6.0 Design Guidelines

The Design Guidelines focus on site-wide considerations and establish a unified development framework for the Master Plan. They establish basic criteria for the design and/or specification of the specific site components that make up the project to create a consistent theme and character.

6.1 General Considerations

6.1.1 Accessibility

All development within the Blue Ball properties is to be accessible to people with disabilities. Design of site improvements and other facilities should meet the requirements of the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).

6.1.2 Environmental Issues

The Blue Ball properties master plan establishes a framework for a sustainable approach to design and management of park lands. The following recommendations are intended to contribute to the "healthy" environment of park land.

Preservation of Significant Natural Features

Development of project features should preserve and enhance existing natural features of the area including hedgerows, woodlands, wetlands, etc. Great care should be taken to preserve and enhance these features throughout the development of the Blue Ball properties.

Meadow

The master plan includes several large areas to be seeded in meadow. In addition to their visual appeal, meadow plantings provide a number of environmental benefits:

- Improvement of water quality through filtering of surface stormwater runoff.
- Enhancement of local wildlife habitat values.
- Reduction in nuisance levels of Canada geese.
- Reduction in energy consumption and chemical treatment required for lawn maintenance operations (reducing maintenance costs).

Native Landscape Restoration

Unless there is a specific design requirement that cannot be met through the use of native plant species, new plantings of trees, shrubs, and herbaceous species should focus on the use of native plant associations.

Choice of Materials

In choosing materials and furnishings, preference should be given to higher quality options that will reduce long-term maintenance costs, consumption of energy and raw materials. As a general principle, efforts should be made to include recycled materials in construction.

Energy Conservation

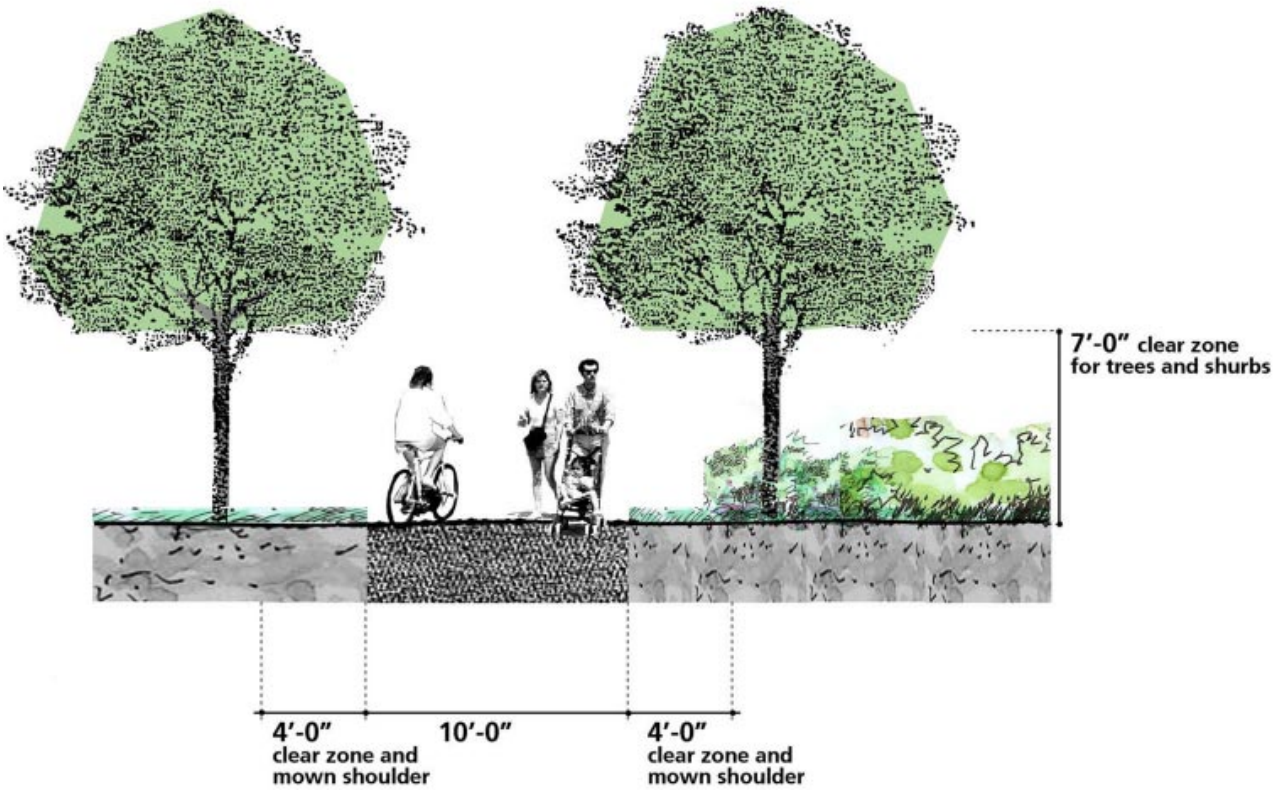
Design solutions should seek to implement energy conservation, such as:

- Use of low energy fixtures such as compact fluorescent bulbs and low pressure lights;
- Use of sensors and controls such as photocells to control night lighting or motion detectors to control lighting in restrooms;
- The use of meadow and native grasses in place of high maintenance lawns;
- Planting shade trees around building structures to lower building cooling energy consumption and costs;
- Use of heat reflective materials in windows, roofs and exterior walls of buildings.
- Orienting buildings to maximize passive solar gain.

6.2 Bicycle and Pedestrian Circulation

The path system provides the central means by which users move through and experience the project. Comfortable, convenient and attractive pedestrian paths will play an important role in making the project attractive to visitors, and should be laid out to access as wide a variety of uses and spaces as possible.

The network of paths will accommodate a wide variety of circulation and recreation activities. To minimize conflicts between user groups, establish an hierarchy of function, and promote safety, the path system is divided into two general types: Greenway (regional) and Park Path (local). Paths should be interconnected to promote accessibility and diversity of experience throughout the project. However, where paths intersect special care should be taken in their layout to provide good sight lines in all directions for safety and orientation. Typical materials and dimensions for each path type are described in the section below.



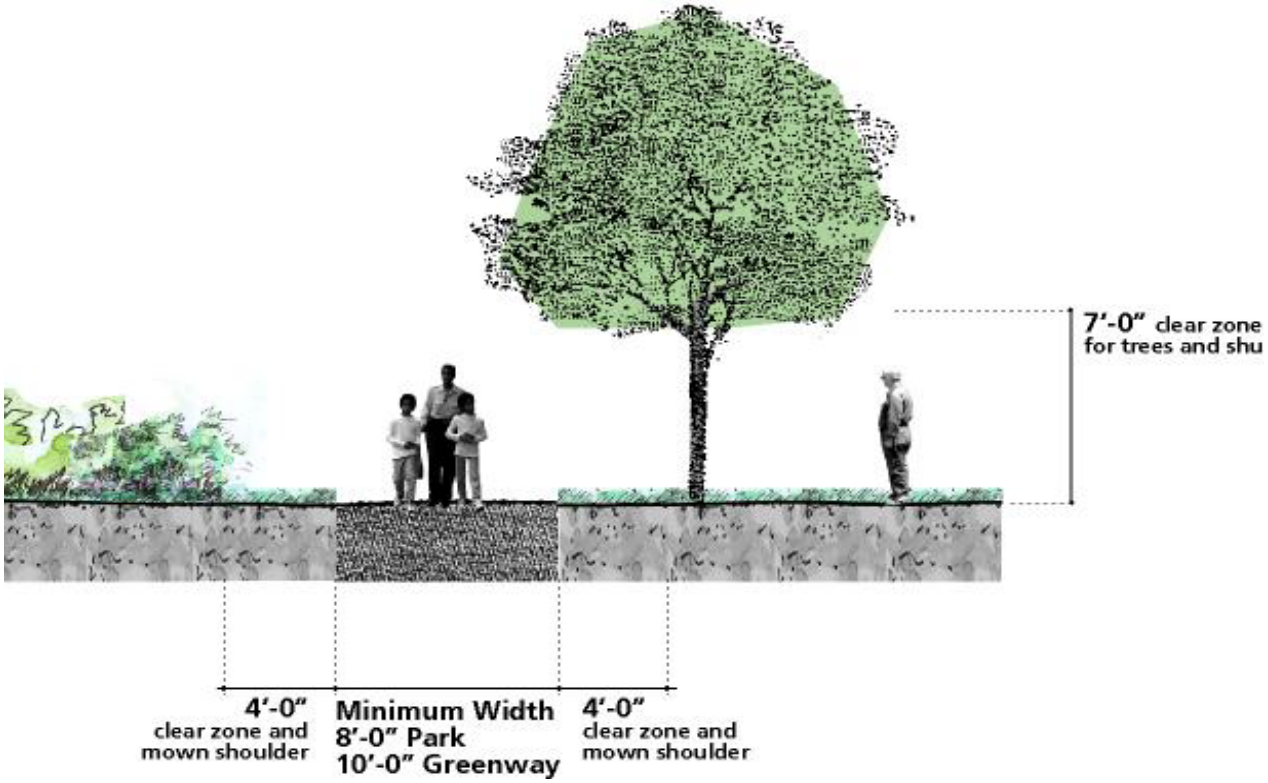
Greenway Sketch Section

Greenway

The Delaware Greenway system traverses the project area and connects the City of Wilmington at the Brandywine River to Talley Road. Though the design criteria for Greenways is generally consistent throughout the system, two paving types for the Greenway are required in the development of this project: Greenways within the Conservation Easement and Greenways outside the Conservation Easement. Greenways provide for multiple uses such as walking, jogging, in-line skating and bicycling. They also serve as circulation routes for maintenance, service and security vehicles.

Guidelines:

- Minimum width should be ten feet. The path width should increase in areas with higher volumes of pedestrians and bicycles.
- The basic paving material should be bituminous paving, although alternative paving materials may be used to upgrade the finish quality of the path at important nodes to emphasize directional information, gateways, rest points, or path crossings. Consideration should be given to the use of porous asphalt paving for Greenway and paths to reduce stormwater runoff. Within the Conservation Easement just west of the Blue Ball



Park Path Sketch Section

property, Greenway paving should be compacted stone fines and/or aggregate to minimize visual intrusion in this wooded environment.

- A safety zone four feet off both sides of the path and seven feet above the path should be kept clear of trees and branches.

Park Path

Narrower paths primarily for pedestrian circulation throughout the park, used for walking and jogging and some cycling.

Guidelines:

- Minimum width should be eight feet. In locations where it is anticipated that park paths will be used heavily for bicycling, width should be ten feet.
- The basic paving material should be bituminous paving, but may be upgraded at special pedestrian nodes.
- A four-foot wide mown shoulder should be maintained along each side of the path. Additionally, a safety zone four feet off both sides of the path and seven feet above the path should be kept clear of trees and branches.

Edging / Inset Pavers

Low cost, simple path surfaces such as bituminous paving can easily be enhanced through the use of edging and inset pavers. The relative impact of this is dependent on its extent and the materials used.

This treatment will provide the following:

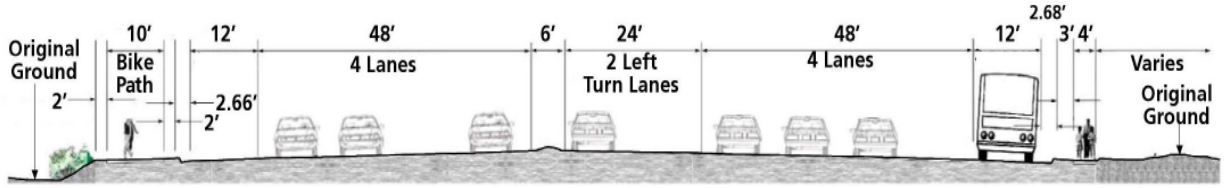
- Maintains integrity of the edge
- Defines paths
- Acts as a deterrent to pedestrians leaving the path
- Serves as a gutter
- Can incorporate avenue tree planting
- Can form lateral bands across the path

Suitable edging materials include limestone/granite setts, precast concrete pavers and clay bricks.

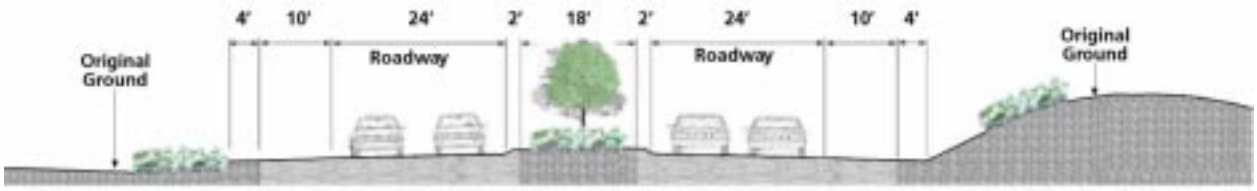
6.3 Vehicular Circulation and Parking

Roadways and parking should follow the conceptual alignment established in the Master Plan. The vehicular circulation system provides access to destination points and parking within the project, but minimizes the amount of through-roads, thereby maintaining an attractive pedestrian environment. Lighting for all roads and parking areas should conform to state and local codes for lighting levels.

6.3.1 Regional Roads



Route 202 Sketch Section, immediately south of existing Route 141/ Murphy Road (Looking North)



Route141 Spur Sketch Section

The primary purpose of the regional roadways in the study area (I-95 ramps, US Route 202, Delaware Route 141, the Route 141 Spur, and Foulk Road) is to provide adequate traffic capacity to serve the significant traffic demands placed upon them. These roadways connect with other regional roadways outside the study area, as well as local roadways within the study area. The proposed roadway system has been designed such that, as much as possible, internal-to-internal trips (i.e., Alapocas to Weldin Park) will not have to utilize these regional roads. Instead, the regional roadways will primarily serve external-to-internal trips, and external-to-external trips.

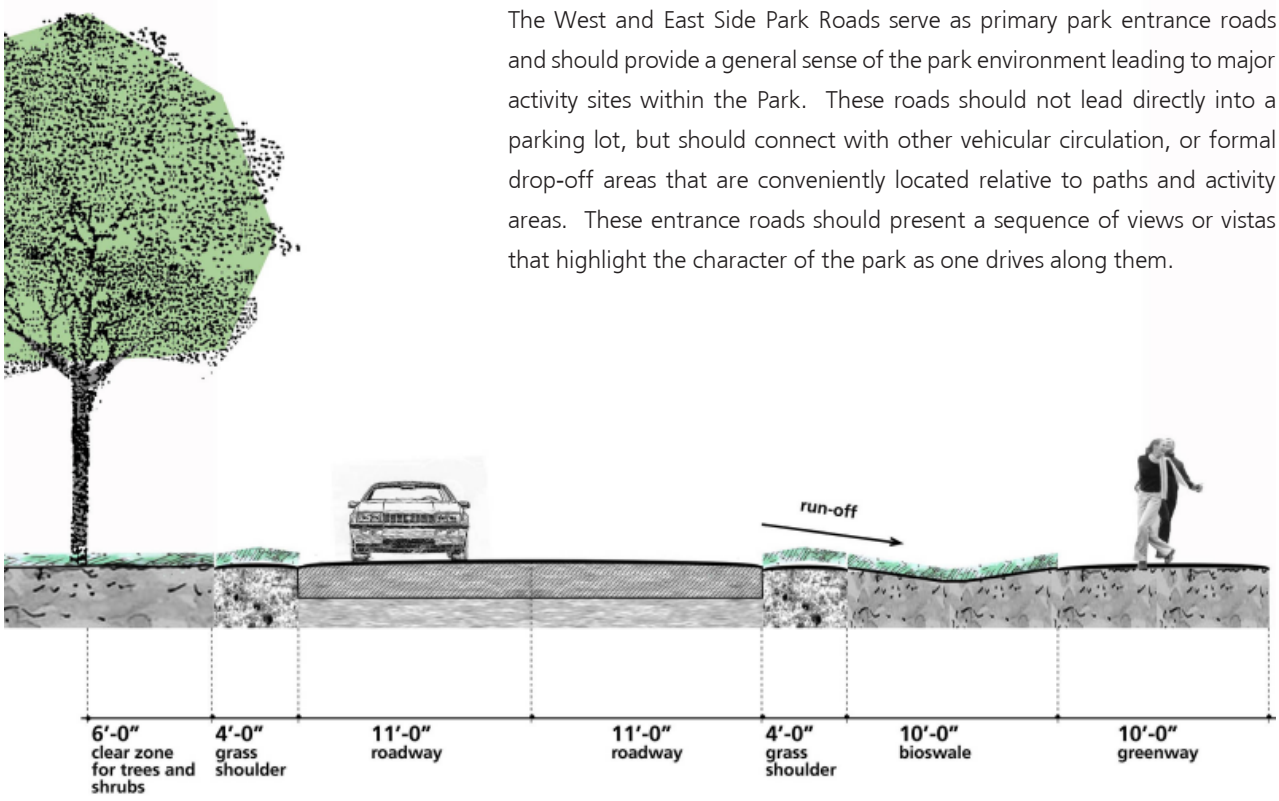
The regional roadways should be designed to enhance the "gateway" ambience that is desired for the study area. This can be accomplished through various methods, including planted medians, landscaping, lighting, and treatments of the bridge structures and guardrails.

Guidelines:

- Standard DelDOT design guidelines for urban multi-lane highways should be followed for lane widths, design speed, horizontal and vertical alignment, cross slopes, side slopes, lateral clear zones, curbing, roadway pavement, pavement markings, islands, drainage, traffic signals, and utilities. Guardrail, median barriers, signing and lighting should be designed utilizing materials that support the "gateway" ambience desired for the study area.
- Medians should generally be maintained where they exist today. Medians should be widened where possible to accommodate median plantings and landscaping and should be consistent with gateway appearance. On the Route 141 Spur, median plantings and landscaping should be incorporated where possible.

6.3.2 Local Roads

The West and East Side Park Roads serve as primary park entrance roads and should provide a general sense of the park environment leading to major activity sites within the Park. These roads should not lead directly into a parking lot, but should connect with other vehicular circulation, or formal drop-off areas that are conveniently located relative to paths and activity areas. These entrance roads should present a sequence of views or vistas that highlight the character of the park as one drives along them.



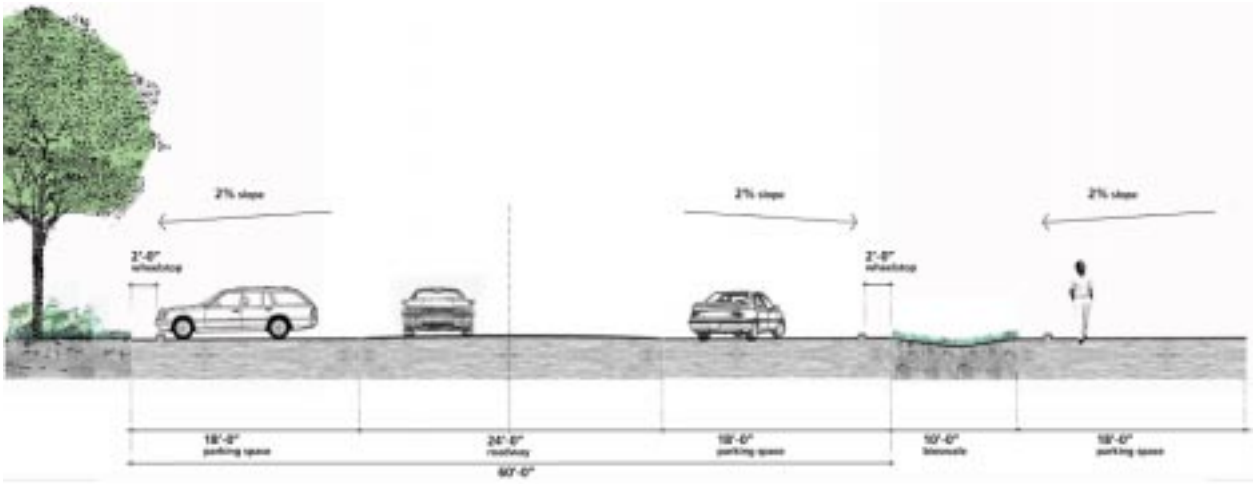
West and East Side Park Roads Sketch Section

Guidelines:

- Maximum road width should be two eleven-foot lanes with a grassed, four-foot shoulder.
- The basic paving material should be bituminous paving, although alternative paving materials may be selected for more significant areas, such as drop-off zones or crosswalks. The road cross section should provide for stormwater drainage to abutting bioswales.
- Primary entrance areas or gateways should use high quality design and materials to create a parklike atmosphere and welcome visitors, should be amply scaled in proportion to the number of visitors arriving/ leaving, maximize access by the disabled, and permit emergency vehicle access where necessary.

6.3.3 Park Entrances, Parking and Driveways

Park roads and driveways provide connection from local roads to park activities.



Parking Lot Sketch Section

Guidelines:

- Maximum road width should be twenty-two feet (two eleven-foot lanes).
- The basic paving material should be bituminous paving, although alternative paving materials may be selected for more significant areas, such as drop-off zones or crosswalks.
- The road cross section should provide for stormwater control.

Parking is strategically located to meet the needs of park users. Parking areas should be located in close proximity to park features for convenience and efficiency of use. The amount of parking spaces provided should be in accordance with expected daily usage and should not be sized to accommodate peak demands for special events. Impacts of parking are also minimized by not paving all parking in asphalt but, rather, retain overflow parking in lawn. The Master Plan illustrates the full build-out of parking spaces.

Guidelines:

- The basic paving material should be bituminous asphalt over compacted crushed stone base. Consideration should be given to the use of porous asphalt paving in parking areas to reduce stormwater impact on the park site. Overflow parking should be seeded in lawn.
- The design of the parking areas should incorporate stormwater management strategies.

6.4 Site Utilities

Guidelines:

- Gas, water, sewer and electricity should be provided to park activity areas with minimal intrusion on the natural setting or visual quality of the Park.
- All new main utility lines and individual building connections should be sub-surface.
- Only sanitary sewer and water lines should be run below roadways. To avoid disruption of traffic flows during installation and maintenance work, gas, electric, storm sewer and telephone lines should be located outside of the cartway. In instances where such utilities must cross the cartway, the length of crossing should be minimized.
- The minimum width of a utility easement should be 8 feet. Multiple

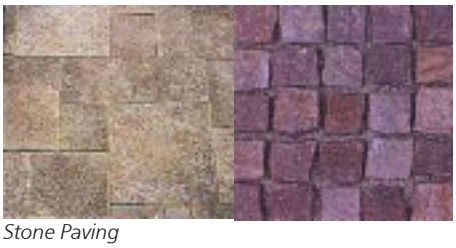
utility lines within a single easement should be encouraged.

- Any utility easement that requires removal of existing planting shall be regraded and replanted in a manner compatible with the overall landscape character of the affected area.
- A utility corridor should be persued to relocate all or most of utilities impacted by roadway reconstruction/park surfacing.

6.5 Park Hard Surfaces

A variety of paving materials will be used throughout the Park for roads, paths, courtyards, and parking. Recommended paving materials criteria is based on cost, appearance, ease of construction, durability, safety (glare, surface quality), and ease of maintenance/repairs.

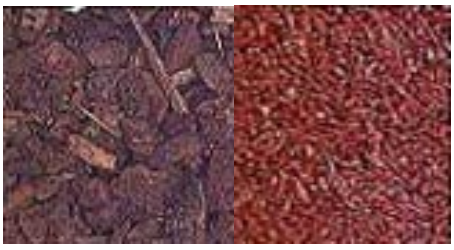
6.5.1 Barn Courtyard



Stone Paving

The entry courtyard on the west side of the Dairy Barn will serve as the formal entry to the structure as well as an outdoor space to support indoor functions. It should be paved in stone to augment the Barn restoration and identify its significance as an important public activity space. Suitable paving material includes bluestone or granite.

6.5.2 Playgrounds



Playground Surfacing

Playgrounds and other informal recreation areas should use flexible paving materials such as resilient surface, stone fines, or mulch.

6.5.3 Pedestrian Nodes

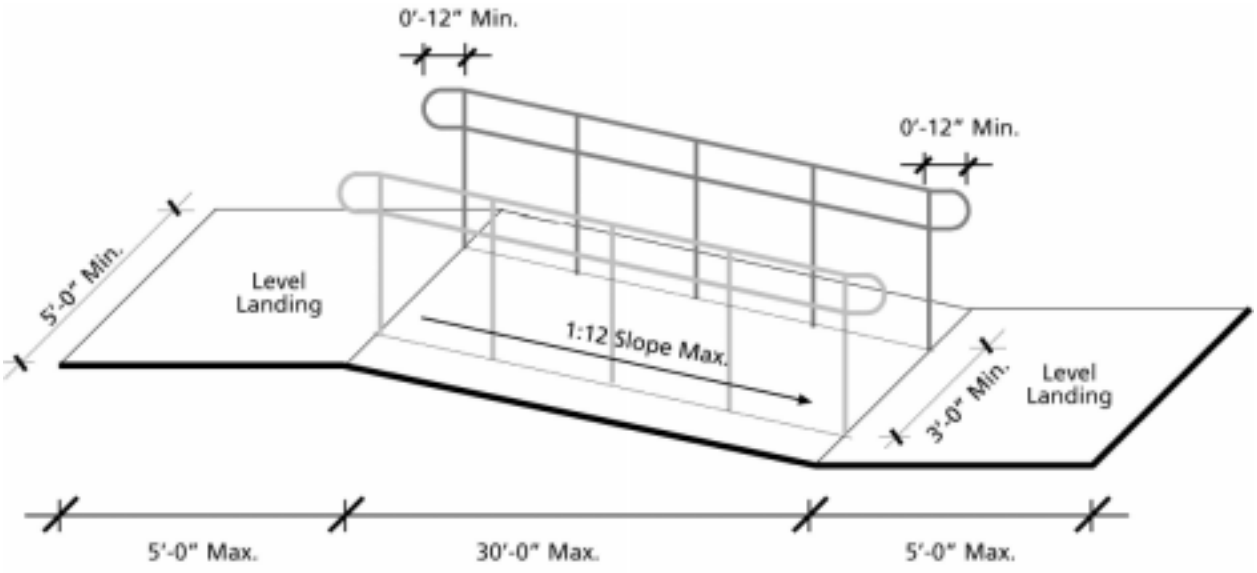
Concrete Unit Paving

Special places along the park path system will be identified and accentuated through the use of unit paving materials, benches, bicycle rack(s), and kiosk for information and orientation for park users. Typically, these nodes will occur at major path intersections as well as strategic points along the Greenway to provide places for rest, views of the park and woodlands, and general directions through the park. The nodes will be designed as spaces

abutting, yet separate from, paths to allow unimpeded flow of pedestrian circulation.

6.5.4 Steps and Ramps

Steps and ramps should complement adjacent paved surfaces in quality, style and dimension; have a non-slip surface; have a comfortable riser to tread relationship; be durable; and avoid settlement. All steps and ramps should include handrails and meet local and ADA codes for layout and safety.



Typical Pedestrian Ramp Requirement

6.6 Planting

Mature Park Landscape

The successful, effective and rapid establishment of vegetation is vital to the success of the Park. The Park should subscribe to the long-term planting goal of creating an arboretum-like environment by including a wide variety of plant materials. The following guidelines should be considered before initiating planting:

- Incorporate plant diversity and encourage the development of wildlife habitat.
- Use of indigenous planting should be considered throughout, particularly in the northwest portion of the site. Native species will be naturally more hardy and adaptable to climate and soils.
- Recognize aesthetic values. The establishment of planting in an integrated design framework can contain diversity and visual unity, and create opportunity for expressions of form, texture, scale and seasonal color.
- Recognize functional values. Careful selection of species creates the opportunity to reinforce site spaces, provide shade and modify microclimate, reinforce pedestrian scale, impact energy efficiency of buildings, mitigate noise, and reduce glare and reflection.
- Match species to micro-climate and soil conditions, resulting in healthier, easier maintained planting.
- Provide good soil preparation and cultivation prior to planting.
- Maintenance and management should be carefully considered. Priority should be given to plants that require low maintenance, are resistant to pests and diseases, and do not produce messy seeds and fruits.

6.6.1 Planting Principles

The Master Plan uses planting for a variety of purposes:

Naturalistic Planting

Naturalistic Planting

Planting should be used to reinforce drainage corridors and to create a naturalized environment. This planting also defines spaces and functions within the site. Naturalistic planting is composed of edge species which form the margins of the planting, and principal tree species which in time will form the core of the planting.

Edge Species serve two functions: 1) ecological - this is the most diverse and valuable area of any planting for flora and fauna, 2) visual - flowers and berries here provide highlight color and seasonal interest and screen the interior of the planting. An irregular outline to the planting maximizes the length of the edge thus increasing its wildlife value. Visually it also creates a more natural effect. After the initial maintenance period the woodland floor is left unmaintained.

Principal Tree Species are determined by the function required and the eventual woodland association desired.

Size and Spacing: The trees should be planted between 6' and 12' on center depending on planting size, species and immediacy of impact required. Plants should be placed in groups of 10-20 of the same naturalistic species in an informal manner creating a natural effect.

Edge Species: Planted as bare-root plants, minimum 2'-3' height.

Principal Tree Species: 70% planted as 3" caliper, balled and burlapped stock; 20% planted as 1½" – 2" caliper, balled and burlapped stock; 10% planted as 5'-6' high bare-root stock.

Structured Planting

Structured Planting

Formally aligned trees define important pedestrian routes through the park, identify important meeting places and nodes, and focus the eye on objects of interest. These are deciduous trees along roadways, trees highlighting the Park's linkages across Route 202, or trees serving as a hedgerow or orchard in a culturally influenced planting arrangement. The overhead tree canopy will provide shade and help reduce glare and reflection. Important routes can be identified by the use of single species of a particular character.

Size and Spacing: Trees are planted at approximately 25' to 30' on center spacing. Trees should be planted as mature nursery stock, ideally at 4" caliper. Planting of this size will give the immediate effect, which is required for the primary pedestrian routes.

Planting Conditions: Trees must be planted into a prepared tree pit (5'x5'x5' deep). Where trees are placed in areas of impervious paving such as the Barn Courtyard, a tree surround of porous material is required to enable surface run-off to water the tree. This should be unit paving on sand, a cast-iron tree-grate or lightly compacted gravel.

Ornamental/Understory Trees

Ornamental Trees

These are feature and highlight trees with distinctive foliage, flower or form. Ornamental trees may be used to emphasize the importance of a space, or may become a focal point in their own right. The visual impact of evergreen ornamental trees is present all year round and it is important that this is exploited during the design stage.

Shrub Planting

Shrub Planting

Use mass plantings of shrubs rather than individual plants. Occasional individual specimen plants are sometimes useful, but these are an exception. Use at least five plants in a massing, and try to use odd numbers rather than even.

Grass

Grass will form the primary surface of the site, in both naturalistic planting areas and for passive and active recreation. Recommended species are indicated in section 6.6.2

Meadow Grasses

- Turf Grass: A grass for general amenity areas with controlled public access and play areas. A sports turf mix should be designated for play fields.

- Upland Shortgrasses: This seed mix will consist of a number of native grasses and perennial wildflowers to provide visual interest and color to the landscape while requiring minimal maintenance.

- Meadow Depressions: A low-maintenance combination of native grasses, rushes, and wildflowers for use away from the primary circulation and activity areas. This planting is designed to withstand periodic inundation while being aesthetically pleasing and adding diversity. Operating costs will be reduced by the naturalized, low-maintenance characteristics of this plant assemblage.

- Bioswale Grasses: This mix of grass species will be hydroseeded in the bioswales for soil stabilization and stormwater filtering once established.

Ground Cover/Vines

Ground Cover

Shrubby or herbaceous ground cover plants are used as an alternative to grass in situations where grass cover is inappropriate or where mower access is difficult. Although the initial costs of establishing ground cover are greater, the maintenance implications are far lower in comparison to grass. Vines may be used on vertical surfaces with adequate sun exposure and good soil/moisture conditions.

Ornamental Planting

Ornamental Planting

Ornamental plantings are best used to highlight important pedestrian routes and meeting places where their seasonal color can be appreciated. Their effect will be greatest if careful consideration is given to planting bed design and species selection.

6.6.2 Recommended Plants

The following master plant list consists of a core group of plants selected for indigenous, aesthetic or functional qualities within the northern Delaware hardiness zone. Additional plants beyond those listed here should exhibit these same general qualities.

The plant list below identifies native plant species commonly available for restoration of Delaware Piedmont Upland, Riparian and Wetland Landscapes:

Trees

SCIENTIFIC NAME	COMMON NAME
Acer rubrum	Red Maple
Acer sacharrum	Sugar Maple
Amelanchier arborea	Serviceberry
Betula lenta	Black Birch
Betula nigra	River Birch
Carpinus caroliniana	Musclewood
Carya cordiformis	Bitternut Hickory
Carya glabra	Pignut Hickory
Carya ovata	Shagbark Hickory
Carya tomentosa	Mockernut Hickory
Celtis occidentalis	Hackberry
Cercis canadensis	Redbud
Chionanthus virginicus	Fringetree
Cornus florida	Flowering Dogwood
Crataegus crus-galli	Cockspur Hawthorn
Crataegus pedicellata	Thicket Hawthorn
Crataegus pruinosa	Frosted Hawthorn
Diospyros virginiana	Common Persimmon
Fagus grandifolia	American Beech
Fraxinus americana	WhiteAsh
Fraxinus pensylvanica	Green Ash
Ilex opaca	American Holly
Juglans nigra	Black Walnut
Juniperus virginiana	Eastern Red Cedar
Liquidambar styraciflua	Sweetgum
Liriodendron tulipifera	Tulip Tree
Magnolia virginiana	Sweetbay Magnolia
Malus coronaria	American Crabapple
Morus rubra	Red Mulberry
Nyssa sylvatica	Black Gum
Ostrya virginiana	Ironwood
Pinus rigida	Pitch Pine
Pinus strobus	White Pine
Pinus virginiana	Virginia Pine
Plantanus occidentalis	Sycamore

Populus grandidentata	Bigtooth Aspen
Populus heterophylla	Swamp Cottonwood
Populus tremuloides	Quaking Aspen
Prunus serotina	Black Cherry
Quercus alba	White Oak
Quercus bicolor	Swamp White Oak
Quercus coccinea	Scarlet Oak
Quercus macrocarpa	Bur Oak
Quercus marilandica	Blackjack Oak
Quercus montana	Chestnut Oak
Quercus palustris	Pin Oak
Quercus phellos	Willow Oak
Quercus rubra	Northern Red Oak
Quercus stellata	Post Oak
Quercus velutina	Black Oak
Salix nigra	Black Willow
Sassafras albidum	Sassafras
Tilia americana	Basswood
Tsuga canadensis	Eastern Hemlock
Ulmus americana	American Elm
Ulmus rubra	Slippery Elm
Viburnum prunifolium	Blackhaw Viburnum

Shrubs/ Vines

SCIENTIFIC NAME	COMMON NAME
Alnus serrulata	Hazel Alder
Amelanchier canadensis	Downy Shadbush
Aronia arbutifolia	Red Chokeberry
Aronia melanocarpa	Black Chokeberry
Aronia prunifolia	Purplefruit Chokeberry
Campsis radicans	Common Trumpetcreeper
Ceanothus americanus	New Jersey Tea
Clethra alnifolia	Sweet Pepperbush
Comptonia peregrina	Sweetfern
Cornus amomum	Silky Dogwood
Cornus sericea	Red Osier Dogwood

Corylus americana	American Filbert
Diervilla lonicera	Bush Honeysuckle
Euonymus americanus	Strawberry Bush / Brook Euonymus
Gaultherium procumbens	Wintergreen
Hamamelis virginiana	Witch Hazel
Hypericum densiflorum	Dense St.Johnswort
Ilex glabra	Inkberry
Ilex verticillata	Winterberry
Itea virginica	Sweetspire
Kalmia latifolia	Mountain Laurel
Leucothoe racemosa	Sweetbells Leucothoe
Lindera benzoin	Spicebush
Lyonia ligustrina	He-huckleberry
Myrica cerifera	Wax Myrtle
Myrica pensylvanica	Bayberry
Parthenocissus quinquefolia	Virginia Creeper
Physocarpus opulifolia	Ninebark
Rhododendron nudiflorum	Pinxterbloom Azalea
Rhododendron periclymenoides	Pinkster-flower Azalea
Rhododendron viscosum	Swamp Azalea
Rhus copallinum	Dwarf Shining Sumac
Rhus glabra	Smooth sumac
Rhus typhina	Staghorn sumac
Rosa carolina	Carolina Rose
Rosa virginiana	Virginia Rose
Salix humilis	Prairie Willow
Sambucus canadensis	Common Elderberry
Spiraea alba	Meadowsweet Spirea
Spiraea tomentosa	Hardhack Spirea
Staphylea trifolia	American Bladdernut
Symphoricarpus albus	Snowberry
Symphoricarpus orbiculatus	Coralberry
Taxus canadensis	Canada Yew
Vaccinium angustifolium	Lowbush Blueberry
Vaccinium corymbosum	High Bush Blueberry
Vaccinium stamineum	Common Deerberry
Vaccinium pallidum	Low Blueberry
Viburnum acerifolium	Mapleleaf Viburnum

Viburnum cassinoides	Wild Raisin (Witherod)
Viburnum dentatum	Southern Arrowwood
Viburnum lentago	Nannyberry
Viburnum nudum	Possumhaw Viburnum
Viburnum rafinesquianum	Rafinesque Viburnum
Viburnum recognitum	Northern Arrowwood

Grasses

(numbers after plants indicate recommendation for specific use – see below)

SCIENTIFIC NAME	COMMON NAME
Agrostis alba (1,2)	Redtop
Andropogon gerardii	Big Bluestem
Andropogon virginicus	Broomsedge
Bouteloua curtipendula (3)	Side Oats Grama
Bouteloua gracilis (3)	Blue grama
Bromus altissimus (1,2)	Wild Brome Grass
Deschampsia caespitosa (1,2)	Tufted Hairgrass
Elymus riparius (1,2)	Riverbank Wild Rye
Elymus virginicus (1,2)	Virginia Wild Rye
Festuca ovina (3)	Sheep's Fescue
Glyceria canadensis	Canada Mannagrass
Glyceria occidentalis (5)	Tall Mannagrass
Glyceria striata (5)	Fowl Mannagrass
Glyceria grandis	American Mannagrass
Glyceria striata	Fowl Mannagrass
Juncus canadensis (5)	Canada Rush
Leersia oryzoides (5)	Rice Cutgrass
Koeleria cristata (3)	Prairie Junegrass
Panicum clandestinum (1,2)	Tioga Deertongue
Panicum virgatum (1,2,5)	Switchgrass
Phalaris arundinacea (1,2)	Reed Canarygrass
Poa palustris (2,5)	Fowl Meadowgrass
Schizocharium scoparius (3)	Little Bluestem
Scirpus cyperinus (5)	Woolgrass
Scirpus pungens (2)	Common 3-Square
Scirpus polyphyllus (2)	Many-Leaved Bulrush
Sorghastrum nutans	Indian Grass

Sporobolus cryptandrus	Sand Dropseed
Sporobolus heterolepis (3)	Prairie Dropseed
Tripsacum dactyloides	Eastern Gamagrass

Wildflowers

(numbers after plants indicate recommendation for specific use – see below)

SCIENTIFIC NAME	COMMON NAME
Anemone virginiana (3)	Tall Thimbleweed
Antirrhinum majus (3)	Baby Snapdragon
Aquilegia canadensis (2,3)	Wild Columbine
Asclepias incarnata (5)	Swamp Milkweed
Asclepias purpurescens (2)	Purple Milkweed
Asclepias syricea	Common Milkweed
Asclepias tuberosa (3)	Butterfly Weed
Aster concolor (3)	Eastern Silvery Aster
Aster cordifolius	Blue Wood Aster
Aster divariatus	White Wood Aster
Aster ericoides (3)	Heath Aster
Aster grandiflorus	Large-flowered Aster
Aster laevis (3)	Smooth Aster
Aster laterifolius Horizontalis (2,3)	Calico Aster
Aster novae-angliae (5)	New England Aster
Aster novi-belgii (2)	New York Aster
Aster oblongifolius	Aromatic Aster
Aster pilosus Heath	Aster
Aster puniceus	Purple Stemmed Aster
Aster pringlei	Pringle Aster
Aster vimineus	Small White Aster
Baptisia australis	Blue False Indigo
Baptisia leucantha	False Indigo
Boltonia asteroiddes (5)	Aster-like Boltonia
Carex lurida (5)	Lurid Sedge
Carex vulpinoidea (5)	Fox Sedge
Cassia marylandica	Senna
Castilleja coccinea (3)	Indian Paintbrush
Centaurea cyanus	Dwarf Bachelor Button
Chamaecrista fasciculata	Partridge Pea

Chelone glabra (5)	Turtlehead
Coreopsis lanceolata (3)	Lance-leaved Coreopsis
Coreopsis tinctoria (3)	Plains Coreopsis
Cosmos sulphureus (3)	Sulfur Cosmos
Dicentra eximia	Wild Bleeding Heart
Dodecatheon media	Shooting Star
Echinacea angustifolia (3)	Narrow-leaved coneflower
Echinacea purpurea	Purple Coneflower
Epilobeum angustifolium	Fireweed
Erythronium americanum	Trout Lily
Eschscholtzia californica (3)	California Poppy
Eupatorium coelestinum (3)	Hardy Ageratum
Eupatorium fistulosum (5)	Joe-Pye Weed
Eupatorium maculatum	Spotted Joe-Pye Weed
Eupatorium perfoliatum (5)	Boneset
Eupatorium purpureum	Sweet Joe-Pye Weed
Eupatorium rugosum	White Snakeroot
Euthamia graminifolia	Grass Leaf Goldenrod
Gaillardia aristata (3)	Blanket Flower
Gaillardia pulchella (3)	Indian Blanket
Geranium maculatum	Wild Geranium
Gypsophila elegans (3)	Baby's Breath
Helianthus angustifolius (5)	Swamp Sunflower
Helianthus decapetalus	Thin-leaved Sunflower
Helianthus laetiflorus	Showy Sunflower
Helianthus maximiliani	Maximilian Sunflower
Helianthus mollis (3)	Downy Sunflower
Helianthus salicifolius	Willow-leaved Sunflower
Heliopsis helianthoides	Ox-eye Sunflower
Iris versicolor (4)	Blue Flag Iris
Lespedeza virginica (3)	Slender Bush Clover
Liatris spicata (3)	Gayfeather
Lilium superbum	Turk's Cap Lily
Linum grandiflorum rubrum (3)	Scarlet Flax
Lobelia cardinalis	Cardinal Flower
Lobelia siphilitica (5)	Great Blue Lobelia
Lupinus perennis (3)	Perennial Lupine
Mertensia virginica	Virginia Bluebells

Mimulus ringens	Square-stem Monkey Flower
Monarda fistulosa (3)	Wild Bergamot
Oenothera speciosa (3)	Showy Evening Primrose
Penstemon digitalis (3)	Beardtongue
Phlox divaricata (2,3)	Wild Blue Phlox
Phlox paniculata	Summer Phlox
Phlox stolonifera	Creeping Phlox
Podophyllum peltatum	Mayapple
Polemonium reptans	Dwarf Jacobs Ladder
Polygonatum biflorum	Soloman's Seal
Ratibida pinnata (3)	Yellow Coneflower
Rudbeckia hirta (3)	Black-eyed Susan
Rudbeckia fulgida (2,3)	Brilliant Coneflower
Rudbeckia laciniata	Green-headed Coneflower
Rudbeckia speciosa	Showy Black-eyed Susan
Rudbeckia subtomentosa (3)	Sweet Black-eyed Susan
Rudbeckia triloba	Thin-leaved coneflower
Silphium laciniatum	Compassplant
Silphium perfoliatum	Cup Plant
Solidago altissima	Tall Goldenrod
Solidago caesia	Bluestem Goldenrod
Solidago canadensis	Canada Goldenrod
Solidago flexicaulis	Zigzag Goldenrod
Solidago gigantea	Late Goldenrod
Solidago juncea	Early Goldenrod
Solidago nemoralis	Gray Goldenrod
Solidago odora	Sweet Goldenrod
Solidago patula	Rough-leaved Goldenrod
Solidago rigida	Stiff Goldenrod
Solidago rugosa (2)	Rough Stemmed Goldenrod
Solidago speciosa (3)	Showy Goldenrod
Tiarella cordifolia	Foamflower
Verbena hostata (5)	Blue Vervain
Vernonia noveboracensis (5)	Ironweed

Aquatic Emergents

SCIENTIFIC NAME	COMMON NAME
Nymphaea odorata	Water Lily
Pontedaria cordata	Pickerelweed
Sagittaria latifolia	Arrowhead
Scirpus tabernaemontanii	Softstem Bulrush
Sparganium americanum	Burreed
Sparganium eurycarpum	Giant Burreed

Ferns

SCIENTIFIC NAME	COMMON NAME
Athyrium felix-femina	Ladyfern
Athyrium thelypteroides	Silvery Spleenwort
Dryopteris intermedia	Common Wood Fern
Dryopteris marginalis	Marginal Wood Fern
Onoclea sensibilis	Sensitive Fern
Osmunda cinnamomea	Cinnamon Fern
Osmunda regalis	Royal Fern
Polystichum acrostichoides	Christmas Fern
Thelypteris noveboracensis	New York Fern
Thelypteris palustris	Marsh Fern
Woodwardia areolata	Netted Chain Fern

1.Recommended plants for Bioswale mix.

2.Recommended plants for Meadow Depressions mix.

3.Recommended plants for Upland Shortgrass mix.

4.Recommended as Aquatic Emergents.

5.Recommended plants for Pond Edge Wetland Seed mix.

6.7 Site Furnishings

Since they will be used throughout the entire Park, site furnishings should be used as unifying elements in the landscape. Their imagery in terms of design and quality of construction is important to the overall visual environment of the Park and helps to establish its identity. Locations for site furnishings should be concentrated in the following places: paths, multi-use fields, play areas, picnic areas and the dog park.

Guidelines:

- Minimize the number of different materials and colors of site furnishings to avoid visual clutter.
- Group furnishings whenever possible to avoid visual chaos.
- Site furnishings should be consistent throughout the Park to provide a sense of unity.
- Provisions for the disabled should be incorporated into the design of site furnishings.
- General descriptions, design criteria and examples of site furnishings follow.

6.7.1 Benches

Bench

Type:	Schwartzwald Park Bench, 4-seater
Material:	Tubular Steel & wire mesh
Color:	Powder Coated Slate Texture or Bright Silver
Manufacturer:	Erlau AG
Representative:	Outer Space, 800-338-2499

6.7.2 Trash Receptacles

Trash Receptacle

Type:	TimberForm- Litter Container 2891
Material:	Tubular Steel & wire mesh
Color:	Powder Coated Slate Texture or Bright Silver
Manufacturer:	Columbia Cascade
Representative:	Mid-Atlantic Products, Inc. 800-544-7529

6.7.3 Pedestrian Railings

Type:	Custom Fabricated
Material:	Powder Coated Galvanized Steel
Color:	Powder Coated Dark Green
Manufacturer:	Various
Representative:	N/A

6.7.4 Roadway Guiderails

At locations where guiderails are required along roadways, alternatives to the standard galvanized railing should be considered. The use of weathered steel or heavy timber guiderails should be investigated for use to conform better with park imagery.

6.7.5 Bicycle Racks

Bicycle Rack

Type:	Pilot Rock Park Equip.- Hitchin' Post Bike Rack
Material:	Tubular Galvanized Steel
Color:	Galvanized Steel Finish
Manufacturer:	R.J. Thomas Mfg. Co., Inc.
Representative:	R.J. Thomas Mfg. Co., Inc. 800-762-5002

6.7.6 Play Equipment

The children's playground shall accommodate all age groups and numbers of children. The selection of play equipment should take into consideration the number of children and their ages and the needs of physically challenged children. The entire play area, including space under and around the play equipment, should be covered with impact absorbent material. Adequate clear zones around the play equipment should be provided as indicated by the manufacturer. The selection of play equipment should focus on safe, maintenance-free equipment.

Play Equipment

Type:	Galaxy by Kompan
Material:	Tubular Galvanized Steel, plastic and rubber
Color:	As per manufacturers recommendations
Manufacturer:	Kompan, Inc.
Representative:	Kompan, Inc. 800-426-9788

6.7.7 Picnic Tables

Picnic Table

Type:	Parador table/ bench unit
Material:	Tubular Steel & wire mesh
Color:	Powder Coated Slate Texture or Bright Silver
Manufacturer:	Erlau AG
Representative:	Outer Space 800-338-2499

6.7.8 Pedestrian Bridges

Pedestrian Bridge

Type:	X-brace, Truss Type
Material:	Steel structure with wood decking
Color:	Weathered Steel
Manufacturer:	Steadfast Bridges
Representative:	Steadfast Bridges, 800-749-7515

6.8 Site Lighting

Site lighting will have great impact on the night-time visual environment of the Park. Although levels of illumination are important for safety and security, other aesthetic aspects of the lighting design include color of light, luminaire design, and lighting patterns. Energy conservation should also be considered in the selection of lighting fixtures. Even during daylight hours, the lighting fixtures will be prominent on site and should be used as a unifying landscape feature. Light fixtures should be used in the following areas: Roadway, Parking lots, Greenway, Primary Paths, Play Area, Picnic Area and the Dog Park.

Guidelines:

- Site light fixtures should consist of a coordinated family of luminaires and poles with regard to materials, design and color.
- Lighting should be coordinated with site furnishings to promote visual continuity.
- Lighting should define and reinforce the hierachy of entrances, roadways, and pedestrian areas to promote a sense of site organization and orientation.
- Use durable materials to discourage vandalism.
- Identify and illuminate elements that reinforce the character of the Park.
- Promote nighttime safety through the lighting of roads and paths. Provide light at areas of potential conflict between pedestrians and vehicles, in pedestrian areas provide adequate lighting levels at a height of about seven feet above grade to allow visual recognition of pedestrians.
- Use lighting sources that provide good color rendition while meeting DelDOT requirements appropriate for the use:

Low pressure sodium – monochromatic cold yellow light for parking areas.

Metal halide light sources (cool white color) for pedestrian and gathering places for excellent optical control and superior color rendition.

Mercury vapor delux white light sources (cool white in the blue-green end of the spectrum) for low level lighting areas for long life, good efficiency and color rendition.

- Provide illumination levels and lighting sources that minimize glare while providing adequate light for safety and security. Minimum recommended average footcandle (fc) levels are as follows:

Building entrances	5.0 fc
Roadways	2.0 fc
Parking areas	1.0 fc
Pedestrian paths and gathering areas	0.9 fc
Minor paths with low level lighting	0.5 fc

General descriptions, design criteria and examples of Site Lighting follow:

6.8.1 Path System Lighting

Path System Lighting *Parking Lot Lighting*

Type: 8101MH Indirect pole top luminaire

Material: Tubular Steel

Color: Powder Coated Slate Texture or Bright Silver

Manufacturer: Bega/US

Representative: DLA www.diversifiedlighting.com

6.8.2 Parking Lot Lighting

Type: 8145MH Floodlighting luminaire

Material: Tubular Steel

Color: Powder Coated Slate Texture or Bright Silver

Manufacturer: Bega/US

Representative: DLA www.diversifiedlighting.com

6.8.3 Accent Lighting

Signage, planting, water features, etc., will all benefit from selective accent lighting. The light source should be hidden while providing uplighting or downlighting that enhances the night-time experience of these features.

6.9 Park Signage

Signage System Example

Signage System Example

Specific images and recommendations for site signage are to be developed further in a future detailed signage study. However, signage for the Park should meet the following general standards:

Guidelines:

- Signs should communicate required information effectively. Information should be presented in a visually comprehensive manner. The sequence in which information is communicated should be logical and should correspond to user needs.
- The signs should reinforce the overall visual image and character of the Park. The design of the signage system should be consistent throughout the Park, and should be coordinated with the design of site furnishings and lighting.
- The signage system design should provide flexibility and be adaptable to changes over time.
- Primary signage types should include: entrance; identification; directional (pedestrian & vehicular); traffic/parking control (pedestrian & vehicular).

6.10 Bridges and Overpasses

6.10.1 Route 202 – Park Road Bridge Overpass

Existing Bridge Treatment at Route 141 / Rockland Road

Route 202 will cross Park Road and Greenway just north of Porter Reservoir. The new bridge structure serves as a portal between the passive park setting on the west and the active recreation on the east. The exposed or visual portions of the bridge must reflect the desired ambiance of the area. Treatments similar in appearance to the existing structure at the existing Route 141/Rockland Road overpass will be used.

6.10.2 Route 202 – Foulk Road Bridge Overpass

The bridge, which carries Route 202 over the new Foulk Road, is located on the periphery of the park system. The appearance of this structure must also match the general theme of the area and its sister bridge to the south.

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