

# WARRIOR'S RANCH:

COMBATING THE INVISIBLE ENEMY





*"It's about how we treat our veterans every single day of the year. It's about making sure they have the care they need and the benefits that they've earned when they come home. It's about serving all of you as well as you've served the United States of America."*

– Barack Obama

# WARRIOR'S RANCH: COMBATING THE INVISIBLE ENEMY.

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

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

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March 2021  
Fargo, North Dakota

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Warrior's Ranch is a domiciliary mental health rehabilitation facility that is designed to help treat veterans who are suffering from post-traumatic stress disorder and other psychological and physical disorders. The design will invoke a sense of home and belonging through the use of architectural elements, spatial programming, and person-centered design strategies in order to provide a more comfortable and secure environment for the user to work through their ailment. The design will also achieve a sense of ownership and inclusion through the personalization of individual spaces and the promotion of community involvement through the use of interactive community spaces. The design thinking strategies of this thesis will ultimately force us to rethink how we can design better, future healthcare facilities that aid our men and women in uniform.

The site for Warrior's Ranch is located in Dickinson, North Dakota. This site was chosen due to its serene environment and expansive shoreline along Edward Arthur Patterson Lake. The site will provide a more relaxed environment due to its rural setting, while also providing the benefits that come with being located near one of North Dakota's largest cities.

This thesis will focus on improving mental health through the use of person-centered design solutions to better aid in the treatment of soldiers suffering from Post-Traumatic Stress Disorder and other psychological and physical disorders. Throughout the design process, this thesis will study how the sense of home and belonging that a resident's environment invokes through the use of architectural elements, spatial programming, and person-centered design strategies directly affect the level of engagement that the patient gives to their treatment.

WARRIOR'S RANCH:  
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# The Narrative

## WARRIOR'S RANCH: COMBATING THE INVISIBLE ENEMY.

Since the beginning of human existence, humans have fought, killed, and experienced many traumatic events. Over the years, however, many have begun to notice side effects of these traumatic experiences and how they can cause long term effects on the human body and psyche. Formerly known as just an aspect of war, this disorder has been referred to as “nostalgia,” “soldier’s heart,” “shell shock,” and “battle fatigue,” however, in 1980 this disorder was formally recognized by the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III) and coined “Post-Traumatic Stress Disorder” (PTSD) (Editors, 2018).

PTSD is a psychological disorder that occurs after one experiences a traumatic event such as death, combat, physical or sexual assault, natural disaster, or any other event that one may relive after the event has concluded. According to the VA's National Center for PTSD (2018), they estimate that about 8% of adults in the United States population will be diagnosed with PTSD at some point in their lifetime (National Center for PTSD, 2018). Currently, it is estimated that between 11-20 out of every one hundred veterans who served in either Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) suffer from PTSD in a given year. (National Center for PTSD, 2018).

The U.S. Department of Veteran Affairs (VA) currently has wings of VA healthcare facilities that treat veterans with PTSD, however, some veterans and family members feel that there is more that we as a society can do to support their recovery. I have never served, so I cannot truly know firsthand the extent of how these veterans are suffering, however, I have watched this ailment affect my family and friends. I have watched people close to me go through the current standard of treatments the VA has to offer, and I know that there is more

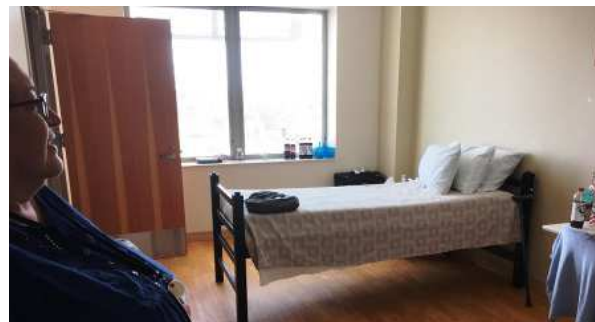


Figure 1 : Current VA Facility Rooms | VA.org



Figure 2 : Domiciliary Facility Rooms | AART

we can do to better the treatment experience. These brave men and women have given so much to protect this country, and I believe it is now our time as a nation and as a family to protect them.

Throughout this design process, my thesis will explore the design questions of: how can the standard of living at treatment facilities directly impact the level of engagement from the users, how can removing the institutionalized design of current VA treatment facilities help better the users treatment overall, how can spaces that are designed to provide the user with a sense of home and belonging impact their treatment, how can a facility be designed and programmed to support all types of psychological and physical disorders that veterans suffer from, and how can architecture become a conduit for teaching veterans’ family and friends about preventative actions that they can take to support their loved ones who suffer from PTSD?

To explore this thesis topic, I will be required to conduct several interviews with U.S. Department of Veteran Affairs hospital staff (doctors, therapists, and nurses) to see how current facilities are working to help veterans who suffer from Post-Traumatic Stress Disorder and other psychological disorders. I also plan to conduct interviews with veterans suffering from these disorders and their families, as well as nonprofit organizations and other groups that help support veterans through these difficult times. These interviews will help give insight into the psychology of these disorders, as well as their common side effects and triggers. This process will also help further my research into current treatments and coping strategies that are used by veterans with these disorders.

To know definitively if my design solutions work, I will have to study differences and correlations between my proposed design solutions, and the current institutional design of VA healthcare facilities. To work towards these new insights, I will use different design software (Autodesk Revit and Rhinoceros 6.0) and 3D visualization means to virtually model my proposed design solutions. I will then have the veterans that I interviewed assess my room layouts through the use of physical scale models and virtual reality. I will then record their initial impressions and feedback to gain a better understanding of how my design iterations affect their well-being and engagement levels. This research process will help me gain a better understanding of methods, feelings, and stigmas that play a role in veterans’ treatment processes so that I can work towards creating a more harmonious design that can be beneficial to all veterans suffering from Post-Traumatic Stress Disorder and other psychological disorders.



**Project Typology |**

Domiciliary Mental Health Rehabilitation Facility

**Typology Precedent |**

The goal of this project is to break away from the current institutional design style that the Department of Veterans Affairs' rehabilitation facilities follow. Through the use of architectural elements, spatial programming, and person-centered design strategies, such as involve, comfort, personalize, engage, protect, and sustain. This rehabilitation facility will achieve a more comprehensive design that can positively affect the users' experiences and treatment. This process of design thinking will also provide the user with a sense of security and inclusion through the use of multi-tiered involvement with other residents and staff. The design will also promote resident engagement through the use of interactive spaces such as lounge spaces, room pods, meditation areas, outdoor trails, gardens, and many other communal spaces.

**Claim |**

The sense of home and belonging that a veterans' environment invokes through architectural elements and spatial programming will directly affect the level of engagement and participation that the patient gives to their treatment. This increase in engagement and participation will, in turn, have a positive effect on the outcome of their treatment process, personal and professional relationships, and civilian life. These positive effects will then allow the veteran to repair elements of their life, such as emotional numbness, addiction, and personal connections and relationships.



**CARING CABIN**

*Figure 3 : Lakeside Perspective | Strode, Rich*



**LAMPRICH CENTER**

*Figure 4 : Front Elevation | Fladzinski, Lucas*



**NEW VILLAGE CARE RESIDENCE**

*Figure 5 : Entry Perspective | APA foto*



**WOY WOY REHABILITATION UNIT**

*Figure 6 : Nighttime Patio Perspective | Bennetts, Peter*

# Caring Cabin



Figure 3 : Lakeside Perspective | Strode, Rich

**Architects:** TVA Architects, Inc.  
**Location:** Pacific City, OR  
**Typology:** Health Care Facility  
 Domiciliary Treatment Facility  
**Size:** 4,114 S.F., 6 Units  
**Completion:** 2004

Standing strong near an Oregon lakeshore, Caring Cabin serves as a beacon for young children who have recently been diagnosed with cancer. This nearly 4,000 s.f. interlocking cabin retreat gives these young fighters and their families, the opportunity to get away from the sterile environment of current medical institutions and immerse themselves in nature. Designed and built almost completely through donations, Caring Cabin, allows its users to create everlasting and cherished memories with their loved ones during such a difficult time in their young lives.



Figure 7 : Front Entry | TVA Architects

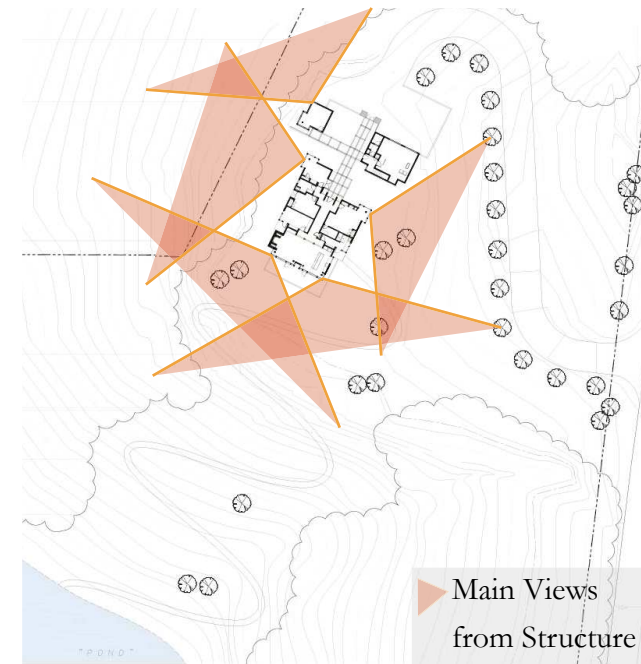


Figure 8 : Site Map | TVA Architects

## Site Related Design:

The main takeaway that I got from this project was its use of location for both natural views and immersion into its surrounding landscape. As we can see the building maximizes its scenic views by placing full corner windows in areas that provide the most optimal views. We can look to its piercing roof forms that closely mimic the surrounding tree line. These active rooflines allow the building to almost blur into its surrounding.

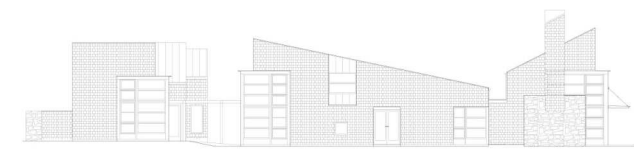


Figure 9 : West Elevation | TVA Architects

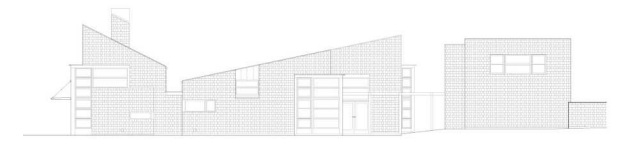


Figure 10 : East Elevation | TVA Architects

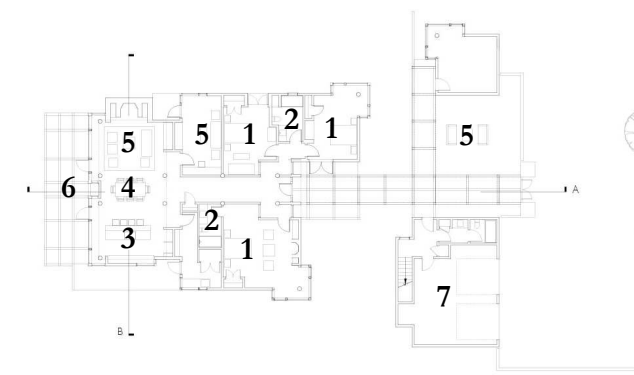


Figure 11 : Floor Plan | TVA Architects

1. Patient Rooms
2. Bathroom
3. Kitchen
4. Dining Room
5. Living Room
6. Outdoor Patio
7. 2-Stall Garage

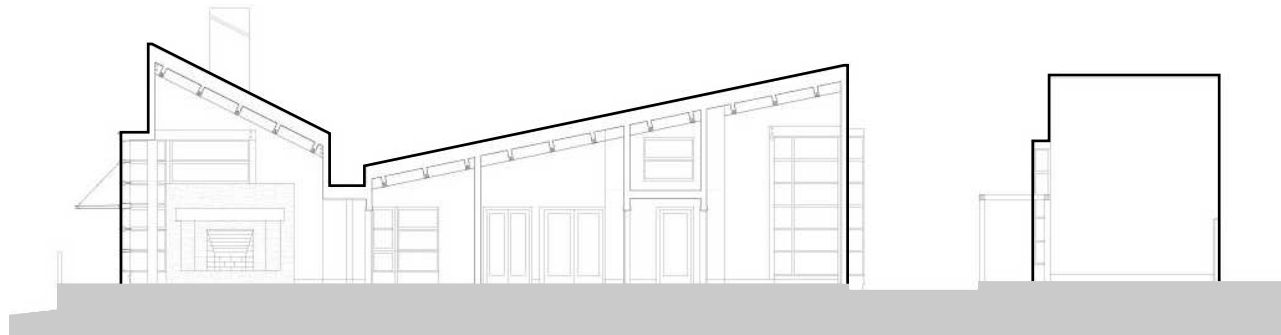


Figure 12 : Sections | TVA Architects

**Human Scale:**

We can also see that the design breaks away from the standard large institutional design that most hospitals follow, and instead it comes down to a more residential feeling. This scale allows users to feel more comfortable in their environment as they battle their illnesses.



Figure 13 : Lounge | TVA Architects



Figure 14 : Dining Room | TVA Architects

**Building Structure:**

- Glue-Laminated Rafters with Ridge Beam
- Glue-Laminated Beams
- Tongue and Groove Wood Roof Decking
- Polished Cast-in-Place Concrete Columns

**Interior Finishes:**

The designers went to great lengths to essentially eliminate all toxic building materials from the structure to help better the users health. Through their due diligence, the building's finishes only included:

- natural stone
- low VOC paints, sealants, and adhesives
- natural wool carpets
- formaldehyde-free wood products from sustainable sources.



Figure 15 : Sitting Room | Cridland, Stephen

# Lamprich Center



Figure 4 : Front Elevation | Fladzinski, Lucas

**Architects:** Alexander Jermyn Architecture  
**Location:** Willitis, CA  
**Typology:** Medical Campus  
 Rehabilitation Clinic  
 Rural Health Clinic  
**Size:** 6,000 S.F., 24 Units  
**Completion:** November 2015

Located in northwestern California, the Lamprich Center designed by architect Alexander Jermyn provides the surrounding community with a rural health clinic, rehabilitation clinic, and a retail pharmacy. As well as it connects to the newly formed Frank R. Howard Foundation office to the adjacent medical campus. This 16,000 s.f. addition uses its long, horizontal, simplified building form to emphasize the rolling topography of the Little Lake Valley. This façade's use of well-articulated repetition and modular components throughout allows the design to "minimize expense, accelerate the building process, and create a spatial and visual language for the project" (Lamprich Center / Alexander Jermyn Architecture, 2016).

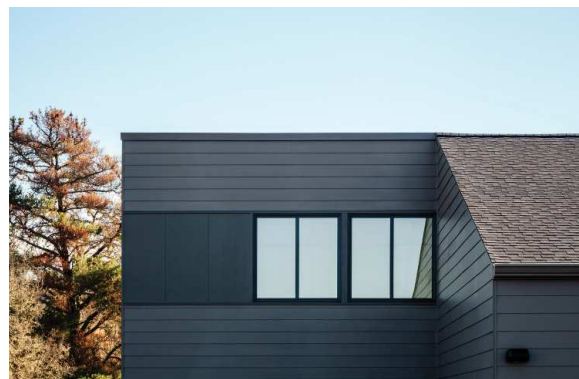


Figure 16 : Roof Line | Fladzinski, Lucas



Figure 17 : Plaza Entry | Fladzinski, Lucas

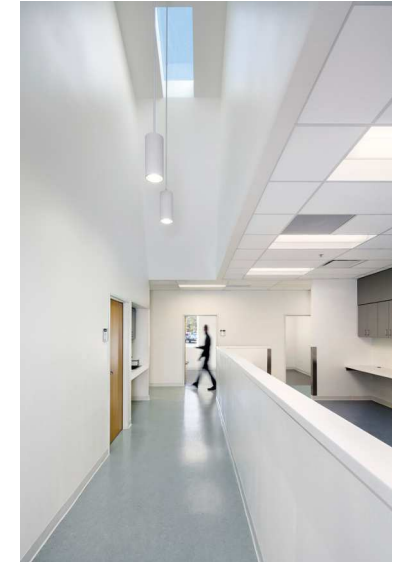


Figure 18 : Hallway | Fladzinski, Lucas

My largest takeaways from this project are its use of human scale and natural lighting. Alexander Jermyn Architecture decided to go away from the typical large institutional medical campus design that currently sits on the site, and go with a more residential scale. I believe that by working at this scale, the Lamprich Center is now more inviting to its patients. Another aspect of the design that I applaud is the use of natural lighting throughout the entire building. The frequent punctures from skylights not only help break up the simple, elegant exterior, but they also help flood the interior with natural daylighting that helps create a warm and healing environment.

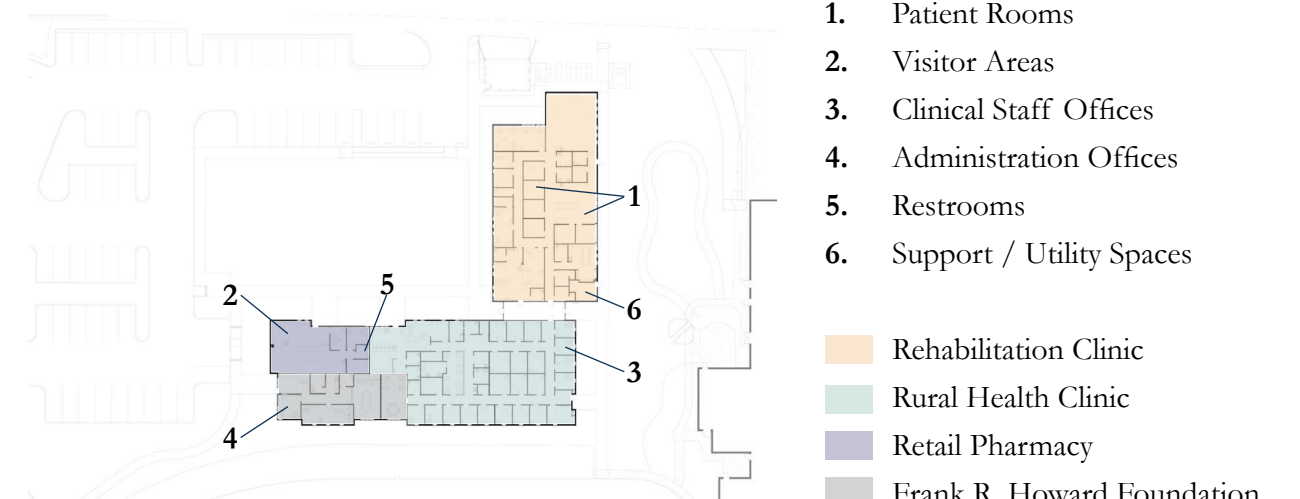


Figure 19 : Floor Plan | Fladzinski, Lucas



Figure 20 : Site Plan | Fladzinski, Lucas

**Site Analysis:**

- Public
- General
- Staff
- Service
- ..... Vehicular Traffic
- - - Pedestrian Traffic

**Site Relationship:**

Alexander Jermyn Architecture was able to create an elegant, simple building form that related to its rural context; while also seamlessly transitioning into the adjacent institutional designed medical campus that shares the site.



Figure 21 : Front Perspective | Fladzinski, Lucas

**Construction:**

From the beginning, the Lamprich Center was given a fast track construction schedule. The owners wanted to have this 16,000 s.f. medical facility designed and constructed within 12 months of being awarded the project. In order to meet this stringent timeline, Alexander and his team decided to use repetition and modularity to help accelerate the building process. In order to achieve this, the firm needed to use a systematic design approach when laying out the interior spaces so that they could limit the number of needed walls. One way they achieved this is by designing spaces so that they could serve multiple uses, this in turn saved the client time and helped expedite the construction process. The use of prefabricated tilt-up wall panels also helped accelerate this portion of the construction progress.

Overall, with the use of simple design principles, Alexander and his team were able to lower construction costs, expedite construction, and create a design relationship between the building and its context.

**Building Structure:**

- Slab On Grade Concrete Slab
- Prefabricated Tilt-Up Wall Panels
- Open Web Roof Trusses
- Laminated Veneer Lumber Beams



Figure 22 : Wall Construction | Fladzinski, Lucas

# New Village Care Residence



Figure 5 : Entry Perspective | APA foto

**Architects:** Doepelstrijkers  
**Location:** Arnhem, Netherlands  
**Typology:** Domiciliary Treatment Facility  
 Treatment Facility  
**Size:** 53,820 S.F., 36 Units  
**Completion:** 2020

Located in the rolling hills of The Netherlands, the New Village Care Center designed by Doepelstrijkers steps up and out of the landscape as a beacon of healing. The New Village Care Center is a learning and healing institution designed to help patients suffering from psychological disorders get back to a normal state of life. This 36-unit facility designed with Active House Principles provides its residents with maximum daylight levels, large green roof terraces, and natural views of the Arnhem countryside. This unique residential mental health facility allows its users to feel free and comfortable, while also retaking control of their lives.



Figure 23 : Patio Perspective | APA foto

## Case Study Takeaways:

My largest takeaway from this project was the meticulous thought that the designers put into this design to maximize daylighting both within the building and on the roof terraces. Throughout the design process, Doepelstrijkers insisted that each residential units' living area had south-facing windows in order to maximize solar access. This was done due to the psychological healing capabilities of daylighting. The designers also made sure when designing the rooftop terraces, to place them on the south side of the structure to ensure maximum usable daylight hours. With having both the rooftop terraces and maximum unit glazing on the south façade of the structure, the designers had to walk a fine line between providing unit privacy while also promoting group interaction between the residents, however, I believe Doepelstrijkers did a great job on this design aspect.

The New Village Care Residence was completed in the spring of 2020, so there is currently no post-occupancy data. Therefore, I will continue to monitor this building's progress as more feedback becomes available.

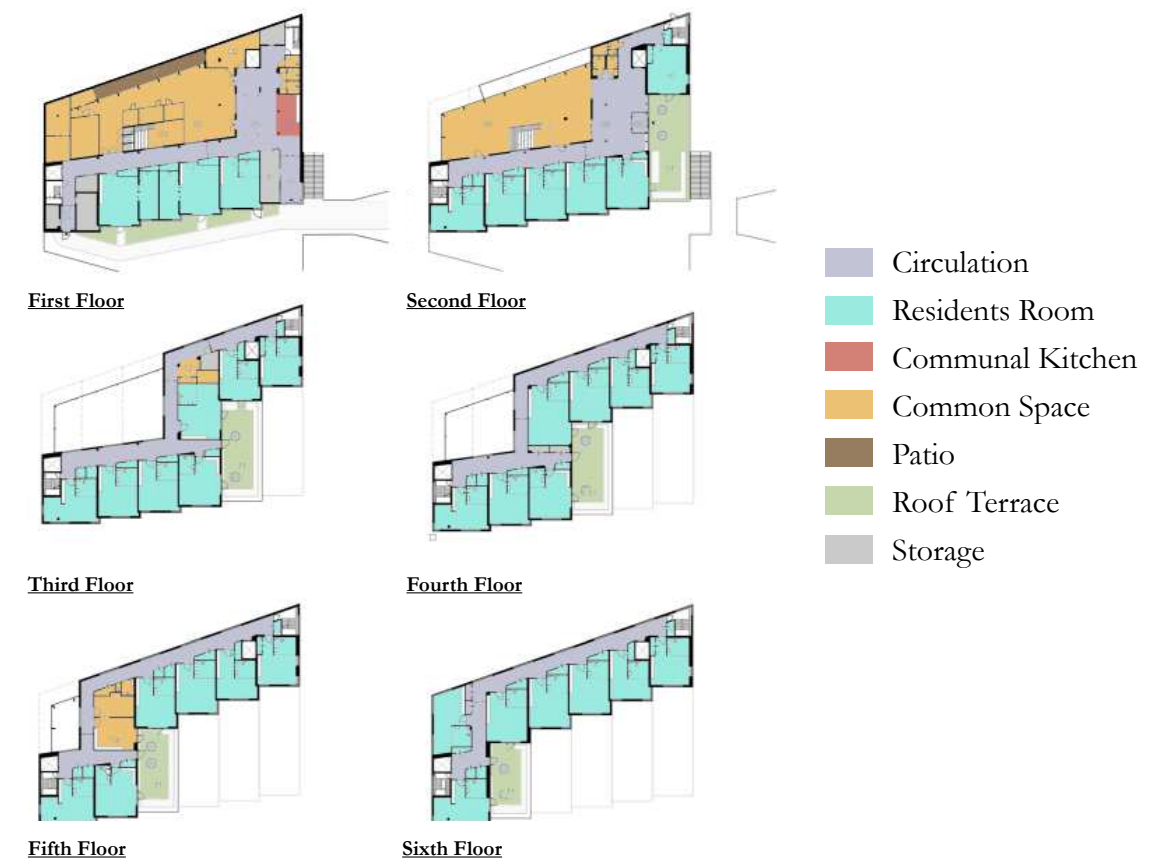


Figure 24 : Floor Plans | APA foto



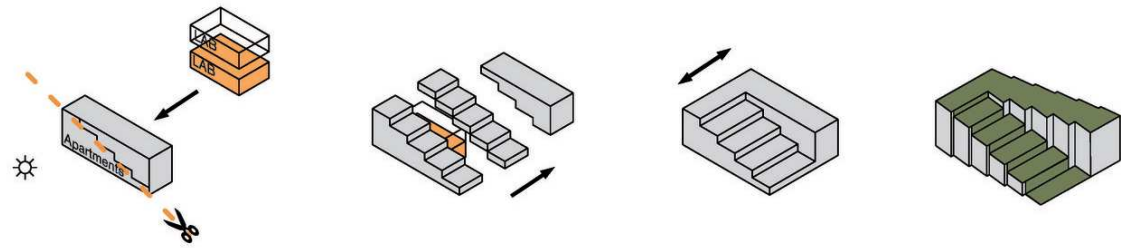


Figure 25 : Massing Diagram | APA foto

### Active House Principles:

Throughout the entire design process, Doepelstrijkers focused on the three Active House Principles of comfort, environment, and energy. They focused on these principals strongly, so that their design could promote a stimulating, healthy and healing environment for the users.

### Active House Guidelines: Comfort, Environment, and Energy (Pintos, 2020)

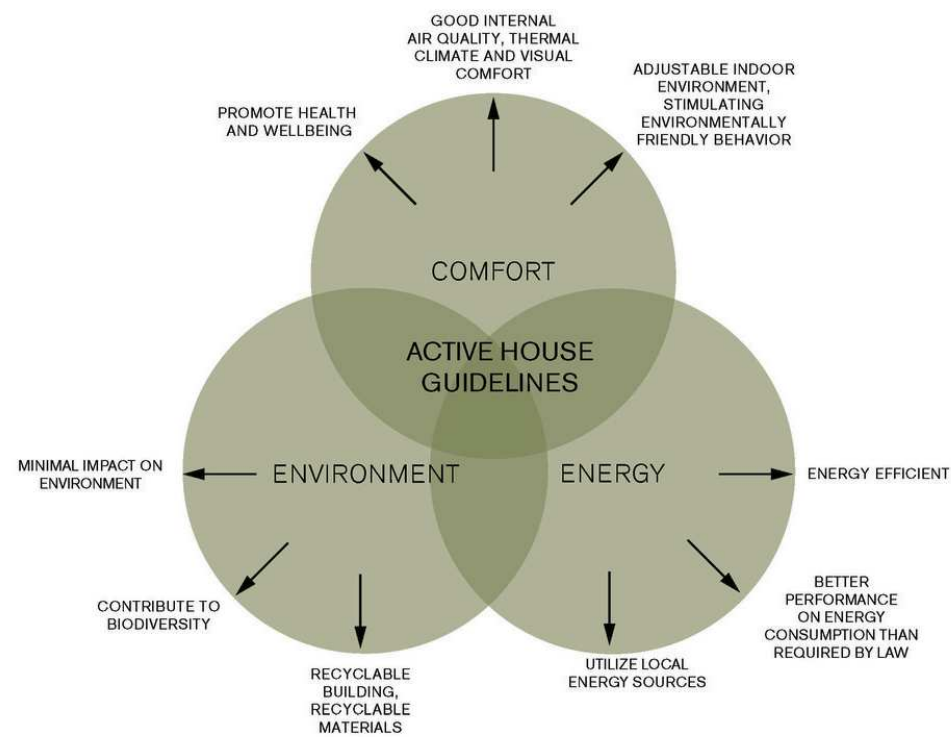


Figure 26 : Active House Guidelines | APA foto



Figure 27 : SIP Installation | APA foto



Figure 28 : Building Structure | APA foto

### Building Structure:

- Heavy Steel Structure
- Hollow Core Precast Planks
- Steel Stud Structural Insulated Panels

The use of prefabricated structural insulated panels (SIP) also helped accelerate the construction progress due to their easy and fast installation process. The SIPs also served the dual function of being the building's structural wall system, as well as the thermal insulation system.

# Woy Woy Rehabilitation Unit



Figure 6 : Nighttime Patio Perspective | Bennetts, Peter

**Architects:** Woods Bagot  
**Location:** Woy Woy, Australia  
**Typology:** Health Care Facility  
Rehabilitation Center  
**Size:** 23,680 S.F., 20 Units  
**Completion:** 2013

Situated on the Central Coast of New South Wales the Woy Woy Rehabilitation Unit blurs the typical harsh line between building and nature. This 20-unit “home in the park” (Woy Woy Rehabilitation Unit / Woods Bagot, 2014) addition to the existing hospital focuses on immersing patients into nature who may be recovering from injuries, surgery, or illness. The piercing triangular form of the roof grabs the users attention and gradually pulls them into the facility, where they are then met with a lively blue glazed brick wall whose colors dance like water in the sunlight.



Figure 29 : Nighttime Front Entry | Bennetts, Peter

## Community Spaces:

### Front Entry:

The use of residential-scale creates a powerful front entry that is defined by its sharp triangular roof form that grabs the users’ attention and pulls them into the building. The building’s use of lively greenery helps accent the blue glazed wall tiles that dance in the sunlight like running water.



Figure 30 : Front Entry | Bennetts, Peter

### Healing Gardens (Exterior):

The prominent use of landscaping and solar access within the gardens creates a healing and visual environment that allows the user to forget about the burdens of life and only focus on their recovery. The use of vegetation within the facility and terminating the landscaping at the façade of the building creates a strong relationship between the building structure and landscaping almost blurring the line between building and landscape.



Figure 31 : Healing Garden | Bennetts, Peter

### Interior Garden:

The use of these tranquil interior park scapes helps break up the monotony of the active corridors while also providing a nurturing oasis for patients as they work through their recovery.



Figure 32 : Interior Parkscape | Bennetts, Peter

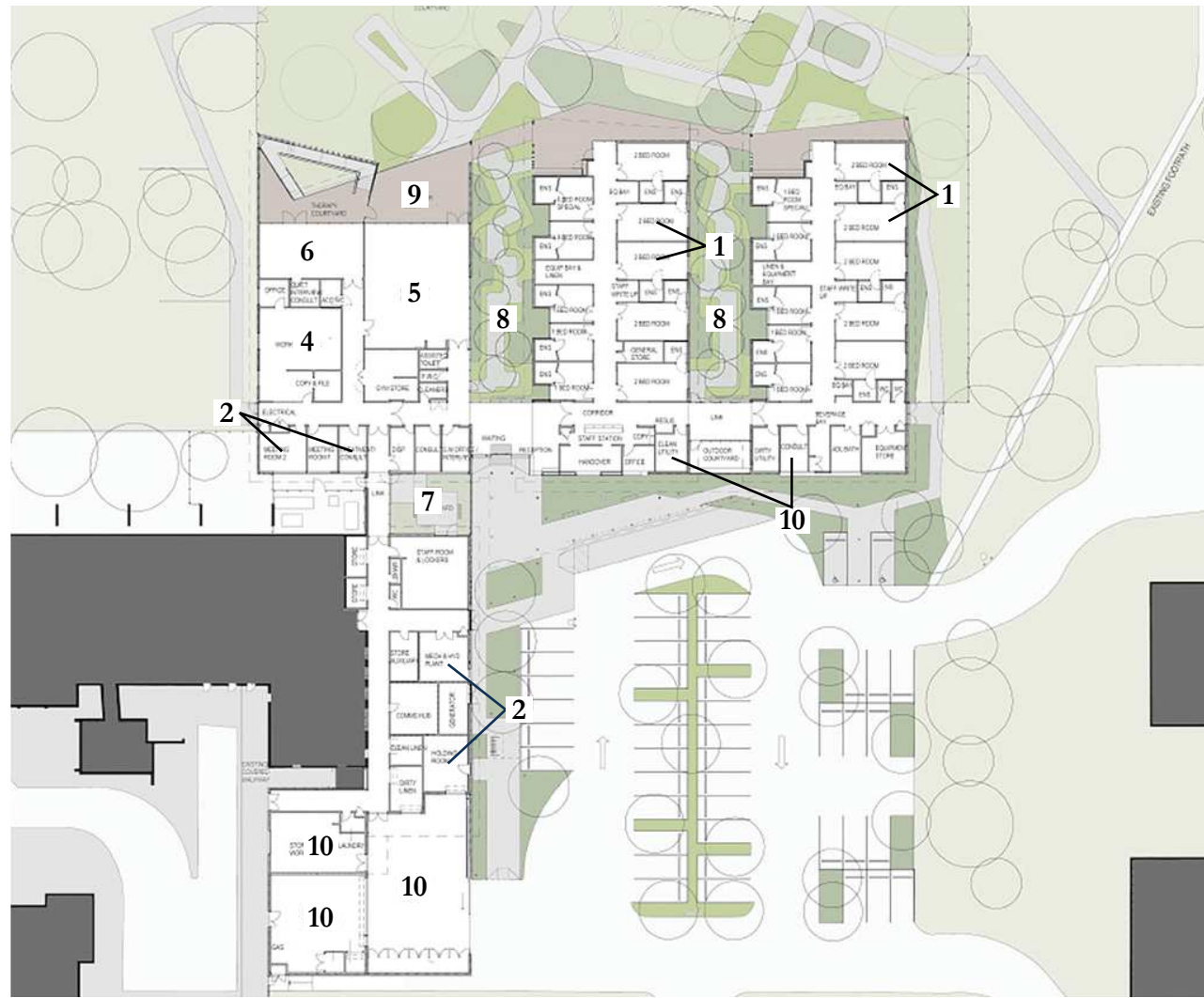


Figure 33 : Site / Floor Plan | Bennetts, Peter

**Floor Plans:**

- |                  |                      |
|------------------|----------------------|
| 1. Resident Room | 6. Gym               |
| 2. Offices       | 7. Staff Courtyard   |
| 3. Reception     | 8. Outdoor Courtyard |
| 4. Workstations  | 9. Outdoor Deck      |
| 5. Lounge        | 10. Support          |

**Building Structure:**

- Glue-Laminated Beams
- Glue-Laminated Columns
- Heavy Steel Structure
- Cast In Place First Floor Slab

- Public Spaces
- Resident Areas
- Administration / Clinical
- Outdoor Gardens
- Outdoor Deck
- Existing Hospital

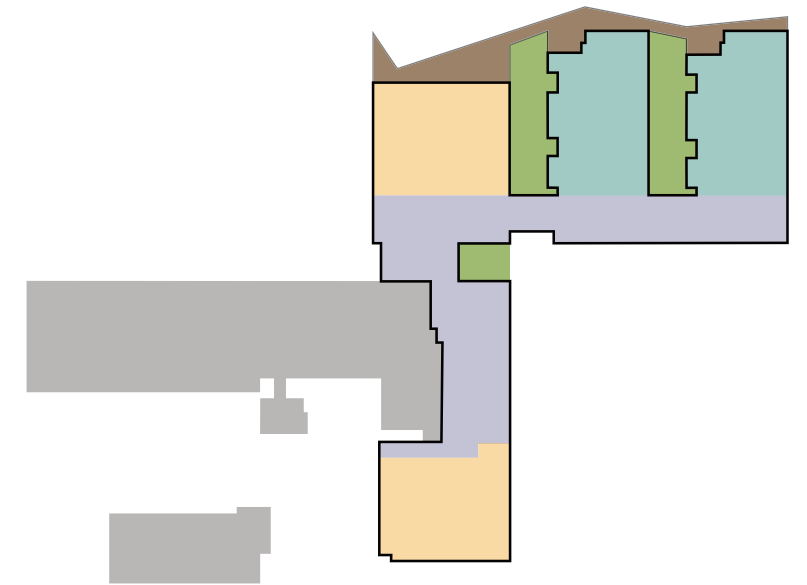


Figure 34 : Floor Plan Breakdown | Personal Diagram

**Case Study Takeaways:**

My largest takeaways from this project are its ability to blur the line between building and nature, as well as, its use of residential-scale to make the facility feel more welcoming. Woods Bagot's use of residential-scale goes against the typical institutional design that most clinics follow, however, they believed that by bringing the patients closer to nature through the use of scale, solar access, interior courtyards, and gardens, that they would be able to create a more welcoming and healing environment throughout the patients' recovery. They were also able to use some of these features to help blur the line between the building and the surrounding park by bringing the eucalypts and native grasses gardens right up to the residents' rooms.

Overall, I believe that the Woy Woy Rehabilitation Unit is a great example of how residential scale and immersion into nature can have a large benefit to the overall healing experience. Therefore, I will refer to this case study throughout my design process for inspiration and advice.

# Case Study Conclusions

The case studies discussed earlier in this document demonstrate different types of architectural design solutions that help in the physical and psychological healing experiences. The different healthcare building typologies explored in these case studies included a children's cancer retreat, a rehabilitation unit addition, a domiciliary treatment facility, and a rural healthcare facility. All four of these projects show how different design strategies can achieve a similar goal of bettering the health and wellbeing of its users.

The first case study that I researched was the Caring Cabin, located on the western shoreline of Oregon just outside of Portland. The Caring Cabin serves as a beacon of hope for young children who have recently been diagnosed with cancer. This retreat breaks away from the typical large, sterile, institutional design that most hospitals follow, and instead it comes down to a more residential feeling that allows the user to feel more safe and comfortable during this difficult time. The cabin also capitalizes on its serene environment to give the user the most optimal scenic views through large corner windows that puncture the building facade. The use of surrounding environmental views to enhance the patient's healing process is something that I will take into great consideration. The positive effects that this design aspect has on the overall wellbeing of the patient is something that cannot be overlooked.

The second case study that I researched was the Lamprich Center located in northwestern California in the Little Lake valley. This 16,000 s.f. addition uses its long, horizontal, simplified building form to create a visual connection and psychological disconnect between it and the adjacent medical campus. The design by Alexander Jermyn Architecture uses its residential scale and well-articulated repetition to create a more welcoming environment for the patients. The building's use of natural lighting through frequent skylight punctures not only helps break up the simple, elegant exterior but allows for natural light to flood the interior and help create a warm and healing environment. This project's use of human scale and natural lighting is something that I deeply admire, and is something that I will strive to achieve in my design.

The next case study that I researched was the New Village Care Residence constructed in the rolling hills of Amsterdam. This design by Doepelstrijkers capitalized fully on the natural views and solar access provided by the building's location. Throughout the design process, Doepelstrijkers focused heavily on the Active House principles of comfort, environment, and energy when laying out the units and the rooftop terraces. The connections made

# Case Study Conclusions

between the natural environment and the users' healing experience was a highly encouraging design solution. I will take into consideration the Active House Principles in order to enhance the healing process.

The final case study I explored was Woods Bagots' Woy Woy Community Health Centre Rehabilitation Unit addition. This project explored the relationship between an immersive residential-scale clinic and recovery from injury, surgery, or illness. This project focused on immersing the patient in nature by blurring the line of where the surrounding gardens ended and where the building began. This project also used warm materials like wood, glass, and greenery throughout the interior to help strengthen the connection to the exterior. These ideas of interior-exterior connections show me ways to help liven/warm the interior spaces in my thesis design.

Through reviewing these case studies, I have had my eyes opened to different programming and spatial relationships that I may not have considered before. I have also started diving deeper into the different design solutions that I believe each of these projects have almost perfected. Through studies of these design solutions, I believe I will be better equipped to design my own Post-Traumatic Stress Disorder facility. Although all of these projects have provided multiple strategies for solving different issues that plague health rehabilitation facilities today, I have yet to find a case study that successfully implements all of these design ideas into one facility. Therefore, I believe this is where my thesis project will come together and help us rethink the way we design healthcare facilities of the future.



## **Private Spaces:**

---

Unlike the facility's public spaces, these private spaces will allow the users to have personal time to work through their ailments. These spaces will also allow the user to work privately with facility staff to create a personal health plan that will fit their lifestyle.

- Resident Units
  - Private and shared rooms based on the level of comfort/need for observation
- Physician Consult Room
  - Provide One per physician
  - Would allow for private therapy sessions
- Exam Rooms
- Nurses Station
  - Medicine Storage
  - Medical Record Storage
  - Patient Monitoring System
- Medical Collaboration Space
- Office/Administration
- Security Office
  - Building Monitoring system

## **Public / Community Spaces:**

---

Public Spaces will allow users to create a sense of community through group participation and inclusion. These spaces will give the residents opportunities to meet other veterans who may be battling the same ailments and disorders.

- Reception
- Dining Area
- Kitchen
- Worship Space
- Theater
- TV / Game Room
- Library
- Maker Spaces
- Visitor Rooms
- Work Out Room

## **Therapy Spaces:**

---

Therapy rooms will be spaces for healing. These spaces will be a mixture of independent healing and community healing spaces so that the users always feel comfortable. These spaces will have to be designed to uplift and heal the user, while also be specifically tailored to that therapy style. This will ensure that the users get the greatest benefits from these spaces.

- Group Therapy Rooms
- Private Therapy Rooms (Doctor's Offices)
- Homeopathic/Non-traditional Therapy Spaces

## **Treatment Methods:**

---

Facility treatment methods will include current and new treatment options offered by the Department of Veterans Affairs, as well as, homeopathic and other nontraditional means of treatment.

- VA Treatment Methods:
  - Prolonged Exposure Therapy
    - In-Person Physician Based
    - Online Coach Based
  - Cognitive Processing Therapy (CPT)
    - In-Person Physician Based
    - Online Coach Based
  - Eye Movement Desensitization and Reprocessing (EMDR)
  - Medication
  - Stress Management Therapy
  - Service Dog
  - Equine Therapy
- Homeopathic/Non-Traditional Treatment Methods:
  - Nature Immersion Therapy
  - Meditation and Yoga
  - Massage Therapy
  - Acupuncture Therapy
  - Sensory Deprivation Tank

## **Outdoor Spaces:**

---

Like the interior public spaces, the outdoor spaces at Warrior's Ranch will allow the users to create a sense of community and inclusion, while also taking in the serene landscape that surrounds the facility and Edward Arthur Patterson Lake.

- Outdoor Patio
- Fire Pit
- Green House / Gardens
- Reflection Pond
  - Meditation
  - Site Water Retention
- Walking / Hiking Trails
- Meditation Pavilions
- Fallen Memorial
- Activity Fields
- Boat Launch
- Activity Storage Shed
  - Kayaks, outdoor games, etc.
- Equestrian Stable
- Parking Lot
  - Staff and Visitors

# User/Client Description

---

**Owner |**

**Department of Veteran Affairs**

**Users |**

**Residents / Patients – 24**

Veterans Suffering from Post-traumatic Stress Disorder (P.T.S.D.) and other psychological and physical disorders.

**Doctors – 6**

At least one doctor would be on-site at all times to ensure the patient's health and well-being. Doctors would work daily or be on call

**Nurses – 14**

4 nurses on duty during the day, each nurse would be accountable for 6 residents

2 nurses on duty overnight, each nurse would be accountable for 12 residents

**Administrative Staff – 3**

Welcome residents and visitors during daytime hours

**Kitchen Staff – 6**

Staffed daily to prepare breakfast, lunch, and dinner

**Janitorial Staff - 2**

Staff cleans the facility daily.

**Security – 5**

Security staff would ensure the safety of all users 24 hours a day

**Visitors**

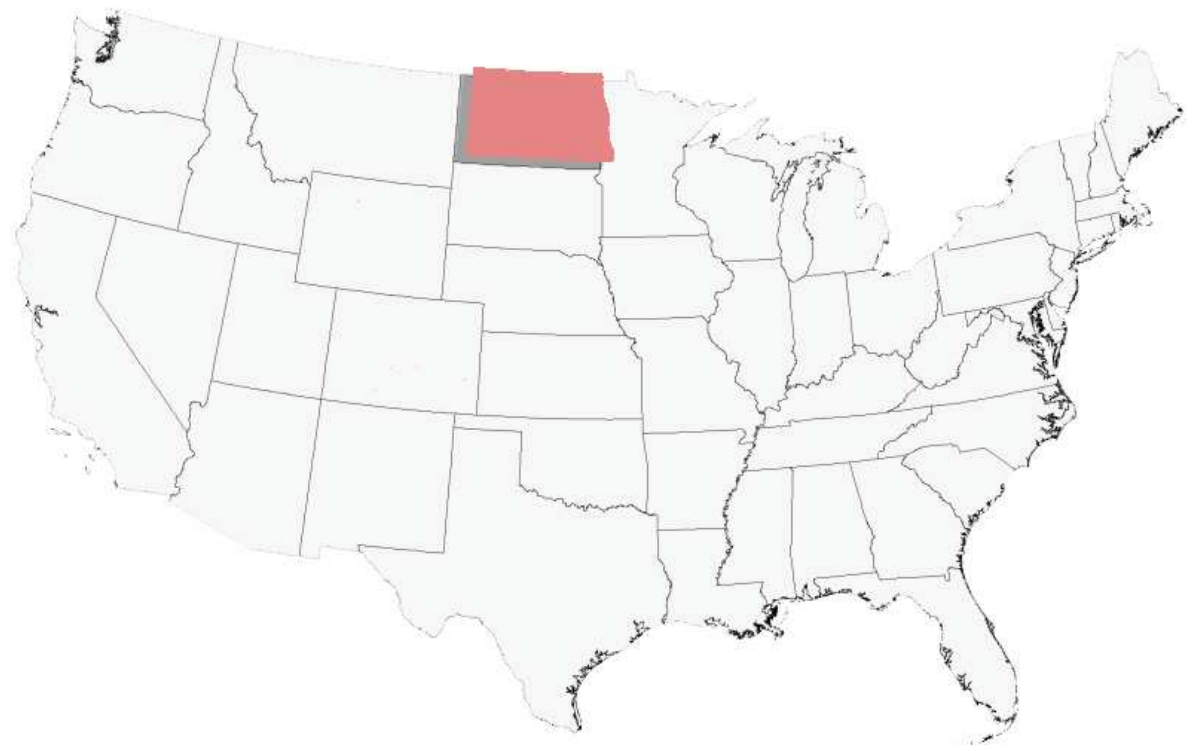




**Country:** United States of America  
**State:** North Dakota  
**County:** Stark  
**City:** Dickinson

**Population:** 23,133 (U.S. Census 2020)  
**Founded:** 1881  
**Nickname:** The Queen City

**North Dakota, USA**



*Figure 35: Map of United States | Personal Diagram*



The site was chosen due to its serene environment and expansive shoreline along Edward Arthur Patterson Lake. Due to the site being located in a rural setting, it will provide a more relaxed environment that will allow the facility to offer a more homeopathic and nontraditional means of treatment, while also providing a semi-structured treatment plan for each veteran.

The city of Dickinson, North Dakota has a population of 23,133 residents (United States Census Bureau, 2020), and because of this population size, Dickinson will be able to offer the residents and staff easy access to an emergency and trauma center, grocery stores, and other local amenities. The site's proximity to Dickinson will also provide the staff with nearby housing in one of North Dakota's largest cities. This location will also have the additional benefit of its ability to service western North Dakota and eastern Montana, as well as other parts of the Midwest region of the United States.

## Stark County

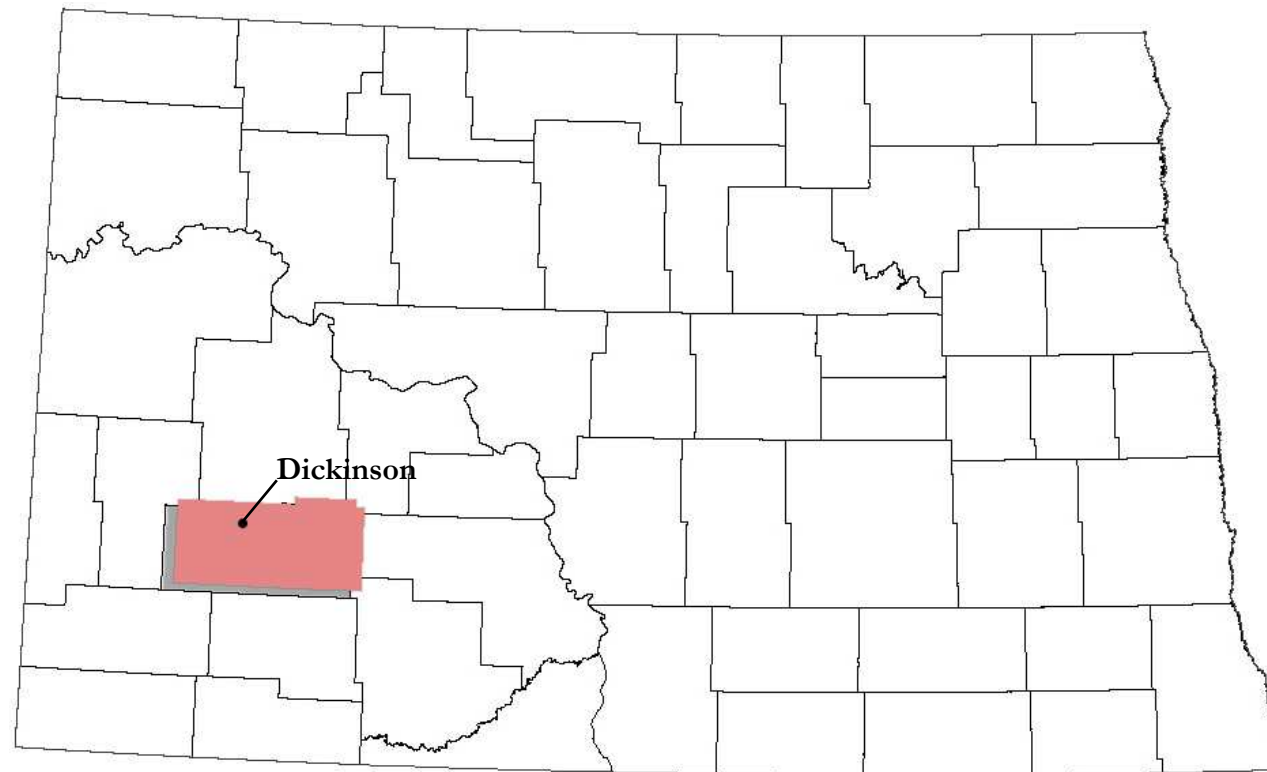


Figure 36: Map of North Dakota | Personal Diagram

## City of Dickinson

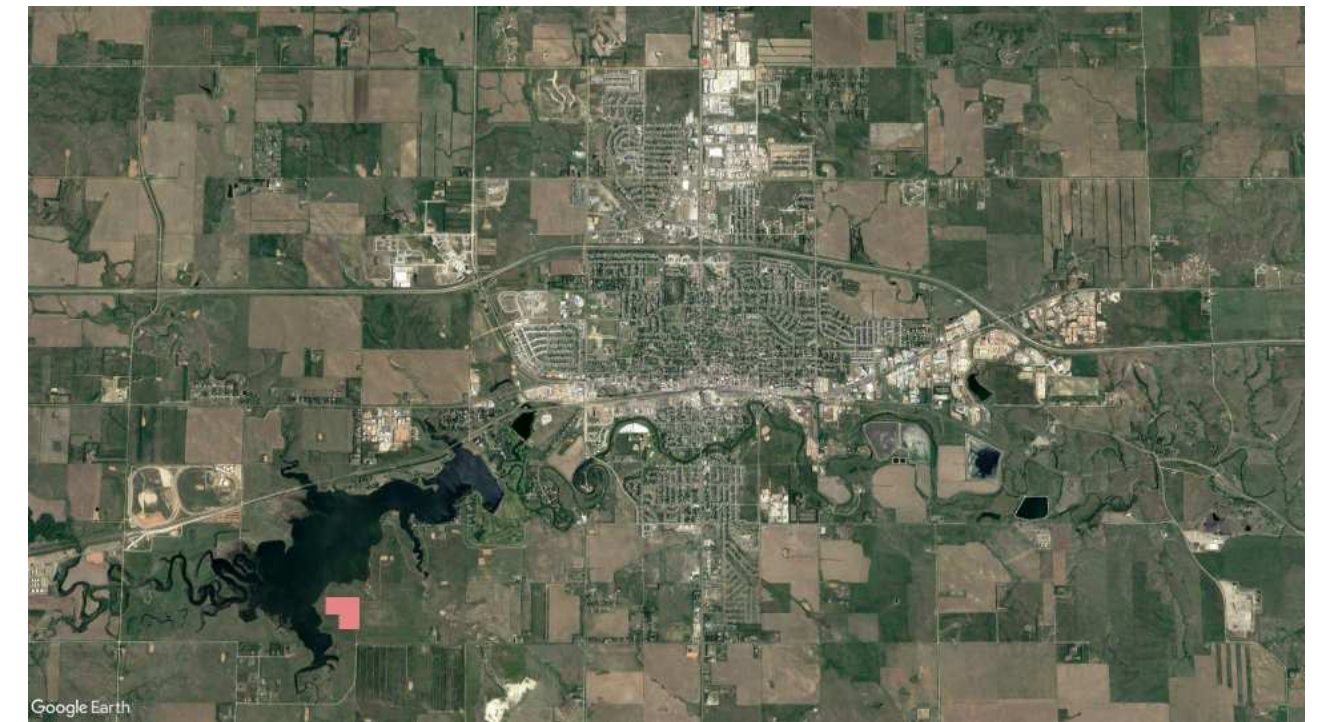


Figure 37: Map of Dickinson | Stark County GIS

## Dickinson Points of Interest

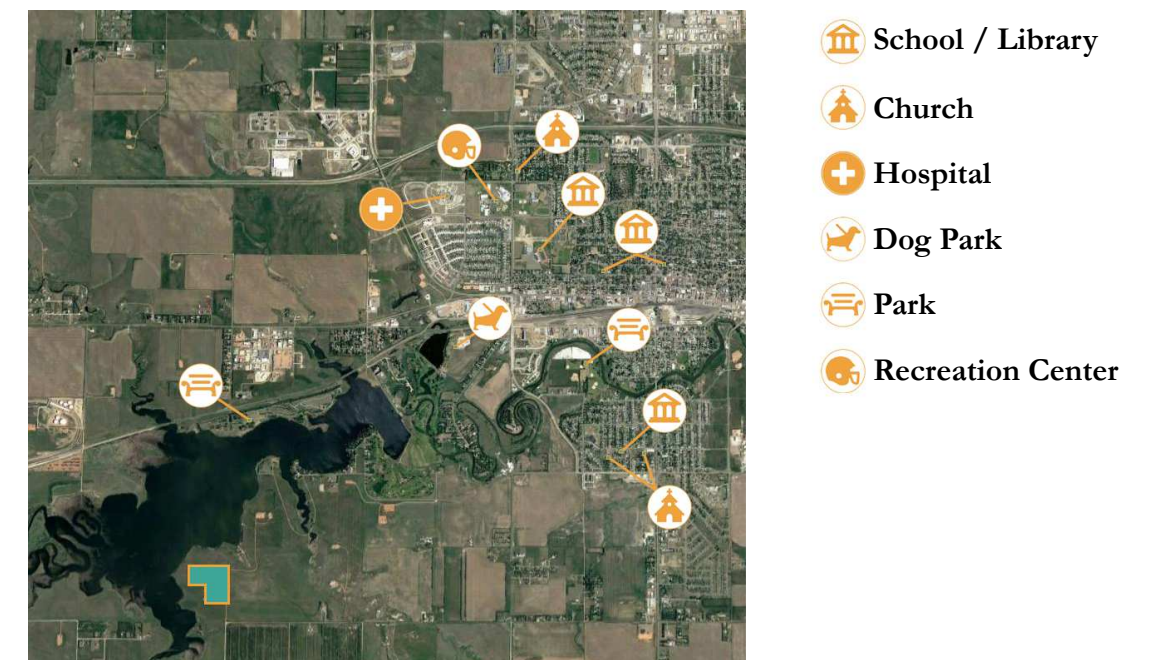


Figure 38: Dickinson Points of Interest Map | Personal Diagram



This thesis will focus on improving mental health rehabilitation facility design through the comprehensive use of architectural elements, spatial programming, and person-centered design strategies, such as involve, personalize, comfort, engage, protect, and sustain. These strategies will then allow the design to better aid in the long term treatment of soldiers suffering from Post-Traumatic Stress Disorder and other psychological and physical disorders, as well as help create an environment that teaches families and the community about these disorders that plague our men and women in uniform. This thesis will primarily focus on the relationship between the level of engagement one has with their mental health treatments based on their current built environment. To encourage increased levels of engagement in the users' treatment options, this design will allow for multi-tiered levels of engagement that focus on the creation of relaxing and stress-free environments to conduct healing. The design will include interactive spaces for current and new treatment options offered by the Department of Veterans Affairs, as well as homeopathic and other nontraditional means of treatment.

This project will be designed for long term care use, therefore, domiciliary spaces will have to be considered to encourage one's sense of "home and belonging." This design's sense of ownership and integrated community will force us to rethink how we can better design future healthcare facilities that aid our men and women in uniform.

This design will also focus on the question of "how can architecture become a conduit for teaching veterans' family and friends about preventative actions that they can take to support their loved ones who suffer from Post-Traumatic Stress Disorder and other physiological disorders?" Therefore, this design will work towards creating a essential resource that veterans' families and friends can use preventatively, during treatment, and post-treatment.

# Goals of the Thesis Project

---

The goal of this thesis is to improve mental health rehabilitation facility's sense of home and belonging through the comprehensive use of architectural elements, spatial programming, and person-centered design strategies. With the goal of positively affecting the level of engagement that a patient gives to their treatment process. Along with these ideas, my main goal is that Warrior's Ranch will force us to rethink how we design PTSD and Mental Health treatment facilities for our men and women in uniform.

For the my design goals, I will be taking inspiration from the six factors of person-centered mental health facility design. These factors include: involve, comfort, personalize, engage, protect, and sustain.

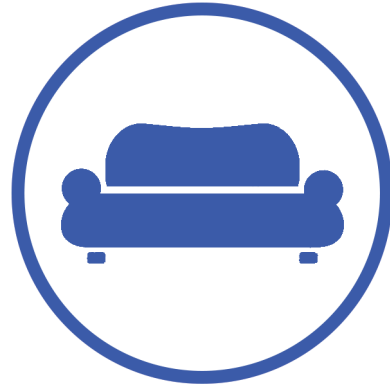


# Goals of the Thesis Project

## Comfort:

---

- Create spaces that allow the veterans to feel comfortable enough to call the facility “home”
- Create spaces that enable the veterans to become vulnerable
- Create direct sightlines from places that the veterans will frequent to entrances, exits, and areas of movement
- Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces



## Personalization:

---

- Allow the veterans to customize their surroundings to provide a sense of “ownership”
- Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces. (Give them control of their surroundings)



## Engagement:

---

- Arrange living layouts near or around group spaces in order to encourage engagement with other patients and staff
- Provide multi-layered engagement options (Patient-to-Patient, Patient-to-Staff, etc.)
  - Will allow the veteran to become open with others
- Create spaces that enable the veterans to become open and vulnerable with their fellow veterans “Community Belonging”
- Introduce Traditional, Non-Traditional, and Homeopathic means of treatment
- Create outdoor treatment options



# Goals of the Thesis Project

## Protect:

---

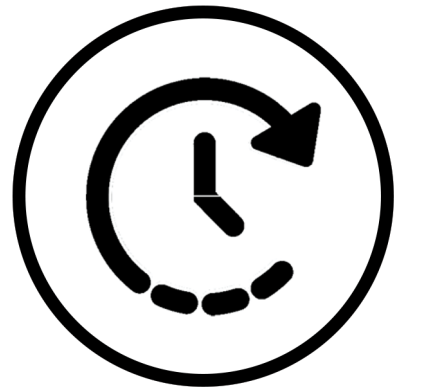
- Allow the veterans to customize their surroundings to provide their own line of defense against unknowns
  - Will allow the veteran to prioritize their own living spaces in order to address the unknowns
- **Eliminate empty, dark corners**
- Create direct sightlines from places that the veterans will frequent to entrances, exits, and areas of movement
- Provide glazing so that veterans may see “threats,” however, also limit glazing so that “threats” can not see them.



## Long Term:

---

- Provide families with the services and information to better understand the early warning signs of PTSD or other psychological disorders
- Provide a long-lasting community that veterans may contact after treatment in case things come up
- Better understand current healthcare design and analyze portions for future approaches
- Develop using healthcare facilities with the six domains of person-centered design



## Sustainability:

---

- Minimize site alterations and destruction
- Apply LEED and WELL thinking strategies
  - Daylighting
  - Quality Views
  - Optimize Energy Performance
  - Passive Cooling / Heating
  - Indoor & Outdoor Water Use Reduction
  - Rainwater Management



Post-Traumatic Stress Disorder and other psychological wounds are currently some of the hardest wounds to heal for most American soldiers. My thesis will focus on the correlation between new and old design solutions that are used to help aid in the treatment of soldiers suffering from Post-Traumatic Stress Disorder and other psychological and physical disorders. This thesis will focus on improving mental health through the study of how one's room invokes a sense of "home and belonging," and how this can affect the level of engagement that the resident gives to their treatment. Through my research, I will also investigate how good design leads to greater autonomy and inclusivity. These design solutions will challenge the current narrative surrounding Post-Traumatic Stress Disorder and other psychological and physical disorders.

The main goal of my research will be largely based on my unifying idea that if a patient's room invokes a sense of home and belonging, their level of engagement in treatment will increase, which in turn will help improve their overall mental health. I plan to study this idea by researching case studies, scientific periodicals, correlation studies, simulations, and interviews. I will conduct interviews with the U.S. Department of Veteran Affairs hospital staff (doctors, therapists, and nurses) to see how they currently handle veterans who suffer from Post-Traumatic Stress Disorder. I will also plan to conduct interviews with veterans and their families, as well as nonprofit organizations and other groups that help support veterans. I plan to use different design software (Autodesk Revit and Rhinoceros 6.0) and 3D visualization means to virtually model my proposed design solutions. I will then have the veterans that I interviewed assess my room layouts through the use of physical scale models and virtual reality. I will then record their initial impressions and feedback to gain a better understanding of how my design iterations affect their well-being and engagement levels. This means of designing and testing will help me better understand the effect of architectural features and how they can directly affect the healing process.

The research and data obtained through this process will be documented regularly and implemented into my final design. This research will help me gain a better understanding of methods, feelings, and stigmas that play a role in veterans' treatment process so that I can work towards creating a more harmonious design that can be beneficial to all veterans suffering from Post-Traumatic Stress Disorder and other psychological disorders.

## Medium for design investigation

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- Sketching
- Computer Modeling
- Hand Modeling
- 3D Visualization Program Modeling

## Software for Investigation

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- Autodesk Revit
- Autodesk AutoCAD
- Autodesk Infravorks
- Rhinoceros 6.0
- Enscape

## Software for Representation

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- Adobe Photoshop
- Adobe Illustrator
- Adobe InDesign

## Design Preservation Methods

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- Creation/investigation of representation
- Record advisor feedback through handwritten & typed notes
- Document all research material
- Backup computer files daily to Google Drive & external hard drive
- Update thesis book weekly
- Update reference section upon retrieval of drawings/diagrams

## Publication of Material

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- NDSU Institutional Repository
- Hardcover book format

## Documentation Organization

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**File Labeling:** YearMonthDay-HYATT-Phase-Name

**Example:** 20201013-HYATT-Site\_Analysis-Sun\_Path\_Map

# Thesis Schedule

# Thesis Schedule

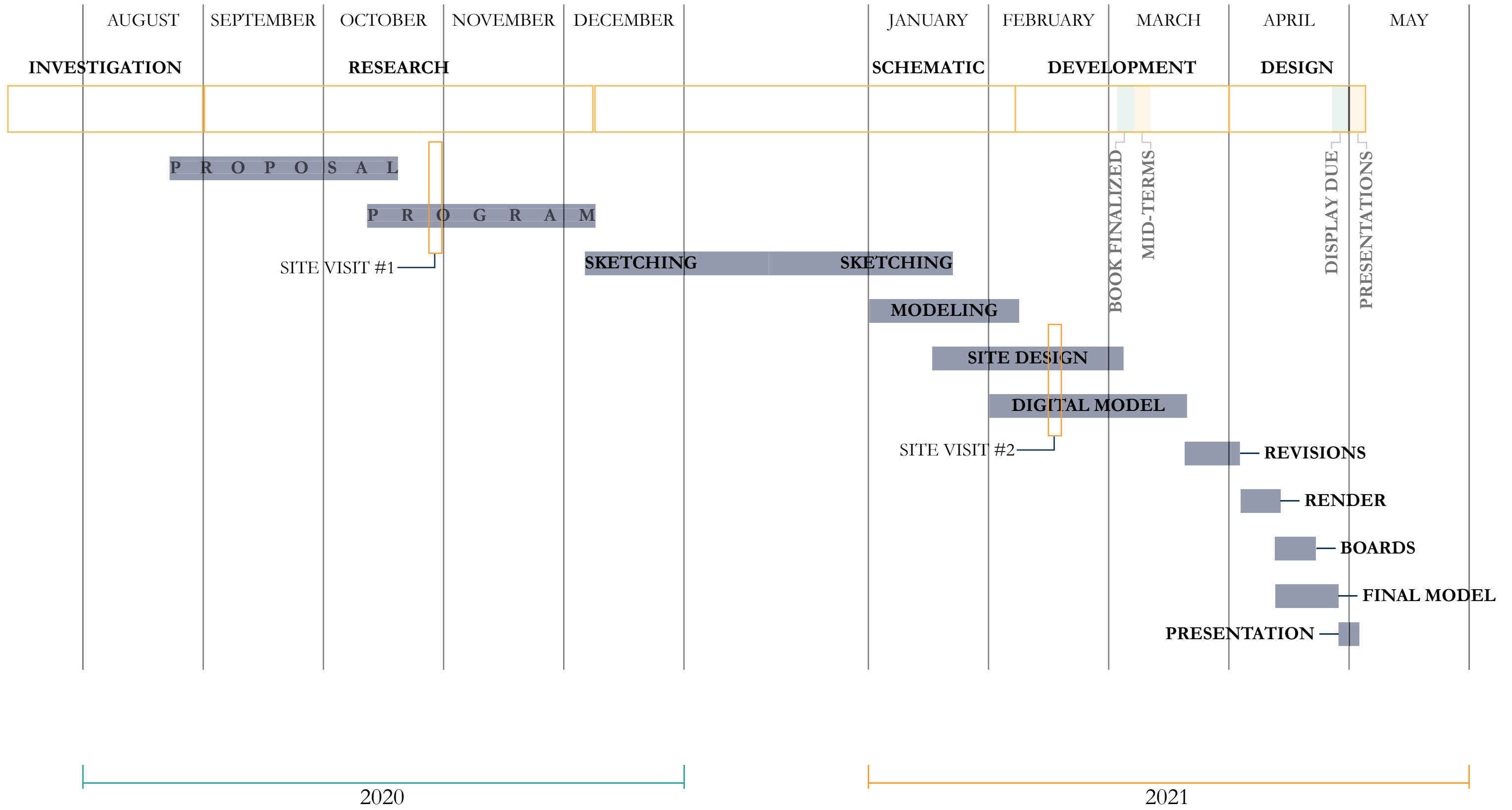


Figure 39: Thesis Schedule | Personal Diagram



## **Abstract**

Five separate literature reviews were conducted to gain a better understanding of the project's theoretical premise. Pieces of literature from the Department of Veterans Affairs such as *PTSD Compensation And Military Service*, *Department of Veterans Affairs Design Guide: Mental Health Facilities*, and *VA's Mental Health Environment of Care Checklist (MHEOCC)* look into how a veteran compensation is evaluated for suffering from Post-Traumatic Stress Disorder. These works of literature also look into the guidelines and standards for designing new mental health treatment facilities as well as strategies for abating environmental hazards within existing treatment facilities. The literature *Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans* and *Investigating Architecture And Space Design Considerations For Post-Traumatic Stress* are academic studies that look deeper into the concept of a dynamic communication and co-design process between the users of the space and the design team throughout the design phases to create a more comprehensive healing environment. These works of literature also look into proposed design frameworks that examine how architectural features and spatial programming can affect the users both physically and psychologically. Through these literature reviews, I hope to gain a better understanding of current methods of evaluating not only the veterans suffering from Post-Traumatic Stress Disorder but also the facilities to which they are sent for treatment.

## ***PTSD Compensation And Military Service***

**Committee of Veteran's Compensation for Posttraumatic Stress Disorder, Board of Military and Veteran Health, and the Board of Behavioral, Cognitive, and Sensory Sciences.**

*PTSD Compensation And Military Service* is a report conducted in tangent between the Committee of Veteran's Compensation for Posttraumatic Stress Disorder, Board of Military and Veteran Health, and the Board of Behavioral, Cognitive, and Sensory Sciences; that takes a deeper look into the current methods and procedures conducted by the Department of Veteran's Affairs in regards to examining and establishing the severity of Post-Traumatic Stress Disorder (PTSD) in-service members who have witnessed or experienced a traumatic event. This report also tries to analyze current methods of assigning initial levels of compensation for PTSD and reevaluation procedures. Finally, this report will look into strategies used to support recovery.

## Evaluation of Trauma Findings:

While conducting their evaluation, the Committee of Veteran's Compensation for Posttraumatic Stress Disorder found that the Department of Veteran Affairs is currently

using the method of Global Assessment of Functioning or GAF Score. This style of evaluating mental health disorders is currently used in the evaluation of people with mood disorders and schizophrenia. This sort of evaluation focuses on one’s ability to accomplish everyday activities and their ability to resemble and maintain a “normal” life. However, after further examination, the committee found this method of evaluation to be flawed in the use of PTSD assessments.

The group found that this type of system does successfully evaluate one’s abilities to conduct everyday tasks, it does fail to account for the patient’s overall condition that may have symptoms that do not cross the “diagnostic threshold of the evaluation. This method also fails to observe the disorder over a long period of time. As in the case of PTSD which can manifest well after the stressor event has occurred. This test also doesn’t account for the PTSD cases that may not become prevalent until the patient is exposed to materials that remind them of the traumatic event. Therefore, the committee concluded that the Department of Veteran Affairs should not rely on the GAF Score since it has limited usefulness when assessing PTSD. The group then recommended that:

“In the short term, VA should ensure that its mental-health professionals are well informed about the uses and limitations of the GAF, that it make certain—to the extent possible—that these professionals are trained to implement the GAF in a consistent and uniform manner, and that it provide periodic, mandatory retraining to minimize drift and variation in scoring over time and across facilities. In the longer term, VA should identify and implement an appropriate replacement for the GAF: one or more measures that focus on the symptoms of PTSD used to define the disorder and on the other domains of disability assessment. The research needed to accomplish this effort should be facilitated.”

(Institute of Medicine and National Research Council, 2007)

### Assigning Compensation Findings:

Once the group finished its finding on the evaluation process for Post-Traumatic Stress Disorder, the Committee of Veteran’s Compensation for Posttraumatic Stress Disorder moved onto evaluating the current methods and strategies for assigning compensation and treatment options for veterans with PTSD.

After evaluating the current compensation methods and procedures, the committee found that the current criteria rating system for all health disorders was an unproductive system that needs to be evaluated further. The committee made sure to note that the current rating system referred to at “VASRD” is a subjective evaluation system that doesn’t account for the health disorder as a whole. They also found that the current system only looks at specific symptoms instead of evaluating how a patient may be affected differently by certain symptoms. The committee also noticed that the system criteria were developed by a health professional that specializes in these disorders, however, the evaluation staff is tasked with knowing all criteria. Therefore, this current system allows for clinical errors when evaluating these disorders, which in turn may cause issues in the overall process.

**TABLE 5-2 VASRD Disability Percentage Ratings for Selected Conditions**

| Condition               | 10%  | 20-30%   | 40-50%  | 60-70%   | 100%   |
|-------------------------|--|--|---|--|--|
| <b>Mental disorders</b> | OSI <sup>a</sup> due to mild or transient symptoms which decrease work efficiency and ability to perform occupational tasks only during periods of significant stress; or symptoms controlled by continuous medication | 30 OSI with decrease in work efficiency and intermittent occupational impairment due to such symptoms as depressed mood; anxiety; suspiciousness; panic attacks (weekly or less often); chronic sleep impairment; mild memory loss | 50 OSI with reduced productivity due to such symptoms as: flattened affect; disordered speech; panic attacks ≥ once a week; impaired memory and judgment; disturbed motivation and mood; difficulty in establishing and maintaining relationships | 70 OSI, with major deficiencies in most areas, such as work, school, family, judgment, thinking, or mood, due to such symptoms as suicidal ideation; obsessional rituals; disordered speech; near-continuous panic or depression affecting ability to function; impaired impulse control; neglect of personal appearance; etc. | Total OSI, due to such symptoms as: gross impairment in thought; persistent delusions or hallucinations; grossly inappropriate behavior; persistent danger of hurting self or others; intermittent inability to perform ADL; disorientation to person/time/place |

Figure 40: VASRD Disability Percentage Rating Chart | PTSD Compensation and Military Service

After evaluation of their findings, the Committee of Veteran’s Compensation for Posttraumatic Stress Disorder recommended that the Department of Veteran Affairs should create a new VASRD criteria system that tailors more towards PTSD and that it should evaluate the multidimensional characteristics of the disorder. They also recommended that the Department of Veteran Affairs establish a certification process for evaluators so that they may better assess their patients for the full spectrum of disorders.

### Supporting Recovery Findings:

After assessing the PTSD evaluation process and the methods of establishing PTSD compensation, the Committee of Veteran’s Compensation for Posttraumatic Stress Disorder moved to their final evaluation category of strategies for supporting PTSD recovery within the Department of Veteran Affairs.



For this portion of the study, the committee was asked to evaluate four questions. The first question that the committee explored was “what are the barriers or disincentives to recovery?” Through their research, the committee established several findings based on the proposed questions by the Department of Veteran Affairs. The committee found that there are currently many barriers that veterans face when it comes to their recovery process. The committee found that there are many self-inflicted barriers as well as external barriers that veterans may encounter and that may derail their recovery process. Through further research, the committee also found that there are, unfortunately, no current easy solutions to this problem.

The next questions that the committee looked deeper into were “what are or might be incentives to recovery and what is the evidentiary basis for the physical, psychological, and social influences of compensation on treatment and recovery?” While exploring these questions, the committee reported that the amount of misreporting of trauma exposure would ultimately increase or that there may be an exaggeration of symptoms in order to obtain further compensation. They also agreed that if patients not suffering from PTSD reported false symptoms, that this would in turn take away much need assets for patients who were actually suffering from PTSD. However, the committee did also state that the idea of further compensation may work in some cases.

The final question that the committee explored the question of “is periodic reexamination appropriate for asymptomatic patients, as it relates to compensation?” Right away at the beginning of the research, the Department of Veteran Affairs did tell the committee that they currently do not have a set schedule in place for reexamination or reevaluations.

After conducting their research, the committee found that the VA was right in not having established across-the-board reexamination and reevaluations. The committee found that not all traumas need to be reevaluated on a timely basis and that instead they should be reexamined if symptoms better or worsen over time because this could lead to a change in treatment options. The committee did however suggest that the VA does reexamine their more extreme cases to ensure that their treatment plans are working in some manner.

Overall, the committee did recommend that the Department of Veterans Affairs continue the evaluation of their recovery strategies. The committee also recommended that the VA should determine guidance criteria for PTSD reevaluations and that they should conduct more data gathering for gender-based traumas.

## Conclusions from Findings:

After finishing their assessment of the current PTSD evaluation process, the methods for establishing PTSD compensation, and the support strategies for PTSD recovery, the Committee of Veteran’s Compensation for Posttraumatic Stress Disorder created a list of overall takeaways from the analysis. These overarching suggestions were the committee’s recommendations to bettering the overall PTSD compensation process.

- more comprehensive and consistent assessment of veteran reports of exposure to trauma;
- more complete assessment of the presence and impact of comorbid conditions;
- the conduct of standardized psychological testing where appropriate;
- more accurate assessment of the social and vocational impacts of identified disabilities;
- evaluation of any suspected malingering or dissembling using multiple strategies including standardized tests, if appropriate, and clinical face-to-face assessment;
- more detailed documentation of the claimant’s condition to inform the rater’s decision (and thus potentially lead to better and more consistent decisions); and
- an informed, case-specific determination of whether reexamination is appropriate and, if so, when.

(Institute of Medicine and National Research Council, 2007)

## Conclusions from the book:

Overall, I found this literature very beneficial in better understanding the evaluation process for Post-Traumatic Stress Disorder compensation. This literature has given me a better understanding of the overall process of how a soldier may be admitted to my proposed facility.

This literature also gave me insight into the possible shortcomings of the Department of Veteran Affairs’ recovery strategies, along with recommendations on how to possibly fix these issues. These suggested changes and treatment options have, therefore, given me a better understanding of what processes and procedures may be carried out inside my facility, so that I may better accommodate them within my design.

***Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans***

Lisa Sundahl Patt, M.S., Sheila J. Bosch, Ph. D., and Daejin Kim, Ph.D.

*Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans* is a case study analysis report that was conducted by several of the nation’s leading design academics; Lisa Sundahl Patt, M.S., Sheila J. Bosch, Ph. D., and Daejin Kim, Ph.D. Through this report, they look at what might a framework for person-centered interiors may look like when it comes to a veteran-specific mental healthcare facility. In order to obtain data for this research, the academics had to conduct a literature review, the best practices review; as well as looked at three current Department of Veteran Affairs (VA) facilities that provide care for veterans who suffer from Post-Traumatic Stress Disorder (PTSD). The three facilities they looked at include the: VA Tennessee Valley Healthcare System (VA-TVHS) in Nashville, TN, the VA Ann Arbor Healthcare System (VAAAHS) in Ann Arbor, MI, and the VANJHCS East Orange and Lyons campuses. Through this research, the academics were able to produce a baseline framework that should be used in tangent with the current VA Healing Environment Design Guidelines when designing person-centered mental health interiors for veteran-specific facilities.

Before starting their comparative case studies, the research group knew that they had to establish a baseline of current design standards, Therefore, the researchers conducted several literature reviews on current person-centered design research, along with reviewing current best practice methods used inside mental health facilities. After concluding this portion of the research, the group was then able to better select their three case study locations based on current design criteria and treatment methods.

While observing and researching their chosen case study facilities, the researchers used a number of different design/research methods such as group interviews, ideation sessions, design charrettes, codesign sessions, and listening sessions; to gain a better understanding of user’s needs/wants when it comes to designing for person-centered mental health interiors. These methods not only gave the researchers better insight into current design means, but it also gave them the tools needed to establish a baseline framework that should be used in tangent with the current VA Healing Environment Design Guidelines. These comparative case studies also helped the researchers define six domains (involve, protect, engage, comfort, personalize, and sustain) of design to consider during the design process. They

found that if all six domains were considered when designing a person-centered mental health facility, it would increase the likeliness of positive outcomes in a veteran-specific mental health facility.



Figure 41: Six Domains of Person-Centered Mental Health Design | Sundahl Platt M.S., Bosch Ph.D., & Kim Ph.D.

**Six Domains:**

**Involve:** The group found that if end users are involved throughout the design process, the design would in-turn create a better environment for person-centered care. Through the use of listening sessions and open-ended questions such as “How does the environment of care design support patient preferences regarding activities?” and “How does the current environment’s design allow patients to connect with nature?” The group was able to determine that to create a nurturing environment for veterans, the designer must first understand the needs of the veteran’s experience. This in-turn helped the group solidify the idea of involvement as one of the design domains.

**Protect:** The group was able to define protective design as “strategies are those that reduce environmental hazards, minimize the risks of suicide, optimize staff-to-patient visibility,

reduce staff stress, provide appropriate acoustical privacy, and protect patients' dignity." (Sundahl Platt M.S., Bosch Ph.D., & Kim Ph.D.). To better understand the current protective design strategies used, the researchers referred to the VA's current safety tools such as the Patient Safety Assessment Tool (PSAT) and the Mental Health Environment of Care Checklist (MHEOCC) in order to assess current safety measures. The group also conducted several listening sessions with both veterans and staff members to understand both sides of safety concerns.

The group also found that designers must pay close attention when it comes to choosing building fixtures and furniture. It is their responsibility to balance both safety and recovery in the best means possible. Not only is it their job to ensure the safety of patients and staff from potential dangers, but it is also their duty to create a welcoming and healing environment.

**Engage:** Through their research, the group found that it is vitally important to design spaces that allow for multiple levels of engagement between staff-to-patients and patients-to-patients, as well as allowing the patients the opportunity to disengage whenever necessary. The group found that when designing for Staff-to-Patient engagement, an open nurse's station concept creates a more welcoming environment for patients. However, they also found that this concept does put some staff members on alert due to its presented increase in safety risk. Therefore, the group does recommend that designers provide additional spaces that staff may go to when conducting private work or when there is an apparent risk to their safety.

When designing for Patients-to-Patient engagement, the group found that it is important to design for multiple levels of engagement. This will allow patients to interact in different group sizes when they feel comfortable, but it will also allow them to retreat to private spaces when needed. The group also spoke about the importance of giving patients the ability to lock their room doors when needed in order to feel safe and secure. However, the group also cautioned designers that they must also provide staff members with manual override abilities in the case that they fear for the patients' health, welfare, or safety.

**Comfort:** During their research, the group found several pieces of literature that discussed the importance of comfort within a mental healthcare facility. They found that the use of residential scale, artificial and natural lighting strategies, flexible spaces, and welcoming

design strategies create an overall comfortable environment for healing.

**Personalize:** One of the most important and easiest design domains that the group found during their research was personalization. The group found that by allowing the patient to personalize their surroundings to the fullest extent possible, they are then able to develop a greater sense of home and comfortability while at the facility.

**Sustain:** For the final domain "sustain" the group determined the importance of design spaces that address the importance of the patients' well-being. The group also focused on strategies that "optimize the acoustical environment, air quality, and other ambient conditions." (Sundahl Platt M.S., Bosch Ph.D., & Kim Ph.D.).

### Conclusions From The Report:

Overall, I found that this literature was helpful in better understanding of how literature reviews and comparative case study research can help lead to establishing a framework for designing mental healthcare interiors. This article also helped bring light to the current challenges for designing mental healthcare facilities. Currently, there is very limited research pertaining to mental healthcare design that designers may refer to. Designers are currently left to conducting their research through group interviews and listening sessions, or through case study analysis of current mental healthcare facilities. Therefore, this report will be a very helpful document for designers to refer to for years to come. It will also be a living tool that designers and researchers may make changes to as they learn more about what does and does not work in mental health care design.

### ***Investigating Architecture And Space Design Considerations For Post-Traumatic Stress Disorder (PTSD) Patients***

**Kunal Khanade, Carolina Rodriguez-Paras, Farzan Sasangohar, and Sarah Lawley**

Investigating Architecture And Space Design Considerations For Post-Traumatic Stress Disorder (PTSD) Patients is a semi-structured interview study conducted by Kunal Khanade, Carolina Rodriguez-Paras, Farzan Sasangohar, and Sarah Lawley. This study consisted of five veteran participants from Project HERO, each participant had different affiliations within the United State military, as well as range in Department of Veteran Affairs disability ratings (between 30%-100%.) The goal of the interview study was to gain a better understanding of how architectural and urban design features affect Post-Traumatic Stress Disorder (PTSD) patients.

For the interview study, each of the participants was asked a series of three open-ended questions. The purpose of these interview questions was to provoke the interviewee to think deeper about the architectural features and built environment around them so that they could then talk about the personal effects these features have on their everyday life. The questions asked to the interviewee were:

1. Can you think of about the design of buildings, rooms, doors, hallways, that result in PTSD triggers?
2. What do you think an ideal living area for PTSD patients should look like?
3. What about social areas?

The results from these interview questions were then broken down into three categories: general design considerations, considerations for private living spaces, and considerations for public spaces.

### General Design Considerations:

When it comes to designing for veterans who suffer from PTSD, designers should always consider location formality, privacy, and peers. When designing for veterans, the design should be organized with a logical system, so that veterans can familiarize themselves with the layouts quickly and be able to move around easily. Designers should also consider designing for situational awareness, the veterans in the study expressed their ability to be aware at all times. Finally, designers should design in a way that allows veterans to be with like-minded people. Veterans desire to be with peers who are going through the same hardships, as this will give them the ability for a supportive environment.

### Considerations For Private Living Spaces:

Through the interviews, the researchers also learned several important themes to consider when designing private living spaces. The interviewers found that many veterans prefer circular layouts with minimal furniture, this in-turn allows the veterans to see clearly around the room and know that there are no blind spots for potential dangers. The researchers also learned that veterans prefer living spaces with more than two exits so that in the case of an emergency, they would have multiple escape routes. However, they also learned that veterans prefer to have minimal wall openings to ensure that they are safe from outside dangers and that they can protect their indoor privacy. Some of the veterans also said that minimizing the

number of windows would help cut down on noises since unexpected loud noises can act as a trigger.

### Considerations For Public Spaces:

The researchers also learned through the interviews about the veterans' preferred public space design considerations. These considerations covered topics like familiarity with new spaces, the need for free movement through space, and the need for open spaces. One topic point, in particular, talked about how veterans prefer a space that they can anticipate other peoples' movements. This idea allows the veteran to be prepared for their next step whether it is passive or defensive. This topic also got expanded on when some veterans spoke about how they like glass walls because they allow them to see what is coming ahead. This idea also allows the veterans to prepare for their next move as they come into a new space.

The interviewees also touched on how veterans like to have building diagrams readily available so that they can familiarize themselves with the new floor plan. They also said a logical door numbering system similar to military structures can also help in identifying their locations and movements.

### Conclusions From The Interviews:

Overall, this literature was very beneficial in the understanding of how veteran suffering from Post-Traumatic Stress Disorder perceives an architectural space and its features. These interview questions allowed us to open the door into the personal connections that veterans have with certain aspects of the design that designers may just brush over since it may have a typically different stigma with other user types. Therefore, these findings were helpful in understanding the nuances in designing architectural and urban spaces and features that can help improve the experience for veterans who are suffering from PTSD.

### ***Department of Veterans Affairs Design Guide: Mental Health Facilities***

**Department of Veterans Affairs; Veterans Health Administration; and Office of Construction and Facilities Management**

Department of Veterans Affairs Design Guide: Mental Health Facilities is a design tool used to create safe, comfortable, and flexible mental healthcare facilities. It was created through partnering research between the Department of Veterans Affairs, the Veterans Health Administration, and the Office of Construction and Facilities Management. This design

guide focuses on how new state-of-the-art mental health facilities' design philosophies can directly affect both the services rendered and their efficiency, as well as the physiological impact of spaces on their users. Therefore, this guide will take a deeper look into how the facility design can impact expectations and perceptions that patients may have about themselves, facility staff, and their treatment process. This design guide additionally touches on the importance of a dynamic design process that includes not only the design team but also the staff and users of the facility.

The Department of Veterans Affairs Design Guide: Mental Health Facilities is written in a way that allows the designer to look at the different aspects of the design process. The first section is the general operational narrative, it lays out the guiding principles of fundamental recovery components; operational and planning recommendations; as well as general design recommendations. This section gives the designer a general introduction to items that should be considered throughout the entire design process, such as flexibility of spaces, the efficiency of services, patient needs, and risk reduction for both patients and staff.

The second section covered in the Department of Veterans Affairs Design Guide: Mental Health Facilities is "Planning and Design Criteria." This section covers the VA's vision and philosophies of the current three major mental healthcare facilities within the network (Inpatient Mental Health Units, Mental Health Residential Rehabilitation Treatment Program (MHRRTTP) Facility, and Outpatient Services.) This section gives key design concepts and special layout suggestions through in-depth case study analyses of current VA facilities. As well as it discusses patient and staff movement throughout the facility.

The next section discussed in the design guide is "technical narrative," this section is most beneficial to the designer, as it gives a general overview of basic industry codes and standards, site design guidelines, interior design standards, M/E/P/S system design guidelines, and many more technical aspects of the design. This section also touches on the aspect of transportation for patients, staff, food, medical supplies and samples, and other healthcare materials.

The final three sections of the Department of Veterans Affairs Design Guide: Mental Health Facilities look deeper into design standards and guidelines for the three major mental healthcare facility types. These sections show designers the current square footage criteria

for all spaces related to the facility, as well as potential layouts for the different patient rooms and support spaces.

Overall, this design guide has been a tremendous asset in understanding design choices in current Department of Veterans Affairs mental healthcare facilities. I will make sure to reference this design guide throughout the design process, however, this document will be especially important in the early design phases, as I am attempting to allocate space for each facet of the design. This guide will also be beneficial in my understanding of material selections within current VA mental healthcare facilities. Even though this guide will be an important toolkit in the design of this project, it does however not cover my exact typology. Therefore, it will have to work in tangent with additional literature and design guides for other mental healthcare facilities.

### ***VA's Mental Health Environment of Care Checklist (MHEOCC)***

#### **Department of Veterans Affairs**

*VA's Mental Health Environment of Care Checklist (MHEOCC)* is a checklist that was developed by members from the VA National Center for Patient Safety, Nursing, Safety, Environmental Management, and Interior Design fields. This tool is intended to assist healthcare staff in evaluating potential environmental hazards within the new and current Department of Veterans Affairs psychological care facilities. This care checklist has medical and safety staff members do a facility-wide safety check every six months in order to abate any new potential hazards that may allow patients to cause self-harm or harm to other patients or staff. This living safety document helps eliminate potential hazards, while also encouraging facility improvements that create a warm and healing environment.

The *VA's Mental Health Environment of Care Checklist (MHEOCC)* will be beneficial in better understanding the protective strategies used within mental healthcare facilities. Therefore, this checklist will be a great asset in the design process, by informing the designer about the aspects of safety when it comes to choosing building fixtures and furniture. This will be a crucial step because it is not only the job of the designer to ensure the safety of patients and staff from potential environmental hazards, but it is also the designer's obligation to create a welcoming and healing environment for the users.

## Literature Review Conclusions

These pieces of literature on designing mental healthcare facilities for veterans suffering from Post-Traumatic Stress Disorder are all beneficial to my design thesis. The literature *Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans* was a helpful document establishing a baseline framework for person-centered mental health interiors for veteran-specific facilities. It also serves as a design asset to be used in tangent with the *Department of Veterans Affairs Design Guide: Mental Health Facilities*. Both of these works of literature focus and expand on the importance of a dynamic design process that includes not only the design team but also the staff and users of the facility throughout the entire design process. Both pieces of literature comment on the fact that by including staff and patients early on in the design, not only do you streamline the design process but you also create a more efficient and healing environment for all users. The Literature *Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans* expresses the significance of charette based codesign and listening sessions to ensure that you accommodate all needs and wants of the user within your design.

Both the design guide and the framework research article go on to talk about how the significance of the built environment, and how it can both have a physical and psychological effect on the patients' recovery process. This idea expanded on deeper in the literature *Investigating Architecture And Space Design Considerations For Post-Traumatic Stress Disorder (PTSD) Patients*. This literature is beneficial in understanding how veterans suffering from PTSD are affected by architectural features and programming. The interviews conducted in this document helped define the personal connection that veterans may or may not have with certain design aspects. This was very helpful in better understanding the nuances in VA architecture since veterans experience features and spaces differently from typical users.

Through these reviews, I did learn that the *Department of Veterans Affairs Design Guide: Mental Health Facilities* is the most extensive document as it expands on both the guideline and standards of VA facilities as well as provides in-depth case studies of current VA mental healthcare facilities types. This design guide also touches on the important topic of how new state-of-the-art mental health facilities' philosophies can directly affect both the services rendered and their efficiency, as well as the impact on expectations and perceptions that patients may have about themselves, facility staff, and their treatment process.

The literature *VA's Mental Health Environment of Care Checklist (MHEOCC)* expanded on the protective strategies carried out within current mental healthcare facilities. This document introduced a current process that is carried out every six months in new and old VA mental healthcare facilities. This process helps medical staff members mitigate and remove potential environmental hazards that could cause harm to either the patients and/or staff. This checklist is also a great tool to be used in the design process since it can inform designers about safety aspects that should be considered when choosing building fixtures and furniture. It also helps the designer understand how to better balance comfort and safety when it comes to facility products and design.

The literature *PTSD Compensation And Military Service* is helpful in understanding the important topic of how the evaluation process for PTSD benefit compensation is carried out. This literature also touches on the process of how veterans suffering from PTSD can obtain medical assistance based on their initial benefit evaluation. The literature then went on to also exposed a few possible shortcomings within the Department of Veteran Affairs' recovery strategies, and how these issues could be fixed in future models. These suggested changes and treatment options recommended in the article gave me a better understanding of what processes and procedures may be carried out within Warrior's Ranch, and how might I accommodate these potential solutions in its overall design. So that it doesn't have the same failures as other current VA facilities have.

Reviewing these works of literature has given me the tools and insight into how architectural elements and spatial programming can directly affect the users' experience and treatment process. This literature has also shown that there currently hasn't been a Department of Veterans Affairs facility that combines these current VA design guidelines with new person-centered design research to create a more extensive design. Therefore, this literature review has shown the importance of this thesis and why it is crucial for designers to start combining multiple design strategies to create the most comprehensive healing environment possible.

# Project Justification

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Ever since watching my first thesis presentation, I knew exactly what my thesis topic had to be. So even prior to starting my fifth year, I had started researching different aspects of my thesis topic and even started interviewing family and friends about their advice on where to start. I knew from the beginning that I wanted to help our veterans in any way possible. Our veterans have given so much for us, and we will never be able to find a way to fully thank them for their service. Therefore, through my thesis research, I am striving to come up with a design that can hopefully help protect them the same way they protected us.

I come from a long line of military service, my great-grandfathers served during World War II, my grandpa served in Vietnam, both my parents, and both my in-laws served in the Air Force and the Army National Guard up until recently. Each and every one of them went through things that I can't even start to imagine, and up until only recently I never even saw it affect any of them. However, as time has gone on and the wounds have gotten deeper, I have started to see this invisible enemy start to wear down these brave men and women.

My father served in Operation Iraqi Freedom, he was deployed with the 164A Engineering Battalion to Iraq from August of 2005 until November 2006. While in Iraq, my father's unit was tasked with finding and safely detonating improvised explosive devices (I.E.D.), so that other soldiers could travel the roadways without fear of being attacked. During their tour, my father's unit accomplished their mission by successfully detonating over 400 I.E.D.s that would have been used to kill U.S. soldiers. Unfortunately, during their tour, my father's unit did lose one soldier in combat, PFC. Hermanson. PFC. Hermanson was the only casualty of the war that my father's unit suffered, however, over the next fourteen years, my father would lose nine more of his brothers to an invisible enemy that many didn't see.

As for my father, since returning from Iraq in 2006 he has suffered from minor effects of P.T.S.D. such as restless sleeping, jitteriness, and minor depression. At first, these symptoms were barely noticeable and times, and eventually, they went away (or so we thought.) However, as my father has lost more and more of his fellow brothers and sisters to a disease that is hard to detect, I have started to see these symptoms come back. Therefore, for mine and many other family's' sakes, I need to work closely with the Department of Veterans Affairs (VA) to design a welcoming and inclusive space for healing so that we can help veterans cope with their P.T.S.D. and other psychological illnesses.

# Project Justification

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Warrior's Ranch will be a mental health care treatment facility that will focus on helping veterans who are suffering from P.T.S.D. and other psychological disorders. Therefore, I plan to work closely with the Department of Veteran Affairs (VA) to explore current and experimental treatment methods that can hopefully treat these suffering veterans. The goal of this thesis is to not just show veterans how to cope with their illness for the time being, but yet, to hopefully help them overcome this disability in a way that they can later then reintegrate into society. I also don't want this project to only help veterans while they are a resident of the facility, but to create a long-lasting sense of community. This way these veterans will always have someone to reach out to if they ever have issues or just need someone to talk to. Therefore this project will also force me to think critically of how future mental healthcare facilities can be designed, and how they may invoke an everlasting sense of belonging and companionship.

Since Warrior's Ranch will be a first look into what future VA mental health facilities could look like when we put the users' needs first. Therefore, I will need to work closely with veterans, doctors, nurses, administration staff, and even current VA architects, so that I can get their input on what items need to be considered first when designing a new VA facility. I find this step very crucial because when the users and staff aren't consulted during the design process, minor components can be missed that can later lead to failure of the design as a whole. Communication is the most critical skill for a young designer, therefore my thesis will benefit me greatly in my professional development by improving my communication skills with clients and users.

*Post-Traumatic Stress Disorder and other psychological disorders affect everyone differently, and if gone untreated, it can lead the victim to the use of drugs or alcohol, or it may even make them take their own lives.*



# Historical, Social, and Cultural Context

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## **Historical**

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Post-Traumatic Stress Disorder (PTSD) is still a relatively new term, however, it has been around since man first engaged in war or other traumatic events. PTSD is a psychological disability that occurs after one experiences a traumatic event such as death, combat, physical or sexual assault, natural disaster, or any other event that one may relive after the event has concluded. Before modern psychiatry coined the term Post-Traumatic Stress Disorder, PTSD was referred to by many other names like: “nostalgia,” “soldier’s heart,” “shell shock,” and “battle fatigue.” We have even found early works of literature such as the Epic of Gilgamesh (2100 B.C.) and the Indian epic poem Ramayana (assumed 500 B.C.) that refer to people suffering from mental disorders after a trauma (Editors, 2018). However, the first reported account of mental disorders after a battle was recorded in 440 B.C. by the Greek historian Herodotus (Editors, 2018).

### Nostalgia:

The term “nostalgia” was first used in 1688 by Swiss physician Dr. Johannes Hofer. Dr. Hofer used the term to describe soldiers who suffered from sleeplessness, anxiety, and homesickness. He came up with the term by combining the Greek words “nostos” meaning homecoming and the word “algos” meaning pain (Beck, 2013).

### Soldier’s Heart (Civil War):

After Dr. Hofer coined the word “nostalgia,” many doctors started diagnosing people across Europe with it. The diagnosis finally reached the United States during the Civil War, however, it wasn’t seen as a disability but rather a sign of weakness. Many military physicians claimed that nostalgia only affected men with a “feeble mind,” and that the only cure was to publicly ridicule them. It was only after Dr. Jacob Mendez Da Costa started studying veterans after the war that he realized the long term effects of the disease. Dr. Mendez Da Costa started seeing patterns of palpitations, constricted breathing, and other cardiovascular symptoms that caused overstimulation of the heart. These symptoms ultimately lead to the illness being named “soldier’s heart.”



# Historical, Social, and Cultural Context

## Shell Shock (WWI):

As wars grew larger and more destructive, PTSD like symptoms became more and more prominent among soldiers. During the Great War (World War I,) the number of soldiers suffering from anxiety, nightmares, and impaired sight and hearing; increased dramatically. Military doctors soon named the disorder “shell shock,” due to the symptoms commonly being caused after being exposed to exploding shells (Editors, 2018). However, shortly after the war, doctors realized that these symptoms were brought on by more than exploding shells. Doctors started to see the same symptoms in soldiers who were in the war but never experienced exploding shells.

## Battle Fatigue (WWII):

During World War II, soldiers immediately started to experience the same symptoms as their predecessors of war. However this time, the PTSD-like symptoms were referred to as “battle fatigue” due to the sleeplessness, nightmares, and overall exhaustion it caused.

## Current Day PTSD:

Throughout the years following World War II, the American Psychiatric Associations (APA) added and removed PTSD symptoms on their Diagnostic and Statistical Manual of Mental Disorders (DSM.) Until finally, in their third version (DSM-III) they listed Post-Traumatic Stress Disorder as a diagnosis. Since then, PTSD symptoms and treatment options have been revised in the DSM (DSM-5 is the most current, it was released in 2013) (Editors, 2018).

Since being recognized by the APA, many professionals have started to research PTSD causes and its long term affects more. Researchers have now found that combat is not the only onset of PTSD, but that there are several causes of PTSD. They have found individuals can suffer from PTSD after they experience life-altering events like death, psychical or sexual assault, natural disaster, or any other event that one may relive after the event has concluded. According to the VA’s National Center for PTSD (2018), they estimate that about 8% of the population will have PTSD at some point in their lives. Currently, it is estimated that between 11-20 out of every hundred veterans who served in either Operation Iraqi Freedom (OIF) or Operation Enduring Freedom (OEF) suffer from PTSD in a given year. (National Center for PTSD, 2018).

# Historical, Social, and Cultural Context

## **Social**

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### Psychology of PTSD and Mental Health:

Post-Traumatic Stress Disorder (PTSD) is a psychiatric disorder that may occur in people who have experienced or witnessed a traumatic event. PTSD can affect anyone regardless of sex, ethnicity, or culture; however, it is estimated that women are twice as likely as men to develop PTSD. Trends have also shown that American Indians, American Latinos, and African Americans suffer higher rates of PTSD compared to white non-Hispanics. It is also estimated that one in eleven people in the United States will be diagnosed with PTSD in their lifetime (American Psychiatric Association, 2020).

Individuals suffering from PTSD typically have intense, disturbing thoughts and feelings related to their traumatic event. These people may relive this memory over and over again through flashbacks and/or nightmares. These experiences can lead to a number of symptoms that can affect the individual for the rest of their life. PTSD symptoms can include sudden anger, sadness, fear, emotional numbness, difficulties in relationships, detached or estranged from other people, and drug and alcohol dependence. These symptoms can also be “triggered” through situations that remind the individual of their trauma, loud unexpected noises, large crowds, accidental touches, and encountering certain objects related to their trauma. (American Psychiatric Association, 2020)

### PTSD Treatment:

The Department of Veterans Affairs (VA) currently offers three forms of trauma-focused therapy to help treat PTSD. These treatment options include prolonged exposure therapy, cognitive processing therapy (CPT), and eye movement desensitization and reprocessing (EMDR), as well as a combination of the three. (Department of Veterans Affairs, 2020)

Cognitive processing therapy (CPT) was developed by Dr. Patricia Resick in the late 1980s. This 12-session cognitive-behavioral treatment involves psychological treatments that attempt to change thinking patterns, in hopes that the patient will then understand how certain thoughts about the trauma cause stress and make symptoms worse. Prolonged exposure therapy is a treatment method created by VA researchers in 2013. The purpose of this treatment method is to expose the patient to their traumatic events’ memory in

# Historical, Social, and Cultural Context

a controlled environment enough so that eventually the event becomes less fearful. Eye movement desensitization and reprocessing (EMDR) is a treatment method in which the patient tries to focus on items in their environment when they think or talk about their trauma. Through this process, researchers are hoping that when patients focus on other stimuli like eye movements, hand taps, and sounds, that they will then not focus on the full extent of the trauma. VA researchers also encourage that all treatment methods are to be done in tangent with other types to increase chances of healing. Researchers currently don't have all the needed information about PTSD, therefore treatment methods are always being changed to suit different scenarios. (Department of Veterans Affairs, 2020)

There are also has several other types of treatment options out there for veterans, such as present-centered therapy, theta-burst transcranial magnetic stimulation, stellate ganglion block, service dogs, horse therapy, and medical marijuana. The Department of Veterans Affairs is also experimenting with homeopathic/non-traditional treatment options such as meditation, massage therapy, and acupuncture.

## **Cultural**

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### Department of Veteran Affairs (VA):

The Department of Veteran Affairs (VA) is currently still the number one leader in providing healthcare services to United States veterans who are suffering from PTSD, other psychological disorders, and physical ailments. VA researchers and medical staff continue to work tirelessly with the National Center for PTSD and the National PTSD Brain Bank to help better understand the symptoms and long term affects that PTSD has on someone.

### Dickinson:

The city of Dickinson, North Dakota has a population of 23,133 residents. The median household income among residents is \$68,718, with a median household value of \$238,000. The population is approximately 90% white, with 2.4% African American, 1.8% Native American, 6.1% Hispanic, and 1.5% Asian (United States Census Bureau, 2020). Due to Dickinson's population size, it will be able to offer the residents and staff easy access to emergency and trauma centers, grocery stores, and other local amenities; along with, providing the staff with nearby housing in one of North Dakota's largest cities.

# Historical, Social, and Cultural Context

### Edward Arthur Patterson Lake:

Edward Arthur Patterson Lake is a reservoir along the Heart River located roughly 1.5 miles southwest of the city of Dickinson, ND. The Lake services the Dickinson area with municipal water supply, farmland irrigation, and flood control. The lake's public areas are open seven days a week for camping, fishing, and water recreational activities. The construction of Edward Arthur Patterson Lake's dam was finished in May of 1952, and a spillway was added in 1981. Edward Arthur Patterson Lake's reservoir has approximately 1,191 water surface acres, 1,276 land acres, and almost 22 miles of shoreline (United States Bureau of Reclamation, 2020).



Figure 42: Traffic Map | Personal Diagram

## **Traffic Study:**

Overall, the site experiences minimal traffic due to its rural location. The site's main vehicular access point is off of 39th Street SW, which is the main thoroughfare for residents of the nearby developments. The site is located far enough from 39th Street SW that it should not be affected.

The Site does have a pedestrian walking/hiking trail nearby that encompasses the entirety of Edward Arthur Paterson Lake shoreline. I will use this trail system as I develop outdoor amenities.



Figure 43: Edward Arthur Patterson Lake | Google Earth

## Dickinson Dam and Reservoir :

**Water Surface Area:** 1,191 acres

**Land Area:** 1,276 acres

**Shoreline:** 22 miles

Dickinson Dam and Reservoir (Edward Arthur Patterson Lake) is located along the Heart River 1.5 miles west of Dickinson, ND. Edward Arthur Patterson Lake was authorized by the senate on December 22, 1944, and construction lasted from March of 1949 until May of 1952. The reservoir added a spillway in 1981, increasing the available water supply for the city of Dickinson. Edward Arthur Patterson Lake services the Dickinson area with flood control, fish and wildlife, and recreational benefits. (United States Bureau of Reclamation, 2020)



Figure 44: Slope Map | Personal Diagram

## Slope:

The overall slope of the site is minimal. This will benefit the design process, as there are multiple locations for suitable building placement.

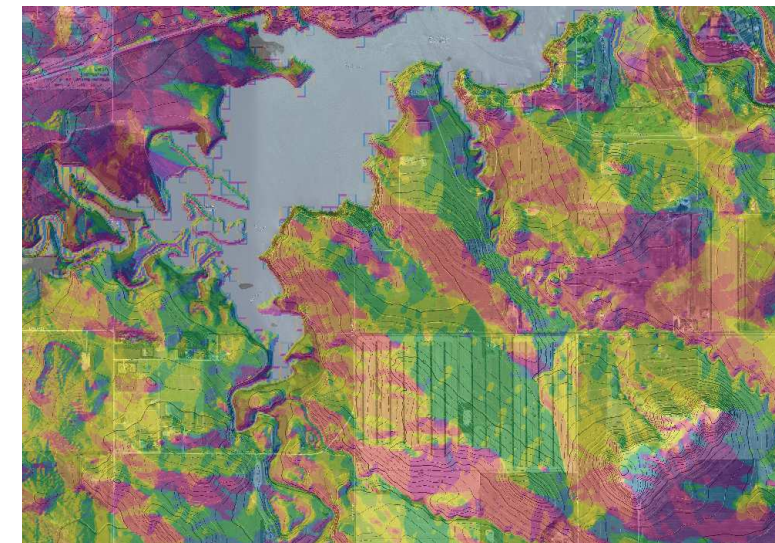


Figure 45: Elevation Map | Personal Diagram

## Elevation:

The overall elevation of the site is consistent/gradual, however, there is a steep dropoff near the shoreline. This sudden drop in elevation will have to be addressed when considering lakeside access from the site. The average elevation of the site is 2,450 feet. The highest point on the site is 2,471 and the lowest is 2,422 feet (along the shore).

## Soils:

### E0415A:

*Belfield-Daglum Complex*  
0% - 2% Slope

### E1333C:

*Vebar-Cohagen Fine Sandy Loams*  
6% - 9% Slope

### E2107A:

*Arnegard Loam*  
2% - 6% Slope

### E2145A:

*Shambo Loam*  
0% - 2% Slope

### E2145B:

*Shambo Loam*  
2% - 6% Slope

### E2601D:

*Amror-Cabba Loams*  
9% - 15% Slope



Figure 46: Soils Map | Personal Diagram



Figure 47: Zoning Map | Personal Diagram

## Zoning:

The site is currently zoned as AG – Agricultural. This zone does not permit healthcare facilities, therefore, I will have to rezone the lots. The current Dickinson Zoning Code permits healthcare developments within LC – Limited Commercial, CC – Community Commercial, GC – General Commercial, LI – Limited Industrial, and GI – General Industrial. I will choose to rezone my site as General Commercial, due to the other similar permitted uses within this zoning district.

## Climate:

### Temperature

Avg. Spring: 54.2° F | 29.4° F  
 Avg. Summer: 80.7° F | 52.5° F  
 Avg. Fall: 55.9° F | 31.1° F  
 Avg. Winter: 28.4° F | 8° F

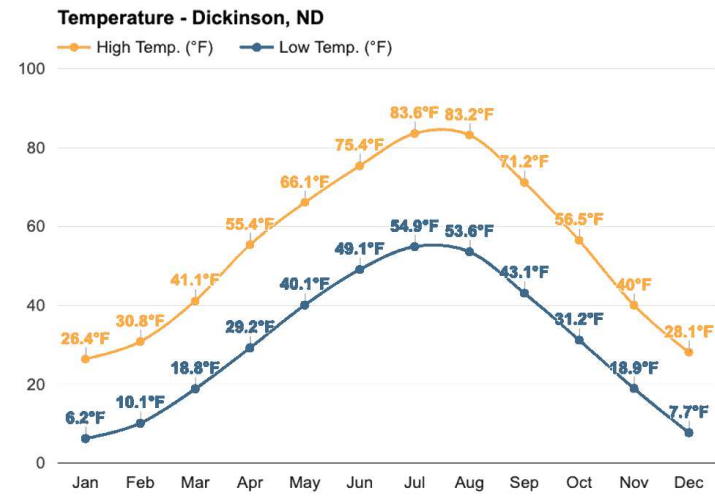


Figure 48 : Temperature Chart | Weather Atlas

### Rainfall

Avg. Spring: 1.5”  
 Avg. Summer: 2.4”  
 Avg. Fall: 1.1”  
 Avg. Winter: 0.3”

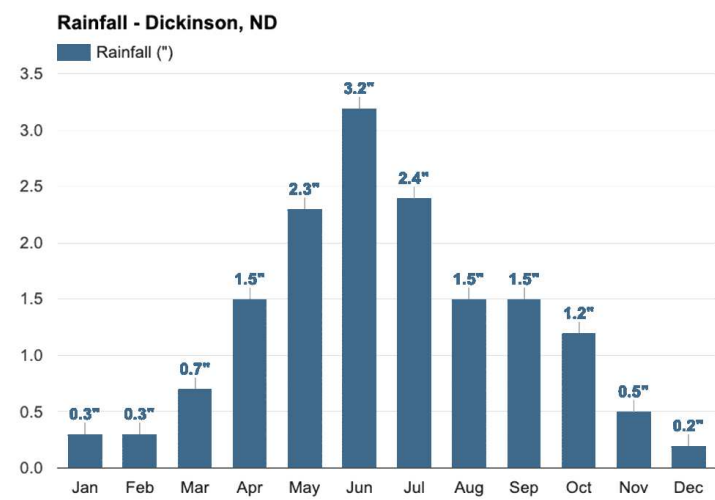


Figure 49 : Rainfall Chart | Weather Atlas

### Snow

Avg. Spring: 3.8”  
 Avg. Summer: 0”  
 Avg. Fall: 2.5”  
 Avg. Winter: 4.9”

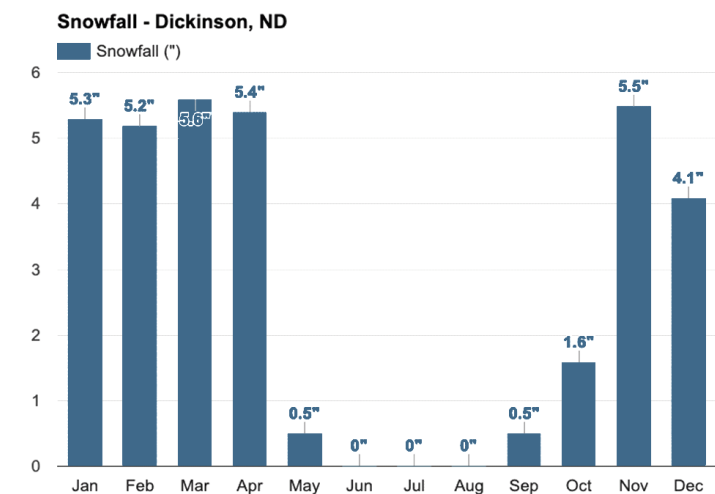


Figure 50 : Snowfall Chart | Weather Atlas

### Daylight hours / Sunshine hours - Dickinson, ND

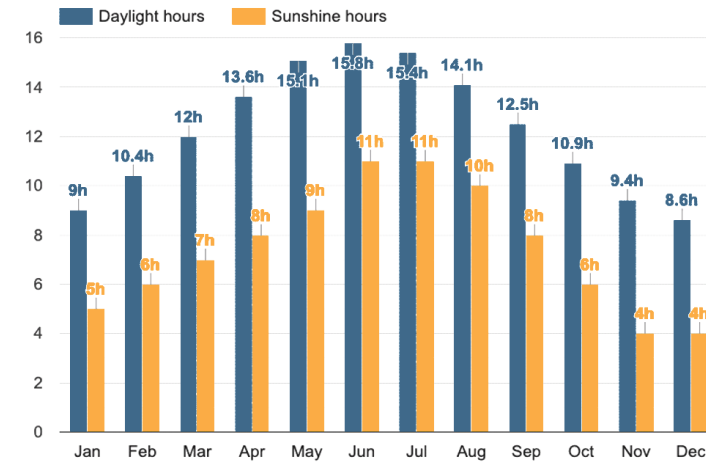


Figure 51 : Daylight Hours Chart | Weather Atlas



Figure 52 : Sun Path Map | Personal Diagram

## Solar:

The longest days of the year are in the month of June averaging 15.8 hours of daylight, and the shortest days of the year are in the month of December averaging 8.6 hours of daylight. The long hours of daylight will be beneficial in sustainable measures such as passive heating and daylighting within the building. The increased number of summer daylight hours will also be beneficial to the psychological health of the patients. However, the design will have to consider artificial lighting treatments during the winter months, since the amount of daylight hours is nearly cut in half.

# Site Analysis

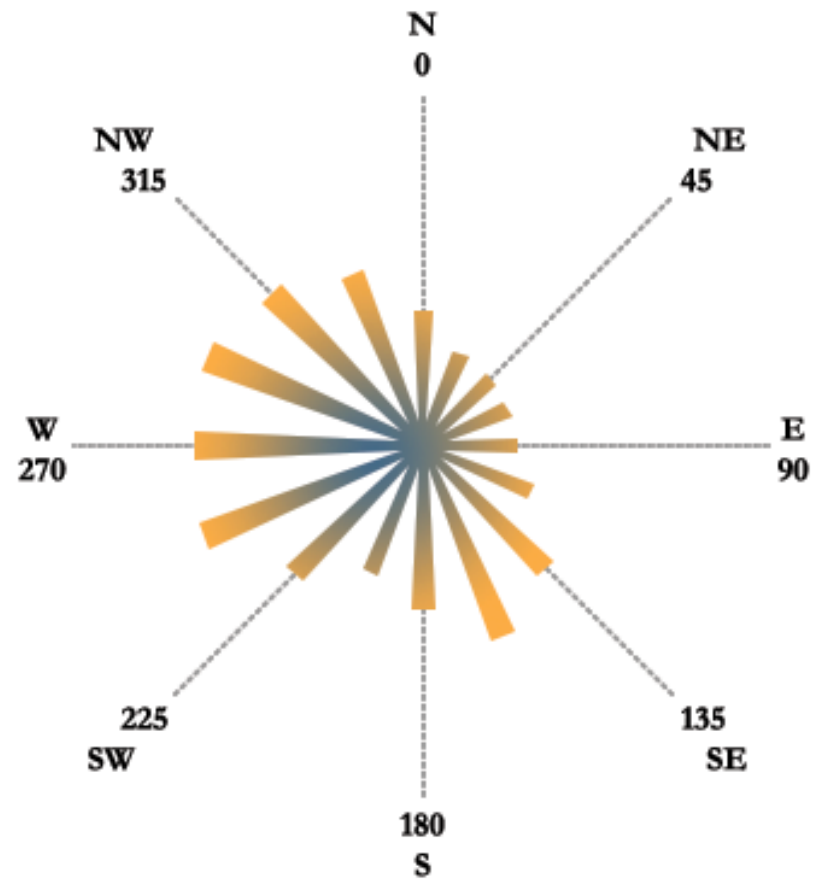


Figure 53 : Annual Wind Rose | Personal Diagram

## Annual Wind Rose

### Wind Study:

Average wind speed throughout the year is between 15 – 21 mph with the wind primarily coming from the WNW during winter months and the SSE during summer months. The high winds will be beneficial in passive cooling strategies during the warmer months, however, they can also cause heating issues during the colder months of the year. Therefore, I will implement several natural barriers to help reduce wind effects on the site (wind erosion and cooling) while also keeping the site esthetically pleasing and maintaining scenic views of the lake.

# Site Analysis

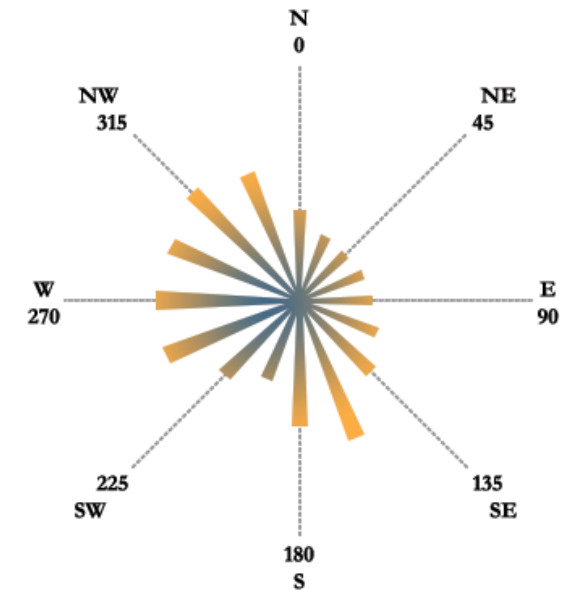


Figure 54 : March Wind Rose | Personal Diagram

## March



Figure 56 : September Wind Rose | Personal Diagram

## September

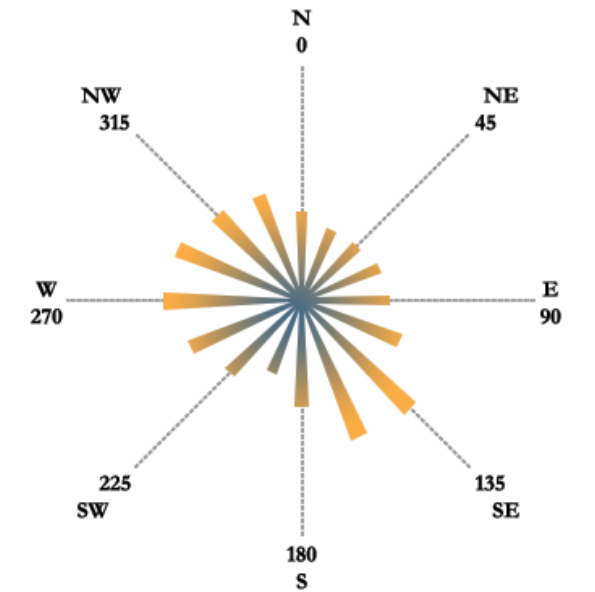


Figure 55 : June Wind Rose | Personal Diagram

## June

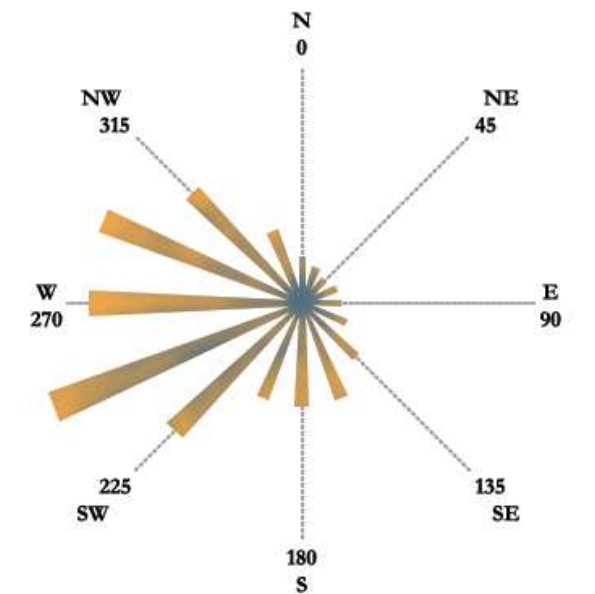


Figure 57 : December Wind Rose | Personal Diagram

## December





Figure 58 : Site Analysis Map | Personal Diagram



Figure 59 : Site Analysis | Personal Image



Figure 60 : Site Analysis | Personal Image



Figure 61 : Site Analysis | Personal Image



Figure 62 : Site Analysis | Personal Image



Figure 63 : Site Analysis | Personal Image



Figure 64 : Site Analysis | Personal Image



Image 07

Figure 65 : Site Analysis | Personal Image



Image 08

Figure 66 : Site Analysis | Personal Image



Image 13

Figure 71 : Site Analysis | Personal Image



Image 14

Figure 72 : Site Analysis | Personal Image



Image 09

Figure 67 : Site Analysis | Personal Image



Image 10

Figure 68 : Site Analysis | Personal Image



Image 15

Figure 73 : Site Analysis | Personal Image



Image 16

Figure 74 : Site Analysis | Personal Image



Image 11

Figure 69 : Site Analysis | Personal Image



Image 12

Figure 70 : Site Analysis | Personal Image



Image 17

Figure 75 : Site Analysis | Personal Image



Image 18

Figure 76 : Site Analysis | Personal Image



Image 19



Image 20

Figure 77 : Site Analysis | Personal Image

Figure 78 : Site Analysis | Personal Image



Image 21



Image 22

Figure 79 : Site Analysis | Personal Image

Figure 80 : Site Analysis | Personal Image



Figure 81 : Site Analysis Map | Personal Diagram



Image 23

Figure 82 : Site Analysis | Personal Image



Image 24

Figure 83 : Site Analysis | Personal Image



Image 25

Figure 84 : Site Analysis | Personal Image



Image 26

Figure 85 : Site Analysis | Personal Image



Image 27

Figure 86 : Site Analysis | Personal Image



Image 28

Figure 87 : Site Analysis | Personal Image

# Performance Criteria / Space Allocation

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## Performance Measure & Analysis

Throughout my design process, I will focus on three main areas of performance. The first and most important design aspect in my opinion is the healing aspect of the space. Throughout the design process, I will have to measure the psychological impact a space invokes on the user through countless surveys before, during, and after virtual walkthroughs of mock-up spaces. The data collected will then help me distinguish potential “triggers” in any given space, and in turn, allow me to redesign the space without them. This will be the most crucial step in the design process to ensure that the spaces I create invoke a sense of belonging and healing for the user, instead of triggering past traumas.

The second area of focus will be on the environmental impact of the design. This will allow me to see how my design may relate to the surrounding context through both potential views and hours of natural daylighting. The use of both local and state GIS mapping software along with the use of Autodesk Insight will assist me in finding this data. The aspect of environmental impact is also a major focus of the design so that I may anticipate the potential “scaring” of the landscape that my building may produce. This will be an important analysis since I want to seamlessly place my building into the natural landscape so that I can encourage healing through nature. Therefore, my goal is to cause minimal environmental scaring so that I may preserve the natural context.

My final area of focus will be on the potential energy consumption of my building. Throughout early design steps and initial site design layouts, I will frequently refer to building performance software such as Autodesk Insight, Autodesk Green Building Studio, and other energy analysis software to measure potential heat gains, passive cooling feasibility, and daylighting hours. This will be a crucial step in the design process as I strive to design a healthcare facility that exceeds double LEED Gold certification.



# Performance Criteria / Space Allocation

| Area           | Small        |               |              | Medium       |               |              | Large        |              |              |
|----------------|--------------|---------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|
|                | S.F.         | Public %      | Building %   | S.F.         | Public %      | Building %   | S.F.         | Public %     | Building %   |
| <b>Public</b>  |              |               |              |              |               |              |              |              |              |
| Reception Area | 150          | 3.0%          | 0.9%         | 300          | 4.5%          | 1.4%         | 300          | 3.5%         | 1.2%         |
| Visitor Rooms  | 300          | 6.1%          | 1.7%         | 450          | 6.8%          | 2.1%         | 600          | 7.1%         | 2.4%         |
| Dining Area    | 360          | 7.3%          | 2.1%         | 465          | 7.0%          | 2.2%         | 465          | 5.5%         | 1.8%         |
| Kitchen        | 1,200        | 24.4%         | 6.9%         | 1,200        | 18.0%         | 5.7%         | 1,200        | 14.1%        | 4.7%         |
| Work Out Room  | 600          | 12.2%         | 3.4%         | 600          | 9.0%          | 2.8%         | 1,200        | 14.1%        | 4.7%         |
| TV / Game Room | 264          | 5.4%          | 1.5%         | 360          | 5.4%          | 1.7%         | 360          |              | 1.4%         |
| Theatre        | 84           | 1.7%          | 0.5%         | 180          | 2.7%          | 0.9%         | 180          | 2.1%         | 0.7%         |
| Chapel         | 168          | 3.4%          | 1.0%         | 408          | 6.1%          | 1.9%         | 600          | 7.1%         | 2.4%         |
| Library        | 900          | 18.3%         | 5.2%         | 900          | 13.5%         | 4.3%         | 1,800        | 21.2%        | 7.1%         |
| Maker Space    | 900          | 18.3%         | 5.2%         | 1,800        | 27.0%         | 8.5%         | 1,800        | 21.2%        | 7.1%         |
| <b>Totals</b>  | <b>4,926</b> | <b>100.0%</b> | <b>28.2%</b> | <b>6,663</b> | <b>100.0%</b> | <b>31.5%</b> | <b>8,505</b> | <b>95.8%</b> | <b>33.6%</b> |

| Area             | Small        |               |              | Medium       |               |              | Large        |               |              |
|------------------|--------------|---------------|--------------|--------------|---------------|--------------|--------------|---------------|--------------|
|                  | S.F.         | Private %     | Building %   | S.F.         | Private %     | Building %   | S.F.         | Private %     | Building %   |
| <b>Private</b>   |              |               |              |              |               |              |              |               |              |
| Resident Rooms   | 120          |               |              | 200          |               |              | 200          |               |              |
| 20 Units         | 2,400        | 42.6%         | 13.7%        | 4,000        | 52.6%         | 18.9%        | 4,000        | 50.6%         | 15.8%        |
| Exam Rooms       | 1,440        | 25.5%         | 8.2%         | 1,440        | 18.9%         | 6.8%         | 1,440        | 18.2%         | 5.7%         |
| Nurses Station   | 1,050        | 18.6%         | 6.0%         | 1,410        | 18.6%         | 6.7%         | 1,560        | 19.7%         | 6.2%         |
| Business / Admin | 300          | 5.3%          | 1.7%         | 300          | 3.9%          | 1.4%         | 450          | 5.7%          | 1.8%         |
| Security Office  | 150          | 2.7%          | 0.9%         | 150          | 2.0%          | 0.7%         | 150          | 1.9%          | 0.6%         |
| Janitor's Room   | 300          | 5.3%          | 1.7%         | 300          | 3.9%          | 1.4%         | 300          | 3.8%          | 1.2%         |
| <b>Total</b>     | <b>5,640</b> | <b>100.0%</b> | <b>32.3%</b> | <b>7,600</b> | <b>100.0%</b> | <b>35.9%</b> | <b>7,900</b> | <b>100.0%</b> | <b>31.2%</b> |

| Area                      | Small         |               |               | Medium        |               |               | Large         |               |               |
|---------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                           | S.F.          | Therapy %     | Building %    | S.F.          | Therapy %     | Building %    | S.F.          | Therapy %     | Building %    |
| <b>Therapy Spaces</b>     |               |               |               |               |               |               |               |               |               |
| Group Therapy (Large)     | 2,400         | 34.8%         | 13.7%         | 2,400         | 34.8%         | 11.3%         | 2,400         | 27.0%         | 9.5%          |
| Group Therapy (Small)     | 1,200         | 17.4%         | 6.9%          | 1,200         | 17.4%         | 5.7%          | 1,200         | 13.5%         | 4.7%          |
| Private Rooms             | 300           |               |               | 300           |               |               | 480           |               |               |
| Doctor Offices            | 1,800         | 26.1%         | 10.3%         | 1,800         | 26.1%         | 8.5%          | 2,880         | 32.4%         | 11.4%         |
| <b>Homeopathic Spaces</b> |               |               |               |               |               |               |               |               |               |
| Yoga                      | 300           | 4.3%          | 1.7%          | 300           | 4.3%          | 1.4%          | 600           | 6.8%          | 2.4%          |
| Meditation                | 600           | 8.7%          | 3.4%          | 600           | 8.7%          | 2.8%          | 600           | 6.8%          | 2.4%          |
| Misc.                     | 600           | 8.7%          | 3.4%          | 600           | 8.7%          | 2.8%          | 1,200         | 13.5%         | 4.7%          |
| <b>Total</b>              | <b>6,900</b>  | <b>100.0%</b> | <b>39.5%</b>  | <b>6,900</b>  | <b>100.0%</b> | <b>32.6%</b>  | <b>8,880</b>  | <b>100.0%</b> | <b>35.1%</b>  |
| <b>Building Totals</b>    | <b>17,466</b> | <b>-</b>      | <b>100.0%</b> | <b>21,163</b> | <b>-</b>      | <b>100.0%</b> | <b>25,285</b> | <b>-</b>      | <b>100.0%</b> |

# Performance Criteria / Space Allocation

| Area                  | Small        |               | Medium       |               | Large        |               |
|-----------------------|--------------|---------------|--------------|---------------|--------------|---------------|
|                       | S.F.         | Outdoor %     | S.F.         | Outdoor %     | S.F.         | Outdoor %     |
| <b>Outdoor Spaces</b> |              |               |              |               |              |               |
| Fire Pit              | 180          | 2.1%          | 180          | 1.9%          | 360          | 3.7%          |
| Hiking Trails         | -            | 0.0%          | -            | 0.0%          | -            | 0.0%          |
| Activity Shed         | 300          | 3.5%          | 600          | 6.3%          | 600          | 6.1%          |
| Greenhouse            | 600          | 7.1%          | 1,000        | 10.4%         | 1,000        | 10.2%         |
| Gardens               | 600          | 7.1%          | 1,000        | 10.4%         | 1,000        | 10.2%         |
| Parking Lot           | 6,800        | 80.2%         | 6,800        | 71.0%         | 6,800        | 69.7%         |
| <b>Total</b>          | <b>8,480</b> | <b>100.0%</b> | <b>9,580</b> | <b>100.0%</b> | <b>9,760</b> | <b>100.0%</b> |



Figure 88 : Space Allocation Diagram | Personal Diagram

# Performance Criteria / Space Allocation

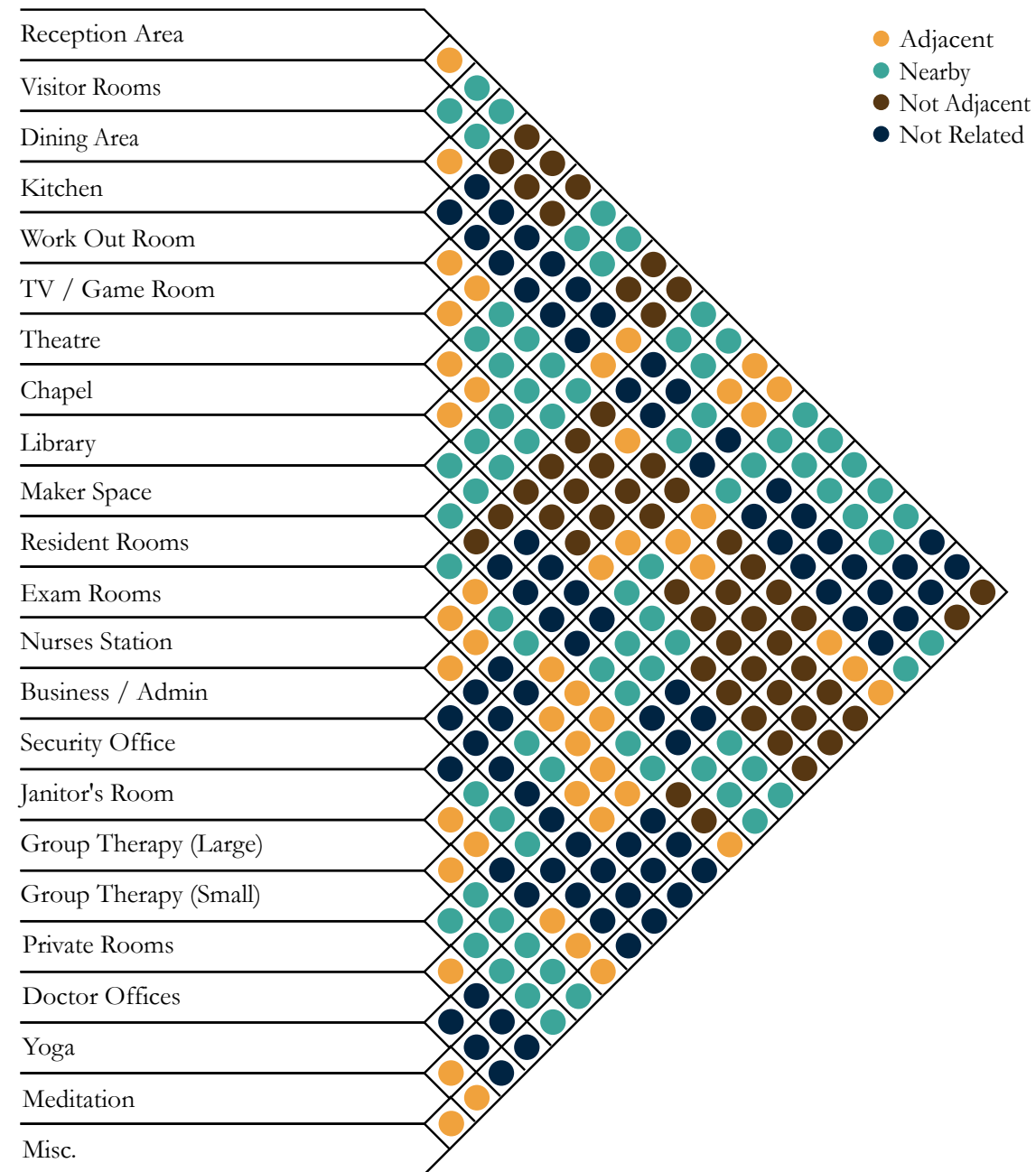
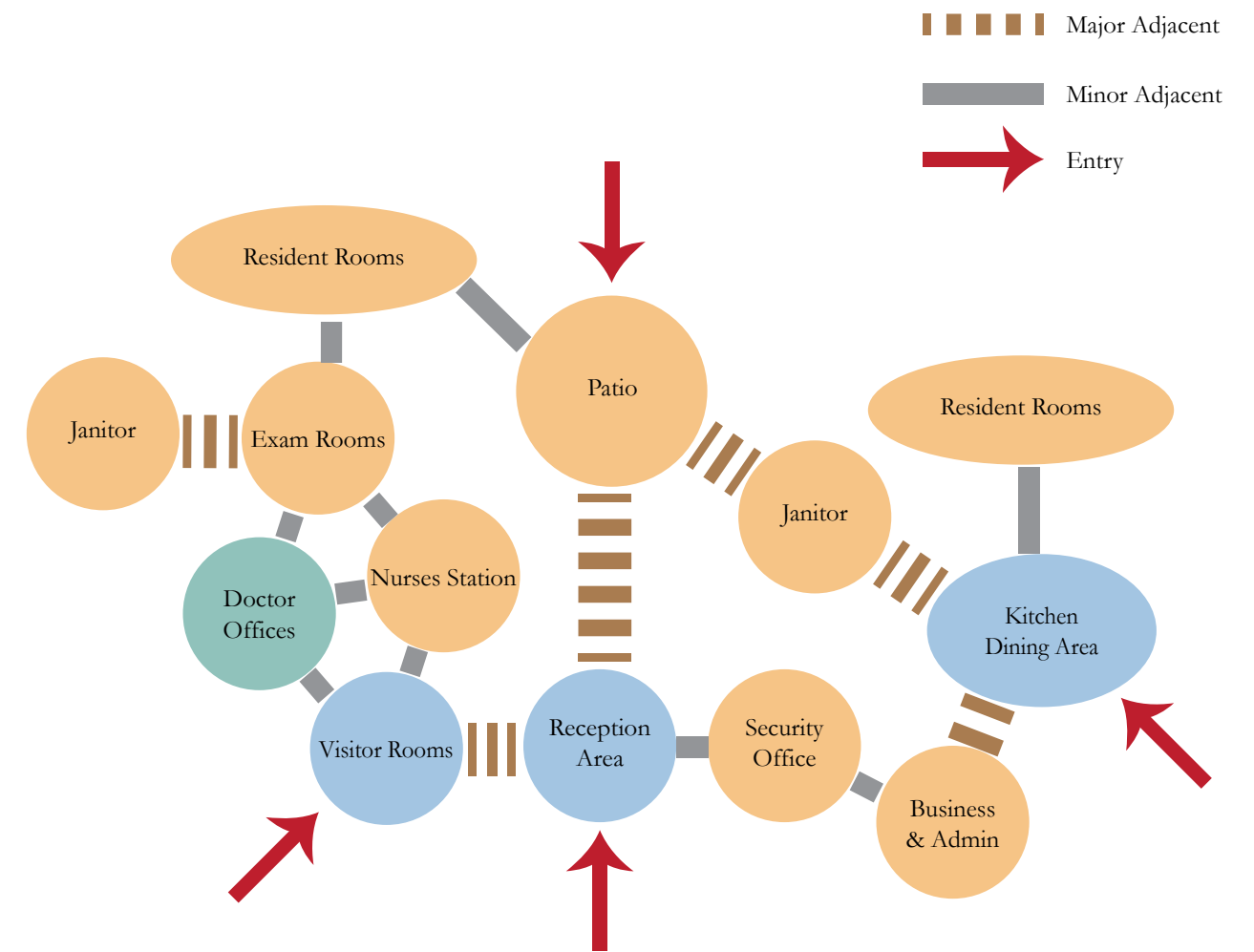
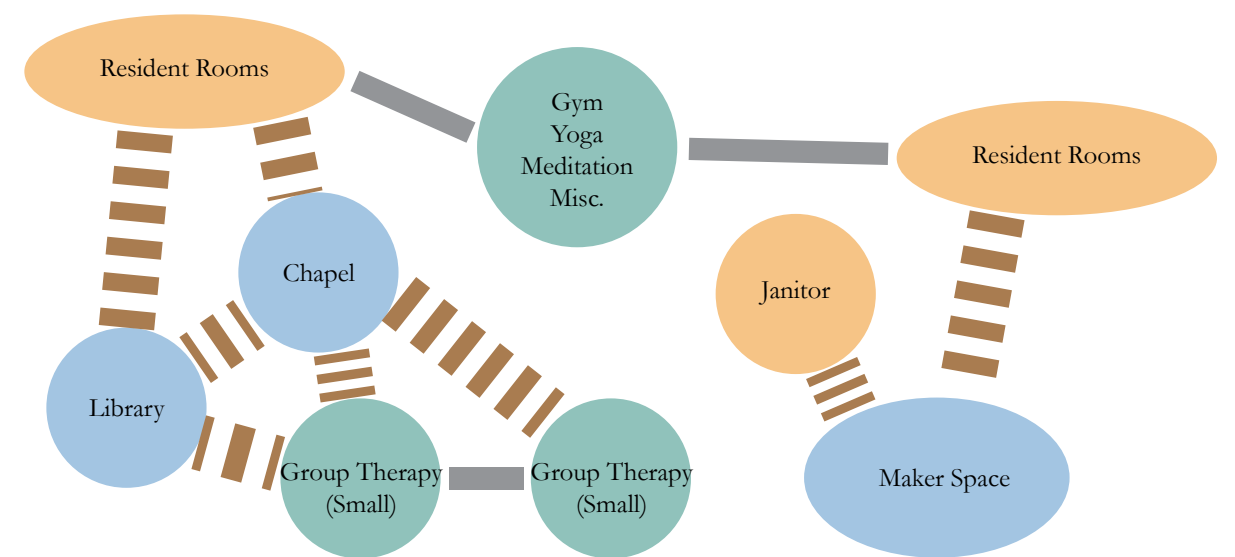


Figure 89 : Space Adjacency Matrix | Personal Diagram

# Performance Criteria / Space Allocation

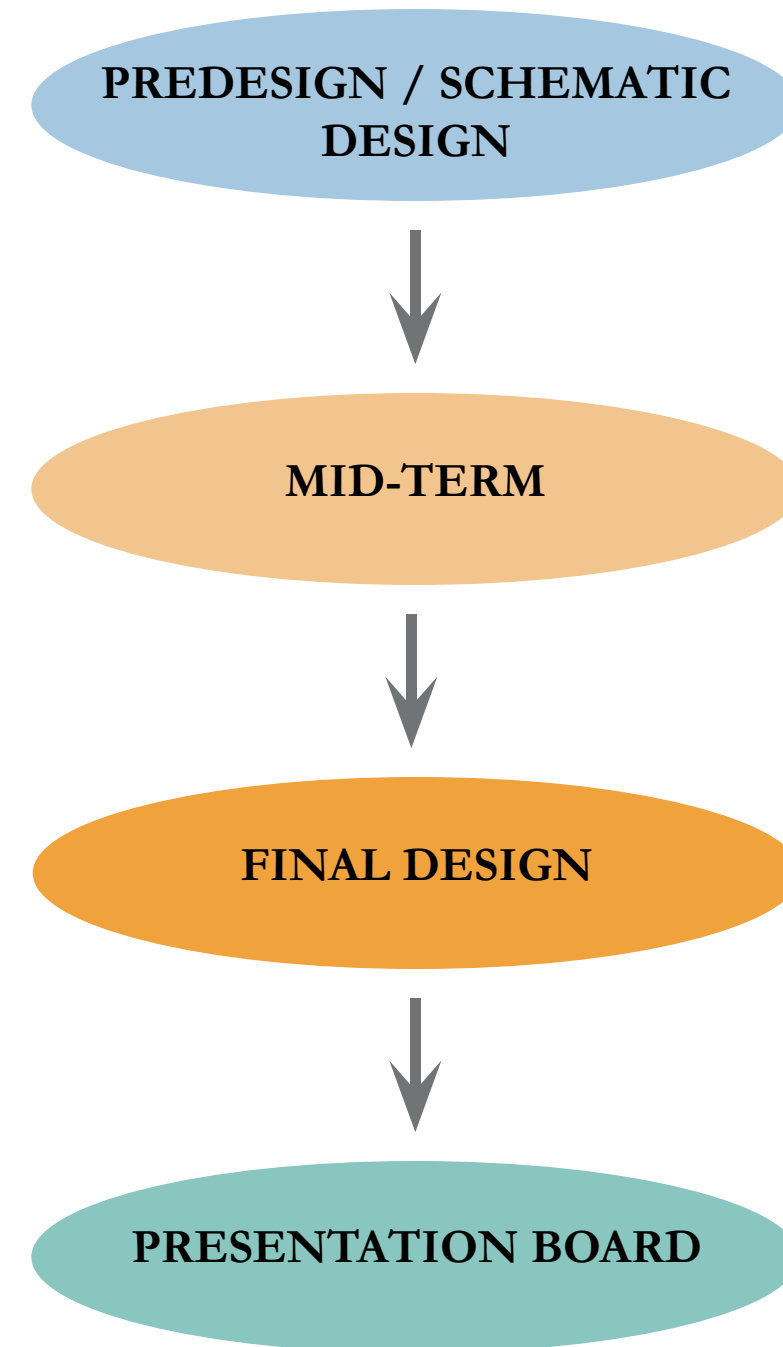


First Floor Space Diagram




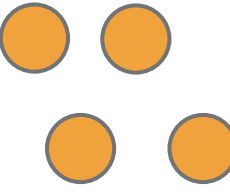

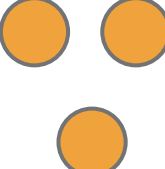







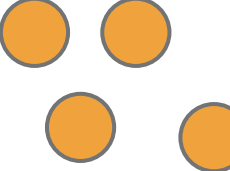
Second Floor Space Diagram

Figure 90 : Space Programming Diagram | Personal Diagram



# Evaluation Criteria

| Evaluation Criteria  |
|--|
| <p><u>Personalization &amp; Comfort:</u></p> <ul style="list-style-type: none"> <li>• Create spaces that allow veterans to feel comfortable enough to call the facility “home”</li> <li>• Allow the veterans to customize their surroundings to provide a sense of “ownership”</li> <li>• Create spaces that enable the veterans to become vulnerable</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces.</li> </ul>  |
| <p><u>Engagement:</u></p> <ul style="list-style-type: none"> <li>• Arrange living units around group spaces in order to encourage engagement with other patients and staff</li> <li>• Provide multi-layered engagement options (Patient-to-Patient, Patient-to-Staff, etc.)</li> <li>• Create spaces that enable veterans to become open and vulnerable with others “Community Belonging”</li> <li>• Introduce Traditional, Non-Traditional, and Homeopathic means of treatment</li> <li>• Create outdoor treatment options</li> </ul>   |
| <p><u>Protect:</u></p> <ul style="list-style-type: none"> <li>• Allow the veterans to customize their surroundings to provide their own line of defense against unknowns                             <ul style="list-style-type: none"> <li>• Will allow the veteran to prioritize their own living spaces in order to address the unknowns</li> </ul> </li> <li>• <b>Eliminate empty, dark spaces</b></li> <li>• Create direct sightlines from places that the veterans will frequent to entrances, exits, and areas of movement</li> <li>• Provide glazing so that veterans may see “threats,” while also limiting glazing so that “threats” can not see them</li> </ul> |
| <p><u>Long Term:</u></p> <ul style="list-style-type: none"> <li>• Provide families with the services and information to better understand early warning signs of PTSD and other psychological disorders</li> <li>• Provide long-lasting community that veterans may contact after treatment</li> <li>• Better understand current healthcare design and analyze portions for future approaches</li> <li>• Develop using healthcare facilities with the six domains of person-centered design</li> </ul>   |
| <p><u>Sustainability:</u></p> <ul style="list-style-type: none"> <li>• Minimize site alterations and destruction</li> <li>• Apply LEED and WELL thinking strategies                             <ul style="list-style-type: none"> <li>• Daylighting</li> <li>• Quality Views</li> <li>• Optimize Energy Performance</li> <li>• Passive Cooling / Heating</li> <li>• Indoor &amp; Outdoor Water Use Reduction</li> <li>• Rainwater Management</li> </ul> </li> </ul>   |

| Option #1   | Option #2   | Option #3   | Option #4 |
|---|---|---|-----------|
|    |    |   |           |
|    |    |   |           |
|    |    |    |           |
|  |  |  |           |
|  |  |   |           |



# Scheme 1

| Evaluation Criteria                   |  |
|---------------------------------------|--|
| <b>Personalization &amp; Comfort:</b> | <ul style="list-style-type: none"> <li>• Create spaces that allow veterans to feel comfortable enough to call the facility “home”</li> <li>• Allow the veterans to customize their surroundings to provide a sense of “ownership”</li> <li>• Create spaces that enable the veterans to become vulnerable</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces.</li> </ul>   |
| <b>Engagement:</b>                    | <ul style="list-style-type: none"> <li>• Arrange living units around group spaces in order to encourage engagement with other patients and staff</li> <li>• Provide multi-layered engagement options (Patient-to-Patient, Patient-to-Staff, etc.)</li> <li>• Create spaces that enable veterans to become open and vulnerable with others “Community Belonging”</li> <li>• Introduce Traditional, Non-Traditional, and Homeopathic means of treatment</li> <li>• Create outdoor treatment options</li> </ul>   |
| <b>Protect:</b>                       | <ul style="list-style-type: none"> <li>• Allow the veterans to customize their surroundings to provide their own line of defense against unknowns                             <ul style="list-style-type: none"> <li>• Will allow the veteran to prioritize their own living spaces in order to address the unknowns</li> </ul> </li> <li>• Eliminate empty, dark spaces</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Provide glazing so that veterans may see “threats,” while also limiting glazing so that “threats” can not see them</li> </ul> |
| <b>Long Term:</b>                     | <ul style="list-style-type: none"> <li>• Provide families with the services and information to better understand early warning signs of PTSD and other psychological disorders</li> <li>• Provide long-lasting community that veterans may contact after treatment</li> <li>• Better understand current healthcare design and analyze portions for future approaches</li> <li>• Develop using healthcare facilities with the six domains of person-centered design</li> </ul>  |
| <b>Sustainability:</b>                | <ul style="list-style-type: none"> <li>• Minimize site alterations and destruction</li> <li>• Apply LEED and WELL thinking strategies                             <ul style="list-style-type: none"> <li>• Daylighting</li> <li>• Quality Views</li> <li>• Optimize Energy Performance</li> <li>• Passive Cooling / Heating</li> <li>• Indoor &amp; Outdoor Water Use Reduction</li> <li>• Rainwater Management</li> </ul> </li> </ul>   |

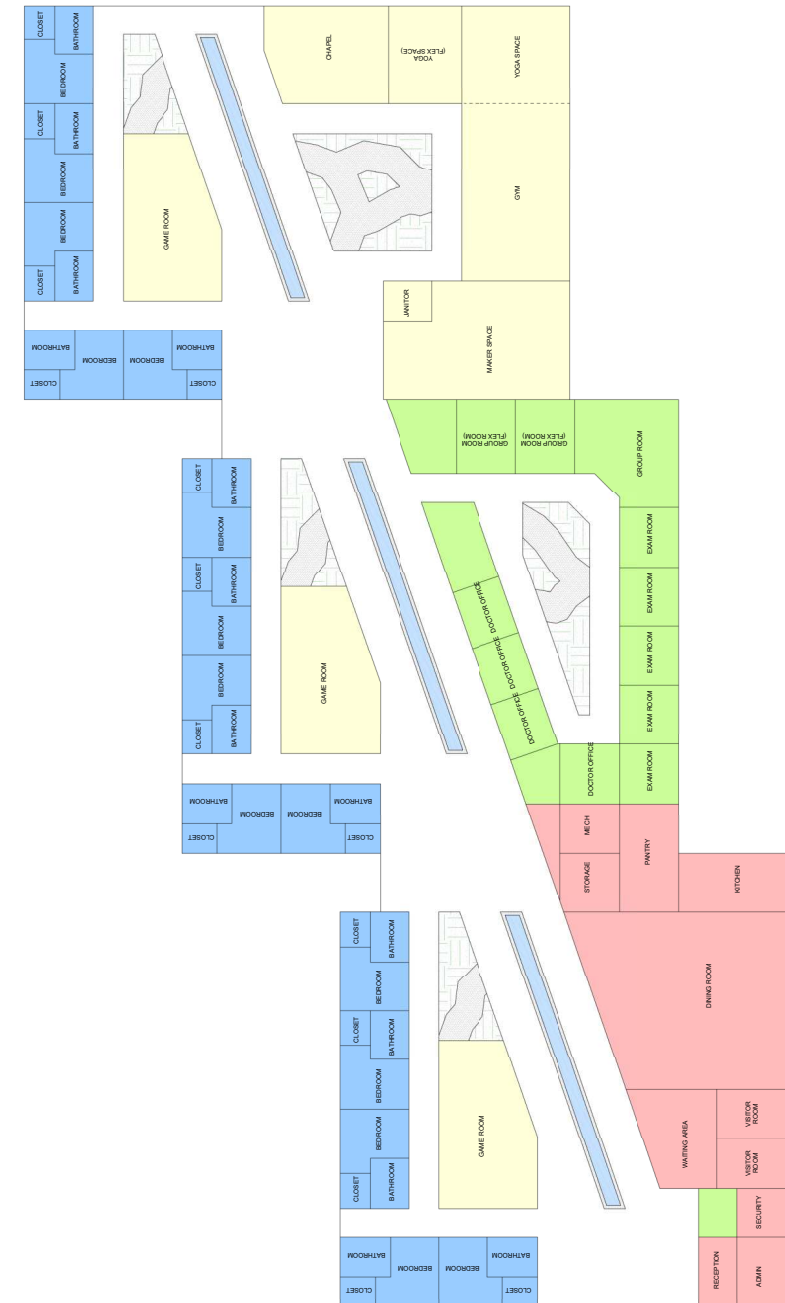


Figure 91 : Plan Option 1 | Personal Diagram

# Scheme 2

| Evaluation Criteria                   |  |
|---------------------------------------|--|
| <b>Personalization &amp; Comfort:</b> | <ul style="list-style-type: none"> <li>• Create spaces that allow veterans to feel comfortable enough to call the facility “home”</li> <li>• Allow the veterans to customize their surroundings to provide a sense of “ownership”</li> <li>• Create spaces that enable the veterans to become vulnerable</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces.</li> </ul>   |
| <b>Engagement:</b>                    | <ul style="list-style-type: none"> <li>• Arrange living units around group spaces in order to encourage engagement with other patients and staff</li> <li>• Provide multi-layered engagement options (Patient-to-Patient, Patient-to-Staff, etc.)</li> <li>• Create spaces that enable veterans to become open and vulnerable with others “Community Belonging”</li> <li>• Introduce Traditional, Non-Traditional, and Homeopathic means of treatment</li> <li>• Create outdoor treatment options</li> </ul>   |
| <b>Protect:</b>                       | <ul style="list-style-type: none"> <li>• Allow the veterans to customize their surroundings to provide their own line of defense against unknowns                             <ul style="list-style-type: none"> <li>• Will allow the veteran to prioritize their own living spaces in order to address the unknowns</li> </ul> </li> <li>• Eliminate empty, dark spaces</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Provide glazing so that veterans may see “threats,” while also limiting glazing so that “threats” can not see them</li> </ul> |
| <b>Long Term:</b>                     | <ul style="list-style-type: none"> <li>• Provide families with the services and information to better understand early warning signs of PTSD and other psychological disorders</li> <li>• Provide long-lasting community that veterans may contact after treatment</li> <li>• Better understand current healthcare design and analyze portions for future approaches</li> <li>• Develop using healthcare facilities with the six domains of person-centered design</li> </ul>  |
| <b>Sustainability:</b>                | <ul style="list-style-type: none"> <li>• Minimize site alterations and destruction</li> <li>• Apply LEED and WELL thinking strategies                             <ul style="list-style-type: none"> <li>• Daylighting</li> <li>• Quality Views</li> <li>• Optimize Energy Performance</li> <li>• Passive Cooling / Heating</li> <li>• Indoor &amp; Outdoor Water Use Reduction</li> <li>• Rainwater Management</li> </ul> </li> </ul>   |

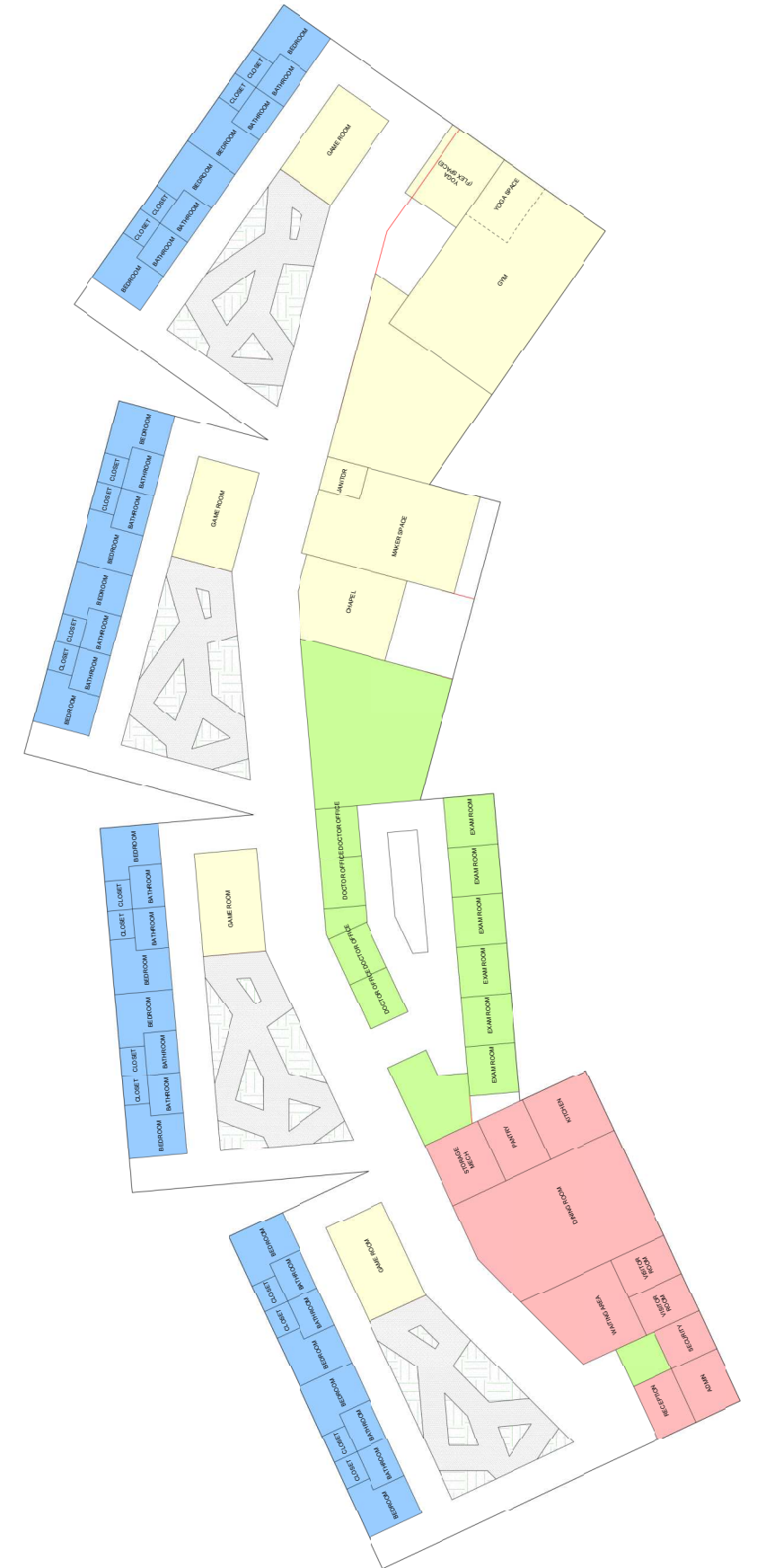


Figure 92 : Plan Option 2 | Personal Diagram

# Scheme 3

| Evaluation Criteria                   |  |
|---------------------------------------|--|
| <b>Personalization &amp; Comfort:</b> | <ul style="list-style-type: none"> <li>• Create spaces that allow veterans to feel comfortable enough to call the facility “home”</li> <li>• Allow the veterans to customize their surroundings to provide a sense of “ownership”</li> <li>• Create spaces that enable the veterans to become vulnerable</li> <li>• Create direct sightlines from frequented areas to entrances, exits, and areas of movement</li> <li>• Give the veterans and staff the ability to control artificial lighting levels as well as direct daylighting into spaces.</li> </ul>   |
| <b>Engagement:</b>                    | <ul style="list-style-type: none"> <li>• Arrange living units around group spaces in order to encourage engagement with other patients and staff</li> <li>• Provide multi-layered engagement options (Patient-to-Patient, Patient-to-Staff, etc.)</li> <li>• Create spaces that enable veterans to become open and vulnerable with others “Community Belonging”</li> <li>• Introduce Traditional, Non-Traditional, and Homeopathic means of treatment</li> <li>• Create outdoor treatment options</li> </ul>   |
| <b>Protect:</b>                       | <ul style="list-style-type: none"> <li>• Allow the veterans to customize their surroundings to provide their own line of defense against unknowns                             <ul style="list-style-type: none"> <li>• Will allow the veteran to prioritize their own living spaces in order to address the unknowns</li> </ul> </li> <li>• Eliminate empty, dark spaces</li> <li>• Create direct sightlines from places that the veterans will frequent to entrances, exits, and areas of movement</li> <li>• Provide glazing so that veterans may see “threats,” while also limiting glazing so that “threats” can not see them</li> </ul> |
| <b>Long Term:</b>                     | <ul style="list-style-type: none"> <li>• Provide families with the services and information to better understand early warning signs of PTSD and other psychological disorders</li> <li>• Provide long-lasting community that veterans may contact after treatment</li> <li>• Better understand current healthcare design and analyze portions for future approaches</li> <li>• Develop using healthcare facilities with the six domains of person-centered design</li> </ul>  |
| <b>Sustainability:</b>                | <ul style="list-style-type: none"> <li>• Minimize site alterations and destruction</li> <li>• Apply LEED and WELL thinking strategies                             <ul style="list-style-type: none"> <li>• Daylighting</li> <li>• Quality Views</li> <li>• Optimize Energy Performance</li> <li>• Passive Cooling / Heating</li> <li>• Indoor &amp; Outdoor Water Use Reduction</li> <li>• Rainwater Management</li> </ul> </li> </ul>   |

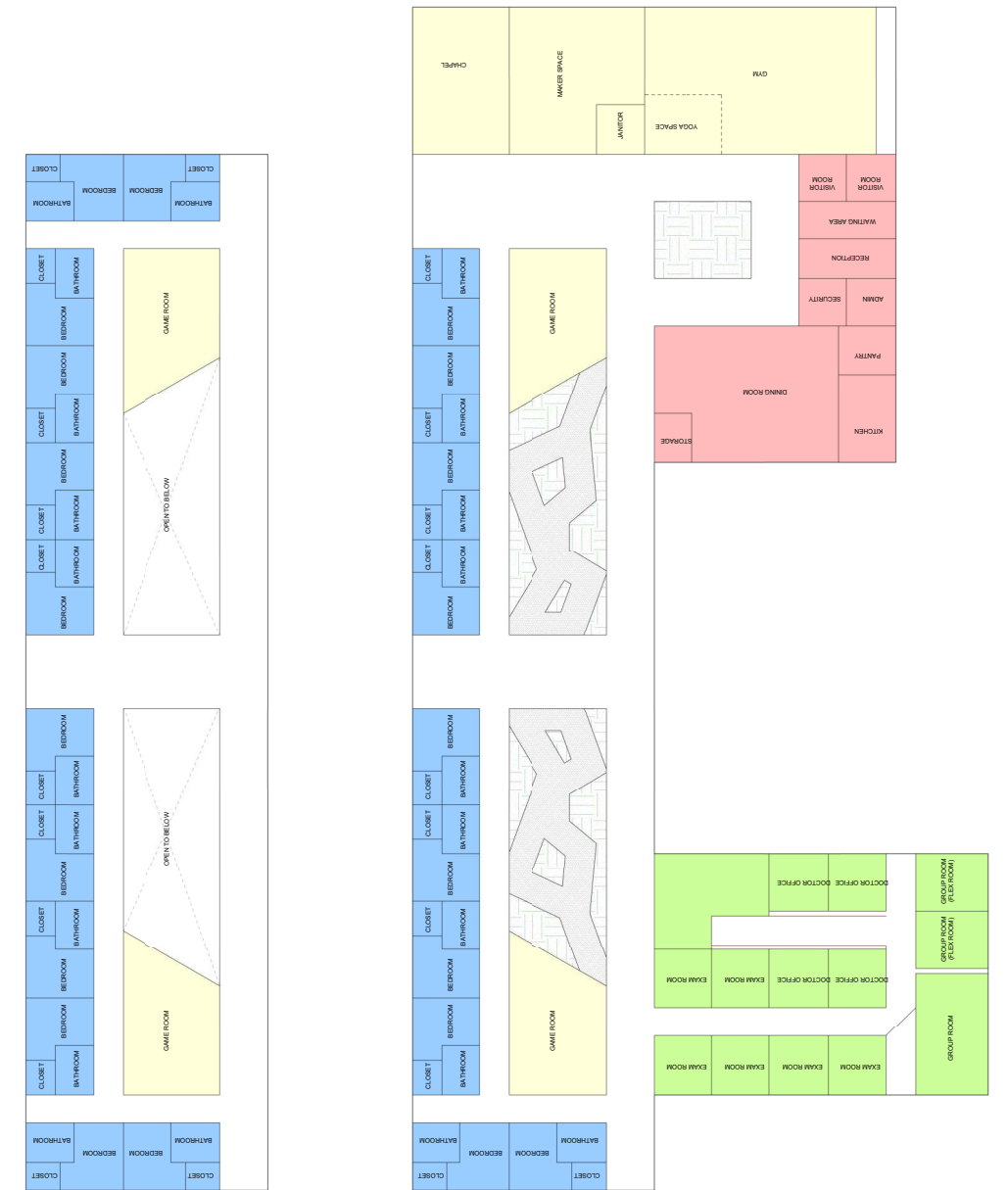


Figure 93 : Plan Option 3 | Personal Diagram



# Rip And Tears



Figure 95 : Rip & Tear | Personal Photo



Figure 96 : Rip & Tear | Personal Photo

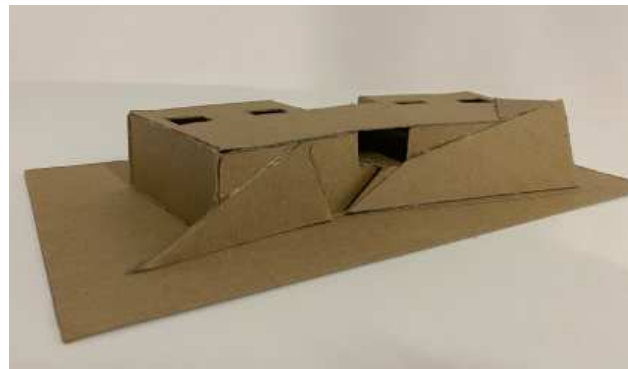


Figure 97 : Rip & Tear | Personal Photo



Figure 98 : Rip & Tear | Personal Photo

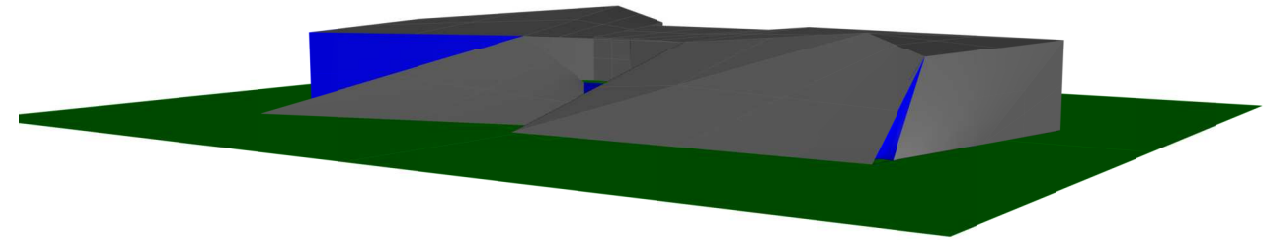


Figure 99 : 3D Model | Personal Photo

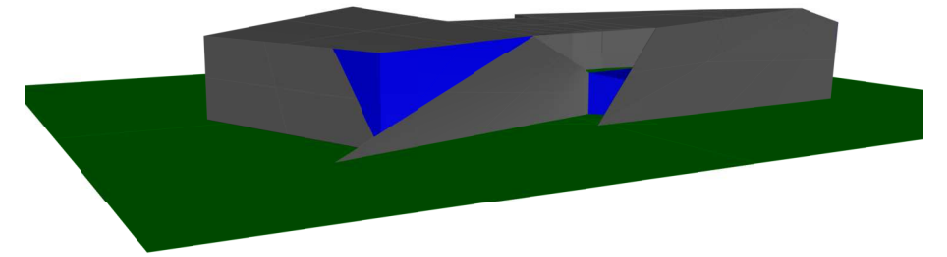


Figure 100 : 3D Model | Personal Photo

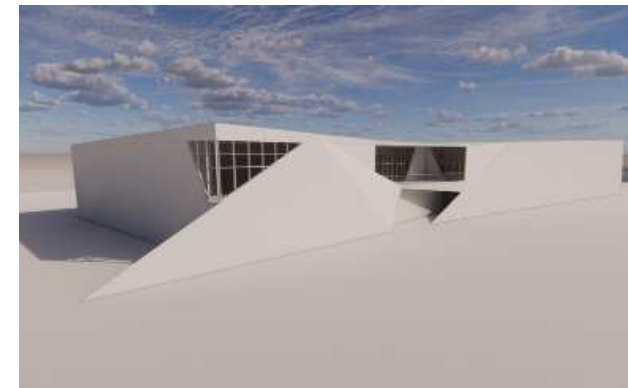


Figure 101 : 3D Model | Personal Photo



Figure 102 : 3D Model | Personal Photo

# Elevation Sketches

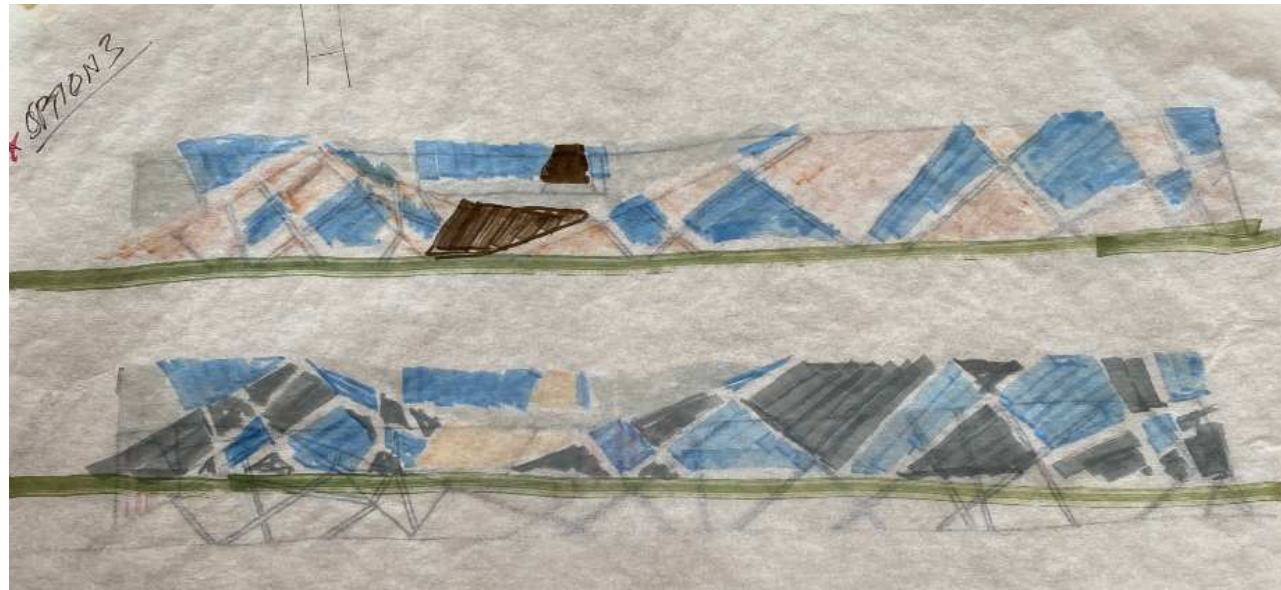


Figure 103 : Elevation Sketches | Personal Photo

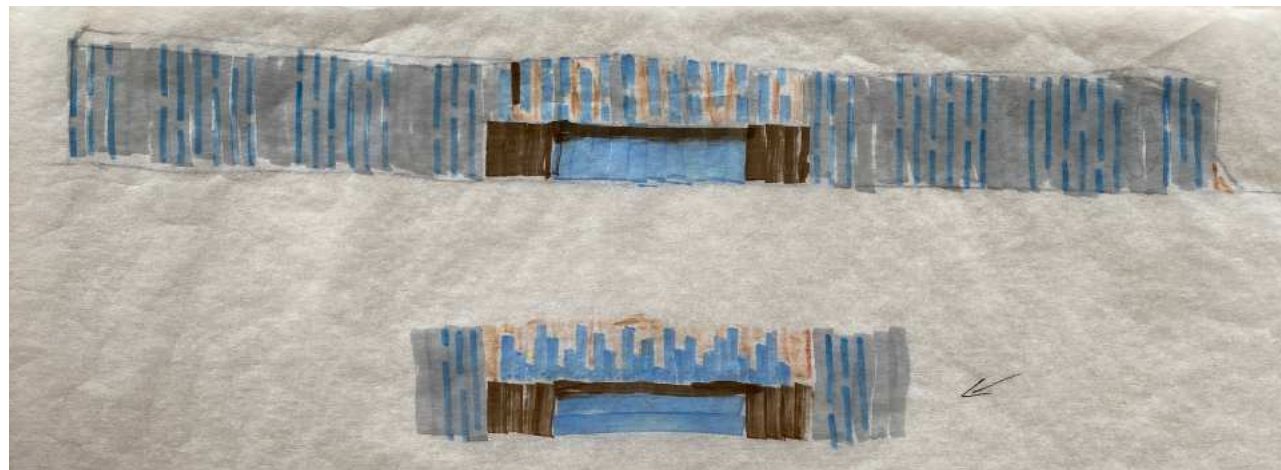


Figure 104 : Elevation Sketches | Personal Photo

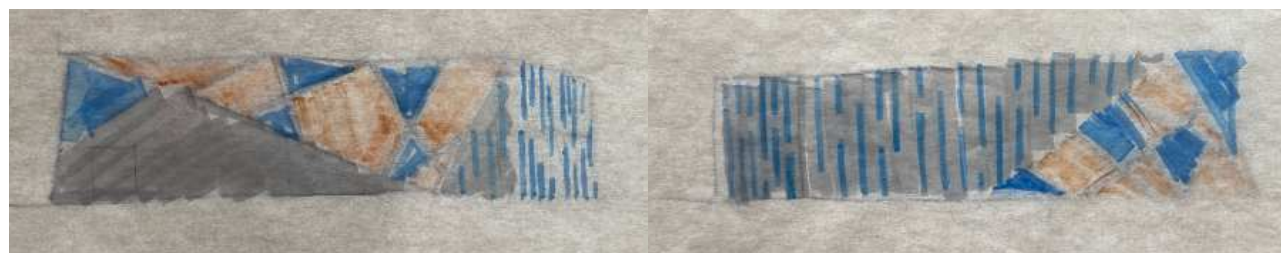


Figure 105 : Elevation Sketches | Personal Photo

# Site Plan Sketches

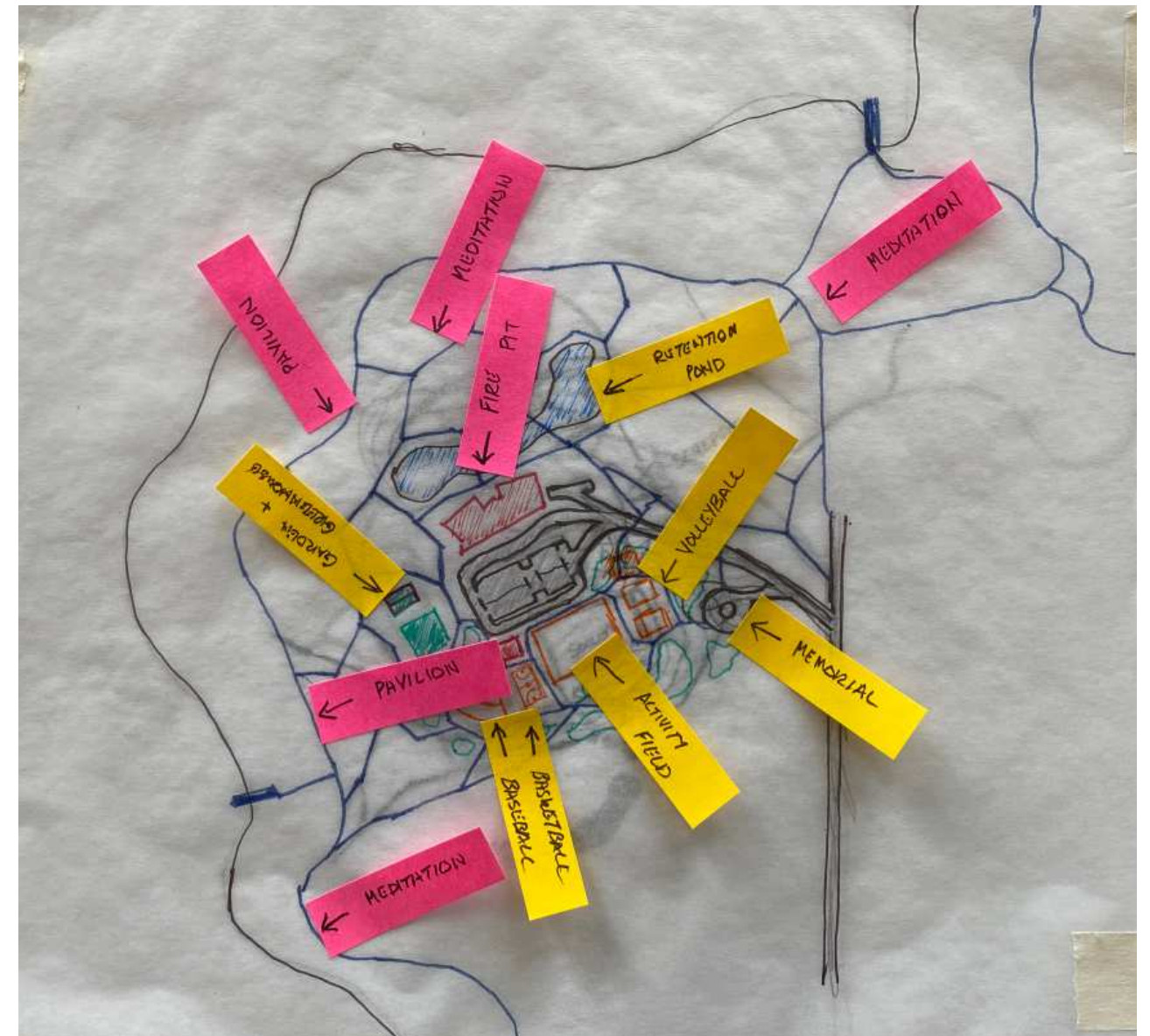


Figure 106 : Site Plan Sketch | Personal Photo

# Mid Term: Building Entry

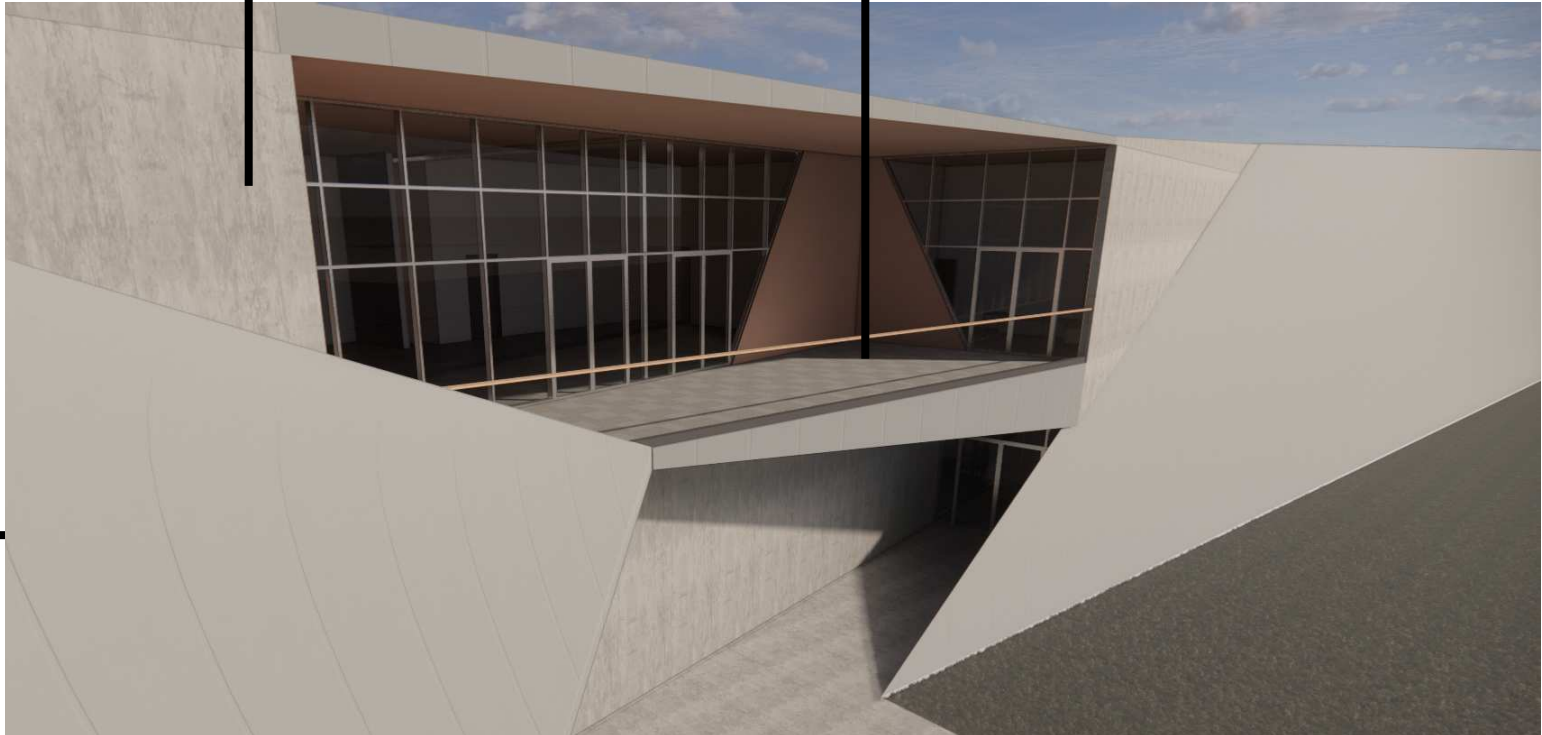
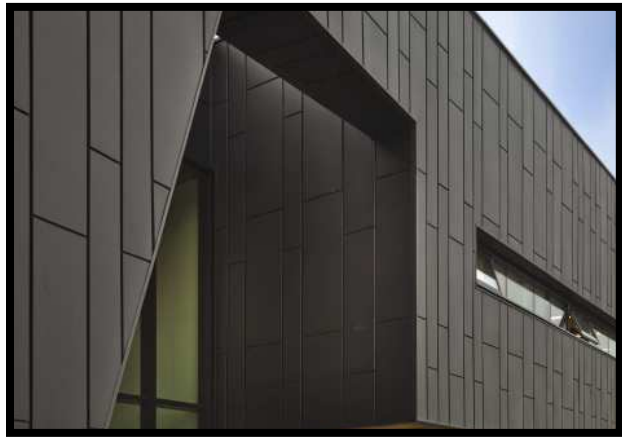


Figure 107 : Mid-Term Board: Building Entry | Personal Diagram

# Mid Term: Building Lobby

**MATERIAL SAMPLES**

|   |   |   |
|---|---|---|
|  |  |  |
| <i>Wall Colors</i>  | <i>Stair Planks</i>   | <i>Handrails &amp; trim</i>   |



Figure 108 : Mid-Term Board: Building Lobby | Personal Diagram



# Mid Term: Dining Room

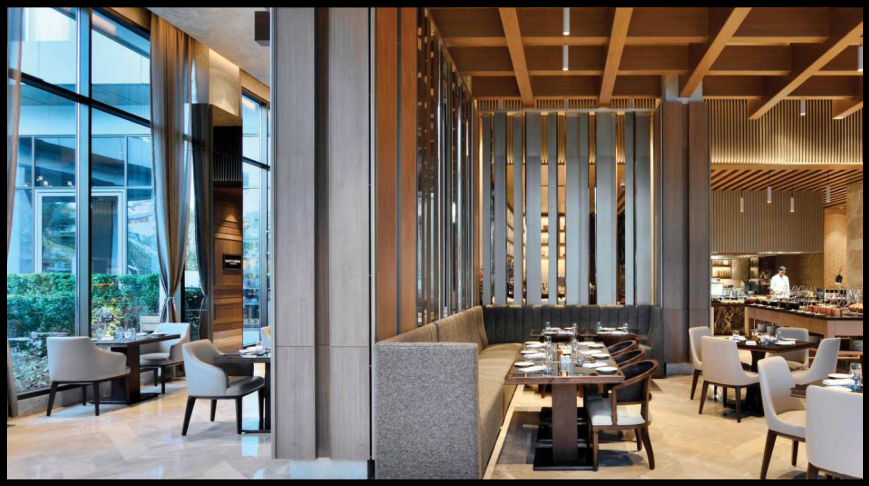


Figure 109 : Mid-Term Board: Dining Room | Personal Diagram

# Mid Term: Resident Lounge



Figure 110 : Mid-Term Board: Resident Lounge | Personal Diagram

# Mid Term: Patio



Figure 111 : Mid-Term Board: Patio | Personal Diagram

# Site Plan

- ① Building
- ② Activities Building / Maintenance
- ③ Activities Field
- ④ Community Gardens
- ⑤ Water Gardens
- ⑥ Memorial
- ⑦ Walking / Hiking Trails
- ⑧ Meditation Spaces
- ⑨ Pavilions

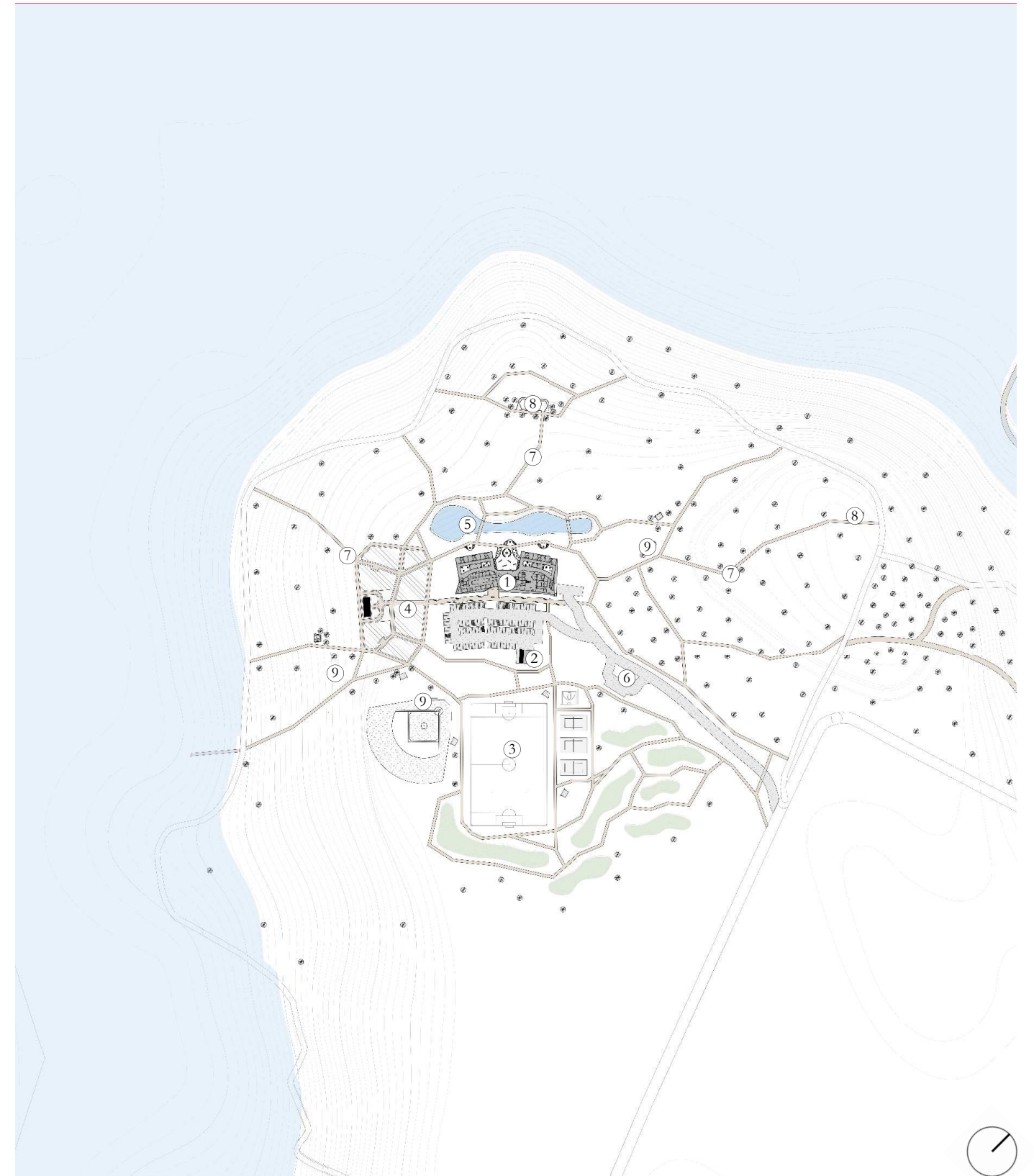


Figure 112 : Final Site Plan | Personal Diagram

# Parking Lot Entry



Figure 113 : Parking Lot Entry | Personal Photo

# Southeast Corner



Figure 114 : SE Building Corner | Personal Photo

# Northwest Corner Night



Figure 115 : NW Building Corner Night | Personal Photo

# Elevations



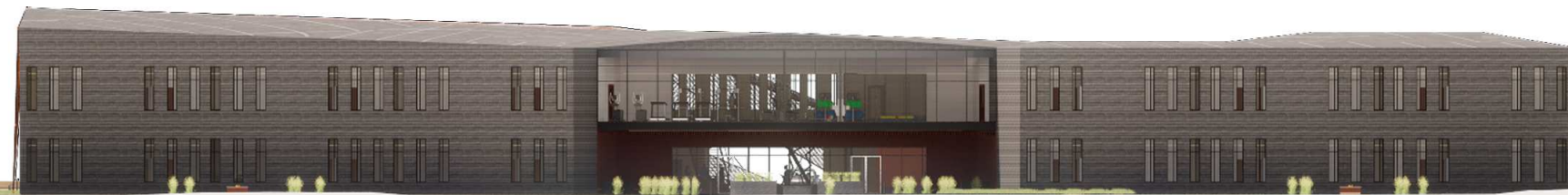
**SOUTH ELEVATION**

Scale: 3/32" = 1'-0"



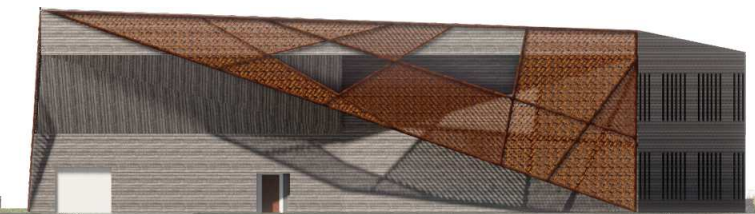
**WEST ELEVATION**

Scale: 3/32" = 1'-0"



**NORTH ELEVATION**

Scale: 3/32" = 1'-0"



**EAST ELEVATION**

Scale: 3/32" = 1'-0"

*Figure 116 : South Elevation | Personal Photo*

*Figure 117 : North Elevation | Personal Photo*

*Figure 118 : West Elevation | Personal Photo*

*Figure 119 : East Elevation | Personal Photo*



# First Floor Plan

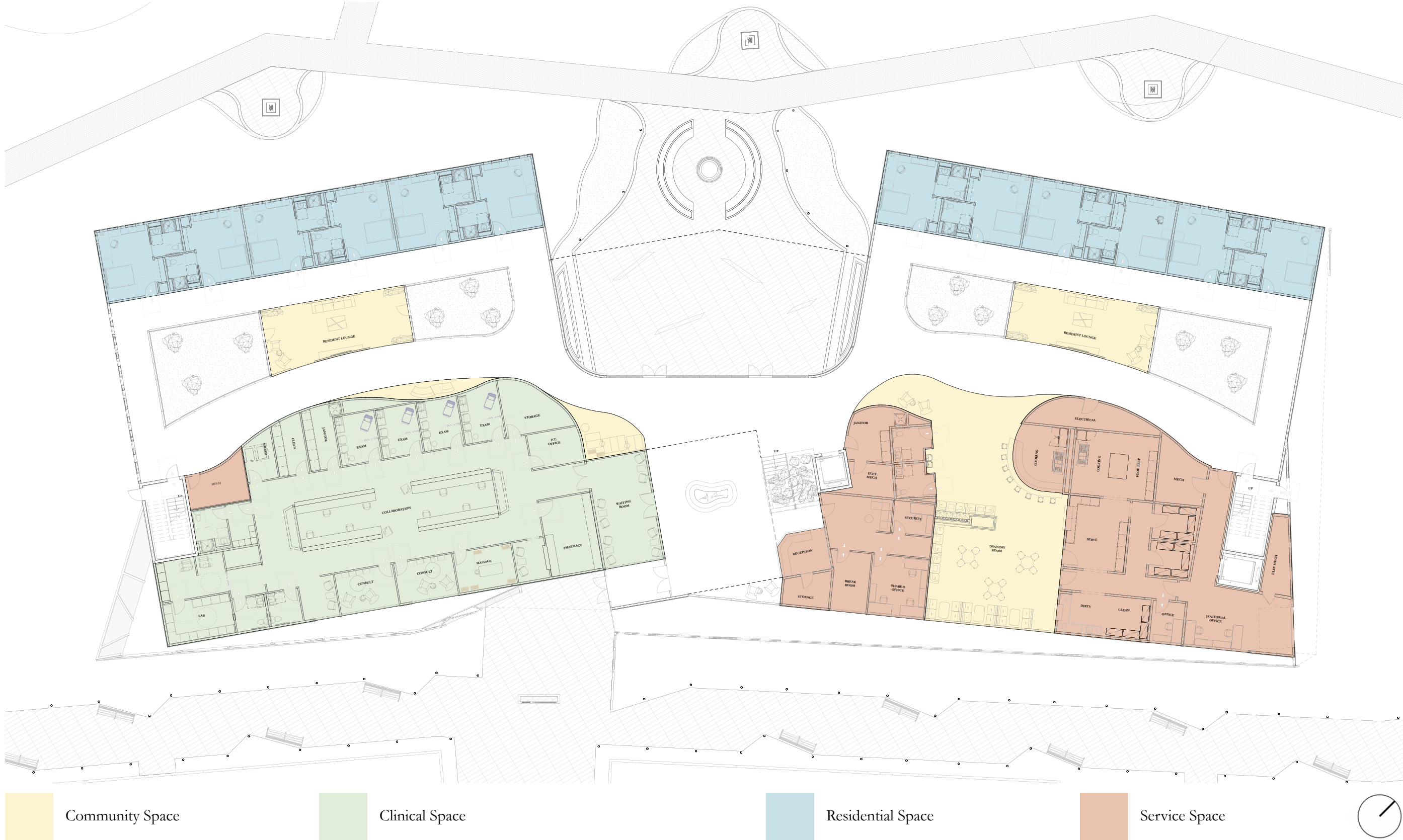


Figure 120 : First Floor Plan | Personal Diagram



Figure 121 : Building Lobby | Personal Diagram

**GOALS ACHIEVED:**





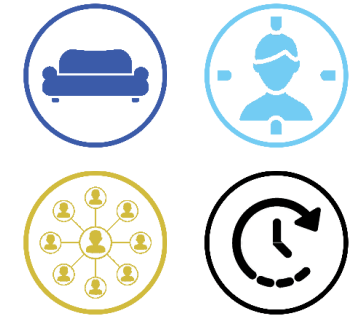
**GOALS ACHIEVED:**



Figure 122 : VA Clinic | Personal Diagram



**GOALS ACHIEVED:**



*Figure 123 : Patio | Personal Diagram*



**GOALS ACHIEVED:**



Figure 124 : Dining Room | Personal Diagram



**GOALS ACHIEVED:**



Figure 125 : Resident Room | Personal Diagram



**GOALS ACHIEVED:**



Figure 126 : Resident Lounge | Personal Diagram

# Second Floor Plan



Community Space

Clinical Space

Residential Space

Service Space



Figure 127 : Second Floor Plan | Personal Diagram





**GOALS ACHIEVED:**



Figure 128 : Maker Space | Personal Diagram



**GOALS ACHIEVED:**



*Figure 129 : Group Therapy Room | Personal Diagram*



**GOALS ACHIEVED:**



*Figure 130 : Library | Personal Diagram*



**GOALS ACHIEVED:**



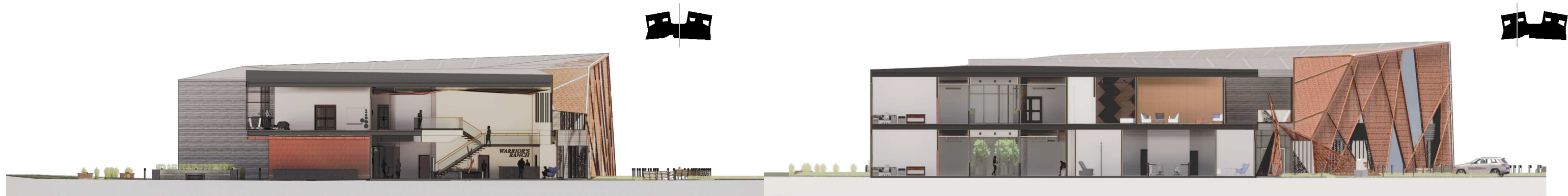
*Figure 131 : Light Tunnel | Personal Diagram*

# Sections



**LONGITUDINAL SECTION**

Scale: 3/32" = 1'-0"



**TRANSVERSE SECTION: OVERHANG**

Scale: 3/32" = 1'-0"

**TRANSVERSE SECTION: LIVING AREA**

Scale: 3/32" = 1'-0"

*Figure 132 : Longitudinal Section | Personal Diagram*

*Figure 133 : Transverse Section: Overhang | Personal Diagram*

*Figure 134 : Transverse Section: Living Room | Personal Diagram*



Figure 135 : Presentation Board | Personal Diagram

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## Brandon J. Hyatt

Hometown | Minot, North Dakota



Figure 136: Personal Identification | Personal Photograph

## Second Year

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Fall 2017 | **Milton Yergens**  
Tea House | Moorhead, Minnesota  
Boathouse | Minneapolis, Minnesota

Spring 2018 | **Darryl Booker**  
Dwelling | Marfa, Texas  
Birdhouse | Fargo, North Dakota  
Mixed-Use | Fargo, North Dakota

## Third Year

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Fall 2018 | **Regin Schwaen**  
Timber: Visitor Center | Cooperstown, North Dakota  
Brick: International Competition | Fjords of Norway

Spring 2019 | **Niloufar Alengery**  
Steel: Fairy Tales Competition | Pompeii, Italy  
Concrete: Native American Museum Competition | Moorhead, Minnesota

## Fourth Year

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Fall 2019 | **Amar Hussein**  
Undergraduate Capstone: High Rise | Miami, Florida

Spring 2020 | **Mark Barnhouse**  
Marvin Windows Dwelling Competition | Fargo, North Dakota  
Sponge City Urban Redevelopment | Miami, Florida

## Fifth Year

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Fall 2020 | **Ronald Ramsay**  
Mid-Century Modern Home | Agincourt, Iowa

Spring 2021 | **Jennifer Brandel**  
Graduate Thesis | Dickinson, North Dakota