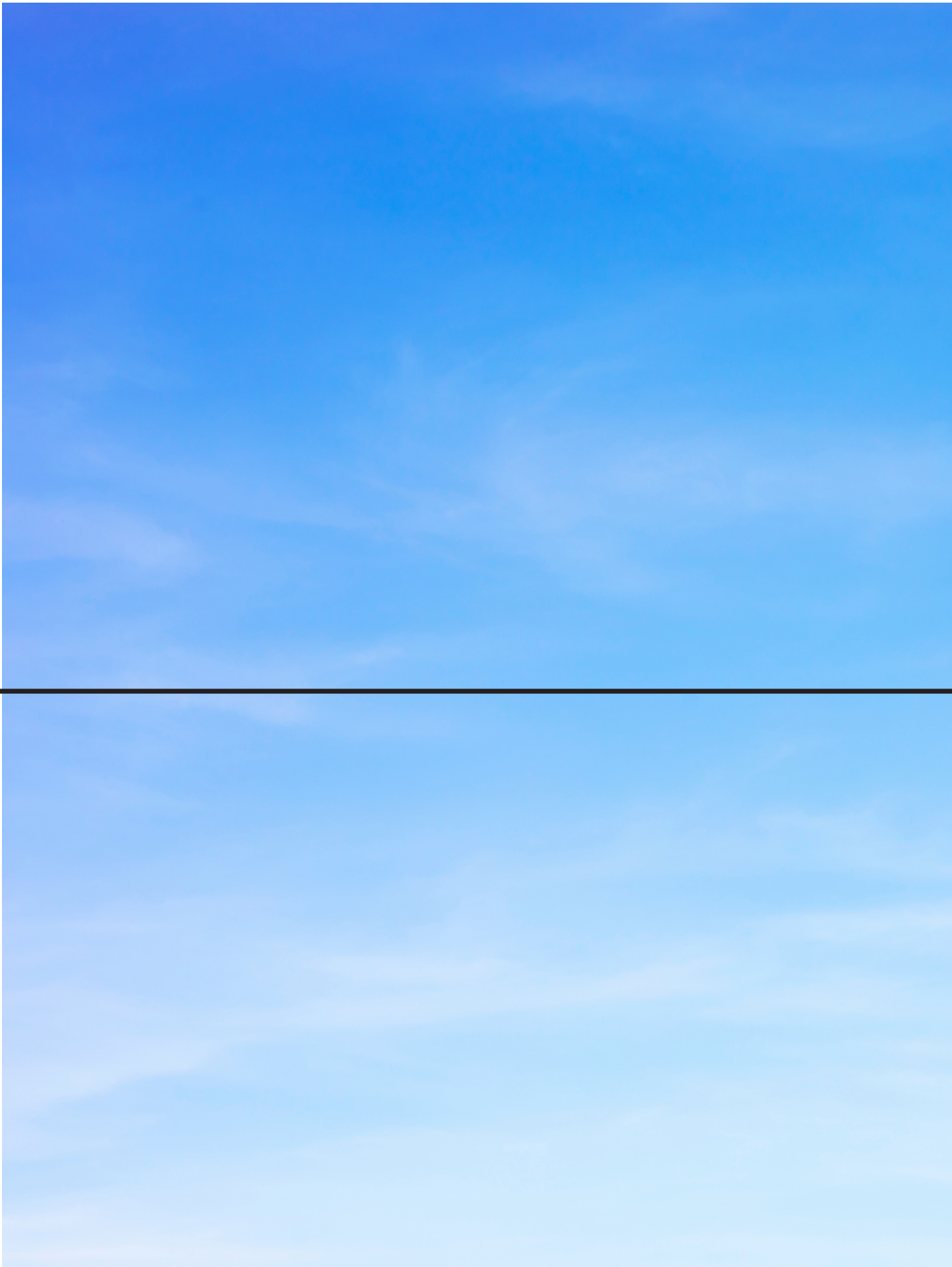


# Architecture of Aging

The Impact of Architecture on Palliative Care and Hospice



Lilly Johnson - North Dakota State University



# **Project Title And Signature Page.**

A design thesis submitted to the Department of Architecture and Landscape Architecture of North Dakota State University by:

**Lilly Johnson**

In partial fulfillment of the requirements for the degree of master of architecture.

***Cindy Urness***

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Primary Thesis Advisor

***Stephen Wischer***

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Thesis Committee Chair

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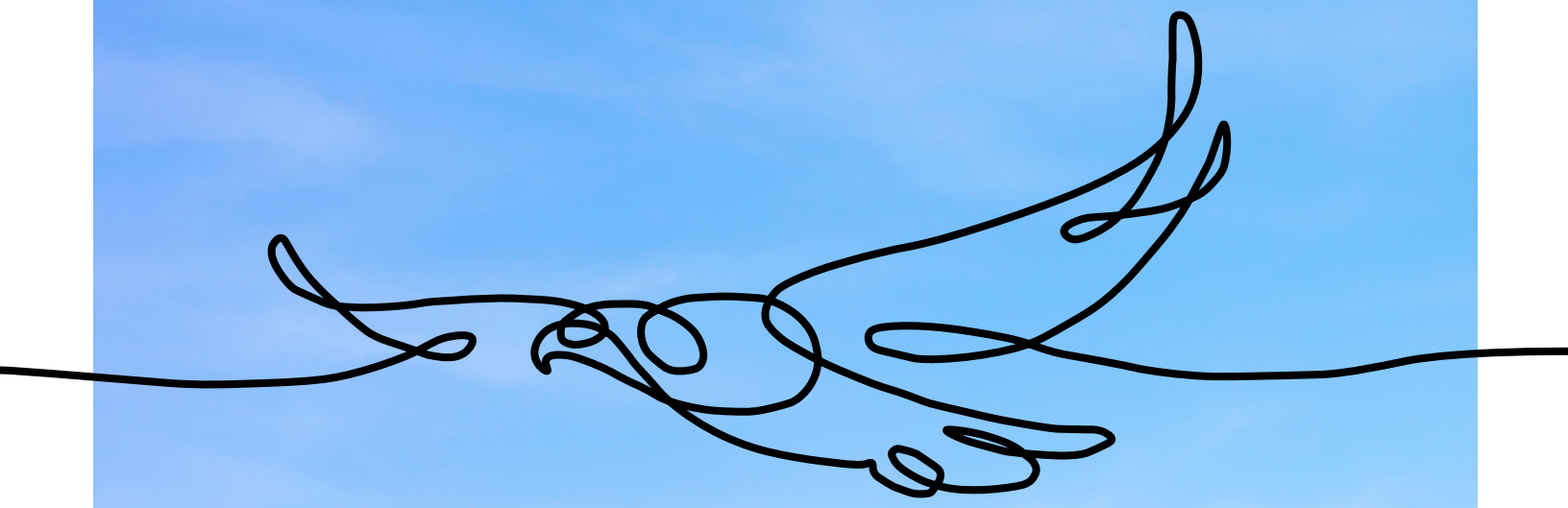
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# **The Proposal.**

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**How people die remains in the memory of those  
who live on.” – Dame Cicely Saunders**

# Thesis Abstract.

**Hospice care** provides empathetic care for people in the last phases of terminal illness, so that they may live as fully and comfortably as possible.

**Palliative care** in combination with hospice care is intended to help patients be comfortable while allowing them to enjoy the last stage of life.

Physical healing can be impacted by the mental healing space, as well as the surrounding wellness space. Research methods such as case studies and other methods will be used to answer a broad question, **how or why does nature create a dynamic healing space?** Architecture can also impact mental healing. In turn, **how does architecture impact hospice and palliative care?**

Figure 01



# Thesis Narrative.

Strides in medical research and medicine are shaping a new way of hospice and palliative care. Thus, comes the idea to create individualized hospice and palliative care spaces for patients to interact with nature, and to bring a sense of peace and serenity during their final moments.

A wish one may have, is to avoid spending their time within a sterile hospital setting during the end. These individual care units provide a sense of minimalism to allow for a simplistic living space, and to focus on only what is important, and to minimize distractions allowing one to connect with the natural setting surrounding them. Creating individualized living spaces allows separation between family members and friends that may be visiting for the day, leaving private care moments for the patient alone.

With a site location close to the metropolitan area allows for family members and friends to stay close by, minimizing chaos and commotion around the patient, and maintaining serenity within the space. Therefore, the intended natural setting remains natural.

# Project Typology.

The proposed design will be a hospice and palliative care center. To define **hospice care**, it is a home that provides care for sick or terminally ill individuals. To define **palliative care**, it is defined as medical care that relieves pain, symptoms and stress caused by serious illnesses.

The main patient care spaces will be designed as tiny home units, to define a **tiny home** is an architectural and social movement that advocates for downsizing living spaces, simplifying, and essentially “living with less”. Typically, a tiny home is considered to have 600 square feet or less. The purpose of minimizing the square footage within the care units, allows for a patient to focus on the important undertakings within their remaining time.

Sustainability has been a growing trend around the country and the world. Therefore, by creating a minimalist living unit, allows for the environmental impact a patient makes on their surrounds decrease. As well as the concept of off-site building minimizes site pollutants to keep the site unharmed.

# Precedent Studies.

## Hospice De Liefde



Figure 02

Location: Rotterdam, Netherlands

# Precedent Studies.

## Outward Bound Micro Cabins



Figure 03

Location: Rocky Mountains, Colorado

# Major Project Elements.

## **Patient Care Spaces.**

A space of comfort and serenity for patients to relax and focus on the important moments.

## **Outdoor Gathering Space.**

Allows for patients to connect and bring one closer to nature.

## **Family Meeting Areas.**

Allows friends and family to create lasting moments with their loved ones.



Figure 04



# User and Client Description.

## The User.

The main user of the care spaces are patients with a terminal diagnosis, and in need of end-of-life care.

The care units will be occupied by patients with similar outlooks on their final moments and identical prognoses. This allows for understanding between patients.

The other possible user of the spaces are family members and friends visiting the patients, as well as any health care professionals.



# The Site Location.

**Address:** Mill Hill Road, Saint Clair, Missouri

**Location:** Saint Clair, Missouri

**Site Type:** Rural Country

This site provides a peaceful setting within nature, including an abundance of wooded areas. The site is also situated near the Meramec River, and provides an existing gravel road surrounding the perimeter.

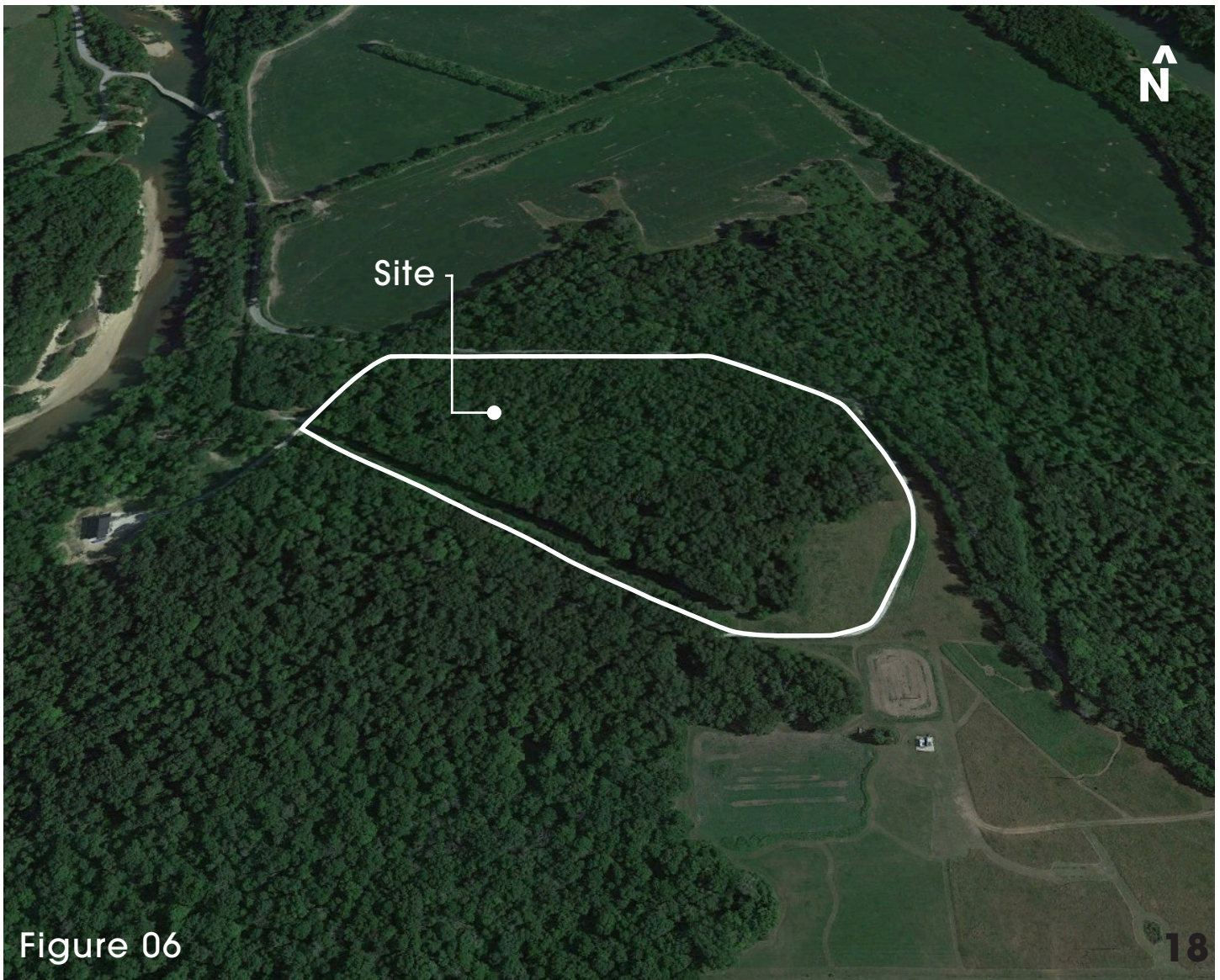


Figure 06

Figure 07



# Project Emphasis.

This project will emphasize simplistic living, by minimizing living square footage. This point will be addressed through the individual care units found placed throughout the site.

The natural, peaceful setting will also be a strong point addressed through the site and location of the project. Bringing patients the capability of interacting with nature, and to reduce the sterile and isolated feel from traditional hospital settings.



Figure 08

# Project Justification.

The idea of tiny homes within a natural setting, for the use within hospice and palliative care, explores the impact and quality an environment has on one's final moments. Minimizing square footage allows for the opportunity to focus on the meaningful and important moments during the end of one's life.

As the life span continues to lengthen, focusing on the quality of those final years becomes more important, and allowing for palliative care provides more options and opportunities for patients.



# Goals of the Thesis Project.

**Academic Goals:** Design a haven for patients that promotes healing and provides comfort, as well as fabricating lasting memories. Also, to exemplify the importance of nature as a part of healing and to identify how design and architecture impact families and relationships during intensive care.

**Personal Goals:** Maintain a healthy schedule during weeks with project deadlines and throughout the semester, as well as getting an adequate amount of sleep, eating healthy, staying active, and minimizing burnout during the project duration.

**Professional Goals:** Create a healthy work life balance outside of school.



Figure 10

# Plan for Proceeding.

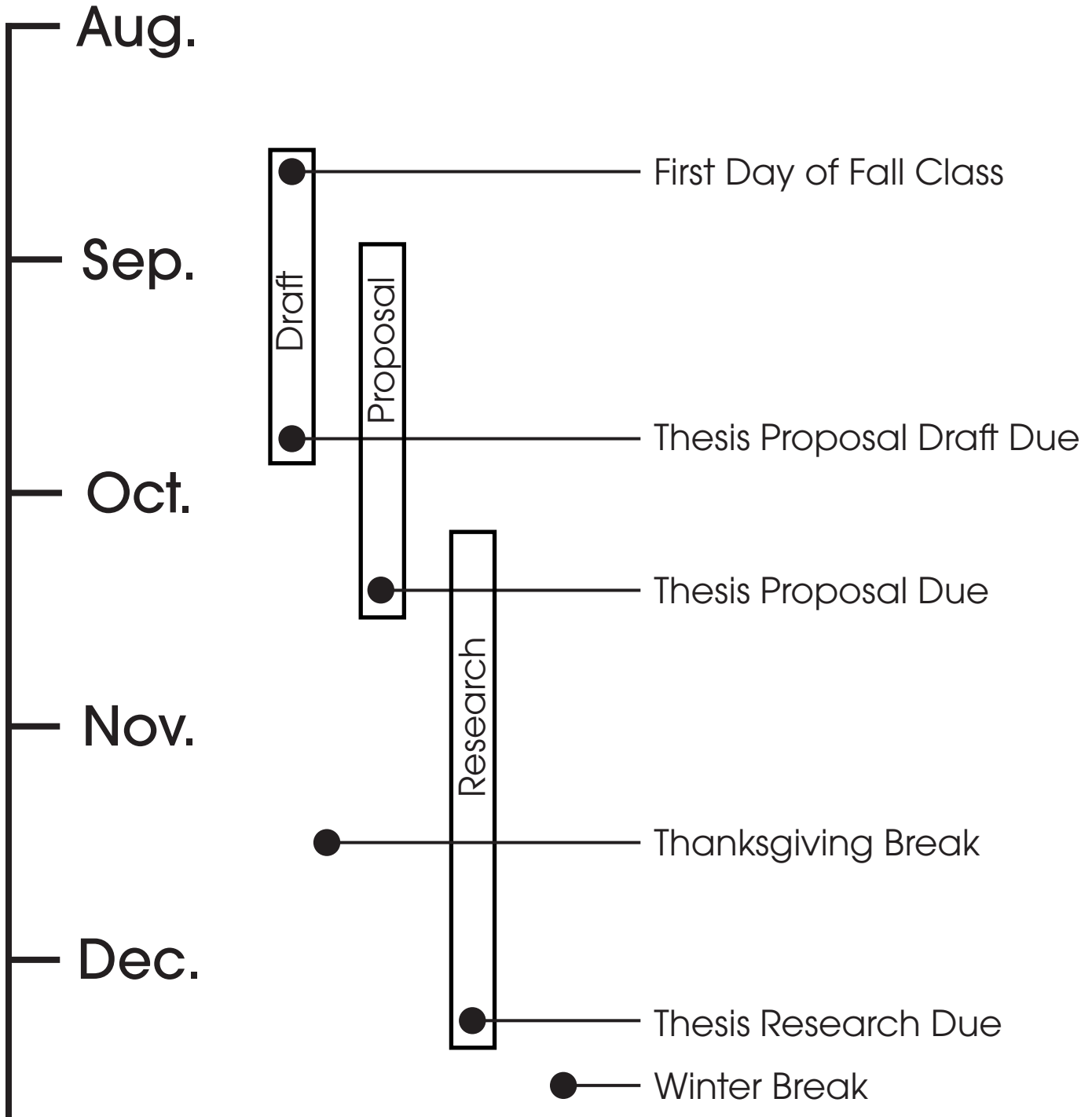
**Research Direction:** Further research will examine the impact of nature within hospice care. As well as eliminating a sterile hospital setting of a care patient's last moments. The schedule on the following page provides a tentative plan to execute research and design through lists of deadlines and important dates.

**Design Methodology:** During the design phase of this project, four sub-phases will be used to guide the project to create the best design solution, in addition to research, while answering the main thesis idea. The four sub-phases are:

1. Schematic Design
2. Design Development
3. Technical Drawings and Detailing
4. Presentation and Execution

**Documentation of the Design Process:** To present my design thesis, I will use a combination of presentation boards, virtual video walkthroughs, a project book and presentation will be created. The design will be highlighted through graphics and images.

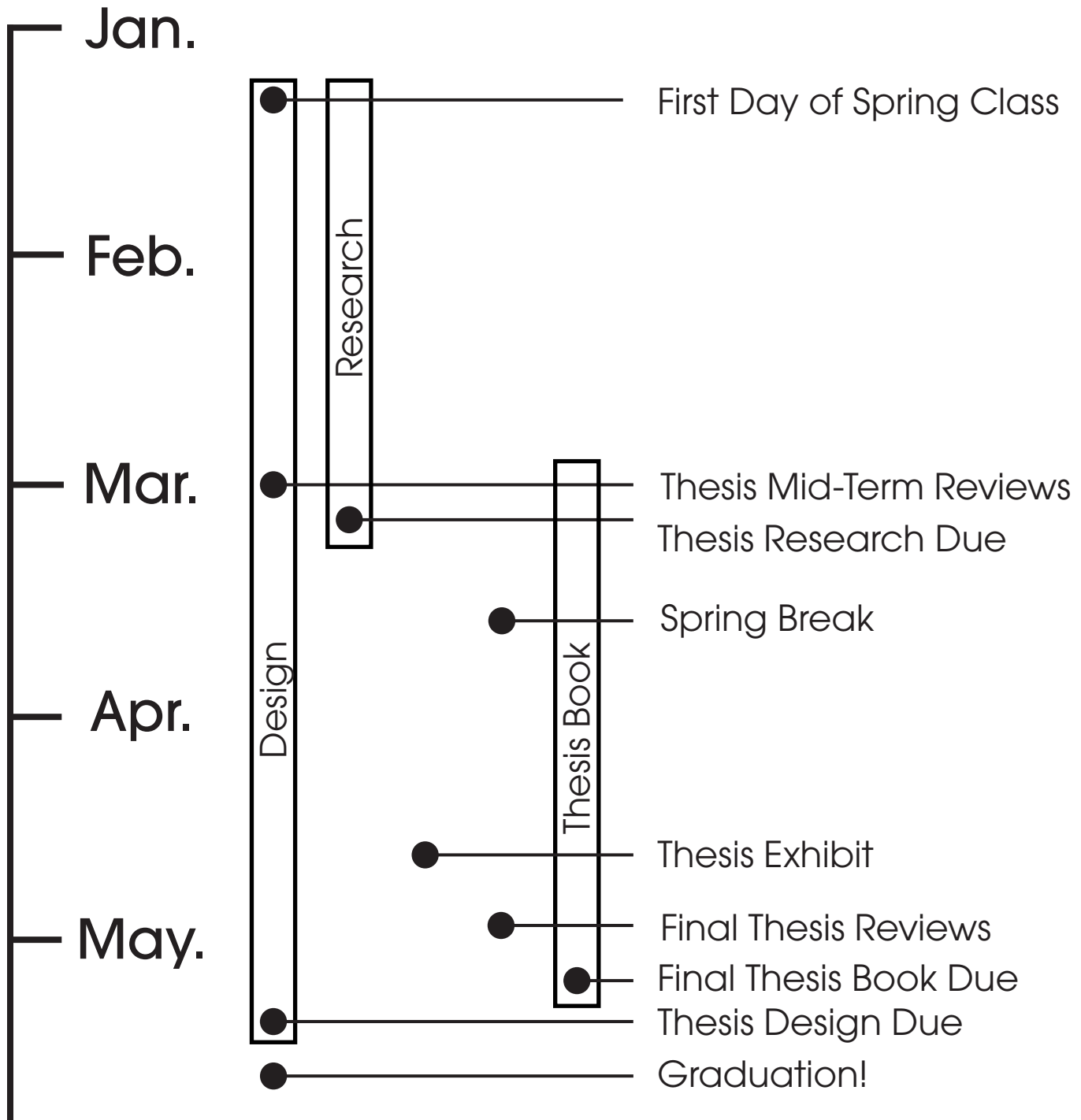
# Project Schedule.

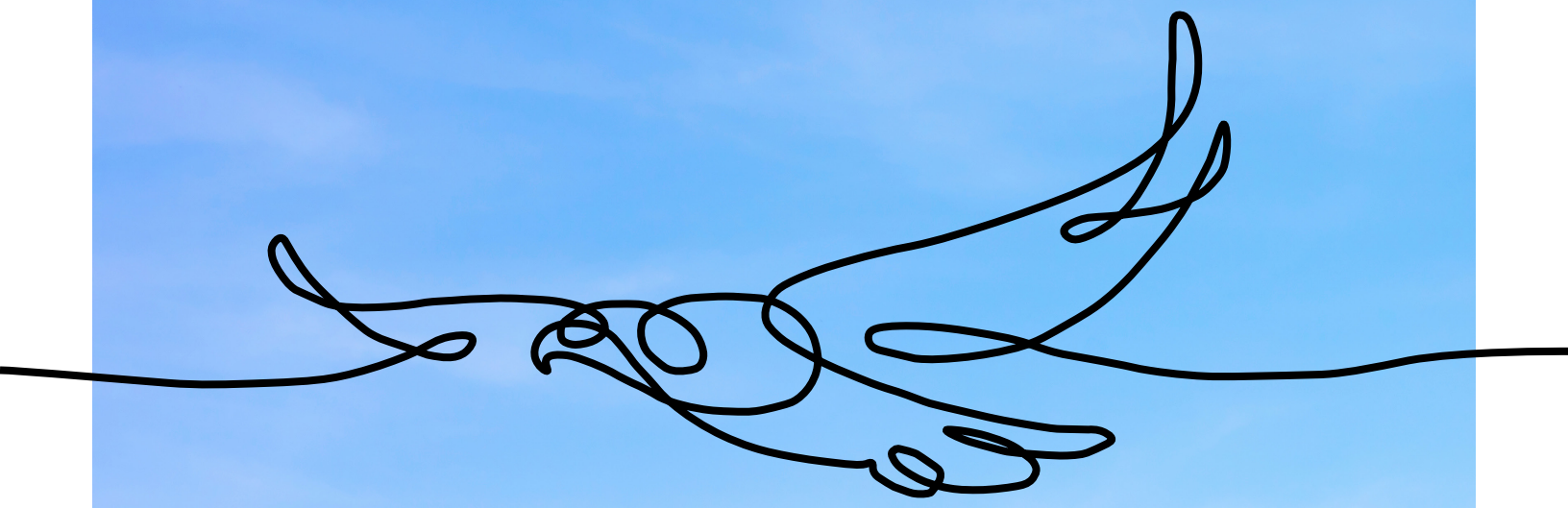


**Fall Semester**




# Project Schedule.





# The Research.

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**“You matter because you are you, and you matter to the end of your life.”** – Dame Cicely Saunders 

# Research Results Timeline.

1967

Cicely Saunders establishes St. Christopher's Hospice.

1974

Florence Wald founds the Connecticut Hospice.

1978

National Hospice Organization (NHO) is established.

1983

Initial Medicare Hospice Regulations are published.

1985

Consolidated Omnibus Budget Reconciliation Act '85.



Figure 11

# Research Results Timeline.

1992

National Hospice Foundation (NHO) created.

1997

End-of-life movement grows national attention.

2004

Over 1 million terminally ill Americans are cared for.

2014

Connecticut Hospice and NHPCO celebrates 40 years.

2019

COVID-19 dominates all healthcare, including hospice.



Figure 12

# Precedent Studies.

# Hospice De Liefde

“... and the garden, nature, light and spaciousness is used to contribute to a dignified farewell.”

Figure 13

Location: Rotterdam, Netherlands



Figure 14



Figure 15

# Precedent Studies.

## Project Information

**Location:** Rotterdam, Netherlands

**Architect:** de Kovel Architecten, studio AAAN

**Materials:** thatched roof, wood walls, and glass

**Year:** Completed in 2019

**Description:** De Kapel is a farmhouse that has been renovated and expanded into a centre for terminal care. There are numerous views to the monument, De Kapel, and surrounding gardens.

**Conclusion:** The design of this hospice care space provides a single room for patients with storage and a bathroom as well, leaving all other spaces to be within the community space. The orientation is the focus of this design, because it focuses the spaces on the gardens with large expansive window to allow for sunlight and flow to the outdoors. This is an example of minimalist rooms but without the sterile hospital feel.



Figure 16



Figure 17

# Precedent Studies.

# Denver Micro Cabins

“... the interior is skinned in birch plywood bringing warmth and evoking a connection with the trees surrounding the site.”

Figure 18

Location: Rocky Mountains, Colorado



Figure 19



Figure 20



# Precedent Studies.

## Project Information

**Location:** Rocky Mountains, Colorado

**Architect:** University of Colorado- Denver

**Materials:** CNC'd birch plywood, hot rolled steel, glass

**Year:** Completed in 2015

**Description:** The cabins were designed as micro-dormitories for the Colorado Outward Bound School students. The cabins direct their views to the Mosquito Range Mountains.

**Conclusion:** The cabins are laid out in a "campus" like style to offer independence and privacy, while still creating a community setting. This study provides as an influence throughout the site design and layout within the thesis project. It creates a strong tie with nature due to the "nestling" of the cabins. It provides as a great example on building offsite to minimize impacts to the site. Overall, a stunning example of minimalist design.



# Historical, Social and Cultural Context

## Historical Context.

The historical context of hospice began over 100 years ago by a woman named Dame Cicely Saunders. She was a nurse, social worker, doctor, and writer.

Saunders realized that patients with terminal illnesses needed a different approach of care than the hospital could provide. “... **an atmosphere that was truly patient-centered, with specific mental, physical and emotional needs cared for.**”

Saint Christopher’s was the first modern hospice care facility, opening in 1967 in London. Saunders’ goal was to “**holistically meet the patient’s needs**”.

The Connecticut Hospice in Brandford was founded in 1974 and was the first hospice care facility in the United States.

## Cultural Context.

The cultural context varies by religion, spirituality, and nationality, as it can be culturally insensitive.

Some cultures prefer not to divulge terminal diagnosis due to emotional suffering. For some they believe it may bring bad luck and wish to avoid discussing.

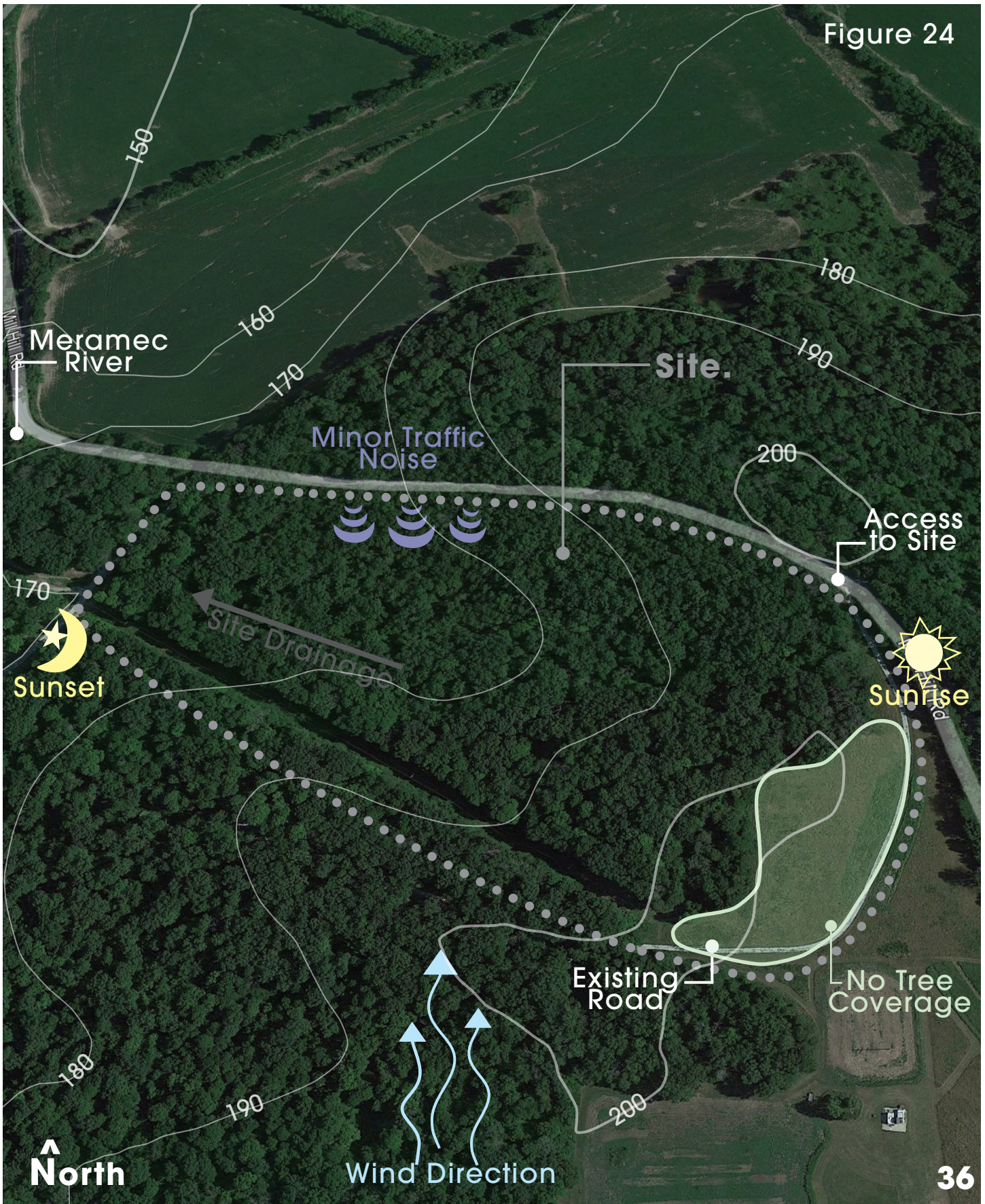
Saunders understood that “**unresolved emotional and spiritual issues amplify the pain of dying**, claiming it came from a desolate feeling of meaninglessness.”



**“...a desolate feeling of meaninglessness.”**

# Site Analysis.

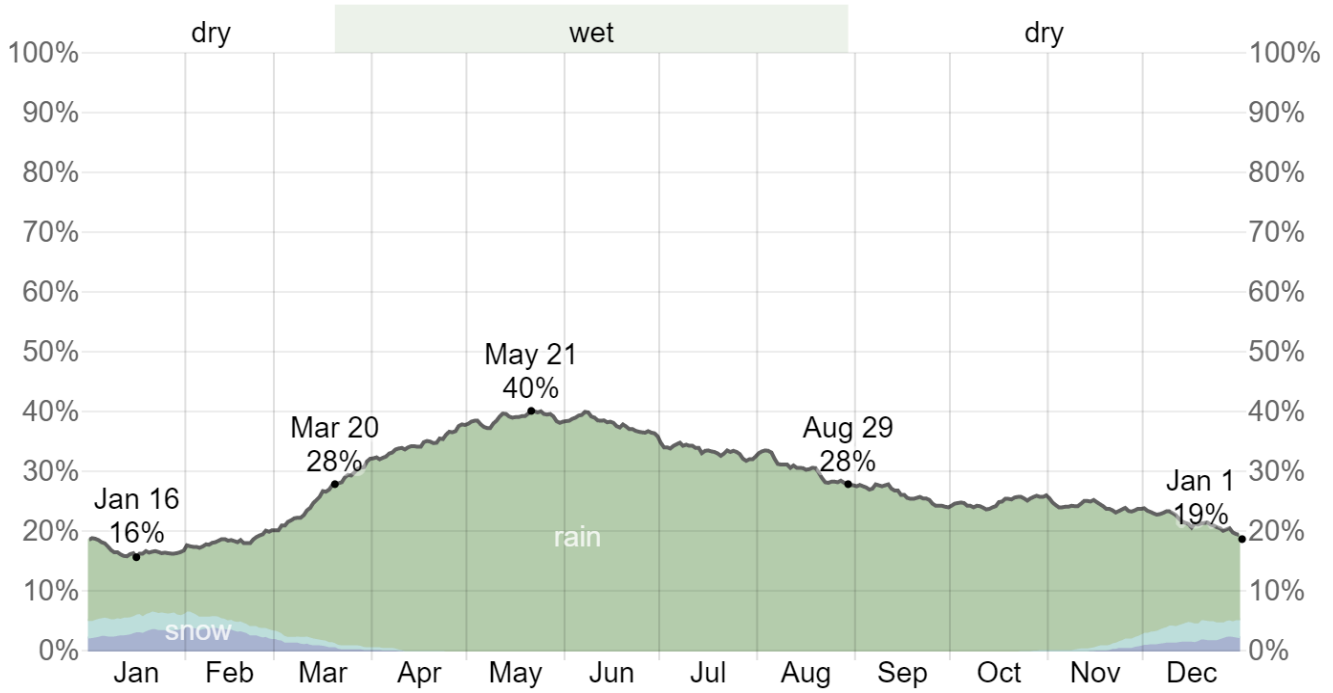
Figure 24



# Site Images.

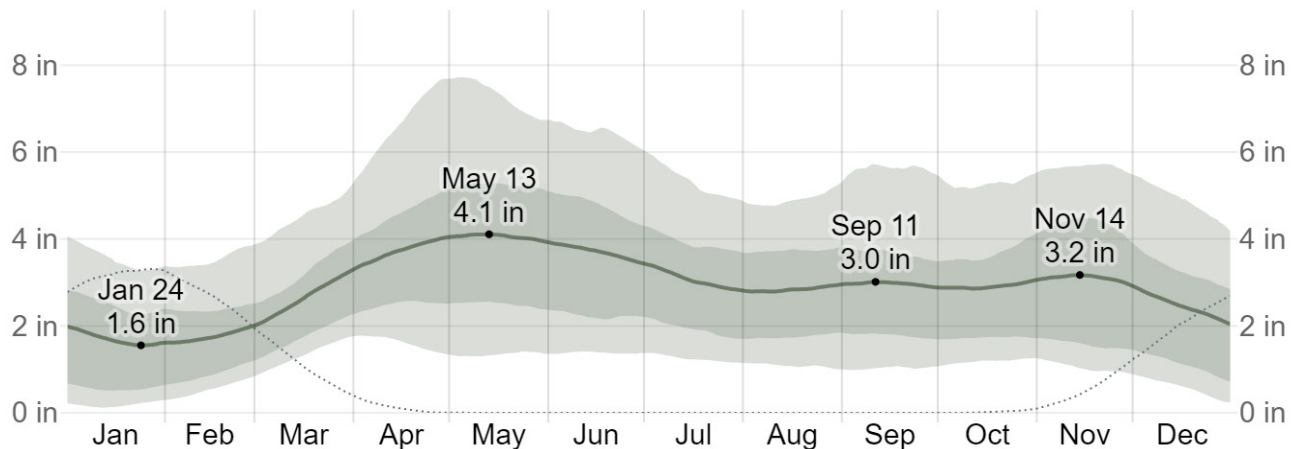


## Daily Chance of Precipitation in St. Clair, MO

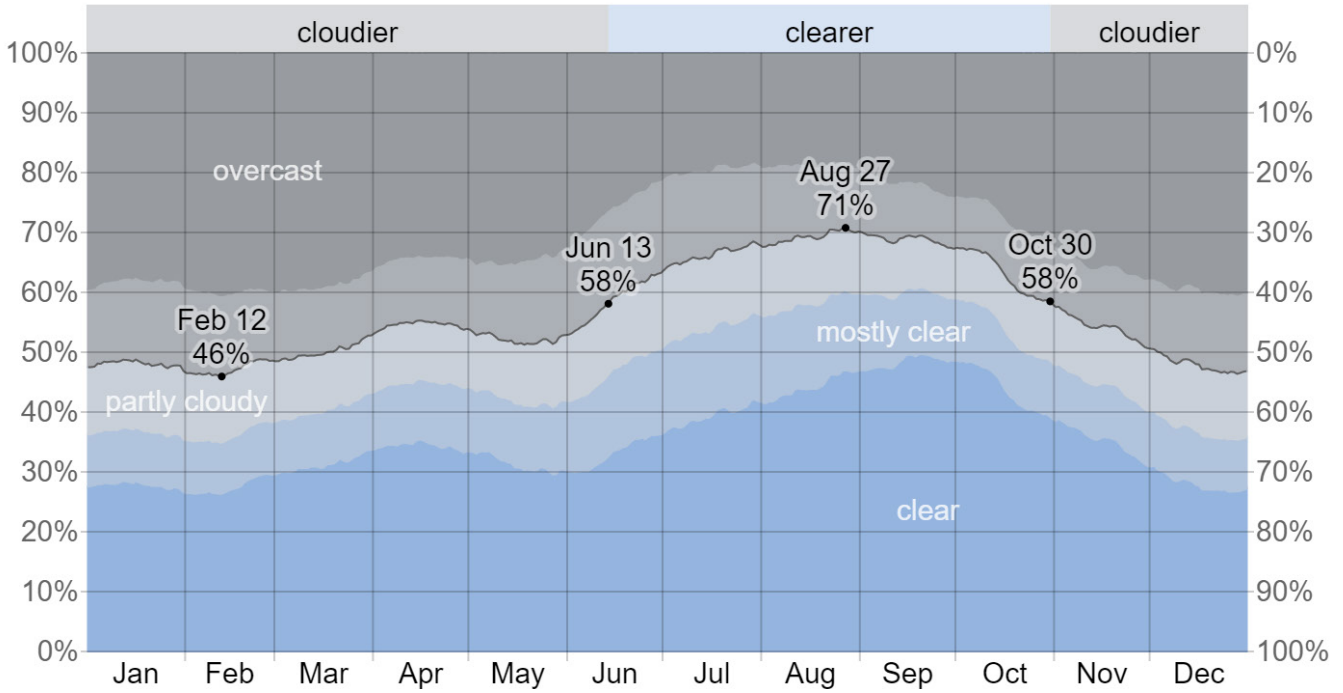


Apart from the months of April, May and June, there is less than a 30% chance of rain daily and under 5% chance of snow during the winter. Typical rainfall accumulates to less than 4 and 1/2 inches during the rainy months.

## Average Monthly Rainfall in St. Clair, MO

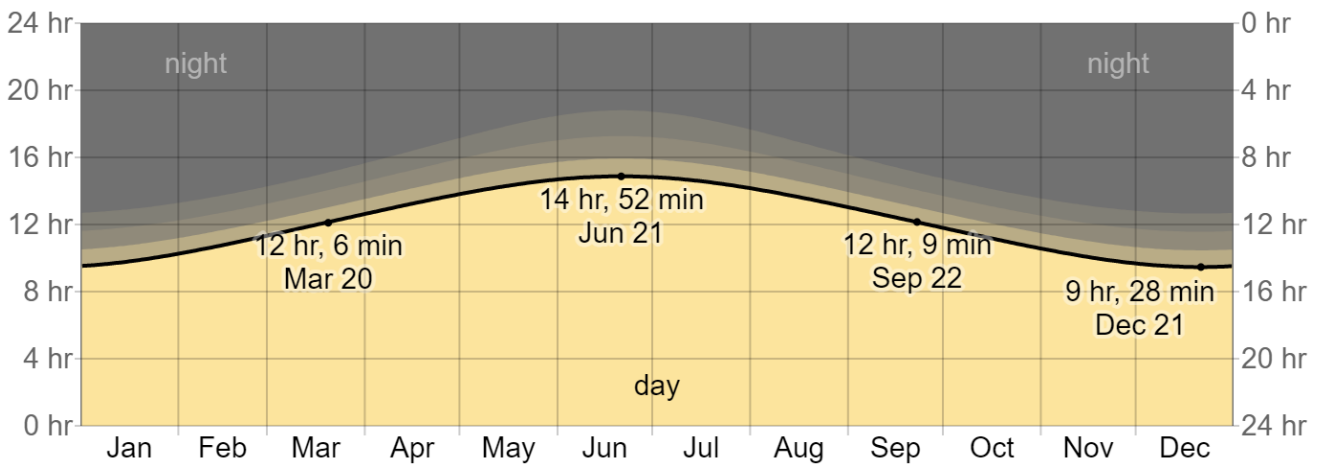


## Average Cloud Cover in St. Clair, MO

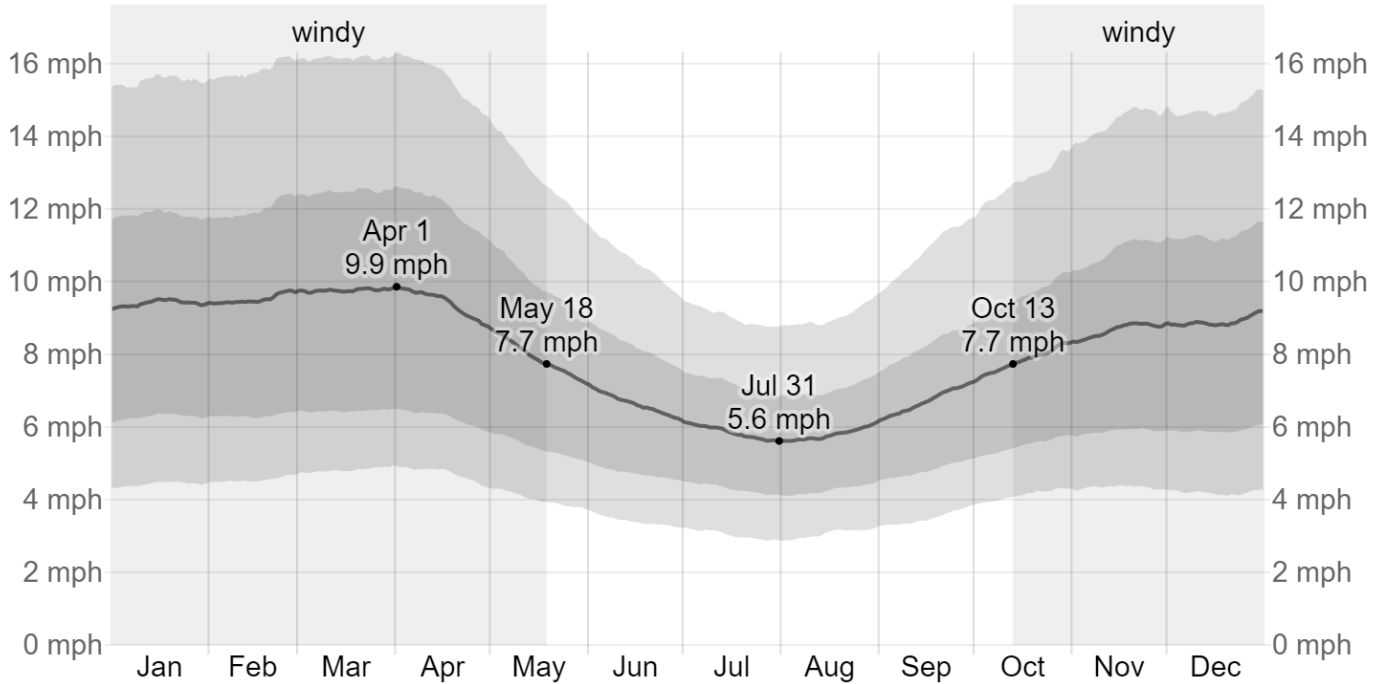


June through the end of September offer the clearest days of the year as well as the most sunlight. With shorter periods of sun and cloudier conditions in the winter, with around 50% of days as overcast or mostly cloudy.

## Average Hours of Daylight in St. Clair, MO

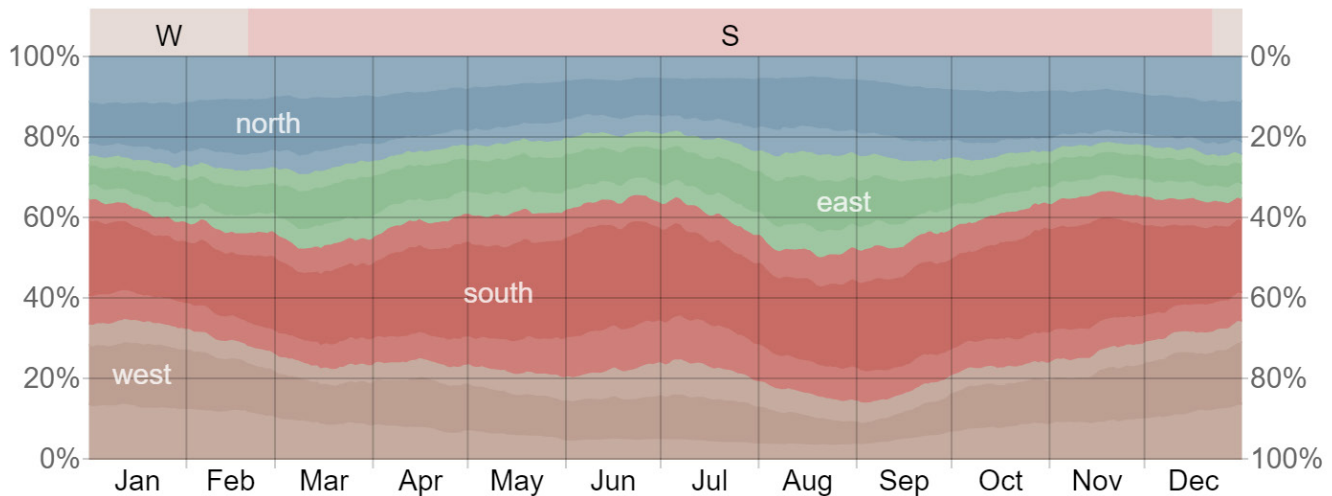


## Average Wind Speed in St. Clair, MO



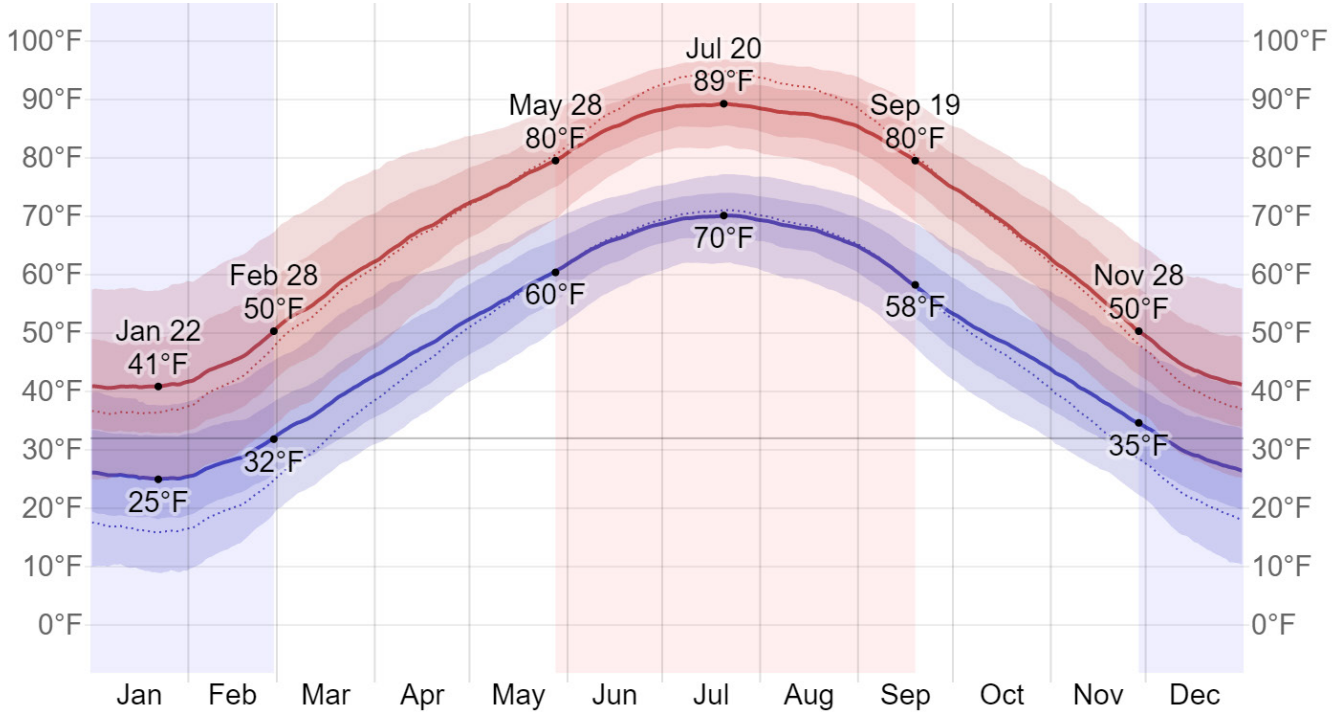
Looking at both the wind speed and direction, the winter months tend to be windier with the wind coming from the west and south. While the summer months are often calmer with the wind coming from the south.

## Average Wind Direction in St. Clair, MO



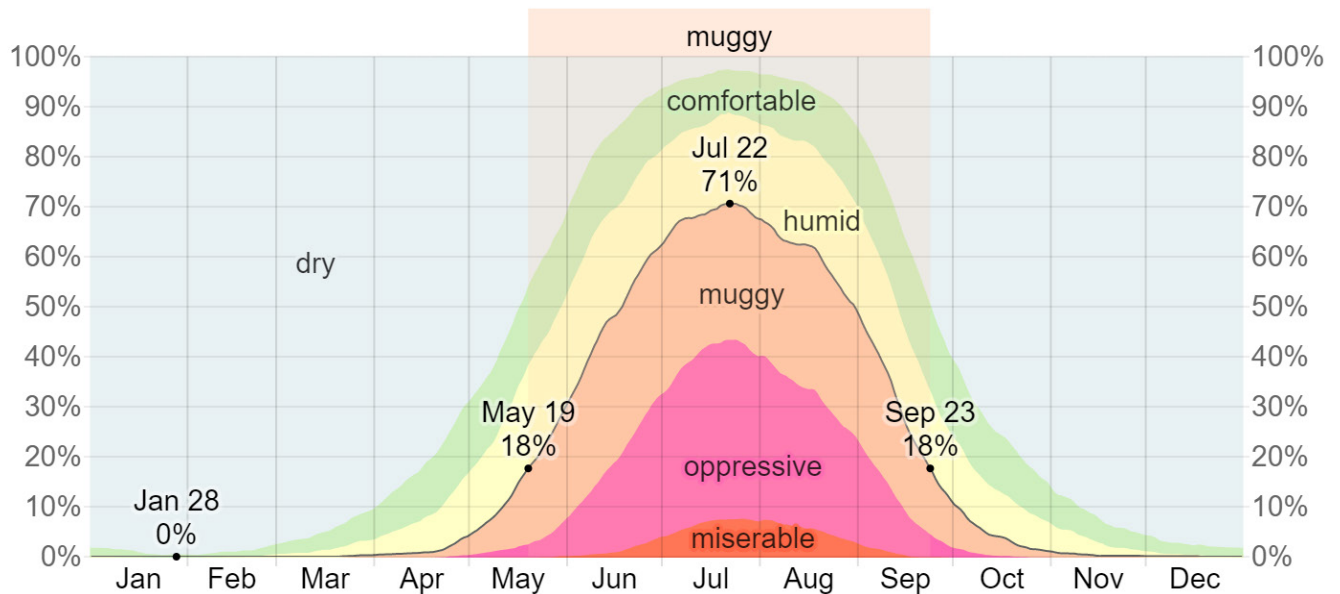


## Average Temperatures in St. Clair, MO



The winter months average a high of between 40°F to 60°F with minimal humidity, while the summer averages temperatures are around 80°F with muggy conditions.

## Average Humidity Comfort in St. Clair, MO



# Performance Criteria.

**Goals of sustainability, mental and physical wellness are the aspects of focus throughout the design.**

Throughout the entire wellness care spaces, light, views to the outdoor spaces, nature, and a simplistic design will be used to **promote a natural setting.**

Energy efficient appliances and fixtures will be used throughout the space to **decrease the environmental impact** on the surrounding space and decrease energy consumption.

Looking at similar projects, the **cost and funding** they received will be the basis of budget for the project and throughout the construction.

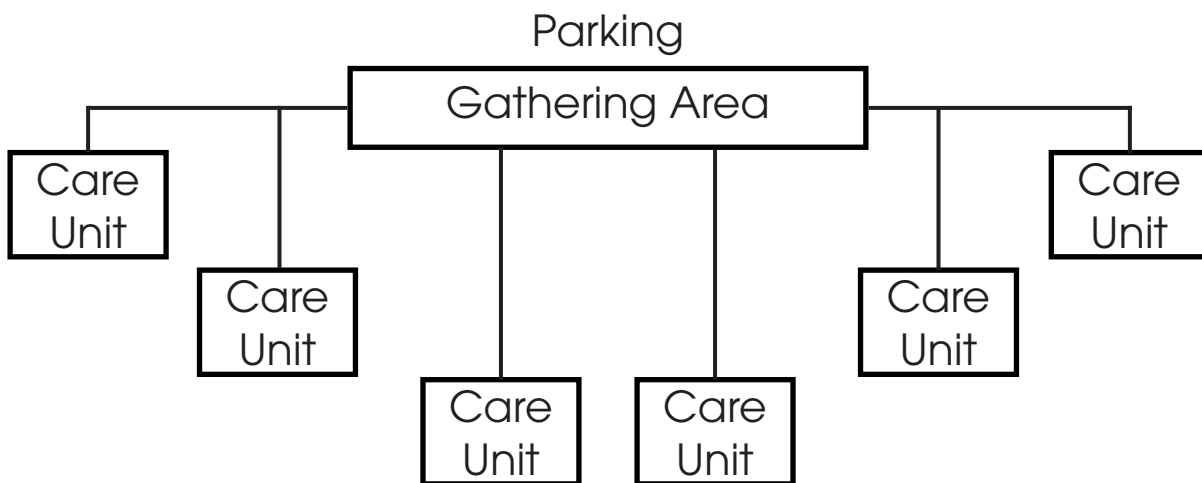
**All local and state codes** within Missouri and Saint Clair will be followed to create a safe and comfortable care space for all users.

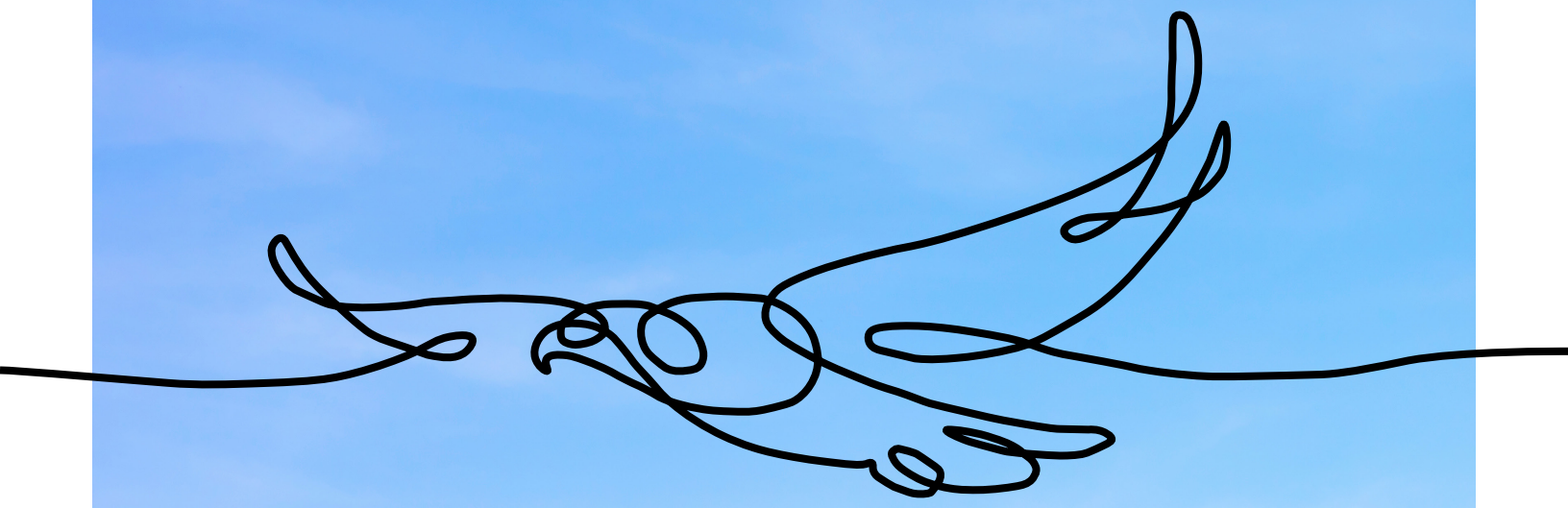
The design will also revolve around the **climate and weather patterns** of the site location. This includes the correct materials, rain and snow loads, wind, and sunlight opportunities, as well as the soil composition and building loads.

# Space Criteria.

<b>Care Space Sizes</b>		
Kitchen/Dining 180 Sq. Ft.	Bedroom/Bath 180 Sq. Ft.	Entry/Living 180 Sq. Ft.
Porch and Outdoor Space Around 100 Sq. Ft.		Miscellaneous 60 Sq. Ft.

<b>Gathering Space</b>		
Gathering Area 300 Sq. Ft.	Storage 150 Sq. Ft.	Restrooms 150 Sq. Ft.
Parking Area/Receiving Around 400-450 Sq. Ft.		Other 60 Sq. Ft.







# **The Design.**

Eagles Landing.

# Eagles Landing.

How people die remains in the memory of those who live on. -Dame Cicely Saunders

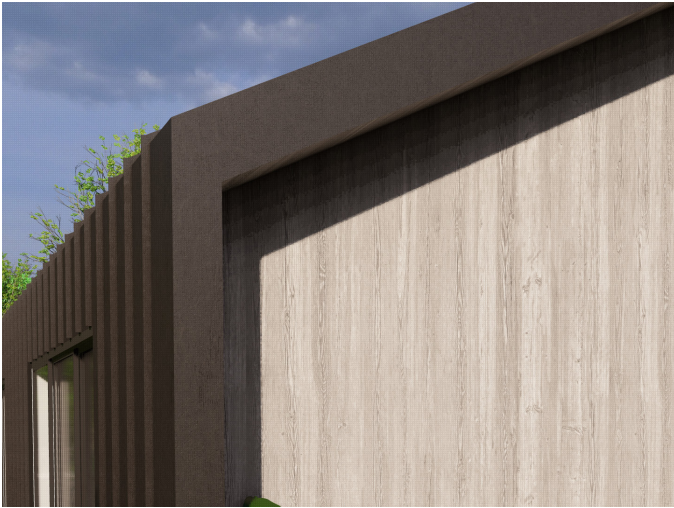
Strides in medicine are being made every day, the average lifespan, in turn, is also lengthening. The choice of how one spends their final time becomes ever more prevalent. In times of chaos following news of terminal illness and sickness, comes time for contemplation and peace. Meaningful spaces to promote peace and healing, allows one to truly live in the important moments at the end of one's life.

Emphasizing a simplistic living space through minimized square footage allows the focus to shift from unimportant tasks in life, to the meaningful moments. Interaction with nature promotes relaxation and time for thought. Therefore creating these spaces to live for those in need of palliative and hospice care within nature brings a renewed sense of strength and life. Creating a dynamic healing space allows one to live fully and comfortably in their final stage of life, both mentally and physically.

Eagles Landing, a hospice and palliative care center, allows one to create a lasting memory that remains with those that live on. Strength and peace brought through nature and minimalistic approach to create a place to live when a lifetime becomes limited.



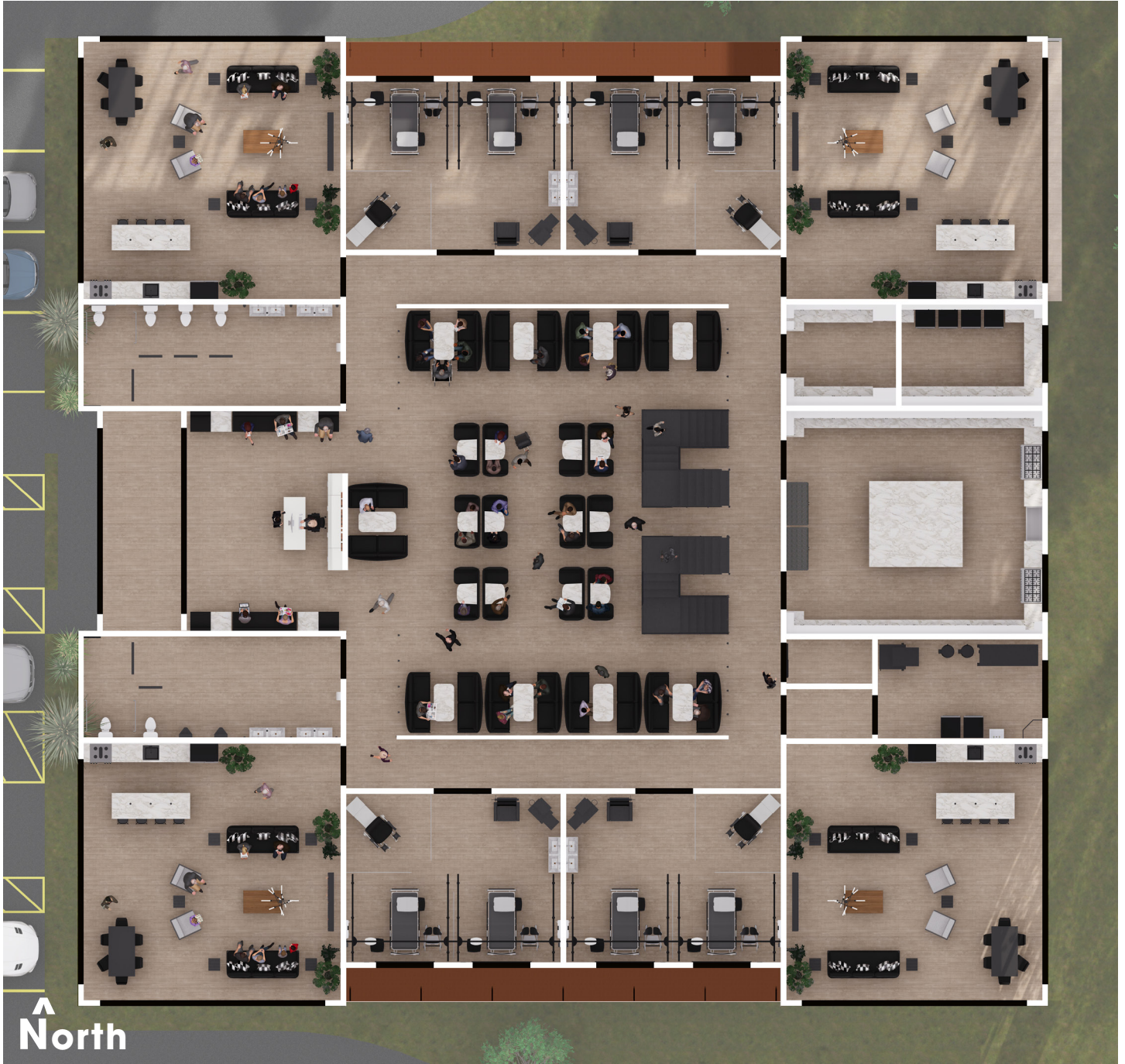
# Materials.



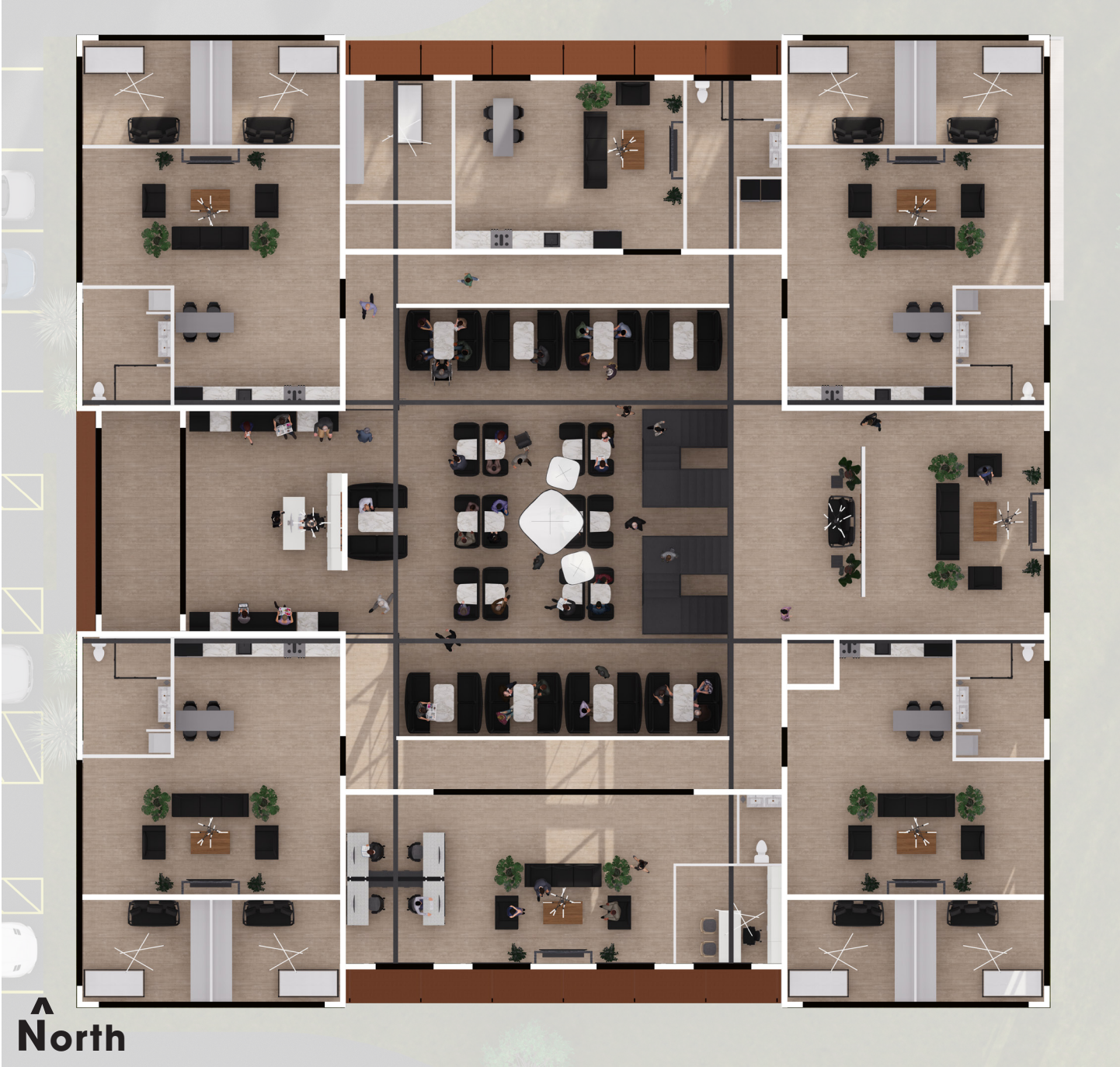




# Main Floor.



# Second Floor.



# Care Unit Floor Plan.



# Site Plan.





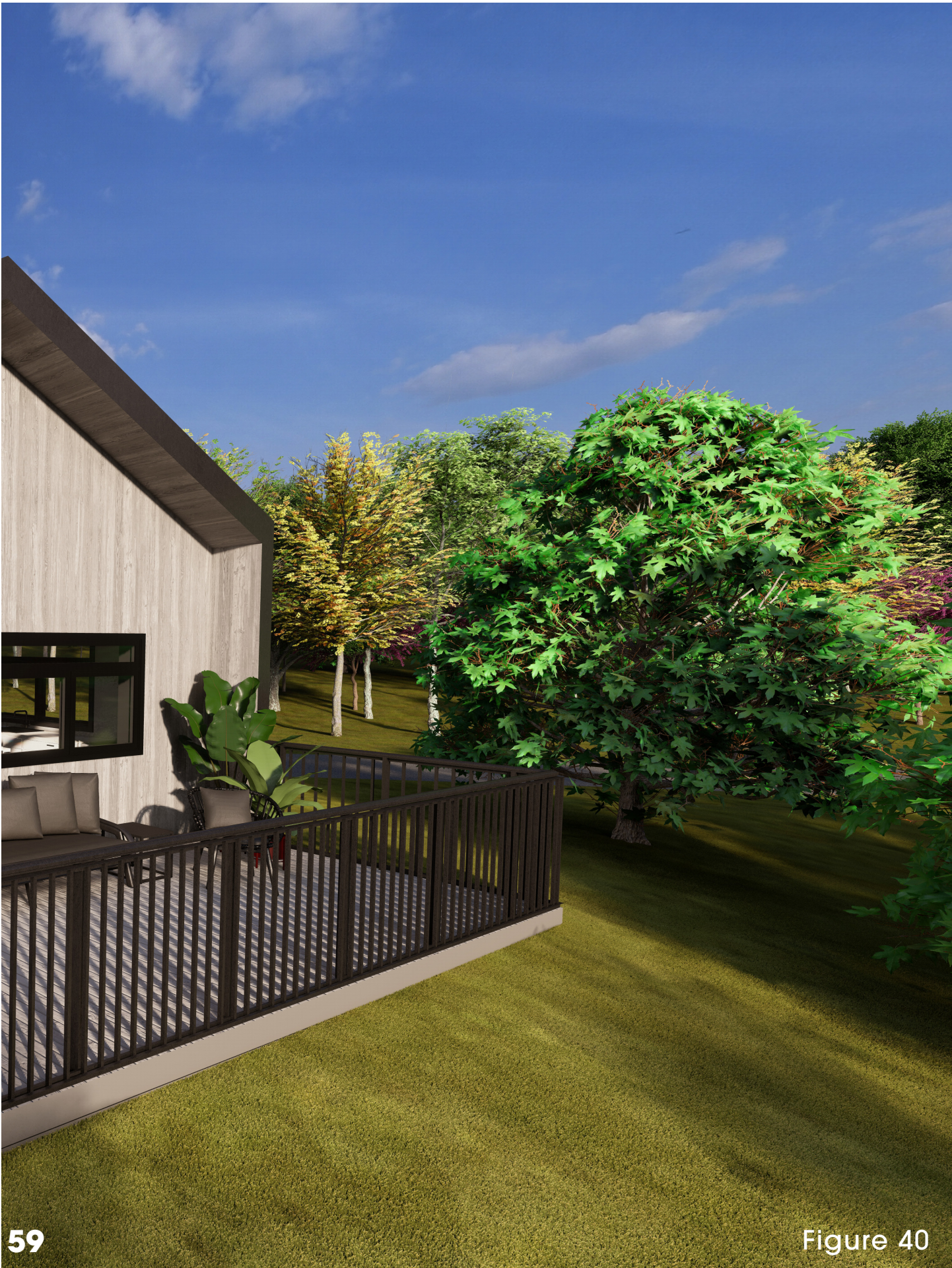
















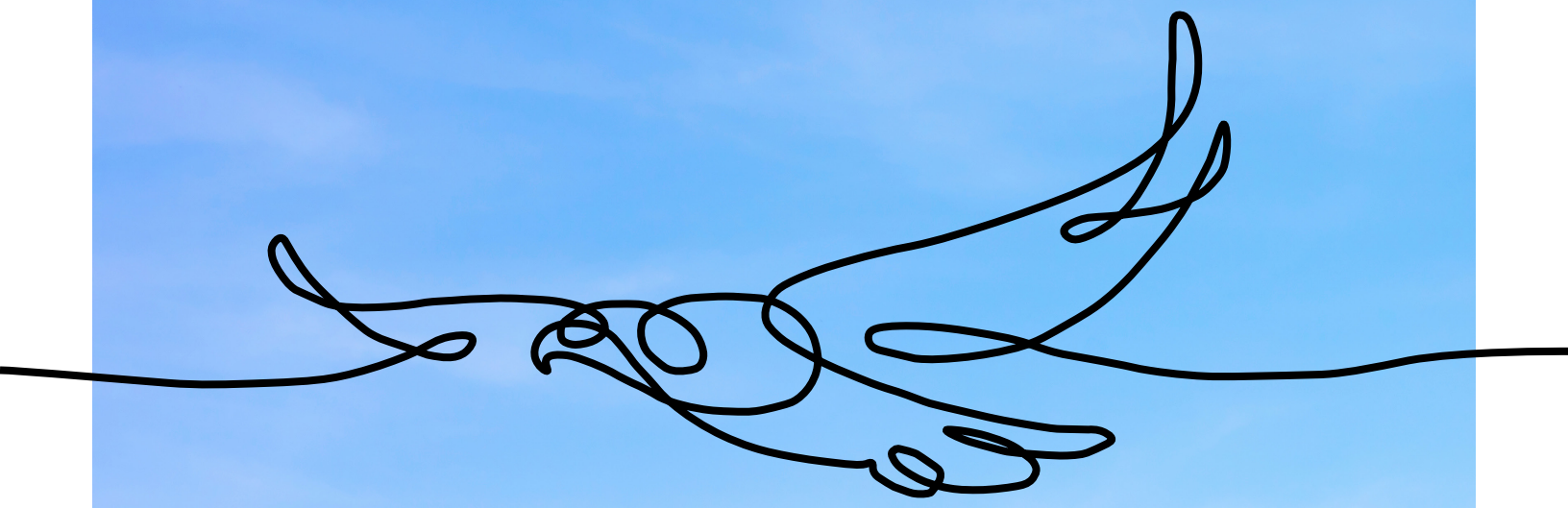












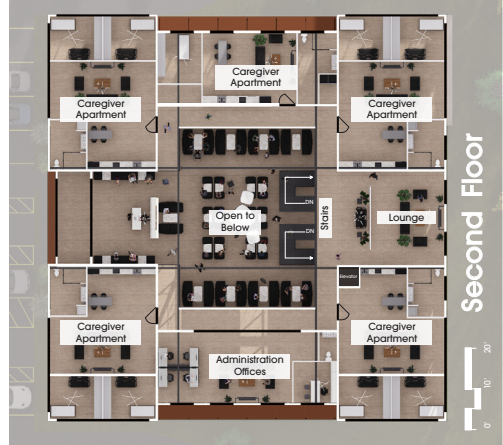
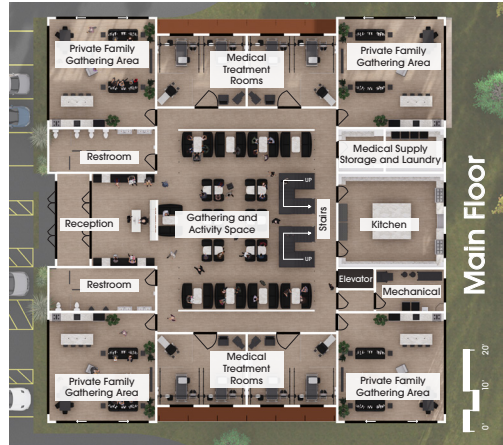


# **The Exhibit Boards.**

Eagles Landing.

# Architecture of Aging

## Architecture of Aging The Impact of Architecture on Palliative Care and Hospice

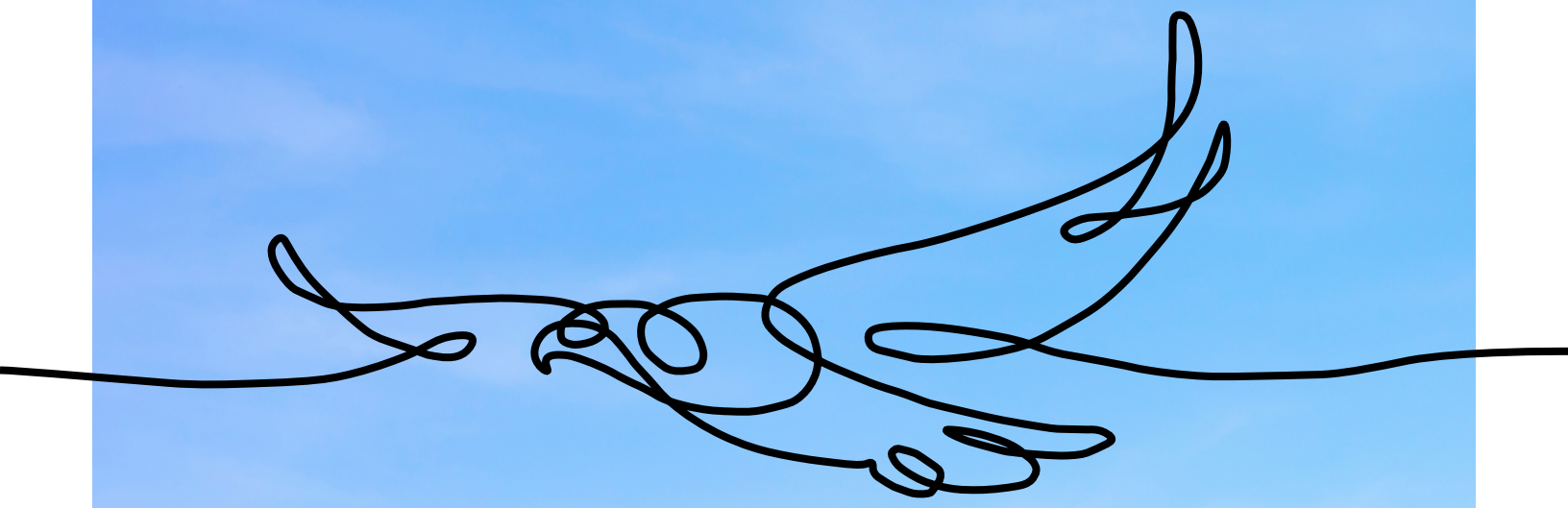


Slides in medicine are being made every day, the average lifespan, in turn, is also lengthening. The choice of how one spends their final time becomes ever more prevalent. In times of chaos following news of terminal illness and sickness, comes time for contemplation and peace. Meaningful spaces to promote peace and healing, allows one to truly live in the important moments of the end of one's life. Emphasizing a simplistic living space through minimized square footage allows the focus to shift from unimportant tasks in life, to the meaningful moments. Interaction with nature promotes relaxation and time for thought. Therefore, creating these spaces to live within nature, for those in need of palliative and hospice care, brings a renewed sense of strength and life. Creating dynamic healing spaces allows one to live fully and comfortably in their final stage of life, both mentally and physically. Eagles Landing, a hospice and palliative care center, allows one to create a lasting memory that remains with those that live on. Strength and peace brought through nature and minimalist approach to create a place to live when a lifetime becomes limited.

*How people die remains in the memory of those who live on. -Diane Cicaly Saunders*

# Architecture of Aging





# **The Presentation Slides.**

Eagles Landing.

# **Architecture of Aging**

**The Impact of Architecture on Palliative Care and Hospice**

## **Imagine:**

receiving news that you only have a few months to a year left to live, where would you want to spend your final moments?





**Outward Bound Micro Cabins**  
Location: Rocky Mountains, Colorado



**Hospice De Liefde**  
Location: Rotterdam, Netherlands

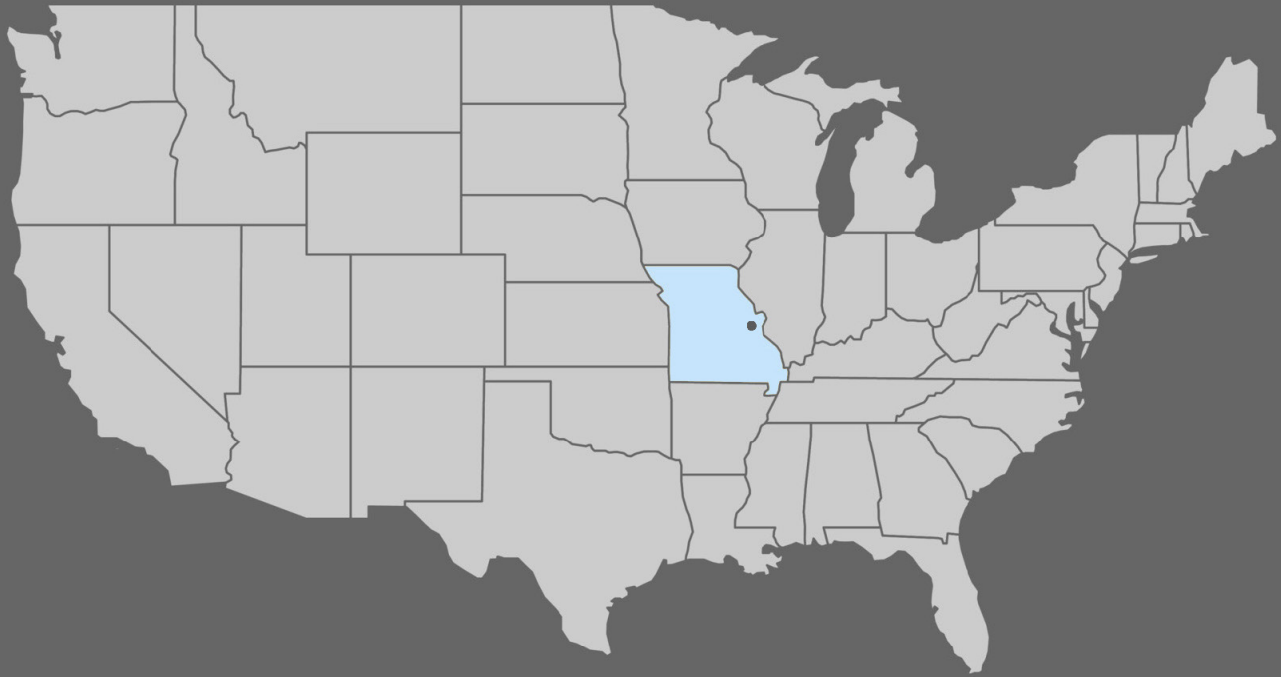


# Overall Goal:

to provide a space for terminally ill patients that promotes comfort, mental and physical wellbeing.

# Design Process.

Eagles Landing Care Center



Saint Clair, Missouri



# Materials.



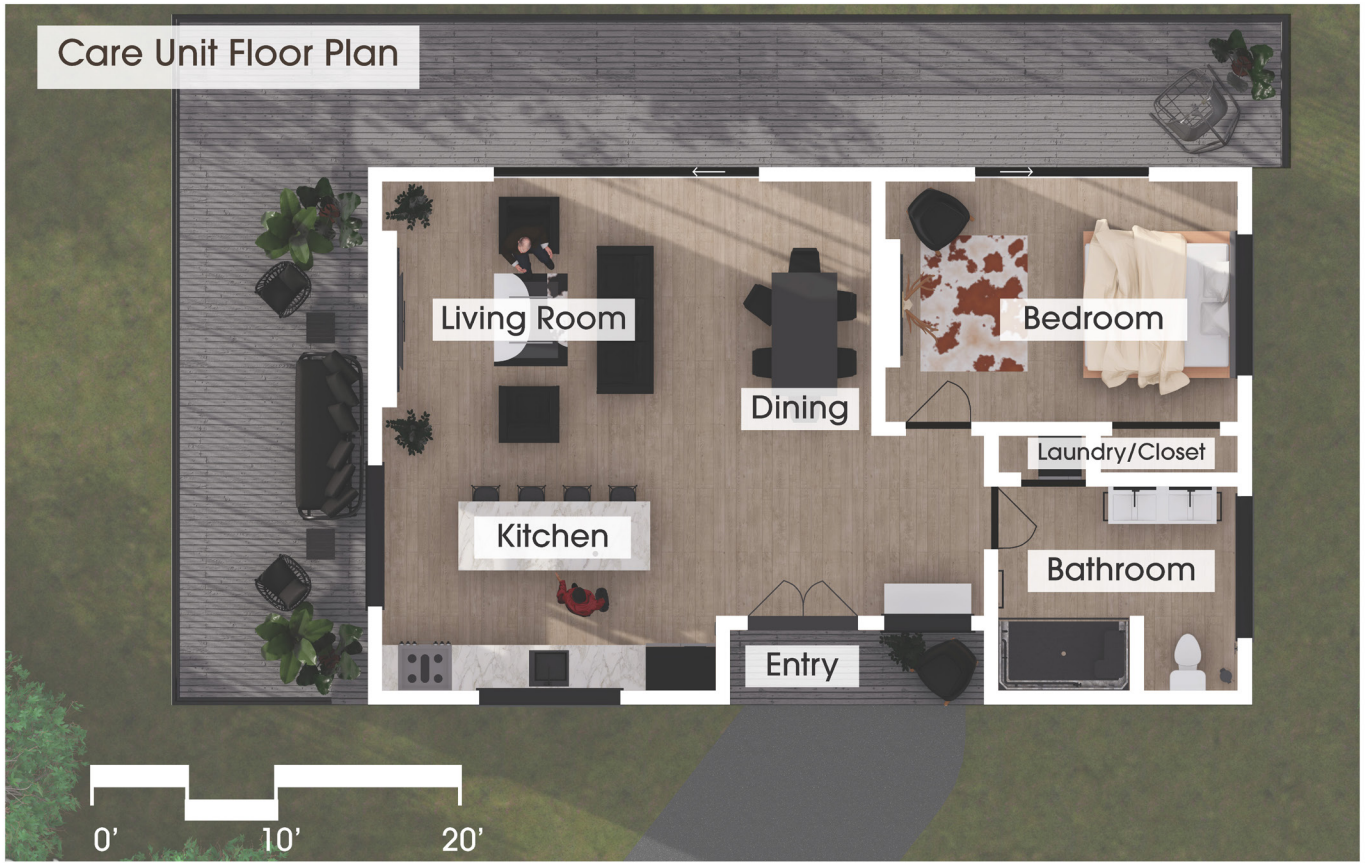
# Design Solution.

Eagles Landing Care Center

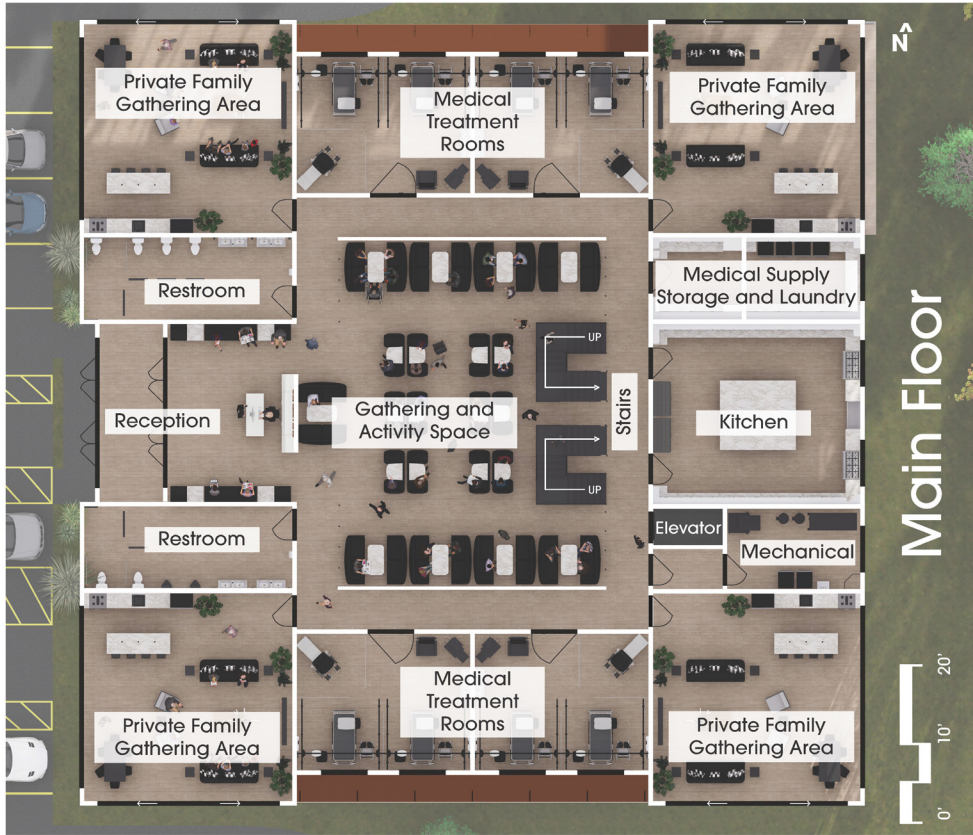


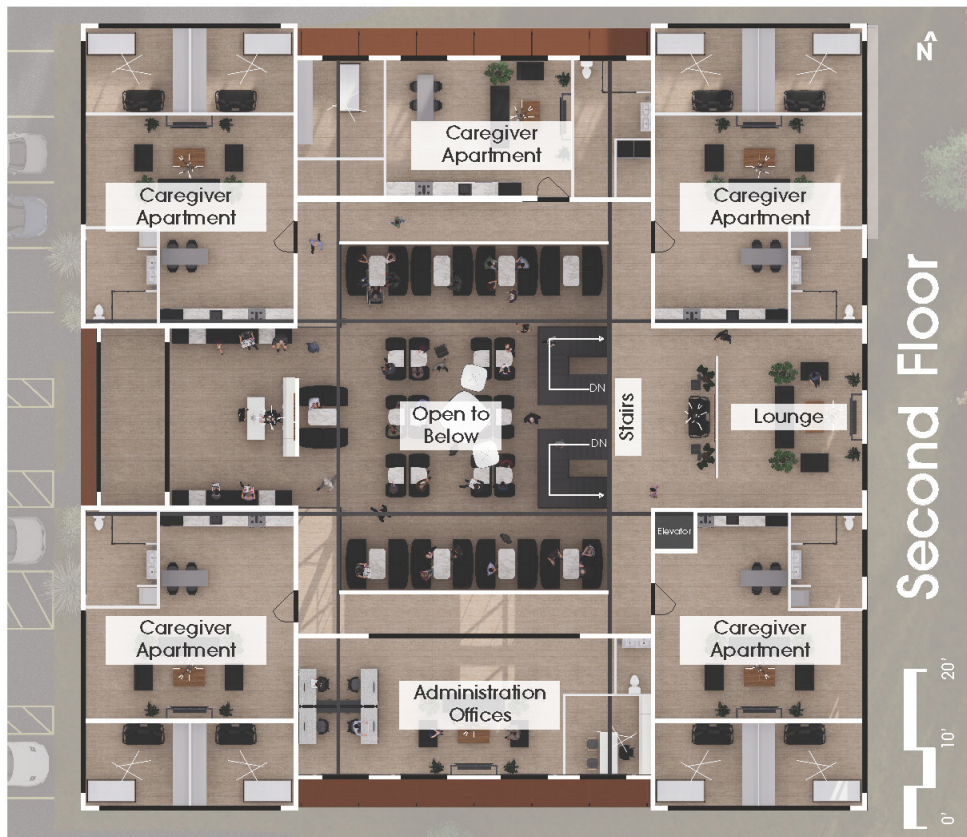


# Care Unit Floor Plan











# Appendix.

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# Appendix.

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# Appendix.

## Previous Studio Experience:

Year <b>II</b> - Autumn Studio _____ Boat House Project	Emily Guo
Year <b>II</b> - Spring Studio _____ Dwelling Project	Milton Yergens
Year <b>III</b> - Autumn Studio _____ Storytelling Within Architecture Project	Seleria Alenjery
Year <b>III</b> - Spring Studio _____ New American Expo Center, Pavilion Project	Paul Gleye
Year <b>IV</b> - Autumn Studio _____ Miami High Rise Capstone Project	DaveCrutchfield
Year <b>IV</b> - Spring Studio _____ Marvin Windows, Medora Planning Project	Kristi Hanson
Year <b>V</b> - Autumn Studio _____ Thesis Design Project	Cindy Urness
Year <b>V</b> - Spring Studio _____ Thesis Design Project	Cindy Urness

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**Thank You  
For Your Time!**

