

PLANTING/ LANDSCAPE MANUAL

~ Draft ~

Anne Arundel County, Maryland

Adopted by Bill No. __-06
_____, 2006, and as Amended

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I. INTRODUCTION

The County Council approved Anne Arundel County's first landscaping requirements on October 4, 1982 (Bill No. 129-82). In response, the Office of Planning and Zoning developed the County's first Landscape Manual in 1982. Since the 1982 appearance of a County Landscape Manual, there have been numerous changes to subdivision and zoning regulations, in addition to the Maryland's Forest Conservation Act of 1993, which prompted changes to County law.

The first reference to the Landscape Manual in County law was in 1996 (Bill 70-96). The County Council has since directed the Office of Planning and Zoning to revise the Landscape Manual and submit it to the Council for adoption by ordinance (Bill No. 76-99).

With the enactment of new comprehensive **Subdivision and Development** and **Zoning** articles in 2005, the Council once again directed the Office of Planning and Zoning and the Office of Law to submit for its review and enactment a revised Landscape Manual. This Manual is the result.

This update has been prepared to bring the Landscape Manual (hereinafter, "Manual") into conformance with current law and practice.

II. GOALS and OBJECTIVES

Goal and Objectives

Landscapes in Anne Arundel County range from rural forest and pastures, to residential developments of varying densities, some bordered by commercial corridors, to urban streetscapes and business complexes. Institutions such as hospitals, colleges, schools, and religious facilities contribute attractive estate-like landscapes that generate a sense of spaciousness to their communities. It is the goal of this Manual to reflect the purpose of landscape in relation to environmental quality, rural development, community conservation efforts, and economic enhancement in commercial areas.

A. Goal

Landscape elements should be used for land development in an organized and harmonious fashion that will enhance the physical environment of Anne Arundel County for the benefit and enjoyment of its citizens. Landscaping should be used to:

- improve environmental quality and protect existing vegetation
- preserve rural character and safeguard natural landscapes
- contribute to the stability of the neighborhoods
- enhance neighborhood security and property values
- foster the economic vitality of commercial development

Environmental Quality

Development is subject to various environmental regulations: forest conservation, storm water management, sediment and erosion control, stream/forest buffers and critical areas. Where the Forest Conservation Act or other environmental regulations achieve the goal of protecting natural resources, this Manual does not impose overlapping regulations. However, Landscape Manual requirements may be used to satisfy Forest Conservation Act requirements as defined herein. The Manual provides for appropriate screening and transitions between the buildable areas and the undeveloped areas.

It is the goal of Anne Arundel County to safeguard the purity of its air resources and to control detrimental impacts from air pollutants upon public health, property, environmental resources, and climate. In conjunction with the County's forest program and regulations, the Manual encourages the retention and the planting of trees that help reduce greenhouse gases and ambient air pollution. Especially in urban areas where small stands of trees do not qualify as forest, the Manual is a tool for implementing the County's policies of goals of controlling air pollution and improving the comfort and safety of the built environment. Wooded and landscaped areas also enhance cooling and sheltering of buildings and increase habitat diversity.

Preservation of Rural Character

The rural landscape of much of Anne Arundel County represents a precious heritage containing some of the oldest cultivated terrain and most historically significant places in North America. The site layout and landscape patterns of new development should incorporate design principles that will help retain the essential visual, spatial and environmental qualities of the traditional landscape. Natural landscapes should be treated with sensitivity and respect.

Community Conservation

Development since the 1970's has generally provided heterogeneous housing types. These must fit into existing neighborhoods with varied contexts. New development should use recognizable landscape styles or themes that identify the unique character of the existing neighborhood. New landscape designs should complement and enhance the neighborhood. Infill projects should provide appropriate landscape transitions between new and existing structures, drives and parking areas.

Neighborhood Security

Landscape design must be sensitive to public safety concerns and the perception of a comfortable and safe environment. Neighborhood security is built on the ability of people to feel responsible and in control of their surroundings. Landscape design must allow surveillance of private and public properties, open spaces, and roadways that make up neighborhoods. Design and maintenance of planting and lighting play important roles in providing a secure neighborhood environment. Landscape areas in residential and commercial developments should be maintained and kept free from refuse and debris to present a healthy and prosperous appearance.

Commercial Image

The County's older communities are largely built-out and have well-established physical and social structures. They are often characterized by traditional homes, tree-lined streets and an interconnected road network. Commercial areas are often an integral part of older communities and have a strong impact on the viability and public perception of the neighborhood. Commercial corridors provide the main travel ways that connect people from work, schools and shopping to their homes. Commercial areas on travel ways must be clean, well maintained, comfortable and appealing to passersby in order to reflect positively on adjacent residential areas. The landscape treatment of commercial development plays an important role in expressing the economic vitality of commercial corridors and securing the stability of adjoining neighborhoods.

B. Objectives

Landscape is an essential element of site design. Basic planning principles to address image, circulation, open space, and recreation must be employed if the objectives are to be accomplished.

The objectives of this Manual are summarized as follows:

1. Provide landscape design that is functional, aesthetically beneficial, cost-effective and environmentally sensitive.
2. Foster site design that preserves natural vegetation and landforms. Preservation of existing trees and vegetation, regardless of size, should be incorporated whenever possible. Preserve trees or vegetation, which have special character due to size, age, habit or historical importance.
3. Articulate spatial relationships and provide image and structure to the built environment.
4. Mix a variety of plant material due to possible insect infestation that potentially could destroy a significant portion of a particular species.
5. Complement the built environment through planting that reduces soil erosion, establishes comfort zones and windbreaks, provides visual screens and buffers, reduces glare, noise, and heat, and provides shade.
6. Integrate aesthetic qualities of landscape elements including form, size, texture, and color into the landscape. Existing and proposed topography and landforms should be used to accent, screen and direct landscape compositions. Grading, earth berms, and plants may be used to define outdoor spaces and create vehicular and pedestrian circulation patterns. Plants are used to modify climate by reducing solar radiation and creating cooler temperatures by shading the sun. Plants also can be used to modify wind direction by blocking winter winds and enhancing summer breezes, controlling soil erosion, and establishing wildlife cover by providing cover and food for birds and other wildlife.
7. Landscape plans must include a comprehensive approach to provide site unity and harmony with site elements and landscape plantings. Contrast, repetition, and focal points are among the many principles used to create integrated and unified planting plans. Planting guidelines are as follows:
 - Large deciduous trees provide unity, character, and identity for residential development as well as a human scale for non-residential neighborhoods. Street trees perform basically the same function but have specific relationship to the street by defining and unifying the streetscape.
 - Ornamental trees provide an understory canopy for overhead major deciduous trees. They provide color, scale, and definition to smaller spaces by accenting and transitioning the landscape into architectural elements.
 - Evergreen trees are used to screen and define spaces and control views. They provide winter interest, accent, definition and transition with a variety of form and color that soften inorganic landscape elements.

- Shrubs, perennials, ornamental grasses, and turfgrass define landscape spaces and direct pedestrian traffic. They should be massed in mulched beds to provide color, variety, and accent, or control erosion.
8. Landscape design criteria includes principles and standards such as, groups of informal plantings to mimic natural landscapes, compatibility of built structures with plant materials, year round effect for screening materials, plant selection with appropriate rate of growth, minimal maintenance requirements, and tolerant of site conditions such as, sun, wind, drought, glare, reflected heat, salt and chemicals.
 9. Landscape elements such as fences, walls, earth berms, and evergreen plantings must be carefully placed in the landscape to avoid obstruction of views and prevent restricting light and air.
 10. Environmental features, such as floodplains, wetlands, and steep slopes should be left in their natural condition as much as possible. Grading should follow the original topography to minimize disturbance of existing vegetation. Avoid compaction and development within critical root zone of trees.
 11. Preserve the integrity of historic properties by designing development on adjacent properties to minimize visual impact and maintain original context.
 12. Through creative and sensitive application of many related elements, the landscape architect and other design professionals can effect a successful integration of architectural and landscape elements. A thorough understanding of these elements and their effective application will result in a positive addition to the community as well as pleasant individual experiences for the citizens of the area.

III. GENERAL STANDARDS

General Standards

A. Generation of Plant Quantities

Minimum required plant quantities shall be based on Planting Units. The use of Planting Units allows more creative planting design, and encourages use of a greater variety of plant types. Sizes shall be in accordance with American Association of Nurserymen (AAN) standards.

1. One Planting Unit equals:

- one major deciduous shade tree 2 - 2 ½ inches in caliper at installation and 3 shrubs or;
- two minor deciduous trees 1 1/2 to 1 3/4 inches in caliper at installation and 5 shrubs or;
- two evergreen trees, 6 feet in height at installation

Tree caliper shall be measured at a distance of 6 inches above the root ball for trees 4 inches or less in caliper.

Evergreen trees shall adequately screen the level of visibility and height required for the screening affect. Shrubs shall be minimum of 60 percent evergreen depending on intended purpose.

Shrubs shall be 24 – 36 inches in height at installation; or

*500 square feet of groundcover (not turfgrass) at a minimum of 6 inches on center spacing or at recommended AAN standards; or

*ten herbaceous perennial plants at 1-gallon size; or twenty herbaceous perennial plants at one-quart size

*(*may only be used to meet Class D screening)*

Expected growth of herbaceous perennial plants is 24 inches within one year, contained within a single mulched bed. Herbaceous perennials may only be substituted for shrubs as noted below and where conditions limit shrub planting.

B. Screening

1. General Requirements

Screening is required to diminish the impact of undesirable views and mitigate the visual conflict and other effects (noise, fumes, and light spillover) of adjacent dissimilar land uses. Screening will consist of: trees and shrubs; fences; earth berms in conjunction with planting materials; or solid brick or split-faced block walls. The degree of intensity of adjacent land uses and width of landscape plantings available as a buffer will dictate the height, density, opacity, and landscape elements required.

EXHIBIT 1

Planting Unit Detail (Typical)

EXHIBIT 2

Screening Types (Typical)

Screening is required for commercial uses adjacent to commercial, industrial, and residential zones or uses, dumpsters, storage and loading areas, service lanes, parking lots, and other conditions as listed in this Manual.

A minimum 10-foot wide landscape buffer is required to provide screen planting unless otherwise stated in this Manual.

All green areas shall be designed and improved to enhance pedestrian circulation areas and to provide effective buffers and visual relief between roadways, parking, and buildings in accordance with the requirements of this “Manual”.

2. Screen Types

a. “Class A”

(1) The function of "Class A" is to provide a visual screen to provide the needed level of height, density and opacity, depending on site conditions. The screen may range from a solid linear screen of evergreen trees, where maximum opacity is needed, to a loosely staggered screen, where a filtered view is appropriate. A combination of major deciduous trees, minor deciduous trees, evergreen trees and shrubs may be used.

(2) A six-foot high opaque fence or wall combined with shade trees shall be required where the spread (12 feet or greater) of an evergreen tree would interfere with the proposed use of the site.

(3) **Minimum width of planting area shall be 15 feet with planting units generated at one (1) Planting Unit per 15 linear feet of the area to be screened.**

b. "Class B"

(1) The function of "Class B" is to partially screen while maintaining views into the site in areas such as parking lots and service lanes.

(2) Plants must provide a minimum three-foot high year-round visual screen at maturity.

(3) A three-foot high solid fence, wall, or earth berm shall be required in conjunction with planting screen where planting cannot be accommodated or would cause maintenance problems.

(4) **Minimum width of planting area shall be 15 feet with planting units generated at one planting unit per 15 linear feet of the area to be screened.**

c. "Class C"

(1) The function of "Class C" is to provide maximum screening between intensive uses, such as automobile uses, and other commercial, and industrial uses and adjacent residential property at a density that restricts pedestrian movement.

(2) In addition to the required plantings, a six-foot high earth berm, masonry wall, board-on-board fence, or sound barrier wall shall be required.

(3) **Minimum width of planting area shall be 15 feet at one Planting Unit per 10 linear feet of the area to be buffered.**

d. "Class D"

(1) The function of "Class D" is to provide low level planting to give visual relief from paved areas while maintaining views of interior functions, such as automobile display areas. Street trees combined with a "Class D" screen provide continuity of streetscape. Mature planting shall be a minimum of 24 inches in height, measured from the top of curb of the adjacent road. A combination of mature (two years after planting) plant height and earth berm height may be used to achieve the minimum height. Herbaceous perennial plants may be used to achieve required height..

(2) "Class D" screen may also be satisfied by increasing the landscape setback to 15 feet and providing a 24-36 inch minimum height grassed berm along the length of the planting area.

(3) **Minimum width of planting area shall be 15 feet at one Planting Unit per 10 linear feet of planting area adjacent to the public right-of-way or adjacent property.**

e. Fence Specifications

(1) For board-on-board fences, the minimum frame size shall be 2x4 and minimum post 4x4

(2) Fences or walls should be constructed of durable, low maintenance materials coordinated with the materials used on building facades.

(3) Fencing and/or walls should usually be placed on the inside edge of the landscape strip with planting on the residential or street side of the fence or, in wider buffers, placed to allow planting on both sides of the fence. Fencing shall be located at the grade elevation that best maximizes screening.

(4) Monotonous stretches of a single fence type may be attenuated by changes in height, material, offsets, or other articulation. Planting shall be spaced at a minimum of every 30' to relieve monotony.

- (5) Fence location should avoid the creation of dead spaces between properties that are difficult to maintain or secure.
- (6) Security fencing along public rights-of-way shall be set back 10 feet to allow planting on the street side of the fence.
- (7) Security fencing for self-service storage facilities along public rights-of-way shall be ornamental (e.g., metal pickets with masonry piers). The Office of Planning and Zoning may also require ornamental fencing for other nonresidential uses adjacent to public rights-of-way.
- (8) Proposed grades, fence location, and construction details are required on the Landscape Plan.

C. Replanting/Damage to Existing Vegetation

The Office of Planning and Zoning may require site specific replanting and reforestation of certain steep slopes, sediment control facilities and other cleared areas. Removal or damage of trees or critical root zone designated for retention will result in additional planting requirements. This planting will be determined by the County and implemented prior to release of security under a grading permit or forestation agreement.

III. REQUIREMENTS FOR PROJECT CONDITIONS

This section is designed to assist the plan preparer and the reviewer in realizing the goal and objectives of the Manual through a combination of landscape elements. In this section, illustrated guidelines address specific project conditions to provide flexibility in design solutions to meet the Manual's objectives.

Project conditions that generate landscape requirements may be existing or created. They may be on-site or on adjacent or surrounding property. The conditions relate to the use of and impact on public and private vistas. The appropriate landscape elements are those that respond to and complement project conditions.

A. Street Trees and Streetscape: Adjacent and Interior Road Right-of-Way

Objectives

- Delineate vehicular and pedestrian circulation patterns to improve the comfort and safety of pedestrians.
- Establish a planned combination of design elements that follow a unified theme or pattern.
- Establish human scale and provide visual relief from expansive road and parking surfaces.
- Incorporate community image and identity within the streetscape design.
- Site development and road alignment should seek to preserve existing woodlands and stands of existing trees.

Guidelines

- Small Area Plans and revitalization plans and streetscape policies establish design criteria for commercial corridors and local streets that may address walkways, light fixtures, street furniture, signs, and planting requirements.
- Coordinate design features such as decorative plantings, flowering trees, evergreen trees, architectural elements, signs and lighting accent intersections and form neighborhood gateways.
- Improve the comfort and safety of pedestrians by planting canopy trees between the curb and sidewalk.
- Define the travel way and provide canopy over the street with formal plantings.
- Frame views of buildings, displays, and signs by clustering of trees in consolidated planting areas.
- Consider site distance and visual obstructions when locating street trees.
- Rural roads may be suitable for formal or informal arrangement of street trees. Formal rows of canopy trees along entry roads create an estate-like setting. Groves or informal clusters frame views and blend in with the rural landscape. Trees can be arranged in groves or informal clusters, to frame views and blend in with the landscape when adequate space is available.
- Earth forms can provide interest to the streetscape design.
- Flowering and evergreen trees and shrubs accent entrances and signs.
- Overhead and underground utilities may require unique design solutions to complete the streetscape design.
- Landscaped turnarounds provide privacy and an open space focal point for courts.

Standards

1. Placement of plant materials shall conform to the standards, guidelines and objectives contained in the Manual and in addition, follow the Small Area Plans, revitalization plans, Department of Public Works streetscape policies , and requirements of the Storm Water Management Manual.
2. The Department of Planning and Zoning shall provide a 100% credit towards street tree requirements for existing trees preserved along roadways, within the right of way immediately abutting the right of way. No additional street trees will be required for the portion of the roadways for which trees are retained.
3. For the purpose of establishing the minimum quantity of trees required, use one Planting Unit per 40 feet of adjacent roadway. Provide a variety of interest and unity with street tree specie selection. (See Appendix 'J'-Street Tree Plant List)
4. Commercial interior and exterior roads adjacent to residential zones or uses require a 25-foot landscape buffer with "Class A" screen.
5. In all zoning districts the following standards apply:
 - a. Major deciduous trees shall have a minimum size of 2 – 2 ½ inches caliper as measured by AAN standards.
 - b. Developer or owner shall maintain landscaping provided within rights-of-way, and landscaping should reflect design appropriate to the nature and intensity of use for which the property and adjacent properties are zoned. (This may call for automatic watering devices, under drains, appropriate planter design, etc.)
 - c. When modifications are submitted for required landscaping or when zoning variances are requested to open space or certain other requirements, the Office of Planning and Zoning or Administrative Hearing Officer may require additional landscape improvements.
 - d. Planting may be provided in a designated park or local open space within the immediate vicinity of the proposed development as an alternative to on-site planting.
 - e. Spacing of trees may be modified to accommodate utilities, sight distances, and visibility for traffic control signs.
6. To the extent that the more urban requirements in the Parole Town Center Growth Management Area or the Odenton Town Center District may be deemed to require alternative landscaping and streetscape, the requirements of those overlay districts or design guidelines will govern. If not, the landscape standards contained in this Manual apply.
7. In instances where the significant natural vegetation exists, the Department of Planning and Zoning may limit the extent of clearing and grading to protect and preserve the area. These natural areas will not be disturbed by the installation of any structures, utilities,

storm and sanitary sewers, water lines, sediment and erosion control devices, stormwater management systems, and signage unless approved by the Department of Planning and Zoning.

8. Where pedestrian and bike paths are proposed within a landscape buffers, such paths shall be meandering so as to preserve existing trees.

EXHIBIT 3

Street Tree Design Layout

EXHIBIT 4

Adjacent to Utility/Road Right-of-Way

EXHIBIT 5

Tree/Sign/Light Pole Placement

EXHIBIT 6
Sight Triangle

B. Parking Lots

Objectives

- Screen parking lots from adjacent public rights-of-way and from adjacent residential uses, property lines, or zones including townhouses, single-family attached, and multi-family development.
- Provide shade and visual relief to paved areas.
- Delineate vehicular and pedestrian travel ways.
- Integrate parking areas into existing terrain and vegetation.
- Integrate interior green areas and larger planting areas.
- Include bio-retention and other water quality BMP's into plantable areas and buffers where practicable.

Guidelines

- Parking lot screening contributes to the streetscape design.
- Earth berms and grade changes help to screen parking areas.
- Fences or masonry walls help secure parking areas.
- Low walls combined with plantings define project boundaries and image.
- Design landscape strips between commercial properties to allow coordinated planting by the adjacent commercial property when redevelopment occurs. A minimum of 50% of the planting units should be major trees. Grade change, existing fencing or walls, and anticipated project phasing are considerations.
- Required interior landscaping is installed in peninsulas, islands, or planting breaks to separate:
 - a) parking lot entrances from adjacent parking spaces
 - b) interior roads from parking bays
 - c) changes in aisle and bay orientation
 - d) interior drives from parking spaces
- Grade changes are accommodated within parking lot medians.
- Consolidated landscape areas allow planting in groves and incorporate existing vegetation.
- Consolidate interior landscape areas to preserve specimen trees.
- Shade trees planted within landscape islands and medians visually interrupt parking bays, provide shade and reduce glare.
- Landscape islands, curb returns and medians define circulation patterns and provide pedestrian access.

- Planting in small groups within larger parking lot medians rather than single trees in minimum size medians enhance tree survivability.
- Where permitted by building setbacks stipulated in Article 18, buildings should be located on the site to screen proposed parking from public rights-of-way and residential property (zoned and/or use).
- Rear facades/loading docks should not face public rights-of-way or residential properties, but if visible should be screened and articulated in such a manner to mitigate the visual impact (i.e. screening walls composed of the same material as the proposed building, evergreen trees, etc.)

Standards

1. Perimeter Screening

- a. Parking lots adjacent to public right-of-way, screening shall comply with “Class B” requirements. Where adjacent to a road right-of-way that is less than 60 feet, use a minimum of 15 feet wide buffer from the property line to curb or edge of pavement. Road right-of-ways identified in the General Development Plan that are greater than 60 feet require a 25 wide buffer. This buffer shall be undisturbed where woodland exists. Selective clearing or removal of understory may be permitted to allow visibility into the site where appropriate.

The minimum required buffer for parking lots adjacent to freeways and expressways is 50 feet. This buffer shall be undisturbed where woodland exists. Selective clearing or removal of understory may be permitted to allow visibility into the site where appropriate.

- b. Parking lots adjacent to commercial and industrial properties shall require “Class B” planting with a minimum 10 foot wide landscape planting area between paved surfaces and lot lines or lease lines.. Where parking lots are interconnected, the 10-foot landscape strip between paved surfaces may be eliminated.
- c. The minimum quantity of trees shall be one Planting Unit per 15 linear feet of parking perimeter.
- d. Parking lots adjacent to residential and institutional properties, “Class A” Screening is required. Institutional property includes uses that serve a recreational, social, educational, or religious purpose.
 - (1) For sites one acre or less, a 15-foot landscape buffer is required. For sites greater than an acre, a 25-foot landscape buffer is required.
 - (2) For redevelopment in commercial corridors, a brick or split-face block wall may be considered as an alternative where the minimum landscape strip is not feasible.

2. Interior Landscaping

- a. Reserve 10% of the parking lot area including parking spaces, drive aisles, and loading spaces for interior landscaping. Plant at one Planting Unit per 250 square feet.
- b. Landscape islands and medians shall be planted with living ground covers or turf.
- c. The minimum width of parking lot medians or islands shall be 13 feet from face of curb to face of curb, with a minimum of 9' for retrofitting of existing parking lots.
- d. When parking spaces abut a building, the face of the curb or parking lot edge shall be a minimum of 10 feet from the face of the building to accommodate a 6-foot planting area and 4 foot sidewalk.
- e. A parking lot containing 5,000 square feet or less of paved area, including drive aisles and parking spaces is exempt from providing interior landscaping.
- f. In parking lots greater than 5,000 square feet, including drive aisles and parking spaces, landscape islands are required for every 12 parking spaces, unless interior open area has been met by consolidating into larger areas within the parking lot. It is recommended that planting islands be increased in size to accommodate planting of trees in groups rather than in a linear method.
- g. Unloaded drive aisles shall be separated from abutting parking spaces by a 9' minimum wide planting area.
- h. All green areas within a parking lot shall be credited as interior landscaping except for required buffers, perimeter green areas, and islands or portions of islands which cannot be planted with trees and shrubs due to conflicts with utilities, storm water management devices, easements, etc.
- i. Parking lot medians are required between every third row of parking unless interior open area has been met by consolidating into larger areas within the parking lot.
- j. Bio-retention and other storm water management best management practices should be integrated into green areas wherever practical.

EXHIBIT 7

Interior Green Space Plantings: Option 1

EXHIBIT 8

Interior Green Space Plantings: Option 2

EXHIBIT 9

Interior Green Space Plantings: Option 3

C. Automotive Display Areas (Dealerships)

DEALERSHIPS

Objectives

- Provide attractive display areas that complement the streetscape.
- Maintain public rights-of-way and sidewalks clear of parked vehicles.
- Provide visual relief from expansive parking areas.

Guidelines

- Simple planting combinations used in bold layouts emphasize display areas.
- Clustering trees at entrances, buildings and property corners helps frame views of display areas and showrooms.
- Low earth berms with ground covers or lawn provide an attractive foreground for auto displays when the landscape setback is adequately increased.
- Architectural elements integrate signage and logos within the landscape area.
- Curbs protect planting areas and define parking and driveways.
- Interior planting areas filter views of storage lots.

Standards

1. Display parking areas are subject to the criteria for interior landscaping of parking lots.
2. A minimum 6-inch high curb or wheel stop is required to separate the parking surface from the planting area to discourage placing vehicles in the planting area but still allowing proper drainage.
1. Automobiles shall not be placed or displayed within the landscape buffer or public right-of-way.
4. Provide a "Class D" screen in the landscape buffer of display areas and street trees at one Planting Unit per 40 feet of adjacent roadway.
5. Areas dedicated to customer parking and employee parking are subject to "Condition B, Parking Lots." Areas dedicated to storage of vehicles are subject to "Condition G" Service, Storage, and Loading Areas."

D. Parking Structures

Objectives

- Screen views of cars at ground level.
- Avoid views of monotonous building mass.

Guidelines

- Masonry walls and ground level plantings should provide screening between column supports where the ground floor is occupied by vehicle storage.
- Where parking structures are located along public streets, the area between the sidewalk and the face of the structure should be landscaped with a second row of street trees and ground level plantings.

Standards

1. Where parking occupies the ground floor and is visually open to the street, provide "Class B" screening and street trees at one Planting Unit per 40 feet of adjacent roadway.
2. Where parking is not visually open to the street, or when retail or office uses occupy the ground floor of the building, one Planting Unit per 40 feet of adjacent roadway will be required.

E. Nonresidential Structures

Objectives

- Provide a highly compatible transition or buffer between residential and more intense office, commercial, industrial, or institutional use.
- Buffer residential properties from the visual and acoustical impacts associated with non-residential and other incompatible land uses.
- Enhance the privacy of residential developments.
- Define the boundaries between different land uses.
- Maintain residential character by preserving the residential appearance and residential setting of buildings converted to office or institutional use.

Guidelines

- The building landscaping provides a transition to the perimeter screening for parking, service, storage, or loading areas.
- Fences or masonry walls provide screening in tight spaces in combination with plant materials.
- Wide buffers and dense vegetation provide appropriate transitions on larger development projects. Existing landforms or created earth berms may be used in combination with plant materials for screening.
- Street trees and foundation plantings are used to give a residential appearance to a small office building.

Standards

1. Adjacent to residential and institutional properties or uses, screening of the structure shall comply with "Class A" requirement, at one Planting Unit per 15 linear feet of area to be screened.
2. Adjacent to public rights-of-way, adjacent road requirements apply at one Planting Unit per 40 feet of adjacent roadway.
3. Adjacent to commercial, when a landscape buffer or landscaped setback is required by this Manual or other plans or regulations, planting in the buffer shall comply with "Class A" requirement, but at one Planting Unit per 20 linear feet of area to be screened.
4. All buildings associated with a commercial or industrial development shall be appropriately landscaped. Fifty percent of a building façade is to contain foundation planting or a combination of architectural and landscaping treatment

acceptable to the Department of Planning and Zoning. Such planting shall accentuate principal entrances, soften linear facades and generally improve building aesthetics. In instances where the building planting is also closely oriented to a parking area, the Department of Planning and Zoning may permit the material to be counted toward that required for parking and that required for the building.

F. Service Lanes

Objectives

- Screen service activities from all adjacent properties, and public and private roads.
- Landscape drive-thru service lanes and self-service storage facility service lanes adjacent to residential properties, and public and private roads, providing appropriate visibility for security and surveillance.
- Mitigate the noise, fumes, and light from intensive auto-related uses adjacent to residential properties.

Guidelines

- Planting in combination with fencing or masonry walls provides maximum screening and visual interest.
- Groupings of screening materials combined with a formal hedge allow views into the site.
- Fences and/or walls shall be located on the inside edge of the required buffer. Planting shall be located on the street side of the fence.

Standards

1. Screen self-service storage facility service lanes and doors, drive-thru service lanes, stacking spaces, menu boards, and teller facilities adjacent to public rights-of-way. Provide one Planting Unit per 15 linear feet of perimeter buffer
2. Provide 10 feet of landscape space between paved surfaces and lot lines or lease lines adjacent to commercial uses or zones. Provide One Planting Unit per 20 linear feet of perimeter buffer.
3. "Class A" screen is required adjacent to residential and institutional properties.
 - a. For sites one acre or less, provide a 15-foot landscape buffer between paved areas and property boundaries. For sites one acre or greater, a 25' landscape buffer is required.
 - b. An opaque fence or brick or split-face block wall may be considered as an alternative if the minimum 10-foot landscape buffer is not feasible in redevelopment on commercial corridors. The height of the fence or wall should mitigate the impact from noise, fumes, and light on adjacent residences.

G. Storage, Loading and Staging Areas

Objectives

- Discourage the location of loading, storage, and staging areas adjacent to the road.
- Conceal loading, storage, and staging areas completely from all adjacent properties, and public and private roads.
- Separate noise-producing activities from residential uses.

Guidelines

- Primarily opaque planting screens storage and loading areas from public view and residential properties.
- Planting in combination with fences or masonry walls provides maximum screening.
- Storage and loading areas can be concealed within enclosures that are extensions of the building architecture with consistency of materials, color, and design.
- Siting below grade or creating earth berms in conjunction with landscaping blocks undesirable views and mitigates noise impacts.
- Where permitted by building setbacks stipulated in Article 18, buildings should be located on the site to screen proposed parking from public right-of way and residential property (zoned of in use). Rear facades/loading docks should not face public right of way or residential properties, but if visible should be screened to mitigate visual impact.
- Interior planting areas for storage of boats, trucks, and vehicles in association with marinas, dealerships, contractor yards, etc., may be reduced or eliminated to accommodate storage and security needs dependent upon the size of the storage area and density of proposed perimeter screening.

Standards

1. "Class C" screening is required to screen loading, storage, and staging areas from all adjacent public and private streets. A 20-foot landscape buffer is required, 10 feet is acceptable when retrofitting a developed site
2. "Class A" screening is required to screen loading and storage areas from all adjacent commercial or office uses. Screening of loading and outside storage areas between similar industrial uses is not required.
3. "Class C" screening is required to screen loading and areas from all adjacent residentially zoned or used properties. A 20-foot landscape buffer is required; 10 feet is acceptable when retrofitting a developed site.

H. Dumpsters, Mechanical/Electrical Equipment, and Signs

Objectives

- Conceal dumpsters from all adjacent properties and roads.
- Conceal ground-mounted air conditioning (HVAC) equipment areas (other than for single family residential units) from public view.

Guidelines

- Primarily evergreen planting screens dumpsters and ground-mounted HVAC equipment from public view and residential properties.
- Trees and shrubs in combination with fencing or masonry walls provide maximum screening.
- Dumpsters can be concealed within enclosures that are extensions of the building architecture with consistency of materials, color, and design.
- Siting below grade or creating earth berms in conjunction with landscaping conceals HVAC units and other mechanical equipment from view.
- Avoid direct sight lines into dumpsters from entrance drives.
- A combination of shrubs and/or flowering and evergreen trees should be provided in and around the base of a freestanding identification sign to visually soften and anchor the sign to other related site improvements.

Standards

1. A “Class A” screen is required for dumpsters, trash corrals for multi-family dwellings, and ground-mounted mechanical/equipment. The linear feet of screening for the dumpster pad shall be measured along the perimeter of the two sides and rear. Screening shall be designed and located in a manner that does not impair sight distance at intersections.
2. Dumpster enclosures and trash corrals must be placed a minimum of 10 feet off right-of-way and residential property lines.
3. Multiple dumpsters should be clustered (including dumpsters for recycling) and contained within permanent fenced or walled enclosures.
2. Dumpsters shall have operable front gates or wing walls where dumpster is visible from public road, entry drive, or adjacent residential property.
5. Free standing identification signs shall have a combination of shrubs and/or flowering and evergreen trees around the base to visually soften and anchor the sign to other related site improvements.

I. Storm water Management Facilities, including bio-retention and rain gardens

Objectives

- Incorporate storm water management and water quality facilities into the landscape setting.
- Treat storm water management and water quality facilities as landscape amenities.
- Incorporate plant species that contribute to wildlife habitat and water quality attributes of storm water management and water quality systems, (except as required by Federal and State guidelines for Airport Zones.)

Guidelines

- Strategically placed plantings screen objectionable views of storm water management riser structures.
- Informal or naturalistic tree and shrub masses blend pond slopes with surrounding landscape areas.
- Plantings of herbaceous perennial plant materials may be used to augment grassed dam embankments.
- Native plants enhance the wildlife habitat of the storm water management or water quality facilities.
- Soften harsh embankments and integrate new landforms into the natural or project landscape.

Standards

1. Provide plant buffers, earth berms, and architectural treatments to screen storm water management ponds from adjoining properties and public or private roads..
2. Provide a "Class A" screen based on the linear feet of the perimeter, measured at the toe of fill slopes and the top of cut slopes. Linear footage of contiguous woods to remain may be subtracted.
3. Storm water management ponds must be located to meet the criteria of the County SWM Manual and the Soil Conservation Service and shall be located in a manner that does not conflict with the provision of street trees and streetscape, screening of ponds from public and private roads, and screening of ponds from adjacent properties, or with adjacent forest buffers or forest conservation areas.
4. The County Soil Conservation District requires that no trees, shrubs, or other woody vegetation may be planted closer than 15 feet from the toe of a fill embankment. A 10-foot minimum landscape buffer shall be provided between the woody plant restriction zone and the property line.

3. Where possible, the interior slopes and the bottom of the Storm Water Management Basin may be planted to reduce maintenance, improve appearance, enhance wildlife habitat and wetland environment. Such planting shall not jeopardize the structural integrity of the pond or interfere with access and not to be planted on the embankment or within 50 feet of the inlet structure.
6. Trees, shrubs, and other woody vegetation are not allowed within 50 feet of the inlet structure by the County Soil Conservation District. The riser structure should be located to minimize impact on landscape requirements.
7. When required, safety fences shall be chain link with black vinyl coating on the post, frame, and fabric or split rail with black vinyl mesh. Decorative fence shall be of a durable material acceptable to the Office of Planning and Zoning when located within a County reservation or easement area.
8. Fences shall be located a minimum of 10 feet from the right-of-way or property lines with plantings on the exterior of the fenced area. In residential development, the landscape planting shall be owned and maintained by a homeowners association.
9. Public Storm Water Management ponds maintained by the County are to be designed in a manner that will minimize maintenance. Yearly maintenance of plant material should consist of little more than mowing. Shrubs and planting beds that require yearly maintenance are to be avoided.
10. Private Storm Water Management ponds may be designed to incorporate shrub masses and annual/perennial planting beds, however maintenance of the pond is the responsibility of the property owner. The facility and planting shall be maintained in good repair.

EXHIBIT 10

Stormwater Management Facility

J. Slopes, Embankments, and Retaining Walls
(Other than Stormwater Management Facilities)

Objectives

- Avoid extreme grade modifications visible from adjacent properties and public view.
- Retain the predominant topography of the community.
- Incorporate distinctive topographic features into the site design.
- Protect adjacent properties from undesirable effects of cut and fill slopes.
- Coordinate landscaping with site grading.

Guidelines

- Terraced slopes, building masses, and parking lots reduce the height of embankments at project boundaries.
- Varied slope ratios provide visual interest. Tops and toes of slopes should be rounded to provide smooth transitions and prevent scalping by mowing equipment.
- Mixed vegetation improves soils stability.
- Coordinated landscaping and grading can produce effective and dramatic landscape effects.
- Distinctive topographic features should be incorporated into the landscape design.

Standards

1. Slopes 2: 1 or greater, exceeding 5 feet in height from toe to top of slope; slopes 3: 1 or greater, exceeding 10 feet in height; and retaining walls exceeding 5 feet in height shall generate the following landscape requirements:
one Planting Unit per 15 linear feet measured at the toe of the slope or base of wall.
2. One additional Planting Unit per 15 linear feet shall be generated for each 20 feet in height for 2: 1 slopes, and for each 30 feet in height for 3: 1 slopes.
3. Plantings shall include a mixture of shrub masses, and evergreen and deciduous trees.
4. Provide an average 5-foot wide landscape area at the base of retaining walls less than 5 feet in height.
5. Provide an average 10-foot wide landscape area at the base of retaining walls 5 feet in height or greater.

K. Small Business Districts (SBD), Drive Through Establishments

Objectives

- Ensure the compatibility of development in Small Business Districts with adjacent residential neighborhoods by providing appropriate transitions.
- Improve the appearance of the County's major commercial corridors by enhanced design that complements residential character.

Guidelines

- Walls in conjunction with planting define project boundaries and image.
- Planting in landscape strips between commercial lots provides shade and reduces the mass of paved areas.
- The front setback is landscaped with lawn, canopy trees, ornamental trees, and foundation planting to give a residential appearance to the street.

Standards

In addition to the Manual requirements for streetscape, parking lots, and commercial uses adjacent to residential uses, development in the Small Business Districts is subject to the following requirements:

1. The required setbacks, except for access drives and walkways, shall be landscaped.
2. All setbacks adjacent to the road shall include minor and major deciduous trees in association with earth berms, hedges, or low walls as a dominant design feature.
3. Drive-thru banks, convenience stores, and fast food restaurants, as well as dumpster, service, and loading areas that are located adjacent to residentially used or zoned properties, shall provide a buffer in the form of a earth berm, an opaque fence, a solid brick wall, or a wall built of architectural block, in combination with landscaping on both sides of the wall. All walls or fences shall be located at least 10 feet from the property line of the commercial use.
4. Provide one planting unit per 15 linear feet adjacent to nonresidential; 50% of the planting units shall be major trees.

L. Residential Rear and Side Yards Adjacent to Roads

- Reverse frontage lots are discouraged by the Code.
- Enhance the public view of residential neighborhoods from adjacent roads.
- Screen public view of private yard space.
- Shield side and rear yards of single-family attached and detached dwellings from the noise and visual impacts of roads.

Guidelines

- If reverse frontage lots are unavoidable, earth berms and/or grade changes in combination with fencing/walls and plantings provide maximum screening.
- A consistency of fence design and materials provides continuity along the streetscape. Offsets in the fence line combined with plant groupings reduce the monotony of long stretches of fencing.
- Open fence styles may be appropriate where greater setbacks allow room for informal landscape treatment.
- Plantings on the street side of solid screen wall/fence soften the wall and create maximum privacy and buffer from the street. Evergreen trees create solid buffers between private yard space and public and private roads.
- Side yard design should be incorporated into the project entry design.
- Where setbacks along arterials are increased, planting combined with berming provides effective screening.

Standards

1. Screening of a dwelling unit is required where its side or rear lot line abuts a public right-of-way. The side yard to be screened is located between the front of the dwelling and the rear lot line. Screening shall comply with "Class A" requirements.
2. If fencing is provided or required it must be set back 10 feet from the right-of-way in conjunction with trees and shrubs. A uniform style of fence architecturally compatible with the community style or home exterior is required. The required trees and shrubs shall be provided on the street side of the fence.
3. A graphic delineation of fencing shall be shown on Final Subdivision and Site Development Plans, and the location of fencing may not generally be closer than 10 feet to a public street right-of-way.
4. Reverse frontage lots may be required to use a combination of grade change, fencing, and landscaping to screen rear yards.

M. Residential Site Adjacent to an Interstate/Freeway

Objectives

- Buffer residential dwellings from the noise and visual impacts of high intensity vehicular corridors.

Guidelines

- Physical distance, berming, sound barrier walls, and vegetation are used to screen noise and visual impacts of such intensely traveled vehicular corridors.

Standards

For dwellings located adjacent to an arterial or more intense road classification, a landscape area shall be provided in accordance with the following:

1. Planting quantities shall be calculated at double the "Class A" requirement.
2. Sound walls proposed for noise attenuation shall be located in a 25' buffer with planting on both sides of the wall.
3. A buffer containing an earth berm proposed for noise attenuation shall require planting on both sides of the berm.
4. A 50-foot landscaped common area owned and maintained by a homeowners association shall provide a visual screen if noise attenuation is not required.
5. The planting area can count towards Forest Conservation Act requirements if 35' wide and 10,000 square feet in size and that incorporate 100% native, non-invasive species.
6. Existing vegetation that is retained but does not meet the minimum forest retention requirements may be credited towards screening requirements. Such buffers shall be in addition to street trees.

N. Historic Structures and Areas

Objectives

- Preserve the setting and frame significant views of historic properties and unique scenery from the road.

- Buffer and screen historic structures from new development to separate incompatible uses visually and physically.
- Retain significant landscapes and vegetation associated with historic properties.

Guidelines

- The structure(s) and setting of the historic property become the central organizational element of the development plan.
- Preservation of existing specimen trees, hedgerows, woods, and terrain contribute to the setting of the historic property.
- Evergreen trees create solid buffers between proposed developments and adjoining existing historic properties. The screen planting is staggered
- Or naturalistically designed unless a formal hedge planting scheme is desired as appropriate to the site's historic context.
- The width of buffer and size of material will vary according to the screening objectives.

Standards

1. A "Class A" screen or supplemental planting may be required by the County Historic Sites Planner in concurrence with the Planning and Zoning Officer.

O. Scenic and Historic Roads

Objectives

- Preserve and enhance the scenic resources identified in the Comprehensive Plan and Small Area Plans.

Guidelines

- Plant materials frame vistas, views of landmarks, or focused views of special features of the landscape.
- Tree and vegetation removal is minimized to maintain enclosed views.
- Siting new development behind existing vegetation and beyond primary views or at the edges of hedgerows and woodlands minimizes visual impact.
- Earth berms and vegetative buffers screen views of new development.

Standards

- Minimum standards can be found in "Section II, General Standards," and in "Section III, Requirements for Project Conditions." Recommendations for plantings beyond the minimum requirements will be site specific and made conditions of approval.

P. Open Space (Publicly or Privately Owned)

Objectives

- Identify public space.
- Design open space to enhance the visual quality of the neighborhood or development.
- Provide a buffer from active recreation areas to residential rear or side yards.
- Enhance the comfort and sense of security of park users.

Guidelines

- Landscape defines the edges of open space to differentiate common areas from private yard space and discourage encroachment. Maintaining good visibility from the street and nearby residences creates a sense of security and encourages use.
- The entry and special features of open spaces are defined by plantings and other landscape elements to create a sense of place.
- Plantings control pedestrian circulation while shade trees and benches provide comfortable areas for spectators and passive recreation users.
- The landscape treatment of adjacent roads is continued to define the edge of the open space.

Standards

1. Landscape planting is applied to complement the function of the open space. Plant quantities are generated at one planting unit per 1500 sq. ft. of open space required. Credit may be given for retention of existing trees.
2. Standards for all applicable conditions apply.

Q. Recreational Facilities

Objectives

- Provide amenities for employees, shoppers, residents of high-density multifamily housing, and the public to enjoy outdoor recreation and leisure activities.

Guidelines

- Spaces adjacent to building entrances and between groups of buildings are developed as plazas, courtyards, and landscaped walkways integrated within the overall pedestrian system.
- An overlook with tables, seating areas, and decorative lighting is located to take advantage of viewing natural landscapes.

Standards

1. Useable, uncovered open areas of buildings designated for use by occupants or by the public, such as terraces, patios, and other hardscape, must be improved as open space to be credited as required recreation area open space by the Office of Planning and Zoning.
2. Placement of plant materials shall conform to the guidelines and objectives of this Manual, the Odenton Town Center Master Plan and the Parole Urban Design Concept Plan.
3. “Class A” screening shall be provided for active recreation areas adjacent residential uses.

V. APPLICATION OF STANDARDS

Application of Standards

A. Compliance with Manual Standards

1. All development needing grading, or building permits, including roads and parking areas, shall comply with the standards in this Manual unless specifically exempted in paragraph C below.
2. Screening in conformance with this manual may be required when a change of occupancy results in new storage or loading areas.
3. Landscaping required in conjunction with a modification, special exception, special hearing or zoning variance must meet the standards of this Manual as conditioned by the Planning and Zoning Officer, Administrative Hearing Officer or the Board of Appeals.
4. In commercial, office and industrial zones, a proposed increase in floor area equal to 50% or more of the existing floor area shall require that the entire site conform to this Manual. Increases in the floor area of less than 50% shall require that the portion of the site impacted by the new development conform to the standards in this Manual or upgrades to the entire perimeter dependant upon site conditions and proximity to public right-of-ways, residential areas.
5. Conversion of an existing residential use to a nonresidential use shall comply with the standards of this Manual.
6. Mobile home parks, allowed by special exception, shall comply with the landscape standards for residential development.
7. Religious facilities, schools, assisted living facilities, and nursing homes in any zone, and other non-residential uses located in residential zones shall comply with the landscape standards for commercial development.

8. Residential subdivisions of three lots or less involving rear orientations to public roads; flag lot driveways; scenic routes or views; or historic properties are subject to the landscape standards for "Condition L, Residential Rear and Side Yards Adjacent to Street;" "Condition N, Historic Structures and Areas,;" and "Condition O, Scenic and Historic Roads".
9. All parking expansion other than single-family dwellings shall comply with this manual.

B. Compliance with Plans, Other Ordinances, Codes, and Regulations

It is the intent of the County government to obtain development that responds to human needs, is socially positive, economically viable, and environmentally satisfying. These standards are designed to meet the stated objectives.

1. These standards shall not relieve the applicant of responsibility of compliance with all applicable state and local ordinances, codes and regulations. Where federal or state ordinances, codes, and regulations permit lower standards than required herein, the County's requirements shall govern.
2. Provisions of the Anne Arundel County Code (date ? ,as amended) shall prevail in the event of any conflict between the Code and the Landscape Manual.
3. The provisions of the Landscape Manual may not supersede any provision of the Anne Arundel County Code (date ? ,as amended), relating to forest conservation, including provisions of Article 16, Title 2, "Grading and Sediment Control", and Article 17, "Subdivisions", pertaining to the establishment of forest conservation thresholds, priorities for retention, standards for mitigation, and afforestation and reforestation.
4. This Ordinance shall take effect 45 days from the date it becomes law.
5. All developments must be in substantial compliance with landscape, buffer yards and screening recommendations included in adopted area plans, revitalization plans or other plans adopted as part of the current County Master Plan and Small Area Plans.

C. Exemptions to Manual Requirements

The following development is exempt from the landscape Manual's requirements:

1. Existing single-family residential lots and agricultural development in the RA zone.

2. Residential subdivisions of five lots or less not involving the following site conditions: rear orientations to public roads; storm water management facilities; scenic routes or views; and historic properties.

D. Modification to Manual Standards

1. These standards are intended to foster creative design solutions. Conditions may arise where full compliance is impractical or impossible, or under circumstances where maximum achievement of the County's objectives can only be obtained through modified requirements. (e.g...urban standards in town centers) The Office of Planning and Zoning may approve a proposed modification of these standards if the modification more fully achieves the objectives contained herein, or in other county plans. **Modifications shall be limited to a specific project under consideration and shall not establish a precedent for other cases.**
2. Minor modifications of an approved landscape plan due to plant availability, and unforeseen field conditions may be authorized by the Department of Planning and Zoning provided the general design and plant characteristics, and cost associated with the modifications as shown on the approved plan would not be significantly altered.
3. All requests for modifications must be submitted to the Office of Planning and Zoning in writing, clearly stating the reasons and relative impact of the modification with sufficient explanation and justification, written and/or graphic, to allow appropriate evaluation and decision by the Office of Planning and Zoning.
4. The Director of Planning and Zoning may authorize modifications of the requirements of the Landscape manual on a particular site and as to a particular landscape plan if the modification satisfies the intent of the requirements that is being modified and:
 - a. It is necessary to address topographic, soil, or other site conditions that make compliance with the requirement impossible or impractical, to mitigate safety concern, to maintain the character of a scenic roadway or historically significant property and protect a vista associated with that roadway or property.
 - b. It enhances environmental quality or improves the overall function of the plan and its relationship with neighboring properties.
5. For development located within town centers, or community center districts on lots that are irregular, confining, or have other unusual site constraints such as determined by the Office of Planning and Zoning, the required landscape areas may be waived provided:
 - a. the reduction of required landscape areas does not negatively impact adjoining uses; and

- b. the reduction of required landscape areas does not negatively impact the streetscape as defined by building location, landscape areas, walkways, street landscaping, etc.

E. **Credit for Preservation of Existing Trees**

Credit shall be given for existing major trees preserved when they are in a location and of a nature that they contribute to the objectives and guidelines of the Manual. A credit of one planting unit shall be given for each major tree 3 inches or greater in caliper, healthy and in good form, preserved within the net buildable area.

The Office of Planning and Zoning may credit trees that are saved toward forest conservation requirements as determined

The developer is encouraged to save the maximum number of trees in accordance with the following guidelines:

1. The following determinants shall be used in selecting trees to be saved: a circle, radius equal to one foot per inch of caliper, shall be drawn around trees that are less than 30 inches in diameter at breast height (DBH), and 1.5 foot per inch of caliper for trees greater than 30 inch at DBH.
2. Upon notification of County approval of a Final Subdivision or Site Development Plan, trees that are to remain shall be marked in the field by the developer, inspected by the County, and protected in an approved manner. Trees within the construction area, which are to remain undisturbed, shall be encircled with a fence for protection (snow fencing or other approved methods). The contractor shall not disturb the area within the fence in any manner including, but not limited to:
 - a. running or parking construction equipment
 - b. storage of deleterious, flammable, or any other construction material or debris
 - c. soil stockpiling
 - d. allowing standing water or fires
 - e. alteration of grades in adjacent areas that will cause drainage to flow into, or to collect in protected areas
3. All trees to be removed should be removed in a manner that will not damage the remaining trees. Any trees that are to remain that are damaged during the clearing operation must be repaired in an approved manner by a licensed arborist as soon

as final clearing has been completed. After construction is completed, temporary barriers, surplus materials and all trash, debris and rubbish shall be removed from the site. All backfill shall be clear of building material, stone, and rubbish.

4. Existing trees (particularly mature trees) that are retained will undergo "post-operative shock" caused by the construction activity. All possible safeguards, as determined by a licensed arborist, should be taken to minimize these effects and to provide optimum growth conditions. Foliage feeding and liquid or root feeding are encouraged. Branch and foliage thinning are also desirable. Existing trees that do not survive, will require replacement planting on a 1:1 basis.

F. Retrofitting Existing Development

Providing trees and installing ornamental landscaping and screening can have a positive effect on property values.. Property owners are encouraged to retrofit existing developed properties to the standards of this manual to the extent possible. Alterations or expansions of existing developments shall be subject to the following criteria:

1. For properties where the alteration or expansion involves a 50 percent increase of the gross floor area or intensity of use, or a 50 percent increase in the parking area or number of parking spaces, the property must be landscaped (screening and internal planting) in accordance with this manual.
2. Where the alteration or expansion is less than 50 percent of the gross floor area or less than 50 percent of parking spaces, screening of existing and proposed development from right-of-ways and adjacent properties will be required.
3. The Department of Planning and Zoning may modify these requirements in instances where the installation of the landscape screening is impractical, or if interior landscaping may be more appropriate.

EXHIBIT 11

Tree Protection Detail

VI. PLAN, PREPARATION, REVIEW AND APPROVAL

Plan Preparation, Review, and Approval

All landscape plans for residential subdivision, commercial, industrial and multi-family dwellings shall be prepared, signed, and sealed by a registered landscape architect. An individual with a minimum of six years experience in landscape design or equivalent education and experience may prepare other landscape plans.

Landscape plans are prepared in stages with increasing levels of detail, culminating in a plan ready for installation by the landscape contractor. The landscape plan stages described below as Sketch Landscape Plan and, Final Landscape Plan represent levels of refinement that are relative to the applicable development process.

Development that is required to submit a Sketch Plan, Variance or Special Exception (subject to the County Code) must include the sketch landscape plan for the site.

A. Sketch Landscape Plan (for Sketch Plans, Variances, Special Exceptions)

The landscape concept is a simplified graphic representation of the combination of landscape elements proposed for the development. The elements should be selected to satisfy the standards and objectives of the Manual, relevant community plans or revitalization plans, and guidelines of the Comprehensive Plan and Small Area Plans. The sketch landscape plan shall demonstrate the purpose and function of the landscaping, buffer widths, the general location of planting units, and the suggested screening method or plant materials. Provide Sketch Landscape Plan Checklist with Sketch Plan submittal.

1. The sketch landscape plan is to be shown on the sketch plan, special exception plan or variance plan and not on a separate plan. The depiction of the various landscape elements, trees, hedges, etc., should be simple in form and understandable to the layperson. The concept should include existing vegetation to be preserved or removed, proposed areas of screening, buffering, berming, use of street trees, proposed landscape areas, landscape amenities, and any other landscape elements anticipated to be incorporated into the Site Development Plan or Final Subdivision Landscape Plans.
2. The Office of Planning and Zoning shall review the sketch landscape plan and comment on the proposed landscape elements in relation to the standards and objectives of the Manual, relevant community plans or revitalization plans, and guidelines of the Comprehensive Plan and Small Area Plans

4. If a development uses the optional planned unit development (PUD) process, the sketch landscape plan, must also indicate the type and quality of all landscape elements with a higher degree of resolution to site design issues. Prepare sections, elevations and perspectives coordinated with the landscape plan, that demonstrate the quality and intensity of the design and materials. These are included as part of the architectural drawings for a PUD. The plan and drawings must show the arrangement of landscape materials, and their integration with site features such as walks, grading, structures, etc.

In addition to the guidelines of this Manual, other County guidelines for PUDs, and appropriate County guidelines for residential, office and commercial development shall be followed. Landscape requirements for PUDs shall exceed the minimum requirements of this Manual.

5. The Office of Planning and Zoning will require that a submitted landscape plan or concept is signed and sealed by a registered landscape architect.

B. Final Landscape Plan (Final Plan of Subdivision or Site Development Plan)

1. The Final Landscape Plan shall be consistent with the provisions of this Manual and any conditions attached to a Subdivision or Site Development Plan, hearing officer's order, special exception, special hearing, variance, or board of appeals opinion.
2. The Final Landscape Plan must be approved and secured (along with 7% inspection fee, when required) before grading and/or building permits may be issued.
3. The plan shall show all applicable items indicated on the Sketch Landscape Plan Checklist and the additional items required on the Final Landscape Plan Checklist
4. The Final Landscape Plan shall include a plant list and unit costs to be used as the approved cost estimate for security/bonding. Submit an itemized cost estimate with the plan that includes the cost of required plant materials and architectural elements such as fences and masonry walls. (See Appendix K, Cost Estimates)

C. Implementation of Final Landscape Plan

1. Security

- a. If security is required, it shall be posted as part of the grading permit bond or if no grading permit is required, a separate landscape agreement shall be executed without security. The Director of Inspections and Permits will determine release of partial or full security.

- b. On approval by the Department of the landscape plan and cost estimate, the applicant shall enter into a Landscape Agreement with the County to provide and install the plant material and any screening materials. The agreement shall be acceptable to and approved by the County Attorney.
- c. The agreement shall be accompanied by a performance bond executed by the applicant and a corporate surety authorized to do business in the State.
- d. Security shall be in the amount of the cost estimate and in a form acceptable to the County Attorney and the Finance Officer.
- e. All planting shall be in accordance with the “Landscape specifications guidelines for the Baltimore-Washington Metropolitan Area,” as published by the Landscape Contractors Association of Washington unless otherwise specified within this Manual.
- f. All planting and screening shall be installed within one year of the date that the landscape agreement is executed.
- g. If installation cannot be accomplished due to seasonal planting requirements or construction time frames, the director may grant an extension of no more than six months.
- h. If an applicant fails to complete the planting and screening in a timely fashion in accordance with the Landscape Agreement and the requirements of this title and the Landscape Manual, the security shall be forfeited.
- i. If the County’s costs in completing the work under the Landscape Plan are greater than the amount of security, the excess costs shall constitute a lien on the property.
- j. Notwithstanding any other provision of this section, a public utility franchised in the county may submit a letter of guarantee, instead of the Landscape Agreement and security, in a form approved by the County Attorney.

2. Release of Security

- a. On inspection by the Department up to 50% of that portion of the security that covers the plant material may be released, and the remaining bond shall be retained for one year to ensure replacement of dead or damaged plant material.
- b. The Landscape Agreement may provide for a full release of that portion of the security that covers non-plant materials and screening improvements.

3. Installation

Landscaping shall be installed on any lot within three (3) months of issuance of an occupancy permit for the building of that lot. This may be extended as a result of good cause shown in accordance with conditions imposed by the County and presented to the Director of Inspections and Permits. The County shall enforce and seek installation or the correction of the required landscaping pursuant to the remedies provided by law.

4. Compliance

Compliance shall be verified at time of Final Inspection. The developer is responsible for the submittal of a red line, as built landscape plan if required by the county to note any modifications

5. Warranty

- a. Installed landscaping shall be guaranteed to be in a viable, thriving condition by the developer for a minimum of one year after final inspection and acceptance of the work by Anne Arundel County. Plant material that is not thriving and in viable condition after this time period shall be replaced at the original planted size.
- b. Applicant shall replace plant materials or correct improvements if the plant materials or improvements violate the Landscape Plan; fail to satisfy the requirements of this Manual or the "Landscape specifications guidelines for the Baltimore-Washington Metropolitan Area," as published by the Landscape Contractors Association of Washington; or if the planting is in failing health.

6. Maintenance

- a. After the Director of Inspections and Permits has determined that the obligations of the Final Plan have been fulfilled and are in compliance, the developer shall be released from responsibility in accordance with the requirements of the County Code.
- b. The owner and occupant of property are jointly responsible for:
 1. Maintaining landscaping in a healthy condition;
 2. Maintaining plant materials and non-plant materials in a sound and neat condition; and
 3. Keeping landscaped areas free of refuse and debris.

7. Enforcement

- a. The County shall enforce the provisions of this Manual. In addition to any other remedy allowed by law, the County may enforce and seek the correction of a violation of this Manual.

8. Inspection

- a. The Department shall make an initial inspection of all plant material and nonplant improvements immediately after installation and a final inspection approximately one year later. An applicant shall request each inspection.
- b. Instead of the final inspection being performed by the Department, an applicant may submit a notarized affidavit from an individual qualified to prepare a landscape plan as provided by the Landscape Manual, verifying that all plant material is in place and in good health one year after the initial inspection.
- c. An applicant shall pay a fee at the time of application for both inspections of 5% of the value of the installed plant materials and non-plant improvements, with a maximum fee of \$1,000. If an applicant certifies that the final inspection will be made by a qualified individual as provided in subsection (B) of this section, the inspection fee may be reduced by 50% at the time of payment.
- d. Security posted by the applicant shall be forfeited if the applicant fails to request an inspection; or fails to have a inspection made after certifying that a qualified individual will make a final inspection.
- e. If additional inspections are required because an applicant has not made a good faith effort to complete the work under the Landscape Agreement, the applicant shall pay an additional fee for each inspection made by the department. The additional fee shall be in the amount of 5% of the value of the installed plant materials and non-plant improvements with a maximum fee of \$1,000.

VII. APPENDICES

APPENDIX 'A': Definitions

Berm - An earthen mound designed to provide visual interest on a site, screen undesirable views, noise reduction.

Buffer - A combination of physical space and vertical elements, such as plants, berms, fences, or walls, the purpose of which is to separate and screen incompatible land uses from each other.

Critical Root Zone – a circular region measured outward from a tree trunk representing the essential area of the roots that must be maintained or protected for the tree's survival; for the purpose of this manual critical root zone is one foot of radial distance for every inch of tree diameter (dbh) measured at 4.5 feet from the ground, with a minimum of 8 feet. For specimen trees the formula changes to 1.5 feet for every inch of tree diameter (DBH).

Deciduous - A plant with foliage that is shed annually.

Forest – a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater. Forest includes (1) areas that have at least 100 trees per acre with at least 50% of those having a two-inch or greater diameter at 4.5 feet above the ground and larger, and (2) forest areas that have been cut but not cleared. Forest does not include orchards.

Evergreen – a plant with foliage that persists and remains green year-round.

Herbaceous Perennial – plant persisting for several years, usually with new herbaceous leaf growth each year.

Institutional Development – includes schools, colleges, universities, military installations, transportation facilities, utility and sewer projects, government offices and facilities, golf courses, recreation areas and cemeteries.

Landscape Plan - a plan, drawn to scale, showing dimensions and detail for onsite improvements including planting, landscape and site amenities. The Plan shows existing vegetation, environmental features, utilities, topography, and the name, location, quantity, size, type, and cost of proposed plant materials.

One-Hundred Year Flood Plain – an area along or adjacent to a stream or body of water except tidal waters, that is capable of storing or conveying floodwaters during a 100-year frequency storm event. A 100-year flood is a flood, which has a 1% chance of becoming

Ornamental Tree – a deciduous tree planted primarily for its ornamental value, or for screening. Generally does not exceed a height of 40 feet and will tend to flower.

Planting Soil Mix – a prepared soil mix used for planting medium as described in Appendix E.

Screening – a method of reducing the impact of visual and/or noise intrusions through the use of plant materials, berms, fences and/or walls, or any combination thereof. Screening blocks that which is unsightly or offensive with a more harmonious element.

Setback – The distance between a building or structure (not including ground-level parking lots or other paved surfaces) and the street line or lot line.

Shade Tree – a deciduous (or rarely, an evergreen) tree planted primarily for its high crown of foliage or overhead canopy. A major shade tree at maturity reaches a height of at least 70 feet. A minor shade tree generally does not exceed a height of 40 feet.

Shrub – a woody plant, smaller than a tree, which consists of a number of small stems from the ground or small branches near the ground. May be deciduous or evergreen.

Soil Amendments – the modification of soil properties for improvement of soil structure; to be confused with fertilizers whose purpose is to correct chemical imbalances in for silvicultural purposes.

Specimen Tree – a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species. The diameter (DBH) measured at 4.5 feet above the ground is 30 inches or more.

Steep Slopes – areas with slopes greater than 25 percent slope.

Stream Buffer – all lands lying within 50 feet, measured from the top of each normal bank of any perennial or intermittent stream.

Street Tree – a tree planted in close proximity to a street in order to provide canopy over the street, to give the street a sense of spatial definition and human scale, to provide shade, and soften the street environment.

Temporary Tree Protection Devices – structural measures, such as fencing or bioretention installed prior to construction for the purpose of preventing access to forest retention areas or afforestation areas during construction.

Woodlands, Existing – existing trees and shrubs of a number, size and type that approximately accomplish the same function as new plantings.

APPENDIX 'B': Tree and Planting Detail

APPENDIX 'C': Plant Species Criteria

1. General Plants

- a. Species shall be selected that will not cause injury to property users, grow to a size consistent with their intended use, (screening, shade, etc.) and thrive in the locations where they are being planted. Plants shall not block or interfere with walkway areas or designated viewlines into or out of site for safety reasons.
- b. Species that are known to be invasive should be avoided, especially on properties close to or abutting natural or sensitive areas. Plants susceptible to breakage due to weak structure or known to be extremely susceptible to pests and diseases in this area shall not be used.
- c. Tree species shall be selected that will survive in the closed soil condition of habit consistent with their placement.
- d. All plants shall be certified free of pests and diseases and have a habit and root ball size and type consistent with the species and size. Plants shall meet the criteria of the current standards of the American Nurseryman Association Standards.

2. Deciduous Shade Trees

- a. Size: 2 – 2 ½ inch caliper
Minimum clear branch height: 7' in areas of pedestrian or vehicular circulation
- b. Surface rooted trees shall not be used in closed soil conditions or within 10 ft. of pavement areas.
- c. Trees that may only be used in a reforestation or large area condition: Eastern Black Walnut, Black Locust, Tulip Poplar, Weeping Willow, Box Elder, Silver Maple.

3. Ornamental Trees

- a. Size: 1 ¼ - 1 ½ inch caliper
- b. Spacing: To be consistent with species and use.

4. Evergreen Trees

- a. Size: 6 ft. height
- b. Spacing: To be consistent with species and use.

5. Shrubs

- a. Size to be consistent with intended use.
- b. No bareroot plants or sizes less than 1 gallon container size will be accepted, other than for reforestation purposes.
- c. Spacing: Plants shall be spaced for continuous planting or required screening.

6. Groundcovers, Vines, Perennials, Ornamental Grasses

- a. Size to be consistent with intended use.
- b. No bareroot plants are to be used. Minimum size of woody species or grasses shall be 24" in height in one-gallon container; minimum size of perennials, vines and other grasses is 1 quart.
- c. Herbaceous groundcovers, (Pachysandra, Vinca, etc.) may be provided in 2" pots or flats.
- d. Spacing: Groundcovers shall be spaced to provide continuous coverage within 3 years after planting.

APPENDIX 'D':Planting Specifications/Requirements

1. Plant Materials

- a. The landscape contractor shall furnish and install and/dig, ball, burlap and transplant all of the plant materials called for on the drawings and/or listed in the Plant Schedule.
- b. Plant names used in the Plant Schedule shall be identified in accordance with Hortus Third, by L.H. Bailey, 1976.

2. Plant Standards

- a. All plant materials shall be equal to or better than the requirements of the "American Standard for Nursery Stock," latest edition, as published by the American Association of Nurserymen (hereafter referred to as AAN Standards). All plants shall be typical of their species and variety, shall have a normal habit of growth and shall be first quality, sound, vigorous, well-branched and with healthy, well-furnished root systems. They shall be free of disease, insect pests and mechanical injuries.
- b. All plants shall be nursery grown and shall have been grown under the same climatic conditions as the location of this project for at least two years before planting. Neither heeled-in plants nor plants from cold storage will be accepted.
- c. Collected plants or transplanted trees may be called for by the landscape architect and used, provided, however, that locations and soil conditions will permit proper balling.

3. Plant Measurements

- a. All plants shall conform to the measurements specified in the Plant Schedule shown on the Landscape Plan.
- b. Caliper measurements shall be taken six inches (6") above grade for trees under four-inch (4") caliper and twelve inches (12") above grade for trees four inches (4") in caliper and over.
- c. Minimum branching height for all shade trees shall be six feet (6').
- d. Minimum size for planting shade trees shall be 2-2 1/2" caliper, 12' – 14' in height.
- e. Minimum size for planting ornamental trees shall be 1-1/2 – 1-3/4" caliper, 6'-8' in height.
- f. Minimum size for planting evergreen trees shall be 6' height.
- g. Minimum size for shrubs shall be, in general 24-36" in height or spread.

4. Planting Seasons

- a. A professional horticulturalist/nurseryman shall be consulted to determine the proper time, based on plant species and weather conditions, to move and install particular plant material and to minimize stress to the plant.

5. Digging

- a. All plant material shall be dug, balled and burlapped or bare root in accordance with the "AAN Standards."

6. Excavation of Plant Pits

- a. All pits shall be generally circular in outline, and the tree deep enough to allow 1/8 of the ball to be above the existing grade. Plants shall rest on undisturbed existing soil or well-compacted backfill.
- b. Areas designated as shrub beds shall be cultivated to at least 18" depth minimum. Areas designated for herbaceous perennials, ground covers, and vines shall be cultivated to at least 12" in depth minimum.

7. Plant Pruning, Edging and Mulching

- a. Plant material shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts made on an angle from the bark ridge to the branch collar, no flush cuts, to minimize the area cut. All cuts shall be made with sharp tools. Trim all edges smooth. No tree wound dressings shall be applied.

8. Seeding and Sodding

All seeding and sodding shall be as per "Standards and Specifications for Soil Erosion and Sediment Control in Urbanizing Areas" as published by the Maryland Department of Natural Resources except as noted below:

- a. Areas between building facades and paved surfaces shall be seeded or sodded with a mixture of three varieties of improved fall fescue at 3-4 pounds/1000 sq. ft.

APPENDIX 'E': Planting Soil Requirements

1. Planting Soil Improvement Requirements

2. Drainage Improvement Requirements

- a. The following requirements apply to both planting soil and subgrade soil that supports planting soil.
- b. Well drained Soil: No requirements
- c. Moderately drained soil: Minimum 5% slopes in all tree and shrub planting areas.
- d. Poorly drained soil: Minimum 5% slopes in all tree and shrub planting areas. Add subsurface drainage lines along the low points of all subgrades. Drain line inverts shall be no less than 18 inches below the finished surface or 6 inches below the required planting soil improvement whichever is greater. For planting bed areas 300 sq feet or greater in area, space subsurface drainage lines no more than 15 feet on center. Within areas that slope greater than 8%, drain lines shall only be required along the lower edge of the planting bed.
- e. Lawn areas within 15' of the trunk of any required tree areas shall conform to slope requirements.

3. Definitions

Loam soil: Soil with less than 35% clay; 50% silt; 85% sand or 15% gravel within Unified Soil Classifications SM, SC, ML, CL, O. Organic content greater than 2% but less than 8% by weight.

Good Soil: Loam soil with less than 12" of fill or 6" of cut from the original grade. The soil profile shall have an organic A horizon. In fill areas the A horizon shall be undisturbed. In cut areas the B horizon shall be undisturbed. Bulk density less than the amount defined herein as restricting root penetration. (Refer to Table 1-Bulk Density, below.)

Graded soil: Loam soil where more than 12" of loam soil fill has been added or more than 6" of cut has been stripped. Remaining soil in the fill area shall

be loam soil. Soil shall not have become compacted to a bulk density greater than the amount defined herein as restricting root penetration.

Compacted soil: Loam soil with less than 12” of fill or 6” of cut from the original grade. A horizon in fill areas is undisturbed. Bulk density more than the amount defined herein as restricting root penetration.

Graded and compacted: Loam soil where more than 12” of fill has been added or more than 6” of cut has been stripped. Bulk density more than the amount defined herein as restricting root penetration.

Heavy, sandy, gravelly or contaminated soil: Soil with more than 35% clay, 50% silt, 80% sand or 15% gravel, Unified Soil Classifications GW, GP, SW, SP, Pt, CH, MH. Organic content less than 2% or more than 8% by weight.

Well drained subgrade soil: Soil intended to serve as the subgrade for addition of loam soil that infiltrates at a rate greater than 1 inch per hour as determined by an infiltrometer test.

Subgrade soil: Soil intended to serve as the subgrade for the addition of loam soil or planting mix.

Undisturbed soil horizon: A portion of the soil profile that has not been graded since the period when the land was in agricultural use or was forested. Or where previous human activity of grading was relatively minor and the soil structure, drainage and profile are still acceptable to support rooting of trees in the top 30 inches of the soil.

Planting soil: Soil that is intended to be the growing medium for plants and lawn and which meets the requirements of soil improvement as defined in section 4.0.

4. Bulk Density

Bulk density as a common measuring standard for horticultural soil. Bulk density is the soils dry weight divided by its volume, most often expressed as grams per cubic centimeter (g/c^3). Table 1 indicates bulk density of various soils. Root limiting levels change with soil type.

Table 1. Bulk Density

<u>Soil Class</u>	<u>Unified Soil</u>	<u>Bulk Density</u>
USDA Classification	Classification	g/cm ³ Beginning of root penetration restriction
Coarse sandy loam Loamy sand	GW, GP, SW, SP	1.60
Fine sandy loam Sandy clay loam Loam	SM, SC	1.50
Silty loam >30% sand	ML	1.45
Silty loam <30% sand	MH	1.40
Clay loam <35% clay	CL	1.40
Clay loam >35% clay	CH	1.35
Soils classified as Silt, clay, sandy clay Sand, silty clay	O, PT	Not usable as horticultural soil

5. Drainage Capability

1. Drainage capability is to be the confirmed drainage infiltration rate in the subgrade and planting soil after all site construction is complete and just prior to the beginning of soil improvement work defined in section 4.0.
2. Well drained soil or subgrade material: Soil that infiltrates at a rate greater than 1 inch per hour as determined by an infiltrometer test.
3. Moderately drained soil or subgrade material: Soil that infiltrates at a rate less than 1 inch per hour but greater than ½” per hour as determined by an infiltrometer test.

4. Poorly drained soil or subgrade material: Soil that infiltrates at a rate less than ½” per hour as determined by an infiltrometer test.
5. Soil drainage assumptions: The following assumptions for post construction drainage capability may be made for planting soil and subsoil in the preparation of Soil and drainage modification plan and details. The following drainage capability assumes that the soil is not compacted to above root limiting density.

Table 2. Drainage Capability by Soil Type

Soil Type	Unified Soil Classification	Drainage capability
USDA Classification		
Coarse sandy loam Loamy sand	GW, GP, GM, GC, SW, SP	Moderate to Well Drained
Fine sandy loam Sandy clay loam Loam	SM, SC	Moderate to Poorly Drained
Silty loam >30% sand	ML	Moderate to Poorly Drained
Silty loam <30% sand	MH	Poorly Drained
Clay loam <35% clay	CL	Moderate to Poorly Drained
Clay loam >35% clay	CH O, PT	Poorly Drained Moderate to Poorly Drained
Silt, clay, sandy clay Silty clay Sand		Poorly Drained Moderate to Well Drained

Moderate to Poorly Drained soils should be assumed to drain poorly until actual infiltration rate is confirmed after construction and just prior to the installation of drainage requirements.

6. Post construction soil conditions

- a. At the time of permit application the landscape architect shall estimate the conditions of the soil compaction of planting and subgrade soil and drainage classifications at the end of construction, based on the soil and drainage type prior to construction, the type and intensity of construction, and amounts of grading proposed.
- b. At the end of the construction period and within two weeks of the start of soil and drainage improvements the landscape architect shall confirm the final soil

conditions and drainage classifications. In any areas where the soil conditions do not match the estimated soil conditions, the landscape architect shall submit a revised soil and drainage plan.

- c. Soil conditions shall be classified as follows (see definitions):

- Good
- Graded
- Compacted
- Grades and compacted
- Heavy, sandy, gravelly or contaminated
- Subgrade Soil

- d. Soil drainage shall be tested and classified as follows (see definitions)

- Well drained
- Moderately drained
- Poorly drained

7. Soil and drainage modification plan

- a. Submit a plan of the project that indicates the following

1. The extent of all areas to be planted including lawn, shrub and groundcover beds, trees and unplanted mulched beds. Soil plans shall include the symbols for trees but not individual shrub and ground cover designations in order to provide sufficient space to show the soil and drainage information.
2. The post construction estimate of soil conditions and drainage classification for each area.
3. The proposed soil improvements for each area.
4. Soil improvements to any areas under pavements.
5. The location of all drain lines, inspection risers, cleanouts, connection points to storm drains, drain line outfall locations and drywells. Drain lines shall indicate the invert elevation at all cleanouts, risers, connections to storm drains, outfalls and the top elevations of all drywells.
6. Existing and proposed topographic contour lines at one-foot contour interval.
7. Detail and section references.
8. Required notes and certifications.

8. Soil and drainage details and sections

- a. Submit details and sections of all soil and drainage improvements. Details shall include the minimum soil and drainage details for each soil and drainage condition.

9. Soil and drainage specifications

- a. Submit standard soil and drainage improvement specifications to support the plans and details.

APPENDIX 'F': Landscape Plan Checklist

APPENDIX 'G': Landscape Plan Process

1. Grading or Site Development Submittal

2. Sketch and Final Subdivision Submittal Building Permit Submittal

APPENDIX 'H': Plant List of Non-Recommended Plants

1. Aquatic Plants
 - Eurasian watermilfoil (*Myriophyllum spicatum*)
 - Giant salvinia (*Salvinia molesta*)
 - Hydrilla (*Hydrilla verticillata*)
 - Parrot feather watermilfoil (*Myriophyllum aquaticum*)
 - Water chestnut (*Trapa Natans*)

2. Herbaceous Plants
 - Garlic mustard (*Alliaria petiolata*)
 - Japanese knotweed (*Polygonum cuspidatum*)
 - Japanese stiltgrass (*Microstegium vimineum*)
 - Lesser celandine (*Ranunculus ficaria*)
 - Purple loosestrife (*Lythrum salicaria*)

 - Bamboos, exotic (*Bambusa, Phyllostachys and Pseudosassa*)
 - Canada thistle (*Cirsium arvense*)
 - Chinese lespedeza (*Lespedeza cuneata*)
 - Common daylily (*Hemerocallis fulva*)
 - Common reed (*Phragmites australis*)
 - Giant hogweed (*Heracleum mategazzianum*)
 - Giant reed, wild cane (*Arundo donax*)
 - Marsh dewflower (*Murdannia keisak*)
 - Spotted knapweed (*Centaurea biebersteinii*)

3. Shrubs
 - Autumn olive (*Elaeagnus umbellata*)
 - Bush honeysuckles, exotic (*Lonicera*)
 - Japanese barberry (*Berberis thunbergii*)
 - Multiflora rose (*Rosa multiflora*)
 - Privets (*Legustrum species*)

 - Wineberry (*Rubus phoenicolasius*)
 - Winged burning bush (*Euonymus alata*)

 - Butterfly bush (*buddleja*)
 - Japanese spiraea, Japanese meadowsweet (*Spiuraea japonica*)
 - Jetbead (*Rhodotypos scandens*)

4. Trees
 - Bradford pear (*Pyrus calleryana Bradford*)

Norway maple (*Acer platanoides*)
Princess tree (*Paulownia tomentosa*)
Tree of Heaven (*Aianthus altissima*)

Silk tree, mimosa tree (*Albizia julibrissin*)
Paper mulberry (*Broussonetia papyrifera*)
Sawtooth oak (*Quercus acutissima*)
White mulberry (*Morus alba*)

5. Vines

English ivy (*Hedera helix*)
Kudzu (*Pueraria Montana v.lobata*)
Mile-a-minute (*Polygonum perfoliatum*)
Orienta bittersweet (*Celastrus orbiculatus*)
Porcelainberry (*Ampelopsis brevipedunculata*)
Wisterias, exotic (*Wisteria sinensis*, *W.floribunda*)

Creeping euonymus (*Euonymus fortunei*)
Five-leaved akebia (*Akebia quinata*)
Japanese honeysuckle ((*Lonicera japonica*)
Louis' swallowwort (*Cynanchum louiseae*)
Periwinkle (*Vinca minor*)

APPENDIX 'I': Native Plant Species List

COMMON NAME	SCIENTIFIC NAME	TYPE
American Beech	<i>Fagus grandifolia</i>	T
American Elm	<i>Ulmus Americana</i>	T
American Sycamore	<i>Platanus occidentalis</i>	T
Green Ash	<i>Fraxinus pennsylvanica</i>	T
Aspen	<i>Populus grandidentata</i>	T
Bald Cypress	<i>Taxodium distichum</i>	T
Black Cherry	<i>Prunus serotina</i>	T
Black Gum	<i>Nyssa sylvatica</i>	T
Black Locust	<i>Robinia pseudoacacia</i>	T
Black Jack Oak	<i>Quercus marilandica</i>	T
Black Oak	<i>Quercus velutina</i>	T
Black Walnut	<i>Juglans nigra</i>	T
Black Willow	<i>Salix Nigra</i>	T
Chestnut Oak	<i>Quercus Prinus</i>	T
Common Persimmon	<i>Diospyros virginiana</i>	T
Eastern Cottonwood	<i>Populus deltoids</i>	T
Hackberry	<i>Celtis occidentalis</i>	T
Loblolly Pine	<i>Pinus taeda</i>	T
Mockernut Hickory	<i>Carya tomentosa</i>	T
Northern Red Oak	<i>Quercus borealis</i>	T
Pin Oak	<i>Quercus palustris</i>	T
Pignut Hickory	<i>Carya glabra</i>	T
Pitch Pine	<i>Pinus rigida</i>	T
Post Oak	<i>Quercus stellata</i>	T
Red Maple	<i>Acer rubrum</i>	T
Red Mulberry	<i>Morus rubra</i>	T
River Birch	<i>Betula nigra</i>	T
Sassafras	<i>Sassafras albidum</i>	T
Scarlet Oak	<i>Quercus coccinea</i>	T
Shortleaf Pine	<i>Pinus echinata</i>	T
Silver Maple	<i>Acer saccharinum</i>	T
Slippery Elm	<i>Ulmus rubra</i>	T
Smooth Alder	<i>Alnus serrulata</i>	T
Southern Red Oak	<i>Quercus falcate</i>	T
Swamp White Oak	<i>Quercus bicolor</i>	T
Sweet Gum	<i>Liquidambar styraciflua</i>	T
Virginia Pine	<i>Pinus virginiana</i>	T
White Ash	<i>Fraxinus Americana</i>	T
White Oak	<i>Quercus alba</i>	T
Willow Oak	<i>Quercus phellos</i>	T

Yellow Oak	<i>Quercus muehlenbergii</i>	T
Yellow Poplar	<i>Liriodendron tulipifera</i>	T

COMMON Name	SCIENTIFIC NAME	TYPE
American Holly	<i>Ilex opaca</i>	UT
American Hornbeam	<i>Carpinus caroliniana</i>	UT
Canby's hawthorn	<i>Crataegus canbyi</i>	UT
Chinquapin	<i>Castanea pumila</i>	UT
Choke Cherry	<i>Prunus virginiana</i>	UT
Dogwood	<i>Cornus florida</i>	UT
Eastern Redbud	<i>Cercis canadensis</i>	UT
Eastern Red Cedar	<i>Juniperus virginiana</i>	UT
Fringe Tree	<i>Chionanthus virginicus</i>	UT
Redbud	<i>Cercis canadensis</i>	UT
Southern Thorn	<i>Crataegus viridis</i>	UT
Smooth Alder	<i>Alnus serrulata</i>	UT
Wild Crab	<i>Pyrus coronaria</i>	UT
American Meadow-sweet	<i>Spiraea latifolia</i>	S
Bayberry	<i>Myrica pensylvanica</i>	S
Beach Plum	<i>Prunus maritima</i>	S
Black haw	<i>Viburnum prunifolium</i>	S
Blueberry	<i>Rubus cuneifolius</i>	S
Button bush	<i>Cephalanthus occidentalis</i>	S
Dangleberry	<i>Gaylussacia frondosa</i>	S
Deerberry	<i>Vaccinium stamineum</i>	S
Devil's Walking Stick	<i>Aralia spinosa</i>	S
Dwarf Azalea	<i>Rhododendron atlanticum</i>	S
Dwarf or Ginger Sumac	<i>Rhus copallina</i>	S
Dwarf huckleberry	<i>Gaylussacia dumosa</i>	S
Fetterbush	<i>Leucothoe racemosa</i>	S
Highbush Blueberry	<i>Vaccinium corymbosum</i>	S
High-tide bush	<i>Baccharis halimifolia</i>	S
Inkberry	<i>Ilex glabra</i>	S
Low Blueberry	<i>Vaccinium vacillans</i>	S
Male-Berry	<i>Lyonia ligustrina</i>	S
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>	S
Mountain Laurel	<i>Kalmia latifolia</i>	S
Narrow-leaved Meadow Sweet	<i>Spiraea alba</i>	S
Obvate serviceberry	<i>Amelanchier obovalis</i>	S
Paw Paw	<i>Asimina triloba</i>	S
Pink Azalea	<i>Rhododendron nudiflorum</i>	S
Possum Haw	<i>Ilex deciduas</i>	S
Red Chockberry	<i>Pyrus arbutifolia</i>	S
Silky Cornell	<i>Cornus amomum</i>	S
Smooth Arrowwood	<i>Viburnum recognitum</i>	S
Southern Arrowwood	<i>Viburnum dentatum</i>	S
Spicebush	<i>Lindera benzoin</i>	S
Staghorn Sumac	<i>Rhus typhina</i>	S
Staggerbush	<i>Lyonia mariana</i>	S

Strawberry Bush	<i>Euonymus americanus</i>	S
Swamp Azalea	<i>Rhododendron viscosum</i>	S
Sweet	<i>Rhododendron canescens</i>	S
Sweet Fern	<i>Comptonia peregrina</i>	S
Sweetbay Magnolia	<i>Magnolia virginiana</i>	S
Sweet Pepperbush	<i>Clethra alnifolia</i>	S
Sweet Sumac	<i>Rhus glabra</i>	S
Tassel-white	<i>Itea virginica</i>	S
Wax Myrtle	<i>Myrica cerifera</i>	S
Winterberry	<i>Ilex laevigata</i>	S
Witch Hazel	<i>Hamamelis virginiana</i>	S
Ferns	(Fern Family)	G
Partridge Berry	<i>Mitchella repens</i>	G
Switch Grass	<i>Panicum virgatum</i>	G
Trumpet Creeper	<i>Campsis radicans</i>	G
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	G
Wild Honeysuckle	<i>Lonicera dioica</i>	G
Big Cordgrass	<i>Spartina cynosuroides</i>	SG
Bluejoint	<i>Calamagrostis Canadensis</i>	SG
Cattail	<i>Typha</i> (spp.)	SG
Common Three-Square	(<i>Scirpus</i> (sp.))	SG
Panic Grass	<i>Dichanthelium</i> (spp.)	SG
Rushes	<i>Juncus</i> (spp.)	SG
Salt Meadow Hay	<i>Spartina patens</i>	SG
Salt Grass	<i>Distichlis spicata</i>	SG
Sedges	<i>Carex</i> (spp.)	SG
Smooth Cordgrass	<i>Spartina alterniflora</i>	SG
Wild Rice	<i>Zizania aquatica</i>	SG

KEY

T	-	Trees
UT	-	Understory Trees
S	-	Shrubs
G	-	Ground Cover
SG	-	Shoreline Grasses

APPENDIX ‘J’: Street Tree Plant List (Department of Public Works List to be modified)

MAJOR TREES

Scientific Name	Common Name	Height	Width
<i>Acer rubrum</i> ‘Armstrong’	Armstrong Red Maple	50’-60’	20’-25’
<i>Acer saccharum</i> ‘Green Mountain’	Green Mountain Sugar Maple	50’-75’	40’-60’
<i>Betula nigra</i> “Heritage	Heritage River Birch (single stem)	40’-50’	40’-50’
<i>Carpinus betulus</i>	European Hornbeam	40’-60’	30’-40’
<i>Carpinus betulus</i> ‘Fastigiata	Fastigate European Hornbeam	35’-40’	20’-30’
<i>Celtis occidentalis</i> ‘Prairie Pride’	“Prairie Pride” Hackberry	40’-50’	40’-50’
<i>Cladasris lutea</i> *	Yellowwood	30’-50’	40’-50’
<i>Fagus sylvatica</i>	European Beech	50’-75’	40’-60’
<i>Fraxinus pennsylvanica</i> ‘Marshall’	‘Marshall’ Seedless Ash	45’-55’	35’-45’
<i>Ginko biloba</i>	Ginko (male grafted only)	50’-80’	40’-80’
<i>Gleditsia tricanthos</i> ‘inermis’	Thornless Honeylocust	50’-70’	35’-50’
<i>Liquidambar styraciflua</i> ‘Rotundiloba’	Sweetgum (fruitless)	65’-75’	40’-50’
<i>Nyssa sylvatica</i>	Blackgum	40’-70’	35’-45’
<i>Platanus x acerifolia</i> “Bloodgood”	Bloodgood London Planetree	70’-80’	55’-65’
<i>Quercus bicolor</i>	Swamp White Oak	60’-80’	50’-80’
<i>Quercus rubra</i>	Northern Red Oak	60’-80’	45’-60’
<i>Quercus phellos</i>	Willow Oak	60’-75’	40’-60’
<i>Sophora japonica</i> “Regent”*	Regent Scholartree	40’-70’	30’-40’
<i>Tilia cordata</i> ‘Greenspire’	Greenspire Littleleaf Linden	50’-70’	35’-50’
<i>Tilia tomentosa</i>	Silver Linden	50’-60’	50’-60’
<i>Ulmus parvifolia</i>	Lacebark Elm	40’-45’	45’-50’
<i>Zelkova serrata</i> ‘Village Green’	Village Green Zelkova	50’-60’	50’-60’

MINOR TREES

<i>Acer campestre</i>	Hedge Maple	30'-35'	30'-35'
<i>Acer ginnala</i>	Amur Maple	15'-20'	15'-25'
<i>Acer griseum</i>	Paperbark Maple	20'-30'	15'-25'
<i>Amelanchier laevis</i> *	Allegheny Serviceberry	30'-40'	15'-20'
<i>Carpinus caroliniana</i>	American Hornbeam	20'-40'	20'-30'
<i>Cercis canadensis</i> *	"Redbud Texas White"	20'-30'	15'-30'
<i>Cercis Canadensis</i> *	Eastern Redbud	20'-30'	15'-30'
<i>Chinoanthus virginicus</i> *	Fringetree (tree form)	12'-20'	12'-20'
<i>Cornus florida</i> *	White Flowering Dogwood	20'-30'	20'-30'
<i>Cornus florida</i> 'rubra'*	Pink Flowering Dogwood	20'-30'	20'-30'
<i>Cornus kousa</i> *	Kousa Dogwood	15'-20'	15'-20'
<i>Crataegus crusgalli</i> 'inermis'*	Thornless Cockspur Hawthorn	25'-30'	25'-35'
<i>Crataegus viridis</i> 'Winter King'*	Winter King Green Hawthorn	20'-35'	20'-35'
<i>Koelruteria paniculata</i> *	Goldenraintree	30'-40'	30'-40'
<i>Malus x</i> 'Robinson'*	Robinson Flowering Crabapple	20'-25'	15'-20'
<i>Malus x</i> 'Callaway'*	Callaway Flowering Crabapple	15'-25'	15'-20'
<i>Prunus x incamp</i> 'Okame'*	Okame Cherry	15'-25'	15'-20'
<i>Prunus yedoensis</i> *	Yeoshino Cherry	35'-40'	35'-45'
<i>Pyrus calleryana</i> 'Aristocrat'*	Aristocrat Pear	35'-45'	25'-35'
<i>Pyrus calleryana</i> 'Redspire'	Redspire Pear	35'-45'	20'-25'
<i>Quercus myrsinifolia</i>	Chinese Evergreen Oak	30'-35'	30'-35'
<i>Stewartia pseudocamellia</i> *	Japanese Stewartia	30'-40'	20'-30'
<i>Stytax japonica</i> *	Japanese Snowbell	20'-30'	15'-25'
<i>Syringia reticulate</i> *	Japanese Treelilac	20'-25'	15'-20'
<i>Viburnum prunifolium</i>	Blackhaw Viburnum (tree form)	15'-20'	8'-12'

*Flowering Trees

Plant major street trees at 40' on center. Trees shall be branched at a point approximately 60% of the total height of the tree above ground.

Plant minor street trees at 30' on center.

APPENDIX 'K': Cost Estimates

K. Cost Estimates

Planting Costs (Installed)

a.	Major deciduous tree (2-2 ½" caliper):	\$400 ea.
b.	Minor deciduous tree (1 ¼-1½" caliper):	\$200 ea.
c.	Evergreen tree (6' ht.)	\$250 ea.
d.	Shrub (24-36")	\$ 50 ea.
e.	Herbaceous/Perennial plants (1gal.cont.)	\$ 9 ea.
f.	Ornamental Grasses (1 gal. Cont.)	\$ 9 ea.

Site Work Costs (Installed)

a.	Mulched Berm (24" ht.)	\$ 15	per lineal ft.
b.	Wooden Fence (6' ht.)	\$ 15	per lineal ft.
c.	Vinyl Fence (6' ht.)	\$ 40	per lineal ft.
d.	Pre-Cast Stone wall (4' ht.)	\$	per lineal ft.

APPENDIX 'L': Approved County Bill and Amendments

