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A Trail Through the Seasons:
All Seasons Garden Center
Jennifer Holien

Holien, Jennifer D.
A trail through the seasons

Arch.
Thesis
2005
Holien

Thesis Program 2004
NDSU Department of Landscape Architecture

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A Trail through the Seasons
All Seasons Garden Center and Arboretum

**An undergraduate thesis submitted to
the Department of Architecture and Landscape Architecture
North Dakota State University**

By:

Jennifer D. Holien

**In partial fulfillment of the requirements
for the degree of
Bachelor of Landscape Architecture**

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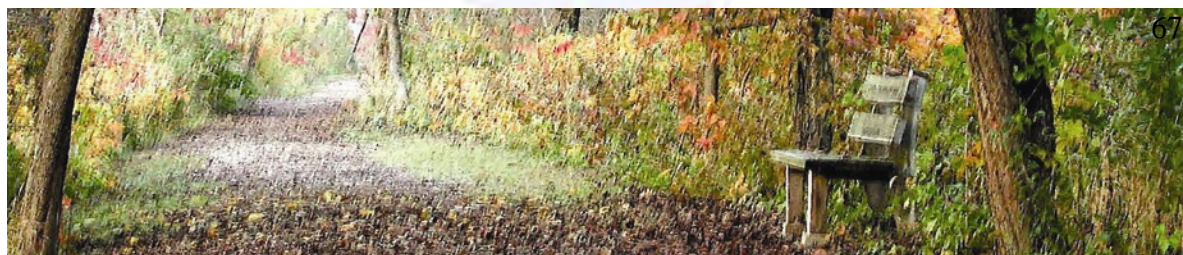
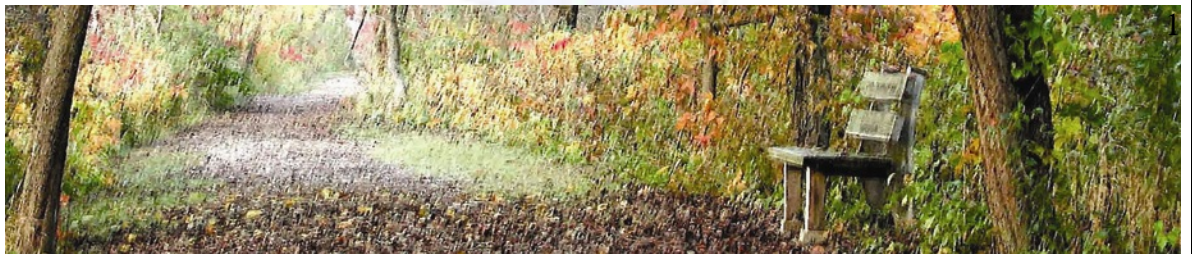




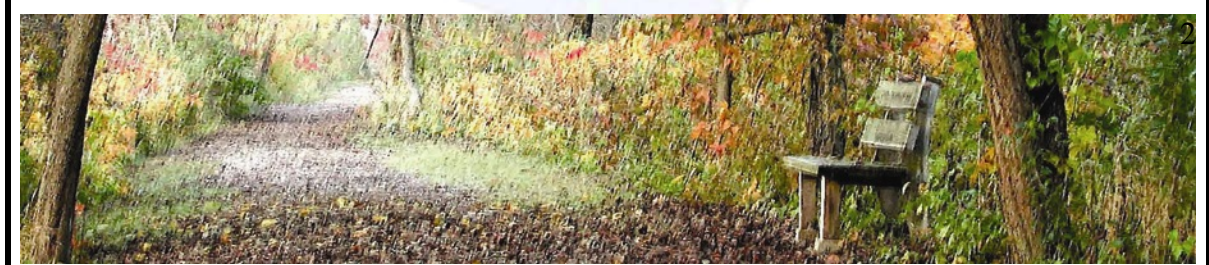
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Project Introduction





Project Introduction

Project Type

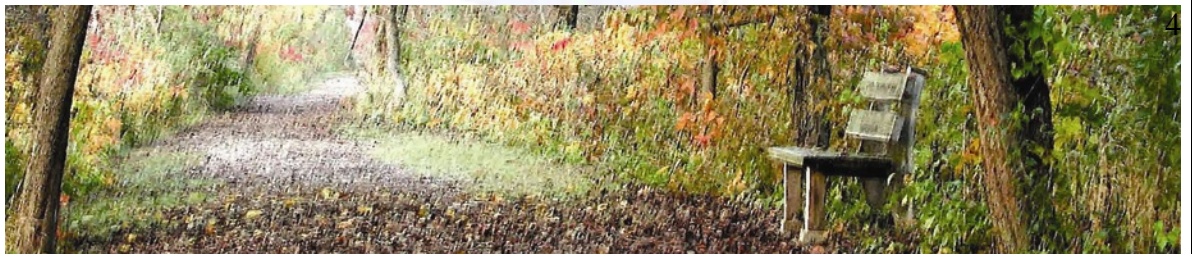
A Trail through the Seasons, All Seasons Garden Center and Arboretum is a retail store that consists of a greenhouse, a nursery, a landscape planning department, a floral shop, a gift shop and an arboretum that collectively work together to provide the tri-state areas of North Dakota, Minnesota and South Dakota a resource for all their gardening needs. With the new addition of the arboretum, the garden center is a place where visitors can enjoy nature and learn about the plants in the northern plains region. This is a project to display what northern plains plant material is available to the homeowner and to demonstrate their use in the landscape.

Concept

There are many greenhouses and nurseries that carry the plant material suitable for this cold climate; however, there is little education provided to the consumer regarding the significance and appropriate application of this plant material. That is what this project will reflect on. It will be a series of plantings and demonstrations that show what the northern region can grow successfully. The demonstration areas will be a template for many visitors to view, and to recreate the ideas in their own homes. Finally, this project will be a tool to advertise the different plants, in the different seasons, to be a selling mechanism for the retail greenhouse and nursery.

Project Justification

There are few places in the tri-state area (ND, MN, and SD) that actually demonstrate a beautifully designed landscape. The region is limited in plant material; so to be able to enjoy what is available in this region's nursery and greenhouse industry, there needs to be demonstration gardens to provide the public with a guide. Grand Forks, North Dakota is centrally located and has the largest running greenhouse/nursery in the region. With the addition of the arboretum, potential economic development within the landscape and greenhouse industries may occur.





Methodology

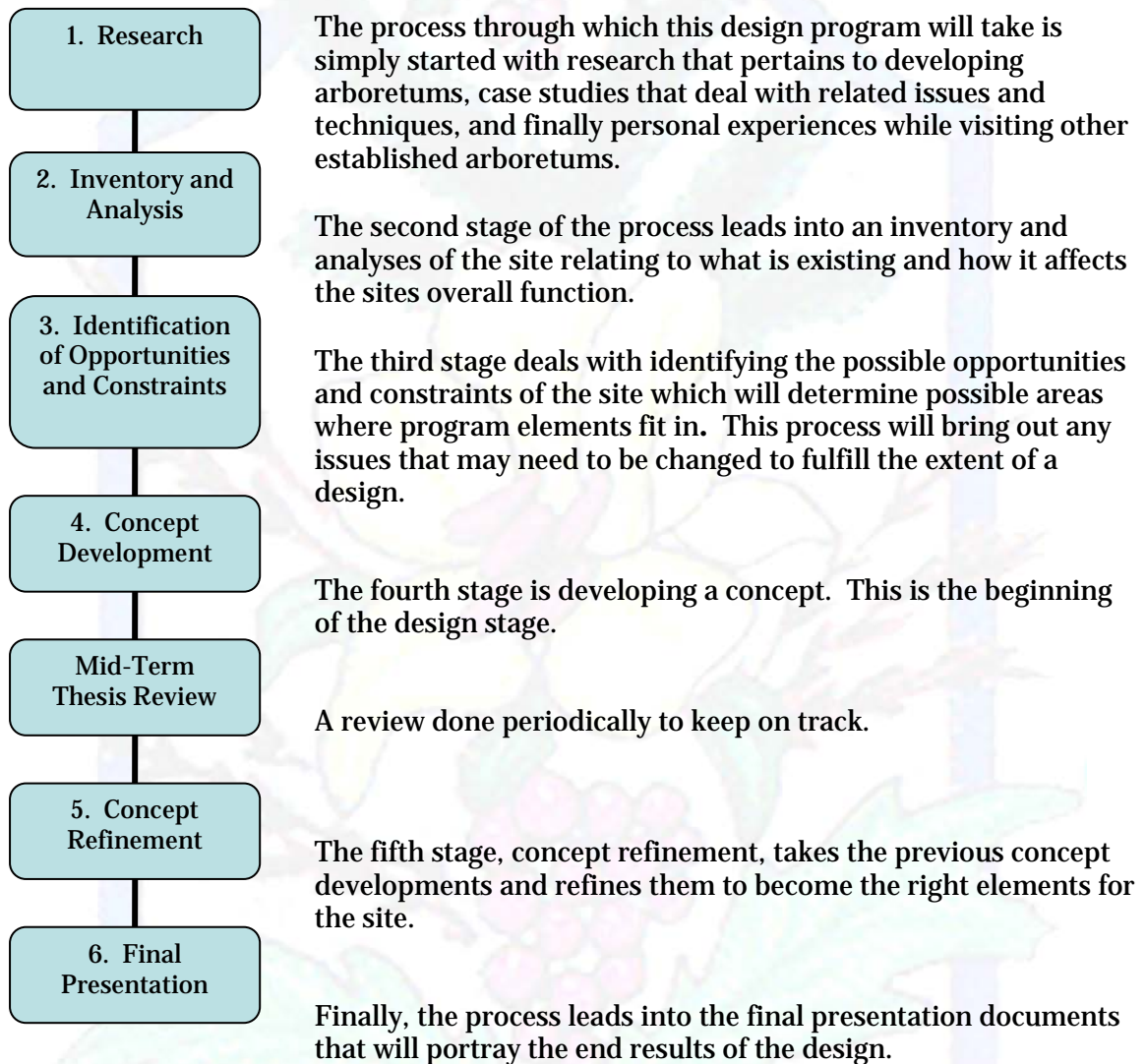
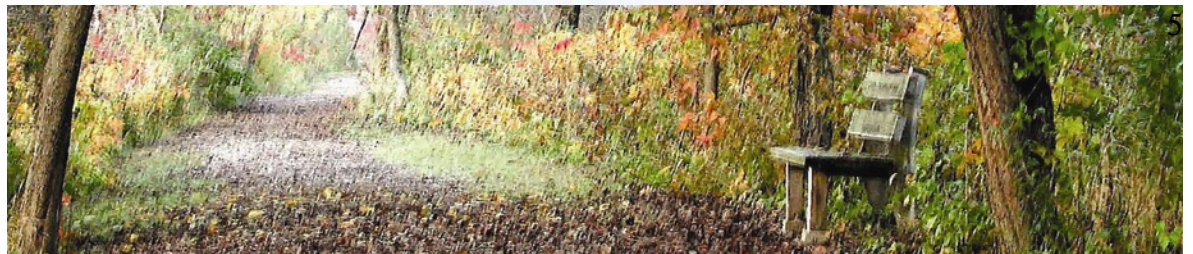


Figure 1: Methodology Diagram *Holien 2004*



Project Description





Project Description

Site Description

The site is located in what is currently All Seasons Garden Center in Grand Forks, North Dakota (see page 12 for location map). It is bound by Highway 81 to the west, and residential areas on opposite and adjacent sides.

Just to the south of the existing store and greenhouses is a piece of land once used as a tree farm (approximately 5 acres). The trees have been removed and the area provides opportunity to develop the projected arboretum. The rest of the property consists of the store, greenhouses, display areas, parking lot and a drainage pond for a total of 15 acres.



Figure 2: Aerial Photograph of site

USGS, 1997





Major Project Elements

The primary elements on the site will be the gardens within the arboretum. These gardens will include: the Spring Garden, the Sun Garden, the Four Season Garden, the Rose Garden, Scented Garden, Daylily and Iris Garden, the Hosta Shade Garden, and the Woodland edge that will include the tree species that grow in northern climates.

Other Spaces

Proposed Spaces:

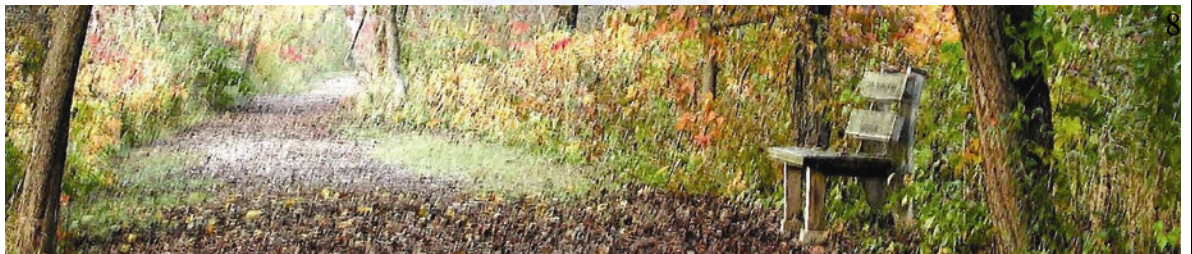
- ◆ Coffee Shop
- ◆ Library
- ◆ Conservatory

Existing Spaces:

- ◆ Gift Shop
- ◆ Greenhouses
- ◆ Nursery
- ◆ Drainage Pond

Circulation Spaces

- ◆ Entrances
- ◆ Parking Lot
- ◆ Paths/Trails



Spatial Relationships

The diagram below shows where the program elements will be located in relation to existing site elements and where they are in proximity to one another.

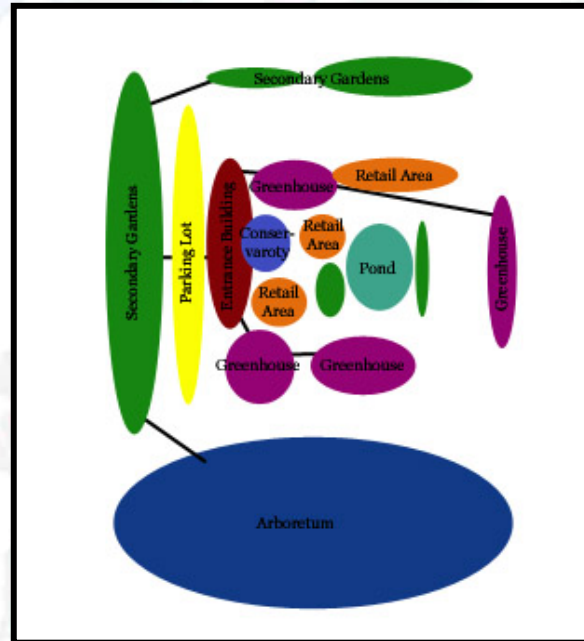


Figure 3: Space relationship diagram *Holien, 2004*

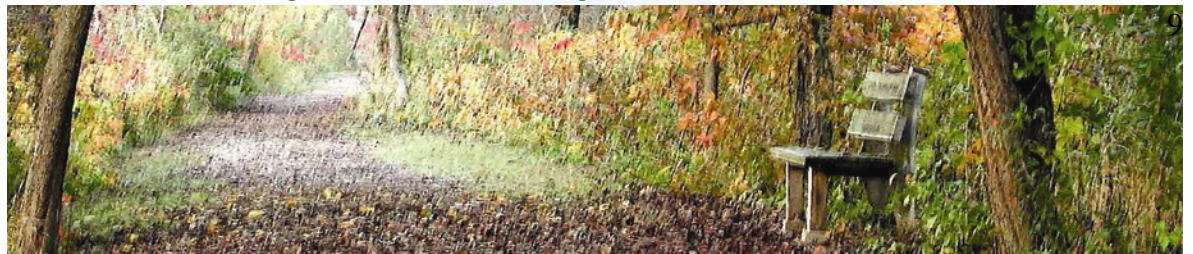
Client Description

The primary client for this project is the current owners of All Seasons Garden Center, Dieter and Georgia Heitmann and their immediate family.

User Description

The primary users of the site will be the residents of Grand Forks, ND and the surrounding communities; including, school groups, therapy groups, senior citizen groups, and private wedding or social groups. Other users would include visitors and tourists from the remaining tri-state region. Secondary users of the site would include the maintenance and administration staff of All Seasons Garden Center and researchers from around the area.

The arboretum will have the same hours as the store and greenhouse/nursery. Seasonal fluctuation would occur with the busier times being spring, fall, and winter, and significant holidays. Special events should take place during business hours, however, if arranged ahead of time, evening hours could be arranged.





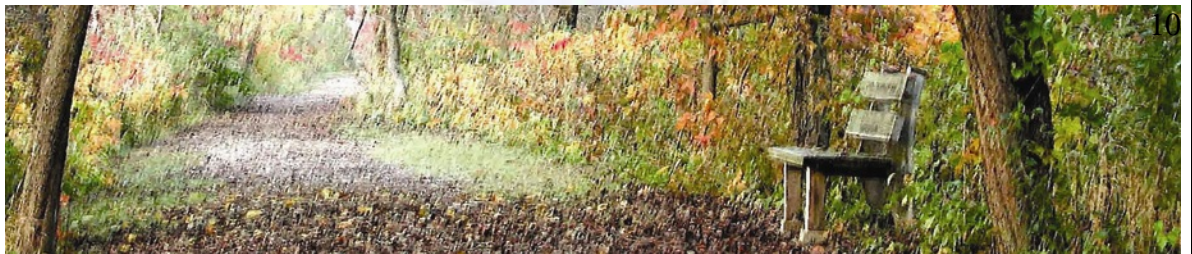
Goals and Performance Requirements

Goal: Encourage the visitors of the garden store and arboretum to buy the plants and incorporate them into their own gardens and landscapes.

Program Requirements: The only requirements for the gardens in the arboretum are to use the plants that the store sells and those that grow in this northern plains climate.

Goal: To encourage visitors to return to the arboretum to experience the seasonal changes.

Program Requirements: Attainment of this goal may be accomplished in several ways. 1) Provide small group or single user areas for sitting, contemplation or quiet interaction with nature and others, 2) Establish outdoor education programs with local schools to encourage nature/garden education in the classroom. These two principle program requirements potentially would encourage added use beyond a simple “garden center.”



Site Analysis



Site Analysis

Site Location



The site is located at All Seasons Garden Center, in Grand Forks, North Dakota.

The site is bounded on the West by south Washington Street. To the North is 47th Avenue, to the South is 62nd Avenue, and to the East is Cherry Street.



Figure 4: Site Orientation Maps *Map Quest, 2004*



Site Context: Regional Scale

Grand Forks is one of two large cities along the eastern border of North Dakota, Fargo being the second. It is the primary trade center for many surrounding small towns. North Dakota Association of Counties cites the population of Grand Forks County at 66,109, with the city of Grand Forks population at 49,321 (Census, 2000). Grand Forks County where the city of Grand Forks is located contains 1440 square miles of land (North Dakota Association of Counties, 2004). The city of Grand Forks includes approximately 19.31 square miles (North Dakota Almanac, 2003). Grand Forks County serves as the home of one of North Dakota's Air Force Bases with Grand Forks as the county seat.

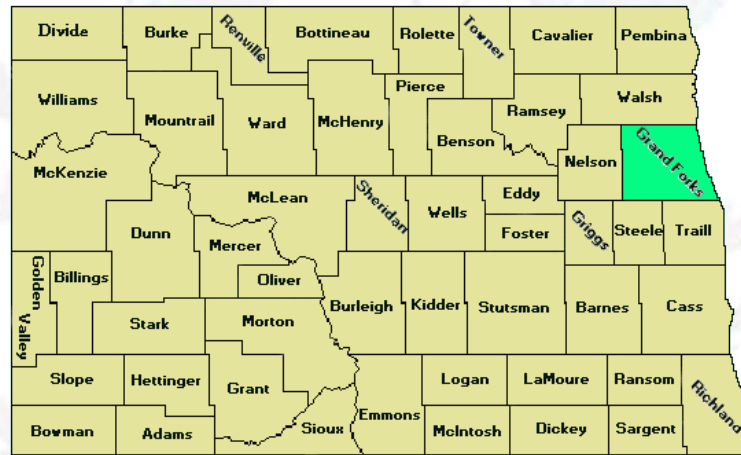


Figure 5: Counties of North Dakota King, 2004





The Red River Valley

L.S. King Grand Forks County historian describes the region as follows:

“the eastern portion of the county, over a broad belt extending to an average distance of twenty miles westward from the Red River, may be designated as a vast level plain, having everywhere the deep, rich, alluvial soil for which the Red River Valley has become famous for.” The Red River arises at the convergence of the Otter Tail and the Bois de Sioux Rivers in southeastern North Dakota (Red River of the North, 2004); from there it flows up north into Lake Winnipeg, Canada, which then drains into Hudson Bay via the Nelson River (Red River, 2004). There are several streams that enter into the flow of the Red River, which include: “the south branch of the Forest River, which passes across the northwest corner of the county; Turtle River, which drains the bulk of the northern and central parts of the county; and the numerous headwaters of the Goose River” (King, 2004). The Red River also acts as a dividing line between North Dakota and Minnesota. The river has a rather shallow channel that can cause frequent flooding during the spring, due to the fact that the gradient is less than one foot per mile and also due to the slow, spring, ice thaw (Red River, 2004).

Ecoregions

Grand Forks lies in the middle of the Lake Agassiz Plain. Glacial Lake Agassiz was the last in a series of proglacial lakes to fill the Red River Valley since the beginning of the Pleistocene (USGS, 2004). Lake Agassiz Plain is composed of thick lacustrine sediments, meaning those sediments that form at the bottom of lakes, which then are underlain by glacial till. The grasslands that once occupied the area have now been altered to provide the area with cultivated agricultural land. “Outside of channelized areas in the floodplain, turbid valley streams meander within narrow buffer strips of cottonwood, elm, ash, and willow” (USGS, 2004).

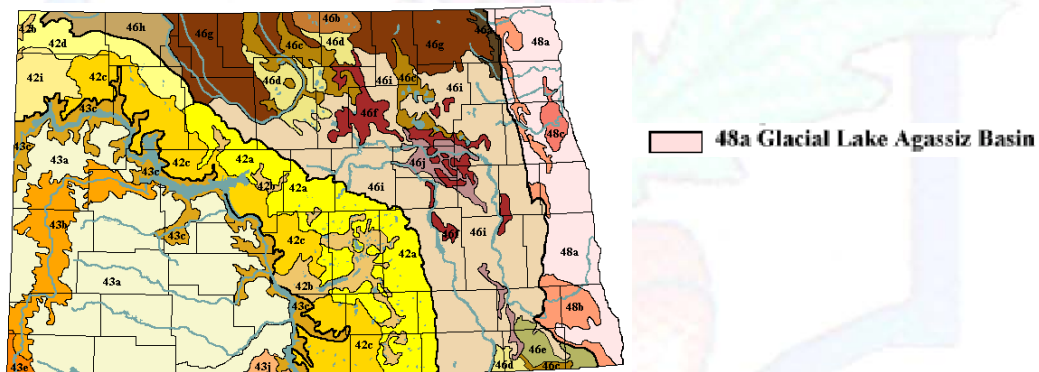
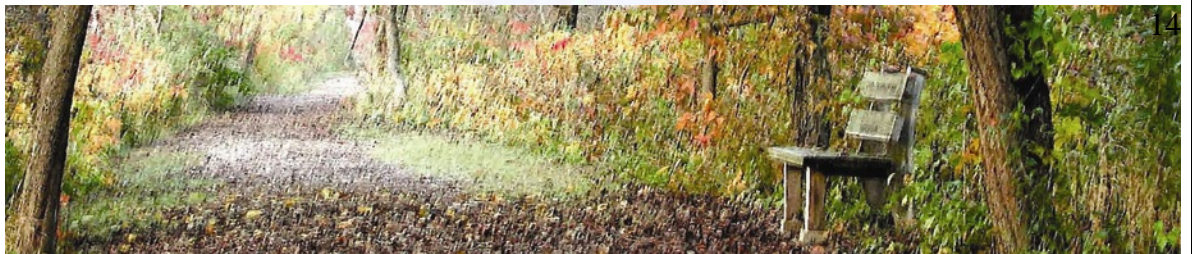


Figure 6: Ecoregions of North Dakota
Northern Prairie Wildlife Research Center 1998



Site Context: City Scale

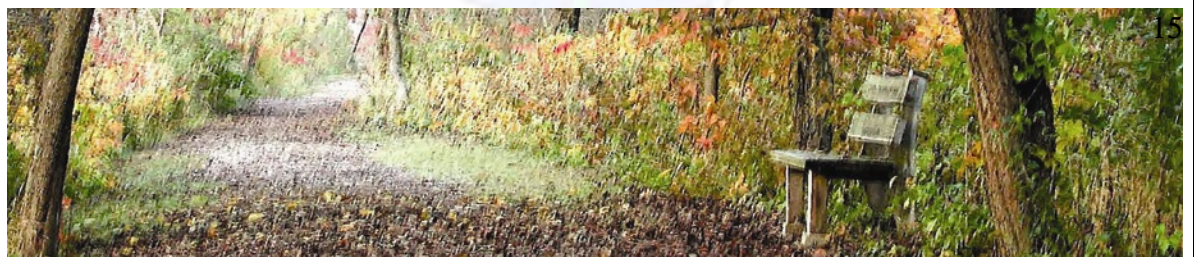
Grand Forks History

The city was the only settled point for miles around, up to the year 1880, (King, 2004). On February 22, 1881, Grand Forks was incorporated as a city, with W. H. Brown as the mayor (King, 2004). At the end of that year, the population had rose from a mere 33 in 1871 with one building to 3,000 people in 1881 and a mile and a half of store frontage (King, 2004). Today the city of Grand Forks has grown to have a population of 49,321 (Census, 2000).



Figure 7: City Attractions

USGS 1997



Site Context: Neighborhood Scale

Neighborhood

The neighborhood just east and north of the site is an empty field with a residential area adjacent to that. Still under construction and growing, the area will eventually be turned into residential housing, town homes, and apartments. Beyond the fields going further east and north, the area consists of town homes and single family housing. Most of these houses have been constructed within the last five years.

Presbyterian Church

The Presbyterian Church borders the site to the south.

Kings Walk Golf Course

Kings Walk, an Arnold Palmer signature golf course borders the project site to the west. Designed in a natural prairie setting, the course is reflective of Scotland and Ireland links.



Figure 8: Kings Walk Golf *Kings Walk 2004*



The Greenway

The Grand Forks Greenway, a park system, which is still being constructed, has a bike trail that runs just along the north edge of the project location. The bike trail provides an opportunity to connect the garden center to the larger greenway system. The map to the right shows the layout of the greenway.

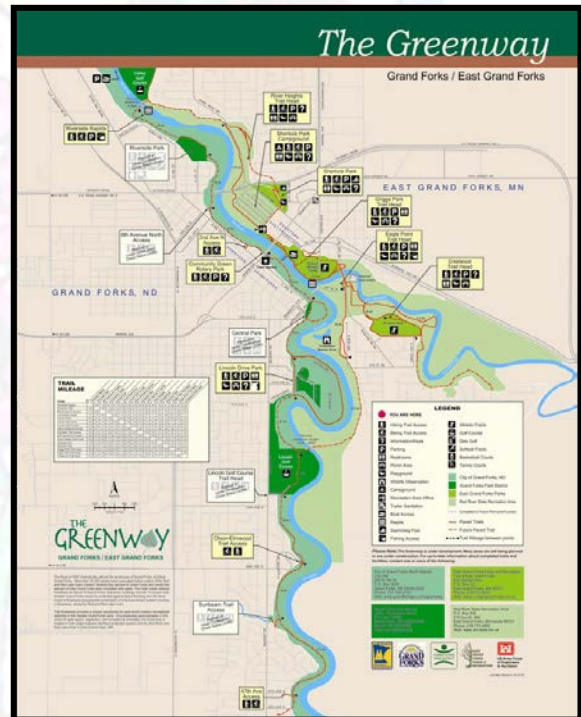
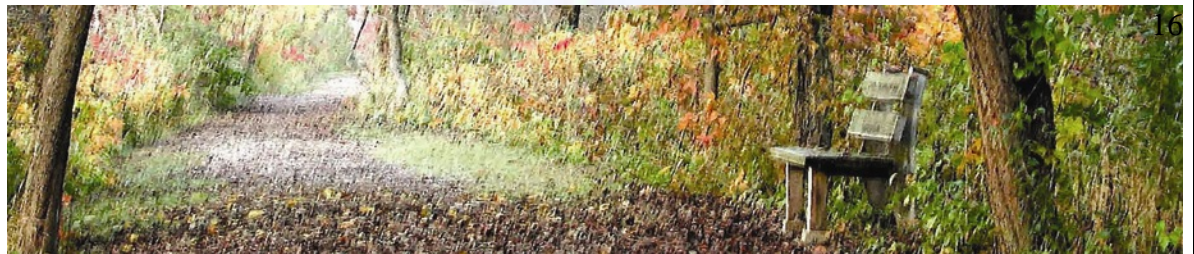


Figure 9: Park System & Greenway "Greenway" 2003

Site Context: Site Scale



All Seasons Garden Center History

The Garden Center development started on September 17, 1978. Dieter Heitmann and an area farmer had just harvested the crop of beans that covered the site the day prior. The black dirt was scrapped away and stock piled to start a solid foundation for the main building. The pond was dug to acquire more fill to raise the foundation for this building. During the fall of 1978 to the spring of 1979, 14,200 square feet greenhouse went up and the first crop of annuals was sold that year. The fall of 1980, the main building construction was underway which consisted of 8,800 square feet. Years of success at this location lead to a major building expansion each year since 2002; along with the addition of the tree farms. Today, there are four, growing tree farms, three in Grand Forks, and one in Fargo. Within the store itself are offices, the gift shop/showroom, garden store and floral shop that provide daily deliveries of fresh flower arrangements to the city of Grand Forks with a ten mile out of town radius.

Prior to the “great” All Seasons build, Dieter and his wife Georgia had lived in Langdon, North Dakota. They originally had started the greenhouse and nursery business here in 1970. (Heitmann, 2004)

Site Map

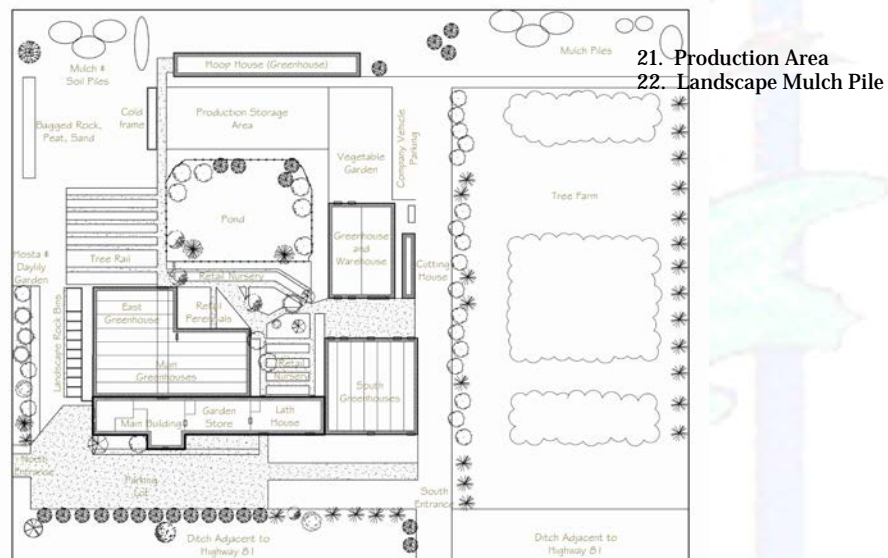


Figure 10: Existing Site Elements

Holien, 2004

Site Views

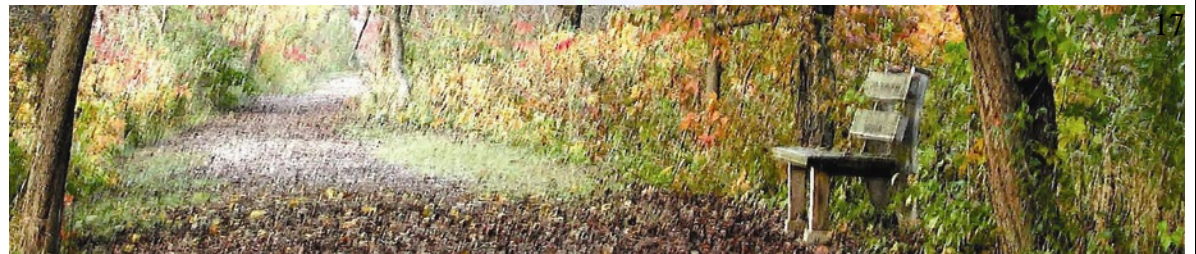




Figure 11: Lathhouse Entry
Holien, 2004

Figure 12: Front Entry to All Seasons
Holien, 2004



Figure 13: Front Garden
Holien, 2004

The pictures above represent the front views of All Seasons Garden Center. The brick building is the main building. In figure 12, the lathhouse and greenhouses were added on as the store developed.

Next, the pictures represented are of the retail areas. There is a separate area for perennials, trees and shrubs.

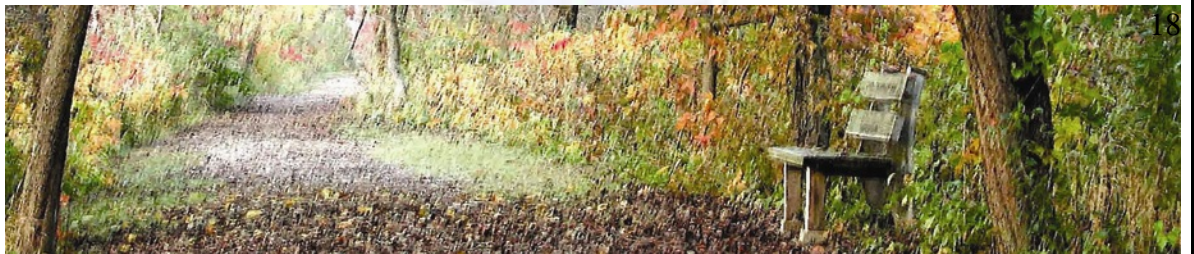




Figure 14: Perennial Shade House *Holien, 2004*



Figure 15: Perennial Retail Area
Holien, 2004



Figure 17: Nursery Retail Area
Holien, 2004



Figure 16: Tree Rail
Holien, 2004



Figure 18: Nursery Production
Holien, 2004

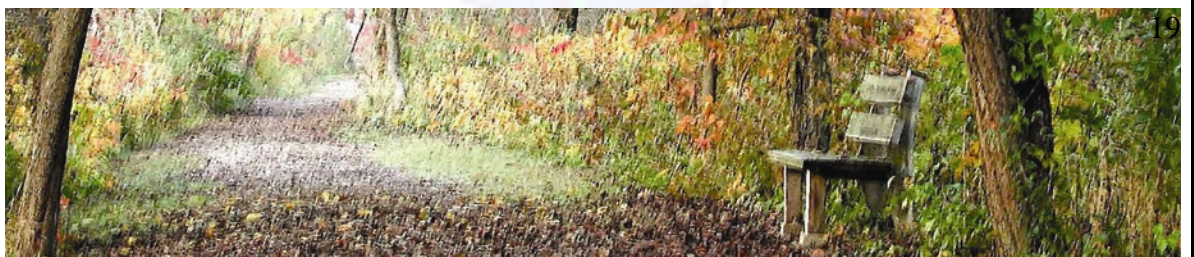
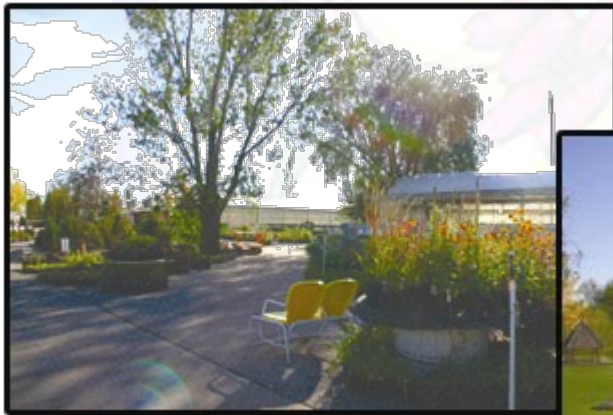




Figure 19: Hosta & Daylily Garden
Holien, 2004



Figure 20: Ornamental Display
Holien, 2004



**Figure 21: Display Area amongst
the Perennials**
Holien, 2004



Figure 22: The Pond
Holien, 2004

Figure 19-22 show views of some of the display areas around the site. The Hosta and Daylily Garden greets you when you first drive in the entry. The Ornamental Display, the Display area amongst the perennials and the pond are within the nursery area.

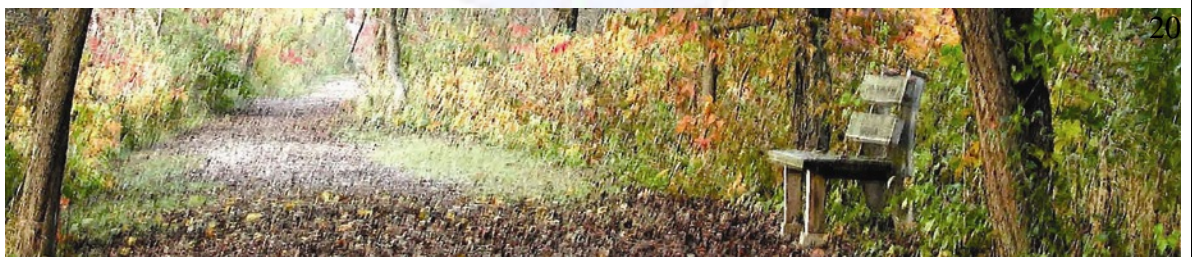




Figure 23: The Main Entrance
Holien, 2004



Figure 24: The South Entrance
Holien, 2004

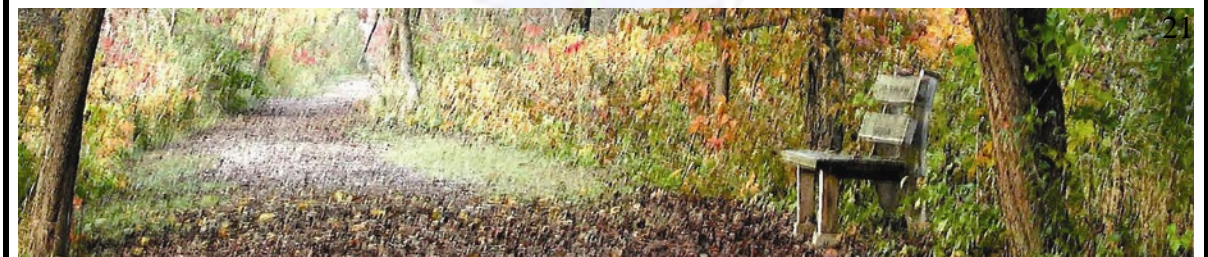
Figures 23 and 24 show the entrances onto the site. The south entrance would be a possible entry into the proposed arboretum. The arboretum is proposed to be just to the left of the entry in the figure 24 picture. The arboretum is pictured in figures 25 and 26.



Figure 25: The existing Tree Farm
Holien, 2004



Figure 26: Tree Farm
Holien, 2004





Climate

Climate and Extreme Temperatures

North Dakota's climate and weather is one that changes and can be very extreme at times. June through August, temperatures range from 50-82 degrees F, though temperatures can shoot up into the 90's. Thunderstorms can be heavy, but usually brief during the middle of summer. The temperatures cool off rather quickly come fall, the lows range around the freezing mark, and day time highs around 50-70 degrees F. Winters are long and can be absolutely cold. Zero is the average temperature, with temperatures periodically dipping down to -20 and -30 degrees F (North Dakota Almanac, 2003).

Flooding

Flooding is always a potential along the Red River. In 1997, Grand Forks experienced a 100 year flood. Grand Forks received a record 98.6 inches of snow. Further south, Fargo, North Dakota had received a 117 inches of snow. The Red River crested in Grand Forks at 54.11 feet, more than 26 feet above flood stage. The peak flow of the Red River measured in Grand Forks was 137,000 cubic feet, over one million gallons per second (Red River Flood Facts, 2004). Much of the city was covered, and miles of open land was overtaken due to the spilling banks of the river. All Seasons Garden Center was one of the sites that had over land flooding.

Sun

The state is located on the 48 degree 80' N Latitude and 100 degrees 76' W Longitude (ND Almanac, 2004). The sun is high in the sky during the summer months and lower during winter months.

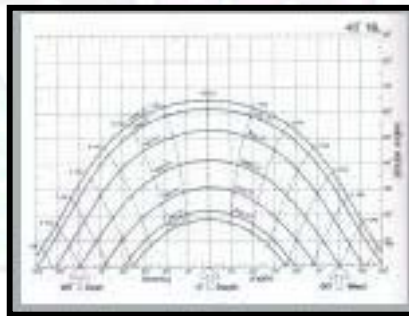
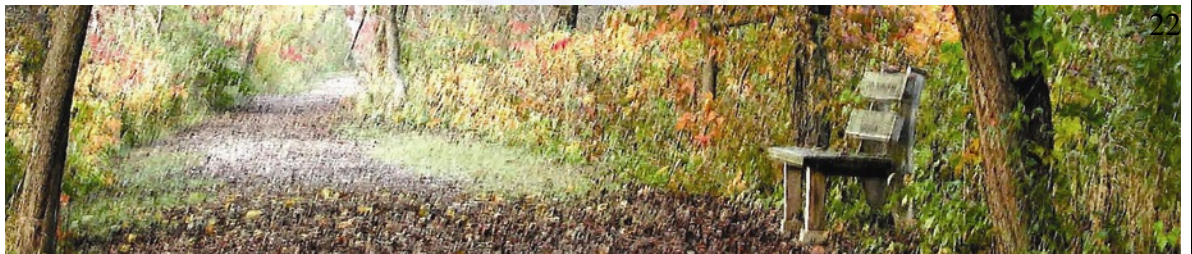



Figure 27: Sun Angle Chart for 48 Degrees North Latitude

Harris, 1998





Geology

Red River Valley

The Red River Valley was created during the last glaciation and after Lake Agassiz receded. The lake left behind flat lands that are a patchwork of cultivated farmland.

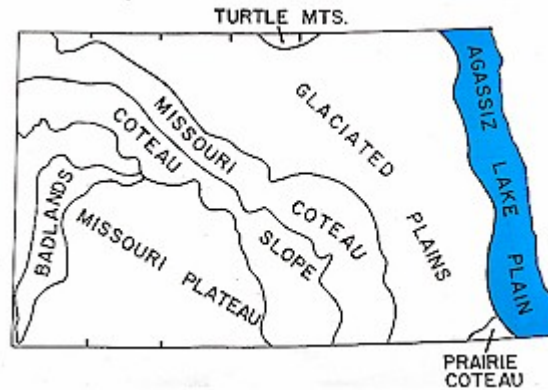


Figure 28: Lake Agassiz Plains
Blueme, 2003

Topography/Terrain

The site is located within the flat lands of the valley and has no topography change at all except for the river bank.

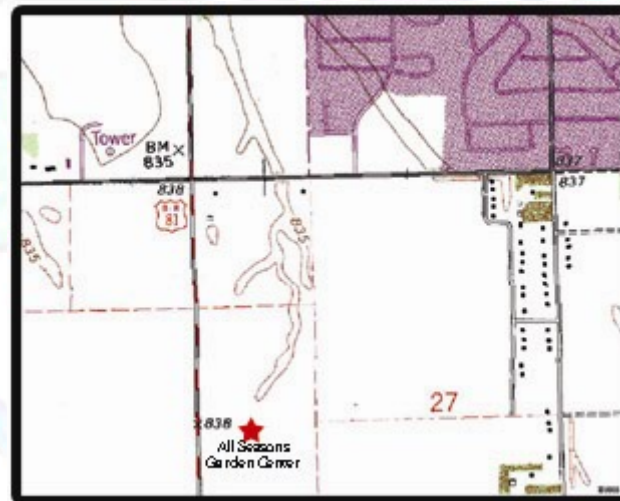
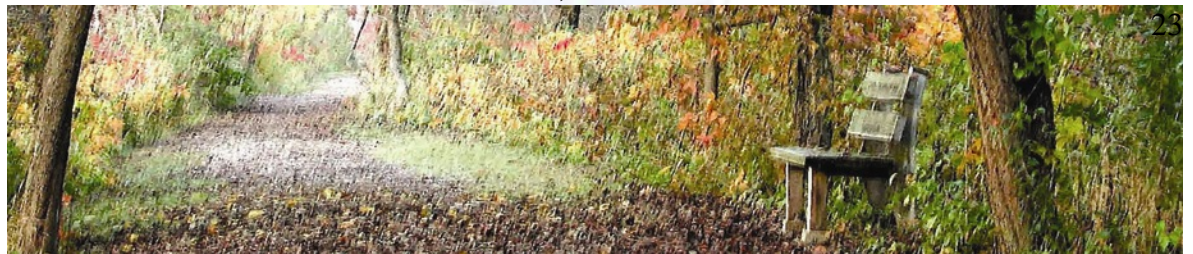


Figure 29: Topography Map
USGS, 1997



Flood Plain

According to the ESRI and FEMA map, the site is located within the 500 year flood range. In 1997, Grand Forks had experienced a 100 year flood and the project site had received overland flooding.

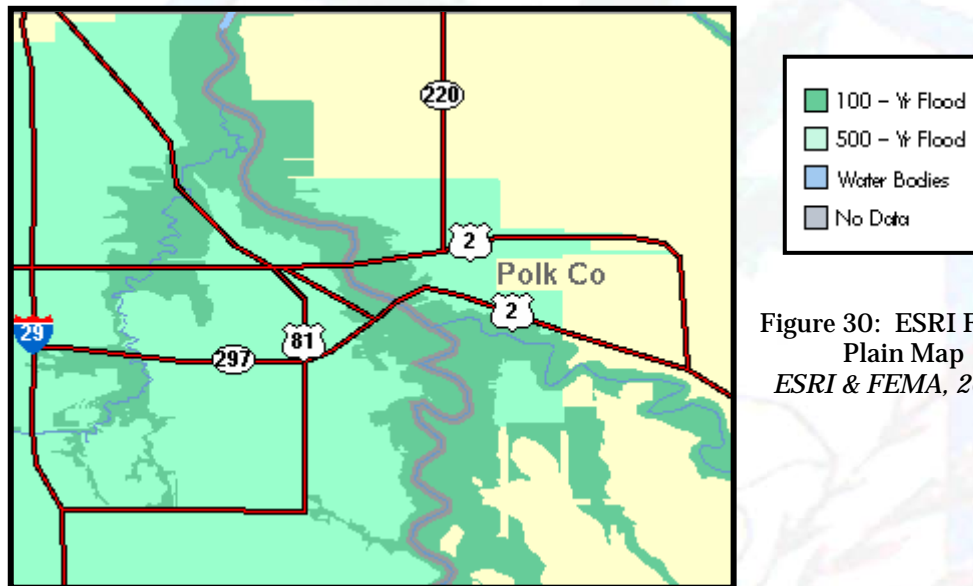


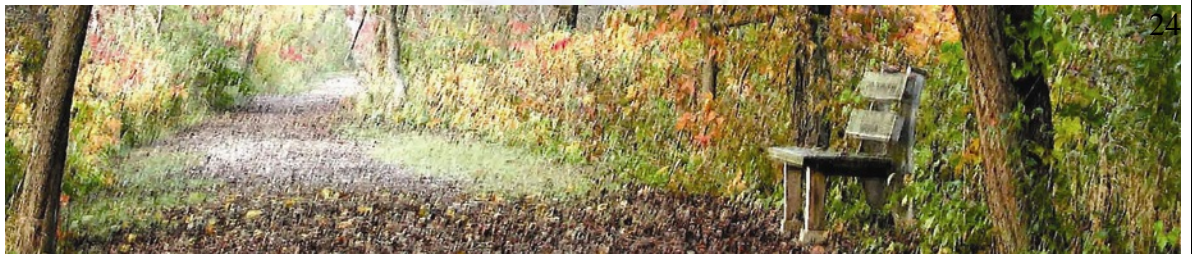
Figure 30: ESRI Flood Plain Map
ESRI & FEMA, 2004

Soils

The soils for the site are a bearden, silty, clay loam. Bearden series soils typically consist of deep, somewhat poorly drained, moderately slow permeability and are typical for the glacial lake plains. This type of soil is rated by the soil survey of North Dakota as good for grain or seed crops, good for grasses or legumes, good for wild herbaceous plants, and fair for shrubs, wetland plants. The statistics are good for open land wildlife also. Looking further on into building site development, the soils range from severe to moderate for shallow excavations and small commercial buildings (Survey Soil, G.F. County, 1981).

Sub-surface Characteristics

Thick beds of glacial drift, averaging 150-130 feet are topped with 95 feet of silt and clay deposits that were set down by glacial Lake Agassiz. The bedrock that typically covers the area is Cretaceous shales and sandstones along with Ordovician and Precambrian basement rocks (Ecoregions of ND, 2004).





Vegetation

Existing Vegetation

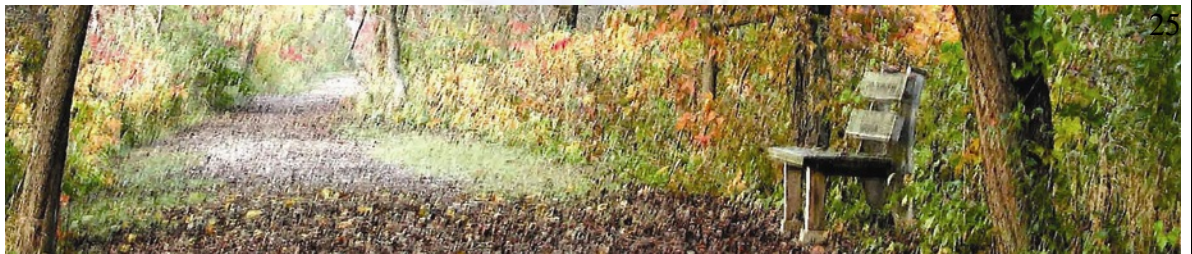
The existing vegetation is mainly woody plant material and turf grass that is mowed. The trees found on the site, not including the existing adjacent tree farm are: Green Ash (*Fraxinus pennsylvanica*), Silver Maple (*Acer saccharinum*), Autumn Blaze Maple (*Acer x freemanii* 'Autumn Blaze'), Laurel Willow (*Salix pentandra*), Paper Birch (*Betula papyrifera*), Cottonwood (*Populus deltoids*), Colorado Spruce (*Picea pungens*) and Black Hills Spruce (*Picea mariana*). There are planting beds on the site that primarily contain varieties of daylilies and hostas. Each year annual beds are planted to provide summer color.

Tree Farm

The tree farm is planted with a variety of tree species.

<u>Common Name</u>	<u>Scientific Name</u>
Patmore Ash	<i>Fraxinus pennsylvanica</i> 'Patmore'
Mancanna Ash	<i>Fraxinus mandshurica</i> 'Mancanna'
Green Ash	<i>Fraxinus pennsylvanica</i>
Locust	<i>Robinia pseudoacacia</i>
Quaking Aspen	<i>Populus tremuloides</i>
Dakota Centennial Ash	<i>Fraxinus pennsylvanica</i> 'Dakota Centennial'
Robusta Poplar	<i>Populus x canescens</i>
Siouxland Poplar	<i>Populus deltoides</i> 'Siouxland'
Radiant Crab	<i>Malus</i> 'Radiant Crab'
Prairie Spire Ash	<i>Fraxinus pennsylvanica</i> 'Prairie Spire'
Fallgold Ash	<i>Fraxinus nigra</i> 'Fallgold'
Bergeson Ash	<i>Fraxinus pennsylvanica</i> 'Bergeson'
Sapporo Elm	<i>Ulmus carpinifolia</i> 'Sapporo Autumn Gold'
Kelsey Crab	<i>Malus</i> 'Kelsey Crab'
Black Walnut	<i>Juglans nigra</i>
Whitespire Birch	<i>Betula platyphylla</i>

Table 1: Tree Farm Vegetation
Holien, 2004





Wildlife

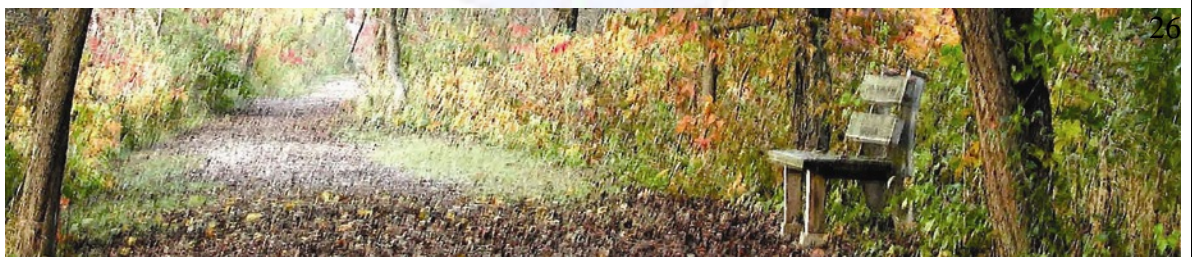
Resident Reptiles and Amphibians of North Dakota

<u>Common Name</u>	<u>Species</u>
Common Snapping Turtle	<i>Chelydra s. serpentina</i>
Great Plains Toad	<i>Bufo cognatus</i>
Plains Spadefoot Toad	<i>Scaphiopus bombifrons</i>
American Toad	<i>Bufo americanus</i>
Canadian Toad	<i>Bufo hemiophrys</i>
Plains Garter Snake	<i>Thamnophis radix</i>
Red Sided Garter Snake	<i>Thamnophis sirtalis parietalis</i>
Western Painted Turtle	<i>Chrysemys picta belli</i>

Table 2: Reptiles and Amphibians
USGS, 2004

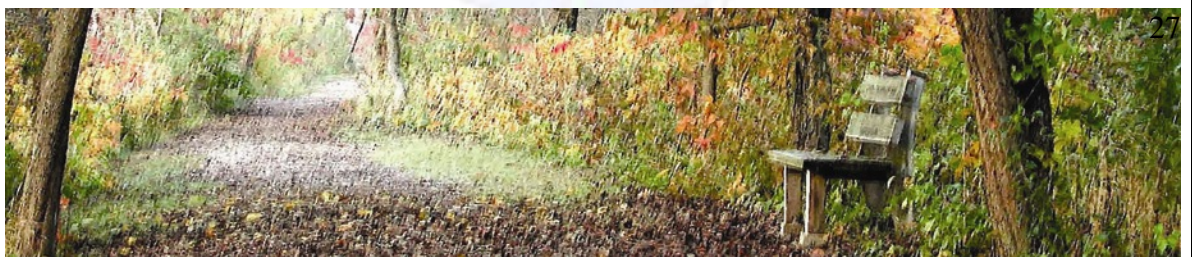
Breeding Bird Checklist for North Dakota

<u>Common Name</u>	<u>Species</u>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Mallard	<i>Anas platyrhynchos</i>
American Black Duck	<i>Anas rubripes</i>
Gadwall	<i>Anas strepera</i>
American Wigeon	<i>Anas americana</i>
American Green-Winged Teal	<i>Anas crecca</i>
Blue-Winged Teal	<i>Anas discors</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Northern Shoveler	<i>Anas clypeata</i>
Northern Pintail	<i>Anas acuta</i>
Wood Duck	<i>Aix sponsa</i>
Redhead	<i>Aythya americana</i>
Canvasback	<i>Aythya valisineria</i>
Lesser Scaup	<i>Aythya affinis</i>
Ring-Necked Duck	<i>Aythya collaris</i>
Common Goldeneye	<i>Bucephala clangula</i>
Bufflehead	<i>Bucephala albeola</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Canada Goose	<i>Branta canadensis</i>

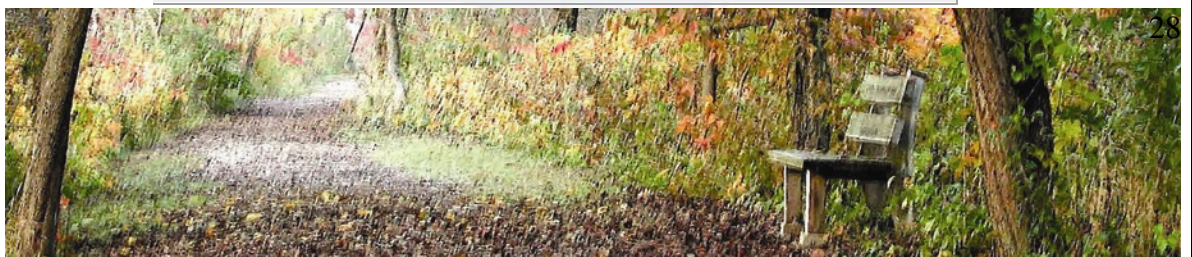




Great Blue Heron	<i>Ardea herodias</i>
Cattle Egret	<i>Bubulcus ibis</i>
Green Heron	<i>Butorides virescens</i>
Black-Crowned Night-Heron	<i>Nycticorax nycticorax</i>
Virginia Rail	<i>Rallus limicola</i>
Sora	<i>Porzana carolina</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>
American Coot	<i>Fulica americana</i>
Marbled Godwit	<i>Limosa fedoa</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Killdeer	<i>Charadrius vociferus</i>
Gray Partridge	<i>Perdix perdix</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Sharp-Tailed Grouse	<i>Tympanuchus phasianellus</i>
Sage Grouse	<i>Centrocercus urophasianus</i>
Mourning Dove	<i>Zenaida macroura</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Downy Woodpecker	<i>Picoides pubescens</i>
Yellow-Bellied Sapsucker	<i>Sphyrapicus varius</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Northern Flicker	<i>Colaptes auratus</i>
Ruby-Throated Hummingbird	<i>Archilochus colubris</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Say's Phoebe	<i>Sayornis saya</i>
Black-Billed Magpie	<i>Pica pica</i>
Blue Jay	<i>Cyanocitta cristata</i>
American Crow	<i>Corvus brachyrhynchos</i>
Brown-Headed Cowbird	<i>Molothrus ater</i>
Yellow-Headed Blackbird	<i>Xanthocephalus xanthocephalus</i>
Red-Winged Blackbird	<i>Agelaius phoeniceus</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Orchard Oriole	<i>Icterus spurius</i>
Baltimore Oriole	<i>Icterus galbula</i>
Bullock's Oriole	<i>Icterus bullockii</i>



Brewer's Blackbird	<i>Euphagus cyanocephalus</i>
Common Grackle	<i>Quiscalus quiscula</i>
Purple Finch	<i>Carpodacus purpureus</i>
House Finch	<i>Carpodacus mexicanus</i>
Red Crossbill	<i>Loxia curvirostra</i>
American Goldfinch	<i>Carduelis tristis</i>
Pine Siskin	<i>Carduelis pinus</i>
Chestnut-Collared Longspur	<i>Calcarius ornatus</i>
Mccown's Longspur	<i>Calcarius mccownii</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Baird's Sparrow	<i>Ammodramus bairdii</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Le Conte's Sparrow	<i>Ammodramus leconteii</i>
Nelson's Sharp-Tailed Sparrow	<i>Ammodramus nelsoni</i>
Lark Sparrow	<i>Chondestes grammacus</i>
White-Throated Sparrow	<i>Zonotrichia albicollis</i>
Chipping Sparrow	<i>Spizella passerina</i>
Clay-Colored Sparrow	<i>Spizella pallida</i>
Brewer's Sparrow	<i>Spizella breweri</i>
Field Sparrow	<i>Spizella pusilla</i>
Song Sparrow	<i>Melospiza melodia</i>
Barn Swallow	<i>Hirundo rustica</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Bank Swallow	<i>Riparia riparia</i>
Northern Rough-Winged Swallow	<i>Stelgidopteryx serripennis</i>
Black-And-White Warbler	<i>Mniotilta varia</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Orange-Crowned Warbler	<i>Vermivora celata</i>
Yellow Warbler	<i>Dendroica petechia</i>
Chestnut-Sided Warbler	<i>Dendroica pensylvanica</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
Mourning Warbler	<i>Oporornis philadelphia</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Yellow-Breasted Chat	<i>Icteria virens</i>
American Redstart	<i>Setophaga ruticilla</i>



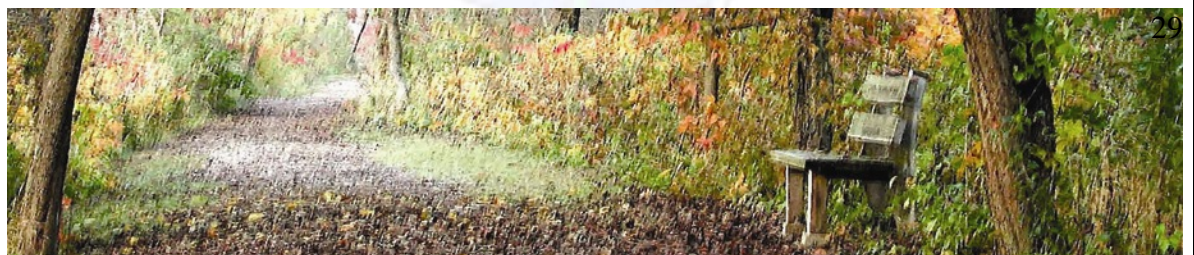
Sprague's Pipit	<i>Anthus spragueii</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
White-Breasted Nuthatch	<i>Sitta carolinensis</i>
Red-Breasted Nuthatch	<i>Sitta canadensis</i>
Black-Capped Chickadee	<i>Poecile atricapillus</i>
Veery	<i>Catharus fuscescens</i>
American Robin	<i>Turdus migratorius</i>
Eastern Bluebird	<i>Sialia sialis</i>
Mountain Bluebird	<i>Sialia currucoides</i>

Table 3: Birds USGS, 2004

North Dakota Mammals

<u>Common Name</u>	<u>Species</u>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Nuttall's Cottontail	<i>Sylvilagus nuttallii</i>
Snowshoe Hare	<i>Lepus americanus</i>
White-tailed Jack Rabbit	<i>Lepus townsendii</i>
Least Chipmunk	<i>Eutamias minimus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Richardson's Ground Squirrel	<i>Spermophilus richardsonii</i>
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>
Franklin's Ground Squirrel	<i>Spermophilus franklinii</i>
Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Fox Squirrel	<i>Sciurus niger</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Northern Pocket Gopher	<i>Thomomys talpoides</i>
Plains Pocket Gopher	<i>Geomys bursarius</i>
Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>
Plains Pocket Mouse	<i>Perognathus flavescens</i>
Hispid Pocket Mouse	<i>Perognathus hispidus</i>
Plains Harvest Mouse	<i>Reithrodontomys montanus</i>
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>
Striped Skunk	<i>Mephitis mephitis</i>

Table 4: Mammals USGS, 2004



Demographics

Population Demographics

Grand Forks Population	49,321
Households	19,677
People per household	2.31
Median Age	28.3
Median Household Income	\$34,194

Information from 2000 Census.

Circulation, Views, and Noise

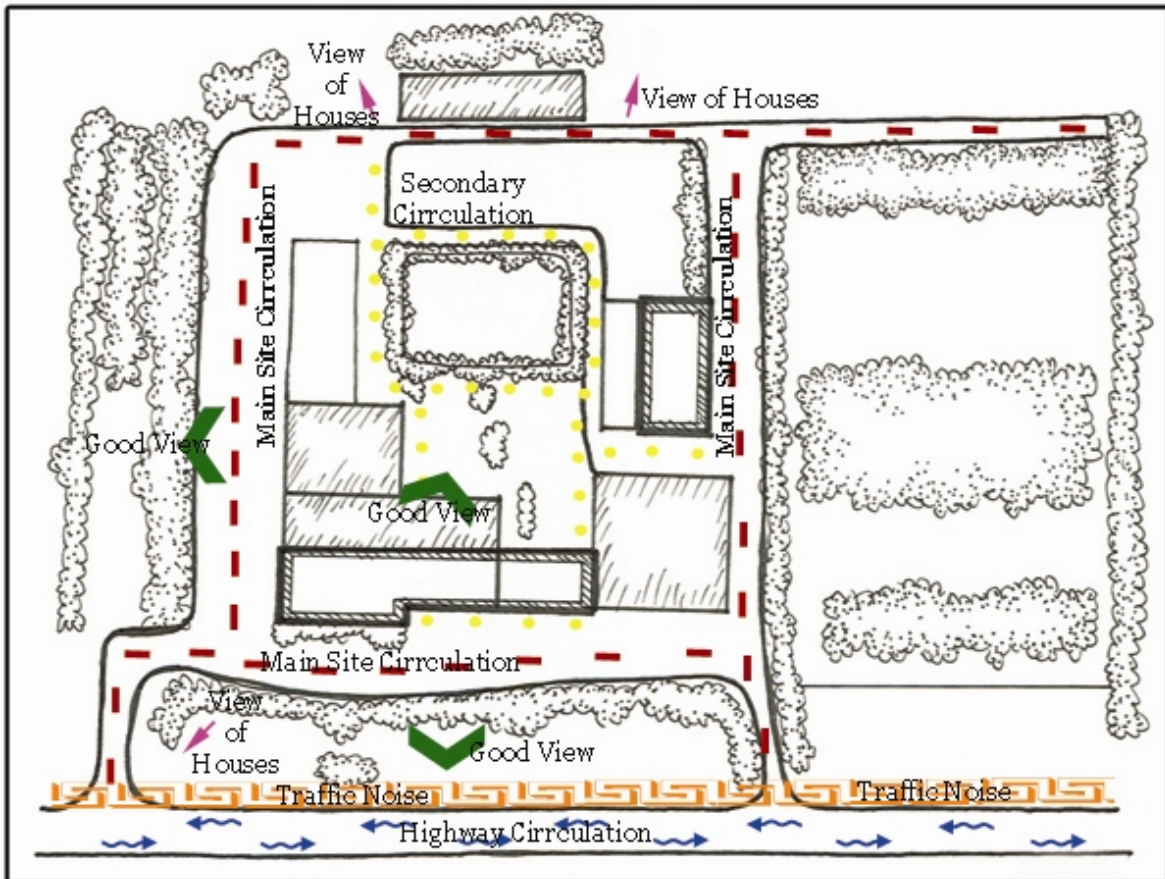


Figure 31: Circulation, Views and Noise Map
Holien, 2004





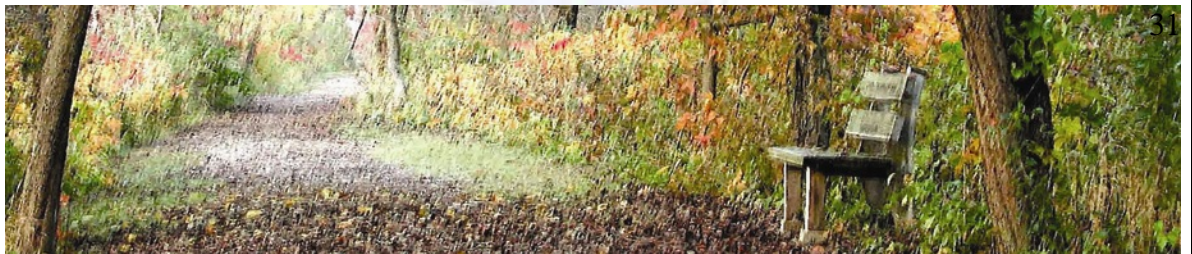
Opportunities and Constraints that guide the design process

Opportunities:

- ◆ Utilizing the space the owners have; using the “picked over” tree farm as the basic Arboretum
- ◆ Connecting to the Greenway
- ◆ Having the supply of plants on hand and being able to have the knowledgeable staff
- ◆ Being able to acquire more land if necessary
- ◆ Being able to enjoy nature within the conservatory during winter months
- ◆ Close relationship with other parks, golf courses, event centers, etc.

Constraints:

- ◆ Private funding
- ◆ Building and greenhouses already exist on site



Case Studies



Case Studies

Minnesota Landscape Arboretum- Chaska, Minnesota

The Minnesota Landscape Arboretum has a mission statement similar the vision *A Trail through the Seasons* should represent. The mission statement is, “to provide a community and a national resource for horticultural and environmental information, research and public education; to develop and evaluate plants and horticultural practices for cold climates; and to inspire and delight all visitors with quality plants in well-designed and maintained displays, collections, model landscapes, and conservation areas” (The Arboretum, 2004).



Figure 32: The Arboretum
*Minnesota Landscape
Arboretum, 2003*

The Minnesota Landscape Arboretum also provides a basis for the conservatory. It is a great example of a showcase of plants that don't typically grow in the northern climate. The conservatory provides opportunity to escape the cold winters and enjoy exotic plant material.

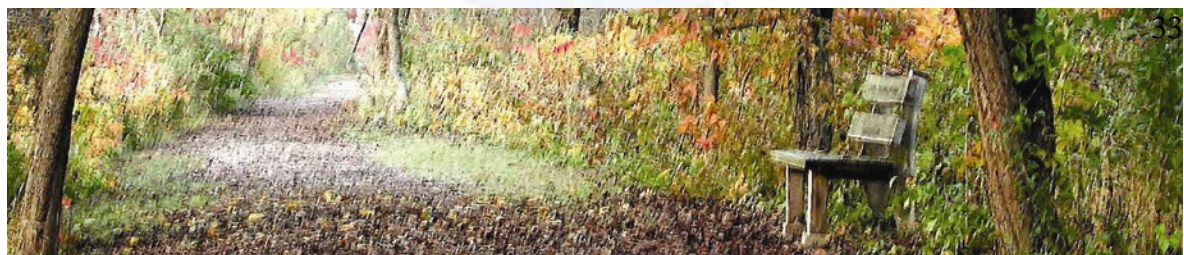


Figure 33: Arboretum views
*Minnesota Landscape
Arboretum, 2003*

Finally, this case study shows many ways to bring in the issue of different user groups and having the groups return. There are many programs that involve educational experiences for children, teachers, and families. The Marion Adrus Learning Center is an educational program that reaches nearly 35,000 students and teachers each year through school field trips, an urban gardening program, and the popular Plantmobile. There is also the Therapeutic Horticulture Program where visitors can indulge their senses as they experience plants chosen for their fragrance, texture, and form. This program also helps to connect people to plants and the earth, the program promotes healing, self-esteem, pride and socialization. This arboretum also gives examples of using a garden for active learning, by planning for special gardens such as bulb gardens, prairie plantings, and raised beds (Minnesota Landscape Arboretum, 2002).



Figure 34: Annual Beds
*Minnesota Landscape
Arboretum, 2003*



The Arnold Arboretum- Boston, Massachusetts

The significance of the Arnold Arboretum to the project is the issue of how the plants are arranged. In 1870, Charles S. Sargent and Frederick Law Olmsted were confronted with this problem. Their result was, “to show relationships among the various genera and families of plants by placing related groups in close juxtaposition, thereby enhancing the educational value of the collection and permitting easy botanical comparison” (Arnold Arboretum, 2002). However, the proposed site is not comparable in size to the Arnold Arboretum, and will be scaled down to the specific woody plants that grow in this region alone.



Figure 35: The Arboretum
A Place for Study & Rec. 2004

The Arnold Arboretum is a good example to show how it connects to Boston’s park system. The plan demonstrates a trail system and how these trails connect to the Emerald Necklace.

Frederick Law Olmstead, the designer of the arboretum, had once thought, “Cities could be wonderful if they incorporated places of natural beauty where people could enjoy the healthful benefits of sunlight and pure air. In such places, people could interact in ways that might ease the stress and antisocial behavior he attributed to the crowded city” (Boston’s Arnold Arboretum, 2004). This was then accomplished by making the arboretum useful as a park, in doing so he designed the roads in a way that suggested relaxation. The route had to curve gently to and fro through the landscape, always leading visitors to new scenery. The trees, therefore, were not planted in the stiff and formal lines of a conventional botanical garden. They needed to appear as they would have in nature, in clumps with plenty of curving space between groups (Boston’s Arnold Arboretum, 2004).

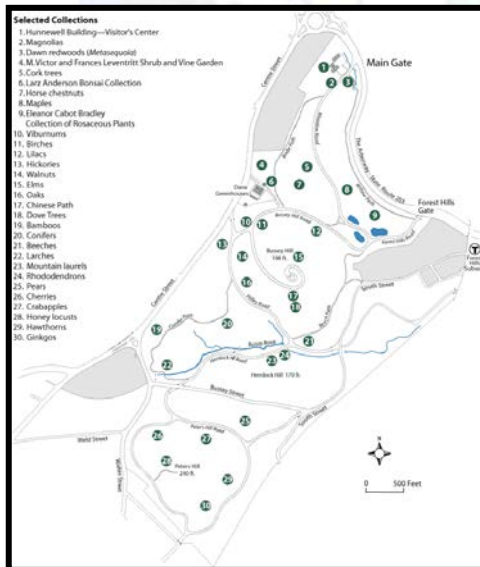


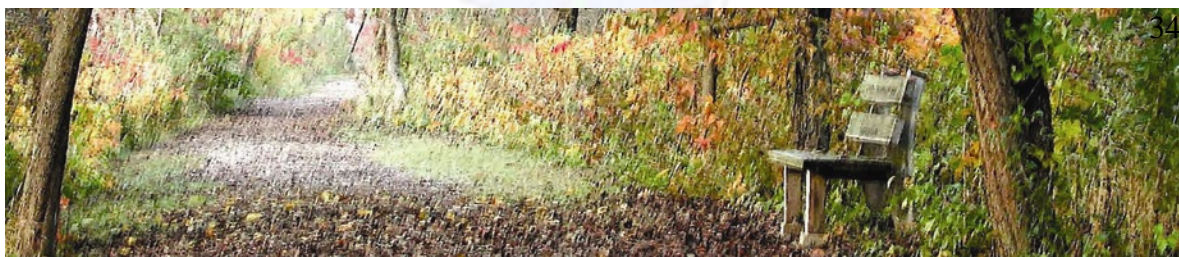
Figure 38: Arnold Arboretum Site Map
Map of Grounds, Arnold Arboretum, 2004



Figure 36: Walking Trails
Lilacs in Bloom, Arnold Arboretum, 2004



Figure 37: The Meadow
Lilacs in Bloom, Arnold Arboretum, 2004



Missouri Botanical Gardens- St. Louis, Missouri

The Missouri Botanical Gardens is the home of the Linnean House, built in 1882, and named after Carl Linnaeus, who invented the plant classification system (Cunningham, 2000). The building was used to once over winter plants; however, the building was remodeled into a conservatory with a new glass roof. The Climatron was then established as a dome like conservatory where a tropical rain forest inhabited the area (Cunningham, 2000).



Figure 39: The Linnean House
Missouri Botanical Gardens, 2004

This site is also the home of the Shoenberg Temperate House. This house focuses on a Mediterranean theme. And finally, a Desert House is occupied by desert plants and plants from South Africa. These are all examples of different conservatories that might fit into my design. The Climatron is 70 feet high and 175 feet in diameter, allowing tall, non-native and tropical trees to flourish. The building also has streams and waterfalls with 1,200 different species of trees and plants ("Exploring," 2004).

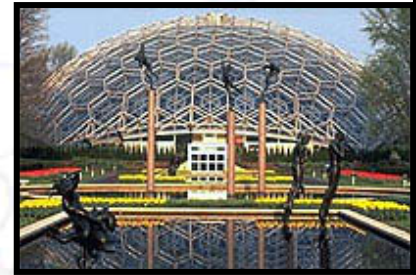


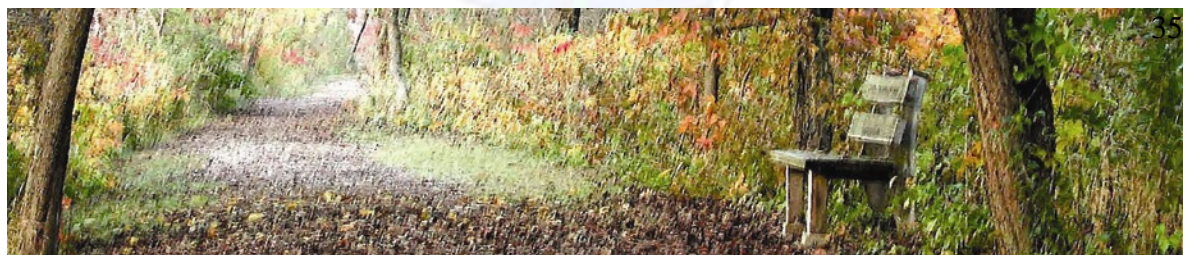
Figure 40: The Climatron
Missouri Botanical Gardens, 2004



Figure 41: The Shoenberg Temperate House
Missouri Botanical Gardens, 2004



Figure 42: Inside the Climatron
Missouri Botanical Gardens, 2004



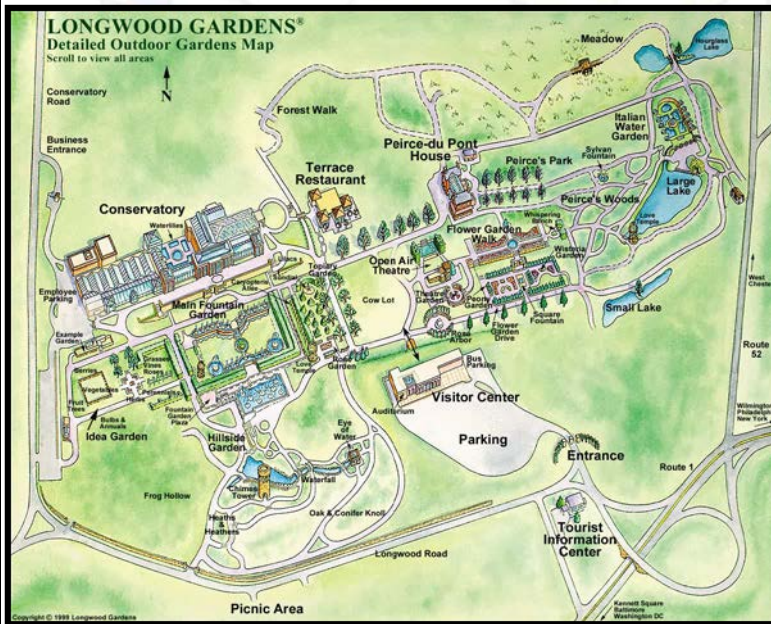
Longwood Gardens- Kent Square, Pennsylvania

Longwood Gardens divides its year into at least eight festivals, beginning with Welcome Spring in January and ending with the Christmas Display (“Seasonal Festivals”, 2004). Longwood Gardens is a showplace, much of what *A Trail through the Seasons* is to present. This is a good example to follow to show different seasons with different plants.

The layout of the gardens is also something that could be included in my design. Its layout is somewhat similar to what the existing conditions of All Seasons Garden Center are today.



Figure 43: The Fountains Longwood Gardens, 1999



Site Plan Longwood Gardens, 1999 Longwood Gardens, 1999



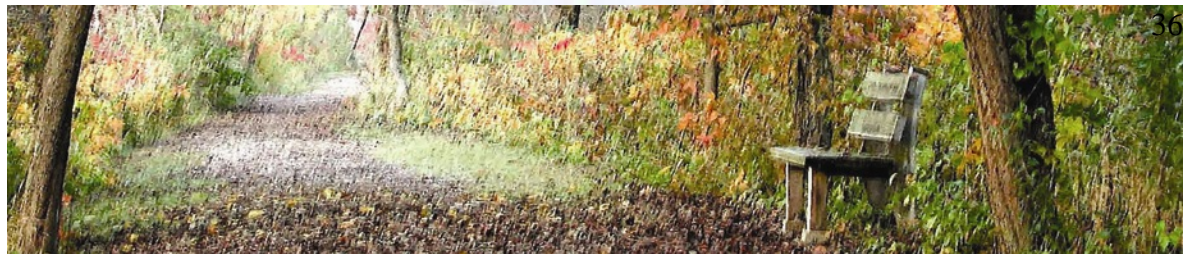
Figure 44: Spring Bulbs
Figure 45: Longwood Gardens



Figure 46: Fall Gardens Longwood Gardens, 1999



Figure 47: Christmas in the Conservatory Longwood Gardens, 1999



Lincoln Memorial Gardens- Springfield, Illinois



Figure 48: Lincoln Memorial Gardens
Lincoln Memorial Garden & Nature Center, 2004

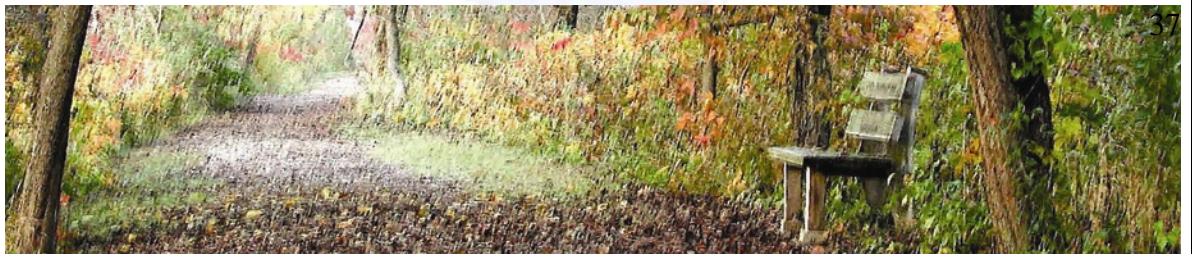
This garden was designed by Jens Jensen. His basic plan for the garden was a series of interconnected paths bordered by various arrangements of native plants. The pattern is held together by eight council rings, circular benches designed as a means of fostering friendly gatherings within the garden (“Untitled,” 2004). This would be a good example to incorporate into my design to show different arrangements of plants to make “rooms of nature.” Also this plan deals with the issue of placing people in a landscape and making it comfortable for them in a specified seating arrangement.



Figure 49: Walking Trails
Lincoln Memorial Garden & Nature Center, 2004



Figure 50: Nature Walking Trails
Lincoln Memorial Garden & Nature Center, 2004



Programmatic Requirements





Programmatic Requirements

Spatial Requirements

Space Name: Gardens

Area Required: ¼ of an acre-2 acres

Components: the Spring Garden, the Prairie Garden, the Rose Garden, Therapeutic Garden, Daylily and Iris Garden, the Hosta Garden, and the Woodland edge

User Groups: all groups

Relationships: Buildings on the site

Potential Materials:

Notes:

Space Name: Entrance Building

Area Required: 10,300 sq. ft.

Components: show room/gift shop, offices, coffee shop, library

User Groups: all groups

Relationships: entrance, greenhouses, gardens

Potential Materials:

Notes:

Space Name: Conservatory

Area Required: 26,000 sq. ft.

Components: non-native plants, clear roofing

User Groups: all groups

Relationships: greenhouse, gardens

Potential Materials:

Notes:

Space Name: Greenhouses

Area Required: 42,000 sq. ft.

Components: plants

User Groups: all groups

Relationships: gardens, gift shop

Potential Materials:

Notes:

Space Name: Nursery

Area Required:

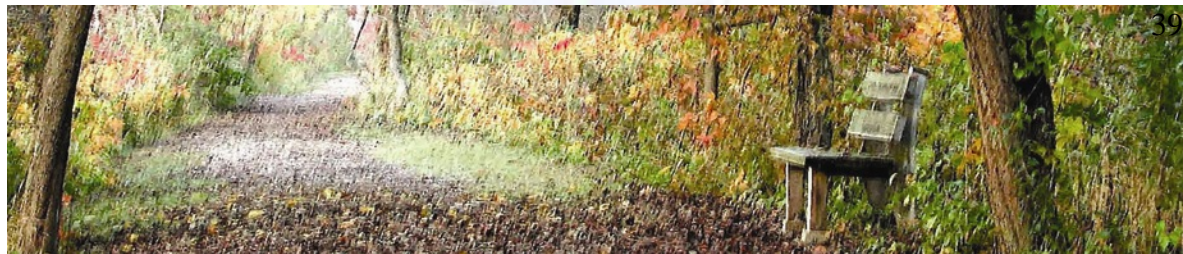
Components: Nursery plant displays

User Groups: all groups

Relationships: greenhouse, gardens

Potential Materials:

Notes:

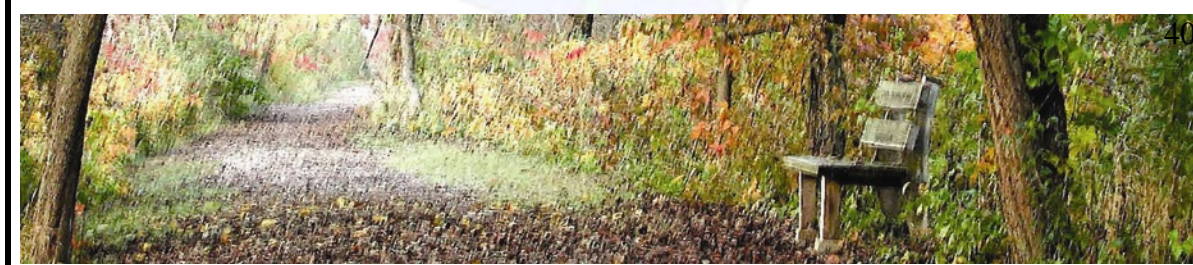




Space Name: Drainage Pond
Area Required: 20,000 sq. ft.
Components: water, water loving plant material, fountains
User Groups: all groups
Relationships: gardens
Potential Materials:

Space Name: Parking Lot
Area Required: 14,000 sq. ft.
Components: General Parking, Employee Parking, Bus & Handicap Parking
User Groups: all groups
Relationships: entrance in to gift shop
Potential Materials: Asphalt, concrete
Notes: 100 standard spaces
2 Bus Spaces
Dimensions 15'x50'
6 Handicap Spaces
Dimensions 8'x18', 5' aisle

Space Name: Paths/Trails
Area Required:
Components:
User Groups: all groups
Relationships: entire site
Potential Materials: concrete, pavers, rolled gravel, mulch
Notes: All paths will meet ADA requirements
Exceed no more than a 5% slope
8.33% slopes on ramps where needed
Major Connecting Paths: 15' wide
Secondary Paths: 10' wide
Garden Paths: 5' wide



Performance Requirements





Performance Requirements

Lighting

Lighting will be specified throughout the entire site to accompany the users on the site during later hours of the day, and turned off when not needed.

- ◆ Lighting along major paths shall be at least 0.9 foot candles
- ◆ Lighting along secondary paths shall be at least 0.5 foot-candles
- ◆ Parking areas shall receive at least 1.0 foot-candles
- ◆ Around building entries at least 5.0 foot-candles

Seating

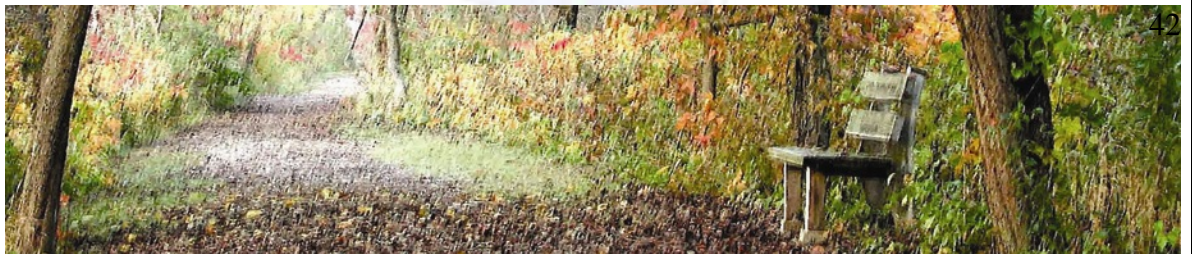
Seating will be provided throughout the site, including inside the greenhouses, conservatory, and nursery. There will be points out in the gardens where there is more seating to provide for a larger group of people.

Signage

The site will be filled with signs to direct people and to educate them about the plants within the site. These signs will be large enough to read from a specified distance.

Plant Irrigation


Irrigation will be provided to gardens where water is essential. The native prairie gardens will rely on nature to nurture them.



Appendix A

Statement of Intent/Proposal





Statement of Intent

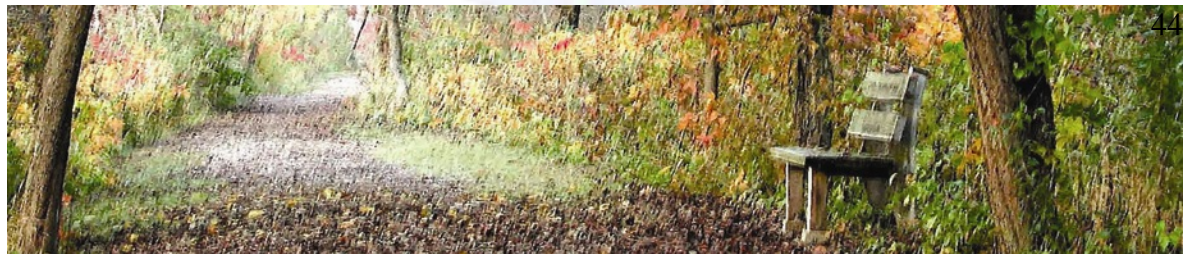
A Trail through the Seasons

I propose an All Seasons Garden Center and Arboretum for the states of North Dakota and western Minnesota. It will be located in Grand Forks, ND, along Highway 81. The garden center will serve the Red River Valley from spring through winter, whether it is a greenhouse full of bedding plants or “home grown” poinsettias. It will be the nursery which fulfills a homeowners landscape needs. This project will explore and determine how to design a retail garden center that above other competitors showcases a variety of plants suitable to these areas climatic conditions. The garden center will be the store for the consumer to accomplish their landscaping needs by buying the necessary plants or products. This will also be a place for consumers to ask questions that they have to a knowledgeable staff. The purpose of this design of the garden center and arboretum is to answer the following question: how can a garden center and an arboretum act together to encourage growth in the gardening and landscape industry, portray a unique landscape setting that will inform and educate a consumer about their landscape purchases and use the store as a continuing landscape resource?

The small, business owners want this project to be a “family oriented” garden center that specializes in plant showcasing, allowing the consumer to see a plant (tree, shrub, perennial, or annual that the garden center will sell), grow and mature before bringing it to their own garden to create a landscape. The design of the arboretum will also act as a “mini-park” to allow visitors to walk through and become informed about nature’s beauty or to invite and gather people for a special event; which will in return, project the main views of the design to educate the visitor about landscape decisions and improve the environment for landscape design and stewardship in our region.

Finally, my intensions for this design project are that it will encourage growth in the greenhouse and landscape industries and be a model for future landscape businesses. It is an important design because the Red River Valley has nothing comparable. It will be a new and fresh idea, the first step in making this region a focal point for the idea of “landscape.”

Through unique planning “*A Trail of Seasons*” will direct this project and be realized in site design, design details and interpretation areas.





Thesis Proposal

A. Title

“A Trail through the Seasons,” All Seasons Garden Center.

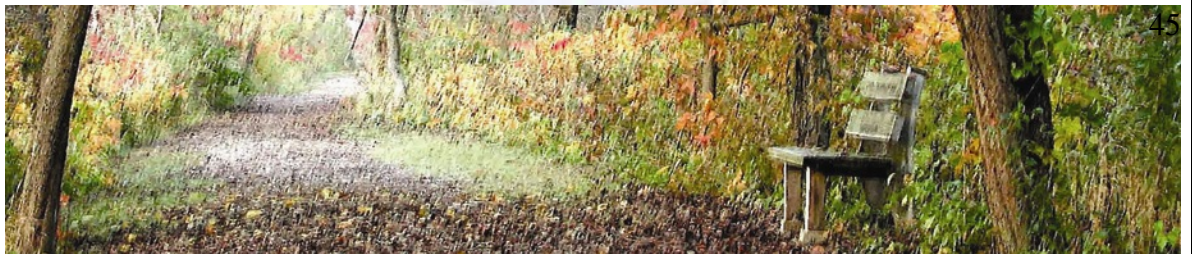
B. Building Typology

My thesis project is to create a stimulating, retail garden center along with an arboretum to portray the many different types of plants that can be incorporated into a northern garden or landscape. An arboretum is defined as a place for studying and exhibiting trees, shrubs, and plants cultivated for educational and for scientific purposes; however, the arboretum that I am proposing is not only as it is defined, but goes further to incorporate the garden center and is a way to advertise and present what All Seasons can do for the consumer and a particular landscape. As seasons change, so does the variety of plants the greenhouse and nursery will carry. Spring time brings beautiful, bulb gardens and colorful annuals, while the perennials, shrubs and trees are waiting to emerge into summer. Fall is a time to enhance the garden with mums and a variety of asters or sedum. That is what this arboretum will do; it will be *“A Trail through the Seasons”* at All Seasons Garden Center. It will be a trail to educate people about specific plants for this area and how to take care of them; it will be a trail to set a model for future landscape and greenhouse businesses and it will be a trail that will depict a unique landscape setting.

C. Conceptual Basis or Unifying Idea

Western Minnesota and especially North Dakota are areas with little variation in their landscapes. These areas (on average) can be categorized as flat and with a few rolling hills in western North Dakota and in western Minnesota. The Red River Valley is considered to be the best farm land in practically the whole country, but to visitors it is just the wide open plains. That is where the idea of an arboretum can come into play. It is a way to enhance and develop an area once thought of as plain into an area of interest and a way to set a standard for new, revitalized landscapes. By providing this area with a year round garden center and arboretum it will be the first step in making this region a focal point for the idea of landscape. By tying an arboretum into a garden center setting will also bring pedestrian traffic in from around the region to visually experience and perceive the different seasons. This is also a way to bring revenue into the garden center by enticing visitors to bring a piece of the landscape home with them and incorporate into their own gardens.

There are many issues that need to be carefully planned out and considered to make this a successful business/ arboretum. To get the best experience out of the space, the focus for this project is going to be on the plant life, how it is arranged and how it reflects time through seasons. The experience of observing the plant life must bring the viewers in close to their curiosities and encourage them to expand this landscape through what they experienced. As a business, this arboretum must also encourage customer return visits and seasonal change is one major advantage for this garden center. Today's world is fast paced, and not many people have the time to learn what can fit into their landscapes, ideally. That is why a garden center and an arboretum placed in this type of setting can be recreational and educational at the same time and in return it will function more fittingly.





D. Project Justification

There is no facility that incorporates the showcasing of plant life and plant sales with educational resources around this area. The focus of this thesis project is to design a garden center and an arboretum that will perform such a task. I also intend to design this space to have an environment that has a family oriented, small town welcoming feeling, which much of this area is accustomed to. By developing this area into a more pleasing landscape, people will find it more exciting and continue to encourage the growth in the gardening and landscape industry.

E. Emphasis

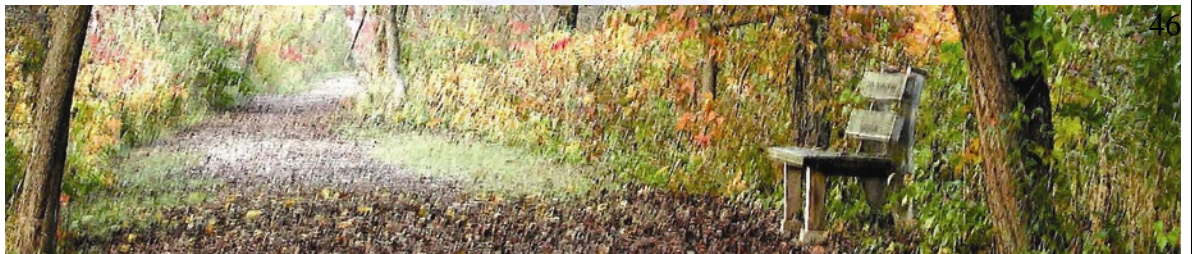
One major emphasis of this thesis project is to revitalize an area once thought of as plain and bring it into a new existence; in a sense, reusing and modifying the garden center that is already in existence to create it into a new resource that will function in this area. Also, designing an arboretum that will display seasonable plants and sequencing many others to portray spaces that will accompany the specified views for many spectators. Finally, an emphasis that will further the development of the landscaping and horticulture industries. Designing these to accompany each other will be of great significance in the site's development.

F. The Site

The proposed site for this project is to be one and a half miles south of Grand Forks, North Dakota, on Highway 81, a short jaunt from Interstate 29. Grand Forks is located in the heart of the Red River Valley, which will serve as a center between central and western North Dakota and the north-western portion of Minnesota, areas of which the garden center and the arboretum will concentrate on, climate wise. The Red River is approximately one and a half miles to the east of the proposed site. The immediate surroundings of the site consist of open land that is recently being acquired to be developed into a community of town homes to the north-west and north-east; a great area that can be a definite backdrop to the site. Directly to the west, across Highway 81 is the King's Walk Golf Course, a good complement to arboretum theme. To the south, adjacent to the site is the First Presbyterian Church. These are all areas that will be good for traffic circulation and is situated in an area ready for growth and development.

All Seasons Garden Center was born in Langdon, North Dakota, and then moved to Grand Forks twenty-five years ago to attain a more desirable market. The store first started with one main greenhouse, a garden supply store, a gift shop and a floral shop. Today, it has grown into the main greenhouse which is twenty-three bays long, four additional greenhouses for holding the spring crop of annuals, four tree farms (three in Grand Forks, one in Fargo, North Dakota) with two tree spade trucks (a 55" spade and a 90" spade) that travel throughout eastern North Dakota and western Minnesota.

The proposed site to develop the arboretum on is on a piece of flat land directly south between the greenhouses and the First Presbyterian Church. It is an area that was bought to be an additional tree farm. Its existing condition contains a few rows of trees, mostly park grade trees, meaning they have minimal animal damage or something similar. The trees can be categorized as mostly Lindens or Ash, ranging in size from a 4" to a 10" caliper. As far as vegetation goes for the rest of the site, a hosta and daylily garden is displayed to the north of the building along with annual planting beds. To the east is a pond, acting as a water feature (that also catches the run off water)





with surrounding willow, maple, and ash trees. Cattails, natural grasses and native perennials make up a small buffer zone.

Since the site is surrounded by a new developing area, we look towards the inside of the garden center to rely on important views. The outside nursery area is currently designed with a few display areas

that would portray specialty plants in containers. The pond is also a view many come to visit as there are always a family of goats, ducks, roosters, or other water loving birds. If we look off site, the main view to the north is the city of Grand Forks, to the south, open fields and the church, to the east, a view of many town homes, and to the west, the King's Walk Golf Course.

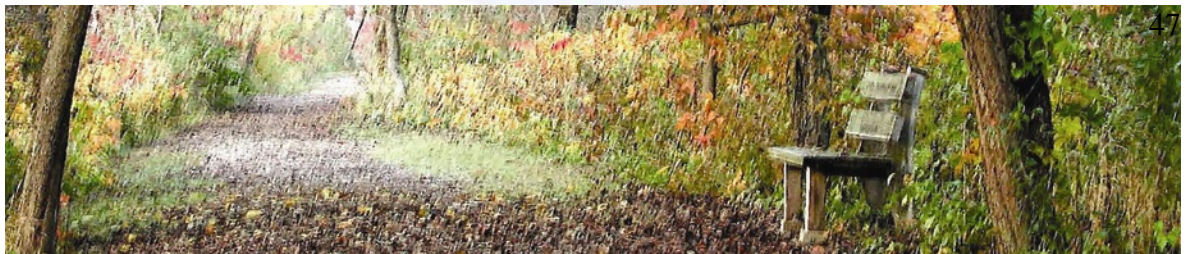
Grand Forks, North Dakota, in terms of population consists of 49,321 people (US Census 2000). 17% of the population is between the ages of 0 and 14. 73% of the population is between the ages of 15 and 64. 9.8 % of the population is 65 years of age and older. The median age for Grand Forks, ND is 28.3 years.

The area has many attractions that would bring in many visitors. Grand Forks is the home to the University of North Dakota, along with the nationally recognized Ralph Englestad Arena. UND is a top competitor in the way of sports in its division and attracts many visitors during sports seasons. The Ralph Englestad Arena attracts many hockey games, college and professional, other sports games and top name concerts. Competing with the Englestad Arena is the Alerus Center, which is the home to UND football games, high school sporting events, concerts, fairs and meeting rooms.

The macroclimate of North Dakota changes by the day and can be determined by the minute. June- August temperatures range 50-82 F/ 10-27 C, though the temperature does occasionally shoot into the high 90s F/ 35 C in July and August. Thunderstorms can be predicted June- August, some usually heavy, but brief. North Dakota's temperatures cool off rather quickly in fall. September may have nighttime lows at or below freezing, though daytime highs are near 70 F/ 21 C. Winters are long and can be numbingly cold around 0 F/ -18 C or colder. Average temperatures for the area are 84 degrees (high) and -5 degrees (low).

The greenhouse structures require particular environmental factors. The greatest amount of solar radiation is sought after, calling for the area to be pretty much wide open, with only a few specimen trees. The only protection the site has from the great North Dakotan, prevailing winds is from the building structures. The small tree farm to the south will block any south, south-east winds; however, the area isn't large enough to protect the whole site.

The soils for the site are a bearden silty clay loam. It is a moderately, slow, permeable soil, with a high water capacity, and runoff is slow. This deep, level, somewhat poorly drained soil is on glacial lake plains. The natural drainage for the site is usually managed by constructing drains. Naturally, the surface layer is black, silty, clay, loam about 10 inches thick. Underneath the topsoil is a layer of mottled silt loam. The lower part at about 60 inches deep is a grayish brown mottled, silty, clay, loam. In some areas the soil is slightly saline, mostly to the western part of the county. In some other areas the surface layer is silt loam and some places the soil contains less clay. A seasonable high water table is at a depth of 1.5 to 2.5 feet.





G. Major Project Elements

- ❖ Arboretum
- ❖ Greenhouses
- ❖ Nursery retail display area
- ❖ Garden Store
- ❖ Main showroom, gift store
- ❖ Display gardens around the site
- ❖ Office space
- ❖ Warehouse, production area
- ❖ Coffee shop
- ❖ Pond area
- ❖ Parking

H. User/ Client Description

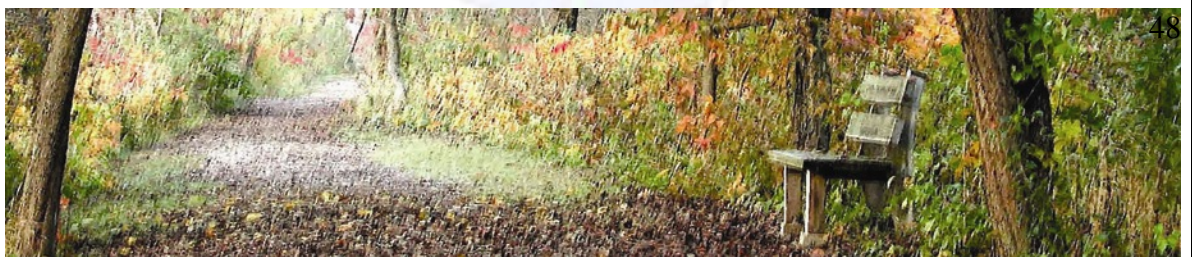
For this garden center and arboretum, the major users will be visitors who want to experience the different gardens and displays amongst the arboretum and consumers who want to establish, renew, or maintain their landscapes in and amongst the regional areas. Spaces for the arboretum will have to be designed to reflect the different plant material and seasons for the climate that we live in and also those spaces for employees to work with and grow the plant material. Spaces for the visitors will have to reflect an inviting atmosphere for observation but maintain adequate space for groups of views.

The client for the garden center and arboretum is the current owners of the store, Dieter and Georgia Heitmann. The family business consists of two daughters and a son-in-law that, together are the heart and soul of the business and are the employer and employee. Each year the staff of All Seasons Garden Center varies with the time of year. Definitely spring and Christmas are the busiest time as of now. Spring time the store has about 20-25 personnel, watering, planting, grooming, and selling the products. Summer slows to about 15-20 employees. Fall to Christmas is a busy time getting ready for Christmas and the amount of personnel goes back up to 20-25 people. The staff that the business has all year round is of course the family, who are distributed throughout the business. Georgia and Dieter overlook everything, while one daughter is the manager of the greenhouse and flower shop, the second daughter the manager of the office and garden store, and the son-in-law that is the manager of the tree farms, and overall maintenance man. One other employee assists with office work, two run the nursery, two assist with the greenhouse management, two floral designers, and currently a part time landscape designer. With the development of the arboretum, more personnel will be required to groom, maintain, and design the space. Also an employee will be needed to run the new implemented coffee shop.

Parking is of concern during peak seasons. As of now a new proposed parking lot will be designed to hold the overflow.

I. Design Methodology

The areas of research that will be explored to solve this design problem are retail garden centers, spatial sequencing for arboretums and design layouts, plant material and individual display areas. Through the use of case studies, knowledge of these areas can be gained and appropriately utilized to create a functional garden center and arboretum.





J. Realization of the Design Method in the Design Process

Case studies dealing with the same design typology will direct the process in which the arboretum and garden center are designed. Visitors and tourists to the arboretum will be able to recognize, understand and be informed about the plants within the arboretum and that will in turn reflect back onto the business.

K. Schedule of Work Plans

* * * **FALL SEMESTER 2004** * * *

Week #1: October 3-9

5 October: Student critic preference slips & faculty preference slips available

7 October: Student returns preference slips (to office)

7 October: Thesis proposal due (in office) 2 copies

RESEARCH

Week #2: October 10-16

14 October: Faculty return preference slips to main office

RESEARCH

Week #3: October 17-23

21 October: Primary and Secondary Critics announced

RESEARCH

Week #4: October 24-30

28 October: Last day of AR/LA 561 programming class

DEFINE THE PROGRAM

RESEARCH

Week #5: October 31- November 6

RESEARCH

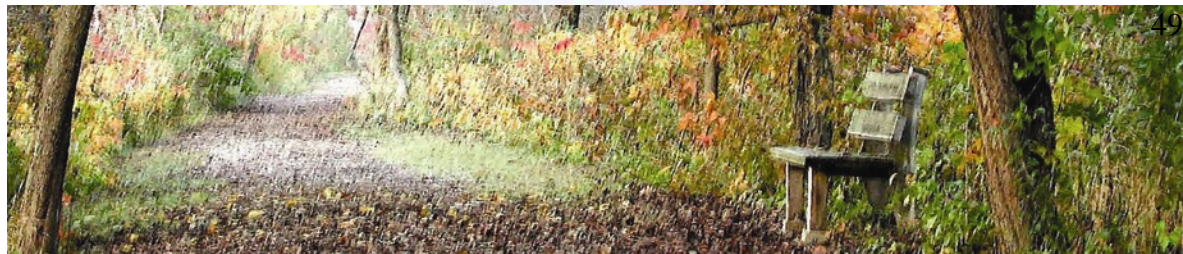
FURTHER WORK ON PROGRAM

Week #6: November 7-13

11 November: Veteran's Day Holiday

ORGANIZE SITE INFORMATION

FURTHER WORK ON PROGRAM





Week #7: November 14-20

15-19 November: Final week of LA 571 (design studio)

**RESEARCH
WORK ON DRAFT OF PROGRAM**

Week #8: November 21-27

24 November: Draft Thesis Program due to Primary Critic (1 copy)

25-26 November: Thanksgiving Holiday

FUTHER SITE ANALYSIS AND BUILDING DOCUMENTATION

Week #9: November 28- December 4

**ORGANIZE REST OF SITE INFORMATION AND BUILDING
DOCUMENTATION
WORK ON FINAL PROGRAM DRAFT**

Week #10: December 5-11

9 December: Final Thesis Program due to Primary Critic (1 copy)

10 December: Last day of classes

**REVIEW OF PROGRAM WITH THESIS CRITIC TO DETERMINE
AREAS OF REFINEMENT**

Week #11: December 12-18

13-17 December: Finals week

Week #12: December 19-25

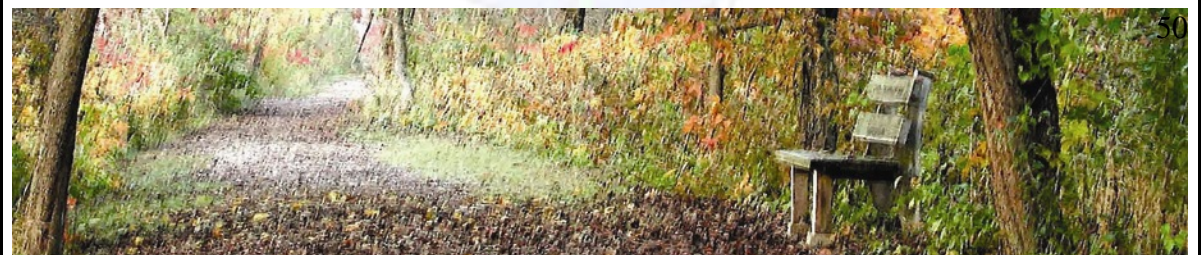
RESEARCH

Week #13: December 26- January 1

RESEARCH

Week #14: January 2-8

RESEARCH



Week #15: January 9-15
11 January: Classes begin

CONCEPTUAL AND SCHEMATIC DESIGN WORK

Week #16: January 16-22
17 January: Martin Luther King, Jr. Holiday

CONCEPTUAL AND SCHEMATIC DESIGN WORK

Week #17: January 23-29

CONCEPTUAL AND SCHEMATIC DESIGN WORK

Week #18: January 30- February 5

CONCEPTUAL AND SCHEMATIC DESIGN WORK

Week #19: February 6-12

CONCEPTUAL AND SCHEMATIC DESIGN WORK

Week #20: February 13-19

DESIGN DEVELOPMENT

Week #21: February 20-26

21 February: President's Day Holiday

DESIGN DEVELOPMENT

Week #22: February 27- March 4

DESIGN DEVELOPMENT

Week #23: March 5-11

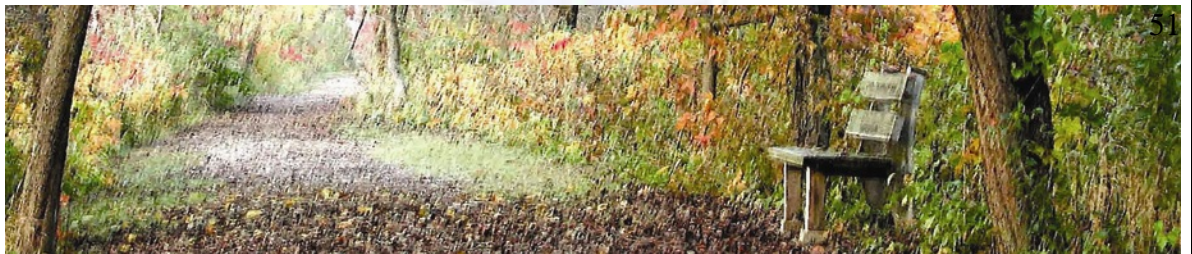
7-11 March: Mid-semester Thesis Reviews


DESIGN DEVELOPMENT

Week #24: March 12-18

12-18 March: Spring Break

PRESENTATION DRAWINGS





Week #25: March 19-25
25-28 March: Easter Holiday

PRESENTATION DRAWINGS

Week #26: March 26- April 1

PRESENTATIONS DRAWINGS

Week #27: April 2-8

PRESENTATION DRAWINGS

Week #28: April 9-15

PRESENTATION DRAWINGS

Week #29: April 16-22

PRESENTATION BOARDS

Week #30: April 23-29

25 April: Thesis Projects due at 4:30 pm in the Memorial Union Ballroom

26-27 April: Annual Thesis Exhibit in the Memorial Union Ballroom

28 April- 5 May: Final Thesis Reviews

29 April: Draft of Thesis document Due to Primary Critics

Week #31: April 30- May 6

6 May: Last Day of Classes

Week #32: May 7-13

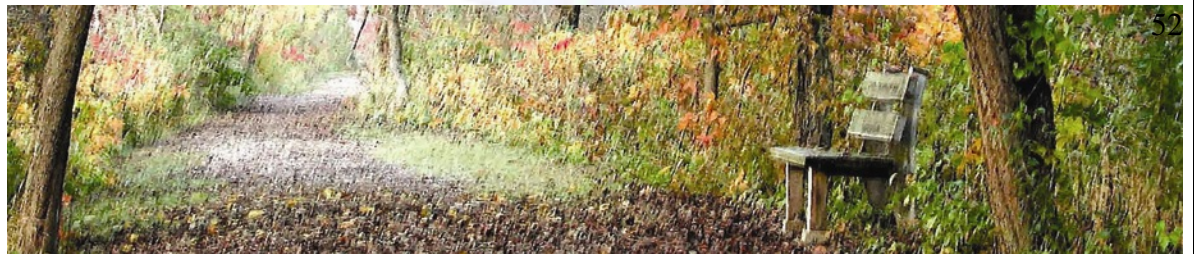
9-13 May: Finals week


12 May: Final Thesis Document due at 4:30 pm in the Department office

13 May: Commencement at 4:00 pm Fargodome!!!!!!!!!!!!!!!

L. Documentation of the Design Process

The knowledge that I will gain through the research and the design process will be recorded and kept in an orderly fashion to refer to whenever needed. Documentation will be recorded through notes, drawings/ sketches, and AutoCAD files and applied to this thesis project.





M. Bibliography

Periodicals:

Articles will be researched in landscape architecture and architecture magazines relating to arboretums and garden centers.

Internet Sites:

<http://grandforks.areaconnect.com/statistics.htm>

<http://www.shgresources.com/nd/almanac/>

Other:

U.S. Dept. of Agriculture, North Dakota State Soil Conservation Committee. (1981). Soil Survey of Grand Forks County, North Dakota. North Dakota: Author.

N. Previous Studio Experience

2nd Year: Fall (Kennedy)

Ideal Landscape

6 Scenarios

Plains Art Museum Café

2nd Year: Spring (Colliton)

NDSU Fountain Plaza

Round House Road

Boy Scout Camp

3rd Year: Fall (Walter)

Multit-use Parking Lot

Sheyenne National Grasslands

3rd Year: Spring (Kennedy)

Camp Cormorant

St. Paul Upperlanding

Masonry Competition

4th Year: Fall (Walter, Barnhouse, Urness)

Urban Design

4th Year: Spring (Hansen)

Broadway Square

Fort Totten Historical Restoration

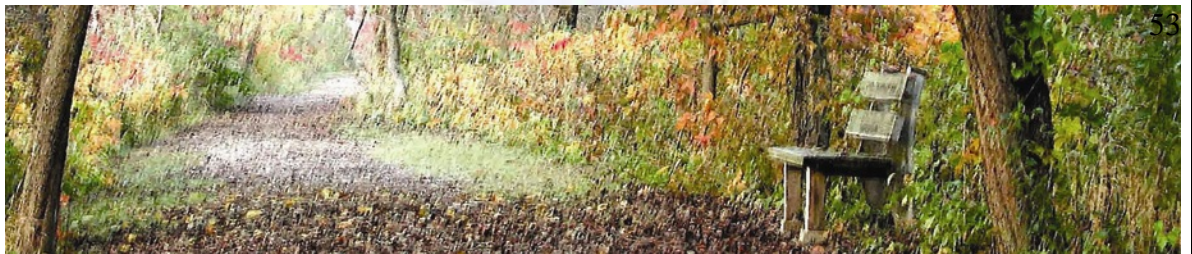
Edgely Design Charette

Stone Competition

5th Year: Fall (Walter)

A River Walkway: Ottertail River

Restoration and Access



Appendix B

Final Presentation Boards



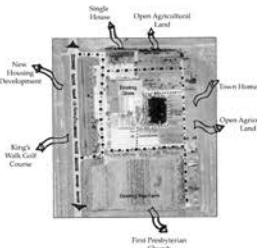


Site Inventory & Analysis

Location Map



Land Use & Circulation



The land surrounding All Seasons Garden Center is an area undergoing new development. Within the last five years the area to the east of the garden center has been developed into single family housing and town homes. Agricultural land to the north is being readied for development. To the west is King's Walk Golf Course, a natural landscape with adjacent residences. To the south is the First Presbyterian Church and agricultural land. All Seasons Garden Center is easily accessible from Highway 81 that runs north and south through the city of Grand Forks. The site also has secondary roads, or maintenance roads throughout, which provide areas for pick up and delivery of goods.

The vegetation on the site was previously designed when the garden center was built to accompany the layout in mind. The main areas on the site that were vegetated are: the tree farm on the south end of the site, the pond, and the north end of the site. Throughout the site vegetation is placed to soften buildings, provide shade for display areas, and to showcase flower gardens. Some of the microclimate factors are: heat reflection off of greenhouse buildings, heat absorption within the greenhouses, the western exposure is clear from trees of any mature height which would make the site warmer and would allow for windy conditions from the northwest and southwest directions.

Vegetation & Microclimate



First impressions upon visiting the site. The above diagrams show movement, concept thinking and the preliminary design process. Dissecting these diagrams bring forth the sites opportunities and constraints.

Opportunities

- * Materials already provided for design work.
- * Close to the city of Grand Forks, ND.
- * Nice views on and off the site.
- * Well established roads to site (Hwy. 81).
- * Talented and informative employees already on site.



Tree Farm Looking East



The Pond

The pond located behind the main greenhouse is a major attraction for young children. During summer months the pond is the home to waterfowl. Occasionally, the area has housed goats and roosters also.

The garden center is unique by the product that the nursery carries. The view to the right shows a display area that holds the decorative evergreen plants. These plants are shaped into specific topiaries which are unique to a landscape. The display area is built up by retaining wall blocks and filled in with mulch. This is an area that can benefit a nursery by being a wonderful display area.

Constraints

- * No topography.
- * New neighbors slowly developing.
- * Existing buildings may be located in difficult positions of the site.



Tree Farm Looking Southeast

The tree farm is an area with great potential. The trees that do exist on the site are those that are not the highest quality to be placed in ones yard. These trees have been graded and remain to be park grade trees. Along the north side of the tree farm is a shelterbelt that hides scrap metal, equipment and odd pieces of material. It is in need of great improvement.

B&B Tree Rail

The B&B Tree Rail is the showcase of the retail trees. There are many sizes available, largest being a 2"-2.5" caliper B&B tree, smallest being a 1/2" caliper potted tree.



Decorative Display Area

History

All Seasons Garden Center started on September 17, 1978. The current pond was dug to acquire fill to raise the foundation for the existing garden center. During the fall of 1978, 14,200 square feet of greenhouse went up and the first crop of annuals was sold that year. The fall of 1980, saw the construction of the 8,800 square foot main building. Within the main building lies the offices, the gift shop/showroom, garden store and floral shop. Years of success at this location lead to a major building expansion each year since 2002, along with the addition of four tree farms.



Front Door Entrance

Products & Services

All Seasons Garden Center is a complete garden facility. The business provides a well rounded gift shop, with unique product, a full service floral shop, with delivery available, a garden store which provides the consumer with any chemical, seed or utility needs, a greenhouse, which grows their own annuals, perennials, and poinsettias, a nursery that provides "farm grown" nursery stock, a landscape design department to advise consumers on plant material and yard development, and finally, tree moving services that can move up to a 10" caliper tree.



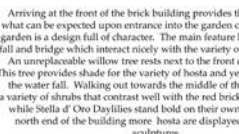
Retail Perennial Display

All Seasons Garden Center Visual Tour Analysis



North Entrance Garden

Entering the garden center from the north provides the visitor with an annual flower bed which reflects what one would see throughout the site. Behind this bed is a display of hosta and day lilies, arranged by variety to represent the species that the garden center would provide to the consumer. The garden is a good entrance feature, however, it seems to be floating, and not connected to the rest of the site. Future gardens around the entrance would help bring this existing feature more meaning.



Front Garden

Arriving at the front of the brick building provides the viewer with what can be expected upon entrance into the garden center. The front garden is a design full of character. The main feature here is the water fall and bridge which interact nicely with the variety of plant material. An unreplaceable willow tree rests next to the front door entrance. This tree provides shade for the variety of hosta and yew placed around the water fall. Walking out towards the middle of the bed displays a variety of shrubs that contrast well with the red brick of the building, while Stella d'Oro Daylilies stand bold on their own. Towards the north end of the building more hosta are displayed with habitat sculptures.

Looking out the front doors of the main building will provide one with the view of a flagpole setting and a row of trees. This view needs to be one of the last impressions a consumer sees before leaving the property. This view needs to be improved to accomplish that lasting impression.



Hwy. 81, Looking North

The sketch on the left depicts Highway 81 that runs along the west side of the site. The view here shows the line of trees, ditch and highway. This is an area that has great potential to draw passersby in. It is an area that will state, by its design, that this property is a garden center.



South Entry

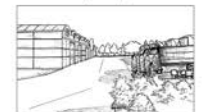
The view of the south driveway has a starting point for drawing viewers onto the site. Trees, boulders and shrubs align the drive to make this entrance a focal point on the site. However, the vegetation along this entrance are aging, and will soon need to be replaced.

The view to the right is a view facing south, where the south entry would be around the corner. This is an area that could potentially be used as parking. The south end of the greenhouse is an area where an entry sign could be placed to invite visitors into the proposed arboretum.



View Facing South

The hoophouse is positioned on the east side of the site, running north and south. This building is used to house the overflow of perennials and annuals. It is also where many plants are stored for winter, which gives them a head start in the spring. It provides the store with an added benefit of bigger, blooming plants. This may be a building that causes some congestion in planning the arboretum.

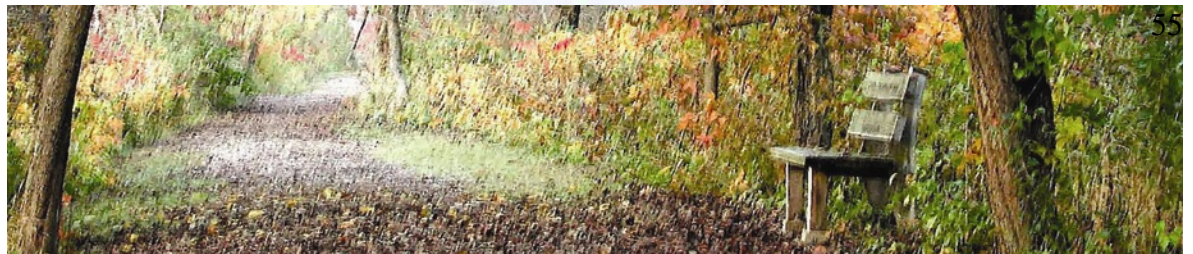


Warehouse & South Greenhouse



Hoophouse

The area between the warehouse and south greenhouses is a major work area. Nursery production, including spring potting, soil mixing and product delivery occur in this area. This area is partially screened off by a garbage truck, something that needs improvement. This also is the area that would connect with the tree farm, which is in the back of the sketch.





Site Concept & Design Process

Conceptual and Schematic Design Work

- Major Project Elements:**
- Spring Garden
 - Rose Garden
 - Daylily & Iris Garden
 - Scented Garden
 - Hosta Shade Garden
 - Sun Garden
 - Four Season Garden
 - Vegetable Garden
 - Woodland Edge
- Other Spaces:**
- Conservatory
 - Library
 - Coffee Shop

Visions of the Gardens: A Trail Through the Seasons

The basic theme of the arboretum's gardens are to be based on German heritage, which is the decent of the existing owners of All Seasons Garden Center. The theme will be defined through researching German landscapes and traditions.

German Landscape Design:

- "natural" development, given the love of nature & forests
- water dominates the design
- visitors have to decide on which pathway to take... a long walk or a short one
- footbridges, ponds, rocks, and waterfalls are frequently used

Visual Concept of the Major Project Elements

The Spring Garden:

In this garden is a collection of Spring blooming bulbs (tulips, daffodils, hyacinths, crocus, etc.), Spring blooming shrubs (Forsythia) and Trees (Crabapple, Canada Red Cherry). This garden should be an eye catcher, refreshing, bright and colorful. The flowers are the first of the season, so this garden should intertwine with the other gardens. This garden may take the whole site. Green grass will be used to soften the ground and blooming daffodils will soften rolling hills. A small seating area accompanies the natural landscape, enhancing the usability of the space.



Rolling Hills

With the Spring plantings, an activity that could be made possible is an Easter egg hunt. Children can run around and search through the gardens, finding treats. Tree houses, birds chirping and children running around in their Easter outfits are a sight. The Easter Bunny making an appearance could definitely start family traditions.

The Rose Garden:

In this garden, white arbors, benches and bird baths/fountains are features. The walkways could be more formal, made out of pavers or flagstone. This garden should be flat with multiple colors. The roses in this garden maybe a Hybrid Tea Rose and a mixture of Hardy Roses. Also in this garden are statues and figures. Could this garden be placed close to the Conservatory to enable it to take on a more formal air? Since not all roses bloom constantly, there needs to be an interest in this garden when the roses are not in bloom...topiaries? This is also an area that could be used for weddings and other special occasions.



Arbors and Walkways

- Vegetation Ideas:**
- Rose
 - Clematis Vine
 - Locust Trees
 - Thyme (throughout the walkways)
 - Evergreen Topiaries
 - Lilac & Hydrangea Topiaries

The Daylily & Iris Garden

This would be a garden that clusters together daylilies or irises of the same variety, which would make a bold statement. It would consist of much pathways, and gardens that extend into the woodland border. Boulders and rolling mounds could be incorporated in this garden to provide depth and variety.



Winding Pathways with Rolling Hills

Boulders could be added throughout the site, much like the sketch to the left. This is a visual idea that would construct council rings, where visitors could sit or have a meeting. This feature placed periodically throughout other gardens creates opportunity for gatherings. Boulders also add a "natural" effect to a landscape, which is a must in German landscape heritage.



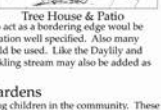
Incorporating Boulders

The Scented Garden

Aromas filling the air and water trickling in the fountains brings a unique aspect to this garden. This could be a garden for children to interact with. The garden would house a tree house, sandboxes, seating, and picnic tables. This garden would almost act as a patio in someone's back yard. Potted annuals picked specifically for their fragrance, and many textures and colors of foliage would be used to highlight the paths. This garden would be placed close to the Rose Garden where ceremonies would take place.

Hosta Shade Garden

In the Hosta Shade Garden large varieties of Hosta with smaller ones to act as a bordering edge would be the basis here. There needs to be mass plantings to make the representation well specified. Also many other varieties of shade loving plants such as Hydrangea and ferns would be used. Like the Daylily and Iris Garden, much trails would best represent a natural trail. A small trickling stream may also be added as an interactive feature.



Tree House & Patio

Sun, Four Season & Veggie Gardens

These gardens, along with the other gardens, can be developed by young children in the community. These gardens can be used for educational purposes. Elementary schools can use the arboretum grounds as a destination for field trips. The gardens can also be used as a relaxation tool for nursing homes and other facilities that help people with special needs.

The Woodland Edge

This area would basically fill in the border around the site and any open areas in between specified gardens. This garden would include many tree species, currently carried in the garden center stock. It is an area that is mounded with rolling hills and covered with an understory of shrubs. The woodland edge would incorporate the council rings to represent campfires, where a fire pit could be located. Use of stone boulders and water bring a "natural" feeling to this garden.

The Evolution of the Master Plan



German House



Design Theme #1

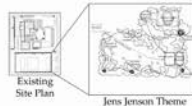


Design Theme #2

Conceptual designs started with the idea of the German House being a representation of how the proposed conservatory would look on the outside. Using the unique German architectural form as impetus for the spatial arrangement of the ground plane, concepts one and two were created. In concept one, each of the envisioned gardens would occur within one of the many rooms identified in the facade. Conceptual design #2 evolved from German architecture as well. Realizing the dominance of the spire on the German folk buildings, the second concept arose from the central point this spire creates. Translating this on the ground plane, the water feature became the central point with each garden radiating from the water feature. Each of the concepts became to formal as further development occurred. Moving away from the initial images envisioned for each garden.

The Jens Jenson Design Theme

Drawing on the "natural landscape," ideas of Jens Jenson gave inspiration to create the 3rd and final design theme. This design theme incorporates nine different aspects and features that can be incorporated in a landscape: The use of native plants, distinctive spaces, light and shadow, movement, water, council rings, play, green, formal gardens, and time and change.



Existing Site Plan

Jens Jenson Theme

Final Design Concept

The existing garden store and greenhouses are the typical commercial setting which needs an element that will make the transformation over into "naturalistic" arboretum an easy transition. In doing so, the arboretum is designed based on two axial lines, starting at entrance points that directs one's eye down the length of the meadow enhancing the perspective as they are more distant, and also placing a visual emphasis on the proposed conservatory.

Other elements on the site relate to the axial lines. Burms, trails, water features and gardens act together to make this site natural and unique to the viewer and they also all relate back to German landscape design.

Progressive Design Steps

Burms are placed along the outer edges of the site, somewhat parallel to the visual axis lines to help direct the viewers eye in one direction. The open meadow in the middle of the arboretum acts as a lawn in a backyard. It ties all the gardens together and provides a way to soften the edges of the site. One of the main elements in this project is the conservatory. The burms and meadow set a place for this building. The facade on the conservatory is to reflect the German heritage of the owner's family. Window boxes filled with blooming annuals soften the structure of this glass building.



1 Burms & Topography

The trails throughout the site are broad, flowing, curvilinear pathways used to create the illusion of space continuing beyond the immediate range of vision by carefully orchestrating the viewers position with the shape of a space and its irregular edges; this also makes the space feel like it has an infinite quality. Straight lines are only used when order is needed as in the veggie garden and rose garden. Movement throughout the site is defined with a system of hierarchy. The paths separating gardens or areas around the buildings are wider and can be decorated by different materials, whereas, pathways that move away from the building into a garden become secondary, aren't as wide and are constructed out of a finer material or mowed lawn. Movement through these gardens is designed to focus in each space as its own. Rather than designing the pathways to pass through the center of the site in full sunlight, these pathways are designed to make sure that visitors walk around and look into the sunlit areas from a shady path this provides the visitor with a better appreciation of the sunlight.



2 Trail System

Relating back to Jens Jenson, in his designs, he rarely located individual plants on his plans; more often he showed masses of trees/shrubs in an intricate, puzzle-like pattern. Planting in masses creates a sense of harmony and unity in a design. This process also suggests the natural patterns along a countryside. In large, central, open spaces, a single specimen tree such as a Hawthorn, was used as scattered individuals, the same specimen is also used in loose masses along the borders. Through repetition, these trees are to guide one's eye, and because of their relatively low profile and horizontal branching, this specimen tends to reinforce rather than interrupt the long meadow view. It also provides a transition to the larger trees along the woodland borders. Certain vegetation is also chosen to determine important pivotal points.



3 Vegetation

The layout of the gardens depends on a couple of factors. The borders of the site were frequently made up of a series of irregular coves and promontories of shrubs, trees, and garden masses that provide a sense of mystery, an illusion that there is space hidden behind the massed plantings. This entices the viewer to move through a space to see what lies behind the bend. Also, linear, finger-like spaces were developed that alternate with wooded portions to create a series of lanes. These linear spaces create a system of openings that penetrate and bring sunlight into the wooded portions of the landscape and extend views down their lengths. Several of these lanes have an east-west orientation which allows the low-angled rays of the sun in the late evening or early morning to reach deep into the garden. Other lanes are orientated north-south to catch the low angled afternoon sun "broadside," creating shadow patterns.



4 Garden Layout

The remaining features on the site also serve a purpose. The positioning of the ponds represent areas of entrance and leisure. The main pond in front of the conservatory provides the site with the transitional element it needs to pass from commercial to naturalistic, yet it still has a basis for the garden store's commercial setting. The council rings are meant to be tucked into the edge of the woodland border to provide a view looking outward into the meadow. The single council ring on the west end acts as a cove that would overlook a yard; this also provides the user with a direct view towards the conservatory. The player's green is developed not as a garden space designed as a traditional theater with a developed stage and seats, but as a natural setting for plays, musical offerings or recitations. The seating is on a sloped bank surrounded by blooming trees. The performance area is surrounded by a grove of trees to provide privacy. The veggie and rose gardens are developed as separate parts of the "natural" design theme. These gardens are tucked close to the conservatory and are designed off of the specific axis of the building to provide the garden's anchor in the space. Finally, annual beds and other vegetation is used to capture the sense of a moving or changing landscape in a physical form. This provides the site with daily and seasonal change, allowing for users to visit the "trail through the seasons."





Daylily & Iris Garden "A Trail Through the Seasons"

Daylily & Iris Garden Plan

Scale: 1" = 20'-0" North

Plant Schedule: Quality of the Garden

Plant Name	Quantity	Plant Name	Quantity
Daylily	100	Iris	50
Hosta	20	Shrub	10
Flax	15	Perennial	30
... (many more rows) ...			

South Entrance Sign

This entrance sign is positioned for the visitor entering from the south driveway. In front of this stone, faced sign is one of the annual beds that will provide the site with seasonal changes. Small, evergreen shrubs planted along the driveway edge will provide winter interest when the site is covered in snow. The color of the brick work is a two-toned, light tan that will stand out nicely with the dark, green, vegetated background.

Deck overlooking the Pond

In the Daylily & Iris Garden, a deck overlooks the pond which allows for visitors to interact with the site. A specific assortment of daylilies and irises surround the pathway that leads to the deck and around the deck itself. With the irises being one of the first bloomers of the season, along with spring-blooming bulbs, this garden will be a splendid view when spring arrives. The daylilies will continue to bring this garden the same luxurious color well into the fall.

Council Ring with Fire Pit

The council ring is positioned to overlook the whole site as if it were a yard. The view that one would appreciate is that of the open meadow, which leads up to one Hawthorn tree. This tree is designated because of its relatively low profile and horizontal branching, which tends to reinforce rather than interrupt the long, "meadow" view, and it provides a transition to the larger trees along the woodland borders. This tree is also positioned where the main visual axis is slightly best to then direct ones view towards the procession of the conservatory. The wall for this council ring is fagstone, in neutral colors, that is stacked to provide a comfortable seat.

Board 3 of 8

Jennifer Holien

Master Plan
"A Trail Through the Seasons"

South Entrance, Boulder Wall with Annual Bed, Annual Bed, Boulder Wall, North Entrance, South Greenhouse, Lath House, Garden Store, Showroom, Conservatory & Garage, Main Greenhouse, East Greenhouse, Retail Shop, Existing Pond, Tree Wall, Hoophouse, Greenhouse, Warehouse, Clipping House, Retail Production Area, Coldframe, Rose Garden, Vegetable Garden, Boulder Wall of Soil Piles.

Boulder Wall with Annual Bed

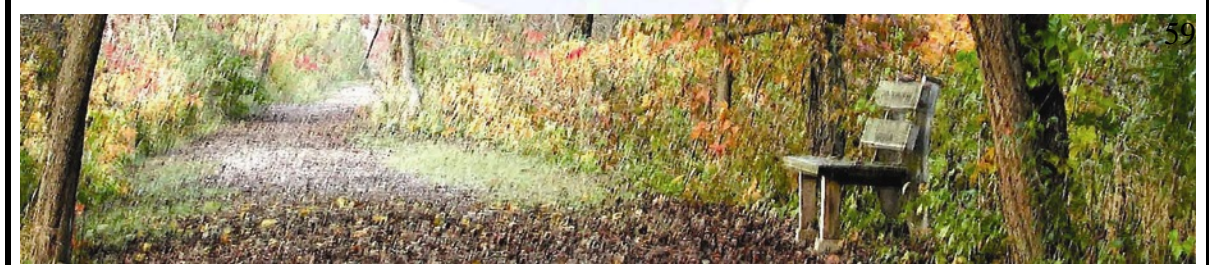
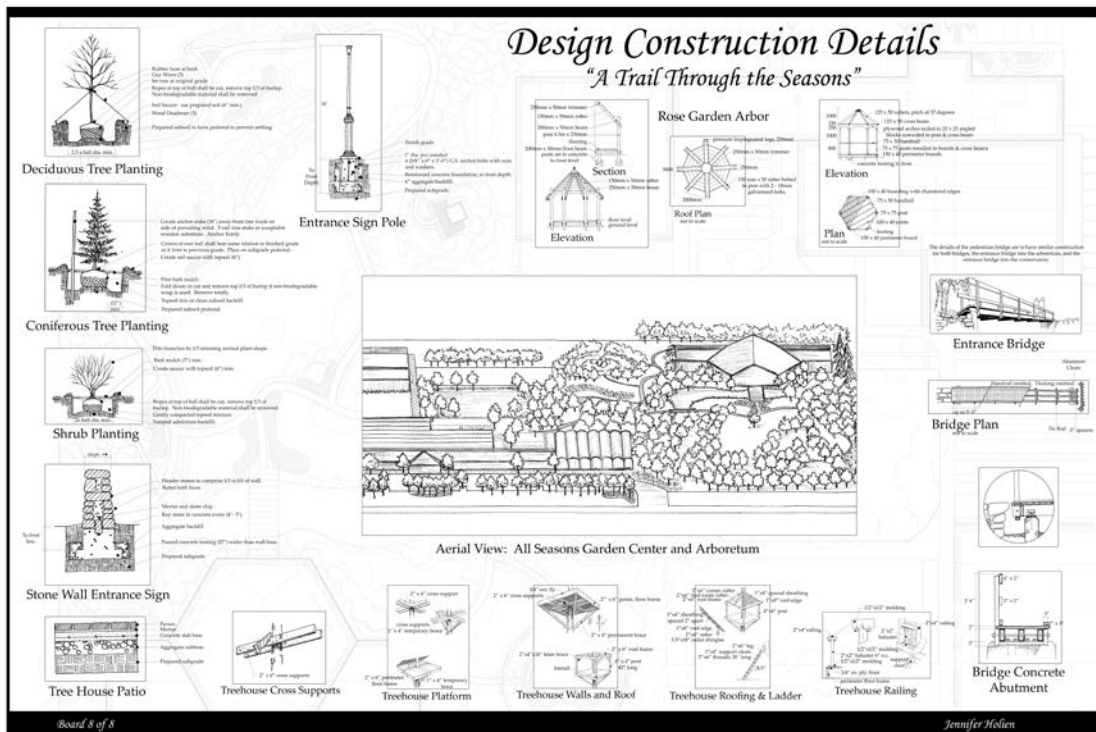
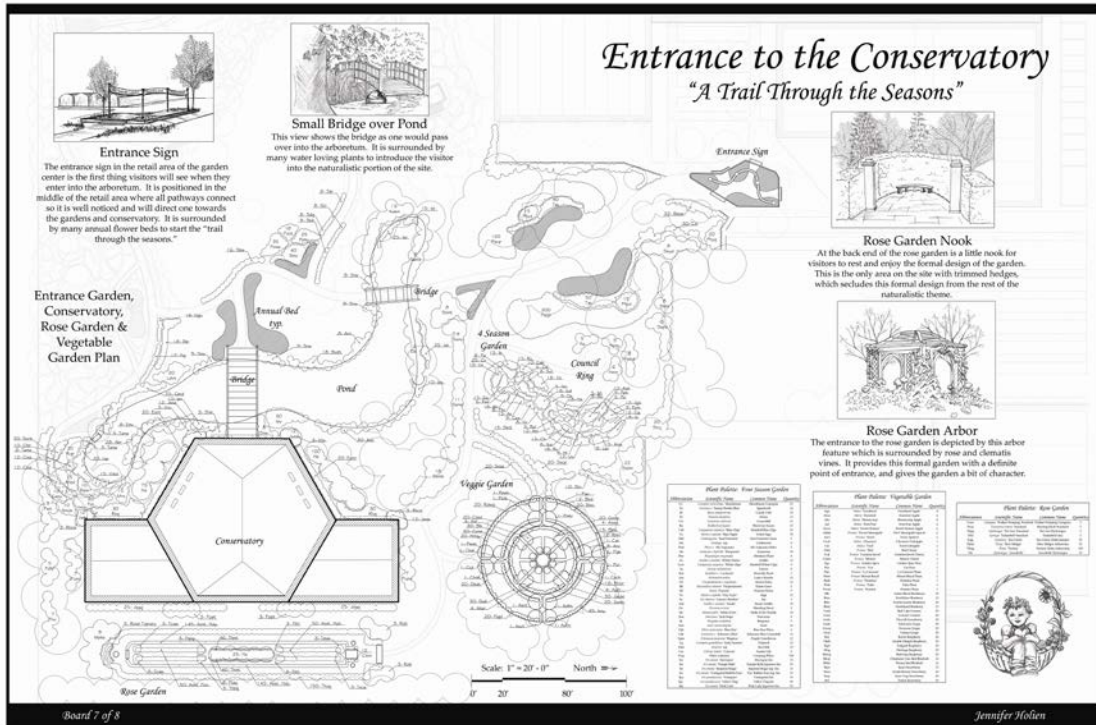
This boulder wall is positioned straight out the front door, which is visible when visitors come and go. The boulders represent a "natural" characteristic, which can be used throughout the site. The annual plantings in front of the wall will represent "the trail through the seasons".

Plant Name	Quantity	Plant Name	Quantity
Daylily	100	Iris	50
Hosta	20	Shrub	10
Flax	15	Perennial	30
... (many more rows) ...			

Board 4 of 8

Jennifer Holien






Appendix C

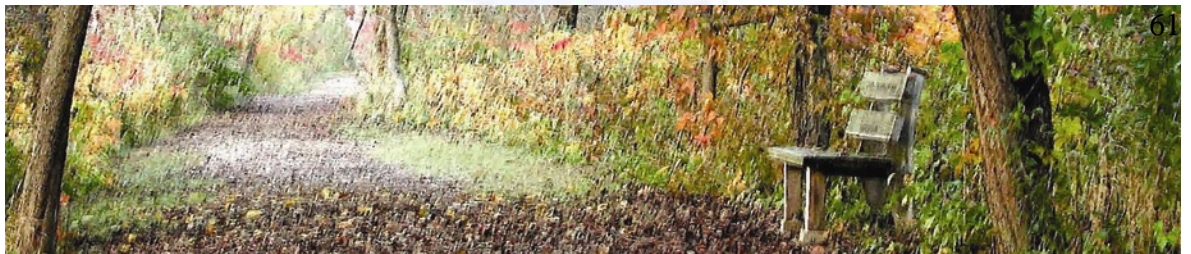
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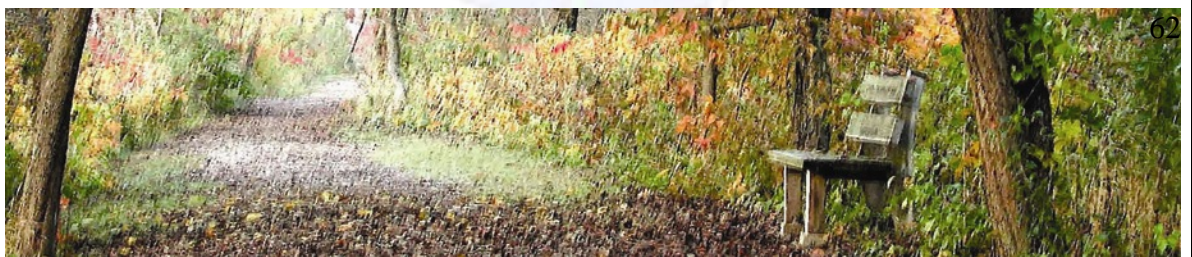
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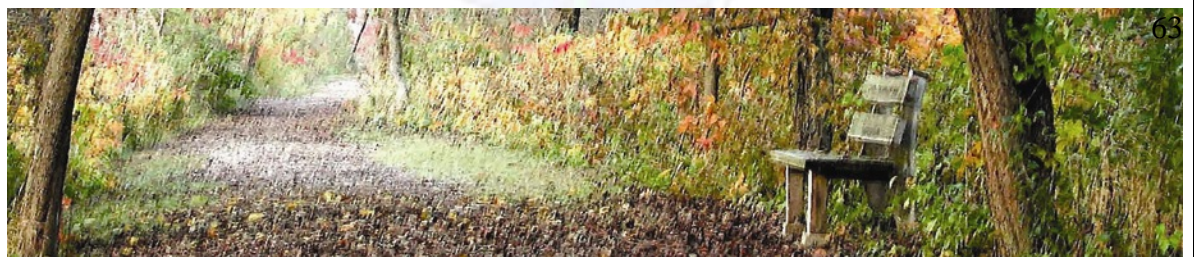
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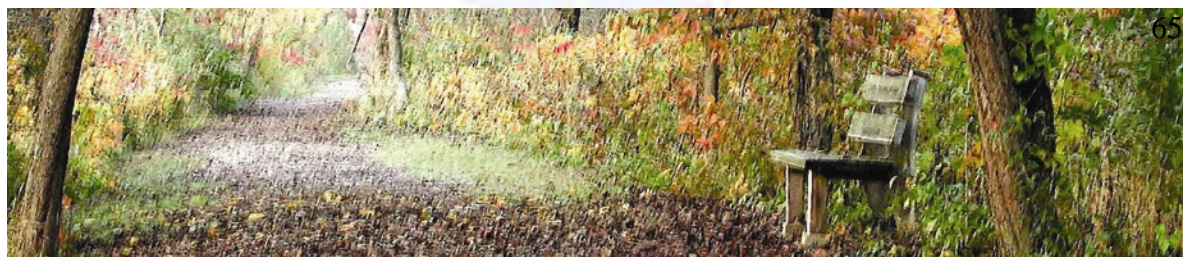




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