REDEFINING ARCHITECTURAL SOLUTIONS FOR MENTAL HEALTH

ISSUE 001

LEVERAGING BIOPHILIC DESIGN

CONTENTS

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Lastly, I would like to dedicate this thesis to my brother Gary. Gary passed away in May, 2019 due to suicide and experiencing this tragedy lead me to exploring the idea of designing a mental health facility that offered a more suitable healing environment for those battling mental health. Thank you for being the big brother you were. I will forever love and miss you.

ABSTRACT

The connection between architectural design and mental health is significant, yet largely goes unrecognized. Although hospitals are capable of helping treat mental health, an argument can be made that, in many cases, these hospitals are not designed with the intent to treat/rehabilitate mental health and are far more equipped to treat physical ailments around the United States. Using a focused lens on design that helps combat mental illness, this thesis will explore how biophilic architecture can improve mental health. Biophilic design offers a variety of solutions that can be beneficial to mental health if done correctly and, in the right environment. Many studies from Stephen Kellert and Terrapin Bright Green have highlighted the positive impact biophilic design has within the built environment, including stress reduction and improvement in cognitive performance. This thesis is driven by a series of questions that ask, by utilizing the principles of biophilic design, can architecture be used as a new source in combatingmental health? How effective can biophilic design be in the overall healing and psyche of an individual or group of people healing from depression, trauma, and anxiety?

I am approaching this topic with the end goal being to propose the development of a new model of mental healthcare facility that is leveraging biophilic design principles to treat mental health than a standard hospital more effectively. The healthcare facility would provide the benefits that an individual would receive from a hospital or residential treatment program but in a more beneficial setting of healing.

PROPOSAL

PROJECT DESCRIPTION

This thesis proposal began with loosing my brother to suicide in May of 2019. In reflecting upon the experiences my brother went through before his death and dealing with depression, there was a handful of instances that I witnessed the allowed for a better understanding of sequence of events that an induvial goes through when they have a mental health crisis. This personal experience taught me firsthand that although hospitals are certainly equipped to offer treatment, it is not a suitable environment for someone suffering from a mental health crisis. In most cases, hospitals are designed to treat physical ailments in a sterile environment and do not offer a setting that is designed to offer cognitive support so that a person has the ability to slowly feel at ease while also being comfortable and safe. My thesis will explore in depth the concept of biophilic design and its ability to reduce stress, improve cognitive function and creativity, improve our well-being, and expedite healing. I then intend to explore the creation of a mental health facility that uses biophilic design principles developed by key thinkers to influence and guide my design.

The end goal is to further demonstrate the benefits biophilia has within healthcare design and that it can be an effective design method to help those suffering from mental illness. I plan to explore this in further detail through the use of many methods such as, a comparative analysis study that examines building that have incorporated biophilic design and learning what work effectively and what failed. A method that I believe will greatly push my project in the right direction is through interviewing those that deal with individuals that suffer from severe mental health and are at risk of self-harm, as well as healthcare architects that have began to incorporate biophilic design. It is important to acknowledge that although this facility cannot be the overall solution to mental health, and must be approached using a smart (Specific, Measurable, Attainable, Realistic, Timely or Time specific) goal. I believe it can provide a significant resource to the healing and treatment of an individual who suffers from it.

KEY WORDS

Biophilic design, mental health,depression, well-being.

NARRATIVE

In the event of a mental health crisis that an individual is deemed to be at risk of self-harm, under self-guidance or by intervention from emergency responders this person will find themselves in the emergency room of their local hospital. Upon their arrival the induvial will be evaluated by a mental health crisis professional to determine what level of care is required. Typically, this will result in inpatient hospitalization. Under close supervision, the individual will potentially find themselves waiting in an ER room for an extended period of time. While they wait the hospital will find placement within a specific floor of the hospital or a free-standing psychiatric hospital. The typically distressed individual is often milled off to a bland, stimulant absent, empty, room. The issue with this procedure is it only causes more distress for the individual that is already feeling out of control and scared. This is due in large part to the way hospitals are designed. A hospital is designed with the purpose of treating physical ailments in a sterile environment and does not give as much priority of the needs of a healing mind, the current way we design hospitals does harm and prevents healing, it is possible to design them in ways that comfort and heal patients both mentally and physically.

ATMOSPHERE OF AN EMERGENCY ROOM

In closely examining the series of movements that the individual goes through from the time they arrive to when they are placed in a room, the interaction each room has on the individual can not be overlooked. Upon arriving at the emergency room the lobby / waiting room is the first point of entry, and this is often designed with a series of bright colors, a use of different materialities that present a welcoming and comfortable environment.The individual then transitions through a series of doors that are intended to act as checkpoints and arrives in a small room where they are first assessed. Although this room is not meant for the individual to spend a lot of time in, it acts as the transition point from the more inviting waiting room to the sterile, bland, and stimulant absent environment that is the rest of the emergency room. This room is often empty with the exception of medical equipment, the room is typically painted white and doesn't offer any sense of comfort. After the initial assessment is over the induvial then transitions through another series of doors and moved through hallways filled with more doors, and checkpoints, like nurses's stations.

Kingston, New York Emergecny Department (Figure.1)

This transition can often make an individual more uncomfortable as it feels as if each room or checkpoint they pass by, everyone is watching them. The induvial then arrives to the ER room where they will wait for an extended period of time. This room is often filled with bright fluorescent lighting because there are no windows, typically painted with soft earth tones or white. It is filled with a bed and surrounded by equipment for medical personnel. As an individual spends more time in the room there is a sense of isolation and a feeling as if time passes very slowly. Often there is nothing to stimulate the mind unless there is a tv. With an individual suffering from a mental health crisis, these rooms don't offer a sense of comfort or relaxation.

THE JOURNEY THROUGH A TYPICAL EMERGENCY ROOM OFTEN FEELS VISUALLY STALE, UNINVITING, AND INTIMIDATING.

AN INTERVENTION

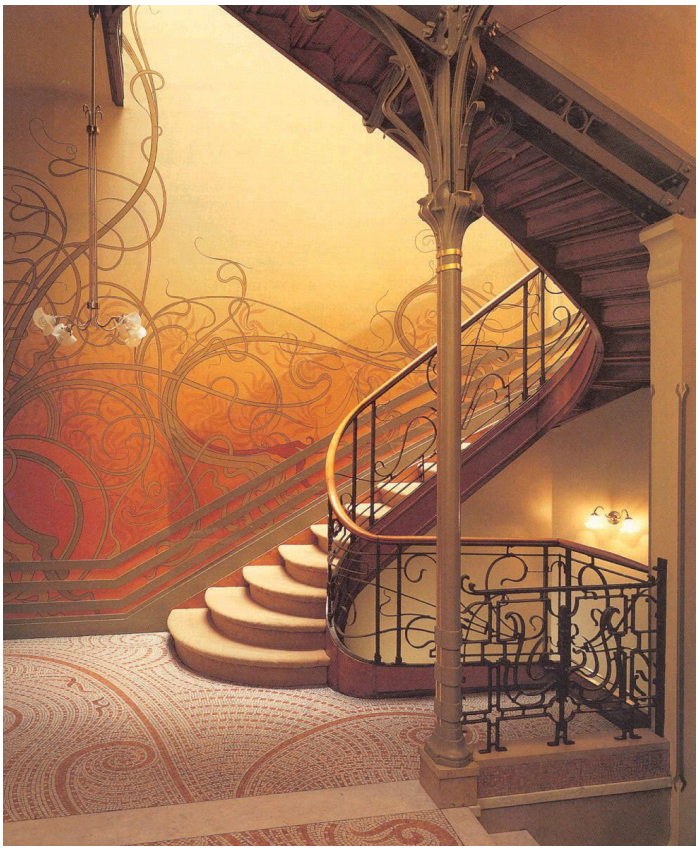
As an individual spends time in spaces that are not dedicated to encouraging the activity or emotion the occupant desires and, though intentions can still be fulfilled in said space, productivity and mental wellness can improve when a space is no longer a resistance for these desired behaviors or emotions. A variety of factors play their role in making a space more "effective", that being in the usage of materials, light, color, and furnishings placement (fixed or non-fixed), along with the type of space a person is living in. Through this research I will explore / investigate how biophilic design can create spaces that bring about a healing behavior. So, if a space is intended to heal, healing will be done. If a space is intended to encourage socializing, people will socialize. And if a space is arranged to lower an individual or individuals' restlessness, the occupant will feel more relaxed. Through other studies findings, it has been in part proven and theorized that biophilic design can play a crucial role in the healing process for someone suffering from mental illness or recovering from an injury or surgery.

DISSECTING BIOPHILIC DESIGN

Biophilic architecture, along with its history and principles, this will be the main proposition that will be tested and use to offer another treatment solution to mental illness. While the term biophilic design was not introduced until the 1980's it has been around in different forms for many years. For example, Indigenous design incorporated a connection to nature. Another example that helped shape its development is it's use by historical movements such as Art Nouveau and by the world-renowned architect Frank Lloyd Wright. This work primarily focused on the ideology of natural imagery and organic forms. In further examining the Art Nouveua movement, in the late 19th century, there were many artists that became known for pulling much of there inspiration from nature itself. There are many works throughout this period that demonstrate the connection to nature, for example, Terrapin Bright Green noted, "Architect Victor Horta's exuberant plant tendrils lacing through buildings in Belgium, the lush flowers that are Louis Comfort Tiffany lamps, and the explicitly biomorphic forms of Antonio Gaudí's buildings" (14 Patterns, 9).

Falling Water (Figure.2)

These examples allude to a reconnection with nature and also demonstrate the beauty that can be inspired when using nature to create varying forms of art. In examining Frank Lloyd Wright, it can be assumed he was doing biophilic design long before it would be coined. Throughout most of Wright's work, there are many examples that allude to the key thinkers of biophilic design using Wright's work to build the original framework. Some of the best examples that display this is how Wright incorporated abstract prairie flowers and plants into his ornamentation and glass windows used in varying degrees and in many of his designs. Wright also used natural materials and focused on creating intimate views that looked out into nature. The most profound use of these methods used by Wright is in his design of Falling Water, located in Pennsylvania.



Victor Horta, Hotel Tassel, Belgium (Figure.3)

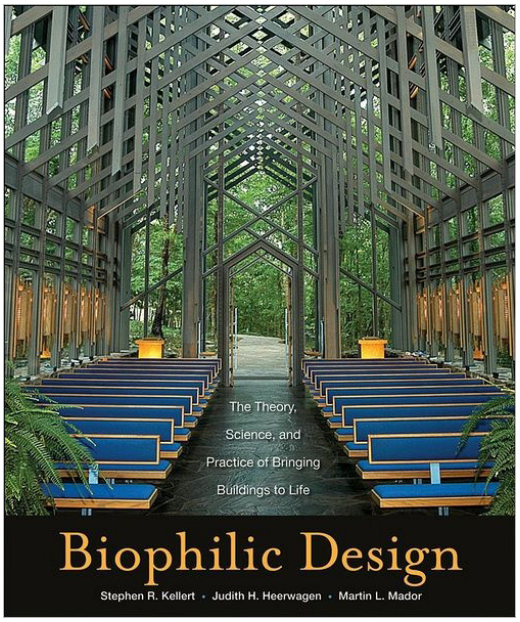
KEY THINKERS

The use of incorporating nature in varying forms of expression allowed forkey thinkers, E.O Wilson and Stephen Kellert to begin the framework of biophilic design in the 1980's. E.O Wilson was a biologist that developed biophilia hypothesis. This theorem was the study of humans seeking a connection with the natural world and other living systems. Stephen Kellert worked with Wilson to develop the theorem. After the book was released, the two identified the need for building design that reflects the natural world. It would not be until 2008 that Stephen Kellert would later build upon this by publishing Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life. The book introduced the world to biophilic design. Stephen Kellert presented the idea that humans have been disconnected from nature and argues for that reconnection through the use of spaces that link nature and the built environment together. Kellert argues this idea by giving design solutions such as incorporating more windows for daylight and fresh air and the use of plants and greens spaces inside and out of the building, while also using natural materials.

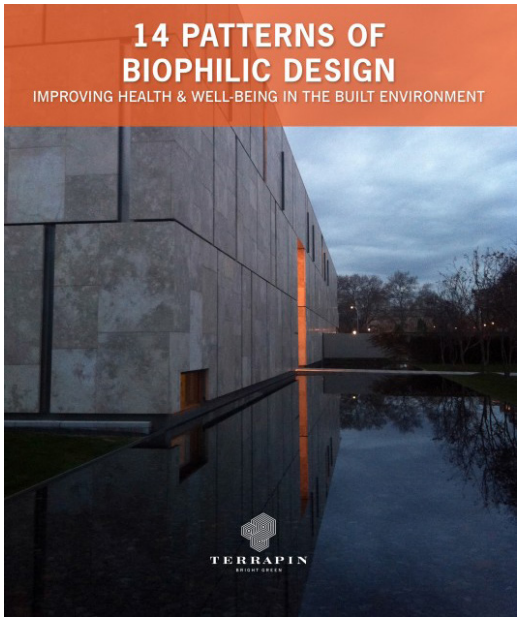
E.O Wilson (Figure.4)

Stephen Kellert (Figure.5)

Kellert states, “people learn better, work more comfortably, and recuperate more successfully in buildings that echo the environment in which the human species evolved” (Kellert 22). This is the foundation in which Kellert and Wilson coined the term and built the framework of biophilic design. Although many found inspiration in Kellert’s first publication and used it as inspiration, it would not be until another key thinker, Terrapin Bright Green, a sustainability consulting firm, published 14 Patterns of Biophilic Design. Building off of Kellert’s major ideas and the framework used to write his book. Terrapin Bright Green Broke down patterns that are found in nature and how they can be applied to the built environment by providing a variety of examples that were successful in their own way of reconnecting humans with nature. The book presented principles as a guide to incorporate biophilic design. These fourteen design principles have since been used as the guide for biophilic design and influence the way architects design for biophilia. I intend to use these fourteen principles along with E.O Wilson and Stephen Kellert’s ideologies to influence and guide me in answering my questions as well as my design.



Biophilic Design (Figure.6)



14 Patterns (Figure.7)

BIOPHILIC

PRINCIPLES OF BIOPHILIC DESIGN

Once my thesis begins moving forward in bringing the project to realization and I begin to design the mental health care facility. I will closely reference the principles of biophilic design that have been followed by architects and designers as a design guide since its conception. These principles offer a general sense in how to go about offering solutions to universal issues of human health and well-being such as a person's physical and mental health. These principles established by a collection of various key thinkers such as Terrapin Bright green, Stephen Kellert, and Elizabeth F. Calabrese "focus on patterns in nature known, suggested or theorized to mitigate common stressors or enhance desirable qualities that can be applied across various sectors and scales" (Terrapin Bright Green, pg.7). The intention behind using this guide in the design of my thesis proposal is to follow the framework that has already been established to create the ideal biophilic building. This also allows for me to have a narrowed focus in my design process which will be beneficial in not overwhelming the design by over complicating it but rather simplifying the end result.

Vatican City Gardens (Figure.8)

Façade renovation of Suites Avenue Aparthotel (Figure.9)

Stepping stones at the Fort Worth Water Garden (Figure.10)

NATURE IN THE SPACE

1.Visual Connection with Nature
2.Non-Visual Connection with Nature
3.Non-Rhythmic Sensory Stimuli
4.Thermal & Air Flow Variability
5.Presence of Water
6.Dynamic & Diffuse Light
7.Connection with Natural Systems

NATURAL ANALOGUES

8.Biomorphic Forms & Patterns
9.Material Connection with Nature
10.Complexity & Order

NATURE OF THE SPACE

11.Prospect
12.Refuge
13.Mystery
14.Risk/Peril

STRESS REDUCTION BENEFITS

Positively impacted heart rate, systolic blood pressure and sympathetic nervous system activity, positively impacted comfort, well-being and productivity, positively impacted circadian system functioning.

COGNITIVE PERFORMANCE

Improved mental engagement/ attentiveness, Observed and quantified behavioral measures of attention and exploration, Improved concentration and memory restoration, Enhanced perception, and psychological responsiveness.

EMOTION, MOOD & PREFERENCE

Positively impacted attitude and overall happiness, Perceived improvements in mental health and tranquility, Improved perception of temporal and spatial pleasure (alliesthesia).

HISTORY

HISTORY OF MENTAL HEALTH

In examining the history of mental illness as it relates to my project. Depression and anxiety have been around for thousands of years dating all the way back to 2000 BC. At the time it wasn't seen as a physical condition but of a spiritual issue and it wasn't until the 20th century in which doctors and psychiatrist began to start understanding depression. During this time range it is important to note some of the rather harsh or very ineffective treatments being used. It started with beatings, ousting, and starvations and began to transition to exercise, bloodlettings, and homemade medicines, and then transition back to more forms of cruel and unusual treatments like drowning and burning those that suffered from depression. Having a better understanding of the history within this time period, I believe is very important for someone to have knowledge of because it not only shows just how misunderstood mental illness was, but also that this may be the reason that to this day, some people choose to not acknowledge, stigmatize, and form negative opinions.

In the 20th Century, is when things began to change with mental illness due to a German psychiatrist Emil Kraepelin. Kraepelin established manic depression and his research allowed for others to have a better understanding of what causes depression and the range in which it effects individuals who suffer from it. Kraepelin's work was later continued in monumental ways from the likes of world-renowned psychiatrist Sigmund Frued, cognitive theorist Aaron Beck, psychologist Martin Seligman and developments such as the behaviorist movement. As there began to be a much better understanding of depression and anxiety, the treatment options began to try to effectively help treat those that suffered from it. However, it wasn't until the 1950s that the first medicine was created to help combat severe depression. As we examine mental health today, there has been drastic strives in helping individuals that suffer, there are a wide range of options that are used, and each treatment is effective in curing some individuals but not all. Because mental health is not a one treatment solution, it is usually treated with a combination of treatments, and within that there is still a percentage that haven't found an effective solution.

PRECEDENT

Each of the following precedent studies with the exception of the Thorncrown chapel is an example of biophilic design that uses the fourteen principles as guidance in their design in varying degrees. The Thorncrown chapel is the exception as it was a structure that was built in 1980 before biophilic design was invented. This structure still holds significant meaning within biophilic design as it influenced the and construction of the fourteen principles. In the Waldkliniken Eisenberg, the architects were heavily influenced in using many biophilic design principles to guide the overall design. The principles of a visual connection with nature, dynamic and diffuse light, connection with natural systems, biomorphic forms and patterns, and material connection with nature. In the Seattle Children's Cancer and Critical Care, the biophilic design principles used were a visual connection with nature, non-rhythmic sensory stimuli, dynamic and diffuse light, connection with natural systems, complexity and order, and prospect and refuge. In defining the principles used within each design, the principal of a visual connection with nature refers to creating a visual experience with nature. The principal of dynamic and diffuse light refers to relying on natural light to achieve lighting effects. The principal of connection with natural systems refers to creating a connection by making one aware of seasonality and the cycles of life, this is achieved in both by the use of gardens. The principal of material connection with nature refers to using material found in nature such as wood or stone, this is also achieved in Waldklinkien by using wood in various parts of each design. The principal of biomorphic forms and patterns refers to, using symbolic references that persist in nature, the Waldklinkien explores this in the form and layout of the building by its resemblance to a tree ring. The principal of complexity and order refers to spatial hierarchy, this is achieved in the Seattle Children's Cancer and Critical Care by its fractal geometries in painting and artwork. The principals of prospect and refuge are more commonly mixed together and refer to providing a sense of safety and control, this is achieved in the Seattle Children's unit by the design of each patient's room. These principles together offer many benefits and promote well-being, the use of these in hospital design is becoming more frequent throughout the world. Although used in varying degrees in each project, each principles plays an important role in influencing design in a positive way.

EISENBERG

THE WALDKLINIKEN “FOREST CLINIC”

Project: Waldkliniken Eisenberg
Location: Eisenberg, Germany
Architect: Matteo Thun & Partners

The Waldkliniken was designed to accommodate pre-and post-operative patients, as well as those requiring therapeutic treatments. Designed to for 128 patient rooms. The patient rooms were arranged around the perimeter of the circular building form, with the intention of each room receiving plenty of daylight and fresh air. The architect incorporated winter gardens located between adjacent rooms to unique provide shared spaces that allow patients to look out across the surrounding site. Wood is used throughout the project to create a warm and calming feel inside the building. The architects were heavily inspired not only to create a hospital that feels more like a hotel but by biophilic design. Throughout many aspects of the design, there are many biophilic design principles used to enhance spaces such as patients’ rooms, communal spaces, and waiting rooms. The principles of a visual connection with nature, dynamic and diffuse light, connection with natural systems, biomorphic forms and patterns, and material connection with nature can be found within many design features.

(Figure.11)

(Figure.12)

SEATTLE

THE SEATTLE CHILDREN'S CANCER AND CRITICAL CARE

Project: Seattle Children's
Location: Seattle, Washington
Architect: ZGF Architects

The Seattle Children's Building Hope expansion consist of an eight-story, 330,000-square foot Building. Designed to accommodate a ground floor emergency department, an intensive care unit, and two cancer care units. A unique approach to offer more flexibility within the layout of the rooms, the architect shaped together an eight-bed neighborhood layout. Within each of the neighborhoods there is shared access to resources such as a nurse's station, automated medication cabinets and family lounge. "The architects used a multi-layered approach to lighting in order to promote a sense of well-being. Patients can control the color-changing LED lighting inside their rooms" (Contract Design Network). The biophilic design principles used were a visual connection with nature, non-rhythmic sensory stimuli, dynamic and diffuse light, connection with natural systems, complexity and order, and prospect and refuge.

(Figure.14)

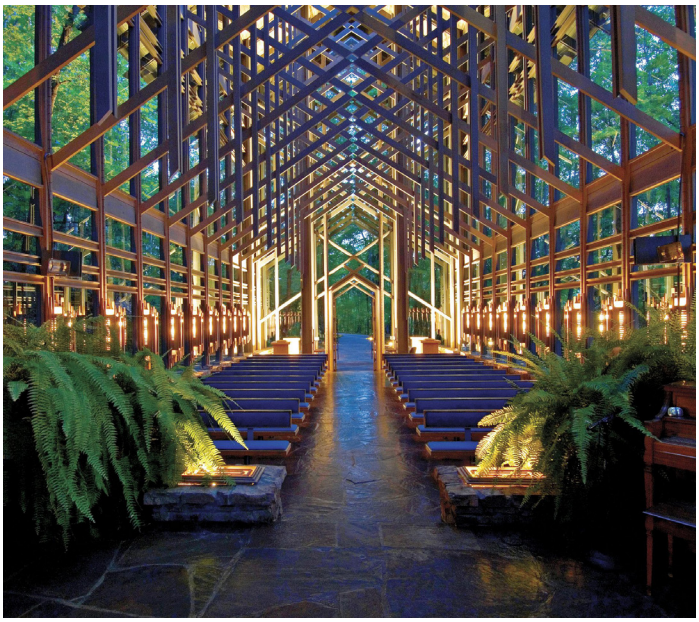
(Figure.15)

CHAPEL

THORNCROWN CHAPEL

Project: Thorncrown Chapel
Location: Eureka Springs, Arkansas
Architect: E. Fay Jones

The Thorncrown chapel built in 1980 stands at 48 feet tall. The structure consists of 425 windows and was constructed using only organic materials indigenous to Arkansas. The chapel has numerous design awards and is often found as key precedent in those that practice biophilic design. Although it came before the creation of biophilic design, the founders Stephen Kellert and E.O Wilson took great inspiration from the designed and based a lot of the core ideologies and principles in the design and techniques used by E. Fay Jones to build the framework for biophilic design. The Thorncrown chapel is often found in most books that focus on biophilic design as many speak of its raw beauty and interaction with nature.



(Figure.17)

(Figure.18)

METHODS

To move my thesis forward from a conception to realization, I have identified three methods that I believe will assist in allowing me to further my research and influence my design. In choosing these methodologies the goal is for them to answer certain questions that will further my knowledge of biophilic design, mental illness, and healthcare design that can make a difference. These methods include a comparative analysis that I hope to gain a knowledge of how to apply biophilic design in ways that may not have been done before and to also understand the importance each principle holds. Another method is interviews with professionals that deal with different aspects within mental health and can give personal experiences and firsthand knowledge of a complicated issue. In doing this method, I look to gain knowledge of what efforts and treatments help with mental illness and what aspects hinder it. Ideally this will allow for creating solutions in my design that these professionals identify as issues that may have arisen from past architectural intervention and are still present. The third method is a series of iterations study, the purpose of this is to allow me to visualize biophilic design and break it down into separate elements and learn how to apply it visually to my own design.

COMPARATIVE ANALYSIS

The focus of employing this methodology is demonstrating the effects of biophilic design. There are many biophilic books that create a comparative analysis in the sense of comparing rooms that do not use biophilic design to rooms that have implemented it using images showing the significance in contrast. In depicting the images used in the books, the authors highlight the use of the fourteen design principles that influenced the design of the spaces that use biophilic design. In most cases, there are biophilic principles that clearly demonstrate the influence and there are other biophilic principles that are present but not particularly visible and the only way of knowing is by the author annotating their presence. I find the way the authors go about demonstrating the effect biophilic design has within a space very effective. However, I want to explore this comparative analysis by taking it a step further, by comparing rooms that both incorporate biophilic design. I plan to do this by using multiple images that show the rooms from different angles and from there breakdown each room by identifying the overall influence biophilic design had in the outcome of the finished space.

The overall visual biophilic principles that are influencing the design, and discussing the psychological and physiological benefits that have been created within the space.The result I intend to get out of this method is being able to have a better understanding the influence each principle has visually, along with being able to demonstrate that just because someone says it is biophilic design doesn't mean it is as effective as other projects and therefore doesn't produce the same results. This will also allow me to not make the same mistakes in my design.

INTERVIEWS

Implementing this methodology is the focus of illuminating the clinical environment and how it affects the job and experience of people that deal with mental health in different ways. This method will allow me to gain knowledge about mental health and understand the role each profession has within mental health. I want to interview people such as a police officer, a medical professional that deals with patients of mental health, and a healthcare architect. The questions I intend to ask range based on each of their professions but will center around their experience in dealing with individuals that are in distress and at a high risk of self-harm, how it effects how they do their job, the importance of mental health, the stigmas behind mental health, and what have they learned that others should also know. The result I hope to get out of this method is being able to present my idea to people that have expertise in design to get feedback on what I should focus on that is helpful, I also look to gain a perspective that influences my design solutions. I hope to then use this knowledge to guide me in my design and other methods I intend to use. I then intend to compile the information to create diagrams.

A SERIES OF ITERATIONS

The idea behind using this method is to start with one principle of biophilic design and design a small room or space that encompasses only that principle and then from there after designing 14 spaces for the 14 principles start slowly combining them together in another series of designs until eventually reaching the end of combining all 14 into one space. The outcome I am hoping for is trying to have a better understanding of each principle and why it is important to biophilic design, the result I am hoping for is to see which principles work better together or if it is necessary to design a space with all 14 principles of biophilic design.

CONTEXT

In selecting a site to explore this design approach, I focused on Fairborn, Ohio, as it was not only the city in which my brother resided but offers a unique set of circumstances. Currently, Fairborn has no hospitals within city limits meaning individuals have to travel by car or bus to seek medical attention. Fairborn is also known as a city in motion and is in the process of revamping its city in any way it can. The city of Fairborn is home to around 35,000 residents and is the 42nd largest city in Ohio. Fairborn has a poverty rate that is 7% higher than that of the national average throughout the United States. The significance of this is it ultimately affects the mental health of the individuals that struggle financially but also affects their access to receiving proper treatment. Another aspect of Fairborn is that it is home to the Wright Patterson Air Force Base and Wright State University. With such a unique set of circumstances of having a large military base and a college in one city, it offers a wonderful opportunity to not only provide a mental healthcare facility to the residents of Fairborn but also to those that serve in the military and to those that attend school.

These institutions have a large population within themselves and create a variety of stakeholders that could benefit. Many of these potential users suffer from a variety of mental illnesses, such as PTSD, depression, and anxiety. Selecting a site within Fairborn was relatively easy as well. The site I chose is an expansive site that used to be home to one of Fairborn's elementary schools that is no longer in service. The site itself is located on a heavily trafficked road with close proximity to Interstate 675, making it more accessible. The site itself offers a unique set of circumstances. The site is over 20 acres and currently has a vacant preschool, a community park, and a community garden. These features offered a wide range of potential in the overall usage of the site.

PROGRAM

In terms of examining program as it relates to my thesis, I believe this may be the most important aspect of my overall goal of creating a mental health facility using biophilic design. The importance of program will ultimately contribute to the success of healing and providing a place of safety. In determining possible functions, activities, or events that will be incorporated into the project there are many rooms that are complete necessities in healthcare design such as nurses' stations, clinical areas, operational areas, waiting areas, and patient rooms. However, a few spaces that I would like to experiment with in the overall program is healing gardens, recreational spaces, and communal spaces that offer unique interaction. Although the overall intention is to use biophilic design within every space, I believe there is an opportunity for going above and beyond that. For example, because this is going to be a space for people who are dealing with suicidal thoughts and are at a much higher risk of self-harm, there will need to be a lot of necessary focus on security design. This would mean examining how current hospitals use doors and checkpoints such as nurses' stations and information desks to oversee those coming and going through certain areas.

A design method that I intend to explore is eliminating the number of doors one needs to go through by possibly designing a bottleneck solution that creates a forced interaction with nurse stations. The hope is to slowly shrink areas down that lead to these checkpoints and would allow for anyone that walks by can not be missed by someone working at the station. In exploring this methodology the goal is to add the necessary level of security that is needed but also isn't immediately noticed as a security measure. This would also offer the ability for line of sight into other areas such as patient rooms and communal spaces. Another design intention I intend to explore is incorporating healing gardens that would allow for certain patients to be able to be outside in controlled environments and allow for an even better interaction with nature. The last major focus of program is creating communal spaces that offer unique interactions. The idea behind exploring this idea is to design spaces that allow patients to interact with one another but offer a sense of control. In terms of interaction, I am not completely set on what this would be but, a few solutions that I want to experiment with are cooking classes, skill training classes, game rooms, and craft spaces.

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ADDENDUM

PROJECT DESCRIPTION ADDENDUM

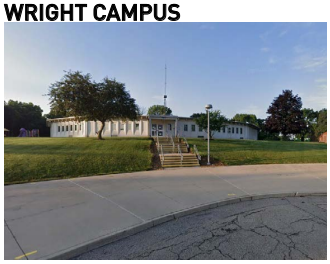
The building design focused primarily on the patient experience. I initially began by exploring the idea of reusing the existing elementary school building. However, I found its unique form and age rather hard to fit the necessary program of a mental health facility into it. Instead, I focused on how I could take inspiration from the site's unique topography to create a form that responded and took advantage of the site's existing conditions. From there, I developed the necessary program needed to promote a healthy and healing environment while incorporating biophilic patterns to influence the design. Focusing on how an individual would arrive at the facility and begin receiving treatment. There are two entrances to the building. The crisis entrance is for those at a heightened risk of self-harm and may typically arrive by police or ambulance escort. An individual coming to the facility in this way would quickly be taken to an exam room or treatment room to receive a proper assessment and meet with a professional. Individuals arriving through the main entrance would receive a very similar intake process.

In designing a mental health facility, it is important to note that the building needs to respond to many safety concerns that come with treating these individuals and are most critical in the design of the building. These features not only guided the design but also allowed for the exploration of trying to hide these elements as much as possible to create a better healing environment that felt less institutional. This is done in many ways by fixed furniture, materiality within the spaces, site lines that allow nurse stations to view the entirety of the patient wing, and many other aspects that influence the design of patient rooms and restrooms. Providing a mental health facility that incorporates biophilic design allows for not only creating spaces that connect humans back to nature and its ability to heal but also provides an environment that is much better suited for healing and promoting well-being. Mental health is something many of us experience on a daily basis, and providing the proper environment, allows individuals to feel safe and secure in a space that is focused on healing and individual growth and is another tool that could be utilized used to combat mental illness.

REDEFINING ARCHITECTURAL SOLUTIONS FOR MENTAL HEALTH

Thesis Question: By utilizing the patterns of biophilic design, can architecture solutions be generated as a new source in combating mental health?

WRIGHT CAMPUS



ABSTRACT

The connection between architectural design and mental health is significant yet largely goes unrecognized. Although hospitals are capable of helping treat mental health, an argument can be made that, in many cases, these hospitals are not designed with the intent to treat/rehabilitate mental health and are far more equipped to treat physical ailments around the United States. Using a focused lens on design that helps combat mental illness, this thesis will explore how biophilic architecture can improve mental health. Biophilic design offers a variety of solutions that can be beneficial to mental health if done correctly and in the right environment. Many studies from Stephen Kellert and Terrapin Bright Green have highlighted biophilic design's positive impact on the built environment, including stress reduction and improvement in cognitive performance. This thesis is driven by a series of questions that ask, by utilizing the principles of biophilic design, can architecture be used as a new source in combating mental health? How effective can biophilic design be in the overall healing and psyche of an individual or group of people healing from depression, trauma, and anxiety? I am approaching this topic with the end goal being to propose the development of a new model of mental healthcare facility that leverages biophilic design principles to treat mental health than a standard hospital more effectively. The healthcare facility would provide the benefits that an individual would receive from a hospital or residential treatment program but in a more beneficial setting of healing.

GOALS

- Create a mental health facility that incorporates biophilic patterns and allows for a better healing enviornment.
- Create a well-being campus for the city of Fairborn.
- Demonstrate how biophilic design can provide a better alternative to help combat mental health.

Mental Health by the numbers

Among U.S. ADULTS:

1 in 5 experienced a mental illness

1 in 20 experienced a serious mental illness

17% of youth (6-17 years) experience a mental health disorder

12+ millon had serious thoughts of suicide

It's Okay to Talk About Suicide

ANXIETY & TRAUMA

Suicide is a leading cause of death in the U.S.:

2nd Among people aged 10-14

3rd Among people aged 15-24

12th Overall

46% Have a diagnosed mental health condition

90% Have experienced symptoms of a mental health condition

Annual prevalence among U.S. adults, by condition:

Anxiety Disorders: 8.4% (21 Million People)

PTSD: 19.1% (68 Million People)

Major Depressive Episode: 3.6% (9 Million People)

Mental Health Care Matters

Mental health treatment - therapy, medication, and self-care have made recovery possible for most people that are experiencing mental illness more successful.

The average delay between symptom onset and treatment is

11 years

Adults with a mental health diagnosis who recieved treatment or counseling in the past year:

23% of Asian adults

33% of Black adults

34% of Hispanic or Latino adults

43% of adults who report mixed/multiracial

49% of lesbian, gay, and bisexual adults

50% of white adults

1 seeks to establish a connection between human beings and the environment, while also encouraging health and well-being.

2 focuses on using natural resources to create a sense of harmony between architecture and the natural environment.

3 can reduce stress, improve cognitive function and creativity, and improve our overall living and health.

Fairborn, OH

Fairborn, OH is home to 34,942 and is the 42nd largest city in Ohio.

Average income is $40,620

Poverty rate: 18.26%

Demographics:

81.76% White

8.74% Black or African American

6.38% Mixed/ multi-racial

2.43% Asian

0.57% Other race

0.12% Native American

0.00% Native Hawaiian

52.24% Female

47.76% Male

Aspects within the site:

- Vacant School
- Wright School park
- Community garden

FAIRBORN, OH

Fairborn, OH is home to 34,942 and is the 42nd largest city in Ohio.
Average income is $60,620
Poverty rate: 18.26%

Demographics:

81.76%	White
8.74%	Black or African American
6.38%	Mixed/ multi-racial
2.43%	Asian
0.57%	Other race
0.12%	Native American
0.00%	Native Hawaiian
52.24%	Female
47.76%	Male

Potential Stakeholders in Fairborn, OH

Name: Jasmine Age: 36

Occupation: Air Force Senior Master Sergeant

About: Jasmine has been stationed at Wright Patterson Air Force Base for the past 10 years. In that time, Jasmine has been deployed 3 times and suffers from depression, anxiety, and PTSD. Jasmine suffers from suicidal thoughts. She is currently receiving therapy through the VA hospital, but doesn't feel it helps.

Goals: Jasmine wants a space that is able to provide her with more adequate treatment in a more comforting environment, find support groups that also deal with similar mental illnesses, and in a community environment that allows her to interact with others.

Needs: Jasmine beilieves a space that isnt connected to her job, is connected to the community, and in a more focused healing environment would benefit her.

Name: Ryan Age: 26

Occupation: Paramedic

About: Ryan grew up in Fairborn and has lived here is whole life. Ryan loves providing community service and does so by being a first responder. Ryan currenlty suffers from PTSD after a tramatic experience while responding to an emergency. Ryan has began to see shifts in mood and behavior and is worried for his well-being.

Goals: Ryan wants to recieve the proper treatment so that he can return to serving his community with a clear mind, cope with the stresses of his job, have a place to go that allows for him to relax and find peace of mind, and find support to treat his PTSD.

Needs: Ryan wants a place that not only serves as a therapist office but a place where him and others can go to decompress and escape every day life.

Name: Anna Age: 53

Occupation: Office Adminstrator

About: Anna has lived in Fairborn for years. Sometimes Anna has trouble leaving the house to go to work due to her anxiety. She knows that her anxiety is excessive but she feels like it is out of her control. Anna is currently on a waiting list to see a therapist but doesnt know how long it will take.

Goals: Anna wants to reduce or manage anixety, improve her health and well-being, find a healthy way to cope with normal life stresses, perform better at her job, and find support from others who are also dealing with the same issues she experiences.

Needs: Anna believes a place that would allow for her to recieve individual and group therapy in a safe and comfortbale environment.

Name: Marcus Age: 27

Occupation: Electrician

About: Marcus grew up in Fairborn and has lived here is whole life. Ryan has struggled with severe depression since he was young. Marcus also suffers from suicidal thoughts and survived a suicide attempt. In dealing with this, Marcus has been hospitalized on a few occasions but doesnt feel he has ever recieved proper help.

Goals: Marcus wants to manage his depression to keep him from self-harm, find a healthy way to decompress, recieve treatment in a more inviting enviroment, and find a place that allows him to escape his everyday tasks and lets him focus on his mental health.

Needs: Marcus is looking for a place that allows him to focus on his mental health and promotes his well-being and allows for a variety of activites.

Name: Grace Age: 21

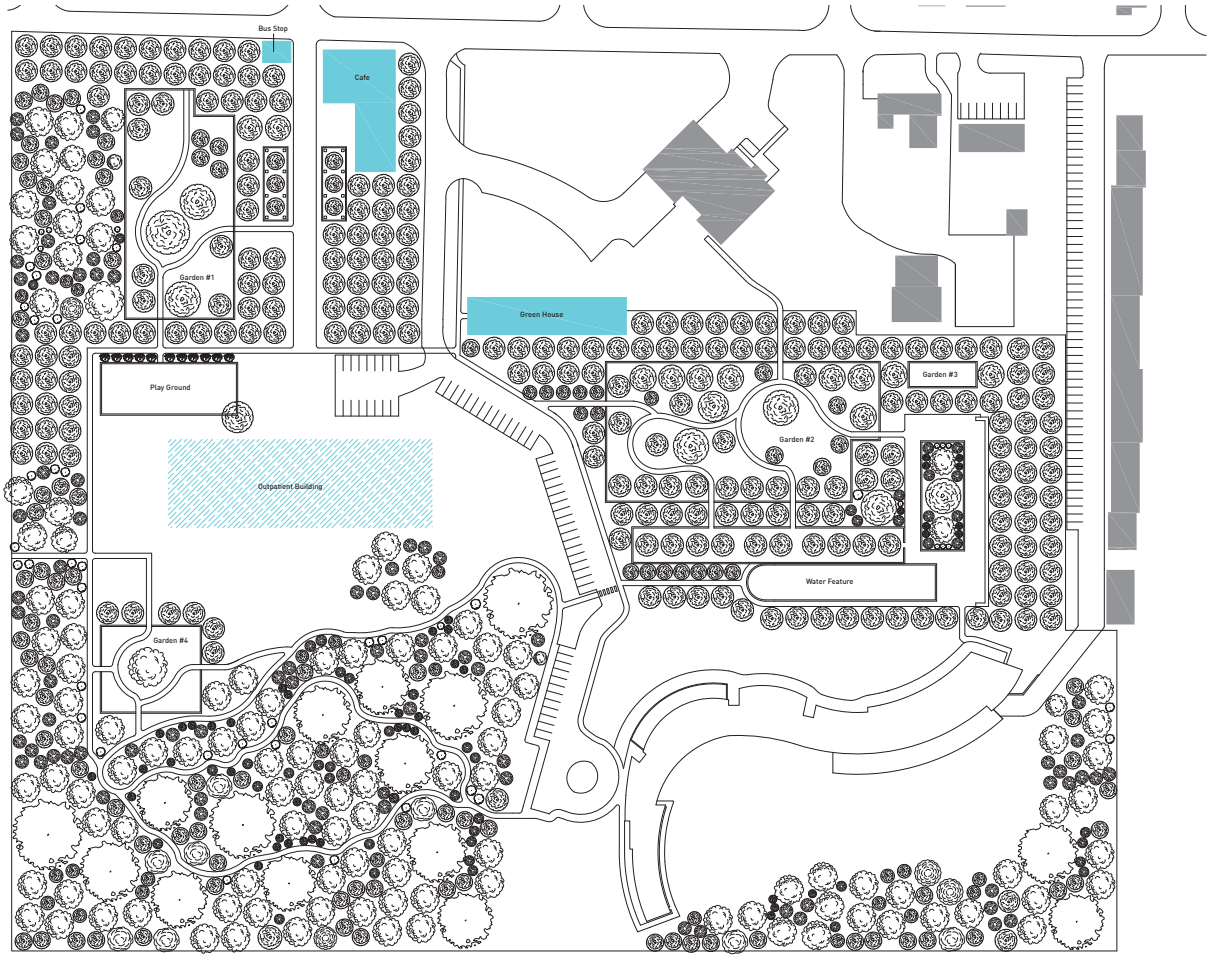
Occupation: University Student

About: Grace has lived in Fairborn for three years while she attends Wright State University. Grace has dealt with depression and anxiety since she was young. Since moving to Fairborn for school she no longer has access to sufficient mental health treatment and her symptoms have gotten worse since being in school.

Goals: Anna wants to reduce or manage her depression and anxiety, find a space that allows her to decompress in a safe environment, talk to a health professional about anti-depressent medication and therapy.

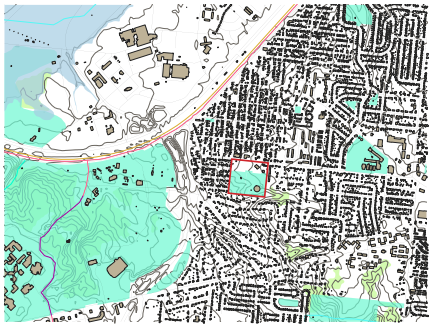
Needs: Grace wants a place in close proximity to campus that she can recieve the proper mental health intervention that promotes her health and well-being.

SITE PLAN AND ANALYSIS



SITE PLAN

SCALE: 1/64" = 1'-0"



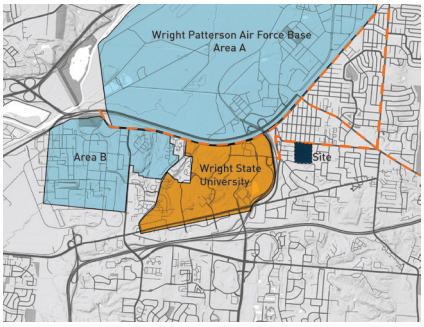
SELECTIVE ZONING MAP

TOPOGRAPHY

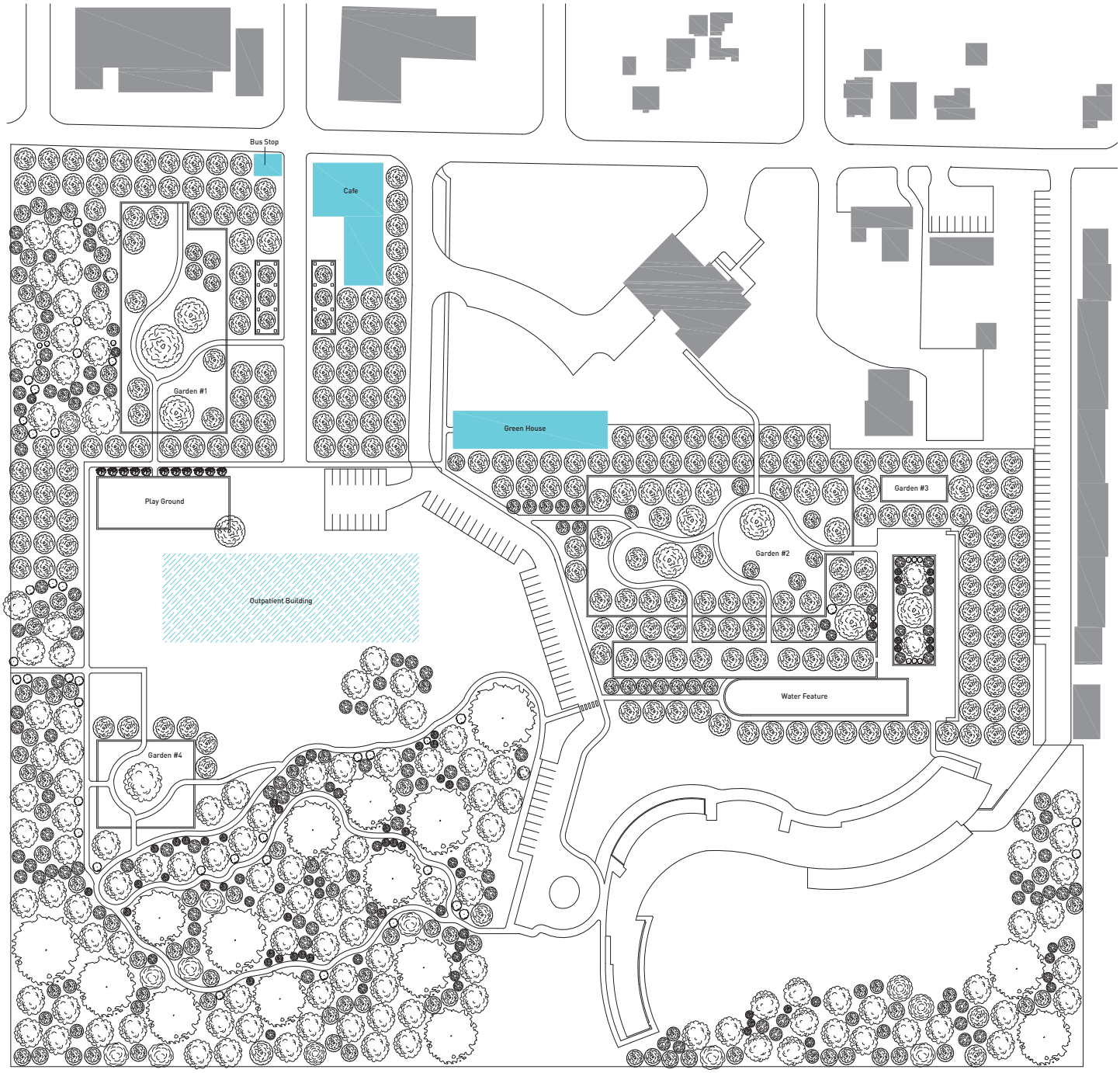
DOCUMENTARY PHOTOS

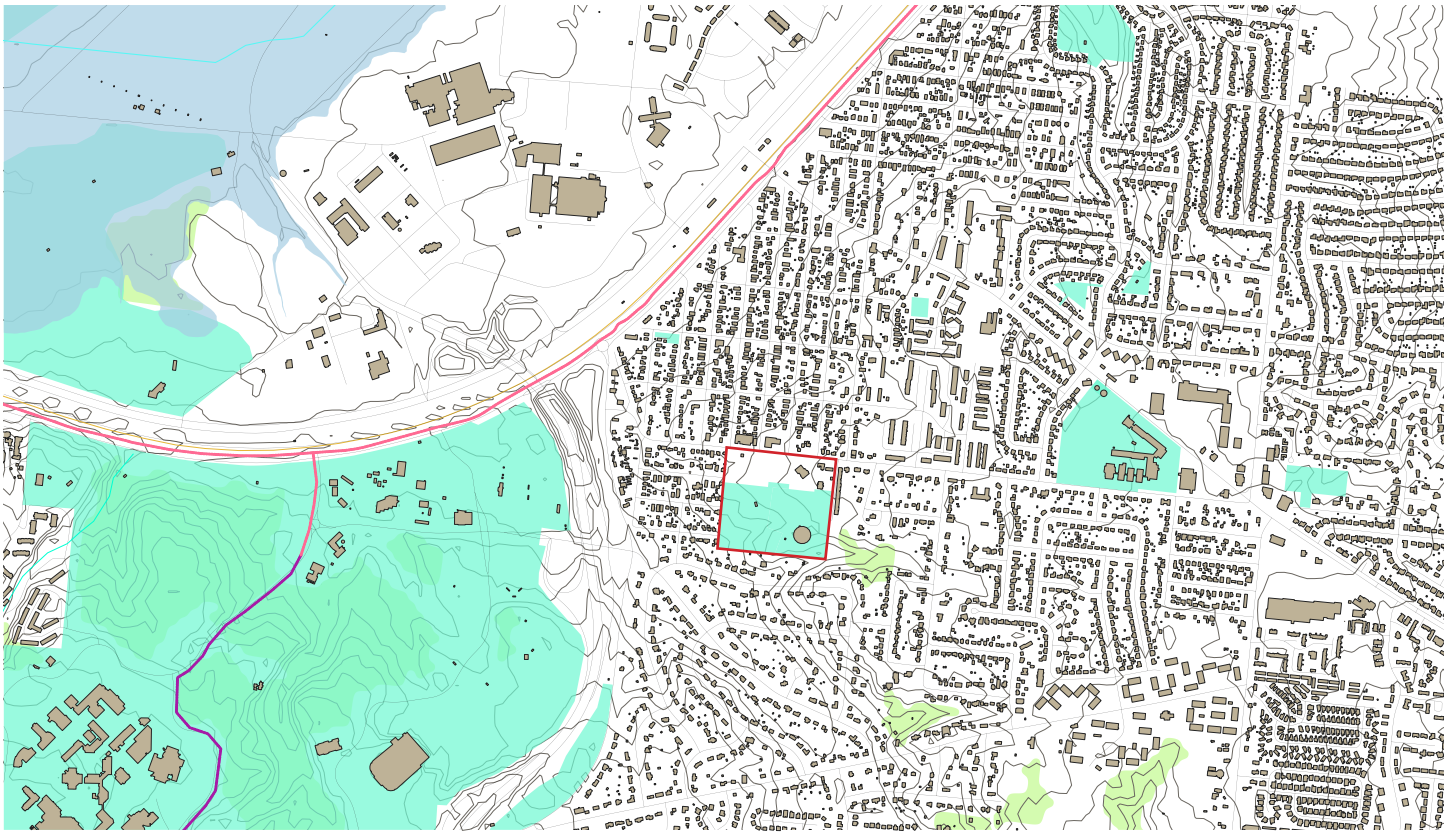
ZONING

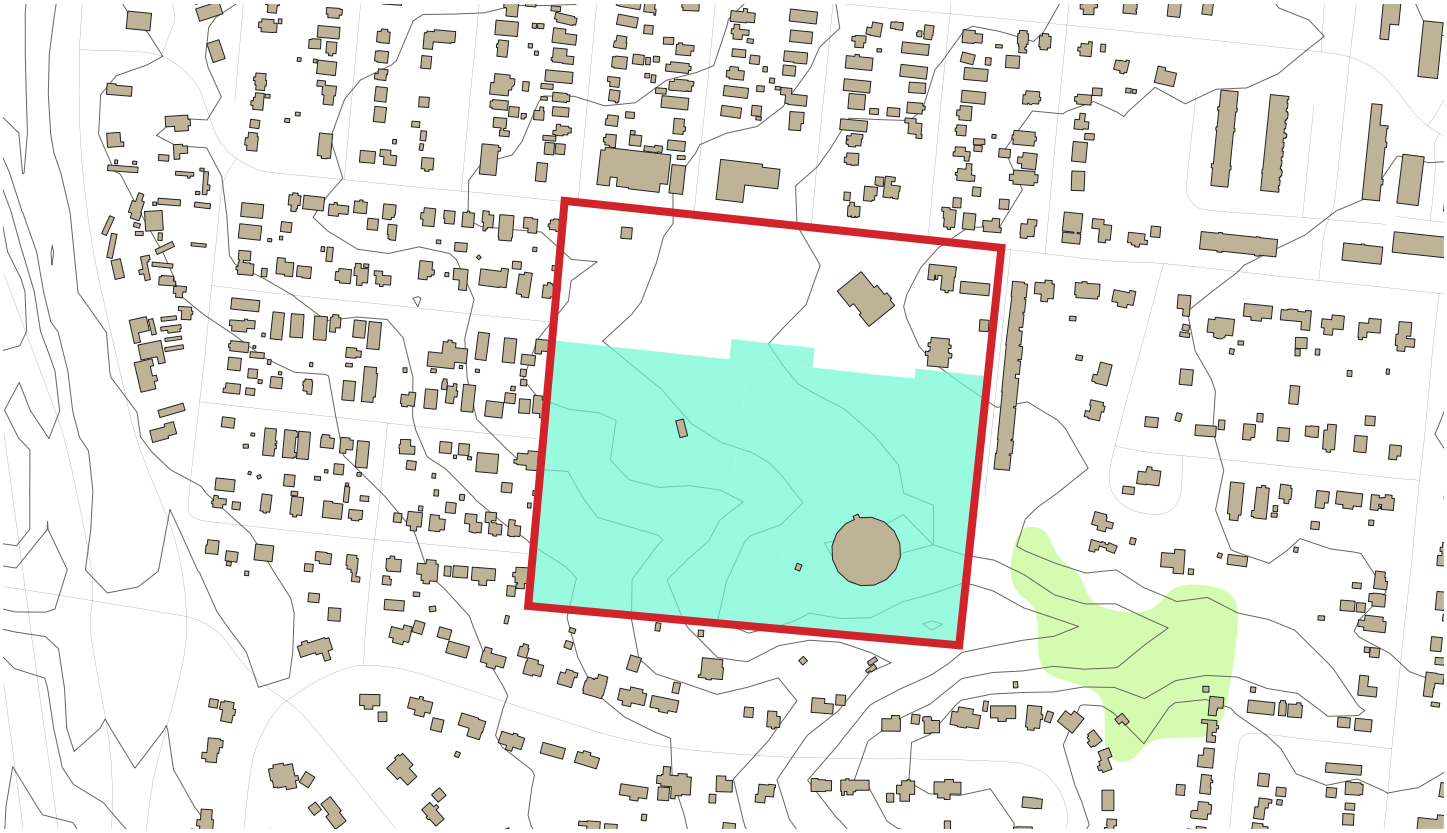
CIRCULATION



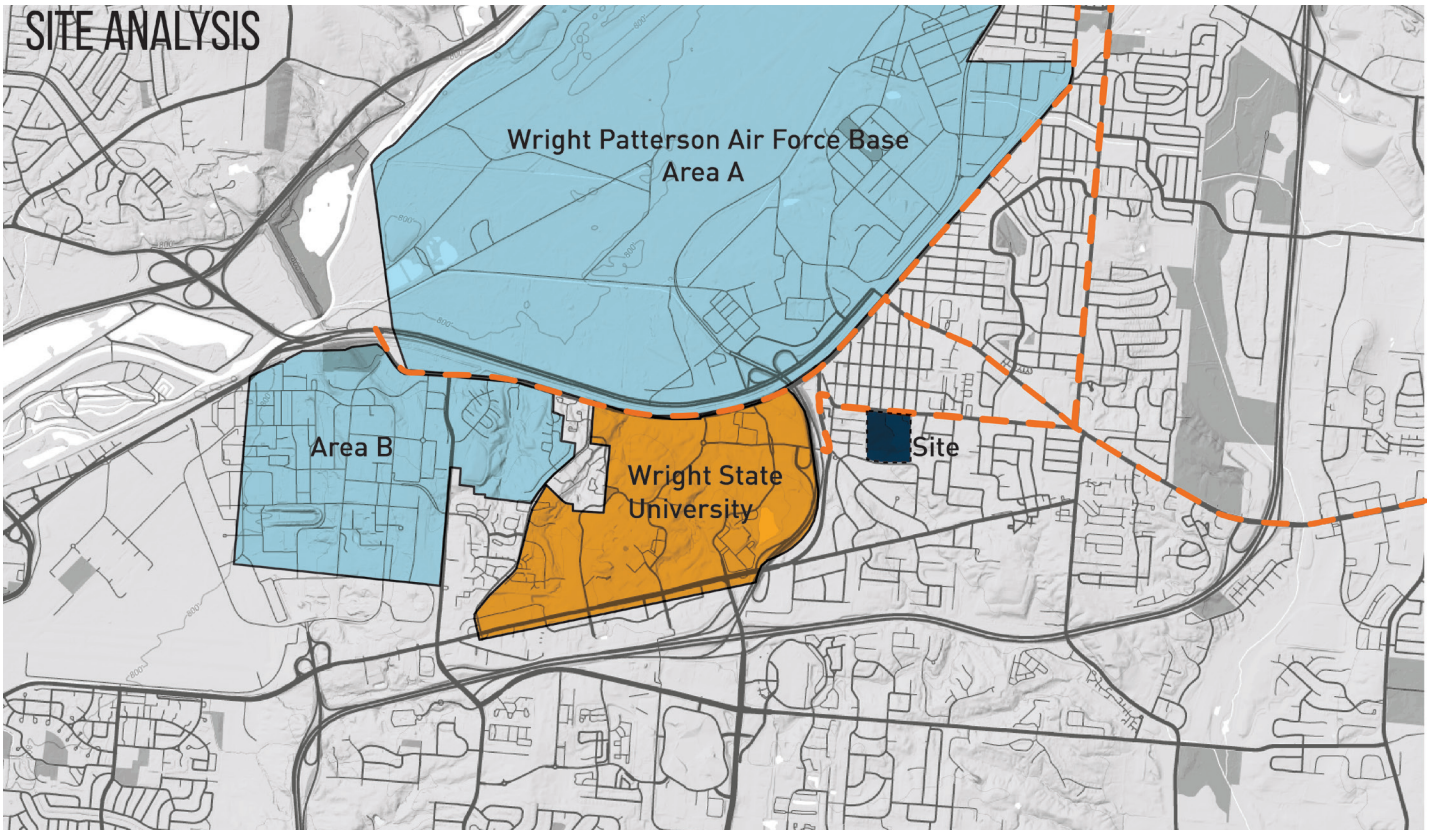
PROXIMITY MAP


Bus Stop
Cafe
Garden #1
Green House
Play Ground
Garden #3
Garden #2
Outpatient Building
Water Feature
Garden #4



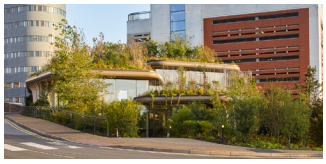


SITE ANALYSIS



Design Process

Precedent studies



Maggie's Leeds Centre

Heatherwick Studios

Harehills, United Kingdom

2020

Design Intentions:
"the belief that great design can help people feel better, Maggie's Leeds uses several 'healthy' materials and energy-saving techniques"

"The interior of the centre explores everything that is often missed in healing environments: natural and tactile materials, soft lighting, and a variety of spaces designed to encourage social opportunities as well as quiet contemplation."

The Waldkliniken

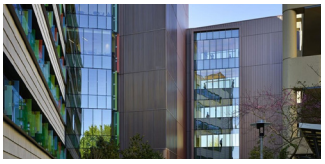
Matteo Thun & Partners

Eisenberg, Germany

2018

"The patient rooms were arranged around the perimeter of the circular building form, with the intention of each room receiving plenty of daylight and fresh air."

"Wood is used throughout the project to create a warm and calming feel inside the building. The architects were heavily inspired not only to create a hospital that feels more like a hotel but by biophilic design."



The Seattle Children's Cancer and Critical Care

Architect: ZGF Architects

Seattle, Washington

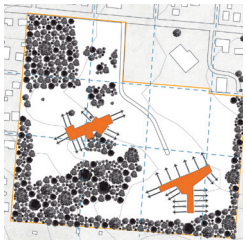
2013

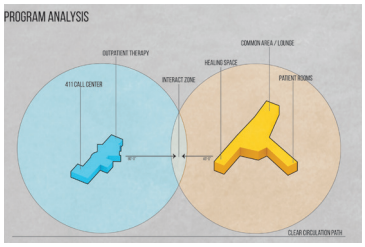
"A unique approach to offer more flexibility within the layout of the rooms, the architect shaped together an eight-bed neighborhood layout."

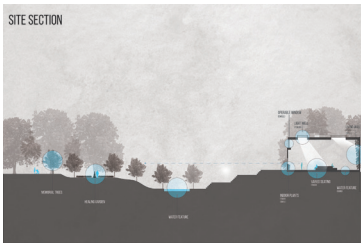
"The architects used a multi-layered approach to lighting in order to promote a sense of well-being."

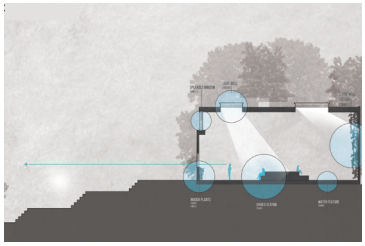
DESIGN PROCESS FALL 2022- SPRING 2023

FALL 2022

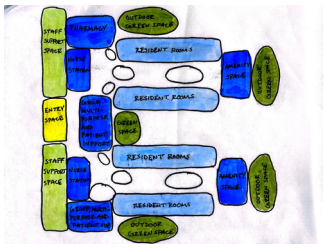


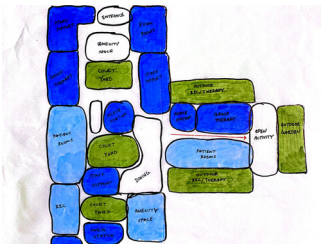


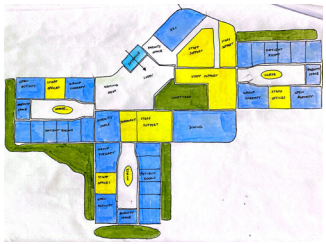


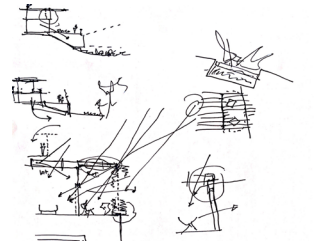


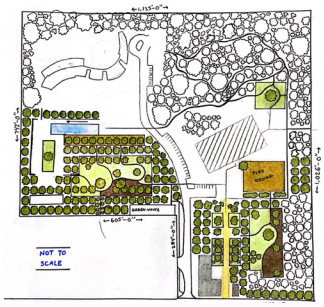
SPRING 2023

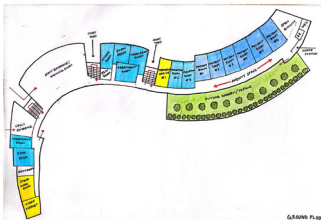


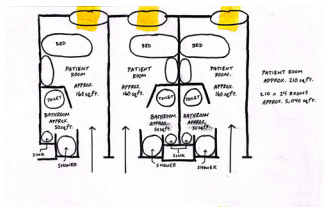


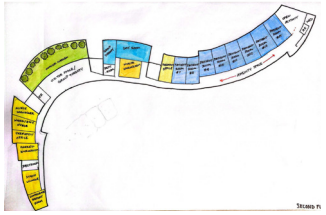




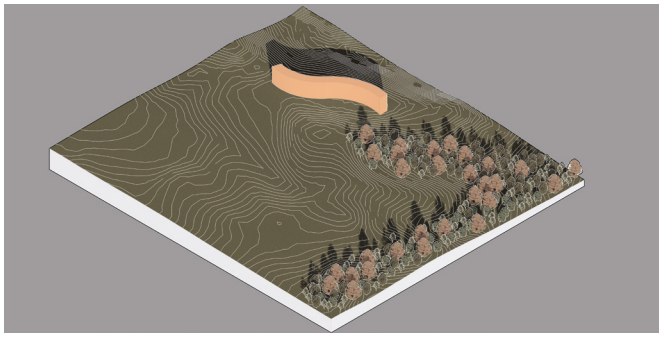


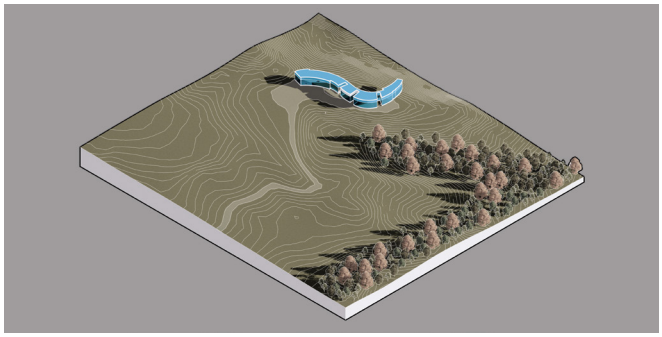






EARLY FORM CONCEPTS





BUILDING STRATEGIES

Nature in the Space

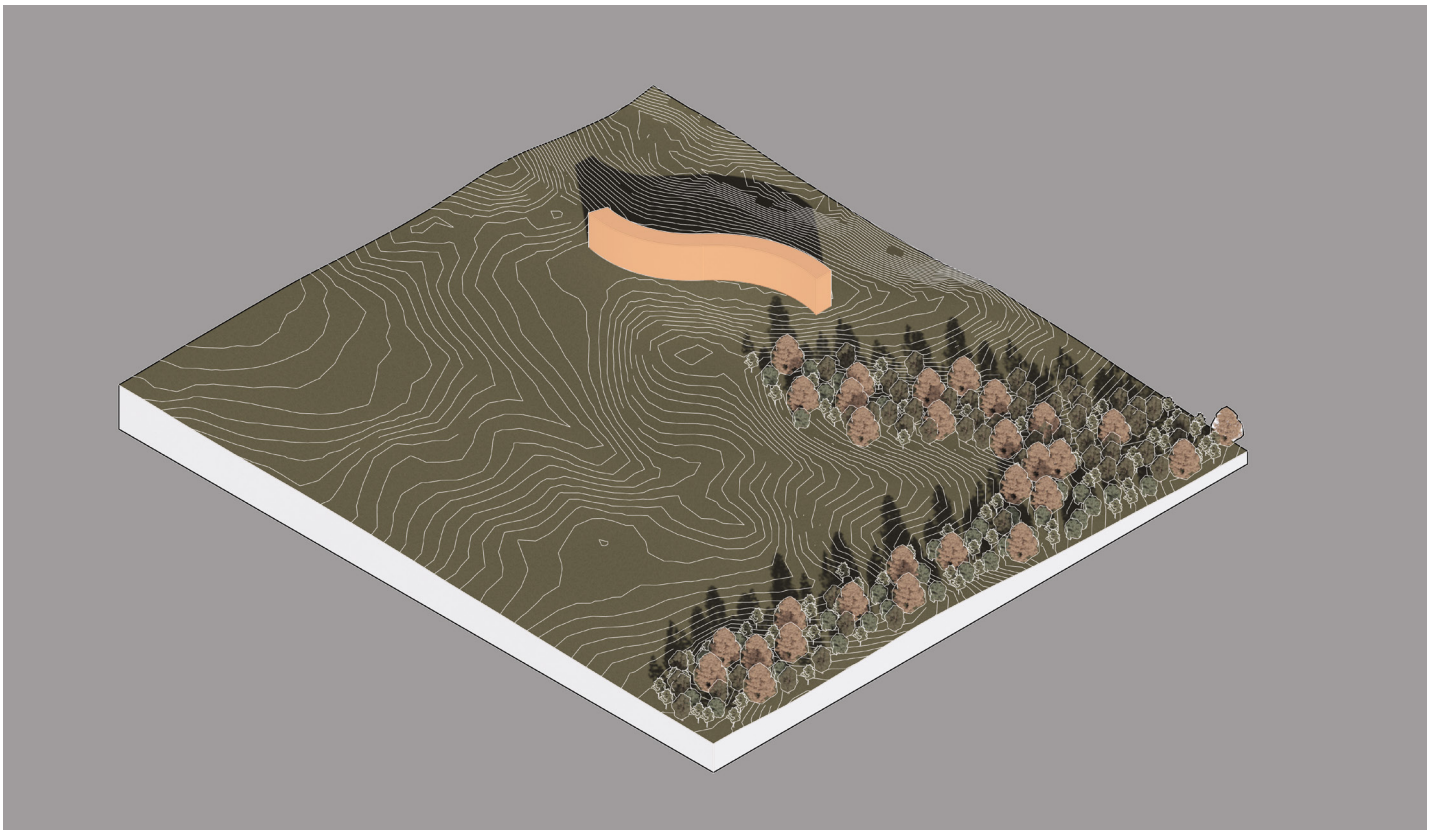
1. Visual Connection with Nature
2. Non-Visual Connection with Nature
3. Non-Rhythmic Sensory Stimuli
4. Thermal & Airflow Variability
5. Presence of Water
6. Dynamic & Diffuse Light
7. Connection with Natural Systems

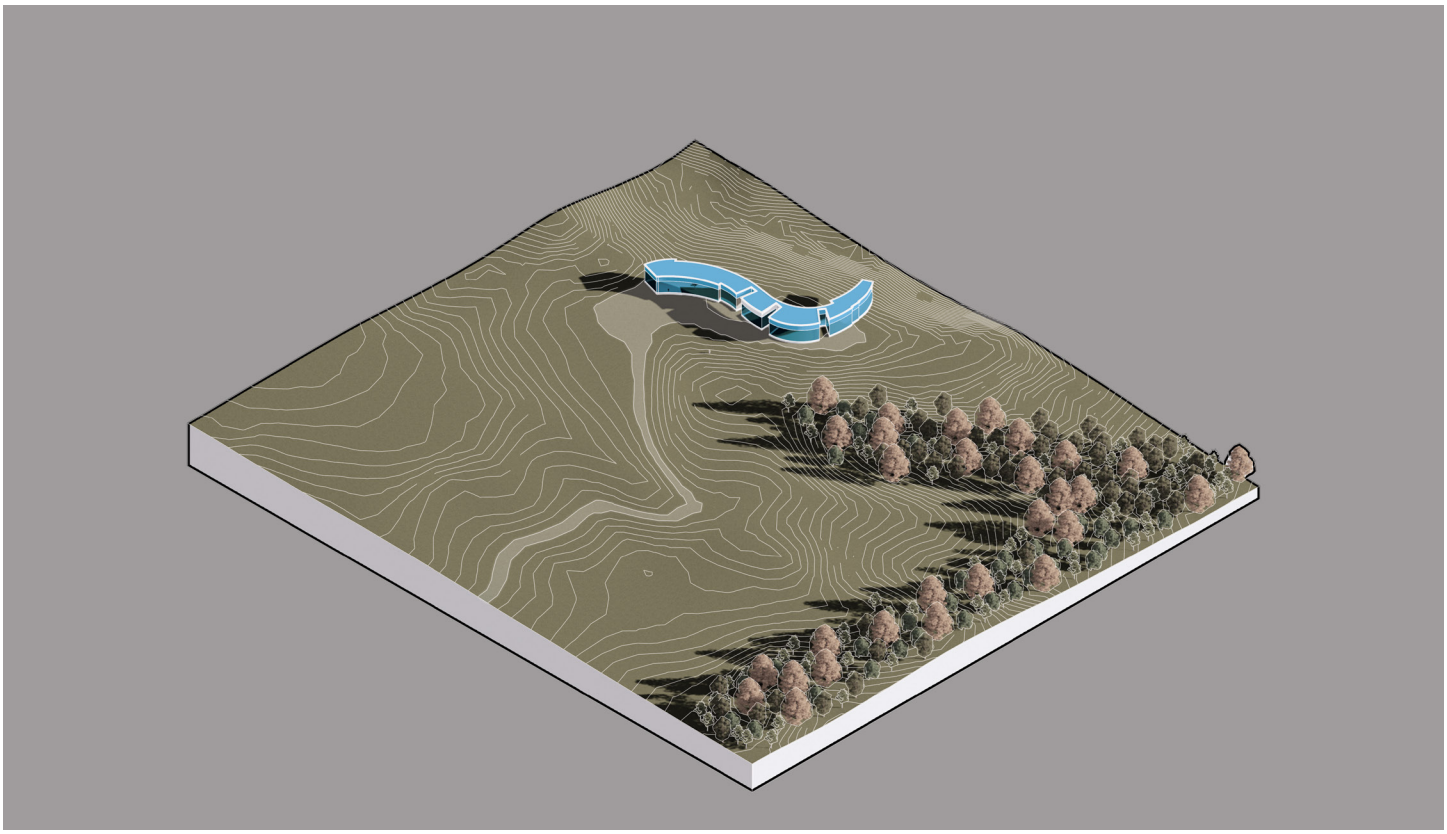
Natural Analogues

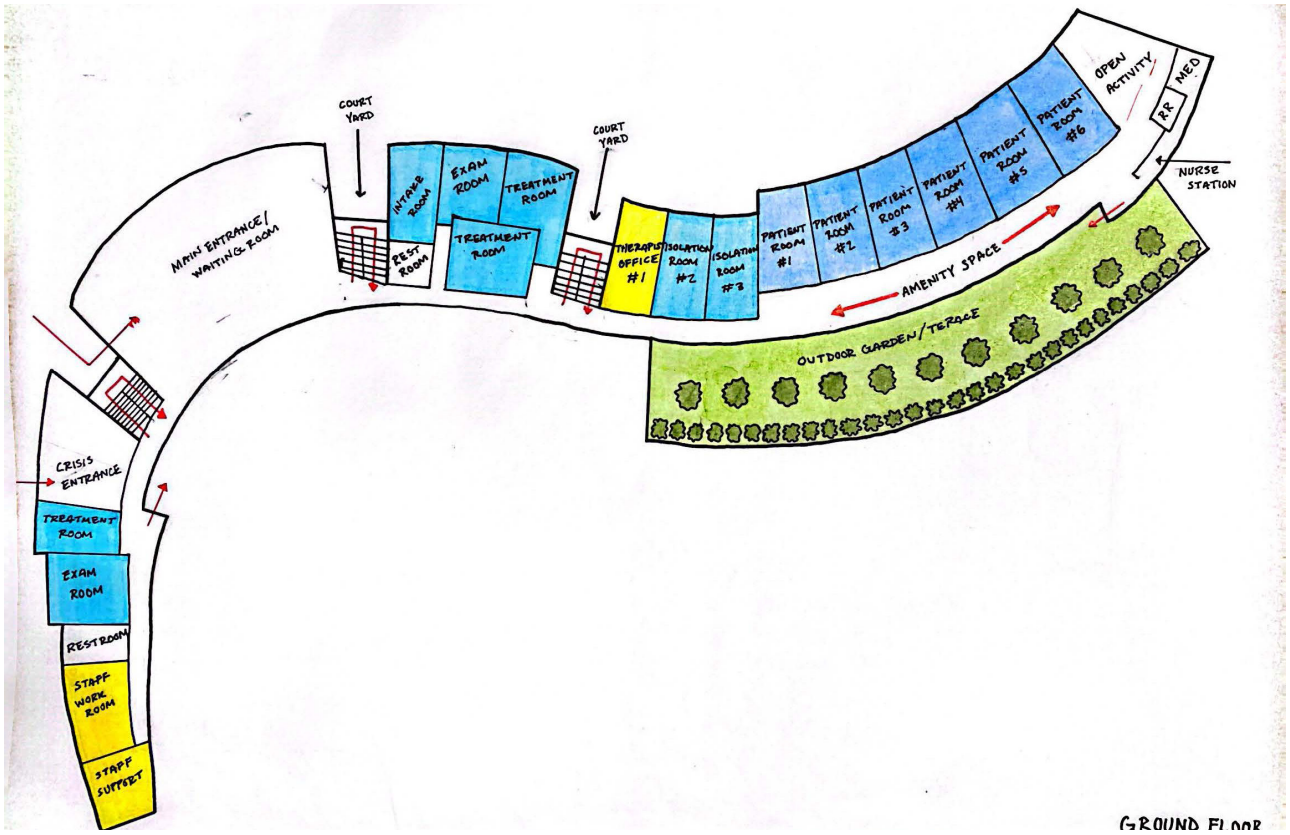
8. Biomorphic Forms & Patterns
9. Material Connection with Nature
10. Complexity & Order

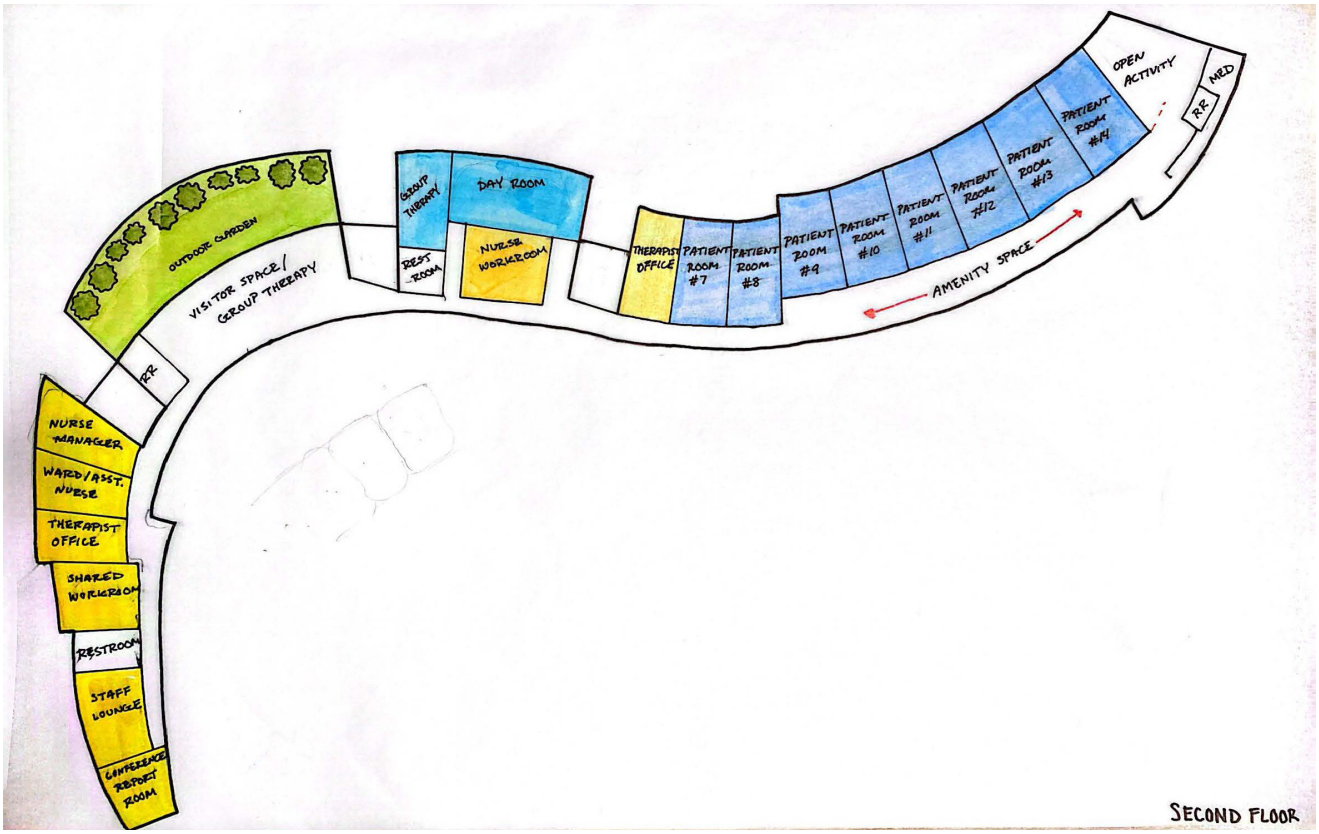
Nature of the Space

11. Prospect
12. Refuge
13. Mystery
14. Risk/Peril






COURT YARD
COURT YARD
INTAKE ROOM
EXAM ROOM
TREATMENT ROOM
TREATMENT ROOM
REST ROOM
MAIN ENTRANCE/ WAITING ROOM
THERAPIST OFFICE #1
ISOLATION ROOM #2
ISOLATION ROOM #3
PATIENT ROOM #1
PATIENT ROOM #2
PATIENT ROOM #3
PATIENT ROOM #4
PATIENT ROOM #5
PATIENT ROOM #6
OPEN ACTIVITY
RR
MED
NURSE STATION
AMENITY SPACE
OUTDOOR GARDEN/TERRACE
CRISIS ENTRANCE
TREATMENT ROOM
EXAM ROOM
RESTROOM
STAFF WORK ROOM
STAFF SUPPORT
GROUND FLOOR


GROUP THERAPY
DAY ROOM
REST ROOM
NURSE WORKROOM
OUTDOOR GARDEN
VISITOR SPACE/ GROUP THERAPY
RR
THERAPIST OFFICE
PATIENT ROOM #7
PATIENT ROOM #8
PATIENT ROOM #9
PATIENT ROOM #10
PATIENT ROOM #11
PATIENT ROOM #12
PATIENT ROOM #13
PATIENT ROOM #14
OPEN ACTIVITY
RR
MED
AMENITY SPACE
NURSE MANAGER
WARD/ASST. NURSE
THERAPIST OFFICE
SHARED WORKROOM
RESTROOM
STAFF LOUNGE
CONFERENCE REPORT ROOM
SECOND FLOOR

BIOPHILIC PATTERNS

NATURE IN THE SPACE

[P1] **Visual Connection with Nature.** Patient rooms have views to the central gardens; interior gardens are planted with low vegetation.

[P2] **Non-Rhythmic Sensory Stimuli.** Outdoor garden terraces, allow occupants to feel breezes, see cloud movements, and hear bird and insect sounds.

[P3] **Access to Thermal & Airflow Variability.** Patient rooms, amenity spaces, and sun rooms have operable sun shades.

[P4] **Dynamic & Diffuse Light.** Large curtain walls bring natural light into the spaces.

[P5] **Connection with Natural Systems.** Views to exterior gardens and ivy walls show effects of weather and seasonal changes in nature.

NATURAL ANALOGUES

[P6] **Material Connection with Nature.** Wood louvers, polished stone floors, oak wood floors and ceilings, and unpainted wood furniture.

NATURAL ANALOGUES

[P7] **Prospect.** Long distance views are availabile from patient rooms and through many of the windows that overlook the site.

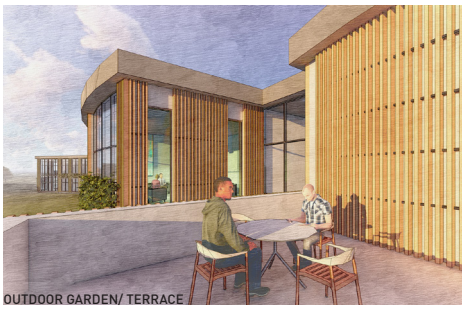
[P8] **Refuge.** Patient sun rooms set back by exterior gardens to view the outside; nested private to public spaces within patient wing.

[P9] **Mystery.** Glimpses of greenery through exterior ivy walls entice occupants to travel deeper into spaces.

LEVEL 1 PLAN

SCALE: 1/16" = 1'-0"

MAIN ENTRANCE / LOBBY



OUTDOOR GARDEN/ TERRACE

Main Entrance

SCALE: 1/8" = 1'-0"

BIOPHILIC PATTERNS

NATURE IN THE SPACE

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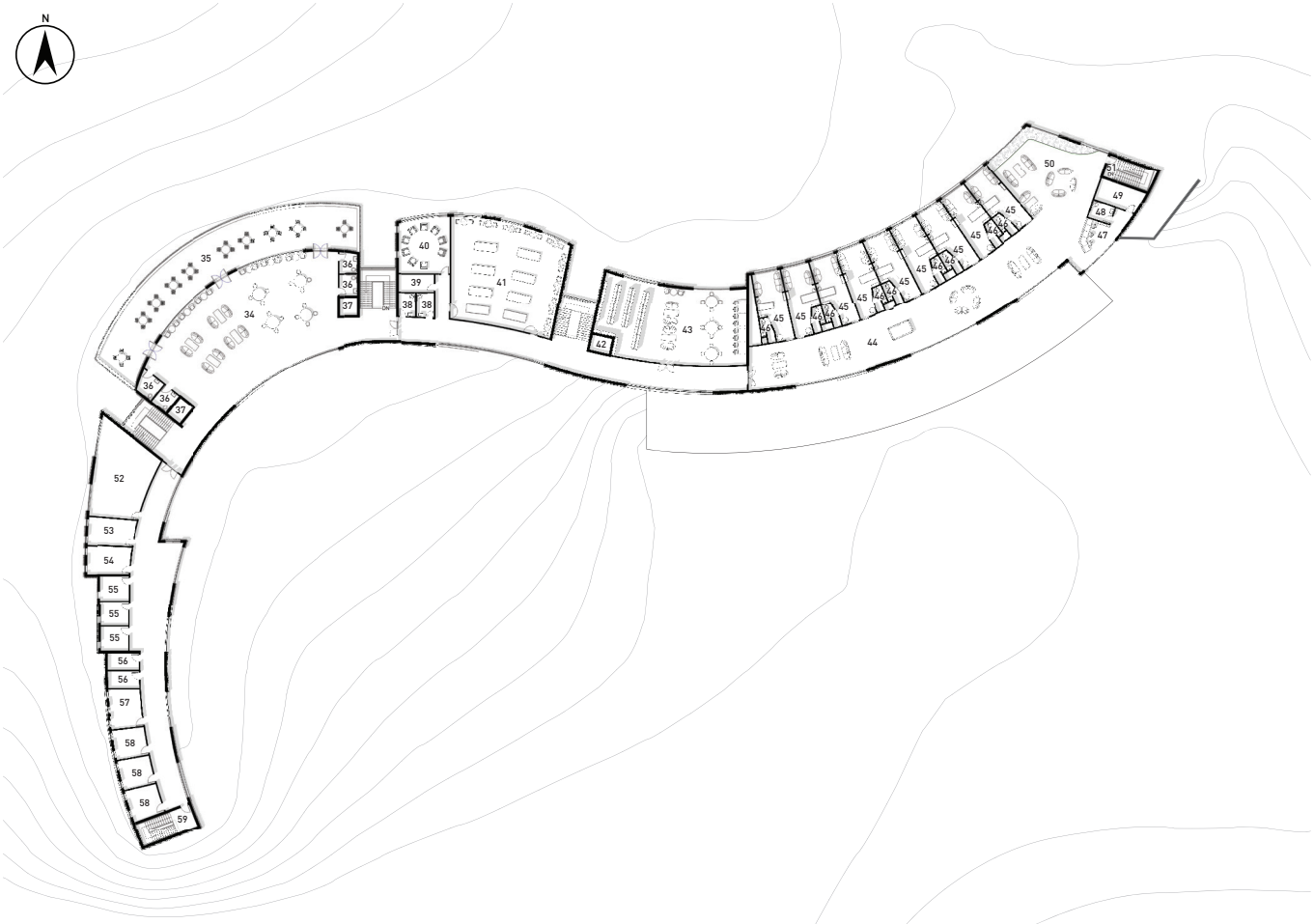
LEGEND

1. Main Entrance/ Lobby
2. Crisis Entrance
3. Nurses Station
4. Treatment Room
5. Exam Room
6. Restroom
7. Shared Work Space
8. Therapist Office
9. Egress Stair
10. Elevator
11. Utility Closet
12. Restroom
13. Reception
14. Staff Office
15. Conference Room
16. Staff Restroom
17. Restroom
18. Storage
19. Exam Room
20. Care Team Station
21. Treatment Room
22. Patient Storage
23. Elevator
24. Group Therapy
25. Amenity Space
26. Patient Room
27. Patient Restroom
28. Outdoor Garden/ Terrace
29. Nurses Station
31. Staff Restroom
30. Staff Restroom
31. Med Room
32. Day Room
33. Egress Stair

LEGEND

1. Main Entrance/ Lobby
2. Crisis Entrance
3. Nurses Station
4. Treatment Room
5. Exam Room
6. Restroom
7. Shared Work Space
8. Therapist Office
9. Egress Stair
10. Elevator
11. Utility Closet
12. Restroom
13. Reception
14. Staff Office
15. Conference Room
16. Staff Restroom
17. Restroom
18. Storage
19. Exam Room
20. Care Team Station
21. Treatment Room
22. Patient Storage
23. Elevator
24. Group Therapy
25. Amenity Space
26. Patient Room
27. Patient Restroom
28. Outdoor Garden/ Terrace
29. Nurses Station
31. Staff Restroom
30. Staff Restroom
31. Med Room
32. Day Room
33. Egress Stair



LEVEL 2 PLAN

SCALE: 1/16" = 1'-0"

PATIENT ROOM

LIBRARY

Group Therapy

SCALE: 1/8" = 1'-0"

BIOPHILIC PATTERNS

NATURE IN THE SPACE

[P1] **Visual Connection with Nature.** Patient rooms have views to the central gardens; interior gardens are planted with low vegetation.

[P2] **Non-Rhythmic Sensory Stimuli.** Outdoor garden terraces, allow occupants to feel breezes, see cloud movements, and hear bird and insect sounds.

[P3] **Access to Thermal & Airflow Variability.** Patient rooms, amenity spaces, and sun rooms have operable sun shades.

[P4] **Dynamic & Diffuse Light.** Large curtain walls bring natural light into the spaces.

[P5] **Connection with Natural Systems.** Views to exterior gardens and ivy walls show effects of weather and seasonal changes in nature.

NATURAL ANALOGUES

[P6] **Material Connection with Nature.** Wood louvers, polished stone floors, oak wood floors and ceilings, and unpainted wood furniture.

NATURAL ANALOGUES

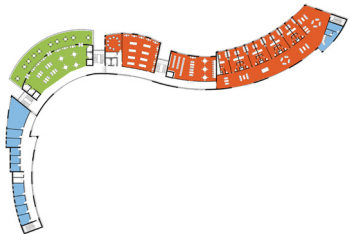
[P7] **Prospect.** Long distance views are available from patient rooms and through many of the windows that overlook the site.

[P8] **Refuge.** Patient sun rooms set back by exterior gardens to view the outside; nested private to public spaces within patient wing.

[P9] **Mystery.** Glimpses of greenery through exterior ivy walls entice occupants to travel deeper into spaces.

LEGEND

34. Visitor Space
35. Outdoor Garden/ Terrace
36. Restroom
37. Elevator
38. Restroom
39. Storage
40. Group Therapy
41. Therapeutic Kitchen
42. Elevator
43. Library
44. Amenity Space
45. Patient Room
46. Patient Restroom
47. Nurses Station
48. Staff Restroom
49. Med Room
50. Day Room
51. Egress Stair
52. Staff Lounge
53. Nurse Manager Office
54. Ward / Asst. Nurse Office
55. Shared Staff Office
56. Restrooms
57. Conference Room
58. Therapist Office
59. Egress Stair



LEGEND

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49. Med Room
50. Day Room
51. Egress Stair
52. Staff Lounge
53. Nurse Manager Office
54. Ward / Asst. Nurse Office
55. Shared Staff Office
56. Restrooms
57. Conference Room
58. Therapist Office
59. Egress Stair

GROUND FLOOR PLAN

SCALE: 1/16" = 1'-0"

OUTDOOR GARDEN/ TERRACE

GROUP THERAPY

Patient Wing

SCALE: 1/8" = 1'-0"

BIOPHILIC PATTERNS

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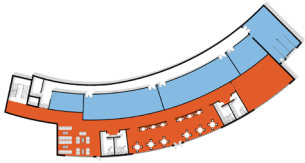
LEGEND

60. Elevator
61. Patient Day Room
62. Restrooms
63. Patient Dining Hall
64. Restrooms
65. Patient Fitness Center
66. Laundry
67. Storage
68. Kitchen
69. Maintenance Room
70. Kitchen Storage
71. Delivery Intake



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70. Kitchen Storage
71. Delivery Intake

NORTH ELEVATION

SOUTH ELEVATION

EAST ELEVATION

WEST ELEVATION

MAIN ENTRANCE

OUTDOOR GARDEN TERRACE

GROUP THERAPY

OUTDOOR GARDEN TERRACE

PATIENT ROOM

LIBRARY