Headwaters
Interpretive Center

Preserving the Past while Sustaining the Future of Itasca State Park

Greg Oakland

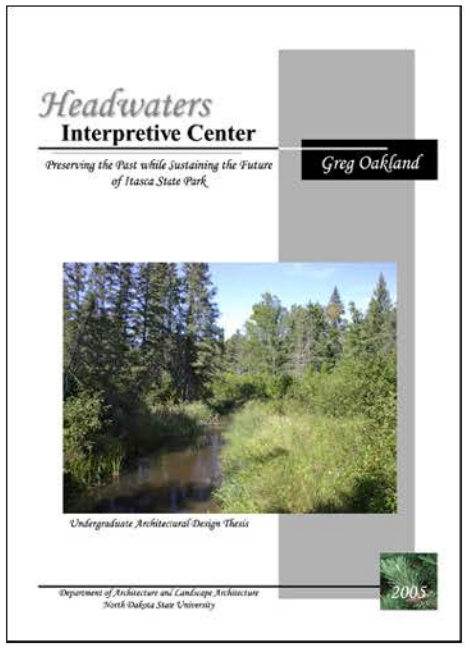
Undergraduate Architectural Design Thesis

Department of Architecture and Landscape Architecture
North Dakota State University

Table of Contents

Undergraduate Thesis Program

Headwaters Interpretive Center:
Preserving the Past while Sustaining the Future of Itasca State Park



Project Introduction

Headwaters Interpretive Center

PROJECT INTRODUCTION

Project Introduction

Itasca State Park has been a popular tourist attraction in northern Minnesota for many decades. Containing the Headwaters to the Mississippi River along with some of the most beautiful natural scenery in the state has lured people to the park to experience its unique opportunities. In addition to the popular attractions which the park is well known for, Itasca State Park has a very rich and diverse history that must be preserved. The recently constructed Jacob V. Brower Visitor Center is a start, but there are many more interesting stories to be told about the history and opportunities that the park can provide.

Figure 1.1. Entrance to Itasca State Park

This thesis project is comprised of a multi-use facility for Itasca State Park of which an interpretive center is the main focus. With a steady increase in the amount of visitors, improvements must be made to the park facilities in order to keep up with the demand that comes with the increase in tourism. The main elements in the project are the interpretive center, a gift shop, a multi-use space that can be used as a classroom or conference room, a lodge, and a restaurant. The center is to provide educational functions as well as recreational opportunities. The interpretive center includes cultural and natural displays emphasizing the Native American influences in the area, the discovery of the Mississippi Headwaters, the ecology of the area, as well as displays concerning preservation measures that have been undertaken by the park.

Figure 1.2. Headwaters of the Mississippi River

The site for this project is near the Mississippi Headwaters in a location where there was previously a small visitor center and gift shop. These small structures were a poor representation of the rich traditions of the park architecture and were inadequate facilities in fulfilling the park visitors' needs. This site was selected because it is relatively flat and it already has areas that are clear of trees so that the fewer trees will need to be removed so the impact on the landscape will be kept to a minimum.

Project Introduction

In a park setting such as this, every structure, no matter how well it is designed, is an intrusion to the beauty of the natural surrounding in the park. For this project, I will attempt to create a harmony between the natural and built environment by minimizing the impact of the buildings on the landscape. The main reason for establishing the park was for preservation purposes, and this project continues this practice by implementing sustainable design strategies within the design of the facility.

Along with using sustainable materials, regional materials will be used within this project. The historic rustic style CCC/WPA depression era architecture that is within the park will be used for inspiration in the new design. The new facilities are not to be exact replicas of the existing structures, but are to show an appreciation for the past and the architecture that came out of it.

Figure 1.3. The Mississippi River as it begins its journey through Itasca State Park

Figure 1.4. The Douglas Lodge was the first park building built in Itasca State Park and is one of many good examples of Rustic Depression Era Park Architecture

History of Itasca State Park

Headwaters Interpretive Center

HISTORY OF ITASCA STATE PARK

First Evidence of People in Itasca

Discovery of the Headwaters

Establishment of the Park

Civilian Conservation Corps

Present Park Attractions

History of Itasca State Park

Evidence of people living in Itasca State Park dates back over 8,000 years. These people were nomadic hunters who wandered in search of food. These early hunters ambushed bison, deer, and moose at watering sites and killed them with flint tipped spears. They also hunted smaller animals, fished in the lakes and streams, and gathered edible plants, berries, fruits and seeds. From evidence found in and around Itasca, it is believed that these people lived in and around Itasca for thousands of years.

The next evidence of people living in Itasca is of the Woodland Culture. These people were considerably more advanced. They lived in larger, more permanent settlements where they used a variety of stone, wood, and bone tools. They also made decorated clay pottery for cooking and storage. They hunted, fished and gathered plants for food, clothing, and shelter much like their predecessors, but they used more modern weapons such as the bow and arrow which enabled them to kill animals from a farther distance. The people of the Woodland Culture gathered wild rice and maple syrup and developed ways to prepare them that are still used today. These people remained in this area until after Europeans discovered Itasca.

Europeans search for the headwaters of the Mississippi River started over 300 years before Itasca became a park. Many inaccurate claims were made about where the Mississippi originated. It wasn't until 1832 when Henry Rowe Schoolcraft, with the help of an Ojibwa guide, laid his eyes on the true source of the Mississippi. The lake was name Itasca which is derived from Latin word which mean "truth" and "head." The claim that Lake Itasca is the true source of the Mississippi was later challenged due to the fact that there are small tributaries that flow into Lake Itasca. Not until 1889 when Jacob V. Brower, a noted archeologist, began his survey of the Itasca region was the disagreement resolved. Brower's study revealed that the tributaries geologically could not be considered rivers, thus Lake Itasca is the ultimate source of the Mississippi.

Figure 2.1. Painting of Schoolcraft at Itasca

Figure 2.2. Jacob V. Brower, founder of Itasca State Park who later became the park's first commissioner

History of Itasca State Park

By the late 1800's, Minnesota's logging era was at its peak and many companies moved north in search of prime timber. While he was surveying the area, Brower realized the threat of deforestation that would soon overtake Itasca. To combat the threat, he embarked on a heroic battle to establish a park to preserve the area around the headwaters. After Itasca State Park was established in 1891, Brower became the first park superintendent. Itasca State Park was the first state park in Minnesota and marked the beginning of a movement in nature preservation in the state.

A few decades after the park was established, the country entered into the worst depression in its history. In order to create jobs for young men in this country, the Civilian Conservation Corps was established. This program led to the most influential period in the development of the parks infrastructure. The young men maintained the park, planted trees, built roads and trails, constructed fire towers and water towers, and most notably built many of the Rustic Style Buildings within the park. Without this program, Itasca State Park would not have ever been able to serve its visitors in its current capacity.

Itasca State Park has many claims to fame. Along with containing the headwaters to the Mississippi River, the park is the oldest state park in Minnesota and has some of the oldest and largest pine stands in the state. The park also has many other attractions including nature and wildlife observation along with many recreational and educational opportunities. With such a rich and diverse history, the park must give its visitors an opportunity to gain an understanding of the events that took place previously in the area around Lake Itasca. The best way to show appreciation to the people who contributed to the development of the park is to create an awareness of their accomplishment and preserve what remains from their effort.

Figure 2.3. The Old Timer's Cabin was the first building constructed by the CCC in Itasca State Park in 1934

Figure 2.4. Forest Inn was built between 1939 and 1941 and was one of the last CCC projects in Itasca State Park

Figure 2.5. The Clubhouse, built around 1910 has several distinguishing features including the unusual roof

Project Description

Headwaters Interpretive Center

Building Typology

Project Justification

Theoretical Premise

Project Emphasis

Project Goals and Objectives

PROJECT DESCRIPTION

Building Typology

Project Description

The new visitor center near the Mississippi Headwaters in Itasca State Park would be classified as a multi-use facility with the interpretive center being the main attraction. It will have an educational component as well as a small retail area, dining, lodging, and public spaces for entertaining and holding other events.

The interpretive center will be composed of not only an indoor component, but it will also extend outside into the surrounding landscape. There will outdoor display areas as well as a small amphitheater where live exhibitions will be performed. The landscaping component of the design will be an important aspect of this project.

Besides the interpretive center, the other major components in the new facility are a gift shop, restaurant, lodge, and multi-purpose spaces that can be used for classrooms or conference rooms among other things. The reason behind having a multi-use facility is to provide the more opportunities for the park visitors in a condensed area. Using shared spaces the size of the facility can be compacted in order to have less of an impact on the landscape. The facility is not to be one massive building, but an arrangement that fits into the landscape and not overwhelm it.

Project Justification

Project Description

The Mississippi River Headwaters has become an icon in our society. The picture of people walking across the rocks at the headwaters is recognizable to most everyone in our society, even if they have not had an opportunity to experience it personally. The experience of the headwaters goes beyond just walking across the small stream. It also includes the experience of discovering the headwaters. This includes not only the physical hike, but also the understanding of the history of this important discovery.

Previously, the facilities near the Mississippi Headwaters contained a small visitor center, gift shop, and restrooms. These facilities were inadequate to fulfill the needs of the guests that visit the park in terms of size and appearance. These buildings were also a poor representation of the rich traditions of park architecture and are not sensitive to the context in which they were built. Since Itasca State Park is so well renowned and the Mississippi Headwaters is the main attraction of the park, these facilities must be improved in order to fit into the context of the park as well as to be able to fulfill the demand due to the increasing number of guests visiting the park each year.

In 2001, the Jacob V. Brower Visitor Center opened near the east entrance of Itasca State Park. This facility provides an improved means displaying many artifacts that pertain to the park's history. The new facility near the headwaters is not intended to complete with this visitor center, but they are to work together to provide the park guests with the best experience possible. The new visitor center near the headwaters will have displays that focus on the discovery of the origins of the Mississippi River, the Native American culture within the park, and the preservation measures that are being taken within the park and the new facility while the Jacob V. Brower Visitor Center will focus on the wildlife in the park and the history of the CCC/WPA projects within the park. Neither visitor center will contain all of the exhibits on a particular theme because many of the subjects are interrelated.

Figure 3.1. This view of the Mississippi River Headwaters is easily recognizable to most people

Figure 3.2. The Jacob V. Brower Visitor Center is to work together with the new interpretive center in order to make Itasca State Park a superior experience

Project Justification

Itasca State Park has so much to offer in terms of natural and cultural opportunities that not everything can be contained in one facility. It will be advantageous to have two visitor centers so that the park guests will be able to go to one and observe the exhibits, then they will be able to take a break, do some sightseeing, and reflect. Then, they can go to the other visitor center with fresh eyes and absorb the information that is being displayed at the second visitor center. The visitor centers are essential for the visitors to gain a better understanding and appreciation of the park and the opportunities that it can provide.

In addition to the new visitor center, there is a demand for additional lodging in the park. Currently, during certain times of the year, you must reserve a place to stay within the park over a year in advance. With this high demand, there is an opportunity to earn revenue that can be used to cover the expenses that occur in the operation and maintenance of the park. With how busy most people's schedules are, they may have only a limited amount of times when they can arrange to visit the park. If there is nowhere for them to stay when they want to come, they will miss the opportunity to experience all the park has to offer. If they are not able to make arrangements to visit the park the revenue that could be earned from their stay would be lost. This shows how important it is to have all of the necessary services that the visitors want so they can come to the park when they want to help keep the park healthy and operational.

Figure 3.3. Inside the Jacob V. Brower Visitor Center, the exhibits focus on the wildlife inside the park and the influence the CCC/WPA had on the development of the park

Theoretical Premise

The purpose of this project is to create a design that allows the visitors connect with nature. Rustic Depression Era Architecture is a good representation of how the natural and built environments can form a harmony in which the built structures can conceivably be thought of as part of the natural environment. These structures seem as if they naturally grow out of the earth because of the way that these structures unite with the ground. These rustic buildings have become an important component of the parks in which they are located in and must be carefully studied in order to understand what makes them so significant. New buildings that are built in parks must capture the same sense as these historic structures.

The major question is what should be the contemporary approach on how to build a new building in a park? Should it have the same appearance as the historic rustic style buildings, or should they take the form of a more contemporary style of construction? New park structures must consider the traditions of the historic architecture in the parks, but should it be a literal representation or at more of a symbolic level?

Measures must be taken to integrate new technologies into new park buildings, yet still reflect their historic predecessors within the park. Environmentally responsive considerations must be taken in every modern building that is designed, but it is especially important when the building is surrounded by nature such as in a park setting.

Project Emphasis

The main purpose for establishing Itasca State Park was to preserve and protect the natural environment of the area. The historic built environment within the park has also become a very important feature within the fabric of the park. Itasca State Park, like many state and national parks, has a rich tradition of rustic CCC/WPA depression era park architecture. These structures, as well as the traditions of this rustic style of architecture must be preserved and incorporated into any new building designed for the park.

Figure 3.4. The new facilities will use the existing historic structures withing the park as a model for successful park architecture

Some of the distinguishing features of this style of architecture are the use of regional materials and extremely well crafted details. The intent of this project is not to create exact replicas of the existing structures, but to draw inspiration from them on a more symbolic level. Modern technologies and techniques must be integrated into the design because the advantages can not be disregarded.

Sustainable strategies will be implemented into the design in order to minimize the effects that the facility has on the environment. This philosophy correlates with the purpose of establishing the park. Preservation in a park setting and sustainability are closely related in that they both involve protecting the environment. These are two concepts that will be considered throughout the course of this project.

Project Goals and Objectives

Some of the objectives and goals that I want to achieve throughout this project are:

• To integrate modern building techniques and technologies into the new facilities that draw inspiration from the existing rustic park architecture in Itasca State Park.

• To find a balance between traditional park architecture and contemporary architecture that is acceptable for a park structure that is built in this time period and looking towards the future.

• To create an aesthetically pleasing design that is in balance with nature through the use of sustainable design strategies. The new facility must have a minimal impact on the site and must fit into the context of a building in a forest setting.

• To increase peoples understanding and appreciation of the historic rustic style CCC/WPA depression era architecture. The traditions of this style as well as the actual structures of this time period must be preserved in order to understand and appreciate the significance that this style has on our state and national parks.

• To create a design solution that will be considered a precedent in park architecture. The design solution must be a good example of how a building should fix into its context, how to implement sustainable design strategies into a building, and how to design a contemporary park structure using traditional rustic styles as inspiration.

Context

Site Information

- Macro Scale
- Micro Scale
- Existing Site Conditions

Site Analysis

- Topography and Drainage
- Soils and Geology
- Vegetation
- Site Buildability
- Circulation and Access to the Site

Site Information

Context

The site for this new facility is located in Itasca State Park, which is located in Clearwater County, Minnesota between Bemidji and Park Rapids. Established in 1891, it is Minnesota's oldest state park. The park has over 32,000 acres of virgin timber, wetlands, and lakes, but the largest attraction is the headwaters to the Mississippi River. From the north point of Lake Itasca, the Mississippi begins its 2,552 mile journey to the Gulf of Mexico.

The park was established to preserve the natural beauty of the area by preventing logging of the old growth pine and other destructive activities. The park has become a famous natural and cultural landmark throughout North America. With all that it has to offer, Itasca State Park is rightly considered the "Pride of Minnesota."

Economically, Clearwater County has one of the lowest per capita incomes in the state of Minnesota. Tourism is the economic base for this area with the park averaging over 500,000 visitors annually. The number of guests that visit the park is steadily increasing every year.

Itasca State Park
Geographic Coordinates
47° North Latitude
95° West Longitude

Figure 4.1. Itasca State Park is located in northern Minnesota

Figure 4.2. Itasca State Park was established to preserve the natural beauty of the park

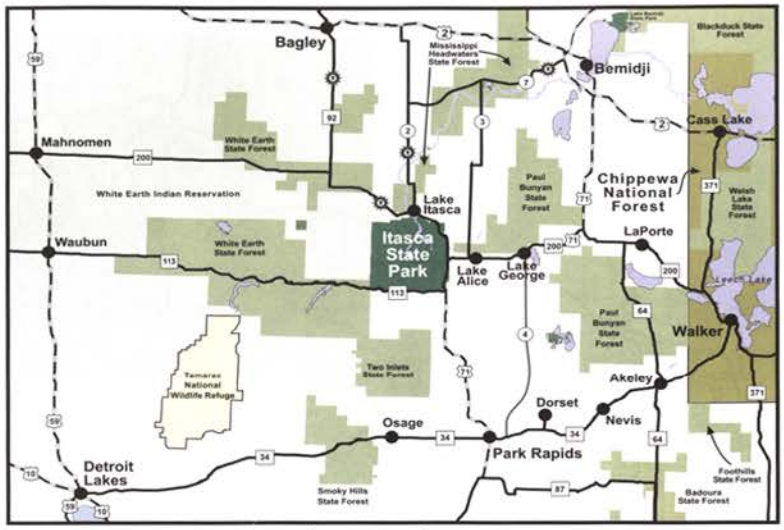


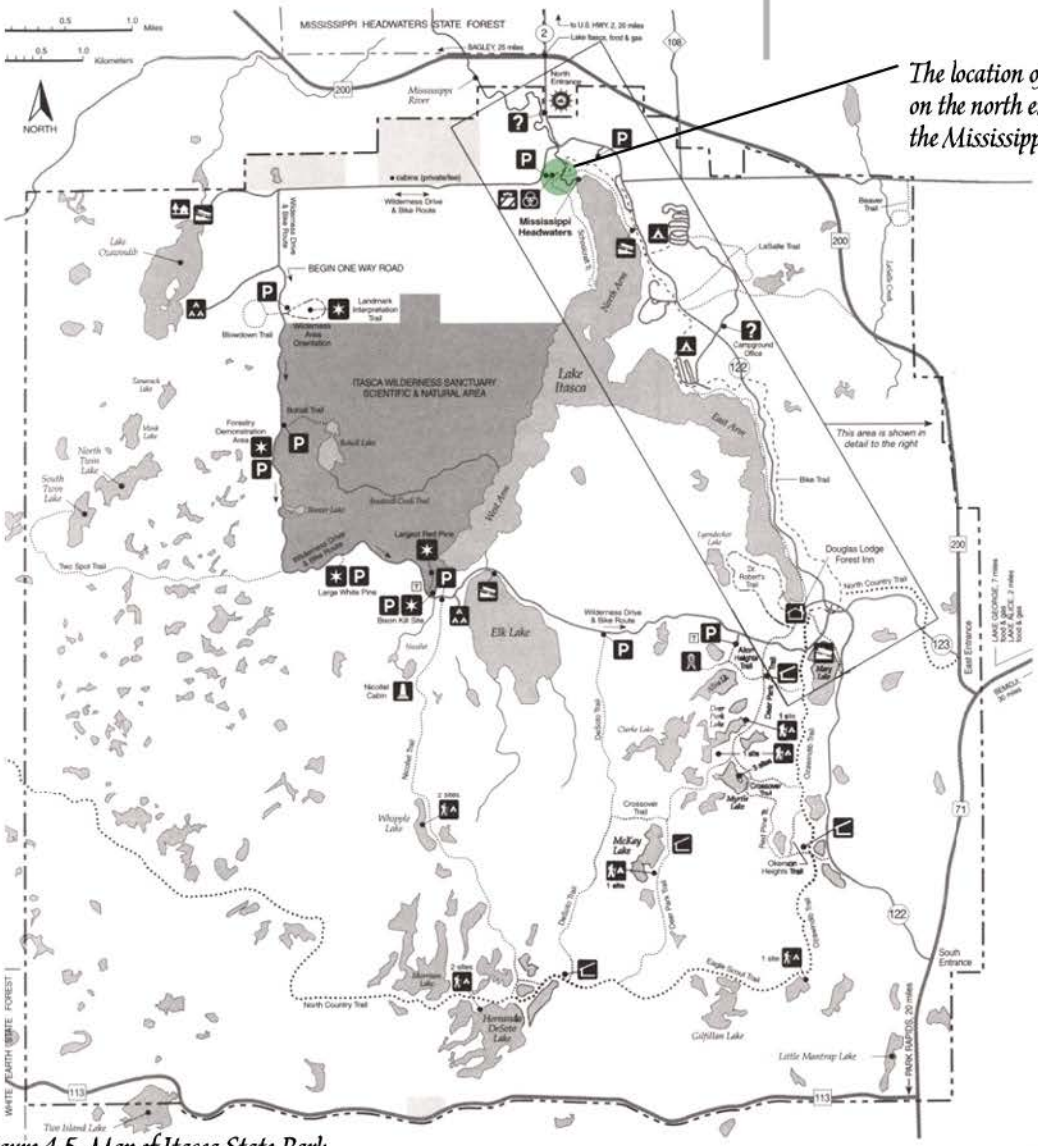
Figure 4.3. Itasca State Park is located in Clearwater County and is surrounded by many State Forests

Site Information

Context

The majority of the built attractions within Itasca State Park are along the Main Park Drive which runs along the east side of Lake Itasca. At the south end of the lake there are many attractions including the Jacob V. Brower Visitor Center, Douglas Lodge, Forest Inn, the Club House, along with many cabins. The Mississippi Headwaters is located on the north end of Lake Itasca, so there are many visitors that spend time in this vacinity. The facilities that were in this area of the park were inadequate to fulfill the needs of the visitors. The site is located on the north end of the park approximately 650 feet west of the headwaters. It is accessible from Wilderness Drive just a short distance away from the park's north entrance. The new facilities will be the first stop for many of the tourists that visit the park.

Figure 4.4. A view down Wilderness Drive near the site for the new interpretive center



The location of the building site is on the north end of the park near the Mississippi Headwaters

Figure 4.5. Map of Itasca State Park

Existing Site and Adjacent Trails

The site also has a convergence of bicycle and pedestrian trails that go through it. The site is located within walking distance from the Mississippi headwaters and a picnic area. Previously there was a small visitor center, gift shop, and public restrooms along with a fairly large parking lot. The new facilities will replace these inadequate structures and add many more amenities to the park. There is an opening in the forest where the site is located and it is surrounded by a mix of coniferous and deciduous trees. The new development will remain inside the existing boundaries of the old structures and parking lot to minimize the impact of the surrounding environment adjacent to the site.

Figure 4.6. Itasca State Park has over 30 miles of trails for biking and hiking in the park

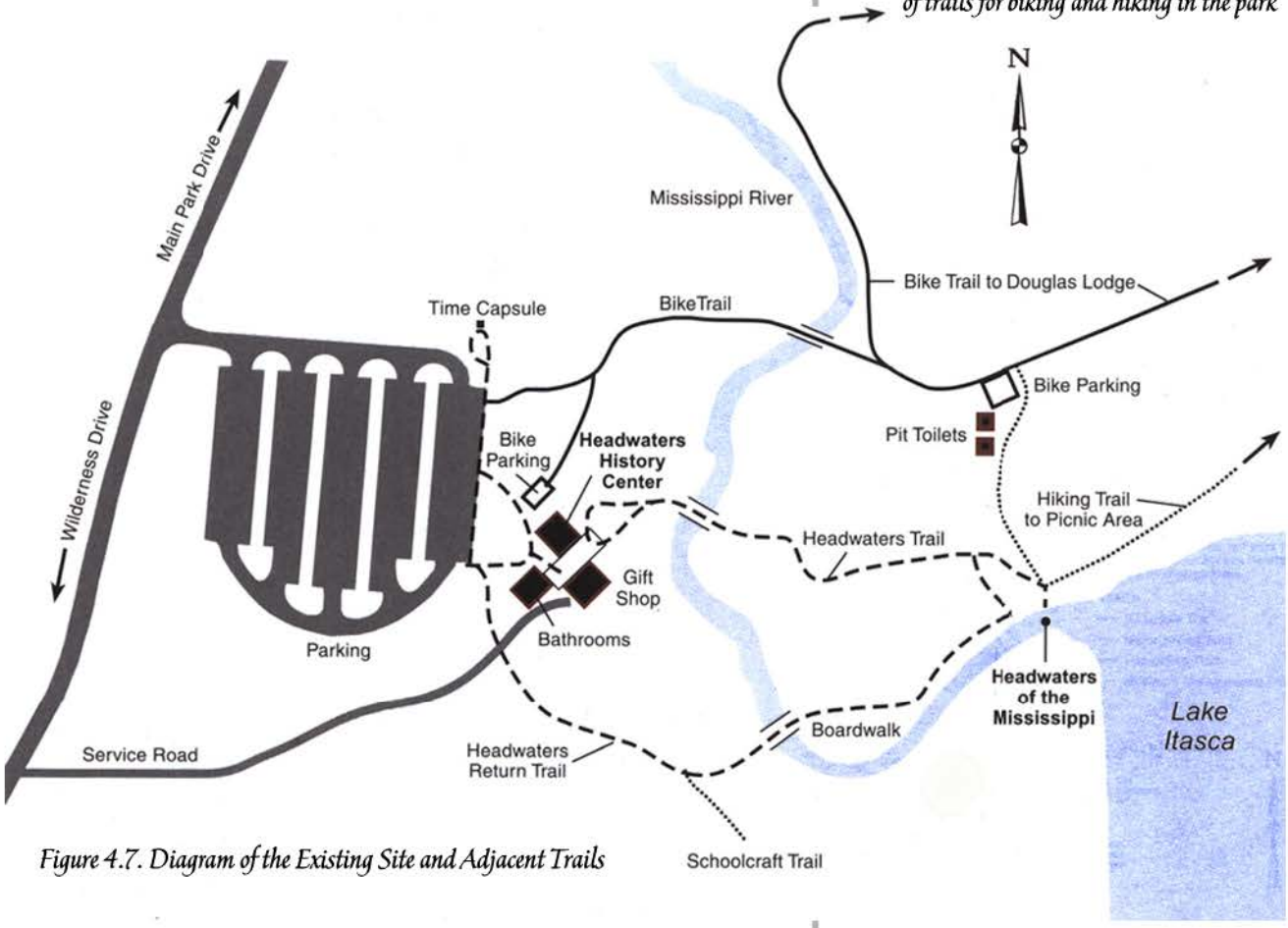


Figure 4.7. Diagram of the Existing Site and Adjacent Trails

Topograghy and Geology

For the most part, the park is composed of hills that were formed when glaciers advanced through the area. The glaciers left deposits that contain coarse, gravelly materials and boulders along with forming countless lakes, ponds, and bogs that are found throughout the park.

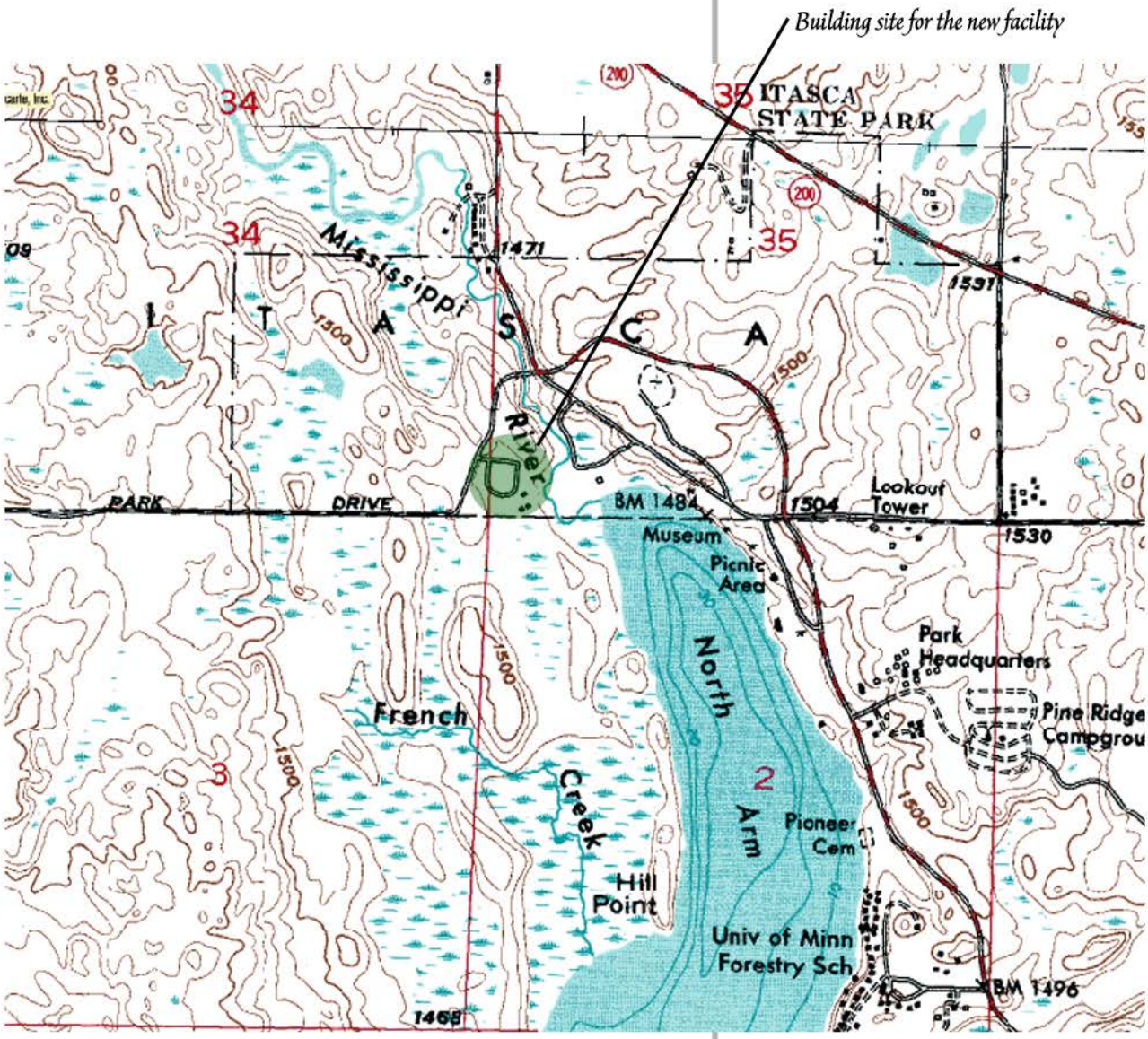


Figure 4.8. Topographic Map of the North Section of Itasca State Park

Topograghy and Soils

The actual site for this project is relatively flat, though it gradually slopes down toward the beginning stretch of the Mississippi River. The slope gradually gets stepper as you get closer to the river. The topography slopes downward from west to east toward the river, making this the predominate direction of water movement through the site. The soil on the site is considered a sandy loam that is well drained with a moderate slope which means that it is well suited for building on. It is a common soil in forested areas that is composed mainly of glacial outwash. The water table with this type of soil is usually over 6 feet deep with no possibility for flooding and only a low potential for frost action. (Larson 107)

Figure 4.9. The Mississippi River near the building site for this project

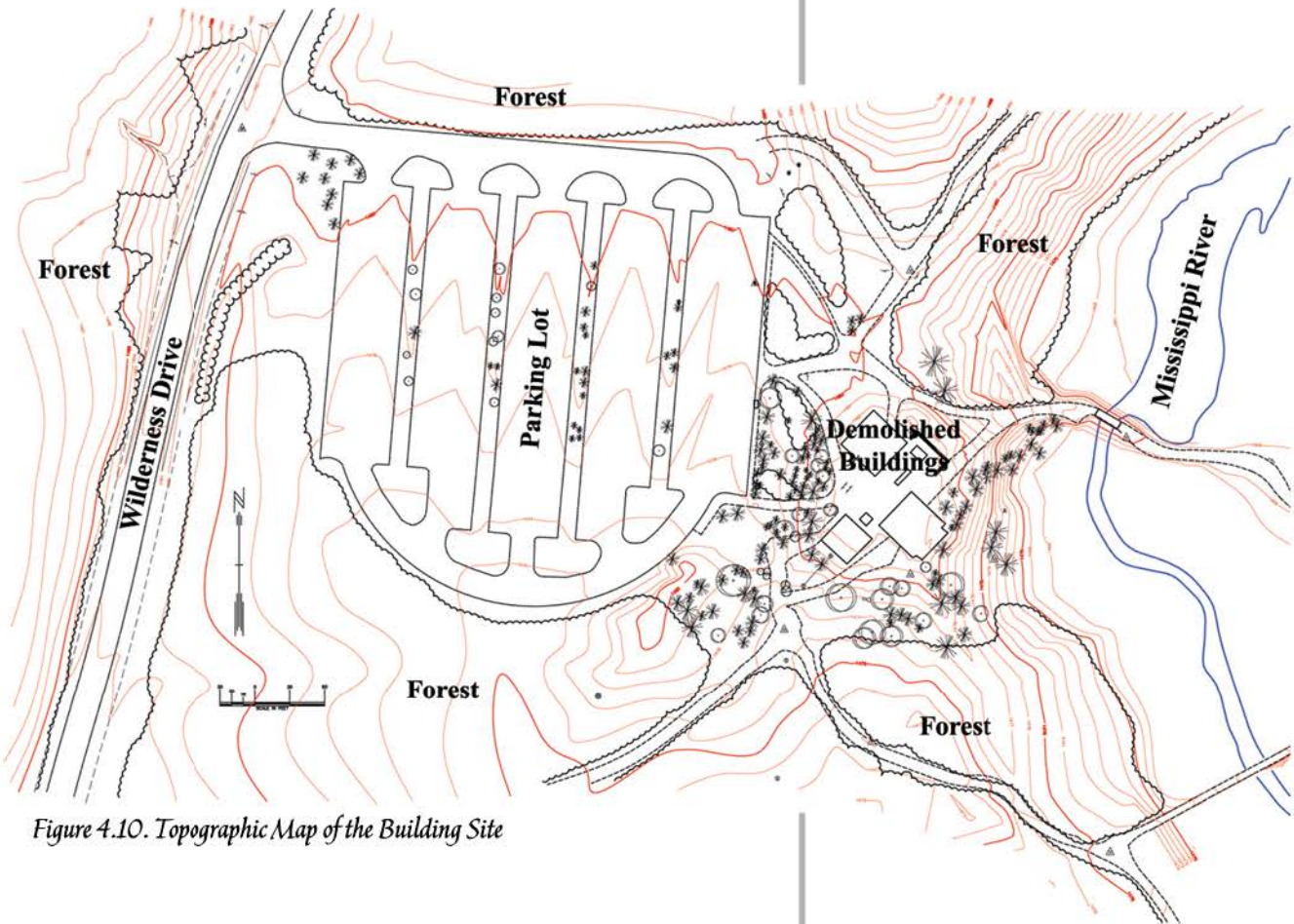


Figure 4.10. Topographic Map of the Building Site

Vegetation

Itasca State Park contains a large variety of plant life. There is a mixture of coniferous, deciduous, and mixed forests within the park. Some of the oldest stands of old growth pine forests in the state of Minnesota are found within the boundaries of the park. Some of the different varieties of coniferous trees that are found in the park are red, white, and jack pine, spruce, and a variety of fir trees. Some of the common types of deciduous trees that are found in the park are maple, basswood, aspen, oak, poplar, birch, ash, and balsam. The site for this project has a mix of coniferous and deciduous forests and contains most of these tree types.

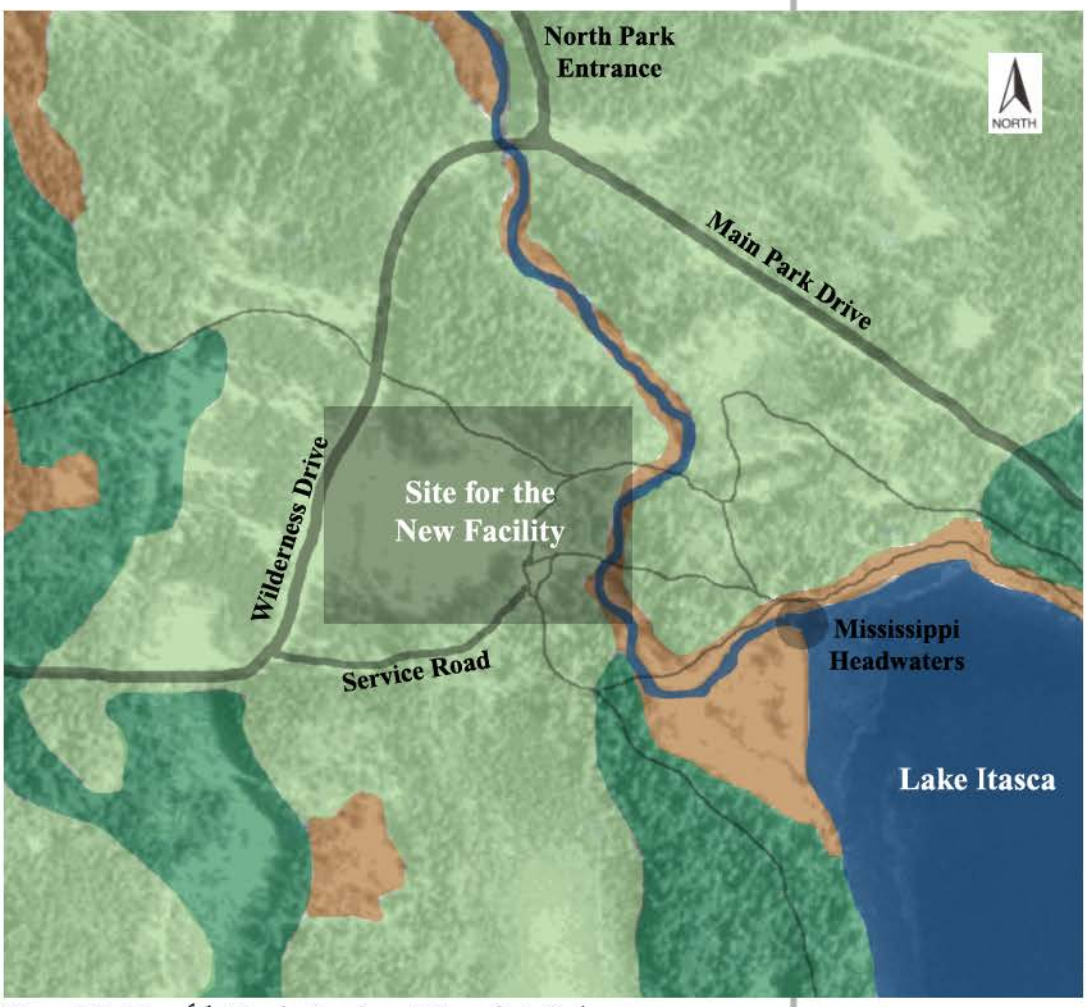


Figure 4.11. Map of the Headwaters Area at Itasca State Park

Vegetation Around the Site

The optimal location on the site to place the new facilities is where the old buildings have been demolished because few trees will need to be removed in this location. Next to where the buildings once sat, the trees are thinner so the new larger facilities will fit in this location without having to remove numerous trees. This is also a good location because the facility will still be surrounded by trees, which will reinforce the connection with nature. This location is close to the beginning stretch of the Mississippi River which should be incorporated into the design because it is a very important element to the interpretive center.

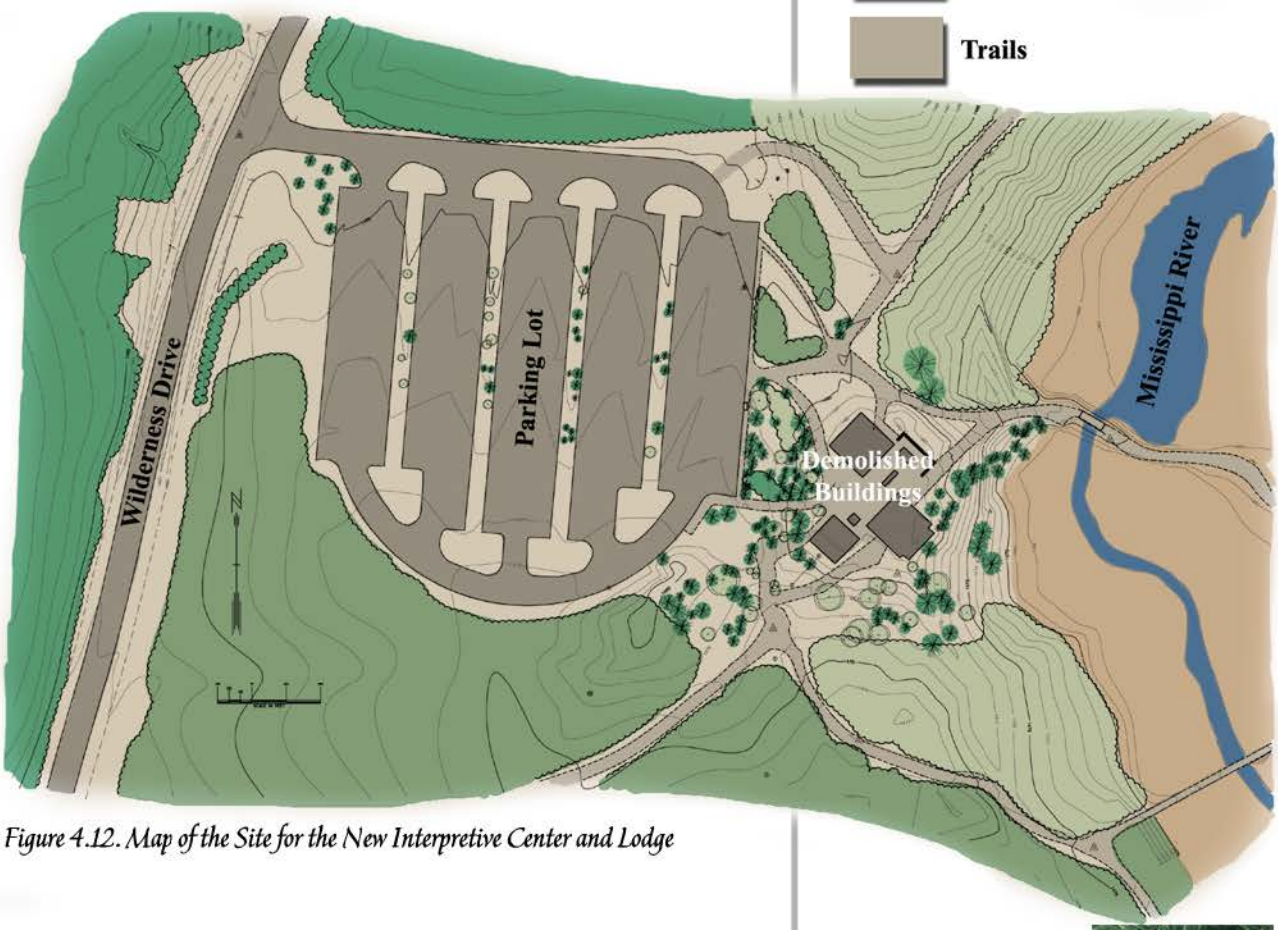


Figure 4.12. Map of the Site for the New Interpretive Center and Lodge

Circulation and Access to the Site

The only vehicular means for visitors to come to the interpretive center is by taking Wilderness Drive. The majority of the visitors coming to the center with vehicles will come from the north because Wilderness Drive turns into a one-way road farther south of the site. When these people leave, many will head back north to the Main Park Drive or leave the park through the north park entrance, but some site-seers will head south down Wilderness Drive to experience the virtually untouched natural environment that the scenic drive offers. There is also a service trail that can be maintained and incorporated into the design of the new facility.

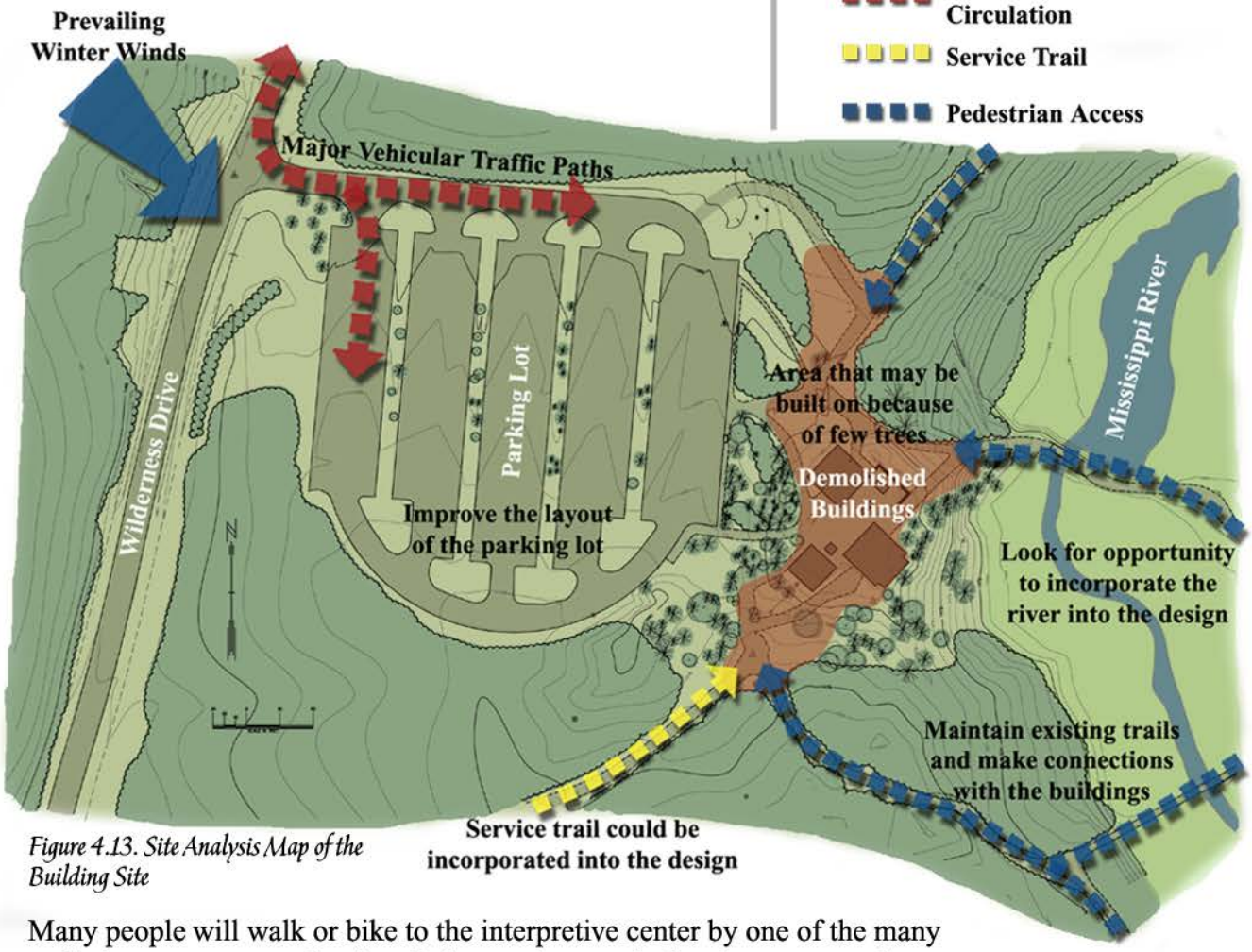


Figure 4.13. Site Analysis Map of the Building Site

Many people will walk or bike to the interpretive center by one of the many trails that converge on the site. Being so close to the headwaters, people can park in other parking lots, such as one near Brower Inn and walk to the headwaters and the interpretive center. These hiking and biking trails must be maintained and integrated into the design of the center.

Design Precedents

Headwaters Interpretive Center

"Sustainable"
Lebanon Hills Visitor Center

"Vernacular"
Fort Snelling State Park Visitor Center

"Harmony with Nature"
McElroy Interpretive Center

"Invitation to the Land"
Trapps Gateway Center

"Regionalism"
Gooseberry Falls State Park Visitor Center

"Boundary"
Greenbrook Nature Sanctuary Visitor Center

"Itasca State Park"
Jacob V. Brower Visitor Center

DESIGN PRECEDENTS

"Sustainable"

Lebanon Hills Visitor Center

Location: Eagan, Minnesota
Size: 6,030 SF
Architect: Partners & Sirny Architects

Surrounded by prairie, woodlands, lakes, and wetlands, Lebanon Hills Visitor Center provides a premier location for environmental education, outdoor recreation, and natural and cultural interpretation. This visitor center is an excellent model of ecological sustainability. It has set a new precedent for sustainable design in the upper Midwest. Every aspect of the design from the beginning to the end integrated sustainable principals into it.

Figure 5.1. The facility incorporates strategies in order to minimize the negative impact on the site

To minimize the environmental impact of the project on the land started with a careful selection of a site to build on. Minimal excavation and backfill was used in constructing the entrance road to avoid negatively affecting wetlands. The entrance road and parking have a shared use to minimize the space that is required for these purposes. Storm water runoff is treated through natural vegetative filtration and sedimentation in holding areas. The amount of existing trees that were removed was kept to a minimum.

Figure 5.2. The center contains many low "E" windows which help to insulate the building

Sustainable strategies were used to conserve water, air, and energy. Construction processes that minimized water consumption were used as well as low-flow plumbing fixtures. To improve air quality, non-toxic materials were used as well as increasing natural air into the building by different ventilation strategies. Many passive energy strategies were used along with a highly insulated envelop and low "E" windows along with many other energy conservation strategies.

Figure 5.3. The building appears as many smaller masses in order to make it seem less

This building uses durable, low maintenance materials and building products that do not adversely affect the environment. Wherever possible, materials that are renewable and recyclable were used along with materials with low embodied energy. Some more subtle strategies were used such as exposing the building infrastructure to minimize the amount of resources used. Strategies were used to minimize the amount of waste that the building produced during and after construction.

"Sustainable" (cont.)

The visitor center has a green roof integrated into its design. This has many benefits including insulation, filtration of storm water runoff, cleans the air, and reduces interior noise, along with many other benefits. Green roofs are low maintenance and are an environmentally consistent choice.

By using efficient space planning, the footprint of the building was kept to a minimum, but the design, using multi-use spaces is very flexible which increases its current potential as well as the potential to facilitate future change. The building is considered to have a vernacular design which relates to its surroundings and creates a timeless design. The strong indoor/outdoor relationship fosters a connection between the users and the site.

Conclusion:

- The sustainable design strategies can be an expression of the building and a means to encourage sustainable uses in other buildings.
- Breaking the building up into smaller masses reduces the scale of the building in order to make it fit in better with the surrounding natural environment.
- Vegetative roofs can visually anchor a building to its landscape.
- Using earth tone colors help the building fit into the surroundings

Figure 5.7. The building is broken up into smaller masses in order to give it the sense that it has a smaller scale

Design Precedents

Figure 5.4. Emphasis put on day lighting and operable windows for natural ventilation, reducing energy consumption

Figure 5.5. The vegetated roof increases energy savings in heating and cooling as well as helps the building blend in with the environment

Figure 5.6. The soapstone fireplace provides heat in the building for 10 hours with just one hour worth of fire

"Vernacular"

Fort Snelling State Park Visitor Center

Location: St. Paul, MN
Size: 6,800 SF
Architect: Thorbeck Architects

The visitor center at Fort Snelling State Park is the centerpiece to one of the states most popular parks. The interpretive center is located near Historic Fort Snelling on the river flats where the Mississippi and Minnesota Rivers converge. The center serves as the park's primary gathering space and educational facility, which interprets and relates the natural and cultural heritage of the park.

Drawing from the traditions of historic park buildings in Minnesota and other states, the architect for the Fort Snelling State Park Visitor Center designed a facility to reflect the architectural vernacular appropriate to its rustic park setting. He looked at distinctive park buildings such as Itasca State Park's Douglas Lodge as well as the rustic buildings of Yellowstone and Glacier National Parks. These buildings use materials that were extracted from the earth and found at the site.

The use of stone and timber are implemented in the design, but are not particularly distinctive. The intention of this project was not for the building to look overtly "fort-like". The historic fort is only one aspect of the cultural history of the area, Native Americans also played a significant role in the history of the area. Materials such as rough-cut Minnesota limestone, interior white pine, exterior cedar, and copper trim were also integrated into the design. (Kudalis 1999)

Conclusion:

• Using materials that are extracted from the site can create a connection between a building and its site.

• Detailing is an important component of design in park architecture because the connections of the different materials are a source of the building expression.

"I sought to retain the tradition of the best of rustic park architecture found throughout Minnesota's parks and around the country."
-Dewey Thorbeck –Architect

Figure 5.8. The architects for Fort Snelling State Park Visitor Center drew inspiration from Minnesota's historic rustic park architecture

Figure 5.9. The visitor center interprets and relates the natural and cultural heritage of the park

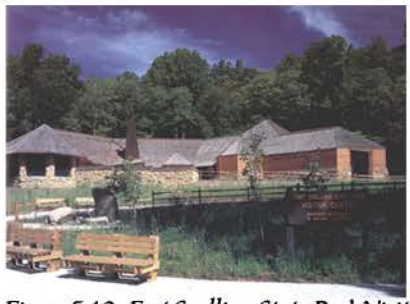


Figure 5.10. Fort Snelling State Park Visitor Center

"Harmony with Nature"

McElroy Interpretive Center

Location: Wild River State Park
Architect: McGuire/Engler/Davis Architects

Far from the traditional massive log and stone Minnesota CCC park architecture, the McElroy Interpretive Center is a graceful blend of contemporary design and unobtrusive form. The building is surrounded by a three sided deck which opens it up to the outdoors and is oriented to the sun with shuttered clerestory windows. The building is unobtrusive to its setting by using broken gables to reduce its massing.

The interpretive center has a minimum impact on the surrounding land. The center is a one-story structure with a complicated form and a scaled down entryway to make it seem less than the sum of its parts. The interior of the center is very flexible with a large reception area and a multipurpose meeting room. These spaces can be used for a variety of events including slide programs, habitat displays, and a weather station.

The McElroy Interpretive Center is an excellent example of architecture being in harmony with its surroundings. As one comes upon the interpretive center, the building appears as if it is just part of the natural surroundings that it is in. The intention of the architect was for the building not to detract from its surroundings. (Kaibel 1991)

Conclusion:

- Using broken masses, a park building can seem less obtrusive to its surroundings.
- By using flexible multipurpose spaces, the building footprint can be reduced while still being able to support all of the necessary activities that the space is used for.
- Park buildings should not detract from their surroundings because the surrounding environment is the reason for having the park.

"…it's broken gables and cedar-shingle exterior camouflage is almost as if it were a ruffed grouse crouched on the forest floor."
-Elizabeth Kaibel –Architecture Minnesota

Figure 5.11. The center is oriented toward the sun with a three sided deck and clerestory windows open to the outdoors

Figure 5.12. A central, multipurpose room is highlighted by a fireplace made of St. Croix Limestone

Figure 5.13. The broken gabled form reduces the massing, allowing the building to slip unobtrusively into the setting

"Invitation to the Land"

Trapps Gateway Center

Location: Mohawk Reserve, Upstate New York
Size: 9,200 SF
Architect: Lee H. Skolnick Architecture & Design Partnership

The architect's intent for this project was for the building to blend in with the surrounding site. By using materials from the preserve, Trapps Gateway Visitor Center is connected to the site in many ways. The 11 main columns are made of trees that were selected from the heavily wooded preserve. Stone was also collected from the land and was used for the building façade, structural retaining walls, and built-in furniture. The building is 9,200 square-feet, but much of the building sits below grade to minimize what could be an imposing, unnatural mass.

The building uses a geothermal heating and cooling system to reduce the amount of fossil fuel consumption of the building by using the earth's underground temperature to maintain a constant climate. The architects emphasized using the geothermal system for sustainability requirement by exposing the system with glass so that the visitors can observe how the system works and implement it into the education program.

The architects designed many of the displays inside the visitor center and tried to create a relationship between the interpretive exhibits and the building. This interplay reinforces the visitor center as a gateway and transforms the visitors' perception of the land while inspiring them to find their place in it. (Dheere 1999)

Conclusion:

• The sustainable design strategies that are integrated within the building can emphasized as part of the exhibition in order to gain appreciation by the visitors. These strategies can be an expressive element in the design of the building.

• Using materials collected near the site can increase the connection of the building with the site.

• Placing the building partially below grade can make the building appear less obtrusive to the surrounding site.

"We are the only architects who promised not to build a building… (but instead build) an invitation to the land"
-Lee H. Skolnick, AIA -Architect of Trapps Gateway Center

Figure 5.14. Native stone and timber are used for the entrance to reinforce the building blending in with the site

Figure 5.15. The visitor center creates relationships between the interpretive exhibits and the building

Figure 5.16. The building uses a hidden lower level in order to make the building seem less obtrusive

Gooseberry Falls State Park Visitor Center

Location: Two Harbor, Minnesota
Size: 10,500 SF
Architect: Salmela Fosdick Ltd.

Being the first major stop north of Duluth along Minnesota's North Shore Drive, Gooseberry Falls State Park Visitor Center is a popular rest stop for many travelers along Highway 61. It is a contemporary building that relates to a heavily wooded site and to the park's traditional rugged architecture. David Salmela, the architect for this project used the traditions of Minnesota's CCC stone and timber structures of the Great Depression as inspiration for his design, but did not intend it to be a knock off. The building is considered modern, but not in the usual sense. It has been coined with the term "Minnesota Modern" because of how it relates to the architectural traditions of the region.

The visitor center is fairly straightforward in that there is nothing that is exceptional or unusual about the basic design. What sets this building apart is the detailing and the usage of materials. From the heavy timber framing and stone base to the exterior cedar siding and the interior finishes, the quality of the materials is apparent throughout the whole building. Many of the materials are recycled including the timber posts and beams. The stone that was used in the building was collected near the site where stone was blasted to make a highway tunnel through a hill. (Kudalis 1998)

The visitor center has become an instant North Shore landmark and in 1997 it received an AIA Minnesota Honor Award.

Conclusion:

- By including multiple functions within the building, more visitors will be attracted to it.
- Detailing plays an important role in park architecture.
- Using regional materials gives a building a connection with its surroundings.
- Modern park architecture does not have to replicate traditional park architecture to be considered rustic. An understanding of historic park architecture is necessary in order to incorporate the features that make this style so unique.

"…architecture of great resorts and lasting design distinguished by texture, scale, and play of materials."
-Jurors for the 1997 AIA Minnesota Honor Award

Figure 5.17. The colonnade, running the length of the visitor center, is the centerpiece of the rustic park building

Figure 5.18. The visitor center is known for its exceptional use of regional materials

Figure 5.19. The visitor center has become an instant North Shore Landmark

Greenbrook Nature Sanctuary Visitor Center

Location: Alpine, NJ
Size: 1,000 SF
Architect: Thanhauser & Esterson

Just six miles north of Manhattan, an inviting little visitor center greets the guests of Greenbrook Nature Sanctuary. The visitor center is composed of a newer interpretive building that is connected to a small, older office by an outdoor deck. The architects envisioned the center to be "a built trail in the woods."

When visitors approach the center, the first thing that they notice is a stone wall that was built with stone that was found on-site. This wall is symbolic of the boundary between the built and natural environment. The wall also symbolizes a major landform in the area.

As the guests approach the visitor center, a ramp carries them up to the deck which is behind the stone wall. Taking a right turn will lead them into the interpretive area. The interpretive building is composed of an abundance of maple ceiling panels and removable exhibit panels. Skylights and numerous windows allow daylight to enter the space to give it a warm glow. (Dheere 1999)

Conclusion:

• Using removable exhibit panels give the exhibit space more flexibility for future changes that may be made in the future.

• Bringing in natural light will give a space a warm feel which the visitors will have a more comfortable experience.

• Establishing a symbolic boundary will increase the visitors' anticipation toward the activities that they soon will be experiencing.

• By using outdoor spaces, the building footprint can be reduced as well as increasing the visitors' connection with nature.

Figure 5.20. The small visitor center was envisioned to be "a built trail in the woods"

Figure 5.21. The stone wall at the entrance of the building is symbolic of a boundary between the built and natural environment

Figure 5.22. Skylights, along with maple panels on the ceiling gives the interpretive area a warm glow

Jacob V. Brower Visitor Center

Location: Itasca State Park
Size: 14,300 SF
Architect: Bentz/Thompson/Rietow

Opening in the fall of 2001, the Jacob V. Brower Visitor Center is the newest major addition at Itasca State Park. The new facility currently serves as the primary informational and educational center for the park. It provides visitors with exhibits that are devoted to the wildlife of the park and the significance of the historic CCC and WPA works in the park.

The structure incorporates many features that reflect the "rustic" style architecture of the park including red pine columns that were harvested to clear the building site. A number of trees were replanted throughout the park to replace the trees that were removed for construction. The building also uses conventional wood framing and structural insulated panels which does not reflect the "rustic " style as literally, but was likely used for economical and maintenance purposes. Integrating environmentally sensitive building materials and technologies were also emphasized in the design of the building.

Figure 5.23. Jacob V. Brower Visitor Center

Figure 5.24. The red pine columns were fabricated from trees harvested to clear the building site

Figure 5.25. The facility uses large windows outlooking the forest that surrounds the building

Figure 5.27.The fireplaces are not a good representation of the rustic style that the archticet intended to capture

Figure 5.26. The lofty vault is intended to give the feeling of a forest canopy over the exhabition space

Within the building, there is a metal gate that separates the entrance from the exhibit areas. There are two wood burning fireplaces in the entrance area that serve as a warming area and trail center in the winter.

Conclusion:

• The use of exposed structure inside of the facility creates a good environment for exhibition space.

• A large open area allows for flexibility within the exhibition area so that the displays could easily be reconfigured if they needed to be.

• The use of symbolism, such as the metal gate as the beginning of discovery, can give the space an added significance.

• One approach on how to design contemporary park buildings is to use modern materials and techniques and incorporate the traditional materials that were used in past park architecture.

• Blending the exhibits into the building creates an attractive and interesting environment which makes the displays seem more cohesive.

Figure 5.30. Sketch of the Jacob V. Brower Visitor Center

Figure 5.28. The metal gate, which serves as the artistic centerpiece, separates the entrance from the exhibit areas

Figure 5.29. Integrating the displays into the building makes the exhibits seem more cohesive with the building

Programmatic Requirements

Headwaters Interpretive Center

PROGRAMMATIC REQUIREMENTS

User Behaviors and Attitudes

- Tourists
- Students
- Researchers
- Employees

Spatial Requirements

Activities and Functional Requirements

Material Performance and Systems Expectations

User Behaviors and Attitudes

People are drawn to Itasca State Park because of the unique opportunities that it offers. The opportunity to interact with the natural environment is what keeps bringing repeat visitors back to the park time and time again. There are many fascinating manmade attractions within the park, but without the natural surroundings, these built features would not be very inspirational.

The interpretive center is not intended to be the main attraction at the park. It is to act as a vehicle for the visitors to understand and appreciate the value of the park. It must give the visitors an opportunity to connect with nature as well as experience the history of the park. The facility will promote the indoor and outdoor relationship between the facility and the natural setting in which it is surrounded. This project is not simply about designing a building, it includes the designing an environment for people to understand and appreciate the significance of the park. These spaces may be exterior spaces as well as interior spaces.

There will be many different users that come to the new facility with vastly different expectations. Most of the users will fit into the major categories of tourists, students on fieldtrips, researchers, and the employees of the facility. Within each of these major categories, the individual users will have different purposes for visiting the park.

The majority of the people that visit the park are tourists of some type. Tourists cannot be generalized into one category, but must be separated into groups that distinguish their purpose of visiting the park. Most tourist visit the park for recreational purposes, but recreation means different things to different people. Many visitors come to the park to relax or connect with nature. These people may spend their time looking at the scenery and investigating all of the attractions. These individuals come to Itasca State Park because of all the unique features that it provides. Another group of tourists come to the park looking for entertainment. Some of the activities that these tourists use the park for are biking, hiking, snowmobiling, and canoeing. Many tourists stay at the park for many days, while some visitors many come for only an afternoon.

Figure 6.1. Tourists walking across the Missisiippi Headwaters

Figure 6.2. Recreational activities draw many visitors to the Park

User Behaviors and Attitudes

What ever the purpose of the persons visit, the park and the new facility must accommodate the visitor's needs.

Itasca State Park serves as a first-hand educational setting for students of all ages. From elementary school students to college students, the park offers a variety of opportunities for learning through experiencing. For elementary school field trips, students learn through the general experience. High school students go to the park searching for a deeper level of understanding for a more specific purpose. College students typically go to the park for an even more specific purpose. The use of interactive exhibits along with more in depth displays will help to serve each type of student visiting the park.

Another significant user group is people who visit the park for research purposes. With the University of Minnesota Biological Station and Laboratories within the park, many experimenters are continuously in the park. There are also other researchers with other organizations or individually that use the park for research purposes. Since the park serves as an excellent example of a virtually undisturbed natural environment, it provides an unique opportunity for certain types of research that cannot be conducted in many other locations. There are also archeological remains from the Native American culture that occupied the park before it was established that draw other types of researchers. The new facility will provide space for seminars and small conferences that can be used by the researchers along with other people and organizations. There will also be a space for the storage of archives from the park that can be referenced by these people to discover past studies that took place in the park.

The individuals that will be using the facilities on a consistent basis are the employees that work in them. The park employees will be the people who spend the most time and will become the most familiar with the facilities. There will be many different types of employees, each with different needs and expectations. There will be staff members who assist the visitors, gift shop workers, administrators, performers, restaurant employees including managers, cooks, and servers, lodge staff including

someone at the front desk, housecleaning and administration personnel, along with custodial and maintenance workers. Each of these employees needs to have a stimulating work environment where they can be rejuvenated daily by their surroundings. One requirement is for the employees to have access to natural sunlight and views. The staff members will typically be the only people who will be using the facility day after day, so it is especially important that where they spend the majority of their time must have good working conditions. They need spaces laid out so that they can do their work efficiently and easily. The employees desire opportunities where they can interact with each other and need space for taking breaks.

No matter what the purposes are for the visitors to come to Itasca State Park are, they all have certain expectations that must be fulfilled by the new interpretive center and other facilities near the Mississippi Headwaters. The new facility is extremely important because for most visitors, it will be the first stop that they make once they enter the park. It will be their first impression of the park and it must show them all of the opportunities that the park has to offer. It must be able to direct the visitors to the direction that they need to go and equip them with the necessary information about the adventures that they are about to participate in.

Spatial Requirements

Interpretive/Visitor Center:

Lobby/Information Area	600 SF
Interpretive/Display Area	2,000 SF
Outdoor Exhibition/Interpretive Area	*3,000 SF*
Archive Area	600 SF
Gift Shop	2,000 SF
Multi-use Space	2,400 SF
Office/Administrative Space	400 SF
Outdoor Theater	*800 SF*
Theater Dressing Room and Storage	800 SF
Storage/Loading Dock	800 SF
Restrooms (2 @ 400 SF)	800 SF
Staff Area/Break Room	300 SF
Mechanical/Electrical/Circulation Space (Approximately 25% of gross building total)	2,675 SF
Total Interpretive/Visitor Center Area:	**13,375 SF**
Adjacent Outdoor Area:	***3,800 SF***

Hotel/Restaurant:

Lobby/Check-in Area	400 SF
Lounge	600 SF
Hotel Rooms	8,400 SF
10 rooms with 1 bed @ 320 SF	*3,200 SF*
8 rooms with 2 beds@ 400 SF	*3,200 SF*
4 rooms with 2 beds and a couch @ 500 SF	*2,000 SF*
Outdoor Deck with Hot Tub	*900 SF*
Office/Administrative Space (2 @ 180 SF)	360 SF
Workspace	200 SF
Restaurant Reception	400 SF
Restaurant Dining Area	2,000 SF
Outdoor Dining Terrace	*1,200 SF*
Kitchen/Food Preparation	1,400 SF
Food Storage	200 SF
Cooler	180 SF
Laundry Facilities	240 SF
Restrooms (2 @ 250 SF)	500 SF
Staff Area/Break Room	400 SF
Mechanical/Electrical/Circulation Space (Approximately 25% of gross building total)	3820 SF
Total Hotel/Restaurant Area:	**19,100 SF**
Adjacent Outdoor Area:	***2,100 SF***

Total Spatial Summary:

Total Building Area	32,475 SF
Total Outdoor Area	5,900 SF
Total Parking	94,500 SF
Total Area	**132,875 SF**

Lobby/Information Area

The reception area is very important because it will be the first impression that the visitors have of the facility. It will be used by the visitors to gather information and to direct them throughout the facility.

The lobby must link all of the major spaces together and make them visible to the visitors. Within this space, there will be a small information desk which is staffed with one employee who can answer the visitors' questions and direct them to where they want to go. There will be an area set aside where visitors can find brochures, maps, and other informational literature about the park and the surrounding area. The lobby must be an open space that leads to the interpretive area.

The lobby area will have exposed timber trusses that continue on into the interpretive area. Daylighting strategies will be employed to assure sufficient lighting as well as to create a warm and inviting environment in this area.

Gift Shop

The gift shop will be used by the visitors of the park to buy souvenirs, educational materials, snacks, and other merchandise. The majority of the customers will visit the gift shop either before or after they visit the headwaters and experience the interpretive center.

The gift shop must be extremely visible from the main lobby. There is to be a clerk counter near the entrance of the gift shop staffed with personnel to check-out merchandise as well as to assist individuals in finding what they are looking for. There also is to be a small storage area within the gift shop to store small amounts of merchandise.

Interpretive/Display Area

The park guests will typically visit the interpretive center either before or after they visit the Mississippi Headwaters. They study the exhibits to gain an understanding and appreciation of the history of the park and all of the opportunities that it currently has to offer. There will be both cultural and natural displays emphasizing the Native American influence in the area, the discovery of the Mississippi Headwaters, the ecology of the area, as well as displays that illustrate the sustainable strategies that will be incorporated into the design of the new facility.

This interpretive area will be filled with displays, but there must be sufficient room for the visitors to circulate between the exhibits. This space is located directly off of the main lobby and also has an adjacent outdoor display area. There must be a connection between the indoor and outdoor exhibition areas. This space must be open to allow for flexibility if exhibits are moved or new displays are brought in, yet the space must feel intimate so that the observers can feel a connection with the displays.

Large exposed timber trusses will allow for the interpretive are to be very open to allow for flexibility within the space. Adjustable lighting will be used in this space so the lights can be directed in a certain direction toward a display. This will allow for the space to feel more intimate while still allowing adequate lighting for viewing the displays. Natural light must be controlled so that the displays are not damaged by the sunlight.

Outdoor Exhibition/Interpretive Area

The outdoor exhibition space will be an extension of the interior interpretive area. Here is where the visitors can take their time to look over larger exhibits or sit and contemplate what they are observing. Visitors that are coming from the Mississippi Headwaters can be greeted by the outdoor displays and from there can continue into the interpretive area and the rest of the visitor center.

The outdoor exhibition space will be located directly off of the interior interpretive area and will include large displays that are not adversely affected by the elements. Much of this area will have a shelter above it, but some of it will be completely open. There will be benches within this space for people sit and relax as they are wandering through the exhibits.

The outdoor interpretive area will be composed of stone pavers with the shelter being built out of timber using a similar type of construction that is used in many of the picnic shelters that are in the park. This are will be surrounded by trees and other vegetation and will include planters within the space.

Archive Area

Historic collections about the park, such as photographs, documents, books, and other materials that need to be preserved, but are not to be on display are to be stored in this room. This material is to be accessible to researchers and historians with the help of the visitor center staff. Though this space is considered an extension of the interpretive center, his space is not accessible to the general public without the assistance of the visitor center staff.

The archive room does not need to be visible from the main public spaces, but potential users must be aware that this space exists. The collections must be organized within a detailed filing system in order to track down the information that is being researched. Using shelves and filing cabinets, all of the archives will be labeled and the information about them will be stored on a computer in the room. There will also be a small workspace in the room with a table and chairs.

It is not necessary for this space to have access to natural light and actually is not desirable because it could deteriorate the collections.

Multi-use Space (Classroom/Conference Area)

This space will be used as meeting rooms and classrooms for events sponsored by the park. Outside individuals and organizations will also be able to rent this space out for receptions, small conferences, and seminars.

This space must be easily for the public to locate. This space will have adjustable partitions in order to arrange flexible room configurations depending on the event that is taking place. This space will be equipped with a projector and screen along with moveable chairs and tables. Within this space will be an area for table and chair storage.

This space will have access to natural light and views to the outside with large window. The windows must not allow the users of the classroom to be distracted by the outdoor activity so the windows must be located above someone's eye level while seated.

Office/Administrative Space

This office is for the curator of the interpretive center and the rest of the visitor center. It is to be concealed from the public but be accessible to the employees of the visitor center. The office will contain and desk and chairs for the curator along with four additional chairs for small meetings. There will also be filing cabinets for storing important documents pertaining to the operation of the visitor center. This space must have access to natural light and ventilation.

Storage/Loading Dock

The storage space will be adjacent to a loading dock where inventory for the gift shop will be received along with new exhibits that are to be displayed in the interpretive center. This storage space is only for temporary storage and must be located near both the gift shop and the exhibit area but must be concealed from the public.

Outdoor Theater

This outdoor space will act as an amphitheater where actors will reenact events from the parks history. It will be an area where tourists can stop and take a break to take in a short show. The outdoor theater is an extension of the interpretive area which must be noticeable to the tourists who are traveling through and around the interpretive center. Demonstrations will be performed throughout the course of the day during summer when the tourism season is at its peak. The amphitheater will have fixed seating for approximately 30 to 40 spectators with standing room behind for additional viewers. The small stage could potentially use the forest as a backdrop.

Theater Dressing Room and Storage

The theater dressing room is to be concealed from the public, but must be located in close proximity to the outdoor theater. The primary purpose for this room is for the performers to prepare for the short acts, but there will also be an area for costume and prop storage. This area must be able to hold up to eight performers at a time. This area will be separated into two changing areas and have a larger preparation area with a countertop and sinks and a large mirror. There will also be a small private toilet room inside this space. The small storage area will be made up of shelves and closets.

Staff Area/Break Room

In addition for employees to be able to take a break and get a snack, the staff area is to allow for an area for the staff members to interact with each other. This area will be equipped with a table, chairs, couch, small refrigerator, microwave, sink, and a countertop. This area must be concealed from the public. It would be ideal for this space to have access to natural light and outdoor views.

Restrooms

There will be each a men's and a women's restroom that must be easily visible from the main entrance. The restrooms must be able to support not only the users of the interpretive center, but also the visitors that are passing by the center on their way to the Mississippi Headwaters from the parking lot.

The restrooms do not need to be located next to an exterior wall for views or sunlight, but they need to have some way to access to natural ventilation in order to continually circulate fresh air through them. The restroom will have low-flow plumbing fixtures to reduce the amount of water consumed by the facility.

Mechanical/Electrical/Circulation Space

These support spaces will account for approximately 25% of the total building area. An attempt will be made to reduce the amount of space that is allocated to these functions. The amount of space allocated for mechanical space will be reduced by implementing passive thermal strategies. The amount of space allocated to circulation will be minimized by using efficient space planning.

LODGE & RESTAURANT

Lobby/Check-in Area

The lobby must be an inviting space which welcomes the visitors of the lodge and the restaurant patrons. The lobby must connect the restaurant to the lodge with the reception desk for checking into and out of the lodge in the lobby. The reception desk will be staffed by either one or two employees, depending on how busy it is at the time. There must be some seating in the lobby for guests if they must wait to check in or out. There will be an adjacent lounge off of the lobby which can be used as an additional waiting space during very busy times.

The lobby along with the lounge will be open to the second floor with the rooms surrounding the open space. The rooms where possible will be loft style overlooking the lobby and lounge.

Lounge

The lounge will serve as a place for the guests staying at the lodge to interact with each other, play games, or read next to the fireplace. The lounge will allow for the guests to meet other guests as well as spend quality time with the people that they already know. The lounge will be used the most in the evenings and on days when the weather doesn't allow for outdoor activities.

The lounge will be connected to the lobby with no real distinct separation. It will be furnished with couches, tables, and chairs. There will be a stone fireplace that will act as the centerpiece of the lounge. The lounge should have access to outdoor views.

LODGE & RESTAURANT

Lodge Rooms

10 rooms with 1 bed
8 rooms with 2 beds
4 rooms with 2 beds and a couch

The rooms in the lodge will be loft style overlooking the lobby and lounge where possible. The lodge is to have an old-fashioned rustic lodge feel, but have all the necessary modern conveniences. There will be different room configurations in order to accommodate guests with different needs and wants. Each room will include a private bathroom, beds, desk, closet, and dresser. Some rooms will have couches that can be converted into an extra bed. The rooms on the second floor will have private outdoor balconies and there will also be a public deck with a hot tub for all of the guests to have access to.

Outdoor Deck with Hot Tub

There will be an outdoor deck with a hot tub that can be used by all of the guests that stay at the lodge. The deck must be secluded from all of the other public activities that will be happening near the lodge. The deck will be surrounded by patio chairs for the guests to have an outdoor area to interact.

Office/Administrative Space

There are to be two administrative offices, one for the restaurant manager and one for the lodge director. These offices must be adjacent to a workroom that will hold much of the office equipment. These should be hidden from the general public but must have access to natural light and ventilation.

Workspace

The workspace is to be adjacent to the administrative offices. It is to be equipped with a printer, fax machine, and table and chairs. There will also be a small area for storage. This area will be available for either the restaurant or lodge employees to use.

Restaurant Reception

The restaurant reception area is where the customers wait to be seated and where the cash register is located. There will be a host to direct the guests where to sit and a small area for the guests to sit while they wait to be seated.

Restaurant Dining Area

The dining area will be able to serve approximately 80 guests at one time. There will be different sized tables to serve groups of different sizes. The dining area will include an area set aside for private dining for larger groups that are visiting the park. The dining area must be adjacent to the restaurant reception area.

The restaurant dining area is to have large windows so that while the people are dining, they can view the surrounding natural environment. The dining area is to have an adjacent outdoor dining terrace.

Outdoor Dining Terrace

The outdoor dining terrace will be open during the peak season in the summer when the weather allows it to be. The outdoor dining area will have both an area that is sheltered and an area that is open. The terrace will be adjacent to the indoor dining area and will be surrounded by trees and other vegetation.

Kitchen/Food Preparation

The kitchen must be concealed from the public, but must be easily accessible to the dining areas for the servers to go back and forth. The kitchen must be equipped with ovens, grills, fryers, sinks, and food preparation surfaces. All surfaces must be durable and easy to clean.

LODGE & RESTAURANT

Food Storage and Cooler

There will be a food storage area located next to the kitchen. This area will be adjacent to a cooler that is used to store beverages and foods that need refrigeration. The food storage space and the cooler will have adjustable shelving for efficient use of space for storage. This space will have an adjacent loading dock and service entrance where the food is delivered. This loading dock will also be used for deliveries to the hotel so it must be close to the hotel service spaces as well.

Laundry Facilities

There are to be laundry facilities mostly for the lodge to use, but the restaurant will also have access to use them. There will be three washers and three dryers which will be stacked units in order to reduce the space requirements. There will also be space to store the linens that are used for the lodge bedding. This space should be hidden from the view of the lodge and restaurant guests.

Restrooms

There will be each a men's and a women's restroom that must be easily visible from the main entrance of the restaurant and the lobby of the lodge. The restrooms must be able to support both the restaurant as well as the public spaces within the lodge. This set of restrooms will not be as large as the ones in the visitor center because there will not be as many tourists passing through this area.

The restrooms do not need to be located next to an exterior wall for views or sunlight, but they need to have some way to access to natural ventilation in order to continually circulate fresh air through them. The restroom will have low-flow plumbing fixtures to reduce the amount of water consumed by the facility.

Staff Area/Break Room

This staff break room will be used by both the restaurant employees as well as the lodge employees. In addition to the staff members being able to take a break and get a snack, the staff area is to allow for an area for the employees to interact with each other. This area will be equipped with a table, chairs, couch, small refrigerator, microwave, sink, and a countertop. This area must be concealed from the public. It would be ideal for this space to have access to natural light and outdoor views.

Mechanical/Electrical/Circulation Space

These support spaces will account for approximately 25% of the total building area. An attempt will be made to reduce the amount of space that is allocated to these functions. The amount of space allocated for mechanical space will be reduced by implementing passive thermal strategies. The amount of space allocated to circulation will be minimized by using efficient space planning.

Parking

A large shared parking lot will serve everyone who uses the facility including all of the visitors and employees. The parking lot will be in the same location as the current parking area, except it will be redesigned in order to make it more efficient. This area will need approximately 300 parking spaces since the site is so close to the Mississippi Headwaters, additional visitors will use the parking lot and walk the trails to the headwaters and other trails. This means that the parking lot will require additional spaces beyond what are necessary for the new facilities. The majority of the parking stalls will be 9 feet wide by 18 feet deep, but there will also be some larger spaces that will be 10 feet wide by 19 feet deep. These larger stalls will be specially marked for larger vehicles. There will also be a row of larger spaces that are reserved for campers and buses. These spaces can also be used by smaller vehicles as an overflow area if the rest of the parking spaces are full. There will be 10 foot medians between each row of parking spaces to plant trees and other vegetation in. This will make it so that the parking lot will not look like a large open space in the middle of the forest and will help the visitors feel that they are still in a heavily wooded area. A parking lot this large will require 8 handicap parking spaces including one space for a handicap accessible van.

PARKING

Drawing inspiration from the historic architecture in the park, the facility will reflect the vernacular traditions that are appropriate in a rustic park setting. The facility must reflect nature through the use of materials and construction techniques. Regional materials that can be found within close proximity to the building site will be used when desirable. The use of stone and timber will be evident in the design although the structures will not be exact replicas of the historic buildings within the park. Common historic features in the architecture within the park, such as exposed timber trusses will be a common theme throughout the facility.

There are different approaches that can be taken on how to be responsive to the historic rustic architecture in the park. The new buildings could be duplications of the existing structures taking the form of log cabins. Another approach would be to design buildings with more contemporary materials and techniques and redefine a new form a park architecture that expresses its own period. The best approach is to combine the previous responses to create buildings that take the past traditions of park architecture and integrate them into a modern design that is suitable in a park setting.

While looking at the existing rustic style architecture in the park as a model, contemporary technologies and techniques cannot be disregarded. Many of the past construction practices are no longer practical or desirable. Many improvements in the construction industry have been made since the time when these park structures were constructed. Even though there will be modifications in the design of this new facility, some of the characteristics of these structures will be evident, such as well crafted details and the use of materials that can be found in the region.

The structural systems that would be appropriate for this facility could be either bearing wall construction or post and beam assemblies as long as they use the right materials. Heavy timber framing would be an appropriate method to use for post and beam construction. Stone bearing walls could also be an option in this facility. Long-span structural systems may not be appropriate or necessary for this facility. The buildings will take the form of smaller masses that are connected in order for the building not to seem obtrusive in the park.

Sustainable design principles will be incorporated throughout the whole design of the facility. This corresponds well with the use of regional materials because of the lower embodied energy that is required due to transportation costs. Timber is a renewable resource and must come from certified forests to be used in this project. Stone is a durable material that requires little maintenance and is readily available. These are all traits that are desirable in the materials that are used within the facility.

The materials that are used in this facility must be durable and low maintenance. Materials with low embodied energy that do not adversely affect the environment during the process of extracting, refining, manufacturing, and installing will be used. Renewable and recycled materials will be used along with materials that can easily be recycled. In many instances, structure will be left exposed which will reduce the amount of materials that need to be used.

Sustainability will be considered in every aspect of the design from the site design to the selection of building materials and conserving energy and other resources. For the site design, the objective will be to try to minimize the impact of the facility of the natural environment. This will be done by minimizing the amount of trees that need to be removed as well as reducing the amount of large excavations from entrance roads and parking.

Implementing a green roof system will be considered in order for the buildings to fit into the natural surroundings. Green roofs have many environmentally beneficial advantages as well as economical advantages. Green roofs have little long term maintenance and typically have a lower life-time cost.

Strategies will be implemented to reduce the amount of water consumption and air pollution. Low-flow plumbing fixtures will be used to reduce the amount of water consumption. Materials that emit toxic or harmful gases will be avoided and instead sustainable materials such as particle board from agricultural residue will be used instead. Operable windows will be used throughout the facility to allow natural ventilation for fresh air as well as for cooling purposes.

Passive heating and cooling strategies will be implemented into the facility with active HVAC systems supplementing the passive systems. Large operable windows will be used to allow for natural ventilation and to allow sunlight to enter the building to heat the buildings when necessary. The facility will use a highly insulated building envelop with low "E" glazed windows. Daylighting strategies will also be implemented into the design to reduce the amount of energy that is consumed by the facility.

Design Process

Headwaters Interpretive Center

Site Analysis & Design Directives

Site Design & Masterplanning

Space-planning Relationships & Graphic Expression of Design Concept

Study of Structural Patterns

Study Relationships in Vertical Section

Exterior Elevations & Initial Material Studies

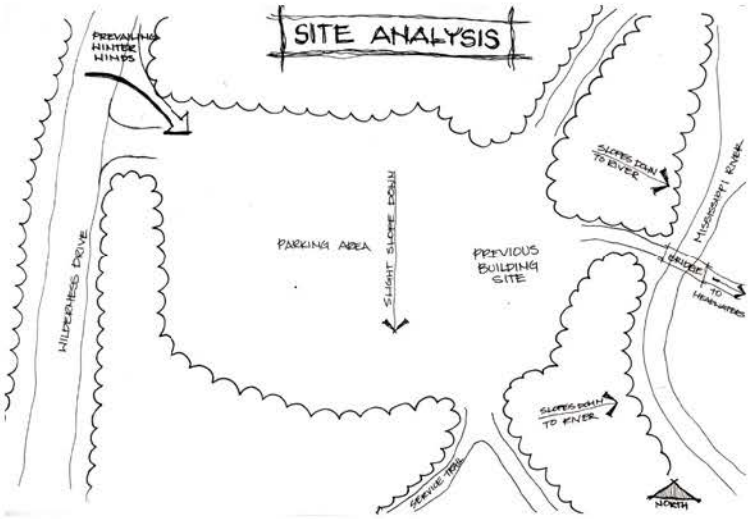
Perspective Sections

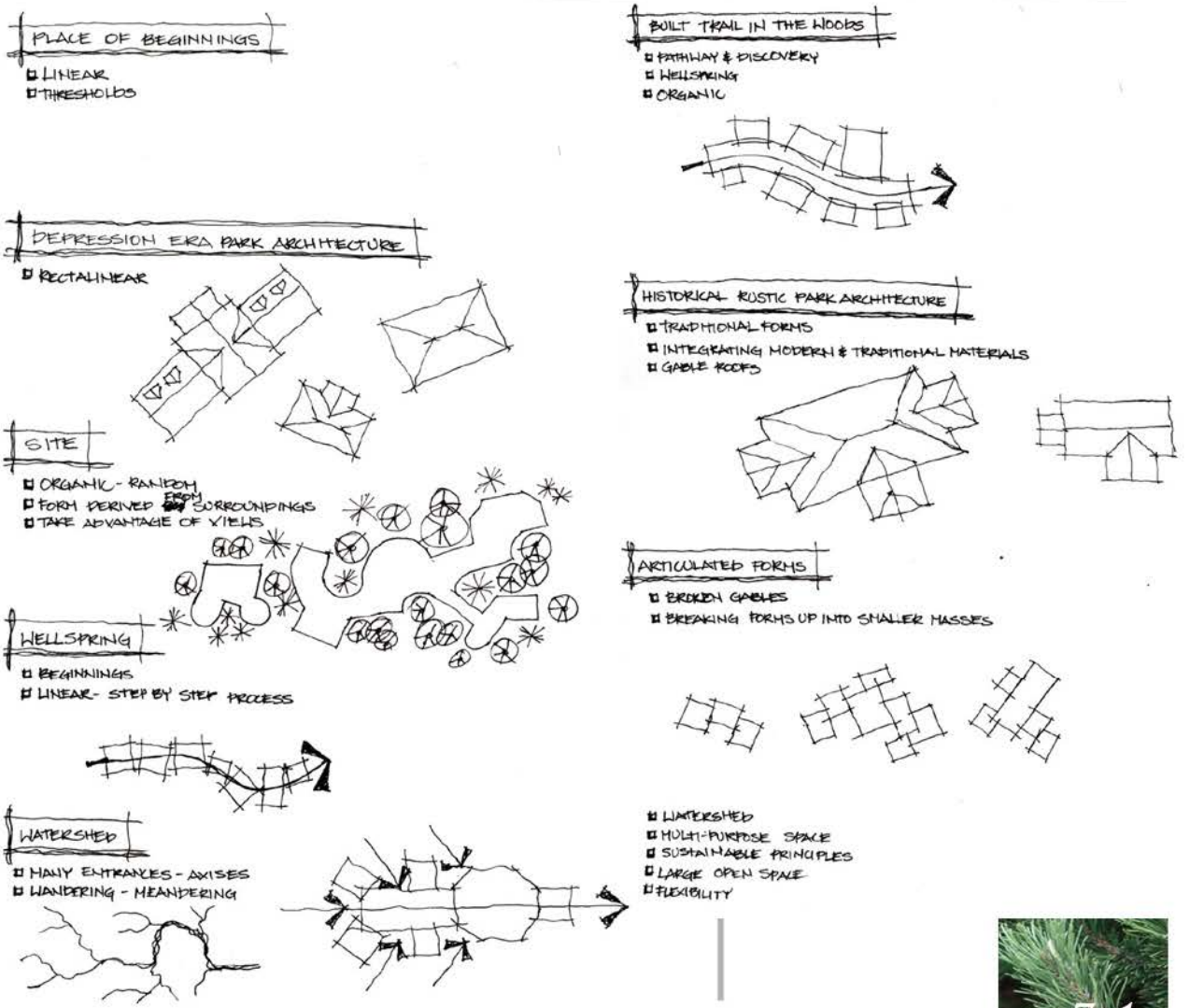
Wall Sections & Detailed Material Studies

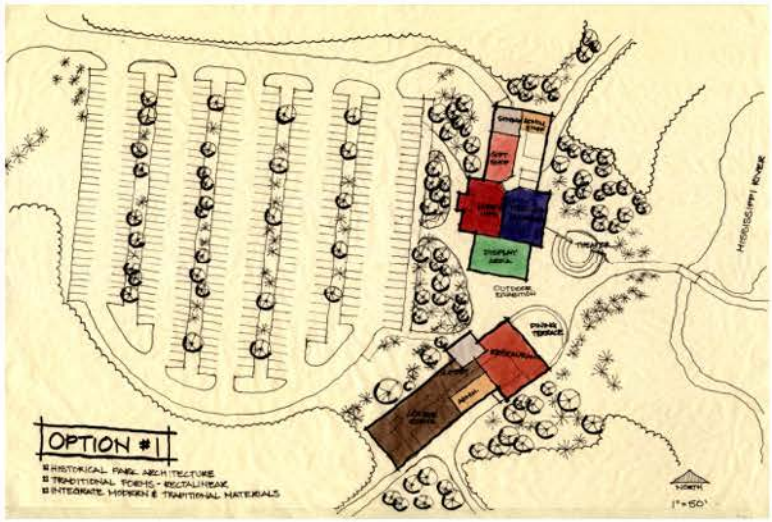
DESIGN PROCESS

Site Analysis and Design Directives

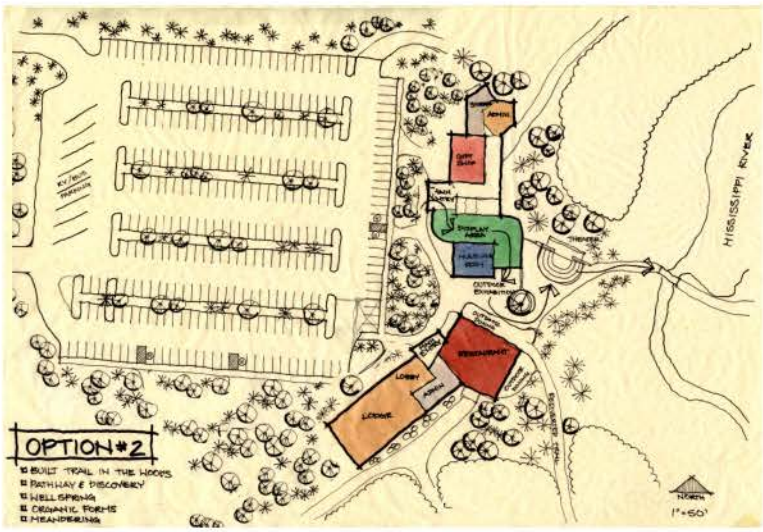
Design Process Documentation



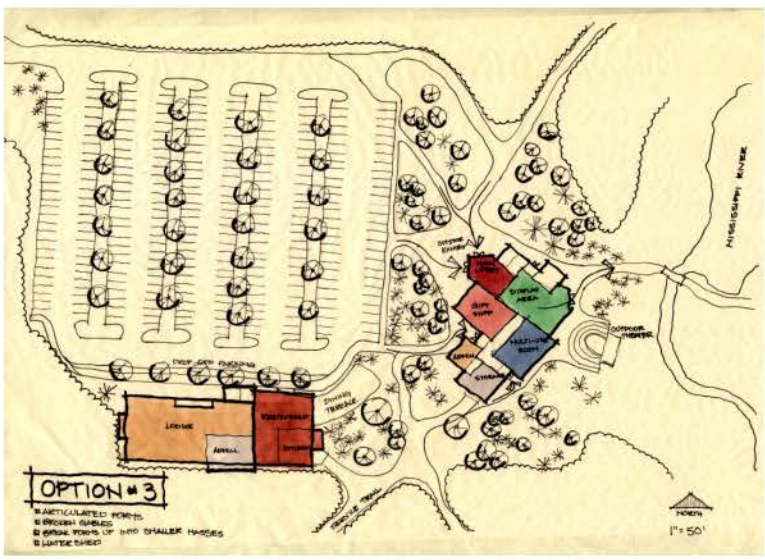




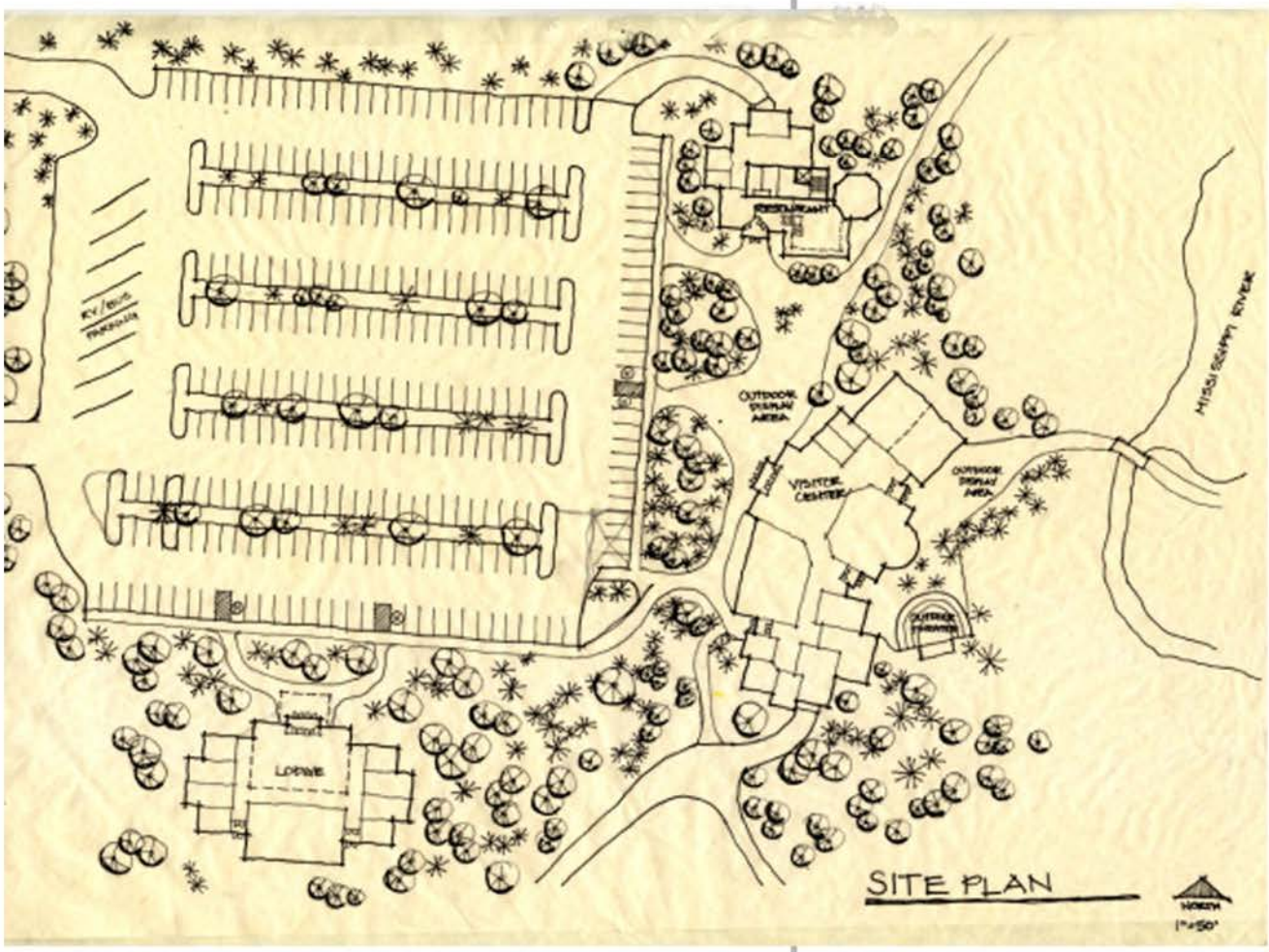
Site Alternative #1



Site Alternative #2

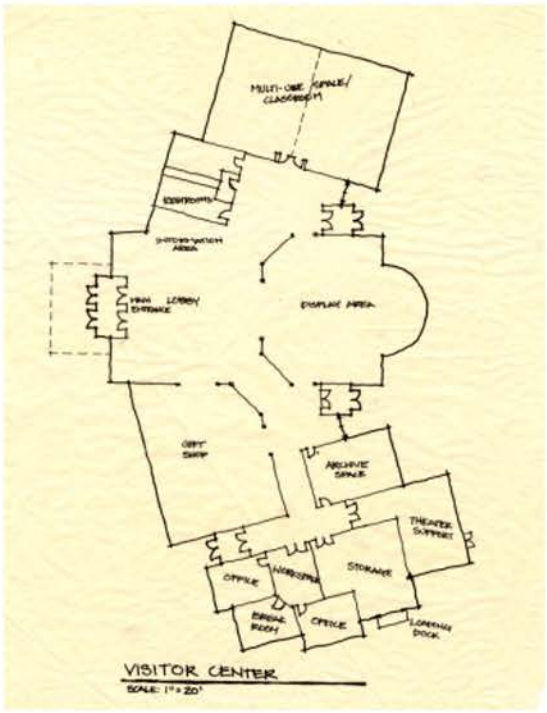


Site Alternative #3

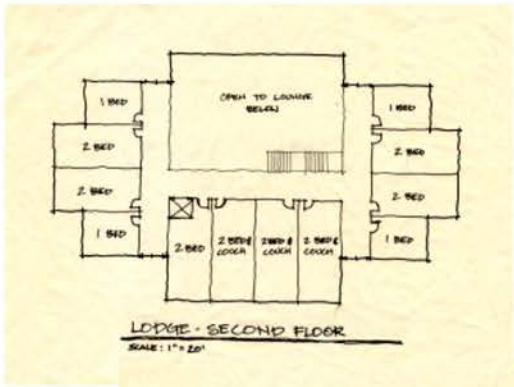


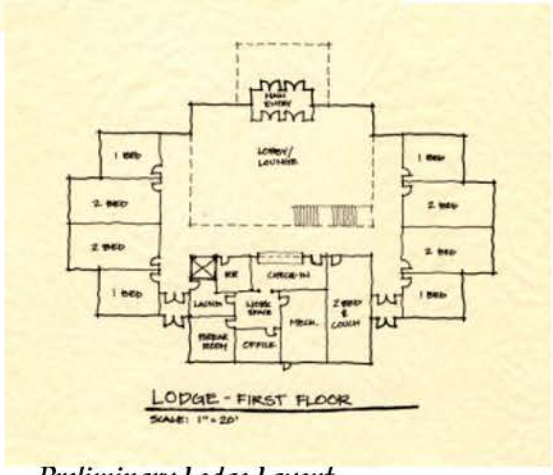
Final Site Plan

Space Planning Relationships

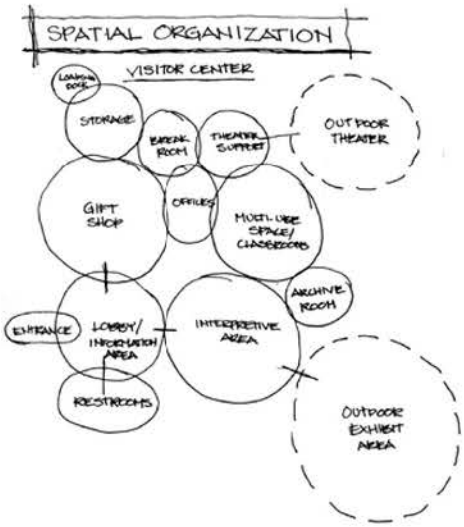


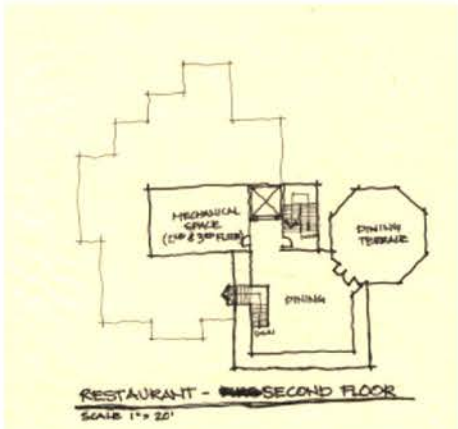
Preliminary Visitor Center Layout

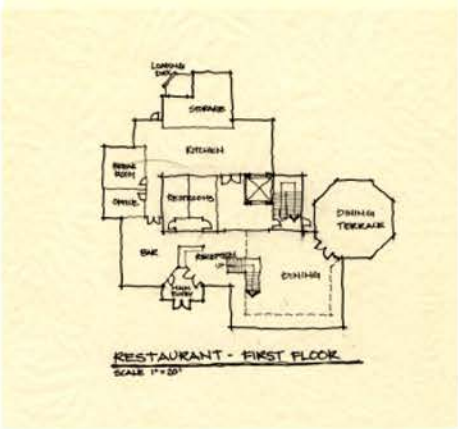




Preliminary Lodge Layout

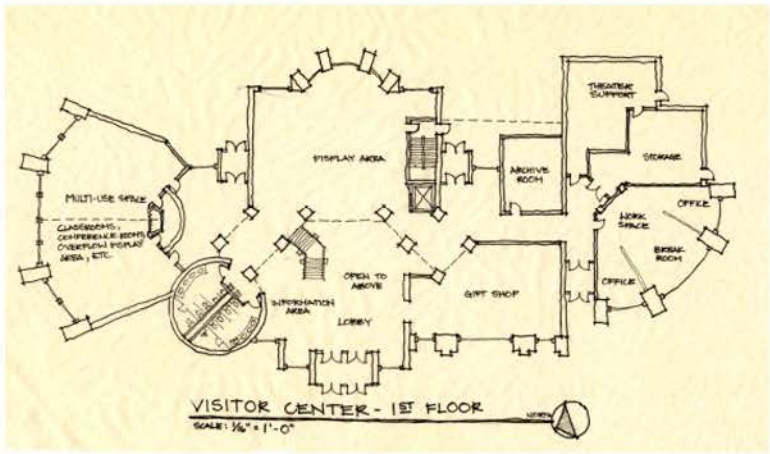




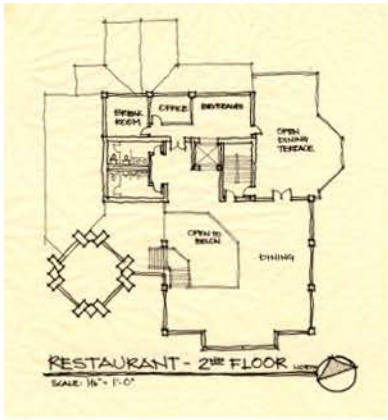


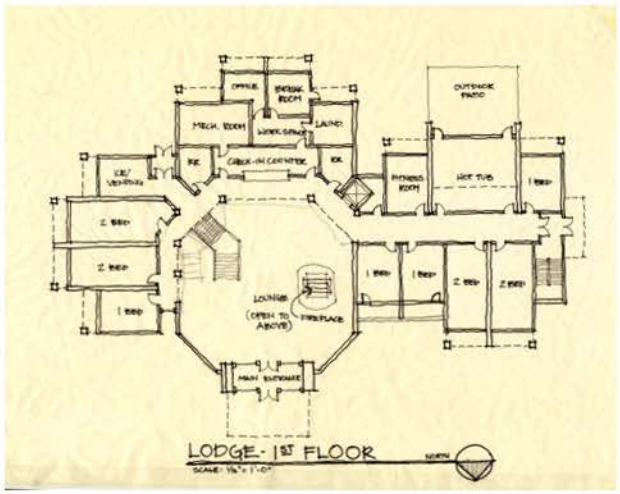
Preliminary Restaurant Layout

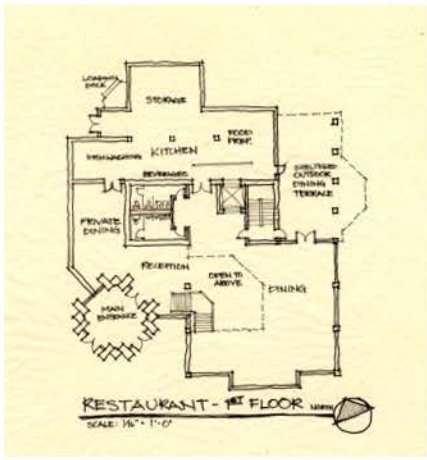
Developed Floor Plans



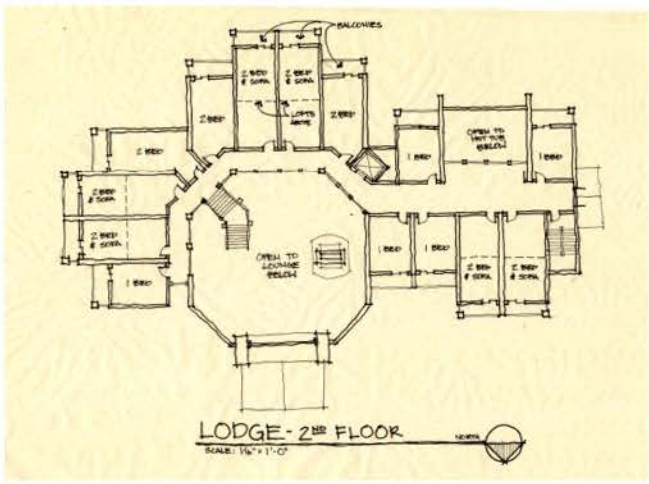
Visitor Center Floor Plan





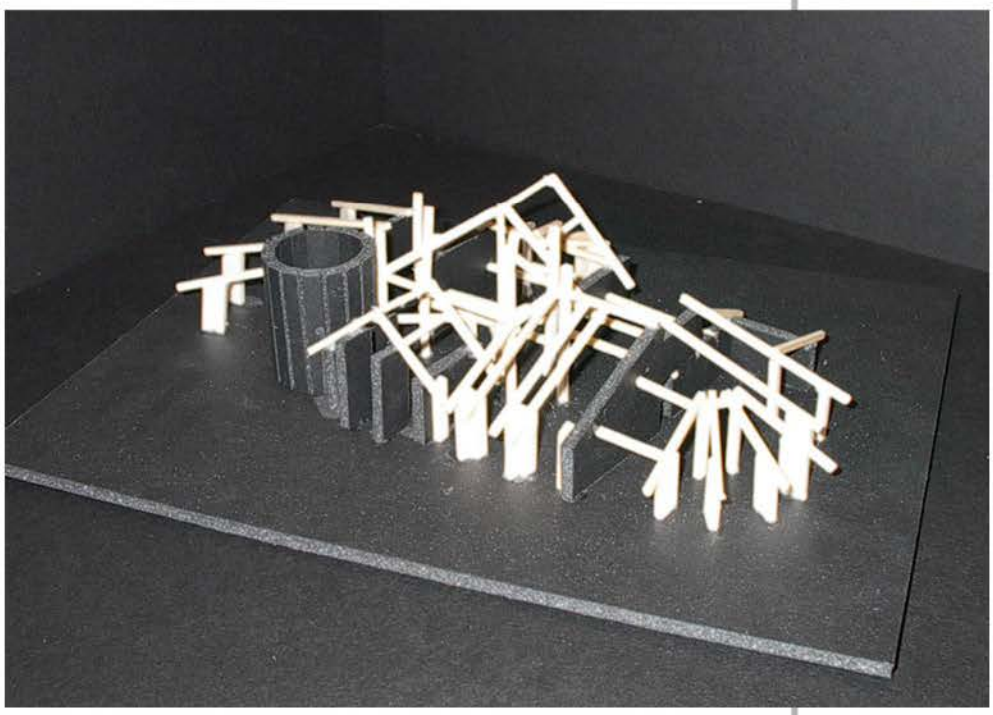


Restaurant Floor Plans

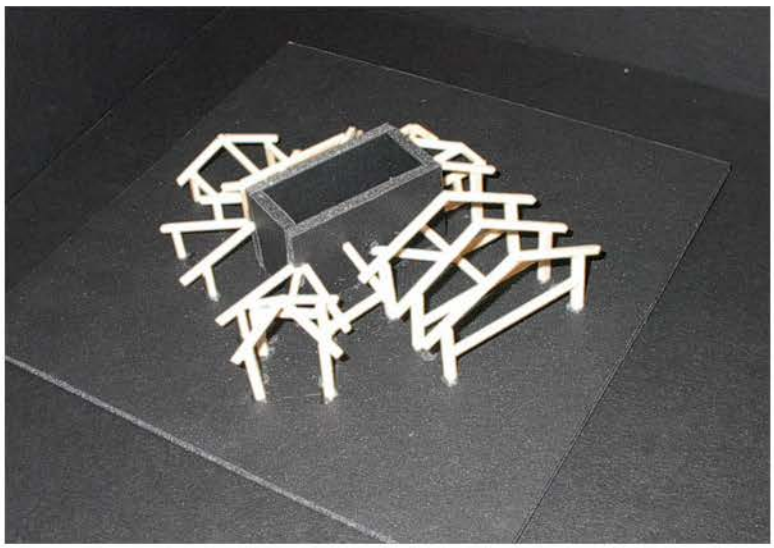


Lodge Floor Plans

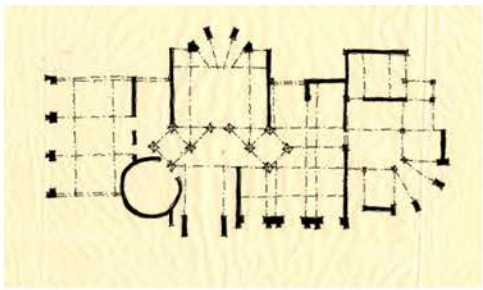
Study of Structural Patterns



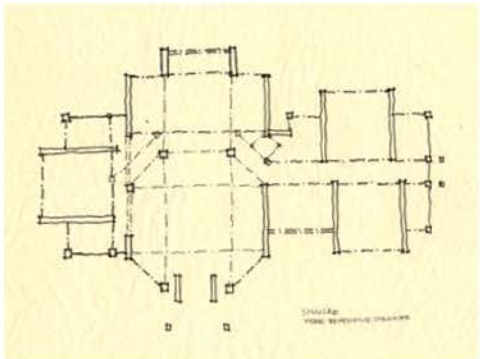
Study Model of the Visitor Center



Study Model of the Restaurant



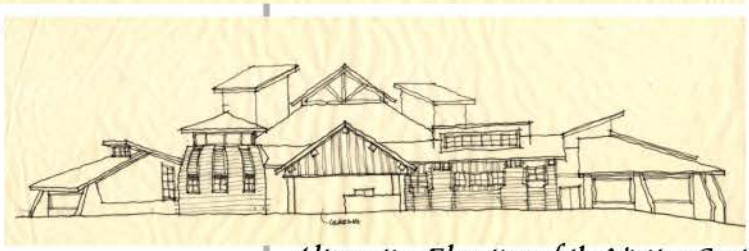
Structural Diagram of the Visitor Center



Structural Diagram of the Lodge

Exterior Elevations

Initial Exterior Elevation of the Visitor Center



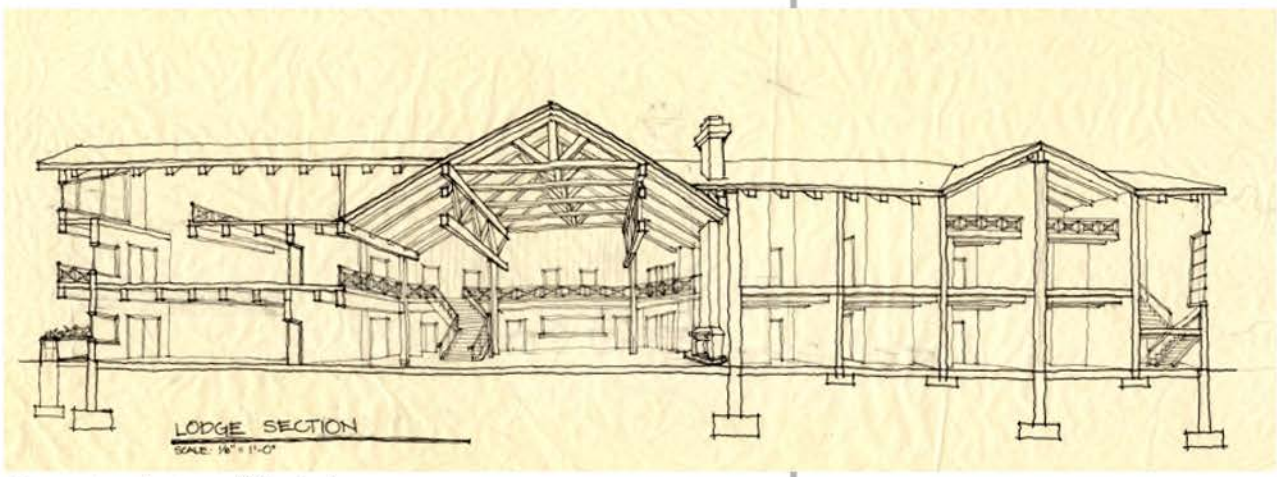
Alternative Elevation of the Visitor Center

Exterior Elevation of the Lodge

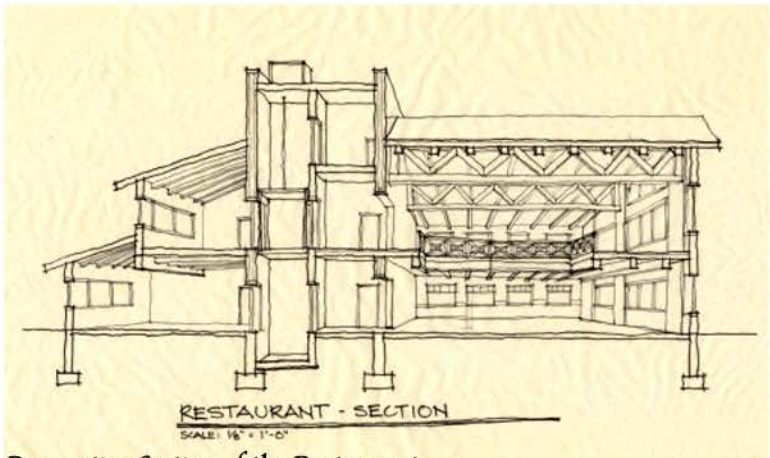
Initial Exterior Elevation of the Restaurant

Perspective Sections

Perspective Section of the Visitor Center

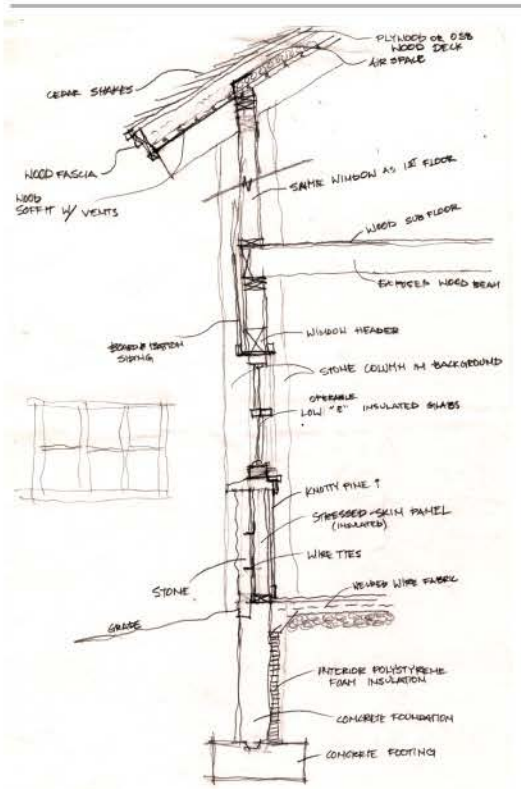


Perspective Section of the Lodge

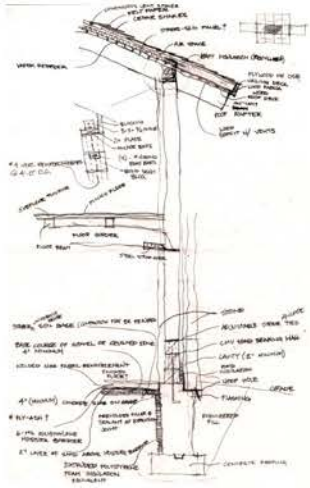


Perspective Section of the Restaurant

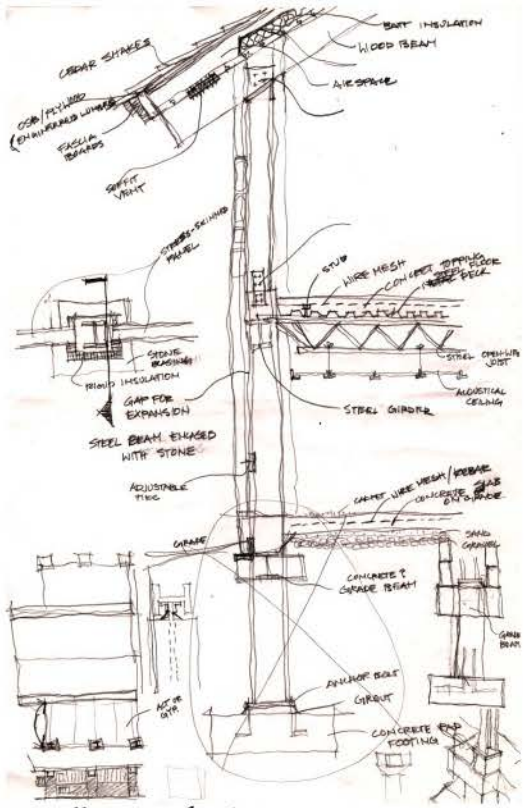
Wall Sections



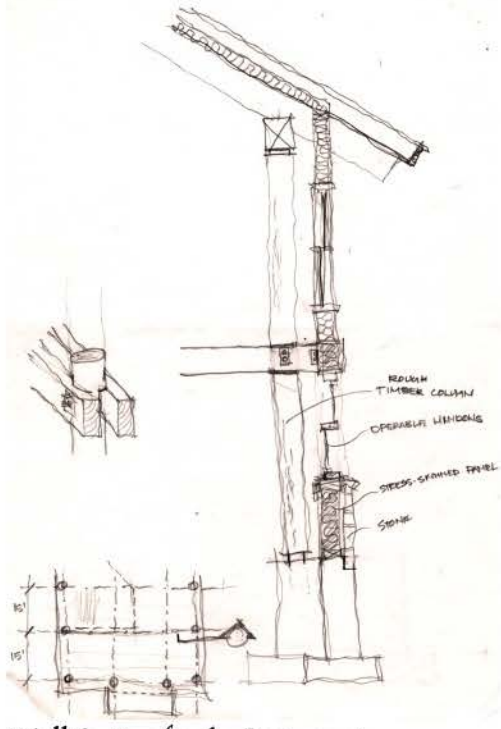
Wall Section for the Visitor Center



Initial Wall Section for the Visitor Center



Wall Section for the Lodge



Wall Section for the Restaurant

Design Solution

Headwaters
Interpretive Center

Final Presentation Boards

Project Masterplan

Interpretive Center Drawings

Lodge Drawings

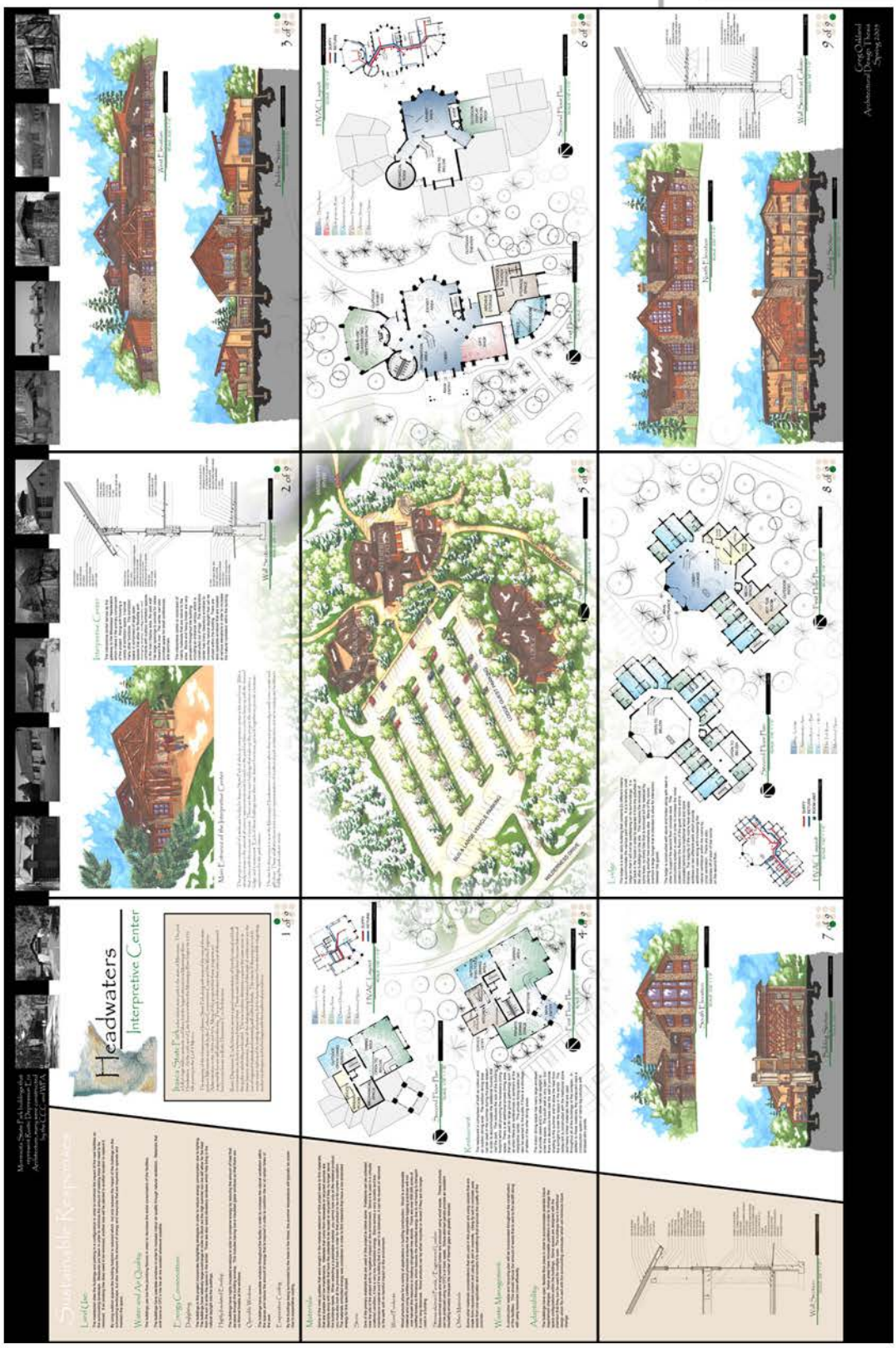
Restaurant Drawings

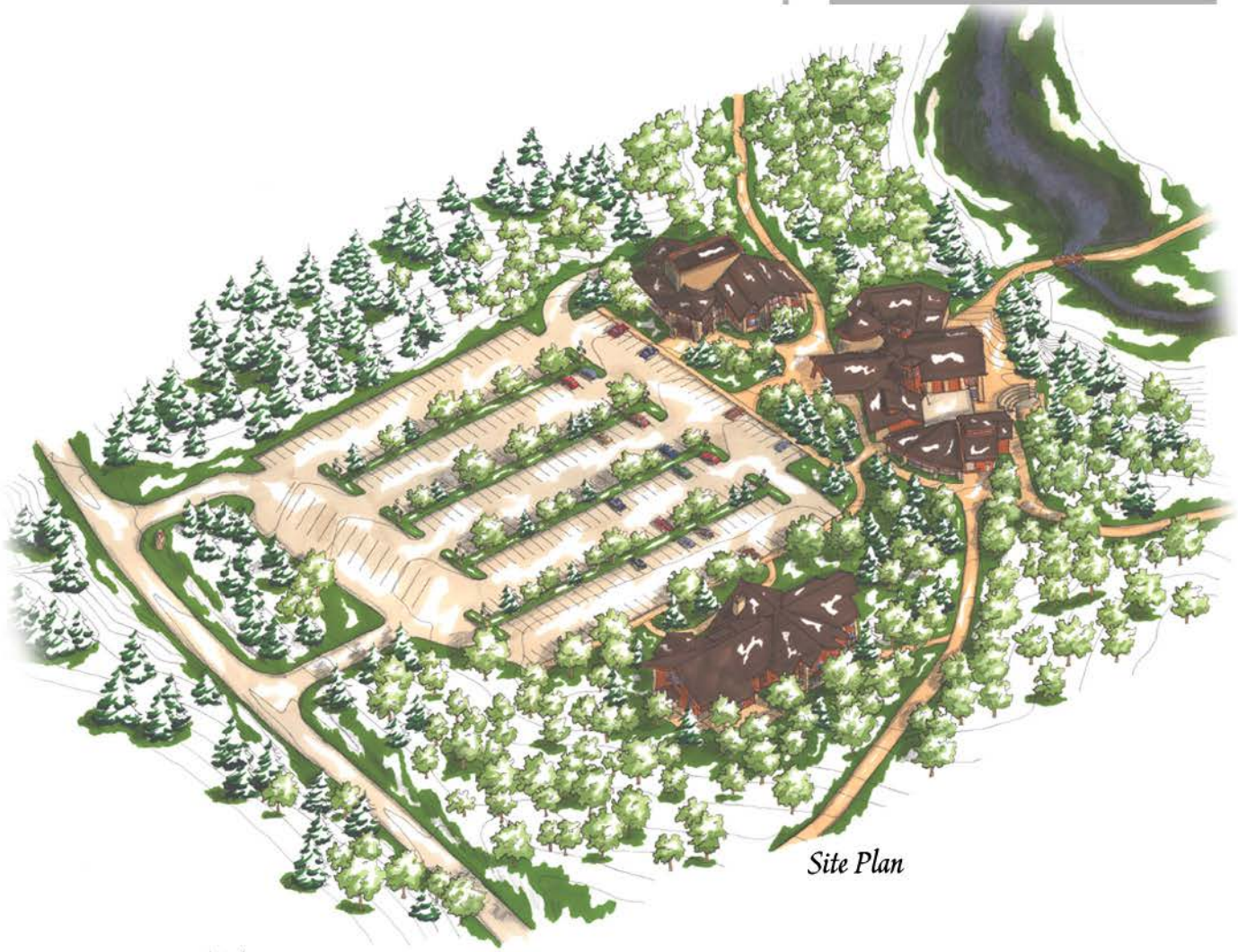
Structural Model

DESIGN SOLUTION

Final Presentation Boards

Design Solution





Site Plan

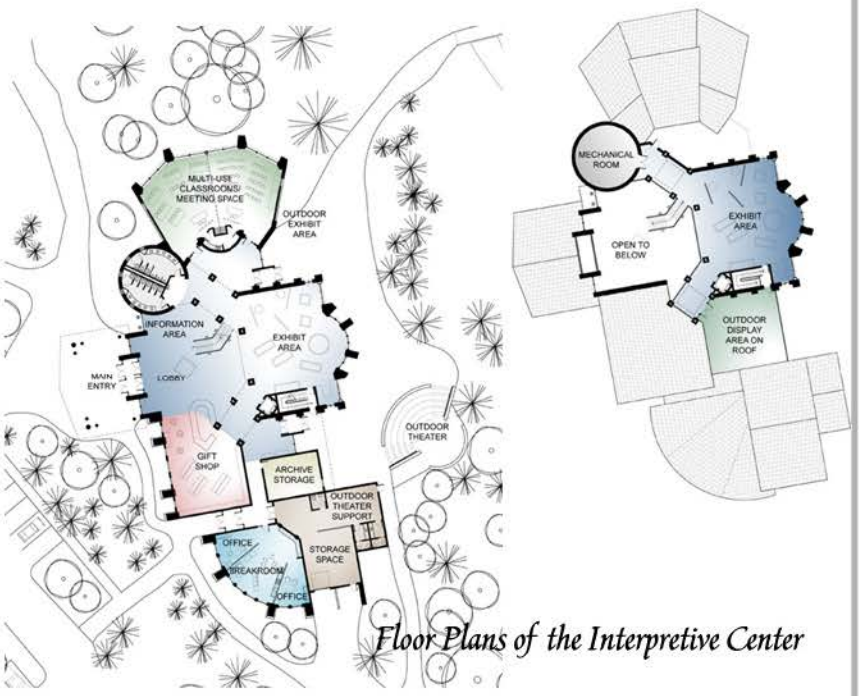
Main Entrance of the Interpretive Center

Interpretive Center

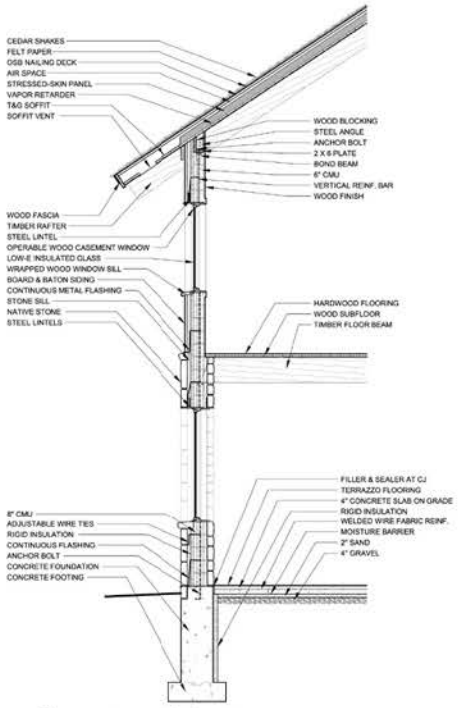
Design Solution

West Elevation of the Interpretive Center

Perspective Section of the Interpretive Center



Floor Plans of the Interpretive Center

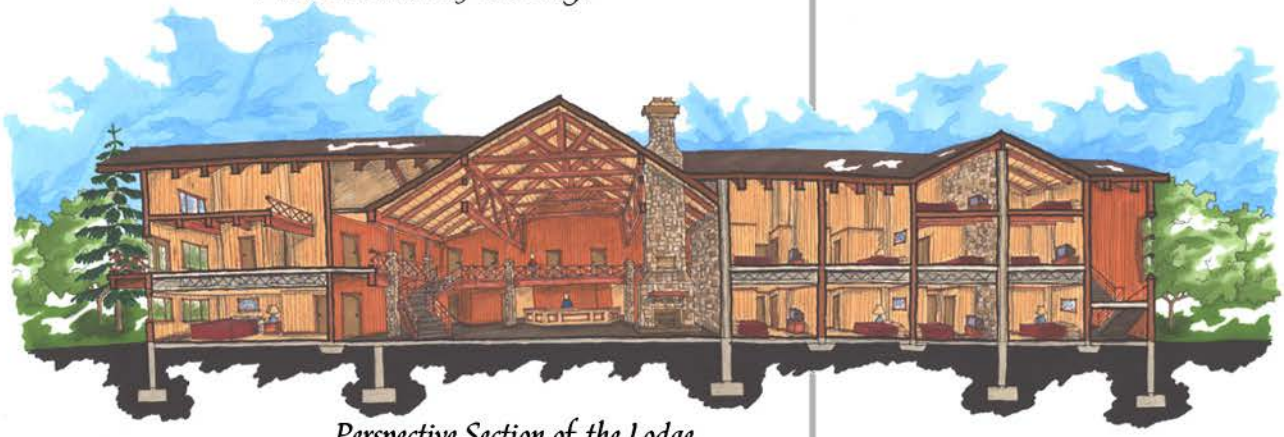


Wall Section of the Interpretive Center

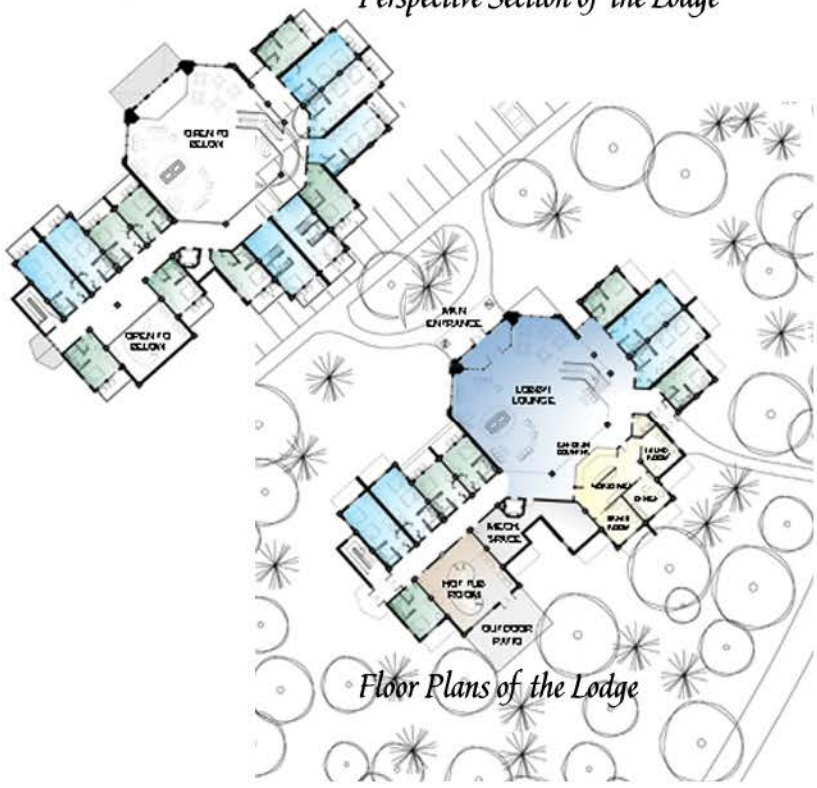
Lodge

Design Solution

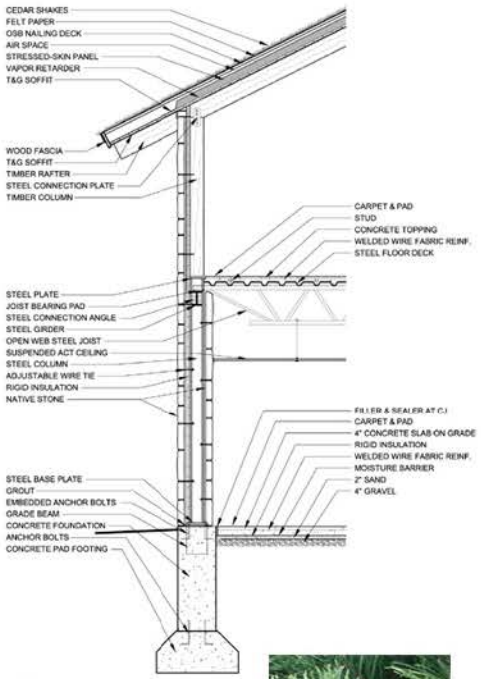
North Elevation of the Lodge



Perspective Section of the Lodge



Floor Plans of the Lodge



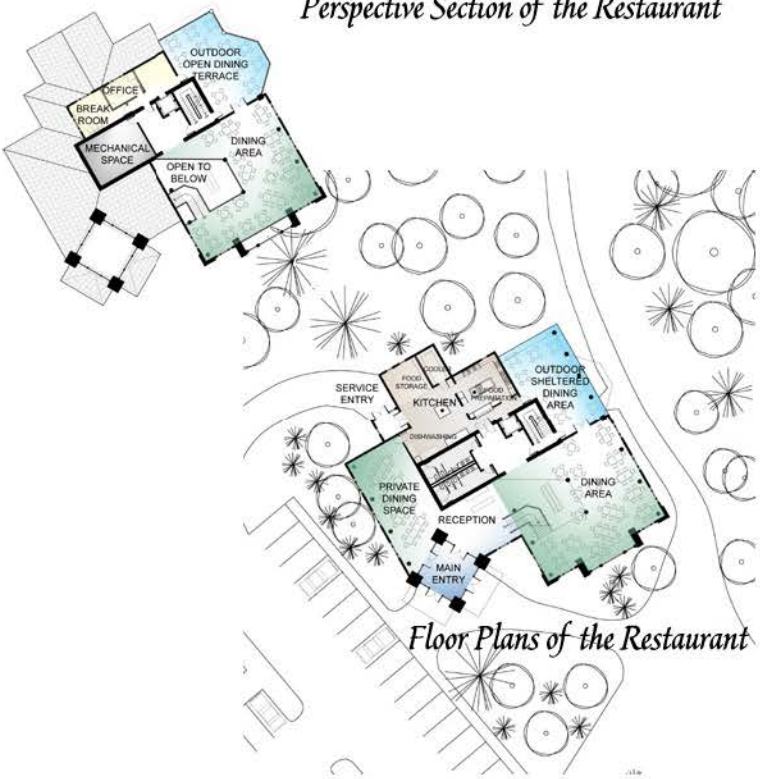
Wall Section of the Lodge

Restaurant

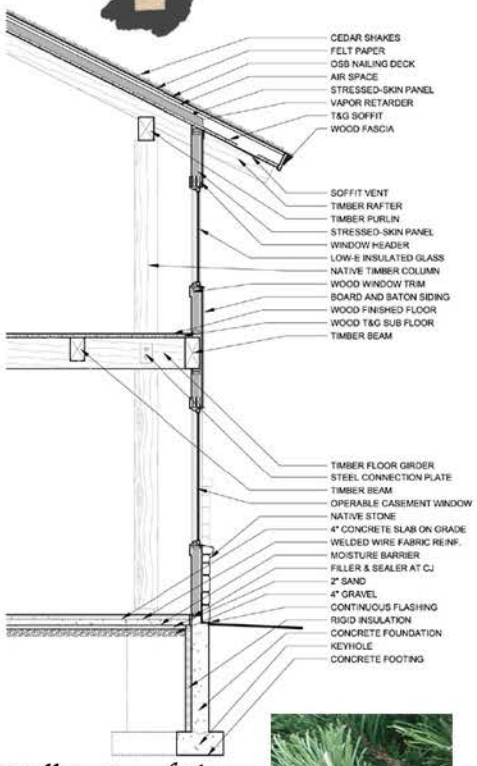
Design Solution

South Elevation of the Restaurant

Perspective Section of the Restaurant

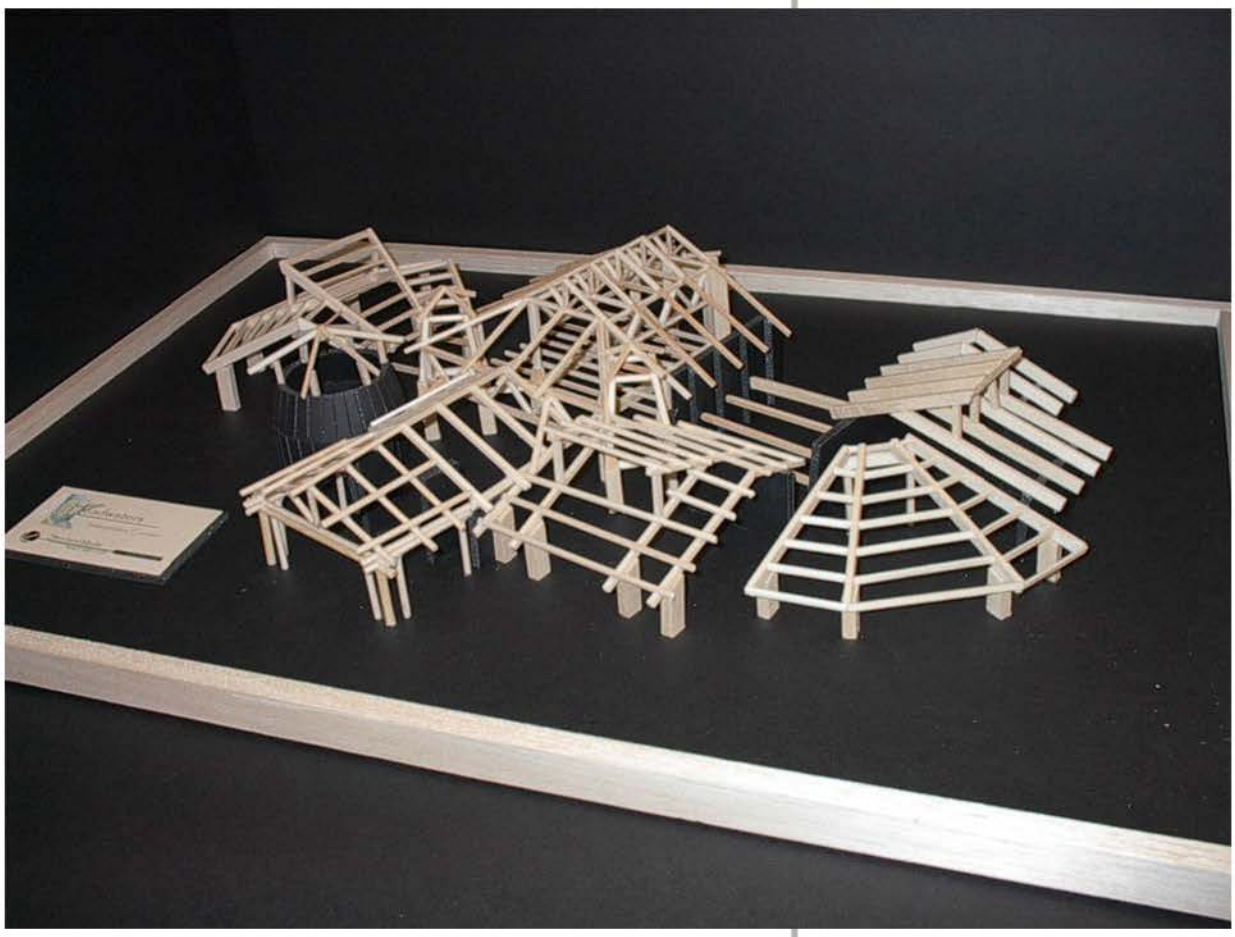


Floor Plans of the Restaurant



Wall Section of the Restaurant

Structural Model



Structural Model of the Visitor Center

Appendix

APPENDIX

Climate Information

Itasca State Park

Geographic Coordinates

47° North Latitude

95° West Longitude

Average Maximum Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	-9.6	-5.1	1.8	10.8	18.8	24.0	26.8	25.5	19.0	12.3	1.7	-7.1	9.9
°F	14.7	22.8	35.2	51.4	65.8	75.2	80.2	77.9	66.2	54.1	35.1	19.2	49.8

Average Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	-16.4	-12.5	-4.9	3.8	11.3	16.8	19.7	18.3	12.4	6.0	-3.1	-12.7	3.2
°F	2.5	9.5	23.2	38.8	52.3	62.2	67.5	64.9	54.3	42.8	26.4	9.1	37.8

Average Minimum Temperature

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	-23.2	-19.9	-11.8	-3.0	4.0	9.7	12.5	11.2	5.7	-0.2	-8.1	-18.4	-3.4
°F	-9.7	-3.7	10.8	26.6	39.2	49.5	54.5	52.2	42.3	31.6	17.4	-1.0	25.9

Heating Degree Days

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	1078	863	721	433	225	74	20	50	180	380	645	964	5636
°F	1940	1553	1298	779	405	133	36	90	324	684	1161	1735	10145

Cooling Degree Days

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
°C	0	0	0	0	10	31	63	52	3	0	0	0	160
°F	0	0	0	0	18	56	113	94	5	0	0	0	288

Average Rainfall

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
mm	20.3	16.0	31.0	55.9	72.2	105.8	87.2	88.3	65.1	48.7	30.4	22.9	644.9
inches	0.8	0.6	1.2	2.2	2.8	4.2	3.4	3.5	2.6	1.9	1.2	0.9	25.4

Average Monthly Snowfall
(Includes Ice Pellets - Total in inches)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
9.6	6.1	7.5	3.2	0.1	T	0.0	T	0.0	0.6	6.1	7.2	40.4

Mean Number of Days with Precipitation 0.01 inch or More

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
9	7	8	8	10	11	10	9	8	7	6	8	100

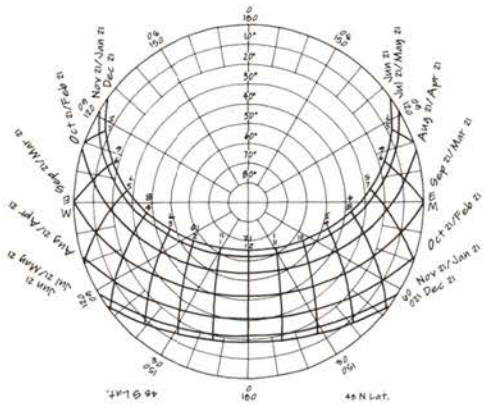


Figure A.1. Sun Path Diagram, 48° Latitude

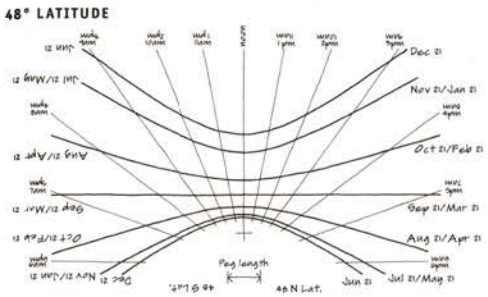


Figure A.2. Sundial, 48° Latitude

Average Wind Speed

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
mph	12.6	12.4	13.1	13.6	12.9	11.6	10.5	11.0	11.8	12.5	12.8	12.2	12.2

Maximum Wind Speed

Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Annual	
DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP	DR	SP
34	49	33	51	34	45	34	43	24	45	8	41	30	46	29	40	31	45	33	49	33	46	30	45	35	49

Cloudiness - Mean number of days
(Clear, Partly Cloudy, Cloudy)

Jan			Feb			Mar			Apr			May			Jun		
CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD
7	7	17	6	7	15	5	9	17	6	9	15	7	10	14	6	11	13

Jul			Aug			Sep			Oct			Nov			Dec			Annual		
CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD	CL	PC	CD
10	13	8	10	12	9	9	9	12	9	8	14	5	6	18	6	7	18	88	109	168

Percent Possible Sunshine
Morning (M), Afternoon (A)

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
50	56	58	60	61	62	71	69	60	54	40	43	57

Average Relative Humidity (percent)

Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec		Annual	
M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A	M	A
75	72	78	73	82	71	79	57	76	50	82	56	86	56	86	55	85	58	81	60	82	71	79	74	81	63

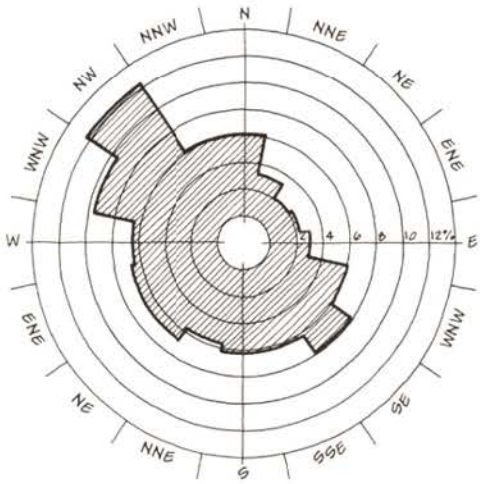


Figure A.3. December Wind Rose

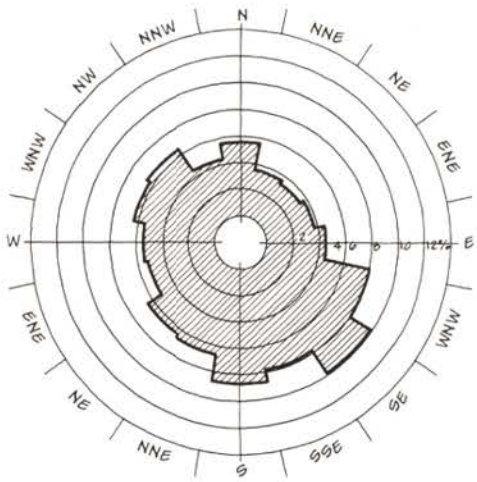


Figure A.4. June Wind Rose

Statement of Intent

Headwaters Interpretive Center

Preserving the Past while Sustaining the Future of Itasca State Park

People have an ever increasing desire to connect with nature and experience its beauty. With an increase in the number of guests visiting the park each year, Itasca State Park requires additional facilities to meet the demand of the sightseers. This facility will serve educational purposes as well as recreational uses. It will provide a relaxing atmosphere for vacationers along with learning environment for researchers.

This new facility will include a visitor's center that will serve the north side of the park. There will also be hotel rooms, a restaurant, conference area, and a gift shop. The different uses will be separated into several buildings so that the facility will not be one massive building.

The success of the new visitor's center on the east side of the park shows the interest that people have in understanding the history, wildlife, natural features, and everything else that the park has to offer. The new facility will include a visitor's center to offer the guests of the park displays and other information. There will also be meeting rooms within the facility where conferences, reunions, classes, and other events can take place.

Lodging is also a necessary addition to the park. Currently, you need to book a room over a year in advance if you want to stay in cabin in the park. This could prevent many people from coming to visit the park and enjoy all that it has to offer. With the increase in the number of people that this new improvement will bring, the need for another restaurant within the park will be necessary.

The facility will be located on the north end of the park within walking distance from the Mississippi headwaters where the north gift shop was previously located. This area sits on the south side of the Wilderness drive near the parks north entrance. On this site there is a clearing, so the number of trees that will need to be removed will be minimal. There are also bicycle trails that go by this site.

Statement of Intent

The client for this project will ultimately be the State of Minnesota. Agencies such as the Department of Natural Resources and the Forest Service will be representatives of the State.

The underlining premise of this project is that this facility is not meant to compete with the other attractions in the park, but is intended to enhance the experience of the park for the visitors. This project requires sensitivity to the surrounding environment, being that it is in a state park which is set aside to preserve its natural beauty. Where possible, I propose to use materials that are native to the area.

Headwaters Interpretive Center

Preserving the Past while Sustaining the Future of Itasca State Park

I. User/Client Description:

The primary users of the new facility will be park visitors and tourists. This may include school students who are visiting the park on school fieldtrips. The facility will also be capable of holding small conferences and events which will attract additional people.

Visitors will use the facility to find information about the park, to observe the various displays, to buy souvenirs, and to educate themselves. People will also be able to eat at the restaurant, stay in the hotel rooms, and hold meetings in the facility.

The facility will require many employees to keep it operational. At any time, it will require a receptionist, a gift shop employee, four to six restaurant workers, two to four hotel workers, and maintenance and custodial workers. For special occasions, more workers may be necessary.

The client for this new facility will ultimately be the State of Minnesota, but will be represented by the Parks and Recreation Division of the Minnesota Department of Natural Resources.

II. Major Project Elements:

Interpretive/ Visitor Center:
- Lobby/ Information Area
- Museum/ Display Area
- Gift Shop
- Meeting Rooms/ Classrooms
- Small Auditorium

Lodge:
- Lobby/ Check-in Area
- Rooms
- Support Areas
- Restaurant

Both:
- Staff Areas
- Restrooms
- Mechanical/ Electrical
- Circulation Space
- Parking

III. Site Information:

The site for this new facility is located in Itasca State Park, which is located in Clearwater County Minnesota between Bemidji and Park Rapids. Established in 1891, it is Minnesota's oldest state park. The park has over 32,000 acres of virgin timber, wetlands, and lakes, but the largest attraction is the headwaters to the Mississippi River. The park was established to preserve the natural beauty of the area by preventing logging of the old growth pine and other destructive activities. Tourism is the economic base for this area with the park averaging over 500,000 visitors annually.

The site is located fairly close the Mississippi headwaters which is located on the north end of the park. It is accessible from Wilderness Drive and also has bicycle and pedestrian trails that go through it. The site is located within walking distance from the Mississippi headwaters and a picnic area. There are currently no structures that remain on the site, but there was previously a gift shop that his been demolished to open up the site to make improvements. There is an opening in the forest where the site is located and it is surrounded by a mix of coniferous and deciduous trees. The actual site is relatively flat, but for the most part the park is composed of hills that were formed when glaciers advanced through the area. The glaciers left deposits that contain coarse, gravelly materials and boulders along with forming countless lakes, ponds, and bogs that are found throughout the park.

The soil on the site is considered a sandy loam that is well drained with a moderate slope. It is a common soil in forested areas that is composed mainly of glacial outwash. The water table with this type of soil is usually over 6 feet deep and there is only a low potential for frost action.

The prevailing winds are from the northwest in the winter and from the south in the summer. The site is sheltered from the wind because it is completely surrounded by trees.

IV. Project Emphasis:

The main emphasis of the project will be the interpretive center which will be located within the visitor's center. The museum will have wildlife and nature exhibits along with displays that tell of the history of the park and the Native Americans that lived there prior to the establishment of the park. The facility is also intended to educate the visitors as well as amuse them.

Material selection will be an important component for this project. I intend to use regional materials wherever possible within the facility.

Another emphasis will be to preserve the natural environment when designing for a building in a heavily forested area. One of the main reasons why Itasca State Park was established was to preserve the natural environment of the area. I will also incorporate sustainable design strategies to conserve the natural resources used to operate and maintain the facility.

V. Plan for Proceeding:

Definition of a Research Direction:

The main focus of my research will be on interpretive centers and mixed-use facility design. The other important aspects of my research will be concerning regional materials and sustainable material selection. I will also study appropriate strategies in site planning to preserve the natural environment along with building in a forest setting.

Design Methodology:

Extensive research will be necessary to discover each of the emphasized areas listed above. Case studies of buildings of a similar typology will be used to discover precedents. Case studies will be found using periodicals and the Internet. Additional research will be conducted by visiting the site and using books along with periodicals and the Internet. Gathering information about the site and the history of the park will also be important in the initial phases of the project.

After the information has been collected, it will need to be evaluated, including an extensive site analysis. The site plan can be designed using the conclusions drawn from the site analysis. After the overall site plan is developed, the focus will shift to each individual component of the facility.

The spatial relationships will be discovered using bubble diagrams. The form of the building will revealed using massing models. Elevation studies will be used to experiment with different material options. Appropriate material assemblies will become more evident by using wall sections and details.

After the final development of the design is complete, the final presentation will be prepared. This will include a site model, individual building models, various perspectives, plans, sections, elevations, and building details.

Documentation of the Design Process:

Documentation will be organized using a binder with tabs labeled, interpretive center design, mixed-use design strategies, nature/forest design and sustainable materials and strategies. A sketchbook will be used to sketch and record information throughout the course of the thesis project. Digital data, such as digital photographs will be organized and stored in digital folders that are divided by the appropriate topic.

Schedule and Work Plan:

Fall Semester 2004

Week #1 (Oct. 4 – 8)
R 07 Oct. Thesis Proposal due to AR/LA Instructor
Research

Week #2 (Oct. 11 – 15)
R 14 Oct. Return Preference Slips to Main Office
Collect site information

Week #3 (Oct. 18 – 22)
R 21 Oct. Primary and Secondary Critics Announced
Site analysis

Week #4 (Oct. 25 – 29)
R 28 Oct. Last Day of AR/LA 561 Class
Case Studies

Week #5 (Nov. 1 – 5)
Case Studies

Week #6 (Nov. 8 – 12)
R 11 Nov. Veterans' Day Holiday
Work on draft of thesis program

Week #7 (Nov. 15 – 19)
M-F 15-19 Nov. Final week of AR/LA 571 Design Studio
Refine draft of thesis program

Week #8 (Nov. 22 – 26)
W 24 Nov. Draft Thesis Program due to Primary Critic
R-F 25-26 Nov. Thanksgiving Holiday
Research

Week #9 (Nov. 29 – Dec. 3)
Work on Final Thesis Program

Week #10 (Dec. 6 – 10)
R 09 Dec. Final Thesis Program due to Primary Critic
F 10 Dec. Last day of Fall 2004 classes

Week #11 (Dec.13 – 17)
M-F 13-17 Dec. Final Examinations

Week #12-14 (Dec. 20 – Jan. 7)
Sa 25 Dec. Christmas Day
Sa 01 Jan. New Years Day

Spring Semester 2005

(Begin the semester with weekly meetings with advisors)

Week #15 (Jan. 10 – 14)
T 11 Jan. Spring 2005 Classes begin
Work on site analysis and conceptual design

Week #16 (Jan. 17 – 21)
M 17 Jan. Martin Luther King Jr. Holiday
Finish site analysis and study functional arrangements

Week #17 (Jan. 24 – 28)
Work on site design and conceptual alternatives

Week #18 (Jan. 31 – Feb. 4)
Resolve space-planning relationships

Week #19 (Feb. 7 – 11)
Explore form by using study models

Week #20 (Feb. 14 – 18)
Resolve structural layout and integrate ECS systems

Week #21 (Feb. 21 – 25)
M 21 Feb. President's Day Holiday
Material selection using elevation studies

Week #22 (Feb. 28 – Mar. 4)
Complete material studies and wall sections

Week #23 (Mar. 7 – 11)
M-F 07-11 Mar. Mid-semester Thesis Reviews
Key decisions finalized

Week #24 (Mar. 14 – 18)
M-F 14-18 Mar. Spring Break
Consider feedback from mid-semester review and make necessary modifications

Week #25 (Mar. 21 – 25)
F 25 Mar. Easter Holiday
Storyboard layout for final presentation

Week #26 (Mar. 28 – Apr. 1)
M 28 Mar. Easter Holiday
Presentation drawings and models

Week #27 (Apr. 4 – 8)
Presentation drawings and models

Week #28 (Apr. 11 – 15)
Presentation drawings and models

Week #29 (Apr. 18 – 22)
Finish presentation boards and models

Week #30 (Apr. 25 – 29)
M 25 Apr. Thesis Projects due at 4:30pm in the MU Ballroom
T-W 26-27 Apr. Annual Thesis Exhibition in the Memorial Union Ballroom
R-F 28-29 Apr. Final Thesis Reviews
F 29 Apr. Draft of Thesis Document due to Primary Critic
Prepare for final presentation

Week #31 (May 2 – 6)
M-R 02-05 May Final Thesis Reviews
F 06 May Last day of Spring 2005 classes
Complete final thesis document

Week #32 (May 9 – 13)
M-F 09-13 May Final Examinations
R 12 May Final Thesis Document due at 4:30pm in the Dept. Office
F 13 May Commencement at 4:00pm Fargodome

Previous Design Studio Experience:

2nd Year:

Fall 2001 ***Philippe d'Anjou***

Project 1: Welcome Back Lucy!: Museum Display
Project 2: A Retreat Away From Home
Project 3: School of Architecture

Spring 2002 ***Milt Yergens***

Project 1: Lofty Intentions: Residential Housing and Studio
Project 2: Salem Lutheran Church Addition
Project 3: New Lutheran Church
Project 4: Lachine Canal Pedestrian Footbridge Charrette

3rd Year:

Fall 2002 ***Steve Martens***

Project 1: Fort Abercrombie Historical Museum
Project 2: Douglas County Airport

Spring 2003 ***Mohamed Elnahas***

Project 1: Experimental Performing Arts Center
Project 2: West Acres Bank

4th Year:

Fall 2003 ***Mark Barnhouse, Cindy Urness, & Joshua Walter***

Project 1: Urban Design Studio

Spring 2004 ***Darryl Booker***

Project 1: Medium Density Housing Project
Frank Kratky
Project 2: High-rise Project

5th Year:

Fall 2004 ***Steve Martens***

Project 1: Historic Preservation Studio

Reference List

Headwaters Interpretive Center

Books, Periodicals, and Documents

Internet Sources

Individuals Contacted

Past Thesis Projects

REFERENCE LIST

Reference List

Books, Periodicals, and Other Documents:

Alexander, Christopher. (1977). *A Pattern Language: Towns, Buildings, Construction.* New York. Oxford University Press.

Anderson, Rolf T. (1993). *Federal Relief Construction in Minnesota, 1933-1941*. National Register of Historic Places Continuation Sheet.

Brown, G. Z. & DeKay, M. (2001). *Sun, Wind, & Light: Architectural Design Strategies.* Second Edition. New York. John Wiley & Sons, Inc.

Dheere, Jessica Joan. (1999). Four visitor centers subtly interpret the landscape, inviting park patrons to become one with the wild. *Architectural Record*. Oct. 144-149.

Hart, Leslie S. (1995). *Guiding Principles of Sustainable Design*. Denver, CO: U.S. Dept. of Interior, National Park Service, Denver Service Center.

Kaibel, Elizabeth. (1991). Where the wild things are: four Minnesota interpretive centers open their windows on the world of nature. *Architecture Minnesota*. May-June 24-35.

Kudalis, Erik. (1998). Northern respite: A visitor center/rest area continues Gooseberry Falls State Park's rustic architectural tradition. *Architecture Minnesota*. Jan.-Feb. 20-15.

Kudalis, Erik. (1999). Rustic parkland: Fort Snelling State Park's visitor center is the centerpiece of one of the state's most popular parks. *Architecture Minnesota*. July-Aug 32-33.

Langston, Craig A. & Ding, Grace K. C. (2001). *Sustainable Practices in the Built Environment*. Second Edition. Oxford. Butterworth-Hiememann.

Larson, David A. (1997). *Soil survey of Clearwater County area, Minnesota*. Natural Resources Conservation Service.

Reference List

Mulfinger, Dale. (1995). The Architecture of Edwin Lundie. St. Paul, Minnesota. Historical Society Press.

McDonough, William. (1992). *The Hannover Principles.* Charlottesville, VA. William McDonough Architects.

Sondergaard, Jan. (2000). Scandinavian Tradition. *Architecture & Urbanism*. Aug. 166-119.

Various Authors. (2001). *The Itasca Guidebook.* Updated Edition. Minnesota Department of Natural Resources: Division of Parks and Recreation

Yeo, Ron & The Acorn Group. (2002). *Conceptual Plan for Edgewood Park and Natural Preserve Interpretive Center.* Tustin, CA.

Internet Sources:

Dakota County Parks Department
<http://www.co.dakota.mn.us/parks/visitor_center.htm>

Minnesota Department of Natural Resources
<http://www.dnr.state.mn.us/state_parks/itasca/narrative.html>

Minnesota Historical Society
<http://www.mnhs.org/places/nationalregister/stateparks/Itasca.html>

Minnesota Office of Environmental Assistance
<http://www.moea.state.mn.us/greenbuilding/products.cfm>

Minnesota Sustainable Design Guide
<http://www.sustainabledesignguide.umn.edu>

Partners and Sirny Architects
<http://www.partnersandsirny.com/lh.htm>

World Climate
<http://www.worldclimate.com>

Reference List

Individuals Contacted:

Anderson, Paul, Partners and Sirny Architects. Nov. 8, 2004. (612) 341-1070.

Kovacovich, Michael, Itasca State Park Ranger. Nov. 2, 2004. (218) 266-2103.

Silardo, John, Minnesota Department of Natural Resources Engineer. Nov. 8, 2004. (218) 755-3641.

Past Thesis Projects:

Brown, Robert T. (2003). Observing Iowa Great Lakes Above and Below: Lake Okoboji Aquarium.

Jackson, Angela D. (2004). Didactic Center of Sustainable Practices: Connecting Reflection & Progression.

Nelson, Adam J. (2000). Grand Portage Administrative & Interpretive Center: A Study of Culture and the Impact of Architectural Design.

Obernolte, Sally A. (2001). Historic Preservation Field School: Emphasis on Depression Era Architecture at Itasca State Park.

Greg Oakland

Headwaters
Interpretive Center

PERSONAL IDENTIFICATION

Hometown: