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# Northern Pacific Railroad Shops

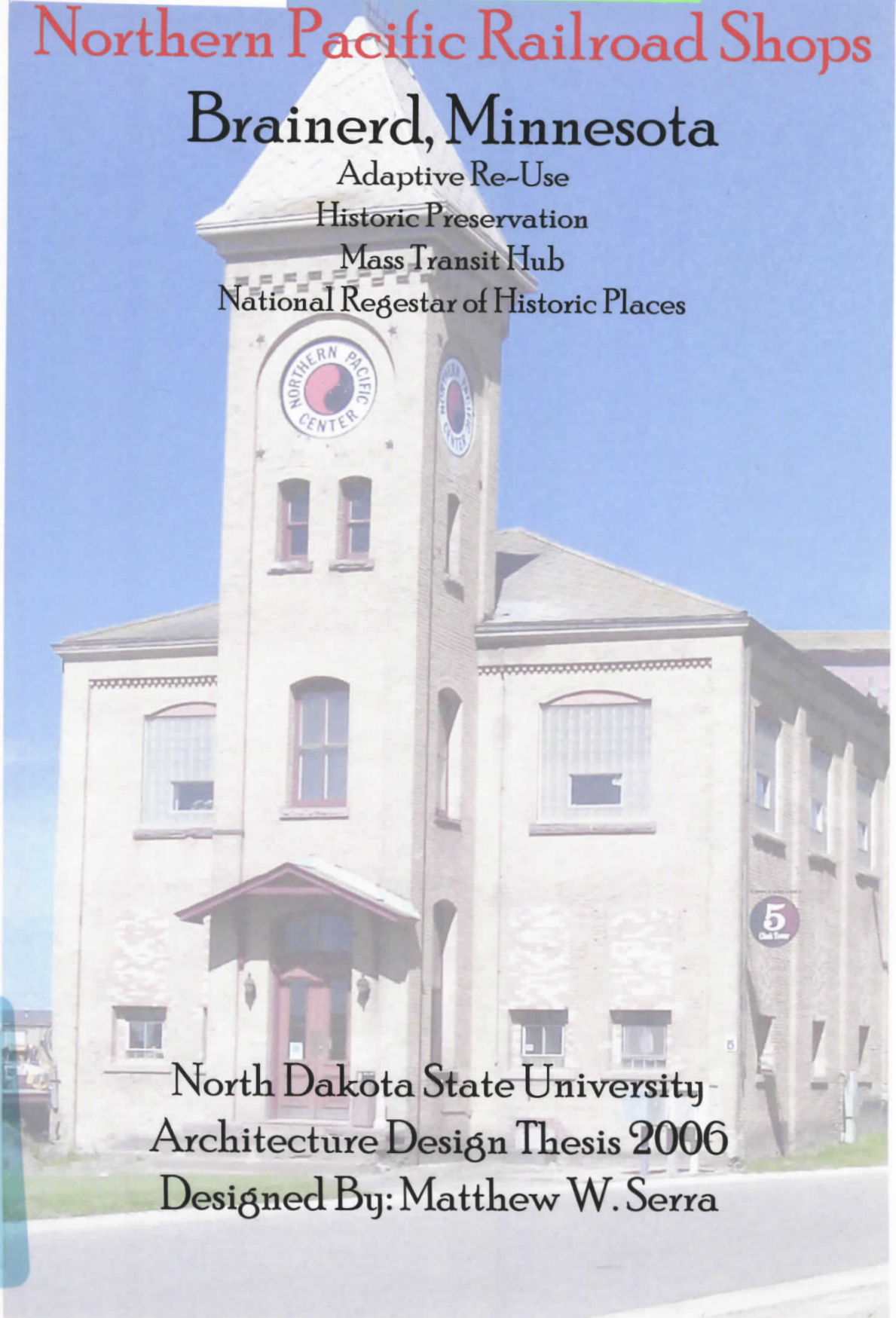
## Brainerd, Minnesota

Adaptive Re-Use

Historic Preservation

Mass Transit Hub

National Register of Historic Places



Serra, Matthew William.  
Northern Pacific Railroad  
shops of Brainerd,

Arch.  
Thesis  
2006  
Serra

North Dakota State University -  
Architecture Design Thesis 2006  
Designed By: Matthew W. Serra

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Serra, Matthew William.  
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**CIRCULATION**  
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# NORTHERN PACIFIC RAILROAD SHOPS of Brainerd, Minnesota

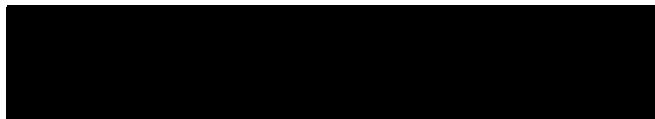
adaptive re-use  
historic preservation  
mass transit hub  
national register of historic places

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

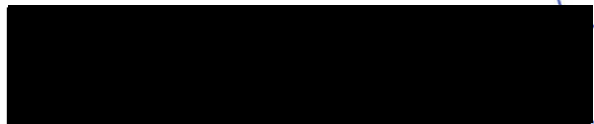
By:

Matthew William Serra

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



Primary Thesis Critic



Thesis Committee Chair

May 2006  
Fargo, North Dakota

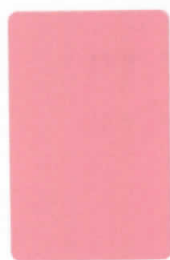
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## Statement of Intent

i. Typology: An adaptive reuse project in the old Northern Pacific Railroad yard in Brainerd, Minnesota.

ii. Theoretical Premise: "The thesis will examine," the fact that the built environment, even in a state of decay, possesses an economic vitality that is there to be tapped if we are sensitive to it. Design metaphors, analogies, and or tectonics will be developed from the examination.

iii. Justification: The area that holds the project site is the last decayed part of the city of Brainerd. Brainerd is in the midst of discussing the disposition of this place and this project will participate in that dialogue.



“The space within becomes the reality of the building.”

-Frank Lloyd Wright



Major Project Elements: The underlying principals of design will determined by the needs of the community and its' people. It is anticipated that adaptive re-use design will be needed. The following plan will try to address:



- 1) Acetylene Generator Plant and Power Plant Building re-use
  - a. adaptive reuse design
  - b. restaurant
  - c. brewery
  - d. winery
- 2) Blacksmith Shop re-use
  - a. store
  - b. nordecor bussiness relocation
  - c. blacksmith shop and metal working
  - d. design working shops
  - e. design studios



- 3) Boiler Tank Shop #1 and Foundry Boiler Shop re-use
  - a. specialty stores
  - b. county museum restoration
  - c. county historical museum annex (new exhibit)
  - d. showcase of historical exhibits associated with the site
  - e. eatery establishments
  - f. placing vintage locomotives and cabooses with the indoor space
  - g. parking



- 4) Engine House re-use
  - a. historic looking bar
  - b. restaurant
  - c. bathroom
  - d. kitchen
- 5) Lavatory Building re-use
  - a. gift shop
  - b. store
  - c. information center
- 6) Machine Shop #2 re-use
  - a. connected winter garden space to the boiler shop
  - b. indoor connected shops (useable in winter months)
  - c. vintage locomotive (DINKY)
- 7) Clock Tower Building
  - a. mass transit hub
  - b. hotel
  - c. hotel laundry
  - d. baggage claim
  - e. conference room



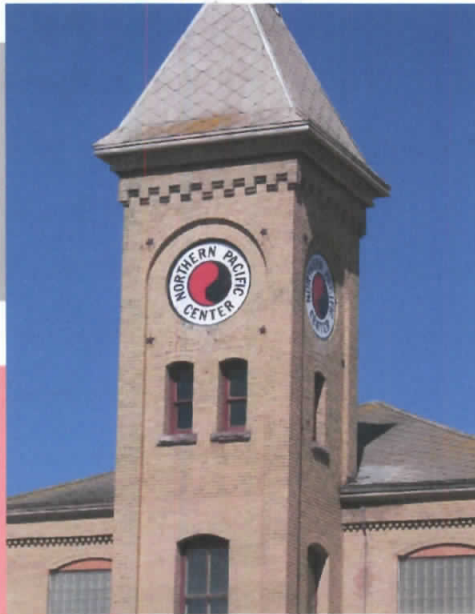
### The Narrative:

An adaptive reuse of the old Northern Pacific Railroad yard in Brainerd, Minnesota. This project will aim to restore the once bustling character of a site at the heart of the city. Comprising of 47 acres, the site includes several abandoned buildings on the National Register of Historic Places. Conformance to the Secretary of Interior's guidelines on buildings of the National Register will be followed for design consideration. A better utilization will include commercial, residential, and other tourist related functions, as well a rail link with other regional communities (Fargo, St. Cloud, Duluth, and Twin Cities). Linking people to other cities and old world charm atmosphere will be driving force behind the site. A phase in the design will be a consideration to allow for the project get underway.



### Design Ideas:

- Adaptive re-use
- Mass transit Hub
- Historic preservation
- Buildings on the National Register of Historic Places



- Reestablish old transportation corridors
- Redevelopment to better fit more needs
- Areas for commercial and industrial growth
- Look to the past
- A vision for the future
- Place for public interaction

### A User/Client Description:

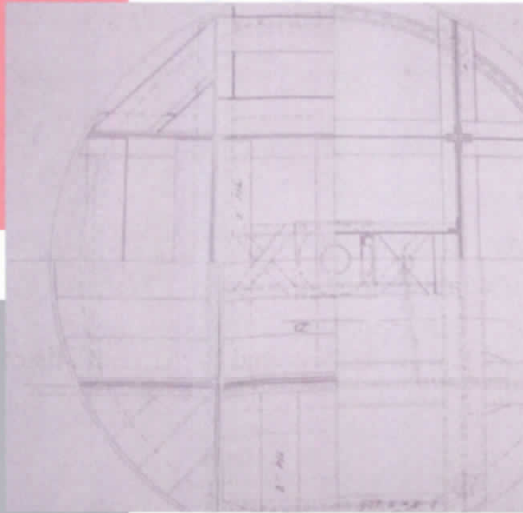
This project is primarily for the citizens of Brainerd and the tourist that vacation here. Also the design is intended for the general public who use the mass transit system.







- 8) Pattern Shop and Storehouse Building re-use
  - a. industrial style apartments
  - b. parking to the east
  - c. laundry
  - d. roof garden
- 9) Roundhouse Foundation
  - a. green space of flowers
  - b. mimic the old pattern of the foundation
- 10) Transfer Table Foundation
  - a. plaza



#### Site Information: Marco to Mirco Scale:

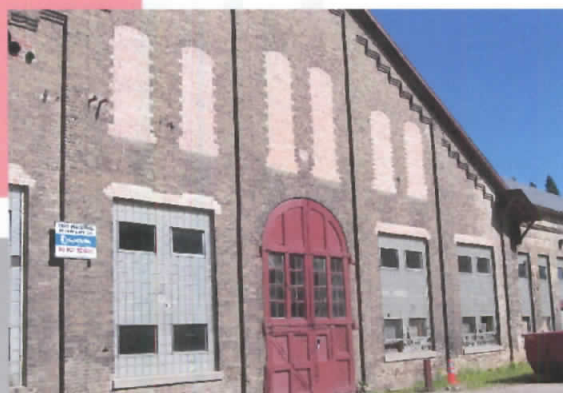
Located within the heart of the lakes country, the city of Brainerd; is located about 65 miles north of St. Cloud, Minnesota. The majority of site is incorporated within the city limits of Brainerd, Minnesota. However, the transportation railway may stretch across the entire state. Due to the city's location; makes it very likely to be highly inhabited place in the near future. The reason this site is so important is because it contains the original infrastructure that helped take the iron horse to the vast wilderness. This site has plenty gestalt quality that has been preserved for years. The original function of this railroad yard was to achieve a maximum industrial yield.





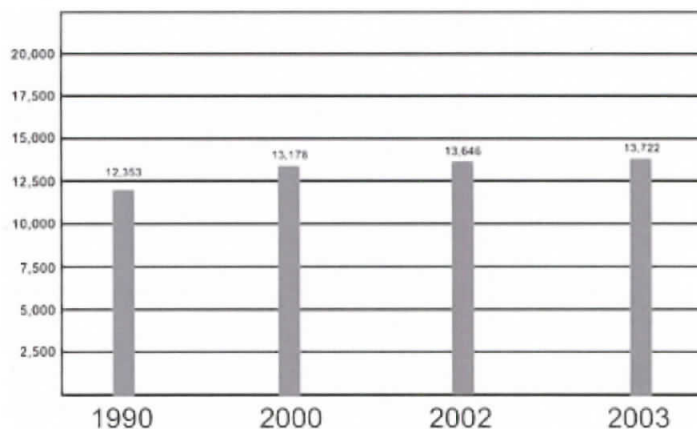
A modern, harmonic and lively architecture is the visible sign of an authentic democracy.

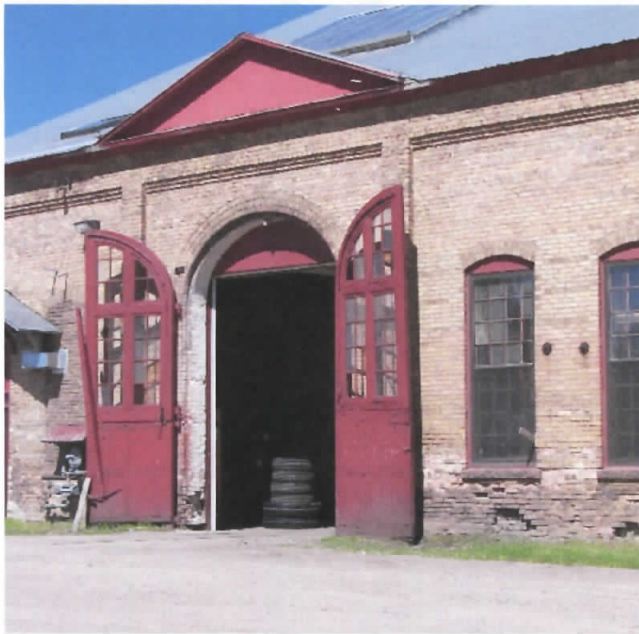
-Walter Gropius



When examining the economic base for this site, it has been used and abused by industrial activity for well over a century. However, the original intent was to transport harvested goods from the surrounding lands. These goods were lumber and iron from the Cuyana Range. It happen to be that Brainerd, was best place to place this train yard. It could take advantage of the Gull River, Mississippi River and mining trails to the North-East. When the age of semi-truck started to dominant the highways, this rail yard became obsolete and outdated. In the 1960's, Burlington Northern Railway built a new repair shop on the North side of the tracks. Once this new shop opened the old rail yard and old shops were neglected for quite some time. In the past decade the BNSF, sold the land. A local reality company bought the land, with the intention of making a few bucks.

Currently, this site houses a impound car lot, Heartland Goodyear Tires warehouse, Fed-Ex warehouse, cell phone tower and a few miscellaneous shops. According to Brainerd Area Chamber of Commerce, "Population growth is outpacing much of the state and is anticipated to increase by 20% by the year 2010. Commercial and residential construction is rising each year".





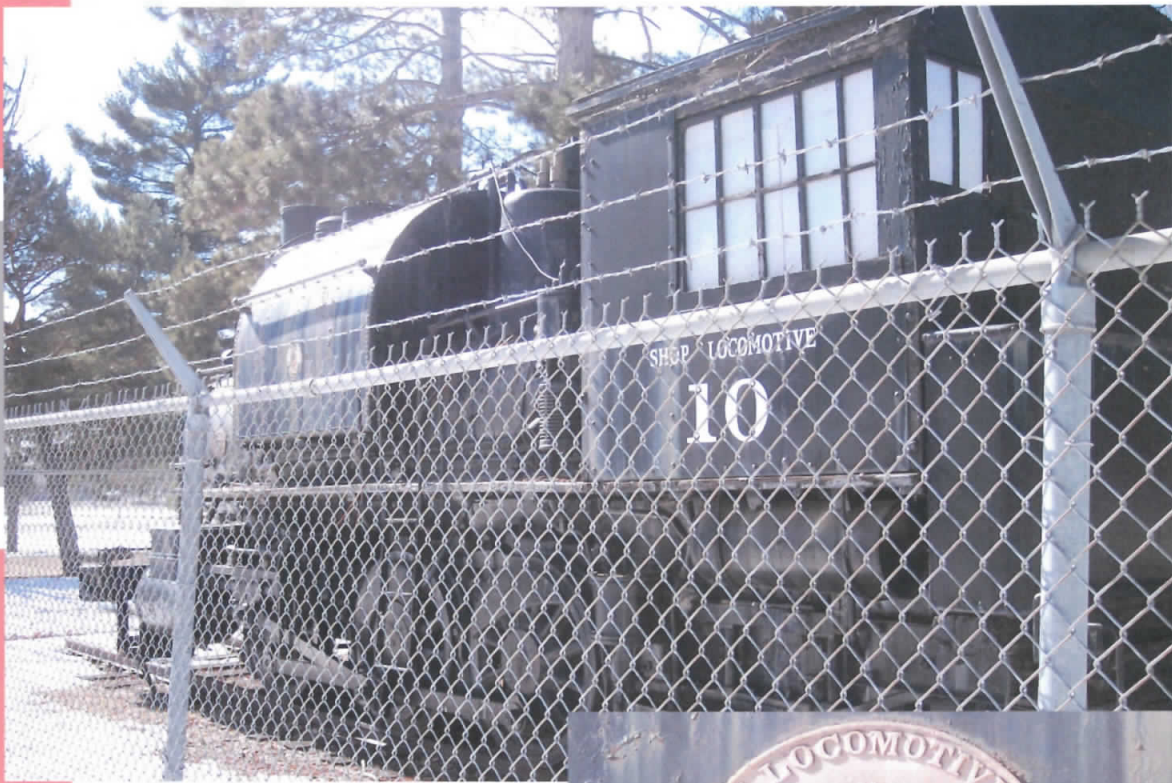
In the past, the local demographics were steadily growing slow. Over the past few years the city has become a tourist destination for people all over Minnesota. These tourists eventually plan to retire and build Lake Cabin homes within the lakes area. Currently, the demographic trend within the city has been has had a high influx of people migrating into the surrounding lakes area. Demographics of many people's heritage are a rich concentration of Scandinavian, Germany and other Western European countries. Thus, making a plentiful melting pot of old world cultures demographics. "Since 1970, Crow Wing County's population has increased by almost 60%, growing from 34,826 to 55,099 in 2000. The area's population is expected to continue to increase more than 20% by the year 2010 and more than 60% by 2030 (Brainerd Area Lakes Commerce)."

It was the train that brought these people to Brainerd, Minnesota. The Railroad industry had provided jobs, homes, hospitals and money to tame the vast unknown wilderness of Minnesota. It was industries like this that help pioneers settle the country side.

In 1805, Lt. Zebulon Montgomery Pike camped here some 8 miles south of the present city. According to the Brainerd Area Lakes Commerce, "a robust fur trade between whites and Native Americans. The newly added security of Fort Ripley quickly brought many more people into the area. By 1848 the fur trade was slackening, and logging quickly became the area's primary industry." It was this area of Minnesota where the Native Americans and White Settlers interacted. The city itself has many historical ties to the railroad industry. The founder of the Northern Pacific Railroad: even gave the name to the city "Brainerd". The name derives from the founder's daughter "Brainerd". It was the start to a new city around the year 1870. Some time after Minnesota became a state within the Union. Around the year 1872, the "Blueberry War" this incident happened here in Brainerd. When a few troops from the nearby Fort Ripley, killed some Native Americans; whom came to town selling wild blueberries. With technology improving the railroad industry this would in turn help tame the Wild West while creating new cities along the way.



Northern Pacific Railroad workers from the Brainerd shops.  
Boiler Shop workers from the 1880's



“Dinky” the Steam Engine was built for the Northern Pacific Railroad Roundhouse in Brainerd. This steam engine would pull and push trains cars about the yard for repair. It was built by the Baldwin Company in 1896. The train was given to the city from Burlington Northern some years ago. However, “Dinky” needs to back home to the yards which it spent most of it’s working life. Incorporating “Dinky” into the thesis will add historical appearance of the site.



Northern Pacific Roundhouse: Brainerd, Minnesota  
Round House  
Dated 1870.



Brainerd: even became the first city to span the Mighty Mississippi River. It would later become a cornerstone for a high-tech railroad yard. This yard would fix and house any to all of the Northern Pacific Fleet of locomotives. When analyzing the site, it was the heart of the entire Northern Pacific Railroad. By the year 1881, a new economic boom hit the city, people from all over came into the area to work in this railroad yard to aid in the American Industrial Revolution. Even the water original water tower of Brainerd: was the first concrete structure like it in the United States. This tower is no longer in operating service, but still stands as a landmark to the city. It was all of the original connections from the railroad all were directly routed some way to Brainerd, Minnesota. Thus: making for an important industrial connection to far away cities.



Northern Pacific Headquarter Building: Brainerd, Minnesota. Dated 1872.  
Washington Street (HWY 210).



Sanitarium of the Northern Pacific Beneficial Association:  
Brainerd, Minnesota. Dated 1883.  
Destroyed

When looking at Brainerd geographically, the city falls on the center of Minnesota with the Mississippi River slicing the town into two parts. The current site location has a Northern boundary of Minnesota Highway 210. The Western boundary edge is 13th Street South-East. Yet, Laurel Street is the Southern boundary edge of the site. To the East is just a property line defines the boundaries, with no connecting streets to the East. "The exact size of the site is 47.74 acres within the city limits of Brainerd. Currently, the site is zoned as I-2 heavy industrial while including buildings under I-1 light industrial zoning" (Progressive Property Management, Inc).



Northern Pacific Depot Building.  
Brainerd, Minnesota. Dated 1928.  
Washington Street (HWY 210).



Northern Pacific Office Building: Railyard of Brainerd, Minnesota. Dated 1971.

When analyzing the site, it contains 12 structures and or sites which are listed on the national register of historic places. This would in turn make them landmarks to the city, due to importance and historic protection these building possess. Other landmarks for the site would have to be the major line BNSF railroad track to the North. It acts a landmark within the city as well as a place of departure for the trains.

Acetylene Generator Plant

Blacksmith Shop

Boiler Tank Shop

Foundry Boiler Shop

Lavatory Building

Machine Shop

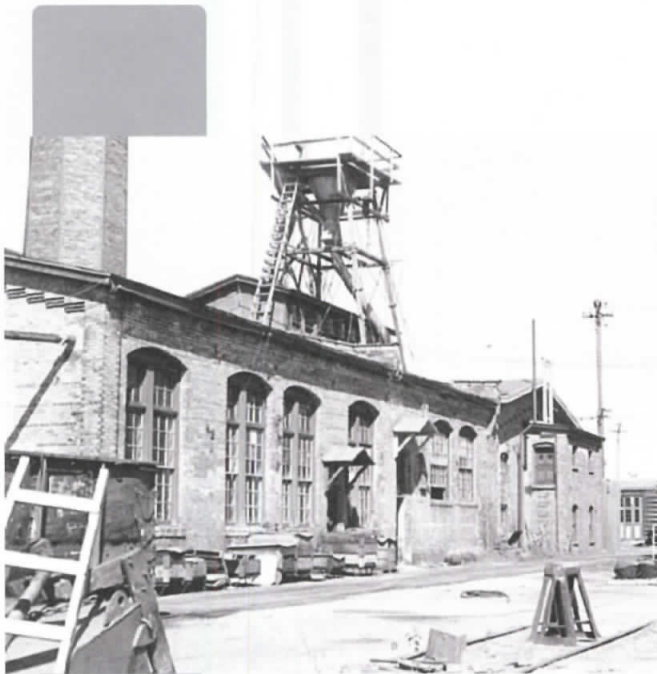
Office and Storehouse Building

Pattern Shop and Storehouse Building

Power Plant

Roundhouse Foundation

Transfer Table Foundation



Shops along the Northern Pacific Railyards of Brainerd, Minnesota. Dated 1971.





This site contains some slight natural drainage, to the east. The eastern edge is defined by the DNR as a wetland marshy area. While; the far Western edge would have natural drainage to an area that once was all used by the Mississippi River for flooding embankment. The Deep highly sloped ravine, to the West: would naturally drain into the Mississippi River Basin or underground springs. When looking around the existing city, a scenic view of the buildings reaches over the tree canopy creating a green space that had grown around old industry. The scenic value when driving down Highway 210 looking east, you can see the old Power Plant tower and the clock tower from about a mile away. It is this view that is worth saving for future generations to come.

The ecological issues containing this site would include the “Laurentian Mixed Forest Providence” (according to Minnesota DNR). While ecological providence is divided into the Northern Minnesota Drift and Lake Plain. The prevailing winds analysis of Brainerd is shown in graphs below according to Minnesota DNR climatology department. These wind rose diagrams help explain the change in direction of prevailing winds over a course of time.



Project Emphasis:

The primary area of interest for this thesis is to redevelop and abandoned railroad yard while using adaptive re-use design. While the interest of the thesis: has been prioritized to aid the intended emphasis.

Adaptive re-use to rehabilitate an otherwise useless site with plenty of opportunity for new program elements while keeping the integrity of the old train yard somewhat intact.

Mass transit Hub to re-establish old historic paths and to allow for rapid movement of people to far away places of destination.

Historic preservation in order to preserve local historical buildings that help make the city what it is today, while remember the key points to past. Bring the past alive again would be one design consideration.

Buildings on the National Register of Historic Places would allow for an interesting design solution. Also, creating a historical function to the program element

Reestablish old transportation corridors would allow our society to save money, save fossil fuels, put less strain on highways and interstates and increase the overall quality life for people whom use this transportation device.

Redevelopment to better fit more needs of the an expanding city would allow for economic activity to thrive in this industrial ruin, create jobs and help spread the population shift better over the existing city area.

Areas for commercial and industrial growth this could bring more money into the tax base, provide jobs, places to visit. While still allowing for new expansion projects that could keep this site up to date not out-dated.

Look to the past is a key element that people overlook, the past was a more simple and humble life style that perhaps many people would enjoy after a hard life of stress and working.

A vision for the future is necessary for the future growth predications. This site has enough opportunity to enrich the lives of people whom use it.

A Place for public interaction: currently, this city has no such places except for a few parks. This would be a multi-functional public area that citizens of this community can meet on debates to craft shows.

A Plan for Proceeding: Thesis Dates & Deadlines 2005-2006

Research and analysis will be by a Mixed Method, Quantitative Qualitative Approach:

- I. A concurrent Transformative Strategy will be employed:
  - a. The strategy will be guided by the theoretical premise.
  - b. Implementation:
    - i. Both quantitative and qualitative data will be gathered concurrently.
      - c. Priority will be assigned by the requirements of the theoretical premise.
      - d. Integration of data will occur at several stages in the process of the research and will depend on the requirements of the examination of the theoretical premise.
      - e. Analyzing, interpreting, and reporting of results will occur throughout the research process.
    - ii. Quantitative Data, including but not limited to:
      1. Statistical Data:
        - a. Gathered and analyzed locally or obtained through an archival search.
      2. Scientific Data:
        - a. Measurements obtained through instrumentation and or experiment:
          - i. Gathered directly or through an archival search
          - iii. Qualitative Data:
            1. Gathered from direct observation
            2. Gathered from a local survey
            3. Gathered through an archival search
            4. Gathered from direct interviews
        - b. Design Methodology
          1. two types:
            - a. Graphical Analysis:  
Interaction matrix  
Interaction net  
Venn diagrams  
Morphological charting  
Etc.
            - b. Language Based:  
Philosophical  
Phenomenology  
Dialectical



c. Documentation of the design process:  
-By digital means

Photographs of the site  
Models : digital and physical  
Scanned images of sketches  
Digital Drawings  
Sketchbooks

## Schedule of Work:

### Fall Semester 2005

T 23	August	Classes begin
T 23	August 1st	Thesis meeting during AR 561 Course
F 30	August	1st Draft of Thesis Statement of Intent due to 561 instructor
F 02	September	First draft of Thesis Statements returned to students in class
M 05	September	Labor Day Holiday
R 08	September	Revised Statement of Intent due to AR 561 Instructor (3 copies)
		Thesis Committee meeting to review Statements of Intent
M 11	September	Statements of Intent sent to faculty for review
M 19	September	Statements of Intent returned to AR 561 instructor Previous
T 20	September	Marked-up Thesis Statement of Intent available in AR 561
T 20	September	Student critic preference slips & faculty preference slips available
R 22	September	Students and Faculty return preference slips to main office
T 27	September	Primary Critics announced
R 06	October	Thesis Proposal due: to AR 561 Instructor (1 copy)
		Proposals distributed to faculty for review
H 20	October	Grades for Proposals due to AR 561 instructor
R 27	October	Last day of AR 561 Class
F 11	November	Veterans' Day Holiday
M-F 14-18	November	Final Week of AR 571 Design Studio / presentations
W 23	November	Draft Thesis Program due to Primary Critic (1 copy)
R-F 24-25	November	Thanksgiving Holiday
R 08	December	Final Thesis Program due to Primary Critic (1 copy)
F 09	December	Last day of classes
R 15	December	Program grade due to AR 561 course instructor
M-F 12-16	December	Final Examinations

### Spring Semester 2006

T 10	January	Classes begin
M 16	January	Martin Luther King, Jr. Holiday
M 20	February	President's Day Holiday
M-F 06-10	March	Mid-semester Thesis Reviews
M-F 13-17	March	Spring Break
M-F 20-24	March	Finish project
M-F 27-31	March	Finish Final Drawings, Plot
M-F 3-7	April	Mount Final Boards, Start a model
M-F 10-14	April	Finish Model
F-M 14-17	April	Easter Holiday
M 24	April	Thesis Projects due at 4:30pm on the Fifth Floor Downtown
T-W 25-26	April	Annual Thesis Exhibit on the Fifth Floor Downtown
R-R 27	April	2005 May Final Thesis Reviews
F 28	April	Draft of Thesis document Due to Primary Critics
F 05	May	Last day of classes
M-F 08-12	May	Final examinations
R 11	May	Final Thesis Document due at 4:30pm in the Department office
F 12	May	Commencement at 5:00pm Fargo Dome



**Previous Studio Experience:**


Fall 2002- Professor Bakr Ahmed: 'Office Building'  
'Fargo Expo 2003' Fargo, ND  
'Big Store Design: Lexus Dealership' Fargo, ND  
'Daycare Center' Fargo, ND  
'Bison Courts: NDSU' Fargo, ND




Spring 2003- Professor Milt Yergens: 'Concrete Buildings / Internal Systems'  
'Mixed Use Offices / Apartments' Fargo, ND  
'Coptic Canadian Religious Museum' Toronto, Canada



Fall 2003- Professor Ron Ramsey: 'Shaker Barn, Concert Hall' New Lebbanon, NY  
'Pipestone Interruptive Cultural Center' Pipestone, MN



Spring 2004- Professor Vince Hatlen: 'Fat Wall Design: Used Tires' Hawley, MN  
'Montessori School' Fargo, ND  
'Masonry Competition, Mixed Use Renaissance Zone' Fargo, ND



Fall 2004- Professor Rebecca Pinkston: 'Figure Ground Studies'  
'Forum, Rome Figure Ground'  
'Plaza Design'  
'St. Paul Redevelopment Project: Holman Air Field' St.Paul, MN



Spring 2005- Professor Mark Barnhouse: 'Sustainable Skyscraper' San Francisco, CA  
'Downtown 2 NDSU, Marvin Windows Competition' Fargo, ND



Fall 2005- Professor Steve Martens: 'Fargo City Hall/ Winter Garden' Fargo, ND

Architecture Seminars: 'Historic Preservation' Spring 2005- Professor

Steve Martens

'Architecture Now' Fall 2005- Professor

Rebecca Pinkston





## Program Document

The Theoretical Premise's research is conducted of the following areas.

### Geology:

The geologic study of the area dates back millions of years ago. When looking at the complexity of the area one can't forget the time it took for area glaciers to recede. Two kinds of Glacial till, or slightly different age and marked different composition have been deposited in the country, The Wisconsin (Cary) till, referred to as brown sandy till. This material has a sandy loam texture and is usually compact. This till occurred in two drumlin areas. In the Northern part, is located north of Whitefish Lake. The other area occurs in the south part of the county, just south east of Brainerd.

More recently during the last glacial age Wisconsin (Mankato), this material is referred to as fine textured; it was referred to as red clay till. This till occurs primarily along the north and south shores of Mille Lacs Lake. Gravels and sand from out wash area occur throughout the county. As well the sizable area of well sorted sandy outwash that boarder the Mississippi. Sand dunes have a tendency to develop along the river here.

The soils structure of Brainerd is very good for construction and road building. Unlike silty clays that move and swell sand, well drained soils shed the water not absorb water like clay soils. Since agriculture is not dominant in this economy, mining the land of resources is. From mining for steel, logging to harvesting gravel and sand from pit is common in Northern Minnesota.



### Anthropology:


This study would include but not be limited to the following areas of Anthropology. During past thousands years this area was once a melting pot for receding glaciers. As the Mighty Mississippi is slowly carving a path, Brainerd was just starting to form. As the last glacier left the area it carved deep channels and holes. Eventually filling in with water to create lakes and rivers.

When examining the impacts of the first human existence would have been very closely associated with the Native Americans which were indigenous to the area. The Ojibwa band and Sioux band of Native Americans once peacefully lived in the area together. However, slowly times changed and these tribes eventually fought a long bloody war. The Ojibwa won, and forced the Sioux to the Great West. The Ojibwa went back to hunting and gathering along the Central Minnesota.

When the Sioux were forced to the West, they had to change their own way of life to survive. It was the whole a new way of life for these people. The Sioux would be dependant upon the buffalo and other animals for everything. They eventually started to live in Teepee's moving like nomadic herds following the buffalo. The buffalo to these people meant their entire life food, spirit, clothing, housing and a way of life. Mean while the Ojibwa were still peaceful people hunting and gathering from wigwams.

Here we have to indigenous tribes whom lived in peace together for years. But after the war and separation of these two different cultures would eventually have one thing in common the hate of Western Expansion into their tribal lands. The fur trade people slowly migrating along the ways trading with these people in a friendly manor. Once fur was unpopular, logging the area quickly began to create a huge boom of migration. For the first time people from many differing countries were coming here to all have one purpose make a small fortune.





It would be the influx of population to the area called Brainerd, that would aid it to become important for the coming years. When lumberjacks quickly ran out of trees nearby, they could not float down stream; they needed something else? It would be the Northern Pacific Railroad that would eventually transport these goods out and establish a city along the way. The Railroad industry built this town, but as it grew so did it's industries. Lumber, logging, papermills and Railroad maintenance all had new homes in Brainerd. As time progresses so did change to the area. Much of the area was still like it was since the 1930's and 1950's. The latest trend in the area is people migrating here to vacation or retire here. As a society we need to help all people by preserving our past while promoting a healthy sense and well-being for the future.



### Materialism:

This study further helps explore the idea of what exactly this environment is made of as matter and materials. When exploring this view point one but can forget that most of this site has a built environment from the 1870's to the 1930's. During that time different construction methods have been used to get the job done. However, when analyzing the building materials one could speculate the abundance of a few major materials.

- Wood
- Brick
- Masonry
- Stone
- Heavy Timbers
- Cast Iron
- Steel
- Glass
- Concrete
- Metal (various)

These differing materials have helped to create an interesting canvas to work with. Over the half century much of these materials have fallen into neglect. With the Sun, Wind and Mother Nature are all slowly decaying these materials. In order to carry on some tradition some things need to be replaced for the better. After all, that is what they would have done back then. The old saying "If it ain't broke don't fix it" applies to much of the materials. In the end it will be the materials of the site that help to capture the past. Not some new off the shelf material.

As our culture slowly grows we need help embrace the past. Learn from it and gain a better understanding of life from a different period of time. This is when materials really help push Historic Preservation to a new realm.



### Economics:

Brainerd would later become a huge wheel in the economic development of Northern Minnesota. The main items that need to be exported and imported are lumber from the North, iron ore from the North-East and wheat from the West. These local items create a certain trade route that still is somewhat left today. All of these goods needed the Railroad for moving people or items quickly. The entire railroad industry needed areas like this to quickly gain capital and make it to the Pacific Rim before the other.

The ironic thing is that Great Northern and Northern Pacific quickly have a race to the west over the years. Just like brothers almost. Each one out doing the other for home field advantage. However, this would quickly change when Northern Pacific would set up shops and headquarters in Northern Minnesota. This idea was to control Northern Minnesota from an economic standing point. Then the NP can control interests in Red River Trail, Mississippi River, Iron Range and the Lumber Industry. Meanwhile, James J. Hill headquarters is in St. Paul, Minnesota. Eventually, a certain amount of wealth flows down to St. Paul from the North, because these are the people who have an interest in the North.

At this point in time the idea of making a quick fortune and leaving quickly with it applies here. Maybe not like gold mining, but with in reason. Many people immigrated to Brainerd in search of a vast wilderness full of riches one could sell. The days of exploiting Minnesota's resources are almost over.

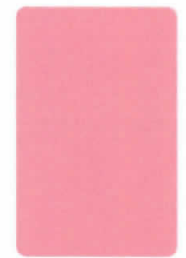
Many people in the 1930's began to enjoy the Northern Minnesota. This is when Folk Lore of Paul Bunyan and Babe the Blue Ox came about. The idea was to switch the economic factors away from industry and more towards tourism. With places like Madden's, Grand View Lodge certainly made people fall in love with the outdoors again.



As time past on so did tourism and industry here. When the highway acts were put in place the city really began to change. Suddenly people would start to build cabins and vacation here for the summer. So later people would move here to avoid the complexity of life in the big city. Thing started to change for the city, it took them years to figure it out.

By the 1960's, Northern Pacific and Great Northern merge to become Burlington Northern Rail Road. When this merger went through the city economic went down. Brainerd was the headquarters for the Northern Pacific. Now some 3,000 men would be unemployed and the offices relocated to St. Paul. Now Brainerd had to do something.

Not until the 1980's did Brainerd begin to expand and grow economically. The advent of transportation, retail, industry and tourism finally worked out. The growth and change that has happened here is one for the record books. More change and economic prosperity has happened in 25 years than the cities entire life.



### Aesthetics:

When looking into the Northern Pacific Railroad Yards, the aesthetics become a big factor. One can not avoid the amount of brick, glass, and heavy timber construction that has taken place. The concept of the a neglected intrustrial site has put futhermore increased the aesthetics of site. The current condition of site in only a few years from being destroyed. The little items that I would like to address here would be things like the corbeling of the brick work. It is common on every building included in the site. These brick workers used a angled pattern (like saw teeth) along the top facial boards. One other iteresting item would be the honey comb like brick work on the clock tower building.

The use of brick and the ways the structure is present through the architectural details helps create rhythm and balance along these long elevations. When looking at other details of these buildings, one can not over look the use of Lake Superior Red Sandstone. Along almost every window sill has a slab of this rich red red sandstone that adds more charm to the site.

One other factor that is so common would be these huge oversized factory style windows. To provide more sunlight and ventilation for these railyard workers. At one time some 3,000 people worked in these railroad yards every day. That requires a lot of ventilation. Not to metion the first uses of early metal work and welding. Which is very dirty and requirie rich light and plenty of ventilation.

Finally, the last item would have to be the sense of time. The notion of how the railroad industry had created time zones and times. When the orginal clock tower had a clock in it, it help further establish the importance of railroads and being on time with the clock. When desiging, a new replica clock should be considered. It will bring back some old world character back to the site, yet still functioning a clock for locals.



## Case Studies:

The following are building studies in which harness the inner beauty and have created positive feedback. Many of these studies are from around the country, allowing for patterns, cultures, and regions to aid in further future of these case study building types.

### Case study locations:

i. One from New England and the Northeast:

1. **Maine to New Jersey**  
Altoona Railroads Museum, Altoona Pennsylvania

ii. One from the eastern seaboard:

1. **From Delaware to Florida**  
Baltimore / Ohio Transportation Museum: Baltimore, Maryland

iii. One from the South:

1. **From Georgia to Texas:**  
Alabama Rail park Project, Montgomery Alabama

iv. One from the Midwest and Great Plains:

1. **From Ohio to the Rocky Mountains**  
Cincinnati Union Terminal Building, Cincinnati, Ohio  
Great Northern James J. Hill Building, St. Paul, Minnesota

v. One from the West:

1. **Colorado, Texas, New Mexico, Utah, Arizona, Nevada, Wyoming, and Montana.**  
Nevada Northern Railroad Museum, East Ely, Nevada

vi. One from the west coast:

1. **California**  
Ferry Terminal Building, San Francisco, California

vii. One from the Northwest:

1. **Oregon, Idaho, Washington.**  
Pikes Place Public Market Historic District, Seattle, Washington



## I. Case Study Research

### i. Altoona Railroad Museum: Altoona, Pennsylvania

Altoona Railroad Museum offers us a glimpse of the past while highlighting on a few areas. The project itself is the Allegheny Portage Railroad National Historic Site and Horseshoe Curve National Historic Site. Currently, since 1998 this site has been able to bring back the life to a once dead industrial city. An adaptive re-use of this site and surrounding landscapes have enabled this city to capture its' own history again. As for a location this site rests in Altoona, Pennsylvania. Altoona was the hub city for fixing and service of the railroad industry. Much of the steel in Pittsburgh needed the help of Altoona Rail-yards to transport American Steel across the United States. As a whole this railroad yard and scenic landscape encompass several hundred acres. Not to mention that in 1945, the world's largest rail shop complex was the Pennsylvania Railroad's facilities in Altoona.

One distinguishing element to this case would be the Horseshoe curve track. This has been considered a scenic landscape across the valley edge. Other elements are the industrial architecture & engineering that have been preserved here. An existing program element; on this site are a few things, adaptive re-use, historic preservation, industrial importance to a country, and finally the ability to find alternatives this site.

This case has plenty in common with the other case studies. It has an importance in the railroad industry. The buildings from this site date back to 1850's and up. Also this case study was a major railroad hub for Southwestern Pennsylvania. This rail-yard has been instrumental in the advancement of the industrial revolution. Other factors that might not be in common with other case studies would that it was one of the largest railroad yards in the world. Other factors are the topography surrounding the site. Not forgetting that age of these building is at the start of industrial revolution around 1849, not the middle to late like in Brainerd, Minnesota.



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This case study finding has been able to respond to its' site given. When looking at it environmentally, it has preserved the industrial site. By putting man and nature back in control of a once useless site from years of neglect, has enabled this environment to flourish for the future. The ability to preserve the horseshoe curve as a scenic landscape has help this environmentally by protecting it from logging, condos and or commercial development. When analyzing the social issues, looking back Altoona had employed some 15,000 people at one point in time. This was the size of a small to moderate town for some folks.

After looking a close underling social issue, this town has preserved a piece of their very social culture with the Railroader's Museum. This particular museum is designed in such a way that it can educate while serving as National Landmark for the city. While helping to making use of tourism to help generate some capital resource for the site. The railroad workers of the past had brought with them differing cultures and ethnic diversity when they moved to Altoona, Pennsylvania. The factors leading to decay of this site are as such. The rapid advancement of the automobile, United States Highways and Interstate Highways, Semi-Truck transportation and the Aviation Industry have led trains into the past. With fuel on the rise, trains should bring back the glory to the county.

Altoona, Railroader's Museum, has plenty of key concept ideas that can be further looked upon in time. However, furthermore the overlying concept principals that needs to be addressed. The historic preservation, adaptive re-use, preserve a culture and by preserving the scenic quality of the landscape. These in turn are the closely related concept principals.



## ii. Baltimore / Ohio Transportation Museum: Baltimore, Maryland

The Baltimore / Ohio Transportation Museum, is located at the Mount Clare railroad shops. This site is to be considered an adaptive re-use project, yet with some reconstruction of historic structures on the site. It has been considered that this was the birthplace of our American Railroad Industry. In 1953, this site was to be considered a National Landmark by the United States Department of the Interior. As a historic site this area consists of around 40 acres containing significant buildings, structures, and train collections.

One characteristic of the site is the relative size and time period. Many of these railroad buildings were built with such durability that that they have taken 150+ years of neglect. The architectural characteristics of gabled roofs, exposed structure, large windows/doors and ability to use local materials all are present here. The idea of encasing time period train relics is very much present. This case study try's to capture an 1800's railroad yard era, with a working passenger train system. Using tourism as fundamental money making machine seems to work well, however due to the mild winters in Maryland probably bring in enough money for the winters'.

Many factors are present in this case study which are the following. One is the ability to recapture a dead era of the railroading industry. Another is the architecture of buildings and structures present and re-built help with the era style. Finally the size is very comparable being about 40 acres is very close in size. However, some factors are uncommon in this case study. One example is the rebuilding of structures that have been destroyed past years. The location is in Maryland, a mild maritime climate not often associated with extreme weather conditions. Finally, being the birthplace of the railroad industry has a certain quality. Of which can not be replicated any where else.

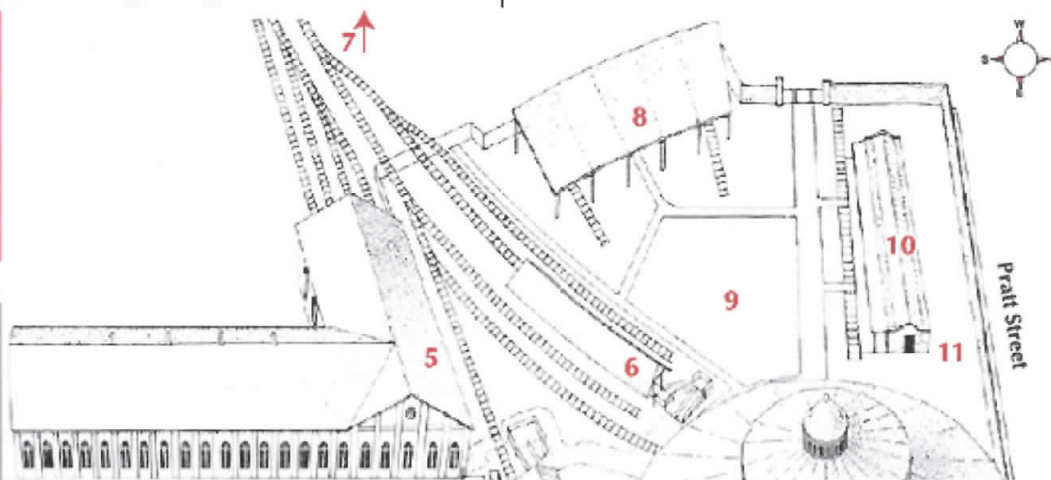




This case study responds to the environment by enclosing lush vegetation around the exterior of the site. This site helps to shield itself from the city and other environmental activities. By being a National Landmark, helps to preserve the quality of site and environment within. Creating this landmark has helped out the environment by not allowing further development within the site too. When looking socially, the B/O Transportation Museum helps to reflect upon a simpler time in America's past. It socially draws people in by educating, communicating and demonstrating a portion of the American History. By showing the public this chapter in American History; it helps preserve our culture as a changing society with new technologies.

When looking at the deep politics of this site, it helps to represent a political point when America took to the roads and left behind them the Iron Horse. A main underpinning of this case study would highlight the following. The ability to re-use this old historic site in a better way! This site helps to recapture the old glory days of the American Railroad past.

This case helps further show re-occurring elements of architectural style. Ability to adaptively re-use a site while being a National Landmark. Furthermore: the recreation of a time period of American History.

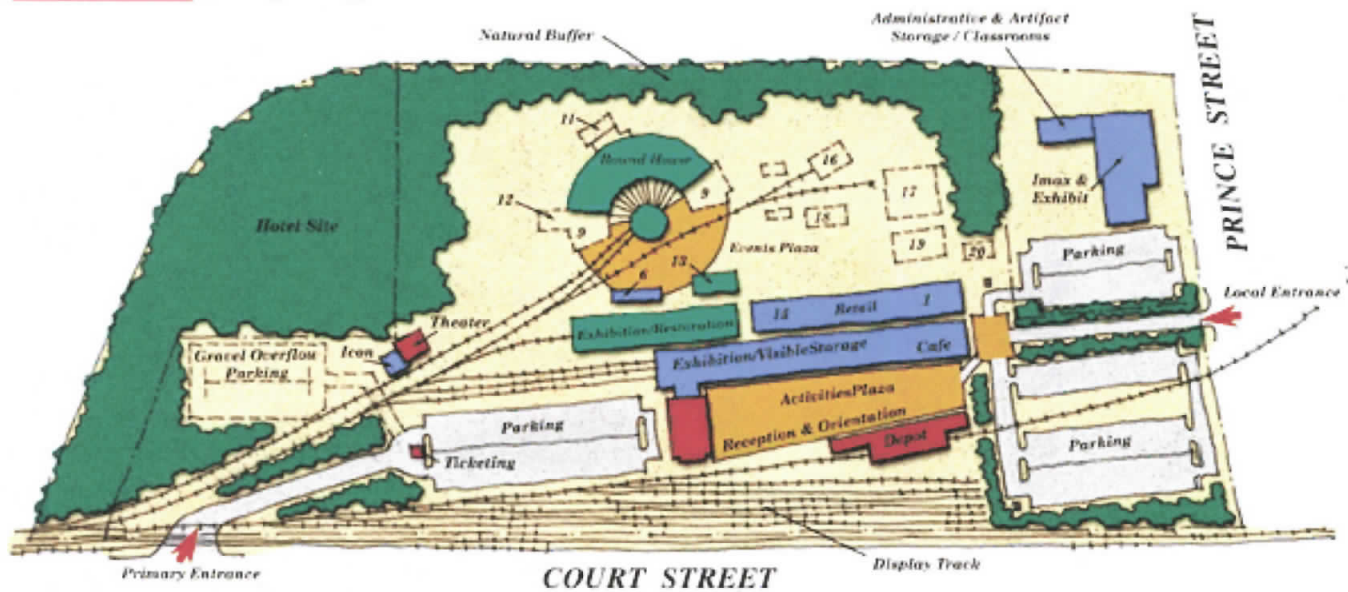




### iii. Alabama Rail park Project, Montgomery Alabama

Alabama Rail Park Project is an adaptive re-use of an existing railroad yard. This case study is located in Montgomery, Alabama. And it lies in about three-quarters of the downtown Montgomery. When looking at the size of this site, it encompasses about 42 acres of the Western Railway of Alabama yards. Some of the unique characteristics of this case study would include the following. The ability to find a “diamond in the rough” meaning this site has been buried with in the dense industrial sectors of Montgomery. An idea of subdividing this project into phases is a great idea economically to start off. This study has four phase of construction. However, the reoccurrence of large warehouse style buildings is common here. With architectural styles like gabled roofs, local building materials and use of architectural styles common of the day. This site, show a certain direction in which adaptive re-use can be more that an old building with a program element. A site like this can help create an historical past, while creating a pleasant experience. Yet, the largest element shown here is the neglect due changing cultures. This site helps offer alternatives to what can be done with an old railroad yard.

This site helps offer a new alternative for a case study. A common reoccurrence within this study would the size of site some 42 acres. An ability to re-use an old historic railroad yards; that helped change the life of a growing city. A large use of warehouse buildings with open floor plans style buildings. And the idea of building with a local building material is present here. However, this case study does in fact show some uncommon characteristics like the city its’ built in. Yet, the study does not in fact have very extreme weather conditions of freeze thaw cycle. The diversity of people in Alabama is far greater than any such cases so far. The southern culture of people here might in fact differ than a much northern area.

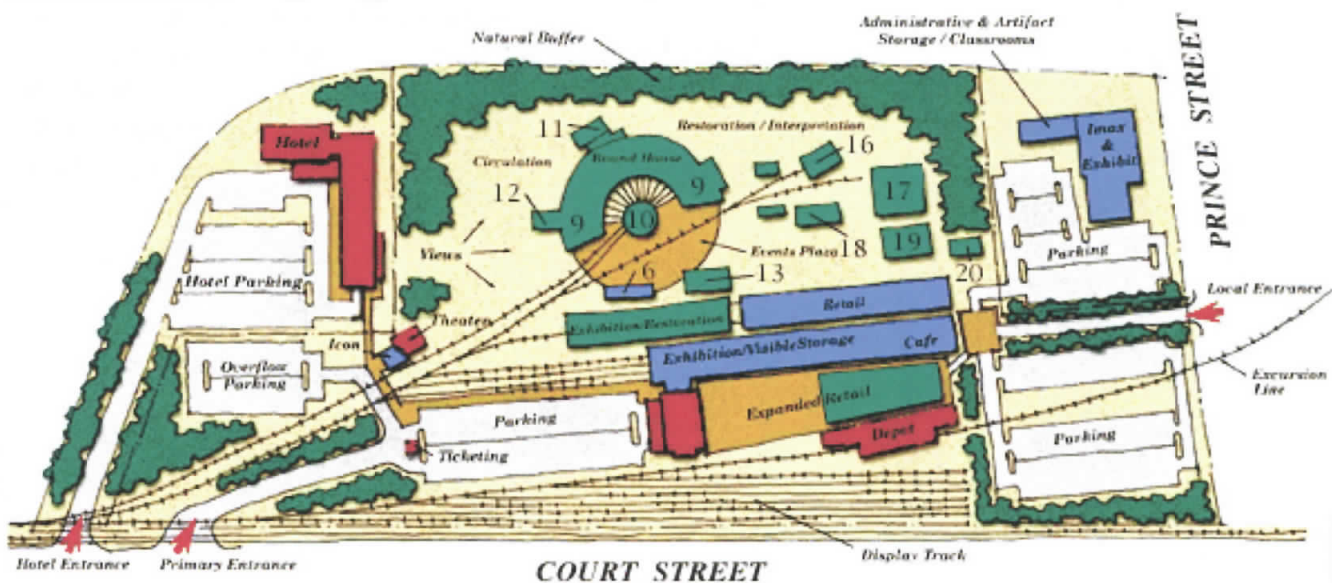


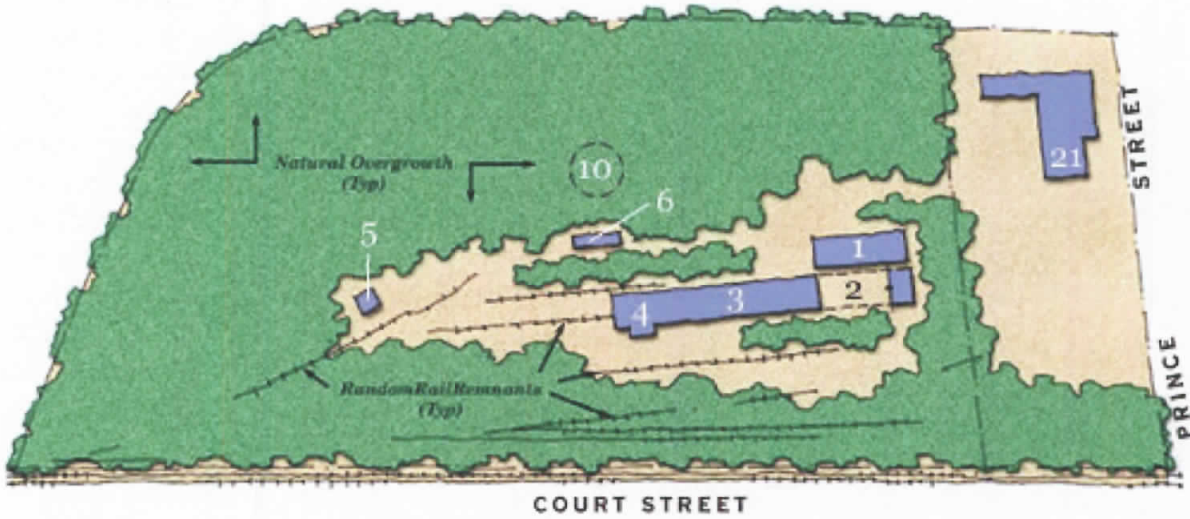
Phase 1:

-The size and money needs handles just right, so it can make a tiny profit while the final construction is underway.

Phase 2:

-The buildings, hotel, parking and Landscape Architecture all work to create a nice setting.



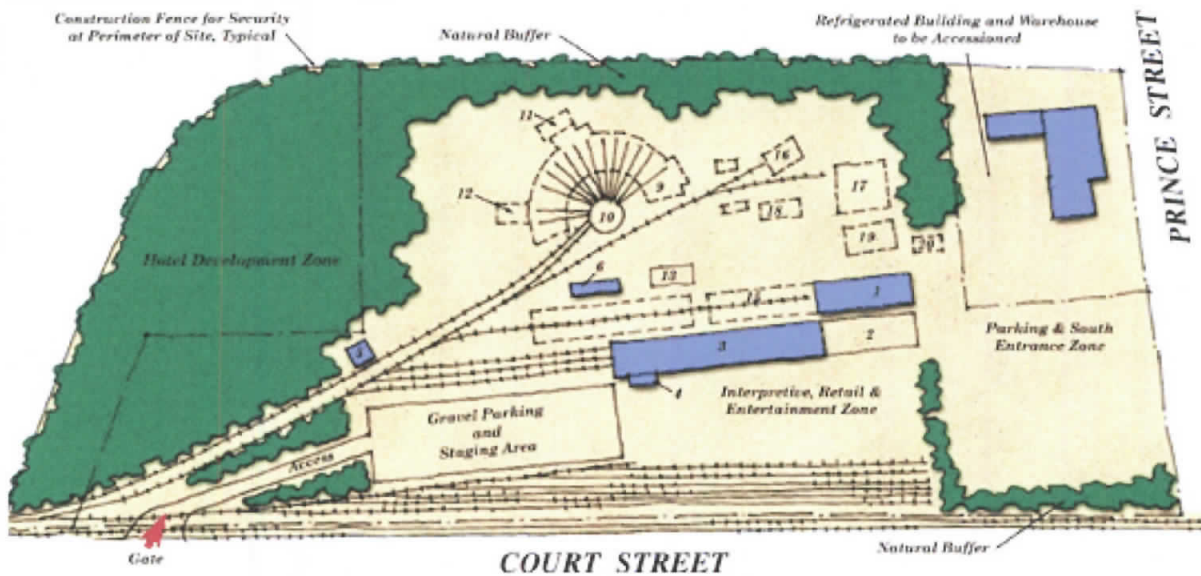



Existing Railyard Conditon

-nothing has taken place only nature has overgrown the surround site.

Zoning map

-the railyard is shown with overgrown vegetation removed to show the size and buildings.





Currently, the Alabama Rail park project helps to rebuild the environment of an old dirty industrial town. With newer removal of some overgrowth will allow for more green open spaces, plazas and sunlight to the environment. The ability to help preserve the Western Railway yard can help the Deep South socially and culturally. By breaking the stereotype ideals like: boxcar willies' and big easy life. Socially, it will draw in tourism and local people for venues, shopping and culture. When looking for cultural ideas, it helps draws people to learn from the past here. From former poor railroad workers to historical local information all can help showcase a piece of culture that Alabama can show.

A conceptual underpinning that is described with in this study would the use adaptive re-use of historical railroad building. The idea behind capturing a piece of local history; with in the railroad industry and how it might help a city. And the re-occurrence of the tourism and local venues has been present within this case study.

Finally, this case study helps show the idea of using an abandoned railroad site and recapturing a piece of history within it. By using tourism and providing venues for locals, allows for the site to make profits to pay for construction.

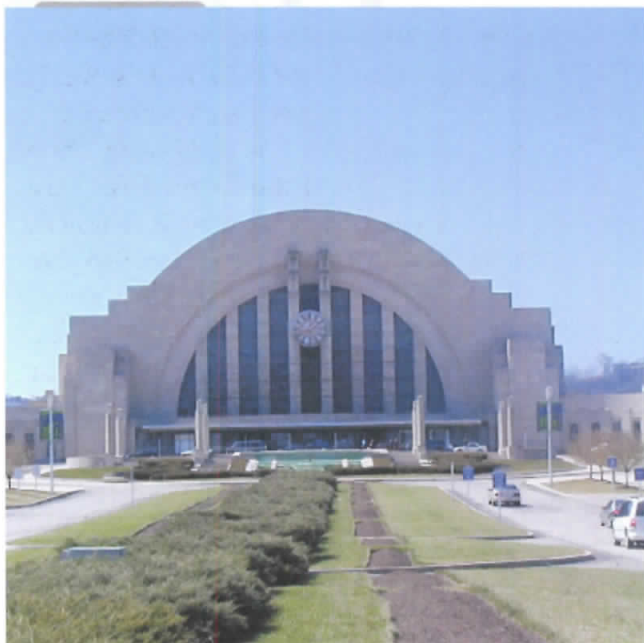


#### iv. Cincinnati Union Terminal Building, Cincinnati, Ohio

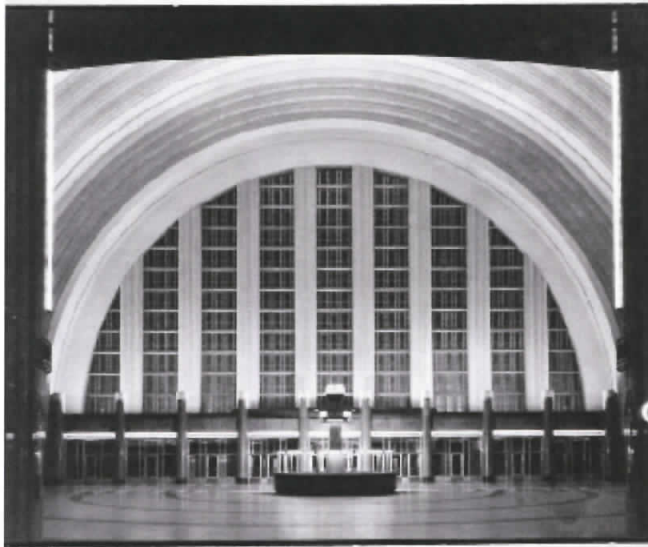
The Union Terminal Building was once named the “Sister of the Chrysler Building”. This case study shows the importance of adaptive re-use in a dense urban fabric. The ability to keep the Union Terminal as a city icon has helped Cincinnati establish its’ own architectural history. Yet, the project itself is a great testament to the Art Deco era in history.

Location of the Union Terminal Building can be found just one mile northwest of the center of the city of Cincinnati. This site was once home to park called Lincoln Park. However, as a city grows so do the demands place upon it! When analyzing the total size of this huge station, one may need to know of the historical importance too. This complex originally had once composed of about 287 acres with 22 distinct building on the site. To give a better perspective to the sheer size of this building, it was conceived that it could handle upwards of 17,000 passengers and 216 trains a day.

It was designed originally to centralize the freight and passenger operations of the (New York Central), (Pennsylvania), (Chesapeake & Ohio), (Louisville & Nashville), (B & O). At a cost of 41 million dollars and only 2 months before the start of the Great Depression this building started construction. An interesting characteristic of this case study would be the attention to details at the time of the Great Depression. When the Union Terminal Building was built it was the largest half dome world; however the Sydney Opera House now has that title. By creating a stunning beauty that has helped this building ensure a future purpose. The interior rotunda dome spans close to 180 feet at a height of 106 feet. When looking at the interior, Winold Reiss designed some very spectacular murals that assisted in creating an art deco environment. These mural depicted local industries native to the area like soap making, radio broadcasting, meat packing and paper making just to name a few.







A few existing program elements would be the following; like the idea of adaptive re-use design. The ability to keep trying new and inventive ways until something worked well for the building. This building has also been listed on the National Register helping it last for further generations. When looking on the outside of the building, not much has changed since the 1930's however, its' been the interior that has changed to meet the demands of Cincinnati. The Union Terminal Building has many common characteristics for this site. One would be the ability to showcase the high style of architecture from the art deco era. Another would be the adaptive re-use of this art deco shell from train station, shopping mall to science history museum. Finally, the last would have to be the national register nomination of the Union Terminal Building. This building does have a few uncommon characteristics like how it has failed as a train station and a shopping mall. However, it has been built in the 1930's when the train stations were in the glory days. This was first case study having one of kind art murals making uncommon, but interesting.

The Union Terminal Building helps respond to the environment by providing a new education of science and history to the public. It also helps creating an urban green space that helps people relax and recreate much like Central Park, NYC. Not forgetting about the how this building helped bridge far away environments closer than ever. When looking at the social aspects, this building has helped create jobs in a time of need during the depression. This building helped melt the city into an urban transit station by showcasing the importance of commerce and industry to the area. Now, socially it educates local public on history and science. As for a cultural aspect, it helps preserve a piece of American culture through the craftsmanship of the building. The artistic murals inside help preserve the local industry ways of creating good/services has been. Politically, this building would have been considered a Pro-Democratic. Probably; due to FDR in the White House and his ways of providing jobs during the depression. importance of how Cincinnati has changed over the years.

The main conceptual underpinning of the case study would be the importance of adaptive re-use. Yet, the ability to find a new program element for the Art Deco structure. This case study shows the importance of buildings becoming obsolete, but can have new uses in the end. Furthermore, buildings like the Union Terminal Building, help capture a certain city luster that can not be matched. It helps to create a civic identity while showing the general public the importance of how Cincinnati has changed over the years.





iv. James J. Hill Great Northern Office Building, St. Paul: Lowertown, Minnesota

“The Great Northern Lofts” is a huge undertaking of historic preservation, adaptive re-use and ability to see the inner beauty of this building. When looking at the location of this case study, this building is located 281 Kellogg Boulevard East in the Lowertown District of St. Paul, Minnesota. In 1887, James J. Hill commissioned James Brodie to design an office building for his Great Northern Railroad Company. James Brodie also designed the James J. Hill Mansion which sits atop Summit Avenue in St. Paul, Minnesota.



The style of this office building was H.H. Richardsonian style of architecture. This building housed the daily functions for a railroad company that was changing the Pacific Northwest. It plays an important role in the development and history of Minnesota and the industrial economy. It would eventually become the offices that help the railroad accomplish its goals to the west and carry out more of the financial portions of the railroading industry. This office building would later be forgotten about in the late 1960's. When the Northern Pacific Railroads and Great Northern Railroads merged to become the Burlington Northern Railroad this building was forgotten about. For thirty years this building was vacant. Until the Cornerstone development financed a re-use for a \$27 million dollars plan. Later the design specifications called for 53 condominium units in a 115 year old building.



Some of the standard elements present here is the connection to the railroad industry. The ability to see a demand for housing and using this building for an adaptive re-use design. Yet, this building shows the local building material and style of the time. While showing that simple is hard in designing and complexity is too easy. Underlining element here is the ideas of size, shape; location should be simple however reflecting upon historical architecture of the area. One uncommon characteristic in this case study is the lack of industrial leftovers. A fact would be that this was the clean simple railroad office, not the down and dirty railroad yards. This is only one huge building, and not a complexity of railroad buildings and train tracks.



This Great Northern Office Building helps the environment by providing housing closer to people's jobs. This in turn lessens their need for oil and the demands that would have placed on the cities traffic. Socially, it allows it uses to become active in the community while living in the community of Lowertown. It helps embrace a lost culture of the railroad industry by preserving the outer shell of the building. Yet, allowing for a new function on the inside. It in turn preserves our historic cultures as well as landmark presence it has within Lowertown.

Furthermore, this case study helps see a few closely underling concepts like the ability to see a demand and use adaptive re-use to help it. By presenting a historical preservation to the design aids its ability to fit in with the context of the environment and save a piece of the past. This case study helps realize the beauty within and the ability to keep it clean, keep it simple while keeping it closely original.



## vi Ferry Terminal Building, San Francisco, California



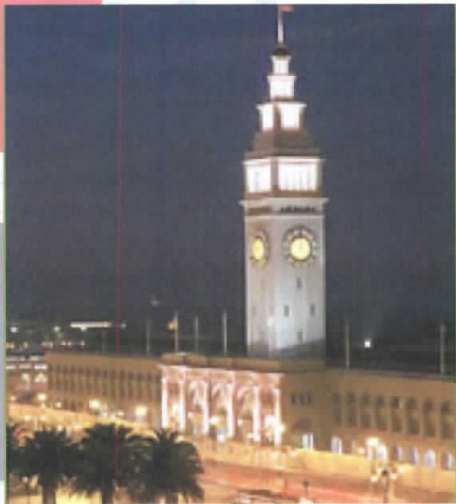
This building study shows exactly what happens when a city forgets its roots. When the city grew so did the demands placed upon this city. With further technology breakthroughs in transportation altered this building useless for years. It would take 100 years for San Francisco to realize the gem along the waterfront. The main project type of this building is a perfect example of adaptive re-use. Having a length of 660 feet and a 240 tall clock tower, help this icon be seen along waterfront of the Central Business District. Historically, the tower would have been the tower element for ferries to find the way back and forth along the bay. According to the Market Place, “approximately 65,000 sq ft of marketplace space at the street level, and 175,000 sq ft of prime office space on the second and third floors.”



San Francisco Ferry Terminal Building was originally the main port for San Francisco. It was used when the railroad industry went directly to Oakland. However, due the lack of technology at the time, railroads were unable to directly cross Oakland Bay. This building was the hub of transportation and goods prior to Oakland Bridge and Golden Gate Bridge. This building would later be blocked off from the city with the elevated, Embarcadero Highway. In 1989, a major earthquake leveled this highway, allowing the City of San Francisco to embrace this landmark once again. After surviving: disasters, weather and over 100 years of abuse this building it still here to test the time. Later, this building would be added to the National Register of Historic Places.



The Ferry building helps to look at what makes a transportation hub important in growing city. This city had a need for a towering landmark icon. It even has a clock tower, due the dependence that the transportation industry has on the sense of time. This main building has been adapted to find better uses for an otherwise empty shell. It has a reoccurrence of tourism, food and business to the program element. Being, balanced upon an axis of symmetry helps highlight the architectural detailing. The best style to call this building would be a Neo-classical style showing the orders along the arches and windows.



This case study further shows the importance of a building with the general environment. It allows the public to gaze into the Bay Area. Plus, helps establish green spaces area along the front, rear and sides. By having an electric trolley outside the main entrance, allows people to travel here without hindering the site with automobiles. This in turn lessens oil needs and keeping air cleaner within the city. Socially, this building has been a hub of transportation in the past. Since 2003, this building has been a hub for shopping, food, goods and workplaces. Bringing people together helps them all socially interact on a daily basis. When looking at the cultural aspects of this case study. It helps preserve the historical integrity of San Francisco. Putting a piece of history into the everyday lives for the locals to love is right here. Allowing tourism to happen with daily business helps the way the building was designed. This building had locals and travelers, much like today. When looking at the politics for this building, one might speculate its' favoritism toward a more conservative background.

A main underpinning for this case study would be the ability to find alternative uses for a historically important building. By capturing and preserving The Ferry Terminal Building allows people to interact with it! Experience these open spaces and bringing in new venues like business and food allow for that interaction to take place. Furthermore, this case study helps provide interesting alternatives for designing. It also shows the importance of people interacting with an old building considered a landmark to the city. In conclusion, this building shows exactly what could be done to a neglected structure with the right amount of money.



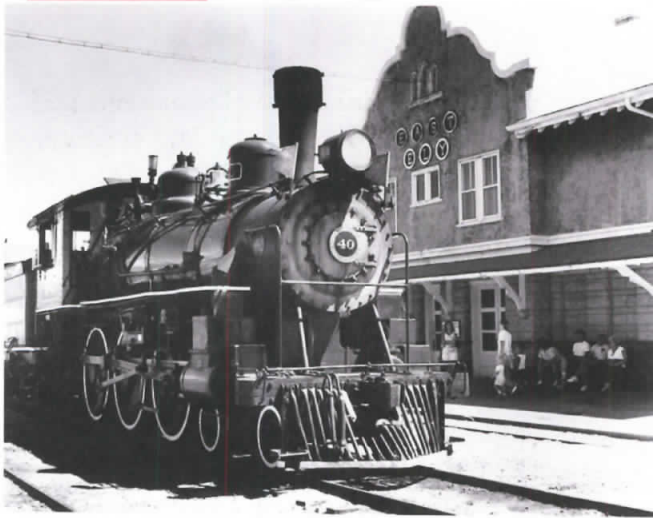


v. Nevada Northern Railroad Museum, East Ely, Nevada

The Nevada Northern Railroad Museum, the project type is that of adaptive re-use. It is located in East Ely, Nevada along the old pony express route. The size of this particular case study is 56 acres comprising of 24 historic structures that have been considered a National Historic Site. A few interesting characteristics of this site would be the amount of buildings that have been saved or under preservation. The fact, that this case study has helped the area in industry, commerce, transportation and architecture. Another interesting characteristic is this site sits along the old pony express corridor. An existing characteristic is the structures like engine house, machine shop, boiler room, coal bunkers, boiler shop, freight depot and railroad offices. All of which are present on this case study.

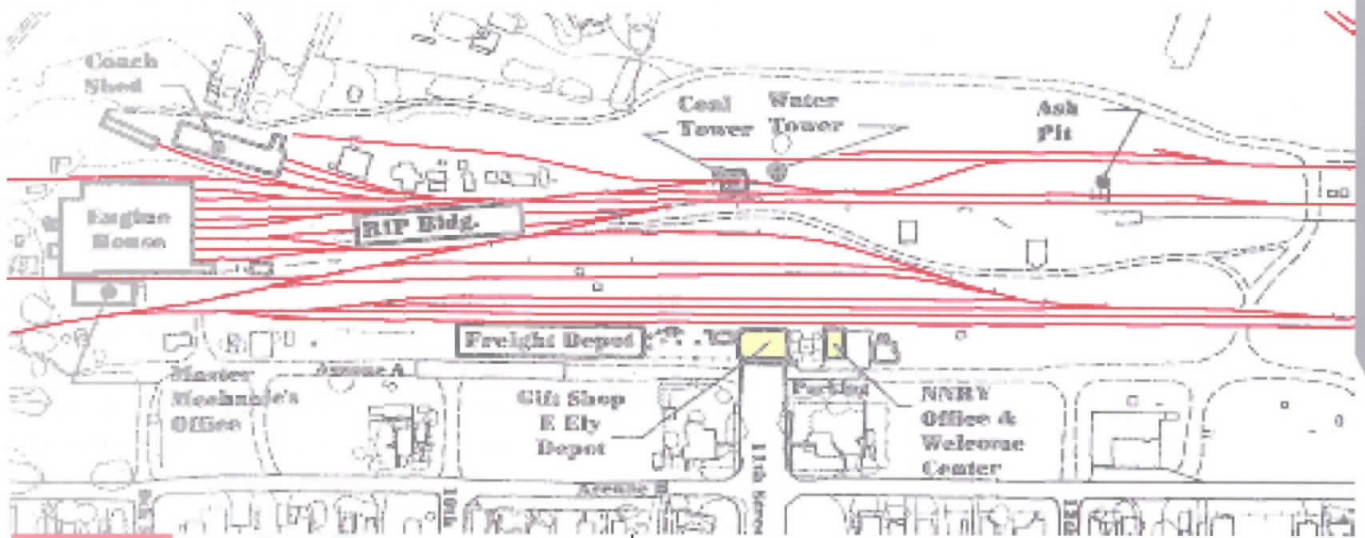
Currently, this case study has been able to take a lost industry and turn it into a commerce and tourism site. By preserving the past of Nevada it has created a historical place for people to visit and interpret the history of this state. Also, the Nevada Northern Railroad Museum is listed as a National Historic Site. This site was in operation from 1867 to 1958. Then later used for ore transportation until 1979. It shows how Nevada has adapted from the Wild West days to a modern high style way life. One characteristic uncommon to the others is that this site rests in mountains along the eastern edge of Nevada. Another characteristic would be that some of the old structures have been rebuilt in recent years. Finally, the topography and vegetation within the site differs here.

Railroad yard of East Ely, helps the environment by preserving buildings and creating vegetation areas along the site. Some of these vegetation spot could be used by local animals as part of a local habitat. Socially, this case study helps to preserve a piece of Nevada History. Culturally, this site educates and shows visitors what life was like in the beginning days of Nevada. While helping people become educated on the importance of this site to the local economy of the time.



The main conceptual underpinning of this site would be the ability to create a useful adaptive re-use. That not only has this site been able to capture the spirit of past here, but has been able to capitalize on them. This case study of the Nevada Northern Railroad shows exactly what happens when a few good people have a dream to create something for all to see. By helping tell the story of this site further helps the site out.

When you can preserve the past and generate capital at the same time is a good investment for local history and tourism. In conclusion, this case study further aids in the process of design and reason.







vii. Pike's Place Public Market Historic District, Seattle, Washington

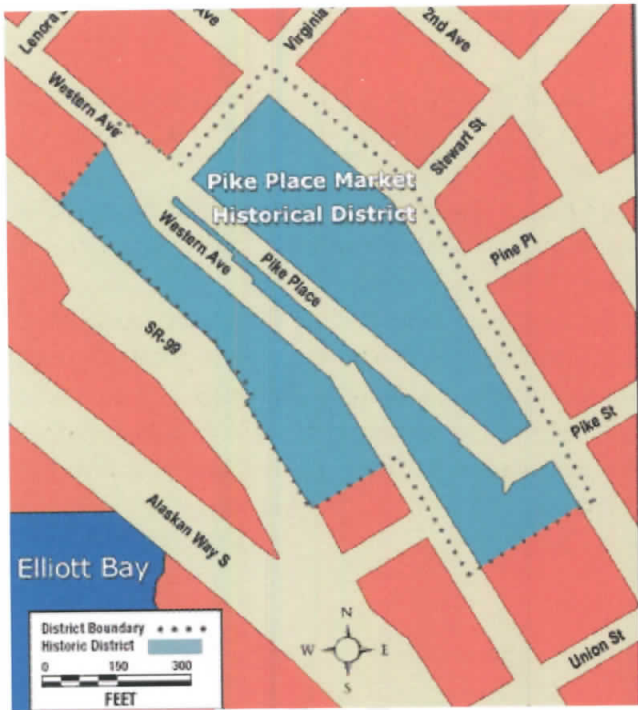
Pike's Place Market is a local market in Seattle. The project type is one of historic preservation. It helps keep a piece of local charm within the city of Seattle. This case study is a local farmers market which has been in business for all most 100 years. Yet, the city decided to keep this market to preserve the history of Seattle. The current location is in Seattle, Washington along Elloitt Bay with Market Place Historical District. This market is currently under review by the Pike Place Market Preservation and Development Authority.



In 1907, it became a city experiment to help out local farmer sell their produce directly right to the customer. The market was created with a few rules: sizes of the stalls were small to keep more vendors in and the products needed to be raised or produced by the seller. A multicultural variety added a unique mix of goods and the textures to the market place. It currently has 7 acres of a historic district market. It is a renowned landmark within the city. With a 550 pound bronze piggy bank, a neon sign with a clock are a few unique features. This case study is listed on the National Register of Historic Places.



An existing program element would be the city of Seattle's ability to hold on and preserve this humble market. It is here that Seattle realized the charm that Pike's Place Market held; it kept a city of mixed diversity in track with new times. It was here Seattle became an eclectic melting pot of cultures, not just produce. One other element is the sense of time that Pike's Place shows with a clock. In the commercial and industry, it is driven by time. Because time is money for these people who sell produce for a living.



The elements that are commonly occurring would be the historic preservation that kept this market alive. Other elements are the size. The site is only 7 acres, however, that is large with a city context. The ability of Seattle, not to let go of its' local historic charm keeps up local historical value. The idea of a market centrally located within the city is great concept. This case study of Pike's Place is on the National Register of Historic Places which aids the study. An element that has is uncommon for this case study is a produce market within a city. Also, this case study has nothing to do with train industry, but rather the people whom use it with the city. This case helps respond to the site by providing a commercial establishment for people to buy and sell goods and merchandise. It helps generate money and brings people centrally to the 7 acres of the market space. Not forgetting the amount of tourism this site currently captures every year.



Environmentally, the city of Seattle has been able to capture the past while saving very valuable land. This land was on chopping block in 1960's, when city's decided to destroy the very things that make them unique cities. However, Seattle did not and kept the past alive for the future. It helps the environment by also selling produce harvested from the earth. Its' in this market which helps a big city have a small rural roots within a large business district. Socially this city had the opportunity to keep the local market. These markets were run by people of all cultures. Yet, they all came together at Pikes' Place to sell produce. As for culture this case study shows the importance of people from Italian, Japanese, Chinese, German and Filipinos whom made the market what it is today. These people brought with them traditions local handicrafts, goods and ethnic recipes.



The current underpinning of the case shows how a city can keep what they have and make it better. Creating a better place to be in Seattle: while keeping it very close to the original. Idea here is to reflect upon a simple less stressful life of going to the market. A final conclusion would be that Seattle has plenty of diversity and this market is like the vegetable stew with all different flavors and colors.



## The Case Study Series and the Typological Summary:

Recognizing that each case has its own intrinsic value;

All of these case studies are in a series that comprise the Typological Study and it is the series as a whole that is reported here:

i. The overall studies that have been provided have further helped the typology to work as large picture, not as a series of studies. The theoretical premise has not been affected by the typological research. While highlighting on case studies, some cases were examined outside those that have been shown.



### 1. Fort Sheridan, Illinois

Military Fort During the Civil War.

Current: Housing and sub divided housing units

### 2. Cable Car Museum: San Francisco, California

Current: Operating works for all the cables under the streets and a museum.



### 3. Mill City Museum: Minneapolis, Minnesota

Site of Washburn A Mill, that burned down in the mid 1990's. It's ties to the flour industry make it a great case study.



### 4. Santa Fe Depot: San Diego, California

Style: Southwest



5. Hudson Rail Yards: New York City, New York



6. Great Northern Railroad Station: Fargo, North Dakota  
Current: Resturant (FAILED to pay for POWER)

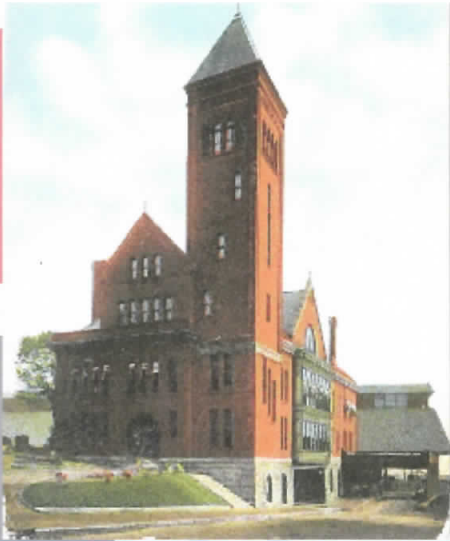


7. Northern Pacific Railroad Station: Fargo, North Dakota

Architect: Cass Gilbert



8. Superior Railroad Museum: Duluth, Minnesota  
Current: St. Louis County, Historical Muesum & railroad collections.



9. Union Station: Louisville, Kentucky



10. Union Station: Denver, Colorado



11. Grand Central Station: New York City, New York



12. Soo Train Station: Duluth, Minnesota  
Destroyed when Duluth needed more land to expand.



13. Chicago, Milwaukee, and St. Paul Railway Company depot: Fargo, North Dakota.



14. Great Northern Train Station: Minneapolis, Minnesota.



15. Las Vegas Monorail: Las Vegas, Nevada.



16. Fergus Falls Train Station: Fergus Falls, Minnesota.  
Current: Resturant (seasonal)



17. Nisswa Train Station: Nisswa, Minnesota.  
Current: Displays the Nisswa Historical Society artifacts. The building is accented by the famous Green Caboose.



18. Northern Pacific Train Station: Wadena, Minnesota.  
Current Amtrack rail stop.



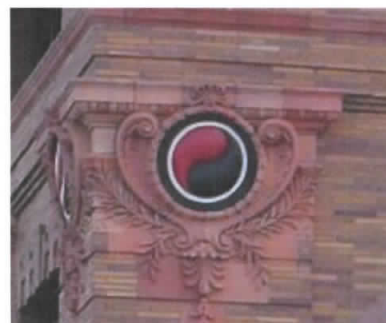
19. New Haven Union Station: New Haven, Connecticut  
Architect: Cass Gilbert



20. The Old Milwaukee Railroad Station: Missoula, Montana.



21. Northern Pacific Railroad Station: Missoula, Montana.





22. Ogden Union Station: Ogden, Utah.



23. Great Northern Railroad Station: East Glacier, Montana.



24. Union Station: Portland Oregon





25. Chicago North Western Depot: Sleepy Eye, Minnesota.



26. Northern Pacific Depot: Little Falls, Minnesota.  
Architect: Cass Gilbert  
Current: Little Falls Chamber of Commerce



27. The Union Depot: Stillwater, Minnesota.  
Style: H.H. Richardson  
Built in 1888  
Destroyed in 1960



28. Chicago & Northwestern Railway Depot:  
New Ulm, Minnesota.



29. Great Northern Depot: Bemidji, Minnesota.



30. Northern Pacific Depot: Aitkin, Minnesota.  
Built: 1916  
Current: Aitkin County Historical Museum



31. Soo Line Depot: Crosby, Minnesota.  
Built in 1910  
Currently: Museum housing Cuyana Range artifacts.



32. Northern Pacific Train Station: Staples, Minnesota.  
Current rail Amtrack rail stop.



33. Pequot Lakes: Pequot Lakes, Minnesota.  
Current: Pequot Lakes Chamber of Commerce and a pit stop for the Paul Bunyan Trail.



ii. **Analysis:**

Many of these case studies shown or briefly stated that have helped with understanding the main underpinning guidelines that have been present. Further time evolves so does the understanding of all these case studies.

iii. **Conclusions:**

1. Common characteristics would be buildings from environments that have been in decay, that now create some kind of economic vitality and are sensitive to the local history, culture, social and political issues of the area.

2. Uncommon characteristics would be that some differ in built environments. While other may have more ties to railroading than tourism. Ferry Terminal Build has nothing to do with railroads, but rather ferries. The Great Northern Lofts are living quarters and never had a railroad yard within the site. Fact that the B & O Transportation Museum is the first and oldest train yard in the United States. Altoona Rail Yards, have the only scenic landscape listed from the case studies shown. Pikes Place is a public market with nothing to with train yards or train stations.

3. The effect of the perceived conceptual ideas on the theoretical premise has been listed below.

Ideas Generated from Case Study Research:

- Public gathering space
- Public gardens
- Transportation hub
- Public Market
- Farmers Market
- Tourist Destination
- Historic Landmark that can be re-used
- Offices of mixed use
- Adaptive re-use ideas
- Designing in Phases I, II etc.
- Historic Preservation
- Educate while experience the site

4. The effect of the different sites on the types can be shown below.


Altoona Railroads Museum, Altoona of Pennsylvania. Shows exactly what can be done historic preservation and historic landscapes.

Baltimore / Ohio Transportation Museum: Baltimore, Maryland. The importance of history, industry and railroading to the site are shown very well in this site.

Alabama Rail park Project, Montgomery Alabama. The importance that its' a concept generated project, designed in phases that are similar to the Brainerd site.

Cincinnati Union Terminal Building, Cincinnati, Ohio. The importance of this building did for 1930's era. Centrally located with the city and has been adapted to suit the needs of Cincinnati. This is the only project to show a failed shopping mall. However, it has found a new use as a Science and History Museum.

Great Northern James J. Hill Building, St. Paul, Minnesota. The importance of this building is the tie railroad industry. Adaptive re-use ideas generated here. The idea that not offices can have adaptive re-use, but rather people can enjoy and live in these spaces.



**Nevada Northern Railroad Museum, East Ely, Nevada.** The importance; history, local culture and educating visitors about the site. Creating a railroad museum with local attractions that have aided the industry are positive in teaching youthful people the importance railroading did for the West.

**Ferry Terminal Building, San Francisco, California.** The importance of local history: of the area to showcase the building to the local citizens and tourist. Adaptive Re-use business, market, landmark and tourist spot all in one. With a major subway line the BART a block away and trolley line bringing people here from all over. It helps solve the problem of cars and parking in a already crowded city.

**Pikes Place Public Market Historic District, Seattle, Washington.** The importance of market venues is present here. Ability to create a public meeting space to help locals gather within the city.

5. The effect of different cultural, political, or social contexts had on the type. Would further show the importance to a place and its' people. Every one of these case studies present has been able to careful look upon the following contexts and reflects on them with design etc.

6. The functional relationships to the site are shown in all of these case studies. They all have a certain function that enriches the lives on whom uses and observes the site.

7. Spatial Relationships: The spatial relationship that all of these case studies have the ability define a need that has been met. People inhabit these spaces of case studies by either living, working and enjoying what they are.

8. Technical Issues: The techinal issues of these case study. Would be defined as politcal or social agendas that carry forward in design. Other issues are start up cost and budgets. Not forgetting that all of these case studies are sensitive to the enviroment and the cultures they are built in.

iv. At this point I would have to say that conclusion drawn off this summary have only aided the further exploration into the program. This only one step; in a series of many to finish the desired project ahead.




### The Historical Context of the Thesis:

1.

This project is set in Brainerd, Minnesota. It however, has a pretty lengthy history dating back to the settlers. According to the Brainerd Area Lakes Commerce, "a robust fur trade between whites and Native Americans. Soon the added security of Fort Ripley brought many more people into the area. When the fur trade industry soon started to collapse the industry switched. It jumped into the mechanized world of logging and lumber mills. After logging was discovered as profit resource, iron ore was discovered in the Vermillion, Mesabi and Cuyanna Iron Ranges of Minnesota. The iron that was located in these mines was to be considered some of the best premium grade ore in the world. So, now Minnesota has two huge mechanized industries, but no way of transporting these raw materials to various places. Brainerd, would later have many ties to the railroading industry like its' name Brainerd. It was not until 1858 when Minnesota joined the union and became the 32nd State of the United States of America.

At this point time the industrial revolution is happening along the Eastern United States and slowly migrating West. The Northern Pacific Railroad was soon founded to help establish a quicker route to the Pacific Rim. While planning and executing a design for the railroads, Brainerd would soon become a Hub of train traffic. These trains would go to the Dakota's for wheat and other crops. Other trains would travel to the Iron Range transporting Iron Ore out of Duluth or Twin Cities. Finally, the trains of Brainerd would transport out their own local resource Logs and Lumber to aid in the local economy. It later is the railroading influence in Brainerd, which helped it to become a city. In, 1870 Brainerd was officially declared a city. At this point in time Brainerd local city venues included only norm of attractions like saloons, banks, hotels and other small businesses.





Once the Northern Pacific Railroad established itself the company kept expanding the empire in Brainerd. Utilizing the centralized location within the state it became a venue for mechanically fixing locomotives and railcars. By having this rail yard centrally located it meant that most trains could be brought in without too much work. In the year of 1881, an economic boom hit this area. Suddenly thousands of people flocked into Brainerd in search of jobs and money. These people whom immigrated were of some European descent that would later add the cultural diversity of Brainerd. Many people came in search of a new life among the Great American Frontier. Brainerd also at this time teamed up with Army Corps of Engineers to tackle a local problem. Building a bridge across the mighty Mississippi River that can withstand weather and train loads. At this time Brainerd started to experiment with a new material called concrete. Brainerd's landmark water tower would be the first structure like it world!

From the 1870's thru the 1970's this site was used by the Northern Pacific Railroad. However, after the merger of Burlington Northern and Northern Pacific into the Burlington Northern brought about change for this site. During the 1960's the Burlington Northern built a new shop facility for the newer style locomotive engines it would need to operate on. It was the advancement of the train that brought the industries in Minnesota to generate revenue to become profitable enterprises. With a large economy spread and a globalizing market place Burlington Northern would merge with Santa Fe thus becoming BNSF or Burlington Northern Santa Fe Railroad. A new name is the only difference here. However, it's the people, lives and industry it created that made Brainerd what it is today. With ever changing demographics in the world today Brainerd needed to change for the better. Rather than clear cutting the once virgin forests, they have opted for preservation of the wilderness and surrounding landscapes.

Brainerd has had to change the local economy of industries like lumber mills to more diversification like tourism, local business, real estate, commercial enterprises and other various industries. The saying putting all eggs in one basket doesn't apply here anymore for the local economy. Without a permanent economic footing this city would have been considered a ghost town. Like the Iron Range of Northern Minnesota which has seen a loss in its own local economy.

Conclusion is that Brainerd has had to adapt to survive for the future. It would be only fitting to adaptively re-use the train yards much like Brainerd had adapted too. This further shows the importance of survival of fittest. Many of the building along this site are the oldest know structures within the city of Brainerd. "The exact size of the site is 47.74 acres within the city limits of Brainerd. Currently, the site is zoned as I-2 heavy industrial while including buildings under I-1 light industrial zoning" (Progressive Property Management, Inc). Doing some sort action to further preserve them would help ensure a piece of history for the city of Brainerd.

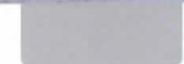
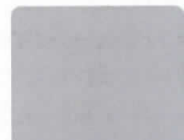
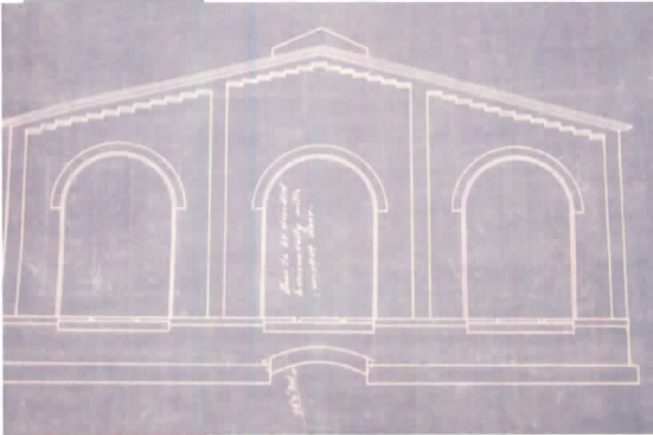
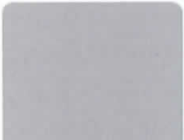
#### Goals for the Thesis:


The main goal for this thesis would allow for further exploration of the Northern Pacific Railroad Yards. After beginning neglected it does pose some potential that can be used to enhance the inner beauty of this site.

#### Site Analysis:

##### Qualitative Aspects:

In the glory days of this railroad site, imagine the train bellowing smoke out the stack at the depot station. As the whistle blows and the start of another delivery to the West. The hustle and bustle of rail yard works switching cars and locomotives for maintenance. With three loud whistle blows for the final clear. Meanwhile the clock hitting 12:00 high noon and train starts chugging away into the horizon. The black smoke is the only thing you can see in the distance as the train departs. Some time later mankind would start to find alternative in transportation. With the advent of airplane soaring in the sky and the semi-trucks along the open roads caused change. It put trains and the industry to the back burner of life. Society changes and so do the people whom live within it.



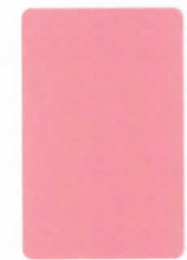


As a designer one can imagine the possibilities this site has to the city of Brainerd. When picturing the old brick that has aged badly to all of the rich hues of rust and other decaying colors only makes it more perfect. When constructed this site is full of buildings that have stood the test of time while virtually nothing has been done to them. The possibilities of bringing a mass transit hub into the train station are amazing. People from all over leaving this station and enjoying the rich plentiful spaces it provides. As business people shuttle to work or the soccer mom have a fun afternoon all of these people can stand to benefit from this site. The people whom benefit from this site would be locals, commerce, commercial, industry and tourism. A concept of sub dividing this site would allow for a richer growth of opportunity within the site. Allowing for further exploration within this site can allow for more opportunity of diversity.

#### Views and Vistas:

##### Plan:

The existing grids that occur within this site would be the work road off of 13th Street. This main road leads directly to the East side of the site. While looking for other grids, the original area of the turnabout is visible with small narrow patches of dirt diagonal rotating in 270 degrees. Another grid is the spaces formed between other buildings. While looking at the textures of this site one can't over see the lush green vegetation on the South and East portions of the site. When looking at other textures the old brick with a mixed use of old sheet metal has a warm feel. The old fashion concrete smoke stacks act a local scenic landmark for the city. From highway 210 one can see the smoke stack miles away. Another texture element would have to the large wooden doors that present them selves everywhere. To the prescience of huge windows; that would have originally brought in natural daylight for working quarters. Much of this site comprises of large rectilinear buildings mostly they occur only a few hundred feet long. However, the reoccurrence of the industrial style is present here. It would be long and narrow geometric solids. Many of these building have a sloping gable roof except the Pattern Shop and Power Plant Buildings. While the shading characteristic of this site would have to pretty open except where the Boiler Shop meets the Machine Shop. The shear size of the site some 40 acres adds enough area that shadow characteristic in plan appears to be minimal.



Some of the surrounding landscapes within the urban context would have to the two concrete smoke stacks with the site. The original clock tower building with its' huge gable tower soar over the landscape. Other landmarks visible from the site would the Brainerd Water Tower and the Originally Concrete Water Tower along Highway 210. When looking at the topography the sites is generally level however it does have a lower area to the East. The topography also slopes to West. Also the western edge of the site drains into a gullies that goes under 13th Street. This gullies would eventually drain into an adjacent swamp area north of Highway 210 and then to Mississippi River.

The number and kinds of built features within the site offer plenty of options to challenge the creativity that can be done here. With old historic structure present along the site offers enough historical value that can not be reproduced.

The light quality of this site is pretty ambient; however the intensity of normal daylight will diminish during the winter months. Currently the temperature of the can vary from -40 below to over 96 degrees above. The temperature change difference here is pretty intense. When designing, special care and attention needs to be taken along seams and seals of doors and windows etc.

#### Vegetation:

When looking at the vegetation of the site, one could say it consists mostly of overgrowth vegetation. In the past the area was full of virgin growth timber that was clear cut to make a quick profit. Historical photos show only small minimal grasses and bushes occurring here in past. However, neglect and age have allowed seedling to blossom into large trees and brush. The vegetation consists primarily of Jack Pines, Red Oak trees and Norway Pines. Jack pine, scrub oaks and aspen are often cut each year for pulpwood and lumber from the area. Other vegetation would include overgrown grasses and brush. They don't occur in patterns or certain texture, but rather overgrowth from neglect of the site.



#### Water:

There is no visible water when I visited the site. However according to other maps a marshy area has existed within the site. This marshy area was shown on the East side of site. Due to climatic changes perhaps it only gets marshy during the summer months. When analyzing the site still water, this would be the only common location for water to appear. Water that falls on the site would be intermittent. Any water in the groundwater under the train yard would in fact be polluted. People dumped every kind of waste into the ground in the early part of century.

#### Wind:

The only characteristic that affects wind would be the built feature within the site. Some buildings like the clock tower, machine shop, boiler shop and power plant will disrupt the flow of wind. The prevailing winds analysis of Brainerd in graphs according to Minnesota DNR climatology department. These wind rose diagrams have help explain the change in direction of prevailing winds over a period of time. In the winter months the wind tends to switch directions from a North to North-East direction to a South to South West direction. During the spring months the winds change to North, East, South and everything in between. When looking at the summer wind patterns they tend to South to South-East or South-West. Finally, the wind patterns of fall season tend to South to South-West



### Human Characteristics:

This site shows plenty of human intervention from the 1870's to the present. Man over the years has used and abused and left this site to rot away for all to see. The Northern Pacific Railroad Company bought this land when it was in a raw pure state. Since that time they built buildings, created jobs and help carve a path to the West. The ability of this site to become a more pure peaceful natural site may one day happen. However, it still lies in a neglected unpleasant state that is still considered an eye soar. People however, have more recently started to return the site. The Progressive Property Management, Inc Company recently purchased the land area with no clear goals in mind. They currently have been leasing out some of these warehouse style building to out right commercial services. The Progressive Property Company uses the front of the clock tower building as an office. FedEx Company uses warehouse shop directly south of the clock tower building. Heartland Goodyear Tires are leasing one portion of the boiler shop to store Goodyear tires. A newly built cell phone tower exists in between the pattern shop and the Engine house. Finally, located a little North-West of the old power plant building, exists a impound lot from a local towing company.

### Distress:

Much of the distress that occurs in this site occurs from man intervening with nature. From the neglect of the buildings to the piles of brick rubble all place distress in the site. The impound lot puts harm on the site, due to local car accidents that occur. These wrecked cars end up in this lot leaking fluids and perhaps oils into the ground. I know because this is where car ended up when I totaled it! That perhaps the distress is more specific within the site. Some areas may be considered more polluted then others. When considering a distress specification the best identifiable view would be a micro system. However, the worst distress has to be the pollution that occurs with the site. Keep in mind this site has been heavy industrial land for over a century.

Quantitative Aspects:

1. Sun angles and percentages of sunny days:

Located at the points, W 94 11, N46 22.

According to The Sun, Wind & Light.

December 21, 9am and 3pm

Altitude 46 degrees N, Azimuth Sun Angle +/- 42 degrees

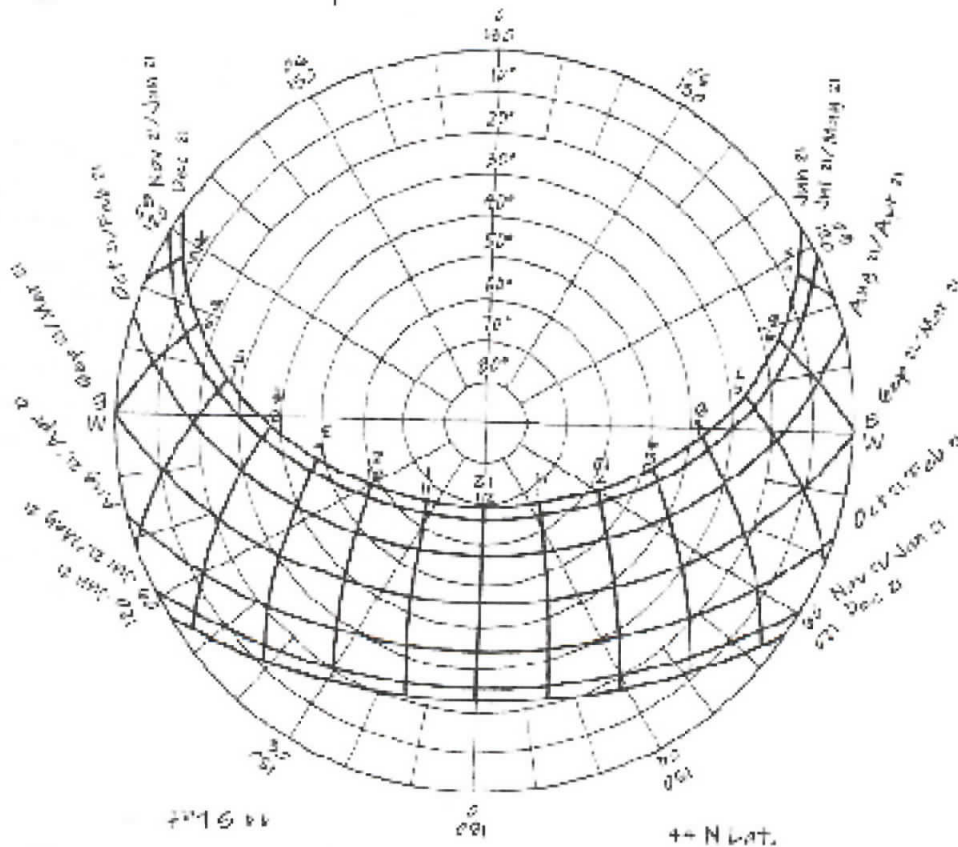
= 88 or 4 degrees

June 21, 9am and 3 pm

Altitude 46 degrees N, Azimuth Sun Angle +/- 80 degrees

= 122 or -38 degrees

This map below shows the importance of sunlight during the course of a year.



2. Cloudiness: This maps shows the average of clouds days per year

### 3. Soils:

#### Agricultural Classifications:

The Following soil survey is from the Crow Wing County Soil Survey in junction with the United States Department of Agriculture. The soil in the area is considered to be Menahga Soil association. From that point the soil is classified into several other portions. The following symbol below will explain the soil further.

P= Peat

MNA=Menagha-Nymore Association, nearly level

MNB=Menagha-Nymore Association, undulating

LP= Lino-Peat Associations

Peat Soils: Peat consists of partly decomposed plant remains. Most of the peat in Crow Wing County occurs at open wet bogs. Few areas are used for agriculture here mainly a wildlife habitats occur near peat.

MNA=Menagha-Nymore Association, nearly level: Associations: consist primarily of light colored soils that have formed from sandy outwash or windblown sand and show only slight profile development. These soils are used primarily to help grow jack pines and red pine for pulp-wood. In areas where the water table is high enough this soil helps yield better agriculture and forest. In some depressions, these soils tend to mix with other organic soils. (Peat and muck)

This is one of the most wide spread associations in Crow Wing County. The slope range is 0 to 3 percent, but slopes of 1 to 2 percent are predominating.

MNB=Menagha-Nymore Association, undulating: This association is not extensive as the previously stated. The slope range differs with soil association. Common range is about 2 to 8 percent. Nearly the same of the MNA, but slopes differ.





**Lino-Peat Associations:** This is a series of widely spread poorly drained, sandy out wash flats. These soils are considered wet and must be drained if crop or tree production is needed. The ranging slope of these soils would consist of less than 0.1 percent.

**Menahga Series:** This series consists of excessively drained, forested soils that develop from deep, loose, non-calcareous sandy outwash. The topography ranges from the nearly level to strongly sloping. Level areas are much more common than areas of rolling terrain. The native vegetation consists of jack pine and red pine with other scattered red oak, aspen and white birch occur.

The Menahga soil series consists of thin, dark-brown surface layer that is a mixture of black organic matter and bleached sand grains. This layer can have sand or loamy sand texture. The subsurface layer is weakly developed. Consisting primarily of brown to dark yellowish brown loamy sand, and it grades to the soil. The single subsoil consists of single grained, yellowish brown fine sand that is slightly cohesive in place but loose as it is disturbed. The substratum, which is at a depth of about 33 to 36 inches, consists of yellowish-brown, loose, single-grained sand that is slightly acidic to neutral. In some areas gravel would not occur and other places gravel would occur as much as 25 percent. The surface runoff is slow for this soil type. Its permeability and internal water movement are rapid.

**Engineering classifications;** referring to the compositions of the soils along this site. Out of ten broad classes of soil that can be identified in the field here are the following.

- Clean gravel
- Peat and muck
- Clean Sand
- Silty or clayey sand
- Silty or clayey gravel
- Organic silt

#### 4. Water Table:

The Burlington Northern car shops and yards are in fact polluted according to the Minnesota Department of Health. The result is the discovery of soil and groundwater contamination from petroleum products and heavy metals. Mainly the big problem within the site is the occurrence of lead and petroleum products. BNSF has done several soil clean campaigns here; however contamination has only occurred in shallow soils within the site. According to the Minnesota Department of Health "The property is underlain by 4 to 10 feet of fill consisting of cinders, sand, gravel, ash, clay, and scattered debris." Below this soil layer exists some 160 feet of unconsolidated sediments of sand, gravel and clay. The groundwater level along the site occurs at depths of 4 feet to 15 feet below surface. Various investigations for contamination have occurred at the site. In 1994 a consultant team accessed the site for lead, it found that it contained on average 495 mg/kg and 234 mg/kg concluding that lead concentrations were below the proposed health-protective concentrations. In 1995, 1998 and 2001 more extensive cleaning of site occurred. Careful data has been collected along the site to show how lead and other toxic elements have been reduced in concentrations here. The results were of 7,048 tons of soil removed from the east side of the machine shop. Also the removal of 6,458 tons of soil was removed south-east of the old roundhouse area.





#### 4. Water Table:

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Maps will be followed to provide a better spectrum for the site:

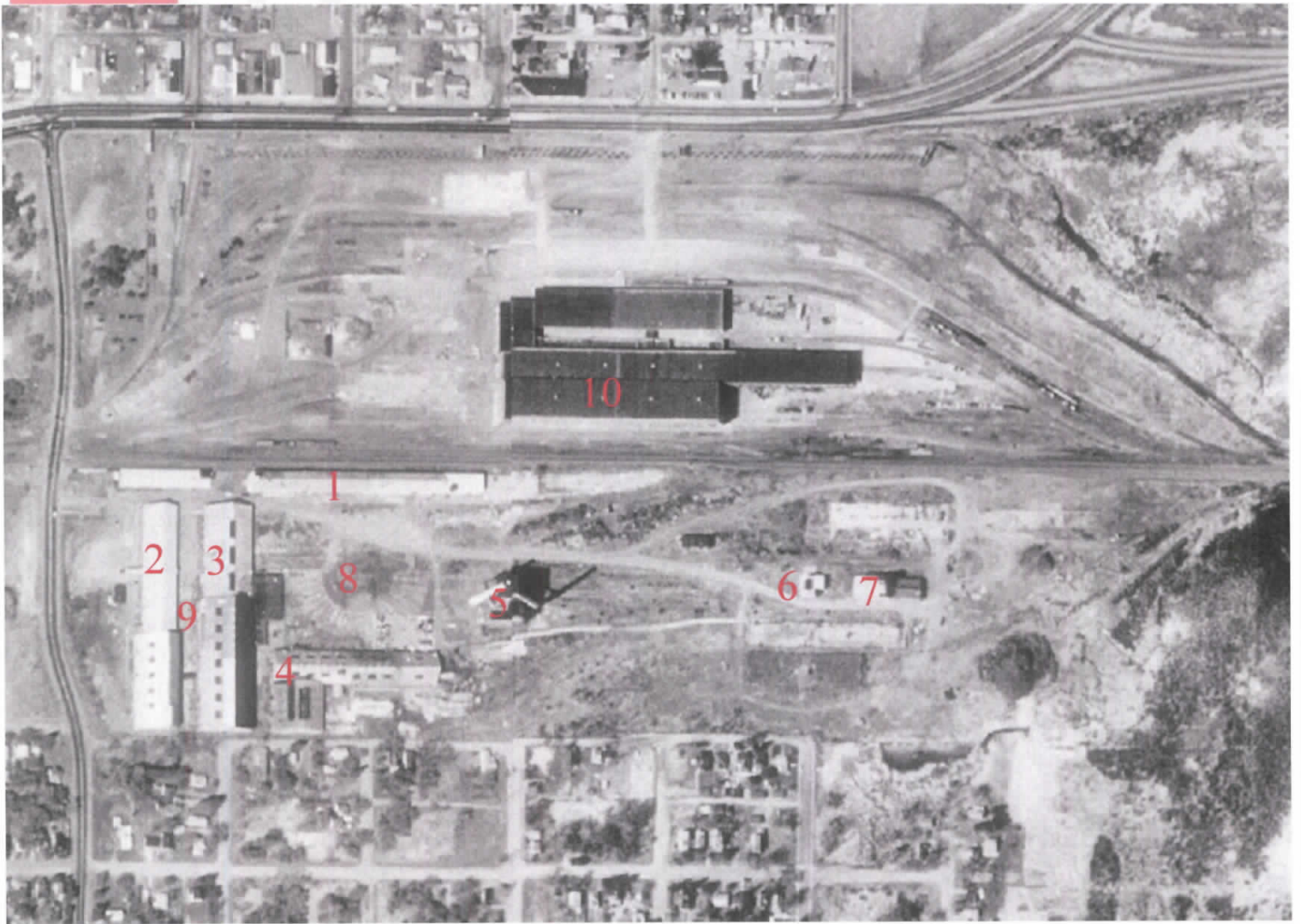
#### 5. Utilities:

The use of this site for over one hundred years means much of the original city utilities would still be here. An extensive replacement of power lines, sewer pipes, fresh water pipes and telecommunications need to be implemented into the site for it work better.

The utilities needed for the site would have to include the following:

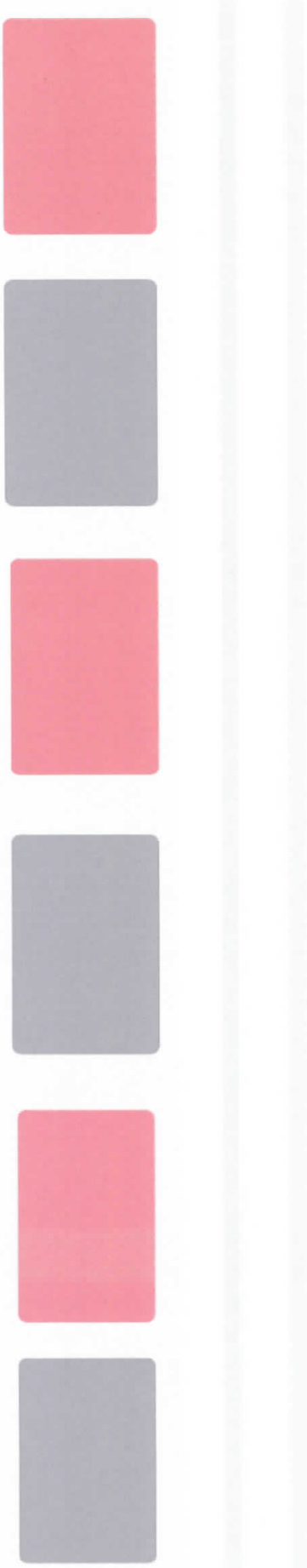
Crow Wing Power Company  
Charter Communications  
Northern Waste Management  
Brainerd City Water and Sewer  
MnDot

## 9. Aerial Photographs:



The following image shows the size of this site. This image will be numbered so further examination can occur.

1. Clock Tower Building
2. Boiler Shop
3. Machine Shop
4. Blacksmith Shop
5. Power Plant
6. Engine House
7. Pattern Shop
8. Round House Site
9. Winter Garden
10. BNSF Current Site



10. **Site Photographs:** are provided in site analysis and inventory.

11. **Visual Form:**

The Visual forms that rise from the land would be the Clock Tower building reaching a pretty good height. The concrete smoke stacks rising above the horizon would also be another form. The other forms would have to be the small minimal heights of the shop buildings. Many of them are enormous in size, but don't have a huge height to them. One other visual form that rises above the land is the cell tower placed here. The removal and relocation of this cell tower perhaps could take place.

12. **Plant Cover:**

a. The plant cover is useful in finding signs of soil and weather conditions.

b. The suitability of particular plants for any context depends on:

i. **Drainage:** The drainage of the site will either drain east into the peat bog or drain into the swamps northwest of the site. The slope was to be determined adequate for building and general use.

ii. **Acidity:** The soils on this site are slightly more acidic than others. Due to the leaching of nutrients that conifers like jack pine and red pine leave behind.



### iii. Humus:

In slight forms occurs along the east edge of the site. This is where the peat soil layer exists. Sense humus, does such great to improve soil conditions, further examination will be taken into if Humus can aid the polluted soils by adding nutrients back into the soil structure.

### iv. Temperature:

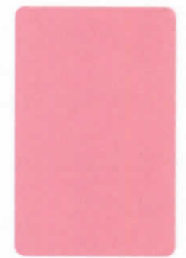
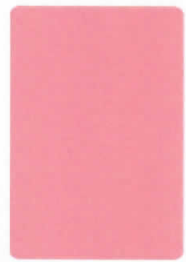
The average temperatures are highlighted along the graph below. Much of this information is averages not to forget that Minnesota has hot summers and cold winters.

### iv. Sunlight:

Sunlight is represented here by this graph. It helps show the importance of sun in the summer months. That's when the Northern Hemisphere receives the natural daylight.

### vi. Moisture:

Moisture can be considered Snow, Rain, Sleet, Ice etc. However, these graphs help show the importance of snow and precipitation. The city gets plenty of rain in the summer months and very little rain the winter. In the winter the precipitation would be snowfall which the city fall higher above the US average.



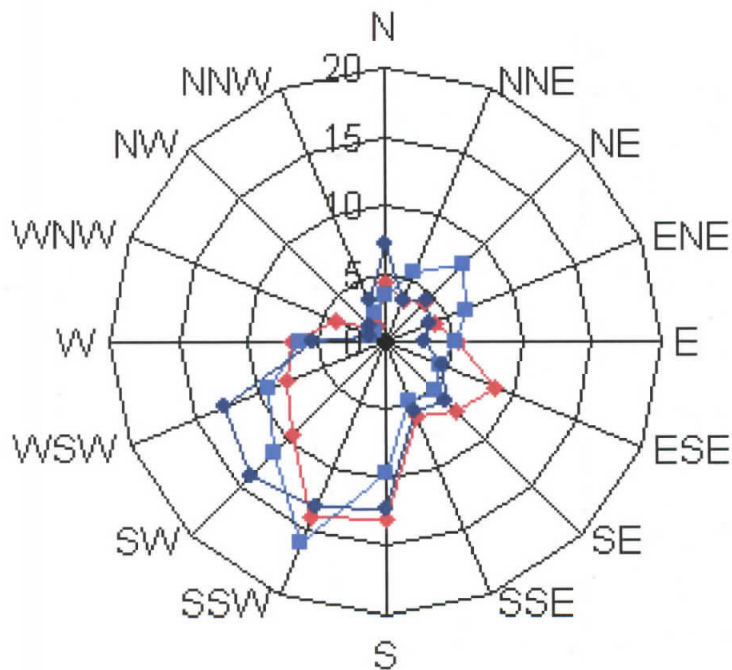
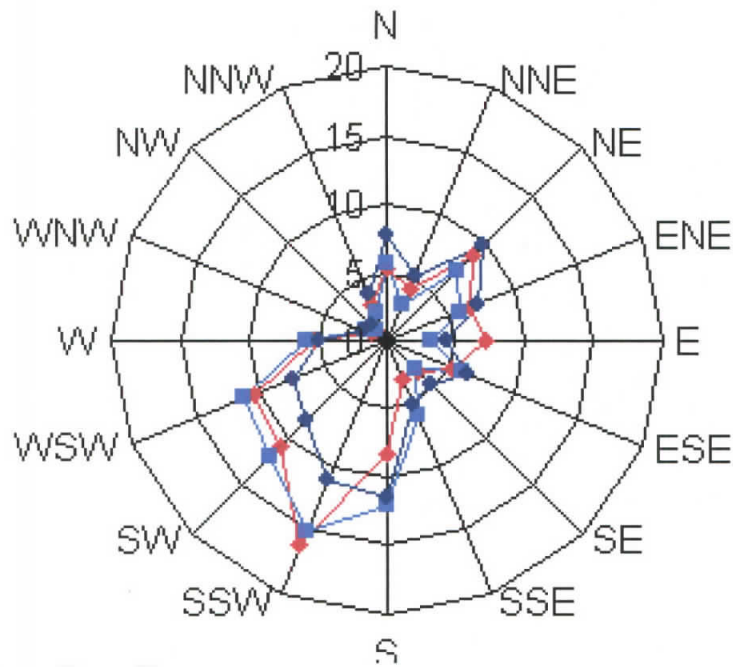
#### vii. Wind:

This wind graph further helps illustrate the importance of how fast the winds blow here. Wind speeds get less intense during the winter months, due to the deciduous trees having leaves. When local trees have foliage, they block the wind to a more calm state. In the winter months, then when trees have no leaves, the wind is more intense in speed.

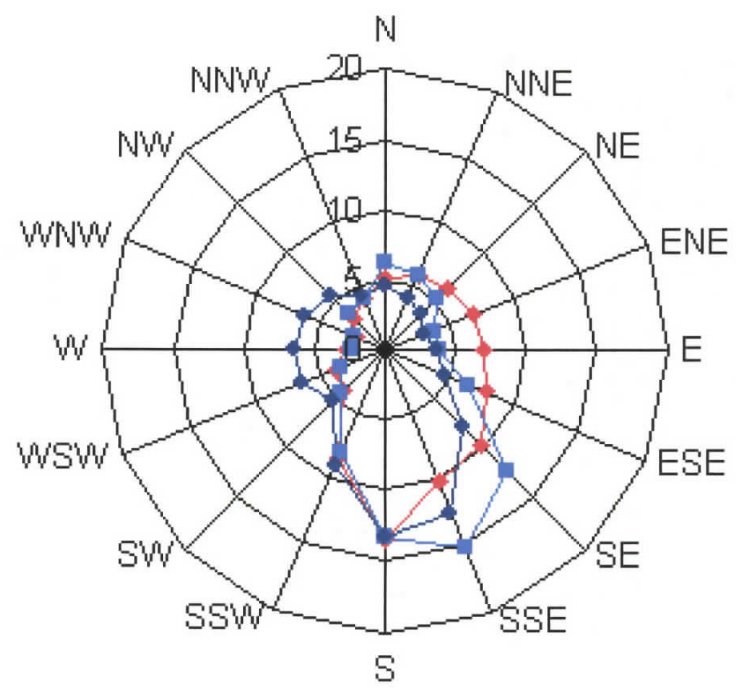
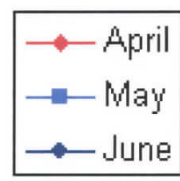
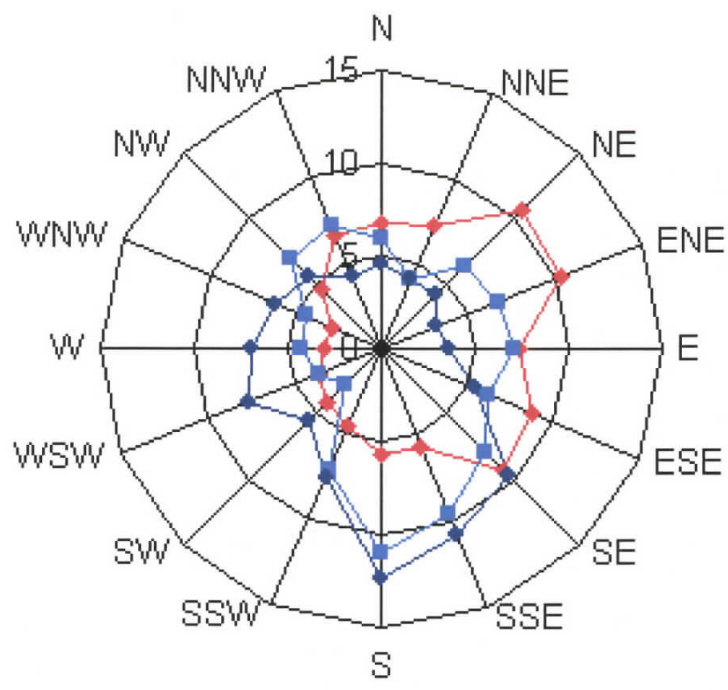
#### 13: Site Character:

When analyzing the site for signs of change an erosion problem occurs in the far South-West corner of the site. More recently a retaining wall structure has been built here to help hold the earth into the side of the slope that was cut away. This wall would occur along 13th Street. During the wet years, the site will act a sponge along the eastern edge of the site. Other distress that occurs along the site is the empty railroad buildings and infrastructure they placed upon the site. Even the paths that have been traveled over the years all put wear and tear on the site. When I took a visit to the site I noticed that appearance of overgrowth was abundant here. Even if a tree was dying in the woods the brush was so thick that you could not see through it.

Wind Rose Graphs showing the direction of winds. This helps further with study in analyzing wind patterns when designing for the built environment.



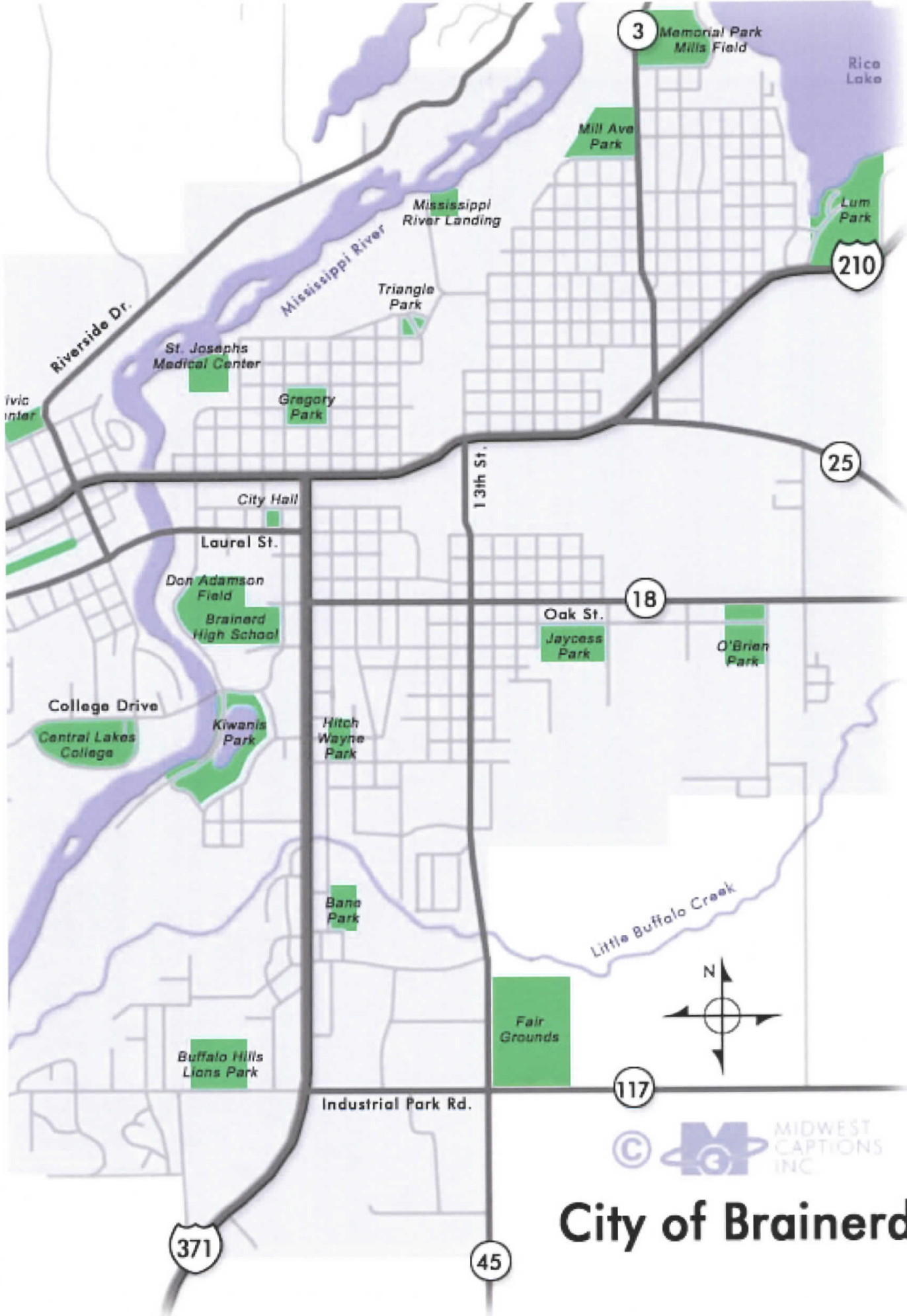






14: **Maps:** This map below highlights the important elements of the city.





©  MIDWEST CAPTIONS INC.

# City of Brainerd

371

45

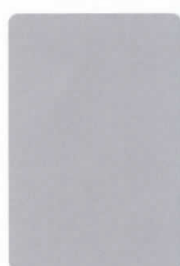
117

18

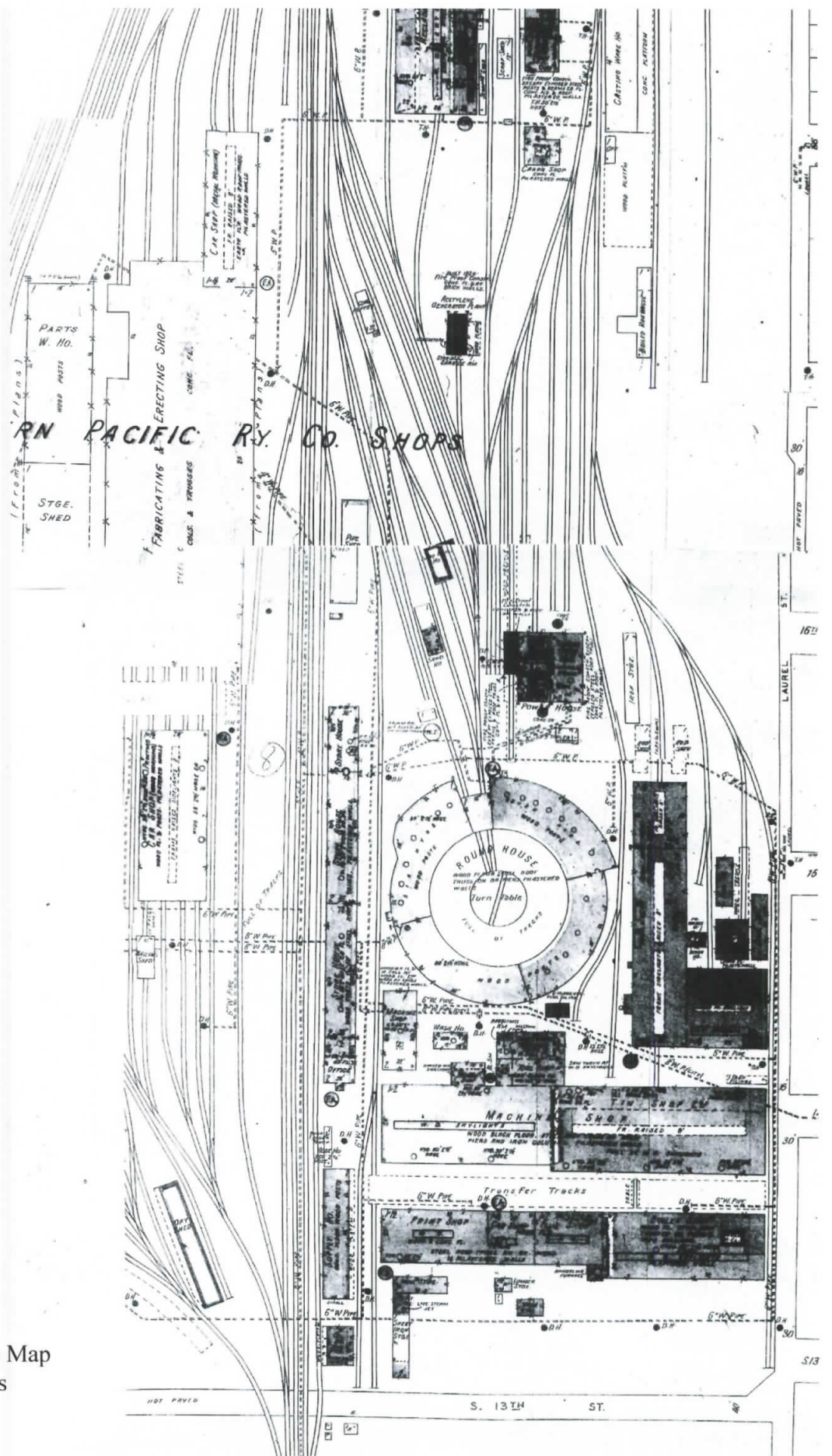
25

210

3



1929  
Sanborn Fire Insurance Map  
Brainerd NP Rail Shops



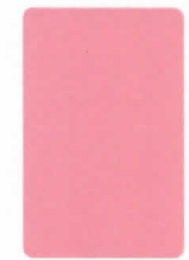
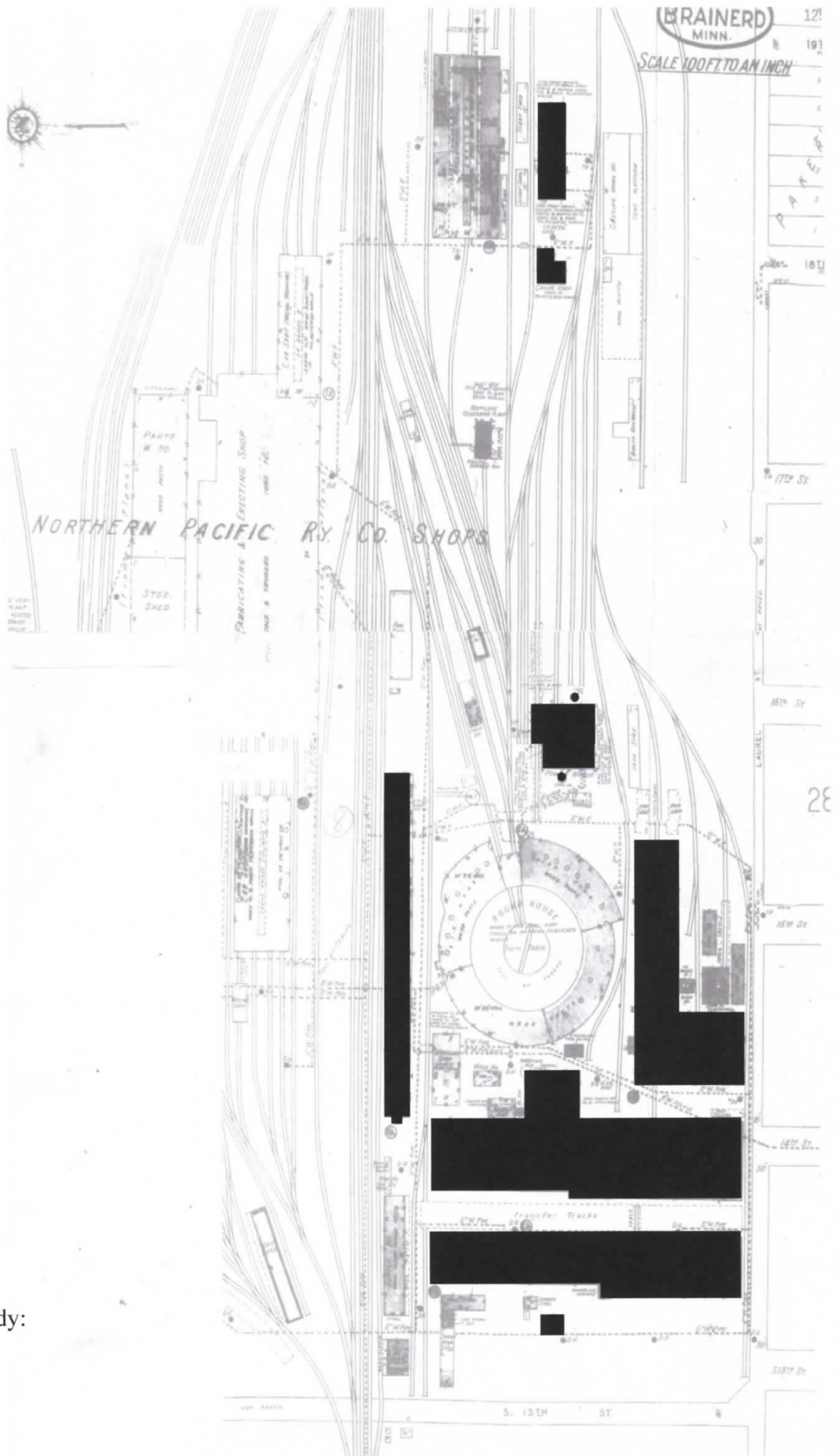


Figure Ground Study:





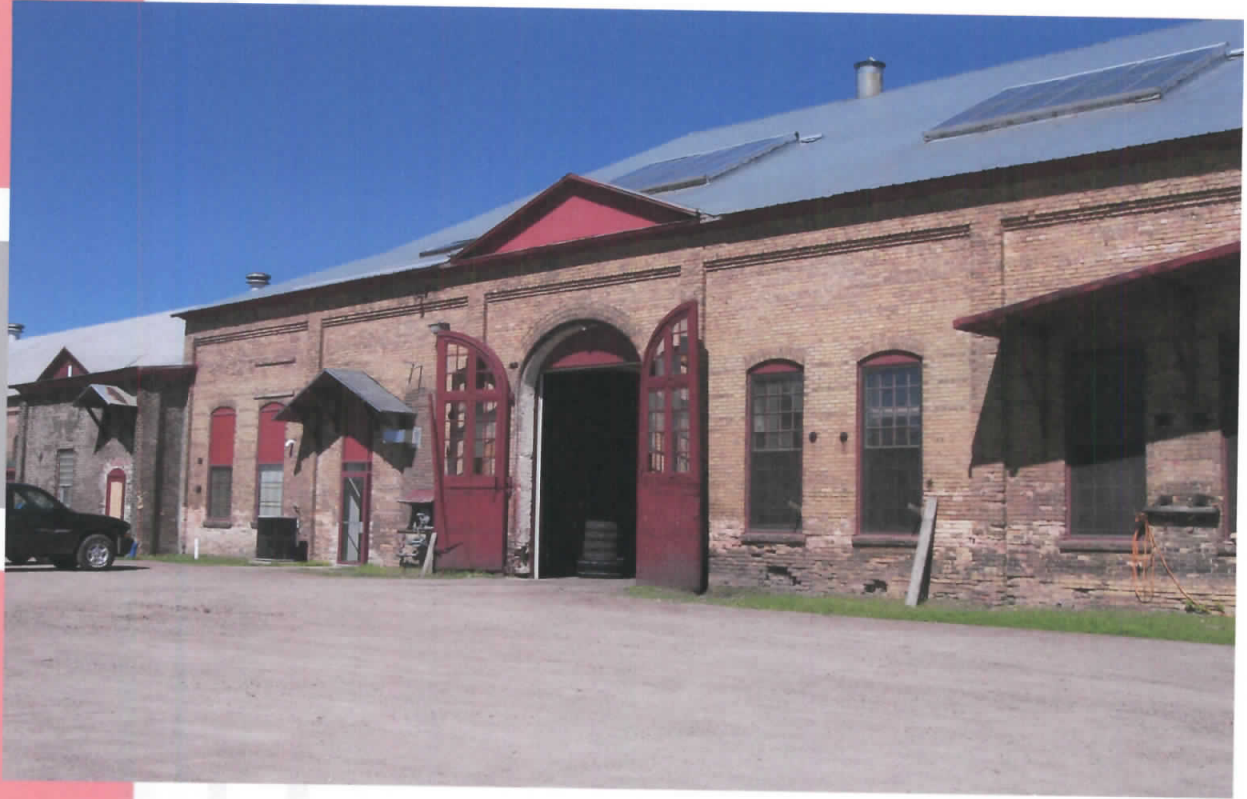
1940'S AERIAL PERSPECTIVE  
OF  
THE NORTHERN PACIFIC RAILROAD SHOPS

15. Site Reconnaissance:

- a. Photo images taken for site analysis and inventory.

Boiler Shop Building: No1







Machine Shop Building: No2





Wash House Building: No3



Blacksmith Shop: No 4





Clock Tower Building: NO 5

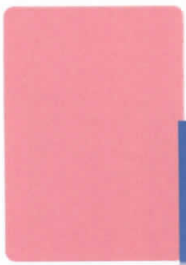




Power Plant Building: No 6









Engine House Building: No 7



Pattern Shop Building: No 8





Winter Garden: Existing Photo



## Temperature Map:

	J	F	M	A	M	J	J	A	S	O	N	D
1 air	51	53	55	58	60	63	66	69	72	75	78	81
2	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5
3	7.3	7.7	8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2	12.7
4	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3	8.4
5	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
6	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
7	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
8	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
9	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
10	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
11	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
12 noon	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
1 pm	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
2	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
3	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
4	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
5	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
6	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
7	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
8	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
9	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
10	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
11 am	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3
12 mid	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9	8.0	8.1	8.2	8.3

0-2      2-4.5      4.5-7.5      7.5-

## Climatic Data:


- A. **Temperature:** is shown on the graph. It helps highlight the importance of summer time heat and cold months of the winter.
- B. **Humidity:** In the summer humidity level almost reach 90%. This in turns creates expansion and contraction in elements of the built environment.
- C. **Precipitation:** Shows the differences in seasons. However, the winter is considered snowfall not rainfall. Eventually, it is added up into annual precipitation.
- D. **Cloudiness:** Illustrates the importance of clear, cloudy and day with precipitation.

## Amount of skycover on average in Minnesota.

### SKY COVER

	J	F	M	A	M	J	J	A	S	O	N	D
1 air	45	55	75	85	95	95	95	95	95	95	95	95
2	35	45	65	75	85	95	95	95	95	95	95	95
3	35	45	65	75	85	95	95	95	95	95	95	95
4	35	45	65	75	85	95	95	95	95	95	95	95
5	35	45	65	75	85	95	95	95	95	95	95	95
6	35	45	65	75	85	95	95	95	95	95	95	95
7	35	45	65	75	85	95	95	95	95	95	95	95
8	35	45	65	75	85	95	95	95	95	95	95	95
9	35	45	65	75	85	95	95	95	95	95	95	95
10	35	45	65	75	85	95	95	95	95	95	95	95
11 am	35	45	65	75	85	95	95	95	95	95	95	95
12 noon	35	45	65	75	85	95	95	95	95	95	95	95
1 pm	35	45	65	75	85	95	95	95	95	95	95	95
2	35	45	65	75	85	95	95	95	95	95	95	95
3	35	45	65	75	85	95	95	95	95	95	95	95
4	35	45	65	75	85	95	95	95	95	95	95	95
5	35	45	65	75	85	95	95	95	95	95	95	95
6	35	45	65	75	85	95	95	95	95	95	95	95
7	35	45	65	75	85	95	95	95	95	95	95	95
8	35	45	65	75	85	95	95	95	95	95	95	95
9	35	45	65	75	85	95	95	95	95	95	95	95
10	35	45	65	75	85	95	95	95	95	95	95	95
11 am	35	45	65	75	85	95	95	95	95	95	95	95
12 mid	35	45	65	75	85	95	95	95	95	95	95	95

0-25      25-50      50-75      75-100



E. **Wind Speed:** The wind speed can define by the graphs. Showing how winds change speeds over the course of a year on average.

F. **Wind Direction:** Shown by wind roses further explaining the shifting wind patterns from year to year. As the seasons change so does the direction is which the wind comes from.

I. **Slope and Climate:** Crow Wing County has a continental climate characterized by warm summers and cold winters. The slope was discovered to be anywhere from 0.1% to 4% and 4% to 10%. These slopes provide the drainage needed with out creating erosion problems.

J. **Shading:** The shading characteristics of the site would be the huge ware house building that cast shadows along the site. The power plant, shops and clock tower will diminish the intensity of the sunlight. But with the interior skylights that most of these building have should help provide daylight within the buildings.

K. **Topography and air movement:**

i. The topography on this site is very minimal. That is why the soil formation is pretty constant. It is here that erosion, runoff, drainage, moisture content, temperature and plant cover work well on this site. In general, the site can shred excess water if needed, but works well enough not need to much surface engineering.

ii. The air movement within Brainerd is dependant upon wind speed and wind direction. When the speed and direction are right it can circulate plenty of air around the site. But, when surface wind speeds drop and directions change, some areas of the site might get a bit less air movement along the site.

L. **Noise:** The only this site experiences is the trains and automobile traffic off of highway 210 and 13th Street.





Programmatic Requirements:

a. Space Allocation:

- 1) Acetylene Generator Plant and Power Plant Building re-use
  - a. adaptive reuse design
  - b. restaurant
  - c. micro brewery
  - d. winery
  - e. product control
  - f. storage

Power House (Power Plant)

112' x 96' three stories on the north half and two stories on the south half

- 2) Blacksmith Shop re-use
  - a. shopping plaza
  - b. indoor square
  - c. indoor black smith shop
  - d. design studios
  - e. relocation of Nordecor wood working

Blacksmith Shop

300' x 80'4" x one story (original)

126' x 125'9" x two stories (South addition)

117'4" x 80'4" x one story (East addition)

- 3) Boiler Tank Shop #1 and Foundry Boiler Shop re-use
  - a. specialty stores
  - b. auction area
  - c. county historical museum annex (new exhibit)
  - d. showcase of historical exhibits associated with the site
  - e. eatery establishments
  - f. placing vintage locomotives and caboose with the indoor space
  - g. parking

Boiler Shop Building

332'9" x 80'4" x one story (original warehouse to the North)

238' x 100'4" x two stories (south addition)  
rises 44' tall



4) Engine House re-use

- a. historic looking bar
- b. restaurant
- c. office
- d. kitchen

Engine House  
50' x 55' x one story



5) Lavatory Building re-use

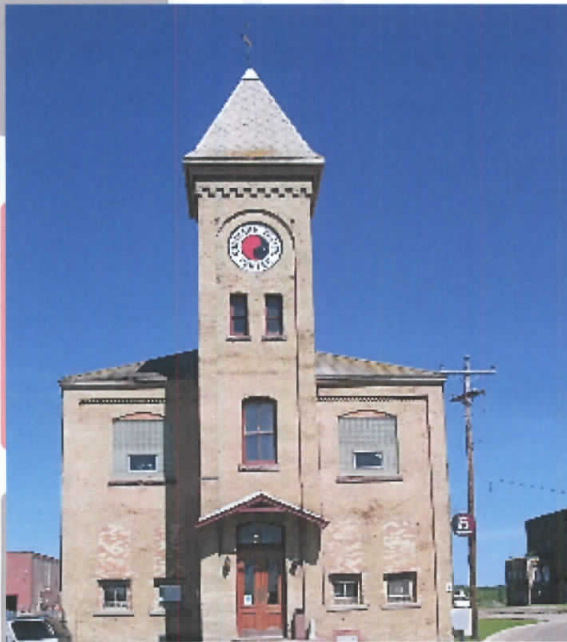
- a. gift shop
- b. store
- c. information center
- d. visitor center

Lavatory Building  
25' x 32' x one story

6) Machine Shop #2 re-use

- a. connected winter garden/ indoor garden space to the boiler shop
- b. indoor connected shops (useable in winter months)
- c. vintage locomotive displays
- d. food courts

Machine Shop  
224'x 120'8" x one story (original warehouse to the North)  
331'4" x 133'5" x two stories (50' tall south addition)



7) The Clock Tower Building re-use

- a. mass transit station
- b. hotel
- c. shops
- d. new clock for tower
- e. offices
- f. waiting area
- g. recreational area
- h. office administration for the site
- i. outdoor patios and seating
- j. parking to the east

Clock Tower Building  
478'x 43.5'  
Two Stories  
Tower is 13'x 13' x 68'



- 8) Pattern Shop and Storehouse Building re-use
  - a. industrial style apartments
  - b. parking to the east
  - c. laundry
  - d. roof garden

Pattern Shop and Storehouse Building  
80'4" x 50'8" x four stories tall

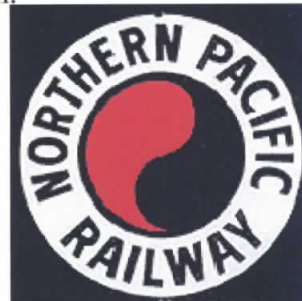
- 9) Roundhouse Foundation
  - a. green space of flowers
  - b. mimic the old pattern of the foundation

- 10) Transfer Table Foundation
  - a. fountain
  - b. rows of green spaces
  - c. walking paths
  - d. formal plaza

- 11) Winter Garden
  - a. A place for public interaction
  - b. connection area for shops

#### ii. Preliminary Budget:

Needs to be calculated within phases 1, 2 etc..  
According to the estimate cost, one would say this project would cost around \$15 Million Dollars +/- for economic conditions and materials available for construction. This would take into consideration permits, labor, transportation and other hidden fees when dealing with historic preservation.

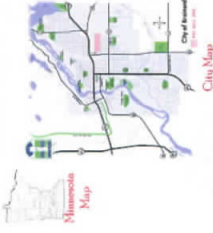


#### 4. Program Appendix:

- a. Additional information deemed important to the understanding and framing of the thesis project.

# Northern Pacific Railroad Shops Brainerd-Minnesota

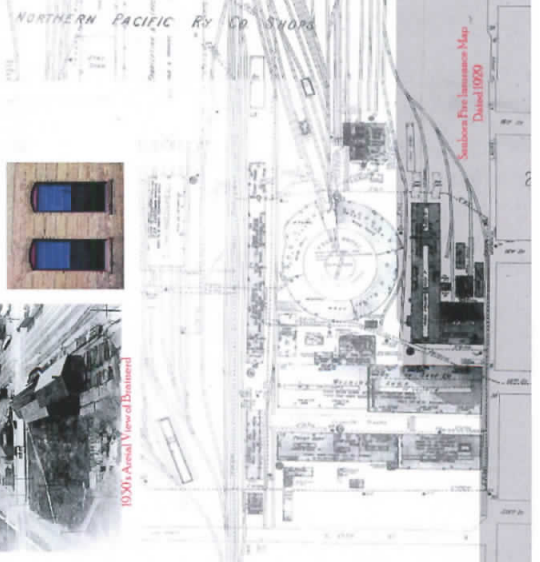
**Bolier Shop No 1 building**  
**Wash House No 4 building**



10/30, Aerial View of Brainerd



No 3 Wash House Perspective



Brainerd First Intersection Map  
Dated 1920



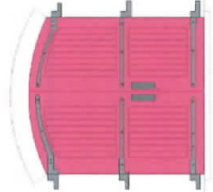
No 1 Bolier Shop North West Perspective



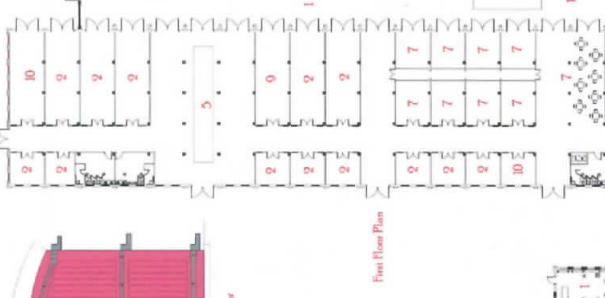
Figure Ground Map



No 1 Bolier Shop South West Perspective



Typical Exterior Door Detail



First Floor Plan



Mechanical Room Plan

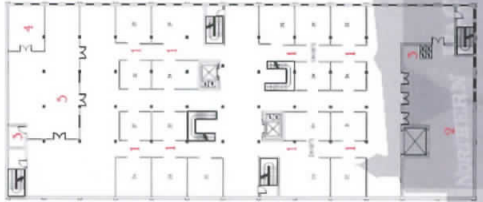


Shop Inventory & Analysis



Bolier Shop First Floor Plan  
Scale 1/8" = 1'-0"

- 1. Main Entrance
- 2. Main Office
- 3. Main Shop
- 4. Main Office
- 5. Main Office
- 6. Main Office
- 7. Main Office
- 8. Main Office
- 9. Main Office
- 10. Main Office
- 11. Main Office
- 12. Main Office
- 13. Main Office
- 14. Main Office
- 15. Main Office
- 16. Main Office
- 17. Main Office
- 18. Main Office



Second Floor Plan

Bolier Shop Second Floor Plan  
Scale 1/8" = 1'-0"

- 1. Main Office
- 2. Main Office
- 3. Main Office
- 4. Main Office
- 5. Main Office



# Northern Pacific Railroad Shops Brainerd-Minnesota

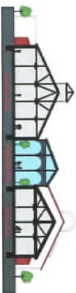
## Machine Shop No 2 building

### Winter Garden

HISTORIC PRESERVATION  
&  
ADAPTIVE RE-USE



Baker Shop, Winter Garden and Machine Shop Perspective



Section looking South



No 2 Machine Shop  
Amenity Restaurant Perspective



Interior Perspective  
View of  
No 2 Machine Shop

**Carlson Foods**  
Housed here in 1993, the historic building was renovated and converted into a food processing facility.

Carlson is a national chain of fast-food restaurants. The current building is 2.5 million sq ft and cost \$200 million.



Typical Lightpole



No 2 Machine Shop  
North East Perspective



No 2 Machine Shop  
Perspective

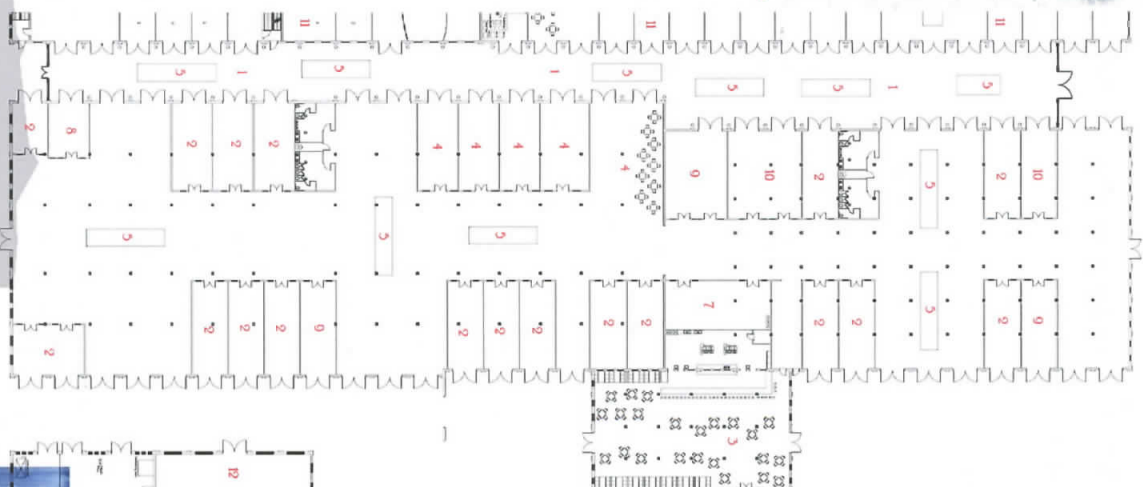


No 2 Machine Shop and Winter Garden  
Interior Perspective



Figure General Map  
1. Baker Shop  
2. Machine Shop  
3. Winter Garden  
4. Amenities Restaurant  
5. Machine Shop No 2  
6. Machine Shop No 1

First Floor Plan



- Plan**
1. Winter Garden
  2. Amenities Restaurant
  3. Machine Shop
  4. Machine Shop
  5. Machine Shop
  6. Machine Shop
  7. Machine Shop
  8. Machine Shop
  9. Machine Shop
  10. Machine Shop
  11. Machine Shop
  12. Machine Shop
- Scale: 1/8" = 1'-0"

Winter Garden Addition  
Machine Shop No 2 building



Site location  
&  
Analysis



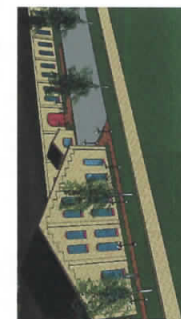
# Northern Pacific Railroad Shops Brainerd - Minnesota Black Smith Shop No 3 building

HISTORIC PRESERVATION  
&  
ADAPTIVE RE-USE

NATIONAL REGISTER  
OF HISTORIC PLACES  
U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT



No. 3 Black Smith Shop  
South West Perspective



No. 3 Black Smith Shop Building  
South Perspective



Site Plan

The proposed adaptive reuse project will retain the historic building's character and provide a new use for the building. The project will include the following:

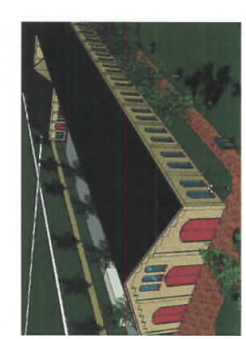
- Retain the historic building's character and provide a new use for the building.
- Retain the historic building's character and provide a new use for the building.
- Retain the historic building's character and provide a new use for the building.



**HISTORY MATTERS**

MINNESOTA HISTORICAL SOCIETY

P  
A  
S  
T  
F  
U  
T  
U  
R  
E



No. 3 Black Smith Shop  
North East Perspective



Figure Ground Map

1. Black Shop
2. Black Shop
3. Black Shop
4. Black Shop
5. Black Shop
6. Black Shop

## Historical Context

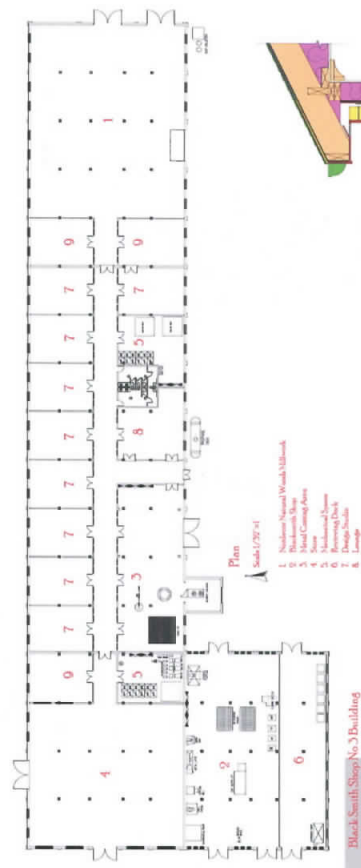
When the Black Smith Shop No. 3 building was constructed in the late 19th century, it was one of many buildings in the Brainerd area that were built to support the railroad industry. The building was designed by the architect John H. Johnson and was built by the contractor John H. Johnson. The building was one of the largest and most expensive buildings in the Brainerd area at the time. It was built to house the railroad's shops and was used for many years as a workshop for the railroad's equipment. The building was one of the largest and most expensive buildings in the Brainerd area at the time. It was built to house the railroad's shops and was used for many years as a workshop for the railroad's equipment. The building was one of the largest and most expensive buildings in the Brainerd area at the time. It was built to house the railroad's shops and was used for many years as a workshop for the railroad's equipment.



Site Inventory  
&  
Analysis



Well Assembly Detail



Plan  
Scale 1/8" = 1'-0"

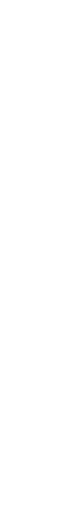
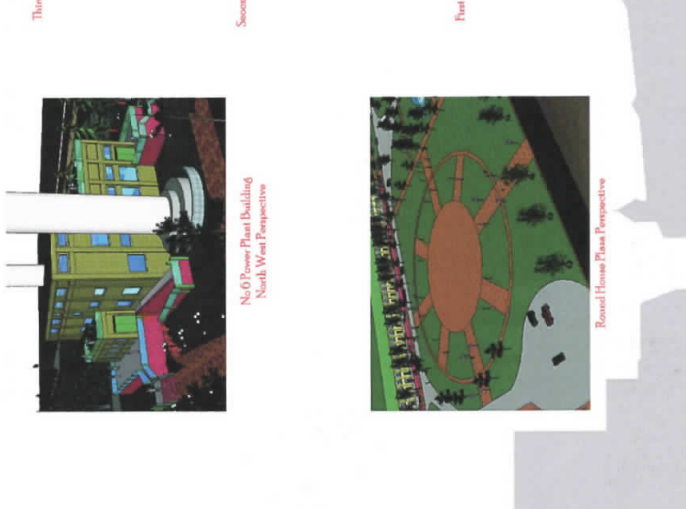
1. Northern Normal Wash Alkath
2. Black Smith Shop
3. Black Smith Shop
4. Black Smith Shop
5. Black Smith Shop
6. Black Smith Shop
7. Black Smith Shop
8. Black Smith Shop

Black Smith Shop No. 3 Building  
First Floor Floor Plan

# Northern Pacific Railroad Shops Brainerd-Minnesota

## Power Plant Building No 6 building

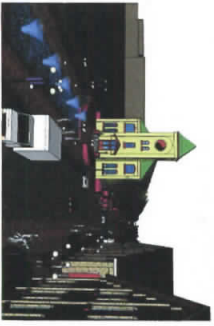
### HISTORIC PRESERVATION & ADAPTIVE RE-USE



# Northern Pacific Railroad Shops Brainerd-Minnesota

## Clock Tower Building No 5 building

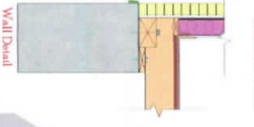
HISTORIC PRESERVATION  
&  
ADAPTIVE RE-USE



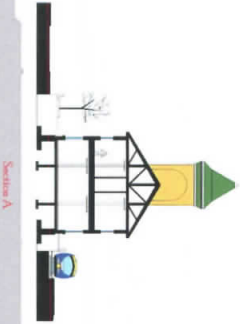
No.5 Clock Tower Building  
Wall Perspective



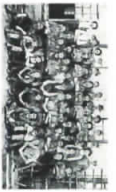
Interior Main Delivery  
Area and main clock tower



Wall Detail



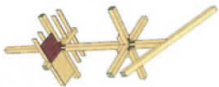
Section A



No.5 Clock Tower Building  
South Perspective



Figure Ground Map



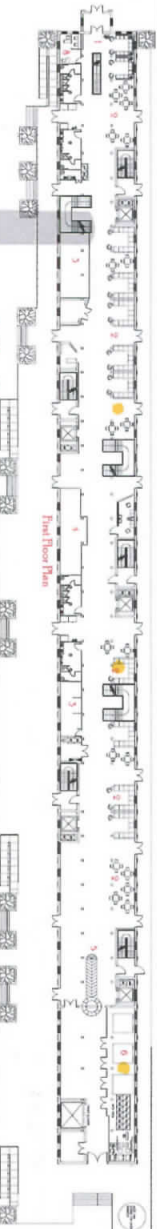
Henry Timber Detail



Book Edge South Perspective



Second Floor Plan



First Floor Plan

Clock Tower No.5 Building  
Plan



Street Corner Perspective



No.5 Clock Tower  
North Perspective



Compass rose showing cardinal directions.

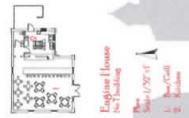
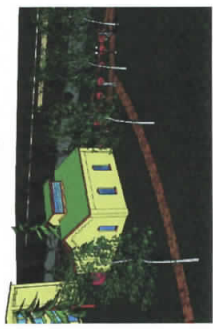


Site Inventory  
&  
Analysis



# Northern Pacific Railroad Shops Brainerd-Minnesota

## Engine House No 7 building & Pattern Shop No 8 building



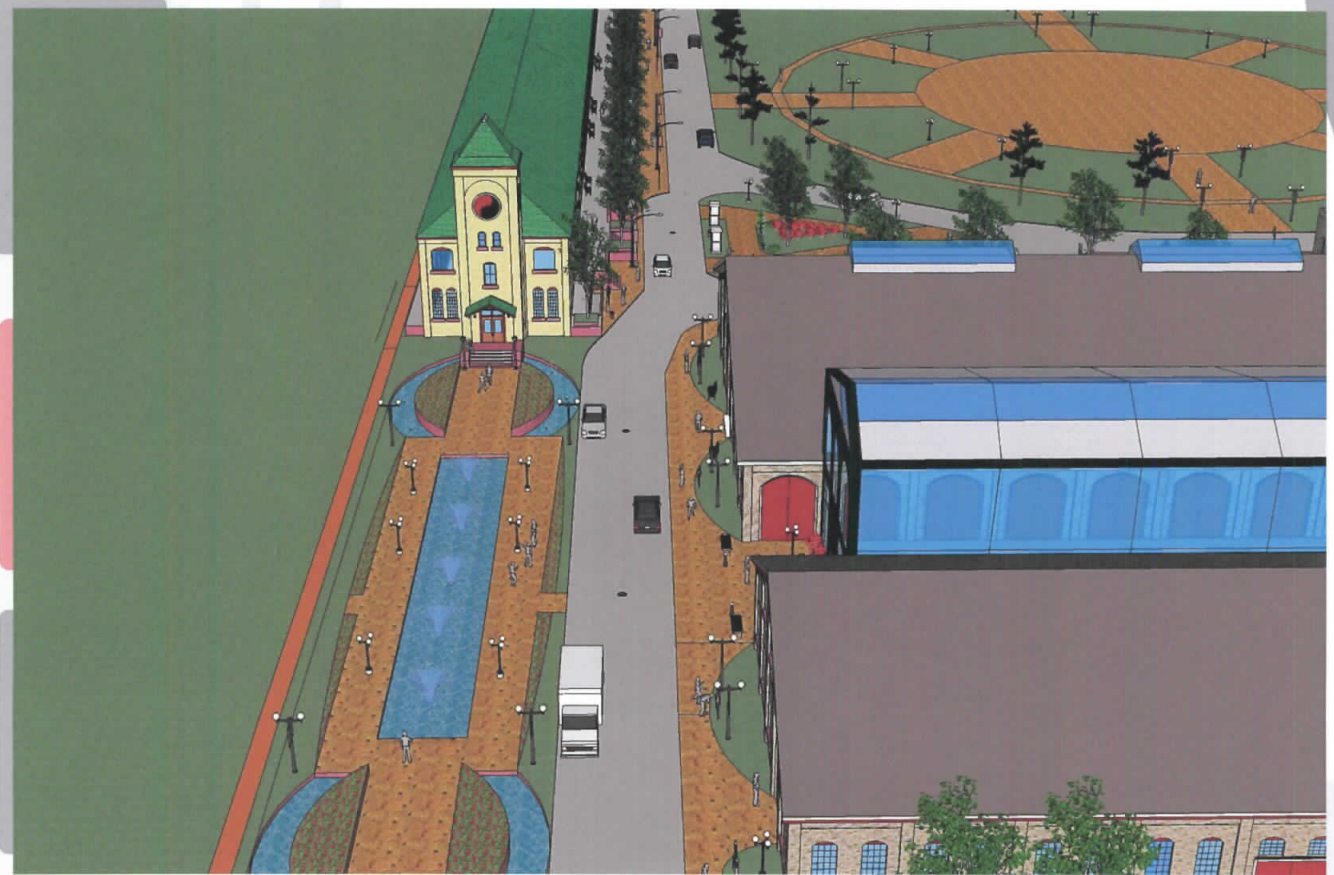
**Masonry Restoration for Brick Mortar**

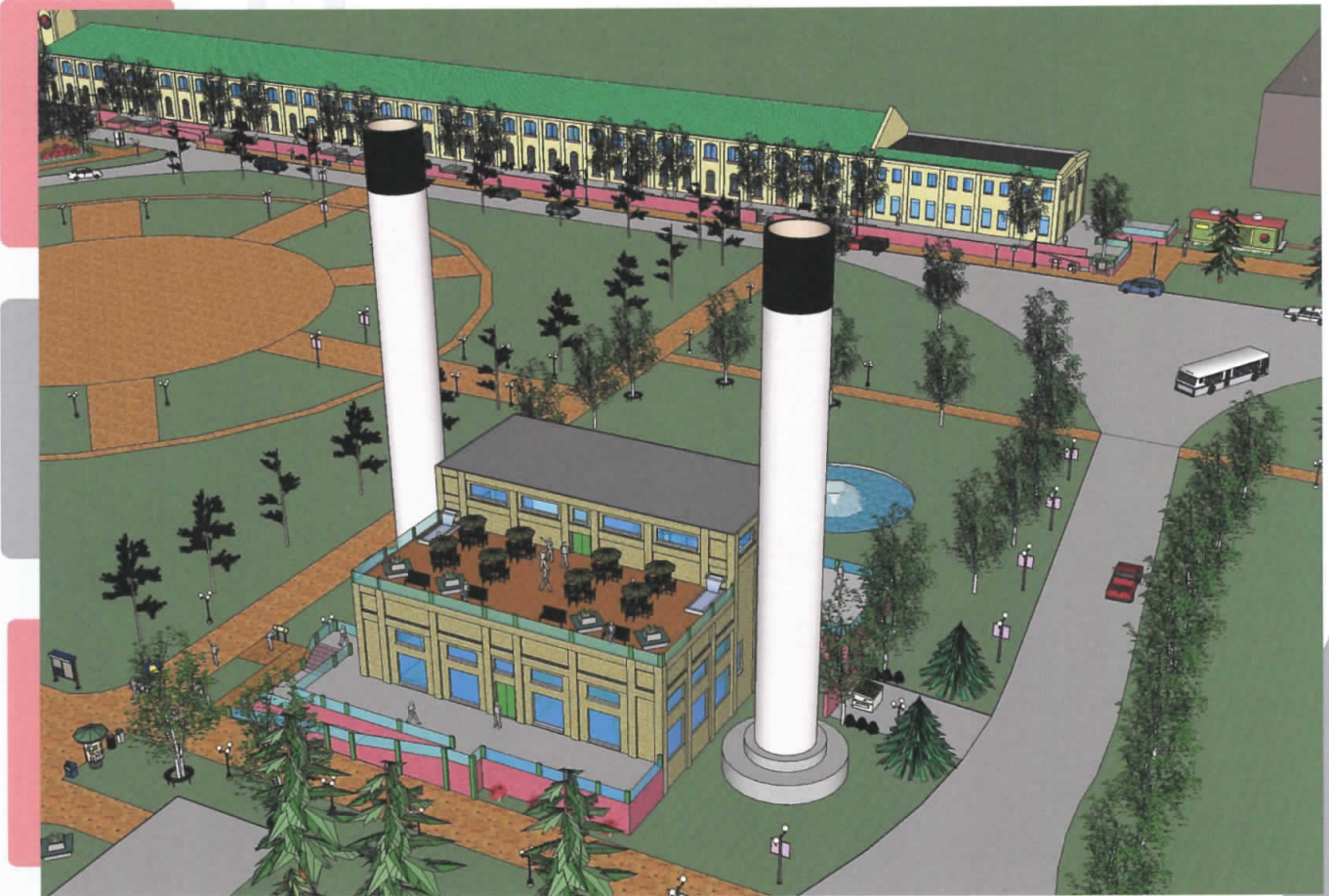
Brick Piles  
- Design for sand compaction design look



1. Gallery Room  
2. Plans Room  
3. Shop 2  
4. Shop 1  
5. Plans Room  
6. Plans Room  
7. Plans Room  
8. Plans Room  
9. Plans Room  
10. Plans Room  
11. Plans Room  
12. Plans Room









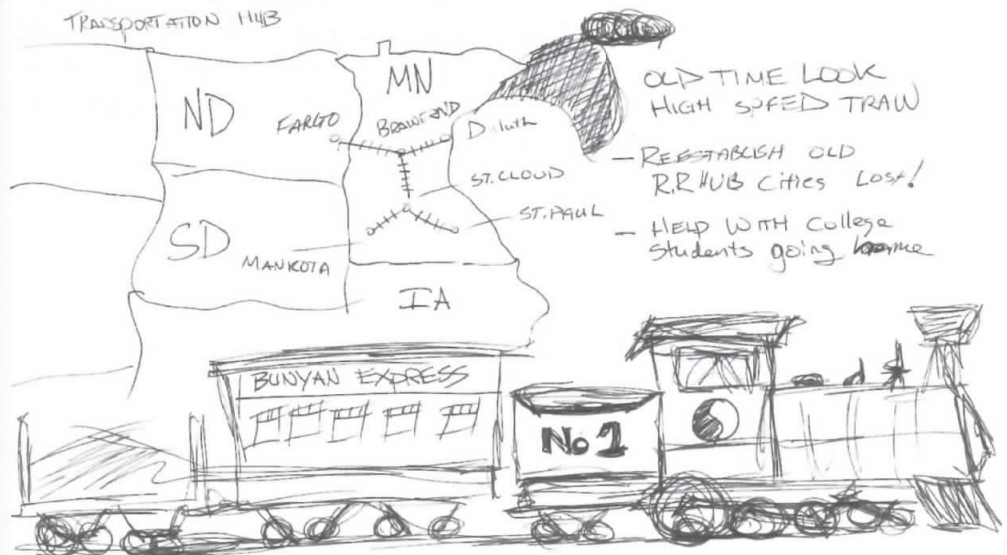
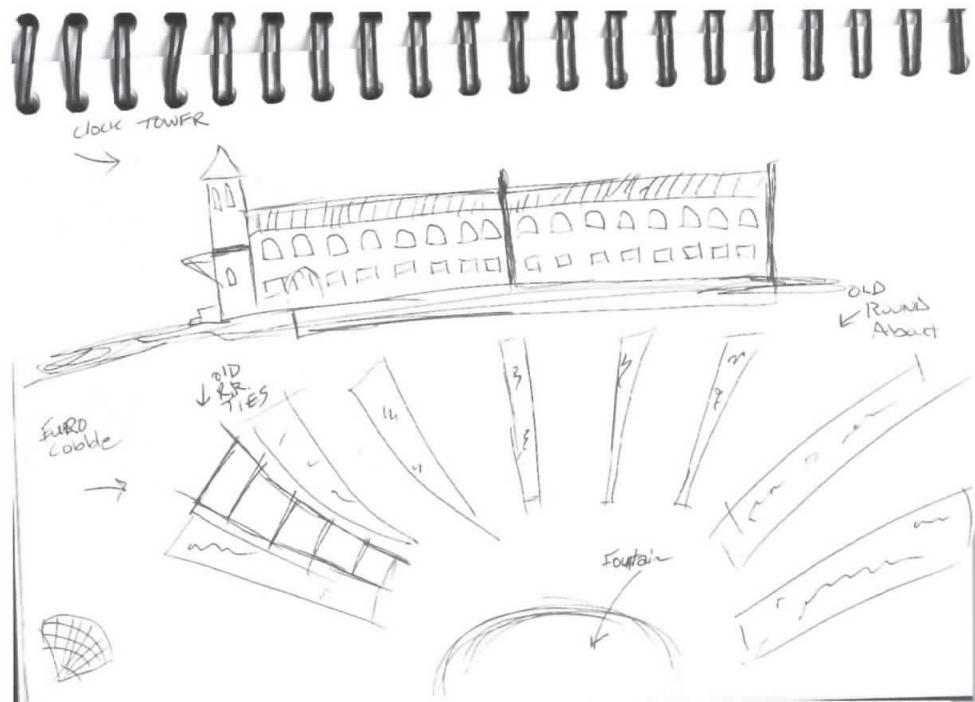


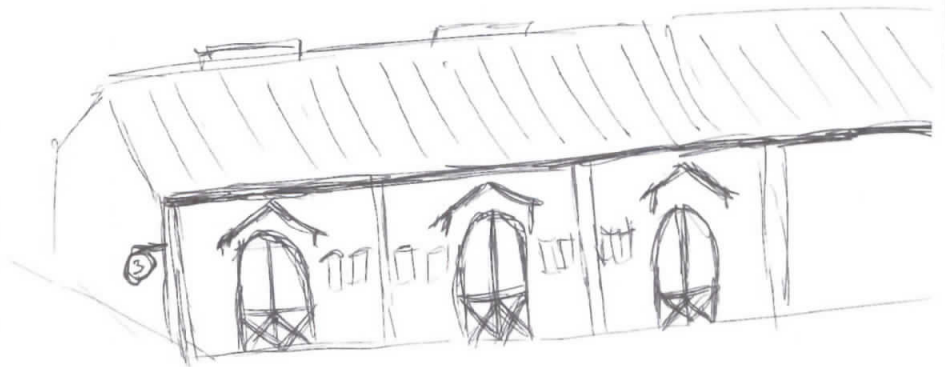
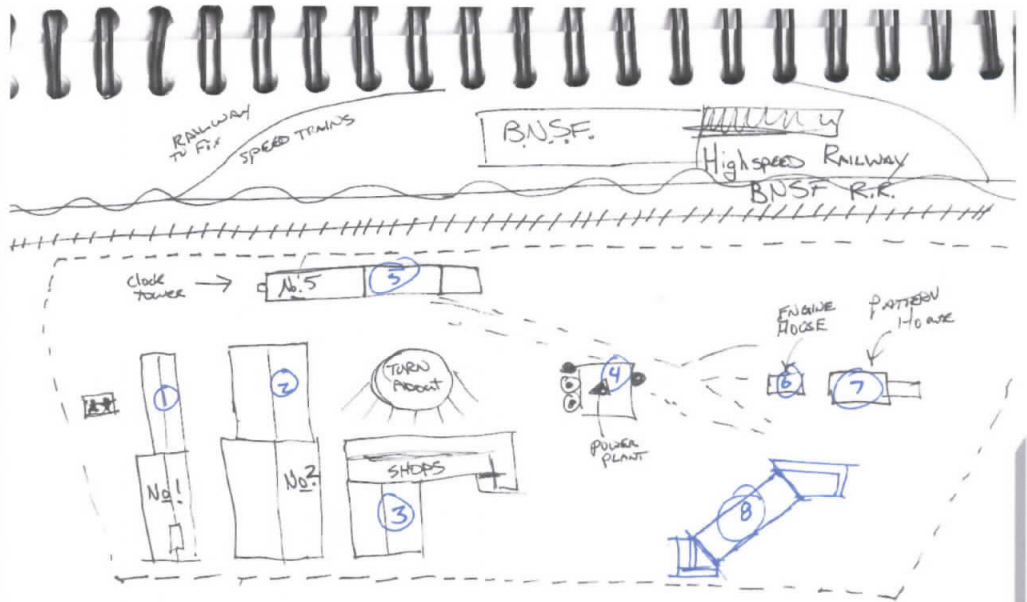


Metro Rail Transit image to the top:

Metro Rail can expand North connecting railroad lines from St. Paul, Duluth, Brainerd, St. Cloud and Fargo. By reconnecting cities the mass transit rail once again can connect cities while using less fossil fuels. By lessening our countrys demand for foreign oil will help the economy recover from the slight depression caused by high oil prices. The adverage price for a one way ticket in the cities is about \$1.25 a person. No one can even buy a gallon of gas for \$1.25. Relinking cities together and bringing people back from suburbs to the inner city will help keep this rail transit running into the future. Metro Rail is just one way this thesis has explored the use of mass transit.

# Thesis Concept Sketches:

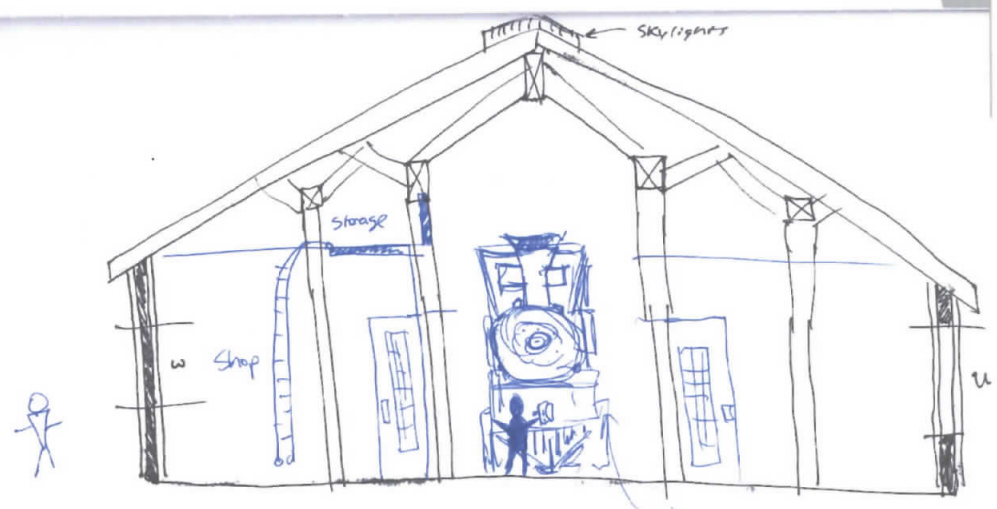
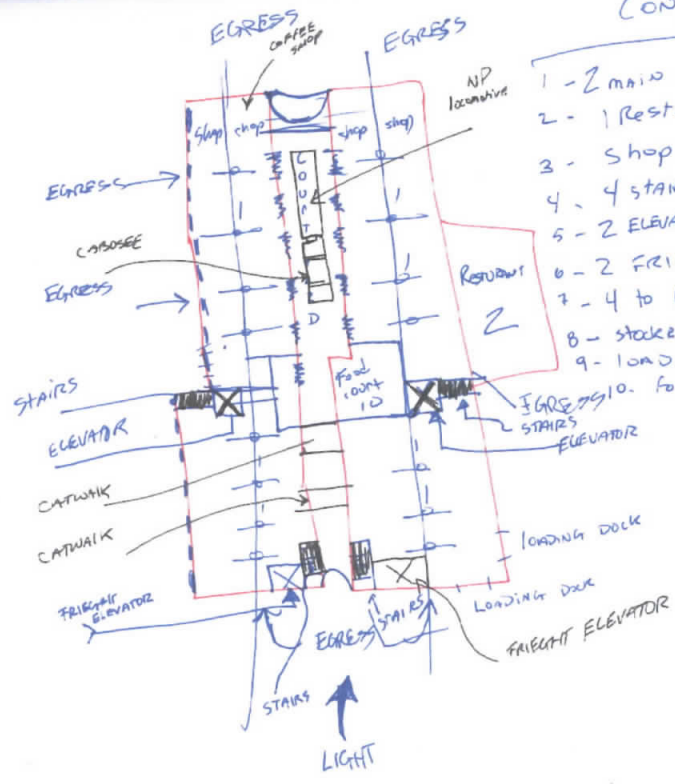


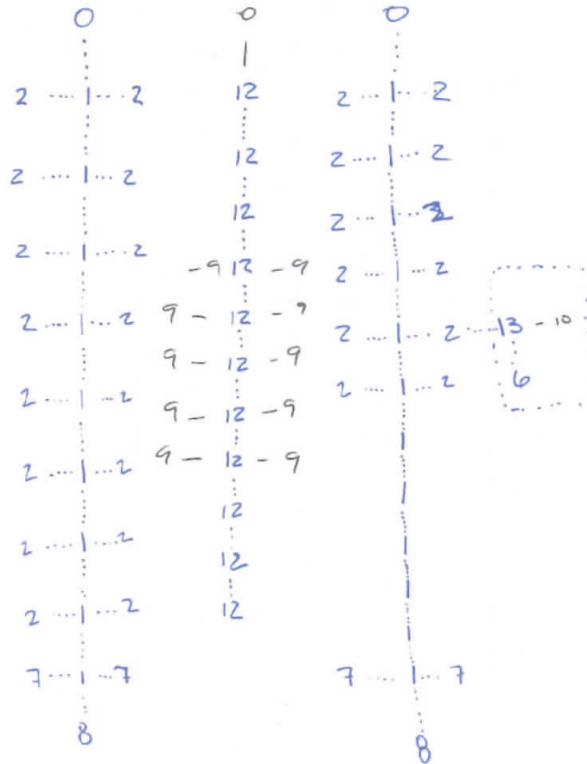
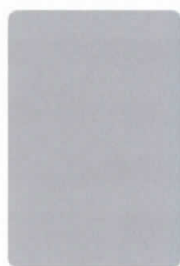




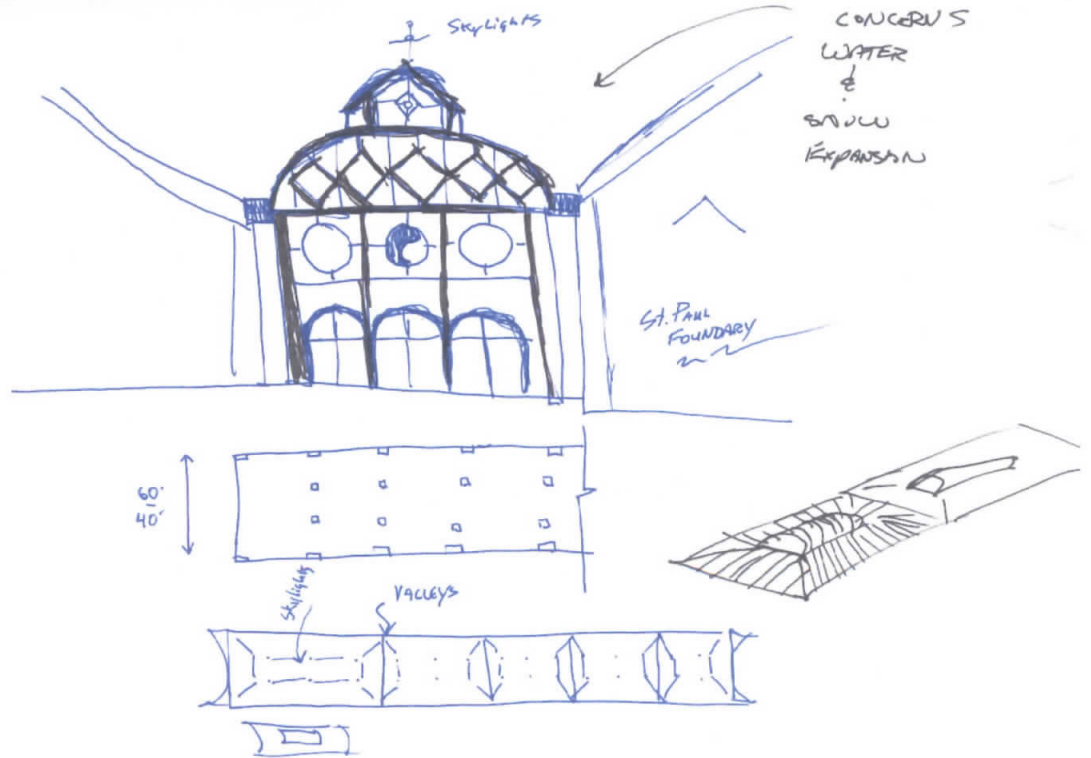
# COMPONENTS

- 1 - 2 main corridors
- 2 - 1 RESTAURANT
- 3 - Shops
- 4 - 4 STAIRS
- 5 - 2 ELEVATOR
- 6 - 2 FREIGHT ELEVATORS
- 7 - 4 to 6 BATHROOMS
- 8 - STOCKROOM
- 9 - LOADING DOCK DOORS
- 10 - food-court





- 0- ENTRY
- 1 wooddeck MAIN
- 2 Shops
- 3 STAIRS
- 4 ELEVATORS
- 5 FRIEHT ELEVATORS
- 6 BATHROOMS
- 7 Stockroom
- 8 LOADING DOCK
- 9 food courts
- 10 food kitchens
- 11. CARDBOARD / GARBAGE WASTE!
- 12. COURTYARD
- 13. RESTURANT

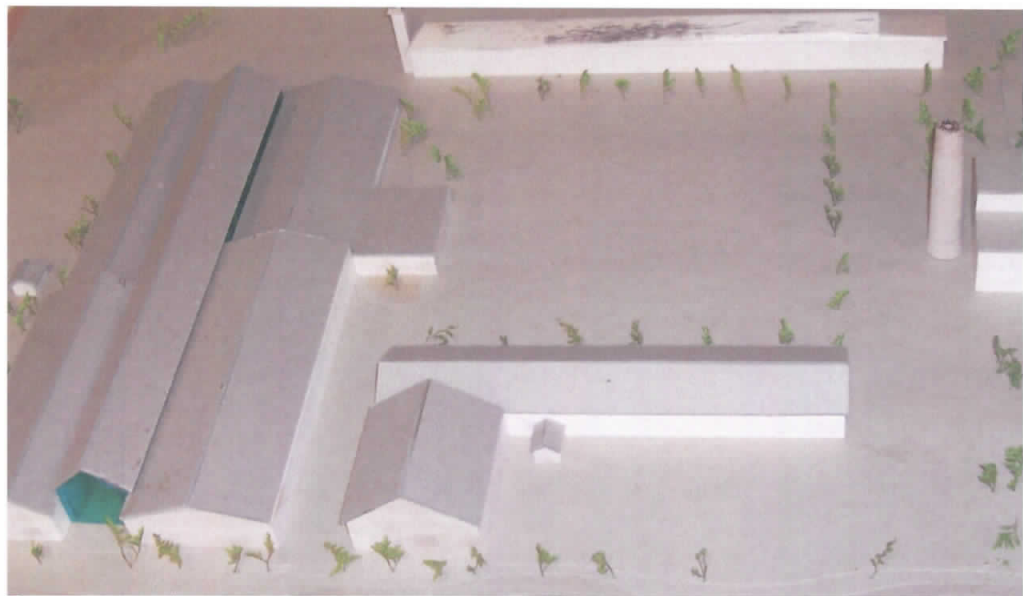
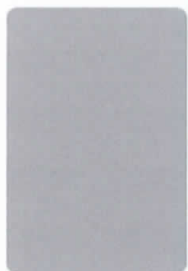


# Thesis Physical Model:

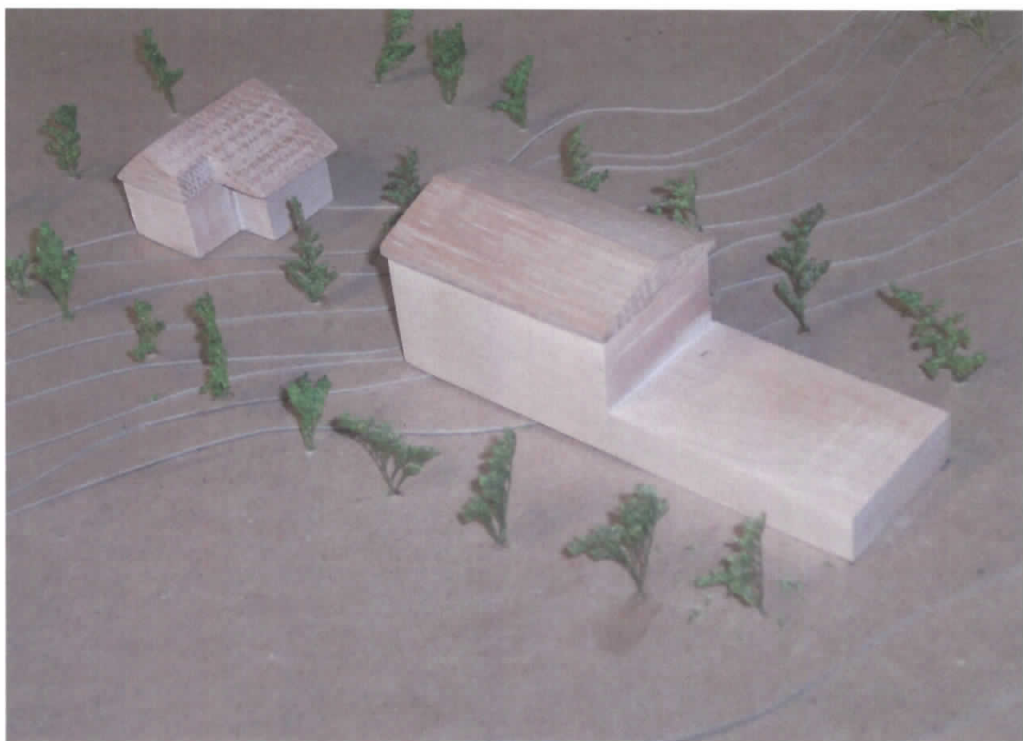
Scale 1/32"=1'



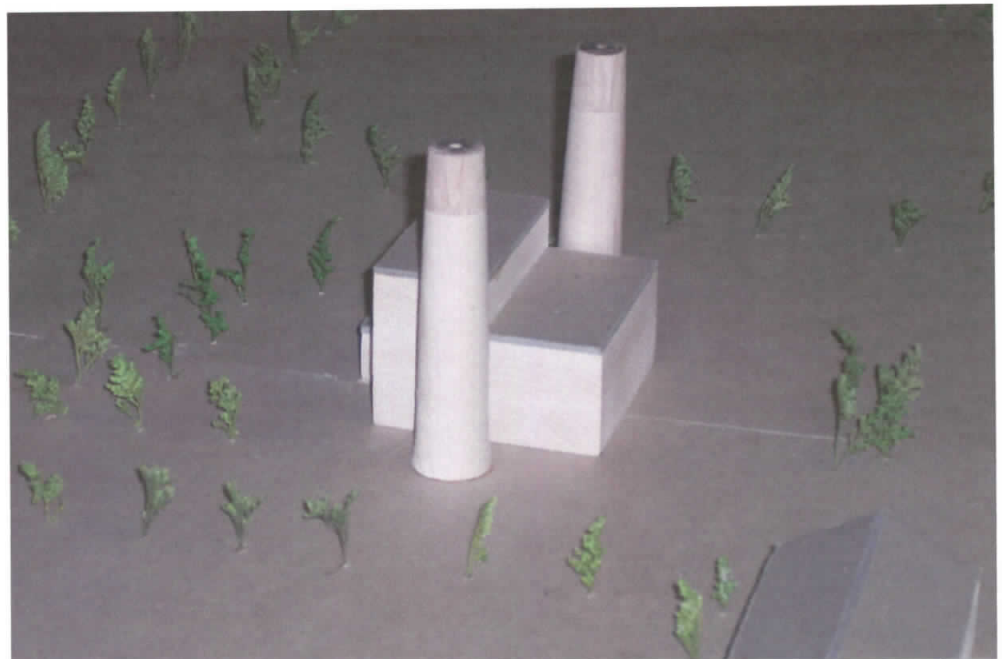
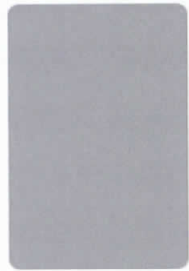
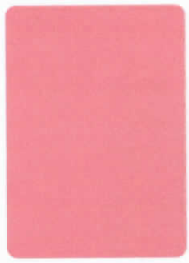
Perspective looking East:



Perspective looking North:



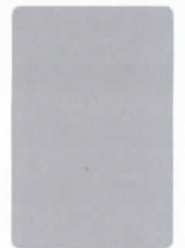
Pattern Shop and Engine House:



Power Plant:



Power plant and Engine House:



Perspective looking West:



Biography Information:

Matthew W. Serra

Hometown

School: North Dakota State University

Major: Bachelors of Architecture Degree

Minor: Landscape Architecture

Quote: "Studying Architectural Design is like designing a house, with out a proper strong foundation, the house will fall down over time."





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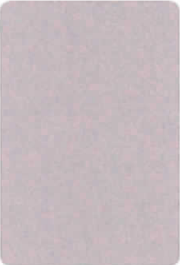
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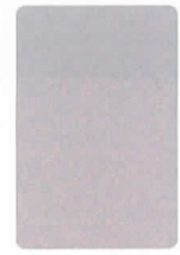


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**Other Various Places of Research Included:**

Site of the thesis: Brainerd, Minnesota.

Minnesota Heritage Center: St Paul, Minnesota

Crow Wing County Historical Museum: Brainerd, Minnesota

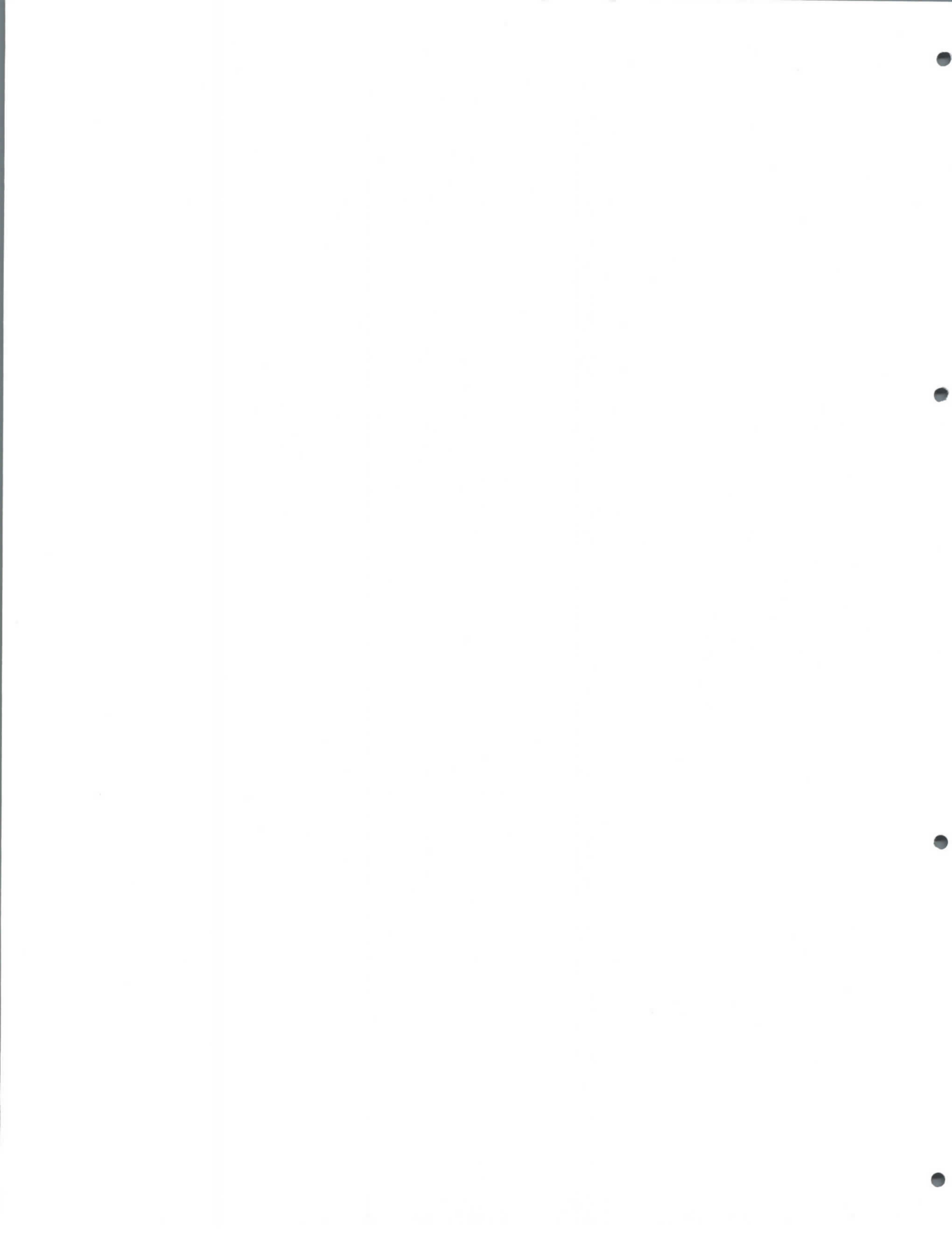
Public Library: Brainerd, Minnesota

NDSU Architecture Library: Fargo, North Dakota



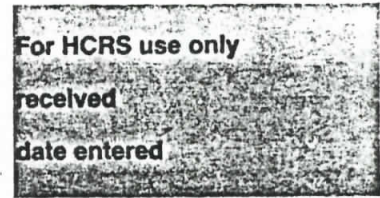
NDSU Main Library: Fargo, North Dakota





**United States Department of the Interior  
Heritage Conservation and Recreation Service**

**National Register of Historic Places  
Inventory—Nomination Form**



See instructions in *How to Complete National Register Forms*  
Type all entries—complete applicable sections

**1. Name**

historic Northern Pacific Railway Company: Brainerd Shops

and/or common Burlington Northern Incorporated: Brainerd Shops

**2. Location**

street & number Off N.E. Washington Street \_\_\_ not for publication

city, town Brainerd \_\_\_ vicinity of congressional district 7th

state Minnesota code 22 county Crow Wing code 035

**3. Classification**

<b>Category</b>	<b>Ownership</b>	<b>Status</b>	<b>Present Use</b>	
<input type="checkbox"/> district	<input type="checkbox"/> public	<input checked="" type="checkbox"/> occupied	<input type="checkbox"/> agriculture	<input type="checkbox"/> museum
<input checked="" type="checkbox"/> building(s)	<input checked="" type="checkbox"/> private	<input type="checkbox"/> unoccupied	<input type="checkbox"/> commercial	<input type="checkbox"/> park
<input checked="" type="checkbox"/> structure	<input type="checkbox"/> both	<input type="checkbox"/> work in progress	<input type="checkbox"/> educational	<input type="checkbox"/> private residence
<input type="checkbox"/> site	<b>Public Acquisition</b>	<b>Accessible</b>	<input type="checkbox"/> entertainment	<input type="checkbox"/> religious
<input type="checkbox"/> object	<input type="checkbox"/> in process	<input checked="" type="checkbox"/> yes: restricted	<input type="checkbox"/> government	<input type="checkbox"/> scientific
	<input type="checkbox"/> being considered	<input type="checkbox"/> yes: unrestricted	<input checked="" type="checkbox"/> industrial	<input checked="" type="checkbox"/> transportation
		<input type="checkbox"/> no	<input type="checkbox"/> military	<input type="checkbox"/> other:

**4. Owner of Property**

name Burlington Northern Incorporated Walter Fisher  
Superintendent of Reclamation

street & number

city, town Brainerd \_\_\_ vicinity of state Minnesota 56401

**5. Location of Legal Description**

courthouse, registry of deeds, etc. Crow Wing County Courthouse

street & number

city, town Brainerd \_\_\_ vicinity of state Minnesota 56401

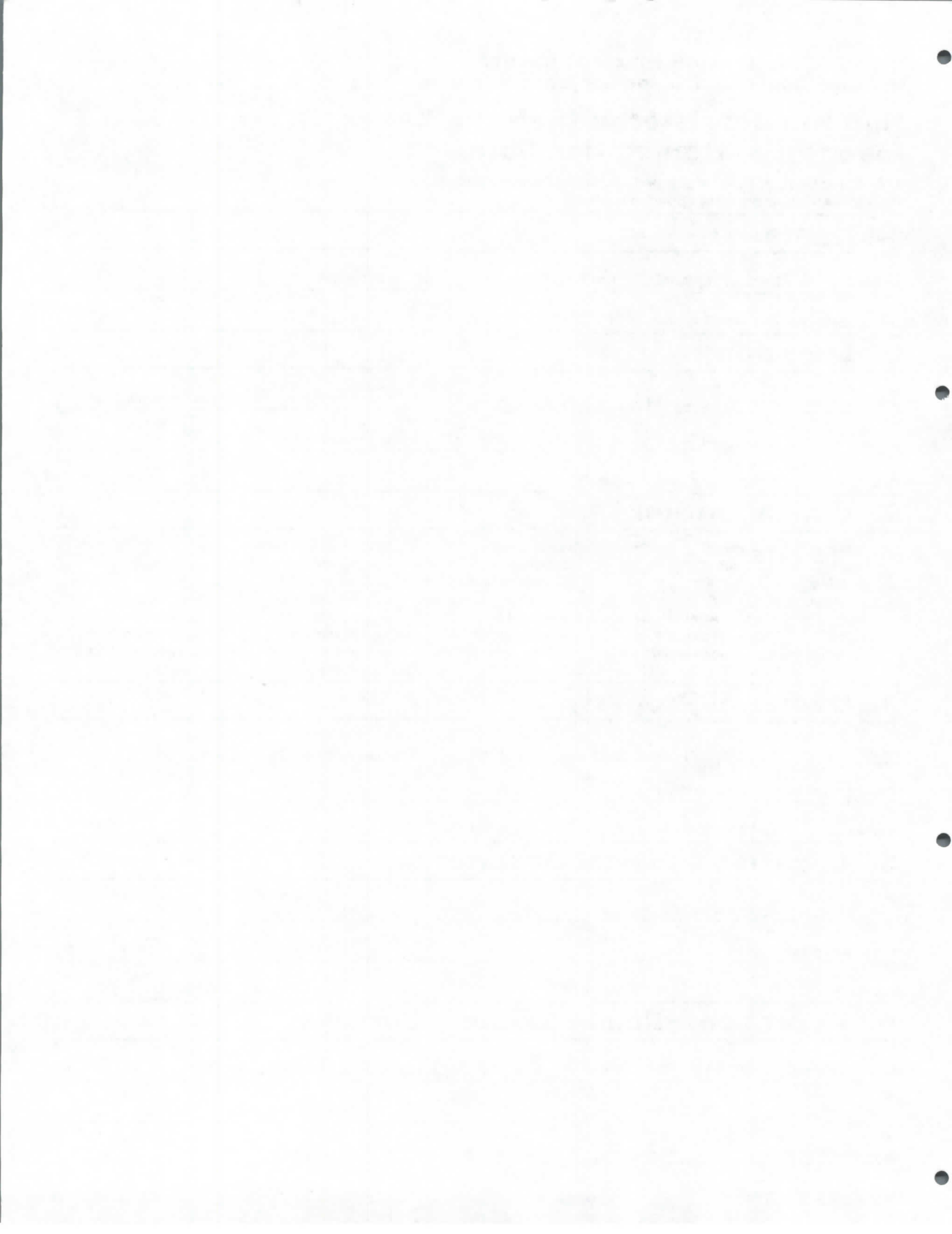
**6. Representation in Existing Surveys**

title State Historic Sites, Registry has this property been determined eligible? \_\_\_ yes \_\_\_ no

date 1972 \_\_\_ federal  state \_\_\_ county \_\_\_ local

depository for survey records Minnesota Historical Society -- 240 Summit Avenue-Hill House

city, town St. Paul \_\_\_ vicinity of state Minnesota 55102





# 7. Description

Condition		Check one	Check one
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> deteriorated	<input type="checkbox"/> unaltered	<input checked="" type="checkbox"/> original site
<input checked="" type="checkbox"/> good	<input type="checkbox"/> ruins	<input checked="" type="checkbox"/> altered	<input type="checkbox"/> moved date _____
<input checked="" type="checkbox"/> fair	<input type="checkbox"/> unexposed		

## Describe the present and original (if known) physical appearance

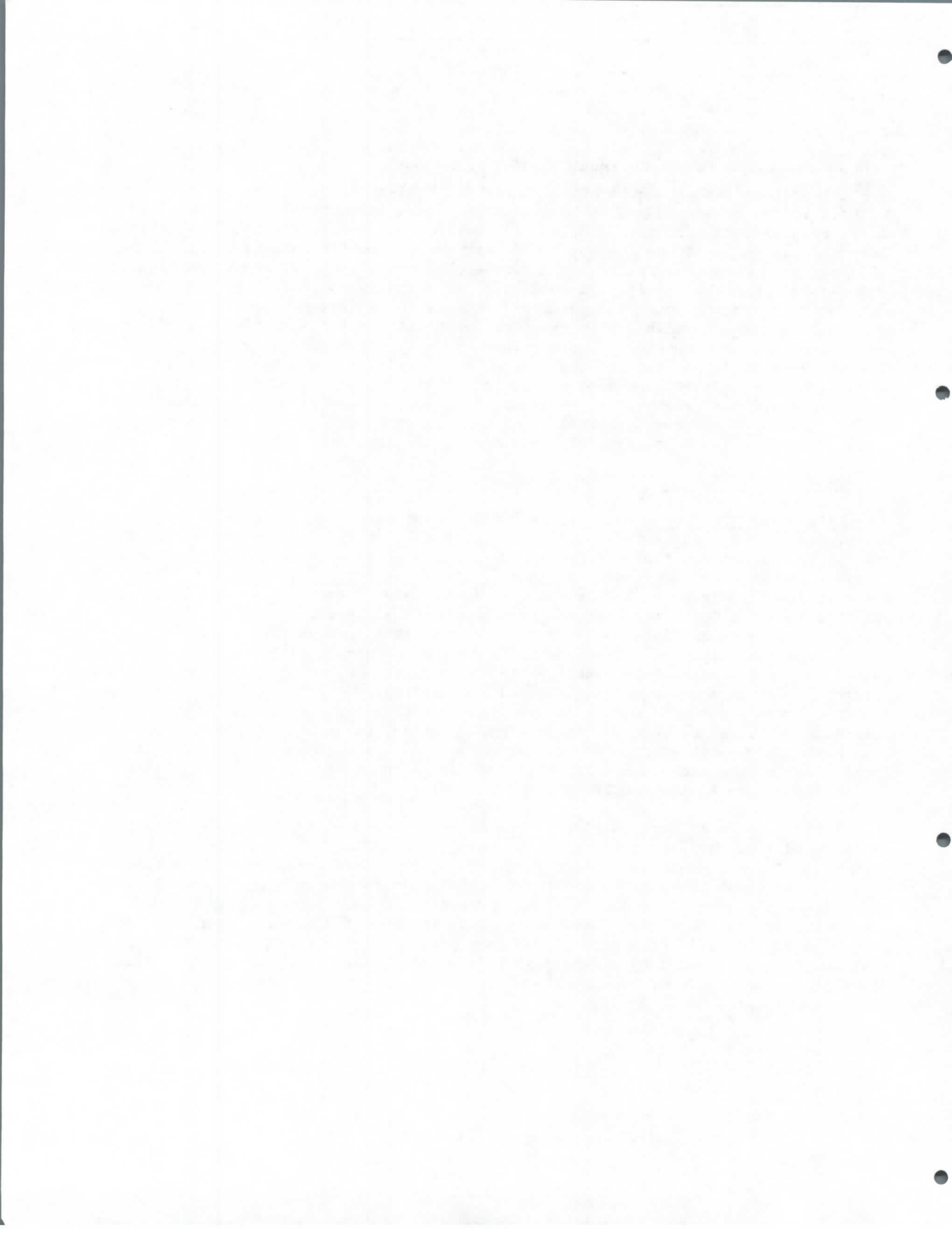
The Brainerd Shops of the Northern Pacific Railway Company, now Burlington Northern Inc., are located on an east-west axis on a large rectangular parcel of land at the east side of the City of Brainerd. Residential and commercial areas directly abut the shops property on the north and particularly the south sides. The shop buildings have been constructed with considerable uniformity of style and materials primarily of cream brick with red wood trim, essentially following the design established with the first construction in the 1880s. Subsequent additions, alterations, and new construction were compatible with the first work until the 1940s when a major building was constructed in a twentieth century factory style. The surviving complex today represents about 75 per cent of the complex as it existed prior to World War I, at which time most new and expansion construction had been completed. Individually the surviving buildings retain great exterior integrity, with alterations generally limited to window and door alterations (largely through the use of glass block infill). Listed below are the major pivotal buildings of the complex.

### I. BUILDINGS IN THE SOUTHWEST QUADRANT

Office and Storehouse Building: (1881-83, east extension 1907) 478' x 43½' x two stories, with a 13' x 13' x 68' tower centered at the main entrance on the west end. With its mansard-roofed tower, this is the most prominent building in the shops complex. Gebhard and Martinson (A Guide to the Architecture of Minnesota) have termed the building "mildly Eastlake" in design. It is constructed of Brainerd cream brick (William Schwartz Co.) with a steel truss-supported hip roof. There are multiple pilastered bays on all facades. Fenestration consists of a variety of segmental arch windows including 6/6, 9/9, and 21/21 double-hung sash, with the windows usually paired at the second story. A Burlington Northern logo fills the circular tower space originally designed for a clock, but used from the beginning for a company insignia. Atop the tower's mansard roof is an iron roof cresting and original weather vane with a railroad motif. A Northern Pacific insignia ("NPRR") is on the main entrance keystone. This building was designed to contain an extensive supply storage area and office facilities for the shops complex. With the exception of some glass block window infill it retains complete exterior integrity.

Boiler and Tank Shop: (1881-3; south extension 1900, 1917) Original building, 332'9" x 80'4" x one story; south extension, 238' x 100'4" x two stories (approx. 44'), with a 30' lantern monitor. Constructed with a stone foundation and yellow brick with a slate steel truss gable roof, this shop exhibits multiple pilastered bays and brick corbelling along all facades. Fenestration consists of large rounded-arch locomotive double doors along the east (front) facade and a variety of 16/16 double-hung sash and 16/16/16 triple-hung sash in segmental arch openings. The building was designed to house a variety of shops including paint, cab, flue, and boiler shops. The east locomotive doors open to the electric transfer table. This building retains almost total exterior integrity.

(see continuation sheet)



# 8. Significance

Period	Areas of Significance—Check and justify below		
<input type="checkbox"/> prehistoric	<input type="checkbox"/> archeology-prehistoric	<input type="checkbox"/> community planning	<input type="checkbox"/> landscape architecture
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> archeology-historic	<input type="checkbox"/> conservation	<input type="checkbox"/> law
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> literature
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Specific dates 1881-83

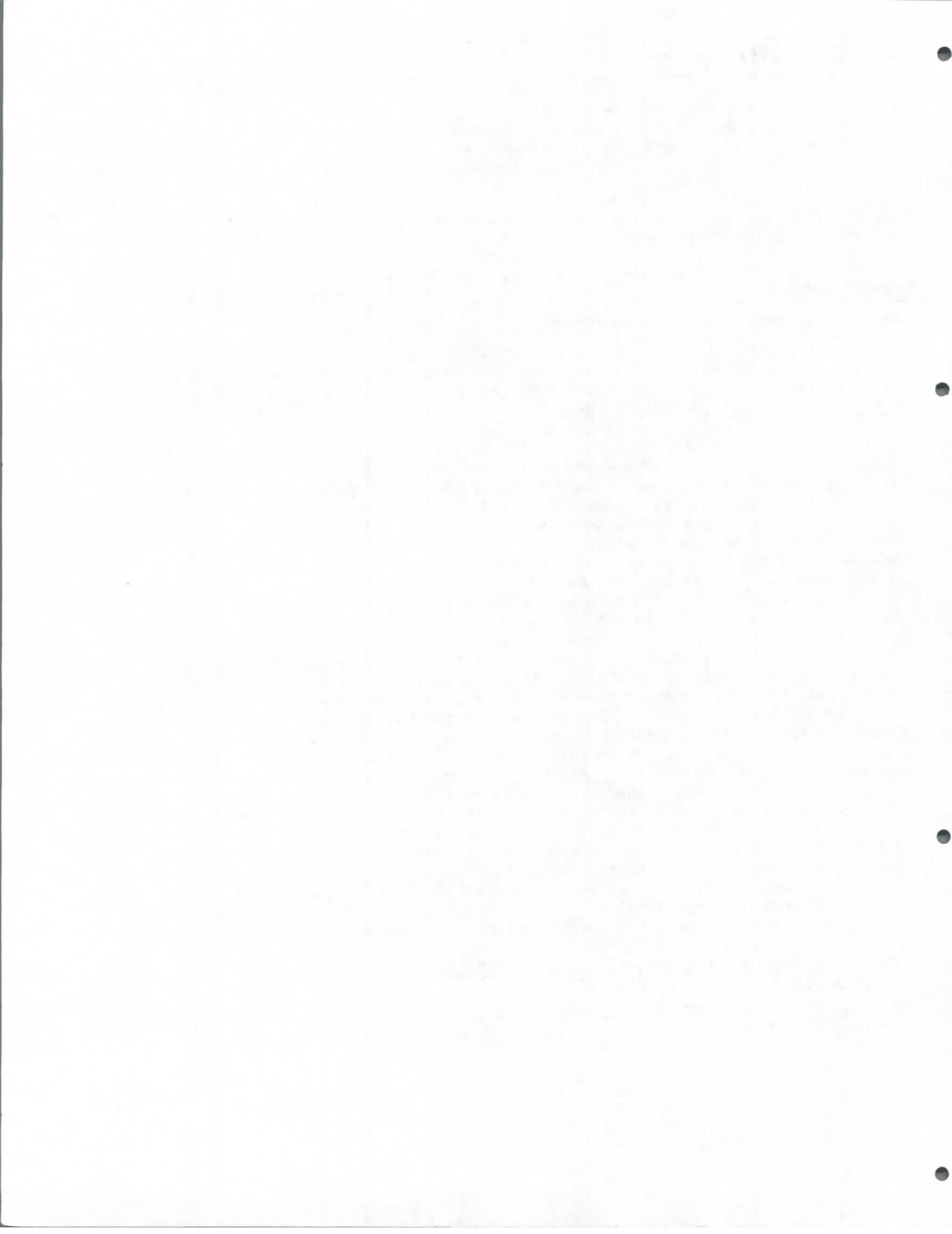
Engineer  
 Builder/Architect C.A.P. Turner (1900-17 extensions)

## Statement of Significance (in one paragraph)

The Brainerd Shops of the Northern Pacific Railway Company (now Burlington Northern Inc.) are significant in the area of transportation as having been "the most extensive shops to be found on the Northern Pacific Road," according to E.V. Smalley's 1883 History of the Northern Pacific Railroad,<sup>1</sup> published the year that the original complex was completed. In an 1888 article on Brainerd, Smalley observed that the shops "rank with the most important plants of the kind in the country."<sup>2</sup> The present 1881-83 shops replaced the first wood frame shops erected in 1871, when Brainerd was chosen as a major terminal point of three Northern Pacific divisions, as the operating department headquarters of the main line and Minnesota branches, and as the headquarters of the engineer's department for the entire system. The shops built all Northern Pacific freight cars and handled all heavy car and locomotive repairs for the entire main line and its branches east of the Rocky Mountains. The buildings are significant in the area of architecture and engineering as a remarkably intact surviving complex of nineteenth century railroad shops erected for large scale operations. Virtually every type of major railroad shop building is represented in the complex with the exception of the now-raised 180-degree roundhouse. Individually the buildings remain impressive and largely unaltered representations of nineteenth century industrial architecture and engineering skills. As a complex, they have been constructed and maintained with amazing architectural uniformity and consistency, with the singular exception of the new car shop (1945). Since World War II the function of the Brainerd Shops has shifted from construction and repair of cars and locomotives to service as a reclamation facility, a function which it now serves for the entire Burlington Northern system. Thus the shops remain vitally active on a large scale for a rail transportation system. Most of the significant large shop buildings have survived changes in function without demolition or extensive exterior alteration. The Northern Pacific line, constructed westward across Minnesota from Superior, Wisconsin to Moorhead 1870 to 1872, was the first rail line through the area and played a crucial role in both urban and rural settlement. It was the central factor in the location and development of Brainerd. The shops complex remains as an outstanding artifact of the line's development and as one of the most complete complexes of railroad shop buildings in the state. Since 1972 the Northern Pacific Shops have been entered on the State Registry of Historic Sites.

<sup>1</sup> Eugene V. Smalley, History of the Northern Pacific Railroad (1883; rpt. New York: Arno Press, 1975), p. 383.

<sup>2</sup> Eugene V. Smalley, "'The City of Pines': Brainerd, Minn.---A Growing Manufacturing Town With a Great Water Power," The Northwest Magazine (July 1888), 8-9.



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INVENTORY -- NOMINATION FORM**

Northern Pacific Railway Company: Brainerd Shops

CONTINUATION SHEET

ITEM NUMBER 7 PAGE 1

Machine Shop: (1881-3; south extension 1900, 1917) Original building, 224' x 120'8" x one story; south extension, 331'4½" x 133'5" x two stories (approx. 50'). The construction and design are virtually identical to the boiler and tank shop building although there has been some recent glass block infill in the window openings. There are multiple roof skylights. Two small additions are located along the east(rear). This building was designed to house a variety of machining areas including a tin shop, sheet metal shop, and tool shop. With the exception of some windows, this building has almost total exterior integrity.

Electric Transfer Table: (1881-83) The electric transfer table is mounted on four rails in the transfer pit, which is located between the boiler and tank shop and the machine shop. The table itself measures approximately 38 feet and consists of a single track table, cab, and an electrical mount to the overhead catenary cables. It was designed to transfer locomotives and cars between the two shop buildings. Originally running the full length of the buildings, the north quarter of the pit length has been removed.

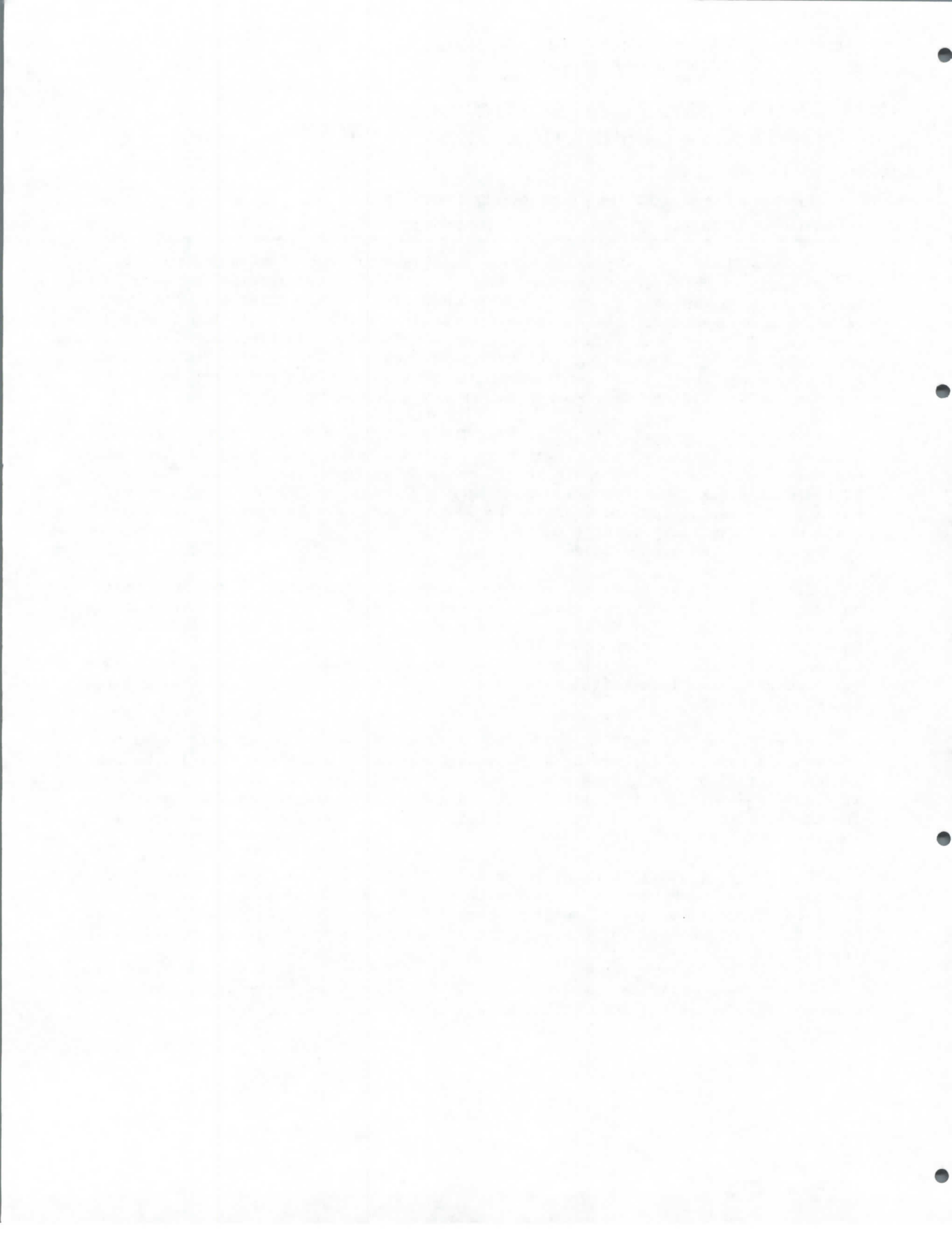
Blacksmith Shop: (1881-83, south and east extensions 1900, 1907) Original building, 300' x 80'4" x one story; south extension, 126' x 125'9" x two stories; east extension, 117'4" x 80'4" x one story. The construction and design are virtually identical to the boiler and tank shop and the machine shop buildings. This building was designed to house blacksmith and rail shop operations. With the exception of some recent glass block infill in window openings the building retains almost total exterior integrity.

Power House: (mid-1920s) 112' x 96' with a three-story north half and a two story south half. The power house is constructed of cream brick with a flat roof and pilastered bays on all facades. Fenestration consists of multi-light factory style windows. The building is flanked east and west by towering concrete chimney stacks and on the north by a wood trestle and coal hopper. This building has virtually complete exterior integrity.

Fan House: (1920s) Approx. 76' x 28' x one story. The construction and design are similar to the machine and blacksmith shops on a reduced scale. Fenestration consists of segmental arched 16-light hinged windows. This building was designed to house the fan operation for the adjacent blacksmith shop. It retains total exterior integrity.

Supply House: (1920s) Approx. 195' x 38' x one story. The supply house is an uncomplicated brick building with low gable roof, few windows, and no decorative elements.

(see continuation sheet)



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INVENTORY -- NOMINATION FORM**

Northern Pacific Railway Company: Brainerd Shops

CONTINUATION SHEET

ITEM NUMBER 7 PAGE 2

II. BUILDINGS IN THE SOUTHEAST QUADRANT

Pattern Shop and Storehouse Building: (1911) Pattern shop, 80'4" x 50'8" x one story; pattern storehouse, 80'4" x 50'8" x four stories. The design and construction is similar to the other large shop buildings. Fenestration consists of 16-light factory style windows, paired in the pilastered bays and there is a monitor atop the low pitch gable roof. This building was designed to house foundry pattern production and the shop and storage area for the adjacent foundry (now razed). It retains virtually total exterior integrity.

Foundry Boiler House (now the Bridge and Building Shop): (1911, 1917) 55' x 50' x one story with a small east addition (the air compressor house, 1917). The design and construction are similar to above described buildings; a monitor is located on the gable roof ridge. The building retains great exterior integrity.

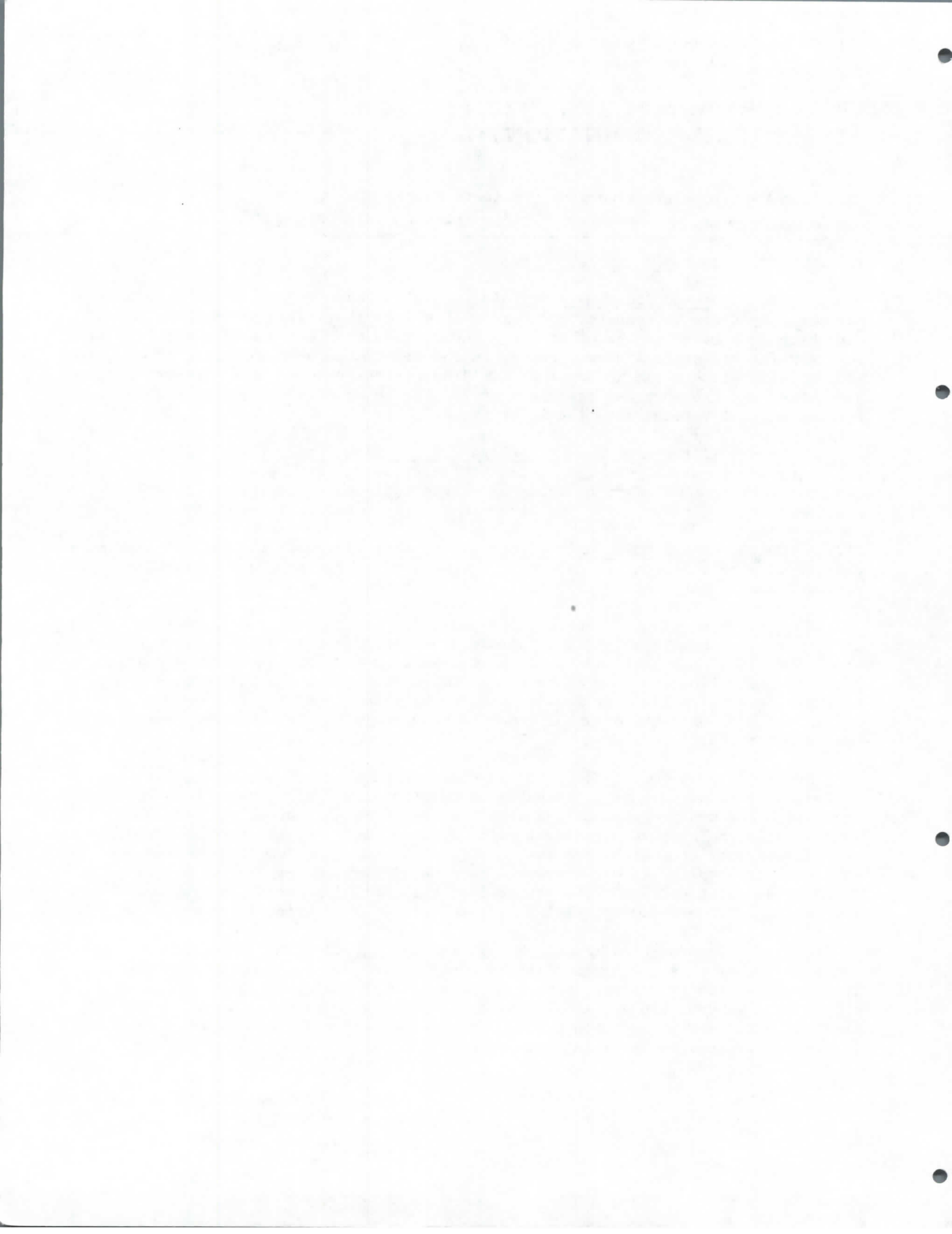
III. BUILDINGS IN THE NORTH HALF (north of the main east-west tracks). The primary cluster of shop buildings in this area has been disturbed by the construction of a massive, more recent, shop building.

New Car Shop: (1945) Approx. 560' x 180' x two tall stories. The new car shop is a large rectangular building in a modern daylight factory style constructed of brick and steel with large monitors located on a north-south axis atop the flat roof. Fenestration consists of extremely large factory-style windows completely filling the bays on the side facades and composing much of the end facades. The construction of this building has impacted heavily in the car shop area north of the main shop tracks.

Steel Car Shop (Original Foundry): (1881-83) 236' x 80' x one story (approx. 40') with a row of shop bays extending an additional 33' along the entire north side. The design and construction of the steel car shop are similar to the main shop buildings in the southwest quadrant, with a gable roof over the main shop section and a shed roof over the north shop row. Originally constructed as the foundry for the entire shops complex, it was converted to a metal working car shop when the larger foundry was built ca.1911. The west end of this building abuts the east end of the new car shop. The building retains a great degree of exterior integrity.

Car Shop, Woodworking (Repair Shop): (1881-83) 260' x 100' x one story. The construction of this shop is similar to other major shop buildings. A long wood frame monitor is centered on the low pitch east-west gable roof, and fenestration consists of windows along the side facades and large rectangular doors in the end facades. The east end of this building abuts the west end of the new car shop. It retains great exterior integrity.

(see continuation sheet)





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INVENTORY -- NOMINATION FORM**

Northern Pacific Railway Company: Brainerd Shops

CONTINUATION SHEET

ITEM NUMBER 7

PAGE 3

Car Shop, Finishing: (ca.1900-10) Originally approx. 260' x 100' x one story, reduced to approximately 160' of the north end (5 bays) when the new car shop was constructed, with the south end now abutting the north side of the new car shop. The design and construction of the car shop are similar to the other shop buildings; it has a low pitch gable roof and large rectangular doors on the track bays. Its integrity has been considerably compromised by the construction of the new car shop.

Lumber Storage Shed: (ca.1900-10) 200' x 36' x one story (22'). This uncomplicated structure of corrugated iron sheathing was designed to provide dry storage for the shops lumber yard and Sturdevant dry kiln (razed). It has a gable roof and remains much as it was when built.

IV. RAZED BUILDINGS: Several structures of considerable significance have been razed since the early 1960s. These buildings include a 44-stall, full 180 degree round-house with turntable (1881-83); a large and architecturally interesting foundry (1911) with octagonal chimney stack; the Sturdevant dry kiln (ca.1900), a lumber drying kiln located near the Lumber Storage Shed; the coal house, and the boiler house. Two small neighboring 1881-83 buildings located between the blacksmith shop south extension and the fan house were both undergoing demolition during the summer of 1979.

V. MINOR BUILDINGS AND STRUCTURES: The extensive area of the shops complex includes many minor buildings and structures such as an elevated water tank, sheds, ramps, docks, and storage bins. There is a vast amount of rail trackage, assorted rolling stock of varying age and state of repair, and widespread miscellaneous assemblages of storage materials, including a number of stored, disassembled girder bridges in the former lumber pile area of the northwest quadrant.

11

11