

## ABSTRACT

Title of Thesis: ARCHITECTURE IMPROVING MENTAL  
HEALTH IN RESPONSE TO THE  
COVID – 19 PANDEMIC

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The coronavirus pandemic created a lot of anxiety, stress, and other mental health issues in our society, especially the medical staff. This thesis develops the possibilities of a meditation space for a major healthcare campus, the MedStar Washington Hospital. The project intends to analyze the effects of natural light in the interior, how it affects the atmosphere inside and how it helps to create the sacred space encouraging reflection. Through a sustainable design this thesis explores how architecture can bring people together, affect their mood and what elements makes us determine the space as spiritual and divine.

ARCHITECTURE IMPROVING MENTAL HEALTH IN RESPONSE  
TO THE COVID – 19 PANDEMIC

by

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## Chapter 1: Introduction: How the coronavirus pandemic affected people's mental health?

2020 has brought about a lot of changes in our society and our daily lives. Having to wearing a mask whenever we walked outside and keeping a six-foot distance from other people has become a new habitual norm. We will never look at the world the same. Coronavirus pandemic has changed the way we think about space in terms of spreading germs and sanitation. But, is that the only thing designers should look at when reimagining spaces after the pandemic?

“Research from Express Scripts revealed a 21% increase in antidepressant, antianxiety, and anti-insomnia medication prescriptions between February and March. The week that COVID-19 was declared a pandemic, 78% of all prescriptions filled for these conditions were new prescriptions.”<sup>1</sup>

The elevated levels of anxiety and stress are partially caused by the all the economic changes in the market. Additionally, media persistently showed people every day the statistics about growing number of cases, how many people have died, and that coronavirus will not go away any time soon. Stay at home orders, distancing

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<sup>1</sup> “Return Strategies Must Prioritize Mental Health and Resilience” Gensler, accessed December 12, 2020. <https://www.gensler.com/research-insight/blog/return-strategies-must-prioritize-mental-health-resilience>

ourselves from people who are close to us, having no social interactions except from virtual meetings on a Zoom call – all these factors lead to depression.

“Feelings of isolation, depression, anxiety, and other emotional or financial stresses are known to raise the risk for suicide. People may be more likely to experience these feelings during a crisis like a pandemic. However, there are ways to protect against suicidal thoughts and behaviors. For example, support from family and community, or feeling connected, and having access to in-person or virtual counseling or therapy can help with suicidal thoughts and behavior, particularly during a crisis like the COVID-19 pandemic.”<sup>2</sup>

There is no doubt that the pandemic has caused long – term effects on the design. The fast spreading virus has made architectural designers rethink the spaces inside our homes, where we have spent majority of our time. They noticed the need for connection with nature, desire for more balconies in apartment buildings and better HVAC systems. But apart from the sanitary aspect of changes, architecture should also respond to all the depression and anxiety caused by the pandemic and isolation. Architecture is a powerful tool that affects our daily lives, can affect our emotions, and change how we feel.

“As designers and strategists, it’s our responsibility to transform existing spaces and experiences to create inclusive, equitable places that instill emotional safety in occupants. By creating environments that deliver a feeling of emotional

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<sup>2</sup> “Coping with Stress”, CDC, Accessed December 12, 2020. [https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html#:~:text=Feelings%20of%20isolation%2C%20depression,COVID%2D19%20pandemic.\)](https://www.cdc.gov/coronavirus/2019-ncov/daily-life-coping/managing-stress-anxiety.html#:~:text=Feelings%20of%20isolation%2C%20depression,COVID%2D19%20pandemic.)

safety, we can better promote people's mental health and well-being when they return to the workplace.”<sup>3</sup>

The goal of this thesis is to explore new ways of how architecture can help our mental health and deal with anxiety and depression caused by the COVID-19 pandemic. The project is going to be addressed towards medical workers and hospital patients, people mostly in need for this type of space. However, by creating a tranquil meditation space in Washington DC, the project will serve as a prototype of a space possible to insert in any other emotionally strenuous environment, such as an office or an apartment building. By intentional use of daylight, sound, enclosure, thresholds and other explored elements, the created space will help occupants experience moments of tranquility and encourage reflection and human connection by bringing people together.

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<sup>3</sup> “Designing Spaces to Help People Feel Emotionally Safe in the Workplace”, Gensler, Accessed December 12, 2020. <https://www.gensler.com/research-insight/blog/designing-spaces-to-help-people-feel-emotionally-safe-in-the>

## Chapter 2: Enhancing Tranquility in Hospitals

### *Whose mental health is the most affected by coronavirus pandemic?*

The COVID – 19 pandemic caused and intensified a lot of physical and mental issues in the general population. Feelings of isolation and fears about the health of those we care about leads to developing depressive symptoms, insomnia, and anxiety disorders. People especially vulnerable to those symptoms are healthcare workers struggling every day in hospitals to help their patients.

The physical and mental health burden is very high in health care workers and numerous articles have been written that try to find any preventive measures. One study from 2020 shows that 62.5 % of health care workers working on the frontline, being directly exposed to coronavirus, reported general health concerns, 43.7% reported fear, 37.9% insomnia, 37.8% psychological distress, 29% anxiety features and 26.3% developed depressive symptoms. People working long hours in a stressed, tense environment are especially exposed to the mental trauma of a pandemic.<sup>4</sup>

Healthcare workers try to battle diseases and injuries everyday working long hours in hospital environment. Very often, for the whole day, they have no access to sunlight, as only rooms for patients have windows. Lack of natural light and spending long hours in enclosed environment can also be a cause for Vitamin D deficiency and can lead to depressive symptoms. Another conducted case – control study from

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<sup>4</sup> Salazar de Pablo, Gonzalo, Julio Vaquerizo-Serrano, Ana Catalan, Celso Arango, Carmen Moreno, Francisco Ferre, Jae Il Shin, et al. 2020. "Impact of Coronavirus Syndromes on Physical and Mental Health of Health Care Workers: Systematic Review and Meta-Analysis." *Journal of Affective Disorders* 275 (October): 48–57. <https://www.sciencedirect-com.proxy-um.researchport.umd.edu/science/article/pii/S0165032720323806>

Wuhan University Hospital analyzed mental health of frontline and non – frontline workers during the COVID – 19 pandemic. Frontline workers, ensuring that patients do not spread the virus to others, seeing their colleagues getting infected, had higher rates of any mental health problems (52.6% vs. 34%) such as: anxiety symptoms, depressed mood, and insomnia. However, the two groups both show low – rates of help – seeking behavior and treatment. Medical workers have been known not to disclose their mental issues and emotions due to embarrassment, not accepting it and fear about confidentiality. The measures that have been taken to address this issue and to provide the medical staff battling the pandemic with necessary mental health services. However, as the article states, further support should be provided.<sup>5</sup>

To further explore this research, an interview with a practicing nurse from New York City was conducted and the results from the given survey can be seen below.

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<sup>5</sup> Cai, Qi, Hongliang Feng, Jing Huang, Meiyao Wang, Qunfeng Wang, Xuanzhen Lu, Yu Xie, et al. 2020. “The Mental Health of Frontline and Non-Frontline Medical Workers during the Coronavirus Disease 2019 (COVID-19) Outbreak in China: A Case-Control Study.” *Journal of Affective Disorders* 275 (October): 210–215. <https://www.sciencedirect.com/science/article/pii/S0165032720323892>



## A Meditation Space for Medical Workers Survey

On a scale from 1-10, how stressful do you think your job is? \*

	1	2	3	4	5	6	7	8	9	10	
calm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	very stressful

How long are the shifts usually?

12.5 hours

How much time do you spend with a patient a day?

9-10 hours

Do you get any longer breaks throughout your day? \*

☐ No

☒ Yes

If yes, how long?

Time

12 : 30 PM ▼

How do you deal with feeling stressed after work?

go for a walk, listen to music, or chat with friends to decompress before getting home to family

Hospital Design

Where do you go to rest in the hospital? \*

I would not call it rest, typically step off the unit to eat lunch or grab a coffee/snack. If I can leave the unit, I will typically try to step outside for 10 minutes.

How important is the aspect of privacy when seeking psychiatric help? \*

not important      1      2      3      4      5      I don't want anyone to know

☐      ☐      ☐      ☐      ☒

Do you think a meditation space for medical workers would be beneficial for the hospital campus? \*

☒ Yes

☐ No

☐ Other: \_\_\_\_\_

Why?

If the meditation space is easily accessible, not a far distance from patient care, and open 24 hours, creating a safe space for providers to step away from the intense unit and patient care, this could be used as a rejuvenation area, to take 10 minutes to ground yourself before finishing your shift. It can be utilized before or after shift as well.

Any additional comments?

As provider burnout continues to increase due to the overwhelming demands and acuity of the patient population, it is vital to prioritize well-being and self-health for all medical providers so they can fulfill their obligation to provide the best care to patients and families in return.

This content is neither created nor endorsed by Google.

Google Forms

*Figure 1 - Interview with a Practicing Nurse - Survey (source: Author)*

An Indian study from September 2020 mentioned what has been reported as a way of coping with the stress and anxiety caused by coronavirus pandemic. 27% of participants pointed out indoor or outdoor exercises and 26% said meditation and self-care. Other methods of mental well – being included staying busy, hobbies and connecting with nature. Participants were also asked what help they would like to see in future situations like this. Their most common answers were: tele – psychiatry and virtual group sessions, more accessible (not online) help, proactive (human) contact and expansion of mental health services. <sup>6</sup>

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<sup>6</sup> Ivbijaro, Gabriel, Claire Brooks, Lucja Kolkiewicz, Charlene Sunkel, and Andrew Long. 2020. "Psychological Impact and Psychosocial Consequences of the COVID 19 Pandemic Resilience, Mental Well-Being, and the Coronavirus Pandemic." *Indian Journal of Psychiatry* 62 (September): 395–403. <http://web.a.ebscohost.com.proxy-um.researchport.umd.edu/ehost/pdfviewer/pdfviewer?vid=1&sid=a01252b9-fa4e-433f-8d3c-0a5e3762c0d4%40sessionmgr4007>

“To date, there is little information to guide the development and implementation of mental health interventions to support health professionals, patients, and the general public during medical pandemics.”<sup>7</sup>

In response to COVID – 19 pandemic there has been a lot of research done on how to create a new safer future, stopping the germ spread and re – opening the world. WELL Health and Safety Rating, a verified rating for different facility types, is addressing the issue and promotes methods of establishing a better, sanitary environment.<sup>8</sup> However, in addition to battling the spread of germs designers should look for methods of creating emotionally safe spaces that promote mental well – being.

### *Hospitality in Hospitals*

Healthcare architecture experienced a big shift in the design between the 19<sup>th</sup> century practices and mid – twentieth century. After the Second World War, which transformed medicine, there was a need for more effective hospital layouts. Architects no longer had to worry about certain limitations that occurred in the 19<sup>th</sup> century. With air conditioning and decontaminating ultraviolet lights designers started to recreate outdoor environment artificially indoor. Hospitals started to resemble office buildings with vertical organization and located in medical centers, reminding

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<sup>7</sup> Soklaridis, Sophie, Elizabeth Lin, Yasmin Lalani, Terri Rodak, and Sanjeev Sockalingam. 2020. “Mental Health Interventions and Supports during COVID- 19 and Other Medical Pandemics: A Rapid Systematic Review of the Evidence.” *General Hospital Psychiatry* 66 (September): 133–146.

<https://www-sciencedirect-com.proxy-um.researchport.umd.edu/science/article/pii/S0163834320301201>

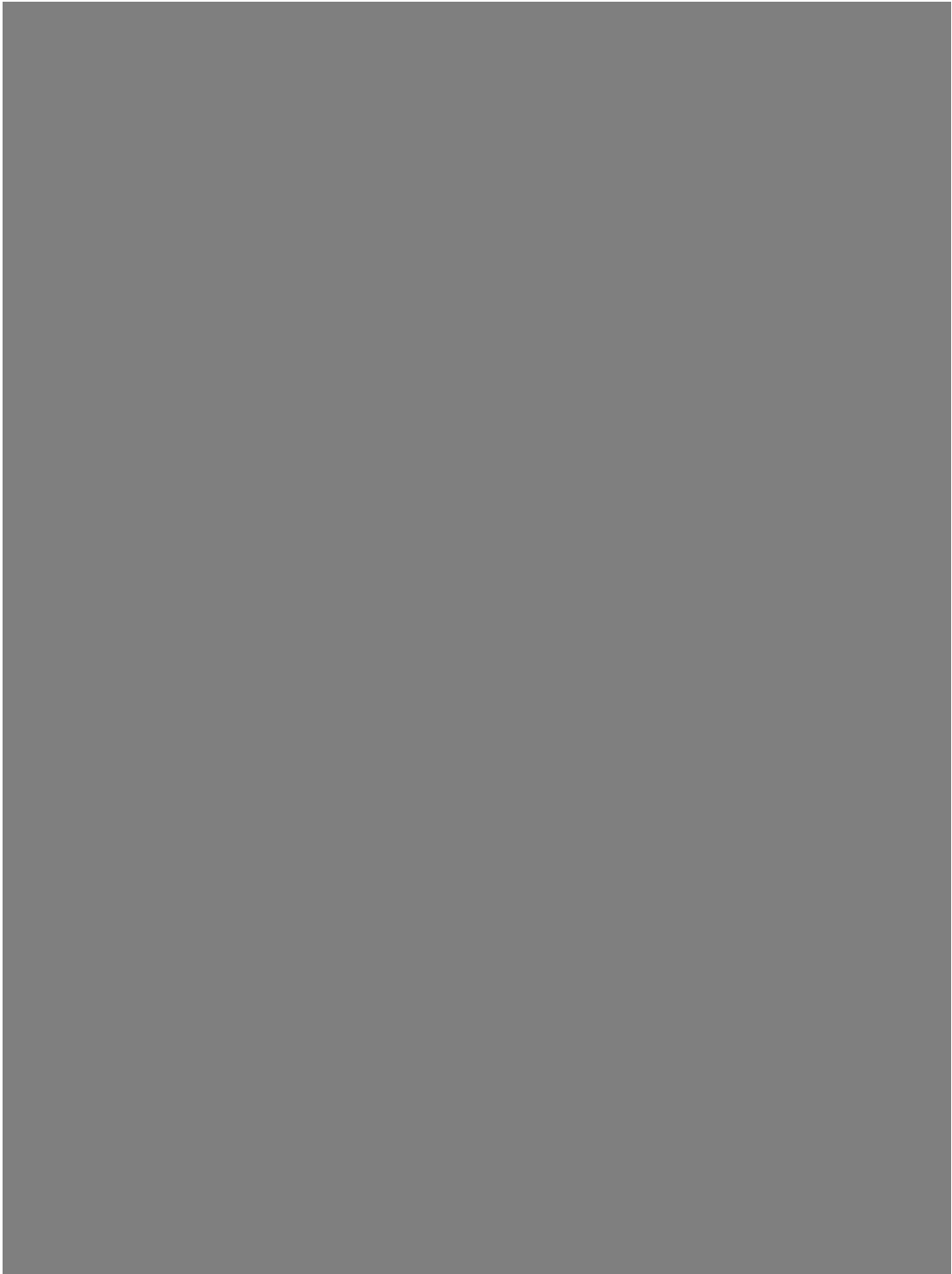
<sup>8</sup> “Health and Safety Rating”, WELL, accessed December 13, 2020.

<https://www.wellcertified.com/health-safety/>

one of small cities, creating much more complex institutions. After 1950s hospitals usually had inoperable windows or rooms with no windows at all. In the 19<sup>th</sup> century designers had to use sunshine and fresh air as a cure and disease prevention. Without these limitations' hospitals begun to look more compact. However, even with antibiotics, antiseptics, and the ventilation systems that we use today, we are not fully protected from hospital – acquired infections and pathogens. In hospital design there is a need to study of the relationship between an individual, it's surrounding and well – being. The new design of the hospital building, including redesign of ventilation systems, can possibly improve the recovery process of patients and transform into an authentic healing architecture. <sup>9</sup>

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<sup>9</sup> Jeanne Kisacky. 2017. Rise of the Modern Hospital : An Architectural History of Health and Healing, 1870-1940. Pittsburgh, Pa: University of Pittsburgh Press. 343  
<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1640209&site=ehost-live>.



*Figure 2 Plan of a 19<sup>th</sup> century Hospital (source: ArtStor)*



*Figure 3 Sheppard Asylum, Baltimore, MD., plan of second floor (source: ArtStor)*



*Figure 4 Medical Center in new York, 1925 (source: ArtStor)*

A new trend in healthcare architecture focuses on designing spaces in hospitals that are welcoming, open and do not resemble a hospital. Those hospitals are open to public, encouraging people to come in and spend some time in their beautiful green courtyards. An example of such hospital is the Angdong Health Center in Baojing, China, completed in 2012 and designed by the Rural Urban Framework. Architects took a different approach with their design, concentrating on the most common activity in hospitals – waiting. While people wait to see a doctor, wait for their test result, they can walk around the building on a ramp going through all the stories of the building and actively spend the time exercising. This new, humanitarian approach of design helped to create an object for the whole community to enjoy.



*Figure 5 Courtyard in Angdong Hospital Center(source: [https://www.archdaily.com/553572/angdong-hospital-project-rural-urban-farm/542e3db7c07a809a0e0004ad-angdong-hospital-project-rural-urban-farm-image?next\\_project=no](https://www.archdaily.com/553572/angdong-hospital-project-rural-urban-farm/542e3db7c07a809a0e0004ad-angdong-hospital-project-rural-urban-farm-image?next_project=no))*





*Figure 6 Ramp going up to the roof in Angdong Hospital Center (source: [https://www.archdaily.com/553572/angdong-hospital-project-rural-urban-farm/542e3e8bc07a809a0e0004b4-angdong-hospital-project-rural-urban-farm-image?next\\_project=no](https://www.archdaily.com/553572/angdong-hospital-project-rural-urban-farm/542e3e8bc07a809a0e0004b4-angdong-hospital-project-rural-urban-farm-image?next_project=no))*

In hospitals people must be given a space to walk while they are waiting, a park to take a walk, a sitting recreational area to take a break and forget about the reality they are in. A space like this is necessary, not only for patients, but also the medical workers and visitors. Even a small courtyard with a few trees can be beneficial when doctors end a 17-hour surgery and need a moment to rest or if a family comes to visit a patient and need room to process good or bad news. Yet, most hospitals lack this kind of space, which would help everyone feel at ease. As the architect of the Angdong Hospital said: “If you spend time in hospitals, you quickly become aware of how they are very often institutionalized, impersonal machines”.<sup>10</sup>

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<sup>10</sup> John Cary, *Design for Good* (Washington: Island Press, 2017), 64-77

Feeling of alienation in hospitals is not helping, which is what a lot of patients' experience. The architect John Lin also says: "Hospitals are theoretically public buildings. Yet so much about hospitals, operationally, is about isolation – isolating patients, isolating people from each other, isolating different kinds of illnesses. It's a weird contradiction." Laying on the hospital bed, alone with your own thoughts, creating all different scenarios in your head about your condition and what will happen next is not good for a patient's mental health. Also, medical workers spending all their time in emergency rooms, operating rooms or in surgery, very often not seeing sun light for the whole day, need an opportunity to go outside and breathe fresh air among others. Humans are social beings, who need interaction and connection with other people. Whether it is a staff member, a patient or a visitor, a feeling of isolation can only make a person's condition worse. An open hospital, encouraging even healthy people from the local community to come in can make hospitals feel less frightening, and give it more homely atmosphere, which can improve overall recovery process of the patients.<sup>11</sup>

### *The Healing Architecture*

Researches have proven that stress can slow the recovery process of a patient and their overall health condition. "Research has shown that stress is harmful to health. It slows healing, predisposes the body to more severe and more frequent infections, and compounds the effects of illness. A hospital environment, whose goal

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<sup>11</sup> John Cary, *Design for Good*, 64-77

is to heal, should do what it can to eliminate stress.”<sup>12</sup> There are a lot of factors that can contribute to a person’s stress levels. Feeling of loneliness, fear, and the built environment they are in. The surroundings have a huge impact on people’s mental health and therefore can positively or negatively affect the healing process. Architecture can not only help with the recovery of a patient, but it can also limit medical errors made by hospital workers, by improving their mental health, more efficient layout, and better organization. “Roger Ulrich and Craig Zimring have proposed a list of design changes that would improve patient safety by reducing infection, falls, and medical errors; mitigate stress; and promote healing. These include the use of single-occupancy rooms that could be adjusted to the medical needs of their occupants; improved air quality and ventilation; use of sound-absorbing ceiling tiles and flooring; better lighting and access to natural light; creation of pleasant, comfortable, and in-formative environments to reduce stress and provide patients, staff, and families with comfort zones, including gardens, nature views, and rooming-in spaces for families; making hospitals easier to navigate; and improving features such as nursing stations so as to help the staff do their jobs.”<sup>13</sup>

Hospitals are sterile spaces, with bright hallways and doctors rushing through them, where a healthy person normally wouldn’t go to. For most people it is an unpleasant, even scary environment that should be avoided. Exactly this kind of reputation can increase the patient’s feeling of alienation and cause stress and anxiety. “Indeed, positive social interactions are important buffers against stress. Sheldon

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<sup>12</sup> Esther M. Sternberg. 2009. *Healing Spaces*: Cambridge, Mass: Harvard University Press. 227  
<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=327606&site=ehost-live>.

<sup>13</sup> Sternberg. *Healing Spaces*, 245

Cohen and Bruce Rabin found that the more types of social interactions people reported over a period of time, the fewer upper-respiratory infections they developed. Cohen and Rabin concluded that the social support derived from these interactions helped to ward off infection”.<sup>14</sup> Hospitals can be more inviting, with open, welcoming spaces where visitors want to come to. This could significantly support people in the hospital and aid in improving their mental health and emotions.

Hospitals, as we see them today, began forming in the Medieval times. Before that, in Ancient Greece the healer would come to the sick person’s home or people who were considered chronically or terminally ill would go to heal in temples. With a scenic view to the sea in the background, they were healed with sleep, fresh water, healthy diet, and social interactions. All the factors that are missing in modern day hospitals filled with noise and lacking windows. At the beginning of the 20<sup>th</sup> century, architect Thomas Ustick Walter was commissioned to design St. Elizabeth’s Psychiatric Hospital in DC. Together with Thomas Kirkbride and his guidelines, they created a peaceful space, surrounded by nature and tranquility. Kirkbride, raised on a farm, believed that the mental healing process must be accompanied by exercising and hard work. The fields around the hospital provided patients with daily activities and therefore supported their emotions and mental health. Even modernist architects knew that to improve health they must incorporate nature in their designs.<sup>15</sup>

Healthcare architecture has a tremendous responsibility of not only creating a sterile environment, limiting spread of germs, but also making the space efficient,

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<sup>14</sup> Sternberg. *Healing Spaces* , 230

<sup>15</sup> Sternberg. *Healing Spaces* , 233

compact, and mentally resilient. Different methods, like involving natural lighting, connection to nature help to design emotionally safe hospital spaces, where patients can recover faster, and medical workers can work more productively. Moreover, the creation of a healing space can be aided by involving all the senses in the design.

“Neuroscience research will lead to further innovation based on what we’ve learned about sensory perception: visual perception of depth, light, color, objects, scenes, and landmarks; auditory perception of sounds and silence; aroma recognition; navigation; and the effects of meditation and belief on healing. Designing hospital environments that support all of these brain functions will aid the body’s own healing processes.”<sup>16</sup>

#### *Tranquility and escaping to natural environments*

“Tranquility, however, is a very personal construct, which requires people to draw upon a complex array of sensory, experiential and emotional inputs”<sup>17</sup> A peace of mind, a state of relaxation is something everyone is seeking in troubled, stressful times. After a long week of hard work people very often express their need to “escape” for the weekend. Escape from the city, to a change of scenery and to spend some time on a fresh air. Research conducted by Kaplan and Kaplan explain that our attempt to recover from mental fatigue means escaping from an aspect in our life that is ordinarily present. This can mean running away from noise, any routine or even a

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<sup>16</sup> Esther M. Sternberg. 2009. Healing Spaces: Cambridge, Mass: Harvard University Press. 245-246  
<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=327606&site=ehost-live>.

<sup>17</sup> Pheasant, Robert, Kirill Horoshenkov, Greg Watts, and Brendan Barrett. 2008. “The Acoustic and Visual Factors Influencing the Construction of Tranquil Space in Urban and Rural Environments Tranquil Spaces-Quiet Places?” Journal of the Acoustical Society of America 123 (3): 1446–57.  
<https://doi.org/10.1121/1.2831735>

goal we constantly pursue. Escaping to tranquil places usually refers to escaping to natural environments, which are very limited in most cities.<sup>18</sup>

As Kaplan and Kaplan go on, being fascinated by nature can reduce stress as it is giving people an experience of pleasure. Observing slowly moving clouds, setting sun, stars on a motionless evening sky, hold people's attention in an undramatic, peaceful way. That is called "soft fascination" which means it allows people to think of something else, it allows reflection, but it doesn't necessarily hold all our attention. Being in a natural environment also gives people a sense of importance and purpose, with simple tasks like gathering wood for fire, setting up a tent before it rains to not get wet or watering plants to grow fruit. It's a different, simple experience that quickly shows results, contrasting to a lot of people's daily life in corporate jobs.<sup>19</sup>

Being in a natural environment has a lot of benefits, from experiencing pleasure by enjoying its aesthetics to decreasing human errors, by reducing mental fatigue of a person. Nature gives people a sense of order and harmony, makes us feel that there is something larger than us and permits us to give up control for a moment.

<sup>20</sup> This feeling of not being able to control nature, even though it might seem frightening and overwhelming at first, can help restore people's peace. It can be a similar experience to a child being in a family home, where there are certain rules they need to follow. A child might not always understand these rules, but they must

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<sup>18</sup> Kaplan, Rachel, and Stephen Kaplan. 1989. *The Experience of Nature : A Psychological Perspective*. Cambridge: Cambridge University Press. 187  
<https://hdl.handle.net/2027/uiuo.ark:/13960/t7tm9w97z>

<sup>19</sup> Kaplan and Kaplan, *The Experience of Nature : A Psychological Perspective*, 192.

<sup>20</sup> Kaplan and Kaplan, *The Experience of Nature : A Psychological Perspective*, 178

learn to accept it and that in the long run teaches them about life and makes them feel protected.

An attempt to incorporate nature into build environment and establish its connection to buildings and human beings is the biophilic design. “Biophilic design focuses on human adaptations to nature that advance physical and mental health, Performance, and wellbeing.” Biophilic design includes emotional attachment to objects and places, encouraging interactions and collaboration and creates an “authentic” experience with nature.<sup>21</sup> More detailed analysis of the individual elements of biophilic design will be explored further in this thesis.

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<sup>21</sup> Kellert, Stephen R. 2018. *Nature by Design : The Practice of Biophilic Design*. New Haven, CT: Yale University Press. 18  
<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=1775048&site=ehost-live>.

## Chapter 3: Precedent Study

- How did other projects successfully deal with the issue in the past?

### 1. Chapel of Silence

Built in 2012, designed by K2S Architects, the Chapel of Silence serves as a quiet and peaceful space for people in Helsinki, in Finland. It is located on a highly busy square in the center of the city. The curved wooden structure of the building blocks the noise and lively feeling of the outside and creates a tranquil interior for prayer. The area of the chapel is 3788 sq ft.



*Figure 7 (source: <https://www.archdaily.com/252040/kamppi-chapel-k2s-architects/4ff5d21028ba0d6c9f000030-kamppi-chapel-k2s-architects-photo>)*





Figure 8 (source: <https://www.archdaily.com/252040/kamppi-chapel-k2s-architects/4ff5d1f928ba0d6c9f00002c-kamppi-chapel-k2s-architects-photo>)

### Contemporary Meditation Spaces:

#### 2. Meditation space – Jose Pena

In 2019 architect Jose Pena designed a project of a meditation space in Chile, located in the forest of young oaks. The outdoor space consists of a barbeque area, a semicircular pool and a wall dividing the outdoor space from the seemingly infinite forest. Looking from the inside the tall trees are reflected in the pool which connects the whole design with the context.<sup>22</sup>

#### 3. Meditation Hall in China, HIL Architects

The building completed in 2018, provides the local community with the space designed for Zen meditation and yoga activities. The sequence of spaces in the project begins with the open, bright outdoor space. Next, the visitor enters the peaceful hallway with water on the side and dim natural light filtered on the other side by the wooden, vertical panels. The dark interior of the main hall is

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<sup>22</sup> "Meditation Space Quincho Moholy / José Peña" [Espacio de meditación Quincho Moholy / José Peña] 22 Nov 2019. ArchDaily. Accessed 15 Oct 2020.  
<<https://www.archdaily.com/928837/meditation-space-quincho-moholy-jose-pena>>

luminated only by narrow strips of openings which let natural light come in and be reflected and diffused by the water. The enclosure of the building helps to block the noise coming from the busy highway outside and helps to create a tranquil meditation space in a dynamic, lively environment.<sup>23</sup>

#### *Meditation room in the office:*

##### 4. The Patio Office, Tal Goldsmith Fish Design Studio

Can tranquility be brought to an office building, a space where people spend so much time of their day? The Tal Goldsmith Fish Design Studio designed in 2020 a 3229 square feet office space that provides a wonderful answer to this question. Their office space is airy, bright, minimalistic, and connected to nature, through a narrow patio dividing the two corridors. On one side of the patio, without the glass, people can touch and smell the plants, which additionally helps to create the overall multisensory experience, bringing calmness and tranquility to the whole office space.<sup>24</sup>

#### *The use of light:*

##### 5. Le Corbusier – Notre Dame du Haut

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<sup>23</sup> Cite: "Meditation Hall / HIL Architects" 28 Feb 2019. ArchDaily. Accessed 16 Oct 2020. <<https://www.archdaily.com/912262/meditation-hall-hil-architects>>

<sup>24</sup> "The Patio Office / Tal Goldsmith Fish Design Studio" 28 Jul 2020. ArchDaily. Accessed 15 Oct 2020. <<https://www.archdaily.com/944515/the-patio-office-tal-goldsmith-fish-design-studio>>

The first religious architecture that Le Corbusier designed, was built in 1955. What's extraordinary about the building is the interior and the feeling created inside using multiple openings on the south wall and daylight.



*Figure 9* Rene Burri. FRANCE. Franche-Comte region. Town of Ronchamp. 1955. The chapel of Notre-Dame du Haut, built by LE CORBUSIER.. [https://library.artstor.org/asset/AWSS35953\\_35953\\_37857879](https://library.artstor.org/asset/AWSS35953_35953_37857879).

Le Corbusier: “[...] in an interview given in 1961 on religious architecture, he explained: “Emotion comes from what one sees – that is to say volumes – from what the body feels through the impression or pressure of the walls on itself, and next by what the lighting offers either in terms of density or in terms of softness depending on the places it is directed towards” <sup>25</sup>

The building looks like a giant sculpture where the exterior was a product of the interior. The south wall with little geometric opening immediately draws the

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<sup>25</sup>Danièle Pauly. 2008. Le Corbusier. The Chapel at Ronchamp. Le Corbusier Guides (Engl.). Basel: Birkhäuser. 41 <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=1157827&site=ehost-live..>

gaze of the visitor after entering the chapel. Another element is a thin strip located under the roof covering the space. That creates an interesting space where one side is luminated by the rays of daylight and the other, north side is in the shadow. The focus of the interior is the altar, located in the center of the west wall and fully luminated by daylight, under the highest point of the ceiling.<sup>26</sup>

## 6. James Turrell

James Turrell is a minimalist artist using only light and perception for his installations. His most popular work is transforming the Roden Crater in Arizona, still unfinished. The point of his art is not to notice an object lit but the light but to see the essence of light itself, it's transparency, the color and the feeling it gives. Especially in his skylscapes, the visitor can sense the spiritual atmosphere created by the multisensory experience. The skyscape called *Dividing the Light* consists of a reflecting pool, making gentle, calming sounds of water and connects perfectly to the context through transparent walls, framed on top by an illuminated canopy.

*“One of these mechanisms is responsible for color contrast effects. If a patch of pure color is placed on a background of another color, it will shift from its appearance against a white background toward the complement of the background color. If the patch were white, for example, putting it on a red background would cause it to look greenish, in fact greenish in the exact hue of green that is the complement of the red background. If the patch placed on the red*

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<sup>26</sup> Danièle Pauly. 2008. Le Corbusier. The Chapel at Ronchamp. Le Corbusier Guides (Engl.). Basel: Birkhäuser. 41 <http://search.ebscohost.com.proxy-um.researchport.umd.edu/login.aspx?direct=true&db=nlebk&AN=1157827&site=ehost-live>.

*background were yellow, the resulting color would be a greenish yellow — the result of mixing yellow and green.”*<sup>27</sup>



*Turrell, James. 1972. Skyspace I (day).*  
[https://library.artstor.org/asset/ARTSTOR\\_103\\_41822000386001](https://library.artstor.org/asset/ARTSTOR_103_41822000386001).

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<sup>27</sup> Turrell, James, Filomena Moscatelli, and Michael Govan. 2009. James Turrell. Milano: Charta, 27  
<https://hdl.handle.net/2027/uc1.31822036427581>

## Chapter 4: Context

The need for a meditation space with a mental health services is very high due to an ongoing issue with the COVID – 19 pandemic and growing problem of developing depressive symptoms and anxiety. Right now, in Washington, DC there are 2,923 mental health providers, significantly smaller than in New York, with 11,807. (Figure 6 ) As the pandemic is affecting more and more people every day and media makes it seem like it will not end soon, growing number of people experience the uncertainty and anxiety leading to depression. Therefore, one of the main criteria for choosing the site was the density so that more people can have access to the services provided by the designed building. The three chosen sites for analysis are located in Washington, DC with the highest population density in the area (Figure 7). As of November 10<sup>th</sup>, 2020, District of Columbia has 18,173 number of confirmed coronavirus cases and 657 number of cumulative deaths. (data from Social Explorer – US Health Data).



*Figure 10 (source: Social Explorer)*



*Figure 11 (source: Social Explorer)*

The three chosen sites where the area in front of the Union Station, which serves as parking lot now, site within MedStar Washington Hospital and area around

Howard University Hospital. The vacant lot in front of the Union Station has a good connection to an open green space, leading to the Capitol in DC, which could serve as an extension of the meditation garden on the site. It is also a big circulation hub, with a lot of pedestrian and vehicular movement in the surrounding area. The proximity to residential and office areas would be an advantage in terms of giving multiple people access to the building, after work or if they were feeling stressed in their homes.

However, the most important category was the proximity to the medical service areas, which helped to eliminate site by the Union Station. The visitors parking in front of Howard University's Hospital and the site within the MedStar Hospital complex both make the designed space accessible for many medical workers, patients, and local residents. Another important factor was the potential for landscape design, as the connection to nature, which is vital for creating a healing environment encouraging reflection. Vegetation in the area can also have healing benefits, like reducing stress and carbon emission. After analysis and careful comparison of the two sites, the site within the MedStar Hospital campus was chosen. The three possible sites in the complex can serve more medical workers who mostly need the designed meditation space with mental health services, has a potentially better view at the McMillan Reservoir and Howard University with more open green space around it. (Figure 8)



	1. Union Station	2. MedStar Washington Hospital	3. Howard University Hospital
Circulation Hub	1	2	3
Proximity to hospitals	3	1	2
Proximity to office and residential area	1	3	2
Visibility	3	2	1
Limited traffic noise	3	1	2
Site character	2	1	3
Potential for the building to be a threshold	2	1	3
Potential for landscape design	2	1	3
Size	2	1	3
View	2	1	3
People passing through	1	2	3
Accessibility	1	2	3
	23	18	31

Figure 12 (source: Author)

After choosing the site within the MedStar Washington Hospital campus, three sites in the area were analyzed. (Figure 9) MedStar Hospital was built in 1958 by merging three hospitals in DC and creating the largest private hospital in the capitol. Earlier in the 19<sup>th</sup> century the three hospitals were opened after the Civil War. After the World War II three women, now called “Three Graces” generated the necessary support and pushed the merging of the three hospitals to create the Washington Hospital Center. (<https://www.medstarwashington.org/our-hospital/historical-hospital-moments/50th-anniversary/timeline/>)

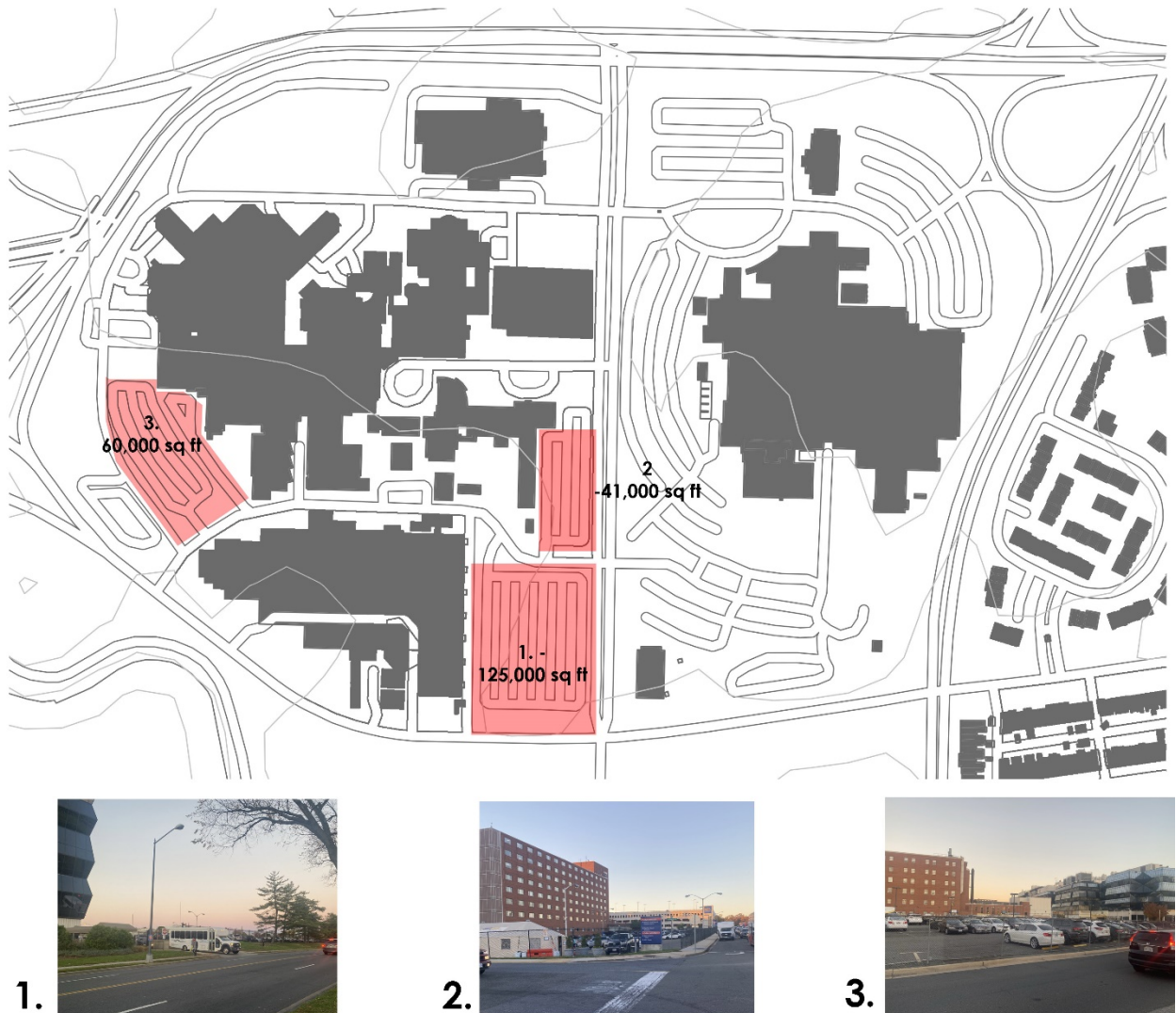


Figure 13 Possible sites within the MedStar Hospital (source: Author)

Figure 9 shows three sites chosen within the hospital's campus and their sizes. Site 1 and 2 are located by the main road 1<sup>st</sup> ST NW, which is the main axis of the complex. On the East side of the axis there is a Washington VA Medical Center. In the north, across Irving ST NW the open green space is dedicated to Armed Forces Retire Home and Old Soldiers' Home Golf Course. The area in the south is marked as a production, distribution, and repair zone on the Existing and Future Land Use Map and gives a nice view for the Mc Millan Reservoir and Howard University from the hospital's complex. The rest of the surrounding area is mostly moderate and medium

density residential and institutional zone, with a nearby green and yellow metro line and Georgia Ave – Petworth Station.

The main entrance to the complex and the main axis is the 1<sup>st</sup> ST NW, which is also creating a lot of noise from traffic. The second road with a lot of traffic is the Irving ST NW on the north side of the hospital. (Figure 10) Another source of noise pollution are the two helicopter pads at the Children's National Main Hospital and at the MedStar Washington Hospital Center Emergency Room. That area is also where most of the ambulances go which creates another source. On site 1 and 2 a designed building can serve as a buffer from the traffic noise on the 1<sup>st</sup> ST NW, which will allow to create a peaceful meditation, healing garden behind it.



Figure 14 Noise Diagram (source: Author)

The main access to the complex is from the Irving St NW from the north and Michigan Ave NW from the south, which creates most traffic to the 1<sup>st</sup> ST NW. The Children's Hospital can be also accessed separately from the Michigan Ave. There are two parking garages that can be accessed from 1<sup>st</sup> ST NW and Hospital Center Dr. The MedStar Hospital complex is located about 22 minutes (3.6 miles) from downtown DC and 15 minutes from the Capitol Hill. The area is generally pedestrian friendly with sidewalks along the main axis on 1<sup>st</sup> ST NW and which allows good access to chosen sites 1 and 2 and all the main entrances to the different hospitals. However, there is no sidewalk near site 3, down on the Hospital Center Dr, which forces pedestrians to walk on the road or between cars on the parking lot. The hospital is also a 15-minute walk (0.7 miles) from Howard University and a moderate density residential area which gives residents and young medical students easy access to the site. The building meant for people affected by anxiety caused by the pandemic, including mostly medical workers, will therefore serve MedStar Hospital employees but also medical students and residents from surrounding area. (Figure \_ circulation diagram)

The complex is surrounded by a lot of open spaces like the green area around the Mc Millan Reservoir and the Old Soldiers' Golf Course. However, the MedStar hospital itself is a densely built environment, lacking outdoor sitting areas. Patients and medical workers are missing an opportunity to go outside to a park to breathe fresh air or to take a walk with some of their visitors. More vegetation in the complex would be very beneficial for medical staff's and patients not only mental health but

also physical since it absorbs CO2 and help to minimize stress. (Figure 11 open spaces GIS map)



*Figure 15 Green Open Spaces (source: GIS)*

	Site 1	Site 2	Site 3
Accessibility	2	1	2
Potential for the building to be a threshold	1	2	2
Limited traffic noise	2	1	3
Visibility	2	1	3
Potential for landscape design	1	3	2
Size - compact	2	1	3
	10	9	15

Figure 16 Site Selection Criteria (source: Author)

The most important criteria were the accessibility, visibility and proximity to the main road and axis, an advantage that site 1 and 2 have. (Figure 12) Another factor was the noise traffic, which is limited in site 3, as it is further away from the main road, 1<sup>st</sup> ST NW. However, the site is located right next to the helicopter pad, which creates additional sudden noises. After the comparison, site 2 was chosen as it is most compact, located in the center of the campus, which is convenient for bigger number of patients and employees. It can also serve as a threshold to the complex which adds a sense of order to the chaotic organization of the hospital.

## Chapter 5: A Multi-sensory Experience

Architecture has been used as a tool to affect people's perception for centuries by affecting their emotions. The old baroque cathedrals were perceived as theatres, surprising, intriguing, sometimes scary. Through illusion of frescoes, artificial sense of depth created by multiple rows of columns and arches, the sound carried through the big stone interiors and the smell of incense scaring bad spirits away with the smoke, all of it was evoking the senses of the visitor. This power that architecture has, can be used in creating an atmosphere that encourages reflection, collaboration and the connection between Earth and people, therefore improving mental health.

Our world today is dominated by the sense of vision. We experience the world by looking at pretty photos on social media or seeing them in movies and TV shows. Unfortunately, sight is, at the same time, the most isolating sense and does not let us fully experience our connection with the world. Using only our vision we are no more than mere spectators of an event, but we do not participate in it nor feel like we are a part of it. For that reason, it is important to understand the possibilities of a multi – sensory experience potential of architecture while designing a space dedicated for meditation and improving mental health. <sup>28</sup>

### Touch

As Juhani Pallasmaa states in his book “The Eyes of the Skin”:

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<sup>28</sup> Pallasmaa, Juhani *The Eyes of the Skin: Architecture and the Senses* (Great Britain: Wiley-Academy, 2005) 19

*“The eye is the organ of distance and separation. Whereas touch is the sense of nearness, intimacy and affection”.<sup>29</sup>*

Different materials, like wood, brick, texture of the seat, vegetation can all incorporate our sense of touch, enhanced by vision. Even the path that the person is walking on is an important factor: a smooth texture of a tile will give a different experience than a walk on a soft grass or stepping on big hard rocks. All these elements are important to consider when designing a place that takes part in the healing process of a person. Those factors can either affect positively our mental health and speed the recovery processes or have the opposite, negative effects.

### Hearing

Evoking all the person's senses helps to awaken the imagination. People experiencing anxiety and stress, tend to overthink and overanalyzing every situation. Their minds are filled with negative outcomes, fear, and uncertainty. If their minds were occupied by positive images instead and their imagination was programmed to think positive thoughts by experiencing a tranquil environment with all their senses, this could potentially heal their anxiety.

The sound helps to create an atmosphere, it adds character to a place, like a soundtrack in a movie. The building can seem inviting, warm, and give a sense of hospitality or can give a cold, monumental or hostile feeling.<sup>30</sup> Hospitals often sound hostile, with busy people running from room to room, phones ringing and all these

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<sup>29</sup> Pallasmaa, Juhani *The Eyes of the Skin: Architecture and the Senses* (Great Britain: Wiley-Academy, 2005) 46

<sup>30</sup> Pallasmaa, Juhani, 50



noises carry down the long, never-ending hallways covered with shining tiles. However, this could be changed by using natural materials, awakening the imagination. Incorporating sounds reminiscent of natural environments, such as singing birds, calm waves of water splashing gently on the rocks, wind moving the tree branches, can also contribute to creating a tranquil atmosphere, thus, enhancing healing.

### Smell

Smell is this sense that helps people remember the space or an experience. Very often a person can sense the same smell they experienced at a different time and location and with this sensation a whole picture of that other place comes to their mind. They can suddenly remember all the other elements associated with that smell. How big the space was, if it was warm or cold, and how it made them feel. This aspect of the smell is important in creating a long – lasting effect of healing. If a person in need visits a place that makes them feel at peace and associates it with a certain smell, for example specific type of flowers, then in the future when this person comes in contact with the same smell of those flowers, they will feel at peace again. This smell will now be associated with the feeling of tranquility. Therefore, it can be helpful with the recovery process even outside of the meditation center.

### Enclosure, Thresholds

Another tool of affecting people's emotions through architecture and design is creating thresholds. People experience space by moving through its sequence. By

actively perceiving a place a person is subject to transition and observing its elements through different point of view. By entering a space, they are unconsciously prompted to answer multiple questions in their heads: is the place inviting, do I want to enter? Which path should I take? If I do not feel welcomed, is there a way to escape? How is the place structured?<sup>31</sup> Architecture involved in the process of healing must be mindful of the sequence of spaces and the actions one is taking while experiencing it. Research shows that “social withdrawal is reduced in settings with limited numbers of common spaces that each have a distinctive identity; agitation is reduced in settings that are more residential than institutional in character.”<sup>32</sup> Thresholds and enclosure are important to create a welcoming place, where people can feel safe and wanted.

### *Landscape and Architecture*

Probably the most important factor to consider when designing a healing space in a hospital complex is the landscape. With the new trend of changing the perception of a hospital as an isolated space into a welcoming, open place of temporary stay, landscape and green surroundings can be used to attract visitors and remind patients of a normal life outside of the hospital.

One great example of an interplay between the landscape and architecture is the Kings Road House designed by Rudolf Schindler in 1921, in West Hollywood,

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<sup>31</sup> Till Boettger. Threshold Spaces : Transitions in Architecture. Analysis and Design Tools. Basel/Berlin/Boston: Birkhäuser, 2014. 57-58

<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=885297&site=ehost-live>.

<sup>32</sup> Sarah Robinson, and Juhani Pallasmaa. Mind in Architecture : Neuroscience, Embodiment, and the Future of Design. Cambridge, Massachusetts: The MIT Press, 2015. 201

<http://search.ebscohost.com/login.aspx?direct=true&db=nlebk&AN=980748&site=ehost-live>.

Los Angeles. The house was designed for two couples, sharing living spaces but also having their own, individual studios. The creation of those intimate spaces is continued in the gardens surrounding the house. Hedges and walls covered in plants create the enclosed, private outdoor patio. From the street it is almost impossible to notice the house hidden behind the thick, tall wall of trees and bushes. The interior seems to flow into the outside garden through using glass, wooden posts, and canvas.

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To use the concept of biophilia the edge between the built and natural environment has to be blended. That can be achieved through indoor/outdoor spaces, by extending the patterns and elements from the interior to the exterior, creating openings in vegetation connected to the views from the interior and by not fully enclosing certain parts of the building.

Designing a garden can also be treated like designing architecture. Trees, hedges, water features can be thought of as walls, edges, elements that help create rooms in the landscape. Creating a garden is like creating a journey and thinking of what the experience is of going from one space to another. Designing a part of the garden with dense, taller vegetation and parts with trimmed hedges, open plazas can create an experience of going from narrow, darker areas to those bright and open, which can be observed very often in Frank Lloyd Wright's architecture. Adding vistas in the landscape towards a building or sculpture also connects the built and natural environment.

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<sup>33</sup> Luke Fiederer. "AD Classics: Kings Road House / Rudolf Schindler" 16 Mar 2016. ArchDaily. Accessed 13 Dec 2020. <<https://www.archdaily.com/783384/ad-classics-kings-road-house-rudolf-schindler>>

Forests, gardens, and green spaces in cities often give a divine feeling and can have a contemplative character, important to achieve tranquility and improve mental health. Using different types of plants and water features also evoke a multisensory experience. In Japanese healing gardens pine trees and magnolias are used as their smell can be calming and help with relaxation. Lavender is another type that can be used for these purposes. Additionally, adding water features encourages contemplation through the meditative atmosphere that the calming waves create. Horizontal surfaces like water or vertical like trees are forming edges between zones or different experiences throughout the garden. Adjusting the height of the plants can control how open or enclosed the space feels, giving an opportunity to form a more private, intimate room, semi public or public. Garden should be seen as an extension of an interior, should use the same design language and be connected to the experience of the visitor inside of the designed building.

## Chapter 6: Program Analysis

The MedStar Hospital is in a desperate need for a green recreational space to improve mental health of struggling, drained medical workers seeking psychological help. This thesis aims to design a Recreation Center and a Counseling Center with a contemplation space surrounded by a green space within the hospital campus.

### *Proposed Masterplan – First Iterations*

The three proposed master plans include adding more open, green areas in the whole complex and try to eliminate the noise pollution coming from the streets and surrounding highways as well as two helicopter pads. In all proposed schemes, site 2, mentioned earlier, serves as a new hospital building, possibly an addition to the Children's Hospital.



*Figure 17 Proposed Masterplan 1 (source: Author)*

The first proposed scheme includes the most open green spaces in the complex. The largest area is located around the Washington DC VA Medical Center on the East, which is currently used as parking lots. More vegetation has also been incorporated in the areas between the existing buildings of the MedStar Hospital to improve the visitor's experience of walking towards their destination and give access to areas of relaxation for all the patients and medical workers.



*Figure 18 Proposed Masterplan 2 (source: Author)*

The second proposed masterplan continues to incorporate as many green areas as possible in the gaps between the existing buildings, making the use of those spaces more efficient and valuable. Adding vegetation to the complex not only provides people with important walking, recreational areas but also creates a pleasing, tranquil, scenic view from the hospital's windows, important for patient's recovery. This scheme also includes more of the built environment, adding new buildings for the Washington DC VA Medical Center by the 1<sup>st</sup> St NW.



*Figure 19 Proposed Masterplan 3 (source: Author)*

The third scheme has most of the built environment incorporated in the design. It takes into consideration four new buildings for the Washington DC VA Medical Center and adds a larger building for Site 3. The green spaces are still connecting and merging into each other creating one flowing open, public space.

### *The Meditation Space*

Two precedents for a meditation space were analyzed to create an adequate program for the project for the MedStar Hospital. The first one was a small



meditation space Quincho Moholy in Chile, designed by an architect Jose Pena in 2019. This small building included an indoor open space, about 252 sq ft, in a circular shape, which creates a peaceful room encouraging reflection. The interior is connected to the exterior through an outdoor reflecting pool, which measures about 151 sq ft.

MEDITATION SPACE/ JOSE PENA, Chile



*Figure 20*



*Figure 21 (source: ArchDaily.)*

Another analyzed precedent was the Meditation Hall in China, designed by HIL Architects in 2018. The project consists of 2,137 sq ft main hall and 1,1284 sq ft private classroom with necessary storage and additional reception space. The building is located by a busy, noisy street challenging the peacefulness of the indoor space. The architects managed to create a boundry between the outside and inside world of the design, at the same time connecting the two through semi- transparent material letting in the natural light in the hallways and reflecting the daylight through a water feature in the interior.

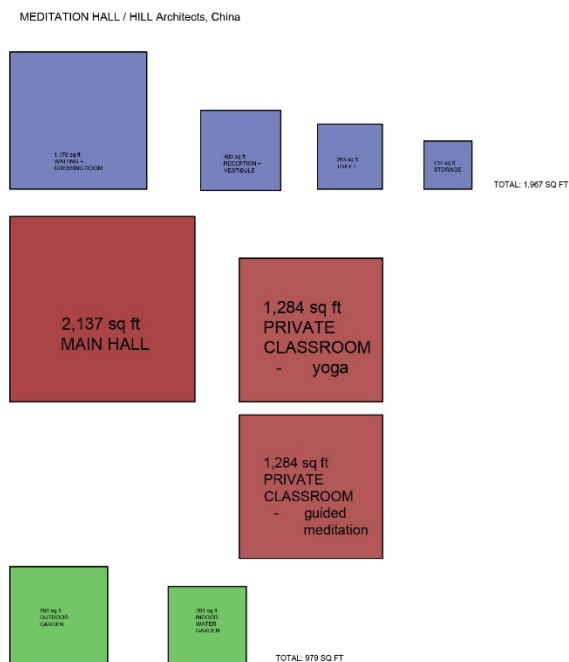


Figure 22



*Figure 23 (source ArchDaily)*

### *The Counseling Center*

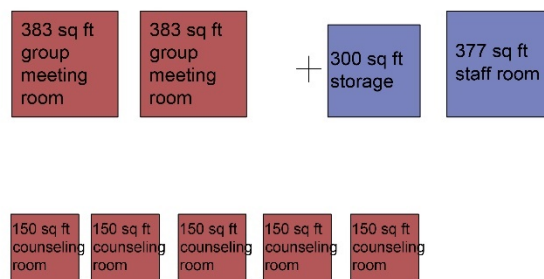
In addition to the meditation outdoor and indoor space this thesis also includes a necessary space for counseling and group meetings for psychological care.

Therefore, another analyzed precedent was the Children's Center for Psychiatric Rehabilitation. The project was designed by Sou Fujimoto Architects in 2006 and consists of several boxes chaotically placed on the site. Boxes include a few counseling rooms, meeting rooms and playrooms for children.



*Figure 24 Plan of the Children's Center for Psychiatric Rehabilitation (source: ArchDaily)*

Children's Center for Psychiatric Rehabilitation  
/ Sou Fujimoto Architects



*Figure 25 (Source: Author)*

### Program

The new meditation center for the MedStar Washington Hospital will have 10,157 sq ft in total (Table 1). People can approach the building from few sides and can either walk straight into the garden with three pavilions encouraging reflection or walk into the main building. The person enters the building and walks into a lobby with a reception desk. From there they can either go to an open to public meditation main hall for reflection or sign up to go for guided meditation or yoga classes in one of the two private rooms. The building also consists of five counseling rooms for individual therapy with a psychologist and two bigger group meeting rooms.

Table 1 Program Tabulation (Source: Author)

	NSF	GSF
	sq ft	sq ft
dressroom	1170	1205.1
reception	400	412
restroom	263	270.89
storage	134	138.02
counseling rooms - storage	300	309
staff room	377	388.31
main hall	2137	2201.11
private classroom- guided meditation	1284	1322.52
private classroom- yoga	1284	1322.52
group meeting room	383	394.49
group meeting room	383	394.49
counseling room	150	154.5
counseling room	150	154.5
counseling room	150	154.5
counseling room	150	154.5
counseling room	150	154.5
outdoor garden	508	523.24
indoor water garden	381	392.43
reflecting outdoor pool	151	155.53
indoor open space	252	259.56
total	10157	10461.71

The outside pavilions are divided into three categories, according to different moods affecting people during hospital visits:

1. The Joy and Excitement Pavilion – providing a space for people feeling happy and wanting a place to express their gratitude.

Along with two pavilions addressing any negative emotions people might feel:

2. The Seclusion Pavilion - a place dedicated to people who want to be alone and reflect and meditate in a secluded space – this can be beneficial to those experiencing the feeling of stress, uncertainty, fear, and/or exhaustion.

3. The Integration Pavilion - the third pavilion encourages integration – it can be especially helpful for people who feel alone because of their negative emotions, they experience a loss of their loved ones and grief.

This kind of division of different experiences in the pavilion acknowledges different ways and needs of people dealing with their emotions. Not everybody deals with their problems in the same way. All the pavilions will give the visitors a multi – sensory experience to help them regain peace within themselves and consequently improve their mental, emotional and physical health.

## Chapter 7: Design Solution

New thinking in hospital campus design focuses on health and wellness building on a growing database of evidence- based research that links physical environment to more successful healing practices. Evidence now fully supports the measurable benefits of treating mind-body-soul for the best outcomes. Healthcare has finally become truly holistic if you are a patient. Unfortunately, the most stressful profession in the United States is the healthcare giver.

Even before the pandemic, these people work 30-hour shift without seeing any daylight and experience challenging emotional situations that take measurable physical toll on our medical staff. During the pandemic many of them reported fear, insomnia and developed depressive symptoms, seeing their patients and colleagues getting sick and dying every day. And yet, evidence has shown that happier, healthier caregivers directly correlate to better patient outcomes.

This thesis develops a prototypical center that provides the staff with the support they need to ensure they maintain a strong mind, body, and soul. The goals are to achieve tranquility through biophilic design, evoke a multisensory experience and create 3 levels of comfort: public, semi-public, and private.

On the existing hospital campus, it is very difficult to find your way, it lacks any vegetation and consists mostly of these massive, overwhelming buildings that do not let a lot of daylight to the interior.

The new developed masterplan (Figure 26) corrects those issues: the main entrance becomes a green, inviting boulevard the orthogonal street grid makes it easy



to navigate, find your way and the narrow shape of the buildings bring more daylight to the interior. The newly added entrance for ambulances shortens their trip to the Emergency Room from the city.



*Figure 26 - Final Proposed Masterplan (Source: Author)*

The figure ground of the existing conditions of the hospital campus shows the chaotic organization of buildings, their massive shape and lack of vegetation. (Figure 27)



*Figure 27 - Figure Ground - Existing Conditions (Source: Author)*

The figure ground of the new masterplan demonstrates the goals of this thesis to add more vegetation to the campus, simplify the layout and add narrowly shaped building for future development of the hospital, that would easily let the right amount of sunlight to the interior. (Figure 28)



*Figure 28 - Figure Ground - New Masterplan (Source: Author)*

The site for the Restorative Center is located in the south-west corner of the campus and has meditative character thanks to the presence of water, the McMillan Reservoir. It is also located further away from the noise and busy environment of the hospital. It gives an opportunity to create a tranquil surrounding.

The design addresses the axis formed in the new masterplan and creates two zones: one public, open, improving human connection, which is significant in the healing process; and the second one more intimate, private, for medical workers who seek psychological help and do not wish for everyone around to know about it.

(Figure 29)



Figure 29 - Parti Diagram of the Site (Source: Author)

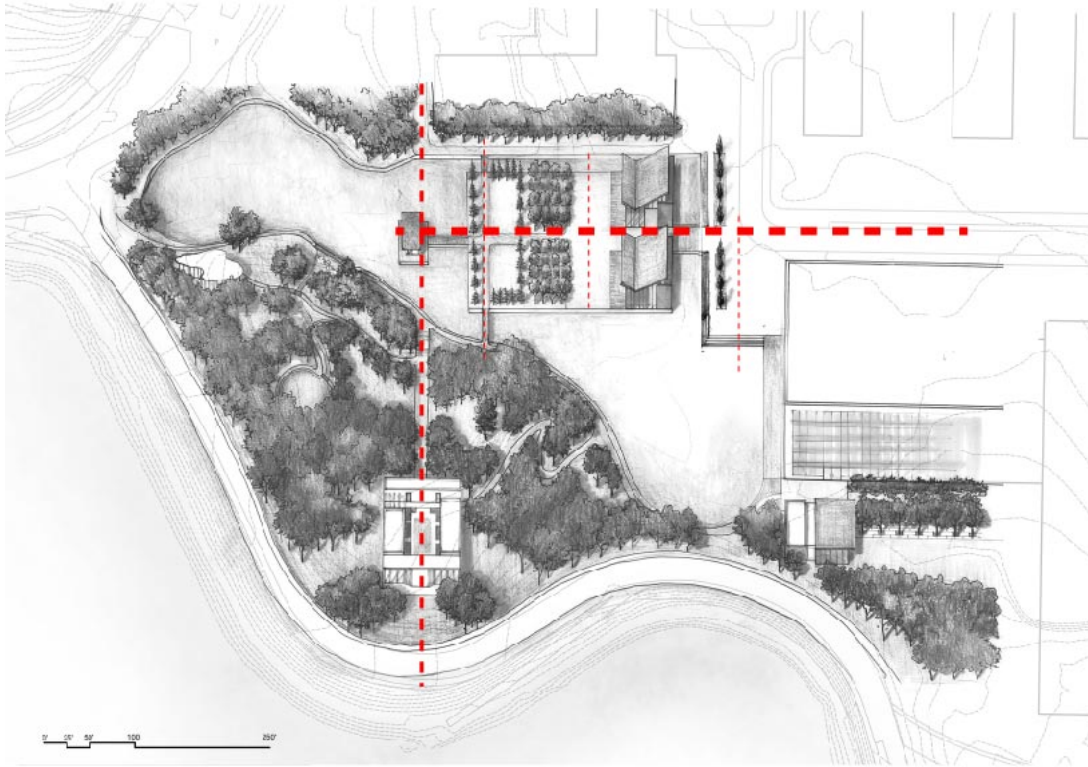
The site plan (Figure 30) shows that the park is accessible only from two sides, for safety: from the city, and from the hospital campus. There are also a few openings in the vegetation that frame the view towards the reservoir. Another water feature was added in the lowering of the topography, where Michigan Ave previously went, to enhance the contemplative atmosphere of the center, and create a stronger edge between the earlier mentioned two zones. It also helps to create a multisensory experience involving the sound of calming waves of the water.



*Figure 30 - Site Plan (Source: Author)*

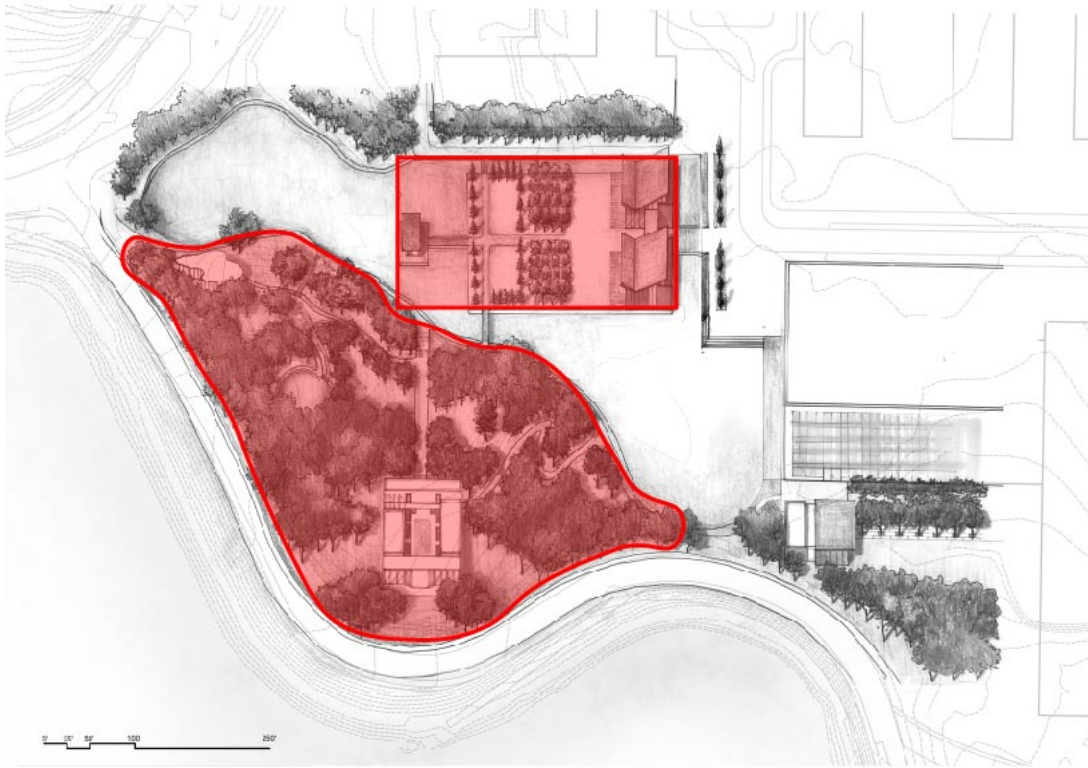
The main axis is addressed through two buildings, the Recreation Center, creating a threshold between the stressful hospital environment and the tranquil oasis for contemplation. The axis ends with the meditation pavilion above the water, from which the visitors can notice another major cross – axis, directing them towards the Counseling Center. (Figure 31)





*Figure 31 - Site Plan - Axis Diagram (Source: Author)*

In the new design for the site there are two zones: first one is more public, with a more formal, axial garden surrounded by water and the second one, a picturesque garden with organic organization of paths and more dense and taller vegetation. (Figure 32)



*Figure 32 - Site Plan - Zones Diagram (Source: Author)*

The created plaza, extended from the hospital campus towards the McMillan Reservoir, ends with a seating area, from which the visitors can observe the park. It is a big, open, mostly empty space and a moment of silence before crossing the threshold of the garden.

The first zone starts with the Recreation Center. The building has a solid front, to enhance the threshold between stressful and calm environment, and create a moment of suspense and a transparent, lightly structured back, open to the garden. The entrance to the building is located from the back and leads to the open lobby from which visitors can go to the changing rooms, or to the smoothie bar located in the bottom building. The solid, front part contains all the service areas, the restrooms,

staff room, storage, two fire escape staircases and an elevator. The two buildings are connected through the bridge on the second floor. (Figure 33 and 34)



*Figure 33 - Recreation Center Floor Plan 1 (Source: Author)*

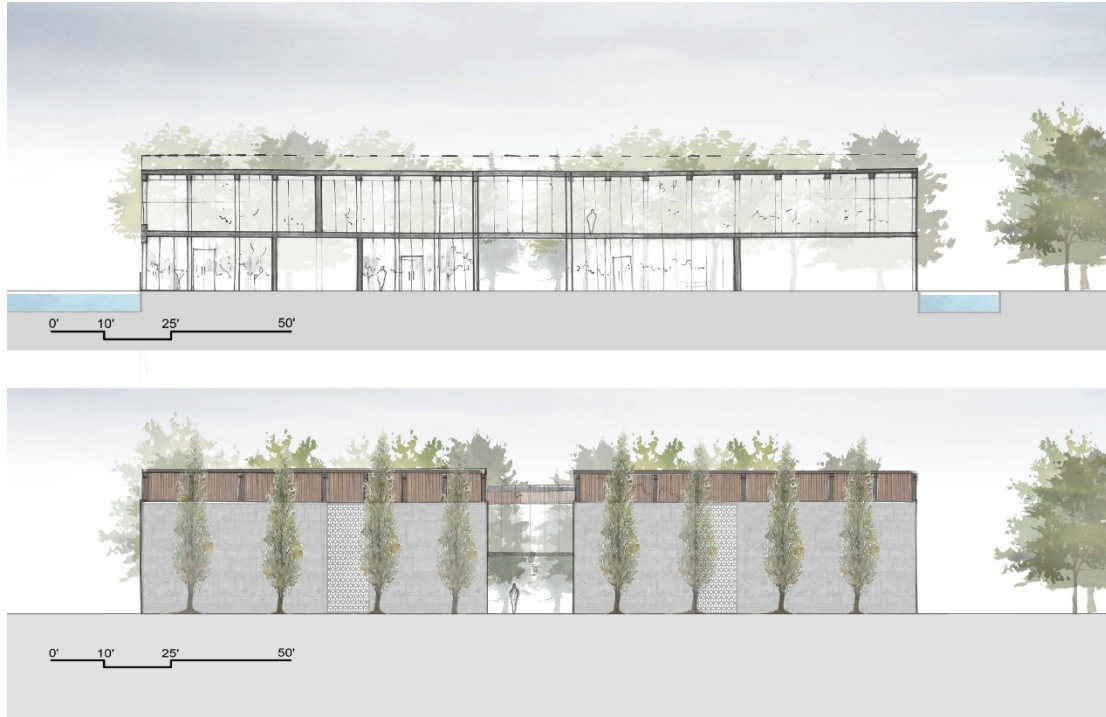


*Figure 34 Recreation Center Floor Plan 2 (Source: Author)*

The front façade is a solid, concrete wall and partially reveals the wooden structure of the back of the building. The section shows the transparent curtain wall,



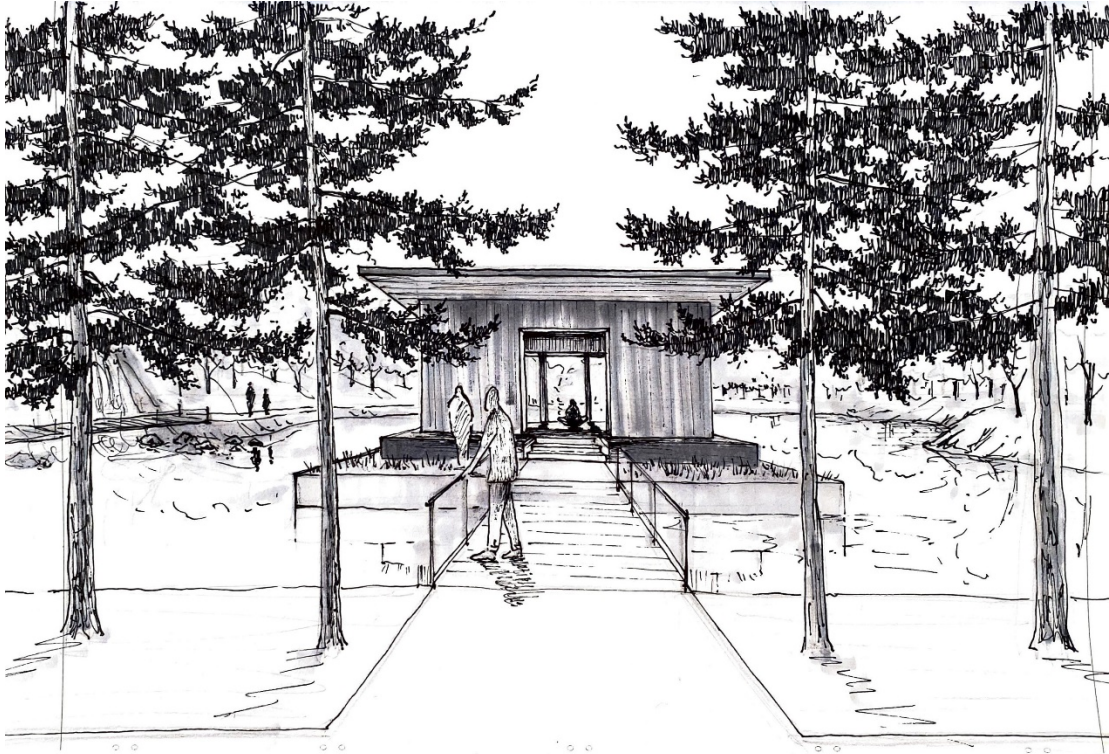
connecting the interior with the garden. (Figure 35)



*Figure 35 - Recreation Center - Longitudinal Section and Front Elevation (Source: Author)*

The second floor of the building at the top is meant for a louder workout, with an open gym area. The bottom building is a quiet, calmer area for yoga and Pilates.

The two buildings connected through a bridge frame the view towards the meditation pavilion above the water. It is separated from the axial garden of the Recreation Center through a bridge, which helps to evoke that multisensory experience, through changes of materials. The gravel path along the formal row of evergreen trees switches to the wooden boards of the bridge and then changes into soft grass surrounding the pavilion. (Figure 36)



*Figure 36 - View of the Meditation Pavilion evoking the Multisensory Experience (Source: Author)*

The second bridge, connecting two zones and two different gardens, is deliberately not located on the cross axis, to force people to slow down as they move through the park, so they must turn around and find their way to cross the water.

After crossing the bridge, the second zone starts, and the forest gets denser and more mysterious. The winding paths lead to the secret rooms spread around the park, one on the hillside with a small pond, changing into a gentle waterfall, and then further leading to the temporary exhibition gallery, for people to display their artwork created in therapy.

The cross axis, beginning at the meditation pavilion, continues in the second zone, through the stairs leading to the Counseling Center, located on the other side of the hill. As the visitors go up the stairs, they can only see the solid concrete wall,

again creating a moment of suspense, by not yet revealing the beautiful view of the reservoir. (Figure 37)

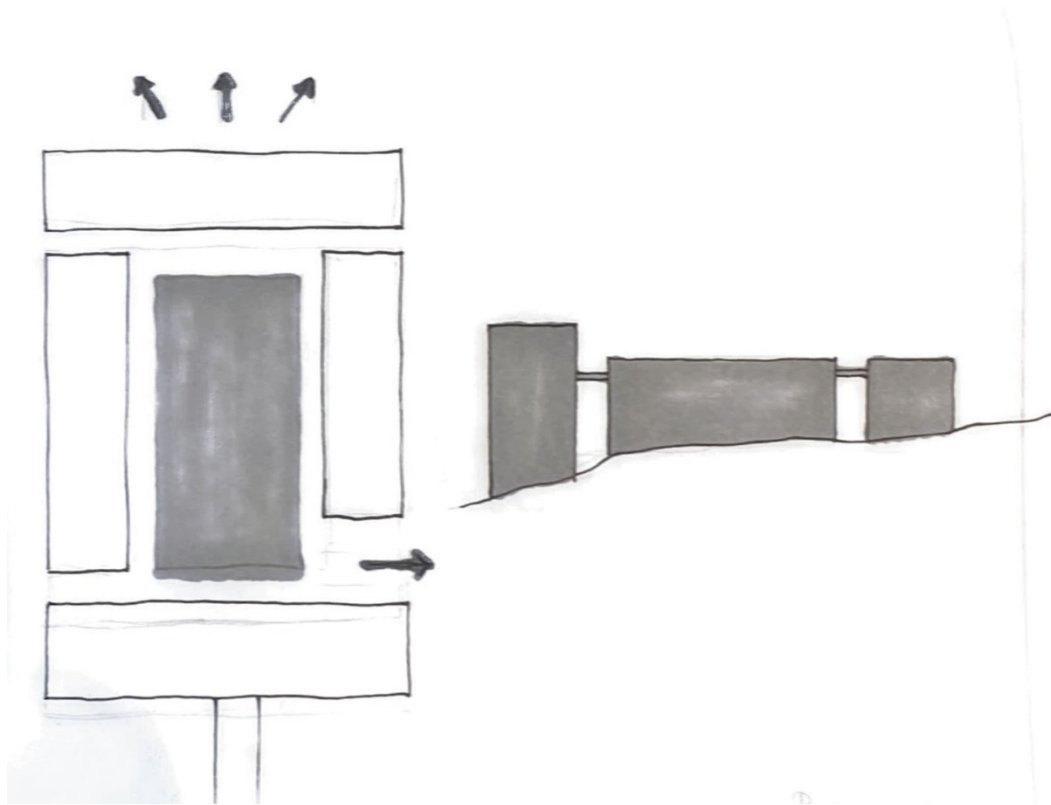


*Figure 37 - View of the Approach to the Counseling Center (Source: Author)*

The Counseling Center is formed with four simple blocks connected with each other and forming a courtyard in the center (figure 38) to give visitors the sense of

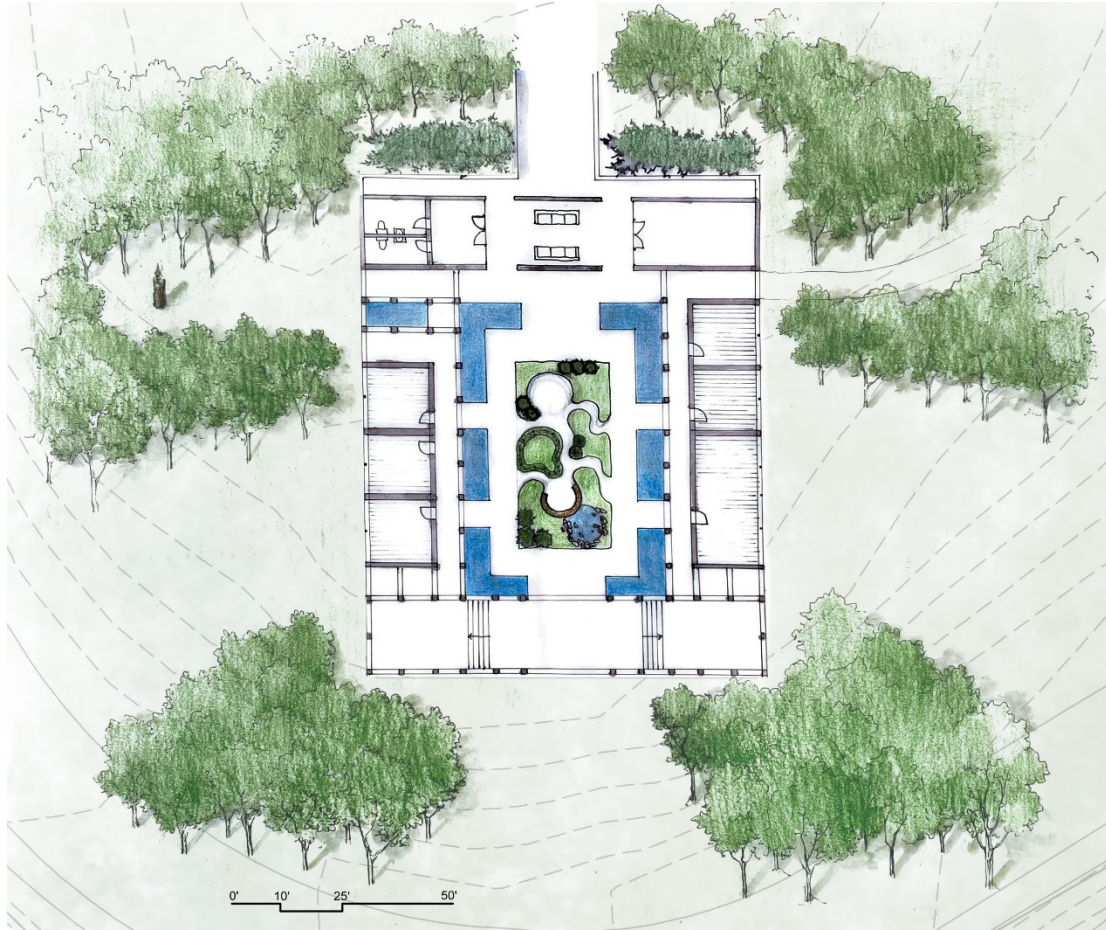


community and make that medical worker feel like they are not alone with their problems, that there are others who struggle with the same issues and are there for support.



*Figure 38 - Parti Diagram of the Counseling Center (Source: Author)*

The person seeking help walks into the outdoor/indoor waiting area with seating and restrooms on the left. Moving forward they enter the courtyard from which they can go to rooms for individual and group therapy sessions. At the south end of the courtyard there is an outdoor contemplation space, on an elevated podium, with a view of the McMillan Reservoir. (Figure 39)



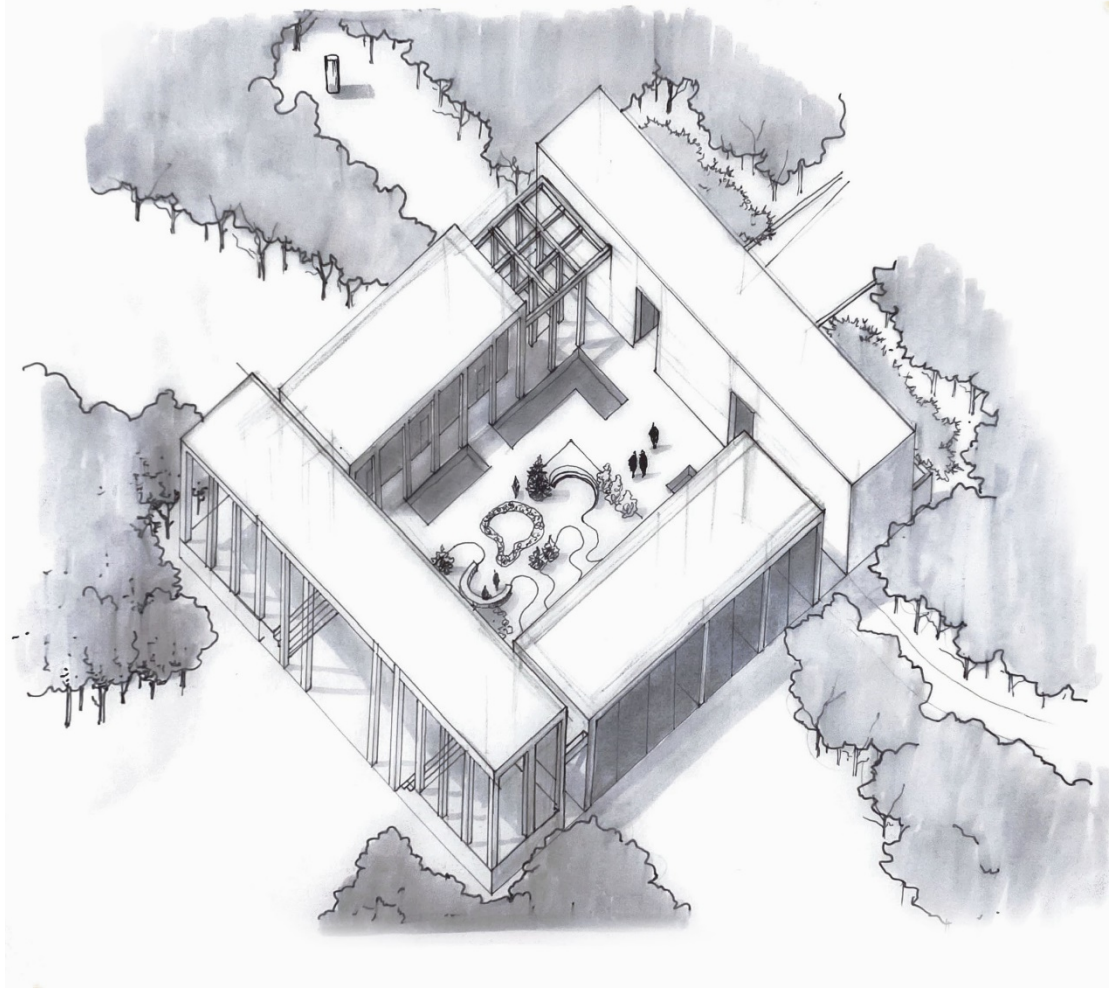
*Figure 39 - Plan of the Counseling Center (Source: Author)*

The elevation drawing shows that the building is made entirely out of sustainable concrete for a minimalistic, not distracting design. It also shows the change of topography towards, the slope towards the McMillan Reservoir and the elevated podium encouraging contemplation. The wall is glazed to create the best view from the individual therapy rooms towards the reservoir and the landscape. (Figure 40)



*Figure 40 - East Elevation of the Counseling Center (Source: Author)*

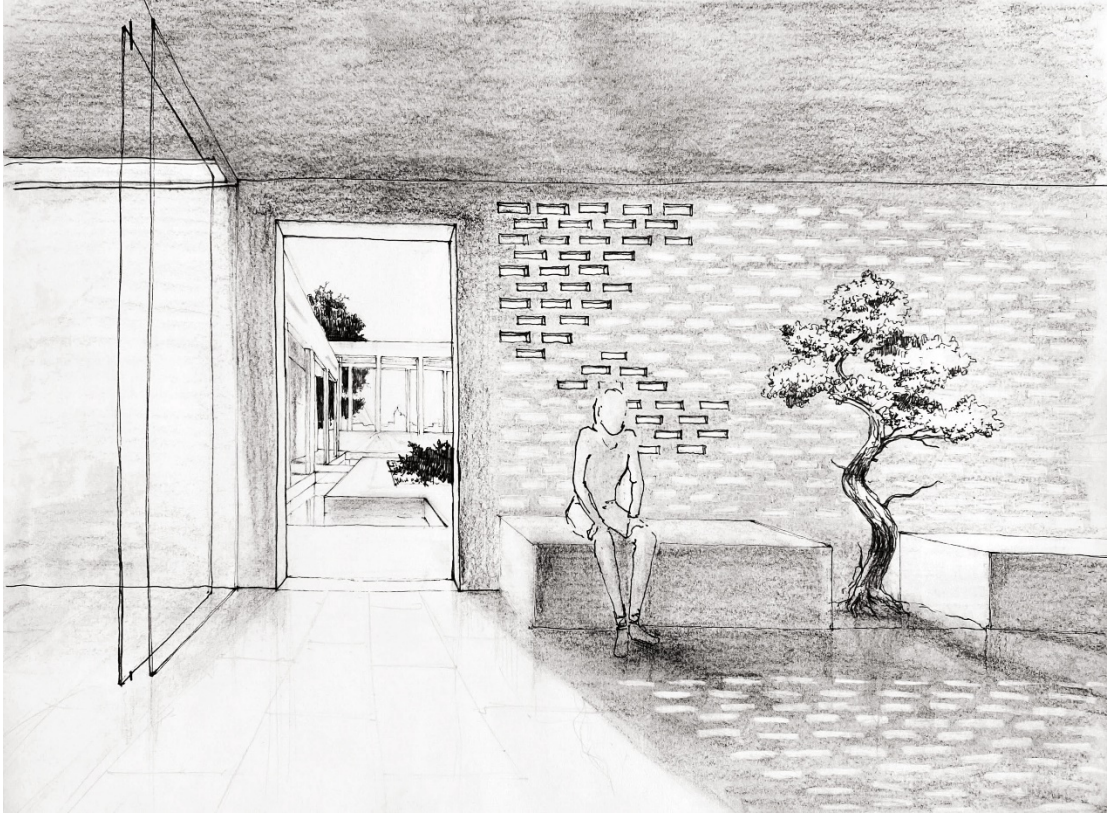
There is another water feature at the edges of the courtyard to enhance the meditative character of the space. In the middle there is a Japanese healing garden with designed gathering spaces. There is also another entry to the courtyard through the ramp from the park. The vegetation helps to frame the view towards the reservoir from the counseling rooms and towards a sculpture in between the trees, which all helps to erase this edge between the built and natural environment. (Figure 41)



*Figure 41 - Axonometric View of the Counseling Center (Source: Author)*

The connection between the natural and built environment can be also seen very well in the waiting indoor/outdoor area which is using the concept of biophilic design. The perforated concrete wall funnels indirect light and helps to create the calming, tranquil atmosphere. The room on the left is another waiting area that can be closed with this pivoting glass door, so it can become a one big room or two smaller ones. Through a horizontal slit in the concrete roof the interior is provided with natural indirect lighting. (Figure 42)





*Figure 42 - Interior Perspective (Source: Author)*

The outdoor concrete courtyard is creating a divine feeling, but as the visitors enter the counseling rooms the atmosphere becomes cozier, through the change of materials. The use of wood on the floors helps to create a warm, safe space.

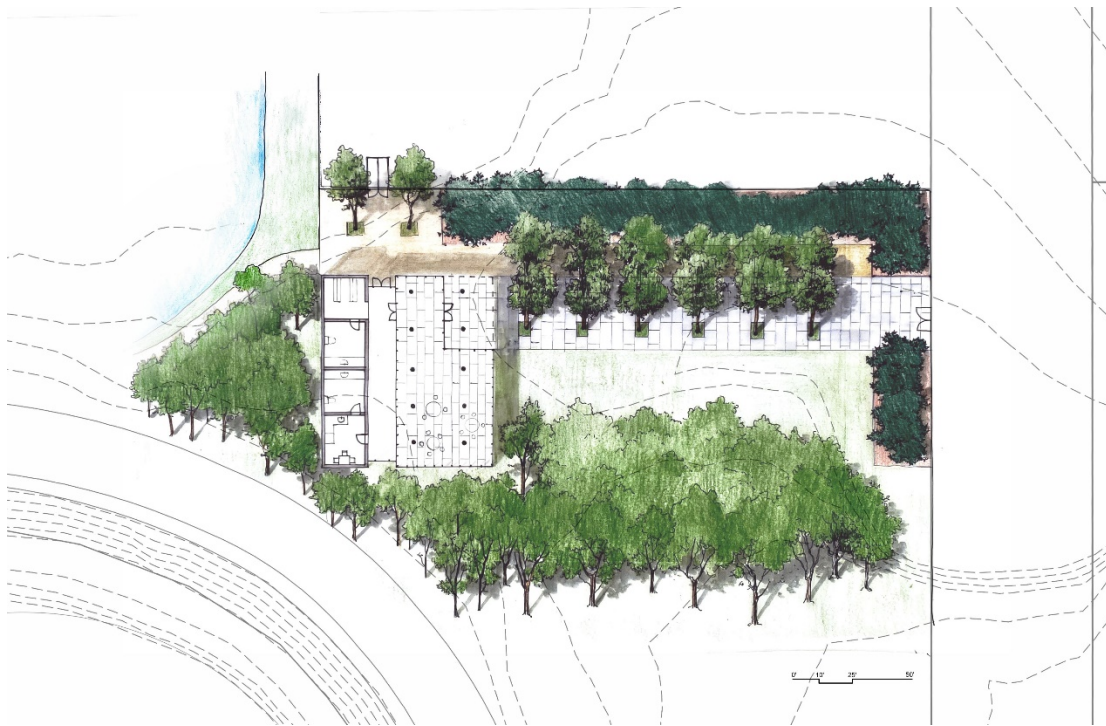
The perspective view (figure 43) shows the experience in the courtyard. The repetitive patterns of the concrete, minimalistic columns are encouraging contemplation and peacefulness. The visitor's view is directed towards the natural environment and the McMillan Reservoir. The open indoor/outdoor areas and lack of enclosed corridors eliminates the risk of acquiring hospital- transmitted diseases. The rainwater from the roof is collected and cascaded down the sculpted spout to the designed water feature.





*Figure 43 - View from the Courtyard (Source: Author)*

Lastly, there is a children's pavilion located by the Children's National Hospital. As the visitors enter there is a children's cloak room with their restroom, on their right and on their left, there is a transparent flexible play area, connected to the garden. The floor pattern extends from the interior to the outdoor garden and the trees are reflecting the column grid. The big open lawn provides a space for children to safely play and spend their time outside. At the end corner, there is a staff room with a separate restroom. (Figure 44)



*Figure 44 - Floor Plan of the Children's Pavilion (Source: Author)*

The pavilion uses the same design language as the other buildings. The front is a solid concrete wall with restrooms and other service areas and the back is a transparent wooden structure that extends to the garden. The connection of natural and built environment is demonstrated through blending indoors with outdoors, through a curtain wall and an extended wooden overhang.

In the garden different types of trees are used. (Figure 45) The threshold is accented by poplar trees. Behind this open space there is an organized grid of hornbeam trees, which are easy to trim and shape. The edge of the island, and the threshold to the meditation pavilion is marked by evergreen cedar trees, partially revealing the beautiful view of the water. The picturesque garden consists of a combination of trees, some of them being the vine maple trees, beautifully changing its colors throughout the seasons and the American elm. The row of trees by the children's pavilion is made of Norway maple trees.

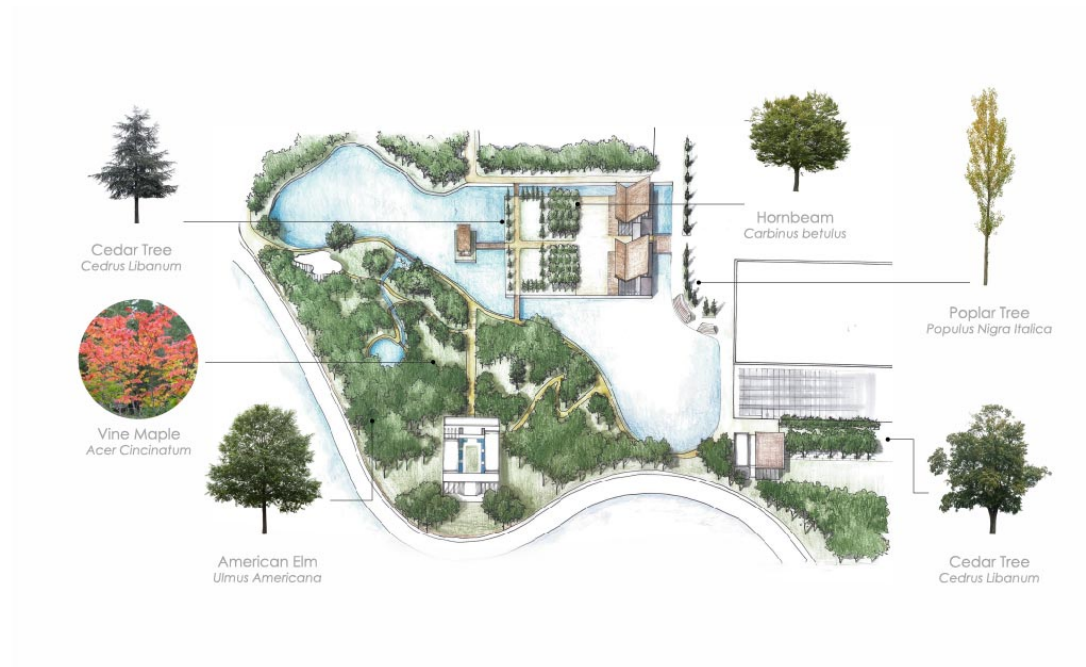


Figure 45 - Types of Trees (Source: Author)

Unfortunately, we will never be able to undo all the trauma and pain that the COVID-19 pandemic has caused for our medical staff. But we can give them a space that enhances tranquility, that provides natural lighting and incorporates nature in the design. It is a place that makes them feel appreciated and a place that they deserve.

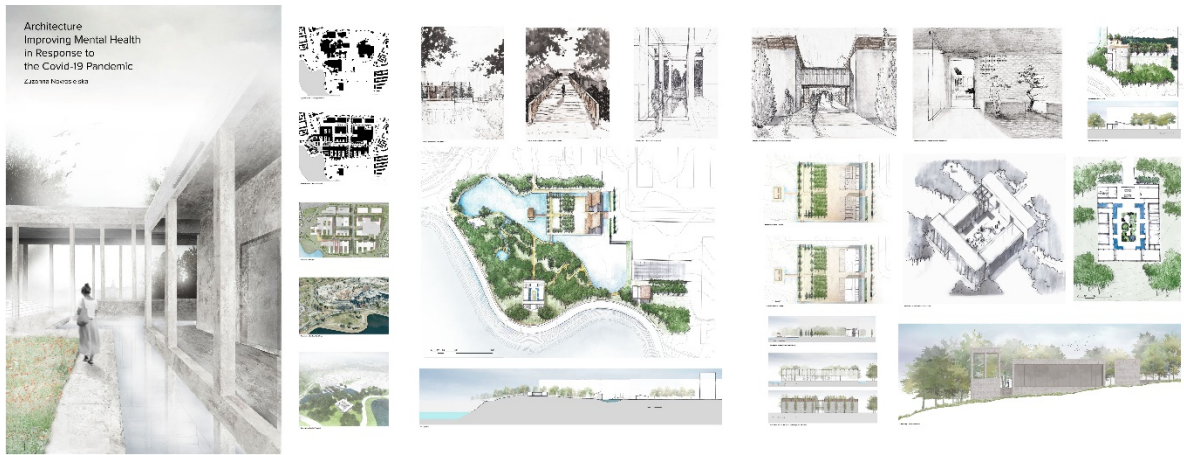


Figure 46 - Presentation Boards (Source: Author)



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