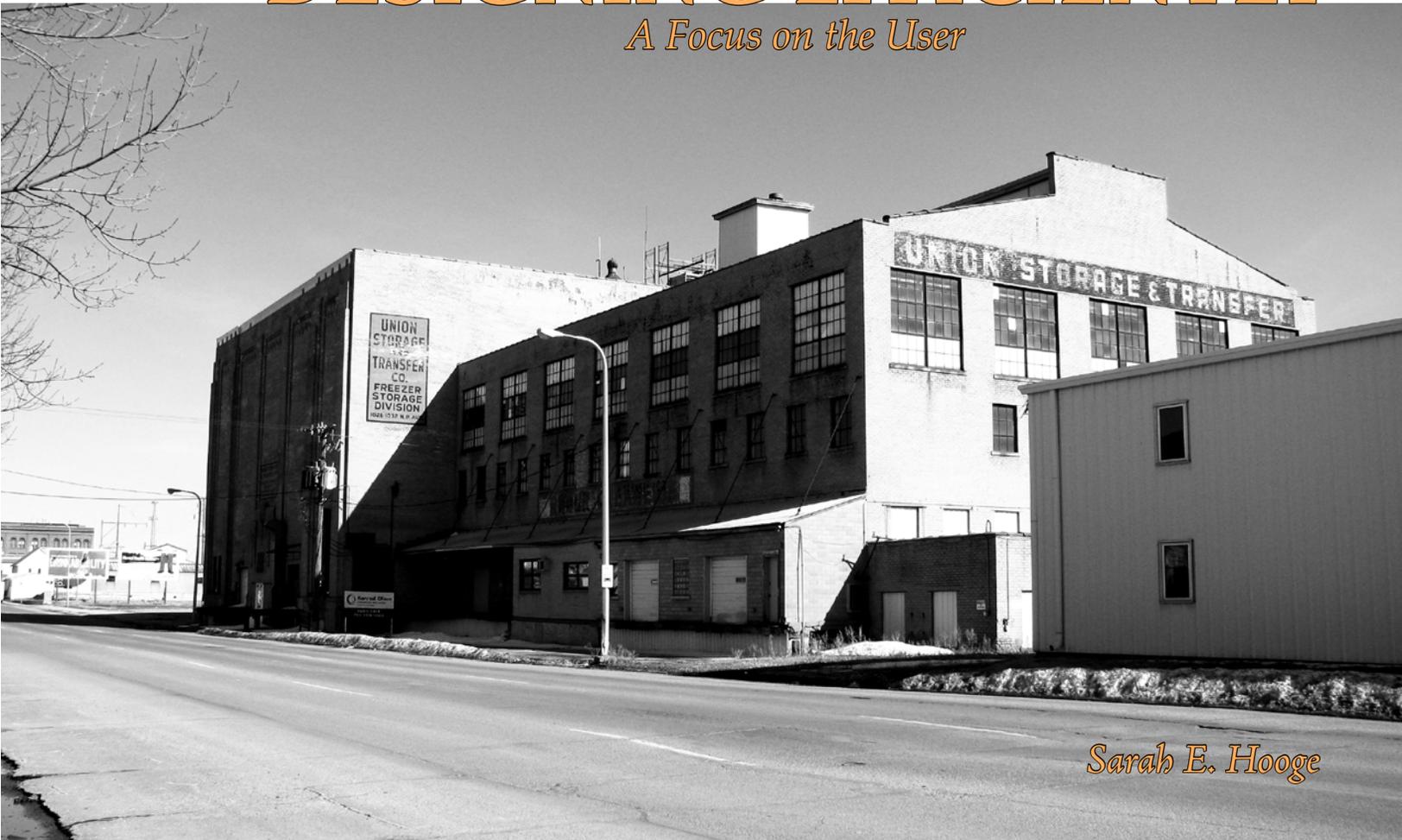


DESIGNING EFFICIENTLY

A Focus on the User



Sarah E. Hooge



DESIGNING EFFICIENTLY

A FOCUS ON THE USER

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

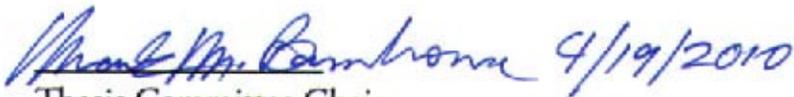
By

Sarah E Hooge

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



Primary Thesis Advisor



Thesis Committee Chair

May 2010
Fargo, North Dakota

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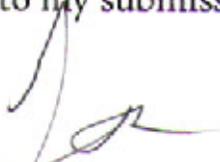
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Table of Contents

Cover Page	1
Title Page	4
Permissions	5
Table of Contents	6
Thesis Abstract	7
Statement of Intent	9
Problem Statement	10
Statement of Intent	11
The Proposal	13
Narrative	14
User/Client Description	15
Major Project Elements	16
Site Information	17
Project Emphasis	18
Plan for Proceeding	19
Studio Experience	20
The Program	23
Theoretical Research	24
Typological Research	34
Historical Context	42
Thesis Goals	49
Site Analysis	50
Program	55
Design Thesis Book	57
Design Process	59
Design Boards	70
References	73
Personal Information	75

Thesis Abstract

Our built environment is plagued by ineffective design. Often we find we have lost sight of the purpose of our built environment as our needs and tasks have changed drastically over time. A fresh analysis of our needs and how people function both physically and psychologically in space is necessary. This thesis pursues an exploration and reanalysis of design in social, historical, and physical constraints. The resulting theories are tested through a Mixed-use, Adaptive, Re-use Development. The existing structure chosen for this thesis is located at 1030 NP Ave N in Fargo, ND. It is a multi-structure warehouse originally constructed in the 1930's, consisting of approximately 80,000 square feet. Also proposed is an addition of 16,750 square feet and 22,000 square feet of designed outdoor space. To thoroughly explore the ideas developed in this thesis the project consists of private residential space, office space, and public market and recreational areas.

Keywords: Design Methodology, Adaptive Re-use, Mixed-Use

Statement of Intent



Problem Statement

What is the nature of design when we interpret utility with regard to the activities of the users rather than the use established by the building typology?

Statement of Intent

Project Typology:

The building typology for my thesis exploration is a mixed used renovation and addition project.

Theoretical Premise:

Claim:

When the design process revolves around the needs of the users, space is more efficient with regards to the needs, well-being, and productivity of the users themselves.

Supporting Premises:

Over time and place, the needs and uses of spaces have changed. Technology, social norms, and culture have changed how we live, work, and play. Architectural design is both proof of this, and trapped by it. Analysis of how we function physically, psychologically, and emotionally in spaces should drastically affect the way we design them.

Across the globe and in our own homes, there are numerous instances of unused and inadequately appropriated spaces. We design based on norms, programs, image, and efficiency. Lost in all of this is a focus on the users and what they need to function.

Functionalism with regards to the users is far more inclusive and extensive than just efficiency of square footage or material. It's about spatial relationships, comfort, scale, and mentality.

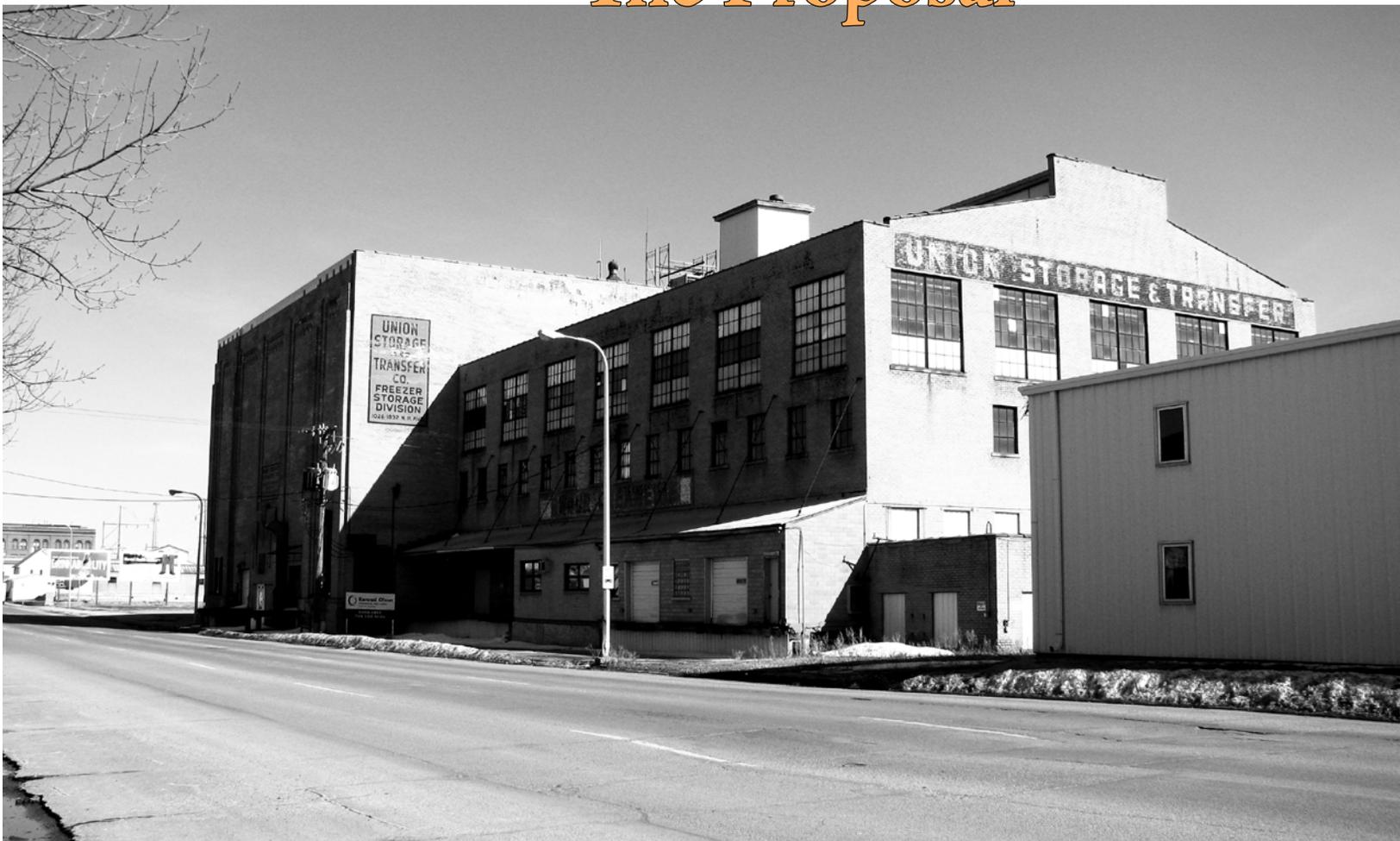
Theoretical Premise:

A fresh analysis of our needs and purpose would prove a noticeable difference in how we view and design space, catering to the physical and mental needs of the user.

Project Justification:

We often find ourselves in buildings with spaces that do not fit their purpose, or extraneous rooms with purposes long gone, and a lack of space for 21st century tasks. I challenge myself to weed through needs, wants, and goals to produce a quality of design that is efficient in the eye of the beholder.

The Proposal



Narrative

In architectural design there is a vast array of what is considered good and successful design results. This array is complicated by the subjective nature of “good” and the basis on which we determine success. We look at the Aesthetic Appeal, the functionality, the tectonics, the thoughtfulness, the efficiency, the design method and the richness of experiences offered. I am not here to dissect what is good and bad design, but I do know there is good design and there is bad.

We all have had to occupy spaces that do not fit the task at hand. Poor lighting, ventilation, awkward circulation, poor scale, and lack of amenities all contribute to the inadequacy of spaces. A huge factor in how we design is influenced by time; we learn and adapt to new information and technology. Not only has the design and building process changed—our needs have changed. With the advancements of technology and programming, sometimes we lose sight of the purpose of design elements. It is necessary to re-examine our design process, analyzing our needs and what they mean to the field of architecture and design.

In order to examine and test my ideas I have proposed a mixed-use renovation project. Mixed-use offers the opportunity to examine how different groups of people, in a variety of social settings, interact with one another and the spaces they occupy. The decision to redevelop an existing structure is fueled by my fascination with the process of time. The process of adapting and re-using offers the opportunity to analyze an existing structure to emphasize its strengths and improve upon its weaknesses. Lastly, it offers the opportunity to see how the functions of buildings have changed [over time].

User/Client Description

This redevelopment project needs to cater to numerous groups of varying social and economic statuses and purposes. A large focus is satisfying the needs and visions of all parties influenced by the project. On one hand there is the building owner, project developer, and the building management and maintenance. Then there are the tenants, whether they rent office space, shop booths, or apartments. Furthermore, each tenant subgroup creates more groups; customers for the shops, clients for the office workers and guests of the apartment renters.

The existing structure is seen as a profitable opportunity to create more housing and positive development downtown. The responsibility toward the owner is to fulfill their vision of a mixed use venue to create housing units and other economic opportunities. The project needs to maintain a budget while creating a quality building that will generate revenue.

The building management requires an office space that is equally accessible to all tenant subgroups and inquiring potential tenants. Management must also have access and the ability to observe all areas of the development for security, and maintenance purposes.

The tenants are broken into three subgroups: office lessees, shop owners, and residents. Each subgroup has its own access, utilities, and spatial environment requirements in order to be successful in their endeavors.

Further research is imperative to determine the affect of the project on the surrounding demographics and fabric of the community to ensure this redevelopment improves and contributes to the character of the downtown neighborhood.

Major Project Elements

As a mixed use complex, the Armour Development must cater to a variety of users and needs. There are primary and secondary design principles and components that are important to the design process.

Primary principles include:

Light	Scale
Personal	Quality
Air	Connections

The Primary Components are:

Residential Units	Market Areas
Plaza	Office Space

Secondary components include connective atriums, lobbies, mechanical spaces, storage areas, parking, and both public and private green space. Secondary principles focus on light, color, comfort, scale, usability, and connections.

Site Information

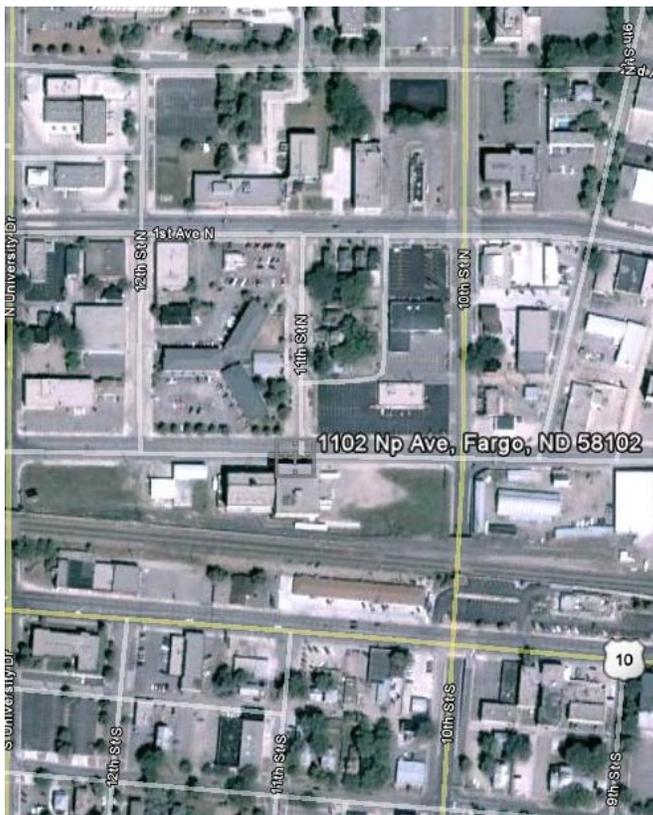


Site Information

The site where I will further the exploration of my thesis is located at 1026-1032 and 1034-1102 North Pacific Ave; Fargo, ND 58102. The site has an existing structure that at one time was the Union Storage and Transfer Cold Storage and Armour Creamery. The site has barriers from the Burlington Northern Sante Fe (BNSF) Railway, the 10th St Corridor and the Northern Pacific (NP) Ave Corridor.

Site Importance

Fargo's downtown community is growing and refurbishing itself as the city grows. The revitalization has been successful thus far and the area would further benefit from the proposed redevelopment project. This site in particular offers a link to the growth and development of downtown along the NP Corridor. The site has a prominent location on the NP and 10th St corridors and bus routes. More importantly, the site has historic significance to Fargo and is a landmark of the downtown when approaching from University Drive.



Project Emphasis

A major point in the investigation of this thesis is the exploration of effective design. More specifically, it is an examination of how space is used in order to design catering to how people function. Take the residential units as an example. A Family has different needs than those of college roommates but both need to be considered and accommodated. A supplementary part of this process is to analyze poor design and determine what qualities and characteristics cause them to be inefficient. This investigation should lead to the development of a revamped intensive and inclusive design process. A final component to focus on is the adaptive re-use process. Re-use offers opportunities to learn and improve upon existing structures and design ideas.

A Plan for Proceeding

Research Direction

Several points require further examination, first and foremost is an extensive focus on effective design. A series of case studies and research of similar typologies and projects will be conducted to analyze and evaluate current solutions with pros and cons. Other case studies will be conducted with a focus on design methodology and theory, examining the effectiveness of the outcome. Historical research is necessary in regards to the structure, site, the city of Fargo and design theory. Geographical, climatical and other qualitative and quantitative information will be gleaned about the site. Lastly, I will research with the purpose of generating further development of the program requirements for the complex.

Design Methodology

In my research, I intend to conduct qualitative and quantitative analysis of written, graphic, digital, and other information. Importance and focus of my resulting research will be continually analyzed and organized in a way guided by my theoretical premise, a focus on reanalyzing effective design.

Plan for Documentation

My research, diagrams, notes, and process will be recorded and compiled into sections by research direction. My process and investigations will be recorded in the final documentation as they fit.

Studio Experience

Second Year

Fall 2005- Mark Barnhouse
Tea House, Moorhead MN
Facility for the Temporarily Blind, Moorhead MN

Spring 2006- Vince Hatlen
Private Residence/Conference Center, Pelican Rapids, MN
Public Library- West Fargo, ND
Center for Interdisciplinary Investigation- Fargo, ND

Third year

Fall 2006- Bakr Mourad Aly Ahmed
Housing Development- Henderson, NV
Montrose Harbor Beach house and Restaurant- Chicago, IL
Olympic History Museum- Berlin, GER

Spring 2007- Steve Martins
Agriculture Research Facility- Fargo, ND
Environmental Research and Education Center- Duluth, MN

Fourth Year

Fall 2007- Mark Lindquist/ Don Faulkner
Solid/Void Artifact
Urban Master Plan- Winnipeg, CAN
Mixed Use Center- Winnipeg, CAN

Spring 2008- Frank Kratky
Mixed Use High-rise- San Francisco, CA
Marvin Windows Nature Center- North Dakota Prairie

Fifth Year

Fall 2008- Frank Kratky
Public High School- West Fargo, ND

The Program



Theoretical Research

Introduction: *Ineffective Design*

Set up in the Theoretical Premise is the concept of effective design; suggesting current works of architecture are inadequate for the functions the users utilize them for. Growing up in the suburbs of Minneapolis, I have witnessed my fair share of bleak housing developments, often visiting a friend's house to bear witness to very large, impersonal spaces. Of course, at the time I did not understand why these spaces seemed off. It is through my architectural education, I have to come understand that scale, proportion, lighting, and texture make or break architectural design. Improper scale does not play the only role in the inadequate design of spaces, but also programmed with spaces designated for tasks no longer part of the social structure. It is pertinent to not only examine how social structures have changed but also the effects of technology on those structures and the processes of design and building.

In her book, *The Not So Big House*, Susan Susanka discusses similar experiences from her residential design work and her actions as a result of them. She begins with an anecdote of one of her clients that had previously built their own house through a developer. The plans had room for everything they wanted but realized upon the house being built it was all wrong. The problem with this particular home was the scale, it was monumental, designed to impress with size rather than quality. This is where Susanka introduces her mantra "Quality over Quantity". The monumental entry ways, ridiculously high ceilings and lack of spatial definition were more appropriate for a powerful institutional building rather than a comfortable home.

Part of the issue lies with how designers present information to the clients. In Susanka's anecdote the developer had shown the client plans and elevation drawings; however these drawings do not depict a fashion in which we will ever experience the built structure. They are two dimensional depictions of three, if not four, dimensional products and cannot possibly relay the information necessary to understand the quality and atmosphere of the proposed space.

Theoretical Research

A secondary predicament lies in outdated programs and concepts of what a house is. Residential design is an excellent example of architectural design struggling to accommodate evolving social structures that are changing how we live. Unused formal dining rooms, living rooms left vacant in favor of the family room and the pure lack of office space are a few aspects not in tune with the unfolding function of the family home.

A large vehicle driving the change in social systems is technology. Everything from the movement from horse drawn carriages to trains and automobiles to the microwave and computers and internet has had a huge impact on society. Although technology is not a main research point in this thesis it is important to understand it has changed how we live, work, and play dramatically.

Theoretical Research

Elements of Design

It is important to further understand the elements that play a role in the atmosphere of space in order to reevaluate design perceptions and processes. However, first an examination of how space is understood and assembled in the mind is necessary. In *A Psychology of Building*, Glen Lym discusses spatial order, or how we order and utilize the spaces presented to us. There are two different kinds of space we are exposed to, acute space and chronic space (Lym, 1980). Acute spaces are unique situations and places with brief exposure while chronic spaces are regular dwellings. It is from frequent exposure to these chronic spaces that spatial orders are formed. The cognitive arrangement and order of rooms is based on personal development and rituals which can change over time as life stages change. Not only is there an internal spatial order within the building there is an external spatial order. This is the cognitive relationship of a given structure with the surrounding fabric, whether that is through relationships with individual neighbors or the social fabric of the community.

Considering spatial orders are unique to each individual it is important to ask whether a designer's spatial order interferes with or changes the spatial orders of the users. The spatial order of the designer has an effect on the layout of spaces but it is in the form of inspiration for the relationships. The user has the ability to overlay their own spatial order on the plan. The inclination to project an individual spatial order is also evident when users acquire an existing structure.

There are numerous elements of space that effect the perception of space: light, color, form, proportion, scale, and contrast are a few to be discussed in further detail. The first area of focus is that of design complexity. Lou Michel discusses in the book *Light: The Shape of Space*, the idea of simplification versus complexity with the stance that good design is a balance of the two. The Modern aesthetic tends to be lacking in visual elements to the extent of being boring while more eclectic Victorian design is too complex to focus.

Theoretical Research

Design must incorporate perceptual clarity, intricacies that correlate together to create a unified whole. Focal accents and hierarchy affect visual and physical perception of simplicity. The eye does not focus on a view as a whole but rather through saccadic eye movements focusing on individual points in rapid succession creating a cognitive collage of the whole vista. Focal accents help focus the order of attention and create congruency within elements while a complex image with no hierarchical elements would be hard to focus and overwhelming. There is a certain order in which the eye is drawn to focal accents, in succession they are, people, movement, brightness, high contrast, vivid color, strong pattern, and meanings or combinations. Aspects that affect focal hierarchy are shape, contrast, light, color and borrowed space. Visual hierarchy does more than aid the comprehension of space but also pulls the user on a path through correlating spaces and structures.

Light has an enormous effect on perception of spatial relationships. We cannot see light but we see and perceive its effects on the objects and forms all around us. Quality lighting can make a room feel larger and affect the ambience of the space. The endless qualities of light infinitely affect forms and objects, which is one of its greatest assets in the design field. Different materials react differently to light, opaque materials reflect light, while translucent and transparent materials absorb and transmit light. Reflectance is the percent of light reflected by the surface, which also correlates directly with the characteristics of the material. Polished materials create specular, or directional, reflectance which is often the source of glare. Furthermore, rough textures spread the reflected light and matte surfaces diffuse light. The luminance and perceptibility of a surface is consequently affected by the angle of incidence to the source as well as its quality and quantity.

Contrasting elements affect perception of space and the objects themselves. In creating focal draws through space, contrasts between light and dark, colors, forms and proportions play a large role. One such contrast is the design element of compression and release, a technique utilized to great extent by Frank Lloyd Wright. He created tight hallways with low ceilings to psychologically force quick passing into a vastly open gathering space. Many critics argue these cramped spaces are counterproductive to architectural design

“Buildings which are interesting are not necessarily excellent... The ‘simplification/amplification’ theory of perception suggests that what, more than anything else, makes a building or a scene ‘easy on the eye’ is a marriage between complexity and coherence. There must be plenty to see but the ‘act of seeing’ must be made easy by coherence between the parts.”

~Frank Lloyd Wright

Theoretical Research

because they purposely make the user uncomfortable. However it is this uncomfortable cramped contrast that forces you to thoroughly appreciate the breadth of Wright's gatherings. There are more ways to create the sensation of compression and release than ceiling heights. The contrast of darkness and light, natural light elements in particular has the same draw. A human attraction to light fuels the effectiveness of the tunnel affect. Although a hall may be dark and cramped, seemingly discouraging to leaving a room, but the enticing light promises a vast comfortable space.

Elements of space like context, the envelope and interspatial relationships have an important role in effective design. The figure ground relationship in the field of design is a common but necessary consideration. The negative space between forms has just as much if not more influence than the object itself however, more often than not this left over space is neglected. Interspaces can be utilized to compliment the primary structure as transition space, secondary spaces, and many other purposes projected from a user's spatial order. Interspaces tend to fall under that category of spatial potential versus enclosed space but by integrating light, form, color, and landscape elements their presence can be cemented. The most important aspect of working with interspace and spatial relationships is spatial continuity. This can be affected by floor and ceiling heights, room proportions, visual connections, and circulation elements. As previously mentioned, the use of compression and release elements can have a far greater impact on enclosing and defining space than the use of doors and solid partitions. Careful attention to interaction with subspaces is pertinent to create connections without subtracting from the solidarity of the main spatial form. Thus penetrations and projections in the envelope must be effectively proportioned to supplement the perception of the space.

Theoretical Research

Spatial Philosophy

Too often when discussing designing space we immediately jump to solid barriers without considering what space really is and how it is defined. There are innumerable processes in which to design projects when considering forms. Some start with interrelating planes while others imagine spaces as volumes interacting with one another. While there is no wrong or right way these processes sometimes result in making elements “fit” with the scheme rather than being designed in their own right. Michelangelo is credited with describing sculpting as seeing a figure in the stone and carving until it is set free. Martin Heidegger discusses a similar concept in his “Building Dwelling Thinking”. He suggests that we do not make space or location; rather they are already there, we just bring them forth into existence through building. This train of thought gives individual spaces more respect as elements of design. With this, they are already in existence and it is our responsibility to do them justice by presencing them. Furthermore by utilizing defining elements like texture, light, color and ceiling heights a higher quality of space can be exist.

“Raum means a place cleared or freed for settlement and lodging. A space is something that has been made room for, something that- namely within a boundary, Greek peras. A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presencing. That is why the concept is that of horismos, that is, the horizon, the boundary. Space is in essence that for which room has been made, that which is let into its bounds. That for which room is made is always granted and hence is joined, that is, gathered, by virtue of a location, that is, by such a thing as the bridge.”

Martin Heidegger

Theoretical Research

Psychological Theory

Just as light creates a focal attraction, colors, natural elements, and vistas also peak interest. Psychological studies analyze what effects these elements have on the body and mind and in doing so have developed intriguing results. Psychological work has shown evidence of biophilia, a love of life and living systems. We are attracted to elements of nature, and while what comes to mind are images of forests and lush wilderness, simpler things like weather, pets, and plants have the same effect. In some studies images of natural scenes also affect the psyche. In a recent study published in the *Personality and Social Psychology Bulletin* researchers found that not only do natural elements make us happier they also make us nicer and even more generous. Other studies found that in offices with no view of the outside world, people surround themselves with images and artifacts of the natural world to the same affect. It is because of these results it is important to incorporate visual connectivity from space to space and to the outside world. As with nature colors can have drastic effects on the body but for color they are not all positive.

Theoretical Research

Red is a stimulating color increasing respiration and heart rate. It can also make objects appear larger and closer than they really are. Red's stimulating quality is due to how it interacts with and strains the retina. Blue is the psychological inverse of red, having a calming effect lowering heart rates and making objects seem smaller. Important to color psychology is that prolonged exposure to pure hues of colors can create inverse results. Yellow is associated with cheeriness because of its relation to spring and sunshine. However, yellow as a pure hue is the most intense color and is stressful on the eye. It is because of this that yellow is an agitating color and can create irritability over prolonged exposure. Orange is a stimulating color associated with high energy, positive personalities and can even boost metabolism. Green is the most beneficial for the human environment. It is refreshing and rejuvenating, as symbol of new growth. Green also rests directly in the center of the retina making it the most relaxing color for the eye to focus on. It helps the body heal and focuses the mind. It is green's rejuvenating affects that makes it so common in hospital and physical therapy rooms.

Color is also important to study because of its adverse effects on the physical experience of space. In a well light, high contrast room colors leave a negative image on the retina causing us to see spots when looking away. This can be negated by placing complimentary colors in context with one another. It is also important to understand colors can affect the appearance of one another because we automatically see a color's compliment at the edge hence tinting the color next to it. Colored light can also negatively impact colored objects muting their appearance. Color creates many opportunities to create another level of quality in architectural design and strengthen design elements but it is also important to be conscious of all of its capabilities.

Theoretical Research

Concluding Thoughts

A large quantity of projects being turned out are inadequate and wasteful in their design and resources. As in Susan Susanka's book, *the Not So Big House*, we need to understand the focus of quantity above quantity and a focus on new and changing needs. A large focus of the research is geared toward processes and analysis that affect the quality of the design process and end result. The process of designing is a far larger process than focusing on programming but also, lighting, physical and visual comfort and continuity, covering multiple fields of study.

Every person has a different process in which they carry out their lives. This process is projected onto the spaces in which they inhabit, developing and projecting an individual spatial order. While this order and process can change over time and place, there is one thing that stays the same—the mind's ability to continually adapt. This is evident in how people adapt to moving to a new home, redeveloping existing buildings, or adjusting to new ones. And although a designer and clients spatial orders may vary drastically it does not play in role in the effectiveness of the end result. An architect spatial order and understanding serves as an inspiration for the project and regardless of whether or not the user picks up on these intentions the space can continually be morphed to function as the user intends.

Through the passage of time there have been numerous styles, fads and theories in regards to how architecture should look, and yet there are still some that do not adhere or conform to any of these trains of thought. There is the contrast of the ornate busy character of Victorian design and the simple sleek volumes of the modernist movement. The theories in this thesis hypothesis that design should appropriately lie somewhere in the middle, not a medium but rather a constant state of flux altered constantly from project to project. A structure ought to be simple enough to

Theoretical Research

inspire perceptual continuity and yet interesting enough to insight a reaction.

The complexity of the design is more than just its aesthetic appearance, it is also important for the programming and flow of the building. This is achieved through elements varying from focal accents and hierarchy to lighting effects, colors and contrasting elements. Lighting plays a large part of perception of space because without it we would not be able to decipher forms, colors and views. Just as the varying degrees of lighting play illusions with space so do contrasting elements like compression and release. It is this sense of contrast that we can appreciate the true atmosphere and solidarity of space.

Also, decisive to the continuity of space is the focus on negative space, their treatment, and interconnectedness. These spaces tend to be neglected and can end up causing an off effect on the project even to the extent of disrupting the feel of the project. The important thing to remember about such areas as negative and transitional spaces is how they are defined.

There are far more elements to creating space than solid barriers, ceiling heights, proportions and views can have a more powerful and dramatic affect. The consideration of these elements is enforced by Martin Heidegger's philosophy in *Building Dwelling Thinking*, which suggests that the space is already there the task at hand is to define it.

These qualitative elements of design are supported by research in other fields of study as well. For example the positive human reaction to natural elements, no matter how simple or artificial, encourages incorporating views to the outside, other spaces, natural lighting and fresh air. And although the psychological effects of colors are not always positive a thorough understanding of them enables us to utilize their positive attributes.

In result of this research, I have found it is important for us as designers to focus more on the quality of our products. Giving due attention to elements not evident in plans and elevations, is necessary and our responsibility as educated designers.

Typological Research

Case Study #1: *Butler Square* Minneapolis, MN

Butler Square is a redevelopment project in Minneapolis' warehouse district. It was originally built in 1906 for the Butler Brothers company and had a square footage of 500,000 square feet. It is constructed of thick masonry walls dissected by slots of windows and consisted of timber beam construction. The building has a rectangular foot print that is cut in half by a fire wall and brick elevator bank. It was designed by architect Harry W Jones and one of the select few of his projects still standing in Minneapolis. The building switched tenants several times and in 1971 was listed to the National Register of Historic Places and from 1972 to 1974 underwent its first remodel developing the east half into office and retail space. The project was successful in a large part due to the vast atrium breaking up the interior and bringing natural light down through the core of the structure. In 1979 the Butler Square was under construction again to remodel the west half of the building. The project was one of the first successful warehouse renovations in Minneapolis and served as a catalyst for further development of the warehouse district. It has been recognized for the preservation of the historic exterior and Douglas Fir timber construction.

Today, Butler square has two irregularly shaped atriums filtering light into its vast interior; the great success of the project is largely attributed to the effectiveness of them. The atriums feature several sculptural elements including a plane, trapeze flyers, and African sculptures. Also on display are historic murals of the surrounding area. The building's Douglas fir timbers are one of its most defining aspects. The atriums were made possible by deconstructing the structural timbers and beams from top to bottom and the open grid of the structure allowed maximum flexibility for its recreation into office space. The atmosphere in Butler Square is warm and



Typological Research

welcoming with room to walk about, benches to sit, and interior landscaping with plenty of greenery complete with the sounds of moving water.

Butler Square has one of the highest occupancy rates in the warehouse district, but the management still has a plan for the future of the structure. Recent changes and renovations are being made, replacing light fixtures and windows, as well as focusing on the use of biodegradable materials, to become more efficient with resources.



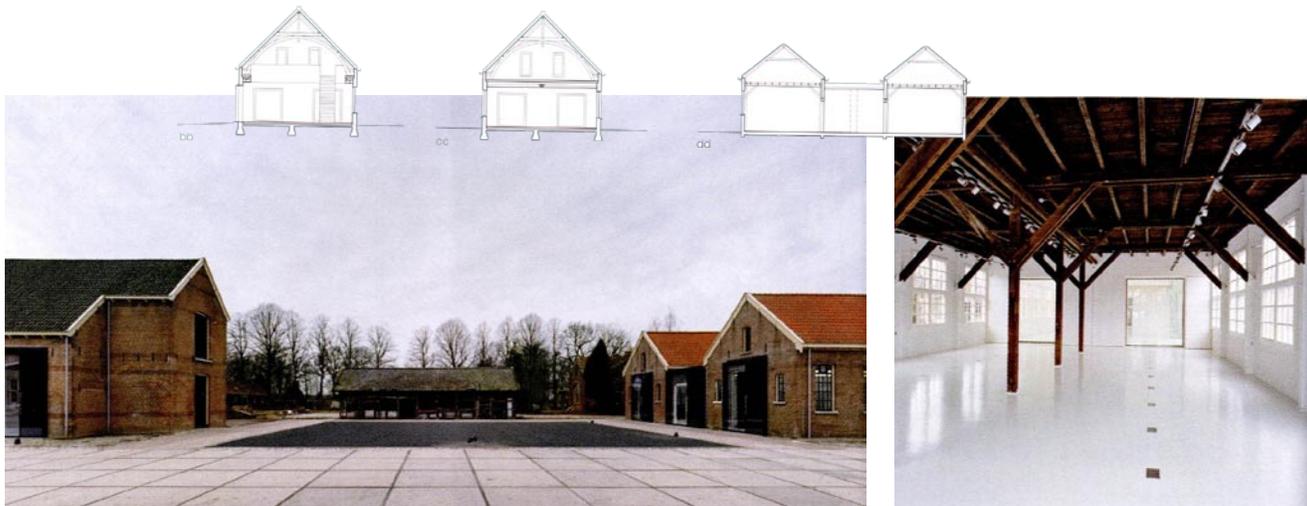
Typological Research

Case Study 2 Crafts Museum Veenhuizen, Holland

The Crafts Museum Complex was originally constructed as a voluntary refinement facility for the underclass, and evolved into a penal colony in the early 19th century. Its redevelopment was completed in 2008 by Atelier Kempe Thill Architects. Over the years numerous additions and sheds had been added to the site; in an attempt to restore its historical character they were demolished leaving the original 16,146 square feet between the three brick structures. The buildings originally served as workshops to keep the prisoners occupied. The Blacksmiths building, the larger free standing structure, was converted into a Museum and Visitors center while the other structures feature workshops that provide work for handicapped individuals.



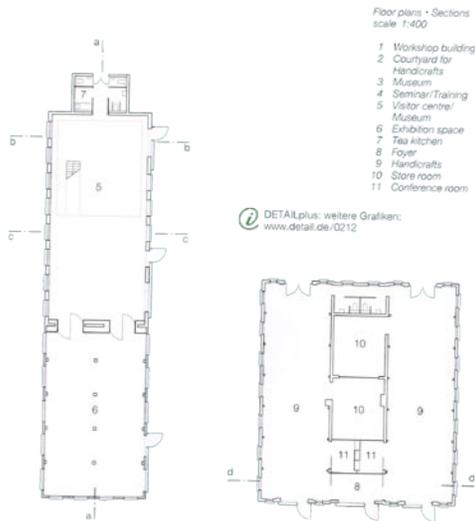
For the renovation it was important to relay the history of the site to the public, leading the architect to strip the site down to its original state before going back in update the spaces for new use. Due to numerous additions of sheds and auxiliary spaces over the years, there were large gaps in the walls where these additions once stood, but instead of boarding them up, the architect chose to frame these opening with glass encasements. In doing so, it alluded to the additions that had been removed while realizing the original form. The intricate structure of the blacksmith's building created an interesting



Typological Research

environment for the gallery. The single span arched trusses left the floor plate open, less a wall partitioning the structure into two spaces. A floor to ceiling white wash cleans up the space to create a luminous setting for exhibits and a visitor's center.

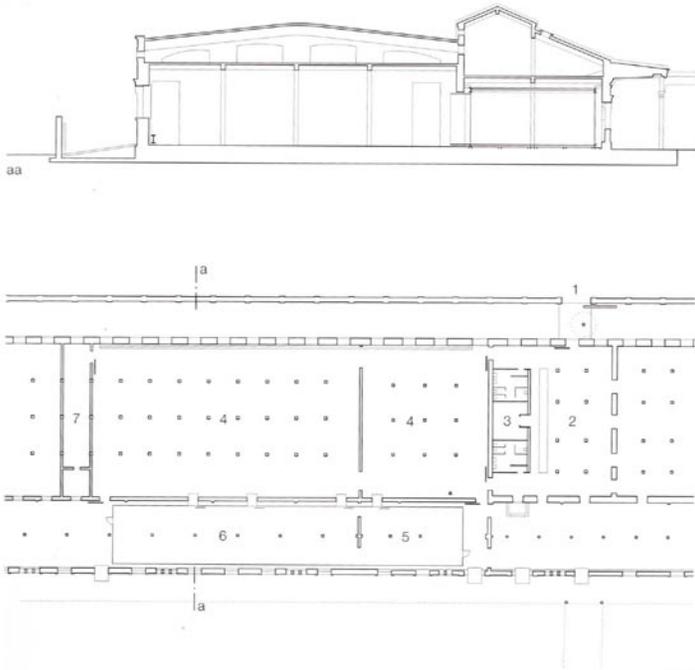
The crafts museum is important for several reasons, first it offers insight into the historical setting of an 1800's jail. More important is the way in which the site was preserved. The architect chose to eliminate alterations to the site in order to further preserve a time and place. But, also chose to add modern elements of glass vestibules to tie the design into the present.



Typological Research

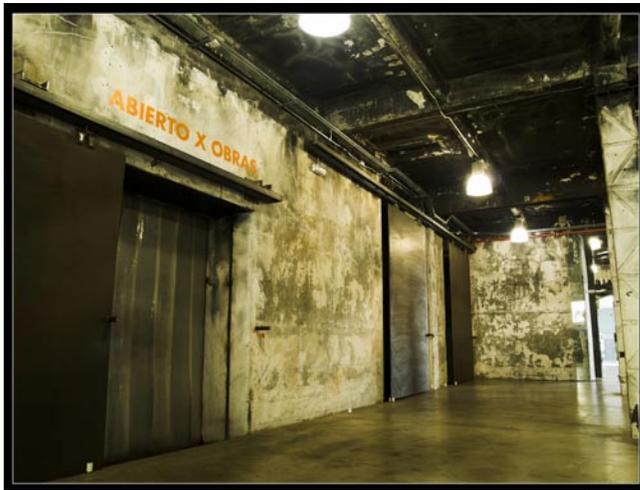
Case Study 3: Matadero of Madrid Madrid, Spain

The Matadero is a former slaughterhouse compound, built in Madrid during the early 20th century that is being rehabilitated in stages and retrofitted into a cultural center for the arts. Although the project will not be completed until 2011, parts have been opened to the public and recently hosted DFest 2009. The Project is led by Madrid Council's Department of the Arts with a goal of creating a local and international cultural icon in Southern Madrid.



The entire compound is surrounded by a wall enclosing 165,415 square meters (1,780,512 sq. ft.) with a total built floor space of 148,300 square meters (1,596,288 sq. ft.). The complex consists of several structures and pavilions serving purposes of management and administration, livestock markets, sanitary services, vehicle depots, stalls and rail service. Over the years the

Typological Research



complex has seen numerous additions and rehabilitations, but in the 1990's it was obvious the structure had fallen to disuse and was in need of drastic repair. In 2003 it was decided it should be converted for cultural use, plans were developed by 2005 and the first section opened in February of 2007. To date only 18,000 square meters has been opened to the public which is about 30 percent of the planned renovations. The purpose of the center is to focus on the collaboration and celebration of multiple areas of art and design. The center includes wings for Drama, Visual Arts, Design, Music, Dance, Architecture, Landscapes, Urbanism, Fashion, Literature, Thought and Cinema.

The renovations have been very minimal, in part due to a limited budget, but clean cut and rigorous. Deteriorating walls and the remains of cork insulation are a few of the elements that are reminiscent of functions long gone. It leaves the building with a sense of rawness that is complimented by the architect's use of raw industrial materials in the conversion. Sleek glass walls and simple welded steel components and doors make up the bulk of the new partitioning elements.

Typological Research

Concluding Thoughts

The case studies in this series were chosen because they are related to the typology, building type, and construction method of this thesis. Butler Square, the Crafts Courtyard and the Matadero contain elements similar to the proposed thesis examination and each contains aspects to glean from.

The first project, Butler Square, is an old warehouse building in Minneapolis, MN built in the early 20th century and constructed with masonry bearing walls, and timber beam construction. The way the atrium was carved out of the existing structure is an effective way to introduce light into the deep floor plates of the warehouse. The atriums also make well of visually connecting the building. Another inspiration is that on the part of the building management to continue updating the building with more efficient fixtures and products in constant pursuit of energy and resource preservation. Because the building was already listed on the National Register of Historic Places there were limited things the architect could do with the façade, encouraging a mode of reuse focusing around interior conversion.

The next project is an old prison complex dating back the 18th century, which had been added to periodically throughout the years of its use. This project was also constructed using masonry bearing walls and timber supports. Due to consisting of multiple buildings the structures do not have nearly the massive scale that the previous study had. The main structure being converted into gallery space had a unique wood structure for the roof that the architect chose to leave intact with the simple cleansing effect of a white wash. The architect took an interesting approach to the project when it comes to telling the story of the site. The numerous vernacular updates were stripped away leaving the site as it was originally laid out. The treatment to the residual cutouts from this process was to then be encased with glass in order to preserve the evidence of the changes while re completing the faces of

Typological Research

the masonry buildings. Lessons to be taken from this project consist of knowing what alterations to keep or remove and examples of how to tie the project into the 21st century.

The third project, the Matadero in Madrid, was another large-scale industrial setting originating from the early 20th century. It had been added to and remodeled over the course of its life but the main structures on the site were left intact constructed again of masonry bearing walls and consist of a combination of wood timber and masonry bearing columns. This project is interesting because of the approach the designer took when reutilizing the building. The existing deterioration was cleaned up, but not fixed freezing its dilapidated state in time. The additions to the spaces were done with minimal impact using highly industrial materials of steel and glass with clean well defined lines. The things to glean from this study lie more along the lines of the treatment of preserving the structure above anything else.

This series of case studies focuses on adaptive reuse projects that deal with preserving the history of the site while applying new means to the building. There are many ways in which these buildings are modes of studying conversion and analyzing techniques that could possibly be applied to this thesis project. For the most part the structures were built around the same time period with very similar construction methods. Between these projects there are three very different approaches taken by the designers to incite a sense of excitement for the history while providing ample adaptation for new purposes.

Historical Context

“The scarcity of building plots, the quality of 19th century industrial architecture, and the problems related to demolition work and new building sites have all given rise to a new attitude on the part of town planners and local authorities regarding rundown industrial areas. Cities such as London (the Docklands scheme), Saint Paul (Minneapolis) and Saint-Etienne have sought to bring new life to their central districts by building upon existing fabric. This is a challenge to which the public, politicians, and property developers cannot remain indifferent..., and it is one which architects must take into account.”

Philippe Robert, *Adaptations*

Philippe Robert's book *Adaptations* discusses and analyzes different ways to reutilize buildings and the changing opinions towards adaptive reuse projects. The above excerpt from Robert's introduction establishes the social framework in which Reuse projects exist. The occurrence of reuse projects has grown drastically since the 1980's. Projects existing before this were pragmatically motivated with old and new generally treated as two separate entities. In the first half of the 20th century, the Modern aesthetic was a big influence on the lack of reuse architecture. Modernism had a vision of the lone enlightened designer operating towards an isolated grandeur, a visage incompatible with adaptation of existing work. The latter half of the 20th century is denoted by a significant growth in awareness, of historical and embodied resources.

A discussion in a recent issue of *Detail* magazine entails six prominent European re-use architects' approach to existing buildings. Three general categories of work come up, historic preservation, re-interpretation, and affirmation of contrast, these are exercised through building within, over, around, alongside, or recycling of materials. Although each designer varies in their

Historical Context

ranking of factors, all agree knowledge of the history is necessary before determining the type of reuse or any decision or process that comes thereafter. Luciano Cupelloni states there are two different forms of projects, strictly Historic Preservation versus Restructuring and Rehabilitation, the latter of which is the true design challenge. Every project requires a specific approach, this particular redevelopment project focuses on a process of conversion. A goal for the project is to treat the existing structure as a facet in the progression of time leaving a residue of time and place in the process of existence.

Historical Context

History of the City of Fargo ND

Fargo, ND has made a lot of changes since its founding in 1871, originally developing as a crossroads of the Red River and the North Pacific Railroad to major business center of North Dakota and the Midwest. In 1883, most of the downtown area was destroyed by a huge fire and was vastly rebuilt within a year. As many more historical events will prove, this progress is made possible by a community fabric that is unique to Fargo-Moorhead, symbolizing the founding principles of the American ethos. The North Dakota State Agriculture College was founded in 1890, later renamed and known as North Dakota State University. Throughout the 20th century Fargo expanded despite economic hardships, and harsh natural elements including a devastating tornado in 1957 and 500 year flood levels in 1997 and 2009. The introduction of Interstate 29 and 94 as well as the addition of the West Acres mall contributed greatly to the sprawl and decentralization of the city. This signaled a time of deterioration of the Downtown area despite several attempts to remodel including the Red River Mall. The Mall was constructed in 1975 and consisted of removing the parking from Broadway and constructing concrete barriers lining the winding path that was now Broadway. Overhangs above the sidewalks and other pedestrian friendly elements were good but not enough to save the area from further decline. In 1986 it was obvious the project failed and Broadway was returned to its previous state.

Between the development of the Downtown Community Partnership and the creation of the Renaissance Zone the efforts of city officials and private developers alike have made huge strides for the Downtown area. Starting in 2004 NDSU has helped influence the downtown fabric by moving a portion of the Architecture and Landscape Architecture and Arts programs into



Historical Context



the Northern School Supply building on NP Ave. NDSU expanded its influence downtown with the opening of Klai and Barry Halls, the old Lincoln Mutual Life and Pioneer Mutual Life buildings respectively.

A several factors in Fargo's steady growth have been relatively low crime rates, low unemployment rates and an abundant affordable housing market. Throughout the 1990's the city of Fargo found itself on lists of top American cities to live. However this started to change during the 21st century as the Forum reports the growth of wages have failed to keep up with the inflation of the cost of living. Also plaguing the city is its continued sprawl. Instead of growing more dense Fargo and the surrounding communities have regularly annexed land for new developments, this practice has come under fire lately as the growing communities fight over land. This has forced the city of Fargo to focus on redeveloping its interior. Patterns of redevelopment and increasing density have found footing particularly in the Downtown area and the older neighborhoods towards NDSU. Despite this movement Greenfield developments far outnumber redevelopment projects.

Moving to Fargo in 2004 to attend NDSU placed me in a setting of positive growth and I have come to witness nothing but steady progress in the development of downtown. It is this respect of the downtown community that I would like to contribute by redeveloping the Union Transfer and Storage Cold Storage Warehouse and Armour Creamery development.

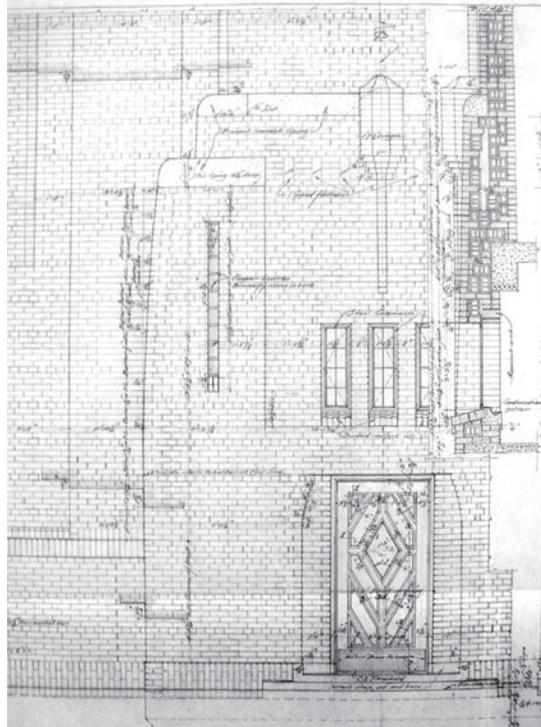
Historical Context



Union Transfer and Storage and Armour Creamery

The Union Transfer and Storage Company was founded in 1906 with its original office at 809 NP Ave. In 1930, the company added cold storage to its vocation with the addition of the Union Transfer and Storage Company Cold Storage facility west of 10th St N on North Pacific Avenue. The new cold storage technology revolutionized cold storage in Fargo especially during the hot summer months, this was particularly pivotal during the Great Depression. The new cold storage facility was also important for the Armour Creamery and Company. The Union Cold Storage facility and Armour Creamery buildings were constructed simultaneously and share a party wall but are considered separate entities and utilize varying methods of construction.

The Armour Creamery portion of the complex was constructed using load bearing masonry walls and an



Historical Context



interior structure of timber post and beam construction. An interesting component is the structure on the third floor, long span bowstring trussed girders create an uninterrupted floor plate. Also in conjunction with virtual floor to ceiling paned windows is a clerestory running the length of the building bringing adequate day lighting into the 3rd floor. While the Armour Creamery building exercised more pragmatic design the Cold Storage facility employed more intriguing design elements. The brickwork on the exterior, the north façade in particular, employs Art Deco detailing. This stylized design is generally atypical of industrial work. The Armour building consists of the more traditional timber post and beam construction of the era, the Union Storage utilizes site cast concrete mushroom columns and concrete floor spans. A warehouse was eventually added to the east side of Union Storage, this site now lies empty with only the residue of the flashings on the east wall.



Thesis Goals

There are three different realms to consider while completing the research and documentation of this thesis project. First there is a responsibility, toward the academic realm and future scholars, to contribute meaningful research and analysis relevant to the college. Secondly there is a responsibility to the professional field as an aspiring professional to prove the ability to contribute to and advance the field of architecture in design and theory. Lastly, is a responsibility to myself, to fully explore and understand concepts that I feel are necessary for the field of architectural design and my own merit.

Academically, the purpose of this thesis is to provide a meaningful exploration of the qualities of space. And furthermore studying how the users are affected by their surroundings, especially focusing on the benefits of designing around the aspects discovered during the initial aspects of quality design work. I hope to contribute a reputable resource for future scholars to build upon with their own theories and education. Finally, I also hope to inspire others to follow the path of study I have devised for this project and appreciate the importance of the concepts I am trying to corroborate.

In regards to the Professional realm of designers, architects in particular, I intend to contribute a meaningful analysis of our responsibilities as professionals to our clients, and the public. This is not so much a document about morals and ethics but rather about focusing on potentials. One of these goals is to understand the potentials of reutilizing the resources of our existing building fabric. Another important aspect is a thorough analysis of needs versus applying standard programming. Lastly is the opportunity to focus on design elements and qualities that are often overlooked for the sake of quantity.

Most importantly are my goals for myself, first and foremost is to explore and solidify the design practices and concepts that are important to me. To not only understand what lighting, connectivity, natural elements among others things can do for architecture but why these things have the impact that they do.

Site Analysis



Qualitative Narrative

Turning the corner from University Drive to NP Ave, I have made this approach nearly every day for the past five years. Regardless of how busy or stressed, I still take a moment to notice the Union Storage and Armour building. It is the first thing noticeable on this route towards Fargo's historic downtown district and Renaissance Hall. Sometimes, even though it's longer, I walk this route just so I can take the time for a more intricate knowledge of the complex. Between the discolored and missing window panes, the aging brickwork, and a sense for a purpose no longer relevant a feeling of nostalgic fascination engulfs my thoughts. What is this place? How long has it been here? How can someone let this resource go to shambles through lack of maintenance? It feels as though this place has a story to tell about a time and place in Fargo's storyline, and that anecdote is gradually being lost with accumulating dust and disintegrating materials. There is a clerestory above the west side of the complex and considering Fargo's relatively low profile I wonder what kind of view it would hold. Something tells me there are reasons this building is left out of the vibrant fabric of the rest



Site Analysis



of downtown is its relative seclusion. The south side of the site is walled in by the raised railroad tracks of BNSF, severing its ties with Main St and its businesses. Other than the small structure of the Culligan Co to the west, the Armour complex has open lots on either side running from the University corridor to the 10th St N corridor. The north side of the complex butts up to NP Ave with newly appropriated angled parking. North of NP lies an apartment complex and a small bar both of which have very little human activity at any given time. These observations create the sensation that the Armour complex is near everything but related to nothing. The site does have numerous elements of potential that with work can create a strong connection with downtown and anchor the west side for redevelopment.

Just as the sight itself has several aspects for potential the complex itself offers several modes for development. Due to the lack of surroundings there are no obstructions to block the use of day lighting. The Creamery's envelope is already broken up with numerous banks of windows, but due to its original function the cold storage has few windows on the first floor and none on the second through fourth floors. Despite this, the structure and brickwork of the building offer a template for tastefully cutting away from the solid façade to allow light in and vistas out across the skyline.

The lack of surrounding poses another issue to be considered, the bitter winter winds of the Red River Valley. The lack of dense obstructions in the downtown area leaves the wind to whip through corridors and around facades. The site also contains no intentional vegetation, only sparse weeds and grass have sprouted up on the unattended vacant lots. The absence of vegetation, lack of contour, and heavy soils of the site all result in watery mud holes over prolonged periods of time. These conditions create several aspects that need to be dealt with during the redevelopment process, but once resolved the complex can once again be a contributing factor to the vibrancy and culture of Fargo.

Site Analysis

Quantitative Site Analysis Geology

Fargo is often called the “City on Stilts” because of its very unstable soils. The top 20 feet is the Sherack formation consisting of silty clay, and the next 85 feet is slick clay making the Brenna and Argusville Formations. These clays are very unstable due to expansion and contraction from absorbing large amounts of water and then drying out. More stable glacial sediments lie at about 100 to 200 feet down and most building caissons and piles for large load structures sit on this layer, the source of the moniker the City on Stilts. At a Depth of 200-300 feet is the Precambrian granite and Gneissic Basement rock.

Although only large structures need caissons reaching the Glacial Sediment layers, the instability of the weak clays takes its toll on surface structures. Sidewalks and foundations are subjected to the constant expansion and contraction of the clay soil resulting in movement, cracking and differential settlement.

The soils below the city of Fargo, and the entire Red River Basin, play a role in its extreme seasonal flooding. The Red River tends to flood with every spring thaw; however in the last twelve years (2007 and 2009) the area has had two 500 year floods. Geologists give four main reasons why flooding is such a big problem in the Red River Basin. The first point is the young age of the Red River being less than 9,300 years old not giving it substantial time to carve away a valley and flood plain. The basin is also extremely flat due its formation from the sediments from Glacial Lake Agassiz. This being the cause of the second factor, the slope of the river is smaller farther downstream slowing the flow and causing waters to backup. A third factor is the Red’s northern flow, synchronizing it with the spring thaws. The fourth cause is ice jams and other restrictions clogging the flow of the river.

The main source of public drinking water comes from the Red River, but the City of Fargo actually has a fairly high water table at depths of 100 to 130 feet. There is also a bedrock aquifer at depths of 200 to 300 feet.

Climatology

Fargo tends to have cold bitter winters and warm summers giving it a climate typical for the Midwest, however due to the flat terrain of the Red River Basin and its lack of native trees it also is one of the windiest areas. The majority of the winds come from the north and northwest or the south and southeast. The trees and structures inside the city tend to break up the excessive winds. However for this particular site that

Site Analysis

is not the case due to the spaced out buildings and lack of vegetation which create more of a funnel affect for the wind. This is one aspect in need of focus for this design project.

Winter weather tends to kick in around October and stay until March; snow starts accumulating in November and melts in April and May, giving the area a short growing season. July is the warmest month averaging 70 degrees and January is the coldest averaging 6 degrees. In January daily averages can range from the negative teens to the 30's while July's averages range from the mid 50's to the 80's. Annual precipitation is around 21 inches with 40 inches of snowfall. Annually Fargo has more cloudy days than clear days with 24 percent being clear and 46 percent being overcast. Winter is the cloudiest with 55 percent overcast and only 21 percent clear, while summer has 32 percent cloudy and 29 percent clear making it the sunniest season. Fargo's variable weather also brings blizzards, dangerous wind chill conditions, thunderstorms, and tornadoes.

Existing Structure and Infrastructure

The site is an easy access point for public bus routes, vehicular traffic, as well as pedestrians. It is bordered on the south side by the BNSF raised rail line. The University Drive and 10th Street North one way corridors border the west and east edges respectively. The north side of the site is bordered by NP Ave which is an important vehicular corridor into downtown. Above ground power lines run along the rail lines and the north side of NP Ave connecting to the structure at the center of the complex.

The site consists of an empty lot and a two part existing structure that previously housed the Union Storage and Transfer Cold Storage and the Armour Creamery. The site is virtually flat with little or no drainage making water pool on site and creating mud holes on the backside of the lot along the train tracks and in the empty lot where the other Union Storage Warehouse used to stand. The only topography is that created by the raised BNSF rail line supported by a steel reinforced concrete retaining wall. The existing sidewalk ends at the west property line and continues to tenth, the condition of the side walk is serious deteriorated. There is newly acquisitioned back in angled parking along the south side of NP Ave butting up to the sidewalk; this stretch of asphalt is also seriously dilapidated.

The two parts of the existing structure were designed, and constructed at the same time but built as two separate entities for two separate companies. The structures share a party wall just as the two companies' businesses benefited from one another. The west portion was utilized

Site Analysis

by the Armour Creamery and the east portion was run by the Union Storage and Transfer Company and contained their cold storage facility. The Cold Storage facility consists of a basement and four floors while the Creamery consists of three floors. While both structures utilize the same light yellow masonry bearing wall construction, the Creamery is constructed with wood timbers and beams. The Cold Storage is constructed with site-cast mushroom capped columns which was an innovative method at the time. Because of the uses and construction methods of both buildings their floor plates remain relatively open except for several non-bearing walls throughout the structures. The third floor of the Creamery has a particularly interesting structure consisting of arched wood truss girders traversing the building and supporting the clerestory level and mezzanine. This structural element leaves this floor even more open and flexible than the others. Both structures have the same style of windows with green aluminum sashing and single glass panes, which although the norm at the time are implausible for the climate. Currently most of the panes in the Creamery are broken and boarded over, but the Cold Storage had few windows to begin with because of its past function this however will be an aspect for change in the proposed project.

Programmatic Requirements

Armour Redevelopment Complex

The Existing structures combined have approximately 80,000 square feet of built floor area and the open lot to the east is approximately 41,000 square feet. The Cold Storage is approximately 53,500 and the Armour Creamery is about 26,500 square feet.

Residential Units in the Cold Storage building will utilize 45,000 sq. ft., including circulation and public spaces, with an addition 4,000 sq. ft. for storage and mechanical.

Office Space in the Creamery will use 17,500 sq. ft. of space including circulation and public spaces.

The International Market will utilize 9,000 square feet in the Creamery building, and 4,500 sq. ft. of the first floor of the Cold Storage.

7,000 sq. feet of new structure shall be added to the East Façade of the Cold Storage, and to be linked to the International Market. This space is to provide a finite and sheltered space for Farmers and Flea markets.

In addition to the new structure 7,000 square feet of semi outdoor space will connect the complex with 12,000 square feet of developed outdoor spaces.

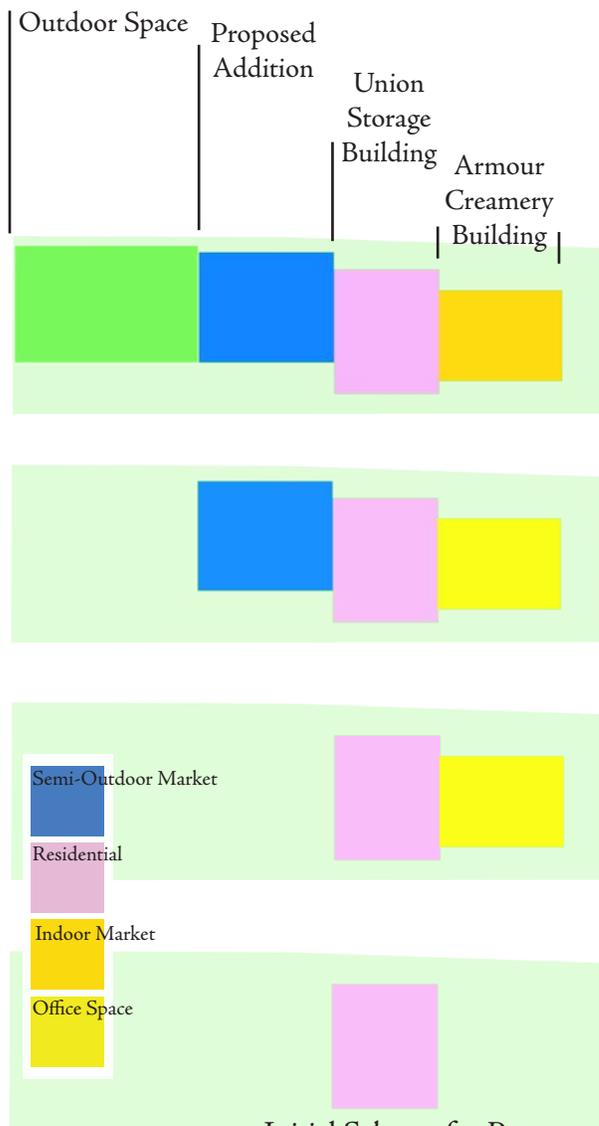
Design Thesis Book



Design Process

Fueled by my research and concepts for an adaptive and innovative design method, I began to focus on the details and tectonics of the existing structure. I focused on figuring out which elements I would like to pull through to the final design. Then, determining which elements were actually usable and finally determining which elements had to be removed in order to make the project functional. The existing facility was quite large and lent itself to be broken down into parts. I focused on designing the Creamery building, the Cold Storage, and my proposed addition. These divisions were justified by the separate massing of the sections and the different functions of each section. The process of designing this project was organized by these divisions but also included a periodical context check to analyze how the different pieces were fitting together.

The most focus was paid to the Cold Storage structure, because of its potential to be sectioned off into residential units. Due to this, it contained the largest quantity of rooms which also demanded the most intimate quality design decisions. It also acts as a central hub connecting the different sections and functions of the project. The unique features of the Armour Creamery building lent itself to a boardwalk storefront concept and secondarily office space. This vision influenced the concept of developing an outdoor market and farmers market to complete the enfolding Armour Re-Development.

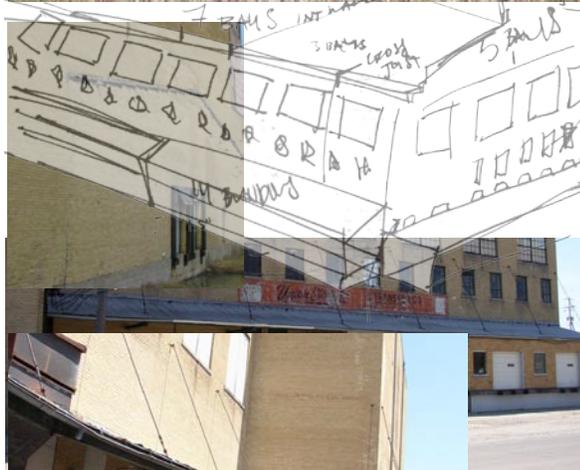


Design Process

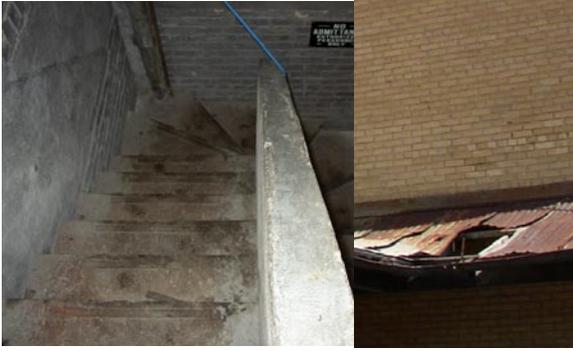
The existing structures possess many opportunities for reuse and elements to influence the new design.

Tectonic elements to work with include:

- ✦ Large Floor to Ceiling Height in the Cold Storage Facility
- ✦ Existing Elevator Shafts and Stairwells
- ✦ Decorative Brickwork on the Cold Storage
- ✦ The Existing Brick Entrance of the Cold Storage
- ✦ Existing Materials (Ex: Gold Brick, Concrete Window Flashings, Corrugated Metal)
- ✦ Historic Paned Windows in the Armour Creamery
- ✦ Open Floor Plan of the Third Story of the Armour Creamery
- ✦ The Unique Structure and Clerestory on the Third Floor of the Creamery
- ✦ The Existing Structural Grids
- ✦ The Flashing Residue from the old warehouse on the East Façade of the Cold Storage
- ✦ The Covered Loading Platforms around 2/3 of the Existing Structures
- ✦ The Rolling Freezer Doors in the Cold Storage have Potential to be Re-used



Design Process



Utilizing an existing structure also creates many design obstacles that must be worked around.

Examples of items that need to be considered:

- ✦ The First floor of both Existing Structures are raised to 3'8" Above Grade

- ✦ Creating an ADA compliant Structure

- ✦ Adding and Enlarging Entrances for a High Traffic Facility

- ✦ The Floor Heights in both structures are different and upper floors do not match up

- ✦ The Deep Floor Plates of the Cold Storage pose issues for Natural Lighting

- ✦ The Existing Stairwells are not to Code

- ✦ The Vibration and Noise due to the Vicinity of the Railroad Tracks

- ✦ Existing Paned Windows lack Insulation and a Thermal Break

- ✦ The Main Approach is the North Side of the Structure Exposing Users to the Elements

- ✦ Several Remodels and Additions do not match the Original Character of the Structures

- ✦ Several Platforms, Materials and Finishes are severely Dilapidated

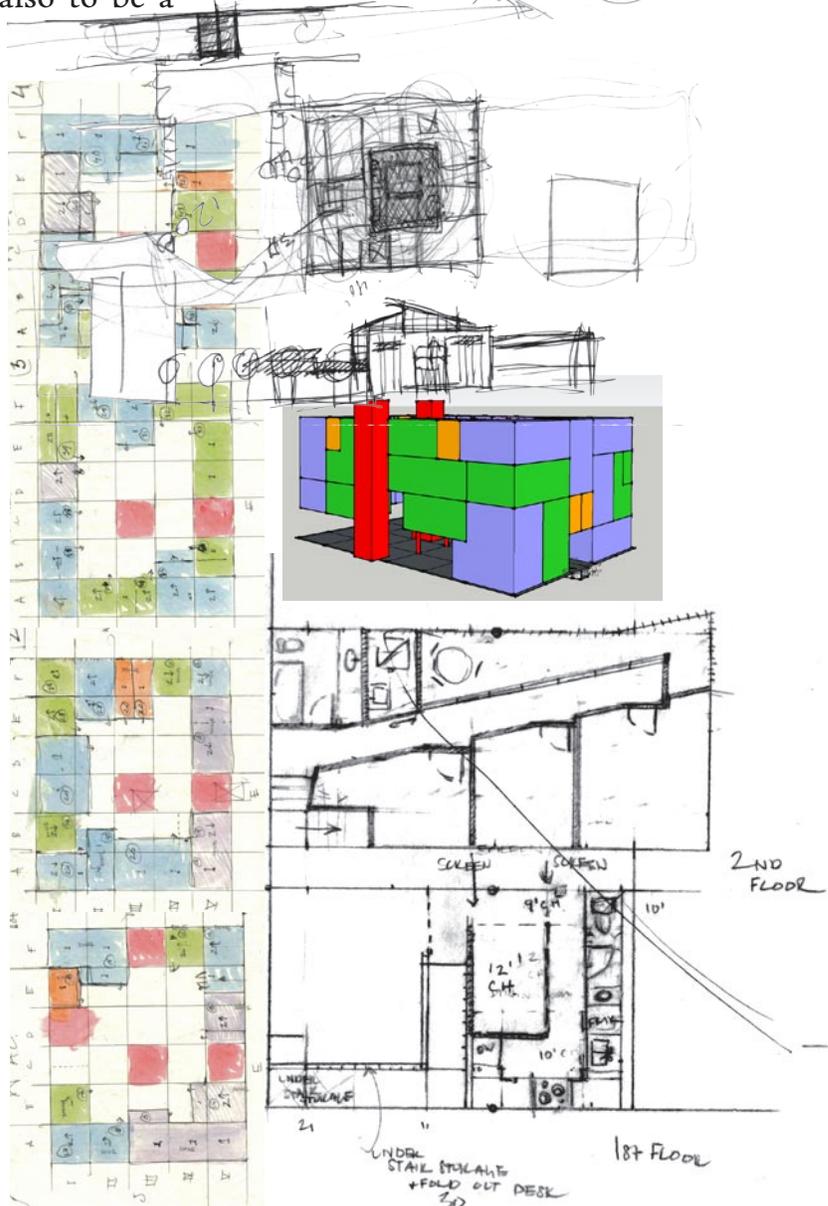
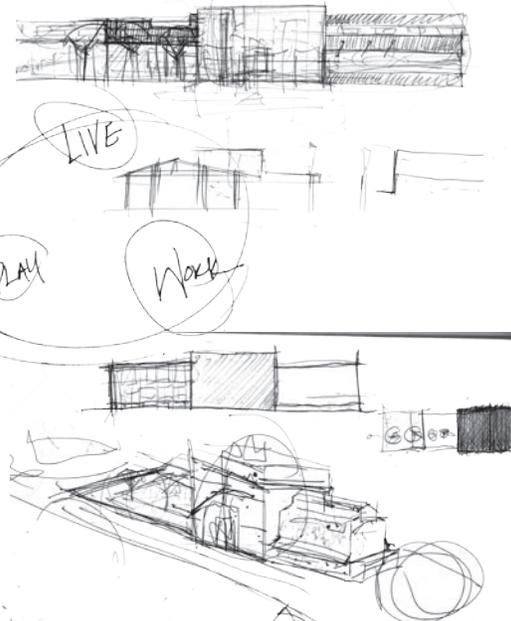


Design Process

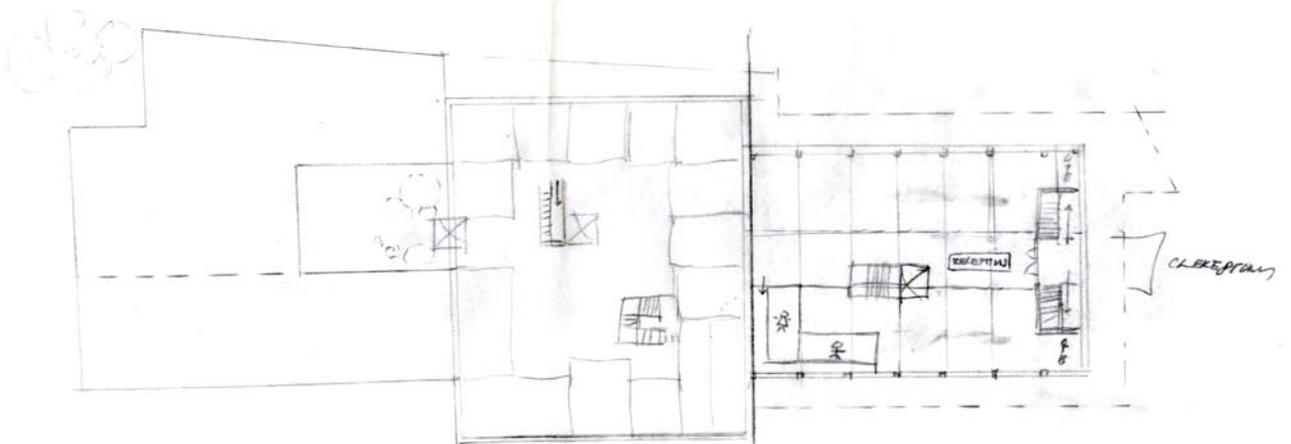
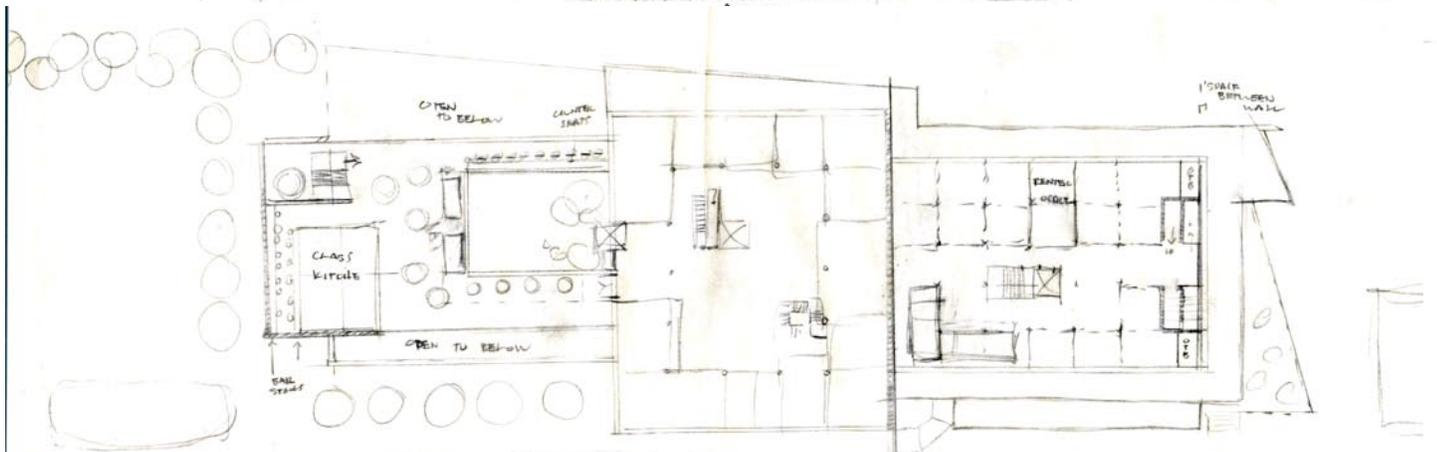
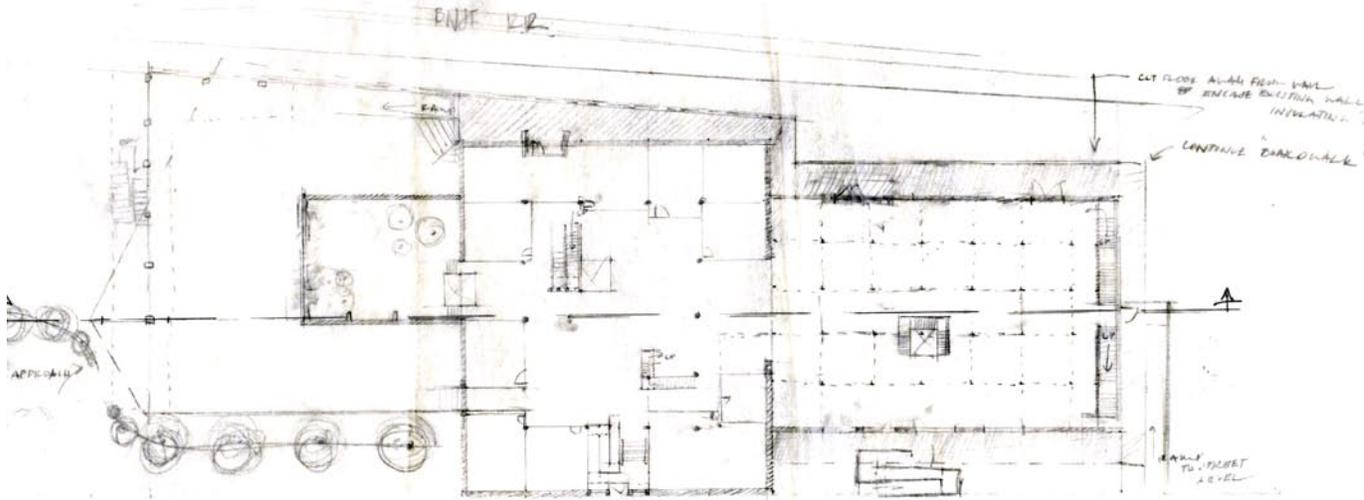
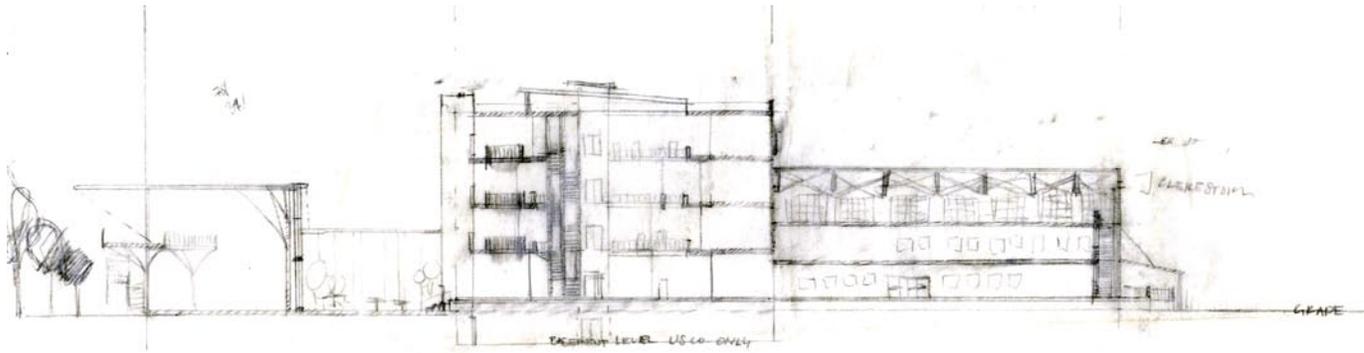
Three Purposes

An important thread in my research is connections—placing a huge emphasis on how the different parts and functions work together throughout the development. The opportunities in this project for my three realms of interaction, home, work and play, roll over into my Apartment units, the Office space, and the Recreational and Market areas. The Cold Storage was allotted to apartments with an atrium opening the center of the structure to pull light through the interior of the building. The first floor of the Creamery initially contained a Farmers Market while the upper floors being office space. And the new addition on the opposing side of the Cold Storage was also to be a Market.

The first portion on the agenda was the design of the apartments. My theoretical premises were focused on formulating a new process of design that is to be more effective. However, as I laid out my apartment plans it became apparent my floor plans were just like any layout found in any apartment building. They were neither unique nor invigorating spaces to live in. I began to focus on them in a new way, instead of the Cold storage as a whole being an exercise in spatial development but rather each apartment became an experiment. I began to look at the Cold Storage as a massive block, carving away chunks of space for each unit, creating units that fold around each other and interact in all three dimensions. It turned into a something along the lines of a Rubik's Cube of apartment units. Units consist of efficiencies, one bedroom units, two bedrooms and a few three bedrooms.

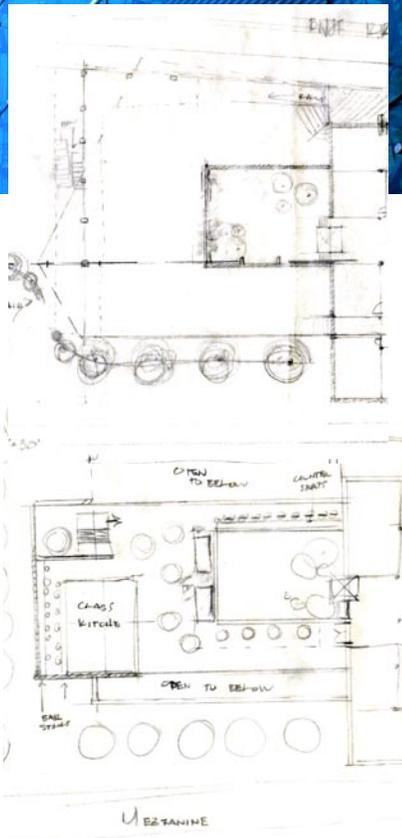
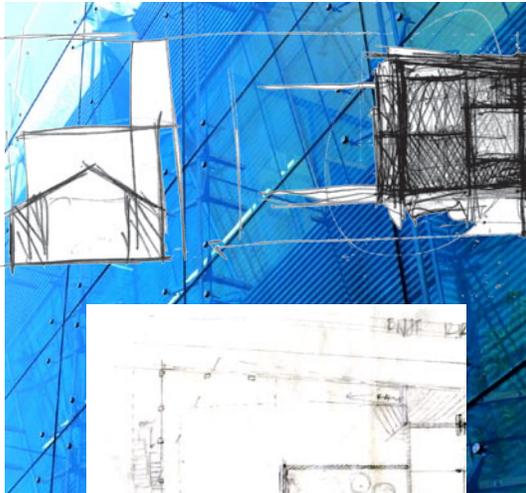
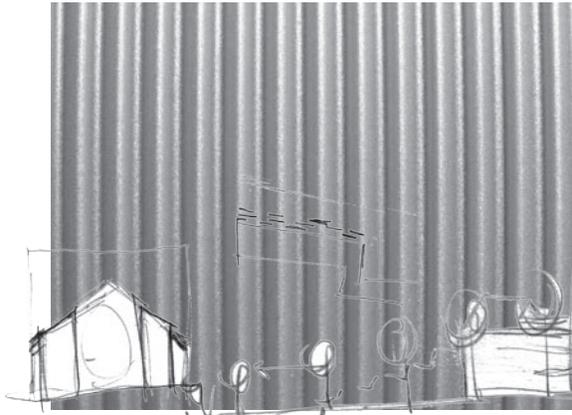


Design Process



Design Process

It was apparent from the beginning that relating and connecting these very different functions would be a challenge. One problem was how to relate a Farmers Market area in the Armour building to a Farmers Market Area on the other side of the massive Cold Storage Apartments. I struggled with what the markets would contain that would be relevant to the two different areas and yet relate at the same time. The solution came in the form of two different markets. The Market was to be more than just a few shops and booths but more of a recreational area for the public. The Armour building became an area for an International market while the addition became a Farmers Market. The mezzanine level in the addition is a Class Kitchen for cooking classes, catering, and hosting various public events.



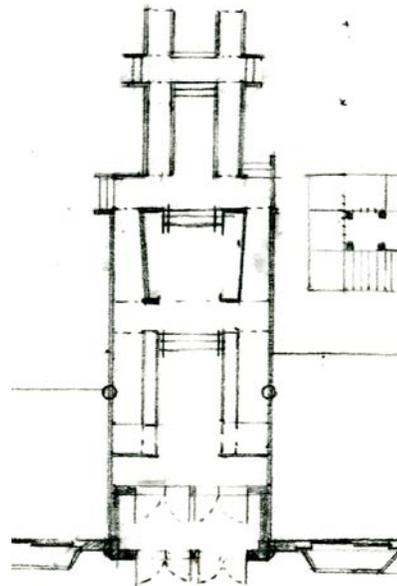
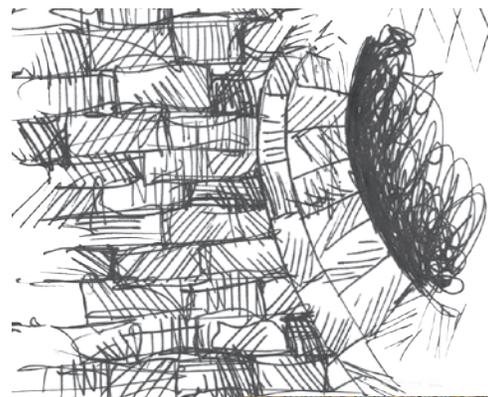
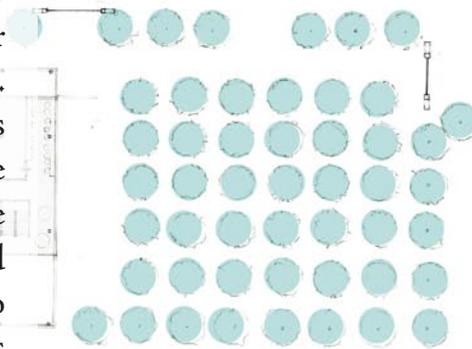
A defining point for the addition was to celebrate its connections to the existing structure while also emphasizing its separation in time and function. This is embodied through the translucent glass curtain walls and more importantly through an outdoor courtyard cut into the addition adjacent to the existing wall. The overall shape of the addition is influenced by elements in the existing facility. The old flashing residue from a previous structure guides the roofline of the new space. Also, the angled boardwalk along the backside of the building guides the angled wall of the market. The other facades are orthogonal and simple in order to contrast and emphasize the aforementioned elements. While the glass curtain wall structure contrasts with the massive heavy brick structures the corrugated metal roofing material is a play off the boardwalk covering on the Creamery.

Design Process

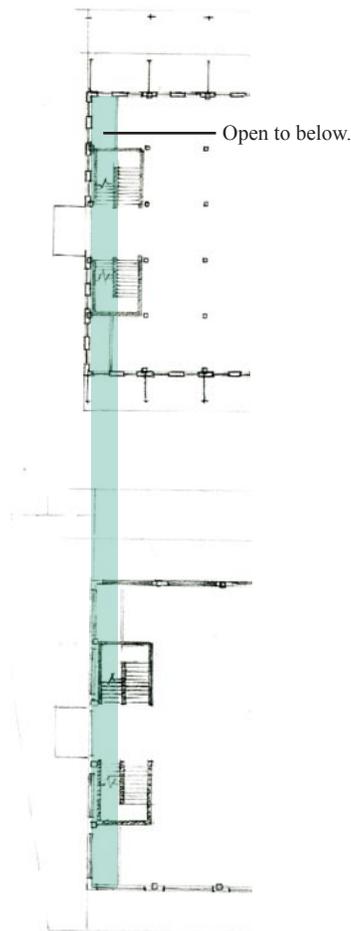
The Plaza is a continuation of the Farmers Market. It is an outdoor space for booths and stands to be set up in the summer time. I also wanted this to be a place for gathering and leisure outside of the Markets operation. The main element of the Plaza is a grid of trees. This natural grid is to provide shade for the market while also denoting how booths are arranged. I also liked the concept of the strict orthogonal grid used to order and confine an organic element and yet still be unable to do so. To pull influence from the existing, the grid of trees mimics the existing structural grid in the Cold Storage Structure. The plaza is to be paved in brick and stone with brick tree rings copying the color of the brick chevrons on the front façade of the Storage building.

The next challenge for the Markets was how to unite them within the building. The first floor of the Cold Storage was originally zoned for apartments but changed to a lobby and hub for the different areas of the project. This hub became very important for the success of the project because it had to connect and separate all in the same. Following the development of the hub it was obvious it needed a grand entrance. The original entrance for the Cold Storage was a single door at ground level. This formed two issues. The first issue was the preservation of the decorative brick that defined the single door; a single door being completely unacceptable for a main entry. The second issue was the split stair, leading up to the first floor and down to the basement, not being up to code, neither was there room for wheelchair ramps.

The foremost documentation of the cold storage entry is of the decorative brick pilasters protruding from the façade embracing the single entrance. Initial visions favor preserving this element but to do so and also create a functioning entrance for a public social development seemed irreconcilable. The second issue being the split level stairs that are far too narrow and shallow, in addition to, the enclosing walls leaving no room for ADA ramps. The solution was to allude to what was already there, by tearing out the protruding brick element and replacing it with a glass curtain wall



Design Process



extrusion mimicking the original form. This therefore, expands the space for doors while keeping with the original proportions with a modern facelift. The interior of the entry was gutted back to the original structural grid. A grand entry of ramps, steps, and plantings lift you up unto the atrium of the Cold Storage Apartments. Other main entries to focus on are the east entrance of the Market Addition, the north boardwalk of the Armour Creamery and the west entrance of the Creamery. The design of these entryways is influenced by their orientation and the function with which they correspond.

The west façade is the first thing to catch your eye when turning onto NP Ave from University Drive. The antiqued painted sign, the yellow industrial brick and the huge paned glass windows—rusted, broken, boarded up, and nostalgic. Doing justice to the preservation and celebration of this façade was a priority from the beginning. Connections have been an important and reoccurring theme throughout my process and design. A connection to history and the effects of time offers a character and uniqueness that cannot be replicated and should be preserved. Vertical connections are an important aspect for any project, both physically and visually. I cut the floors away from the west wall in order to pull in light and expand your view to the full height of the wall. The purpose is to draw attention to the age, the texture, the residue, the tectonics, and the light. These are complimented by the ability to move up through it by means of two staircases projecting upwards. There is no elevator by this main staircase in order to encourage people to move through the spaces experiencing the transitions. A secondary stairwell and elevator is closer to the center of the building where the original elevator once stood.

The second floor is allotted to office spaces. The uniform open structure creates opportunities for movable partitions and renovations to suit each leaser's needs. Finally, the third floor of the Creamery is a structural experience in itself. Instead of the timber column and beam structure of the rest of the structure, this floor is

Design Process

spanned by arched wood trusses and features a clerestory level as well. The entire floor is filled with light from floor to ceiling paned windows. The ideal use for this space would be to lease it out to firm large enough to utilize the whole floor in order to take advantage of the natural light and openness. However, if necessary the space can be seperated at each bay.

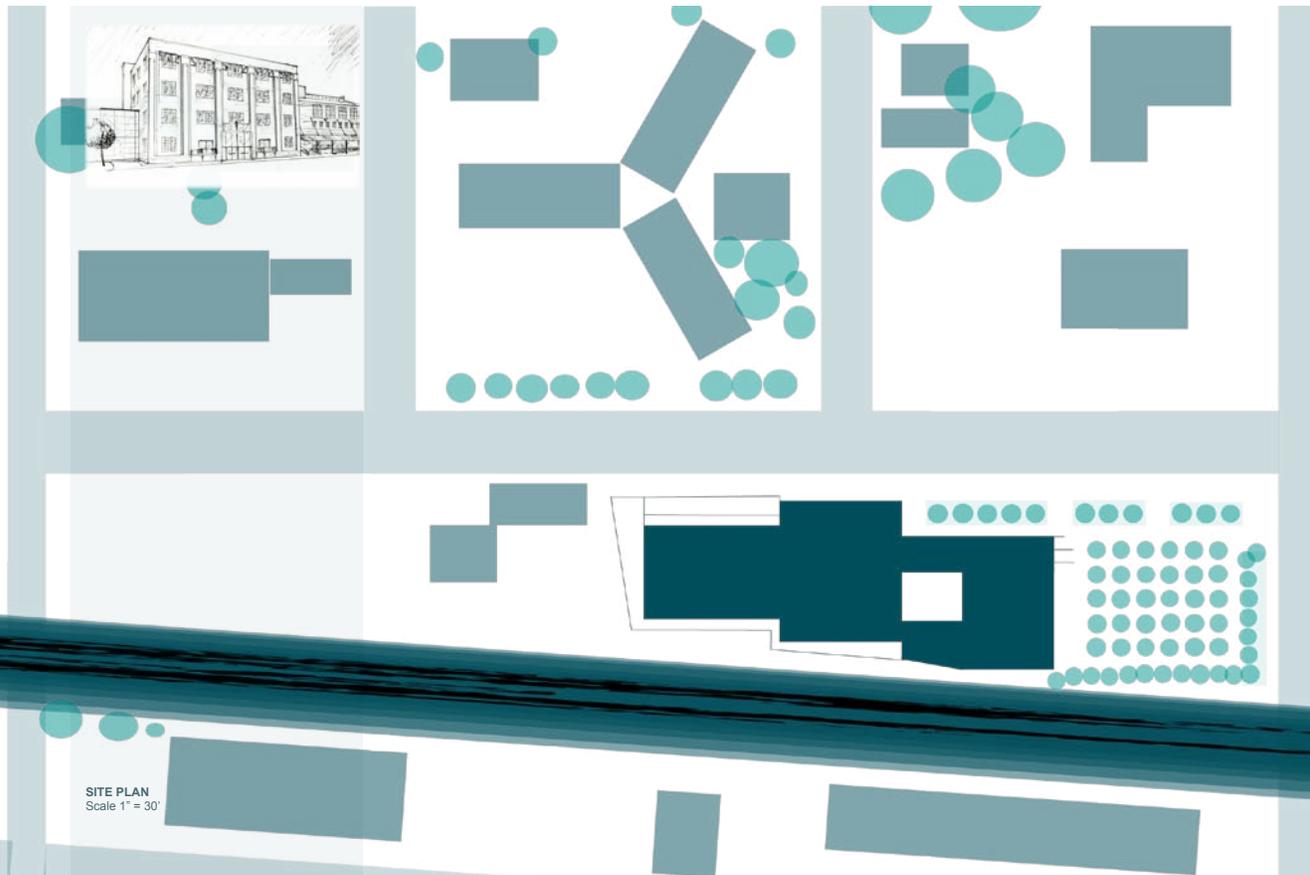
Wrapping up the design process is a context check. I worked over and checked how every part of the building is working together. Materials, circulation, and function are all working together to create a whole. The Armour Re-development is designed to create new experiences and a project for the city of Fargo fit for the downtown area.



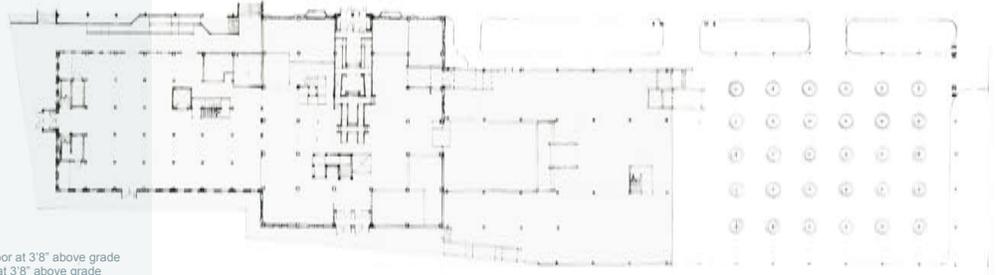
Presentation Boards



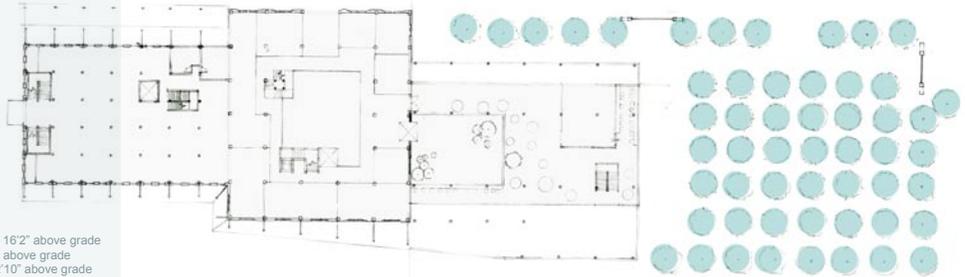
ARMOUR REDEVELOPMENT



Presentation Boards



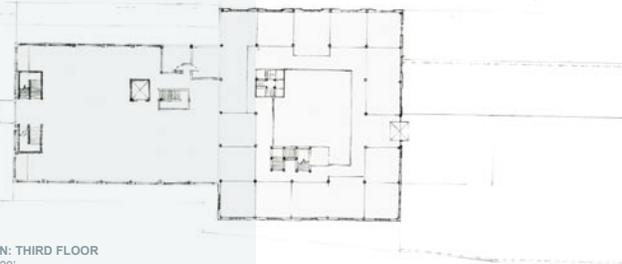
PLAN: FIRST FLOOR
 1" = 20"
 Armour Creamery 1st floor at 3'8" above grade
 Union Storage 1st floor at 3'8" above grade
 Market Addition 1st floor at 14" above grade



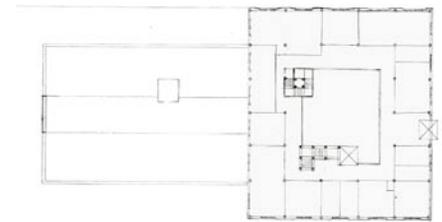
PLAN: SECOND FLOOR
 1" = 20"
 Armour Creamery 2nd floor at 16'2" above grade
 Union Storage 2nd floor at 18" above grade
 Market Mezzanine Level at 12'10" above grade

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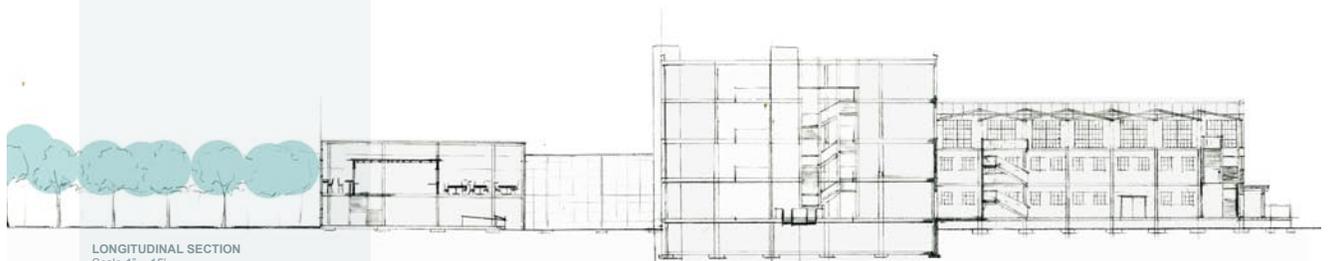
SARAH E. HOOG
 Regis Schwann
 ARCH 572 Design Thesis, Spring 2019
 Department of Architecture and
 Landscape Architecture
 NORTH DAKOTA STATE UNIVERSITY



PLAN: THIRD FLOOR
 1" = 20"
 Armour Creamery 3rd floor at 28'8" above grade
 Union Storage 3rd floor at 32'4" above grade



PLAN: FOURTH FLOOR
 Union Storage 4th floor at 46'8" above grade



LONGITUDINAL SECTION
 Scale 1" = 15'

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"NDSU, through its atmosphere, professors, and opportunities, has prepared me with the knowledge and ability to be the change I see in the world."

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