



Remedial Architecture

# Remedial Architecture

By: Katelyn Schmidt





# SIGNATURE PAGE

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Remedial Architecture

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



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Primary Thesis Advisor



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Thesis Committee Chair

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Fargo, North Dakota

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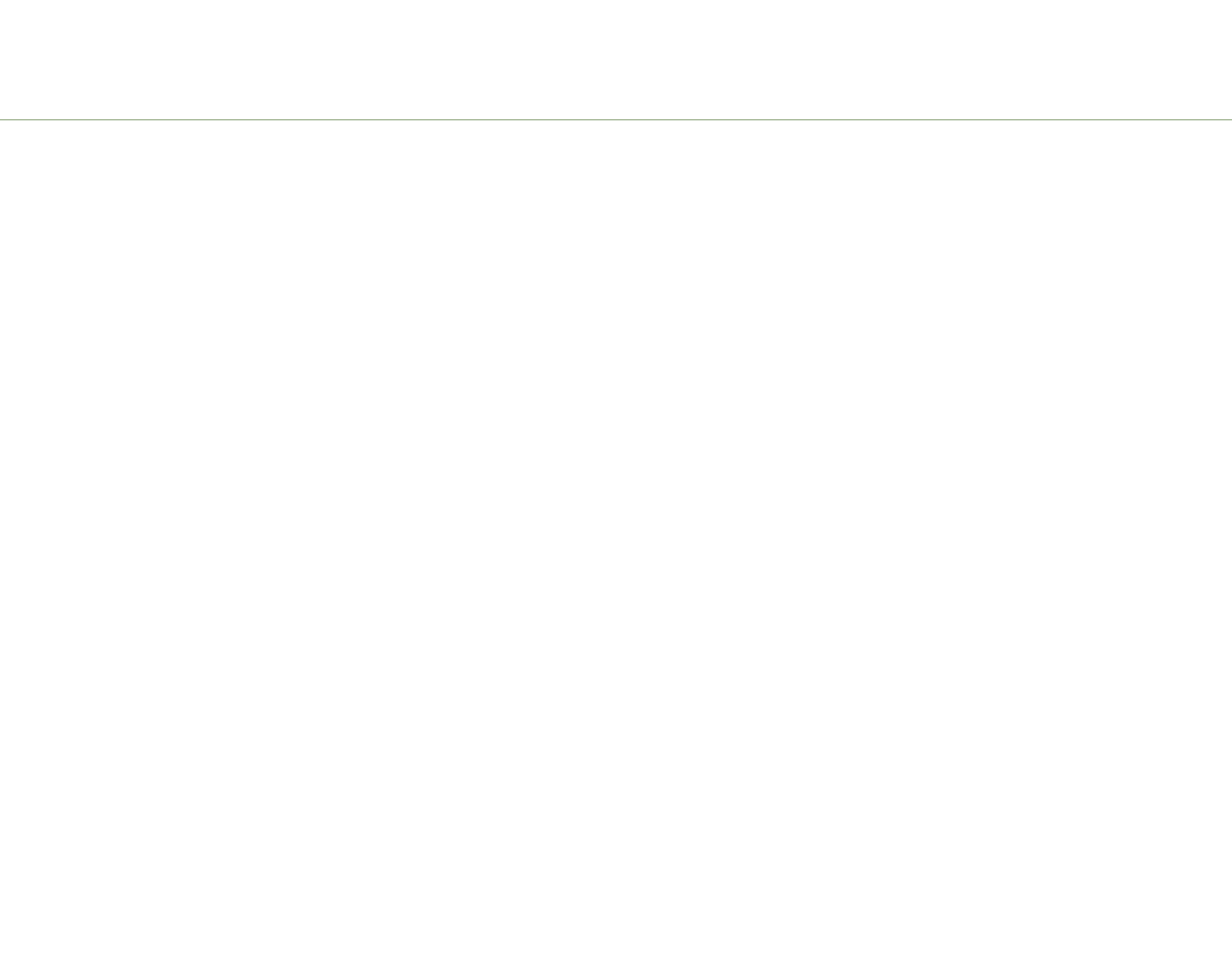
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# THESIS ABSTRACT

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The North Shore Healing Center gives a place for personal mental health rehabilitation. This building provides a safe and comfortable place for people to rebuild themselves. It uses natural healing remedies and holistic methods when treating patients back to a happy and healthy state of mind.

This thesis studies the relationships that people have with their surrounding built environments. In order to communicate effectively with the users of this building the research was very extensive. We not only studied the way people physically interact with buildings, but also people's body language around variations of building materials.

This project makes it easier for patients to be comfortable in a home away from home, while reaching their goals of a happy and healthy life.

# PROBLEM STATEMENT

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Can the **relationship** between building **materials** and spatial layout influence peoples' **emotions** and affect how they live their life?

**Keywords |**  
relationship  
materials  
emotions

# THESIS PROPOSAL





# NARRATIVE

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Throughout our lives, we hope to find a place of comfort and happiness. For some people that happens and for others unfortunately it does not. Everyone experiences hiccups in life, some people's hiccups are bigger than others and everyone handles them differently. Some trip and fall and are able to pick themselves up, and others need some guidance to stand back up.

No matter what curve balls life throws at a person I believe everyone should have the chance to be happy and enjoy the life they live. This thesis proposes a place designed specifically for the people who need a place to heal after they have hit their rock bottom, and wish to no longer be there.

I have experienced friends and family go through struggles related to addiction, mood disorders, and self image issues and it is a problem far too many people face during their lives. Many times people will be adamant about not getting help because "they're fine." Could it be that they actually believe they are, or because

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they prefer not to spend months in a hospital's grace unit or psychiatric center?

I am empathetic to this case and am interested in finding a solution in happiness through architecture.

I am a firm believer that design has an everyday impact on the entire population, even though many don't realize it. I consider it to be our responsibility as designers to have the health, safety, and welfare of our communities on our minds throughout the entire design process.

The layout of spaces influences the way a person will move through the building and also manipulates the way a person will spend their time in a place.

Not only is spatial layout important in creating a strong, comfortable sense of place, but material choice affects the way people interact with and receive a space.

In this thesis I am striving to help people feel comfort and warmth in their surroundings. Soft and light materials will be fitting through this process.

Spatial layout and material doesn't just

apply to the building, but to the site as well. The north shore of Lake Superior is known for its extreme serenity and beauty among most, if not all Minnesotans. Duluth Township is a small township located northeast of Duluth and just south of many state parks along the lake. The actual site sits nestled in a wooded area right along the shore. It is important to me that patients at the North Shore Healing Center feel safe and comfortable while they are here trying to better themselves.

At one point many years ago, the economy in Duluth, MN plummeted. The unemployment rates were nearly 20% (Kraker, 2012), and people in the community became discouraged. The lack of courage or compassion can drive people into a dangerous place. Many people turn to drugs and alcohol to cope with a unhealthy state of mental health. Today the unemployment rate is less, but there is still a problem in the Twin Ports area with substance abuse.

I am adamant about creating places for people to heal. There are so many ways as

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designers we are able to create healthy lifestyle choices so people do not eventually end up in a dark place like so many unfortunately do. It is our duty to help make our communities a better place and to influence people in our society to live a happy and healthy life like they deserve.



# PROJECT TYPOLOGY

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Project Typology |

A mental health rehabilitation facility

Typological Precedents |

This building has qualities of a hospital or a long stay clinic. The spatial layout of this facility is meant to be welcoming and give a sense of comfort to its users. There are also many public and communal areas to encourage interaction with other people and spaces. The site around the building has healing gardens and meditation areas.

Claim |

Spatial layout of a building and material choice affects the way people interact with the building, and influences the way a person will experience a space.



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TYPOLOGICAL RESEARCH |





Hazelden Foundation | Plymouth, MN



Figure 4.0 Hazelden Foundation

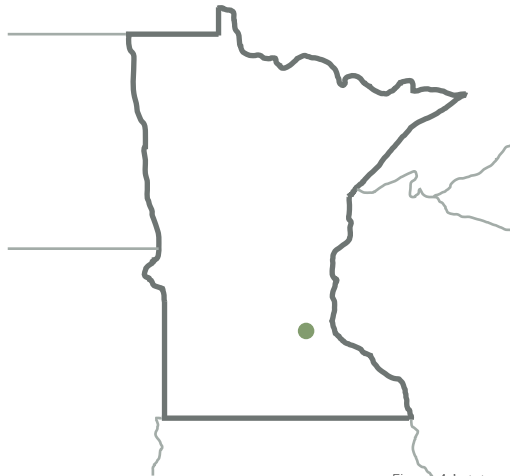


Figure 4.1 state outline

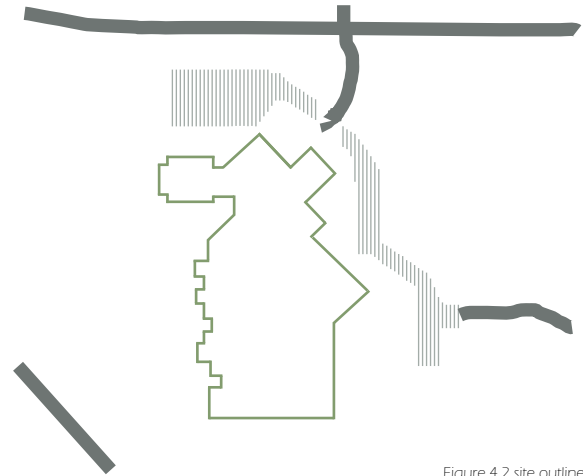


Figure 4.2 site outline

Introduction |

Owner | Hazelden Foundation

Architects | HGA

Typology | Treatment center

Size | 49,000 sq. ft.

Project Elements | 32 beds  
Gym with climbing wall  
Workout room  
Music therapy room  
Art room  
Private admission area  
15 acre site near serene lake

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## Research Findings |

Hazelden Plymouth is one of eleven facility locations for the Hazelden Foundation. This case study was a recent renovation project and is one of the newest buildings for the Foundation. Alike the other case studies, this building was designed for the healing and treatment of people struggling with a mental illness. The lead designer on this project believes that there is a way to design a building that physically aids in the natural process of mental rehabilitation. Along with important layout of spaces inside the building this case study also captures the beauty of the external environment of the site. There is a serene lake which many of the rooms have views to.

Unlike the other two case studies, this facility specifically concentrates on helping adolescent and young women suffering from substance abuse. The program is designed for interactive healing between all of the patients. With the small size of the living area, I think it is appropriate to limit the admission for ultimately the best results.

The Hazelden Foundation in Plymouth, MN has been very well received by many. This building has received awards from the medical community as well as the design community. The designers were very cautious with the natural habitat of the area and built with the site, not on the site. It is an inspiring work of architecture.

Analysis |

Structure

Steel and precast concrete super structure

Natural Light

The use of clerestory windows are prominent throughout the design of this case study.



Figure 4.3 reception desk



Figure 4.4 gymnasium

## Massing

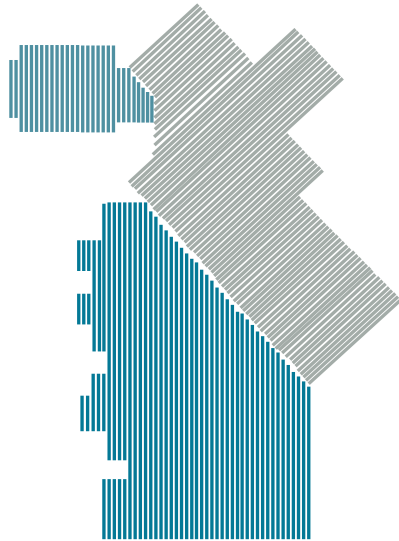


Figure 4.5 massing

The 3 masses are easily distinguished by the difference in their exterior finishes.

## Hierarchy

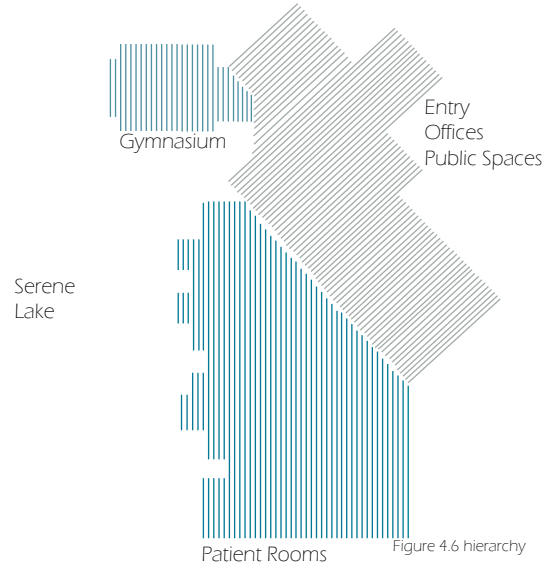


Figure 4.6 hierarchy



Figure 4.7 serene lake



Figure 4.8 Hazelden entry

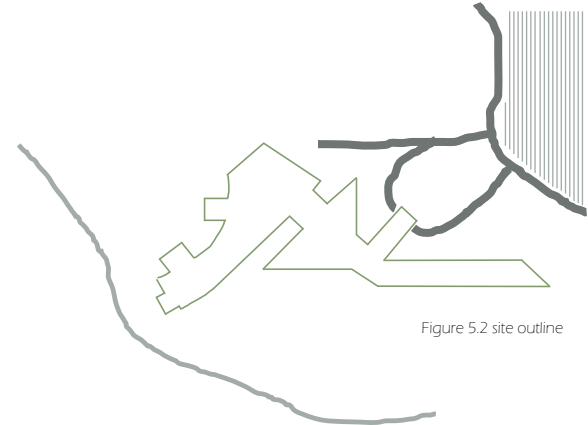
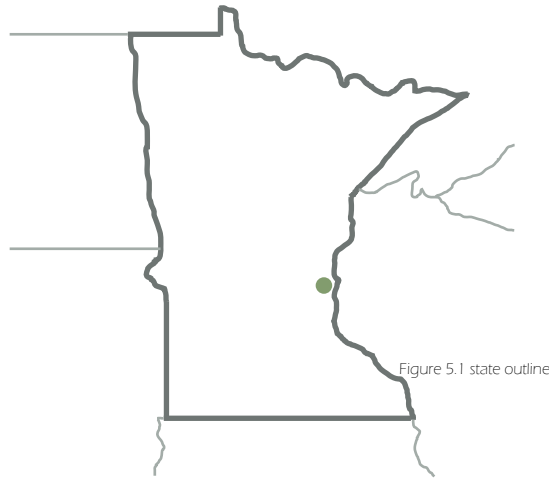
Conclusion |

The Hazelden Foundation's Plymouth, MN location is not only a beautiful work of architecture, but their mission statement is something to appreciate as well. The way this facility and its workers strive to help people become a better version of themselves is amazing. The way that the Hazelden Foundation incorporates architecture and spatial organization as a part of the healing process is something I would like to make prominent in my thesis design. I hope that my thesis portrays the same kind of integrity towards helping others.



Figure 5.0 women's recovery center entry





Introduction |

Owner |

Architects |

Typology |

Size |

Project Elements |

Hazelden Foundation

BWBR

Women recovery center

61,000 sq. ft.

87 inpatient beds

Each room has 3 beds, full size  
kitchen and large living room

Group counseling dayroom

Serenity room

Acute care center

Offices

Reading room

## Research Findings |

The Women's Recovery Center at Hazelden is a well known, sought after rehab facility. BWBR recently finished the remodel and new addition to the facility and has made it a comfortable place for patients to heal and interact with others. The concentration of this design was in the spaces and how they could be as open as possible for important interaction, but still closed off enough for a sense of privacy. Along with the other case studies, designers chose light materials and permeable spaces.

This study is different than the others in that is it the largest of the 3, not in square footage, but in the number of patients it can accommodate. This is executed in the shared spaces between patients. BWBR found a comfortable, positive way to do this.

Hazelden is a well respected rehabilitation foundation and this building design executes that well. The community appreciates the dedication of this foundation and responds to it appropriately.



Figure 5.3 living quarters

Analysis |

Structure

Masonry and steel super structure



Figure 5.4 private balconies

Natural Light



Figure 5.5 group room

The designers concentrated on using natural light throughout the entire facility. For the interior spaces designers used clerestory windows to declare privacy, but still allow daylight into the space. The exterior spaces have tall windows to capture the beautiful views out to the lake and gardens. Almost all rooms have either balconies or patios overlooking these serene places.



Figure 5.6 landscape

Massing Hierarchy

The 3 masses in this case study are broken up into levels of privacy. From the exterior it is easy to determine where each mass changes from one to another.

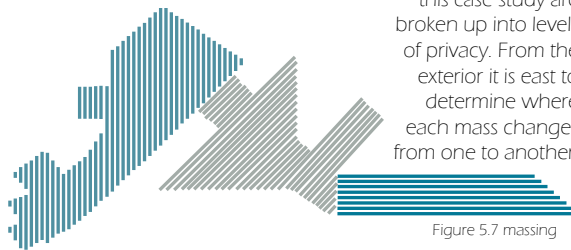


Figure 5.7 massing



Figure 5.8 hierarchy

Lake

## Conclusion |

The Women's Recovery Center at Hazelden is nationally known for its healing accommodations. Not only are the professionals amazing, but the comfort of this facility is valuable to the foundation. I believe positive patient interaction here can be attributed to the use of natural materials in such a contrasting way. I will keep this technique with me through the design process of this thesis.



Figure 5.9 women's recovery center

# St. Anthony Hospital | Pendleton, OR

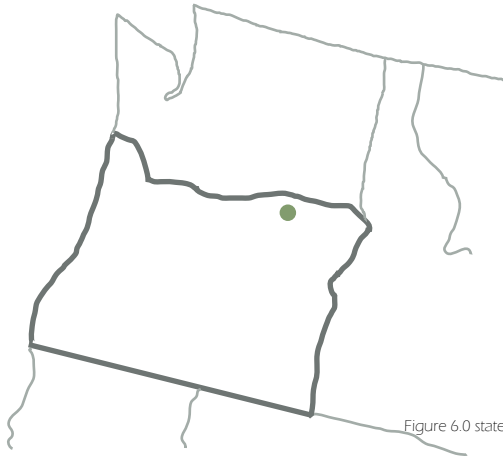


Figure 6.0 state outline

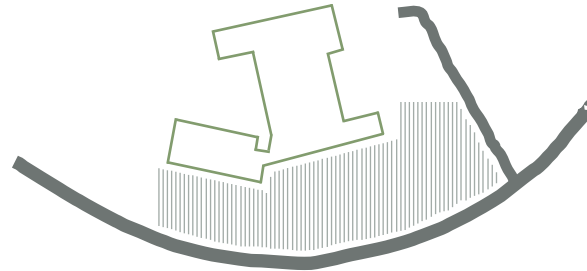


Figure 6.1 site outline

## Introduction |

Owner | Private investor

Architects | ZGF Architects

Typology | Hospital

Size | 105,200 sq. ft.

Project Elements |  
Site sits on 90 acres of rolling hills  
Large healing garden  
25 inpatient beds  
Outpatient and emergency services



Figure 6.2 St. Anthony Hospital

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## Research Findings |

St. Anthony Hospital is a general hospital that demonstrates the same type of natural healing as the other case studies. Some things I am searching for in this thesis are different ways to establish natural healing methods through design. Along with the others, this care center has several rooms for inpatient treatment and long stay patients.

This particular case study is larger than the others, and unlike the other two it does not have a specific space for mental health but rather general emergencies.

This hospital is very well received by the Pendleton community. The small town was excited about the building throughout the entire process and had a celebratory grand opening for the hospital. (Mirviss, L.) ZGF Architects were very cautious of the carbon footprint of the building and spent a lot of time designing the site surrounding the structure. The healing gardens are many peoples' favorite place at St. Anthony.





- HOURS ENTRANCE
- 3 AMBULANCE ENTRANCE
- 4 STAFF AND HELIPORT ENTRANCE
- 5 ADMITTING
- 6 EMERGENCY DEPARTMENT
- 7 IMAGING
- 8 RESPIRATORY THERAPY
- 9 INFUSION
- 10 LAB
- 11 SURGERY
- 12 CENTRAL STERILE
- 13 CHAPEL
- 14 PHARMACY
- 15 MEDICAL/SURGICAL
- 16 ICU
- 17 FAMILY BIRTH
- 18 GIFT/COFFEE SHOP
- 19 INNER COURTYARD
- 20 HEALING GARDEN
- 21 MATERIALS/MANAGEMENT
- 22 ENVIRONMENTAL SUPPORT SERVICES

Figure 6.3 floor plan

Analysis |  
Structure

Steel super structure with metal and masonry external cladding

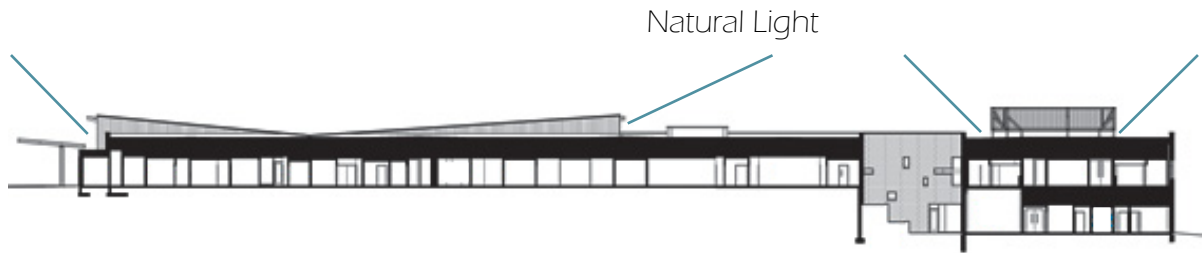


Figure 6.4 section cut

Massing

3 masses separated  
by level of care and  
privacy. All areas have  
views to the healing  
gardens.

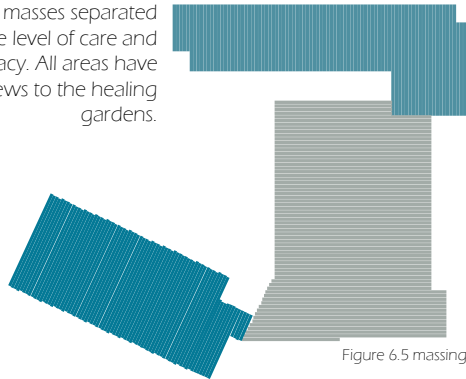


Figure 6.5 massing

Hierarchy

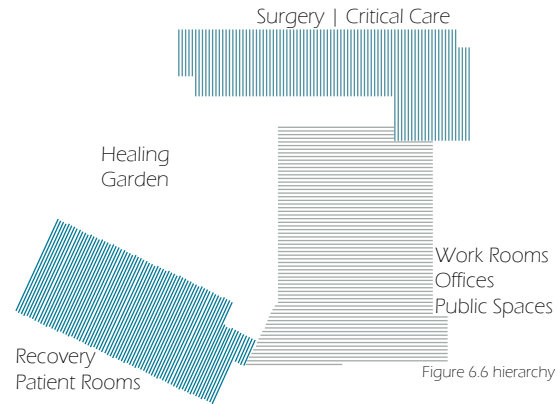


Figure 6.6 hierarchy



Figure 6.7 healing garden

Conclusion |

St. Anthony Hospital represents a lot of things I am striving for in my thesis. The natural beauty of the site and the material choice definitely ties into my theoretical abstract. Although this building is far larger than what I expect my thesis to be I would like to follow the hierarchy of this particular site. I believe the spatial layout and accessibility through the spaces is addressed in an appropriate way. I am inspired by the beautiful, calming outdoor spaces on this site and strive to design something just as pleasing.

# RESEARCH SUMMARY

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The previous case studies researched all demonstrate a type of architecture that is good for the soul. The building typologies include a youth and adolescent substance abuse rehabilitation center, a women's mental health recovery center, and a general hospital. All three of these buildings concentrate on how architectural design can better the health and welfare of their users. Each design has a similar strategy for obtaining this goal, but has executed it in different ways.

The first case study researched, the Hazelden Foundation is one of many locations for this organization. This is the newest location of eleven for the foundation. When HGA Architects was designing this facility they concentrated on ways to integrate the healing process with the physical design of the building. They used soft, natural materials to portray comfort for the young women who would use this building to start their rehabilitation process. The objective was executed in a way that is encouraging to my thesis project.

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The second case studied was Hazelden's Women's Recovery Center, this is another one of eleven locations for the foundation.

This center helps adult women deal with addiction and many other mental health problems. When adding on to this building, BWBR was faced with integrating the old building while designing a new piece that included strategies for natural healing methods. The end result portrays stimulating living and gathering spaces for the patients to interact with their surroundings and each other. The spatial layout of this building shows me ways it is possible to influence positive communication from the users into my own design.

The last study was unlike the first two in the case that it was a general hospital and did not have a specific area for concentration on mental health. St. Anthony Hospital, a recent staple to a small town in Oregon, establishes a strong sense of place with the style of design executed there. ZGF Architects believe that there are special strategies to use when designing a healthcare facility.

The layout of spaces and the material choices in the different spaces is something that was obvious to me in their design. They also created natural spaces for meditation and interaction. I think giving people these spaces is something that is overlooked too often in design and can make a huge difference in the way you experience a place.

Through all of these case studies researched, I can say I have a better understanding of spaces I will incorporate in my thesis design. I have the knowledge of strategies and techniques to further explore, and I feel confident that I will be able to create a comfortable place for mental health rehabilitation.

# MAJOR PROJECT ELEMENTS

---

## Public Spaces |

Entrance to reception and main lobby area  
Reception  
Restrooms  
Lounge area | Breakout spaces  
Cafeteria  
Library  
Chapel

## Private Spaces |

Private rooms for patients  
Small lounge areas  
Doctors offices  
Medical exam rooms  
Triage  
Staff break rooms | Staff overnight spaces  
Art Studio  
Music room

## Outdoor Spaces |

Walking trail  
Picnic area  
Meditation  
Parking  
Open space for activities

---

Mechanical and Circulation |

Three stairs | one open, two fireproof

Kitchen

Server room

Filing room

Medicine storage

HVAC mechanical room

Open circulation

General storage

# USER | CLIENT DESCRIPTION

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Who | The project will be designed with all of the users in mind. Our goal is to make a difference in the health and well-being of people; the patients will be the primary concern when designing.

Owner | The North Shore Healing Center is a privately owned medical practice.

Users | Doctors | 8\*  
At least 1 doctor on site at any given time  
Doctors work daily and on-call

Program Directors | 5  
Program directors make sure the facility is running smoothly  
Each department has a manager and there is at least one on site at all times

Nurses and Nurses Aids | 20  
10 nurses on duty at any given time during the day  
5 nurses overnight



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Patients | 30

There are beds for up to 30 patients

Drug and alcohol addiction

Eating disorders

Mood disorders

depression | manic depression | multiple  
personalities schizophrenia | trauma and PTSD

Secretarial Staff | 3

Reception in main lobby

Kitchen Staff | 10

The kitchen is staffed every day from  
breakfast until supper

Janitorial Staff | 2

Staff cleans every night with the exception  
of weekends

Security | 5

For the safety of every user, security will be  
staffed 24 hours a day

Visitors

\*The number of users will vary at different times of each day.  
These are general numbers of what the project is designed for as  
a capacity number.

# SITE INFORMATION

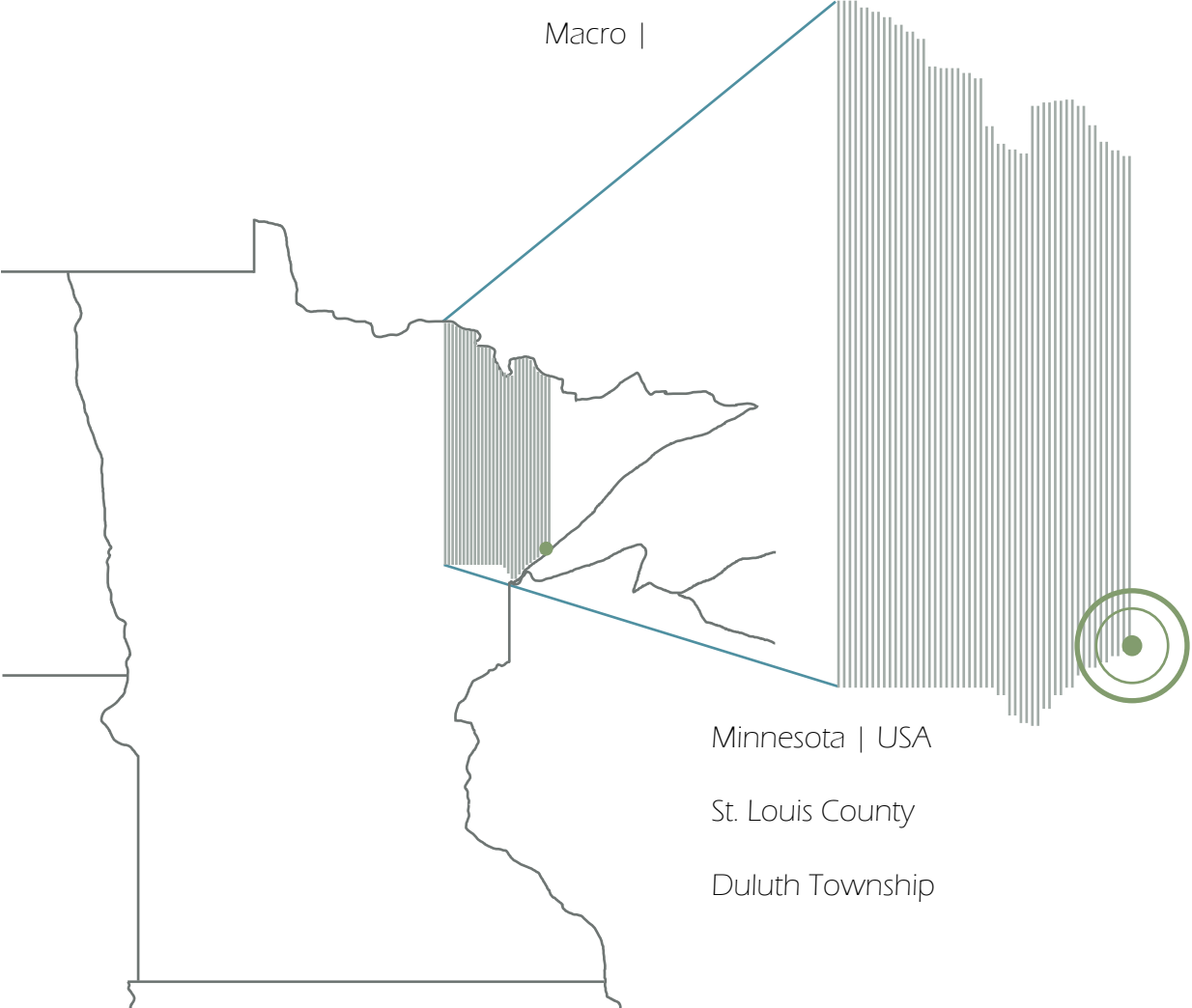


Figure 7.0 site region

Micro |

This site was chosen for its serene sense of nature. It is far enough away from an urban atmosphere to keep it unhindered from attaining a calming environment.

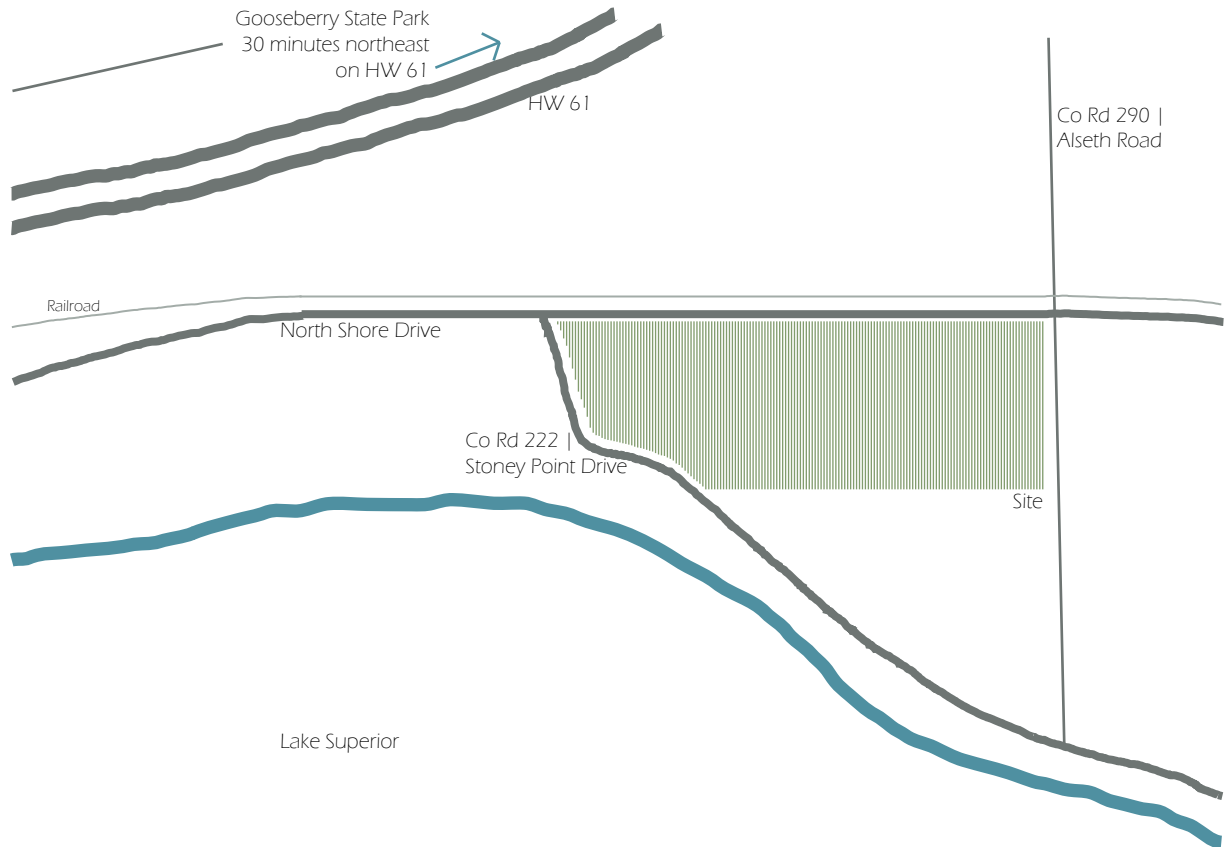


Figure 7.1 site context

# SITE INFORMATION



Figure 7.2 south photo



Figure 7.3 east photo



Figure 7.4 north photo



Figure 7.5 west photo

# PROJECT EMPHASIS

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This thesis will explore the relationship between people and the built environments around them. It will create spaces that employ positive reactions from its users, and use materials in a manner that affect the way people experience the space. It will force us to think about the way we design for the medical and health related fields, and hopefully aid in helping better our communities.



Figure 8.0 Amsterdam housing photo

# GOALS FOR THE THESIS

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Academic |

As my academic career at North Dakota State University nears its end, there are many goals I have for my final project. I anticipate expressing the different strategies of design and presentation I have acquired during my undergraduate career here in this thesis project. I hope to show a combination of those techniques to the best of my ability. My goal is to create a project that teachers, classmates, and underclassmen look at with excitement and approval. I am eager for this project to showcase my ability to create a comprehensive design from start to finish.

Professional |

A successful professional career is very important to me. After graduating with a Masters of Architecture degree I hope to work with a medium to large size firm concentrating on institutional work. I have especially been interested in pursuing work in healthcare or schools. I would love to start working on large projects learning from experienced designers and moving my way into a leadership role at a successful design firm. I believe architecture changes the way people view



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or live in a certain place and time. I think as architects we have the power to do something genuinely special and exciting for this world. I am anxious and determined about my future as an architect.

Personal |

Everything I do in school is an attempt to become a better designer. I hope to keep growing as a person, but also as a professional. My thesis concentrates on the health and well-being of others because that is truly something I am passionate about. I believe that as a designer I have the ability to make the world a little more interesting and positive place to be. Looking out for the health, safety, and welfare of others is really what this profession is all about.

# PLAN FOR PROCEEDING

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## Research Direction |

This thesis proposes an idea that studies relationships between static and dynamic objects. Extensive research on these topics are required in order to complete a successful design. Research will be done through textbooks, online sources, magazine articles, interviews with potential users of this building, and typological case study work.

## Design Methodology |

The approach I will take during the design will start with metaphorical studies of the site and the theoretical aspect. From there I will move onto intensive sketching and quick model making. The project will bounce between paper and computer until most of the design has been finalized and then will be a digital model. I will meet with classmates and peers and consider feedback given from them to move my design forward throughout the semester.

## Documenting the Design Process |

This design process will be documented from A to Z. All design work will be scanned and filed throughout this semester and will later become available for others to access through North Dakota State University's Institutional Repository.

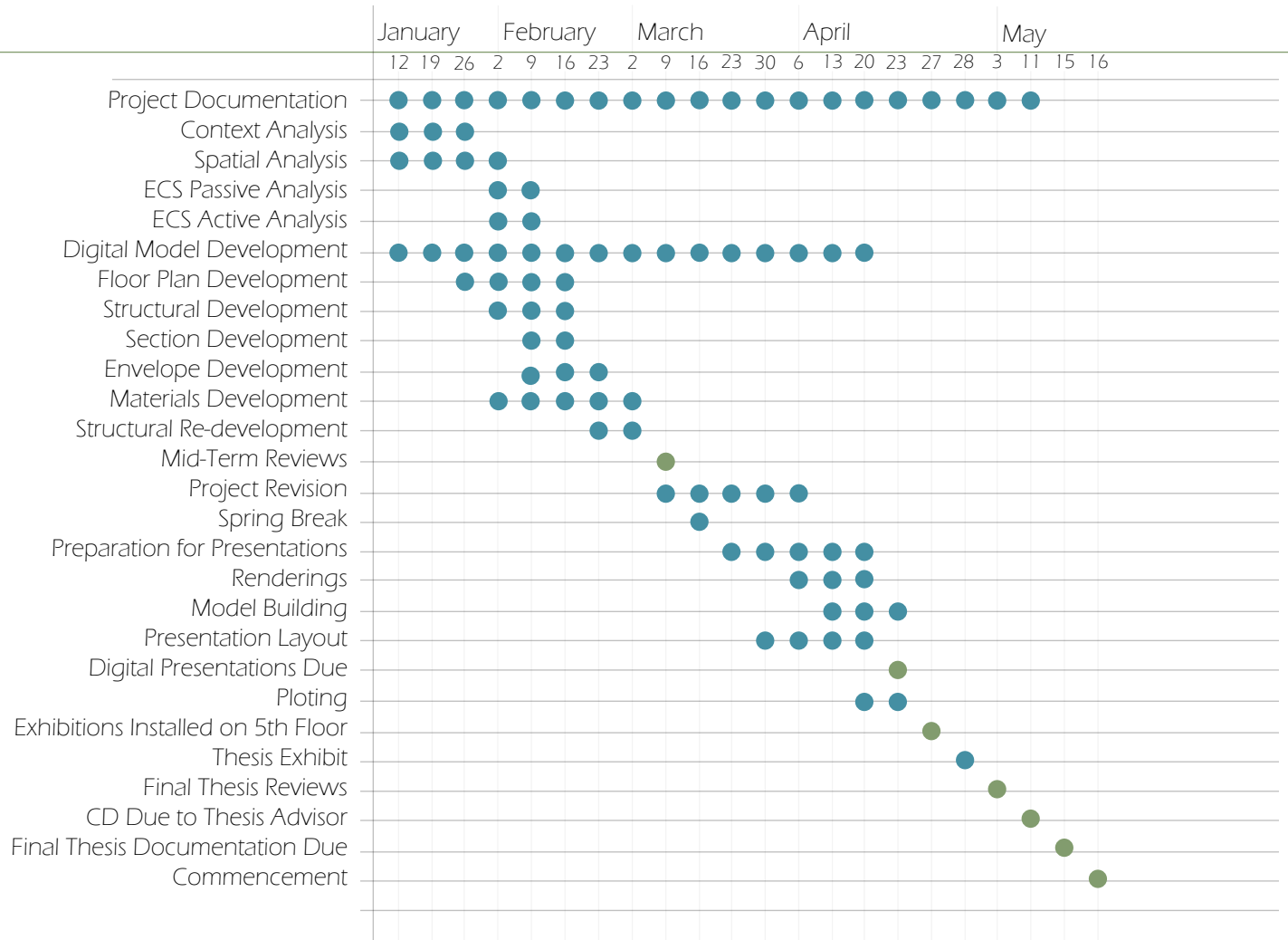


Table 1.0 timeline

# THESIS PROGRAM



# UNIFYING IDEA RESEARCH

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This thesis studies the relationships people develop with their built environments and how architecture influences everyday life. It is about human interaction with other people and your visible surroundings. It studies the importance of spending time in a natural environment, and how being in a certain space at a certain time can make you feel.

This thesis studies the ability of materials and spatial layout of spaces to be able to influence or affect the way a person feels in a space, It looks at different materials and carefully identifies their strengths and weaknesses, physically and psychologically. It looks at spatial layouts as a way to direct people through or around spaces; it carefully plays with subconsciouses when addressing its users.

This thesis studies emotions and the importance of living with good mental health. It emphasizes the psychological connection we have with each other, our physical environment, and ourselves.

*“One of the great but often unmentioned causes of both happiness and misery is the quality of our environment: the kinds of walls, chairs, buildings and streets that surround us.”*

## Relationship|

The relationships a person has with other individuals is influential of the direction in which one will choose to go in life. Speaking on behalf of the nurture side of nature vs. nurture, I truly believe that our upbringing and people we surround ourselves with daily, influence the direction of the rest of our lives. We always have the ability to make our own decisions and stand up against people for things we believe in, but at some point along the line there was a relationship made with someone or something essential to our own beliefs.

There is something to be said about being in the right place at the right time. There are people you might not meet, memories you might not make, and life opportunities you may not have been given the option to take. The context of which an individual spends their time will affect daily activities he or she takes part in. Say a person comes from a small town in a rural setting and that is all they know, perhaps a busy urban environment would be overwhelming and uncomfortable to them. That relationship



Figure 9.0 relationship

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with the built environment (or lack of built environment) around them is their comfort. Same goes for an individual who grew up in a city, or enjoys spending time in an urban setting. If an individual is used to being surrounded by hundreds of new and strange people everyday that will become their normal. The two types of environments these people live in contrast each other in a way that assumes the individuals' personalities would also differ greatly from each other.

A strong sense of place can provide a person with comfort, strength, confidence and so much more. "Structuring the environment in turn structures the communication processes that form the basis of social interaction (Lang, 1974)." If an individual chooses to spend his or her time outdoors with nature, it could present time to meditate and reflect on life, the choices they have made and the choices they foresee themselves making in the future. Creating a relationship with nature and an outdoor environment can be very calming and quite remedial.

Along with a natural outdoor setting, built features are sure to influence a persons' actions and reactions. As designers we have the ability to affect the choices a user will make while interacting with a space. It is our job to keep the health safety and welfare of all users in mind while designing for this reason. Walls and other structures do not have to act as barriers to spaces. That is the great thing about design. We have the ability to push building limits in new and exciting ways. Some individuals experience spaces metaphorically; pushing building limits correlates to pushing personal limits (Botton, 2006). As a future designer, it is a flattering opportunity to be able to affect a person's life psychologically as well as physically. We should strive for positive reactions in our designs always.

Not only are relationships with other individuals and the relationships with the surrounding environment important, but the relationship a person has with themselves is crucial. It is essential to live a happy life that an individual must possess strong self



worth. You are the only person you have control over, you are the person that holds the key to your personal and physical sanctuaries.

### Material |



Figure 9.1 material

This thesis studies the influence of building materials and spatial layout and the effect they have on its users. Is it important for designers to understand the acute effect each part of a building has on the individuals that use it. From the time a person enters a building their experience is in the hands of those who have put in the time and effort of a comprehensive design. Our job is to prevent the users to feel like they're being forced to inhabit a space rather than enjoying their time in the building.

Building materials directly impact a users first impression. If an individual were to walk into a concrete room with few windows he/she would most likely have a different reaction to the space than if it had been a space accentuated with large curtain walls and/or wood paneled walls.

The coolness or warmth a person feels when experiencing a space can be controlled by the materials that surround them.

Concrete as a building material can evoke a cooler environment. It is also a very strong material that can symbolize strength or sturdiness. It is a sustainable building option because there are many added benefits when designing with concrete. The material can be produced anywhere around the world and the structure can be poured in place on site. Using steel as a material can also make a space seem strong or sturdy. When comparing steel to concrete some may say that steel would be a better choice if the intention is to make the space seem open or airy. Wood is the least expensive building material to use. Along with the cost benefit, showing wood in your building can warm a space up. All of these materials are good options when designing a structure, but the choice is important when deliberating about evoking certain emotions in a space.

The choice of structure is one thing, but when selecting finishes for the interior of the building designers must understand what the spaces future is. We must recognize the psychology of a space before we can make a decision of how to achieve the best end results of a project.

Not only do building materials affect how users feel in a space, the spatial layout of a building can influence how an individual experiences the design as a whole. Ceiling heights, hallway widths, and view corridors are all things that affect how a person sees a space.

In “Perception and the Senses”, Brown and Deffenbacher show us how what we see and what our brains process can differ from each other. This is dependent on how each individual’s brain processes the contrast between the figure and the

ground of an object or space. It is important to understand that in a design we can overlap spaces and create voids without



Figure 9.2 spatial voids

jeopardizing the fluidity of adjacent spaces. Using overlapping spaces in design can be an advantage when designing public and circulation spaces. Attention will be drawn to those places in which spaces overlap, because your brain is suggesting something your eyes don't see. As a designer it would be beneficial to use these points in the design for a space intending on drawing people towards it. The figure on the right (Canter, 1974) suggests different ways design can influence a users reaction to a space. With a simple sloped ceiling the comfort and relaxation level of this individual looks to have increased. It is truly the little things in spatial organization and building design that will make or break the users experience of the project.

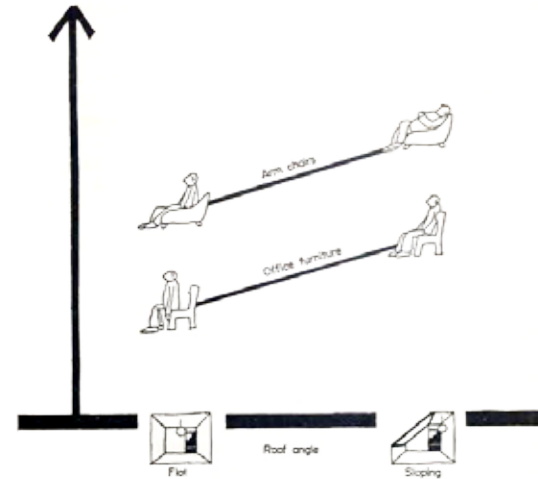


Figure 9.3 design influence

## Emotion |

This thesis strives to design a rehabilitation facility mental illnesses. Before we can design a building meant for users who suffer from mental health problems, we must define what it means to be have a mental illness.

The term “mental health” is hard to define because there are many meanings depending on who you are talking to. “The model of a mentally healthy, secure individual is described by Erich Fromm as “the productive and unalienated person; the person who relates himself to the world lovingly, and who uses his reason to grasp reality objectively; who experiences himself as a unique individual entity, and at the same time feels himself one with his fellow man; who is not subject to irrational authority, and accepts willingly the authority of conscience and reason; who is in the process of being born as long as he is alive, and considers the gift of life the most precious chance he has.” (Moller, 1968). In that quote lies such deep thought about mental illnesses. It is not saying that a person who does not possess all of those traits is mentally ill, but instead suggests that it is the ultimate happiness a person can strive for. If society was mentally healthy would we know war? If we were a healthier community would we stand more united? If our generation was healthy would there be reason to point blame?

There are so many benefits to living a mentally healthy life, and so many reasons we should help the members of our society obtain mental health.

There are millions of people who suffer from mental illnesses in the United States, some cases worse than others. 1 in 5 Americans suffer from a mental health illness each year, and only roughly 60 percent of them seek treatment (Conley, 2012). Pamela S. Hyde, head of Substance Abuse and Mental Health Services Administration, said in a news release in 2012 that “People, families and communities will benefit from increased access to mental health services.” It is important to our society that we listen to people when they ask for help, that’s what



Figure 9.4 mental illness

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being a part of a community is all about.

If funding for mental health prevention and treatment is an option, anybody who has the ability to help should consider the advantages and opportunities programs like these would create.

If a person with mental illness was seeking treatment, what would he/she want in a treatment facility? A sense of comfort and safety would be of key importance. A place that would feel like their home away from home while they are out of their comfort zone, trying to become a healthier person. Professionals who care about the patients as individuals and connect with them on a personal level. A staff who is rooting for them and would make sure they were doing everything they could to treat their patients. Understanding you are mentally ill is hard, but seeking treatment is psychologically challenging as admitting you are sick is one of the hardest parts. When patients agree to trade in their lives for an inpatient program it is essential they are getting the absolute best they can.

Architects and designers play an important role in creating a healing environment.

What can we do to ensure the users of this building are being helped, not hindered by the design? We can create spaces inside and out that convey comfort and safety. We can design living quarters that provide privacy but prevent alienation. We can make educated decisions about material choice and spatial layout to emphasize the healing nature of the building; we can bring remedial architecture to life.

# UNIFYING IDEA SUMMARY

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The previous research was completed so that through this thesis I could have a better understanding of people's relationships with one another and their surrounding built environments, the way individuals react to building materials and are influenced by spatial layout, and the emotions of mental health and mental illness.

It is important to study the relationships people have with the environment around them. Everyone has a different personality and prefers this over that, but there is something to be appreciated in the vast differences in the members of our society. To design a project for several individuals, all experiencing the building a little different from one another, you must remember that all users are priority and make very deliberate educated decisions about the design.

Materials in a building can be chosen to influence certain moods the users may have while interacting with the building. Not only can the building and finish materials awaken your senses, they can

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help move and direct you through a space. Spatial layout was researched to understand how different design techniques can influence the way an individual reacts to a space. Layouts were studied to map out movement through spaces, and the overall spatial progression of the design.

This thesis researches the psychology of mental health. It suggests what being mentally healthy is, it looks at the emotions of individuals who are mentally ill, and it addresses concern society might have for the future of this terrible disease.

This thesis emphasizes the psychological connection we have with each other, our physical environment, and ourselves. It strives to create a comprehensive design of a facility to bring these three things together as one.

# PROJECT JUSTIFICATION

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Mental illness is one of the nation's leading diseases. It is important that people in society maintain a healthy life, not only physically but mentally as well. Mental health could be defined as being content with your life in many aspects. Issues related or stemming from mental health illnesses are far too prominent in our society today. There is no illness too big or too small when it comes to mental health, that shouldn't be addressed and treated.

As a designer choosing to research this topic I will be strive to demonstrate how spaces can be designed for specific users and their individual needs. I will also be given the opportunity to resonate with many different individuals as I design a thesis gears towards several users.





Figure 10.0 clock tower

# HISTORICAL CONTEXT

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An estimated 26.2 percent of Americans ages 18 and older or about one in four adults suffer from a diagnosable mental disorder in a given year. (National Institute of Mental Health, 2013) Today that makes roughly 83 million people in the United States that suffers from a mental illness. About 50 percent of the nation will suffer from some sort of mental illness in their lifetime. Those numbers are truly astonishing and unfortunately have only been on the rise for the last 10 years. In 2004 the number of Americans affected was 58 million people. The causes of this rise are not completely specific and could be for a number of different reasons, but nonetheless as a society we should worry about what this means.

The effects mental health illnesses have on the communities we live in and our society as a whole are not only negative, but also far too eminent. In children we can see struggle in school the easiest. Making new friends and keeping old friendships alive is also difficult when you are not in a happy healthy state of mind. Studies show that mental illness is most susceptible of

“Mental illness is nothing to be ashamed of, but stigma and bias shame us all.”

-Bill Clinton

affecting young teens to the mid 20's range. (NAMI, 2014) At this time in a persons life they are most vulnerable to acquiring a mental illness. This makes it hard for people to do well in school, seek jobs and ultimately keep a job. Four of the ten leading causes that people have work disability in the United States is caused by mental health illness. The economic cost of untreated mental illness is more than \$100 billion each year. (NAMI,2014) That alone should influence people in the society to help and reach out in any way they can to help people struggling with mental illness.

Not only is the economic cost unsettling, but people with a mental illness turn to substance abuse a lot of the time to try to cope with what they are going through. This can be a major problem for society because once you introduce drugs and alcohol onto the streets, you can never predict an outcome of a situation and many people will not feel safe in their own communities.

The stigma about people who suffer from a mental illness in our society is so negative. When people get depressed or turn to substances they typically shut people out because they don't feel like anyone will understand. Unfortunately a lot of people will respond to that poorly and turn their back on people who need them most. It may be hard for some people to relate to friends or family dealing with their illness, but if someone is struggling with a mental illness and is hurting and willing to get help, by all means help them. A lot of times people who are sick have a hard time admitting that they have a problem because society has put an "embarrassing" label on having a mental illness. It has been said that between 70 and 90 percent of treatment programs are effective for patients who seek and complete them.

There are thousands of mental health hospitals and treatment centers in the United States. Not all facilities are geared solely for mental health. Most general hospitals will have a grace or psychiatric unit on one floor of their hospital. In a lot of areas around the United States the

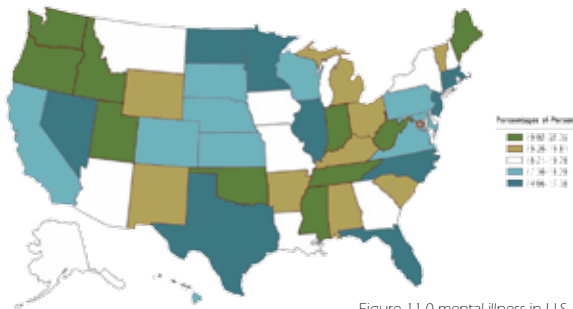


Figure 11.0 mental illness in U.S.

lack of mental health rehabilitation facilities is harmful to the overall mental state of the community. The map above shows the percentage of people in each state that are affected by a mental illness in some point of their lives. Although there is no scientific reason as to why it is higher in some areas and lower in others, it is easy to see a pattern in the different regions around the United States. In rural areas there might not be a large need for a rehab center so the hospital may dedicate a floor, or half of a floor to mental health. In many cases I know this is not enough. A lot of the times mental health patients are placed in monochromatic boxes of spaces. Mental health facilities can cost an arm and a leg and I think that's a lot of why people opt out of seeking treatment to get healthy.

Dedicating a small part of the hospital is a less expensive and economically feasible decision.

In Duluth, Minnesota the only mental health rehabilitation center is in the St. Luke's Hospital in the downtown area. The size allocated to this program is half of one floor of the hospital. The number of people in Duluth that would benefit from a treatment center is far larger than the current facility could accommodate.

In the 1950's the economy in Duluth started declining. The iron ore that once brought the city up from nothing quickly started running out. Being it was the port city's largest export it started causing problems for workers at the shipping companies and the U.S. Steel Duluth Works steel factory located on the port. Once the iron ore ran out completely, they started exporting taconite (a form of iron ore but not as valuable). It kept the companies alive for awhile, but once foreign countries started becoming competition many places were run out of business.

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The lack of need of the American steel industry directly affected this city as a whole. When the steel plant in Duluth closed in 1981 thousands of people lost their jobs. This led to an economy shock to the city and the unemployment rates skyrocketed to 18 percent. (Kraker, 2012) This economic downfall not only affected the industrial business of Duluth but rather the city as a whole. With all of the unemployment a lot of people were unable to keep their homes and either left the city or became homeless. With the decline in population to this once thriving and successful town, something had to be done. The city had to find a new way to bring in people and money. Duluth turned to tourism. Being a historic town and located on one of the busiest shipping ports in all the United States, it didn't take too long to bounce back and start climbing economically again. The old warehouses were turned into restaurants and little tourist shops along the canal and the downtown area started filling up with shopping and eateries as well.

Today Duluth is known for its absolute beauty and its ideal location close to several pastime activities. There is no doubt that this city that began as a millionaire's paradise and then turned into an economic disaster is finally living up to its expectations. There are however still setbacks and repercussions from the slight depression of the city over 30 years ago. The unemployment rate in Duluth is only about 2 percent, but on any given day if you are downtown you will see homeless people walking around and asking for money. The Duluth police department has been fighting a war on drugs in the Northland in the last 5 or so years. Starting with the new craze in synthetic drugs and now the biggest concern has turned to heroine. Police arrested over 60 people early this year in their fight to end the drug business in the area. (Marnati, 2014) This city would benefit immensely from the opportunity to help its community members struggling with addiction or other mental health issues in any way that it can.

# SITE ANALYSIS





Figure 12.0 Lake Superior



## SITE NARRATIVE

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Duluth, Minnesota is the fifth largest city in the state. Tourists flock to the area to enjoy the rich history of the city and all the activities the area has to offer. From the Spirit Mountain Ski Resort to shops in Canal Park, there is a buzz of people all year round in this booming city.

Duluth is also the most western port of the famous North Shore of Lake Superior. As soon as you leave the city on Highway 61 (the same Highway 61 Bob Dylan sang about) you start an absolutely breathtaking drive along the shore of the lake. On both sides of the road thick forests guide you north, with little breaks in the trees on the south side to give you boundless views of the largest freshwater lake in North America.

Stay on Highway 61 and cruise to your destination north, or take a turn off the main road and head up the North Shore Scenic Route. Along the scenic route you will drive through little towns that thrive on tourist season and the business they bring to the area. While meandering in and out of these little towns you are granted with

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lake. The vegetation is so colorful and vibrant in the summer and fall months. The contrast between the bright leaves and the muted dark blue of the lake sparks intrigue to get involved and be one with the nature. Every so often the scenic route will provide overlooks to park your car to get out and experience the shore.

One of these scenic overlooks is tucked away like a hidden gem. When you turn right on Stoney Point Drive, you can immediately see the lake in front of you. A stone retaining wall guides you towards the steep shore of the lake. When you get out of your car the crisp smell of woods and water is in the air and compliments the waves crashing below and the leaves stirring in the wind. When you sit on cold yet comfortable rock wall, it's easy to get lost in your own mind and forget about the urban setting you just came from.

If you leave the overlook and keep driving along the lake you are navigated towards an open field just across the road from the open, rocky banks of the lake. The sudden void in trees catches your attention and

directs you toward the large clearing in the middle of the woods. It's hard not to let curiosity get the best of you and wander into the clearing on the defined path. The clearing is overgrown with thick grasses and down brush. You can smell the fermenting leaves that have fallen to the ground and have started to become a part of nature's floor. The natural unscathed essence of the site allows you to decide how you want to experience it. Whether the first thing you do is walk into the middle of the clearing and take a 360 degree look around, or if you want walk along the tree line around the entire opening, the opportunity is yours to influence and manipulate the experience.

No matter how you enter, walk about, or leave the site there is no doubt that you will have felt the still, tranquil nature of the site.



Figure 12.1 brush clearing



Figure 12.2 dense forest



Figure 12.3 shoreline

“Sense of place is the sixth sense, an internal compass and map made by memory and spatial perception together.”

-Rebecca Solnit

# SITE ANALYSIS

## Views |

The environment of this site is very unscathed and natural. In any season the dense plant life creates barriers and view corridors. When you are arriving to the site you are able to hone in on the nature and forget about the busy urban setting you've left behind. The slight clearing in the trees allows you to identify the entrance to the



Figure 12.4 Stoney Point Drive



Figure 12.6 arrival to site



Figure 12.5 view to lake



Figure 12.7 Lake Superior 2



Figure 12.8 site panorama

site and leads you from the road into the large clearing in the woods that will embody the future building. If you are standing on the site you can look to the west and see the large body of water that is Lake Superior. While in the wooded areas, you are surrounded by large pine trees and colorful birch. If you are looking north, east, or south your views are encompassed by these. With trees all around you are able to obtain a sense of comfort and privacy.



Figure 12.9 Lake Superior 3



Figure 12.10 brush clearing 2

## Vegetation |

The site is full of life in all seasons. Abounding, lush greenery in the summer, vibrant colors in the fall, and large pines and coppice in the winter. The plant life on this site makes it comfortable by the way it sets suggested boundaries. It is important to feel that sense of place while considering a site.



Figure 12.11 fall colors



Figure 12.12 shore shrubs



Figure 12.13 overgrowth

## Human Characteristics and Distress |

The site sits just off of the North Shore Scenic Route. There is a scenic overlook about a quarter mile from the entrance of the site where people come to sit and take in the beauty of the lake. Some come and take a few pictures and are then on their way, but others take advantage of the stone retaining wall and enjoy the surrounding environment. The entrance into the site clearing is obviously marked, but not often used for more than a parking spot. Car tracks stop only 20 feet from the road and the majority of the opening is completely unscathed. The subtle human interaction with the site establishes a sense of serenity and calmness.



Figure 12.14 driveway



Figure 12.15 scenic overlook



Figure 12.16 brick

## Water |



Lake Superior is known as the largest fresh water lake in North America. The crisp, clear water of the lake provides a perfect setting to reflect and become revitalized.





## Soils|

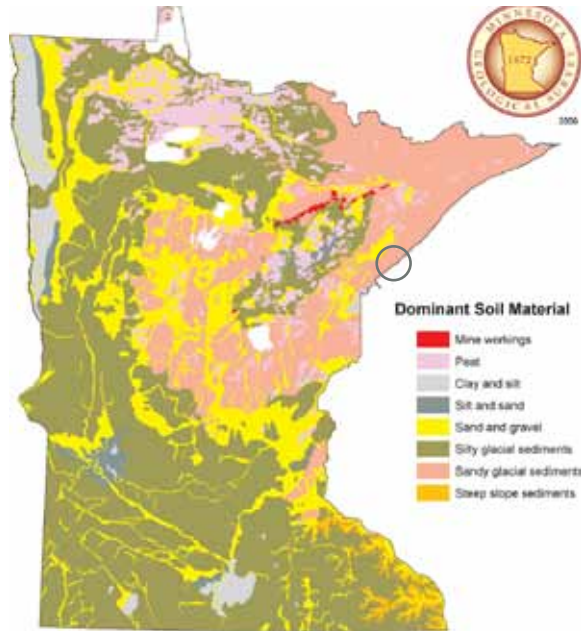


Figure 12.19 soils

The dominant soil material for the site and most of the northeastern part of the state is sandy glacial sediment.

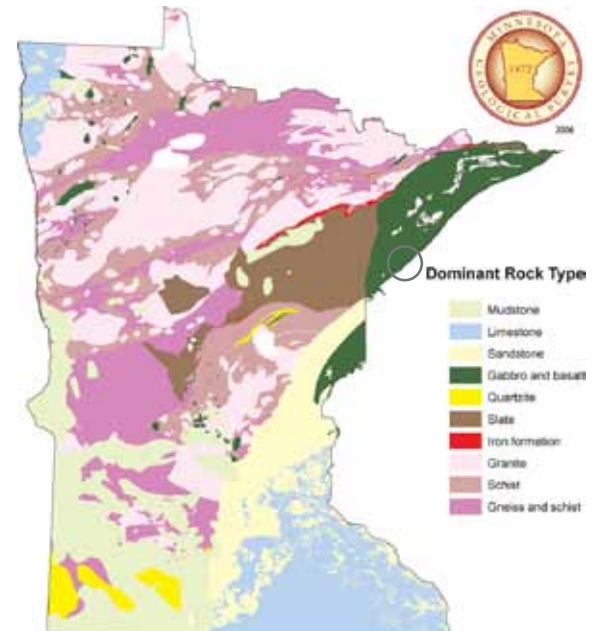


Figure 12.20 bedrock

The bedrock of this site is mostly made up of basalt. Basalt is an igneous rock formed from rapid cooling of molten lava. The Latin translation of "basalt" is "very hard stone".

### Topography and Air Movement |

The topography of the site appears flat as it only has a slight slope on the far east side. If you cross the road the change in elevation will be evident as you peer out over the steep shores of Lake Superior.

lake, there is steady air movement on the site. In the wintertime the barrier of trees will block the frigid northwest winds, and in the summertime the cool breezes coming off of the lake will be able to percolate throughout the site.

With the opening of the site being on the west side of the site, within 50 yards of the



Figure 12.21 topo and air movement

### Traffic and the Built Environment |

This site sees very little vehicle traffic and even less pedestrian traffic. The scenic overlook brings a few adventurous travelers onto Co. Rd. 222 but other than the occasional tourist drive by, the road is mostly used by the few homeowners who reside along the stoney point. Other than

the few residences scattered around the area there are not any built features surrounding the site. Highway 61 is a busy road, but it is far enough away and has enough of a forest barrier to buffer any loud vehicle traffic.



Figure 12.22 traffic

# CLIMATE DATA

Average Temperature

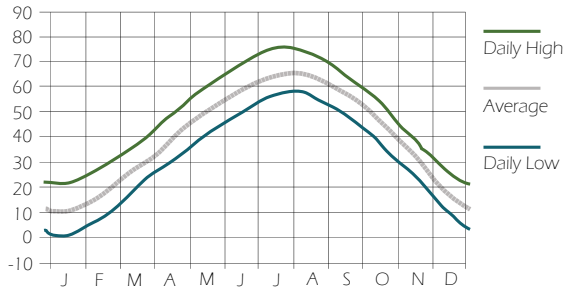


Figure 12.23 temperature

Precipitation

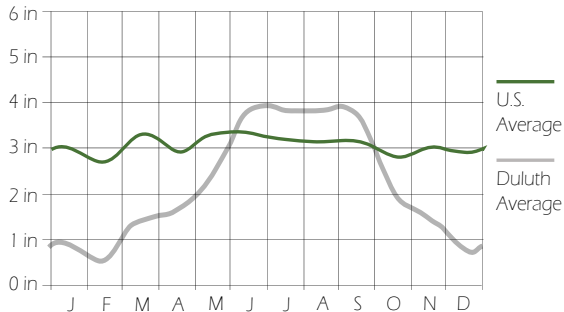


Figure 12.24 precipitation

Snowfall

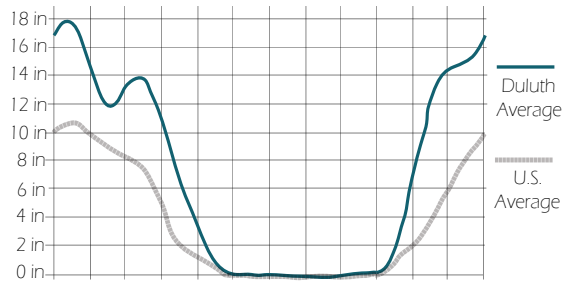
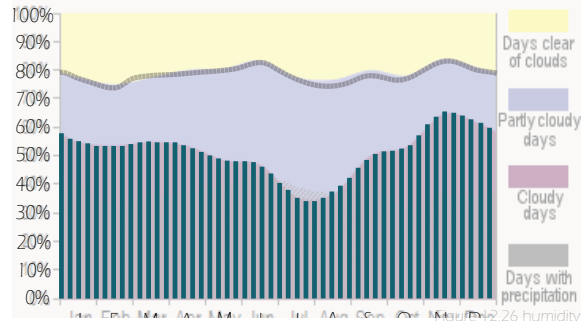


Figure 12.25 snowfall

Cloudy Days



Cloudy Days

Figure 12.26 humidity

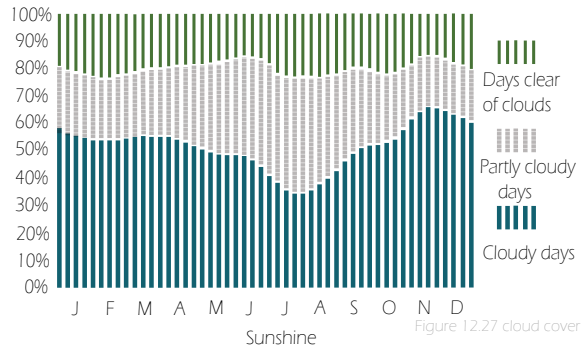


Figure 12.27 cloud cover

Sunshine

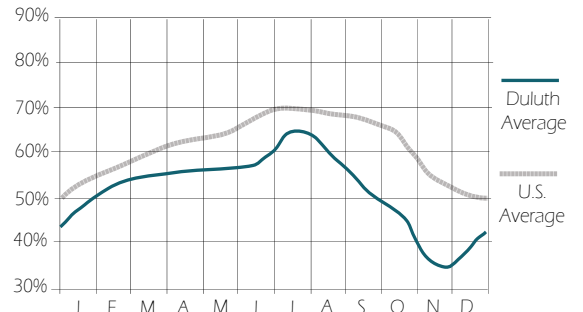


Figure 12.28 sunshine

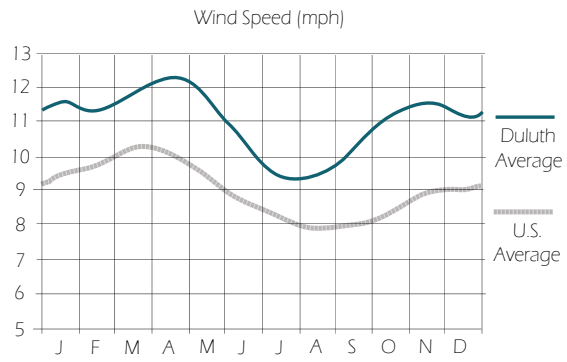


Figure 12.29 wind speed

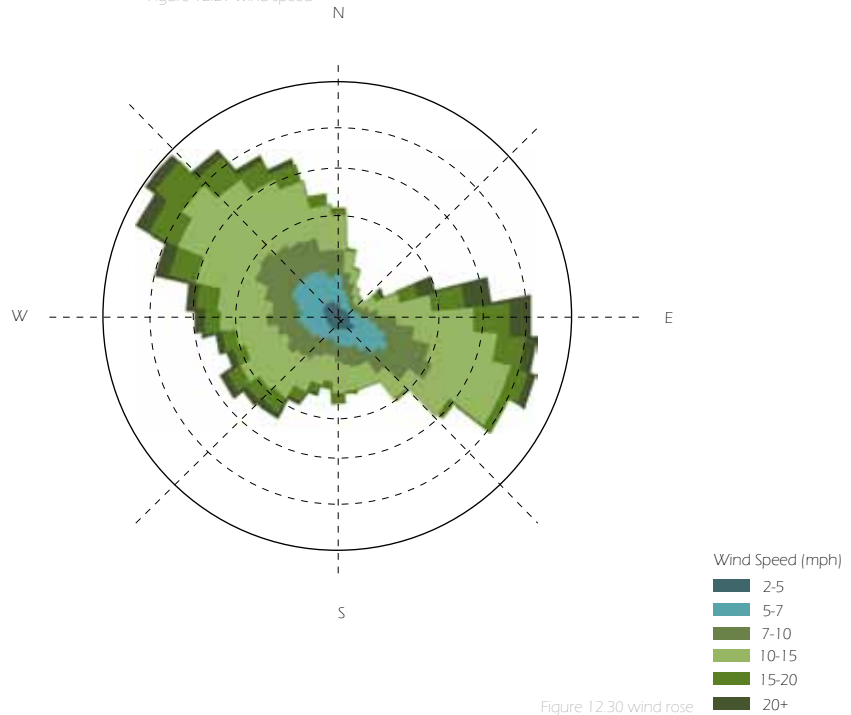


Figure 12.30 wind rose

# Sun Path |

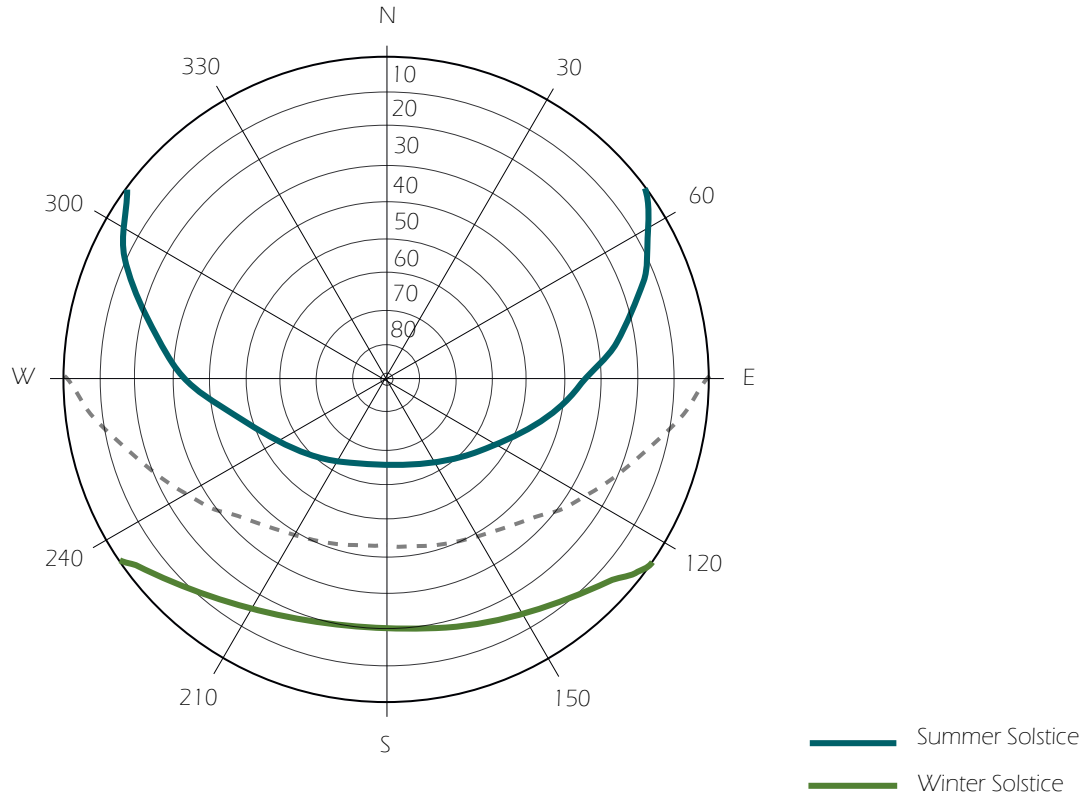


Figure 12.31 sun path diagram

### Light Quality|

It is an important aspect of my thesis to capture as much natural sunlight as I can. With the site being in an open field, there will be no problem in the summer time using the long days' sun for natural lighting. Even in the winter time when the sun is low, the northern part of the site is filled with the beaming rays. This creates a perfect plot on the site for the building to sit.

Along with sunlight comes shadows. The shadows are seen dancing throughout the whole site and create dramatic contrasts that catch the eye.

With a large opening on the west side of the site, users will be able to experience the breathtaking sunsets over Lake Superior. It will be important to design for the patients in such a way that embraces the beauty of this aspect of the site.



Figure 12.32 site with shade



Figure 12.33 site with sun



Figure 12.34 shadows

# PROGRAM REQUIREMENTS





# SPACE ALLOCATION

---

## Public Spaces |

The public spaces will be open and monitored every day for to allow visitors to come and go. These spaces will most likely be used daily by patients, workers and visitors. These spaces need to be open and inviting. The colors and materials should be warm and comforting.

Main lobby area	1,500 sq ft.
Reception	100 sq ft
Restrooms	1,200 sq ft
Lounge area   Breakout spaces	2,500 sq ft
Cafeteria	2,500 sq ft
Library	1,000 sq ft
Chapel	800 sq ft

## Private Spaces |

The private spaces will be split into separate areas based on gender. These spaces will be occupied most all times by the patients and workers. It is essential to this thesis that these spaces are warm and inviting. They will employ a sense of comfort and peace to their users. The materials should be warm and light. There should be natural light available to all spaces where the patients spend the majority of their time.

---

Patient rooms	13,000 sq ft.
Small lounge areas	1,000 sq ft
Doctors offices	800 sq ft
Medical exam rooms	500 sq ft
Triage	250 sq ft
Staff break rooms   Staff overnight spaces	900 sq ft
Art Studio	800 sq ft
Music room	1,000 sq ft

#### Outdoor Spaces |

The outdoor spaces are crucial for the relationship between the users of this space and the environment around them. These spaces will be designed to stay true to the nature of this site. The outdoor spaces will be monitored at all times while people are using them. The public spaces will be more common and suggest an open invitation sort of feeling.

Picnic area	500 sq ft
Healing Gardens	2,500 sq ft
Parking	5,000 sq ft
Open space for activities	5,000 sq ft

Mechanical and Circulation |

The mechanical spaces are not meant to be occupied by all users. In that case it is important that they stay more private and hidden from the public eye. The circulation spaces on the other hand need to be designing in such a way that they encourage movement through the spaces. The design will need to play with light and materials to suggest start and stop points throughout the spaces.

Two stairs   one open, one fireproof	900 sq ft.
Kitchen	750 sq ft
Server room	100 sq ft
Filing room	300 sq ft
Medicine storage	300 sq ft
HVAC mechanical room	300 sq ft
Open circulation	3,000 sq ft
General storage	500 sq ft

Area totals |

Public spaces	9,600 sq ft
Private spaces	18,250 sq ft
Outdoor spaces	13,000 sq ft
Mechanical and Circulation	6,150 sq ft

Total building area | 34,000 sq ft

(omits outdoor spaces)

A GENERAL MODEL OF THE DESIGN PROCESS

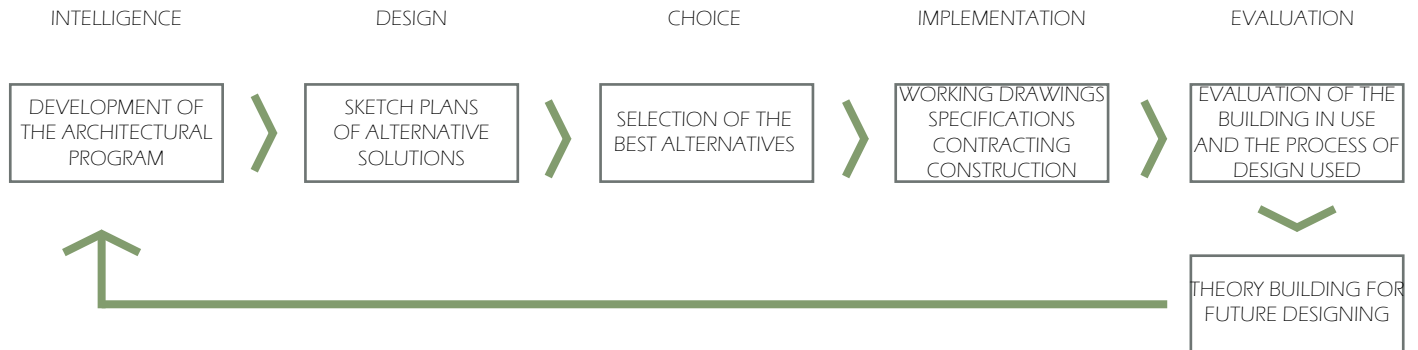


Figure 13.0 design process



# INTERACTION WEB

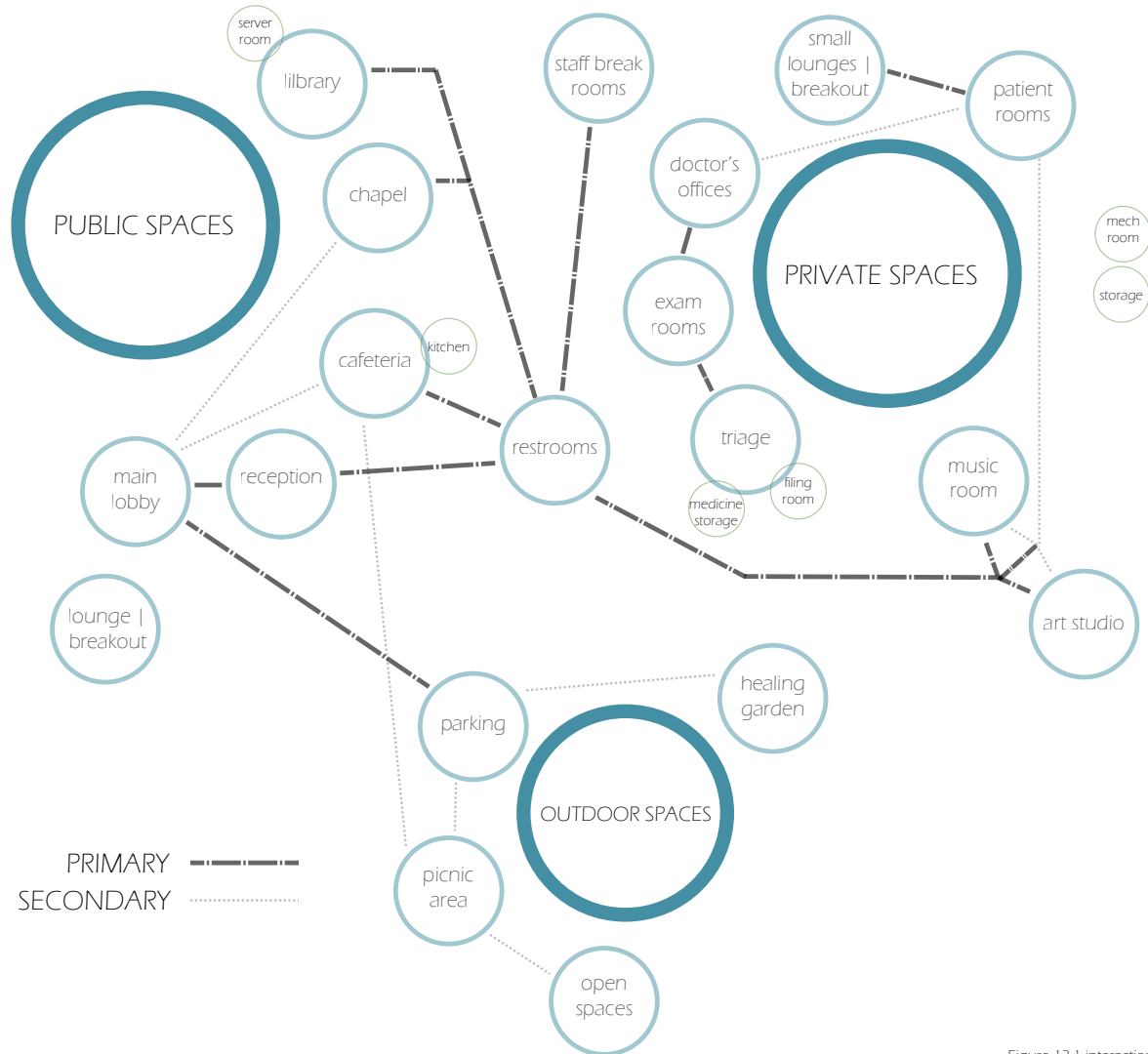


Figure 13.1 interaction web

DESIGN SOLUTION





# NORTH SHORE HEALING CENTER





Figure 14.0 North Shore Healing Center

# SITE

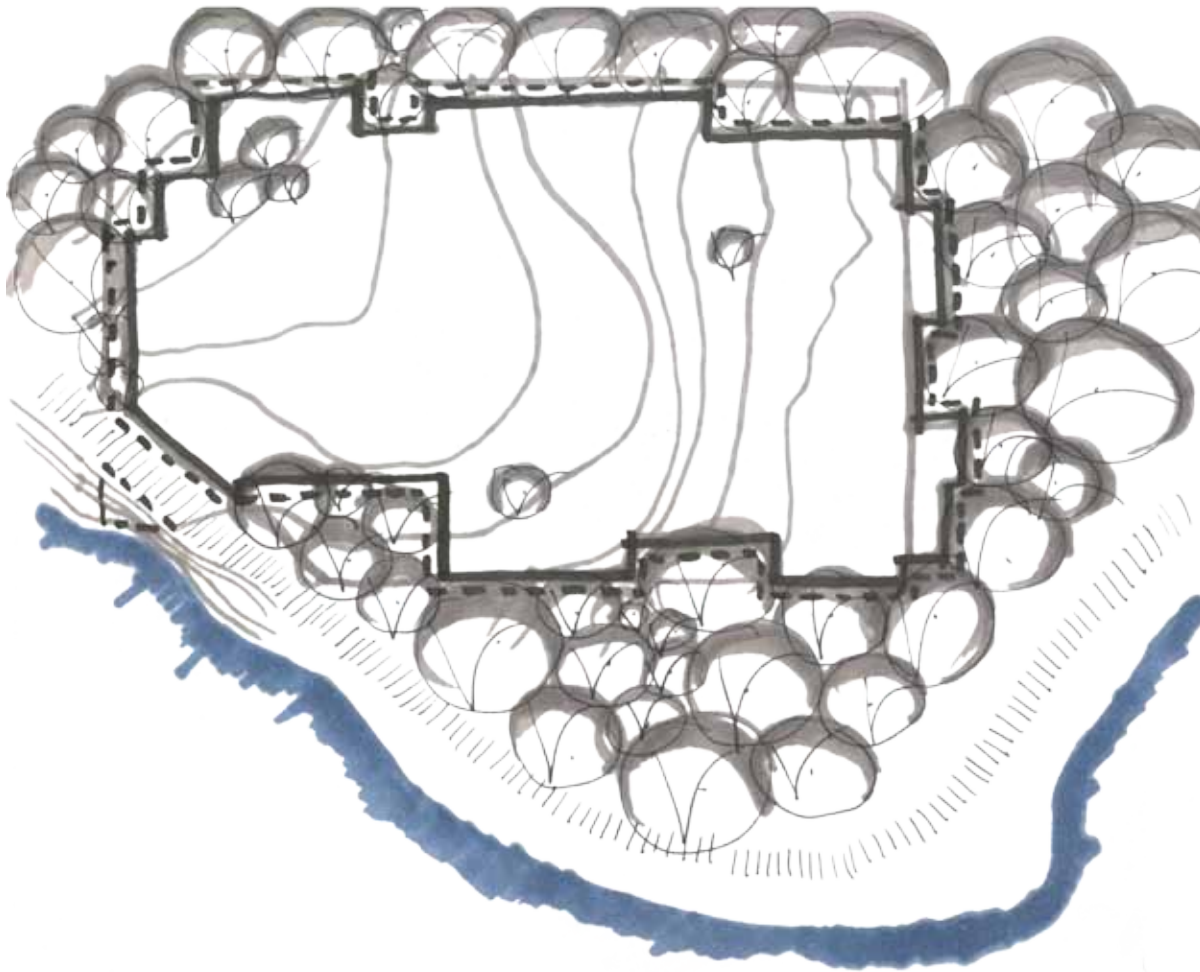


Figure 15.0 site process

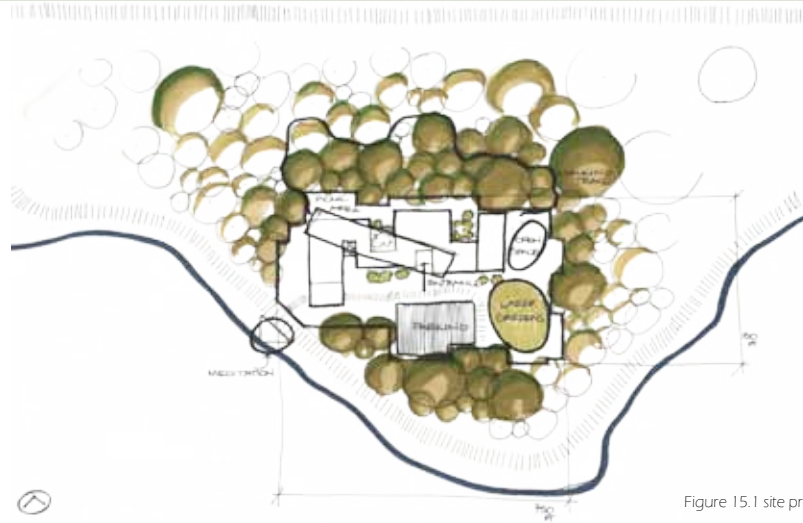


Figure 15.1 site process 2



Figure 15.2 site process 3

Site Plan |

- 1 parking
- 2 reflection pool
- 3 healing gardens
- 4 meditation pond
- 5 open space for activities
- 6 lake superior





Figure 15.3 site plan

# PROCESS | SPATIAL LAYOUT

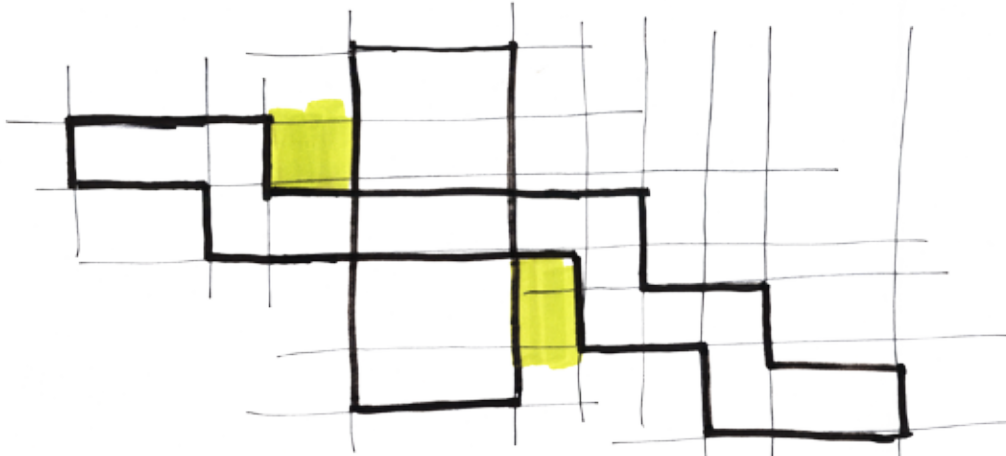


Figure 16.0 spatial layout process

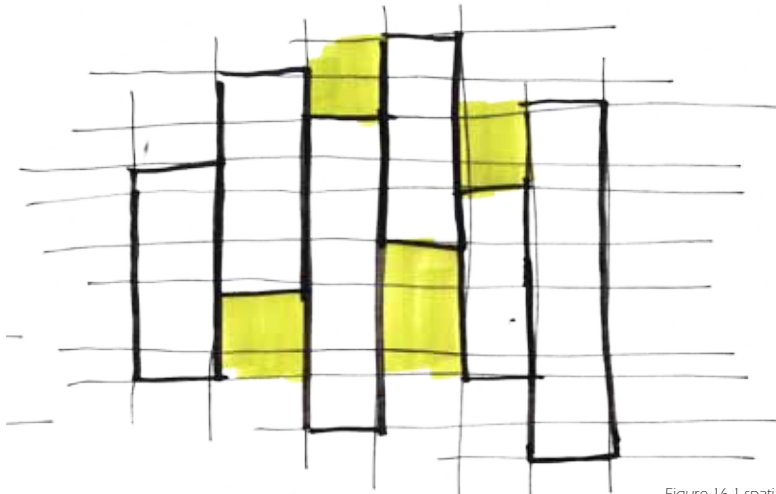


Figure 16.1 spatial layout process 2



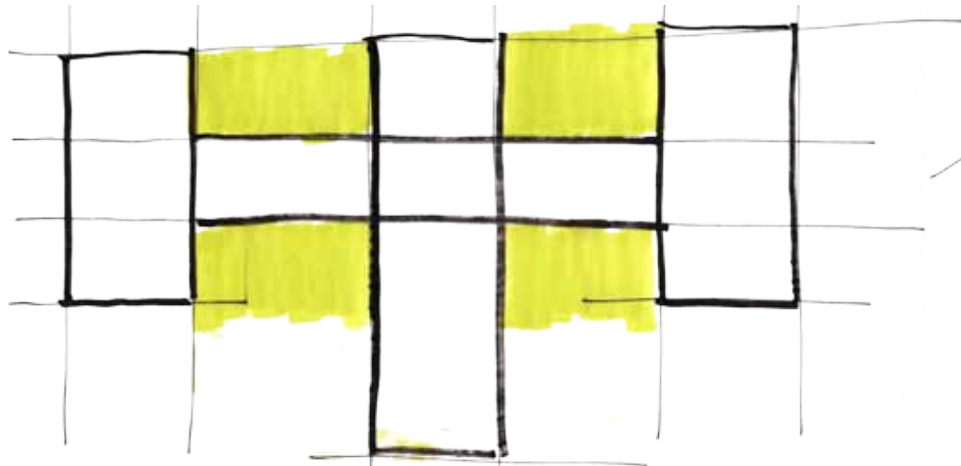


Figure 16.2 spatial layout process 3

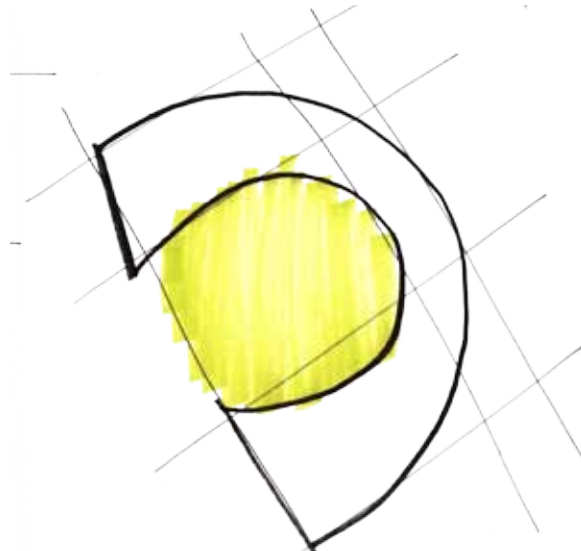


Figure 16.3 spatial layout process 4

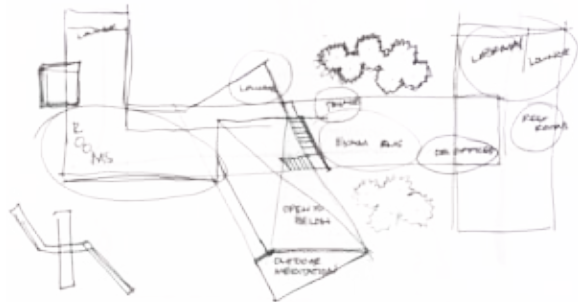


Figure 17.0 bubble diagramming

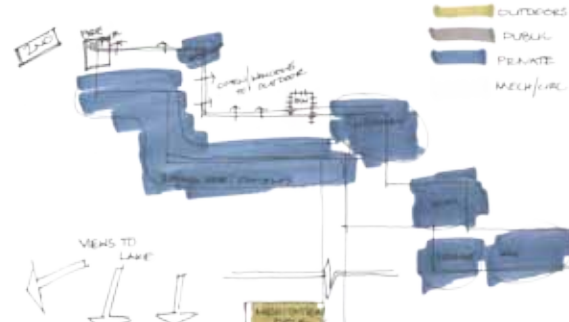


Figure 17.1 bubble diagramming 2

## Bubble Diagramming |

The mechanical spaces are not meant to be occupied by all users. In that case it is important that they stay more private and hidden from the public eye. The circulation spaces on the other hand need to be designing in such a way that they encourage movement through the spaces. The design will need to play with light and materials to suggest start and stop points throughout the spaces.

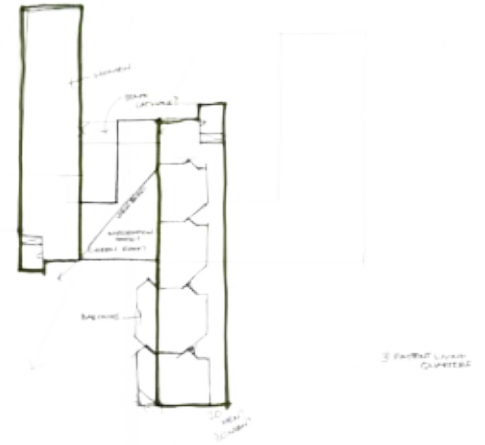
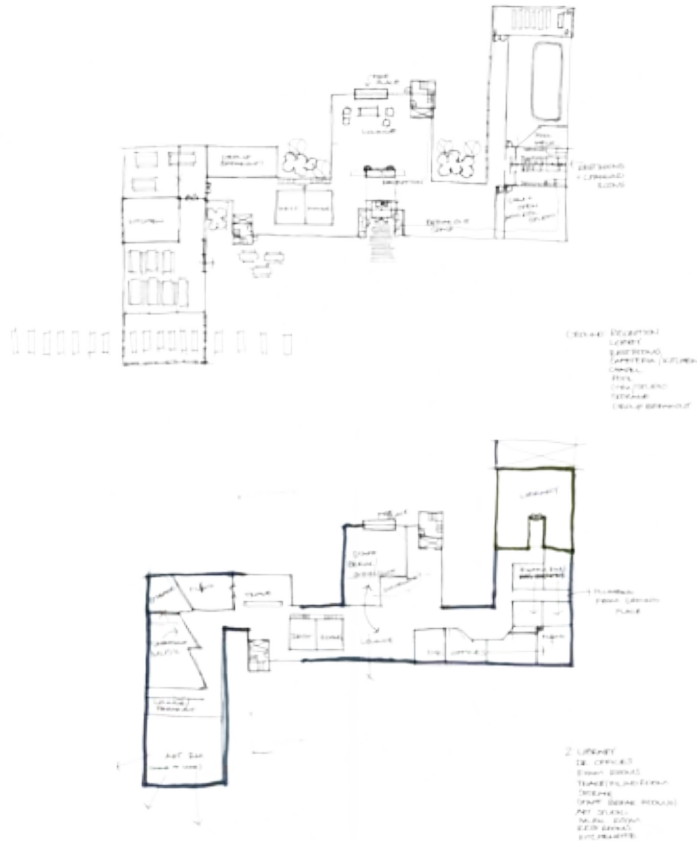


Figure 17.2 bubble diagramming 3

# PROCESS | ELEVATIONS



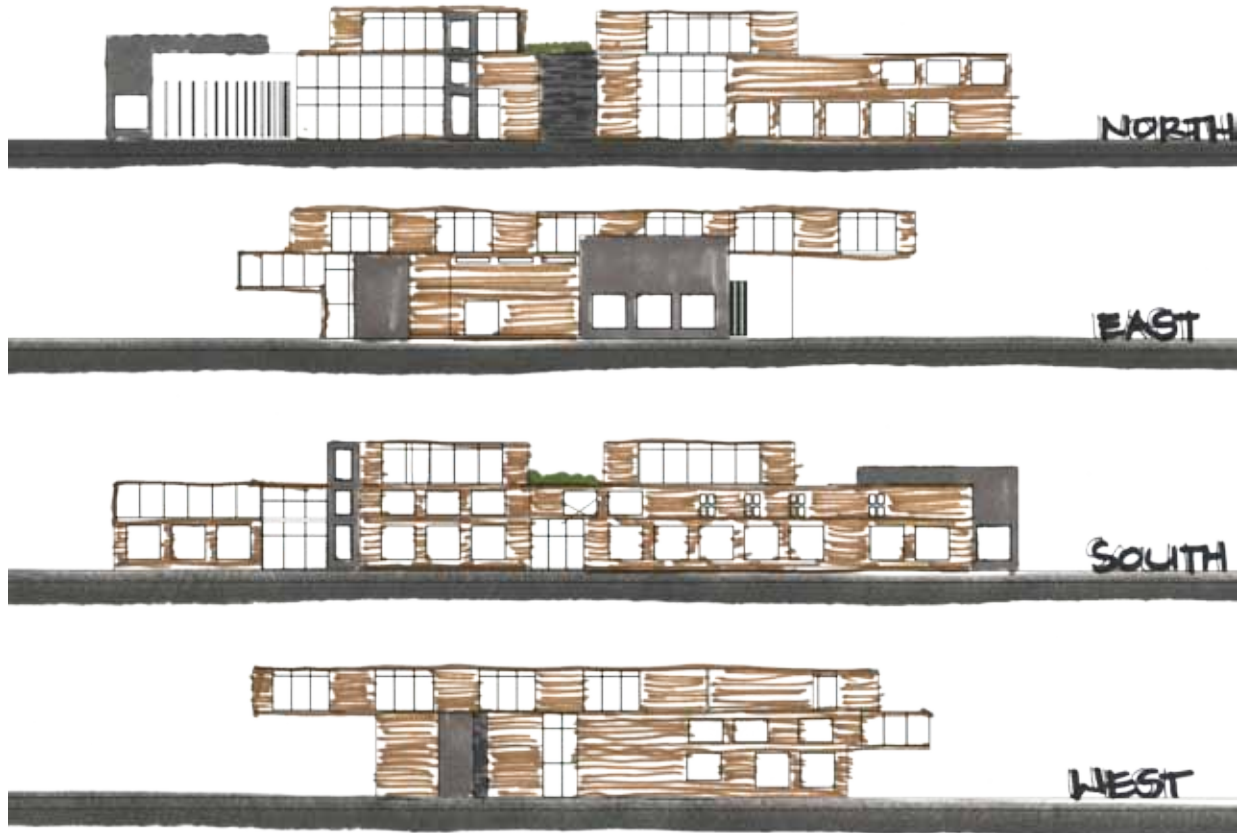


Figure 18.1 elevation study 2

# PROCESS | IDEA BOOK



Figure 19.0 building at mid-term

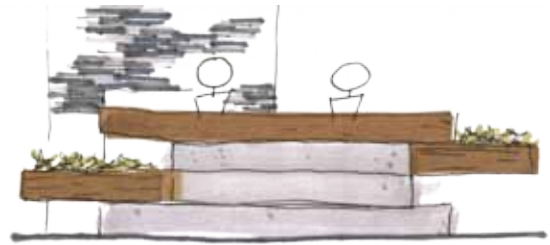


Figure 19.1 reception desk

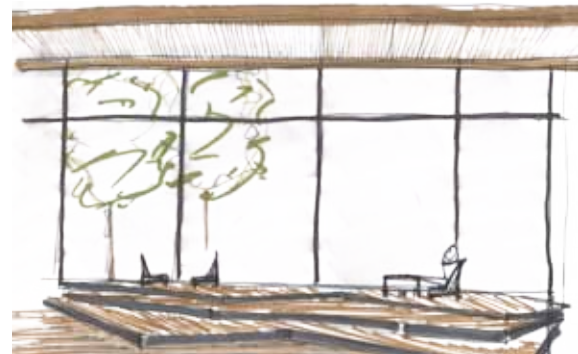


Figure 19.2 meditation steps

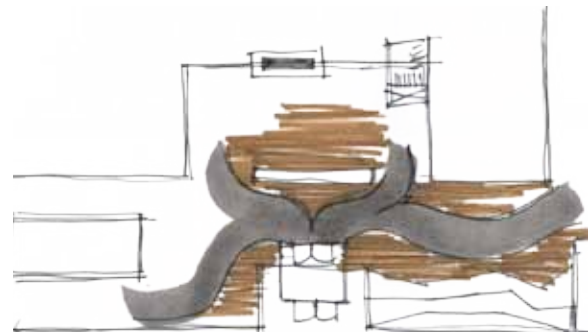
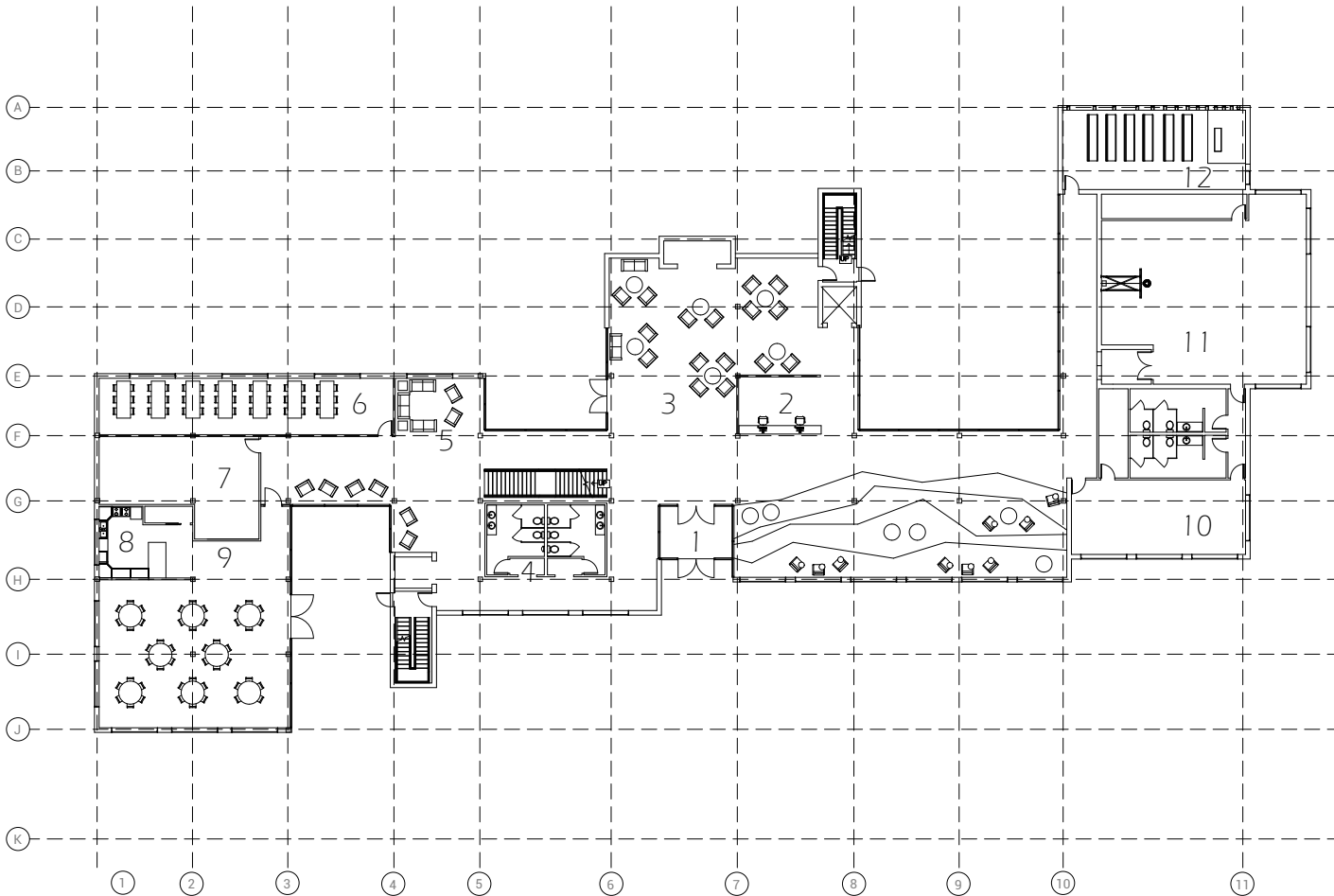


Figure 19.3 floor contrast

# PLAN | GROUND LEVEL



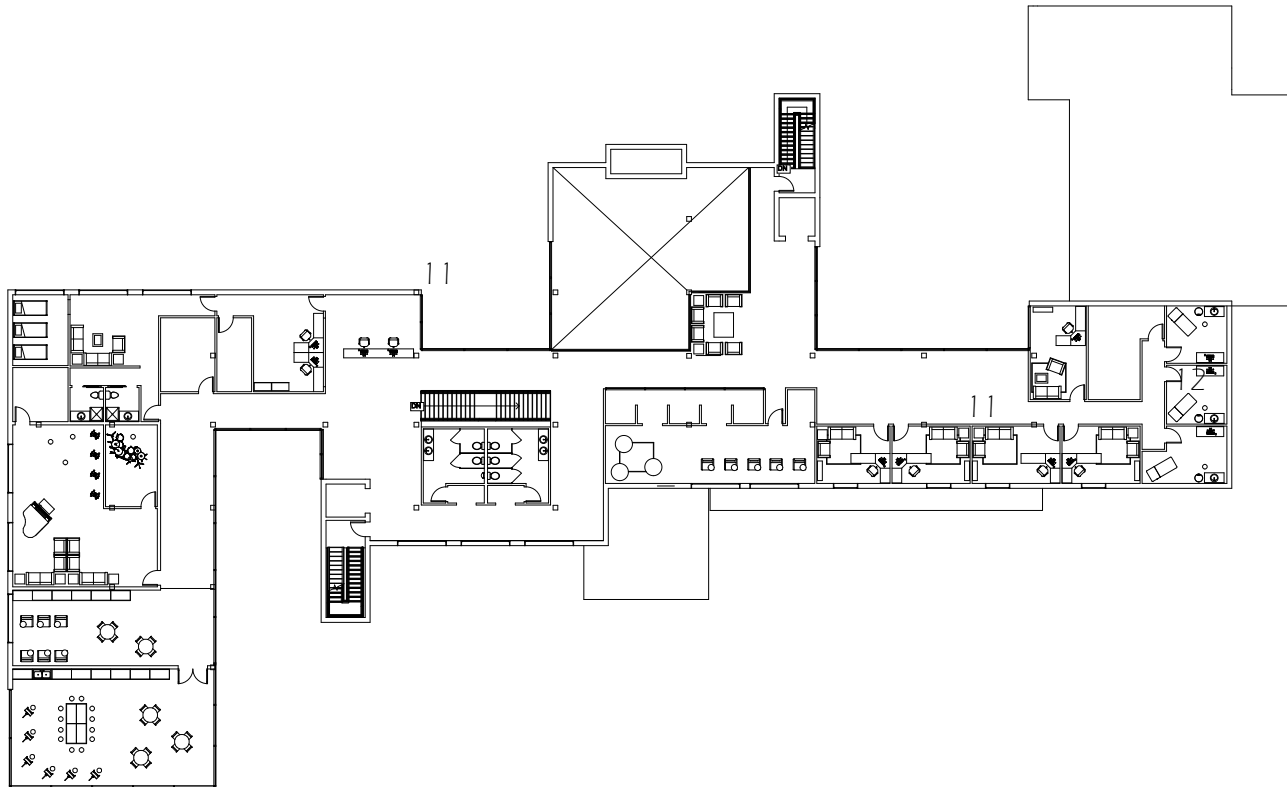


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Ground Level |

- 1 entrance
- 2 reception
- 3 ground level lobby
- 4 restrooms
- 5 breakout space
- 6 presentation room
- 7 storage/mech
- 8 kitchen
- 9 cafeteria
- 10 meditation studio
- 11 gymnasium
- 12 chapel

# PLAN | SECOND LEVEL

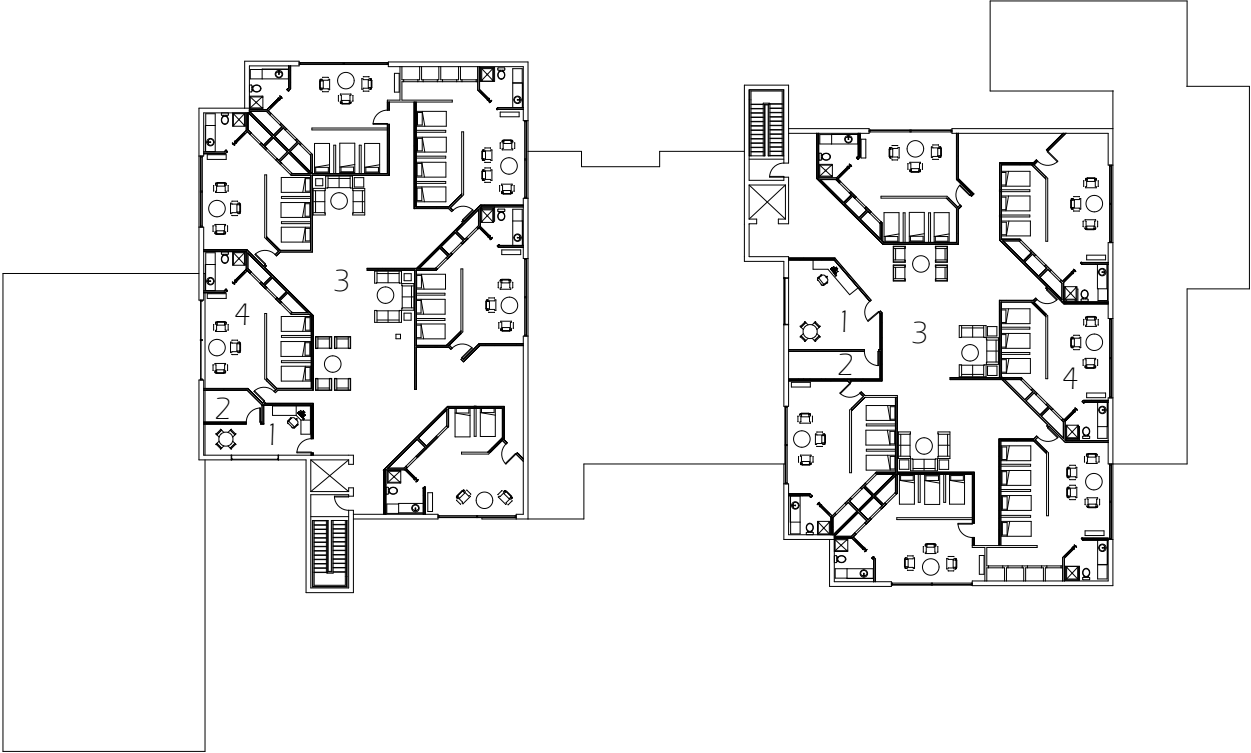


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Second Level |

- 1 reception
- 2 triage
- 3 server room
- 4 storage
- 5 staff break room
- 6 restrooms
- 7 music studio
- 8 lounge
- 9 art studio
- 10 library
- 11 doctors offices
- 12 exam rooms

# PLAN | THIRD LEVEL



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Third Level | 1 reception  
2 storage  
3 third level lobby  
4 resident rooms

# SECTION CUT

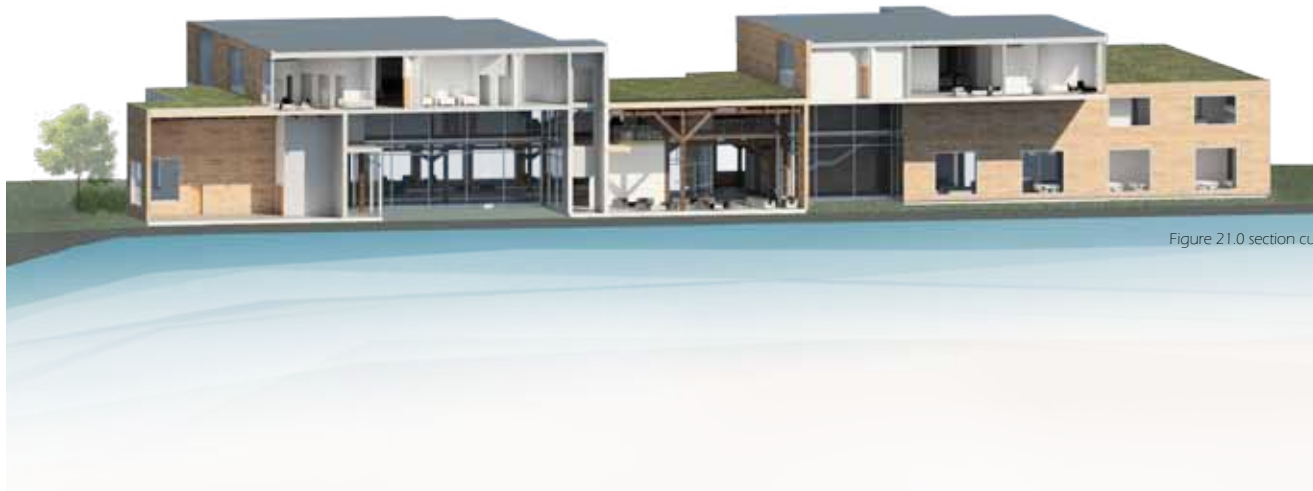


Figure 21.0 section cut

# DETAILS

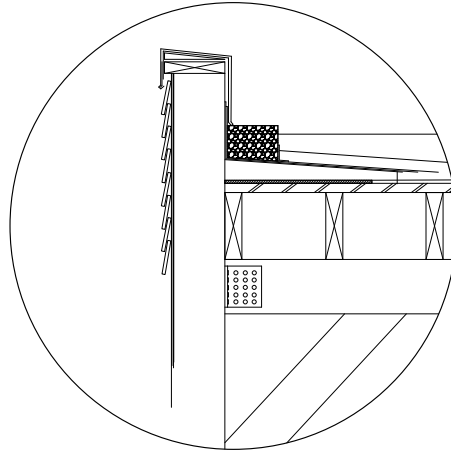


Figure 21.1 parapet green roof detail

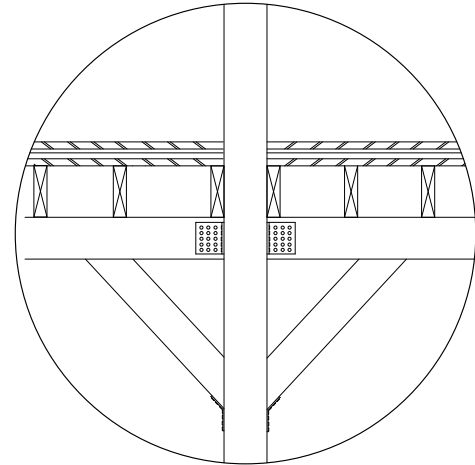


Figure 21.2 floor to floor detail

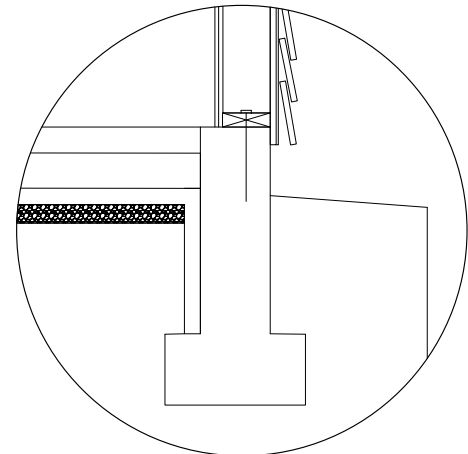


Figure 21.3 foundation detail

# ENTRANCE LOBBY



Figure 22.0 entrance lobby rendering



# GROUND LEVEL LOBBY



Figure 22.1 ground level lobby rendering

# SECOND LEVEL LOBBY



Figure 22.2 second level lobby rendering

# CHAPEL



Figure 22.3 chapel rendering

# PRESENTATION



Figure 23.0 presentation boards

# MODEL



Figure 23.1 site model

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# PREVIOUS STUDIO EXPERIENCE

---

1st  
Year

---

Fall 2010 | Jason Moore  
ENVD 130 | Drawing

---

Spring 2011 | Heather Fischer  
ENVD 172 |

2nd  
Year

---

Fall 2011 | Darryl Booker  
Tea House | Fargo, ND

Boat House | Minneapolis, MN

---

Spring 2012 | Joan Voderbruggen  
Dwelling | Cripple Creek, CO

Dance Studio | Moorhead, MN

Birdhouse | Fargo, ND



3rd  
Year

---

Fall 2012 | Frank Kratky  
Methodist Church Remodel | Fargo, ND

---

Spring 2013 | Milt Yergens  
Oil Visitor Center | Stanley, ND

Mixed Use Apartments | Fargo, ND

4th  
Year

---

Fall 2013 | Bakr Aly Ahmed  
Highrise Competition | San Francisco, CA

---

Spring 2014 | Paul Gleye  
International Design Studio  
Urban Redevelopment | Brussels, Belgium

5th  
Year

---

Fall 2014 | Mark Barnhouse  
Wetland Research Laboratory | Ullen, MN

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Hometown | Breezy Point, MN



Figure 14.0 identification photo

# THANK YOU

---

I want to thank every person who has helped me get to where I am today. Without the constant support of my family, friends, and peers getting to this point would have been much more difficult. The all nighters, harddrive failures, and broken models have humbled me and made me appreciate the work that goes into this chosen career path. I will be forever grateful to the professors who pushed me further than I thought I could be pushed, and the people who believed in me even when I didn't believe in myself. Thank you North Dakota State University for allowing me to make memories I will cherish forever.