

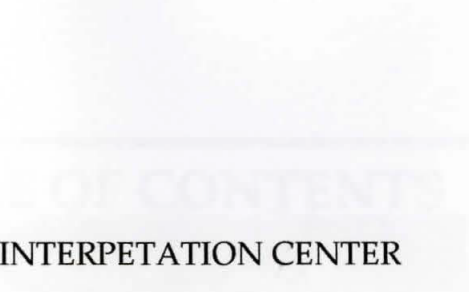


# TRAIN STATION AND HISTORICAL INTERPETATION CENTER

MINOT, NORTH DAKOTA

UNDERGRADUATE DESIGN THESIS  
DEPARTMENT OF ARCHITECTURE AND LANDSCAPE ARCHITECTURE  
OF NORTH DAKOTA STATE UNIVERSITY

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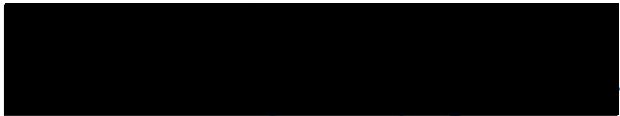
# TRAIN STATION AND HISTORICAL INTERPETATION CENTER

A Design Thesis Submitted to the  
Department of Architecture and Landscape Architecture  
of North Dakota State University

By

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In Partial Fulfillment of the Requirements  
for the Degree of  
Bachelor of Architecture



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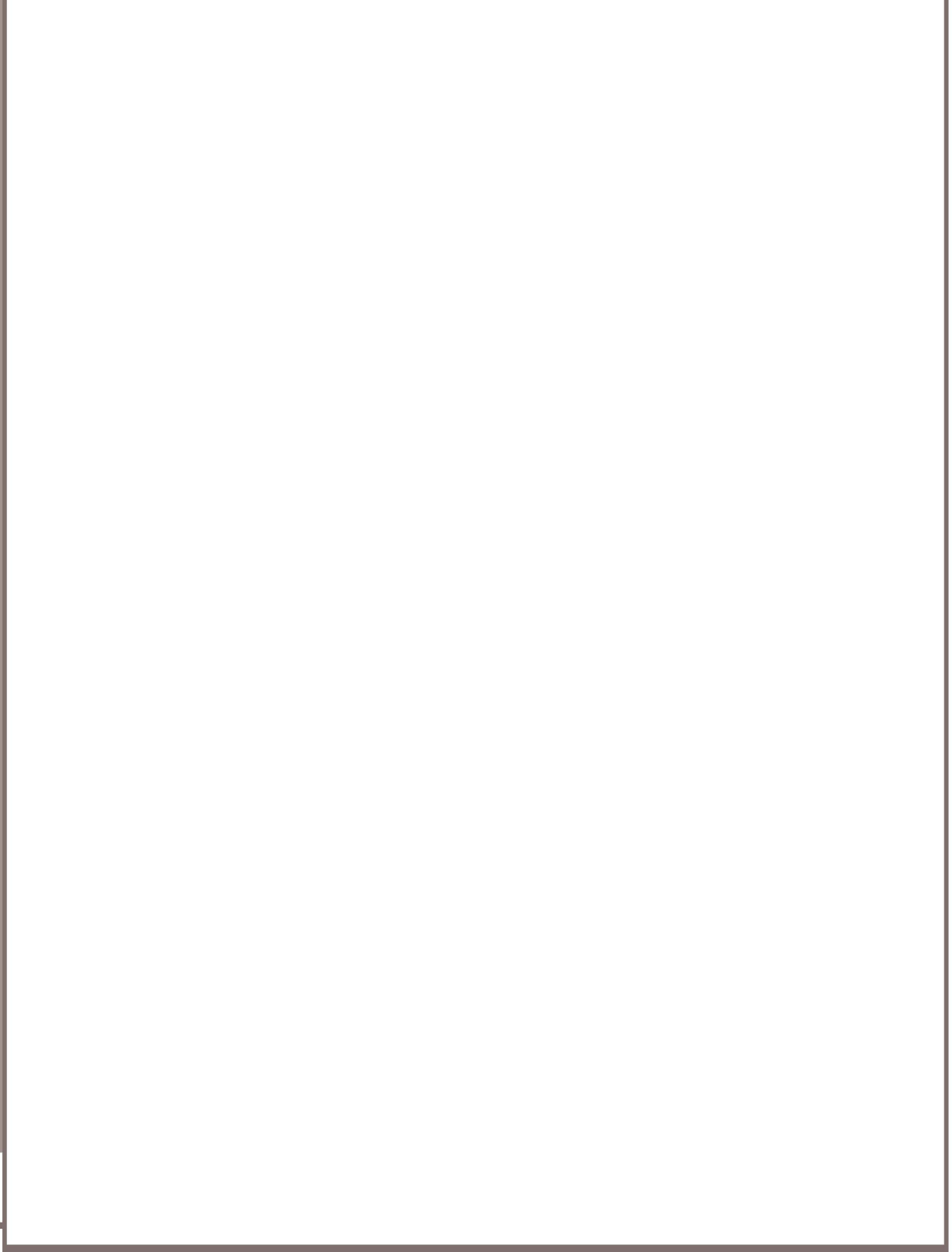
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## ABSTRACT



The building type that is being proposed is a passenger train station combined with an interpretation center creating a multi-use structure. Train travel is an experience that is under emphasized as a means of travel in much of the nation. The train station is pivotal as an interface between the passing train car and the communities they serve if the railroad is to reclaim its standing as a one of the dominant forms of travel in the United States. Additionally, the railway was the driving force which most instrumental to the early growth and development of Minot. Also by combining additional uses within the same structure, there is a greater ability to attract a more diverse group of visitors for each of the building's functions. The purpose of the historical interpretative center is to serve as educational exploration environment of the community they are in, while tying the community to its rich past with the railroad.

# PROJECT INTRODUCTION



OVERVIEW OF PROJECT

GENERAL HISTORY



## OVERVIEW OF PROJECT

Traveling by train was once a prevailing way of arriving at a destination. This thesis project is to encompass the design of the Minot, North Dakota passenger train station combined with an interpretation center creating a multi-use building. The focus is to provide a structure that draws from the regional history and the influence of the railway on the community to enhance the experience of the modern day traveler on the rail system. This project will design a structure to present a first impression to the visitors, illustrating the character of the community. The key components of the design are the expression of truth about the location, the influence of train travel, and to bring awareness and interest of mass transportation to the general public.

Amtrak has several routes across all regions of the lower 48 states including most major cities North, South, East and West. The "Empire Builder": runs daily between Chicago and the Pacific Northwest to Seattle or Portland including stops in Milwaukee, St Paul, and Fargo along the way (Map 2 in Appendix). This route includes numerous stops, and Minot is one of the extended stops. Currently there are a few vending machines, a waiting/seating area, a break room for crew members, also a donated book stand with free books for travelers to use to pass their remaining travel time. As the train route passes through and stops in larger cities there tends to be greater accommodations for the traveler. However, the services provided to the traveler need to reflect the heritage and geography of the communities in the upper Midwest. This allows the travelers from outside the area to learn the features that set the region apart from other parts of the United States. The train depot is that pivotal place which can provide more than just a place to board a train or to get off to stretch.

Amtrak arrives in Minot at two different times of the day depending on whether it is westbound or eastbound. The present arrangement of the station is unresponsive to the time of day. The feel of being an outsider when arriving in a new town versus feeling welcome, the people (staff) convey the message of warmth and welcome to the area; in contrast the Minot depot is in a state that it neither correspondent with the Amtrak companies in encouraging the use of their service or the cultural distinctions of the town.

"Passenger stations are composed of two main elements: first platforms and





tracks, second booking hall and other facilities – waiting rooms, restaurant, and shops.” (Binney, 1984, p. 119) The depot must go beyond providing the main elements of a station to allow travelers to experience the foundation of the community in which they have a short view of, when on their journey. In addition, this depot has the potential to help the people of Minot recapture and regenerate the importance the railway had and continually has on the community.

## GENERAL HISTORY

Many things can drive the development of a town. In the region of the Northern Great Plains the railway was the key factor common to the early growth of many communities. Minot was one of the upper Midwestern towns that were directly affected by the railway. In the early stages of development the introduction of the railway through Minot produced substantial growth (Peterka, 1996). The town was nicknamed the “The Magic City” as a result of this growth. The town’s name, Henry David Minot was actively involved in railroad management and construction in the 1880’s, and the Great Northern Railroad founder, James Hill named the town for his work. Since those early days, the railway still has a strong presence in the town as many people still use Amtrak for transportation though the area. However, Minot the town has continually developed. Minot has become the fourth largest community in North Dakota with the population at 36,580 (2000 Census). The town is now the center for education, transportation, medical, culture, retail and wholesale service center for a large agricultural region reaching one hundred miles or more in each direction including eastern Montana and some southern provinces of Canada. Transportation in Minot is now composed of an international airport, bus services, three major U.S. highways and also three rail lines two being freight and one passenger (The Minot Area Chamber of Commerce, 2000).

# PROJECT DESCRIPTION



THEORETICAL PREMISE  
PROJECT JUSTIFICATION  
USER/CLIENT DESCRIPTION  
MAJOR PROJECT ELEMENTS  
PROJECT EMPHASIS  
DESIGN METHODOLOGY



## THEORETICAL PREMISE

The slow rocking from side to side with rhythmic clinking and clanking sounds is a trademark of how a train moves down the tracks. As engine technology has improved over the years, trains have developed the ability to power a larger number of cars while using fewer engines. As the massive train slows to a halt for the nearing community, the energy of the train connects with nearby buildings. At that moment a slight vibration is felt starting by a person descending from the top of the person's head and cascading out to the tip of the person's fingers. This experience has been constant for passengers and building occupants along the railroad tracks, of today and past years. In the train depot, friends and family greet, welcome and say good-bye to their visitors.

The building type, train station, conveys a symbolism to the workers and to those who the workers provide the service for. The train station is a living history to participate in; unlike other transportation methods, the railway was instrumental in the growth, life and stability for many towns across the country. This building type can show the nature of people in the region. Show how that past influences their everyday living. The movement across the landscape by train interacts and informs many outside visitors through local train station design.

The countless number of perspectives through which individuals can see their surrounding can be astonishing. Taking that thought another step further, the difference in point of view between one person to the next can be just as amazing. However, it is not until both individuals are given the chance to interpret the same viewpoint that there is a realization of the significance and meaning one aspect or object from a culture symbolizes has to another person. The display of meaningful artifacts has the potential to enhance, instill a memory, or evoke emotion in a physical context. When can it be said this pattern here or that object there has gained the respect to be held to high regard. Is it conceivable to find a common response from people that encounter the symbol? Symbolism embodied without subsequently using and object and placing it directly into elements of the building will not have a significant impact on its viewers. However, applying an indirect correlation to embrace the splendor of past in which the building typology possesses will leave an imprint of the relationship between the items on the individual viewers.



Several case studies were performed to discover ways architecture can use elements of meaning and symbolism to educate and inform the occupants. Two museums studied were the Jewish Museum in Berlin, Germany designed by Daniel Libeskind and the Museum of Anthropology in Vancouver, British Columbia by Arthur Erickson. Both museums illustrate a level interpretation of past events and abstracting the principles of symbolism into architecture. This creates a deep and universal appreciation of culture and/or past events. In addition, an investigation was performed on train stations that were built around the time period when the train was the dominate form of travel in United States and Western Europe. Exploring the various aspects of those train stations developed a comprehension in how the building typology became a dramatic symbol of a revolutionary period. It is often times that history is forgotten or lost along the way, leading to unexplained features in buildings and little reason why things are done the way they are. Providing some historical and cultural characteristics within architecture is a way of preserving knowledge and displaying it for future generations.

The goal of representing cultural characteristics through the use of symbolism is expressed throughout the building and site. However it is important to avoid a literal display of objects or symbols of a culture. Often such a display becomes purely superficial. Many times, the importance of the symbol is lost when it is taken out of its context or misused because a full understanding was not achieved. The goal set forward is to discover the essence of past cultures that occupy the area of the building site. The design must also find the spirit of a place that explains the past lives and experiences embodied by the building typology. Those are the two main components to strive to achieve in the design of the building. Furthermore, developing a structure that provides meaning to the current residents while maintaining the ability to reach the multiple perspectives that can be viewed by through the nature of the building type.

## PROJECT JUSTIFICATION

There are many reasons to redesign the Minot Amtrak station. This may be seen as a desperate act of hopefulness, but it is also very possible to achieve. Economics, both local and notional, are aspects of this project that drive the development of the train station. At the national level, the gas prices are a major concern. There are many individuals and families whose income can not support their transportation needs by use of a vehicle. There should not be a reason for restricting a person's mobility given the technologies avail-



able to this generation. To be successful, Amtrak must look at not only providing the affordable service, but also in a comfortable, enjoyable environment. Why not Minot? There are also solid reasons for developing this station from the local perspective. Amtrak uses the Minot station for an extended stop to allow passengers to step outside and for employees to change shifts. This extended stop in Minot may be the only significant exposure travelers from other parts of the nation see of the northern Midwest. The lack of understanding of the area is increased by the absence of something to draw passengers out of the train during this stop.

The idea of improving the station's condition supports growth and a more inhabitable city for the residents, causing a positive chain of events to happen. Based on statistics taken from the 2000 Census, Minot is well positioned to support this growth. The town has more jobs available than in past years and the cost of housing is low compared to the surrounding region, further contributing to growth potential. These are some key factors behind the reconstruction of the degrading station building. In addition, this project goes beyond a simple update in facility but also encourages greater activity levels in the area to instill life into both the building and the downtown area. This is where the multiple function building concepts becomes important in supporting present reality and future developments in the area. The multiple functions of the building come with the addition of an interpretative center and café to compliment the train station function. This proposed building is located in an urban setting where, not unlike Fargo, North Dakota is taking on projects to re-invigorate the activity that once filled the downtown area.

Additionally, developing multiple functions within one building provides an opportunity to display the local cultural influences and history through an educational setting. Often, the reasons, explanations, and background behind events are lost because following generations do not receive the information in a way that they understand. Having this historical information displayed will serve as an effective vehicle to pass this information on to future generations. This living history will allow people from outside the area to get a more complete picture of what makes Minot and its surrounding area unique, and stimulate further interest in the area to both residents and travelers.

In conclusion a train station located in Minot, ND with multiple uses stimulates an atmosphere in which people can learn about the area and history



building type. This also gives the town's residents a source of civic, cultural, and historical pride to invigorate their downtown. Then this project also provides a development that enhances the use of trains as a mass transportation on a local and national level.

## USER/CLIENT DESCRIPTION

Many of the building's users will be individuals who are traveling on Amtrak. Their major concern is the ease of which they are able to properly check in before getting on a train car. The second major group the design must consider is the visitors to the historical interpretative center. A requirement for those visitors is circulation that provides a guide. The third group of clients that the building must serve is the staff including: Amtrak ticket/check-in counter, baggage claim staff, security, museum attendants, and servers in the café, custodians, and a person to maintain the grounds. All these individuals will require special design elements to create a functional and enjoyable working environment.

## MAJOR PROJECT ELEMENTS

- Lobby/entrance
- Offices
- Storage
- Exhibit space/galleries
- Ticket/check-in counter
- Baggage room
- Custodian
- Parking
- Waiting room
- Platform
- Information desk
- Lockers
- Security
- Circulation
- Mechanical/electrical
- Café/kitchen
- Gift shop
- Outdoor gathering space

## PROJECT EMPHASIS

### Amtrak Station

Design for the needs of railway patrons. Incorporate comfort and fluidity within environment of traveling.

### Interpretation Center

Design displays to engage visitors while emphasizing the circulation in a matter that provides ease from one exhibit to the next.



### Multi-use Building

Design a building which harmonizes between various functions and modes of usage within the structure.

## DESIGN METHODOLOGY

To begin the process of design, the interaction matrix is used to identify, define, and measure relationships between the individual elements of the site spatial requirements. It is also used to develop how each item creates functional, organizational and activity associations. Using the interaction net to find patterns that develop concerning elements within the design problem, this includes features of the external environment. Another design methodology used is case studies diagramming significant attributes to apply or avoid in the design problem. A more simplistic approach applied to the design problem is brainstorming to document any ideas or arrangements that are generated and then evaluate any aspects from each idea to maintain. Lastly, maintaining a progress log will aid in obtaining the desired standard of development.

## PROJECT GOALS AND OBJECTIVES

The project emphasis is a train station, historical interpretation center, and dining services. The building is to have multiple uses to increase activity in the areas close to site, specifically downtown Minot. Combining the times when each function would likely to be most active will provide a more consistent flow throughout the duration of the day. The train depot portion focus is on the comfort and ease of patrons on their arrival. To operate with minimum confusion, the staff work space, and space for other site users must act as its own guide to show people where they need to be at the appropriate times. The interpretative center must hold elements that allow a visitor to effortlessly view all exhibits. The interpretation center should develop those elements that correspond to the train depot, while expanding itself to a larger audience. The dining services introduce an environment that reaches to the other two functions as well as the community. The balance of all the functions, provide interconnection between the train station, interpretation center, dining services within one structure to achieve a harmony which the community can use and appreciate for many years to come.

One of the many goals of this project is not to duplicate but to instill an experience, and atmosphere that brings people of today, in to feel the impact



the train as mass transportation has on the area now and in the past. Maintaining and sustaining the usefulness of the building is key aspect for the structure and the environmental influences it contains. Along with the environmental concerns, another goal is for climatic changes to be an influential factor in design. In addition, the building must maintain a connection with the surrounding natural environment. The sight line of the building should also actively engage and interact with the surrounding cityscape. Many of these factors help provide awareness to the people train travel directly impacts through the use of mass transportation.

Another objective for this project is to provide a structure that caters to users on a daily bases and to the occasional visitor. Although the relationships between the various functions utilized by the building are key to this project, the building itself is not the only concern for the project. Then to accomplish a facility that takes into account the future possibilities, should Amtrak discontinue their services, the building is versatile enough to accommodate other proposes. A main point to consider in centralizing activity in the downtown region, the building and site development should maintain integrity of the larger contexts.



# SITE INFORMATION AND ANALYSIS



Image 15.1: Souris River

Minot, North Dakota sits between different geographic characteristics of the state. To the east is the flat Dakota prairie and to the west is the rolling, arid Missouri plateau. The town is settled in the Souris (Mouse) River Valley. The winding loops and curves of the Souris River with tree-line banks create a park like atmosphere for the town. The Amtrak station is located near once of many loops of the Souris River shown in Image 15.1. Not only is there a natural feature such as the River and change in contours because of valley but the Amtrak station is placed in the downtown area. The built environment around

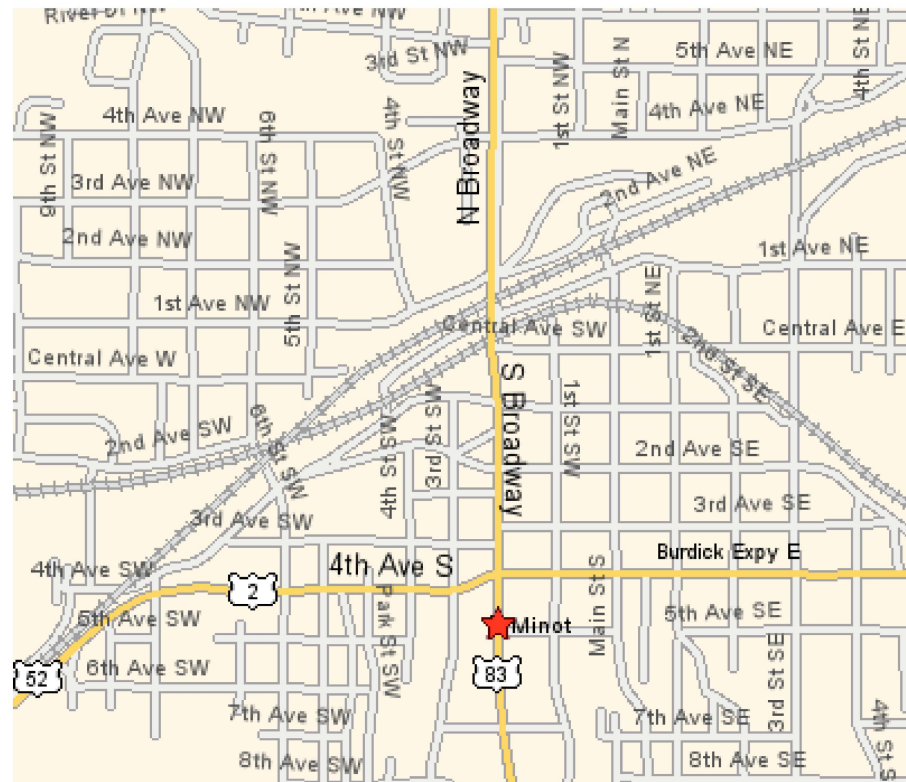


Figure 15.1: Map of Minot

the Amtrak station is: public library, City Hall and police station, civic auditorium, local furniture store, and also residential



Image 16.1: City Library



Image 16.2: Amtrak Station



Image 16.3: Pedestrian Bridge

buildings refer to Figure 15.1. Since the train depot is approximately one block west of Broadway there are numerous businesses within walking distance of the station.

The Library is the building directly west of the station, which has views of the Amtrak station. Also the City Hall across the street from the Library, south of the depot can view the station with some obstruction caused by vegetation shown in Image 16.1. The other buildings nearby are not visible standing at the entrance of the station because of the hill ascending to Broadway. From another viewpoint the traffic on Broadway is able to look over the train depot for the street is bridged over the train tracks and river to prevent the train and automobile traffic from interfering with each other seen in Image 16.2.

A few demographic characteristics of Minot are shown in Table 1 in Appendix data provided by the US Census Bureau. The Table shows the majority of the population falls between the ages 25 to 44 years old. An interesting aspect of the population is that the percentage of people in the 18 to 24 age range is close to the percentage of individuals 70 and older living in Minot. This gives reason to believe that Minot's population is well-balanced and stable. These numbers allow opportunity for the proposed facility to maintain a body of clients. The diversity of this Upper Midwestern town is largely dependant on the Uni-



iversity in town and the Air Force Base located on the border of Minot. Minot is a town that has the population base and characteristics that would allow the building type to be viable. Then data provided by National Association of Railroad Passengers (NARP) and Congressional Budget Office (CBO) show a steady number of passengers that travel with Amtrak; refer to Chart 1 and Table 2 in Appendix for the calculated numbers.

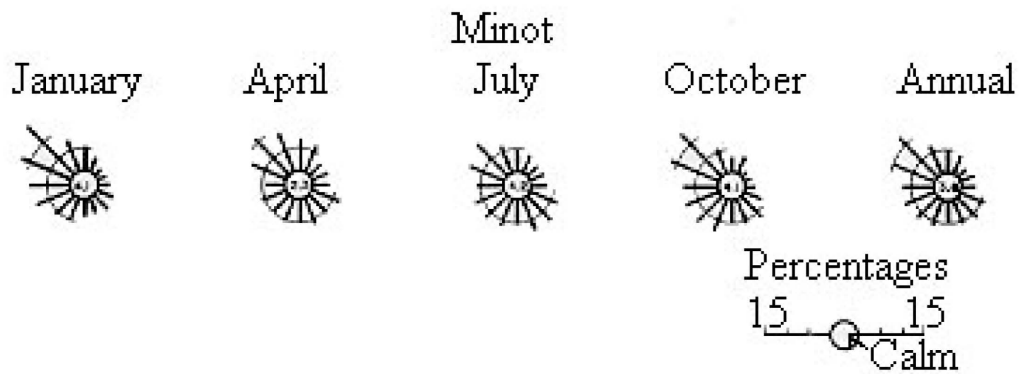


Figure 17.1: Wind Roses

Considering the site is located in North Dakota, the climatic conditions include prevailing winds from the Northwest. In the city of Minot there is a sizable east wind direction that is present although northwest winds are clearly prevailing as shown in Figure 17.1. The average temperatures (given in degrees Fahrenheit) for the winter months include a high of 15 degrees to average low of minus two degrees, summer months average temperatures range from 82 degrees to 58 degrees. The extreme temperatures that occur in the

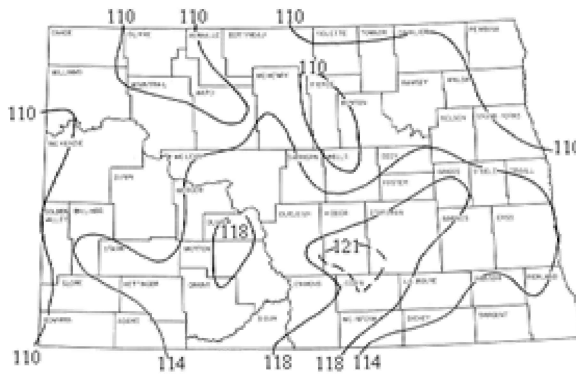


Chart 18.1: Extreme High Temperatures

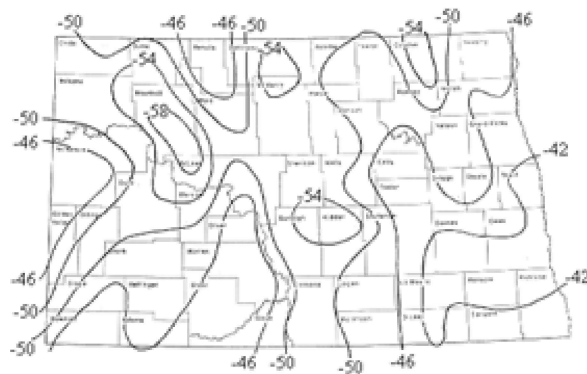


Chart 18.2: Extreme Low Temperatures



Image 18.1: Entrance Street

region are a high of 110 degrees and extreme low of minus 50 degrees as shown by Chart 18.1 and 18.2. Other elements to account for are an average annual snowfall of 26 inches and average annual precipitation of 17.24 inches. The soil type present in the area is Velva loam (Vh) and Wabek (WaE). The Velva loam is in close elevation with the Souris River, the corresponding slope being at two percent. Furthermore the soil type has shown to drain well. An additional feature is the soil is fairly shallow with sand and gravel underlining it. This contributes to the area having rapid permeability but also withhold very little moisture. The soil types do have a fair amount of heaving from frost and a moderate chance of flooding. The frost penetration depth for the area has bearing on capabilities of the site. In the region specified average of frost penetration is four feet and the extreme case scenario is six and half feet. The site location of the train station typically will have frost penetration depth around four feet (Northern Prairie wildlife Research Center). These characteristics do put some limitations on the foundations of buildings; however because of the building type some of the restrictions of the soil characteristics can be accommodated for by the proposed design.

The site is appropriate for the Amtrak station and historical interpretive center due to the direct connection with the downtown area. The vistas that are possible to establish correspond to the city buildings that surround it, exploration of the pedes-



trian approach to the site or leading away from the site, seasonal conditions greater enhance the experience of the location for the proposed Amtrak station and historical interpretive center.



Image 19.1: Aerial Map of Minot



# SITE ANALYSIS DIAGRAM

# CASE STUDIES



REDWING DEPOT, MINNESOTA

KIASMA, HELSINKI, FINLAND

KING'S CROSS, LONDON, ENGLAND



## RED WING, MINNESOTA



Image 22.1: Red Wing Depot

This train depot is a smaller scale building that is comprised of three components, a train station, gift shop, and gallery. The building, originally constructed in 1904, was restored in 1990 (Red Wing Visitors & Convention Bureau, 2003). The potential of the Red Wing Depot site features are effectively realized by the design utilized. The relationship the building has with the river bank and park are ideal for enhancing the patron's experience. The natural features are not the only outstanding surroundings used by the site, the position of the depot sets-up sight lines with a historical hotel and Main Street. This creates a dramatic view for visitors down to the detailing in the paving which works as a guide without contemplation on the part of the user. Other features of the exterior are the material choices applied, and the platform canopy. The materials were locally based creating a stronger connection to the community's charm which is an option that can be applied to the Minot Train Station and Interpretation Center. The materials may be ordinary, but because of the thoughtfulness that went into the building; the exterior exudes an artful decoration fitting to the building type. The canopy for the platform demonstrates working within the scale of the main structure and number of clients that benefit from it. A more surprising aspect of the canopy is the detail it contains, waiting to be explored by waiting visitors to the depot.

Moving inward, the train depot effectively placed and scaled the glazing to allow





Image 23.1: Exterior of Kiasma

natural light to penetrate. The windows also provide an image of the functions within to the exterior. The windows are appropriately scaled but also contribute to the grand atmosphere of the interior. The ceiling level is elevated compared to a standard height; this allows the small building to maintain a strong presence to the user. Nonetheless, the scale of the interior considers the human scale making a friendly and welcoming environment. All the characters and features mentioned are concerns for the proposed design of Minot train station.



Image 23.2: Interior of Kiasma

#### KIASMA, HELSINKI, FINLAND

The museum in Helsinki, Finland called the Kiasma is based on ideas that pertain to the golden section, Zen-like peace, and human scale stated by A. LeCuyer (1998). This building is at a larger scale than the proposed building exhibit space; however, it has a principle that can be applied. Working from the inside to out, the spatial sequences are an element that emulates the presentation of the galleries. There are some curved walls that gently move the museum patrons to proceed through the building in an orderly, but not in predictable fashion (p.46-47). Natural light was a significant influence on the transparent surface design used by the Kiasma. Lighting effects created in the gallery spaces take into account how natural light varies and changes depending on the direction it enters the space. The design illustrates how natural lighting can be suc<sub>23</sub>



Image 24.1: King's Cross



Image 24.2: King's Cross

cessfully used to work with artwork and displays. In addition, fluorescent lamps are placed intentionally so indirect, tranquil lighting could occur within the space.

The characteristics of the interior are embodied in the external cladding and form of the building. The materials considered reflect the maritime climate of Helsinki by use of aluminum to resist the impacts of the surrounding environment. The aluminum elevations are also sandpapered to refract light. The exterior features enhance the building. The pools, play with the building's material characteristics creates inspiring reflection patterns on the building( LeCuyer, 1998, p. 46-47). The key aspect of the building is the creative application of materials to illustrate the purpose of the building. In addition, the expressed control over lighting can be effective in museum design. The way the building is artful in itself without being distracting to the exhibits is quite fitting for the building type.

#### KING'S CROSS, LONDON, ENGLAND

King's Cross in London is a 19th century railway station where a plain functional façade has set the standard while passing through the years noted by M. A. Sullivan. The yellowish brick exterior corresponds to the functions in the interior of the station. The arched windows signal the forms beyond the façade along with allowing light to enter the vaulted train sheds inside. The implementation of the decora-



Image 25.1: King's Cross Train Entry

tive cast iron brackets that support the arched roofs of arrival and departure halls symbolize the technology and skills of the craftwork during the period of its construction. King's Cross has elements of architecture that embrace the nature of trains while maintaining its own integrity symbolism. Another appreciated aspect of this station is how it allows natural light into the covered platforms (Sullivan, [www.buffton.edu/~sullivanm/england/london/kingscross/cubitt.html](http://www.buffton.edu/~sullivanm/england/london/kingscross/cubitt.html)). One of the elements to consider in the Minot train station is sheltering the platforms while containing sustainable design features similar to the arched windows in King's Cross. The assortment of materials used was minimal however well represented in the path a patron would take, beginning at the brick façade of the entry the cast iron vaulted arrival, and departure halls in the interior. The materials choices match the contexts of its location and remain honest to the functionality of the building type. The designer and engineer of King's Cross, Lewis and Joseph Cubitt had created a simple yet elaborately beautiful structure that functions for its users which is a key component for the proposed facility in Minot.

# PROGRAMMATIC REQUIREMENTS



**CATEGORY:** Spaces provide for both Train Station and Interpretation Center or shared.

**Space name:** Lobby/entrance

Square feet: 450-600

Activities/functions

- Direct visitor to right area of the building
- To become aware of layout within the structure
- Handicapped accessibility

Spatial relationships

- |                     |              |
|---------------------|--------------|
| • Waiting area      | strong       |
| • Exhibits/displays | intermediate |
| • Outdoor areas     | strong       |
| • Parking           | strong       |

**Space name:** Circulation

Square feet: + or – 15% of occupied space

Activities/functions

- Movement from area to the next

**Space name:** Mechanical/electrical

Square feet: 3,000

Activities/functions

- Space for climate control equipment to maintain room comfort levels for users' needs

Spatial relationships

- Placed in area where noise transmitting can be regulated



**Space name:** Café

Square feet: 5,000-8,000

Activities/functions

- Dining
- Greeting customers

Spatial relationships

- |                     |              |
|---------------------|--------------|
| • Exhibits/displays | intermediate |
| • Waiting room      | strong       |
| • Platform          | strong       |
| • Outdoor area      | intermediate |
| • Parking           | strong       |

Materials, finishes, equipment and fixtures

- Tables and chairs
- Counters
- Shelves
- Task lighting

**Space name:** Kitchen

Square feet: 5,000-8,000

Activities/functions

- Preparing, and serving meals

Materials, finishes, equipment and fixtures

- Counters
- Shelves
- Standard kitchen equipment
- Task lighting



**Space name:** Gift shop

Square feet: 500-900

Activities/functions

- Selling gallery and train related merchandise

Materials, finishes, equipment and fixtures

- Cash register
- Checkout counter
- Wall shelves
- Free-standing shelves
- Task lighting

Spatial relationships

- |                     |  |              |
|---------------------|--|--------------|
| • Exhibits/displays |  | strong       |
| • Waiting room      |  | strong       |
| • Lobby             |  | intermediate |

**Space name:** Parking Lot

Number of car spaces: minimum of 100

Activities/functions

- Long-term parking for travelers
- Short-term
- Employee parking

Materials, finishes, equipment and fixtures

- Night hours lighting
- Security checks for the long-term parking

Spatial relationships

- |                     |  |           |
|---------------------|--|-----------|
| • Lobby             |  | strong    |
| • Platform          |  | undesired |
| • Café              |  | strong    |
| • Employee entrance |  | strong    |



**Space name:** Custodian

Square feet: 300

Activities/functions

- Storage for cleaning supplies and outdoor maintenance equipment

Materials, finishes, equipment and fixtures

- Sinks
- Shelves
- Hooks
- cabinets

**Space name:** Information desk

Square feet: 100

Activities/functions

- Displayed maps, regional information, and building

Spatial relationships

- |                    |              |
|--------------------|--------------|
| • Waiting room     | strong       |
| • Exhibit/displays | intermediate |

**Space name:** Outdoor gathering space

Square feet: determined by the site

Activities/functions

- Seasonal dining
- Exploring

Spatial relationships

- |                    |              |
|--------------------|--------------|
| • Exhibit/displays | strong       |
| • Waiting area     | intermediate |
| • Platform         | undesired    |
| • Café             | strong       |
| • Parking          | strong       |



## CATEGORY: Train Station

**Space name:** Baggage room

Square feet: 700-900

Activities/functions

- Preparation of luggage for loading
- Security checks

Materials, finishes, equipment and fixtures

- Loading belts
- Task lighting

Spatial relationships

- |                  |              |
|------------------|--------------|
| • Ticket counter | strong       |
| • Waiting room   | intermediate |
| • Platform       | strong       |

**Space name:** Ticket/check-in counter

Square feet: 400-500

Activities/functions

- Providing travelers' ticket information
- Checking baggage
- Selling ticket passes

Materials, finishes, equipment and fixtures

- Computers
- Printers
- Baggage belt
- Task lighting
- Counter
- Communication equipment

Spatial relationships

- |                |        |
|----------------|--------|
| • Waiting room | strong |
| • Platform     | strong |
| • Baggage room | strong |





**Space name:** Offices (3)

Square feet: 150-250 each

Activities/functions

- Bookkeeping
- Scheduling

Materials, finishes, equipment and fixtures

- Desks and chairs
- Filing cabinets
- Task lighting
- Natural lighting
- Computers

**Space name:** Conference

Square feet: 700-850

Activities/functions

- Meeting space for employees

Materials, finishes, equipment and fixtures

- Table and chairs
- Projector and screen

**Space name:** Security

Square feet: 150-200

Activities/functions

- Check visitors for unwanted materials

Materials, finishes, equipment and fixtures

- Metal detectors
- Scanners



**Space name:** Platform

100-300 feet long and minimum of 20 feet from the building to railroad tracks

**Activities/functions**

- Boarding
- Arrival dock
- Loading baggage

**Materials, finishes, equipment and fixtures**

- Canopy
- Lighting for night hour

**Space name:** Break room/Lockers

Square feet: 900-1,200

**Activities/functions**

- Area for the employees to prepare for tasks
- Also a space for relaxation

**Materials, finishes, equipment and fixtures**

- Lockers/storage
- Seating
- Table and chairs
- Kitchenette
- Shower
- Toilet

**Space name:** Waiting room

Square feet: 1000-1200

**Activities/functions**

- Area for persons waiting to board the next train
- Also for individuals waiting for people who will be arriving

**Materials, finishes, equipment and fixtures**

- Seating
- Vending machines
- Natural lighting



## CATEGORY: Interpretation Center

**Space name:** Exhibit space/galleries

Square feet: 7,500-8,000

Activities/functions

- Circulating between displays

Spatial relationships

- Lobby                      intermediate
- Waiting area              strong
- Storage room              strong
- Outdoor spaces           strong
- Offices                      intermediate

Materials, finishes, equipment and fixtures

- Indirect Lighting
- Display cases

**Space name:** Storage

Square feet: minimum 800

Activities/functions

- Storage of gallery objects and displays when not in use
- Preparation area for new displays

Materials, finishes, equipment and fixtures

- Shelving
- Carts
- Cabinets
- Tables



**Space name:** Offices (4)

Square feet: 150-250 each

Activities/functions

- Bookkeeping
- Scheduling

Materials, finishes, equipment and fixtures

- Desks and chairs
- Filing cabinets
- Task lighting

# APPENDIX



PHOTOGRAPHS

MAPS

IMAGES

FIGURES

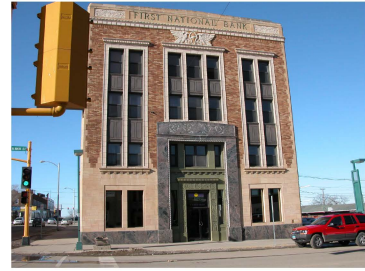
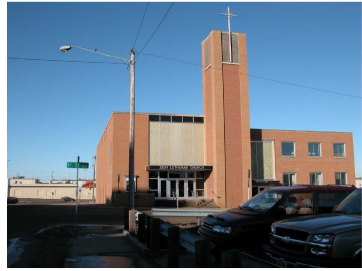
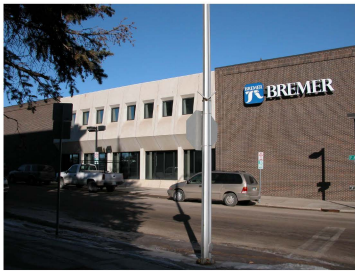
TABLE

CHARTS

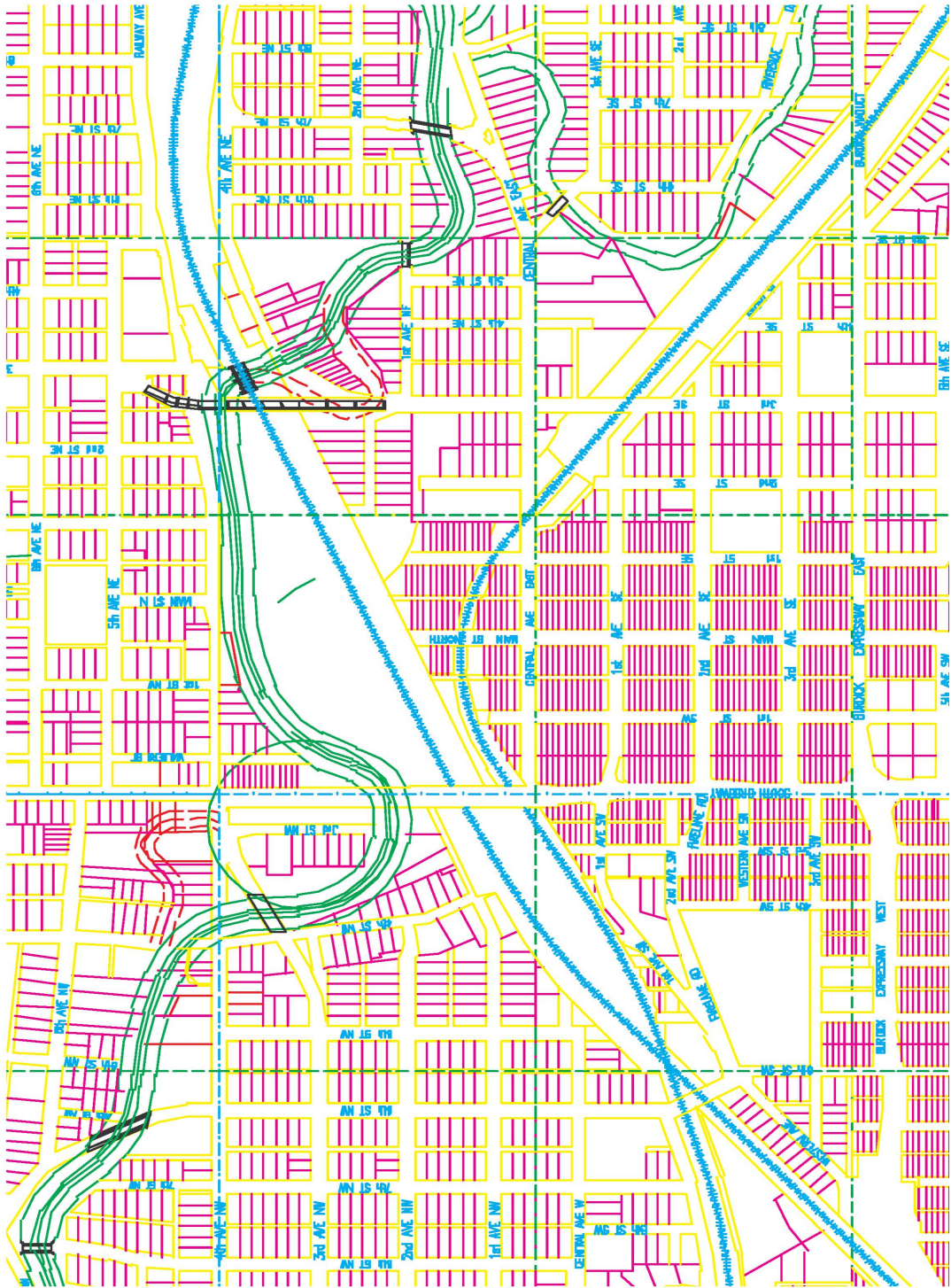
STATEMENT OF INTENT

THESIS PROPOSAL

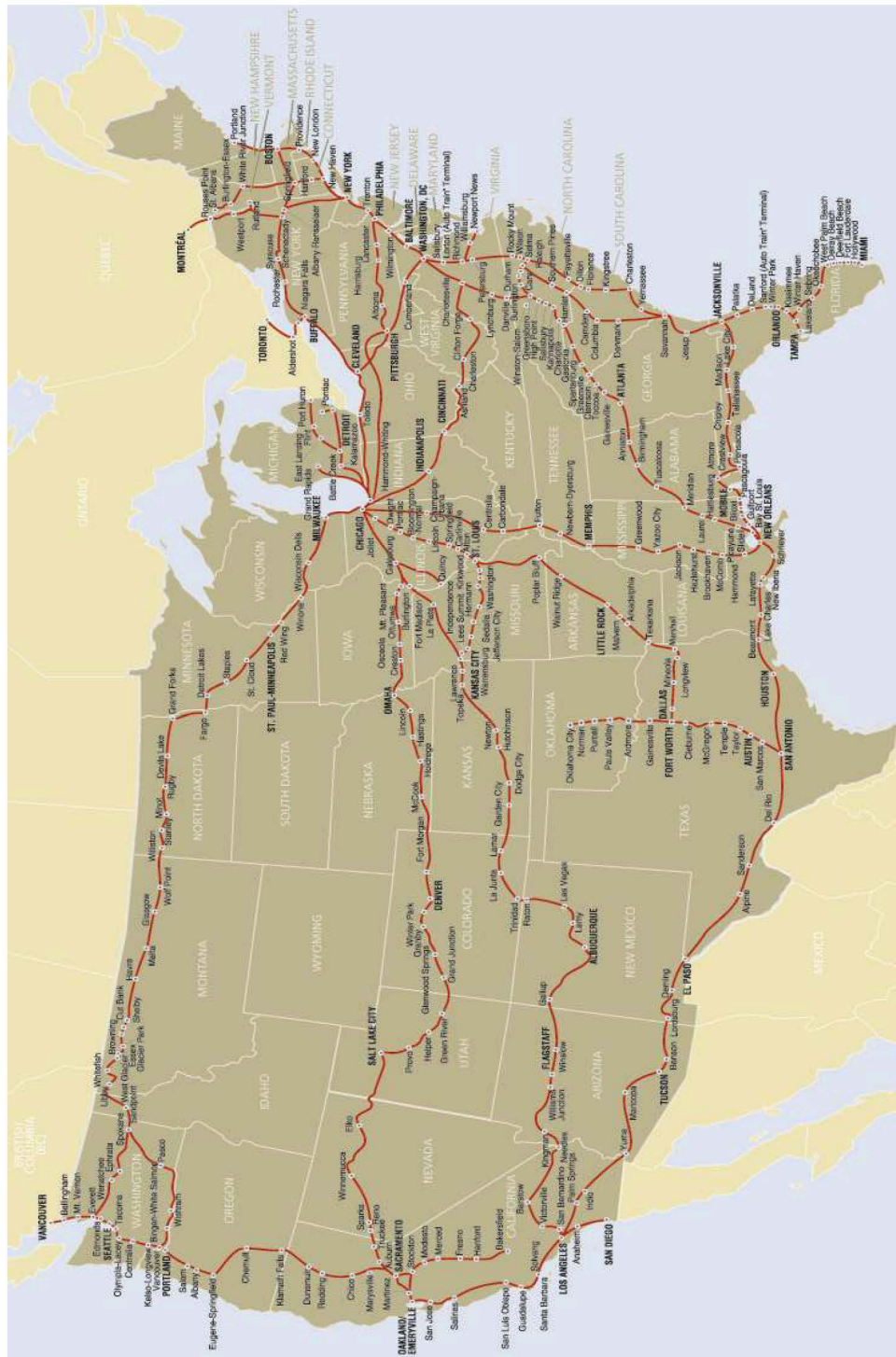
# PHOTOGRAPHS OF MINOT



# MAPS



Map 1: Zoning map of map, <http://eng-server.ci.minot.nd.us/maproom/zoning.dwf> (← North)



Map 2: Amtrak Route Map, [www.amtrak.com](http://www.amtrak.com) (← North)



## LIST OF FIGURES



Image 15.1 : Photograph taken by Sara Kempton

Image 16.1: Photograph taken by Sara Kempton

Image 16.2: Photograph taken by Sara Kempton

Image 16.3: Photograph taken by Sara Kempton

Image 17.1: Photograph taken by Sara Kempton

Image 18.1: Aerial Map of Minot , <http://terraserver-usa.com/image>

Image 22.1: Red Wing Depot, [www.hebners.net/amtrak/amtstationR.htm](http://www.hebners.net/amtrak/amtstationR.htm)

Image 23.1: Exterior of Kiasma, [www.kiasma.fi](http://www.kiasma.fi)

Image 23.2: Interior of Kiasma, [www.kiasma.fi](http://www.kiasma.fi)

Image 24.1: King's Cross, <http://hometown.aol.com/metrafan/peurbrl.jpg>

Image 24.2: King's Cross, <http://news.bbc.co.uk/1/hi/england>

Image 25.1: King's Cross Train Entry, <http://hometown.aol.com/metrafan/peurbrl.jpg>

Figure 15.1: Map of Minot, [www.yahoo.com](http://www.yahoo.com)

Figure 17.1: Wind Roses, <http://www.npwrc.usgs.gov/resource.othrdata/climate>

Chart 17.1: Extreme High Temperatures,

<http://www.npwrc.usgs.gov/resource.othrdata.climate>

Chart 17.2: Extreme Low Temperatures,

<http://www.npwrc.usgs.gov/resource.othrdata.climate>

## CHARTS AND TABLES



Population	Minot, Historical (1)				Minot Air Force Base (1)		Minot & Minot AFB (1)	
	1990	%	2000	%	2000	%	2000	%
Population by Age Group								
Under	8,743	25.3%	8,490	23.2%	2,756	36.3%	11246	25.5%
18 - 24	4,320	12.5%	4,877	13.3%	1,825	24.0%	6702	15.2%
25 - 44	10,815	31.3%	10,028	27.4%	5,897	38.1%	12925	29.3%
45 - 64	7,148	20.7%	8,843	24.2%	119	1.6%	8962	20.2%
70 - Over	3,518	10.2%	4,329	11.8%	2	0.0%	4331	9.8%
Total	34,544	100.0%	36,567	100.0%	7,599	100.0%	44166	100.0%
Median Age	N/A		35		22		N/A	

Table I: Demographic Characteristics of Minot, [www.mnotusa.com](http://www.mnotusa.com)

### Domestic Intercity Travel by Rail, Air, and Bus, Selected Years, 1960 to 2000

(Billions of passenger-miles)

	1960	1970	1980	1990	2000	Percentage of 2000 Total
Air Carriers	31.1	108.4	204.4	345.9	516.1	92.2
Railroads	17.1	6.2	4.5	6.1	5.5	1.0
Buses	<u>19.3</u>	<u>25.3</u>	<u>27.4</u>	<u>23.0</u>	<u>37.9</u>	<u>6.8</u>
<b>Total</b>	<b>67.5</b>	<b>139.9</b>	<b>236.3</b>	<b>375.0</b>	<b>559.5</b>	<b>100.0</b>

Table 2: Number of Travelers, 1960 to 2002 (measure in millions), [www.cbo.gov](http://www.cbo.gov)

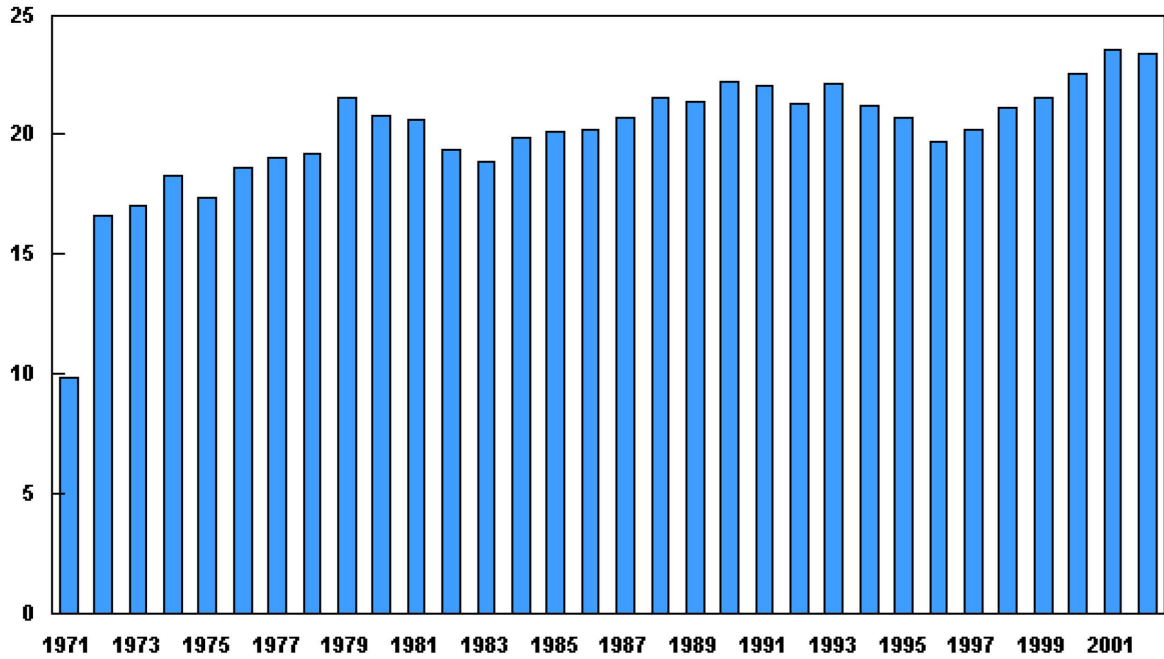


Chart 1: Number of Amtrak Passengers, 1971 to 2002 (measure in millions), [www.cbo.gov](http://www.cbo.gov)

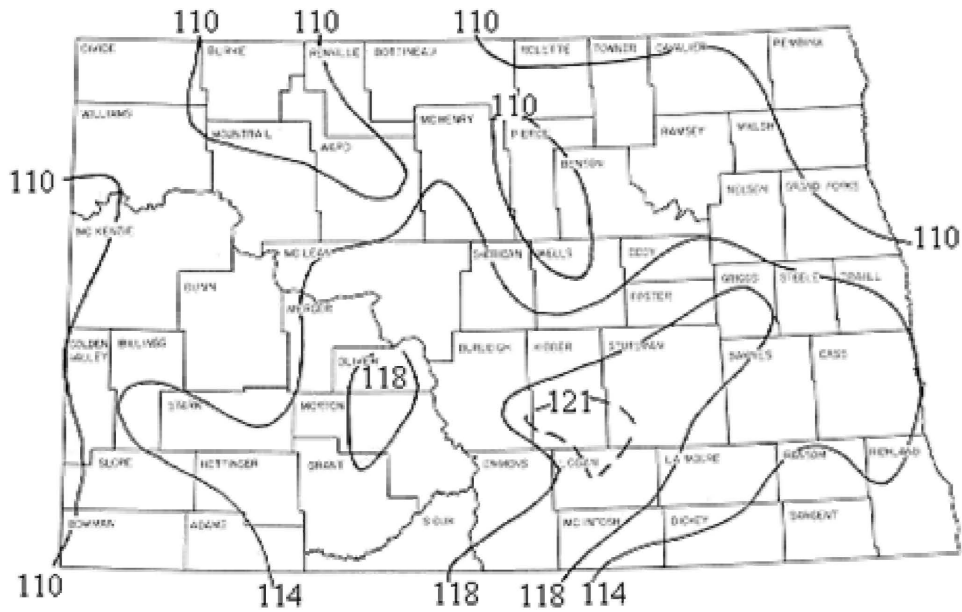


Chart 2: , 1971 to 2002 (measure in millions), [www.cbo.gov](http://www.cbo.gov)



## Train Station and Historical Interpretation Center Minot, North Dakota

Sara Kempton

Traveling throughout Western Europe, a person boards many trains and experience navigating the many stations. This compels a person to ponder the possibilities of train travel in the United States. The stations of Europe are universal while possessing with unique aspects corresponding to the various cultures. Organization from platform to platform is an aspect which remains consistent; however many other aspects convey a different sensation. This often depends on what country and the city in which the station is located. Each city and country has its own cultural impact on the built environment. Furthermore, cultural impacts influence the visitors' perception of the city or town they have arrived in and also present a first impression.

The focus for this thesis project is the exploration and experience of European train travel, station architecture, and application of that spirit to a Northern Plains Amtrak station. The main objective for this thesis project is to provide a multi-use building for Minot, North Dakota, where the Amtrak station is currently located. The project would involve replacing the structure that presently contains the depot. The multi-use building will house the train station while incorporating a historical interpretative center which will serve the citizens of Minot, tourists, and Amtrak users. The project is intending to draw from the character of the Northern Plains region and illustrate its spatial relationships and perspectives throughout the building. The key components of the design are the expression of truthfulness about the location, and the influence that train travel exerts on us, therein bringing an awareness and interest to a marvelous type of mass transportation and also the culture of the Northern Plains. The underlying premise of this design is that the movement across the landscape by train informs both the universal and site specific aspects of train station design.

# THESIS PROPOSAL



## Title

Minot Amtrak Station and Historical Interpretation Center

## b. Building Type

The building type that is being proposed a passenger train station combined with an interpretation center creating a multi-use structure. A train station provides services quite similar to an airport, and should possess many of the same building type characteristics. The interpretation center portion is similar to a museum, and will have functions in common with that particular setting.

## c. Conceptual Basis or Unifying Idea

Minot, North Dakota a centrally located city in the state provides a cross-roads for commerce for northwestern North Dakota, neighboring states and southern Canada, the bordering provinces Manitoba and Saskatchewan. Because transportation is a key to connecting Minot with other communities travel options must provide experience individuals will keep returning to. Train travel is an experience that is under emphasized as means of travel in much of the nation. The train station is pivotal as an interface between the passing train car and the communities they serve if the railroad is to reclaim its standing as a one of the dominant forms of travel in the United States. Additionally, the railway was the driving force which was most instrumental to the early growth and development of Minot.

Also by combining additional uses within the same structure, there is a greater ability to attract a more diverse of group of visitors for each of the building's functions. The purpose of the historical interpretative center is to serve as educational exploration environment of the community they are in, while tying the community to it rich past with the railroad.

Putting forward a multi-use building presents issues that provide a basis for special considerations. The key is to introduce a successful relationship between the two uses. The multi-use building must enhance a person's perspective on mass transportation while receiving a broader view of the characteristics of the surrounding area that encapsulate the project.

## d. Project Justification

With the raise in gasoline prices continuing, fewer people will be traveling to



parts of the country that rely on tourist and commercial traffic for their economic base. As natural resources decline other options need to be presented as optimal alternatives. Mass transportation has not been conveyed in a positive matter to the American public and is often viewed as a last resort. To be considered a viable option, mass transportation must maintain a high degree of quality to attract individuals that desire to travel without their personal means of transportation.

Too often cities are extending their borders and leaving voids within the city center. In addition to combining multiple uses in one structure, this project opens the possibilities to concentrate activity levels in the downtown area by providing entertainment that is centrally located thus accommodating the greatest number of users. Not only will the interpretive center serve as an alternative entertainment option for the community, but it will also bring a greater sense of civic identity and pride to the surrounding community. Furthermore, an interpretive center is comprised of elements that require a designer to research the special needs of a specific building type. The design is to maintain and enhance the downtown environment while providing a service that goes beyond the immediate community.

## e. Emphasis

### Amtrak Station

Design for the needs of railway patrons. Incorporate comfort and fluidity within environment of traveling.

### Interpretation Center

Design displays to engage visitors while emphasizing the circulation in a matter that provides ease from one exhibit to the next.

### Multi-use Building

Design a building which harmonizes between various functions and modes of usage within the structure.

## f. Site

Minot, North Dakota was a small town that experienced extensive growth when the Great Northern Railroad came through in the early years of the 20<sup>th</sup> century. Since the city was capable of supporting the growth while maintaining small town values, Minot earned recognition in 1992 for All American City by the National Civic League. Today, like most North Dakota towns' economic base lies in agriculture but also includes mining, construction, communications, and wholesale and retail trade industries to provide a



balanced community.

Minot is a community containing 36,580 (2000 Census) people not including the Minot Air Force Base, whose population is 11,000. The residents experience average high temperatures during the winter of 15 degrees to average low at -2 degrees, also an average of 26 inches of snowfall. During the summer months the average ranges from 58 to 82 degrees. The prevailing winds come from the northwest direction.

The location of proposed Amtrak station and historical interpretive center is to be in downtown Minot, one block west of the most heavily traveled street, Broadway. Due to the location, the station is near the city library, city hall, police station, civic auditorium, and few local businesses. The placement of the site also contains a few natural elements such as the Souris River and mature vegetation. One concern for the site is that it is near the Souris River and the soil type is prone to flooding if there is large amount of snow that melts in the spring thaw or heavy rainfall. With proper management, the area can avoid major issues concerning the flooding potential. Another characteristic of the soil is that it has a low shrink-swell likelihood which is important when considering to climate zone of the area. This site allows possibilities and challenges for the train station and historical interpretation center.

### g. Major Project Elements

- Lobby/entrance
- Offices
- Storage
- Exhibit space/galleries
- Ticket/check-in counter
- Baggage room
- Custodian
- Parking
- Waiting room
- Platform
- Information desk
- Lockers
- Security
- Circulation
- Mechanical/electrical
- Café/newspaper stand
- Gift shop
- Outdoor gathering space



#### h. User/Client Description

One of the many users of the building will be individuals who are traveling on Amtrak. Their major concern is the ease of which they are able to properly check in before getting on a train car. The second major group the design must consider is the visitors to the historical interpretative center. A requirement for the visitors is circulation that provides a guide. The third group of clients that the building must serve is the staff including: Amtrak ticket/check-in counter, baggage claim staff, security, museum attendants, and servers in the café, custodians, and also a person to up keep the grounds. All these individuals will require special design elements to create a functional and enjoyable working environment.

#### i. Research Direction

Research into mass transportation facilities and how they are organized and made efficient is one subject matter. Additional analysis will be made of museums and exhibits as they apply to a design that corresponds to a historical interpretative center. Another direction that needs to be studied is patterns of the people using the multi-use building type.

#### j. Design Methodology

Begin with the analysis and evaluation of case studies which employ concepts that are relevant to the proposed building type. Next consider gaining knowledge from characteristics of the site and surrounding community. Followed by research in the nature of materials and the effects the natural environment has on specific elements to guide conceptual ideas.

#### k. Documentation of the Design Process

Case studies with notes and evaluations will be placed in a binder categorized by subject fields. Research documents, material, environmental, day lighting, and other conceptual information will be dated and placed in proper order so all reference material is easily located. In addition all sketches and diagrams will be labeled, dated and kept in a sketchbook.

#### l. Schedule

*Week 1:* October 4-8

7 October      Thesis proposal due  
                         Research

*Week 2:* October 11-15





- Research
- Week 3:** October 18-22  
22 October Visit site and record more data  
Research
- Week 4:** October 25-29  
Research  
Define the Program
- Week 5:** November 1-5  
Research  
Further work on Program
- Week 6:** November 8-12  
Organize Research Information  
Work on Program
- Week 7:** November 15-19  
17 November Design studio project completion and presentation  
Research  
Define areas need for Program
- Week 8:** November 22-26  
24 November Draft Thesis Program due to Primary Critic  
Research  
Work on Program
- Week 9:** November 29- December 3  
Organize all Research and Information
- Week 10:** December 6-10  
9 December Final Thesis Program due to Primary Critic  
Work on final Program draft  
Review requirements and comments
- Week 11:** December 13-17  
Final Exams
- Week 12:** December 20-24  
Research
- Week 13:** December 27-31  
Research  
Reflection
- Week 14:** January 3-7  
Research
- Week 15:** January 10-14  
11 January Spring semester begins  
Conceptual and schematic design work



- Week 16:* January 17-21  
Conceptual and schematic design work
- Week 17:* January 24-28  
Conceptual and schematic design work
- Week 18:* January 31-February 4  
Conceptual and schematic design work
- Week 19:* February 7-11  
Conceptual and schematic design work
- Week 20:* February 14-18  
Design Development
- Week 21:* February 21-25  
Design Development
- Week 22:* February 28-March 4  
Design Development
- Week 23:* March 7-11  
Mid-semester Thesis Reviews  
Design Development  
Presentation layout plan
- Week 24:* March 14-18  
Presentation Drawings
- Week 25:* March 21-25  
Presentation Drawings
- Week 26:* March 28- April 1  
Presentation Drawings
- Week 27:* April 4-8  
Presentation Drawings
- Week 28:* April 11-15  
Presentation Drawings
- Week 29:* April 18-22  
Presentation Drawings
- Week 30:* April 25-29
- 25 April Thesis Projects due at 4:30pm in the Memorial Union
- 28 April (through 5 May) Final Thesis Reviews
- 29 April Draft of Thesis Document Due to Primary Critics



*Week 31:* May 2-6

6 May Last day of classes

*Week 32:* May 8-12

Final Exams

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

### m. Previous Studio Experience

#### 2<sup>nd</sup> Year Fall Semester: Yergens

Wall Design

Additive/subtractive Studies

Bistro

#### 4<sup>th</sup> Year Fall: Barnhouse, Urness, Walter

Fargo Urban Design

#### 2<sup>nd</sup> Year Spring: D'Anjou

Copenhagen School of

Architecture

World Trade Center

Living Space

Lachine Cannel

#### 4<sup>th</sup> Year Spring: Faulkner

Residential Building

San Francisco Highrise

#### 3<sup>rd</sup> Year Fall: Martens

Abercrombie, ND Historical  
Museum

Aberdeen Airport

#### 5<sup>th</sup> Year Fall: Waronker

Olympic Gallery

United States Supreme Court  
Building

#### 3<sup>rd</sup> Year Spring: Prafcke

Art Center

Presbyterian Church

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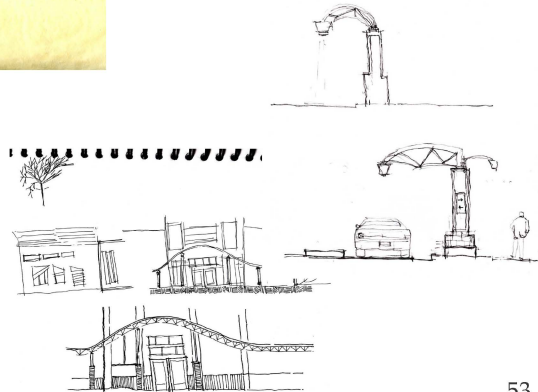
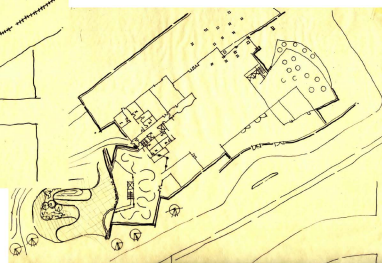
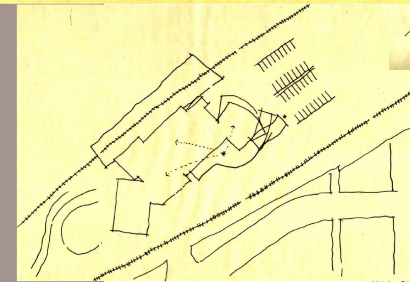
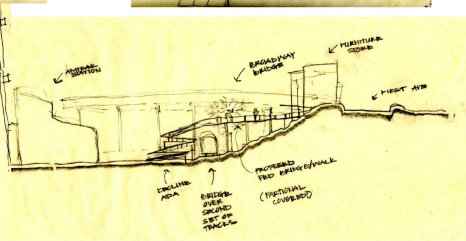
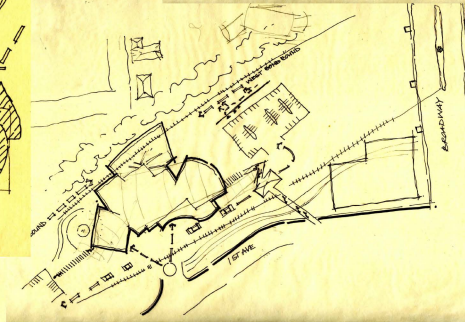
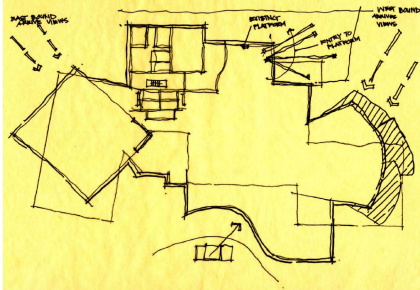
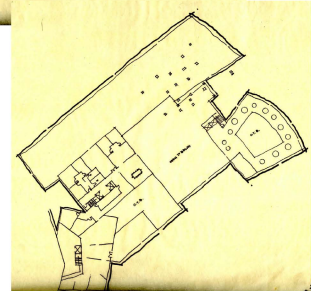
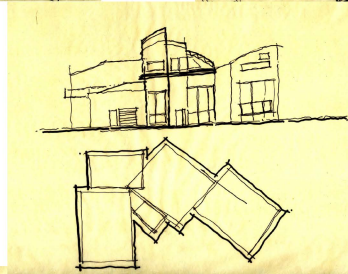
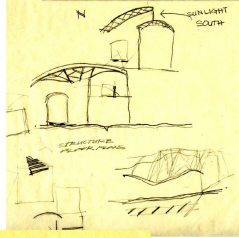
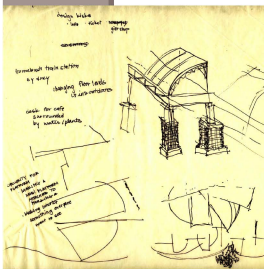
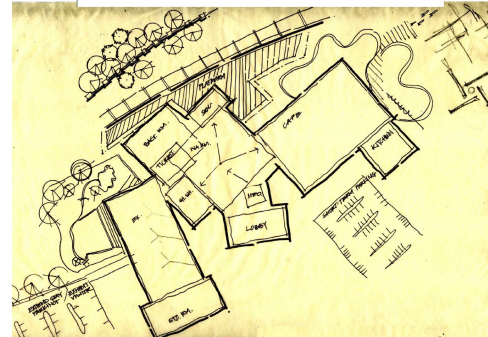
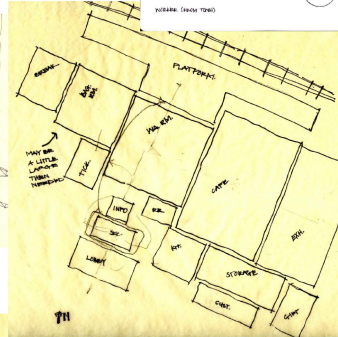
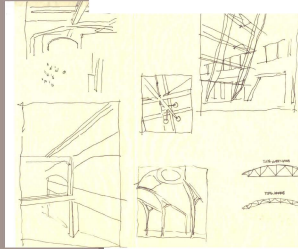
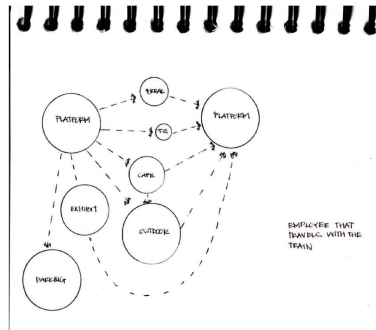
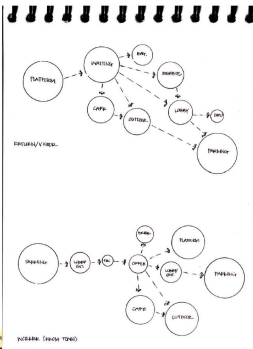
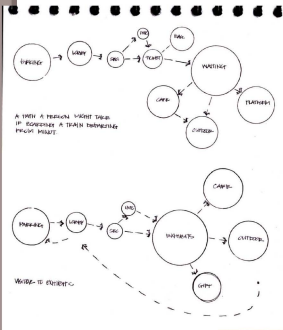
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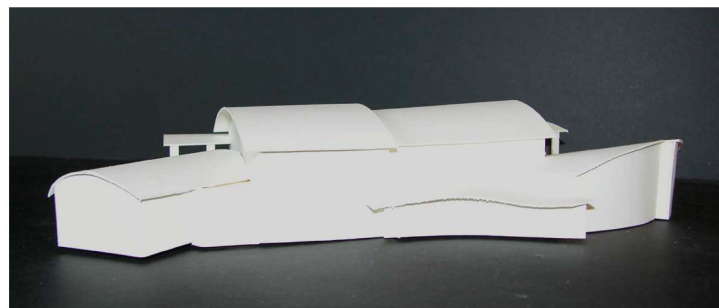
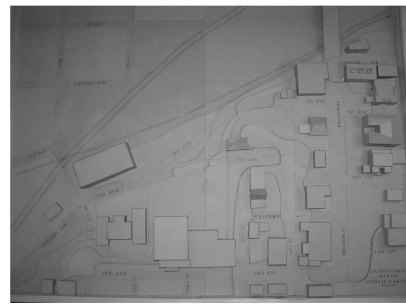
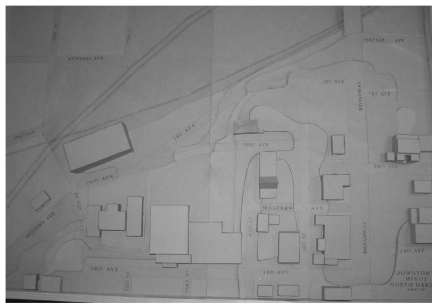
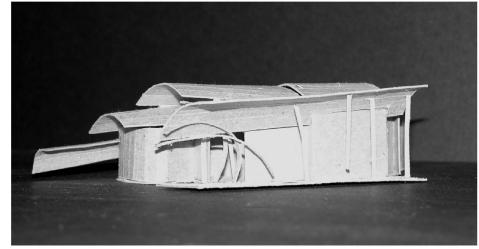
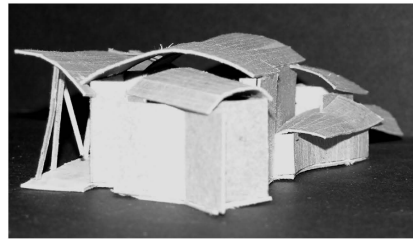
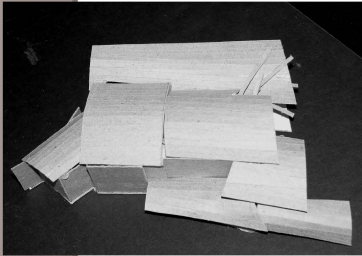
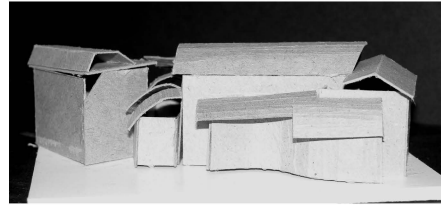
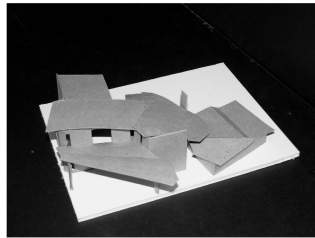
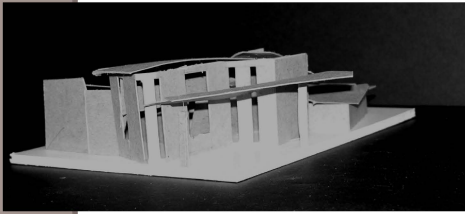
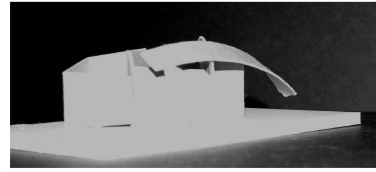
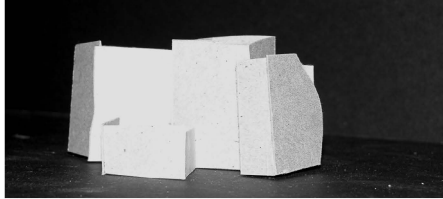
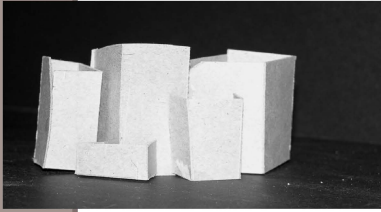
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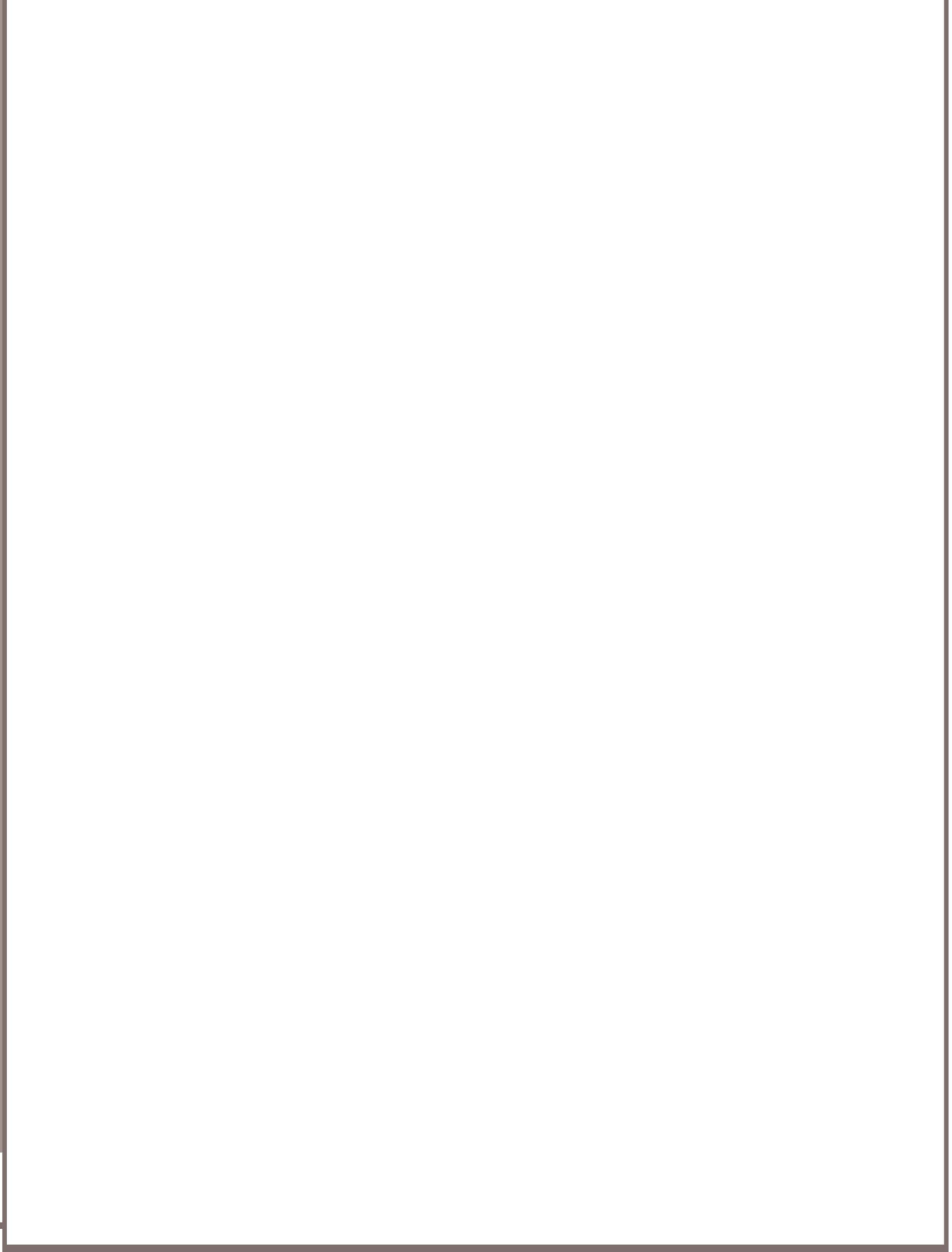
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# PROCESS DOCUMENTATION









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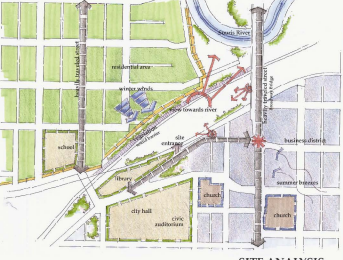
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# PROJECT SOLUTION

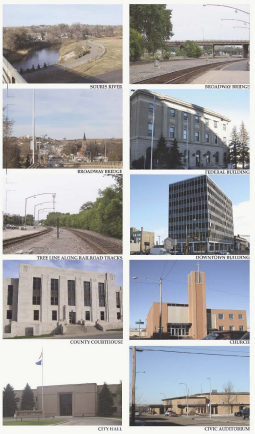




**SITE ANALYSIS**



The site is located on first avenue southwest in Minot, North Dakota. This location is near one of many loops the Souris River with tree-line banks, creating a park like atmosphere. The site location has the advantages of natural features such as the river and change in contours the valley provides, and has the added advantage of being placed in the downtown area. Since the train depot is approximately one block west of Broadway there are numerous businesses within walking distance of the station.



**SITE LOCATION**

**PROJECT OVERVIEW**

The subject of this project is the re-design of the Minot, North Dakota passenger train station combining it with an interpretation center creating a multi-use building. The key components of this design are to provide a smooth transition with the area surrounding the site, incorporate the influence of train travel and to stimulate an interest in mass transportation with the public. This train depot also provides an opportunity for the people of Minot to recapture the importance of the railway in the town's development and future.

**USER DESCRIPTION**

The primary building users will be individuals traveling on Amtrak. Their major concern is ease of check in, boarding and leaving the train car. The second major group are the visitors to the historical interpretive center. The main concern for those visitors is circulation that provides a guide. The third group of clients that the building must serve is the staff including Amtrak ticket/check-in counter, baggage claim staff, security, museum attendants, cafe service, and custodians. All these individuals require specific design elements to create a functional and enjoyable working environment.

**EMPHASIS AND GOALS**

The project emphasis is a train station, historical interpretation center, and dining services.

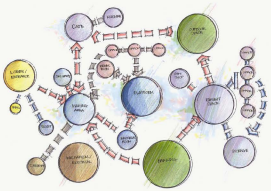
Providing a multiple use building to increase activity in the areas close to the site, specifically downtown Minot.

Another goal of this project is not to duplicate the surroundings, but to instill an experience, and atmosphere that draws people, in to feel the impact the train as mass transportation has on the area's past, present and future.

The train station must also convey its symbolism and importance to the workers and to those who the workers provide the service for. The train station will serve as a living history people can participate in; the railway was instrumental in the growth, life and stability for many towns across the country.

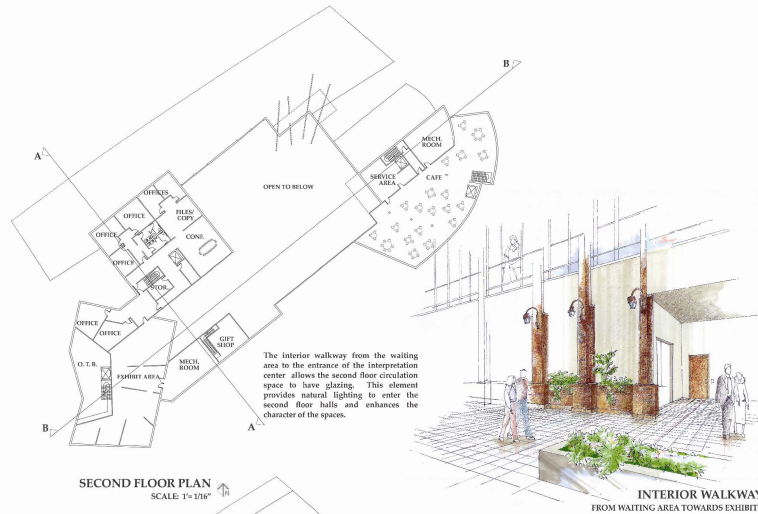
**PROGRAMMATIC REQUIREMENTS**

- Lobby/entrance
- Mechanical
- Cafe
- Gift Shop
- Information Desk
- Outdoor Gathering Space
- Ticket/check-in Counter
- Baggage Room
- Offices
- Security
- Break room/Lockers
- Waiting Area
- Platform
- Exhibit Space/galleries
- Storage



**SPATIAL RELATIONSHIP DIAGRAM**

**PROJECT DESCRIPTION**



SECOND FLOOR PLAN AND WALKWAY

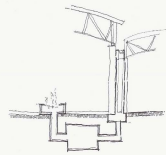


PLATFORM

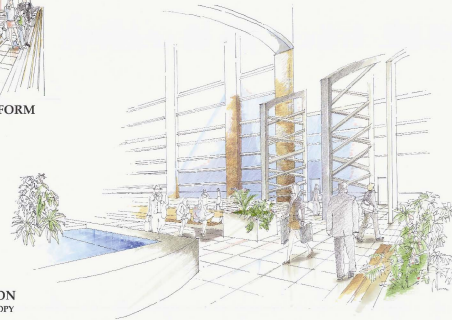
The platform has two materials. The change from stone pavers to ridged rubber creates a signal in where a person should wait safely until the train ready to board. The material change is not only a visual indication but a texture difference for the visually impaired.

Water collection between roof and canopy supplies the water features, the landscaping and the grey water used throughout the building.

The security process is the transition between the waiting area and platform made visible by open structure that intersects walls parallel to platform.



WATER DRAIN AND COLLECTION  
ROOF AND PLATFORM CANOPY



WAITING AREA INTERIOR VIEW

TRAIN DEPOT



CAFE EXTERIOR VIEW

The orientation of the cafe is angled towards the downtown business district to correlate with business base for that building function. Also, having the cafe facing southeast creates the opportunity for outdoor dining in the summer months.

Exhibit spaces open up towards the view of the railroad tracks, creating a connection between the materials displayed and the outdoor environment. The open two storey area in the interpretation center accommodates for large elements.



INTERPRETATION CENTER INTERIOR VIEW

CAFE AND INTERPRETATION CENTER



Sara R. Kempton

Overall the project experience developed a greater understanding of the full scope of effort that goes into a project. Completing this project provided opportunities to improve design development skills and advance organizational abilities that are required to produce a quality architectural design. However some things to consider for further personal growth, realistically look at how much work there is to complete in the project and how much time is necessary to finish each component. One issue that was encountered was completing the site model within a reasonable time frame without taking away from the design process. Creating detailed benchmarks for progress and honestly evaluating progress on those items would help schedule adherence and allow a more flexible schedule. This would also help in evaluating potential changes in plan versus staying on the original path in order to meet the end of semester deadline. One another key factor is to sketch or write down ideas and concepts that enter your thoughts no matter what stage of the project is in. Caution does not allow an idea to stick before all research is complete. Flexibility is essential to the development of a quality product. The most important aspect of the thesis design chosen was that I enjoyed working on it the duration of the project, which was vital in getting through the whole process.

Working towards the deadline.

