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The Morris Arboretum Entrance: A New Landscape Design

Title: **The Morris Arboretum Entrance: A New Landscape Design**

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Abstract:

The focus of this project was to augment the existing beauty of the meadows, wetlands and fields that paint the pastoral scenery of the Morris Arboretum's entrance experience, as well as to create a bold and inviting statement for visitors, passersby and the local community. The primary goal throughout this project was to create a beautiful, low-maintenance, naturalistic landscape using a site-appropriate, water-conserving native-plant palette. In completion, the design formally announces the Morris Arboretum as an important local cultural institution in Philadelphia. A component aside from an aesthetics purpose was to enhance the value of the landscape as a small sanctuary to benefit native wildlife. The aim of this paper is to explain the journey I undertook this past year in developing the best design for the site and the limitations, opportunities and milestones I encountered along the way.

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Morris Arboretum Entrance Landscape: A Brief History and Context

Before 1986, the entrance to the Morris Arboretum was located at Hillcrest Avenue. Today's visitors enter the Morris Arboretum at Northwestern Avenue. This road officially divides Philadelphia and Montgomery Counties, as well as two very distinct landscapes geologically, culturally and ecologically. On the Philadelphia County side lies the Compton Estate of the Morris Arboretum, which showcases the original gardens of John and Lydia Morris. On the Montgomery County side lies Bloomfield Farm; this once was home to pasture and croplands as well as a grist mill during the years of the Morris family. Before European settlement Bloomfield Farm's site was primarily riparian floodplain. Geologically, Compton is comprised of schist and gneiss and piedmont vegetation, while Bloomfield Farm is mostly limestone floodplain. Both sides have been sculpted by the Wissahickon Creek and its associated plant and animal life. The Northwestern Avenue entrance to the Morris Arboretum visually and functionally connects the Compton Estate and Bloomfield Farm. This connection will soon be more important than ever considering the future construction of the Arboretum's new education and horticulture centers at Bloomfield Farm.

The naturalistic landscape that dominates the entrance experience to the Morris Arboretum has come a long way in the past decade. "I think that entrance is important for us," Paul Meyer says, "It really helps us present the Arboretum to people passing by as an important cultural institution." Visitors to the Compton Estate begin their visit by passing through meadows, wetlands and riparian forest sloping up past the magnolia collection and on to the Widener Visitors' Center. Floodplain meadows were seeded in 2006, and the wetlands were installed with the beginning of the restoration of the Paper Mill Run stream bank in 1999 along with the historic pump house in 2002. Considering the naturalistic areas and surrounding properties in addition to the Morris Arboretum's Victorian garden history was vital in creating a relevant landscape for its Northwestern Avenue entrance. Complimenting scenery that contributes to the entrance includes historical surrounding properties like Bloomfield Farm, Dickson Farm, Chestnut Hill College, and the Forbidden Drive entrance to Fairmount Park.

Focus and Objectives:

The primary objective of this project is to create a more pronounced landscape design for the entrance to the Morris Arboretum and to work within the limitations and opportunities of the site and resources to complement and augment the existing beauty.

Fall 2007: Soil Sampling and Geology of Soils

One of the great benefits of interning at the Morris Arboretum is the option to take additional courses at the University of Pennsylvania. Considering the context of my project, I decided the best way to utilize this option would be to take a course that would benefit the progress and quality of my project. I enrolled in Geology of Soils taught by Dr. Art Johnson for autumn 2008 so I could gain a deeper understanding of the soil at the site of the entrance to the Morris Arboretum and the surrounding geology. This course taught me methods for identifying soil characteristics and types and learning about their roles in shaping ecosystems.

Most gardeners know healthy plants are grown in healthy soil. Cultivated gardens are ideally composed of perfect proportions of organic matter, minerals, nutrients, soil organisms and are free of compaction. Conditions are manipulated to provide garden plants with exactly what they require. In naturally occurring ecosystems everything is connected. Top soils are products of their parent material, climate, topography, biological factors and time. The flora and fauna that live with these soils are affected by them as much as they affect the soils because they live within the same system. However, in a disturbed ecosystem additional factors must be considered.

The top of Chestnut Hill and the Compton Estate sit on a gorge 400 feet above sea level comprised of quartzite, schist, and metamorphic rock. In contrast, the Richard J. Ryan Gateway landscape resembles the sedimentary limestone floodplain of Bloomfield Farm at 120 ft above sea level. The soils of the Morris Arboretum floodplain are considered today to be urban soils. Factors that inflict major impacts on the soil include stormwater runoff, historic cultivation, construction that has changed topography and hydrology, invasive flora and fauna, compaction and pollution. Basically, the soil profile during Lenni Lenape habitation was much different than the one we work with today. The heavy clay soil is high in base cations and very high in nutrients. Site topography is generally flat; however inundations in the landscape give way to niche habitats for different types of plants. The pH varies from 6.6 in places to 8.2. Soil alkalinity could be a product of invasive earthworm populations and parent rock material.

Vegetation

Historic vegetation claiming nativity to Wissahickon riparian zones represents a variety of ecotones, including streambank, tidal marsh, wetland, meadow and forest. Contemporary flora is a mix of historic native, introduced and invasive species. Installed landscapes such as the floodplain meadows and the constructed wetlands were seeded and planted with nursery stock of regionally native species. The existing vegetation at and around the Richard J. Ryan Entrance Gateway Landscape include historic native species, seeded meadows (Indian grass, little blue stem and purple top), planted wetland species (sedges, grasses, shrubs trees and forbs) and exotic, aggressive and invasive species such as Canada goldenrod, lesser celandine, buttercup, garlic mustard, Japanese stiltgrass, nightshade, orchard grass, star of Bethlehem, galega, and Canada thistle.

Plant Research

In order to gain a better understanding of all the plant possibilities, I researched the native flora of southeast Pennsylvania using The Flora of Pennsylvania, Bowman's Hill Wildflower Preserve, The New England Wildflower Society, Ernst Conservation Seeds and the Paper Mill Run Restoration plant list. I created a database containing ecological and horticultural specifics for over 400 plants. Obviously not all of these plants were chosen, and even these represent only a small dent in the possible list of over 2,000 plants native to the Wissahickon watershed. I reviewed the database and began narrowing plant selections based on criteria of site specificity, aesthetics, conservation status, and nursery stock availability. After much narrowing, I started putting together collages of plants to create color palettes.

Color Palettes

The plantings in the entrance landscape design are largely intended for spring, summer and fall impact. Summer through late fall blooming perennials are the main theme of the plantings, though there is potential for winter interest as they can either be left standing for the impact of their winter silhouettes or mowed for a starker appearance. Color is especially important in this landscape because during the summer months green is the primary color in the landscape. The Arboretum will stand apart from its surroundings with a colorful entrance for passersby. The six main color palettes include representatives for pink, red, yellow, orange, purple/blue and white blooms. Once I created a collage for each color, I began taking elements from each to create color schemes for each planting zone.

The area primarily considered the “Entrance” to the Morris Arboretum includes over five acres of floodplain, and the key views reach much further beyond to include adjacent properties, the sheep meadow, swamp white oak and winding drive to Widener. I decided to limit the plan view drawing to primary components of the landscape; areas that would be directly impacted by the plantings. Thus, the plan view is limited to express the primary five-acre area to be augmented. Within this parameter, I divided the plan into seven zones. Each zone represents a different type of planting. Zones were decided based on their location, existing vegetation, and purpose.

Site Analysis

A proper site analysis is a vital component of landscape design. During the autumn and winter months I spent time observing and learning the different attributes of the landscape: vistas, topography, hydrology, focal points, size and aspect. The construction of Richard J. Ryan Gateway in the Fall of 2007 donated the primary hardscape features that would act as the bones of the design. By working with the architect’s drawings and BG basemap coordinates I was able to weave together the basic site layout before construction was completed.

Zones

Outside Fence:

Sorghastrum nutans

Lilium superbum, canadense, philadelphicum or Hibiscus moscheutos

Monarda didyma, Lobelia cardinalis

Lonicera sempervirens

Symphotrichum ericoides, laeve

Helenium autumnale

Heliopsis helianthoides

Rudbeckia laciniata

Rudbeckia triloba

The first zone is labeled simply “Outside Fence” because it is the only area to be planted outside of the gateway. It is the most important planting for passersby along Northwestern Avenue, and is approximately 10,000 square feet. The gradient and aspect of this zone promote habitat for plants that like “wet feet” and full sun. I decided the best plants for this zone aesthetically would be bold colors; oranges, yellows and reds accented by purples. The purpose of this zone is to advertise the Arboretum’s more formal facet with a more planned, gardenesque design. Colors, textures and quantities act as tools for creating depth and magnitude. The slow, sweeping curves of the beds play into the grand presence within the greater whole of the landscape. The intention of the slow curves is literally to slow traffic and grab attention from passersby.

Interior Zone:

Asclepias incarnata, verticillata, purpurescens

Monarda fistulosa

Liatris spicata

Coreopsis rosea

Lobelia siphilitica

Schizarium scoparium

Verbena hastate

Eupatorium coelestinum

The second zone, the Interior Zone, is comprised of the two strips of the meadow edges along the entrance pathway immediately after the emblem courtyard continuing on to the bridge, pump house and Papermill Run. The Interior Zone is important because it is the first thing people see once they have made their passage through the Emblem Courtyard on their way into the Arboretum. The naturalistic landscape left room for improvement; the native grasses abrupt transition to mowed turf tends to be weedy and harsh in appearance. There was room in this landscape for more color diversity, form and artistic expression. Within this zone are some of the lowest lying areas where pooling water occurs most frequently and soils remain almost constantly wet. In the wettest months of the year these areas are very muddy and frequently have standing water. For this portion of the design I chose softer, more billowy pastels accented by sharper counterparts. This area is approximately 30,000 square feet.

Transition Zones:

Verbena hastata
Vernonia novaborensis
Heliopsis helianthoides
Eupatorium maculatum
Eupatorium coelistanum
Eupatorium perfoliatum

The next zone is called the “Transition Zone” because it consists of two symmetrical strips along the interior of the fence, tying together the outside fence and the interior fence zones. The colors are the most important feature of this zone because they buffer the bold colors of the exterior from the soft pastels of the interior. The transition plants are primarily pink, purple and white Eupatoriums. Their grand presence draws people in from one primary zone to the next. They are key plants because they are repeating elements in other places throughout the landscape. The area they comprise is approximately 30,000 square feet.

“Meadow” Plants:

Helianthus giganteus
Vernonia novaborensis
Later phase: seed with Castilleja coccinea, Viola, or other meadow forbs for more diverse plant community

The next zone is simply called “Meadows.” The intention here was to create elements of the new plantings into the established meadows to create a more woven and natural effect. There is not too much augmentation here, only accent. The plan is not to re-plant the meadows, rather simply to take elements from the new design and stitch them sporadically into the landscape to promote diverse consolidation.

Emblem Courtyard:

Coreopsis rosea
Heliopsis helianthoides
Eupatorium coelestinum

The new courtyard created by the Richard J. Ryan Gateway is a primary planting zone. Any vegetation there is intended to accent the curves of the iron gateway and the portal into the arboretum. I chose three long-blooming species that represent the pinks, yellows and purples that carry throughout the plantings within the landscape.

Plants for Kiosk Containers:

Carex appalachia

Loncicera sempirvirens 'Major Wheeler'

Coreopsis 'Limerock Passion'

Helianthus angustifolius 'Lowdown'

Vaccinium corymbosum 'Chandler' 'Toro' 'Bluegold' 'Top Hat' 'Elliot' 'Northsky' 'Sunshine Blue' 'Legacy' 'Duke' or 'Chippewa'

In order to make a connection between the pastoral landscape of the natural areas and the formal Victorian gardens ahead, it became apparent that a symbol could be used to announce that transition. That symbol would be a container planting at the kiosk. This point in the visitors' journey into the Arboretum is a very impressionable place. The kiosk is simple and functional, but not extremely gardenesque or attractive. By placing two large terracotta containers at the kiosk the entrance experience may be greatly enhanced. Thus, two large polyethylene terracotta-colored containers were ordered from Campania International in Spring 2008. The plants chosen for the containers are recommended for container plantings and are drought tolerant. To ensure the best blooming and form, I chose cultivars of native species: two plants to act as cascaders, one plant for structure and height, and two plants for filler.

Plants for Shrub Grove:

Rosa palustris

Viburnum cassinoides

Rosa carolina

Viburnum trilobum

Rosa virginiana

Viburnum recognitum

Plants for Aster Alcove:

Aster cordifolius (*Symphyotrichum cordifolium*)

Aster divaricatus (*Eurybia divaricata*)

Aster ericoides (*Symphyotrichum e.*)

Aster firmus (*A. puniceus* ssp *firmus*)

Aster laevis (*Symphyotrichum laeve*)

Aster lanceolatus (*A. simplex*) (*Symphyotrichum lanceolatum*)

Aster macrophyllus (*Eurybia macrophylla*)

Aster novae-angliae (*Symphyotrichum novae angliae*)

Aster novi-belgii (*Symphyotrichum novi-belgii*)

Aster oblongifolius (*Symphyotrichum oblongifolium*)

Aster pilosus (*Symphyotrichum pilosum*)

Aster prenanthoides (*Symphyotrichum prenanthoides*)

Aster puniceus (*Symphyotrichum puniceum*)

Aster umbellatus (*Doellingeria umbellata*)

The next two zones are to be considered for implementation in the future. One strong notion throughout this design was to use grand scale for large sweeping effects. In other words, one large pastoral landscape is more potent than chopped up segregated sections. My design includes a shrub grove and alcove intended to unify the meadow and stream bank views. Currently there are rough patches between the meadows and the pumphouse and between the meadows and the adjacent stream bank. In this primary phase the shape of the alcove is being created by mowing, using tree and shrub plantings as a backdrop and meadow grasses for the shape. For the future I have recommended planting a shrub grove of native roses and viburnums and an alcove to frame the pumphouse designed to showcase a collection of the region's native asters. Not only would these be colorful additions to the landscape, they would bring diversity to the already multifaceted plant community of the site. Ernst Conservation Seed Company offers a great selection of native aster seeds at an economical price.

Matrix Design Implementation

Once I established all of the zones within the site, I brought together the color palettes and plant choices and began thinking of the more intricate designs within the zones; the parts of the whole. I came up with a matrix-style planting where large swaths of colorful, herbaceous perennials could flow and inundate. This matrix is made up of boomerang shapes comprised of three adjoining squares. Each square represents 10 feet x 10 feet and is part of a 300 square foot boomerang shape. Each boomerang represents a swath planting and each swath is part of a greater planting matrix divided by the zones. (See **Appendix A** for Diagram)

By creating a spreadsheet of all the potential plant choices, we calculated individual spread size and how many would be needed per 100 square feet based on mature plant sizes. Based on this information it was simply a matter of counting how many designated 100 square feet there are on the drawing for each type of plant to calculate how many plants would be needed for each species. We calculated the number of plants needed by considering the total area divided by the mature plant size for each species. One priority of this project was to create some immediate results for summer 2008. Thus, seeding the most visual areas in the landscape was not considered although this was the best option economically. I decided instead to order larger plants for more immediate results and after some nursery research ordered size 50 plugs, quarts and gallons from New Moon Nursery and Redbud Native Plant Nursery, both located in southeastern Pennsylvania.

One of the primary goals of this project is to begin implementation of the design in spring 2008. I ordered all of the first phase plants by the March 1 and they are scheduled to be available for pick-up by May 19. Working with Horticulture Section Leader, Iana Turner and the Morris Arboretum Horticulture Volunteers, we have coordinated a few days to plant the plugs and containers. Without the help of volunteers this project would not be feasible.

Site Preparation

Measuring and flagging the areas to be planted was the first step in implementing the design. Once planting zones were established in the landscape itself, mowing and tilling are the primary management tools used to prepare the site. As part of the management strategy, I decided to prepare the site using minimal chemical inputs. Instead, mulching, maintenance, observation and organic options will primarily be used.

Conclusion

Designing the entrance landscape for the Morris Arboretum's Northwestern Avenue Entrance has been a great learning experience. Researching plants has introduced me to the native flora of Pennsylvania; conducting a site analysis with the aid of staff and professors exposed me to the processes involved in the beginning phases of landscape design; doing business with nurseries exposed me to some of the ethics behind landscape design; working with volunteers has affirmed my faith in teamwork and the good spirit of those who volunteer their time. Implementing my design after hours of thought, planning, contemplation, listening, discussing and deciding has proved extremely rewarding. I hope that the design I have offered works well for the Arboretum as a big, bold and beautiful augmentation to the landscape.

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Appendix

A: Drawing

