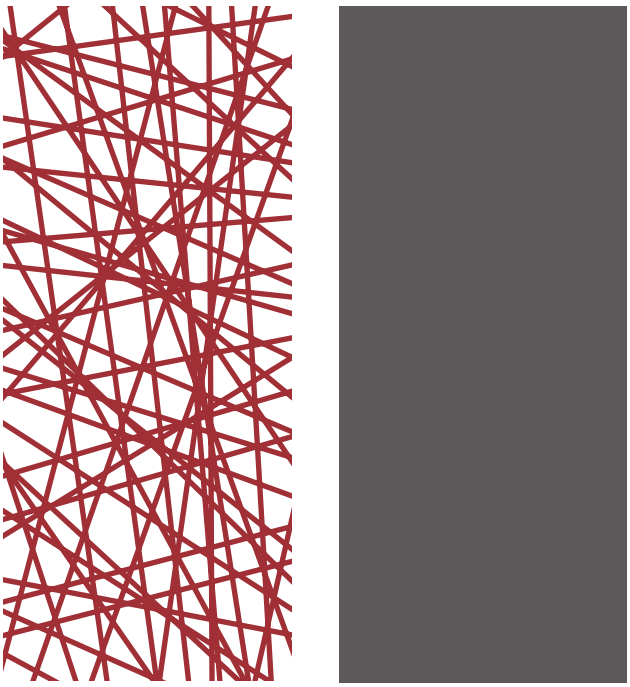

Old + New

Michael Stark

OLD + NEW

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

By

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

5/8/2013
Primary Thesis Advisor

2 May 2013
Thesis Committee Chair

September 2012
Fargo, North Dakota

Table of Contents

Tables and Figures

Thesis Abstract

In this thesis the question, how can buildings that no longer serve their original purpose be reused for a new typology in a sustainable way, is worked out and given answers. It will be explored through the typology of a recreational depot. The theoretical premise/unifying idea that pushes the research is that, buildings, when repurposed create less waste and that the buildings create opportunities. The justification for this projects is, when buildings are repurposed the decrease in waste material due to not demolishing the building is good for sustainability. The thesis contains a narrative is explaining why reusing buildings is important and that principles must be set up for the proper act of repurposing a building. The client for this project is the Lake Wobegon Trail Association, and the users are the general public of the central Minnesota area. Major project elements include a marketplace, observation area, workshop, gallery, offices, bicycle parking, and changing rooms. The site for the project is Saint Joseph, Minnesota, located along the Lake Wobegon Trail. In the thesis the emphasis will be on the principles that designers should follow when reusing buildings; discovered through the use of multimedia, drawing and models. A mixed method, quantitative qualitative analysis design methodology will be use through a concurrent transformative approach. Data will be compiled digitally and uploaded to the universities institutional repository.

Keywords:
Repurpose, Sustainablity, Old, New, Saint Joseph, Minnesota

Statement of Intent

Problem Statement

How can buildings that no longer serve their original purpose be reused for a new typology in a sustainable way?

Statement of Intent

Typology
A local recreational depot trailhead for the Lake Wobegon Trail.

Claim
Old buildings or buildings that no longer serve their intended purpose should be carefully repurposed by owners and designers to a new intent in a sustainable way while being aware of the previous use.

The Premises
Building owners and designers have the opportunity to reuse buildings in their new designs.

Repurposing is changing the design of a current object to fit a new purpose that the users are needing. The repurposing in a sustainable way is adaptive reuse (O'Connell 2012).

Buildings become vacant and their original intent is no longer needed when an owner or occupant moves on to other buildings or businesses fail.

Unifying Idea
The repurposing of buildings creates opportunities for architecture to showcase history to new occupants and increase the life time of buildings. It doesn't matter if it is a historically significant building or not they should be repurposed.

Project Justification
When buildings can be repurposed it can be much more sustainable method of construction. There is a decreased amount of waste due to not demolishing the current building on the site to build a new building. The reduced waste and opportunities that reusing a building creates is a large factor in why repurposing buildings is necessary.

The Proposal

Narrative

How can buildings that no longer serve their original purpose be reused for a new typology in a sustainable way? Buildings go through a cycle, they are designed, built, occupied, and then sold or even abandoned. Sometimes these buildings get demolished. Reusing buildings can create unique architectural opportunities while being sustainable in the recycling and adapting of old buildings.

Designers and building owners have a chance to reuse buildings, but often choose to wipe the slate clean and demolish the vacant building. Doing so wipes the history of the site and building away. There are in fact times when demolition is deemed necessary. There could be major structural issues, or cost boundaries that prevent the reuse of a building. After demolishing the building chances are the only artifacts left over are heaps of rubble and a few photographs of the building, unless the building is some how very historically important. The buildings that do get demolished are some how unimportant to the world. Most buildings should be seen as important as they they are photograph of time and place of how the built environment was constructed at that particular time. Sites and building should not be seen as a white board where the content can easily be wiped off without a trace, but more as wood carving where the gouges last.

The act of reuse cannot be one in a world with out rules. There must be principles in which one can follow in order to reuse a building in a way that increases sustainability while creating new architecture. In this thesis there will be an exploration through to find these principles through the transformation of a vacant building into a new thriving one that serves the community and serves as an example of the principles.

The site for this project is located in Saint Joseph, Minnesota. The vehicle for this exploration for reuse principles is a vacant grain building located along the defunct railway turned trail, the Lake Wobegon Trail. The city is growing and the trail is growing, but there seems to be a void at this site that can be revitalized by the transformation of this building.

User/Client Description

Client

The clients are the Lake Wobegon Trail Association and Stearns County Parks department.

Users

The main users of this building would be the general public. Specifically, cyclists, walkers, runners, rollerbladers, snowmobilers. Others users are trail maintenance, cafe/marketplace staff, bicycle mechanics, and art gallery staff.

Major Project Elements

Marketplace
A section of the building that allows for local businesses to open up shops. Mainly selling healthy food and drink for people returning from a trip on the trail or about to set out on a trip. There will also be a shop that sells trail related items.

Observation tower
An observation tower which allows people to see out over the path and the city of Saint Joseph.

Mechanic Workshop
workshop for fixing bicycles and other equipment will be in the building. This workshop can also be using for learning and classes on repairing and bicycle maintenance.

Gallery
The main space of the building is a gallery space. This space showcases local art from artists in the area and student art from the local schools. It will also showcase the history of the site regarding the grain building and the rail line that makes up the trail.

Headquaters Office
Houses the offices for the Lake Wobegon Trail Association. Includes a conference room for meetings.

Bicycle Parking
or people that did not drive to the site to go on the trail there needs to be a place for people to safely leave their bikes and equipment while they are visiting the building.

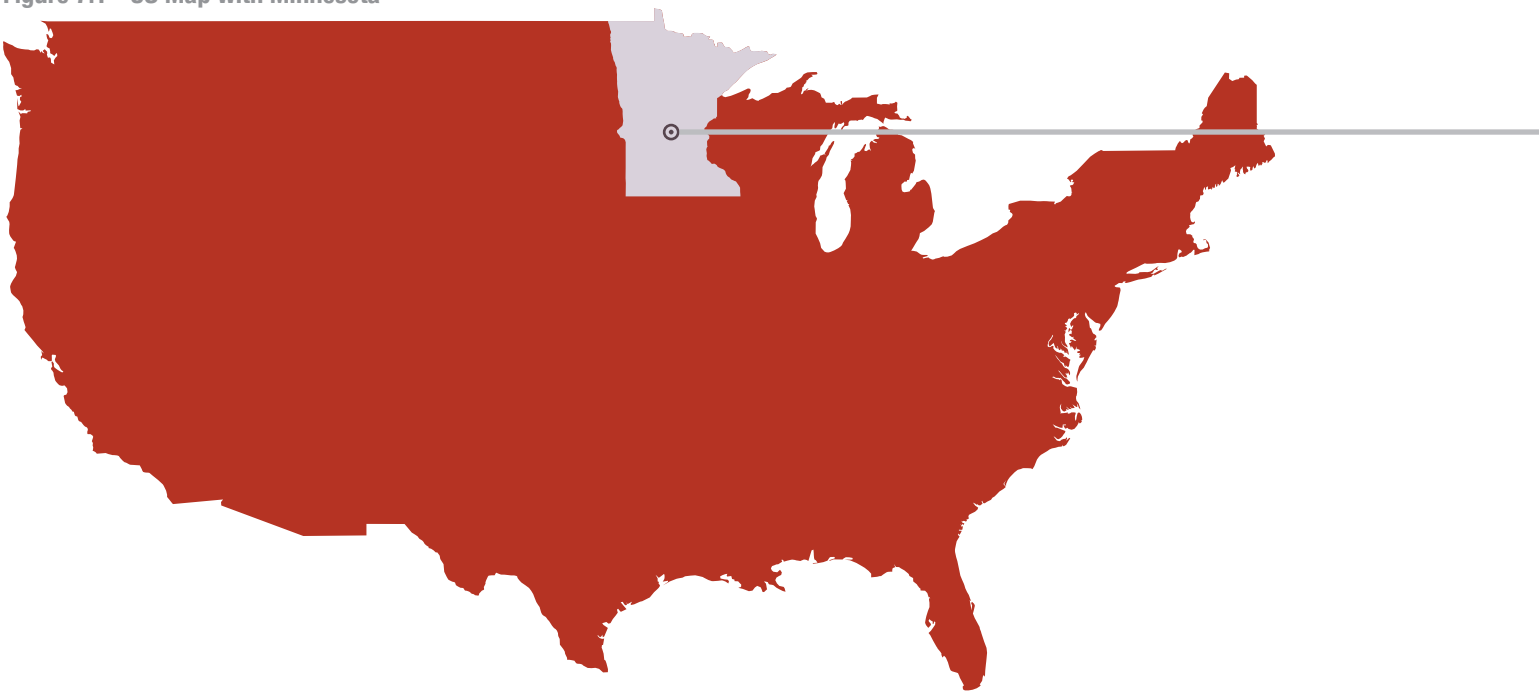
Changing Rooms
In order to better accommodate users of the trail there will be rooms in which they can change into their clothes for biking, running, etc.

Figure 6.1 - Carlo Scarpa: Castlevecchio

Image retrieved from Santini (1979).

Site Information

Figure 7.1 - US Map with Minnesota



Map data retrieved from Google Maps (2012) Illustration by Michael Stark (2012).

Located at the east end of the Lake Wobegon Trail in Stearns County, the site is on the north side of Saint Joseph, Minnesota. The Lake Wobegon is located along interstate 94 between Saint Joseph and Osakis. It was created from an old Burlington Northern rail line (Lake Wobegon Trails Association, 2012). On the site is an old grain building that is now unused, because the rail line is no longer there. The idea is that the reuse of the rail line and site match the idea of reusing the building adjacent to the trail.

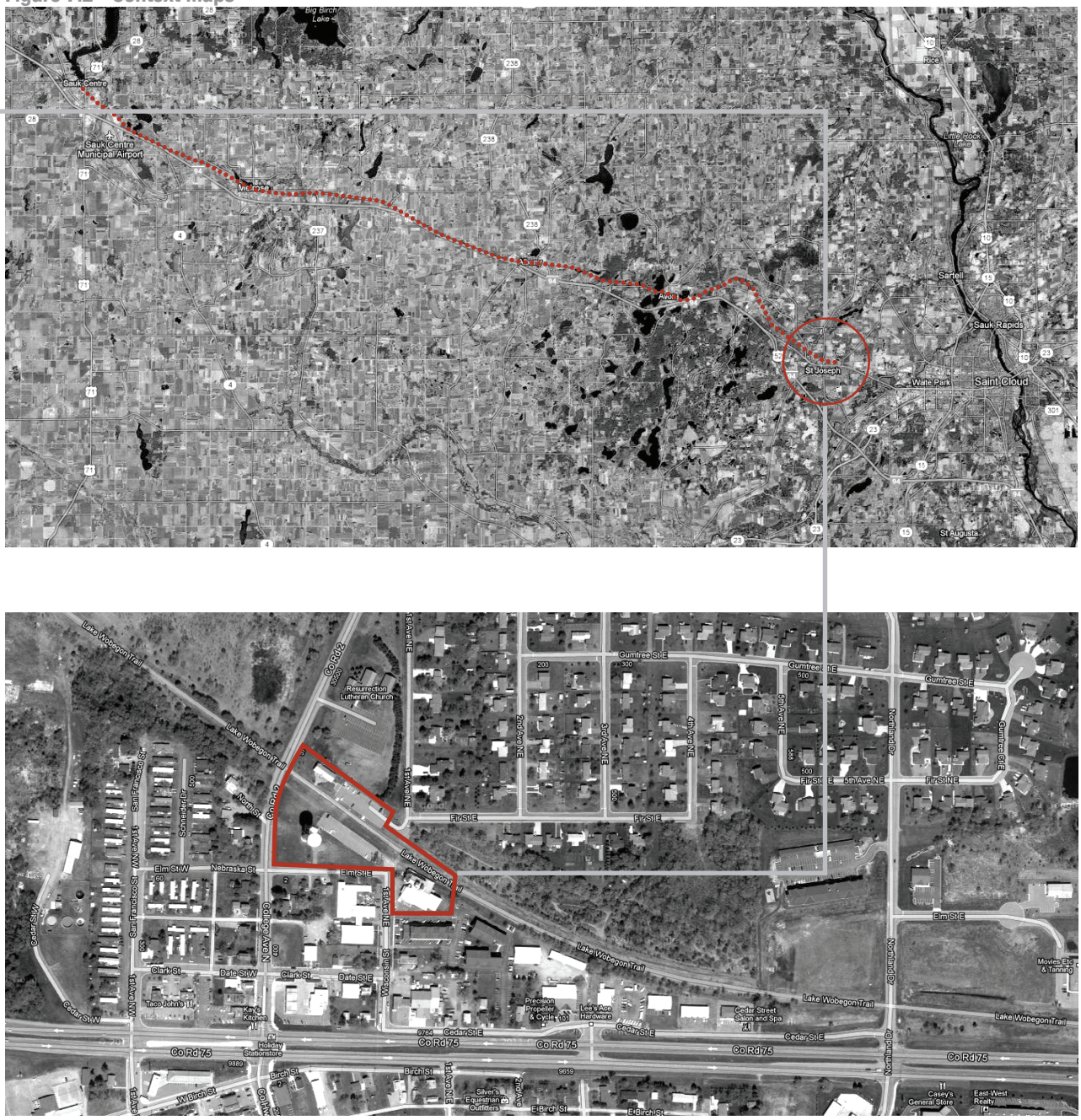
Near by are the schools, College of Saint Benedict and Saint John's University. Five minutes to the east is the city of Saint Cloud. Those are some of the main areas that attract people to the trail.

Saint Joseph

MN

Minnesota

Figure 7.2 - Context Maps



Map and image data retrieved from Google Maps (2012) Illustration by Michael Stark (2012).

Figure 7.3 - Site Panoramas

Photographs by Michael Stark (2012)

Project Emphasis

The project explores the principles which a designer should use when reusing buildings through the transformation of a vacant building into a new typology. It than explores the process in which these principles are discovered through the use of multimedia, drawing and models.

Plan for Proceeding

Research Direction

While working on this thesis research will be conducted through the areas of the theoretical premise/unifying idea, the project's typology, historical context, site analysis, and programmatic requirements.

Design Methodology

The design methodologies for this thesis will be that of the mixed method quantitative/qualtitative approach through graphic, digital, contextual, and historical analysis. This will all be done through a concurrent transformative strategy where all data, both qualitative and quantitative, will be collected concurrently. The theoretical premise/unifying idea is where the main requirements will be drawn from. The data will be implemented at several different points in the process.

Quantitative data will be collected through archival search and represented graphically. This includes climatic, economic, and cultural data. The site visits will be the main source of qualitative data acquisition and analysis. Other qualitative data concerning history will be obtained through archival search.

Plan for Documention

Documentation will be compiled digitally. Text will be stored in text documents along with a list of references and will be backed up weekly. Sketches, drawings and models will be scanned or photographed and backed up weekly. The thesis will be made available on the institutional repository of the university in a digital format on the Internet.

Figure 9.1 - Spring Design Schedule

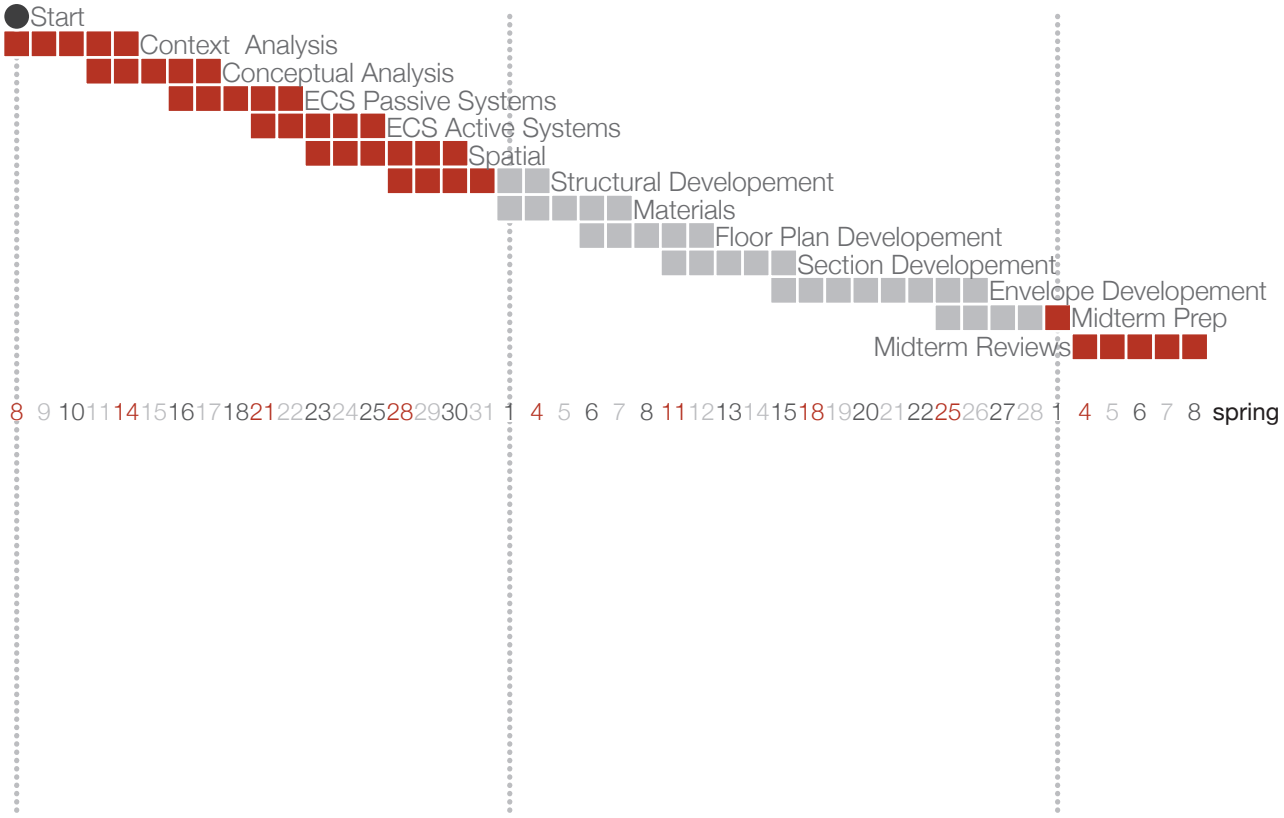
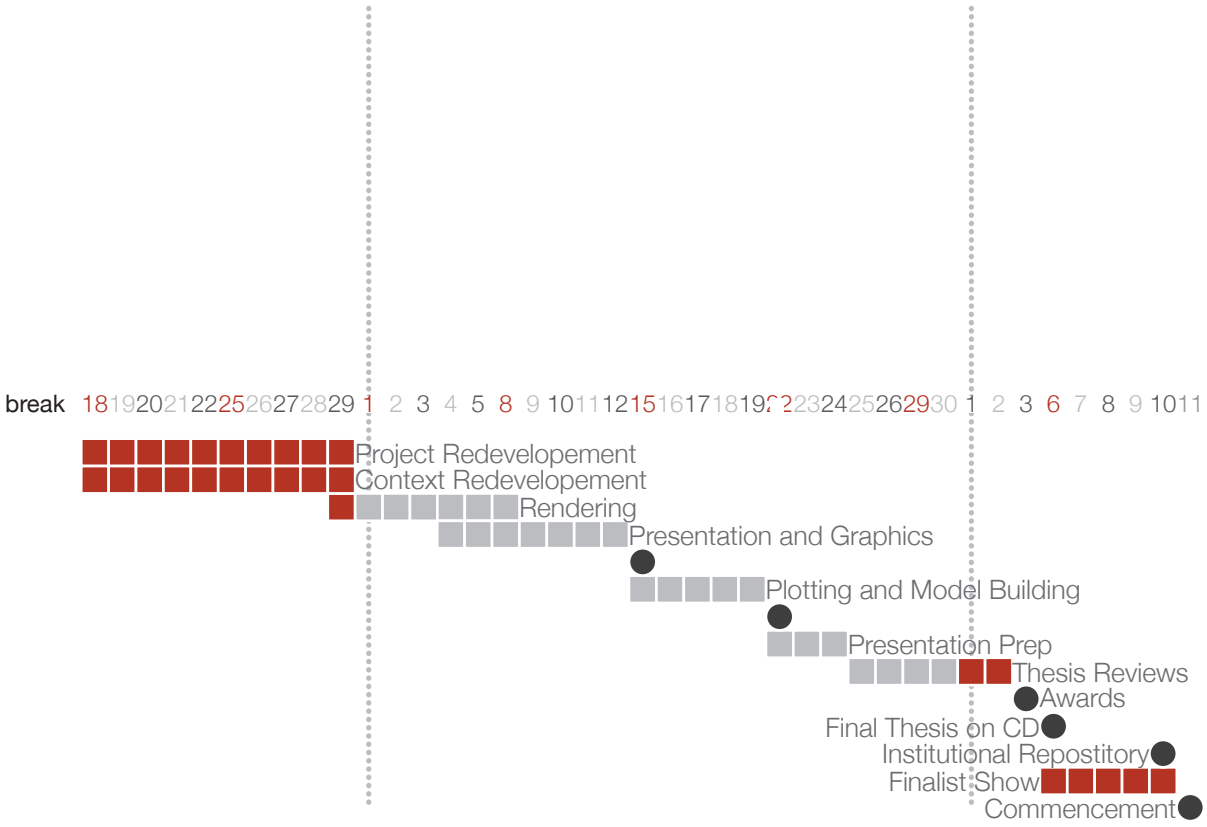


Illustration by Michael Stark (2012).


break 18 19 20 21 22 25 26 27 28 29 1 2 3 4 5 8 9 10 11 12 15 16 17 18 19 22 23 24 25 26 29 30 1 2 3 6 7 8 9 10 11
Project Redevelopement
Context Redevelopement
Rendering
Presentation and Graphics
Plotting and Model Building
Presentation Prep
Thesis Reviews
Awards
Final Thesis on CD
Institutional Repostitory
Finalist Show
Commencement

The Program

TP/UI Researech

Introduction

The driving question for the research is, How can buildings that no longer serve their original purpose be reused for a new typology in a sustainable way? This question may be very vague to begin with, but it serves as the guiding idea about what is researched and how this research will be applied to the project design. It touches on sustainability, economics, typologies, history, and more.

The theoretical premise or unifying idea that answers the question is that buildings should be reused and re-purposed when possible, and it should be done in way that pays homage to the originally intended use of the building. The refurbishing and reuse should increase the building's performance. The act of reusing a building can create unique opportunities and challenges for design when the components of the old structure have to interact with the new additional design elements.

Research will be discussed through the following areas; demolish of structures, building performance and economics. These areas will be researched, discussed and commented on through the use of books, journals, and other sources.

Demolition

The demolition of built environment is a large part of the construction industry. It is usually that case that the demolition of the old is used to make room for the new, but is it the best approach for sustainable architecture? In the city of Saint

Figure 10.1 - Demolition

Image retrieved from (http://en.wikipedia.org/wiki/File:Woodwards_building_Vancouver_demolition_2.jpg).

Cloud, Minnesota, there was a Sam's Club that demolished to make room for a new, Walmart Supercenter. The media director for the region for Walmart, Delia Garcia claimed, "This was designed specifically for that purpose and the new construction also allowed us to implement some sustainability elements in the design, Whether it's daylight harvesting getting light through skylights, or using sustainable building materials or the newest green technologies, a lot of those things are possible with the new facility." (Allenspach, 2012). How is demolishing a building to build a new one that has nearly the same exact use and is nearly the same exact tilt up concrete, big box commercial building? Sure it may have more efficient components used in the design, but could some or all of them not be integrated into the old structure and design. This would lead to not having to waste energy on the demolition, transportation, recycling or waste, and excavation of the site and building. The idea of reusing an old building probably doesn't correlate well with Walmart's corporate image and design where a design is copy and pasted all over the country and slightly adapted to the local codes and fit into the site.

This leads into the concept of embodied energy. John McKinney defines embodied energy as, "It quantifies of the energy consumed by all the processes associated with the original construction of a building, from the acquisition of natural resources to product delivery, including the mining, manufacture and transport of materials and equipment." (McKinney, 2011-2012). When adding this concept into the equation

sustainability and energy use awareness, it becomes more apparent creating a new building uses a huge amount of energy.

There is a massive number of aspects of embodied energy that deal with construction. Take a door for example, the trees are felled and transported to a mill. The mill then rips and rough cuts the logs into lumber. That lumber is then transported again to the carpenter that then uses saws to make finer cuts to create the door and it's inserts. The hinges and door knob also have their own path; every single component has a path it takes to get to the final culmination of the building that uses energy. Every one of these vast amounts of paths adds up to what is a lot of energy required for construction to occur.

Figure 10.2 - Century Plaza Hotel

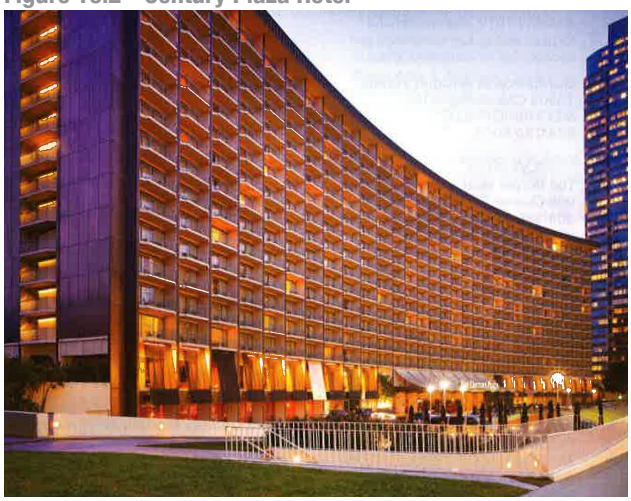


Image retrieved from (McKinney, 2011-2012).

Back to the point of demolition. There is also more energy required to demolish and clear a site for the new construction of a building, the energy for transporting and processing the building waste. McKinney discussed, in the article Rethinking Reuse, the effort to save the "Masterpiece of mid-century modern architecture" Century Plaza Hotel designed by Minoru Yamaskai, was driven by the concept of embodied energy (McKinney, 2011-2012). The building was set to be demolished even after a

recent renovation to make way for a more "green" urban design. The Los Angeles Conservancy argued against the demolish of the Century Plaza Hotel by bringing the idea of embodied energy to the table. The Conservancy said that there demolishing a perfectly functional building to

make room for a more green and sustainable plan is neither green nor sustainable. The argument for preserving the hotel stood ground and defeated the proposed demolish, and caused a change in plan to keep the historic building and build two towers behind it.

Embodied energy is an important factor when it comes to design. When there is a site with an existing building on it there should be some analysis on whether or not it could be reused, focusing on embodied energy for sustainability and whether is it more cost effective one way or the other. But when it comes to sustainability, demolishing a building functioning for the purpose of creating a more sustainable design is mostly a foolish idea due to all of the energy that went into constructing it originally and the energy required to dismantle, demolish and process the waste.

Figure 10.3 - Highline

Image retrieved from (Betsky, 2011).

Economics

Unused buildings and structures seem to be more prevalent in areas of low economic activity. There are voids in cities with run down, unused buildings. There is an opportunity for these buildings to plant the seed for new economic development and city growth. The High Line for example turned an unused elevated rail line into a park that thrives and has increased the value and draw to the area adjacent to the park. The park has been criticized by a few people saying that it is expensive and may the standard for unsuccessful copies in other cities (Betsky, 2011).
While maybe the High Line should not be copied

all over that place, it can be seen as an example of how the refurbishment of a structure can increase activity to a place. The increased activity to a place creates more economic opportunities in the area and increases the value of the area, especially if it is a place the public values.

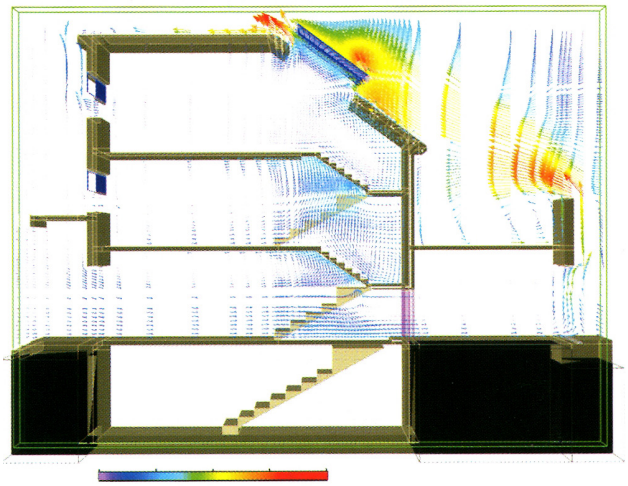
These economic seeds can be placed in the voids of the cities, and allow the growth of the surrounding area to occur.

Performance

Performance is a word that has many different denotations. It can hold a meaning that is very scientific and measurement based. Take a car as an example. The measurements of how a car preforms are very quantitative. There are measures of speed, acceleration, braking, efficiency, power, torque, and more. There are tests and studies that manufacturers do to design cars. A timed lap around a designated course may serve as an overall performance indicator for high performance cars. They are tested for distance to come to a stop from a set speed to test brake performance. Cars and engines have their power measured by complex computer powered instruments. They are also timed at how quickly they accelerate. There are even agencies that test for safety and fuel efficiency. Overall a cars performance can be setup in a spreadsheet of numbers and can be ranked and studied purely in a quantitative way.

Another definition of performance is an event. As in a play, concert, or a ballet. This aspect of performance is much more qualitative and

Figure 10.4 - Performance Measurement Software

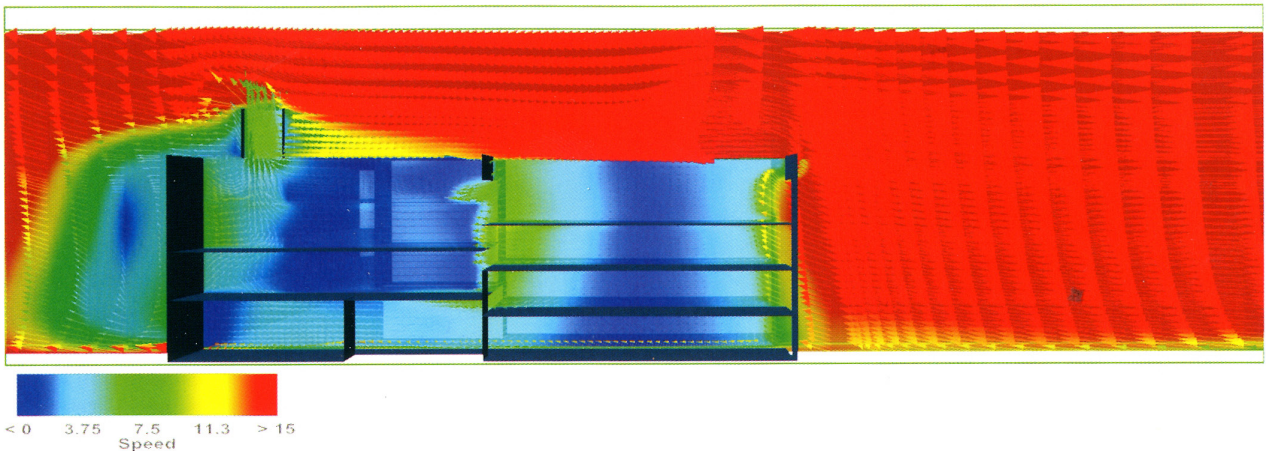


(Above and Below) Images retrieved from (Kolarevic & Malkawi, 2005).

subjective. The success of such performance therefore is to be interpreted by the person perceiving the event. Defining a great performance in this respect is much more difficult. The parameters set for testing the performance often do not yield specific numeric results that can be organized and analyzed for a concluding result of the performance. Although a quantitative approach can be seen through studying the monetary gain of a performance or the popularity of it, that is just a small facet of the overall performance of an event. A performance as an event is something a person perceives and experiences.

Architecture has the ability to working one many points on the spectrum of definitions of performance. Architecture has the ability to to have its performance measured, and can also act as a performance as an event.

Modern technologies and computer software allow for a greater ability to measure and simulate the performance of a building. In Ali M. Malkawi's chapter Performance Simulation: Research and tools in the book *Performative*



Architecture he states, “The use of performance simulation in architectural design is on the rise. This is due mainly to the increase of computing power and the maturing of the building simulation field.” (Kolarevic & Malkawi, 2005). He then goes on to explain that many of these tools are not yet fully integrated into the design process and that it is mostly the elite architecture practices that are actually using these tools in there design. Some of the tools like Computational Fluid Dynamics (CFD) are being used more today because of this increase in powerful computers, but their use still requires an in depth knowledge of thermal dynamics to set up the models and get very accurate results. Overall these simulation tools are becoming more and more accessible for designers to use in the process of design. The goal for the development of these tools is too integrate them more within the design process. Currently “The tools are predominately of analysis and are not for analysis and synthesis.” (Kolarevic & Malkawi, 2005).

Figure 10.5 - D-Tower

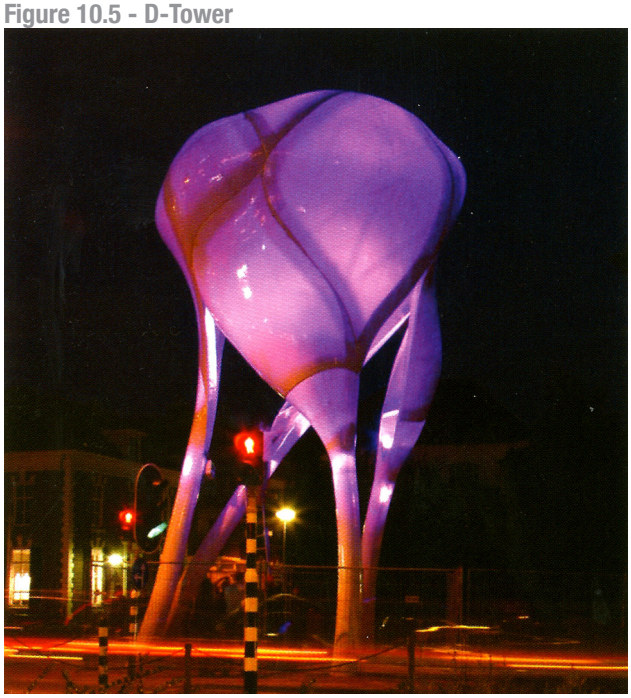
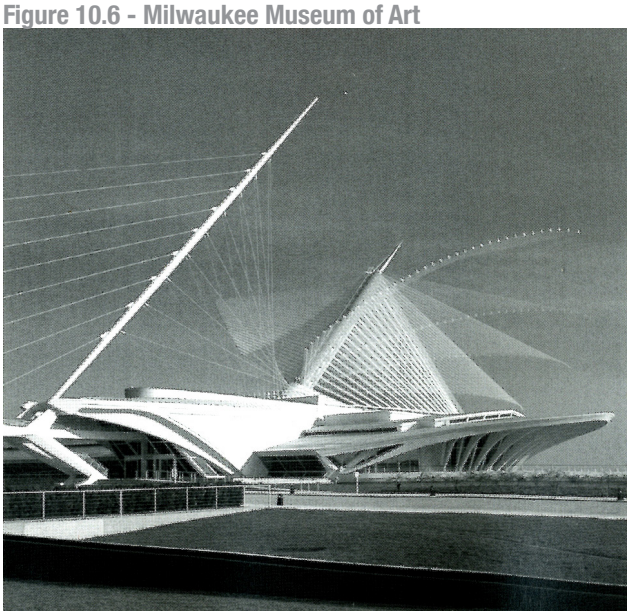
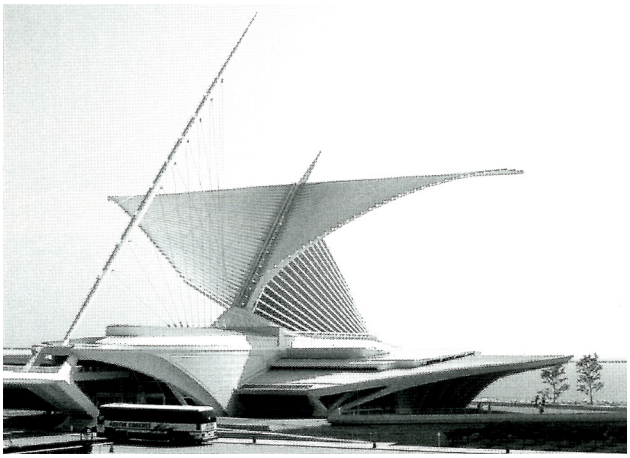


Image retrieved from (Kolarevic & Malkawi, 2005).

In the other respect, architecture can a performance. Architecture can create events that people go to experience. An example from Branko Kolarevic’s chapter in *Performative Architecture* is the D-Tower. A project in Doetinchem, Netherlands that is an interactive twelve meter tall tower. The interaction is with the residents of the city. “The tower changes its color depending on the prevailing emotional state of the cities residents, which is computed from responses of the city’s inhabitants to an online questionnaire about their daily emotions...” states Kolarevic (Kolarevic & Malkawi, 2005). There are four

Figure 10.6 - Milwaukee Museum of Art





Images retrieved from (Kolarevic & Malkawi, 2005).

colors given to four emotions; hate, love, happiness and fear, the overall response of the city are then the color that illuminates the structure. Giving the city a billboard that displays the collective emotions of the city day to day. People viewing this structure perceive this event as a performance of the city's emotions.

Buildings can literally perform as an event. An example of which is the Milwaukee Museum of art. The brise soliel is an event that happens daily to allow light to enter the building. Its brise soliel opens like a birds wings. The wings control the amount of light that enters the building, and wings move open or close to accomplish this.

Structures and architecture can take on both of these definitions of performance. Mahadev Raman explains, "The design of a suspension bridge aims for something very beautiful and elegant but, in fact, every part of it is optimized for performance." (Kolarevic & Malkawi, 2005). Each component of a suspension bridge is made so the bridge can span a long distance while carrying the heavy load or traffic that is constantly crossing the bridge. The elegant curve of the cable comes from vector diagrams of forces. This curve is derived from the most efficient path for the forces to flow.

Summary

The theoretical premise/unifying idea research results covered areas involving the question, How can buildings that no longer serve their original purpose be reused for a new typology in a sustainable way, and theoretical premise that buildings should be reused for new typologies when possible, and that th conversion of the typology should increase the buildings performance. Through the use of books, journals, and other sources, the following areas are discussed, demolition, performance, and economics.

Demolition is a key part in the life cycle of the constructed world. Sometimes the reason for demolishing a building doesn't hold much ground, especially when the reason is for sustainability. A recent example of this was the demolition of a Sam's Club to build a 'more sustainable' Walmart in St. Cloud, Minnesota. A perfectly good building was demolished to build an almost identical building on the same spot.

The embodied energy is a concept that adds together all of the energy required to create and transport materials and building components. When this concept is put into the equation of sustainability it makes the idea of demolition to create a new building seem a bit foolish. The Century Plaza Hotel was saved from demolition using this argument.

The Century Plaza Hotel was set for demolition in order to building two new towers in its place.

These towers were supposed to be a sustainable design. The hotel is a prominent mid century modern design and was also recently renovated before the decision to demolish it. All of this embodied energy in the hotel would just thrown out to destroy a perfectly good building so some one could build a new sustainable design. There would even be more embodied energy in the process of demolition.

Performance in architecture is a broad term. It has many definitions. Performance can mean the measurable results from tests and how well the building completes the tests, or the building performs as an event.

The first definition deals with the ability for the building to deal with the elements. How well does the building insulate? This a a question that lies within this definition. Today, the advancements of computers allows for greater use of simulation software for predicting how the design will react and perform.

Buildings can be a performance. The Milwaukee Museum of Art is an example of performing architecture. The prominent feature of the design are the brise soliel, these are wing like shads that raise and lower to control the amount of light that enters the space. The operation of the brise soliel is a performance that people go to see.

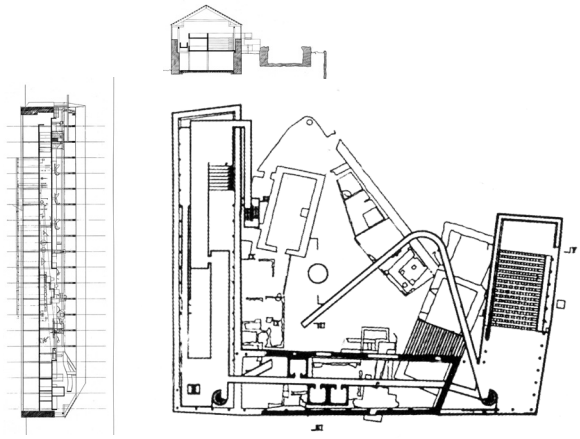
Design can act as a economic seeds in run down areas or areas of low activity. The Highline in New York, which is a linear park, or trail, that was created on an unused section of an elevated rail line. The creation of the Highline created increased activity to the area and caused the value of the surrounding area to increase.

Typological Research

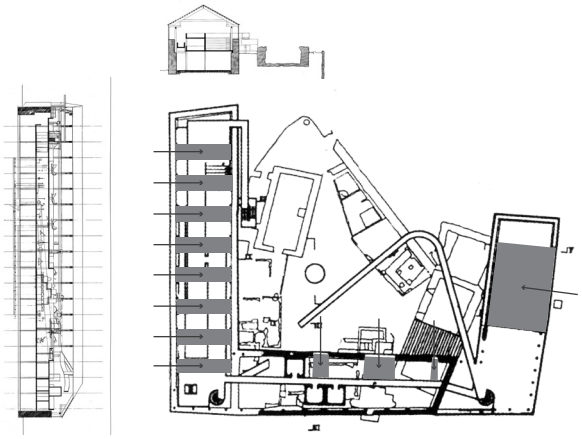
Hamar Bispegaard Museum

Sverre Fehn
Hamar, Norway
Museum
1969

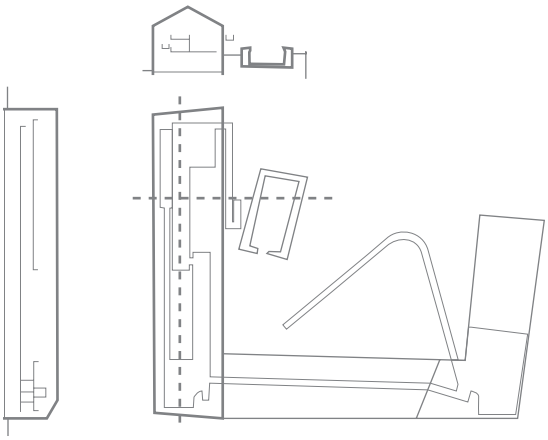
Figure 11.1 - Case Study 1 - Graphic Analysis



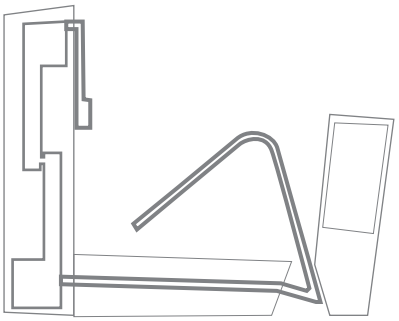
Plan and Sections



Natural Light



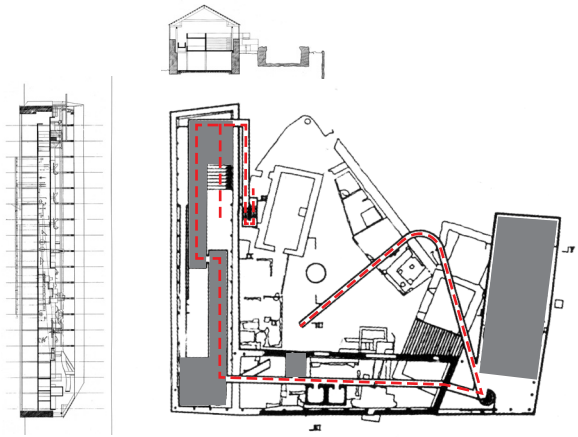
Plan to Section



Hierarchy

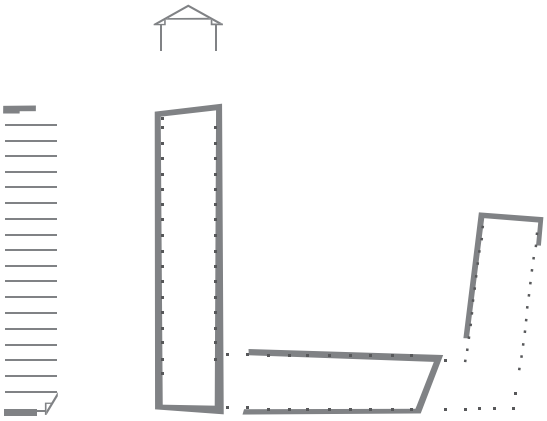
Images retrieved from (Norberg-Schulz, 1997). Illustration by Michael Stark (2012).

Figure 11.2 - Case Study 1 - Graphic Analysis

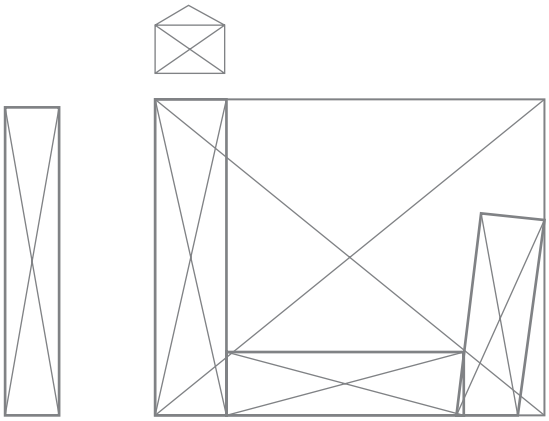


Circulation to Use

Massing



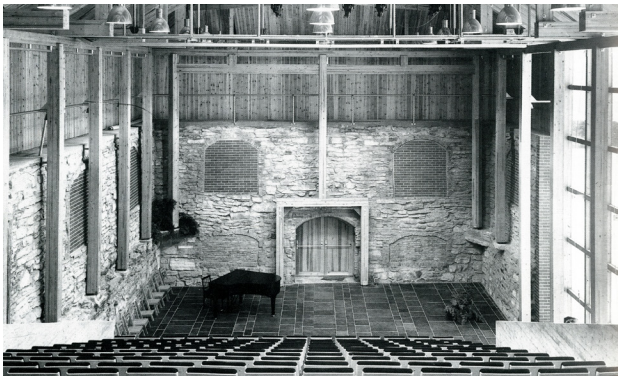
Structure



Geometry

Images retrieved from (Norberg-Schulz, 1997). Illustration by Michael Stark (2012).

Figure 11.3 - Case Study 1 - Photographs



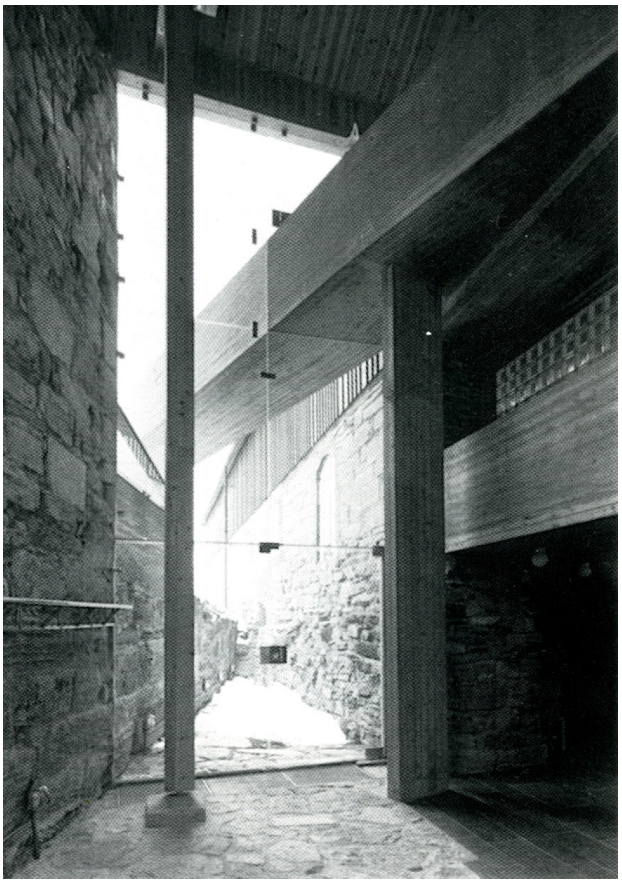
Images retrieved from (Norberg-Schulz, 1997).

Located in Hamar, Norway, Sverre Fehn's Archbishopric Museum of Hamar is a impressive example of bringing ruins back to life. The building lies on the ruins of a nineteenth century farm structure, which also is on top of an archaeological excavation site. The museum was meant to hold and display the excavated artifacts. The excavation is for the ruins of a sixteenth century medieval fortress that hold significance as it is on the "Kaupang trail, along which the bishop of Hamar in 1302 set off on his way to Rome." (Norberg-Schulz, 1997)

The spaces in the building include the exhibit spaces, a conference room, and restrooms and services. A key program element is the concrete ramp that starts from the excavation site and flows into the corner of the museum. It connects the occupants to where the items in the exhibition originated from. Norberg-Schulz discusses, "The museum was intended to house the artifacts recovered in the excavation of the site, and, in addition to permitting this dig to continue, it also houses a series of exhibition rooms for displays on peasant life." (Norberg-Schulz, 1997). As Norberg-Schulz said, the design allows for great communication between the architecture, the site, and the history of the site. The courtyard leaves the excavation site untouched and allows the interaction between old and new occur.

The building uses the farm structure as a base for the new building. On top of this base is a wooden framed structure that is repeated along the length of the farm ruins. This repetition is also represented in the windows on the roof that

Figure 11.4 - Case Study 1 - Photographs



Images retrieved from (Norberg-Schulz, 1997).

alternate with the structural bays.

In the case of this museum the materiality is significant. The over all design is quite simple, but the use of concrete and wood create dialog between the old elements and new elements. The concrete has similarities to the farm structure foundation. It is heavy and has a similar hue and texture yet its form is simple and clean unlike the complexity of the stacking stone of the foundation. The wood structure has a similar effect as the concrete. It is a material that was used when the original was constructed but done is a very clean way.

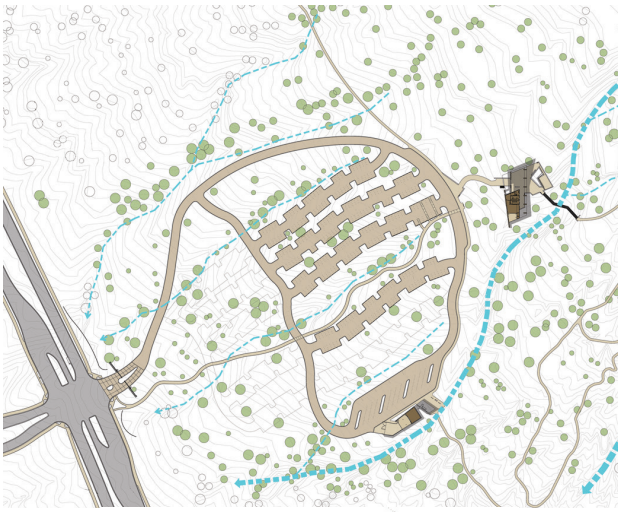
Slicing through the central axis of the museum is the main circulation through the exhibits. This path is similar to the ramp that brings occupants from the ruins of the courtyard to the building. It is a concrete path that leads through the museum showcasing the interaction between the old base and the new structure on top while bringing occupants to the various artifacts within.

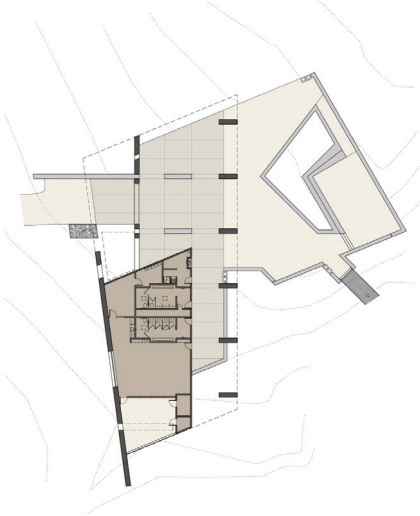
Given the theoretical premise of this project pertaining to the reuse of buildings, Sverre Fehn's museum is one of the finest examples of architecture meshing old elements with new elements. There is a use of glass lightly covers the opening in the old wall as Norberg-Schulz example here, "...light that enters through the openings in the old wall, which were not filled, just covered with unframed glass during restoration." (Norberg-Schulz, 1997). This detail allows for protection of the elements while retaining the same characteristics of the old structure.

The Gateway to the McDowell Sonoran Preserve

Weddle Gilmore Black Rock Studio
Scottsdale, Arizona
Trailhead
2009

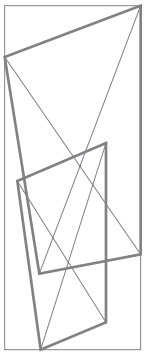
Figure 11.5 - Case Study 2 - Graphic Analysis



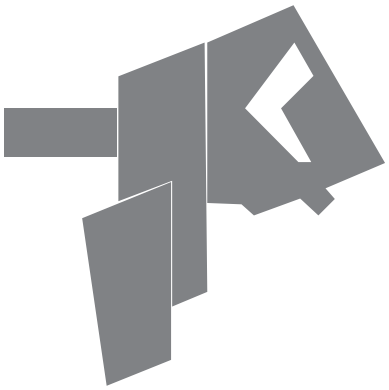


Images retrieved from (ArchDaily, 2011, May 10). Illustration by Michael Stark (2012).

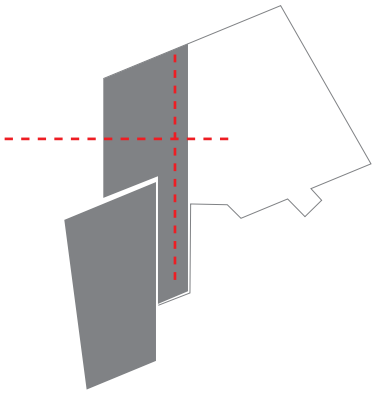
Figure 11.6 - Case Study 2 - Graphic Analysis



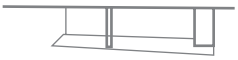
Geometry

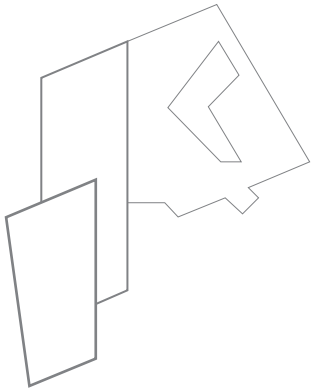


Massing

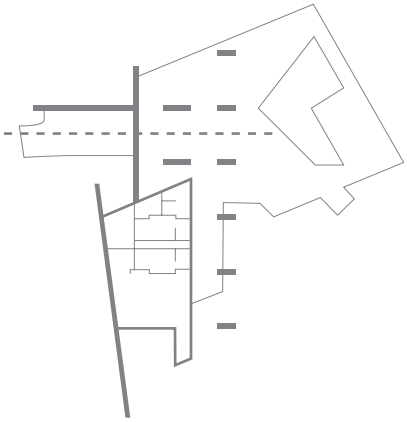


Circulation to Use





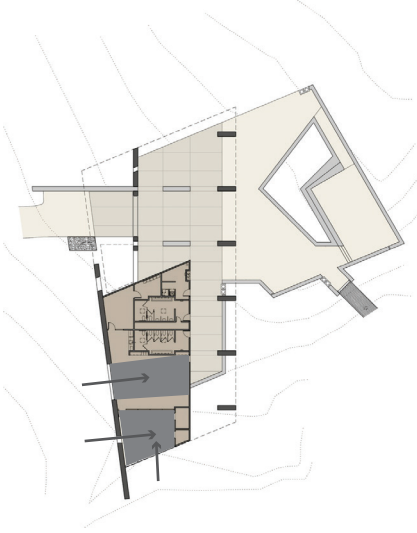
Hierarchy



Plan to Section

Images retrieved from (ArchDaily, 2011, May 10). Illustration by Michael Stark (2012).

Figure 11.7 - Case Study 2 - Graphic Analysis



Natural Light

Structure

Images retrieved from (ArchDaily, 2011, May 10). Illustration by Michael Stark (2012).

Figure 11.8 - Case Study 2 - Photographs

Images retrieved from (ArchDaily, 2011, May 10).

A trail head for the for McDowell Sonoran Preserve in Scottsdale, Arizona, the main concept for the building is to have as little of an impact as possible on the surrounding Sonoran Desert. It has elements such as rammed earth, solar panels, low water consumption plumbing fixtures, and water collection for increased sustainability. There are also more aesthetic features to have less impact on the preserve as stated on the blog ArchDaily, "The roof of the Gateway is covered in native desert rock cobble allowing it to disappear into the desert when viewed from the mountain trails to the east." (ArchDaily, 2011, May 10).

Education and community activity one of the main features of the trail head. There is signage throughout the site used for educational proposes to "enhance the visitor's awareness of and appreciation for the Sonoran Desert environment." (ArchDaily, 2011, May 10). There are also organized hikes that are informative about the desert.

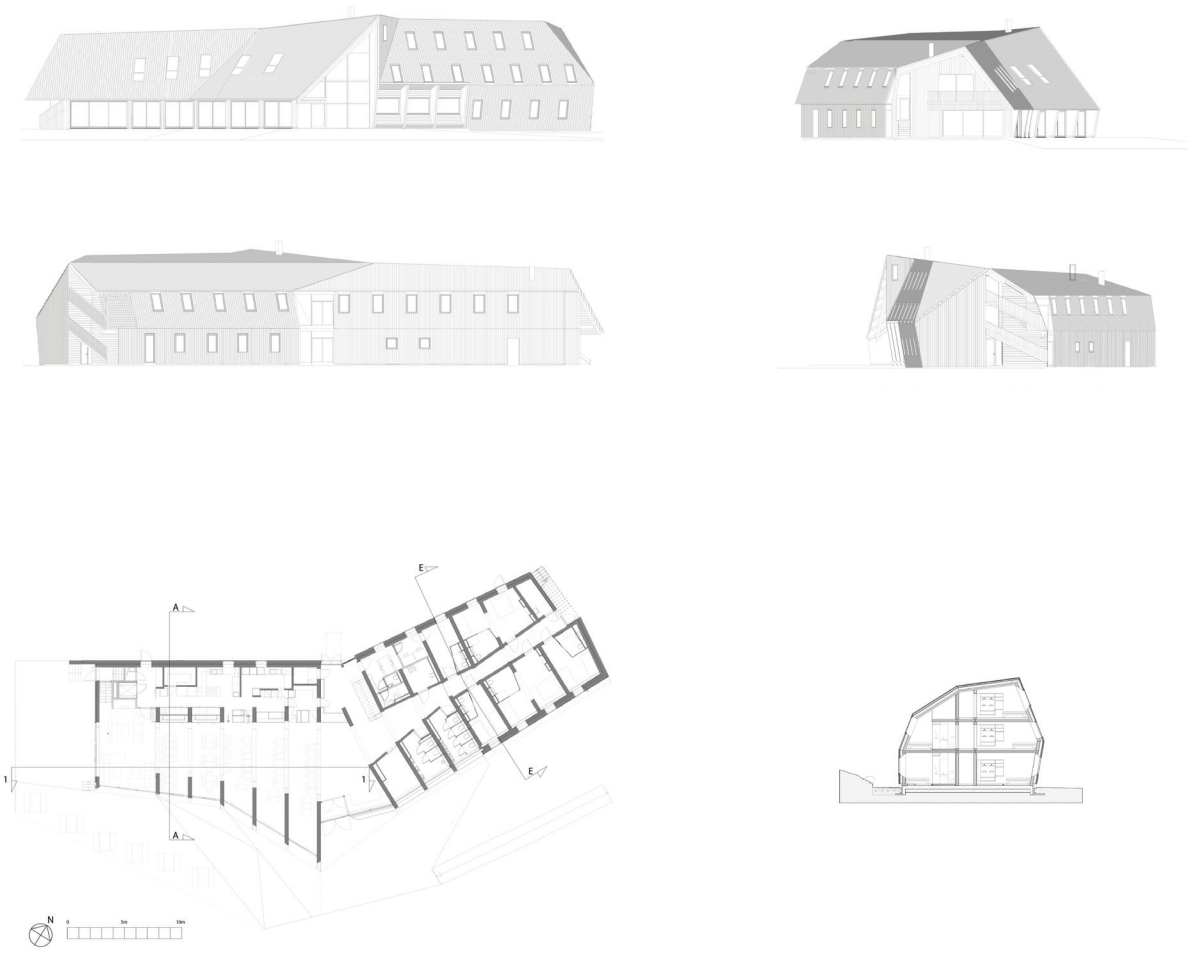
The design includes an outdoor amphitheater. In the actual structure there are restrooms, a covered outdoor space, and a multiple use space for all of the buildings needs.

The significance of this case study for the project is that it is an example of a trail head that is integrated well within its environment. The trail head serves 45 miles of trails. The building is an example of 'net zero' design and is a LEED Platinum building (ArchDaily, 2011, May 10). The theoretical premise involves increasing the sustainability of the base building through the regeneration of it.

Pulpit Rock Mountain Lodge

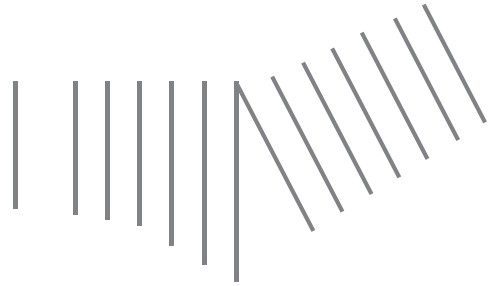
Helen & Hard
Strand, Norway
Trailhead and Lodge
2008

Figure 11.9 - Case Study 3 - Graphic Analysis

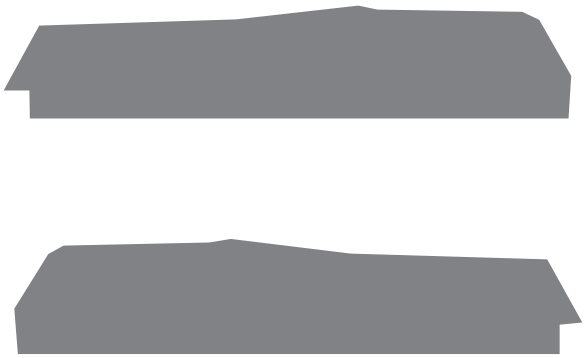


Images retrieved from (ArchDaily, 2011, July 24).

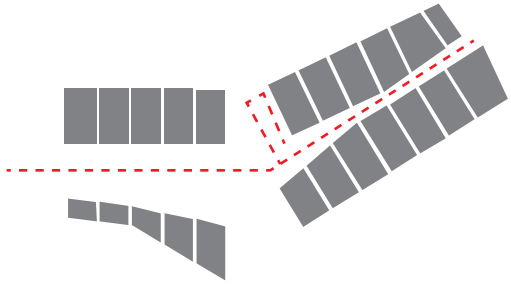
Figure 11.10 - Case Study 3 - Graphic Analysis



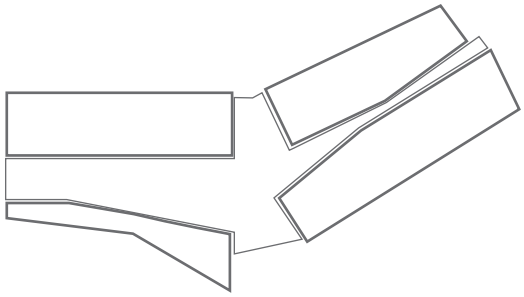
Structure



Massing



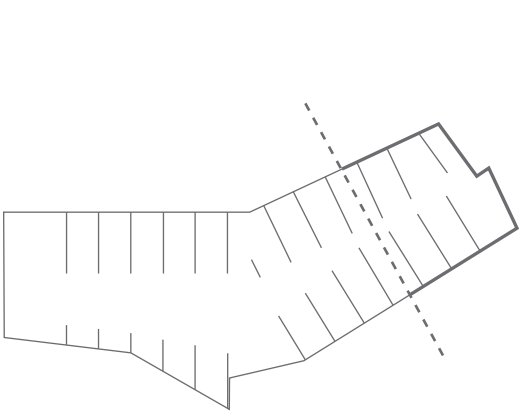
Circulation to Use



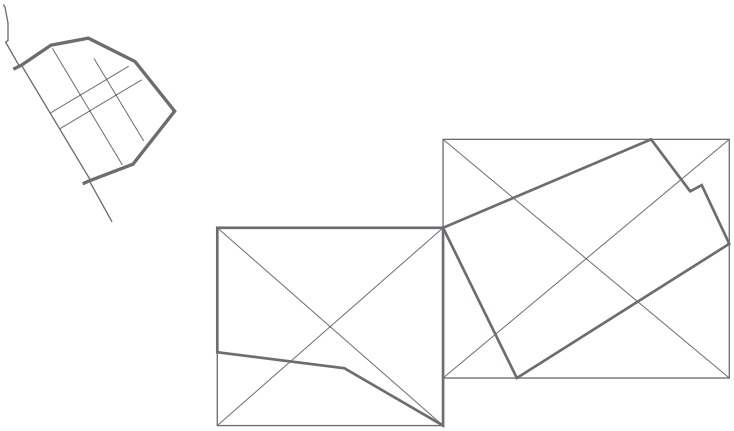
Hierarchy

Images retrieved from (ArchDaily, 2011, July 24). Illustration by Michael Stark (2012).

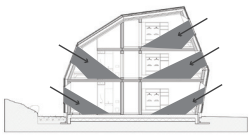
Figure 11.11 - Case Study 3 - Graphic Analysis

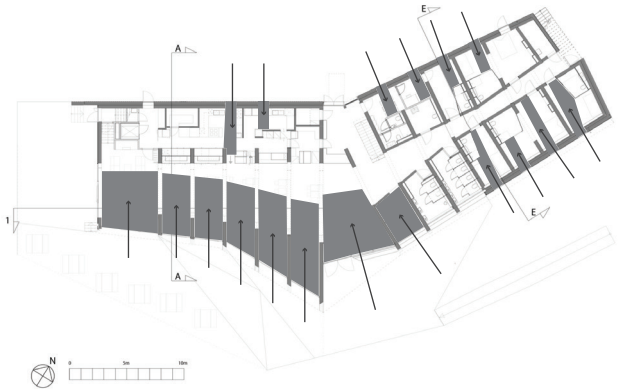


Section to Plan



Geometry





Natural Light

Images retrieved from (ArchDaily, 2011, July 24). Illustration by Michael Stark (2012).

Figure 11.12 - Case Study 3 - Photographs

Images retrieved from (ArchDaily, 2011, July 24).

Pulpit Rock Mountain Lodge is a lodge located at the trail head of the trail leading to The Pulpit Rock in Strand Norway. Designed by Helen & Hard, it serves as a supplement to the trail by including twenty eight rooms for guests, a restaurant and café, and a conference room. The area for the project is 1,260 square meters. These accommodations allow for guests to have great access to the wilderness around the site.

The building form takes shape from the surrounding mountains. Shaped after the angled nature of rock out an cropping, the lodge is placed with in the mountains. Reacting to the site around it, "The volume is furthermore bent around a rock outcropping creating a gesture to the main entrance." (ArchDaily, 2011, July 24). The rooms have great views of the mountain across the water. The roof also creates outdoor spaces by hanging further off of the main building.

Thirty-two wooden ribs make up the structure of the design. The ribs are spaced 2.8 meters apart, and each structural module makes up the width of one of the guest rooms. The main material is wood, more specifically the Holz100 wood system (ArchDaily, 2011, July 24). This system is a purely wood system that is held together by dowels and not any fasteners. The dowels are dried out before being inserted so that it will expand and lock the wood pieces into place. The material is an all encompassing component that can be assembled and does not need any extra insulation or rain screening membrane.

Each guest room has a window overlooking the

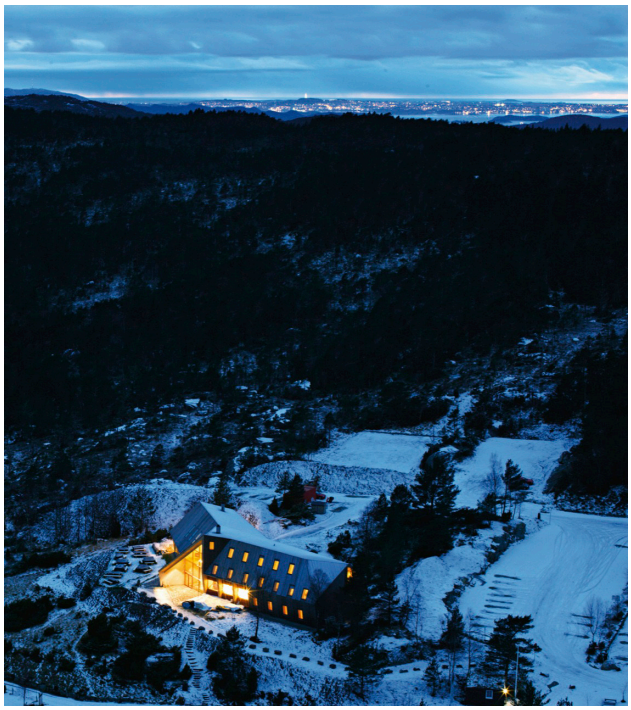
water and mountains that also lights the rooms. The facade has indications of which types of spaces lie behind it. More private spaces have smaller windows with more wood surface, while the more public spaces open up with more glazing. The light colored wood surfaces on the interior of the guest rooms creates a diffused light quality.

Materials are used in a way to be both high tech and low tech. They are low tech in that wood is the main material and is very primitive. It is high tech in the way the wood is used as a prefabricated unit that serves as insulation and a moisture membrane.

The case serves as an example of a supplemental building for a trail head that allows more occupants to come to the site and increases the uses for it. The thesis project typology benefits from supplemental uses for a new trail head for the Lake Wobegon Trail and this case is an example of other uses at a trail head. They can be a gathering place for an event or as a destination to embark on a trip.

Relating to the theoretical premise, the building was on a site were a small cabin stood trying to serve the same purposes as the current design (ArchDaily, 2011, July 24). This cabin could not serve as a foundation for a newer, larger, and more sustainable building that servers better use for the trail to The Pulpit Rock. Sometimes it is necessary to replace an old building with a new one to better serve the typological requirements.

Figure 11.13 - Case Study 3 - Photographs



Images retrieved from (ArchDaily, 2011, July 24).

Summary

The series of case studies making up the typological research pull from various building types and styles in order to find information to cover the aspects of the thesis' typology and theoretical premise. The typology involves a trail head building for the Lake Wobegon Trail, located in Saint Joseph, Minnesota, that also has other uses in it to bring more attention to the trail and create better facilities for the people that use the trail and the residents of the city. Reusing buildings is the premise for the thesis and there is an example case of a project that reuses the ruins of a building. The cases include a re-use museum by Sverre Fehn, a trial head for the McDowell Sonoran Preserve by Weddle Gilmore Black Rock Studio, and a trail head lodge by Helen & Hard.

Starting the series, Sverre Fehn's Archbishopric Museum of Hamar serves as a great example of connections between old buildings and the new structure on them. There is great use of glass to cover the opening in the old foundation. It serves to protect and seal while saving the original character of the foundation. The materials both complement and contradict the original ruins it is based off. The concrete has similar visual weight and color to the stone wall, but is much simpler in form.

Second in the series is the Gateway to the McDowell Sonoran Preserve, which is the trail head to the preserve. It offers a look into sustainability and melding the building into the site and having the least impact as possible. This case also has educational aspects which teach the occupants about the site and natural environment around them. These are aspects for supplementing the trail and site with information rather than being just a trail map and bathrooms at the start of a trail.

Finally the third case is the Pulpit Rock Mountain Lodge, which is a lodge at the trail head to the Pulpit Rock Mountain. The building serves to supplement the trail and serve as a place of gathering and preparation to embark on a journey on the trails and through the environment. It is also an example of when it is necessary to rebuild over an existing building because of the lack of space that was needed for the program.

A characteristic that all of the cases have in common that they affected the theoretical premise is they way each of the cases interact with their respective sites. It increased the awareness of how a building should interact with the site and how is should respect it. Sverre Fehn's museum carefully surrounds an excavation site of archaeological importance allowing for continued digging to occur. The Gateway to the McDowell Sonoran Preserve also is well designed in respect to its site. The building strives for the least amount of impact on the environment around it and blend into the sight so it is there, but not obtrusive to views.

The cases also serve as examples of detail connections, and materials. The Archbishopric Museum of Hamar is carefull in connecting old to new. The Pulpit Rock Lodge uses a high tech wood structural material to increase building performance.

Historical Context

The site for this project is located in Saint Joseph, Minnesota. The township of which was first settled in 1854 by the German immigrant Peter Loso. Saint Joseph was incorporated on January 18, 1890 (Lakesnwoods.com, 2012). Some of the first buildings were a store, a mill, and a hotel owned by Loso. Saint Joseph's main components were a railway, farming, and Saint Benedict's Monastery.

"The Sisters trace their roots to Saint Walburg Abbey in Eichstätt, Bavaria." (St. Benedict's Monastery, n.d.). In 1857 six of these sisters moved to Saint Cloud, Minnesota, and eventually moved to Saint Joseph, a neighboring city approximately five miles west of saint cloud, in 1863.

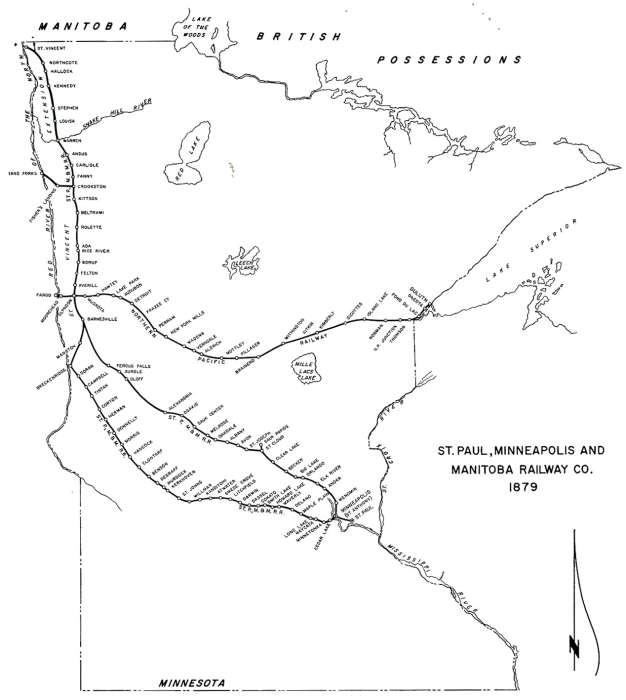
The sisters were involved in education and and health care in the area and still are today. "In all, they have established or served at 163 schools in the United States, including 72 in the Diocese of St. Cloud." (St. Benedict's Monastery, n.d.). A notable educationally instituted that the sisters established is the College of Saint Benedict, in 1913, in Saint Joseph. To this day the college is one of the main draws to bring people to the city.

Rails to Trails

Running through Saint Joseph is the remains of what once was an old rail line. The Great Northern Railway was the line that ran through the town.

The Great Northern rail started in the mid

Figure 12.1 - StPM&M Rail 1875



Images retrieved from (Hidy, Hidy, Scott, & Hofsommer, 2004).

nineteenth century as the St. Paul & Pacific Railway started by James J. Hill (Hidy, Hidy, Scott & Hofsommer, 2004). The St. Paul & Pacific Railway connected St. Paul, Minnesota to the pacific northwest city of Seattle, Washington. St Paul was the main point of navigation to the north on the Mississippi river to Lake Superior and the Red River. The path which the railway took was through the north western states that are along the United States - Canadian border. Hill took over the St. Paul & Pacific railway as a start to the Great Northern.

The two main components for the start of the Great Northern Railway as stated in the book *The Great Northern Railway: A History* were, "the Minneapolis & St. Cloud Railroad Company, enfranchised by an act on March 1, 1856, and the Minnesota & Pacific Railroad Company, authorized by law on May 22, 1857." (Hidy, Hidy, Scott & Hofsommer, 2004). The eventual growth of these two entities created the Great Northern Railway which expanded through out Minnesota, and through the northern States to the pacific, and north into Canada.

The line that ran through the site in St. Joseph was the St. Paul, Minneapolis and Manitoba line. Starting in St. Paul, the line ran north to St. Cloud, and then through St. Joseph. The path is similar to the path of Interstate 94 takes until Barnesville, Minnesota where it diverges to the north and meets Canada at the north western corner of the state at St. Vincent.

The Great North continued to run until on March 2, 1970, "the Great Northern, the Northern Pacific, the Chicago, Burlington & Quincy, and the tin Pacific Coast Railroad were merged to form Burlington Northern Incorporated." (Hidy, Hidy, Scott & Hofsommer, 2004). The new Burlington Northern received 8,000 miles of railway from the acquisition of the Great Northern. Currently the Burlington Northern is now part of Burlington Northern Santa Fe. One of their rail line runs directly south of our studio building, Renaissance Hall.

Today with the invention of airplanes, the creation of the interstate highway system, semi trucks, and the consolidation of railroad companies, there has been some unused sections of rails through out the country. One of these sections is the line that once ran through the thesis site which served St. Joseph, and the feed mill building. In 1980 congress passed a law allowing railways to abandon railways that were not making profit with more ease then before (Rails-to-Trails Conservancy, 2005). This was an attempt to keep the struggling railroad companies solvent.

The act caused many miles of rail lines to be abandoned, up to 8,000 miles per year (Rails-to-Trails Conservancy, 2005). Three years later the United States Congress, in effort to save the land of the abandoned rail lines, passed an amendment to the National Trails System Act to create create the rail banking system (National Trails Training Partnership, 2003). Railbanking allows for line that are proposed to be abandoned

Figure 12.2 - James J. Hill

Images retrieved from (Hidy, Hidy, Scott, & Hofsommer, 2004).

Figure 12.3 - Rail and Elevator

Images retrieved from (Hidy, Hidy, Scott, & Hofsommer, 2004).

Figure 12.4 - Train in winter & Lake Wobegon Trail

Images retrieved from (Hidy, Hidy, Scott, & Hofsommer, 2004).

Michael Stark (2012).

to be preserved for the use of creating trails. The act prevents the lines from becoming abandoned and ownership is transfered to a government agency or a private group that meets the requirements for converting the corridors into trails (Rails-to-Trails Conservancy, 2005).

One of these trails that was created from this process of railbanking runs along the thesis project's site. This trail is the Lake Wobegon Trail. On September 30, 1998 the trail opened on what was once a section of rail owned by Burlington Northern (Lake Wobegon Trails Association, 2012). A ten feet wide paved path runs from St. Joseph to Osakis. The current trail is 62 miles long and crosses most of the width of Stearns county.

The trail is used greatly in summer months by bicyclists, walkers, and runners. In the winter when the snow flies the trail is then allowed to be used by snowmobilers. Studded track are not allowed due to risk of damaging the pavement.

The "Saintly Seven" is the newest proposed expansion of the Lake Wobegon Trail, getting its name from the seven miles to extend the trail into St. Cloud. This proposal would create one of the longest paths as explained by Chuck Wocken, Stearns County parks director, "Extending the Lake Wobegon Trail into St. Cloud would provide 135 miles of continuous separated blacktop trail, the longest in Minnesota and possibly in the nation." (Marohn, 2011).

Preservation

Like the defunct railways of the past, there is a movement for keeping buildings of the past which hold historical importance preserved for future uses. The railroads hold a significance in the country as a feature of engineering and an artifact of the industrial revolution. The carving of the landscape and the history of some of the unused rail lines is preserved through historical restorations of trails, and the reuse of rail line by conversion to trail systems.

A similar movement has happened with historically important buildings. One of the first efforts to preservation was Mount Vernon in the 1850s. Mount Vernon was George Washington's plantation in Alexandre, Virginia.

It wasn't until the mid nineteenth century that much of the ground work was set for the current state of historic preservation. The late 1940s saw a movement for a national organization for promoting historical preservation. The National Trust for Historic Preservation was established in 1949 when, on October 26, 1949, President Truman signed legislation creating the trust (National Trust for Historic Preservation, 2012). The trust had preserved buildings such as Phillip Johnson's Glass House.

In 1966 The National Historic Preservation Act (NHPA) was passed into law (US/ICOMOS, 2012). This act setup up framework and funding for the preservation of historical buildings. The NHPA set up a process for reviewing building

and places to be deemed worthy of preservation, and set up funding for the preservation of these historical sites (16 U.S.C. 470). The act created the National Register of Historical Places, a list or historical places that today hold more than one million places.

Figure 12.5 - Garrison Keillor

Image retrieved from (http://ticketkingminneapolis.blogspot.com/2011/01/garrison-keillor-fitzgerald-theater.html)

Lake Wobegon

"The town of Lake Wobegon, Minnesota, lies on the shore against Adams Hill, looking east across the blue-green water to the dark woods. From the south, the highway aims for the lake, bends hard left by the magnificent concrete Grecian grain silos, and eases over a leg of the hill past the SLOW CHILDREN sign, bringing the traveler in on Main Street toward the town's one traffic light, which is almost always green."
-Garrison Keillor (Keillor, 1985).

The Lake Wobegon Trail is named after Garrison Keillor's fictitious town in Minnesota (National Recreation Trails, 2012). The town of Lake Wobegon is said to be located in Stearns County, Minnesota, more specifically near the town of Holdingford. Lake Wobegon is featured in a few of Keillor's books and on "A Prairie Home Companion", which is a live comedy and musical variety radio show played on Minnesota Public Radio.

Goals for the Thesis Project

The thesis project's purpose is to explore the reuse and repurposing of buildings into new revitalized buildings. Within the context of the thesis project there are goals, which I seek to achieve through the duration of the project. The goals for this thesis are in three separate environments, the academic, the professional, and the personal. The following is an explanation of these goals in relation to the project.

The Academic

Within the academic environment the goals for this thesis are as follows. I wish to contribute to the exploration of how to execute a reuse project that respects the history of the current building while bringing the building systems, both passive and active up to current standards. Another goal is for this project to serve a study for future students to go to for ideas on the reuse and rejuvenation of a building.

This thesis project is for achieving a master of architecture degree from North Dakota State University. An academic goal within these regard is for achieving a quality of a graduate student level.

I strive to create a well thought out project with design and graphics to the best of my ability. Producing to the best of my ability will be beneficial not only to myself, but also for the school for when accreditation comes around and it will keep up the reputation of the school.

The Professional

A goal for the thesis topic of reuse in the context of the professional environment is for the profession to consider more projects that involve the reuse of buildings as opposed to new construction. I feel that this can help the over all sustainability of the built environment by not wasting the embodied energy in the building, and the energy to demolish it. When buildings are reused it gives the area around them a certain aesthetic value that can't be achieved by a newly constructed design.

The Personal

I have a few personal goals for this thesis project or that relate to the project. The building that on the site for the project that is being reused in the design is a building that I have know for half my life. It is a few blocks away from my house and it sticks out as a marker for the city and something that I have passed by many times wondering what it was and the history behind it and why it was no longer in use.

I hope to try out new processes and technologies in the the process of the design of the building. I wish to use media in interesting ways both within the design process and the presentation of the project. I want to explore aspects of performance and buildings. I want to use the thesis project to learn new skills.

Finally I want to have a successful project that will meet the requirements to graduate and receive a master of architecture degree and go on to be successful in the profession.

Site Analysis

The site is located a few blocks north for County Road 75 at the corner of Nebraska Street and First Avenue NE. At this spot is an old feed mill that is adjacent to the Lake Wobegon Trail. Being in a town and consisting of parking lots, the site is fairly flat, and is mostly hard scape and open grass area. Looming over the site is the city's water town which acts as a marker in the town, and can be seen from most area's in the town. There is another marker to the south, the St. Joseph Parish, which isn't quite as visible as the water tower. The water tower further explains this connection with these markers through a silhouette of the skyline. During the night the marker aspect of the water tower is emphasized by the lights that illuminate it.

The trail acts as a corridor through the country side, cutting through woods and fields. Approaching the site from the trail can be seen as a clearing in the woods. To the east and west the environment along the trail tightens up along the path.

Looking south from the corner of Nebraska Street and First Avenue NE there is a connection from the site to the main road connecting the city of St. Joseph to near by cities. Other views from the site include the views east and west that run parallel with the trail. These views display the convergence of perspective and show approaching and departing patrons of the trail.

The site and trail disputes the Cartesian grid that makes up most of the layout of the city. It slices through diagonally.

Michael Stark (2012).

Figure 13.1 - Context Map

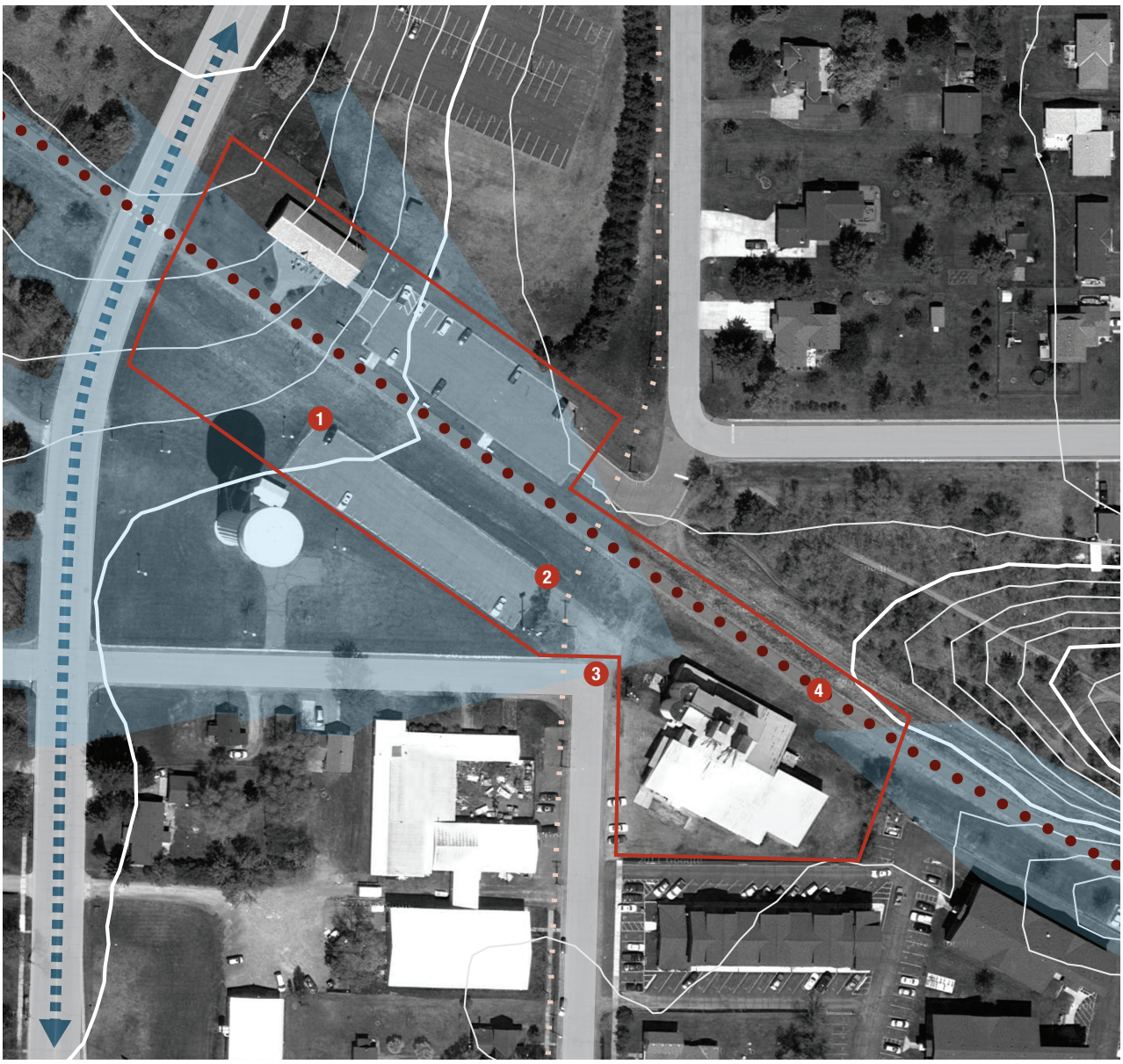


Image retreived from Google Maps (2012). Illustration by Michael Stark (2012).

Spot 1




Spot 2




Michael Stark (2012).

Spot 3

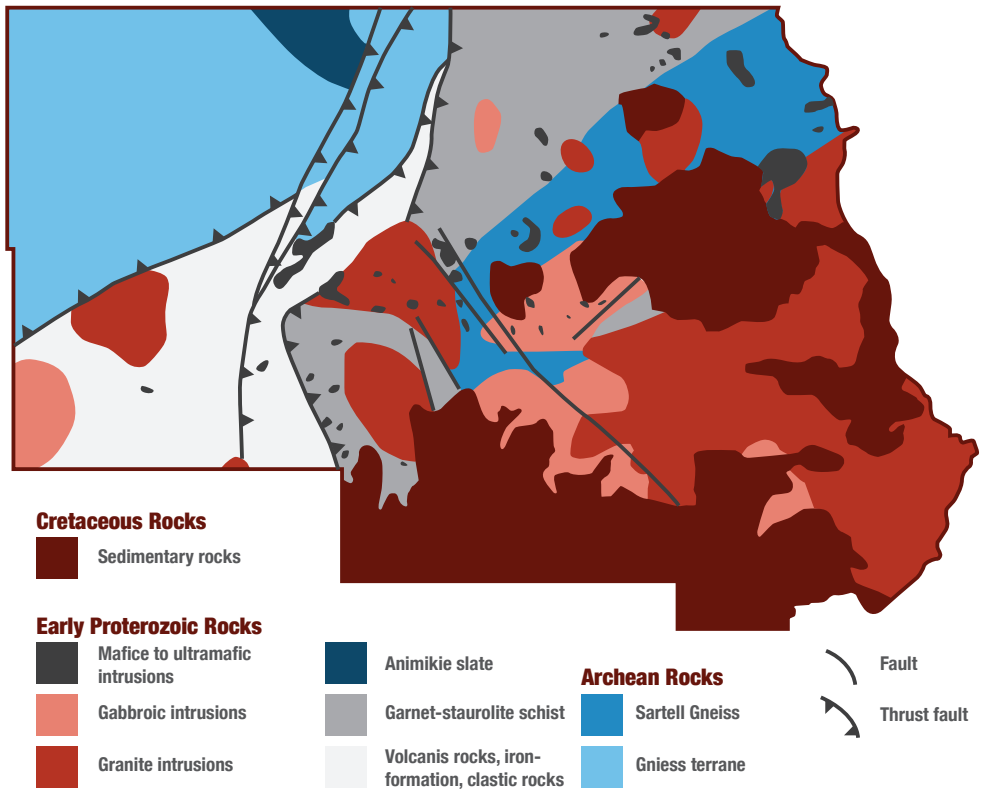



Spot 4




Michael Stark (2012).

Figure 13.2 - Stearns County Bedrock



Map data retrieved from County atlas series c-10, part c. In (1996). G. Meyer & L. Swanson (Eds.), Geologic atlas stearns county, minnesota, St. Paul: University of Minnesota.

Soil: Estherville Sandy Loam

Subgroup

Soil Order: Mollisols
Suborder: Udolls
Great Group: Hapludolls
Subgroup: Typic Hapludolls

Family

Particle Size: Sandy
Mineralogy: Mixed
Soil Temperature: Mesic

United States Department of Agriculture Natural Resources Conservation Service. (2012, February 17). Web soil survey. Retrieved from http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

Figure 13.3 - Slope Analysis

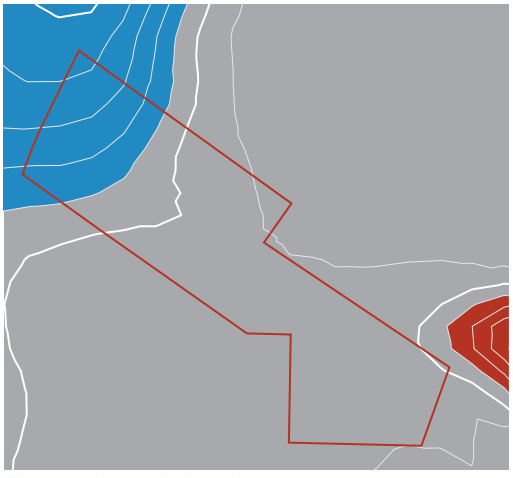


Illustration by Michael Stark (2012).






Michael Stark (2012).

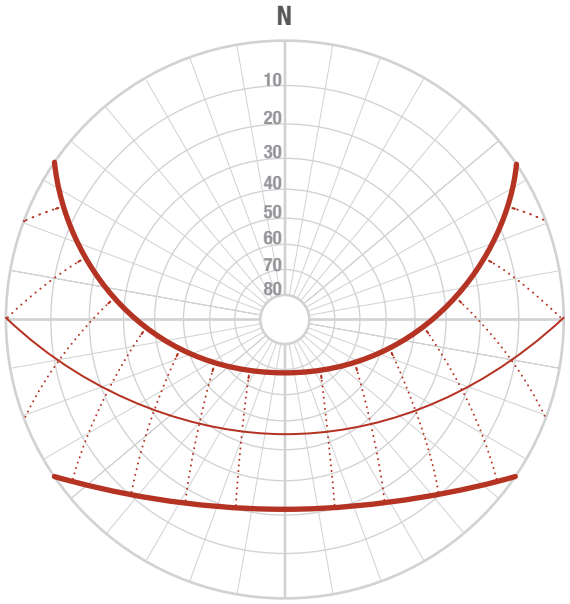
Wind

The trees to the north and apartment complex to the south affect the wind flow to the site. In the spring and summer it is more effective due to the increased wind flow from the south and east.

Light

Most of the site has direct sunlight through out day. the Apartments to the south shade the mill building slightly in during the winter months. The other area of shading is from the water tower. At night the water tower is illuminated from the ground and the reflected light slightly lights the site.

Figure 13.4 - Sun Path



Lat. 45° 34' 9.6126" N
Lon. 94° 19' 0.5226" W

(Above) Sun Path Diagram. Data from Brown, G. Z. (2001). Sun, wind, and light. architectural design strategies. (2nd ed.). John Wiley. Illustration by Michael Stark (2012).
(Right) Wind Rose. Data from Minnesota Climatology Working Group. (2004, October 06). Wind roses for st. cloud (kstc). Retrieved from http://climate.umn.edu/wind/kstc.htm. Illustration by Michael Stark (2012).

Figure 13.5 - Wind Rose

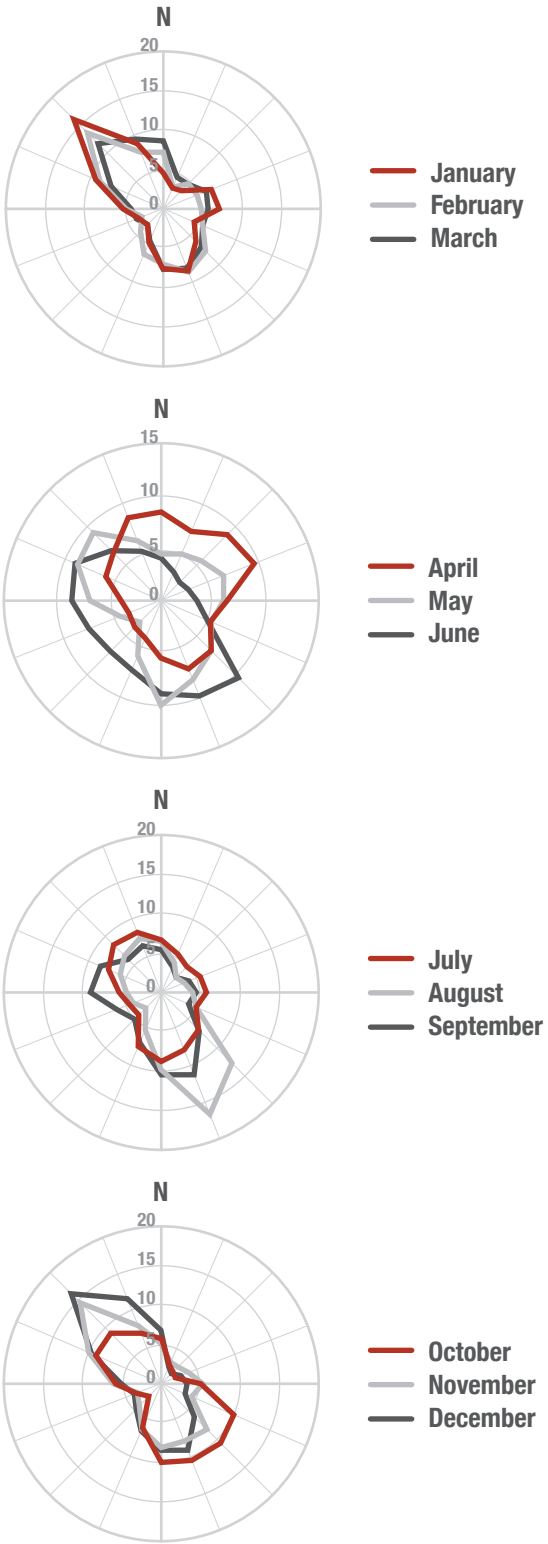
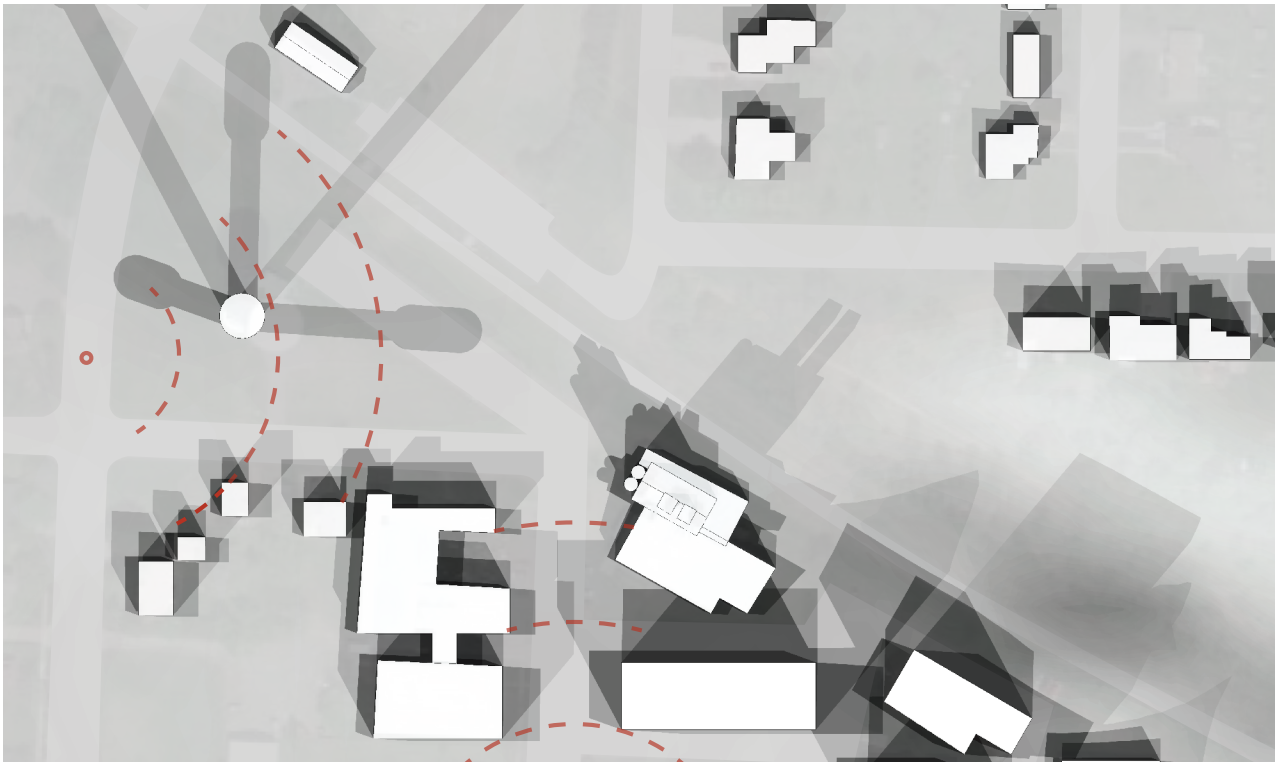


Figure 13.6 - Shading and Noise



Michael Stark (2012).

Built Features

There are a few built features on the site, including one which is the base for the project, the feed mill. Other built features include two parking lots, utility poles, a fire hydrant, and the current trail head. The current trail head includes restrooms and covered seating.

Human Characteristics

The main use for the site is access to the Lake Wobegon Trail. Part of the site is an extra parking lot for the apartments adjacent to the site. Bicycling, roller-blading, walking, and running on the trail are by far the most used part of the site. Patrons drive up, park, unload, and then prepare for their individual journeys on the trail.

Distress

An area of distress on the site is the vacancy of the feed mill building. The distress of the building is displayed by the boarded up windows. The pavement on the site is showing signs of distress.

The trail thrives with activity in the warmer months with bicyclist, runners, etc. The adjacent area around the site, mostly to the south is a dead spot for activity. There are a few houses and a shop. Directly south of the vacant mill is a complex of student apartments. Just north of the site is a residential development that is growing to the north and east.

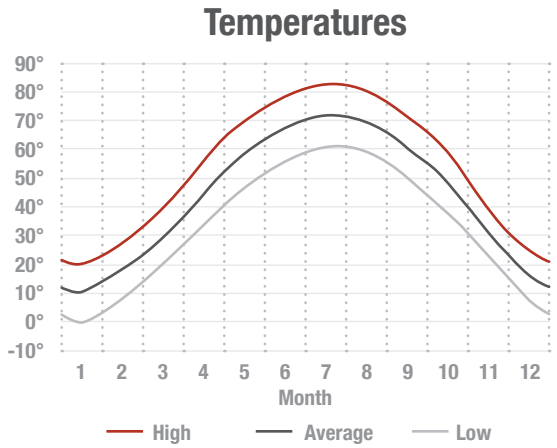
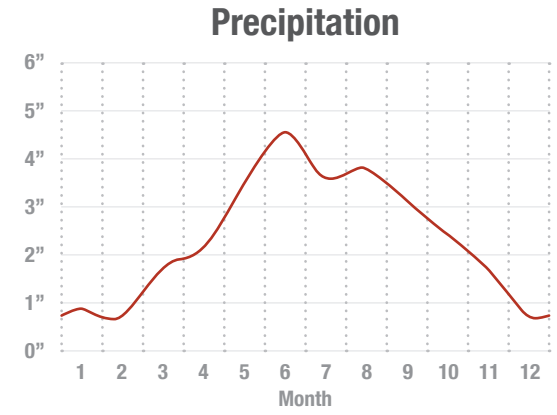
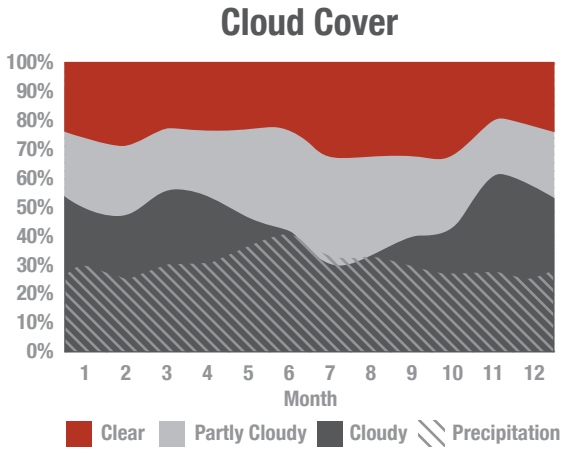
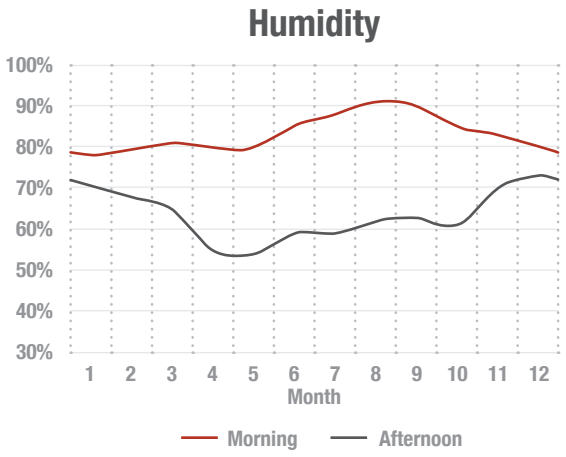


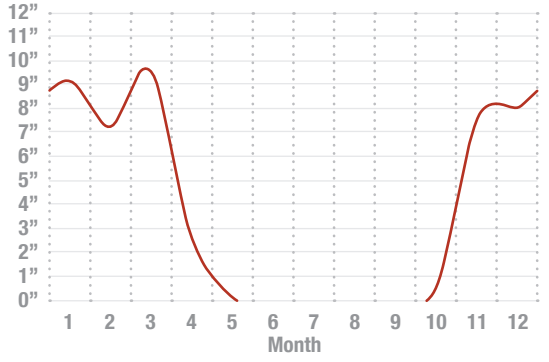
Figure 13.7 - Climate Data

City-Data. (2012). St. joseph, minnesota. Retrieved from http://www.city-data.com/city/St.-Joseph-Minnesota.htmlIllustration by Michael Stark (2012).









Programmatic Requirements

Figure 14.1 - Interaction Matrix

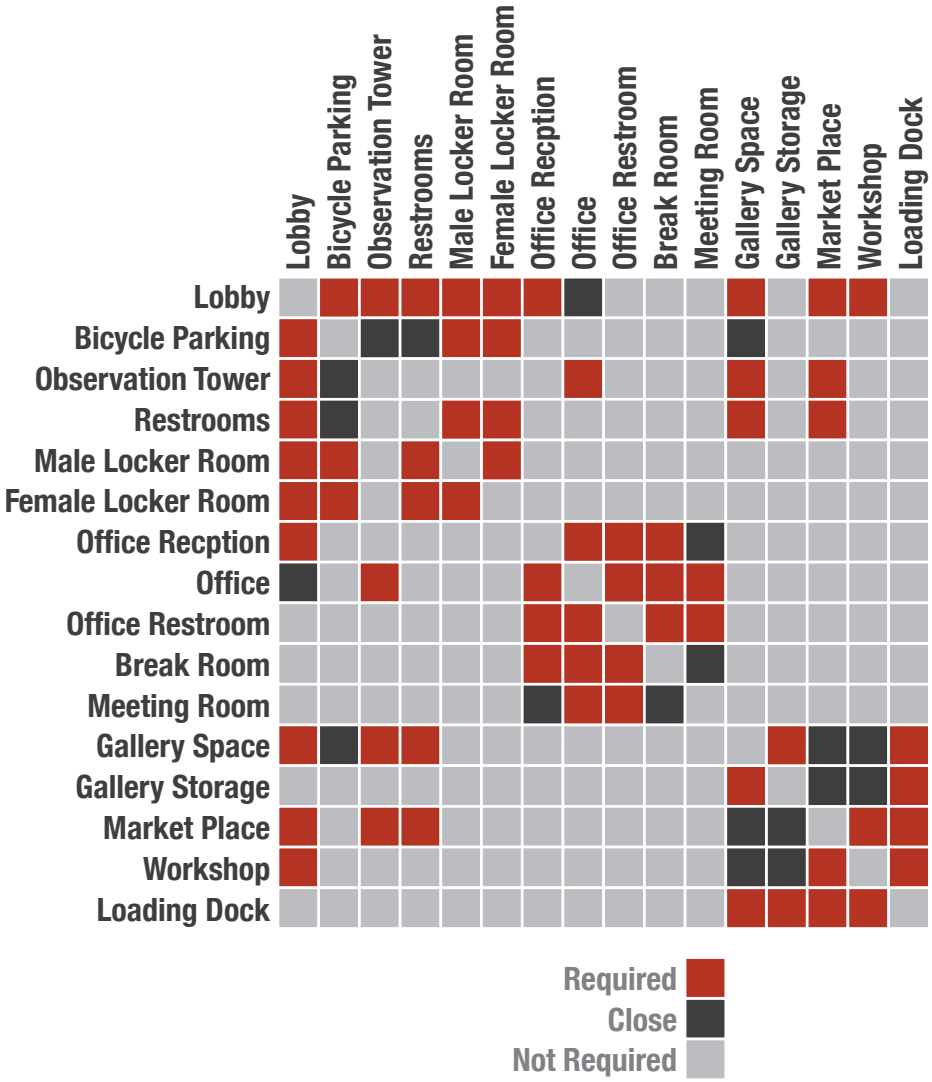


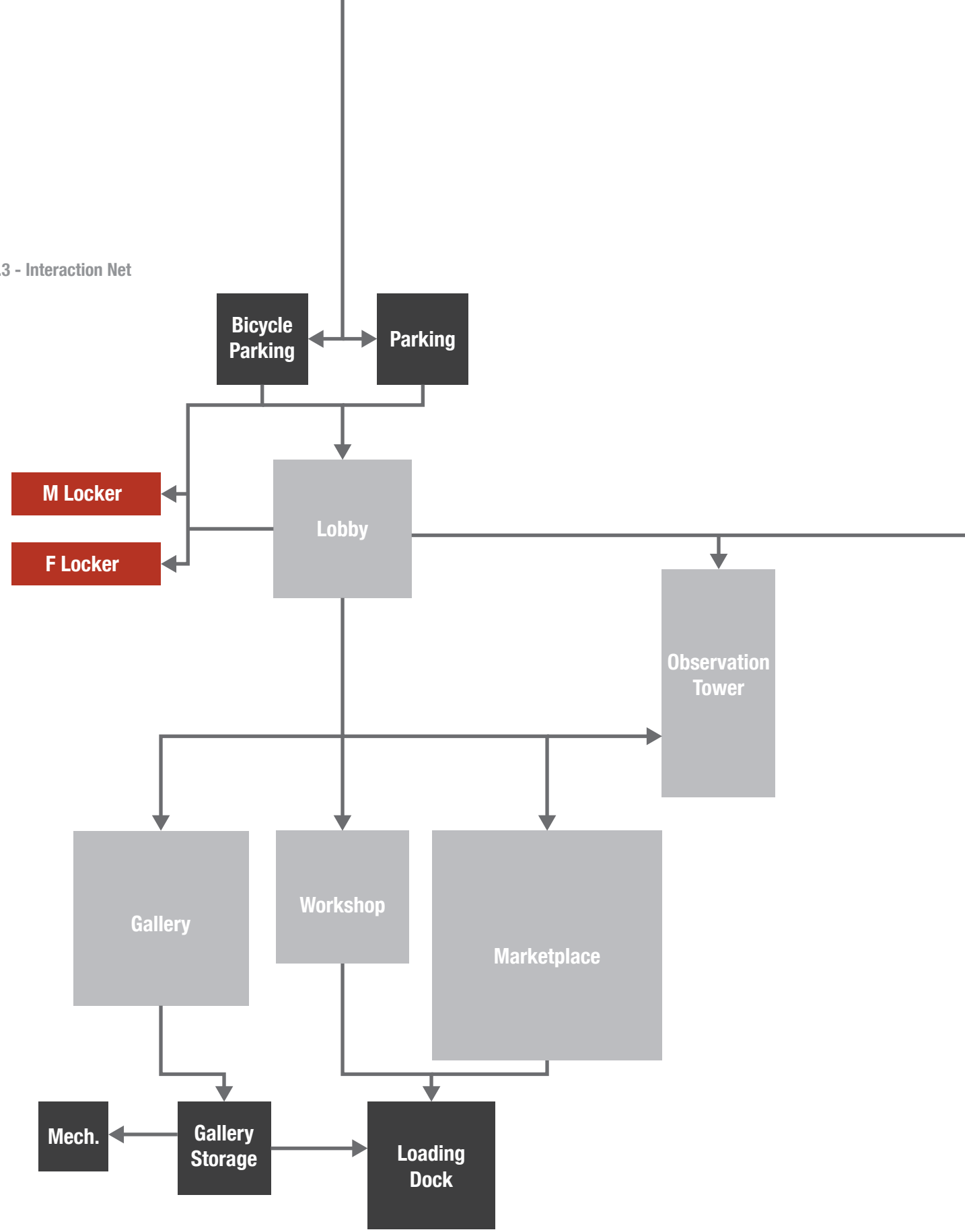
Illustration by Michael Stark (2012).

Figure 14.2 - Square Footages

Space		Percent of Total	Square footage
Lobby	-	5.3%	900 sq. ft.
Bicycle Parking	-	4.4%	750 sq. ft.
Observation Tower	-	2.9%	500 sq. ft.
Restrooms	2 x 300 sq. ft.	3.5%	600 sq. ft.
Male Locker Room	-	4.4%	750 sq. ft.
Female Locker Room	-	4.4%	750 sq. ft.
Office Reception	-	1.5%	250 sq. ft.
Offices	10 x 100 sq. ft.	5.9%	1,000 sq. ft.
Office Restrooms	2 x 200 sq. ft.	2.3%	400 sq. ft.
Meeting room	-	1.5%	250 sq. ft.
Break room	-	2%	350 sq. ft.
Exhibit/Gallery Space	-	14.9%	2,500 sq. ft.
Collection Storage	-	4.7%	800 sq. ft.
Marketplace	8 x 500 sq. ft.	23.8%	4,000 sq. ft.
Workshop	-	5.9%	1,000 sq. ft.
Loading Dock	-	7.1%	1,200 sq. ft.
Mechanical	-	4.4%	750 sq. ft.
Parking	-	-	-
		Total	16750 sq. ft.

Illustration by Michael Stark (2012).

Figure 14.3 - Interaction Net



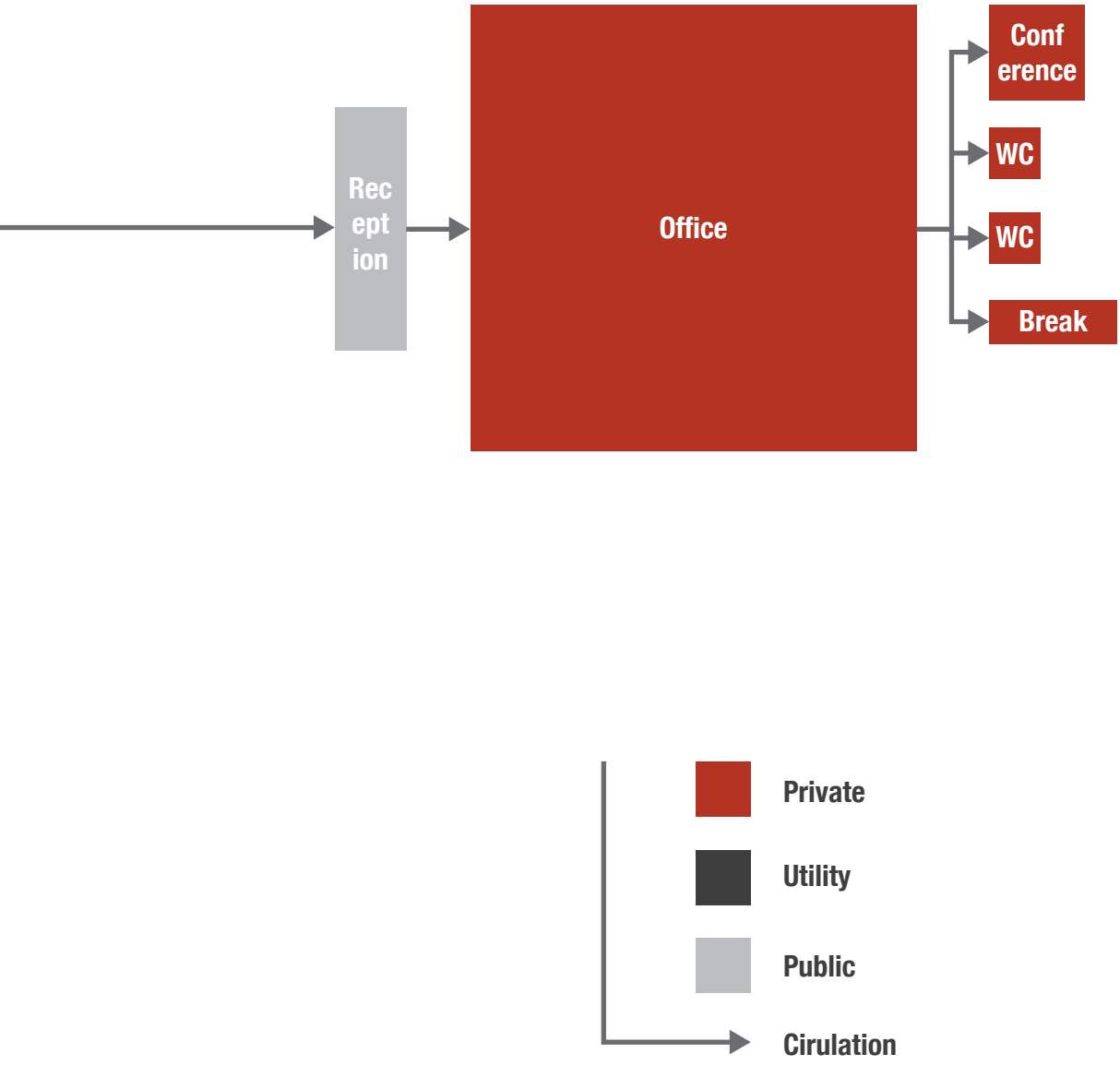
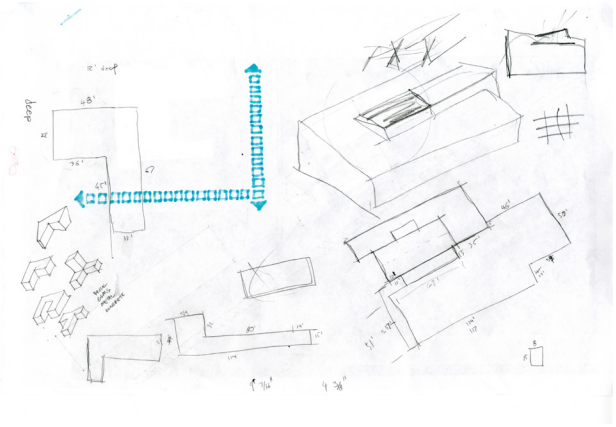
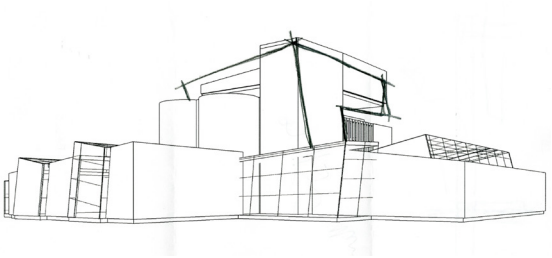


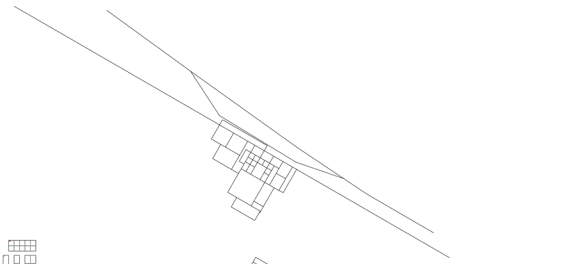
Illustration by Michael Stark (2012).

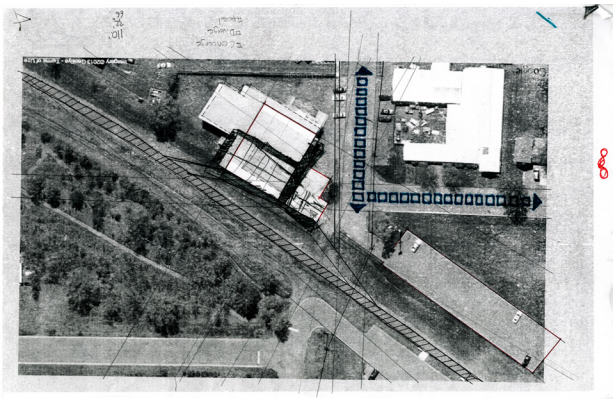
The Design

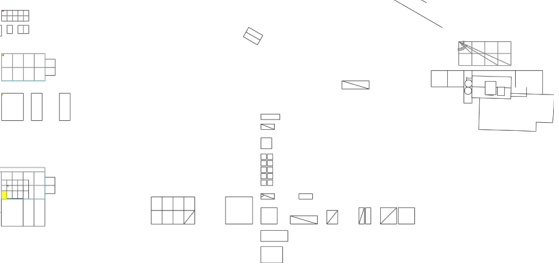
Process Documentation

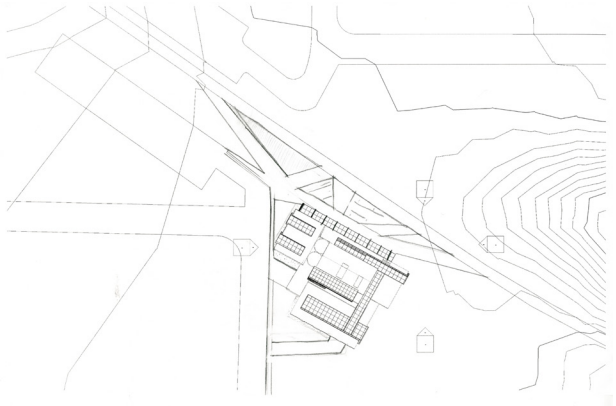


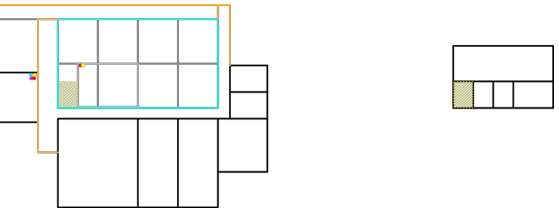


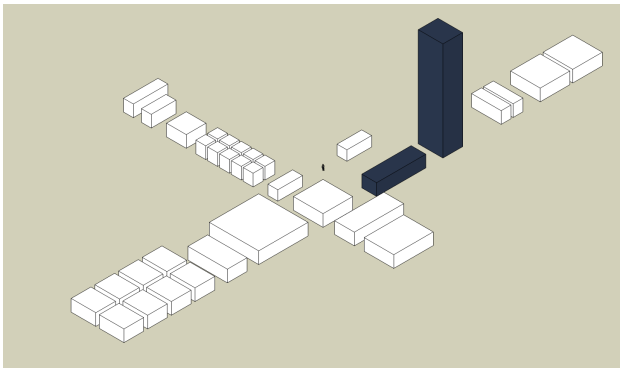


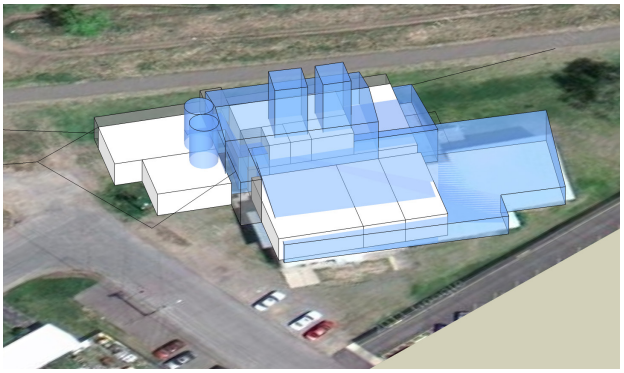


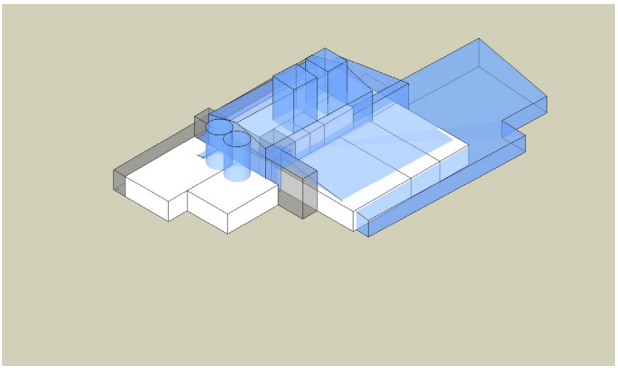


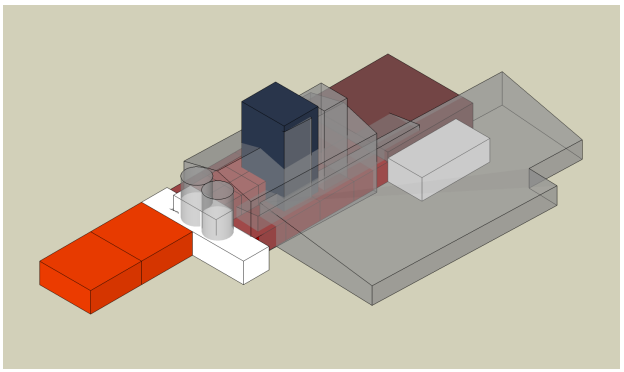


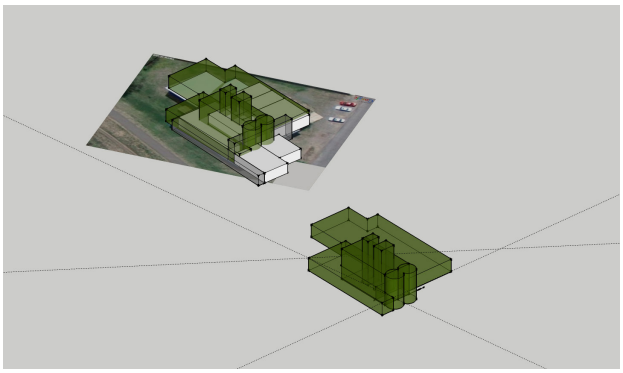


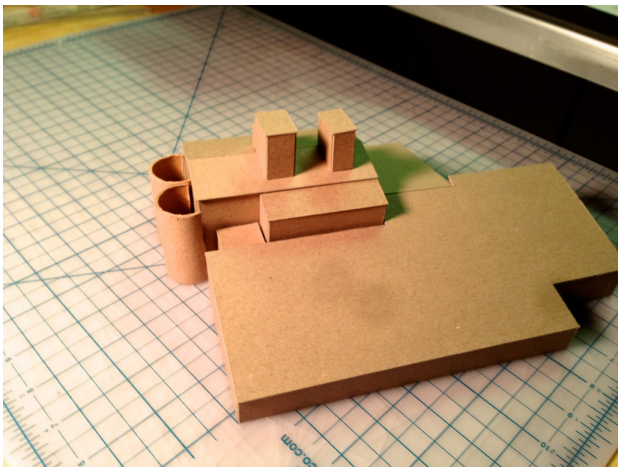


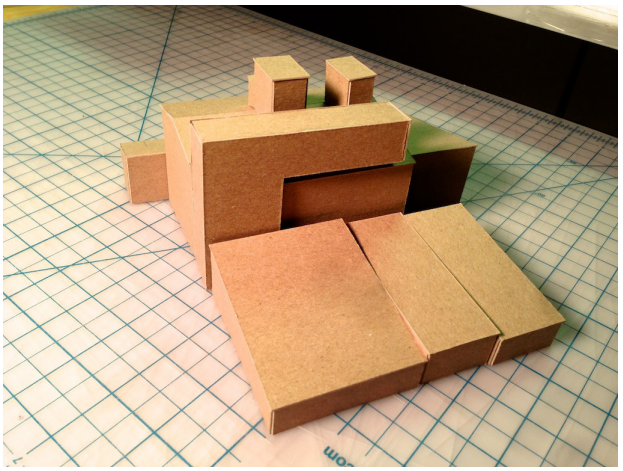


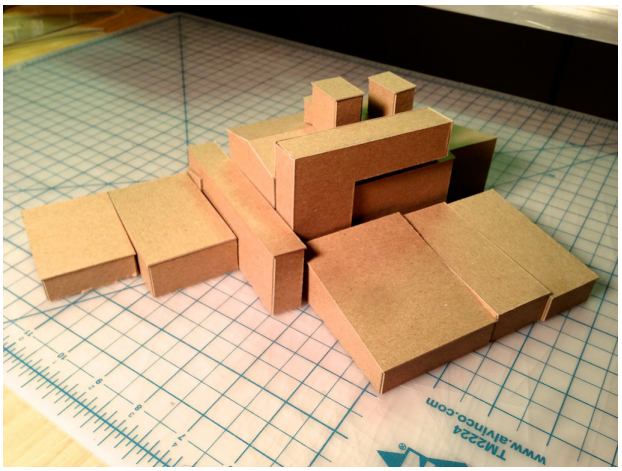


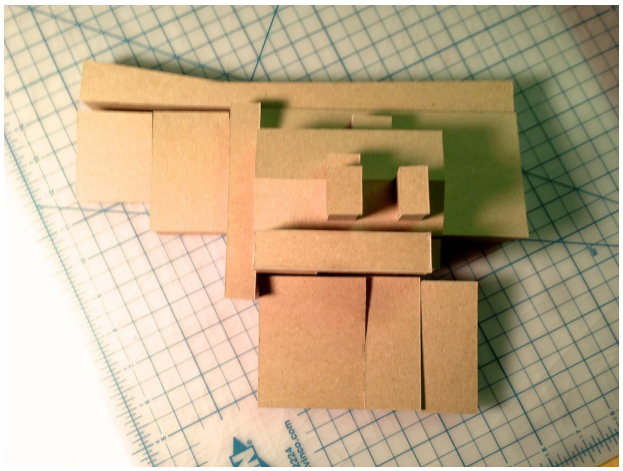


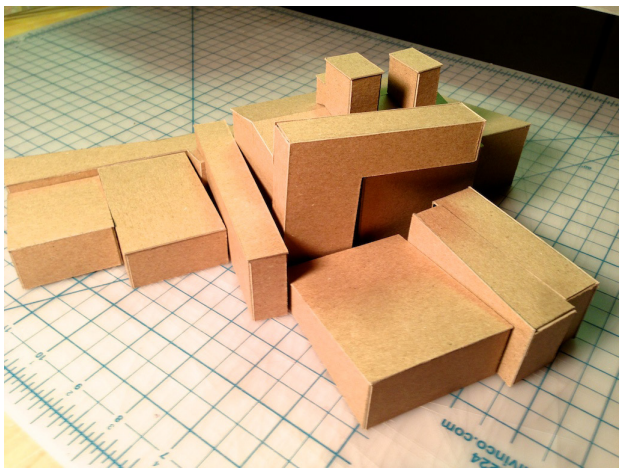


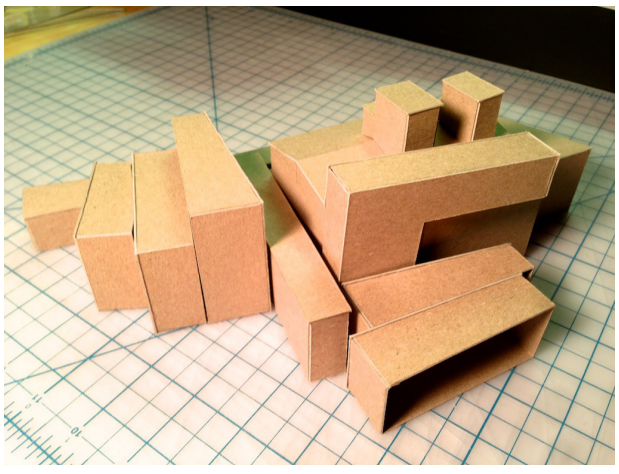


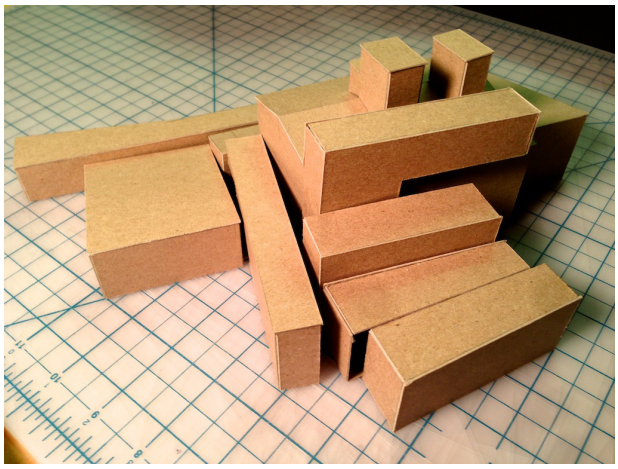


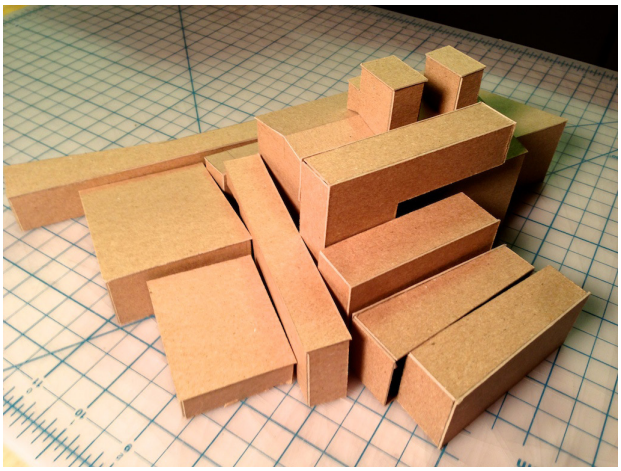




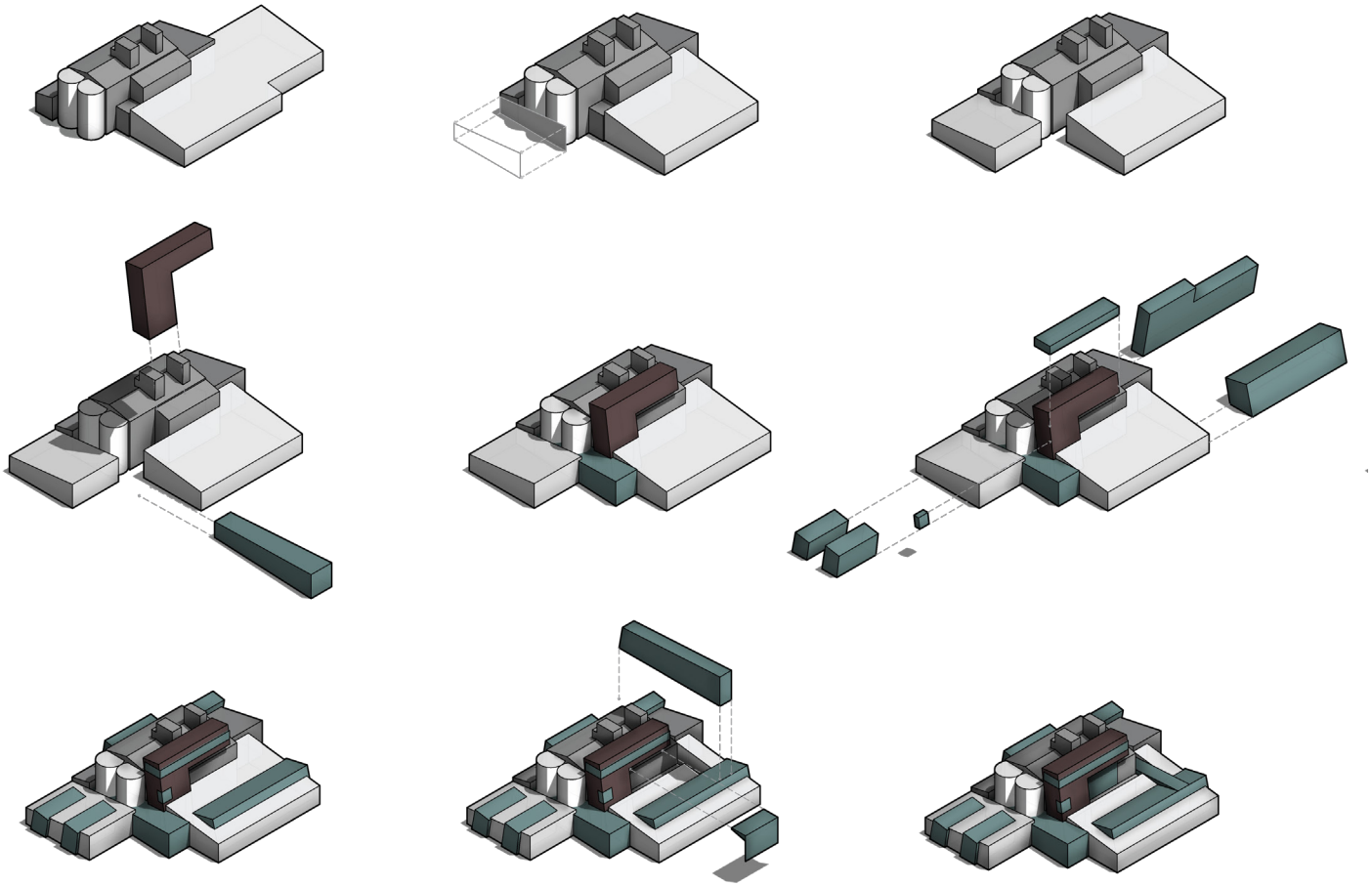


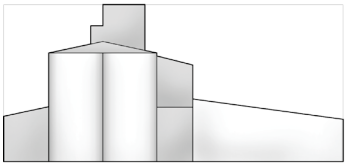


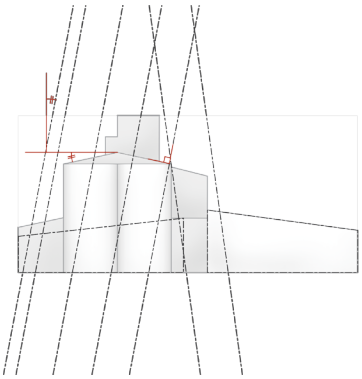


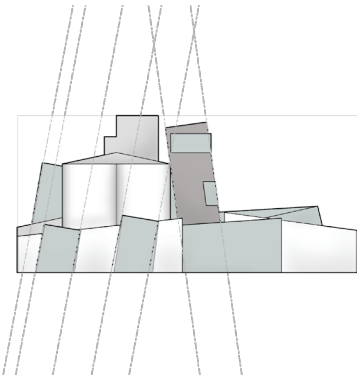


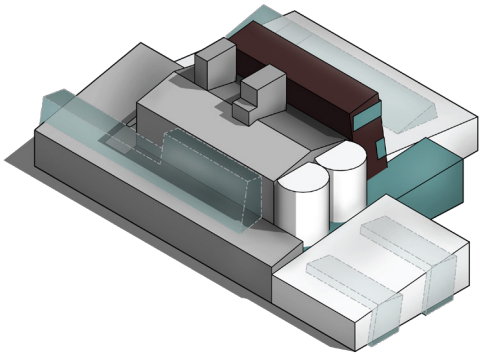
Project Solution Documentation

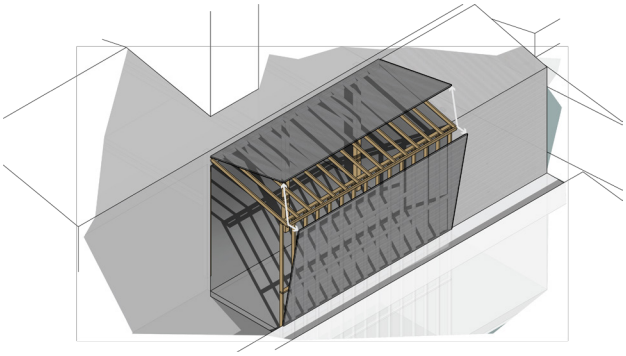


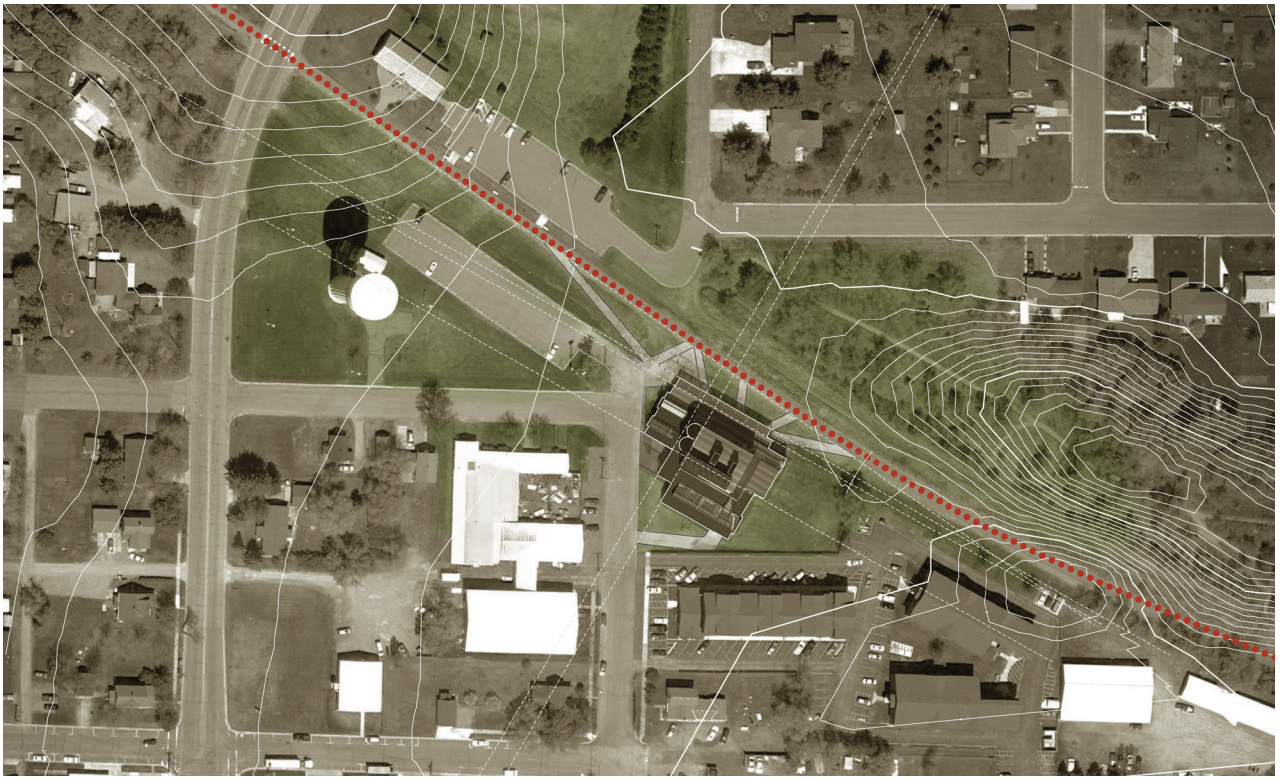


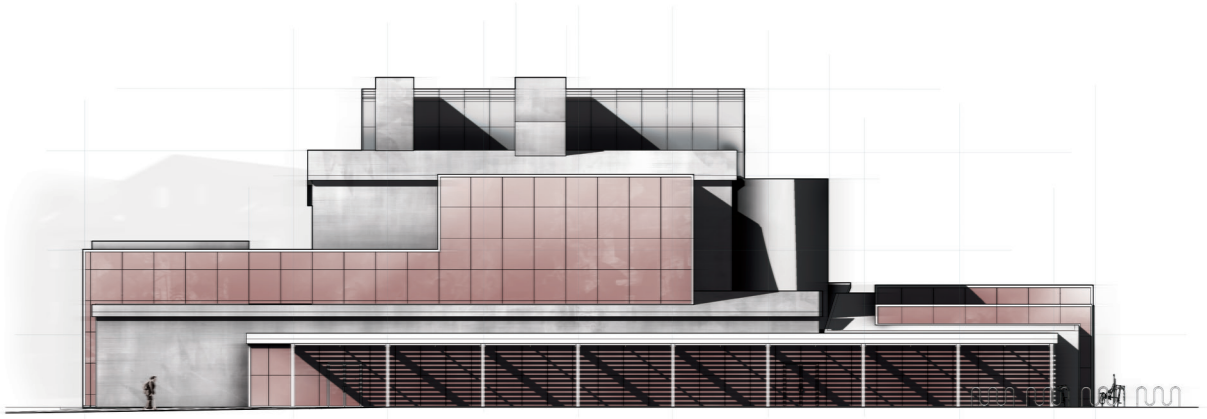


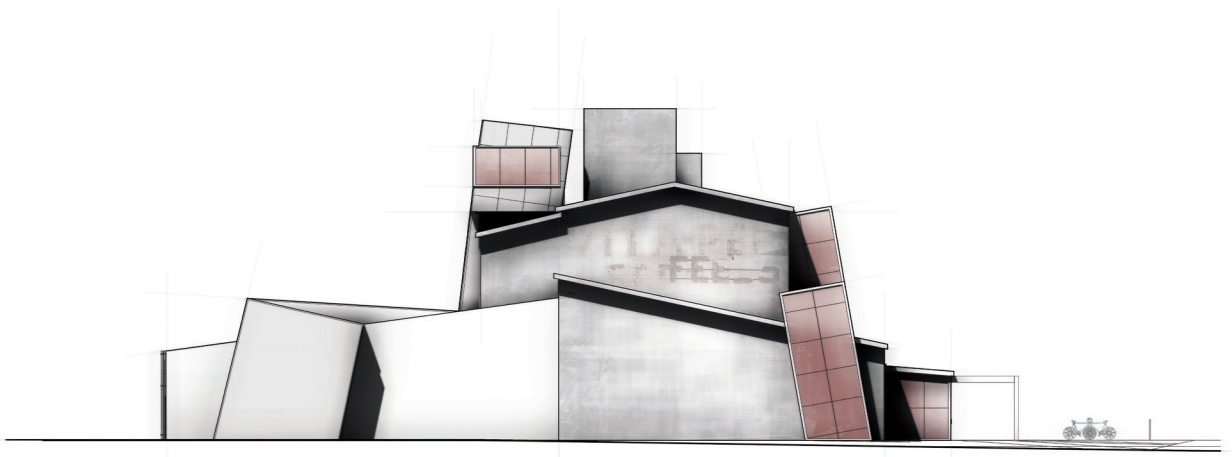


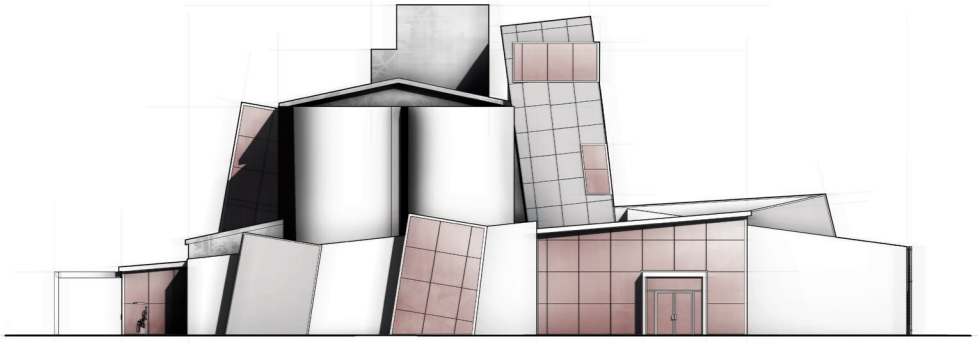


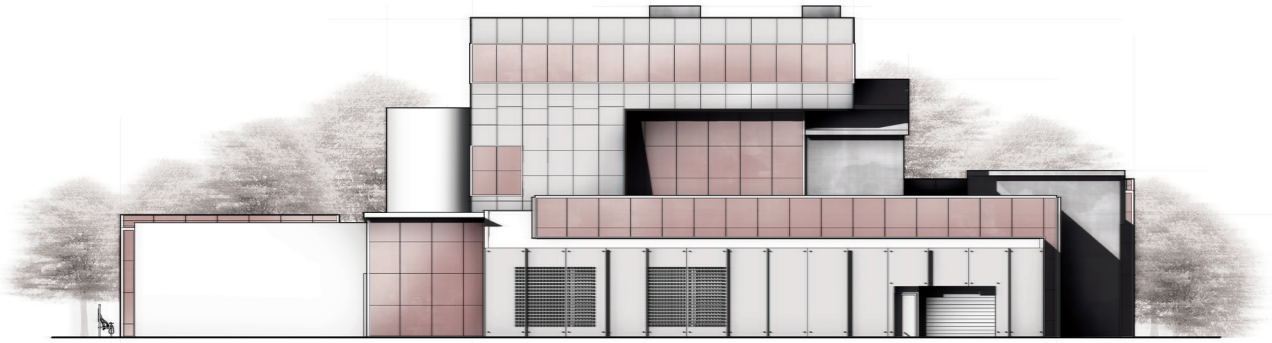


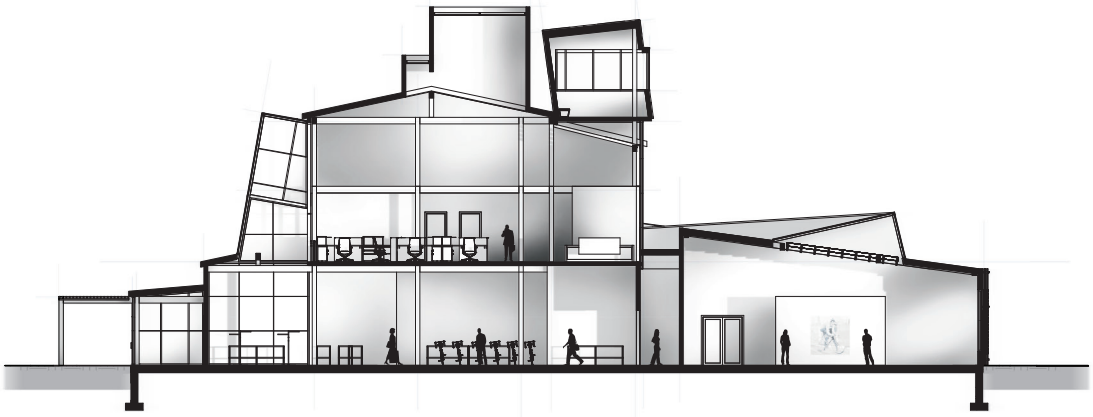


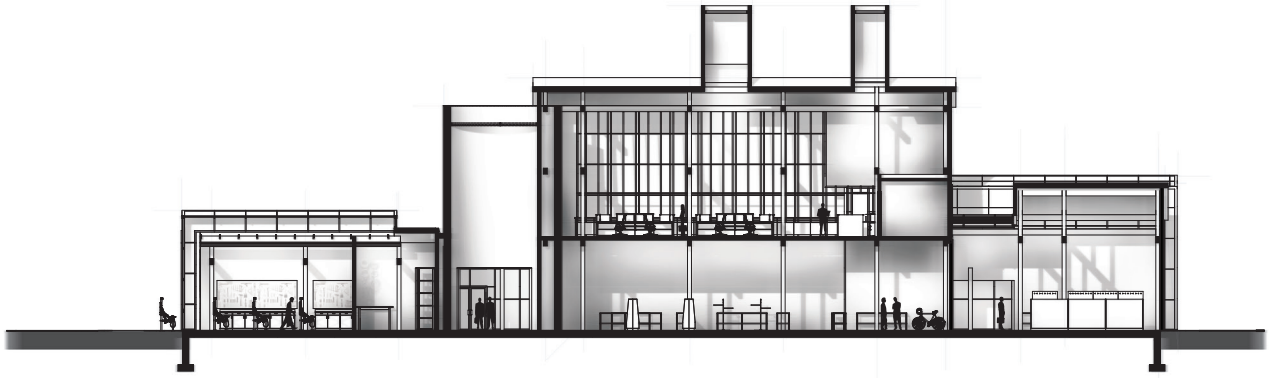


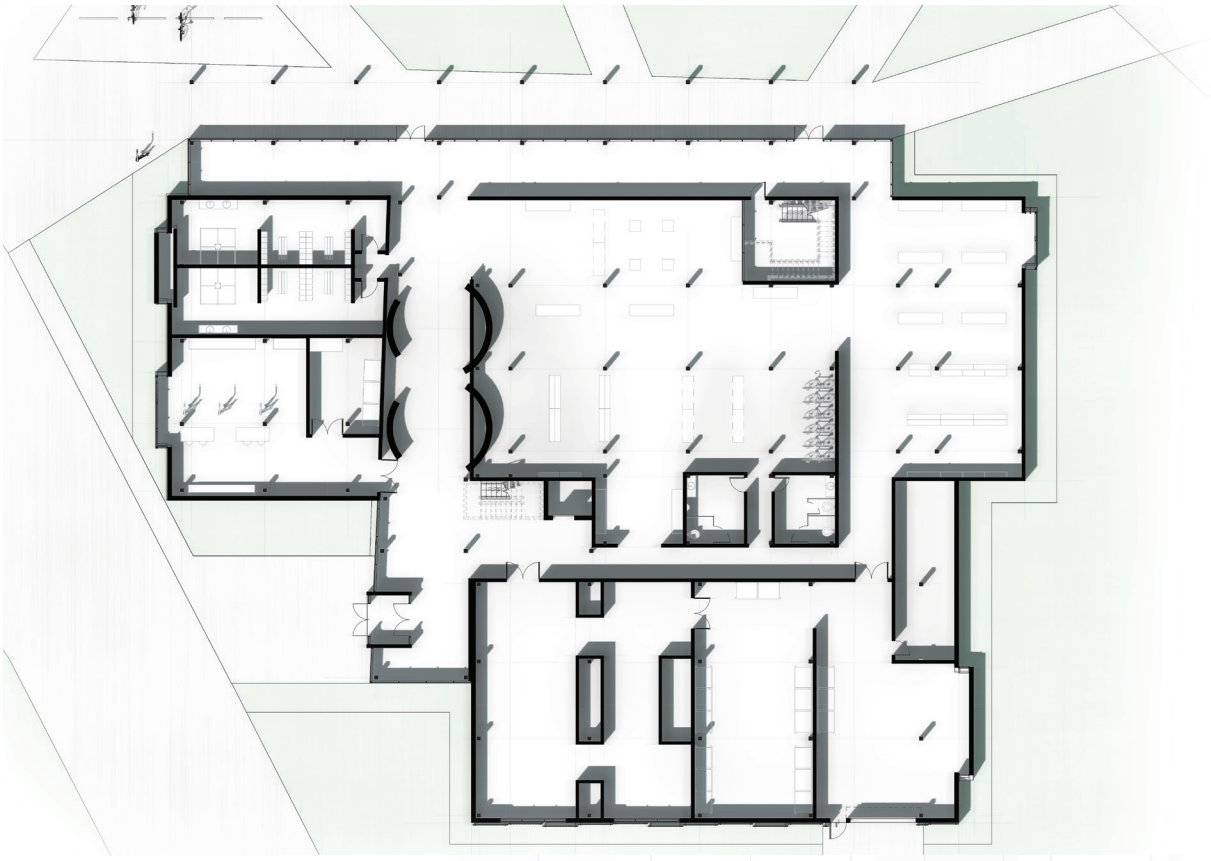


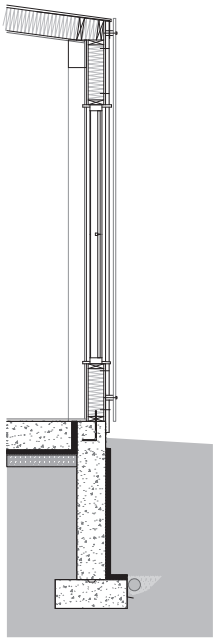


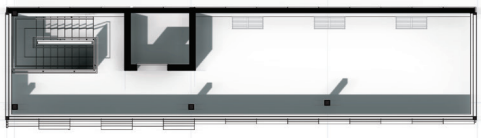


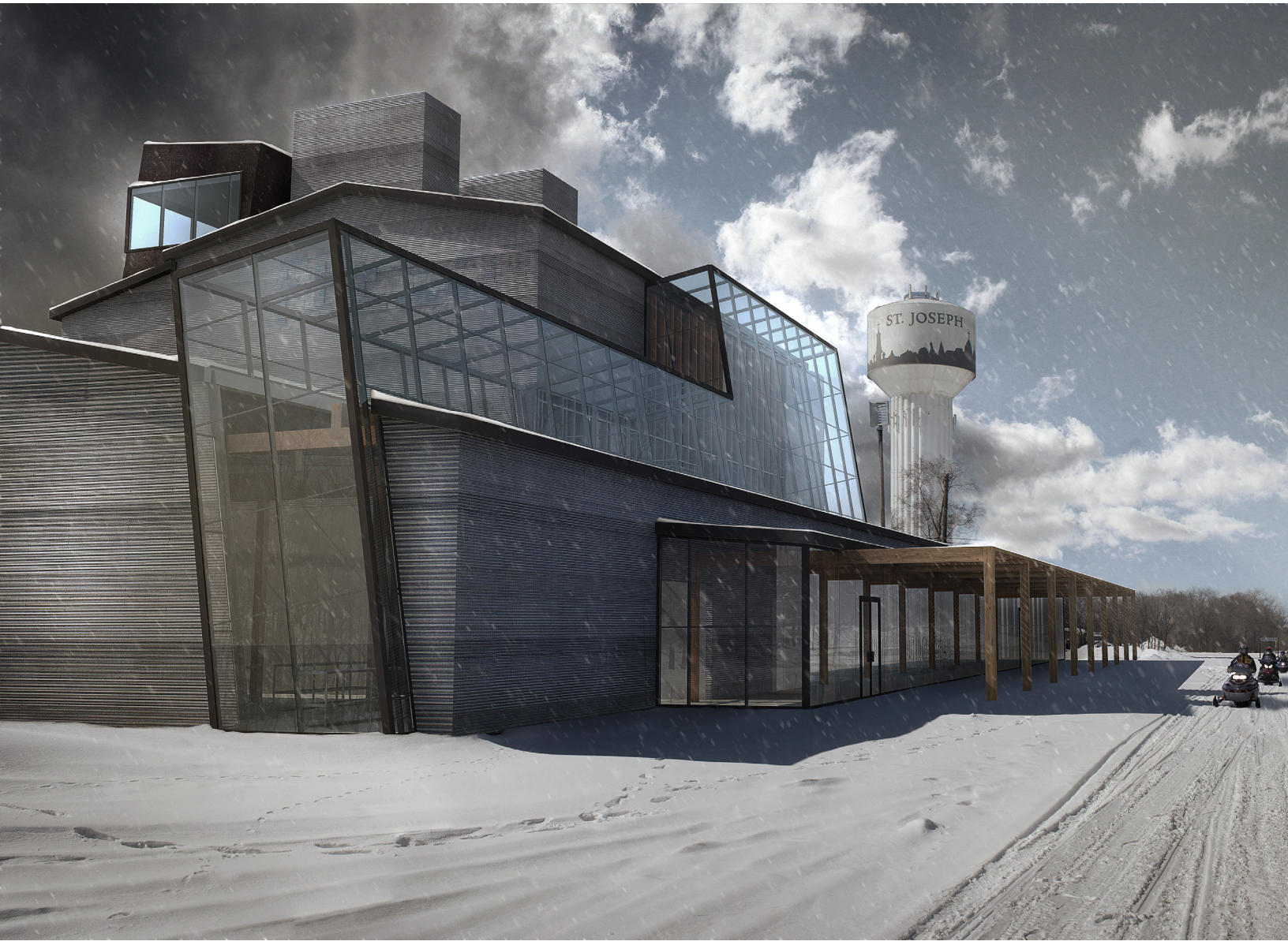


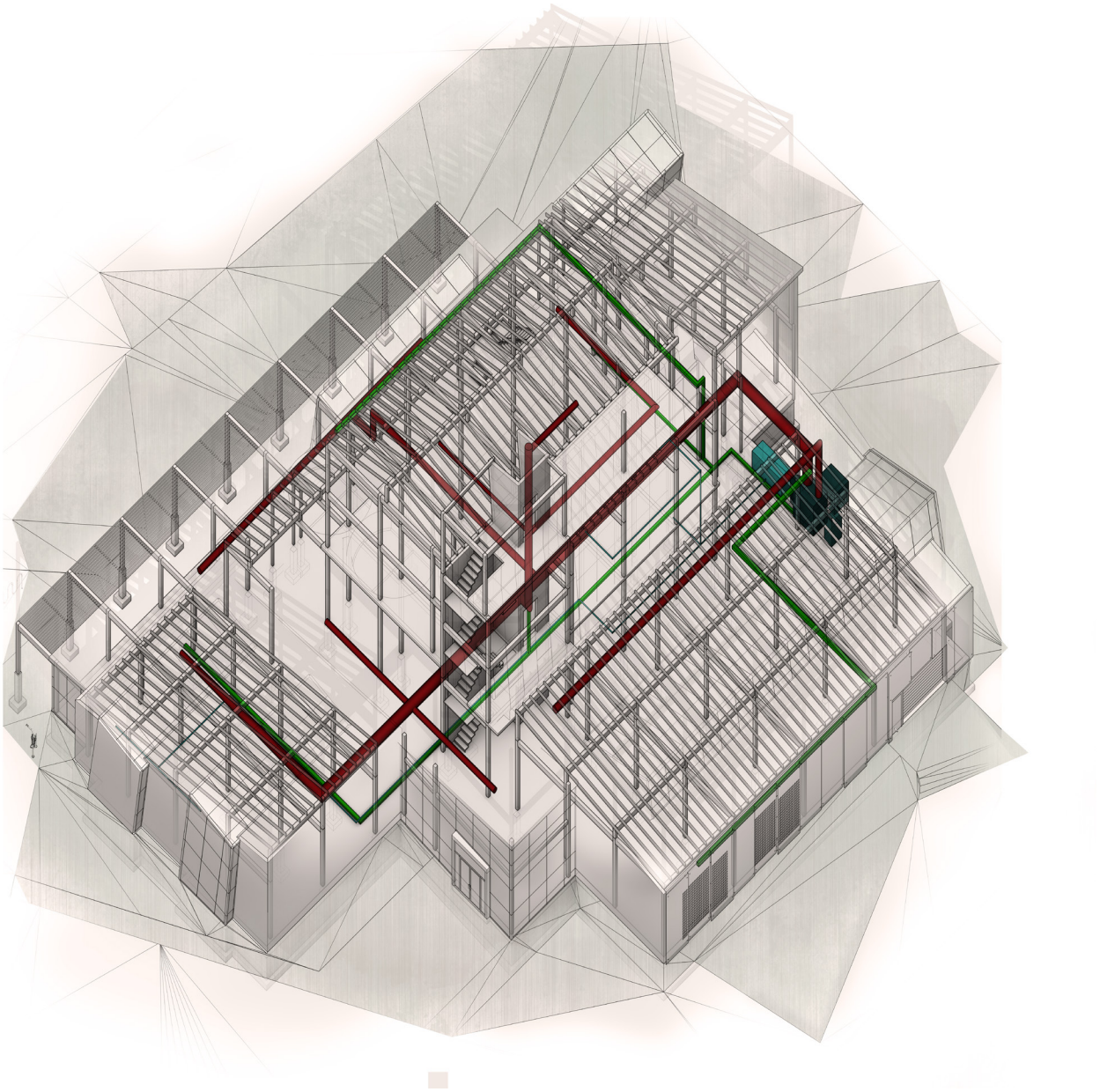


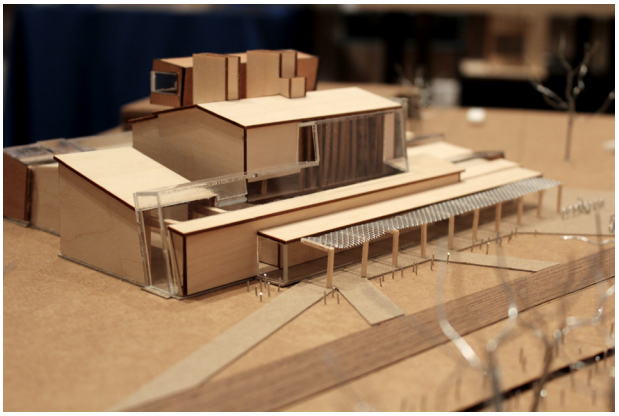






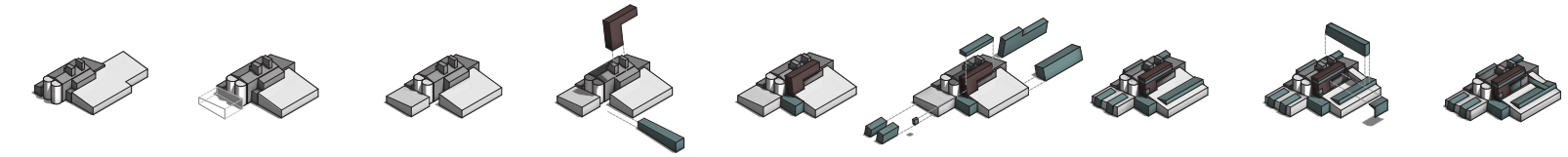

ST. JOSEPH

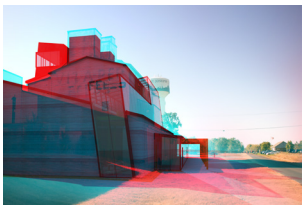




Old + New

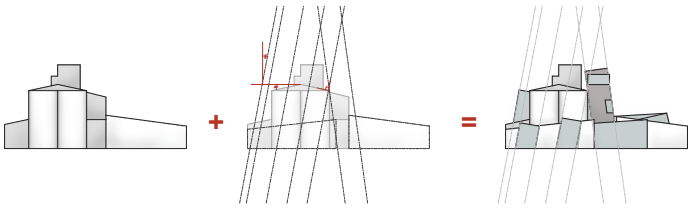
How can buildings that no longer serve their original purpose be reused for a new typology?





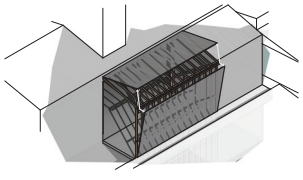
Binocular Rivalry

(Above). Binocular rivalry is a visual phenomenon when a different image is visible in each eye. When the above images are viewed wearing red/blue anaglyph glasses, the left eye sees a photograph of the original building and the right eye sees a rendering of the new additions to the building. The observer struggles to resolve the two images. The images can be viewed separately by closing either eye or they can be observed with the binocular rivalry. The far image is the resolved, finished design with the stereoscopic 3D effect.



Similar Design Language

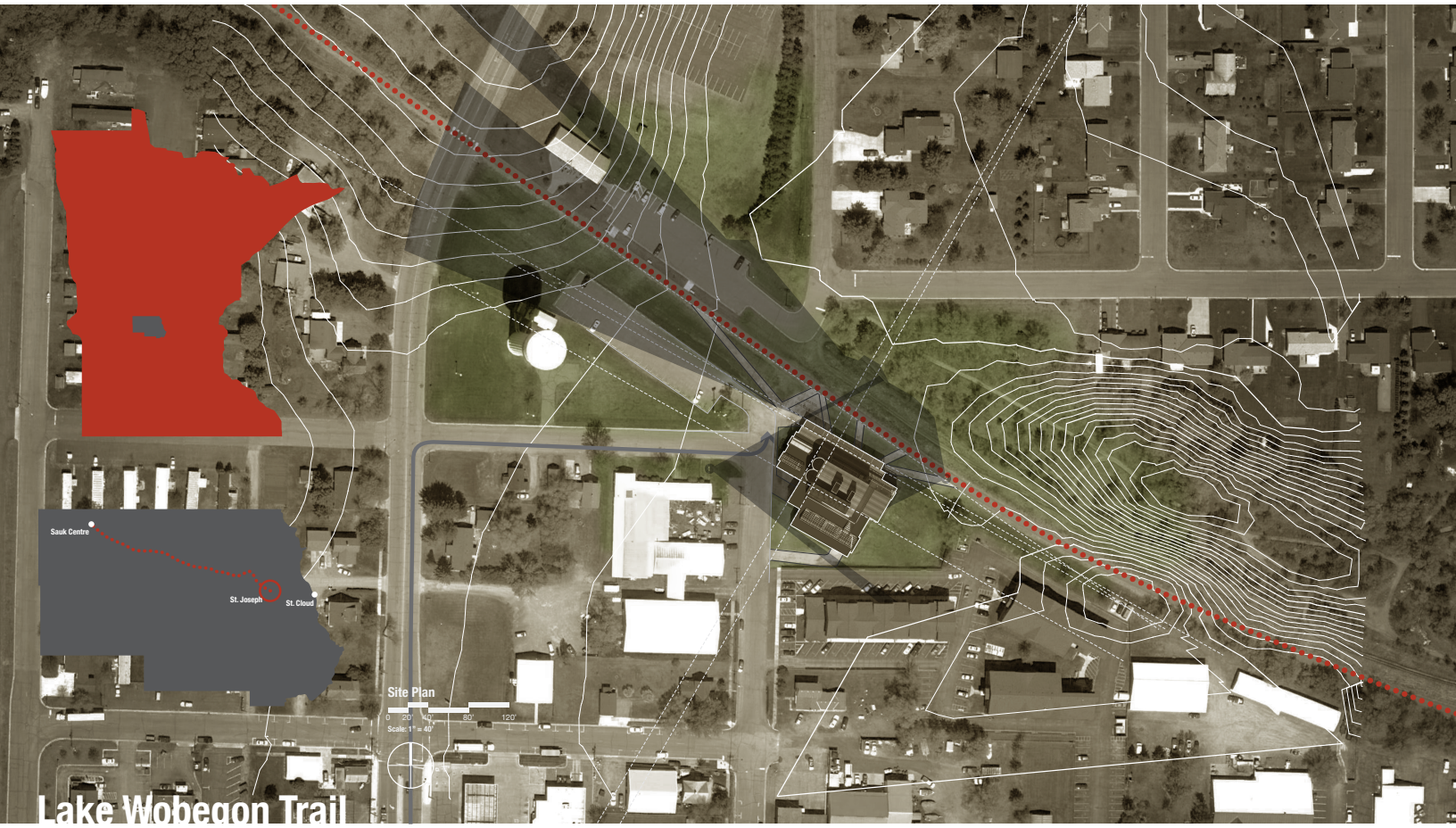
The design takes geometries from the original building and uses them to create the additional elements of design. The profiles of the lower sections of the original building are extruded to create the masses of the additional spaces. The angle of the roof slope is used to create an array of reference lines for the glazing masses that create the openings for light and views. The observation tower uses the same angle as the glazing, but it is mirrored horizontally.



Peeling and Reveali

In areas the original skin building is peeled away to openings for views and ligh diffusing the light. The balloon frame that is revealed sun screen while revealing the structure in the new design.

The timber frame is visible design and the additional spac similar structure.



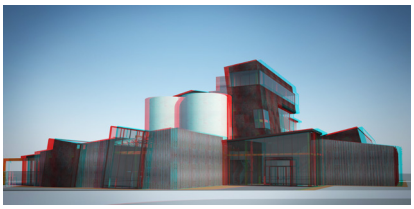
Lake Wobegon Trail

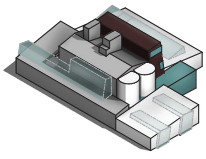
Saint Joseph, Minnesota

The site for this thesis project is in Saint Joseph, Minnesota, along eastern end of the Lake Wobegon Trail. Extending from Saint Joseph to Osakis, the trail is 62 miles long and connects to other trails such as the Soo Line Trail and the Central Lakes Trail. These trails were formed from old, defunct railways which were paved over to create recreation paths through the rail banking legislation.

The site is an old feed mill building from 1890 that has been sitting vacant for at least a decade. Made of timber and metal panels, the building is a collage of different additions throughout the years.

Nearby the site in Saint Joseph, there is a growing community of businesses, homes, and schools. There are two nearby colleges, College of Saint Benedict and Saint John's University.

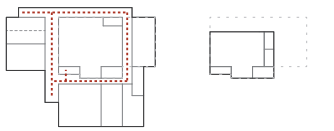




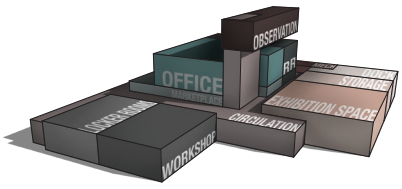
Increase Glazing

The original building had no openings for light to get in. Its typology didn't require much light to begin with. In order for a new typology to inhabit this space there must be increased glazing for light and views. The masses of glazing are placed to create the views over looking the trail and increase light penetration. The light is mostly diffused by either being on the north facade or through screens. This light quality works well for the program elements of offices, exhibit spaces and workshops.

2



Spatial Planning



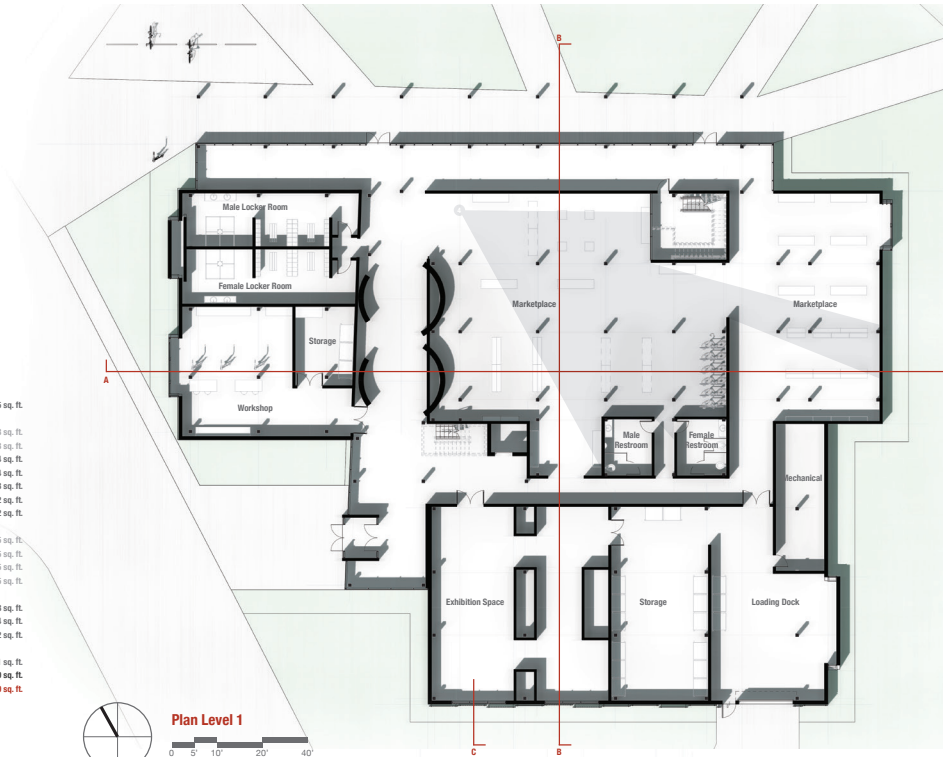
The program for the building contains a workshop, locker rooms, a market, exhibition space, office space, and an observation tower. The typology is to serve the trail and community as a depot for users of the trail and create more awareness of the trail.

The workshop and locker rooms need quick access to the trail and be some what separate from the rest of the spaces. The offices that house the trail association are on the second floor since they are a less public space. The market place is below the offices and is also close to the trail for easy access from the trail. The market may sell items for people using the trail, for example, snacks or bicycle gear.

There is an exhibit space for displaying local art, informational exhibits, or for holding events with storage and a loading dock attached to it.

The observation tower extends vertically from the main circulation stair to create views over the city of Saint Joseph. The tower makes visual connections with the other high points in the city; the catholic church's tower and the water tower. These are prominent components of the skyline.

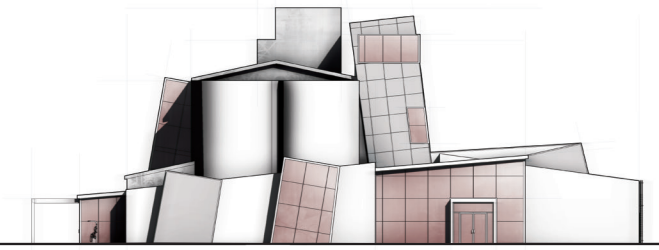
Level 1	
Marketplace	**4,395 sq. ft.**
Locker Rooms	
Male	463 sq. ft.
Female	463 sq. ft.
Workshop	**874 sq. ft.**
Exhibition Space	**1,674 sq. ft.**
Storage	**923 sq. ft.**
Loading Dock	**962 sq. ft.**
Mechanical	**352 sq. ft.**
Restrooms	
L1 - Male	135 sq. ft.
L1 - Female	135 sq. ft.
L2 - Male	105 sq. ft.
L2 - Female	105 sq. ft.
Level 2	
Office Space	**2,108 sq. ft.**
Break Room	**184 sq. ft.**
Conference	**222 sq. ft.**
Level 3	
Observation	**701 sq. ft.**
Circulation	**4,460 sq. ft.**
Total	**18,440 sq. ft.**



Plan Level 1

0 5' 10' 20' 40'

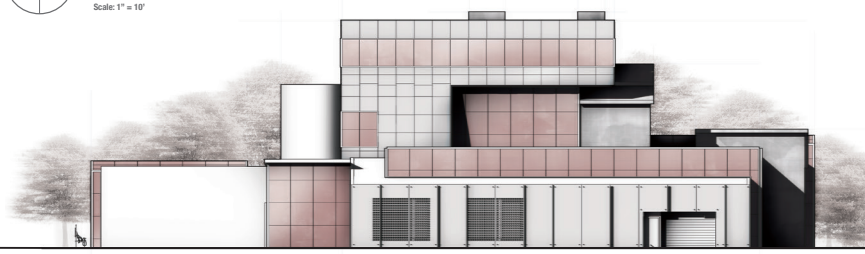
Scale: 1" = 10'



West Elevation

0 5' 10' 20' 40'

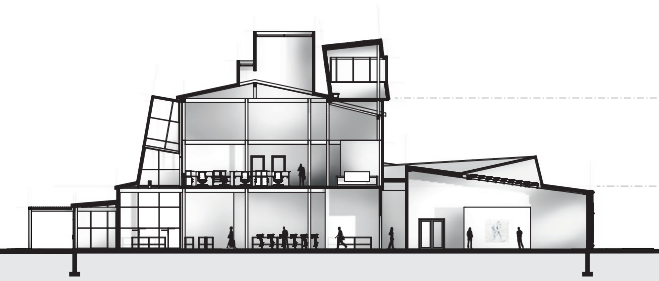
Scale: 1" = 10'



South Elevation

0 5' 10' 20' 40'

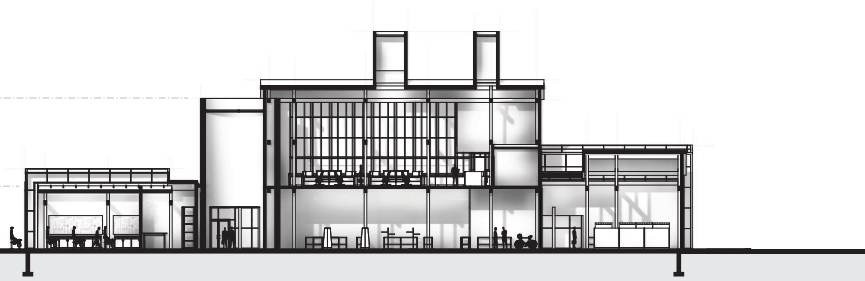
Scale: 1" = 10'



Section B-B

0 5' 10' 20' 40'

Scale: 1" = 10'



Section A-A

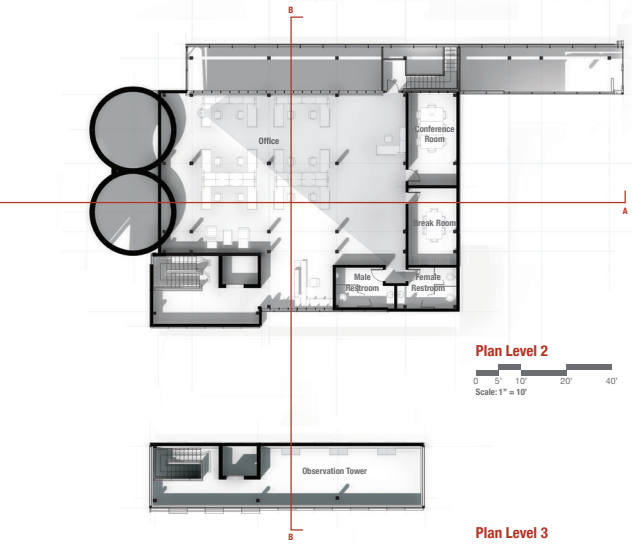
0 5' 10' 20' 40'

Scale: 1" = 10'

Old + New

Recreation Depot | 18,440 SQ. FT.

Department of Architecture and Landscape Architecture | NDSU
ARCH 772 | Design Thesis | Spring 2013
Michael Stark | Advisor: Ganapathy Mahalingam
Software: Adobe Creative Suite | Revit | AutoCAD | SketchUp | Cinema 4D



Plan Level 2

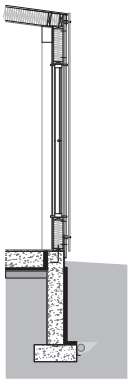
0 5' 10' 20' 40'

Scale: 1" = 10'

Plan Level 3

0 5' 10' 20' 40'

Scale: 1" = 10'



Wall Section C-C

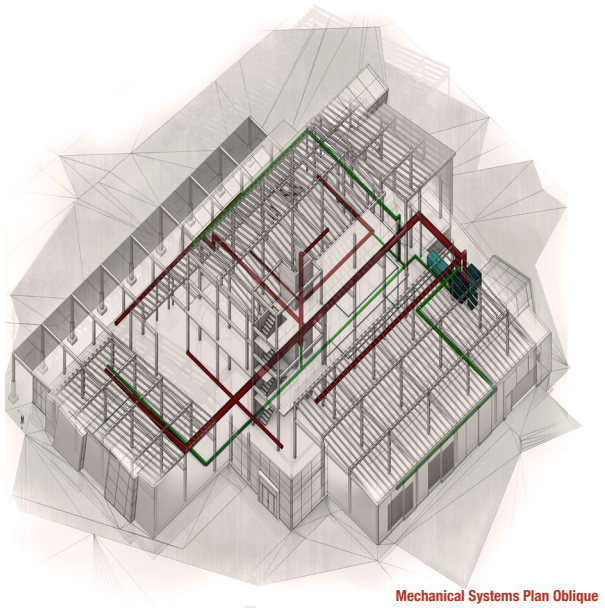
0 1' 2' 5'

Scale: 3/8" = 1'

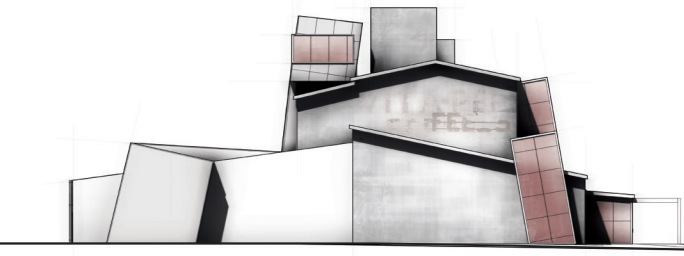
Building Components

The structure is a continuation of the original wood frame structure, then wrapped in a wooden frame skin with corrugated metal to match with the original skin. The metal panels on the original are a collage of different textures. The new spaces are wrapped in a consistent, new corrugated metal panel. The tower is clad in weathered steel panels.

The HVAC is housed in the mechanical room by adjacent to the loading dock. It is a forced air system. The plumbing is also distributed through the same paths as the air ducts to the restrooms and the locker rooms.



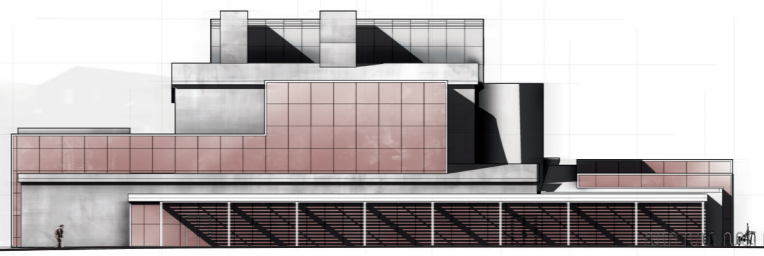
Mechanical Systems Plan Oblique



East Elevation

0 5' 10' 20' 40'

Scale: 1" = 10'



North Elevation

0 5' 10' 20' 40'

Scale: 1" = 10'

Project Installation

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Previous Studio Experience

2009

Fall - Darryl Booker
Teahouse - Moorhead, MN
Boathouse - Minneapolis, MN

2010

Spring - Joan Vorderbruggen
Montesorri School - Fargo, ND
Dwelling - Marfa, TX

Fall - Regin Schwaen
Fargo Hotel - Fargo, ND
BrickStainible Competition - Baltimore, MD

2011

Spring - Ronald Ramsay
Shaker Barn Chamber Hall - New Lebanon, NY
44 West Congress Parkway - Chicago, IL

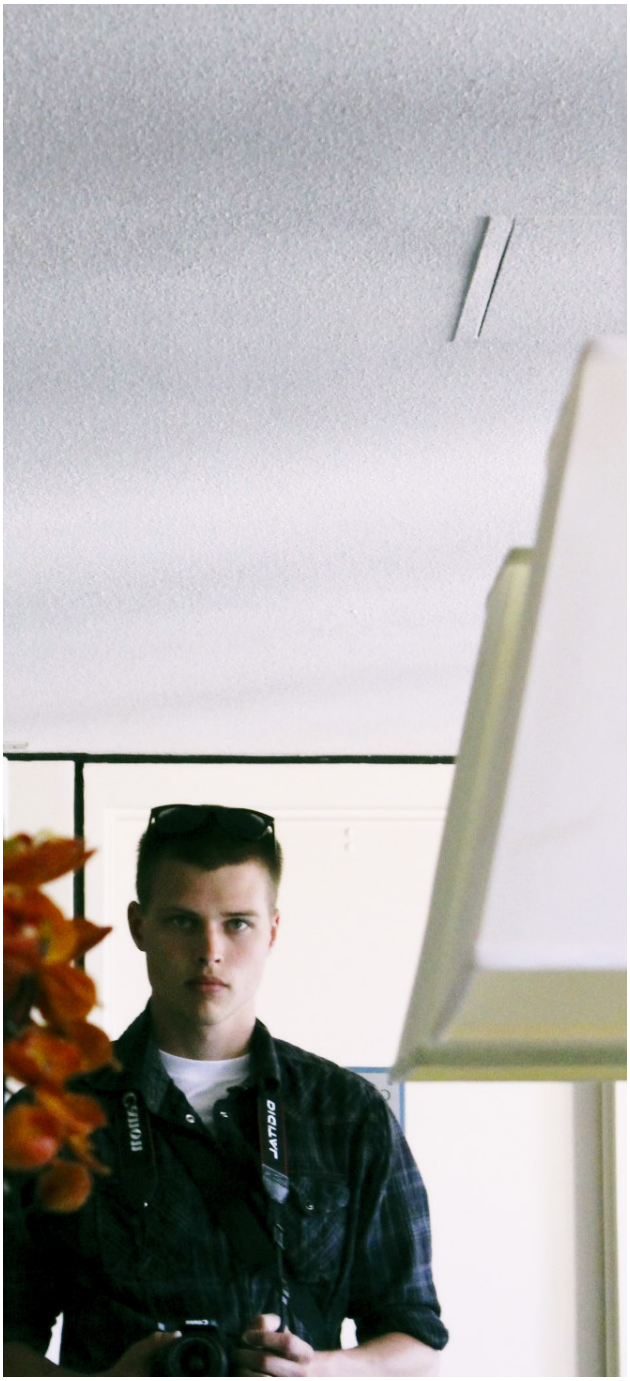
Fall - Bakr Aly Ahmed
Highrise - San Francisco, CA
DLR/KKE Competition

2012

Spring - Ronald Ramsay
Newspaper Press - Agincourt, IA

Fall - Regin Schwaen
North Dakota Museum of Art Addition
Grand Forks, ND

Personal Identification



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