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**APPENDIX E: GUIDE FOR LANDSCAPING**  
**[Amended 5-7-08 by Bill No. 2008-01]**

**E-1: Guide for Protecting Existing Trees.**

Articles XXI, XXII and XXIII provide for the retention and protection of large trees when land is developed. Retention and protection of existing trees are the priority and preferred options when developing new sites. To better ensure the survival of existing trees, the developer should heed the following guidelines:

- (1) Protect existing trees with fencing and armoring during the entire construction period. The fence should enclose an area ten (10) feet radial distance or equal to the crown radius, whichever is greater, with the tree at the center.
- (2) Avoid compaction of the soil around existing trees due to heavy equipment. Do not pile dirt or other materials beneath the crown of the tree.
- (3) Keep fires or other sources of extreme heat well clear of existing trees.
- (4) Repair damaged roots and branches immediately. Exposed roots should be covered with topsoil. Wherever roots are destroyed, a proportional amount of branches must be pruned so the tree doesn't transpire more water than it takes in. Injured trees must be thoroughly watered during the ensuing growing year.

**E-2: Standards for Street and Parking Lot Trees.**

Trees planted in compliance with the requirements of Articles XXI, XXII and XXIII shall have most or all of the following qualities.

- (1) Hardiness.
  - (a) Resistance to extreme temperatures.
  - (b) Resistance to drought.
  - (c) Resistance to storm damage.
  - (d) Resistance to air pollution.
  - (e) Ability to survive physical damage from human activity.
- (2) Life cycle.
  - (a) Moderate to rapid rate of growth.
  - (b) Long life.
- (3) Foliage and branching.
  - (a) Tendency to branch high above the ground.
  - (b) Wide spreading habit.
  - (c) Relatively dense foliage for maximum shading.
- (4) Maintenance.

- (a) Resistance to pests.
- (b) Resistance to plant diseases.
- (c) Little or no pruning requirements.
- (d) No significant litter problems.

**E-3: Formula for Calculating Thirty-Five-Percent Shading of Parking Areas.**

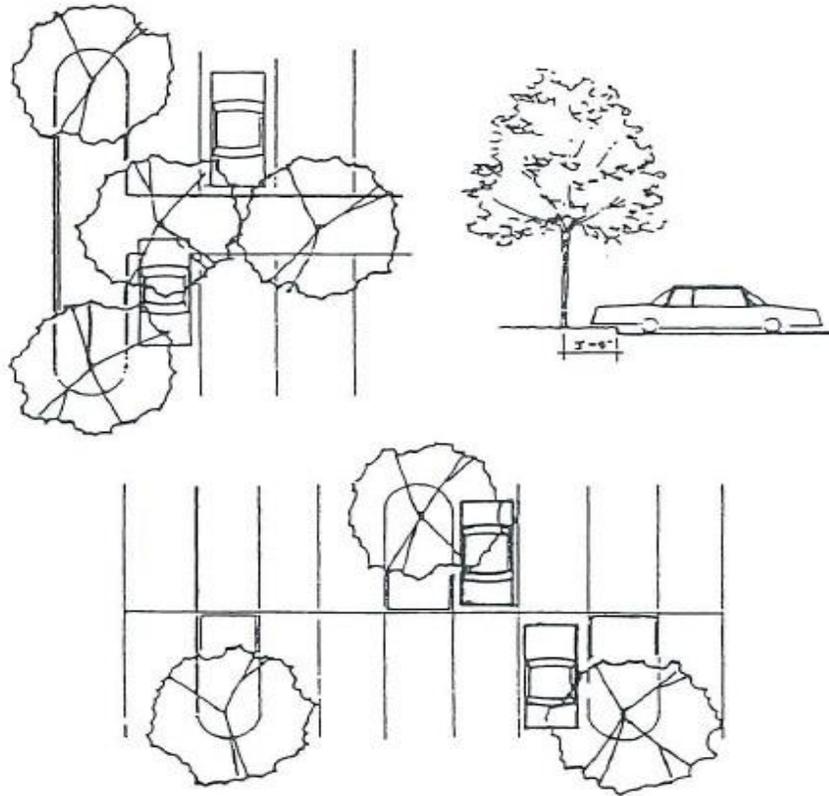
The following is a formula for determining the number of shade trees required in and around paved parking lots in order to presumptively satisfy the shading requirements of Article XXI.

(1) Including parking spaces, driveways, loading areas, sidewalks and other circulation areas and not including building area or any area which will remain completely undeveloped, calculate square footage of the vehicle accommodation area:	sq. ft.
(2) Multiply	X .35
(3) Area to be shaded =	sq. ft.
(4) Area shaded by existing trees to be retained in and around the vehicle accommodation area:	sq. ft.
(5) Area shaded by required screening trees, if any:	sq. ft.
(6) Area shaded by required street trees, if any:	sq. ft.
(7) Subtotal- [If line (7) is greater than line (3), then the shading requirement has been met. If not, go to line (8).]	sq. ft.
(8) Enter the difference between line (7) and line (3):	sq. ft.
(9) Divide line (8):	÷ 707
(10) Total number of shade trees required within the vehicle accommodation area=	trees

NOTES: Existing trees retained in compliance with Article XXI, XXII and XXIII will be credited according to their actual crown radius. Shaded area may be calculated as follows:  $3.14 \times (\text{crown radius})^2 = \text{shaded area}$ .

Trees planted within the vehicle accommodation area are credited with shading seven hundred seven (707) square feet [based on a crown radius of fifteen (15) feet]. New or existing trees on the perimeter, within 15 feet of the parking lot, are credited for having only half a crown over the vehicle accommodation area [e.g., new perimeter trees will be credited for shading three hundred fifty-four (354) square feet]. Generally, all trees planted in compliance with the screening requirements of Articles XXII and XXIII and the street tree requirements of § 297-358 will be considered perimeter trees. When smaller trees such as dogwoods are planted, the credited shading area will be adjusted downward to three hundred fourteen (314) square feet for interior trees and one hundred fifty-seven (157) square feet for perimeter trees. [based on a crown radius of ten (10) feet].

#### **E-4: Typical Parking Lot Planting Islands.**



#### **E-5: Guide for Planting Trees.**

The trees recommended in Section E-10 are native to the coastalplain physiographic region and adapted to local conditions. All trees must receive a certain degree of care, especially during and immediately after planting. To protect an investment in new trees, the developer should ensure that the following guidelines are followed when planting:

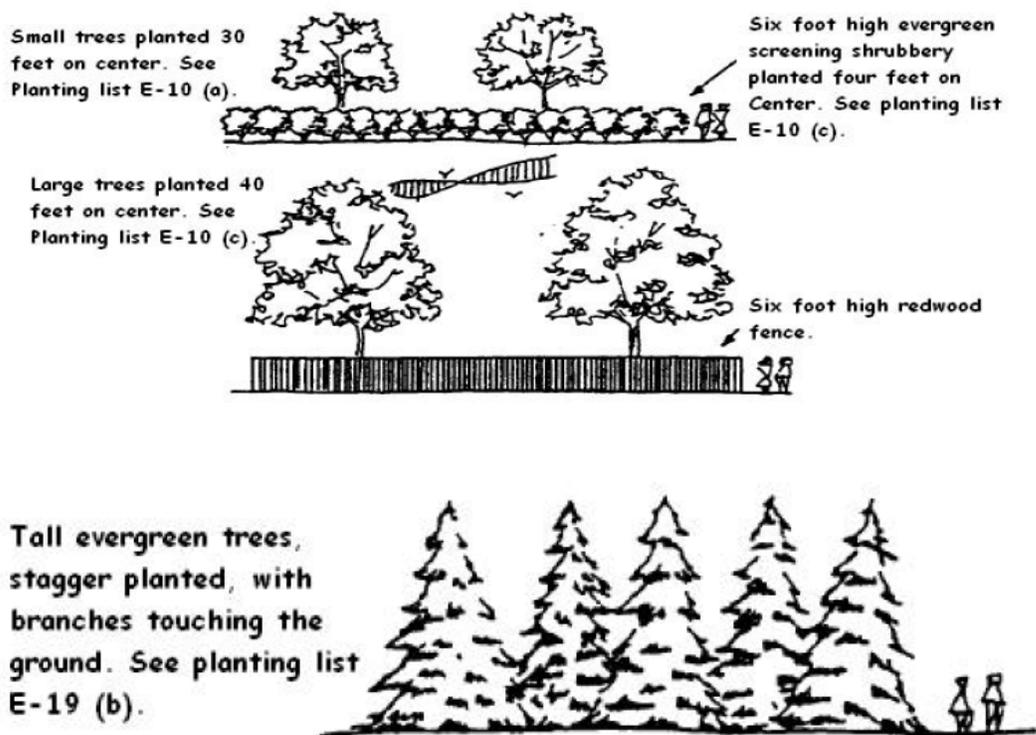
- (1) The best times for planting are early spring and early fall. Trees planted in the summer run the risk of dehydration.
- (2) Plant all trees at four (4) feet from the end of head-in parking spaces to prevent damage from car overhangs.
- (3) Dig the tree pit at least one (1) foot wider than the root ball and equal to the ball's vertical dimension, so the top of the root ball will be flush with the ground level.
- (4) Especially in areas where construction activity has compacted the soil, the bottom of the pit should be scarified or loosened with a pickaxe or shovel.

- (5) Backfill for entire parking peninsulas and planting areas should be with the site's existing soil . However, if soil is hard, compacted fill dirt, the soil in the entire parking peninsulas and planting areas should be improved with organic matter and the ground worked so that it can be more easily planted. All roots must be completely covered. Plant material should be thoroughly watered after installation.
- (6) Immediately after it is planted, the tree should be supported with stakes and guy wires to hold it firmly in place as its root system begins to develop. Staked trees will become stronger more quickly. Remove stakes and ties after one (1) year.

Spread mulch a maximum of one (1) inch over the entire excavation in order to retain moisture and keep down weeds. An additional three-to-four-inch saucer of mulch should be provided to form a basin around the trunk of the tree with a two-foot (2) radius. This saucer helps catch and retain moisture.

- (7) To ensure survival and to meet the intended use, all shade, canopy and street trees referenced in this chapter shall be a minimum of two (2) inches in diameter at breast height at planting. All understory trees shall be a minimum of one and one-half (1 ½) inches in diameter at breast height at planting.

#### E-6: Typical Opaque Screens.



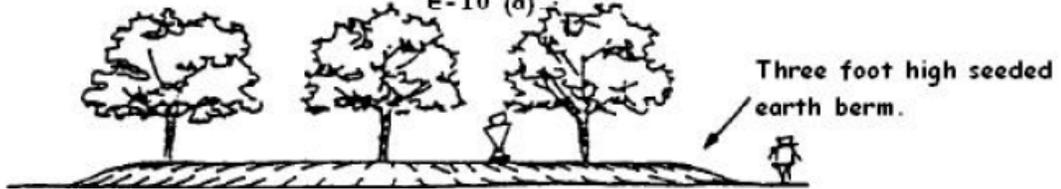
E-7: Typical Semi-Opaque Screens.

E-7: Typical Semi-Opaque Screens

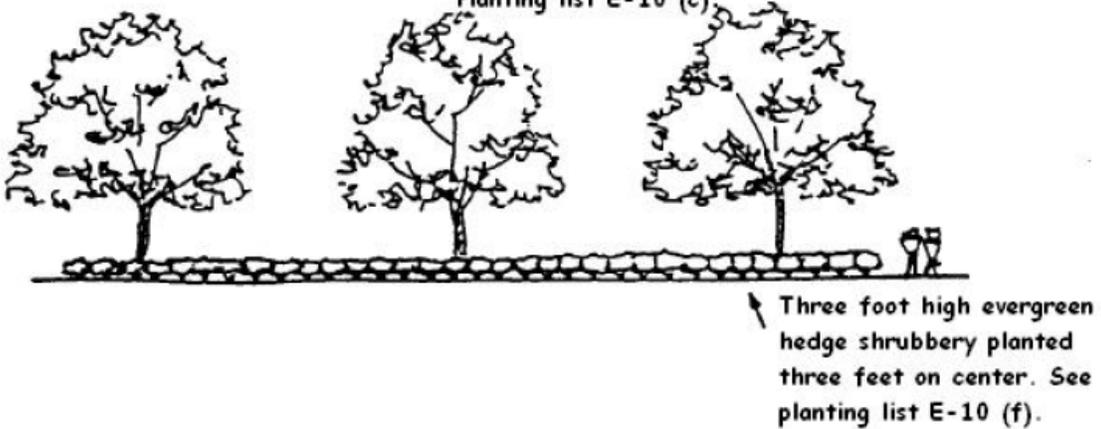
Small trees planted 30 feet on center. See Planting list E-10 (a).



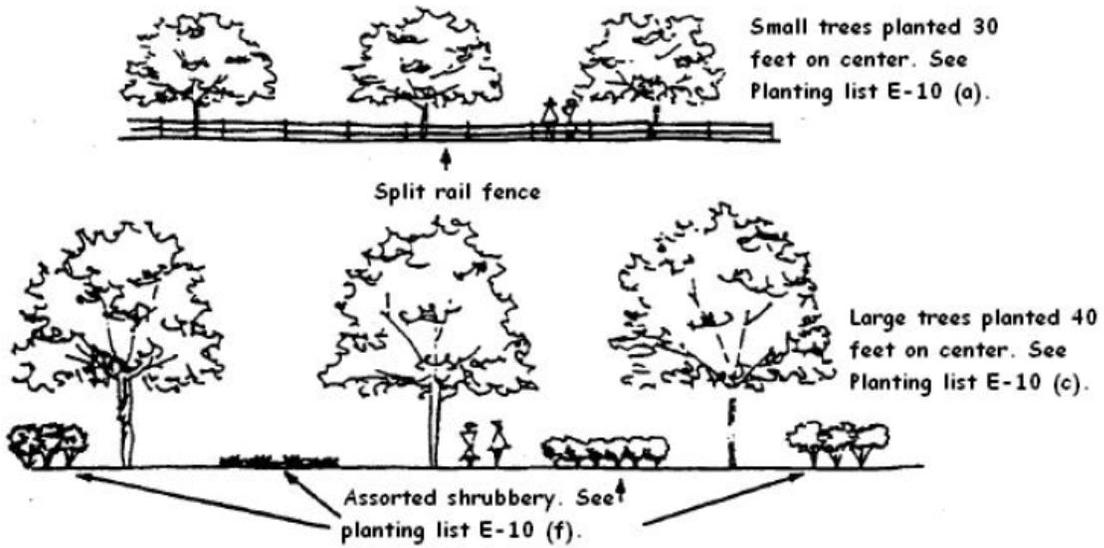
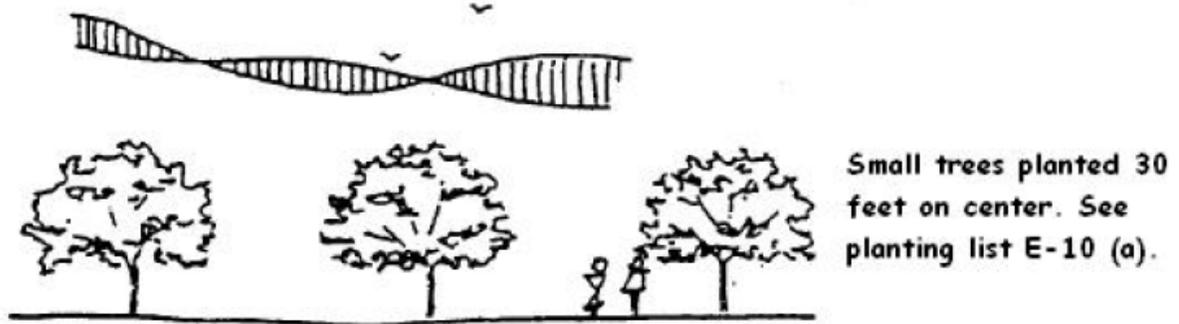
Small trees planted 20-30 feet on center on top of a berm. See Planting list E-10 (a).



Large trees planted 40 feet on center. See Planting list E-10 (c).



**E-8: Typical Broken Screens.**



**E-9: Guide for Planting Shrubs.**

Shrubs planted for screening purposes should be given a proper culture and sufficient room in which to grow. Many of the guidelines for tree planting listed in Section E-5 also apply to shrubs. However, because specific requirements vary considerably between shrub types, this appendix does not attempt to generalize the needs of all shrubs. For detailed planting information on individual species, refer to the Manual of Woody Landscape Plants by Michael Dirr.

**E-10: Lists of Recommended Trees and Shrubs. [Amended 5-17-08 by Ord. No. 2008-01]**

The following lists indicate plantings which will meet the screening and shading requirements of Articles XXI, XXII and XXIII of this chapter. The lists are by no means comprehensive and are intended merely to suggest the types of flora which would be appropriate for screening and shading purposes. Plants were selected for inclusion on these lists according to four (4) principal criteria: general suitability for the climate and soil conditions of this area, ease of maintenance, wildlife value, and availability from area nurseries. When selecting new plantings for a particular site, a developer should first consider the types of plants which are thriving on or near that site.

(a) Small trees for partial screening.

(1) Serviceberry	<i>Amelanchier canadensis</i>	(10) American Holly	<i>Ilex opaca</i>
(2) Paw-Paw	<i>Asimina triloba</i>	(11) Sweetbay Magnolia	<i>Magnolia virginiana</i>
(3) River Birch	<i>Betula nigra</i>	(12) American Crabapple	<i>Malus coronaria</i>
(4) Chinquapin	<i>Castanea pumila</i>	(13) Ironwood	<i>Ostrya virginiana</i>
(5) Eastern Rosebud	<i>Cercis canadensis</i>	(14) Choke Cherry	<i>Prunus virginiana</i>
(6) White Fringe Tree	<i>Chionanthus virginicus</i>	(15) Black Willow	<i>Salix nigra</i>
(7) Flowering Dogwood	<i>Cornus florida</i>	(16)Sassafras	<i>Sassafras albidum</i>
(8) Cockspur Hawthorn	<i>Crataegus crus-galli</i>		
(9) Green Hawthorn	<i>Crataegus viridis</i>		

(b) Large Trees for evergreen screening

(1) Atlantic White Cedar	<i>Chamaecyparis thyoides</i>	(5) Pond Pine	<i>Pinus serotina</i>
(2) Eastern Red Cedar	<i>Juniperus virginiana</i>	(6) Loblolly Pine	<i>Pinus taeda</i>
(3) Southern Yellow Pine	<i>Pinus echinata</i>	(7) Virginia Pine	<i>Pinus virginiana</i>
(4) Pitch Pine	<i>Pinus rigida</i>	(8) Bald Cypress	<i>Taxodium Distichum</i>

(c) Large trees for shading

(1) Box Elder	<i>Acer negundo</i>	(17) American Sycamore	<i>Platanus occidentalis</i>
(2) Red Maple	<i>Acer rubrum</i>	(18) Black Cherry	<i>Prunus serotina</i>
(3) Mockernut Hickory	<i>Carya alba</i>	(19) White Oak	<i>Quercus alba</i>
(4) Swamp Hickory	<i>Carya cordiformis</i>	(20) Swamp Oak	<i>Quercus bicolor</i>
(5) Smooth Bark Hickory	<i>Carya glabra</i>	(21) Scarlet Oak	<i>Quercus coccinea</i>
(6) Shagbark Hickory	<i>Carya ovata</i>	(22) Southern Oak	<i>Quercus falcata</i>
(7) Sugarberry	<i>Celtis occidentalis</i>	(23) Blackjack Oak	<i>Quercus marilandica</i>
(8) Persimmon	<i>Diospyros virginiana</i>	(24) Swamp Chestnut Oak	<i>Quercus michauxii</i>
(9) American Beech	<i>Fagus grandifolia</i>	(25) Chestnut Oak	<i>Quercus muehlenbergii</i>
(10) White Ash	<i>Fraxinus americana</i>	(26) Water Oak	<i>Quercus nigra</i>
(11) Green Ash	<i>Fraxinus pennsylvanica</i>	(27) Pin Oak	<i>Quercus palustris</i>
(12) Black Walnut	<i>Juglans nigra</i>	(28) Willow Oak	<i>Quercus phellos</i>
(13) Sweet Gum	<i>Liquidambar styraciflua</i>	(30) Northern Red oak	<i>Quercus rubra</i>
(14) Tulip Poplar	<i>Liriodendron tulipifera</i>	(31) Post Oak	<i>Quercus stellata</i>
(15) Red Mulberry	<i>Morus rubra</i>	(32) Black Oak	<i>Quercus velutina</i>
(16) Black Gum	<i>Nyssa sylvatica</i>	(33) American Elm	<i>Ulmus americana</i>

(d) Small shrubs for evergreen screening

(1) Inkberry	<i>Ilex glabra</i>	(2) Sheep Laurel	<i>Kalmia angustifolia</i>
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(e) Large shrubs for evergreen screening

(1) Mountain Laurel	<i>Kalmia latifolia</i>	(2) Southern Bayberry	<i>Myrica ce</i>
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(f) Assorted shrubs for broken screens.

(1) Smooth Alder	<i>Alnus serrulata</i>	(21) Black Chokeberry	<i>Photinia melanocarpa</i>
(2) Groundsel Tree	<i>Baccharis halimifolia</i>	(22) Red chokeberry	<i>Photinia pyrifolia</i>
(3) American beautyberry	<i>Callicarpa americana</i>	(23) Beach Plum	<i>Prunus maritima</i>
(4) New Jersey Tea	<i>Ceanothus americanus</i>	(24) Dwarf Azalea	<i>Rhododendron atlanticum</i>
(5) Buttonbush	<i>Ceanothus occidentalis</i>	(25) Sweet Azalea	<i>Rhododendron calendulaceum</i>
(6) Sweet Pepperbush	<i>Clethra alnifolia</i>	(26) Pink Azalea	<i>Rhododendron Periclymenoides</i>
(7) Sweetfern	<i>Comptonia peregrina</i>	(27) Swamp Azalea	<i>Rhododendron viscosum</i>
(8) Silky Dogwood	<i>Cornus amomum</i>	(28) Pasture Rose	<i>Rosa carolina</i>
(9) Black Huckleberry	<i>Gaylussacia baccata</i>	(29) Swamp Rose	<i>Rosa palustris</i>
(10) Dangleberry	<i>Gaylussacia frondosa</i>	(30) Prairie Willow	<i>Salix humilis</i>
(11) Witch Hazel	<i>Hamamelis virginiana</i>	(31) Steeplebush	<i>Spirea tomentosa</i>
(12) St. John's Wort	<i>Hypericum densiflorum</i>	(32) Highbush Blueberry	<i>Vaccinium angustifolium</i>
(13) Smooth Winterberry	<i>Ilex laevigata</i>	(33) Lowbush Blueberry	<i>Vaccinium pallidum</i>
(14) Winterberry	<i>Ilex verticillata</i>	(34) Deerberry	<i>Vaccinium stamineum</i>
(15) Virginia Sweetspire	<i>Itea virginica</i>	(35) Arrowwood	<i>Viburnum acerifolium</i>
(16) Marsh Elder	<i>Iva frutescens</i>	(36) Southern Arrowwood	<i>Viburnum dentatum</i>
(17) Sweetbells	<i>Leucothoe racemosa</i>	(37) Witherod	<i>Viburnum nudum v. cassinoides</i>
(18) Spicebush	<i>Lindera benzoin</i>	(38) Possum-haw	<i>Viburnum nudum</i>
(19) Stagger-bush	<i>Lyonia mariana</i>	(39) Black Haw	<i>Viburnum prunifolium</i>
(20) Northern Bayberry	<i>Myrica pensylvanica</i>		

## **E-11: Conservation Landscaping.**

Conservation landscaping has the specific goals to reduce pollution and benefit the environment. Elements of conservation landscaping: reduce disturbance, reduce lawn or high maintenance areas, use native plants, avoid invasive species, improve water quality, enhance and create wildlife habitat, can be naturalistic planting, or habitat restoration.

Benefits of conservation landscaping: Reduce time and expense of mowing, watering, fertilizing and treating lawn and garden areas, and offers greater visual interest than lawn. Conservation landscaping can also be used to address areas with problems such as erosion, poor soils, steep slopes, or poor drainage.

Native Plants for Wildlife Habitat and Conservation Landscaping Chesapeake Bay Watershed, U.S. Fish and Wildlife Service, 2003, is recommended as a guide for choosing plants to use in conservation landscaping.

(1) Select plants suited to site conditions:

- (a) Sun exposure (full sun, partial shade or shade);
- (b) Soil moisture (dry, moist, wet);
- (c) Soil PH (acidic, neutral, base); and
- (d) Soil type (organic, clay, loamy, sandy). For best results, select plants suited to existing soil conditions rather than amending soil. However, if soil is hard, compacted fill dirt, improve it by adding organic matter and work the ground so that it can more easily be planted, then choose plants suited to the new conditions.

(2) Select plants that are native to the coastal plain physiographic region.

(3) Select plants to emulate a specific habitat:

- (a) Woods;
- (b) Wetland; or
- (c) Meadow

