Commission and Board. Attached are the current Landscaping, Transitional Buffer, and Greenbelt regulations from the Zoning Ordinance for the Board's review. I look forward to receiving your feedback and suggestions.

Attachments:

- Landscaping, Buffer, and Greenbelt Regulations (Article II, Division 4, Chapter 24.1, York County Code) and relevant charts and tables from Appendix A of Chapter 24.1
- Excerpts from approved minutes of the August 6, 2024, Board of Supervisor's Meeting

Chairman Roane asked if there had been any community engagement in previous organizational assessments conducted by The Berkley Group. Additionally, he questioned if there a strategy in place to incorporate community involvement in the study for York County.

Mr. Tuttle replied if there is data from community surveys, The Berkley Group will review them. However, The Berkley Group will not be conducting separate surveys as a part of the public's view of the County.

Mrs. McKinney added that the Board was given a memo stating that The Berkley Group's approach to staffing levels and organizational structure was a two-pronged approach to observing the County's efficiency. She explained that The Berkley Group was on schedule with its tasks and was in partnership with staff to dissect the entire organization into a phased approach.

Chairman Roane stated that if Fire and Life Safety and Law Enforcement were included with the rest of the study, the comparison would be too large to produce an accurate outcome.

Mr. Shepperd inquired about The Berkley Group's approach and how they utilize each department's different national standards and the common knowledge of what it takes to be effective and efficient.

Mr. Tuttle detailed that there are national standards and benchmarks in different divisions. While they are useful, not all of them are beneficial to York County due to the uniqueness of the organization. Mr. Tuttle described York County as unique due to its geography and population.

Mr. Campbell explained that using benchmarks could be beneficial for assessing York County by providing The Berkley Group with a clear framework of the County's service levels. The data collected will be tailored to meet York County's specific needs.

Mr. Holroyd questioned whether the organization's level of competency would be evaluated.

Mr. Tuttle stated that although The Berkley Group cannot individually evaluate every employee, it can provide a sense of the effectiveness of the workgroup and measure it against the people we have known in local government through our careers.

In conclusion, Chairman Roane thanked Messrs. Tuttle and Campbell for their informative presentation and added that the Board looks forward to seeing them again in October.

LANDSCAPING, GREENBELT, AND BUFFER REQUIREMENTS IN THE ZONING ORDINANCE

Mr. Holroyd stated that the Board has had insufficient time in which to digest the 40-page package they received less than an hour ago from staff. He recommended that in the future such material should be available to the Board in advance so that it can be thoroughly digested prior to discussion.

Mr. Shepperd pointed out that some of the reading material Mr. Holroyd identified appears to be a copy of the County's existing ordinance.

Mrs. Noll stated that she sees the work session as a learning session, whereby the Board has the written material; however, staff's presentation aids one to absorb and consider it on a deeper level.

Ms. Caitlin Aubut, Planner II, stated that staff is reviewing Article 2, Division 4 of the Zoning Ordinance in its entirety. She added that the purpose of the presentation is to review this section of the Code, discuss it with the Board, clarify any vague items and explain what each section really means. She also noted that the review and discussion are to survey the Board's opinions on what sections are working and which ones need to be tweaked. In response to a Board question, she clarified that the information brought forward this evening is on

August 6, 2024

Landscape, Buffer, and Greenbelt Regulations. However, prior to her presentation, she stated that this is a broad topic requiring a great deal of the Board's time to review and consider.

Mr. Mark Bellamy, County Administrator, stated that subsequent to speaking earlier with Chairman Roane regarding this matter, it was decided that the Board will determine how long the discussion will last this evening. In addition, he noted that continued discussion and final formal action on this item will be pursuant to the Board's direction.

Mr. Shepperd noted the length of this section of the Code and inquired about the length of time needed to perform a thorough survey.

Mr. Bellamy stated that this task is similar to that of the home-based business ordinance which the Board is prepared to address over multiple meetings with a formal vote being advertised and scheduled at the Board's direction.

Chairman Roane noted that tonight's objective is to do a high-level overview of the ordinance with a deeper level of consideration occurring at subsequent Board meetings.

Ms. Aubut reiterated that this evening the Board will take high level look at Article 2, Division 4 of the Zoning Ordinance dealing with the County's landscape regulations which were adopted in 1995. Although several minor text amendments have occurred over the years, the ordinance basically has changed very little. During her subsequent presentation, she highlighted the following information:

- The purpose of this section of the Code is intended to establish minimum standards for landscape design and for the preservation of trees in order to better control soil erosion and the transport of sediment, and to protect and improve the quality of surface and groundwaters, screen noise and dust, and preserve, protect and enhance the natural and built environment.
- Section 24.1-241 is all about landscape plans and details what is required on a landscape plan which needs to be prepared by a professional. This plan will also include what will be planted, the species, and the size to include schedules and charts that will explain how the minimum standards will be met.
- Section 24.1-242 lists the landscape standards for new plantings to include the design, plant layout, species, and how the landscaping will be maintained. This section also includes ratios to ensure a good mix of trees and shrubs, and identifies planting minimums to include numerical standards for building perimeters and parking lots.
- Landscape credits for trees increase due to height and the diameter of the plantings. This is an incentive for individuals to plant larger trees/shrubs and also additional credits are given if a species is installed that will grow faster. Also existing mature trees on one's property provides additional credits, so individuals are less likely to cut them down.
- Section 24.1-243, transitional buffers, updated in 1995, notes the required buffer between properties with different land use intensities/zoning. For example, a heavy industrial business next to a residential area would require the largest buffer of 50-feet.
- For transitional buffers, current planting ratio permits 70 percent of credits to be earned from shrubs in 25-foot, 35-foot buffers, and 50 percent in 50-foot buffers. Minimum shrub planting size is 18-inches in height and spread. However, whatever evergreen shrub that is planted, it must eventually grow to be four feet.
- The goal of the transitional buffer is to protect a less intense land use from a more intense land use.

During the presentation, Mr. Shepperd highlighted the importance of the words to be included in these regulations to ensure clarity for both citizens and the Board alike. He also stressed the need to ensure that property owners maintain the level of maintenance that is required when a structure is initially constructed or built, such as fences, etc.

Chairman Roane added that these regulations need to be tweaked to ensure that when elevation/photographic materials are submitted, the final structure, if approved, must reflect the submitted photos/elevation drawings.

Mr. Shepperd stated that in order to do this, another step would have to be included in the process, which may not be legally feasible. He also noted that some changes occur due to regulations enacted by federal agencies, which the Board cannot alter.

Ms. Aubut interjected that relative to landscape plans approved by the Board, they must be substantially implemented as such.

Chairman Roane stated that the Board needs to be assured that whatever is constructed/erected accurately reflects what the Board has approved. However, he agreed that due to situations beyond our control, such as how a utility installation can alter a landscape plan, there has to be some leeway in such situations. In another instance, he noted that VDOT designs can also sometimes alter a landscape plan.

Mrs. Noll pointed out that typically submitted landscape plans show mature trees/shrubs, which do not accurately reflect the passage of time, and Ms. Aubut concurred.

Mr. Holroyd expressed concern that the Zoning Ordinance, Section 24.1-242(a), does not prohibit the planting of a 3-inch-diameter tree when a 24-inch-diameter tree is removed, which should not be allowed.

Mr. Shepperd also voiced unease that often, when large trees have to be removed for some reason, the County requires them to plant so many small replacement trees that the visibility of on-site or nearby businesses is jeopardized.

Chairman Roane asked what determines the quantity and type of an actual engineered landscape plan.

In response, Ms. Aubut stated that staff looks at a couple of things, including the landscape plan prepared as part of a site plan package. First, it is reviewed to determine if the plan meets the minimum planting requirements. Then, staff references the extensive list of species included in the appendix to decide if what is listed on the plan will thrive in the specified area.

Chairman Roane asked if the staff is looking at the design and whether it is in harmony with the County's green belt vision.

Ms. Aubut stated that the County does have minimum planting requirements for green belts and noted that clearing a green belt is currently prohibited. However, she added that staff feels that the current Zoning Ordinance language in this specific area has issues that need to be addressed.

Mrs. Noll asked if someone owns a piece of raw, untouched property that already has mature trees is that taken into consideration when applying the landscape requirements.

Ms. Aubut responded that to do so, the property owner would have to engage a tree surveyor to validate the trees' location, size, and species, which will determine how many credits the property owner will receive towards the landscape requirements.

Mr. Shepperd expressed concern that when large trees are left on a site, providing some of the required credits, they often die due to various environmental circumstances. As such, he inquired if the proposed changes to the Zoning Ordinance would satisfactorily address this issue.

Ms. Aubut stated that the County does not commonly see this issue anymore, especially in parking lots because even commercial property owners have concerns over this matter.

Mr. Holroyd stated that when landscaping is removed, the property owners should be forced to put back in what they have taken out.

However, Mr. Shepperd pointed out an example where a property owner removed trees because VDOT authorized it; however, the area was so heavily replanted that it almost obscured the

August 6, 2024

adjacent business. He then inquired, if a buffer is required between two properties, can be shared.

In response, Ms. Aubut noted that it depends upon which property is developed first. She stated that the ordinance provides the option of two property owners executing a shared maintenance agreement. In addition, she pointed out that as uses and zoning on abutting properties change, this could cause a shift in the required buffer.

Mr. Shepperd stated that this is a complicated matter, but the County must be mindful of the language used in the ordinance to ensure that buffers are appropriately required and maintained.

Mr. Holroyd added that the County needs improved language in the ordinance to ensure that when rezonings are approved, the effective setback is in place and maintained. He expressed concern that on Springfield Road the existing homes have only a 10-foot transitional strip between the existing older neighborhood and the new neighborhood.

Ms. Aubut explained that staff will also review these same requirements in open space cluster subdivisions in the next few months. She also noted that the planting requirements for green belts are not as intense as transitional buffers.

Mr. Shepperd stressed that common sense has to play into these issues as well, where often one size setback does not fit all circumstances. In certain situations, he stated the Board needs an escape clause so that common sense can be used and applied when special conditions are present.

Chairman Roane agreed that the Board's hands cannot be tied when special circumstances arise that cannot be adequately addressed by the Zoning Ordinance. However, he also noted on the other hand this should only occur in very special situations.

Ms. Aubut reminded the Board that there is a mechanism whereby citizens can approach the Board of Supervisors for permission to clear in a required greenbelt buffer. She left the Board with a request for them to consider and discuss at a future meeting, the Code's existing planting matrix and the widths we currently have between the different districts and whether or not the Board feels they are still appropriate.

Chairman Roane noted the passage of time and that the Board should hopefully finish up considering and discussing transitional buffers this evening and continue the discussion at another time in the near future. However, he stressed that the Board needs to consider the true intent of the ordinance and added that the ordinance should address erosion control, aesthetics, screening, noise, and dust. Since the Zoning Ordinance was last updated in 1995, he questioned if we are still appropriately addressing these issues or do we need to make changes to better accomplish these goals. He also questioned the validity of the landscape credits and if they are truly accomplishing what was originally intended.

Ms. Aubut stated that staff could review the number of landscape credit units being required; however, a base unit of measurement will still be necessary.

As Ms. Aubut's presentation proceeded, Mr. Holroyd stated that he would like to see the Zoning Ordinance require those property owners who are approved for a decrease in the transitional buffer to have to increase the number of shrubs in the buffer. He added that for businesses, this would help block noise from nearby traffic. Mr. Holroyd expressed a desire to see this added to our existing ordinance on transitional buffers.

Mr. Shepperd questioned the adequacy of the current ordinance relative to the requirement of transitional/buffer space between a manufactured home park and a business.

When discussing the transitional buffer, Mr. Holroyd asked if shrubs are removed from a site during the development stage, should the property owner be required to replace and thicken the shrub line. Instead of one-on-one replacement he recommended an amendment to the Code that would require a denser vegetative replacement. In addition, he noted that should an applicant be approved for a reduction in a buffer, additional plants should be required for the

remaining buffer, which would also deter the audio and visible impact of adjacent traffic congestion.

Mr. Shepperd pointed out that, pursuant to sound engineers who have previously reported to the Board, you must have 200 feet of planted foliage to effectively buffer noise. He also questioned the adequacy of a 35-foot buffer between a manufactured home park and an adjacent business.

Chairman Roane closed this portion of the meeting and stated that the Board would resume the discussion soon.

RECESS

Chairman Roane called a brief recess at 7:15 p.m.; the work session reconvened at 7:22 p.m.

HOME-BASED BUSINESS UPDATE

Mr. Earl Anderson, Chief of Development Services, stated that the Board tabled this application at its June meeting to the September 17th Board meeting. He explained that he would provide the Home Base Business (HBB) Committee proposal, provide some information received from citizens, and then develop an understanding of how to prepare for the meeting in September, which will include a public hearing.

During his presentation, Mr. Anderson highlighted the following information:

- This application is for the Board to consider amendment to the Zoning Ordinance, Sections 24.1-280, *Home Occupations Permitted*, 24.1-281 *General Requirements for Home Occupations*, 24.1-282, *Home Occupations Permitted as a Matter of Right*, 24.1-283, *Home Occupations Permitted by Special Use Permit*, and 24.1-284, *Prohibited Home Occupations*.
- Home Use Classification as follows: 0.5 percent exempt, 4 percent clients on site, 17 percent consulting, processing paperwork, 79 percent wholesale, retail, online.
- In July 2018, the York County Chamber of Commerce asked the Board of Supervisors to review what they considered to be outdated home occupation regulations that have not evolved to meet citizens' needs. The Chamber noted that many existing and potential businesses operate without authorization because of the length of time required to go through the Special Use Permit process. They also offered a variety of recommended changes to the County Code to better accommodate home-based businesses.
- In response to the Chamber's concerns, the Board formed an ad hoc Home Based Business Committee to review the regulations related to these uses. The Board appointed six citizens to work with a Planning Commission representative as Chair and staff members from the Office of Economic Development (OED), the Zoning and Code Enforcement Office, and the Sheriff's Office. Staff support was provided by the Planning Division and the Zoning and Code Enforcement Office. The Committee started meeting in June 2019, first by reviewing the new home occupation environment and then delving into the County Code regulations.
- Since the Great Recession in 2008, according to the OED, there has been a shift in the workplace resulting from technological advances, the cost of doing business, and generational and cultural shifts toward a more entrepreneurial mindset. Additionally, people who work from home see the benefits of flexibility in schedules to help them better maintain a work-life balance and also to be able to choose the location where they would like to live and work. The Office of Economic Development noted that over two-thirds of the County's licensed businesses are home-based businesses and saw a greater demand to provide services for these businesses.
- The Committee worked with staff to craft changes to the Zoning Ordinance, which were completed in February 2020 and were being prepared for review by the Planning Commission when postponed due to the COVID-19 pandemic. On December 20, 2020, the Planning Commission reviewed and was supportive of the text amendments, only changing the wording for allowing heavy trucks to be allowed "on" a residential

DIVISION 4. LANDSCAPING, BUFFER, AND GREENBELT REGULATIONS

Sec. 24.1-240. Intent.

The following regulations are intended to establish minimum standards for landscape design and for the preservation of trees in order to better control soil erosion and the transport of sediment, protect and improve the quality of surface and groundwaters, screen noise and dust, and preserve, protect and enhance the natural and built environment.

The transitional buffer regulations established herein are intended to minimize potential conflicts between development on properties located in abutting zoning districts of differing intensities. The purpose of transitional buffers is to ensure that a natural area of appropriate size and density of plantings is located between potentially incompatible land uses.

The greenbelt regulations established herein are intended to implement the specific comprehensive plan designations of greenbelts.

(Ord. No. 03-42(R), 12-2-03)

Sec. 24.1-241. Landscape plan.

(a) A landscape plan shall be:

- (1) Required in conjunction with any development project requiring site plan or development plan approval;
- (2) Prepared and/or certified by a landscape architect, landscape nursery person, horticulturalist, or other design professional practicing within their area of competence; provided, however, that in the case of development proposals involving sites located on a secondary system roadway and classified IL or IG, the landscaping plan may be prepared by the property owner;
- (3) Shall cover the entire project area included in the overall site plan or development plan for which approval is sought.

(b) A landscape plan submitted to meet the requirements established by the provisions of this chapter shall include the following information and existing and proposed site landscape features:

- (1) Location and identification by size and name, both common and botanical, of all heritage, memorial or specimen trees in open areas on the site which are proposed to be disturbed. In wooded areas, the woodline before site preparation, average size, and predominant species of trees shall be noted, except that any heritage or memorial, within a wooded area proposed for clearing shall be individually located and identified by size and name, both botanical and common.
- (2) Existing vegetation to be saved shall be indicated and noted accurately if credits for tree preservation are being proposed or claimed.
- (3) Location, dimensions and area of all required buffer and landscape yards, including transitional areas.
- (4) Location and description of other proposed landscape improvements such as earth berms, walls, fences, or paved areas including notes and details to describe fully the methods and materials proposed.
- (5) Plant list or schedule to include common and botanical name, quantity, spacing and size at time of planting of all proposed plants.

-
- (6) Locations and labels of all proposed plants.
 - (7) Planting, installation details and tree protection details as necessary to ensure conformance with the standards in section 24.1-242.
 - (8) Schedules or lists showing required and proposed quantities for landscape items required by the zoning ordinance.
- (c) In preparing landscape plans the following factors shall be considered:
- (1) Location of trees, shrubs, groundcovers and other landscaping to utilize effectively the natural capacities of plant materials to intercept and absorb airborne and runoff-related pollutants and to reduce runoff volume, velocity and peak flow increases caused by development.
 - (2) Preservation and protection of existing viable and mature trees to the maximum extent feasible.
 - (3) Appropriateness of plants and locations for the specific characteristics of the site and the purpose for installation.
 - (4) A preference to designs and plant materials with reduced water needs.
 - (5) An emphasis on landscaping in front of the principal building on the site and on providing appropriate breaks in parking and vehicular areas.
- (d) No site or development plan required under the terms of this chapter shall receive final approval unless a landscaping plan has been submitted and approved.
- (e) No certificate of zoning compliance or certificate of occupancy may be issued unless the following criteria are fully satisfied with regard to the approved landscape plan:
- (1) Such plan has been implemented on the site; or
 - (2) Such plan, because of seasonal conditions, cannot be implemented immediately, but has been guaranteed by a postponed improvement agreement between the developer and the county in a form acceptable to the county attorney, and secured by a letter of credit, cash escrow or other instrument acceptable to the county attorney in an amount equal to the cost of such installation plus a reasonable allowance for estimated administrative costs, inflation and potential damage to existing vegetation or improvements (see sample agreement in Appendix B). An irrevocable fully executed contract with a landscape contractor or nursery providing for such installation shall be deemed to be a sufficient guarantee for the purposes of this section.

(Ord. No. 03-42(R), 12-2-03)

Sec. 24.1-242. Landscaping standards.

- (a) *Maintenance of landscaping and screening.* The property owner, or the owner's successors, shall be responsible for the maintenance of all landscaping, fencing, and screening materials required by this chapter or under the terms of other development approvals and shown on an approved landscape plan. Failure to maintain such landscaping, fencing and screening shall be deemed a violation of this chapter.
- (1) All plant material and planting areas required by this chapter or other development approval shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse, litter, and debris. The replacement provision for landscaping shall apply only to plants that were required to be installed or that were awarded preservation credits as part of the site plan approval process.
 - (2) All fences, walls, and screening required by this chapter shall be maintained in good repair.

-
- (3) In the event that any *required* landscaping material shown on the plan is subsequently replaced, the new material shall conform with the original approved landscape plan, or an approved amended plan, with respect to size and characteristics of the plantings. In meeting the terms of this section, the replacement of mature trees which were counted toward the original landscape compliance shall be with trees of a similar species and of a size that meets the standards for new installations.
- (b) *Source standards.* All plant materials installed on a site shall have been grown in conformance with the American Standard for Nursery Stock, provided however that the zoning administrator may approve, in writing, the transplanting of trees or shrubs when such transplanting is done in accordance with accepted horticultural and silvicultural practices.
- (c) *Standards for berms and earth forms.* All berms and earth forms required or otherwise proposed for use shall conform with the following standards (See Figure II-5 in Appendix A):
- (1) Design should include physical variations in height and alignment
 - (2) Landscape plant material installed on berms and earth forms should be arranged in an irregular pattern to accentuate variation and achieve a natural appearance.
 - (3) Location and design shall minimize disturbance to existing trees located on the site or adjacent thereto.
 - (4) Sight triangle provisions contained in this chapter and the subdivision ordinance shall be observed.
- (d) *Layout and design standards.* Except as may be otherwise required by this article, the following layout and design standards shall apply to all landscape plans:
- (1) All trees installed to meet the requirements of this chapter shall be comprised of a combination of tree types (e.g., deciduous shade, evergreen, flowering ornamental) unless otherwise specified. No more than fifty percent (50%) of the required trees shall be of one type (i.e., deciduous, evergreen), nor shall more than twenty-five percent (25%) of the required trees be of a single species.
 - (2) All trees installed to meet the requirements of this chapter should be dispersed throughout the required planting areas, should be planted with a combination of single and groups of trees in a staggered, clustered or other pattern designed to complement the building and site design and promote appropriate views and sight lines. Trees shall not be installed in a continuous single row except where necessary and appropriate to meet screening or transitional buffer requirements.
 - (3) Shrubs, perennials and ornamental grasses installed to meet the requirements of this chapter should be installed in groupings and integrated with trees.
 - (4) Existing vegetation which is suitable for use in the landscape shall be preserved and used as required plantings to the maximum extent practicable. In no case shall any viable mature, heritage, memorial, specimen or significant tree be removed from any buffer area or landscape preservation easement except to accommodate necessary entrances or utility service to the site which cannot be relocated in an appropriate manner or where such preservation would create or perpetuate demonstrable public health, safety, or welfare hazards.
 - (5) Impervious surface area should be limited to the minimum amount necessary to accommodate the desired development and ensure appropriate levels of parking, traffic safety, and on-site circulation. The zoning administrator may require plan modifications which reduce the amount of impervious surface area without inhibiting site development and operation.
 - (6) Modifications of the layout and design standards contained herein may be approved by the zoning administrator upon a determination that all of the following conditions exist.
 - a. The proposed layout and design furthers a readily discernible theme or complements the architectural style of the structures on site. The lining of an entrance road or driveway with trees of the same species in straight lines parallel to the road or driveway in an attempt to further a

colonial or antebellum theme expressed in the architecture of the buildings or the use of massed ornamental plantings to highlight or complement a unique architectural or natural feature are examples.

- b. The proposed layout and design provides landscaping which will have the same or similar screening impact, intensity, or variation throughout the year when viewed from adjacent properties or rights-of-way as that which would be required by strict interpretation of the standards contained in this subsection.
 - c. The proposed layout and design fully integrates and complements the existing trees to be preserved on the site.
- (7) Any trees or shrubs installed or preserved on the site which exceed the minimum numerical requirements of this chapter shall not be subject to the species mixture, locational, maintenance or replacement requirements contained herein.
- (e) *Tree protection standards.*
- (1) Trees which are to be preserved on site shall be protected before, during and after the development process utilizing accepted practices. At minimum, the tree protection practices set out in the Virginia Erosion and Sediment Control Handbook, Third Edition, 1992 shall be utilized.
 - (2) Trees selected for preservation in order to obtain landscaping credits shall be shown on the landscape plan and clearly marked in the field. In woodland areas, groups of trees shall be selected for preservation rather than single trees wherever possible.
 - (3) Trees and groups of trees which are to be preserved shall be enclosed by a temporary fence or barrier to be located and maintained five feet (5') outside of their dripline during construction. Such a fence or barrier shall be installed prior to clearing or construction, shall be sufficient to prevent intrusion into the fenced area during construction, and in no case shall materials, vehicles or equipment be stored or stockpiled within the enclosure. Within the fenced area, the topsoil layer shall not be disturbed except in accordance with accepted tree protection practices.
 - (4) The developer shall be responsible for notifying all construction personnel of the presence and purpose of clearing limits and protective fences or barriers and for ensuring that they are observed.
 - (5) Where grade changes in excess of six inches (6") from the existing natural grade level are necessary, permanent protective structures such as tree wells or walls shall be properly installed.
- (f) *Selection of trees for preservation.* In determining which trees shall be preserved during the development process, consideration shall be given to preserving trees which:
- (1) Are heritage, memorial, significant and specimen trees;
 - (2) Complement the project design including the enhancement of the architecture and streetscape appearance;
 - (3) Can tolerate environmental changes to be caused by development (i.e., increased sunlight, heat, wind and alteration of water regime);
 - (4) Have strong branching and rooting patterns;
 - (5) Are disease and insect resistant;
 - (6) Complement or do not conflict with stormwater management and Best Management Practice designs;
 - (7) Are located in required buffer areas;
 - (8) Exist in natural groupings, including islands of trees;

- (9) Do not conflict with necessary utility, structure, parking area, roadway or sidewalk placements;
 - (10) Have been recommended by the Virginia Department of Forestry, the York County Cooperative Extension Service or a qualified arborist or urban forester for preservation.
- (g) *Species standards.* All required landscape plant material proposed to be installed on the site shall be selected from the appropriate listing of recommended plant material contained in tables II-1 through II-7 in Appendix A and shall be of the minimum sizes noted provided, however, that alternative species may be used, upon certification by a certified landscape architect, landscape nurseryman or horticulturalist that said species have a rated hardiness and growth habit appropriate for the intended location. Particular attention shall be given to selecting trees and shrubs based on the area in which they will be installed (e.g., landscaped yards, parking areas, adjacent to buildings, etc.) and the lists contained in Appendix A will assist in the selection and review of a landscaping design. In addition, landscaping shall be selected and arranged with appropriate attention to future growth and maturity in order to accommodate visibility, safety and aesthetic considerations without need for future severe pruning or removal.

All landscaping required within this chapter shall conform with the following minimum size standards unless specifically modified by other provisions contained herein:

- (h) *Numerical standards:*
- (1) Unless a greater or lesser number or ratio is specified elsewhere in this chapter as it pertains to specific development types and forms, the following planting ratios shall be required (all fractional calculations shall be rounded up to the next highest whole number):

Planting Calculations	
Location	Landscape Credit Unit (LCU) Requirement (required credits per 100 linear feet measured at lot line or building face)
Front Yard	40 credits per 100 feet
Side Yard(s)	10 credits per 100 feet
Building Perimeter	15 credits per 100 feet
Parking Lot	15 credits per 10 spaces

In the case of front yards, side yards and parking lots, a minimum of 50% and a maximum of 75% of the landscaping credits must be earned from trees. In the case of building perimeters, a minimum of 25% and a maximum of 50% of the landscaping credits must be earned from trees. Ornamental grasses and perennials may be incorporated into the landscape design and shall be eligible for achieving up to 25% of the required/proposed shrubs credits.

- (2) Landscaping credits shall be awarded/earned based on the values established in the following table:

Landscape Credit Unit (LCU) Values			
New Planting	Deciduous (Minimum Caliper)	Evergreen or Ornamental (Minimum Height)	LCU value
Trees	3 inches	10 feet	9
	2.5 inches	9 feet	6
	2 inches	8 feet	5

	1.5 inches	6 feet	3
Shrub	18 inches height or spread		2
Ornamental Grasses or Perennial Beds	1 gallon size		1
Existing Tree	Minimum Caliper		LCU value
Mature	> 13 inches		15
Large	11 to 13 inches		12
Medium	6 to 10 inches		8
Small	3 to 5 inches		5

(Ord. No. 03-42(R), 12-2-03; Ord. No. 08-17(R), 3-17-09)

Sec. 24.1-243. Transitional buffers.

- (a) *Buffer types.* Transitional buffers of the following types shall be provided in the situations identified by the entries in the table contained in section 24.1-243(b) below. Where there is no entry for a particular combination of districts, no transitional buffer shall be required. The layout, design, and arrangement of the prescribed numbers and types of landscape materials shall be in accordance with the provisions of section 24.1-242 of this chapter. Plants shall be positioned to achieve the greatest benefit in terms of buffering the views of adjacent and potentially incompatible uses. The use of staggered double rows of plant materials is encouraged as a technique to achieve maximum screening benefits. Shrubs planted in the transitional buffer shall be of a type that will have a mature height of at least four (4) feet and when located within an existing or newly planted wooded area, shall be selected based on their suitability for shaded areas and any other growth-inhibiting characteristics of the subject area.
- (1) *Transitional Buffer Type 25:* shall consist of a strip of open space, a minimum of twenty-five feet (25') wide, landscaped with evergreen trees and shrubs to achieve a minimum of 0.75 landscape credits for every linear foot measured along the outside edge of the transitional buffer. A maximum of 70% of the landscape credits may be earned from shrubs.
 - (2) *Transitional Buffer Type 35:* shall consist of a strip of open space, a minimum of thirty-five feet (35') wide, landscaped with evergreen trees and shrubs to achieve a minimum of (1) landscape credit for every linear foot measured along the outside edge of the transitional buffer. A maximum of 70% of the landscape credits may be earned from shrubs.
 - (3) *Transitional Buffer Type 50:* shall consist of a strip of open space, a minimum of fifty feet (50') wide, landscaped with evergreen trees and shrubs to achieve a minimum of 1.25 landscape credits for every linear foot measured along the outside edge of the transitional buffer. A maximum of 50% of the landscape credits may be earned from shrubs.
 - (4) Upon specific written request, the zoning administrator may modify the landscaping requirements for transitional buffers which have been designed by a certified landscape architect in order to preserve mature trees, facilitate a clearly discernible development and planting theme, or complement the arrangement and type of surrounding landscaping provided, however, that the landscape architect must certify that the modified buffer will provide at least the equivalent buffering as would otherwise be required and that the buffering will be from landscape means (i.e., exclusive of fencing).

- (5) The zoning administrator may require supplementary fencing either temporarily or permanently in order to ensure that the appropriate degree of visual buffering and noise attenuation is achieved.

(b) *Transitional buffer provision matrix.* Transitional buffers shall be provided as follows:

TRANSITIONAL BUFFERS																
	RESIDENTIAL DISTRICTS									COMMERCIAL & INDUSTRIAL DISTRICTS						
	RC	RR	R33	R20	R13	R7	YVA	PD	RMF	NB	WCI	LB	GB	EO	IL	IG
RC	X									25	25	25	25	35	35	50
RR		X								25	25	35	35	35	35	50
R33			X							25	25	35	35	35	35	50
R20				X						25	25	35	35	35	50	50
R13					X					25	25	35	35	35	50	50
R7						X				25	25	35	35	35	50	50
YVA							X			25	25	25	35	35	50	50
PD								X		25	25	25	35	35	50	50
RMF									X	25	25	25	25	25	35	50
NB	25	25	25	25	25	25	25	25	25	X				25	35	50
WCI	25	25	25	25	25	25	25	25	25		X				35	50
LB	25	35	35	35	35	35	25	25	25			X			35	50
GB	25	35	35	35	35	35	35	35	25				X			35
EO	35	35	35	35	35	35	35	35	25	25				X		25
IL	35	35	35	50	50	50	50	50	35	35	35	35			X	25
IG	50	50	50	50	50	50	50	50	50	50	50	50	35	25	25	X

(c) *Buffer location standard.* Transitional buffers shall be installed along the zoning district lines at such time as any development or site modification requiring site plan approval on property abutting such district lines occurs. For the purposes of the following provisions, residentially-zoned property that has been subdivided into lots or that has an area of less than 2.5 times the minimum lot size for the district in which located shall be considered "developed" property, whether or not houses have been constructed on those lots. The location of transitional buffers shall be determined as follows:

- (1) Where both properties are currently undeveloped and one of the properties is residentially zoned, the buffer shall be established entirely on the residentially zoned property whenever it develops. In other situations where both properties are undeveloped, one-half (½) of the required transitional buffer shall be established on each of the parcels in the order in which developed. The width of the buffer on the respective properties may be modified by mutual agreement of the property owners involved as evidenced by a lawfully executed agreement(s) and easement(s) between the property owners specifying how the buffer is to be shared; such agreement(s) and easement(s) shall be recorded at the expense of the applicant in the name of the property owner(s) as grantor(s) in the office of the clerk of the circuit court. A landscape preservation easement shall be established over the area encompassed by the required buffer with the county and each property being granted rights under that easement.
- (2) Where one property has previously been lawfully developed, the required transitional buffer shall be provided entirely on the undeveloped property unless an agreement evidenced by a lawfully executed easement between the two property owners to share the buffer in a mutually agreeable manner is executed; such easement shall be recorded at the expense of the applicant in the name of the property

owners as grantors in the office of the clerk of the circuit court. In the latter case, the zoning administrator shall ensure that the required buffer is installed in an acceptable manner and that a landscape preservation easement is granted over the buffer areas to the county and each of the subject properties. When a commercially or industrially-zoned parcel occupied by a residential structure is being redeveloped for non-residential purposes and the parcel abuts a residentially-zoned parcel that is "developed" as defined above, the parcel zoned commercial or industrial shall be considered "undeveloped" and shall be responsible for the full buffer width unless an alternate agreement is reached by the abutting property owners.

- (3) Where the properties on both sides of the zoning line have been previously developed, but one is being redeveloped or otherwise modified to the extent that site plan review and approval is required, said property shall be responsible for providing $\frac{1}{2}$ of the normally required transitional buffer as part of the redevelopment/site modification plan. When the property being redeveloped is commercially or industrially-zoned and is occupied by a residential structure that is being converted to non-residential use or being demolished, and the parcel abuts a residentially-zoned parcel that is "developed" as defined above, the parcel zoned commercial or industrial shall be considered "undeveloped" and shall meet the buffer standards prescribed in subsection (2) above.

- (4) Where the zoning district line is defined by the centerline of a right-of-way, the transitional buffer shall be installed along the right-of-way line on the property having the higher zoning intensity.

(The chart in subsection (b) above lists the zoning districts in order of intensity from least intense at the top and left to most intense at the bottom and right.)

The zoning administrator may grant relief from these requirements as provided in subsection (f) of this section.

(d) *Design standards.*

- (1) Transitional buffers shall be continuous except where driveways or other breaks are necessary. To the extent possible, driveways should be curved in order to preserve the view obstructing qualities of the transitional buffer area. Multiple breaks of the transitional area shall not be permitted except to provide an efficient and safe site access and internal circulation pattern.
- (2) Transitional buffers shall not be used for accessory structures, storage, or off-street parking or loading.
- (3) Utility easements shall not be located within transitional buffers except those which cross the buffer at a right angle. Where the zoning administrator determines that a certain utility location or configuration which is essential conflicts with this standard, the administrator may, in writing, modify this requirement by imposing different standards to achieve an equivalent buffering effect.

(e) *Relationship between transitional buffer and other elements.* Transitional buffers shall relate to other required design elements as follows:

- (1) *Yard requirements and setbacks.* Where a transitional buffer is required along a property line, the minimum yard and setback along said property line shall be the greater of the yard and setback required for the particular zoning district or the width of the transitional buffer.
- (2) *Landscape yards.* Landscape yards may be incorporated into the transitional buffer and no additional landscaping above and beyond that required for the transitional buffer shall be necessary.

(f) *Modification of buffer standards.*

- (1) Where the zoning district boundary line which requires a transitional buffer follows a public street or highway right-of-way of less than ninety feet (90') in width, the following shall apply:
 - a. Where an industrial district abuts a residential district, the normally applicable transitional buffer shall be provided and may not be reduced or modified in any way;

-
- b. In any situation other than an industrial district abutting a residential district, the required transitional buffer may be reduced to one-half ($\frac{1}{2}$) the normally required width, or twenty feet (20'), whichever is greater. In such cases, the landscaping and design standards for the required transitional buffer yard may be modified to include appropriate trees and shrubs which visually screen all parking, loading, and storage areas, but not the buildings; however, in no case shall the planting ratio be less than that required for a Type 25 Buffer.
- (2) Where the zoning district boundary line which requires a transitional buffer follows a public street or highway right-of-way ninety feet (90') or greater in width, no transitional buffer shall be required.
- (3) Where adjacent properties of differing zoning intensities are being developed in a cohesive, planned and coordinated manner under the equivalent of a master development plan, the zoning administrator may waive or reduce any transitional buffer required along zoning district lines which are internal to the development.
- (4) Where the adjacent property giving rise to the need for a transitional buffer is under public ownership, is likely to remain under public ownership, and is managed for watershed purposes, the otherwise required transitional buffer shall be waived. Where the adjacent public land is managed as public park land, the zoning administrator may modify or waive the transitional buffer requirement consistent with the public interest in the park land.
- (5) Where property on which a transitional buffer is required has already been developed in a manner which precludes full implementation of these requirements, the zoning administrator may modify these requirements on a case-by-case basis to achieve as much of the desired buffering as is possible. In making such modifications, the zoning administrator may consider balancing the existing development with the needs of the community at large. Modifications could, for example, include the use of berms or increased numerical planting requirements in lieu of the otherwise required transitional buffer width.
- (6) Where the zoning district boundary along which a transitional buffer is required traverses environmentally sensitive land or water features, the zoning administrator may modify the location, layout, arrangement, and design in an appropriate manner which balances the buffering requirements with the environmental resources.
- (7) Where a properly engineered and designed landscaped berm is proposed to supplement the screening/buffering qualities of a required transitional buffer, the zoning administrator may authorize up to a 25% reduction in the required buffer width. Minimum heights for berms proposed for this purpose shall be as follows:
- Type 25 Buffer—Minimum Height: 2 feet
 - Type 35 Buffer—Minimum Height: 3 feet
 - Type 50 Buffer—Minimum Height: 4 feet
- (g) *Transitional buffers abutting properties in adjacent jurisdictions.* Where a commercial or industrial district abuts property in an adjacent locality which is in a residential zoning district and used as such, a transitional buffer shall be provided as if the abutting property were classified RC (resource conservation).

(Ord. No. 03-42(R), 12-2-03; Ord. No. 09-22(R), 10-20-09; Ord. No. 14-12, 6-17-14)

Sec. 24.1-244. Landscape yards.

- (a) All proposed new developments shall include landscape yards around the perimeter of the site and the buildings erected on the site in order to facilitate adequate control and management of stormwater runoff

and of non-point source pollution as well as to enhance the aesthetics of the project. In the case of expansions or redevelopment of existing development, perimeter landscape yards of the specified size, or as near to that size as determined practical by the zoning administrator, shall be provided on all sides of the site adjacent to such expansion or redevelopment.

- (1) The minimum dimensions of landscape yards around the site perimeter shall be twenty feet (20') for front yards and ten feet (10') for side and rear yards, to be measured from the lot line or, where drainage ditches or structures are located or are proposed to be located along lot lines, from the top or inside edge of the open ditch or structure. Landscape yards, as required herein, may include driveways providing access to other parcels in an effort to promote unified project design.
 - (2) The zoning administrator may approve the transfer of up to fifty percent (50%) of the required landscape yard located behind the rear of the principal building on the site to the area in front of the principal building on the site provided that all of the following conditions are met:
 - a. No remaining landscape yard shall be less than five feet (5') in width;
 - b. The total amount of landscaped open space on the site is not less than it would be without the transfer; and
 - c. No required transitional buffer is reduced.
 - (3) Landscape yards shall be landscaped with trees, shrubs, bushes, plant material and ground cover in accordance with the provisions of section 24.1-242 of this chapter. If transfers have occurred, the transferred area shall be landscaped in accordance with the requirements for the area from where it was transferred.
- (b) A landscaped open space strip a minimum of ten feet (10') in width shall be provided adjacent to and surrounding all buildings and shall be landscaped in accordance with the provisions of section 24.1-242 of this chapter. This open space strip may be bisected by necessary entrances to the building and may include bicycle accommodations and pedestrian sidewalks serving the entrances provided that no more than fifty percent (50%) of the open space strip may be comprised of impervious surfaces. In no case shall off-street parking be located within ten feet (10') of any building on the site.
- (1) That portion of this landscaped open space required at the rear of the principal building may be transferred to the perimeter landscape yard in order to provide additional screening and buffers for adjacent streets or developed properties.
 - (2) Where the proposed structure, by reason of its intended use and market orientation, requires vehicular access into the front, sides or rear of the building, the zoning administrator may approve the transfer of the required landscaped open area adjacent to the structure to the perimeter landscape yard in order to provide additional screening and buffers for adjacent streets or developed properties. At least fifty percent (50%) of the area transferred shall be transferred to that portion of the perimeter area located in front of the principal building on the site.
 - (2) If transfers have occurred, the transferred area shall be landscaped in accordance with the requirements for the area from where it was transferred.

(Ord. No. 03-42(R), 12-2-03)

Sec. 24.1-245. Greenbelts.

- (a) Greenbelts shall be provided contiguous to the street right-of-way along the following roads in accordance with the specified minimum widths:
 - (1) Bypass Road (Route 60)—35 feet

-
- (2) Denbigh Boulevard (Route 173)—35 feet
 - (3) Fort Eustis Boulevard (Route 105)—35 feet
 - (4) Hampton Highway (Route 134)—35 feet
 - (5) Merrimac Trail (Route 143) between I-64 at Exit 230 (Camp Peary/Colonial Williamsburg) and Queen Creek—45 feet
 - (6) Penniman Road (Route 641) between the Colonial Parkway and Route 199—45 feet
 - (7) Route 132—45 feet
 - (8) Route 199—45 feet
 - (9) Victory Boulevard (Route 171)—35 feet
 - (10) East Rochambeau Drive from Oaktree Road (west) intersection to Mooretown Road and from Mooretown Road to dead end—45 feet
 - (11) Mooretown Road from Lightfoot Road to a point 1,400 feet south of its intersection with Clark Lane—45 feet
 - (12) Mooretown Road from Airport Road to Waller Mill Road—45 feet
 - (13) Lightfoot Road from Route 60 to Rochambeau Drive (west)—45 feet, except where the parcel also has frontage on Route 199, in which case the Lightfoot Road greenbelt shall be 35 feet.
 - (14) Rochambeau Drive (west) from Lightfoot Road to James City County line—45 feet.
 - (15) Interstate 64—45 feet.

The 10-foot perimeter landscape strip normally required at the rear of buildings by Section 24.1-244(b) of this Chapter shall not be required on parcels subject to the 45-foot Greenbelt provision.

- (b) Along the Colonial Parkway, a greenbelt of no less than three hundred feet (300') from the nearest edge of the roadway shall be provided. This may include property owned by the National Park Service.
- (c) The greenbelt shall be left in an undisturbed natural state, unless the board, after conducting a duly advertised public hearing, authorizes clearing or development. Unvegetated or under-vegetated greenbelts shall be landscaped in accordance with the following planting requirements as if they were front yards:

35 foot Greenbelt 70 landscape credits per 100 linear feet

45 foot Greenbelt 90 landscape credits per 100 linear feet

Normally required front yard landscape credits may be counted toward these requirements. Nothing in this section however, shall be interpreted to preclude the following activities within greenbelts: (1) the planting of additional trees, shrubs or groundcovers, or the maintenance thereof; (2) the construction and maintenance of bicycle and pedestrian facilities; (3) the establishment, construction, and maintenance of necessary entrances to the site; (4) limited clearing of underbrush, nuisance plants, dead or diseased plants/trees, or limbs/understory necessary to provide reasonable sight lines to a commercial establishment; or (5) the installation of utilities necessary to serve the development provided that the crossing of the greenbelt minimizes disturbance to the greatest extent possible; or (6) the installation of signs which do not require disturbance of existing trees, except to the extent necessary to open limited sight lines for the signs. All of these may occur under the terms of an approved plan.

Where an existing or proposed utility easement greater than twenty (20) feet in width runs parallel to the right-of-way requiring the greenbelt, the required greenbelt dimension shall be increased by one (1) foot for every foot of easement width in excess of twenty (20) in order to ensure the availability of sufficient unencumbered greenbelt width for retention or placement of landscaping.

-
- (d) If approved, modifications shall preserve the feeling and sense of the natural character of the greenbelt as it currently exists and application for modifications shall contain pre-development and post development renderings. In the event the board approves disturbance of a greenbelt, it may require the area to be re-landscaped at the ratios specified for unvegetated buffers, or at such other ratios as it may deem appropriate. The cost of advertising and conducting public hearings to consider modifications shall be borne by the developer making the request.
 - (e) Greenbelts shall be open space that is owned and maintained by a property owners' association, conservation land trust, or equivalent entity. Alternatively, a landscape preservation easement granted to the county or an appropriate land trust may be utilized.
 - (f) Commercial properties fronting greenbelt roads shall be permitted to open limited sight lines which allow indirect views of buildings, but generally block views of parking. Such sight line clearing shall be shown on the landscape plan for the site which shall include both plan and perspective views.
 - (g) For purposes of calculating residential densities, the area encompassed by the greenbelt shall be considered as developable acreage in such computations.

(Ord. No. 098-18, 10-7-98; Ord. No. 03-42(R), 12-2-03; Ord. No. 05-13(R), 5-17-05; Ord. No. 09-22(R), 10-20-09; Ord. No. 10-24, 12-21-10)

Secs. 24.1-246—24.1-249. Reserved.

FIGURE II-6
STAGGERED PLANTING

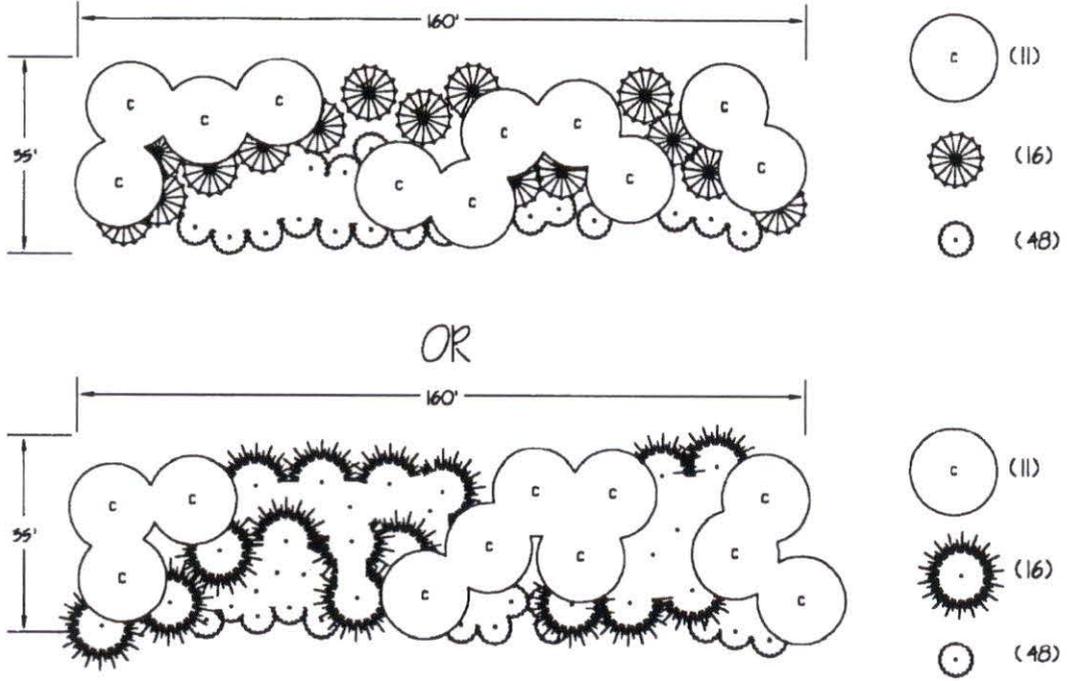
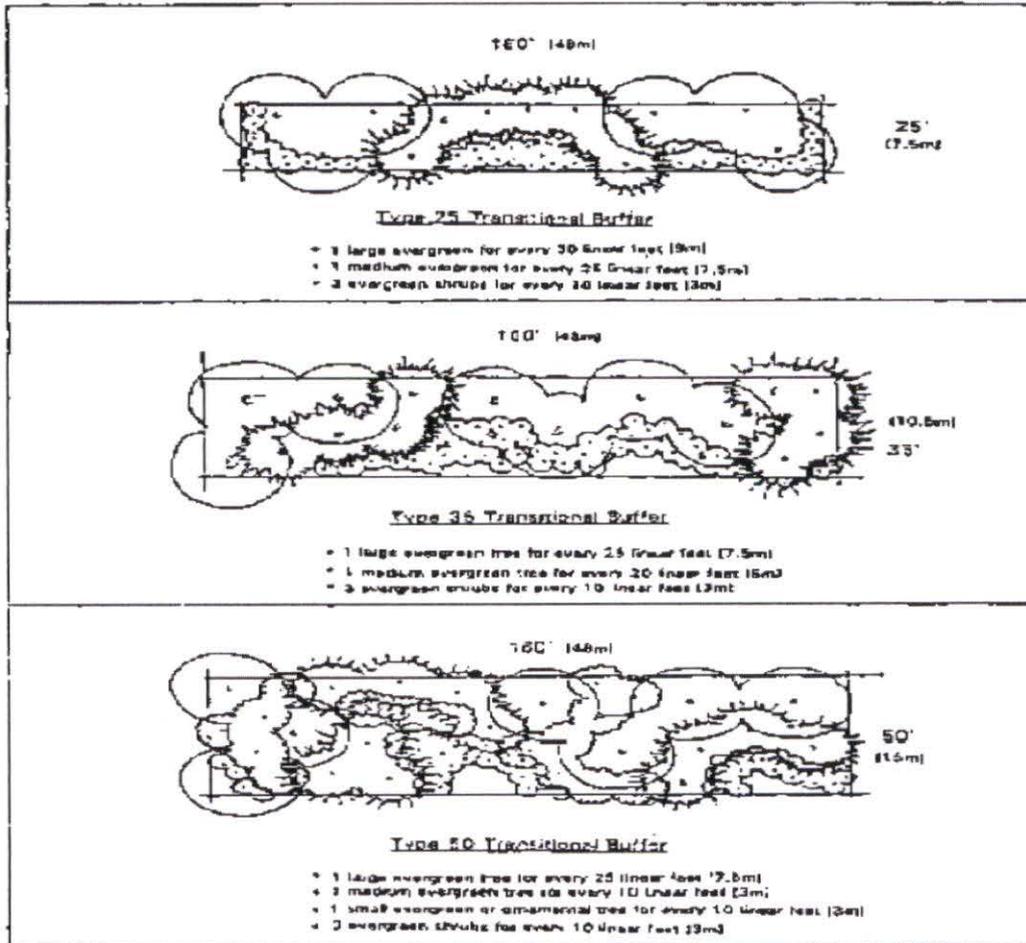


FIGURE II-7
TRANSITIONAL BUFFER ZONES



SCALE 1" = 40'

NOTES: These are schematic diagrams. Transitional buffers need not be designed exactly as depicted. Linear feet (meters) measurement is along the outside edge of the transitional buffer.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Evergreen Trees Botanical/Common Name	Projected 10-Year Cover Area (square feet)			Minimum Planting Area (square feet)	Uses/Placement					Environmental Tolerances					Problems						
	Height at Planting				Par	Scr	Sm	U	Ov	Rig	Re	Po	Par	Ful	W	Dr	Dis	Ins	W	Ob	Ob
	6'	8'	10'																		
Cedrus deodora/Deodar Cedar	75	100	125	50		X															
Chamaecyparis obtuse/Hinoki Cypress	75	100	125	50			X	X		X		X									
Cunninghamia lanceolata/China Fir	75	100	125	50		X															
Cupressocyparis Leyland/Leyland Cypress	75	100	125	50		X						X									
Ilex 'Nellie Stevens'/Nellie Stevens Holly	75	100	125	50		X						X									
Ilex opaca/American Holly	75	100	125	50		X			X			X									
Ilex X attenuata/Foster's Holly	75	100	125	50		X			X			X									
Juniperus virginiana/Eastern Red Cedar						X		X		X	X	X			X		X				
Juniperus chinensis 'Kaizuka'/Hollywood Juniper						X	X	X		X					X		X				
Magnolia grandiflora/Southern Magnolia	125	150	175	90		X						X								X	
Magnolia grandiflora 'Little Gem'/Little Gem Magnolia	75	100	125	50		X		X	X	X		X									
Myrica cerifera/Bayberry or Wax Myrtle (multi-trunk)						X	X	X	X		X		X				X				
Pinus taeda/Loblolly Pine	150	200	250	130							X	X			X				X		
Pinus thunbergiana/Japanese Black Pine	60	80	100	50		X	X	X	X	X	X				X						
Quercus virginiana/Live Oak									X			X									
Thuja occidentalis/Arborvitae	75	100	125	50		X	X	X		X	X										
Thuja orientalis/Oriental Arborvitae	75	100	125	50		X	X	X		X	X										

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Small Deciduous Trees Botanical/Common Name	Projected 10-Year Cover Area (square feet)			Minimum Planting Area (square feet)	Uses/Placement					Environmental Tolerances					Problems							
	Height at Planting				X	Par	Scr	Sm	U	Ov	RIG	Re	Po	Par	Ful	W	Dr	Dis	Ins	W	Ob	Ob
	1.5"	2"	3"																			
Acer ginnala/Amur Maple	60	80	100	60		X	X	X	X		X	X	X		X							
Acer palmatum/Japanese Maple	60	80	100	60		X	X	X		X		X										
Amelanchier arborea/Serviceberry	100	125	150	60		X	X	X		X		X	X			X	X					
Cercis canadensis/Eastern Redbud	150	175	200	50		X	X	X		X	X	X	X			X						
Chionanthus virginicus/White Fringe Tree	80	100	120	60		X	X	X		X		X										
Crataegus viridis 'Winter King'/Green Hawthorn	150	175	200	100	X	X	X	X	X	X					X	X	X					
Koelreturia paniculata/Goldenraintree	150	175	200	100	X	X	X	X	X	X					X							
Lagerstroemia indica/Crape Myrtle	150	175	200	100	X	X	X	X	X	X	X			X	X							
Magnolia stellata/Star Magnolia	100	120	150	60		X	X	X		X												
Magnolia x soulangeana/Saucer Magnolia	150	175	200	60		X	X	X		X												
Magnolia virginiana/Sweetbay Magnolia	100	125	150	60		X	X	X		X		X		X								
Malus sp./Crabapple	150	175	200	100		X	X	X	X	X					X	X	X	X				
Prunus cerasifera/Flowering Plum	100	125	150	100	X	X	X	X	X	X						X	X	X				
Prunus serrulata/Kwanzan Cherry	150	175	200	100	X	X	X	X	X	X					X	X	X					
Prunus subhirtella/Higan Cherry	150	175	200	100		X		X	X						X	X	X					
Prunus x yedoensis/Yoshino Cherry	150	175	200	100	X	X	X	X	X	X					X	X	X					

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Medium Deciduous Trees Botanical/Common Name	Projected 10-Year Cover Area (square feet)			Minimum Planting Area (square feet)	Uses/Placement					Environmental Tolerances					Problems						
	Height at Planting				X	X	Scr	Sm	Ov	Rig	Re	Po	Par	Ful	W	Dr	Dis	Ins	W	Ob	Ob
	1.5"	2"	3"																		
Betula nigra/River Birch	150	175	100	X	X								X								
Ginkgo biloba/Ginkgo (male variety)	150	175	100		X			X		X				X		X					
Pyrus calleryana/Callery Pear	150	175	100	X	X			X		X				X			X				

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Large Deciduous Trees Botanical/Common Name	Projected 10-Year Cover Area (square feet)			Minimum Planting Area (square feet)	Uses/Placement					Environmental Tolerances					Problems						
	Height at Planting				Par	Scr	Sm	H	Ov	Rig	Re	Po	Par	Ful	W	Dr	Dis	Ins	W	Ob	Ob
	1.5"	2"	3"																		
Acer platanoides/Norway Maple	275	300	180		X			X		X	X					X				X	
Acer rubrum/Red Maple	275	300	180	X	X			X		X	X		X			X				X	
Acer saccharum/Sugar Maple	275	300	180		X			X		X	X					X				X	
Fraxinus pennsylvanica/Green Ash (Marshall's Seedless)	275	300	180	X	X			X		X			X								
Liquidambar styraciflua 'Rotundiloba'/Fruitless Sweetgum	275	300	180	X	X			X		X			X			X					
Metasequoia glyptostroboides/Dawn Redwood	275	300	180		X			X		X			X							X	
Nyssa sylvatica/Black Gum	275	300	180		X			X			X		X			X					
Platanus x acerifolia/London Planetree	275	300	180		X									X	X	X					
Quercus acutissima/Sawtooth Oak	275	300	180		X			X													
Quercus coccinea/Scarlet Oak	275	300	180	X	X			X			X										
Quercus phellos/Willow Oak	275	300	180	X	X			X		X				X							
Taxodium distichum/Baldcypress	275	300	180		X			X		X			X							X	
Tilia cordata/Littleleaf Linden	275	300	180	X	X			X			X					X					
Ulmus parvifolia/Chinese Elm	275	300	180		X			X		X	X										
Zelkova serrata/Zelkova	275	300	180	X	X			X		X				X							

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Evergreen Shrubs Botanical/Common Name	Projected 10-Year Cover Area (square feet)		Minimum Planting Area (square feet)	Uses/Placement					Environmental Tolerances						Problems			
	Height at Planting	18"		Par	Ge	Sm	all	En	Scr	Re	Po	Par	Ful	W	Dr	Ful	Dis	Ins
			18"															
Abelia grandiflora/Glossy Abelia	25		9	X	X				X	X			X	X	X			
Aucuba japonica/Japanese Aucuba	20		9	X	X					X	X					X		
Berberis julianae/Wintergreen Barberry	20		9	X	X				X				X	X	X			
Buxus sempervirens/American Boxwood	6		4			X		X		X	X							
Buxus microphylla/Wintergreen Boxwood	6		4			X		X		X	X							
Camellia japonica/Spring Blooming Camellia	25		9							X	X							
Camellia sasanqua/Fall Blooming Camellia	25		9							X	X							
Chamaecyparis pisifera/Cypress	16		6		X		X		X				X	X				
Cleyera japonica/Japanese Cleyera	25		9	X	X		X		X	X			X	X	X			
Cotoneaster salicifolius/Willowleaf Cotoneaster	9		6		X	X		X	X	X			X	X	X			
Cytisus scoparius/Scotchbroom	16		6		X				X	X			X	X	X			
Elaeagnus angustifolia/Russian Olive	36		12	X	X		X		X				X	X	X			
Euonymus fortunei/Wintercreeper Euonymous	6		3		X	X	X		X	X	X	X	X	X	X	X	X	
Euonymus radicans/Radicans Euonymus	6		3		X	X	X		X	X	X	X	X	X	X	X	X	
Ilex cornuta 'Burfordii'/Burford Holly	36		12	X	X		X		X	X	X		X	X	X			
Ilex cornuta 'Burfordii Nana'/Dwarf Burford Holly	25		9	X	X		X		X	X	X		X	X	X			
Ilex cornuta 'Carissa'/Carissa Holly	16		6		X	X	X		X	X	X	X	X	X	X			
Ilex crenata 'Compacta'/Compacta Holly	9		6		X	X	X		X		X		X	X				
Ilex crenata 'Helleri'/Helleri Holly	9		6		X	X	X		X		X		X	X				
Ilex crenata 'Nigra'/Nigra Holly	9		6	X	X			X		X			X	X				
Ilex glabra/Inkberry	16		6	X	X			X		X	X		X	X				
Abelia grandiflora/Glossy Abelia	25		9	X	X				X	X			X	X	X			
Aucuba japonica/Japanese Aucuba	20		9	X	X					X	X					X		

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Berberis julianae/Wintergreen Barberry	20		9	X	X					X				X	X	X	
Buxus sempervirens/American Boxwood	6		4			X			X		X	X					
Buxus microphylla/Wintergreen Boxwood	6		4			X			X		X	X					
Camellia japonica/Spring Blooming Camellia	25		9								X	X					
Camellia sasanqua/Fall Blooming Camellia	25		9								X	X					
Chamaecyparis pisifera/Cypress	16		6		X		X			X				X	X		
Cleyera japonica/Japanese Cleyera	25		9	X	X			X		X	X			X	X	X	
Cotoneaster salicifolius/Willowleaf Cotoneaster	9		6		X	X			X	X	X			X	X	X	
Cytisus scoparius/Scotchbroom	16		6		X					X	X			X	X	X	
Elaeagnus angustifolia/Russian Olive	36		12	X	X			X		X				X	X	X	
Euonymus fortunei/Wintercreeper Euonymous	6		3		X	X	X		X	X	X	X		X	X	X	X
Euonymus radicans/Radicans Euonymus	6		3		X	X	X		X	X	X	X		X	X	X	X
Ilex cornuta 'Burfordii'/Burford Holly	36		12	X	X			X		X	X	X		X	X	X	
Ilex cornuta 'Burfordii Nana'/Dwarf Burford Holly	25		9	X	X			X		X	X	X		X	X	X	
Ilex cornuta 'Carissa'/Carissa Holly	16		6		X	X	X		X	X	X	X		X	X	X	
Ilex crenata 'Compacta'/Compacta Holly	9		6		X	X	X		X		X			X	X		
Ilex crenata 'Helleri'/Helleri Holly	9		6		X	X	X		X		X			X	X		
Ilex crenata 'Nigra'/Nigra Holly	9		6	X	X				X		X			X	X		
Ilex glabra/Inkberry	16		6	X	X				X		X	X		X	X		

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Deciduous Shrubs Botanical/Common Name	Projected 10-Year Cover Area (square feet)		Minimum Planting Area (square feet)	Uses/Placement						Environmental Tolerances						Problems		
	18"			Par	Li	Ge	Sm	En	Scr	Re	Po	Par	Ful	W	Dr	Ful	Dis	Ins
Azalea calendulaceae/Flame Azalea	16		9	X						X	X				X	X		
Azalea nudiflorum/Pinxter Bloom	16		9	X						X	X				X	X		
Berberis thunbergii/Japanese Barberry	25		12	X	X	X	X		X				X	X				
Buddleia davidii/Butterfly-Bush	25		12	X			X		X				X	X				
Chaenomeles lagenaria/Japanese Flowering Quince	25		12	X										X	X			
Clethra alnifolia/Sweet Pepperbush	25		12	X	X					X		X		X				
Cornus sericea/Redosier Dogwood	25		12	X	X		X		X	X				X				
Cotoneaster/Cotoneaster	16		9	X	X	X		X	X	X				X				
Deutzia gracilis/Slender Deutzia	9		4	X	X	X		X	X	X				X				
Euonymus alatus 'Compacta'/Burning Bush	25		12	X	X		X		X	X				X				
Forsythia intermedia/Forsythia	25		12	X	X		X		X					X				
Hamamelis mollis/Chinese Witch-Hazel	36		15	X			X		X	X				X				
Hamamelis vernalis/Vernal Witch-Hazel	36		15	X			X		X	X				X				
Hibiscus syriacus hybrids/Rose of Sharon	25		12	X			X		X					X				
Hydrangea macrophylla/Bigleaf Hydrangea	16		9	X						X	X							
Hydrangea querifolia/Oakleaf Hydrangea	16		9	X						X	X							
Hypericum/St. Johnswort	9		4	X	X	X		X	X					X				
Ilex verticillata/Winter Berry	25		12	X			X		X					X				
Itea virginica/Virginia Sweetspire	25		12	X	X		X		X	X		X		X				
Spiraea japonica/Japanese Spirea	16		9	X	X	X		X	X					X				
Spiraea prunifolia/Double Bridal Wreath	25		12	X	X		X		X	X				X				
Spiraea x bumalda/Bumald Spirea	16		9	X	X	X		X	X					X				
Viburnum carlesii/Koreanspice Viburnum	25		12	X	X		X			X	X							
Viburnum plicatum/Doublelife Viburnum	36		12	X	X		X			X	X							
Viburnum tinus/Tinus Viburnum	25		12	X	X		X			X	X							
Weigelia florida/Weigelia	25		12	X			X		X	X				X				

APPENDIX A DIAGRAMS, TABLES AND FIGURES

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Perennials and Ornamental Grasses Botanical/Common Name	Projected 3-Year Cover Area (square feet)		Minimum Planting Area		Uses/Placement							Environmental Tolerances							Problems	
	1 gal.		S.F.	Height (feet)	Park	Gene	Small	Arboreal	End	Island	Screen	Restrict	Poor	Partial	Full	Wet	Drought	Full	Disease	Insect
Perennials:																				
Achillea/Yarrow	4		4	2		X	X	X			X					X	X			
Astilbe arendsii/False Spirea	2		3	2		X	X				X		X	X						
Caryopteris x clandonensis/Blue Mist Spirea	4		6	2		X	X	X			X					X	X			
Coreopsis grandiflora/Coreopsis	2		4	1.5		X	X	X			X	X				X	X			
Coreopsis verticillata/Coreopsis	2		4	1.5		X	X	X			X					X	X			
Dianthus gratianopolitanus 'Baths Pink'/Bath's Cheddar Pink	3		4	1		X	X	X			X					X	X			
Dryopteris erythrosora/Autumn Fern	2		3	2		X	X				X		X	X	X					
Echinacea purpurea/Purple Coneflower	2		3	2		X	X	X			X		X					X		
Eupatorium/Joe Pye Weed	4		6	5	X	X					X	X	X		X			X		
Gaillardia grandiflora/Blanket Flower	3		4	1		X	X	X			X	X				X	X			
Heliopsis helianthoides/False Sunflower	4		6	3		X					X	X						X		
Hemerocallis/Daylily	2		4			X	X	X			X	X	X		X	X	X			
Hosta/Hosta	3		4	3		X	X				X		X	X	X					
Iberis sempervirens/Candytuft	2		3	1		X	X				X							X		
Iris ensata/Japanese Iris	3		4	3		X	X				X		X		X			X		
Lavandula angustifolia/Lavender	3		4	1.5		X	X	X			X					X	X			
Perovskia atriplicifolia/Russian Sage	4		6	3		X	X	X			X					X	X			
Rudbeckia fulgida/Black-eyed Susan	4		6	2.5		X	X	X			X	X	X		X	X	X			
Salvia x superba/Perennial Salvia	3		4	2		X	X	X			X					X	X			
Scabiosa columbaria/Pincushion Flower	2		4	1		X	X	X			X					X	X			
Sedum spectabile 'Autumn Joy'/Autumn Joy Sedum	4		6	3		X	X	X			X	X	X		X	X	X			
Stachys byzantina/Lambs Ear	4		6	1		X	X	X			X	X				X	X			
Verbena canadensis/Verbena	6		6	1		X	X	X			X	X				X	X			
Veronica spicata/Speedwell	2		3	1		X	X	X			X					X	X			

APPENDIX A DIAGRAMS, TABLES AND FIGURES

Veronica x 'Sunny Border Blue'/Veronica 'Sunny Border Blue'	2			3	2		X	X	X		X						X		
Ornamental Grasses:																			
Calamagrostis acutiflora/Feather Reed Grass	6			9	5		X	X			X	X				X		X	
Chasmanthium latifolium/Northern Sea Oats	6			9	4		X	X			X		X						
Cortaderia selloana/Pampas Grass	9			12	6		X	X			X	X					X	X	
Liriope muscari/Liriope	3			4	1		X	X	X		X	X	X	X	X	X	X	X	
Miscanthus sinensis/Maiden Grass	9			12	5		X	X			X	X					X	X	
Miscanthus purpurascens/Miscanthus	9			12	5		X	X			X	X					X	X	
Muhlenbergia capillaris/Pink Hair Grass	6			9	3		X		X		X							X	
Ophiopogon japonicus	2			3	.5		X	X	X		X	X	X	X				X	
Panicum virgatum/Switch Grass	6			9	5		X	X			X	X						X	
Pennisetum alopecuroides/Fountain Grass	6			9	3		X	X	X		X	X	X					X	X
Phalaris arundinacea/Ribbon Grass	4			6	3		X	X	X		X						X		X

This chart may be revised from time to time by the Zoning Administrator to add or delete species or to update other information based on consultation with the Cooperative Extension Agent and/or landscape professionals.