ISOLATED URBAN PLACES & SPACES:
A RAILS-WITH-TRAILS SOLUTION
THE FARGOIN TRAIL

ALEX BOSSERT
ISOLATED URBAN PLACES & SPACES:
A RAILS-WITH-TRAILS SOLUTION

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

By

Alex Bossert

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

Primary Thesis Advisor
Thesis Committee Chair

May 2012
By signing and submitting this license, I, Alex Bossert (the author(s) or copyright owner) grants to North Dakota State University (NDSU) the non-exclusive right to reproduce, translate (as defined below), and/or distribute my submission (including the abstract) worldwide in print and electronic format and in any medium, including but not limited to audio or video.

I agree that NDSU may, without changing the content, translate the submission to any medium or format for the purpose of preservation.

I also agree that NDSU may keep more than one copy of this submission for purposes of security, back-up and preservation.

I represent that the submission is my original work, and that I have the right to grant the rights contained in this license. I also represent that my submission does not, to the best of my knowledge, infringe upon anyone’s copyright.

If the submission contains material for which I do not hold copyright, I represent that I have obtained the unrestricted permission of the copyright owner to grant NDSU the rights required by this license, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission.

If the submission is based upon work that has been sponsored or supported by an agency or organization other than NDSU, I represent that I have fulfilled any right of review or other obligations required by such contract or agreement.

NDSU will clearly identify my name as the author or owner of the submission, and will not make any alteration, other than as allowed by this license, to my submission.

Name: ___________________________ Date: __________________
# Table of Contents

## The Statement of Intent
- Project Abstract ....................................................... 1
- Problem Statement ...................................................... 2
- Statement of Intent ...................................................... 3

## The Proposal
- The Narrative ............................................................ 4
- A User/Client ............................................................. 5
- Major Project Elements ............................................... 6
- Site Information ......................................................... 7
- Project Emphasis ........................................................ 8
- Plan for Proceeding ..................................................... 9

## The Program
- Theoretical Premise Research ....................................... 10-27
- Case Studies ............................................................. 28-36
- Historical Context ..................................................... 37-49
- Goals of This Thesis Project ........................................ 50
- Site Inventory & Analysis ............................................ 51 - 92
- Site Design ............................................................... 93-122
- Personal Information .................................................. 123
- Previous Experience .................................................... 124
- Reference List .......................................................... 125-127
- Image Reference List .................................................. 128-130
- Schedule ................................................................. 131
This thesis focuses on exploring the question: how can a pedestrian trail along an active railway corridor unite several isolated areas of a city? The typology for exploring this project is an urban railway system that runs through the heart of downtown Fargo, North Dakota, and surrounding neighborhoods. Planning and designing within an existing built environment to better suit the well-being of the pedestrian may prove problematic, because urban growth has revolved around the automobile for nearly a century. Utilizing spaces along railway corridors may provide direct connections to destinations, making for a more cohesive urban fabric. An urban pedestrian corridor can promote economic development, increase property values, encourage physical fitness and more transit use instead of personal auto use, serve as an environmental and recreational resource, promote social interactions, and help give an area a stronger sense of identity.

Key words: isolated, destinations, connections, urban fabric
How can a pedestrian trail along an active railway corridor unite several isolated areas of a city?
**Typology:** The main area of focus is an urban railway corridor.

**Claim:** A pedestrian corridor can safely exist with an active railway corridor to improve the physical ties within a segregated portion of a city, while enhancing non-motorized transportation, and become an environmental, economic, and recreational resource.

This thesis, if it were a real project, could bring together but would not be limited to landscape architects, urban planners, civil engineers, and construction contractors to create a planned pedestrian corridor. This corridor will exemplify efficiency and safety, with an emphasis on connections and destinations in an existing segregated urban fabric and railway corridor. Such a corridor could be a major beneficial amenity to surrounding neighborhood residents, elderly people, children, students, tourists, and other visitors.

**Premises:** Designers and planners would potentially work with community residents, the railroad company, railroad customers, utility companies, law enforcement officials, adjacent landowners, advocacy groups, transportation officials, public transit, parks and recreation, and health departments to create a design and build strategy (Rails-with-Trails: Lessons Learned).

An efficient and safe pedestrian corridor design along a railway may decrease automobile use and benefit public health, local economics and transportation, community pride, and identity (Rails-to-Trails Conservancy: Benefits of Rail-Trails).

The railway corridor would link several isolated areas of the city, creating a cohesive and healthy urban fabric.

**Theoretical Premise:** Planning and designing within an existing built environment to better suit the well-being of the pedestrian may prove problematic due to urban environments commonly being built to best suite the automobile. Utilizing spaces along railway corridors can provide direct connections to destinations, creating a more cohesive urban fabric.

**Project Justification:** An urban pedestrian corridor can potentially promote economic development, increase property values, encourage physical fitness and more transit use instead of personal auto use, serve as an environmental and recreational resource, promote social interactions, and provide an area with a better sense of identity.
As a fifth year student at North Dakota State University and a frequent visitor of the campus, NDSU/Roosevelt Neighborhood, and Downtown Fargo, I have become accustomed to daily life in the area. Having lived, worked, and played in the area for the past four years, I have experienced the transit and bicycle route systems that are currently in place in the neighborhoods. While on my daily commutes, I often think about how life would change in the area if a rails-with-trails corridor, greenway, or some other transportation alternative was established to connect the different areas within the neighborhoods. Thoughts about this have been building in my mind for some time now. In this project I intend to explore the possibilities of such a corridor.

With a limited amount of space to plan and design within an automobile-favored urban fabric, utilizing extra space paralleling a railway, including run-down or vacant neighboring spaces, may provide the best opportunity to promote a non-motorized transportation system. Older areas of cities, such as those within this project site, were planned and built with one thing in mind, the automobile. This makes the planning and designing of pedestrian routes very difficult due to obstacles such as busy roadways and built structures, which make for inefficient routes to destinations. This project aims to find a viable solution for uniting the pedestrian with important destinations within the presently disconnected urban fabric that are part of our daily lives. These are places such as schools, commercial areas, parks and open spaces, and places of employment. Before the automobile, development occurred near railways, and this project aims to study these linear urban spaces for future development.
Client:
The potential clients are the Burlington Northern Sante Fe Railroad and the City of Fargo.

Users:
The site design must take into account all measures possible to ensure that users of all ages and abilities can use the corridor with ease. The goal of the corridor is to get users from starting point to destination as safely and efficiently as possible, following all Americans with Disabilities Act (ADA) requirements necessary. Although the efficiency and safety of the routes will be key, site elements to enthuse trail “wanderers” are a must. Elements and features unique to the site should be implemented in creative ways to create wonder and discovery within the corridor. A linear segment from point A to point B is not enough.

Surrounding Community Residents
This category of site users consists of NDSU/Roosevelt, Madison/Unicorn Park, Horace Mann, and Downtown Fargo Neighborhood residents (young to elderly) traveling to and from work, local businesses, NDSU’s main and downtown campuses, local parks, schools, and other residential homes. Peak usage for this category will be morning and evenings.

Commuters
This category of users includes mainly students, faculty, and other community residents traveling to and from work, businesses and campuses. Students and faculty will be the vast majority of the users of the corridor. High usage of the corridor for this category will be Monday through Friday 9 A.M. to 5 P.M., August through May (seasonal weather pending). Peak usage will be in the morning and evening during these months.

Recreationalists
This category of users consists of residents and non-residents using the space passively on foot, bicycle, roller blades, etc. to get to destinations such as parks and other local attractions or to explore the greenway itself. It also includes recreationalists who want to simply enjoy and/or explore the site. It is made up of all age ranges, and peak usage will be in the warmer months of the year (April to October). The weekends will get the highest number of users. Cross country skiing use is also a possibility.
Major Rails with Trails Corridor

This corridor will serve as a major link between the neighborhoods of NDSU/Roosevelt, Madison/Unicorn Park, Horace Mann and Downtown Fargo. It will also serve as a major link to area schools, businesses, parks and open spaces, the Red River corridor, transit stops, and places of employment. The greenway will be a direct route along the railway corridor providing pedestrians with a safe and efficient route to their destinations, and perhaps a shortcut.

Destination Connections

This includes places where city streets and sidewalks, parks, gathering spaces, and the Red River corridor meet the railway corridor. Destination connections will not only focus on users’ safety and ADA requirements, but also what the user will experience during the transition from greenway to destination. This may include specific views along with structural, pavement and plant materials.

Historical Features & Landmarks

Railroads shaped early American Midwestern cities, and Fargo is a great example. They are part of the culture and heritage. Railway corridors, such as the BNSF railway, retain this unique character that can be preserved in elements like buildings, railroad equipment, signage, bridges, and other ways.
The proposed site of this thesis project is in Fargo, North Dakota, along an active BNSF Railroad corridor that travels through downtown Fargo, NDSU/Roosevelt Neighborhood, Madison/Unicorn Park Neighborhood and Horace Mann Neighborhood (refer to map below).
The emphasis of this project will be to establish a rails-with-trails corridor to make connections in an isolated portion of Fargo, to enhance non-motorized transportation, and become an environmental, economic, and recreational resource. The safety requirements and issues that must be addressed in such a project will be a key focus area. This will go along with knowing some basic requirements set forth by the BNSF Railroad. Existing pedestrian, bicycle, transit routes, and historical context will be studied. Fargo’s rich history plays a major role in its identity, and will need to be researched in-depth to understand why Fargo is unique. Railway corridor elements, such as right-of-way distances, street crossings, and more will be examined.
Research Direction
This thesis will use a mixed method approach of qualitative and quantitative research. Quantitative and qualitative methods of research will be used to get a better understanding of site typology, historical context, site inventory, and future program requirements.

Design Methodology
This thesis will follow a concurrent transformative strategy guided by the theoretical premise. Findings of quantitative and qualitative data will be gathered concurrently and prioritized by the requirements of the theoretical premise. Qualitative data will be gathered from direct site visits and findings at different time periods (seasons, time of day). Qualitative data will also be gathered through local and archival documents. Quantitative data will be gathered from online scholarly documents, books, journals, archives, and city documents. Quantitative and qualitative data will be compiled and demonstrated through graphics and text.

Documentation
Progress in thesis research, analysis, graphics, text, drawings, photos, 3D modeling, or sketches will be documented digitally on a weekly basis to ensure the project is current. At the conclusion of the project, a digital presentation will be given. All final research, analysis and design work will be compiled and stored digitally in NDSU’s Library Archive for future viewing.
A Rail & Trail

The problem statement of this thesis is, “How can a greenway along an active railway corridor unite several isolated areas of a city?” A new trail idea, emerging in the last 35 to 40 and becoming a common planning element in cities throughout the nation, may have the answers. This idea is rails-with-trails. The idea came about from the more popular and well-known idea of rails-to-trails, which involves the rehabilitation of abandoned railways into pedestrian greenways. Rails-with-trails is a similar concept, except a pedestrian corridor is created adjacent to an active rail line/s. The rails-with-trails idea is becoming popular because the demand for alternative non-motorized transportation is increasing and the availability of land is decreasing. A rails-with-trails study, done by the Rails with Trails Conservancy in 2000, indicated that there were 61 rails-with-trails in service and at least 20 more in development stages in the United States (Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines, 2000). Due to the difficulty of planning safe and efficient trails within existing city infrastructure, active rail line corridors may serve as an alternative for pedestrian routes. Railroad corridors often travel through the heart of cities, paralelling residential, commercial, and industrial areas, making them prime locations to create vital community connections within the urban fabric that may not be possible otherwise.

Rails-with-trails can serve as a more direct route, and may also serve as the missing link to other trail systems. One could say they can be a complement rather than a substitute (Trail and Greenways for Livable Communities, 2010). Trail systems within cities’ urban fabrics are often disconnected. Often they were not planned to develop as a city sprawled outward and the movement of people from places of live, work and play. Rather, they were developed along or near
natural corridors, utility easements, canals, parkways, or wherever else they “fit,” rarely straying into the vicinity of automobile right-of-ways. The automobile may have detoured the use and demand for pedestrian trails, but today there is a renewed demand for trails. However, solutions may prove difficult to establish. The automobile’s reign over how cities have been developed for nearly a century has sank deep roots into the urban landscape.

One could think of a railway as a section cut through a city’s developmental history. After all, many cities in the American Midwest began to develop around railroads. Creating a pedestrian corridor along a railway corridor may create a more cohesive city trail and non-motorized transportation system, stitching other trail systems closer together as well as neighborhoods isolated by years of development.

So, what are some of the benefits of creating a pedestrian corridor along a railway?

The positive issues that arise out of a rails-with-trails project are similar to that of a rails-to-trails corridor or any sort of pedestrian greenway. They are as follows:

Rail-with-trails & Health:

Physical activity is directly linked with health, but, according to a study done by the Surgeon General in 2001, “less than one-third of Americans meet the federal recommendation of at least 30 minutes of moderate physical activity at least five days a week, and 40 percent of adults participate in no leisure-time physical activity at all” (Health and Wellness Benefits, 2010). Leisure-time refers to the freedom to do as we please. We live in a time when this freedom can all too easily be filled with the latest technological gadget or simply by more...
work demands. We have grown accustomed to that if we need or want something, one does not have to travel very far to get it. If some sort of technology is out there to make our daily routines of wants, needs, work, and play more efficient or enjoyable, we take advantage of it.

A rails-with-trails project may not be classified as a technology, but it can be classified as transportation intervention for people to use during daily routines or leisure time. Many urban dwellers’ common daily activities, such as commuting to work, going to the local markets, or commuting children to and from schools, are quick and simple. However, automobile-favored environments make doing such activities any other seem unpleasant, inefficient, unsafe and against the “norms.” The automobile has become the center of American society and culture.

Rails-with-trails can serve as a unique opportunity to break this commonality by utilizing existing but underutilized urban infrastructure, serving as a safe, efficient, and healthy alternative. Everyday routines, as mentioned above, may be done by utilizing trails and can quickly add up to 30 minutes of moderate physical activity at least five days a week without people realizing it is benefiting them. Public health experts say that this is enough to generate long-term health benefits (Frank, Engelke, & Schmid, 2003).

“Mounting evidence from epidemiological studies have began to show that moderate forms of physical activity, such as walking and bicycling, could provide both short and long term health benefits, contributing to a reduction in the risk of premature mortality, chronic disease and a host of other maladies” (Frank et al., 2003).
As a result, public health researchers are beginning to focus more on moderate physical activities, because it could get a broader cross-section of the population physically active. Moderate physical activity, such as mentioned earlier, is more attractive to people who may not think they have the free time to exercise or simply like spending their leisure time doing something else. Rail trails can become even more appealing because the trails can be utilized by all ages and by all sorts of activities, including biking, walking, jogging, skating, hiking, and skiing. Railways tend to be gentle in slope, making them appealing to a wider range of people. A study done on six trails in Indiana revealed that more than 70 percent of the users reported getting more exercise as a direct result of the trails (Health and Wellness Benefits, 2010).

Economic realities also play a large role in the health of people and how much exercise they get. Rails-with-trails or any other type of pedestrian trail are alternatives to a costly local gym or health club. Similar to a gym or health club, trails also provide an opportunity for people to be among other people exercising. “Researchers have found that a lack of this type of social support is often a barrier to participate in exercise” (Health and Wellness Benefits, 2010). Communities rarely consist of residents of the same class, ethnicity, age, or abilities. This is why important facilities such as rail trails that can be accessible to a wide range of people are important to livable communities. Owning a personal auto is something that may not be an option to some residents due to financial, physical, or mental reasons. This is another reason why transportation choices are important for a livable community.
Rails-with-trails & Community Livability

Human behavior is linked to the layout and design of the urban area where they live, work, or play. The location and type of transportation systems available, places of work, parks and open spaces, and schools all play roles in people’s lives (Frank et al., 2003). In short, the location of such places affects community livability.

Trails, especially rail trails, have the potential to create ideal connections to such destinations due to their directness in nature, non-proximity to vehicular traffic, and length. The layout of the urban environment also influences walkability and bikability, which can contribute to the health and well-being of a community. Many communities do not have pedestrian paths that are separated from vehicular traffic, so trails bordering railways, water corridors, or utility easements can serve as transportation alternatives.

Pedestrian trails along active and abandoned railways, waterways, and utility easements are also being implemented into city plans to act as “feeders,” to get people to and from points among the larger transportation system creating a more cohesive transportation network (Trail and Greenways for Livable Communities, 2010.) The availability of such trails, which tend to avoid major arterial streets and highways, yet connect a variety of destinations, is a major factor in a community’s “livability” (Trail and Greenways for Livable Communities, 2010). A diversity of transportation options reduces reliance on personal autos, reduces emissions from autos, increases chances of social interactions between community members, and benefits people’s health and well being by providing opportunities for physical activity.
Ecological benefits:

Greenways are corridors that can meet the needs of both recreation uses and the conservation and management demands of open space. They are often used as conservation tools to protect important natural landscapes, wildlife habitats, water and air quality enhancement, and may be used to link fragmented habitats (Enhancing the Environment with Trails and Greenways, 2010). A rails-with-trails corridor has the opportunity to do such things, but with active rail line(s) associated with the corridor, enhancing any sort of natural habitat may prove improbable.

However, one ecological benefit of a rails-with-trails project is the enhancement of air quality it may yield. As mentioned earlier, rails-with-trails and other types of greenways and trails can reduce reliance on the personal automobile by creating more transportation options. According to a study done by the U.S. Department of Transportation, “the average American adult takes only eight percent of their total yearly trips on foot” (Roerty, Carapella, Plotz, & William, 2010). Air quality due to vehicle emissions is a threat to everyone’s health and can cause a variety of different health-related issues including headaches, emphysema, contribution to lung cancer, respiratory issues, cardiovascular problems, and has been linked to low infant birth rates (Melosi).

Typical short urban trips greatly contribute to overall vehicle emissions due to “cold start” emissions. A cold start is the time between when a vehicle is first started and the time it takes emissions control equipment to reach optimum performance temperature (Hamilton). “These journeys will start, and most of them will end with the vehicle significantly below this
temperature” (Blaikley, Smith, Feest, Reading, 2001). Nearly three quarters (70-80%) of vehicular emissions are emitted during the initial two minutes after a vehicle is started (Hamilton). According to a study put together by the U.S. Environmental Protection Agency in 1997, although today’s vehicles run 70 to 90 percent cleaner than those 40 years ago, air pollution due to vehicle emissions is still a major contributor to pollution due to steady increases in vehicular travel (Opportunities to Improve Air Quality through Transportation Pricing Programs). According to the same study, “vehicle miles traveled have more than doubled in the U.S. from 1970 to 1990, and tripled from 1960” (Opportunities to Improve Air Quality through Transportation Pricing Programs). Other notable environmental benefits that are linked to reduced automobile use are decreases in water pollution, ozone depletion rate, hazardous and solid waste production, and noise pollution (Opportunities to Improve Air Quality through Transportation Pricing Programs).

Historical Identity & Preservation/Community Identity:

In addition to economic benefits, rails-with-trails and greenways of all types often provide access to the unique landscapes all around us. Trails give the public the opportunity to reconnect with what landscapes have to offer. Landscape features that may serve as great locations for trails, such as railways, canals, river valleys and former roadways, are often important to our cultural heritage (Flink & Seams, 1993). These places are where many of the communities in the United States originated. Railways and river valleys are especially important to the American Midwest, because they are how the majority of immigrants made their way as they settled the American Frontier. Railways and river valleys were once the
interstates of America, where goods and services were brought in and out to lay the foundation of early America. The placement of transportation such as railways and roads, before their establishment, were often where Native Americans had already established transportation routes (Flink & Searns, 1993). “Today, many of these linear landscapes contain vestiges of early events and early settlement patterns” (Flink & Searns, 1993).

After decades of change, development, and sprawl, the cultural heritage that exists in these corridors is becoming harder and harder to find and further is decayed. Trails and greenways are a means to save, protect, and preserve these “heritage corridors” (Flink & Searns, 1993). They can serve as a link to features such as historic buildings, bridges, battle fields, canals, and other historic areas (Historic Preservation & Community Identity, 2010). One such rails-with-trails project that does this is the Metropolitan Branch Trail in Washington D.C. This eight-mile trail runs along the active Metropolitan Branch Line of the B & O Railroad. It passes through several unique and historic neighborhoods and historical landmarks, including the National Mall and Union Station. “The railway carried the bulk of western rail traffic out of both Washington and Baltimore soon after it was built in 1873” (History: From Rail to Trail).

Linear landscapes, like the Metropolitan Branch, are also a way to preserve and promote community identity and pride. “Through recognition of the cultural, historical and natural assets of places, trails and greenways can enhance a sense of community identity by incorporating recreation, education and interaction into a user’s experience of a site” (Historic Preservation & Community Identity, 2010). Trails and greenways can help people connect with the landscape and better understand their roots to the landscape.
Economics:

Rails-with-trails, greenways and other trails and open public spaces alike, yield economic benefits to a variety of sources including “local governments, home owners and businesses through higher property values and corresponding higher tax assessments” (Sjoquist, 2003). Such increases in revenues may be greater than acquisition totals. Urban trails gain positive votes when they have the potential to add to the value of adjacent properties. In the housing industry, “70 percent of real estate agents use trails as a selling feature when advertising homes near trails. In Minnesota, 80.5 percent of them feel the trail would make it easier to sell” (Sjoquist, 2003). A survey was done in 2002 by the National Association of Home Builders and the National Association of Realtors of recent home buyers, which showed that trails rank number two out of eighteen in a list of most desirable community amenities (Economic Benefits of Trails and Greenways).

Trails can be recreational destinations, creating prime locations for business opportunities to capitalize on tourism and recreation spending wants and needs, as well as local users’ spending. More businesses means more job opportunities. Food and beverages, recreation equipment and rentals, maps, and clothing accessories are just some typical examples that could be in demand as a result of an urban rails-with-trails. According to a study done in 2000, “visitors to Ohio’s Little Scenic Trail spend an average of $13.54 per visit on food, beverages and transportation to the trail. In addition, they spend an estimated $277 per person each year on clothing, equipment, and accessories” (Economic Benefits of Trails and Greenways). The Kuttke Scenic Trail gets an estimated 150,000 users each year. Supplies and services
needed to construct and maintain a trail can help support local businesses (Economic Impacts of Trails).

The management of trails may also lead to job opportunities. Trails can lead to the revitalization of urban decay. Why is this important? Mayor Tom Murphy of Pittsburgh “credited trail constructions for contributing to a dramatic downtown revitalization. Miles of trails now connect millions of dollars of economic development, including new stadiums, housing, office space and riverfront parks” (Economic Benefits of Trails and Greenways).

What could compromise the feasibility and success of a pedestrian corridor along a railway?

The major concerns associated with the feasibility and success of a rails-with-trails project are as follows:

User Safety and Owner Liability:

Safety of trail users along a railroad corridor may be the most important issue in building a rails-with-trails project. Rails-with-trails are not common; people may be unaware of how beneficial and safe they can be and make premature assumptions. “A trail set back 25 feet from a track carrying 10 to 20 trains per day provides substantially less exposure to potential incidents for people than riding or walking a few feet from a road carrying between 10,000 and 40,000 vehicles per day” (Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines). A study of 61 rails-with-trails throughout the United States was done in 2000 by the Rails with Trails Conservancy and it was reported that the average separation between rails and trails was 33 feet, substantially more than a mere few feet like many bike lanes and sidewalks. Within
that same study, there was one trail user who had sustained injuries as of 1996. This incident happened on the Illinois Prairie Path when a bicyclist was struck by a train after riding around a crossing gate and ignoring flashing lights and warning bells (Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines).

The safety of a trail greatly depends on project preparation; understanding all of the design issues that may jeopardize user safety must be taken into account accordingly. Every project is different, which is why there is no rails-with-trails standards book. Individual railroad companies are not governed and regulated the same way, and have different concerns, guidelines, and standards with which to comply. Often, railroad companies only cooperate with a trail proposal if design standards and guidelines set forth by them are met (Rails-with-Trails: Lessons Learned, Section 3). Each railway corridor has its own unique environmental and structural obstacles to design around to ensure user safety, including such things as building setbacks, right-of-way widths, and proximity to roadways and utilities.

Public education is a critical component for the safety of a rails-with-trails project. This means, among other initiatives, placing signs along a trail (especially near crossings), providing brochures at kiosks and other points of interest such as bike shops, and having public awareness presentations/events (Rails-with-Trails: Lessons Learned, Section 6). The Railroad Trail in Michigan goes one step further, requiring users between the ages of 12 and 18 years of age to take a mandatory safety class, in which they receive a completion pass that they must carry when visiting the trail (Rails-with-Trails: Lessons Learned, Section 3).
Another major concern among railroad companies and other involved owners and agencies is liability, especially for railroad companies. Railroad companies are highly liable in rails-with-trails projects, because they are often seen as having “deep pocketbooks.” As a result, they are targets for lawsuits and may be wary of these types of projects. In a rails-with-trails project, “liability refers to the obligation of a trail manager or railroad to pay or otherwise compensate a person who is harmed through some fault of the trail manager or railroad” (Rails-with-Trails: Lessons Learned. Section 4). Rails-with-trails projects have not been around for long; the oldest is the Illinois Prairie Path, built in 1966. That being said, there has not been a lot of time for courts to study the responsibilities of railroads regarding pedestrian injuries. Many cases are resolved and settled outside of the court system, resulting in few cases to study (Rails-with-Trails: Lessons Learned. Section 4). “There are no clear legal guidelines as to how the courts will view rails-with-trails liability issues” (Rails-with-Trails: Lessons Learned. Section 4). For this reason alone, the chances of a railroad company fully cooperating requires significantly more time and design effort than typical trails.

Railroad companies are concerned about the time and effort that often follows a court case, not the money to the same extent. Time is money. There are a variety of liability solutions available to railroad companies, land owners, and trail management agencies, but the key to reducing liability issues is simple. A trail should be studied, analyzed, designed, built, managed, and documented by professionals only (Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines). A public recreational site will always be associated with some sort of liability risk. Having professionals design and construct the project will not solve all issues, but it may greatly reduce
them and increase the comfort level of the railroad companies that own and lease the property (the decision-makers), as well as the other liable agencies and stakeholders involved. In working with railroad companies, the expertise design professionals bring to the project can make the difference in whether or not a project is built.

Trespassing is also an important issue when discussing liability. An increase in people does not necessarily mean an increase in negligence, such as littering, vandalism, and trespassing. It does not mean greater chances of injury or death. In fact, the opposite is often the case. A study done by the U.S. Department of Transportation’s Federal Railroad Administration reported that well-designed trails, such as the ATSF Trail and Mission Trail in California, the LaCrosse River State Trail in Wisconsin, the Platte River Trail in Colorado, the Schuylkill River Trail in Pennsylvania, and the Railroad Trail in Missouri were directly responsible for decreases in these negative problems (In Rails-with-Trails: Lessons Learned, Section 3). “Such designs attract families, commuters, recreational users and others and discourage vandals and criminals, who thrive in abandoned, ugly places” (In Rails-with-Trails: Lessons Learned, Section 3).
Research Summary:

This project focuses on creating a rails-with-trails design as an alternative type of non-motorized transportation along an active railway. The theoretical research identifies and elaborates on a variety of issues that correspond with such a project. It addresses the potential beneficial influences of an urban rails-with-trails system associated with aspects such as health, community livability, ecological effects, historical identity and preservation, community identity, and economic effects. The last section of the research discusses user safety and owner liability, which are controversial but legitimate concerns associated with the feasibility and success of a rails-with-trails project. The research was conducted to address the theoretical premise and project justification, as well as to educate readers of this thesis about the benefits of a rails-with-trails system. A pedestrian pathway near an active railway may seem absurd or foolish at first, but as communities seek alternatives to the automobile, rails-with-trails is a viable solution. This thesis sets out to research and explore the possibility of a rails-with-trails system in Fargo not to change the minds of skeptics, but to improve the daily lives of community residents. It will explore what a designer can do to create a safe and successful rails-with-trails system. The following is a summary of issues associated with a rails-with-trails project and how designers can become involved with the issue.

Rails-with-trails & Health:

Rails-with-trails and other pedestrian trails serve as a unique way to provide people with exercise. Many of the activities we do on a daily or weekly basis are close to our homes, yet automobile and motorized transportation dominate street systems, causing pedestrian routes to be unpleasant, unsafe, or inefficient. Moderate physical activity,
such as walking and biking, for quick daily errands may be the answer to a healthier society. Something needs to be done to make pedestrian trails a more viable alternative for commuting. This is where the designer comes in. Faced with a lack of standards to influence the design, strategies involving how to best make connections to such things as residential neighborhoods, other trails, and transit stops should be thoroughly examined. It is my intent to explore how people can be connected to the rail corridor, and how they can continue to feel connected and safe while on the trail(s) along the active railway. Circulation patterns (pedestrian and vehicular) will be examined. Also, demographics related to the locations of places of live, work and play in the area is important and will be taken into account when strategizing design.

Rails-with-trails & Community Livability:

The location in neighborhoods of the places that people commute to on a regular basis, and how easily they can get to them greatly contributes to the livability of the area. Pedestrian trails, bike routes, or other non-motorized routes may make getting to these places easier, safer, healthier, and more efficient. In a perfect world, all neighborhoods would have pedestrian trails separated from motorized traffic and places of live, work and play within walking distance, but this is not a perfect world and not everything is planned out by professionals successfully. Cities like Fargo were built first around the railroads and later around the needs of the automobile. For a pedestrian trail to be constructed in a city like Fargo, all potential vehicular and locomotive traffic crossings, as well as corridors of minor versus heavy traffic, must be examined to find the safest solution (or placement) of pathways and crossings. Connections to and from places of work, live, and play will be important, but even
more important will be the crossings in between, especially at-grade crossings. Vehicular and locomotive traffic crossings could be the primary area of concern when designing. The main idea will simply be to reduce the number of crossings within the rails-with-trails corridor. This may be done by examining all existing and alternatives to existing pedestrian routes, and by using underground or overhead crossings. The use of existing bridges and roadway underpasses may be utilized to make use of existing infrastructure. In order to create safe intersections, the designer will have to think from the viewpoint of all possible types of movement that will be associated with a crossing including bicyclists, trains, motorists, and pedestrians.

Ecological benefits:

Greenways and other pedestrian corridors are often utilized as spaces to protect, conserve, revitalize, connect, and enhance natural landscapes and wildlife habitats. While these are noble ambitions, many will be difficult to achieve in this project due to the actively running locomotives. Realistically, the enhancement of air quality may be the only major arguable ecological benefit of a rail trail. However, it does not have to be the only “stand-out” ecological benefit. Since rails-with-trails is a recent idea, why not push what they can be and address them ecologically? Why can’t a bird sanctuary or a stormwater filtration system coexist within an active railway corridor? Common sense and perhaps a rails-with-trails standards book may some day state otherwise, but that is because it has not been done. Something that has not been done successfully before will always have skeptics, but without testing and further exploring possibilities they would remain just that, ideas.
Historical Identity & Preservation/Community Identity:

Rails-with-trails and similar types of greenways often provide access to unique landscapes that may not be able to be viewable from roadways. Railways, especially in the Midwest, were the roots of origin. They are one of the last remaining places in cities where hints of the past can be seen. It is the job of designers to find and explore unique ways to preserve, revitalize, and enhance these qualities for the public to see, explore, and enjoy. The historical context of an area is what truly gives it a sense of place and identity. Understanding the history of what remains is not enough; it is the job of the designer to grasp the connection and role the history has played on people throughout history until the present. The historical context itself is not what is most important, the human connection to it is. Without the human connection, the historical context would simple be stuff or things. It would not hold as much meaning, and it would be pointless to preserve them. The idea is not to create a museum, but rather an educational parkway dedicated to Fargo’s cultural heritage.

Economics:

Public trails, parks, and other spaces alike can prove economically beneficial to local governments, home and property owners, and businesses in the surrounding area. Trails and other public spaces can attract businesses to capitalize on tourism, as well as the increasing needs and wants of more people living in and visiting the area. They also may create jobs in construction and maintainance. Enhancing key site features, such as historical landmarks or city/landscape views, is a common strategy when designing trails and public spaces to attract users. What else can be done? This is a question I
intend to explore as I continue on this thesis journey. Being the first rails-with-trails project in Fargo, what will this project do for the local economy, health, identity, livability, and environment? I do not have the answer as I write this, nor do I feel that I should. The answer may come as I better get to know the site.

User Safety and Owner Liability:

The safety of users on a trail along an active railway and the liability that rests upon the property owners may be the two most important issues that could hinder the establishment of a rails-with-trails project. Faced with a lack of standards, every project being different, and railroad companies having different guidelines to follow, it is up to the designer as a professional to understand all possible direct and indirect safety concerns. It is up to designers to communicate to the public, clients, and property owners the truth about all situations and work out any confusions or problems in a democratic fashion. Designers should go into these types of projects with an open mind, trying to balance the interest and needs of the users and owners to reduce liability concerns and safety risks. Similar to any other landscape or architectural design, risk is part of design. There is always a chance of failure and complications. As I continue with this thesis, I simply intend to design with an open mind and follow where preparation and logical reasoning leads me.
The project type: Rail Trail & Greenway

The Metropolitan Branch Trail

The Metropolitan Branch Trail, otherwise known as the MBT, is a rail-with-trail project currently in the last phases of construction in Washington D.C.

The multi-use trail system is a long work in progress that spans about eight miles, from the Union Station in the city’s monumental center to the Baltimore and Ohio Railroad Station at Silver Spring, Maryland. The trail runs parallel to the Metropolitan Branch Line of the B & O Railroad, home to Amtrak, Metro, and various freightlines. The MBT passes through several unique and historic neighborhoods and historical landmarks, including the National Mall. It connects to a regional network of trails, including the Anacostia Trails System, Capital Cresent Trail, and is woven into the East Coast Greenway. The MBT has both on and off-road segments, but is envisioned in the future to be a completely off-road trail.

“The MBT is intended to link people to jobs, schools, commercial and recreation areas and various Metro stations” (Final Environmental Assessment for Metropolitan Branch Trail on Park Service Land i). A few of the greatest challenges during this project included reaching agreements between the public and private land owners dealing with the design and future of the trail, establishing a right-of-way, guaranteeing easy trail access, and enhancing the users’ safety (Rogers, 2010).

Project Relevance:

The MBT’s topological setting within Washington D.C. is similar to that of this thesis. Both the MBT and the proposed study area of this thesis is within urban and historic environments that include places people work, live, and play. There are few rails-with-trails parallel to active rail lines in the United States today, and even fewer in dense urban settings. As of June 2000, there were just over 240.5 miles of rails-with-trails parallel to active lines in the United States (Rails-with-Trails, 2000). A rails-with-trails project such as the recent MBT in such a monumental city only adds to the credibility and feasibility of a similar project in Fargo.
Figure 6 - MBT Map

The map at the top right shows the spatial relationship between the MBT and several other trails. The main map shows the trail’s location as well as the locations of other trails that exist within the MBT route.
The project type: Rail Trail & Greenway

**The Cedar Lake Trail**

The Cedar Lake Trail in Minneapolis is a 3.5 mile mixed-use trail with separate lanes for bikers and walkers. The trail was finished in June 2011 after nearly 20 years on the drawing board. The trail runs from St. Louis Park to downtown Minneapolis, beginning at the Highway 100 east frontage road near Cedar Lake Road and ending at Greenwood and 12th in downtown Minneapolis. The trail parallels the property of the BNSF Railroad.

The average setback of the trail is 25 feet, and the minimum setback is 15 feet. These measurements are from the centerline of the track to the edge of the trail. In the minimum setback areas there is a six-foot chain link fence to separate the trail and the rails. If the trail is 50 feet or further away from the track, no fences are required. The BNSF tracks that run adjacent to the trail have 10 to 12 trains per day running at speeds between 25 and 50 miles/hr. (Rails-With-Trails: “Lessons Learned” Federal RWT study).

Cedar Lake Trail is connected to several other regional trails in the area, serving the public as a direct route from Minneapolis’s western suburbs to downtown and beyond without having to share a path with motorized transportation. The trail also serves as a route for college students traveling between the University of Minnesota in Minneapolis and a second campus in St. Paul. A few of the challenges that arose during this project, similar to that of the MBT, were the coordination of the stakeholders, including the city, the park board, citizen groups, and the engineering and property management divisions of BNSF. The BNSF Railroad carries the most important vote in such a project, and ironically, “from the
railways perspective, the trail has helped beautify the once very industrial-like corridor” (Rails-with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines, 2000). The trail also improved the ease of railway maintenance, because the trail acts as an “improved” maintenance road.

Project Relevance:

Both the Cedar Lake Trail and the proposed trail of this thesis are located on BNSF Railroad property. As mentioned earlier in this thesis in the Theoretical Premise Research, railroad companies tend to have different concerns, standards, and interests regarding these types of projects. There are no universal standards by which all rails-with-trails projects must comply. The railroad company is the most important stakeholder to support a rails-with-trails project, so examining an existing project such as the Cedar Lake Trail, which parallels the property of the BNSF Railroad, will be important. Finally, the BNSF railroad tracks along the Cedar Lake Trail in Minneapolis and in Fargo are used by trains of similar type, speed, and frequency.

Figure 10 - Cedar Lake Trail
The project type: Rails-to-trails

The High Line

The High Line in New York City is a one mile elevated public park that is built on the former elevated West Side rail line. The elevated linear public park is located on the west side of Manhattan. It was built in two sections, and a third will eventually be constructed. Section one opened to the public on June 9, 2009, and runs from Gansevoort Street in the Meatpacking District to West 20th Street. Section two runs from West 20th Street to West 30th Street. The High Line runs through the neighborhoods of West Chelsea, Hell’s Kitchen, and the historic Meatpacking District.

The former West Side rail line, on which the High Line is built, is a historic, cultural, and structural relic of the city’s economy. It was once a busy route for the transportation of goods from rail yards near the Hudson River to the Meatpacking District and Downtown Manhattan. It was built in the early 1930s as a way to avoid the already cumbersome city street system in the industrial district. Ironically, more than 75 years later, the elevated rail line meets the purpose and need to create an alternative way for people to get around the city once again. The rail line was in business until 1980, and was abandoned for nearly 20 years.
Like many cities, the turn of the century in New York has sparked an interest in the downtown rehabilitation of historical decaying buildings of Manhattan’s west site, and eventually the “ugly” abandoned elevated rail line. Like the MBT and the Cedar Lake Trail, the construction of The High Line was met with much controversy. It took nearly 10 years of “old-fashioned city politics, bottom-up community activism, and celebrity fund-raising” to get the project underway (The High Line, New York City, 2009). The High Line is the result of collaborative efforts by Friends of the High Line (a non-profit project advocacy group), the New York City Department of Parks and Recreation, the New York City Economic Development Corporation, the landscape architecture team of James Corner Field Operations, and the architecture firm of Diller Scofidio & Renfo (The High Line, New York City, 2009).

Much like the MBT and the Cedar Lake Trail, the design of the High Line was intended to have as little impact on the existing site elements and features as possible. These elements and features are what make trails such as the High Line unique. Similar to the MBT, the High Line was partially created as a means of historical urban preservation. In addition, the design of the High Line has influenced the creation of new zoning laws that have helped preserve, revitalize, and protect the industrial urban infrastructure that once played a vital role in the city’s economy. The High Line is a key influence in attracting new development, businesses, and people to the once run-down and crime-infested west side of Manhattan (The High Line, New York City, 2009).

The High Line’s design has a very unique way of incorporating design elements into the rail line structure and corridor compared to the other two trails studied. Users have a different perspective 30 feet above the streetscape. This is one of the key factors in the park’s design. The strategic placement of pathways, seating, stairways, and other deliberate spaces within the park “reinforce opportunities for chance encounters, frame views of landmarks and streetscapes, and enhance moments to absorb the changing sky” (The High Line, New York City, 2009). (See images at the top of the next page.)
The High Line uses unique ways of interlocking or weaving pathways, seating, stairways, and vegetation plantings into the railway structure to create a new urban fabric. It uses actual railroad elements, such as track rails, along with railroad-inspired elements and the concrete path and wood benches in the bottom left image to perhaps do the weaving. One might say this is done to celebrate the line of history of the railway structure. The park design is a combination of the major transitions the structure has gone through. It contains elements of when it was active, when it was abandoned, and today, now has new additional modern features to accommodate pedestrians all while enhancing its history. Actual rail track and wooden ties are used to exemplify times of active use as seen in the bottom middle image. Plantings, inspired by the wild beauty of the tough drought-tolerant vegetation that grew in the years the track laid abandoned are located in planters that are woven amongst pathways and seating as seen in the bottom right image. The modern, geometric, flowing, and interlocking forms of seating and pathways are designed to suit the needs of the pedestrian while representing the new use of the structure as a city park. The structure was important to people as an active rail line, an abandoned rail line, and now as a park.

Project Relevance:

The High Line is a great example of the extent of creativity that can be involved in this type of project. Once an eyesore, now an iconic landmark, the High Line has brought new life to West Manhattan. Although it is not located along an active railway, it still meets the purpose and need of creating an alternative choice of transportation apart from motorized traffic. The BNSF railway is and was a major player in the economy and development of the city of Fargo. It too retains similar built infrastructure to that of the High Line in remnants of the past that may be preserved and enhanced in the design of a rails-with-trails project. Though some may see aged and/or abandoned infrastructure as eyesores, unsafe or worthless, the High Line proves otherwise. Projects such as the High Line can be a means of reinterpreting such places that beautify a city’s colorful history, arouse people’s sense of adventure, and show them an eyesore from a different perspective.
Typological Summary:

Each case study has three main elements in common: they are all located in urban settings, they all serve as public routes to and from areas of work, live, and play, and they all serve as feeder routes to other pedestrian trail systems, as well as transit and train stops. Each trail system creates shared public spaces that offer the possibility of creating shared social grounds for users of the trails and surrounding neighborhoods. Each trail may be similar in purpose, but each is unique in connection with the site context.

The Metropolitan Branch Trail (MBT):

Like the proposed trail of this thesis, the MBT is a rails-with-trails design that runs through several neighborhoods in Washington, D.C., passes several historical landmarks, and connects to a variety of other trail systems. Unlike The High Line in New York City, the history of the trail’s context is not directly associated within the design details of the trail. In other words, the trail’s features do not have historical significance. However, the trail’s placement and orientation provide users with views and vistas of some of the city’s historical places, such as the Catholic University Basilica, giving the trail users a true sense of being in the nation’s capital. The trail not only functions as a feeder route to other trail systems, but it also acts as a feeder route to some of the city’s most famous historical landmarks, including the Union Station and the National Mall.

The Cedar Lake Trail:

As previously mentioned, the Cedar Lake Trail in Minneapolis is also a trail that runs through several neighborhoods in urban Minneapolis. Similar to The High Line in New York City, the Cedar Lake Trail was built in an industrial area. As a result, it has helped beautify the once industrial-like historic
corridor in which it is located. The trail simply being there has attracted public interest in the trail’s context. One could say that the Cedar Lake Trail is a historic revitalization and preservation tool, although it is not a direct historical representation of the area’s past like The High Line.

The High Line:

The High Line in New York City, although not a rails-with-trails project, is an inspiring example of an urban public space project that is a means of neighborhood revitalization, preservation, and transformation all at the same time. The shared public space influenced the creation of new zoning laws that have helped preserve, revitalize, and protect the industrial urban infrastructure of the area. Revitalization and rezoning have attracted new development, businesses, and people to the once run-down and crime-infested west side of Manhattan. The historical context and a timeline of the former urban space can be directly seen in many aspects of The High Line’s design. It can be seen in elements such as seating, pathways, and vegetation, as well as in framed views of historic landmarks and streetscapes created by strategically positioned pathways and seating. The unique interwoven design elements that reflect the history of the former railway may not give users a sense of place to the extent that they know or feel like they are in the “Big Apple.” Rather, The High Line gives the user the unmistakable sense of exactly where they are, a former elevated railway. The views from the space give users the sense that they are in New York City.
**Red River Valley: In the beginning**

Fargo's origins and its development can be attributed to the physical and climatic features of the Red River Basin. Millions of years of glacial movement across eastern North Dakota deposited layers of sediments (Fargo, North Dakota A Brief History of a Long Time). Nearly 12,000 years ago, the Red River Valley was occupied by the last of the retreating glaciers that scoured the land, filling in low spots as it moved north. As the glacier melted and receded north, the glacier itself dammed the water from flowing north, and glacial Lake Agassiz was formed. The future site of Fargo was under an estimated 200 feet of water 12,000 years ago (Fargo North Dakota, From Frontier Village to All American City, 2001). As the glacier receded it deposited rich clay and silt sediments across the valley, as well as beach ridges of sand and gravel where the water’s edge once was. From nearly 9,300 years ago to only a century ago, the valley was lush with prairie grasses that helped create some of the most fertile agricultural land in the world (Fargo, North Dakota A Brief History of a Long Time). The map located at the bottom right is a footprint of the Red River Basin.

The Red River Basin has served as a riverine corridor for wandering hunters between the prairies of North Dakota and the woodlands of Minnesota for thousands of years. There are not many archeological findings and records of civilization or traces of agricultural practice until about 1,000 years B.P. (Holzkamm & Dormanen, 2001). Years of continuous flooding and the depositing of silt over the floodplain has made locating historical sites almost impossible. The Red River Valley was occasionally, or seasonally, occupied by Native American Sioux tribes, as well as the Anishinabe, otherwise known as the Ojibwa or Chippewa. Conflicts between the tribes kept Euro-American fur traders from permanently settling the area until the 1850s and 1860s (Holzkamm & Dormanen, 2001).
**HISTORICAL CONTEXT**

**Commerce, Transportation, and Westward Expansion**

Fur trade and the abundance of wildlife is what brought the first Euro-Americans to the Red River Valley. A French voyager by the name of Pierre Gaultier de Varennes was the first European to reach the Red River Valley in the 1730s. He established a series of trading posts in the upper Red River Valley, including Fort Rouge in Winnipeg (Red River Valley History, 2005). The land of the valley became prime hunting and trading grounds. One could say it was a transportation hub because of the abundant trading of meats, furs, guns, clothing, metal tools, etc. between Native Americans, Europeans, and Americans. Goods traveled by boat, steamboat, and wooden cart up and down the valley, from Winnipeg to the Selkirk and Goergetown settlements near present day Fargo/Moorhead. They also ran from Selkirk and Georgetown to St. Paul, south to Lake Traverse and even St. Louis. The fur trade era came to an end in the 1860s when westward expansion started to take place.

Local transportation and commerce through much of the 19th century in the Red River Valley was done by horse or ox-drawn carts known as Red River Carts. They were constructed from local timber and the harnesses, and canvas was made from bison hide. A cart, like in the image to the left, could carry 600 to 700 pounds of freight. They were popular with the Metis people who played a major role in the development of the Red River Valley. The Metis were a mixture of European and Native American cultural lines that developed in the Red River Valley (Holzkamm & Dormanen, 2001).

Steamboats were an important means of transporting freight and immigrants north and south, reaching their peak in the 1870s. Fargo was a major port, and the steamboat business carried a significant importance in the development of the city, as well as throughout the valley until about 1915 (Holzkamm & Dormanen, 2001).
The Arrival of the Railroads

The arrival of railroads in the Red River Valley signified the first population and agriculture boom in the valley. Marking the end of steamboats, railroads are what created the city and society of Fargo. The boom time of steamboats on the Red River is not credited with the creation of Fargo; the crossing of the Northern Pacific Railroad over the Red River is. The crossing of the river sparked two settlements on the western side, “Fargo on the Prairie” and “Fargo in the Timber.” “Fargo on the Prairie” was located near where Broadway meets Main Avenue, formally Front Street (Fargo, North Dakota, Crossing the Red River). “Fargo in the Timber” was located near the banks of the Red River and is historically remembered as being raucous and rowdy compared to the more sedate “Fargo on the Prairie” (Holzkamm & Dormanen, 2001).

Fargo was founded by the Northern Pacific Railway in 1871 as a result of railroad track being built across the mighty Red River. The track was built in the Fargo/Moorhead location as a precaution against flooding. It represented the highest elevation on the river in the area. Fargo was originally named Centrilia, but within a few short months the city was renamed for William G. Fargo, who was the founder of the Wells-Fargo Express Company and director of the Northern Pacific Railway (Fargo, North Dakota, Crossing the Red River).

In 1882, the Great Northern Railroad built a bridge across the Red River about a mile north of the Northern Pacific Bridge. The Great Northern ran north to Grand Forks and west to the coast. These two railroad lines formed twin transportation backbones that shape Fargo for nearly a century. In 1970, they combined to form the Burlington Northern Railroad and, a year later, became part of AMTRAK (Fargo, North Dakota, Great Northern Railway Depot). Fargo’s Broadway developed as the trail that connected the two stations.
Westward Expansion

In July of 1864, Congress granted large sections of land from the Great Lakes to the Puget Sound to the Northern Pacific Railroad (nearly 50 million acres). The land grant gave 10 acres on each side of the tracks in the states and 20 miles on each side in the territories. The government did this so the railroad company could sell the extra land to fund future rail construction and promote westward expansion to benefit the economies of the railroad, as well as cities like Fargo (Fargo, North Dakota, Land and How to Get It).

A man by the name of James B. Power came up with the idea of trading some of this granted land for Northern Pacific bonds to former bond holders to create large wheat farms that became known as bonanza farms. The farms would be used as advertisements to promote the valley as having bumper crop-producing lands. The Upper Midwest, especially the plains regions, were not considered great places to settle, mostly due to harsh climatic conditions. The farms of thousands of acres brought worldwide recognition and drew settlers from all over the world to take advantage of the fertile plains (Holzkamm & Dormanen, 2001).
**Importance of the Railroads**

The development of urban Fargo, as well as surrounding rural and agricultural development and its connection to the Northern Pacific and Great Northern Railroads cannot be overemphasized. The railroads were not only a huge source of employment, but they also attracted and encouraged and the success of many business developments. Fargo's good rail connections made it attractive to businessmen, wholesalers, and warehousemen to centralize their businesses and undersell competitors in other towns (Holzkamm & Dormanen, 2001). Sparked by the advertisement of bonanza farms, the success of agriculture in the Red River Valley attracted farm implement dealers, as well as agriculture service firms, to Fargo. The construction of the Interstate Highway system in 1925 also aided in the creation of Fargo as a centralized booming transportation hub (Holzkamm & Dormanen, 2001). There was even a time between 1904 and 1937 when electric street cars, inspired by their steam locomotive cousins, ruled the streets of Fargo/Moorhead moving large numbers of commuters (Fargo North Dakota, From Frontier Village to All American City, 2001).

**Early development sparked by the railroad**

Pictured to the left is an image of J. R. McLaughlin's farm implement business building. It is said to be one of Fargo's earliest large businesses. It was located on "Machinery Row" on the east end of NP Avenue. The tracks of the Northern Pacific Railroad are located at the back of the building. It burned down in the Great Fire of 1893 (Fargo, North Dakota J.R. McLaughlin's Machinery Hall).

Due to the agriculture boom, grain elevators such as the Union Elevator in the image to the left sprang up along the two railways. The Union Elevator was constructed around 1880, and was located at the intersection of Second Street and First Avenue North. This particular elevator could host both trains and river barges. It is thought to have been built by G.S. Barnes and Major L.H. Tenney (Fargo, North Dakota Union Elevator).
**Top reasons the Red River Valley was settled:**

1 - Congress passed the Pre-emption Act of 1841  
   - Allowed any citizen to buy 160 acres of land for $1.25/acre
2 - Congress passed the Homestead Act of 1862  
   - Allowed any citizen over the age of 21 the chance to own the deed to 160 acres of land if he or she settled the land for at least five years
3 - Congress passed the Timber Culture Act of 1873  
   - If a settler would plant 10 acres of trees on the land, he or she would receive an additional 160 acres
4 - Railroads provided travel other than by steamboat or mules and horses  
   - The Northern Pacific railway crossed the Red River in Fargo in June of 1872  
   - The Great Northern railway reached the Red River in 1881
5 - Bonanza Farm Era attracted settlers (1879 - 1886)  
   - Extra land grant areas needed to be sold to fund railroad expansion  
   - Advertisement was needed  
   - The idea of creating large farms called bonanza farms was thought up by commissioner James B. Power to show people how successful agriculture could be in the region  
   - It was a large success that further encouraged doubtful minds to venture west and acquire land
6 - Poor conditions in Europe caused people to want to start a new life on the frontier  
   - Poor soil conditions and a lack of land to be owned by individuals drove people in search of better lives out west
The Great Fire of 1893

One of the most tragic events that changed Fargo forever was a fire that broke out on the afternoon of June 7, 1893. The fire, driven by an estimated 30 mph winds, burned everything north of what is now Main Avenue. The fire destroyed about three-fifths of the buildings in Fargo (Holzkamm & Dormanen, 2001). It ruined Fargo’s business district, city hall, and the homes of most of its 6,000 residents. In total, 140 residential structures and 219 businesses were lost (Fargo, North Dakota, The Fire of 1893). Much of the remnant debris from the fire was dumped and buried in ravines, as well as in Long Lake.

After the fire, Fargo city leaders created building codes that resulted in many buildings being constructed of brick and other fire-proof materials. The fire created the “brick” revolution, which started a population boom from 1893 to 1930, marking a time of prosperity for the city of Fargo (Holzkamm & Dormanen, 2001).
Long Lake

As Fargo was settled, the valley was full of natural ravines and low areas. Throughout time, these coulees and low areas, such as Long Lake, were filled in with debris from the city or confined to drainage ditches and pipes. The map below is a current location map of where Long Lake was, it is now occupied by several city parks. The site of this thesis is located in dashed red.

Facts:

--Stretched from present day 12th Avenue North to 15th Avenue South, nearly 2.25 miles.

-Long Lake was called a few different names throughout its history including Long Lake, Dry Lake, and “The Slough” (Fargo Sanborn Maps).

-Began its history in Fargo in the 1870s-1880s, as a place to fish, hunt and swim.

-A population boom ignited by the arrival of the Northern Pacific Railroad in 1872 and the Great Northern Railroad in 1882 put pressure on Long Lake.

-In the days before common knowledge of germs and disease, people did not know any better than not to dispose of the industrial, animal, and human wastes in the nearby lake.

-Before long, Long Lake became what Fargo Historian Ronald Ramsay called “toxic soup.”

-The Great Depression of the 1930s marked the beginning of the end of Long Lake as a result of a Works Progress Administration (WPA) project to provide jobs and clean up the city.

-Drainage of Long Lake took place in a series of projects from the 1930s through the 1950s.
**Community Story:**

Five children, between the ages of 5 and 10, and a mother in two families by the last names of Birge and Irons, got terribly sick one winter because of their interaction with the contaminated lake. The five children ended up dying, but the mother survived. At the time, nobody knew why or how the families got so sick. They could have gotten sick a number of ways, including air quality, by coming into direct contact or by eating something that they harvested in or near the lake.

The most interesting part of the story is how the children were buried. It was winter when they died and there was no access to the cemetery outside the city limits, so the pastor at the Episcopal Church decided to bury them on church grounds on the corner of 2nd Avenue and 9th Street South. This was illegal at the time, so the pastor was fined 50 dollars for his actions. Fargo city ordinances at the time said that burials needed to take place outside city limits. The irony of the story is that burials needed to be outside city limits was a strict city ordinance, but the raw dumping of human, animal and industrial wastes into a publicly used body of water was not. People could not connect the deaths of the children with the severely polluted lake. The children were moved after the church burned down in 1992 to the new Gethsemane Church at 3600 25th Street South, Fargo.

*Story source: Ronald Ramsay, Fargo Historian, 2011*
A devastating F-5 tornado ripped through Fargo’s north side on June 20, 1957. The tornado (one out of a series of five produced by the storm that day, destroyed 300 homes and damaged another 1,000, leaving more than 2,000 people without a place to go. The tornado killed 13 people; the last died in 1964 from injuries. Debris from this natural disaster was dumped in what was called “The Slough” (Long Lake), and covered with soil. A less devastating tornado struck Fargo on June 7, 1890 (Fargo ND, June 20, 1957 F5 Tornado).
**Flooding**

The mighty Red River has been overflowing its banks long before the area was settled by immigrants. There are several major climatic and geological reasons why the Red River Valley is so prone to flooding. First, the Red River flows northward, so ice jams are more likely due to the fact that spring thawing generally happens to the south (downstream) and not north. The ice jams prevent water from easily flowing into Canada and cause the Red River and its tributaries to overflow downstream. Due to the flat geological layout of the former floor of Lake Agassiz, when water overflows the river and stream banks it does not take much to spread wide and far. Native Americans used to describe spring flooding in the Red River Valley as a sea. The Upper Midwest tends to have heavy precipitation in the spring, and when mixed with climbing temperatures and melting snow it makes for perfect flooding conditions (Fargo North Dakota, Red River Floods).

<table>
<thead>
<tr>
<th>Major flood crest levels in Fargo:</th>
<th>Flood stages:</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 21, 2010 36.99 feet</td>
<td>Alert stage: 17 feet</td>
</tr>
<tr>
<td>April 15, 1969 37.34 feet</td>
<td>Flood stage: 18 feet</td>
</tr>
<tr>
<td>April 9, 2011 38.70 feet</td>
<td>Moderate flood stage: 25 feet</td>
</tr>
<tr>
<td>April 7, 1887 39.10 feet</td>
<td>Major flood stage: 30 feet</td>
</tr>
<tr>
<td>April 18, 1997 39.72 feet</td>
<td>100-year flood level: 38.2 feet</td>
</tr>
<tr>
<td>March 28, 2009 40.84 feet</td>
<td></td>
</tr>
</tbody>
</table>

*Fargo’s current protection levies are at 40.2 feet.*

Data source: [http://tinyurl.com/bv66zeq](http://tinyurl.com/bv66zeq)

---

**Fig. 42 - Flood debris during flood of 1897**

This image was taken at an unknown location. Before sidewalks were paved in Fargo, people built wooden walkways. The image above shows the wood blocks that supported the walkways floating in a pile.

**Fig. 43 - Trains weighting down Northern Pacific Railroad Bridge in the flood of 1897**

This image was taken on the banks of the Red River in Moorhead overlooking the Northern Pacific Railroad bridge. There are three locomotives on the bridge to hold it down.
**Conclusion:**

The geologic and climatic characteristics of the Red River Valley laid the foundation for people to settle the valley and Fargo. The Red River Valley, which consisted of a vast amount of wetlands before they were drained for farming, was home to an abundance of wildlife. That wildlife is what brought the first Native Americans to the valley, as well as the first Europeans and Americans. Once the Europeans and Americans became established in the valley, trade between each other and the Native Americans along the route of the Red River, its tributaries, and surrounding settlements attracted more people to the valley. The Red River became a major transportation corridor for trade and commerce. Steamboats in the mid-to-late 1800s to the 1910s further established the Red River as a major trade and commerce amenity.

Permanent settlements were not a reality until the two railways, the Northern Pacific Railroad and the Great Northern Railroad, crossed the Red River. The railroads brought in large numbers of immigrants searching for a new start, and they served as the front door to the western frontier. Fargo’s centralized location between cities such as St. Paul and Winnipeg and its good rail connections to smaller settlements throughout the area made it a booming and attractive community to businessmen and women looking to centralize their business. The advertisement of fertile farmland by the Northern Pacific Railroad to promote westward expansion and growth in the valley sealed the deal, ensuring that Fargo would become a great city.

**Relevance of historic research to design:**

The history of a city tells a story about the situations and problems people have faced and how they came up with solutions. This includes the construction of buildings, bridges, and even the layout of roads and railways on the landscape.
Such historical context is what gives a city such as Fargo a sense of place, identity, and community pride. The historical context of Fargo is remnants of the people of Fargo, not Bismarck, not Grand Forks, not Minneapolis, but Fargo.

The historical context may not visually stand out or interest the average person who lives in the city of Fargo today. It is up to the designer to make Fargo’s historic heritage stand out. It is the intent of this thesis to explore ways to make Fargo’s rich historic past known to both residents and visitors alike. This may be done by exploring how to strategically place pathways and seating to create views of things such as historic architecture, a streetscape, or a mural on the side of a building. It may also be done by incorporating historically inspired design elements, much like the High Line in New York City. There may be multiple ways to enhance the history of Fargo, but without conducting the historical research, one would leave out important details that may further enhance a design.

Understanding major events that took place on or near the site of this thesis will lead to further inspiration in later in design work. Events such as the Great Fire of 1893, the flooding, and the tornado of 1957 have left remnants of the past behind that may not be noticeable to the general public. For example, before the Great Fire of 1893, structures in Fargo were typically constructed of wood. After the fire, city officials developed new building codes making materials such as brick, tile, and steel the primary construction materials to reduce the chances of such a devastating event happening again. It started a brick revolution, and if the fire never happened, many of the historic buildings in downtown Fargo would not exist. It is the designer’s role to not let such events fade into the history books. Such events affected many lives. Although they may have happened before some of our lifetimes, they should be preserved and enhanced to never be forgotten because they are part of why Fargo is the city it is today.
Goals of the Thesis Project

Academic:

The academic goal of this thesis is to explore strategies to create a rails-with-trails system in Fargo's urban setting that can be used as an example for future projects. The underlying goal of this thesis is to find the best feasible strategy to unite several communities with the creation of a pedestrian corridor along an active railway. The intent is not to create a detailed design showing what needs to be done at all points along the railway, but rather, examples of what could be done in certain situations. The selected portion of BNSF tracks that is the main focus in this thesis is only a small portion of tracks that run through the greater metropolitan area. In that regard, this project is being undertaken to address situations that can become examples for other similar situations and environments.

Professional:

The professional goal of this thesis is to create a project that can be viewed both inside and outside of the academic realm as a creative solution to a common urban problem. The intent is to create a project that follows current standards and codes, but to challenge the conventional thinking about underutilized urban spaces such as the BNSF Railroad corridor.

Personal

The personal goal of this project is simply to push creativity. This may be one of the last projects in which I am free to do whatever it is that I feel is best, and even to use first person references. There is no client to please or budgets to stick to. The only thing that stands in my way is a deadline. It is my intent to finish my academic career in NDSU’s Landscape Architecture program using my creative side, which has often been lost in the midst of trying to maintain my academics. I will not be satisfied unless the design of this thesis has critics that both like and disagree with it.
**Climate**

Fargo has a humid continental climate, which is known for its extremes in temperature, weather, and seasonal changes. Fargo is located at the edge of a semi-arid climate and a moist continental climate, further adding to the area’s wide climatic variations. Fargo’s location at the bottom of a dried up, low-lying lake bed many times causes cold air to become trapped in the valley as warm air rises to the top. It is not uncommon for the weather to change as one travels out of the valley and reaches a higher elevation out of the Red River Basin at locations such as Jamestown, North Dakota or Detroit Lakes, Minnesota (Holzkamm & Dormanen, 2001).

**Temperature**

The extremes of average temperature for the month of January range from negative 10.1 degrees in 1887 to 21.8 degrees in 1990. The extremes of average temperature for July range from 80.2 in 1936 to 63.4 recorded in 1891. Fargo’s ground is only frost-free for an average 130 days/year (Holzkamm & Dormanen, 2001). Is is a very common issue for construction in Fargo to be rushed to get in the ground before freeze up.

**Sky Cover**

Due to short summers and a low-lying location, Fargo’s amount of clear sky cover compared to cloudy and partly cloudy days is low. July has the fairest weather in Fargo.

**Relevance to Design:**

Climate plays some role or another in every aspect of landscape design. It determines plant use, placement, and growing season. It influences things such as structural design and placement, material use, and outdoor functionality of the site, just to name a few.

Precipitation & Snowfall

The wettest months in Fargo are May through August, and the driest are December through February. Fargo typically experiences snowfall from October to early May. The greatest amount of rainfall was 34.75 inches in 2000. The highest amount of snowfall occurred in 1996-1997, with a total of 117 inches (Gordon & Gordon, 2002).

Wind Speed

The flatness of the Red River Valley influences a typical south-southeast and north-northwest wind. This makes winds coming straight out of the north or south the strongest winds in Fargo (Gordon & Gordon, 2002). The BNSF Railroad corridor is orientated in a south-southeast and north-northwest direction, so wind mitigation will be a key issue to address.

Humidity

Fargo’s rather high average annual humidity level of 77.5% can greatly influence how a person experiences a site. Humidity can make hot summer days seem sweltering and cold winter days more bitter. When designing an outdoor space in Fargo, exploring ways to create different micro-climates will be important.

Climate data source: http://www.climate-zone.com/climate/united-states/north-dakota/fargo/
Project Focus Area

The focus area for this thesis will be within the four isolated neighborhoods that surround the site. They are: Roosevelt/NDSU Neighborhood, Horace Mann Neighborhood, Madison/Unicorn Park Neighborhood, and the Downtown Fargo Neighborhood. The map below shows the location of these neighborhoods outlined in red.

Figure 44 - Project Neighborhood Map
Roosevelt/NDSU

Size: .593 sq. mi.

Population: 3,723 (2009)

Neighborhood Brief: Roosevelt/NDSU
Neighborhood is primarily a residential area located in central Fargo.

Community groups: The Roosevelt Neighborhood Association

Area Housing:
- Single family
- Triplexes
- Small number of condos
- Conversion and apartment buildings
- Duplexes
- 12 residence halls on NDSU campus for students

Parks:
- Roosevelt Park: includes restrooms, open area, playground, winter ice-skating/hockey
- Roosevelt Schoolyard: playground and open area
- Johnson Park: playground, recreational paths, open areas, picnic facilities, restrooms, soccer fields

Schools: NDSU, Roosevelt Elementary School

Above info retrieved from: http://www.ci.fargo.nd.us/Residential/YourNeighborhood/KnowYourNeighborhood/RooseveltNDSU.aspx

Mode of Transportation to Work

Graph by Alex Bossert


Travel Time to Work

Graph by Alex Bossert

Horace Mann

Size: 1.037 sq. mi.

Population: 3,024 (2009)

Neighborhood Brief: The Horace Mann Neighborhood is primarily a residential neighborhood, bordered by downtown Fargo to the south and the Red River to the east.

Community groups: The Horace Mann Area Neighborhood Association

Area Housing: Similar to Roosevelt/NDSU without dorms

Parks: -Oak Grove Park: includes pedestrian paths, horseshoes, open areas, picnic facilities, playgrounds, frisbee golf, volleyball, tennis, and restrooms  
-Treefoil Park: includes paths, open area, picnic facilities, and restrooms  
-Horace Mann Schoolyard: includes playground, ice skating/hockey, open area  
-Mickleson Field: includes ball diamonds, paths, picnic facilities, and playground

Schools: Oak Grove Lutheran School, Horace Mann Elementary School

Above info retrieved from: http://www.ci.fargo.nd.us/Residential/YourNeighborhood/KnowYourNeighborhood/MadisonUnicornPark.aspx

Source of graph data: http://www.city-data.com/neighborhood/Horace-Mann-Fargo-ND.html

Mode of Transportation to Work

Travel Time to Work
**Madison/Unicorn Park**

Size: 1.486 sq. mi.

Population: 1,337 (2009)

**Neighborhood Brief:** The Madison/Unicorn Park Neighborhood is a mixed-use neighborhood of residential, commercial, and industrial. The north central neighborhood is bordered by BNSF Railroad tracks on both the south and north side.

**Community groups:** Madison Association

**Area Housing:**
- Detached single family
- A few triplexes, conversions and apartment buildings, and a few duplexes

**Parks:**
- Madison Park: includes ball diamonds, basketball, paths, open areas, ice skating/hockey, picnic facilities, playground, swimming/splash pad, volleyball, restrooms
- Unicorn Park: includes a playground, ball diamond, and open area
- 5th Avenue Mini Park: includes a playground
- Cannon Park: includes playground

**Schools:** Madison Elementary School

Above info retrieved from: http://www.ci.fargo.nd.us/Residential/Your-Neighborhood/KnowYourNeighborhood/MadisonUnicornPark.aspx

**Mode of Transportation to Work**

- Individual auto use
- Walks
- Buses
- Bikes
- Carpools
- Other
- Works at home

Source of graph data: http://www.city-data.com/neighborhood/Madison-Unicorn-Park-Fargo-ND.html

**Travel Time to Work**

- Graph by Alex Bossert

Source of graph data: http://www.city-data.com/neighborhood/Madison-Unicorn-Park-Fargo-ND.html
Downtown Fargo

Size: 1.179 sq. mi.


Neighborhood Brief: The downtown Fargo neighborhood is the core business district in Fargo, and is currently zoned as residential and commercial. It is bordered by the Red River to the east.

Community groups: Downtown Community Partnership, Fargo Downtown Neighborhood Association

Area Housing:  
- Detached single family home on the borders of the neighborhood  
- A variety of housing near the center of downtown

Parks:  
- Island Park: includes basketball courts, paths, open areas, picnic facilities, playground, swimming pool, tennis courts, and restrooms  
- Dike East: includes a footbridge, boat access, sledding, basketball court, and open areas  
- Wildflower Grove: includes pedestrian paths, community garden, and seating areas

Schools: NDSU Downtown (Renaissance Hall & Klaai Hall)

Mode of Transportation to Work

Information unavailable.


Travel Time to Work

Graph by Alex Bossert

Zoning: Roosevelt Neighborhood

The map below shows the zoning classification of the Roosevelt/NDSU Neighborhood. Besides the NDSU campus, the Roosevelt Neighborhood is primarily single family dwellings. However, this has been challenged in recent years due to an increase in NDSU student numbers. The neighborhood is experiencing a decline in single family dwellings to make room for multiple dwelling apartment buildings.

Map retrieved from: http://www.cityoffargo.com/Maps/NeighborhoodLandUseMaps.aspx
The map to the left shows the zoning classification of the Horace Mann Neighborhood. This neighborhood is almost completely residential. It is unique from the other neighborhoods because it has a series of parks and recreational areas bordering the entire east site along the Red River. It may already have fair access to such amenities, but a trail along the BNSF railway would improve its connection into central Fargo. It is currently as if the neighborhood is in its own isolated corner of Fargo.

Map retrieved from: http://www.cityoffargo.com/Maps/NeighborhoodLandUseMaps.aspx
The map to the left shows the zoning classification of the Downtown Fargo Neighborhood. Downtown Fargo is the birthplace of the city and contains much of the area’s businesses and rich history. A trail along the historic BNSF railway can only add to the downtown economy, which in turn may help revitalize it.

Map retrieved from: http://www.cityoffargo.com/Maps/NeighborhoodLandUseMaps.aspx
Zoning: Madison/Unicorn Park Neighborhood

The map below shows the zoning classification of the Madison/Unicorn Park Neighborhood, which is a mixture of all types of zoning classifications. A trail in such a neighborhood, if successful, may influence changes in zoning over time due to increases in property values and help create more mixed neighborhoods.

Map retrieved from: http://www.cityoffargo.com/Maps/NeighborhoodLandUseMaps.aspx
Geological Information

- The area’s soil is a clay silt loam blackish-grey to light brown with weak engineering properties.
- Slopes generally run between 0 to 3%, with the steepest slopes near underpasses and the Red River.
- Ground water deposits are scattered within glacial drift deposits beneath 100 feet.
- The average frost-free period ranges from 110 to 135 days, and the frost line is typically between 4.5 feet to 6 feet.
- The soil can hold a substantial amount of water, making for unstable properties, and in dry periods can release water causing it to become hard and brittle.


The structural bearing capacity of the site is very low, somewhere in the range of 2000 pounds per square foot. The site is not meant to hold any large structures because of its low strength, so any large building structures considered for this site would be very costly. Because the area has the potential to draw large numbers of people, innovative ideas about how to deal with site runoff and trail structures, such as bridges and underpasses will be important. Soil structure also influences plant growth, so species selection will be partially based on tolerance in clay silt loam soil.
Views from the track intersection at 16th Street N on the east side of the BNSF railyard; this may be a key location to begin the rails-with-trails project.

Views from the diagonal crossing on 7th Ave N; this point may see the highest number of trail users.
Views from the underpass of University Drive. Notice the space on the left side of image J where a track line used to be.

Views from the underpass of 10th Street N; the right-of-way on the north side of the tracks is nearly 50 feet.

(Photos by Alex Bossert)
Views from the closed off intersection at 7th Street N. To the west is a long perspective of the railway right-of-way and to the east is downtown Fargo.

Views from the railway intersection at Broadway, an intersection of high pedestrian traffic and historical views.
Views from the railway intersection at 4th Street N, the last at-grade pedestrian crossing before the Red River.

Views from the overpass over 7th Street N; from this point, one can see views of the Red River.
Fargo’s Historic District

The large map directly below highlights in red the city parcels that are within Fargo’s Historic District. The bottom right map shows the building footprints of historic buildings that are within sight or in close proximity to the railroad corridor. It will be important that this rails-with-trails project enhances the sight and existence of the Historic District and such buildings.

A dozen historic buildings of the railroad corridor:
1-Saint Mary’s Cathedral: 604 Broadway
2-First Lutheran Church: 619 Broadway
3-John Morrell and Company Building: 508 Broadway
4-Fargo Food Products Company: 503 Broadway
5-Aggie Block: 420 Broadway
6-Commercial Building: 420 Broadway
7-Lowman Block: 4006-4010 Broadway
8-Powers Hotel: 400 Broadway
9-Viking Hotel: 413 Broadway
10-Ford Assembly Plant: 505 Broadway
11-Great Northern Depot: 425 Broadway
12-Burrel Apartments: 409 4th Street N
Saint Mary’s Cathedral: 604 Broadway

St. Mary’s Cathedral was built in a Gothic Revival Style and completed in 1899. Construction was started in 1891, but was stopped due to The Great Fire of 1893. It was the first Catholic church in Fargo up until 1917 (Strom, 2006). The church is highly visible from the project site.

First Lutheran Church: 619 Broadway

First Lutheran Church was built in the early English Revival Style and completed in 1919. The congregation of the church takes roots dating back to 1871 (Strom, 2006).

John Morrell and Company Building: 508 Broadway

The John Morrel and Company building was built in 1912 as a meat packing facility. It was built in Fargo due to its good rail connections and low shipping rates (Roberts, 1983). Recently, the plain brick building has been renovated and turned into condos.
The KRJ Building was built in an Art Modern Style, and was completed in 1928. It was also built in Fargo because of its early rail connections (Roberts, 1983). The building’s proximity to the railway (35 feet at the closest point) will make this historical building a key feature to consider when designing.

The Aggie Block was named after an early real estate investor in Fargo, Samual Aggie. It was once the furthest most building on Broadway in Fargo’s commercial district. It is constructed of red brick and stone trim and was completed in 1926 (Strom, 2006).

The Commercial Building was built in 1929 and housed Leeby’s Food Market and Delicatessen until 1990. It has been home to upscale variety stores since. It is constructed of multi-colored brick and decorated with concrete blocks and brick insets (Strom, 2006).
The Lowman Block was built in 1914, the same year as the Powers Hotel to the south. Like many other buildings downtown, its decorative stone parapet and name block make the building unique (Strom, 2006).

The Powers Hotel is built in a Classic Revival Style and was completed in 1915. The building was three stories until 1919, when the top two stories were added due to a boom time in Fargo’s economy after WWI (Strom, 2006).

The cream brick Viking Hotel was built in 1910 as a hotel and restaurant. It switched owners in 1940 and was renamed the Bison Hotel. The name block says “The Northern,” but the reason behind this is not known. The building functioned as a hotel and restaurant until 1972 (Fargo, North Dakota, Viking (Bison) Hotel).
The Ford Assembly Plant was built in 1914 as a place to manufacture automobiles and place them directly on rail cars. It once had a spur line running through the building. Its red brick, broadly arched windows and fascinating past may make this building a focal point of this project (Strom, 2006).

The Great Northern Depot may be the most iconic structure in Fargo. It is built in the Richardsonian Ramanesque Style, with a sandstone foundation, tile roof, and dark red brick facade. The depot was built in 1906 and is on the National Register of Historical Places (Strom, 2006).

These apartments are built in the Classical Revival Style, and were constructed between 1908 and 1910. The yellow brick, trimmed with red brick and sandstone, and front porches supported by Tuscan columns make this building very unique in Fargo (Roberts, 1983).
Roadway Circulation & Railway Crossings

The map below shows the variety of streets that within the four neighborhoods of interest in this project. It also shows where these roadways meet or cross the BNSF Railroad track/s. The location and how trail users navigate street crossings will be the biggest concern of this project. Crossings pose a great threat to not only the trail users, but also to the BNSF Railroad, designers and planners, and stakeholders. The following pages explain in more detail the crossings that exist in this project site.
This crossing connects the Roosevelt/NDSU Neighborhood to the Madison/Unicorn Park Neighborhood. It connects a residential area on the north to a commercial/industrial area on the south side. This site could be a key trail entrance/exit. Currently, the railway has automatic gates, flashing lights and alarms, but it is lacking any sort of pedestrian crossing.
This crossing may be the most challenging crossing to design due to its diagonal orientation. There is sufficient sight distances around the crossing for users to see oncoming traffic, but much more will need to be done. If possible, the safest way to cross 7th Ave. N. will be to do so at a 90 degree angle, indicated by the yellow line below. Sidewalks along 7th Ave. N from the west should cross the tracks as perpendicular as possible to improve sight distances and avoid wheelchair and bike tires from getting wedged in the flangeways.
These two underpasses may serve as great ways to cross both University Drive and 10th Ave. N. The BNSF Railroad used to have another spur line that ran on the north side of the two that can be seen in the aerial image below. Now that that line has been removed, there is nearly 50 feet of right-of-way between the centerline of the north side existing track and the north side of the underpass railing. This should be more than enough room to create a safe pedestrian trail over the roadways. Utilizing existing structures such as these will greatly reduce the costs of the project. Currently, there is no knowledge of the BNSF Railroad planning to utilize the space with a new line.
7th St. N. and 3rd St. N. are both abandoned crossings. The streets are currently being used as driveways to residences, businesses, and parking lots near the tracks. They may serve as a great opportunity to create pedestrian crossings, unique entrances into the Horace Mann and Downtown Neighborhoods, or even spaces for an underpass. These crossings will be explored further in the design process to reestablish the street systems that could enhance the neighborhoods.
The at-grade crossings at Roberts St. N. and Broadway N. currently have the highest amounts of pedestrian traffic. In places where the railway meets the streets there are traffic and sidewalk automotive guards, as well as ADA truncated dome tiles fifteen feet away from the tracks. Guards and tiles will also need to be placed on the project trail leading on each side of both streets if the trail is to continue eastward. Sight distances around vegetation, on-street parking, and other structures may be an issue.
The at-grade crossing at 4th St. N. is similar to Roberts St. N. and Broadway N., except 4th St. N. does not see as much pedestrian traffic on any given day. The 4th St. N. crossing separates a highly residential area of the Horace Mann neighborhood from Downtown Fargo. This crossing may serve as a major entrance/exit of the trail and an important link between the two neighborhoods.
The underpass crossing at 2nd St. N. is the last crossing before the Red River. The underpass structure poses similar opportunities and constraints as the University Drive and 10th Ave. N. underpasses, though there is one major difference. Instead of having a 50 foot space to work with on the north side of the tracks, this underpass has a space of about 35 feet on the south side. If the current structure is to be used, than a crossing of the trail over the tracks themselves will need to be implemented prior to this crossing. A crossing of the railroad tracks prior to this crossing would also allow for the most direct connection into the existing trail systems that border the Red River (see red line below). Another major decision in the design process will be where to put this crossing over the tracks to best meet the needs and safety of the users.
Bus Circulation

The map below shows the bus routes within the four neighborhoods. There are eight buses running routes in the area outlined below. Bus routes cross the BNSF railway corridor in four places, and the route along Dakota Drive runs adjacent to it for four city blocks. If bus routes were to stay the same, there could possibly be a bus stop every two blocks along the rail trail. To make this work, there would need to be an additional route down 2nd St. N. Currently, from 4th St. N. west and north of 1st Ave. there are no routes. Other potential bus stop locations will be examined as needed.
Pedestrian Circulation

The map below shows where all of the current designated pedestrian routes are located within this four neighborhood region. Bike routes and multi-use pedestrian routes are shown in red. Principle arterial streets such as University Drive N. and 10th St. N., along with the BNSF tracks, have created gaps in such routes (notice the gap circled below). These obstacles are the main reason for the disconnection between the neighborhoods. The city is constantly making changes to street systems to better accommodate non-motorized transportation and make them safer. The ideal plan would simply be to not have pedestrians cross busy streets. This is where a rail trail in the location indicated below may prove ideal. The trail may not eliminate all street crossings, but could reduce pedestrian crossings of major streets such as University N. and 10th St. N.
**Public Parks**

The map below shows where public parks are located within the four neighborhoods. There are a total of 15 parks within the four neighborhoods, and making connections to them where possible will be important. It will be important not only for health reasons, as mentioned earlier in this document, but also to help connect the isolated neighborhoods and bring people closer to the nature that exists in the Red River Valley. Key areas that will likely connect to this project are indicated with red circles below. Connections in the left circle would better link the neighborhoods to the series of parks that were created in the place of former Long Lake (a map of these parks can be found on page 45). A connection in the right circle, to the series of parks that border the Red River, may be the most important link to make within this project. In addition to the public green spaces along the Red River, there are also several recreational trails that are the existing Fargo and Moorhead trail system. The parks seen below are isolated by roadways and the BNSF rail lines. A proposed rails-with-trails system would help bridge the gap between them, not only by actual distance, but also by linking bus and pedestrian routes.
Major Destinations

The map below shows where popular destinations of work and play are located within the four neighborhood region, including parks as seen in the previous map. Also shown are current pedestrian routes. Notice the separation between them, with the project site in the middle.

Map Key
- Project site
- Neighborhood boundary
- Large destination areas
- Pedestrian Routes
- Parks

Destinations of work and play

1-Downtown business strip
2-NDSU Renaissance Hall
3-NDSU Barry Hall
4-NDSU Klaif Hall
5-NDSU main campus
6-Roosevelt Elementary School
7-Oak Grove Lutheran School
8-Horace Mann Elementary School
9-Madison Elementary School
10-Fargo Public Library
11-Sunmart
12-Sanford Health
13-City Hall/Fargo Civic Center
14-Radisson Hotel
15-Howard Johnson Inn
16-United States Postal Service
17-Wildflower Grove
18-5th Ave. Mini Park
19-Statue of Liberty Park
20-Roosevelt Park
21-Roosevelt Schoolyard
22-Johnson Park
23-Oak Grove Park
24-Treefoil Park
25-Horace Mann schoolyard
26-Mickleson Park
27-Madison Park
28-Unicorn Park
29-Island Park
30-Dike East/West
Land-use and Land-cover Classification

The map below represents land-use and land-cover classification data of the four neighborhoods. The light shade of pink represents low density residential, consisting of mainly single family housing units. The next shade of pink represents high density residential, which is comprised mostly of row housing and apartment complexes. They are areas of higher population density per block. The two darkest shades of color represent commercial and industrial infrastructure, as well as transportation infrastructure such as roads and railroads. From this map, one can gather where key areas of work and business are located compared to where people live. It also reveals how several residential areas are isolated by commercial, industrial and transportation infrastructure (outlined in yellow). A rails-to-trails path along the BNSF railway (represented in dashed white) would split the gaps between the isolated residential areas and help make better connections to destinations.
Railway Right-of-Ways

The map below indicates the widths of railway right-of-ways. The placement and design of an adjacent trail directly depends on how much space exists.
Property Ownership

The map below shows the ownership of properties adjacent to the BNSF railway. The majority of the surrounding parcels are privately owned except some city parcels near the Red River. In preparing a rails-with-trails proposal, working with adjacent property owners would be critical to this project.
This area of the site (outlined in red above) is wide open to nature’s climatic elements. There is no vegetation of any sort, so planting vegetation for wind protection, microclimates, and for a sense of enclosure in the barren thoroughfare will be a key design strategy. With the use of strategically placed paths and seating among a variety of vegetation, a sense of definition can be created.
This area along the BNSF railway is where buildings begin to infill closer within the corridor. The ratio between building height and width of the corridor is 10:1, beginning to create a sense of enclosure. It will not take a great amount of additional enclosure to give users a comfortable experience on the trail. Canopy trees or boulevard trees will help break up this 10:1 ratio into perhaps a 6:1 ratio, which will be far more pleasant to a trail user.
This section shows the railway corridor gap between Roberts St. N. and Broadway N. This space is currently used for parking with no walkways east or west to connect the two streets. Implementing a trail through this area may be a challenge due to pedestrians, automobiles, and locomotives all operating within such a small area. The challenge here will be to design a trail to enhance the area’s historic features while keeping trail users’ eyes and concentration on crossing the streets and tracks.
A 3:1 ratio in a pedestrian thoroughfare is thought to be the most comfortable sense of enclosure, as seen below. However, what if a 4,000 horsepower diesel locomotive traveling 25 mph is included in this thoroughfare? This section shows the only area in which this happens, but a solution to taming the experience of being near such overpowering pieces of equipment will be a substantial challenge in the design process.
This section shows where the BNSF railway parallels and crosses the Red River. From the 2nd St. N. underpass, one has views into the river corridor as seen in the bottom images. The goal in this location will be to make a connection with 2nd St. N., as well as to the trail system along the Red River. From this area, the rail trail can connect to the long series of parks that span the Red River on both the Fargo and Moorhead sides.
General Railway Information

Type:

The BSNF Railway corridor of this project is not a heavily used railway. It sometimes gets used as a detour route for other lines in the area. Typical types of trains that run on the tracks are as follows:

- AMTRAK
- Grain trains
- Coal trains
- Mixed freight trains
- Switch trains

Speeds:

Train speeds on this set of tracks vary, but on average they run at 25 mph.

Schedule:

There is no set schedule for railway traffic on this set of BNSF tracks. AMTRAK is the only locomotive traffic that has a schedule. Two AMTRAK trains pass through daily, an eastbound train at 2:13 A.M. and a westbound train at 3:35 A.M.

On average, the BNSF tracks have 10 trains that run each day. An average day goes as follows: two AMTRAK trains, a couple switch trains, two or three grain trains, and the occasional coal train and mixed freight trains. The track leads out of the Fargo railyard, where a mixture of types of cars are stored to await departure (see image at top right). The majority of the cars in the railyard, as well as the cars that run down the track, are grain cars. In an interview with Clide Stauss, a BNSF train master, he said that, “whenever the cars are filled and billed they run.”
**Project emphasis:**

1 - To establish a rails-with-trails corridor to make connections within an isolated portion of Fargo, to enhance non-motorized transportation, and become an environmental, economic, and recreational resource.

2 - To enhance the rich history that has taken place at or near the railway corridor site of this project.

**Overall design theme:** Create a transition from designed natural forms, spaces, and shapes to more modern urban design, and then back to natural as the trail proceeds from 12th Avenue N., to downtown Fargo, to the Red River. These transitions will be done while enhancing the history that has happened near the railway corridor.

**Will it be more than a ten foot path beside the railroad tracks?**

Several factors that influenced the design process were the available railway right-of-way widths, connections to existing bus, bike, and pedestrian routes, and meeting the needs of future trail users to make for a safe and pleasant experience. After much research and analysis of the site, a framework plan was developed to better connect the isolated neighborhoods with the additions of sidewalks, multi-use pathways, bike routes, bus stops, and a rail trail. Five trail themes were also created along the 1.5 mile length of urban railway to enhance Fargo’s history.

**Trail themes:**

1 - Prairie Trail: Stretching the prairie in from the west and adding historic character.

2 - Long Lake Trail: Creating a small wetland in the location of the historic Long Lake.

3 - Urban Trail: Transition from a natural to a urban setting as the trail moves towards Downtown Fargo.

4 - Historic Trail: Creating a transition through Downtown with historic observations, education and for a recreational experience.

5 - River Trail: An abrupt change from urban Fargo to a natural Red River corridor setting.
Great Northern Dr. crossing
- Create a bike saddle and pedestrian link between neighborhoods (*added bike lanes and sidewalks)

7th Ave. N crossing
- Create a safe sidewalk and trail access across the diagonal crossing (*reduce speed limit from 35 mph to 25 mph and add bike route)

Creating a link to:
- Existing bike routes & sidewalks
- NDSU’s main campus
- Proposed bus stops

University Dr. & 10th St. Crossings
- Create ramps at 1:10 slopes on north side providing access to bus stops, sidewalks and a proposed bike route.
- Rail trail crosses tracks on the west side of 7th St. N

Creating a link to:
- Existing Downtown Fargo Bike Path
- Reconnect roadway and pedestrian sidewalks across formally abandoned crossing

Fargoin Trail entrance
- A unique entrance with a connection across the Red River to Moorhead MN

Tornado Alley:
- A unique entrance to the Fargoin Trail that educates trail users about the tragic Tornado of 1957 that passed through this location.

High concentration residential area to the north

Creating a link to:
- Existing multi-use pathway
- Existing bike route
- Existing sidewalk

Fargoin Skate Park:
- A public recreation space for skateboarding, BMX and inline skating.

Create a link to:
- Existing bike route
- Proposed sidewalk
- Proposed bike route

Creating a link to:
- Existing & proposed sidewalks and bike route on 7th Ave. N

7th St. N crossing
- Reconnect roadway and pedestrian sidewalks across formally abandoned crossing

Creating a link to:
- Existing sidewalk
- Existing bus stop shelter

Legend
- Intersections
- BNSF ROW width
- Existing bike route
- Proposed sidewalk
- Existing sidewalk
- Proposed Mulit-use pathway
- Rail trail
- Existing bus stop shelter
- Proposed bus stop shelter

This framework plan is broken down into 3 smaller sections as seen in the map on the bottom left to describe it in greater detail in the following pages.

THE DESIGN

FARGOIN TRAIL FRAMEWORK PLAN
This section within the project site is located between 12th Ave. N. and University Drive in Fargo (see small map to the right). It is 10 city blocks in length and contains 3 different trail themes including the Prairie Trail, Long Lake Trail, and the first part of the Urban Trail. This framework plan shows how existing bike routes, bus routes, and existing sidewalks combined with a proposed rail trail, bike routes, and pedestrian routes will act together to make better connections between the Madison/Unicorn Park and the Roosevelt/NDSU Neighborhoods. Multiple bus stops were added along existing bus routes near existing and proposed bike routes to enhance non-motorized transportation in the neighborhoods. The proposed rail trail (green line) is located on the north side of the BNSF tracks to better connect to the Roosevelt/NDSU Neighborhood to the north, and because railway right-of-way widths are greater on the north side. The rail trail located on the north side also provides a better connection to a bus route on Dakota Drive. Several areas were designed along this section of the site and their locations are indicated by the circled letters below. These areas will be described in more detail in the following pages.

**Framework Plan: Section 1**

1. **Great Northern Dr. crossing**
   - Create safe bike and pedestrian link between neighborhoods (*added bike lanes and sidewalks)

2. **7th Ave. N crossing**
   - Create a safe sidewalk and trail access across the diagonal crossing (*reduce speed limit from 35 mph to 25 mph and add bike route)

3. **Fargoin Trail entrance**
   - Transition from an urban setting to a prairie feeling.

4. **Creating a link to:**
   - Existing bike route
   - Proposed bus stop

5. **Creating a link to:**
   - Existing bike routes & sidewalks
   - NDSU’s main campus
   - Proposed bus stops

6. **Tornado Alley:** A unique entrance to the Fargoin Trail that educates trail users about the tragic Tornado of 1957 that passed through this location.
Prairie Trail Entrance: Transitioning from an urban setting to a prairie feeling.

This is the north entrance to the Fargoin Trail. The idea with this entrance was to create a gradual transition from the urban setting in the Roosevelt Neighborhood to a prairie setting before the trail leads into the Prairie Trail that follows. The design alternates urban turf grass and natural prairie grasses and wildflowers between walking paths to make the transition seem gradual as a person walks eastward into the Prairie Trail. The entrance will provide a connection across Dakota Drive to continue the trail northward towards 15th Avenue N. and possibly to 40th Avenue N., which will improve Fargo's overall non-motorized transportation routes north of this site. Other elements of the design are a small parking lot, bus shelter, rest area, and unique signage.
Looking at the bird’s-eye image below, one can get a better understanding of how the transition between the turf grass, natural vegetation, and walking paths work together to create a unique trail experience before entering the Prairie Trail from the Roosevelt Neighborhood. The space was designed to have a modern urban appearance with a natural prairie feeling. Trail elements such as the rest area, signage, pathways, and lighting were designed from inspiration from railroad car elements and the linear geometric shapes and forms that can be seen in railroad tracks.
The Prairie Trail is the first trail theme of the Fargoin Trail extending from the entrance near 12th Avenue N. to 16th Street N. The Prairie Trail design stretches the prairie in from the west with prairie grasses, wildflowers, and scattered trees and shrubs among winding pedestrian trails. The railway corridor in this area allows for the use of between 29 feet to 60 feet of right-of-way as can be seen in the existing section cut below. At minimum, the trail will have a bioswale area with wetland vegetation acting as a buffer, paved and gravel pedestrian paths, and paved bike paths. Where there is more right-of-way space available, an alternative dirt bike path is created to add to the experience of being in the prairie biking.

**Typical plan:**
- Betula nigra (2)
- Bike lanes
- Bike rack
- Seating
- Paved pedestrian path
- Alternative dirt bike path
- Populus tremuloides (1)
- Fencing
- Celtis occidentalis (2)
- Seating
- Bike rack
- Gravel pedestrian path
- Betula nigra (1)
- Bioswale
- Lighting (every 30')
- Apartment garage

**Existing railroad corridor:**
- Right-of-way space available

**A - A'**
- Max. ROW = 60'
- Min. ROW = 29'
- 15’ min. setback

**Apartment complex**

**Railroad corridor**

**Source:** viewphotos.org
From the large bird's-eye image below, along with the images of the seating, lighting, and vegetation, one can get a better feel of what it would be like to experience this part of the Fargoin Trail. Three different types of grass mixes were used to simulate being in different areas of the prairie though still is a small space. Trail elements such as the seating and lighting were inspired by wagon and train wheels. Wooden fencing constructed from rail ties (not treated with creosote) would be used to add to the rustic prairie experience. The light poles throughout the 5 trail themes remain the same with only the signage design changing.
The Long Lake Trail extends from the end of the Prairie Trail at 16th Street N. and spans 2.5 blocks southeast. This area of railway corridor is where the historic Long Lake once occupied (refer to pg. 44 & 45). There is around 75 feet of right-of-way in this area, in which I created a 40 to 50 foot wetland with a boardwalk. Bordering the wetland area to the north are gravel and paved pedestrian paths, bike lanes, and seating areas.

**Typical plan:**

- Celtis occidentalis (1)
- Paved bike lane
- Gravel pedestrian path
- Paved pedestrian path
- Betula nigra (12)
- Railing @ 42'
- Boardwalk
- Boardwalk seating
- Populus tremuloides (2)
- Seating
- Celtis occidentalis (3)
- Apartment garage
- Lighting (every 30')
- Observation deck

**Existing railroad corridor:**
- Right-of-way space available

**Inspiration:** Long Lake

1889 map of Fargo

Source: rare-maps.com
1 - Paved bike paths (6’)
2 - Gravel pedestrian path (5’)
3 - Paved pedestrian path (5’)
4 - Constructed wetland (40’-50’)
5 - 15’ min separation from RR centerline

---

**THE DESIGN**

**DETAILS:**

From the bird’s-eye perspective below, one can get a better idea how the pathways work in this wetland area. This part of the Fargoin Trail is where the transition from natural to urban forms and characteristics starts to take place. The trees are planted in rows with equal spacings and elements such as the seating, fencing, and boardwalk start to take on urban forms and characteristics. Though the bench to the left was inspired by driftwood, the flowing curves of the precast concrete materials give it a modern urban design feel. Instead of simple rustic wood fencing, the fence along this part of the trail now becomes post and cable fencing.

---

Seating

Fencing

Lighting

Shoreline Grass mix

Conservation Tallgrass Mix

---

1 - Paved bike paths (6’)
2 - Gravel pedestrian path (5’)
3 - Paved pedestrian path (5’)
4 - Constructed wetland (40’-50’)
5 - 15’ min separation from RR centerline
This section is located between University Drive and 4th Street N. (see small map to the right). It is approximately 10 city blocks in length and contains 2 trail themes, the Urban Trail and the Historic Trail. The rail trail continues to be located on the north side of the tracks (green line) to better suite the residential neighborhood to the north, and also because right-of-way widths are greater. The trail crosses the tracks at 7th Street N. to give the trail a solid connection to downtown Fargo’s historic business district. 7th Street is currently an abandoned intersection that will be reestablished to make a better connection between the Horace/Mann and Downtown Neighborhoods. There are several void spaces in this section (green blocks) that were designed as public spaces along the rail trail. These spaces include a skate park (D), a passive green space (F), a pocket park (G), and a sculpture park (H) which all but D will be explained in more detail in the following pages. Two bus stops were added along with multiple sidewalks and a single bike route that would continue from the first framework plan on 7th Avenue N. These additions were made to make better connections to the Fargoin Trail as well as between the Roosevelt, Downtown, and Horace/Mann Neighborhoods.
**Typical plan:**

- Gleditsia triacanthos (7)
- Seating
- Flat rail car (bike path)
- Freight rail car (ped. path)
- Multi-use path
- Gravel pedestrian path
- Ornamental grasses
- Ramp @ 1:10 slope
- Stairs
- Planted rock beds (taconite)
- Skate park access
- Seating
- Entrance from 11th St.
- Lighting (every 30')
- Paved bike path
- Gravel pedestrian path
- Seating
- Paved pedestrian path
- Warehouse building

**Existing railroad corridor:**
- Right-of-way space available

- **C - C':**
  - ROW = 40'-0"
  - 10:1 Ratio
  - 15 min. separation

- **Private property**
- **Railroad corridor**
- **Private property**

The first part of the Urban Trail (Urban Trail I) extends from the end of the Long Lake Trail near 7th Avenue N. and spans 6 blocks southeast to 10th Street N. This part of the Fargoin Trail is where the trail really starts to take on urban shapes, forms, and characteristics. This part of the railway corridor is also where the character of the neighborhood seems to become more urbanized with more industrial and commercial buildings increasingly enclosing the railway corridor as seen in the section below. The Urban Trail I was designed around inspiration taken from railroad cars, and a more playful urban design approach was used in this part of the Fargoin Trail due to its proximity to a proposed skate part. A clearer image of what the trail consists of can be seen on the following page.
This trail design consists of a variety of pathways and seating all inspired by railroad cars. Like the other trails, this trail will have at minimum paved and gravel pedestrian paths along with paved bike lanes. What makes this trail unique is that pedestrians on foot have the opportunity to walk up two flights of stairs to walk on a line of box cars. This will give the trail users a more comfortable sense of scale beside the actual train, as well as give them elevated views of the railway corridor. Bikers will have the opportunity to ride up ramps to ride on flat rail cars. There will be a 10 foot multi-use path the goes around both the railroad car pathways for those who choose not to go on either. The seating was inspired by railroad car drive line, and the fencing seen at the bottom right is made from salvaged freight car sides than graffitied. There is a trail median with seating, grass, and shade for people to sit and watch people on the elevated railroad car pathways or at the skate park to the north.
**Urban Trail II:** The trail takes on its most urban forms and character.

The second part of the Urban Trail (Urban Trail II) extends three city blocks from 10th Street N. to 7th Street N. This is where the Fargoin Trail takes on its most urban forms and characteristics. Notice how all of the trees in the plan below are now all planted in rows with equal spacing. Inspiration was taken from the shapes and forms of crossing railroad tracks much like those seen in the picture below. The south side of the trail consists of paved pedestrian pathways that are woven together. The north side consists of bike lanes that are woven together. The pedestrian and bike pathways meet every 200 feet at elevated resting areas with shaded seating. A gravel pathway is located between the pedestrian and bike pathways and slopes up and down at 10 percent slopes to add to a unique experience on the Fargoin Trail. This sloping gravel trail can be better understood on the following page.

**Typical plan:**

- HP: 904
- Planter beds
- Bike paths
- Pedestrian paths
- Fraxinus americana (18)
- Lighting (every 30’)
- LP: 896
- Seating
- Bike rack
- Railing @ 42”
- Fencing
- Planter beds
- HP: 904

**Existing railroad corridor:**

- Right-of-way space available

**Inspiration:** Rail Lines

Source: building-your-model-railroad.com
THE DESIGN

DETAILS:

From the bird’s-eye rendering below one can get a better understanding of how the sloping gravel trail, bike paths, and pedestrian paths work together. The fencing to the left was also inspired by railroad tracks. It would be constructed of steel and chain link fencing. The seating would be constructed of railroad ties (not treated with creosote) and held together by threaded tie rod. The retaining walls seen in the middle of the bottom image would have stamped images in colored concrete of historic images of Fargo on the outside. The image to the right is an example of what this stamped concrete could look like.

1 - Paved bike paths (6’)
2 - Planter beds (6’)
3 - Sloping pedestrian corridor w/ gravel path (5’)
4 - Planter beds (6’)
5 - Paved pedestrian paths (5’)
6 - 15’ min separation from RR centerline

Stamped images of historic photos within the railroad corridor

Fence height sequence: 4’, 3’6”, 4’-6”
Sheet metal (4” height)
Open spaces
Chain link fencing
4x4” square tubing
Backrest sloped back 12.5%
R0“-2”
7x9” stained railroad ties (not treated with creosote)
Plan objectives:

1. Make a solid connection to Downtown Fargo’s main business strip.
2. Draw people’s attention to Downtown Fargo’s historic features, especially the architecture.
3. Provide a variety of pathways to accommodate many possible circulation patterns.
4. Provide public spaces to accommodate all types of users.
5. Do not forget the wanderer and the curious.
6. Provide a sense of entrance and arrival into Downtown Fargo and into each small park.
7. Create a sense of place with uniquely designed staged views and park elements such as seating, sculptures, and paving.
8. Provide elements such as a small indoor/outdoor café to attract people and promote socializing.
9. Provide many types of seating.

*Seating in the sun, shade, a large group, small groups, back, side, front, grass, movable seating, isolated seating, indoor seating for poor weather days, outdoor seating for fair weather days.

Bird’s-eye view from above the Great Northern Depot looking west over the three parks.
**Appreciation Park**: A transition into Historic Downtown Fargo with historic views and perspectives.

Appreciation Park is one of a series of three designed public spaces that give the Fargoin Trail a solid connection to the heart of downtown Fargo. These three spaces make up what is referred to as “Historic Trail I” on the framework plan for section 2. The main objective of Appreciation Park is to stage views of historic architecture that exists along Roberts Street and Broadway Drive with the use of strategically placed paths and seating. Design inspiration was taken from potential pedestrian circulation patterns and railroad tracks. The circulation map below on the top right shows the shortest paths people may want to take when traveling in this area using existing sidewalks and bike routes to destinations in and around downtown Fargo. The green area outlined on the left side of the map is Appreciation Park.

**Plan objectives:**
1. Make a solid connection to Downtown Fargo’s main business strip.
2. Draw people’s attention to Downtown Fargo’s historic features, especially the architecture.
3. Provide a variety of pathways to accommodate many possible circulation patterns.
4. Provide public spaces to accommodate all types of users.
5. Do not forget the wanderer and the curious.
6. Provide a sense of entrance and arrival into Downtown Fargo and into each small park.
7. Create a sense of place with uniquely designed staged views and park elements such as seating, sculptures, and paving.
8. Provide elements such as a small indoor/outdoor cafe to attract people and promote socializing.
9. Provide many types of seating.

**Existing sidewalk**
- Roberts Street
- Broadway Drive
- 7th Street N.

**Existing bike route**
- Rail trail

**Pedestrian circulation**

**Inspirations:**
- Rail lines
- Circulation
From the bird’s-eye view below of Appreciation Park one can see how the different pathways work together. There is a sculpture entitled “Click-Clack Rhythm & Perspective” embedded in a berm within the park inspired by the rhythm and perspective of train as it travels down the track into the distance. The seating is precast concrete with an exposed aggregate surface. The fencing shown below is currently used in certain places near Broadway Drive and I felt it complimented my design, so it was used throughout this space and others.
Details:

In this series of images a person can get a better understanding of what it would be like to be in Appreciation Park. The images to the far right are of historic buildings that are visible from within the park. A full description of these buildings can be found on pages 68-71. The letters on the top left hand side of the images correspond to where they are located at in the bottom perspective rendering. The bottom perspective view is from a bench that is pointed out in the top perspective.

View looking east across the main multi-purpose trail through Appreciation Park. *(Notice the fire sculpture in the direct line of sight down the trail.)*

View looking northeast across Appreciation Park towards historic Fargo buildings. *(View from the bench in the middle of the image to the above.)*

(Photos by Alex Bossert)
Great Fire Pocket Park, formally a parking lot between Roberts Street and Broadway Drive, is a small public gathering space inspired by the Great Fire of 1893, which was one of Fargo’s most tragic events that nearly destroyed the whole city (see page 43 for more information). The fire created a “brick” revolution, which started a population boom from 1893 to 1930, marking a time of prosperity for the city of Fargo (Holzkamm & Dormanen, 2001). This gave me inspiration to create a contrast between brick and wood materials that can be seen in the plan below. Other elements of the park include various types of seating, a snack shop with indoor seating, a steel water feature, and planter beds.
Details:
From this bird’s-eye view a person can see how people can move around the park. The water feature in the middle of the park is meant to draw people into the space from its four corners. The paving pattern of wood and brick are not only supposed to represent fire, but also flow with how people circulate through the space.
This is a view looking northwest across the pocket park from the south entrance along Broadway Drive. From this eye-level view the various seating options, the snack shop, and the water feature can be seen, which could draw people into the park that are passing by on the streets. An awning and seating were added to the building on the far left as well as windows to enhance people watching in and out of the building. The far left building is the Empire Bar and does not currently have windows or an awning, but it does have an entrance on this side. Notice the historic KRJ building (1) in the background.

Similar to the perspective above, one can see how the snack shop, various seating, and the water feature could draw interest from people passing by on the streets. From this view one can also see a few historic buildings including the Great Northern Depot (1) and the Ford Assembly Plant (2).
The Fargoin Sculpture Park is located directly next to the Great Northern Depot (home of Island Park Cycles). There is currently a public green space in this location that was designed to improve the approachability from Broadway Drive, and improve the appearance of the Great Northern Depot and north end of downtown Broadway. The newly designed green space is more attractive than its prior use as an asphalt parking lot, but it is not successful at drawing people into the site. There is no reason for people to interact with the site. The main objective of the Fargoin Sculpture Park is to draw people into the space using art pieces and provide access to a variety of different types of seating choices. A site full of art pieces and a rail trail running through it will give people reasons to interact with this historic site.
Details:

From this bird’s-eye perspective a person can see how people can interact with the art pieces and the rest of the site. The designs and layouts of the pathways, paving patterns, and raised concrete pedestals were inspired by railroad tracks as well as the potential circulation patterns that were studied in the inventory and analysis phase of this project.
This is a view looking east across the sculpture park from the north entrance at Broadway Drive. In this view, one can see how the path continues past the Great Northern Depot in the distance as well as how the path veers off into the area of the art pieces. This vantage point from Broadway gave me the inspiration to create the lighting seen in this image as well as in the image below.

This image is a view looking west across the sculpture park near the Great Northern Depot. From this perspective, one can see how the main multi-use trail that runs through the park is associated with the seating, lighting, and fencing. The grey-colored concrete that mimics rails directs people through the site. Also, notice the other seating in the background such as the seat wall and the stationary sheltered tables.
This section is located between 4th Street N. and the Red River (see small map to the right). It is approximately 5 city blocks in length and contains the end of the Historic trail and the entire River Trail. The rail trail is now on the south side of the tracks to make connections to the trails that exist along the Red River, and also because the right-of-way widths are greater now on the south side. The main goal within this section was to make a solid connection from the rail trail to the existing pathways and sidewalks near the river. The greatest challenge was to create an off/on ramp at the end of the River Trail that would connect trail users across the river into Moorhead as well as to the existing Downtown Fargo Bike Path (orange line). The proposed bike route (pink line) that was seen in the previous two sections now makes a connection to an existing bike route on 7th Avenue N. Other connections made are multiple sidewalks and an excess ramp from the south on 2nd Street N.
TIGHT SPACE GREEN WALLS: Continue to enhance historical features while creating a comfortable experience along the railway corridor.

This area along the Historic Trail is where buildings enclose the railway corridor to the greatest extent, as seen in the section below of the current railway corridor. The ratio of the height of the adjacent buildings to the railway corridor width is 3.1 in places. This 3:1 ratio may be a comfortable space if it were a streetscape, but not an active railway corridor. The main goal in this area was to simply make it comfortable, while providing multiple types of paths. This was done with the use of a 20 foot green wall/sound wall that would separate the paths from the railroad track. This green wall/sound wall would be sustainable supported from runoff water from adjacent buildings held in cisterns. The cisterns were inspired by the historic Great Northern Railroad water tower that is displayed on Broadway Drive in Fargo.

Typical plan:
- **Populus tremula ‘Erecta’ (12)**
- Cistern
- Green wall/sound wall
- **Parthenocissus q. ‘Englemanii’** (Virginia Creeper)
- Paved pedestrian path
- Gravel pedestrian path
- Paved bike path
- One-way access alley
- Lighting (every 60’)

Existing railroad corridor:
- Right-of-way space available
- **3:1 Ratio**
- **F - F’**
- 15’ min. separation
- **ROW = 41’**

Inspiration: Water tower

Source: waymarking.com
**The Design**

**Details:**

From the bird’s-eye image to the bottom left, one can understand how the elements within the railway corridor are laid out. The details on the right show how the green wall/sound wall will function being supported with runoff from the adjacent building. The height of the cisterns along with atmospheric pressure will provide enough pressure to create enough psi at the top of the green wall to support it. There will also be a municipal water supply connection to the green wall for periods of prolonged dryness during the summer months. The wall will be constructed out of salvaged hesco baskets. There will be 1.5 feet of crushed rock in the middle of the wall to break up sound waves created by the train. There will be 4 inches of peat moss or some other growing media on the outsides of the wall lined with coconut fabric on both sides to place vegetation plugs. This material will also help with sound wave reduction. Drip lines will be suspended in the growing media every linear foot to water the plantings.
The River Trail is the last trail theme of the Fargoin Trail, beginning at 2nd Street N. and ending at the Red River. It will be a trail that brings trail users back to a natural setting much like that of the Prairie Trail. It will consist of an existing paved multi-use trail, the Downtown Fargo Bike Trail, as well as gravel pedestrian and bike paths. The greatest challenge within this part of the Fargoin Trail was to design an on/off ramp so the trail could continue east over the Red River into Moorhead. The plan below shows how this ramp could be placed on the site.
The design of the on/off ramp shown in the bird’s-eye image below was inspired by antique train engine wheels and existing railroad bridge infrastructure. The bike trail seen at the bottom left side of the bird’s-eye image was inspired by pathways created by red river carts that used to travel up and down the river corridor hauling goods to various trading posts before railroads existed in the Red River Valley.
THE DESIGN

DETAILS: (refer to page 118 for section detail locations)

The section to the right is a conceptual idea of how the Fargoin Trail could connect to the existing BNSF bridge that crosses the Red River. At minimum, there would need to be a sound wall (required by the BNSF), steel supports connected to bridge infrastructure, and a protective rail along the trail boardwalk that goes beyond what is needed to eliminate the risk of trail users falling off and the liability issues that follow.

The section below shows in detail what the ramp would consist of. The ramp would consist of two ten foot lanes with a constant 6 percent slope and a 2 percent super elevation to direct water off the ramp not down it. There are planter beds for aesthetics, pathways and seating areas at the top for resting and viewing of the Red River, and stairs on the east side for an alternative way to reach the top of the ramp structure. The ramp structure is 10 feet in height to meet grade at the bottom and at the top to connect to the bridge path.

A - A’ (refer to plan on pg. 118)

Entrance ramp detail:

B - B’ (refer to plan on pg. 118)

Bridge connection detail:
Alex Bossert

Address: 1440 34th St. S. Apt. 209
Fargo, ND 58103

Email: alex.j.bosser@my.ndsu.edu

Phone: (701) 400-2182

Hometown: Drake, North Dakota

“The substantial student loan debt I will leave NDSU with has proven well worth it! Money cannot buy the lifelong friends that I have made, and the experiences and opportunities that I have been fortunate enough to have been given here at NDSU.”
2nd Year

**Fall Semester**
- Sumi Painting & Haiku Poetry | Fargo, ND
- Tea House & Garden Design | Fargo, ND
- Halverson Park Design | Battle Lake, MN

**Spring Semester**
- Cold Smoke | Bison Turf, Fargo, ND
- Abrey Green Riverfront Design | Winnipeg, Canada
- NP Ave. & 1st Ave Redesign | Fargo, ND

Kathleen Pepple (2008)

Mark Lindquist (2009)

3rd Year

**Fall Semester**
- Defiant Garden Study | Fargo, ND
- Regent Planning | Regent, ND
- Fargo Analysis | Fargo, ND
- Snow Symposium | Fargo, ND

**Spring Semester**
- Roosevelt/NDSU Neighborhood Design | Fargo, ND
- United Tribes Technical College Plan | Bismark, ND

Stevie Famulari (2009)

Jason Kost & Kathleen Pepple (2010)

4th Year

**Fall Semester**
- Figure Ground Study | Winnipeg, Manitoba
- Conventional Zoning | Fargo, ND
- Fargo Analysis | Fargo, ND
- Duluth Urban Redevelopment | Duluth, MN

**Spring Semester**
- Phytoremediation | Fargo, ND
- HESCO Barriers: Long-term Flood Protection | Fargo, ND

Jason Kost & Niki Carlson (2010)

Stevie Famulari (2011)

5th Year

**Fall Semester**
- Red River Basin Watershed Study & Design | Red River Basin, MN, ND, SD, Manitoba

Catherine Wiley (2011)


Figure 2: Focus Area in Fargo, ND. Retrieved from http://www.ci.fargo.nd.us/Residential/YourNeighborhood/. September, 2011.


Figure 5: MBT near Rhode Island Avenue. Retrieved from http://www.silverspringtrails.org/?page_id=111. October 15, 2011.

Figure 6: MBT Map. Retrieved from eckington.wordpress.com. October 15, 2011.


Figure 11: High Line Map. Retrieved from florica.wordpress.com. October 18, 2011.


Figure 15: Seating overlooking streetscape. Retrieved from florica.wordpress.com. October 18, 2011.

Figure 16: Seating & pathway overlooking the historic Hudson River. Retrieved from thirteen.org. October 18, 2011.

Figure 17: Moveable seating. Retrieved from vi.sualize.us. October 18, 2011.

Figure 18: Seating and pathway. Retrieved from forum.xcitefun.net. October 18, 2011.

Figure 19: Railroad Elements. Retrieved from eyefordesign.wordpress.com. October 18, 2011.

Figure 20: Site vegetation. Retrieved from panoramio.com. October 18, 2011.


Figure 32: The image above is a view of northwest Front Street (Main Avenue) and Fourth Street. Retrieved from http://www.fargo-history.com/early/fargo-fire3.htm. November 23, 2011.

Figure 33: The picture above was taken at the northeast corner of Roberts Street and NP Avenue during the tragic event. Retrieved from http://www.fargo-history.com/early/fargo-fire2.htm. November 23, 2011.

Figure 34: The picture above is a southeast view of Front Street (Main Ave.) from Broadway. Retrieved from http://www.fargo-history.com/early/fargo-fire2.htm. November 22, 2011.


Figure 37: Late-1940s aerial view of drainage ditch south of North Dakota State University. Retrieved from North Dakota State University Libraries, Institute for Regional Studies, Fargo. November 23, 2011.

Figure 38: 1950s Aerial over west Main Ave., Fargo, N.D. Retrieved from North Dakota State University Libraries, Institute for Regional Studies, Fargo. November 23, 2011.

Figure 39: Path of 1957 tornado through Fargo. Retrieved from Google Earth Pro Maps. November 25, 2011.

Figure 40: Great Northern Railroad cars after tornado of June 7, 1890. Retrieved from North Dakota State University Libraries, Institute for Regional Studies, Fargo. November 23, 2011.


Fall Semester 2011

Statement of Intent
• Due for review September 9th

Thesis Proposal
• Due for review October 5th

Thesis Program
• Due for review December 9th

Spring Semester 2012

Design Methodology: Research/Analysis
• 25% complete - January 16th - 20th
• 50% complete - January 23rd - 27th
• 75% complete - January 30th - February 3rd
• Due for presentations, February 7th and 9th

Design Development: Schematic Design
• 15% - February 13th - 17th
• 30% - February 20th - 24th

Design Development: Master Planning
• 40% - Due for review of thesis document - March 2nd
• 50% - Presentations March 6th and 7th

Design Development: Site Planning
• 60% - March 19th - 23rd
• 70% - March 26th - 30th

Design Development: Design Detailing
• 80% - April 2nd - 6th
• 90% - April 9th - 13th

Design Development: Board Composition
• 100% - Final Boards due April 19

Thesis Presentations: Boards/Formal Review
• Final boards due on display - April 23rd

Final Presentations
• April 26th - May 3rd