Pardis Centre, a wellness centre for people living with Multiple Sclerosis (MS) and their companions

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Abstract

This practicum project aims to increase the quality of life of people diagnosed with Multiple Sclerosis (MS) by providing an interior environment that facilitates coping with the stress caused by the disease. The design framework for this project was shaped by exploring theories related to environmental psychology, such as the biophilic design theory by Stephen Kellert and Nikos Salingaros, as well as the supportive environments design theory by Roger Ulrich. Moreover, Persian gardens and Zen aesthetic principles were explored as traditional examples of philosophies that led to the design of spaces that foster a sensory experience for visitors in a relaxing environment in order to provide a multi-sensory experience in the interior realm of this project. Eventually, *Pardis Centre* offers individuals living with MS and their companions the opportunity to enjoy nature as a part of its adaptive reuse approach for St. Norbert Art Centre in Winnipeg.

Acknowledgments

To my advisor, Susan Close, thank you for helping me find the right way when I wandered on this journey. The support you have provided me since I began my studies at the University of Manitoba while I was still in Tehran is greatly appreciated, and I thank you for encouraging me to remain mentally and physically healthy upon arriving in Winnipeg in the middle of the pandemic while I was in a small room. I cannot be thankful enough for your time reading my document carefully and making notes to improve my writing skills. I am grateful for your trust in me to complete this project despite the obstacles I encountered along the way.

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To my lovely wife, Afrooz, thank you for your patience when I had to come back from work and start working on this practicum project in your early months in Winnipeg. Thank you for all the evening tea times to chat about my project. This practicum project would not have been the same without you.

Mom this practicum project was for you!

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PREFACE

My childhood memories are tied with the moments of being mesmerized by the rhythm and heroic meanings of Persian poetries cited by my parents. My favourite poem was about the mythical story of the death of *Arash*, an Iranian archer who devoted his life to saving the lives of others. The first verse goes as below:

Life is beautiful, yes it is.
Life is a long-standing fire.

-Siavash Kasraei

Simple, yet enriched with layers of concepts. The poem was in one of my mother's old university books. She studied Persian literature and combined my life with poetry. My mother is my first and best teacher. She taught Persian literature in high school until Multiple Sclerosis stopped her from teaching, the job she is living for. As a child, listening to poems cited by my parents improved my imagination skill for creating fictitious spaces described in the poem. As a designer, it is my turn to imagine a space in that my mother is still able to teach poetry. This project comes from my imagination.

CHAPTER I

INTRODUCTION

1.1
Introduction to the Chapter

This practicum project aims to investigate how the interior environments designed for wellness and stress reduction can enhance the quality of life of people with Multiple Sclerosis (MS) disease and their companions.

Unfortunately, There is currently no cure for MS, but researchers are learning more about how it is caused each day and finding ways to prevent it.[1] Hence, it is not the goal of this practicum to cure the patients, nor is it the responsibility of the designer to find a cure for a disease. Designers, however, can implement proper design solutions to create an environment that enhances the quality of life and well-being of occupants of their design through the use of theories and research related to the topic.

An individual's quality of life is often determined by their perception of their physical and psychological health, their level of independence, as well as their personal relationships (WHO 2002, 13). Understanding the needs of building occupants is essential to utilizing the design tool to improve health and well-being.

This chapter investigates MS disease and its effects on the health and daily lives of people with MS, as well as their companions in the interior environment. Throughout this chapter, the relevance of the practicum topic will be highlighted, as well as the objectives of the practicum project, to introduce the questions that will be addressed throughout the project.

1. "About MS." About MS - MS Society of Canada. Accessed December 29, 2022. https://mssociety.ca/about-ms.

1.2
Project Description

As mentioned earlier, this practicum aims to investigate how an environment that promotes total wellness can potentially enhance the quality of life of people with multiple sclerosis (MS). Multiple Sclerosis is a rapidly emerging disease in the present-day world, which, although not fatal to the patient, prevents the patient from participating in social interaction and daily life (King 2020). Stress and pressures associated with the disease may cause depression and anxiety in patients and their families (The Canadian Burden of Illness Study Group 1998). As a means of overcoming stress, this practicum hopes to translate theories related to stress reduction into the design language and design a wellness centre specifically for people with multiple sclerosis.

The wellness centre in this practicum is called *Pardis,* پردیس in the Persian language or Paradise in English, and it is a treatment centre that provides support for MS patients as well as their companions such as friends or family members. *Pardis* provides its users with a safe, relaxing, and welcoming environment that promotes self-discovery and well-being as part of its educational, recreational, and treatment services. This centre is located in southern Winnipeg, Canada, on a river bank, away from the hustle and bustle of the city. The existing building for the site of this practicum is a heritage building called St. Norbert Art Centre, and it is a part of the historical Trappist Monastery site located in St. Norbert. This adaptive reuse design incorporates temporary accommodation, medical rehabilitation rooms, healing spaces such as indoor gardens that promote communication among users, and workout facilities for patients and their companions. Due to the limited area in the existing building, this project will include a minor additional building to meet end users' needs.

1.3 Project Rationale & Context

According to the Multiple Sclerosis (MS) International Federation, more than 2.8 million people around the world are living with MS, which is one of the most common diseases affecting the central nervous system including the brain and spinal cord. Studies show that MS is more common in countries farther from the equator (Figure 1), Multiple Sclerosis is very prevalent in Canada and North America as well as Scandinavian countries. According to Atlas of MS, there are at least 90,000 people diagnosed with MS in Canada (Atlas of MS 2022). This equates to 1 in every 400 people in the country.

The site of this practicum is located in Winnipeg. Currently, there is only one MS clinic in the whole Manitoba province. It is important to note that MS incidence in Canada is expected to increase from 4051 to 4794 cases per 100,000 people between 2011 and 2031. In 2011, there were an estimated 98,000 people living with MS, a number that is expected to rise to 133,000 by 2031. Also, a study by the MS Society of Canada indicated that, in 2011, an individual with MS spent approximately $17,000 on healthcare costs during the year, compared to approximately $2,500 for individuals without MS (About MS 2022).



Figure 1. Demographic map of the number of people with MS around the world. Source: Atlas of MS

MS is projected to cost the healthcare sector $2 billion by 2031 based on this information. Moreover, out-of-pocket expenses for people with MS in Canada were $125 million in 2011, and are expected to increase to $170 million by 2031 (Amankwah et al. 2020). MS is most frequently diagnosed between the ages of 20 and 40, and its unpredictable effects last the rest of the individual's life (MS International Federation Website 2021). Since MS targets people in their prime years, a person with MS needs to continue a normal life. Several studies have shown that people with MS can expect to live 95% of their normal life expectancy (MS society of Canada, 2018). However, the *MS Society of Canada*'s Action on MS report emphasizes that nearly 80 percent of people affected by MS may find themselves unemployed (Amankwah et al. 2020). Knowing more about the client and user groups is the first step that leads to a design that meets the client's needs.

1.4 Client & User Groups

MS Society of Canada is the hypothetical client for this practicum. It is mentioned by MS Society of Canada that their mission is to be a leader in finding a cure for MS and enabling people affected by MS to enhance their quality of life (MS society of Canada 2018, 50). The MS Society of Canada provides support to people living with MS, their families and friends, as well as health professionals, employers, institutions and students. For this practicum, the main focus is to design a space dedicated to three groups of people as users of the facility.

As it demonstrated in the figure 2, the primary users of this practicum are people diagnosed with MS. Primary users will have access to unique facilities tailored to their needs, including a customized gymnasium for physiotherapy and occupational therapy. Providing spaces for receiving treatment as well as recreation and socializing for primary users is an objective for this practicum.

The secondary users consist of the family members and friends of the person with MS. The secondary group is also called as companion of the primary users in this practicum. There will spaces in the centre that both primary and secondary users can use including the social gardens. There will also be spaces called "activities of daily living lab" that both primary and secondary users will learn more about MS and how to modify their homes, and how to create the supports they need to manage in their daily lives.

The tertiary users consists of all caregivers and staff working at the facility. Studies have shown that people who work in healthcare facilities are also at risk for anxiety and depression (Chew et al. 2020). Therefore, we must ensure that all three groups of users are enjoying a relaxing environment at the facility throughout this practicum process.

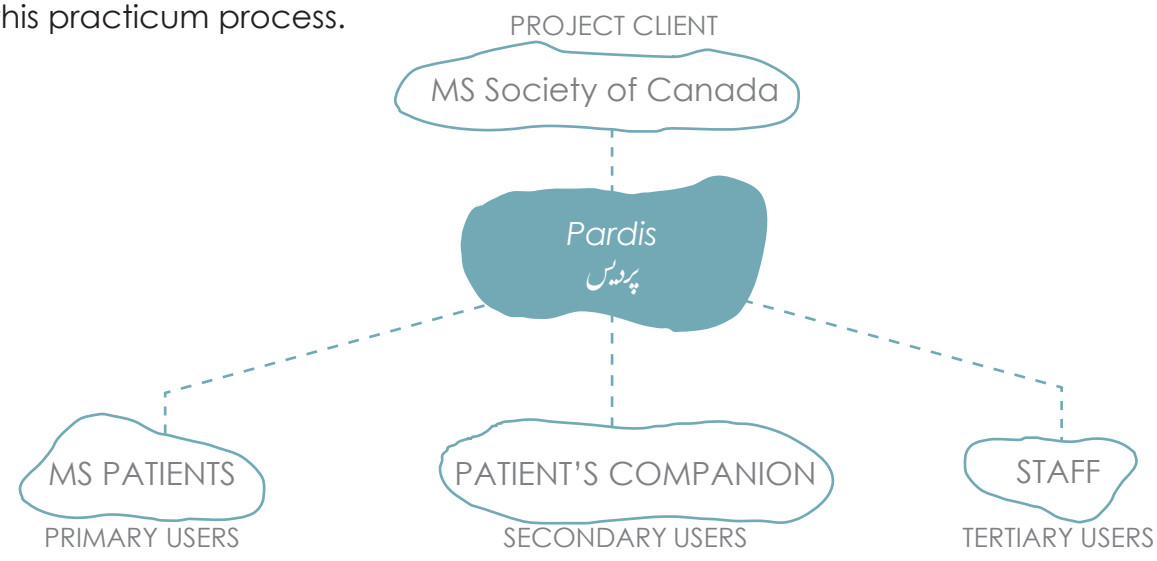


Figure2. Demonstrates the project client and users groups.

1.5 Project Objectives & Key Research Questions

Having defined the client and user groups of this project, the next step is to set the objectives and accordingly research inquiries related to the project to build a strong foundation for the research and literary analysis chapter of this practicum.

Listed below are the overall project goals and objectives for this practicum:

- To obtain a deeper understanding of Multiple Sclerosis and its impact on those who live with it.
- To develop a framework for designing healing environments to help reduce users' stress levels using the Biophilic Design theory.
- To explore traditional architectural techniques for creating relaxing environments and incorporate vernacular architectural principles into contemporary architectural design in order to create an interior environment that allows for contemplation and meditation in order to cope with medical depression.
- To implement environmental psychology theories related to stress reduction spaces for developing a design framework for interior design applications.
- To create a sustainable interior environment that supports users and the building context by providing a symbiotic relationship between users and nature.

The healthcare architectural field is a broad area that requires an abundance of information. Therefore, defining key research questions helps to narrow down the project to the scope of this practicum. The questions are listed below:

- How can interior environments contribute to a person's health and well-being?
- How does an interior design enable people diagnosed with MS to feel independent and have control over their environment, even though there is no cure for MS as of today?
- In what ways can vernacular design techniques be applied to today's architecture as a sustainable approach to designing a project?

1.6 TERMINOLOGY

The practicum contains important terms from different disciplines or languages repeated in various sections. The purpose of this section is to provide readers with a more comprehensive understanding of these terms.

Multiple Sclerosis (MS):

MS is stands for the "Multiple sclerosis". A disease caused by damage to the myelin sheath around nerve fibres in the central nervous system. This damage causes nerve impulses to be disrupted and the nerve fibres themselves can be damaged. MS can vary in severity and course. Although there is no cure for MS, there are specific treatments for different types of it (MS society of Canada 2018, 4).

Pardis (پردیس)/Paradise:

The word paradise originates from the old Persian word *Pardis,* which meant a walled enclosure, pleasure park, or garden. The word evolved into Hebrew, Aramaic, and Greek, which retained its original meaning (Moynihan 1982). *Pardis* is the Persian word for garden, derived from the word *Paridaiza* which means walled garden, described as a luminous and fragranced place inhabited by angelic and beautiful creatures (Babaie 1997). *Pardis* is a poetic term used in Persian literature and has been used throughout history in Persian poetry.

The site of this practicum sits on a heritage location surrounded by nature. The biophilic design also plays a pivotal role in the research and design process of the project. *Pardis* is a place where people can enjoy nature without experiencing pain or anxiety. The word *Pardis* conveys the meaning and purposes of this practicum and is in line with the goal of the practicum.

Restorative Environment:

A restorative environment is defined as a place where individuals can unwind, free their minds, and distance themselves from pressures, demands and direct attention. Restorative environments are filled with features, are perceived as coherently ordered and substantial in scope, and are compatible with human needs (Kaplan & Kaplan 1989).

1.7 Limitations

This practicum is a hypothetical project to explore more about a problem related to the health and science fields. Multidisciplinary is a unique characteristic of architectural design. While it is not the responsibility of architects and designers to find a cure for the disease, they can use their expertise to provide a conducive environment in which scientists and health professionals can find a cure and treatment for patients. Science and health are evolving fields, and this practicum focuses on current discoveries about MS, as well as psychological environment theories relating to stress reduction.

1.8 RESEARCH METHODOLOGY

This project uses the following research methods to achieve its objectives and answer the questions outlined earlier:

- **Literary Analysis:** The second chapter of this project consists of the investigation on theories related to health and well-being of individuals in the built environment. An understanding of this overview is the basis for making programmatic and aesthetic decisions and lays the foundation for analyzing design precedents.
- **Precedent Analysis:** The design precedent analysis examines three architectural projects in the field of health. The three projects were designed by prestigious architects and designers. The purpose of this chapter is to explore how other designers have contemplated and applied certain issues and ideas discussed in the literary analysis in their design.
- **Site Analysis:** Site analysis shapes the design of the project in its earliest stages. The programming and design process involves investigating more about the potentials offered by the context of this project to gain a better understanding of its positive and negative elements.

1.9 Summary

The impact of a healthy environment on people is undeniable and architecture and medicine have always had a very strong connection (Colomina 2019). Due to MS disease being related to one's nerves, living away from stress and anxiety while continuing to interact with others and living a normal life in peace is an important issue where interior design can have a significant impact on a patient's quality of life.

The main goal of this project is to design interior environments where end users of the project can comfortably stay in private spaces, receive treatment in a healing environment, interact with others in social spaces such as indoor gardens, acquire new skills in workshop classes, and finally improve their quality of life during their stay in the *Pardis* centre whether just for a weekend or more.

This practicum tries to answer the question:

How can interior design improve the quality of life for those living with multiple sclerosis who may lose their normal lifestyle due to the disease?

The visual graphic on the next page illustrates the framework of this practicum (Figure 3). Each chapter is highlighted with a specific colour to make it separate from the other parts. The diagram illustrates that each chapter is related to the previous one and they form a continuous unit throughout the project. At first glance, it appears that the layout of the project follows a linear process, but the entire process involves back and forth between the chapters. This project focuses on defining the process for designing the interior environment for the final product. Final product success is essential, but so is explaining how the design process is conducted. This project began with an issue in the first chapter and it aims to answer questions raised by the issue using an architectural design problem-solving approach.

In order to achieve this goal, research into the restorative design with a focus on three major theories of Biophilic design, Mindfulness design, and Supportive design provides a theoretical foundation for selecting a suitable site for the project as well as a design guideline for the design chapter.

Having explored the theories related to restorative design in Chapter 2, the third chapter examines three different projects that follow the previous theories in their design to promote a restorative environment. To gain a deeper understanding of the design solutions related to this practicum, it is necessary to examine the precedents with a more detailed perspective.

The design application chapter refers to the project objectives as well as the information gathered regarding the user groups in the first chapter for leading the programming section of the design process. Lessons learned from theories and precedents analyzed in the last chapters guide the design strategies for this project.

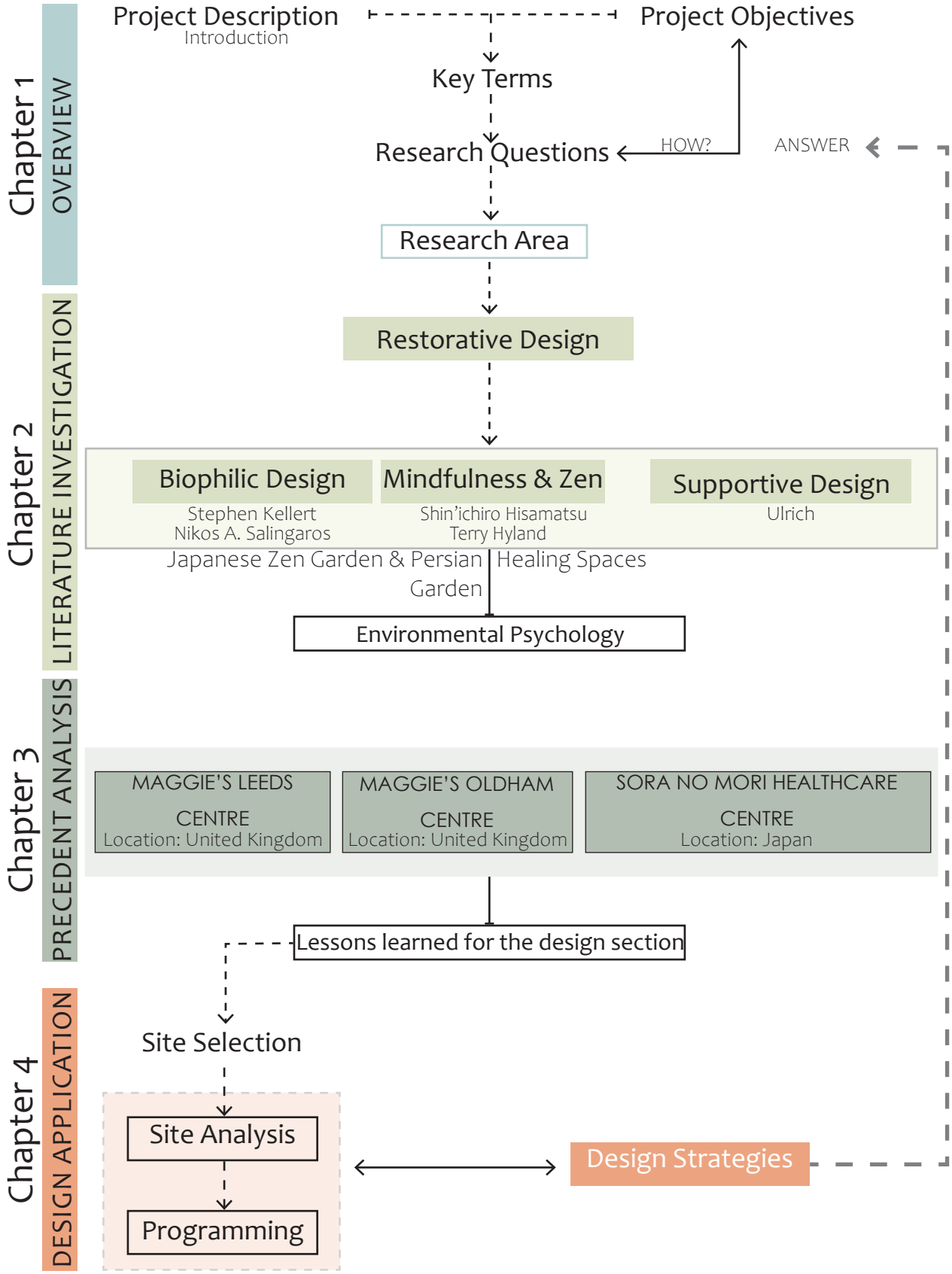


Figure 3-Provides an overview of how this practicum will proceed.

The next chapter will explore three main theories of Biophilic design, Supportive environment design, and Mindfulness design. The literary analysis chapter provides a bridge between this practicum's objectives and its design application in the forth chapter.

CHAPTER II

LITERARY INVESTIGATION AND ANALYSIS

2.1

Introduction to the Chapter

This chapter provides information related to health and well-being in the built environments. A key objective of this project is to design an environment that can help individuals living with MS cope with their condition and eventually improve their quality of life. The interdisciplinary nature of interior design allowed for the examination of theories relating to MS well-being, including modern psychology and traditional concepts, in order to fulfill the stated objectives. That being said, restorative design is a major focus of this project and involves exploring the theories of Biophilic Design, Mindfulness and Zen Philosophy, and Supportive Environments Theory. Restorative environments in this project do not aim to cure MS patients, but rather to help them release tensions and reach self-discovery to reduce their anxiety. It is the goal of this chapter to prepare a strong theoretical keystone for the design chapter of the practicum.

Throughout this chapter, two main sections complement one another. The first section includes contemporary theories related to environmental psychology, such as Biophilic design, and supportive environment design theories. Stephen Kellert, Roger Ulrich, and Nikos A. Salingaros are the main theorists whose ideas are discussed in the mentioned category. Biophilic design and supportive environment design theory give direction to the tangible principles and elements of design for *Pardis Centre*.

The second section involves Zen Philosophy and Mindfulness, which is rooted in the eastern traditional philosophy of Buddhism. This chapter examines mindfulness and Zen from the perspective of design by examining the theories of Japanese scholar and philosopher Shin'Ichi Hisamatsu who provided seven Zen aesthetic principles in his historic book titled *Zen and the Fine Arts*.

Zen garden design and traditional Persian garden design are explored as two instances of restorative spaces that merge Eastern philosophies with environmental psychology to create an environment designed for users' well-being to implement in this project's design process. These concepts shape the design philosophy of *Pardis Centre* using the vernacular design approach. Getting a better understanding of the ideas behind the theories and translating them into the interior environment of the project in Chapter 4 is essential for answering the research questions posed in the previous chapter.

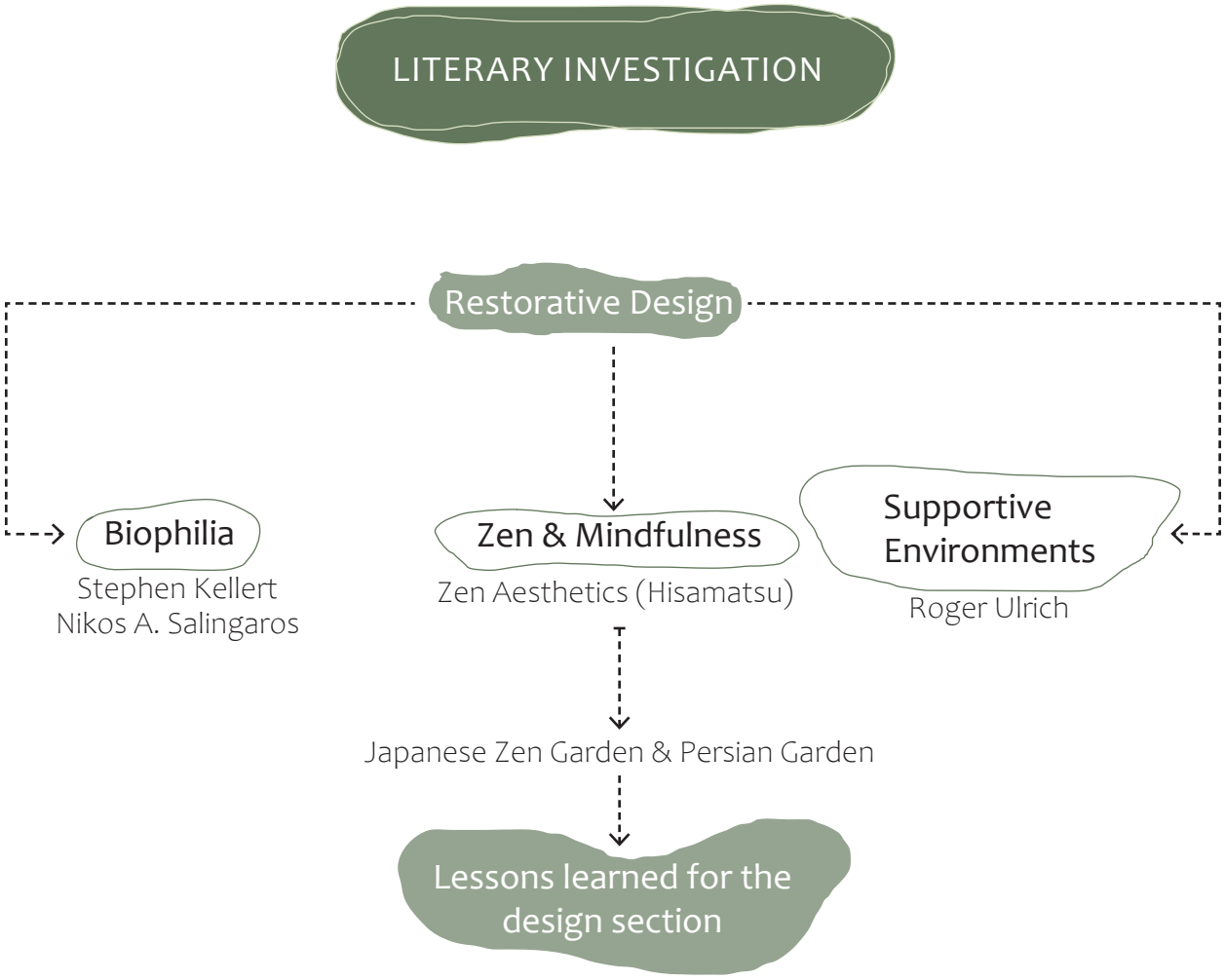


Figure 4. Visual mind map will be discussed through the Chapter.

2.2

Restorative Design[1]

The United Nations estimates that 55% of the world's population now lives in urban areas, and this percentage is expected to increase to 68% by 2050 (United Nations 2018). With the shift of population from rural to urban areas, human life gradually separated from the natural environment. Increasing numbers of people moving to cities have also increased the demand for accommodation facilities. To accommodate more inhabited, the city will have to expand its borders. This urban expansion has resulted in the destruction of ecosystems around the city. There is evidence that interacting with nature can positively influence one's health and wellbeing (Kopec 2006; Gifford 2007; Salingaros 2015). Due to a lack of connection between humans and nature, psychological problems and depression rates have grown among urban communities over the past few decades (Kaplan 1995; Steg 2019).

In contemporary society, theorists and experts are increasingly concerned with resolving the problems that are associated with this separation from nature. As a result of studies regarding the importance of incorporating natural systems into the design of urban environments, architects and designers are aware of the importance of nature in architectural design. Organizations like LEED, Leadership in Energy and Environmental Design, Well Building Standard, and International Living Future Institute also encourage clients to spend their money for sustainable building. The concept of biophilic design, in particular, is emerging in the study of sustainable architecture and architectural design. It is well-established that natural and artificial biophilic environments promote healing (Salingaros 2015). As primary users of this project, MS patients benefit from interacting with an environment designed with a biophilic approach. Moreover, Nikos A. Salingaros, an architectural theorist and urbanist, argues that biophilic designs also have healing

1. This section of the practicum is derived and edited from a paper that the author wrote for the "IDES 7190 - Theory Seminar 2" course at the University of Manitoba on December 2021.

effects on the designer's body (Salingaros 2015, 14). Understanding biophilic design theory helps designers create artificial environments that benefit themselves, building users, and the natural environment. The biophilic design however is not the mere use of greenery in the interior environment of the project. To guide the design of the Pardis Centre for MS patients and ultimately enhance the quality of life of the building's users, the following sections explore the concept of biophilic design in more depth.

The term biophilic is derived from the word biophilia, which was coined by the social psychologist Erich Fromm in 1964 (Zhong 2021). It was a concept he used to describe living organisms' "love of life," which explains their behaviour in two ways: their ability to survive death threats and their ability to integrate with other living organisms (Fromm 1964). The concept of Biophilia was later developed by naturalist and biologist Edward Wilson. In his view, biophilia is the urge to align ourselves with nature and other forms of life (Wilson 1984). Using the concept of biophilia, Wilson explains that our emotional connection to life was preserved as humankind migrated from the natural world to the new, artificial environment. According to Wilson, biophilia is defined as the emotional affinity that people have for other living organisms, which is the result of an innate tendency (Wilson 1993, 31).

The selected site for this practicum sits in the margin of the city of Winnipeg, close to natural potentials such as a provincial heritage park and the river bank. It helps primary users of the project to be away from the hustle and bustle of the city and be in a closer relationship to natural elements like trees, river, clear sky and animals. As a guide for using natural potentials and elements around the site of this project, Stephen Kellert's theory of biophilic design is examined in this chapter.

Social ecologist Stephen Kellert defines biophilic design as a deliberate attempt to improve people's health and wellbeing through contact with nature. (Kellert 2008). Kellert's studies raised awareness of biophilic design among architects and interior designers. The Kellert method offered a classification of biophilia that was based on environmental design. According to him, the evolution of the human mind and body occurred in a sensory environment predominated by light, sound, odour, wind, weather, water, vegetation, animals, and landscapes. These are biophilic elements that architects can use in their design as long as they know the principles of biophilic design. Using Kellert's biophilic design principles in figure 5, they can create a healthy environment (Kellert 2008). The design of this project can incorporates nature directly, indirectly, and symbolically based on figure 5. An interior environment with greenery in it is an example of the direct use of nature. Using organic finishing materials on the interior surfaces is an indirect approach to using biophilic design. A building design or furniture that includes wood or stone subtly introduces nature outside into the space. An organic pattern on the fabrics used in the interior spaces would also be a symbolic approach to biophilic design. Another dimension of biophilic design is vernacular design. Having a good site analysis will help in the design process in understanding the site's good and bad characteristics, such as the best views to open up or noise pollution or wind direction to avoid.

The project incorporates two dimensions of biophilic design, including organic and vernacular approaches, with the interior environment focusing on direct contact with nature. An approach for integrating outside nature into the interior realm of the building was the provision of indoor gardens within the project as a way of strengthening the human-nature relationship and consequently, reducing the stress level and boosting the wellbeing of the users.

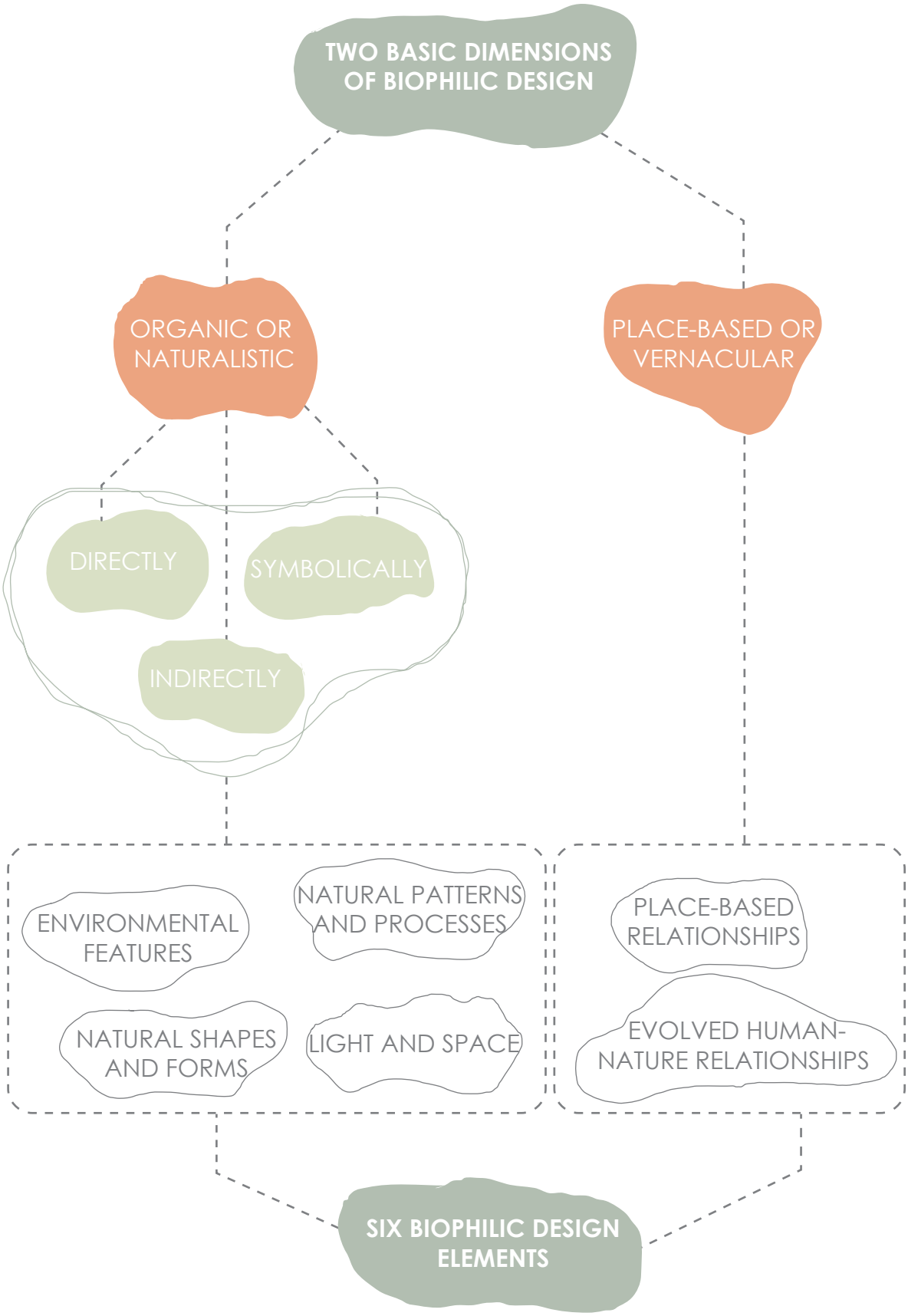


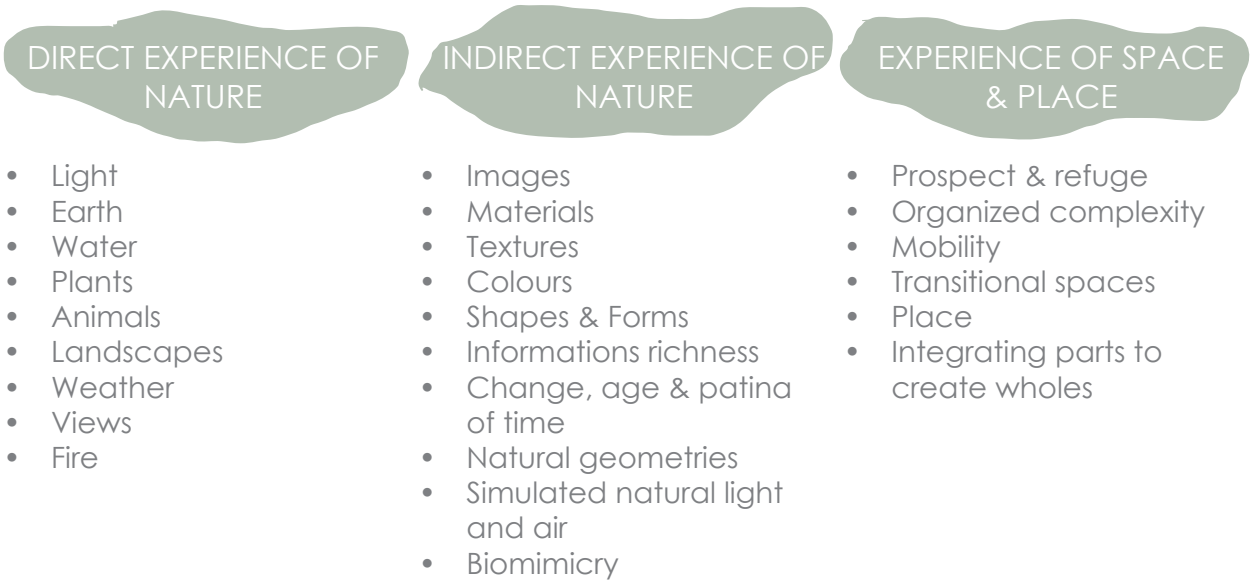
Figure 5. The relationship between two basic dimensions for the biophilic design and six elements of the biophilic design according to Kellert (Source: Author).

Kellert noted in his latest book, *Nature by design*: *The practice of biophilic design* that "the identification of particular strategies for the practice of biophilic design does not tell the architect, designer, and developer what to do, but rather what the practice of biophilic design is important, and how one might effectively incorporate nature into the built environment" (Kellert 2018, 23). In this regard, he updated the previous dimensions by investigating more on the values of biophilic design. Kellert restructured the three-level taxonomy into two levels by combining previously divided elements and dimensions into three categories of "experiences" that will be used as a guideline for the design stage of this practicum.

1. Direct experience of nature, to contact with the natural environment basics and characteristics;

2. Indirect experience of nature, to converting empirical and objective reality into symbolic and metaphorical form by transforming thoughts, images, and feelings;

3. Experience of space and place, to the spatial setting, to consider humans approach to managing and organizing their environments (Kellert 2018, 24-25).



3 experiences & 25 attributes of biophilic design (Kellert 2018)

The theory of biophilic design provides tangible guidelines that can be used at every stage of the design process to improve the quality of life for users. One example is in the design programming stage for this project that aims to locate spaces well-lit by natural light as a direct experience of nature that eases depression and improves mood by allowing direct access to daylight (Brown, Jacobs 2011, 138-139). Further, since the lack of vitamin D in the body is directly related to MS and sunlight is one of the main sources of vitamin D for the body (MS International Federation Website 2021), this project needs to provide the building's users with sufficient natural light in order to prevent the development of MS. Also, it reflects the place-based dimension of biophilic design theory since Winnipeg has one of the highest rates of sunny days during the year in Canada (Environment Canada 2010). As an interior designer, I was obligated to utilize these opportunities for the improvement of users' well-being in the interior environments.

My strategy for achieving that goal involved considering the site's sun study and providing the optimal openings in the building envelope. The result is a relaxing view of nature, as well as sufficient sunlight and the dynamic art of nature.

Biophilic Design & Sustainability

Since the 1990s, the concept of sustainability has been widely discussed and explored in the architectural realm. Various sustainable approaches have been explored, such as energy-efficient, high-tech, low-tech and vernacular strategies, analogizing nature and natural systems for design inspiration (Zhong, 2022).

Biophilic design also contributes to the sustainability of architecture by using it in the built environment. In terms of sustainability, we consider the health, peace, happiness, and vitality of both humans and nature. Therefore, proper use of biophilic design could be a possible approach for creating a sustainable yet healthy environment in an architectural project. In other words, following the principles of biophilic design properly will lead us to sustainable architecture, as each of these principles is in alignment with the sustainable goals of architecture. As a result, both humans and nature develop a symbiotic relationship based on biophilia and sustainability values. An effective biophilic and sustainable design strives to maintain a balance between artificial and natural environments. By incorporating these principles in design, we can create a restorative environment for both humans and non-humans.

A key objective of this practicum is to provide a theoretical framework for designing an environment that is safe and healthy for humans, as users, and for the environment, as the project's context. Thus, understanding the types of symbiosis is essential for choosing the right one during the design phase.

Symbiosis Relationship

German naturalist Professor Anton De Bary first described Symbiosis in 1878 as "the living together of opposite forms of life" (De Bary 1879; Sapp 2002). It is interpreted as a biologically significant relationship between different species today. Currently, these interacting partners are known as symbionts. Three types of symbiotic relationships exist between symbionts.

- Mutualism Symbiosis

In the first case, Mutualism occurs when two or more interacting symbionts benefit from each other. As a mutualistic symbiosis, participants enter into a close, long-term physical association (Angelard & Bever 2013).

- Commensalism Symbiosis

Symbiosis involves Commensalism, in which one or more symbionts benefit without harming their symbiotic partners. For instance, an organism may provide essential resources or nutrients to another organism (Hartel 2005).

- Parasitism Symbiosis

Thirdly, Parasitism refers to an association between different species of organisms, where the parasite depends on its host to meet its metabolic needs (Noble & Noble 1973). Parasites consume substances that are nutrients for themselves.

As illustrated in Figure 6, this project focused on creating a mutualism symbiosis relationship between users and nature around by applying both the biophilic and sustainability principles in the design process.

Contact with nature can reduce negative emotions and foster recovery from physiological stress and health problems (Zhong 2022). The project aims to create a mutualism symbiosis between users and nature by designing indoor gardens for primary users to ease the experience of nature for them during their treatment and to expose them to natural elements that assist them in the healing process. Furthermore, users will be able to contribute to nature by taking care of the gardens in the facility. So both sides of this relationship benefit from the relationship.

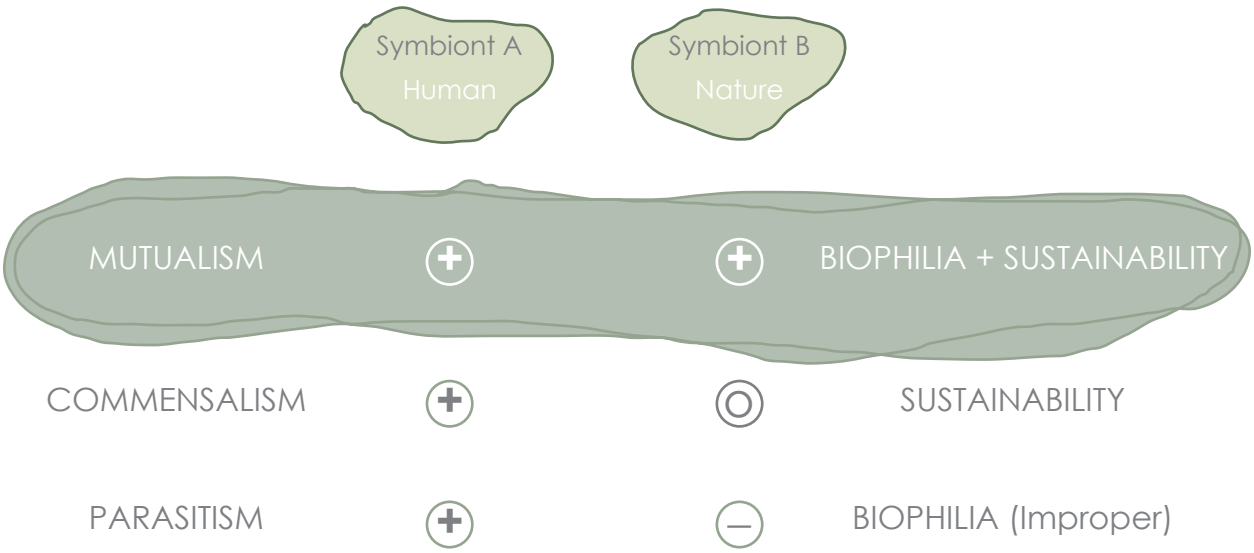


Figure 6. Types of Symbiosis as a result of Biophilic and Sustainable design (Source: Author).

Supportive Environments

It is challenging to design a public centre that can serve a wide range of people because depression is highly subjective, has a wide range of effects, has several coping mechanisms, and has multiple concerns associated with it. As a solution to this problem, taking into account the needs of people with MS as the primary users of this project will provide the main guidelines for the design process of this project to meet the needs of users. MS patients should avoid stressful conditions to prevent the harmful progress of disease in their body. MS society of Canada notes that MS patients are more likely to experience depression than the general population, and their symptoms may be reactive at the time of diagnosis as well as throughout the treatment process (MS Society of Canada 2022). There are many factors that can contribute to stress, including illness, uncertainty, painful medical procedures, worries about the welfare of the family at home in the absence of the patient, and disruptions in everyday life and work schedules (Ulrich 1991). Healthcare facilities may not provide the right physical-social environment for patients to feel well. So, in this project, it is crucial to provide a supportive environment for the primary users of the project.

"Supportive" refers to the characteristics of an environment that make it easier for a person to cope with and recover from stress caused by illness. As defined by Dr. Dilani, the psychosocially supportive design aims to stimulate the mind and produce feelings of pleasure, creativity, satisfaction, and enjoyment, all of which are conducive to reducing stress, anxiety, and depression symptoms (Dilani, 2009). In Ulrich's view, an unsuitable environment may negatively impact health and physiological indicators of well-being if the needs of its users are not taken into consideration (Ulrich, 1991).

Ulrich's theory of supportive design suggests that a positive physical-social environment promotes well-being by fostering a sense of control over physical-social surroundings, access to social support, and access to positive distractions.

A common concern among MS patients is losing their sense of independence as their disability increases. Compromised sense of control can lead to health complications such as high blood pressure and depression. Lack of control affects nearly every aspect of a patient's daily life if they are powerless to affect change. A sense of control is important in cultivating energy and atmosphere within an interior environment. Therefore, a self-supporting system can help alleviate this feeling of helplessness by giving patients control over many aspects of their environment. For this practicum, by integrating rooms that allow for a customized sensory experience such as providing dimmable lighting fixtures and movable furniture and partitions to adjust the interior layout based on their needs, primary users can achieve a sense of comfort and relaxation that is tailored to their personal preferences.

Healing quality sometimes depends upon biophilia, but often arises from interaction among human beings, and between individuals or social groups and the built environment (Salingaros 2015, 33). In a potentially stressful environment, like health care facilities, having the social support of others can ameliorate stress. Even staff at healthcare facilities as tertiary users of the project have been found to benefit from social support in terms of reduced stress and depression in the work place environment (Chew et al. 2020). Providing social spaces such as galleries, workshops, and amphitheater, and collaboration spaces in this project helps patients to overcome the stress of treatment period. These social spaces also act as a gathering space for primary users to meet their family members and friends in a relaxing environment.

Focusing on stress-producing factors like painful medical procedures, worries about the family's well-being in their absence, and disruptions in work schedules and everyday life are another concerns for primary users of this practicum. Ulrich's theory of supportive design recommends positive distractions to reduce stress and discomfort. The positive distractions include static stimuli such as reading materials, photography, and depictions of nature, as well as active stimuli like music, companion animals, and even hearing others' laughter (Ulrich, 1991).

Spaces in this practicum project are designed to address theories discussed so far in this chapter to bring tranquility for the building users during their stay. Various spaces in the *Pardis* Centre, such as the entrance, cafe, and transition space, reflect different theories discussed so far, however, healing gardens are the centrepiece for bringing all theories together. Healing gardens are biophilic spaces that provide sense of control because primary users can take care of their garden as well as access to social support by using the garden as gathering area for collaboration with others. The indoor healing gardens are also provide positive distractions through sensory experience like hearing the sound of water (Kaplan 1995), or experience of entering the indoor garden that contrast the exterior environment during winter season.

Healing Gardens

In order to create a restorative environment using biophilic design principles and provide personal and public gardens in the project, this section examines two eastern approaches to garden[1] design that were used for healing and meditation purposes. Japanese Zen gardens are designed according to Buddhist beliefs, which relate to mindfulness. Alternatively, there are traditional Persian gardens to enjoy both nature's aesthetics and cultivate in an enclosed environment.

According to previous theories, people feel less stressed when they connect with nature (Kellert 2018). The supportive environment design theory also suggests that people need physical and spiritual spaces to socialize and meditate (Ulrich 1991). Providing green spaces for MS patients to disconnect from urban lifestyles and engage with nature is a crucial part of this practicum. There are two types of gardens included in this project to connect the primary users to nature. One is the public or shared gardens that everyone in the *Pardis* Centre have access to them. The purpose of these shared gardens is to relieve stress by collaborating with others and socializing to create a supportive environment for users. There are a variety of open, semi-open, and closed areas included in this project as public gardens. The second type consists the enclosed personal gardens in order to provide privacy for users. A personal garden serves two main functions in this project. First, as a place to meditate and practice mindfulness. Secondly, it allows users to develop symbiotic relationships with nature and plants through gardening and feel the sense of control over their personal space.

Having a deeper understanding of the ideas behind the two eastern design philosophy, facilitates this practicum's design process for creating a symbiosis relationship between users and nature.

1. Exploring these traditional gardens does not mean that the design product in the final chapter is going to be a Japanese Zen garden or a Persian garden inside the project. But the goal is to learn more about the principles and philosophy behind the traditional gardens and apply those principles into this project.

Persian Garden, a paradise in the desert

As Donald N. Wilber, American writer, described in his book titled *Persian gardens and garden pavilions*, on his first trip to Iran, he experienced the importance of Persian gardens as natural shelters located on the arid roads of Iran for travelers. As Wilber argues, the Persian garden symbolizes Paradise due to the contrast between the garden's green, fresh, soft atmosphere and the arid desert of the Iranian plateau (Wilber 1979, 13).

Although the selected site for this practicum project is not located in the dried climate as Wilber describes, Winnipeg's climate fluctuates between hot days of summer to extremely cold days of winter during the year. Winnipeg has at least a centimeter of snow on the ground more than one-third of the year (Environment Canada 2010). It shows the importance of having greenery in the project for both the mental and physical health of the users.

The question that arises here is how is it possible to provide the proper situation for gardens in this situation? One possible answer to this question is having indoor gardens for this project. This opens up a new opportunity for interior design practice.

Persian gardens are sacred spaces that strive to represent Paradise in settings devoid of water, which is an essential ingredient for gardening (Mozes 2004). As water is not readily accessible in most areas of Iran, it has a significant place in Iranian culture. To bring water from the mountains into the arid areas, Iranians created underground streams called *Qanat*. Thus, water dominates Persian gardens and shapes their design (Moynihan 1987).

Streaming water divides the garden into four different sections and guides people through their journey inside the garden. It is based on the Zoroastrian division of the universe into four parts, four seasons, or the four elements of water, wind, soil, and fire (Karimi-Hakkak 1998). *Chahar-Bagh* is another name for Persian Gardens and it literally means Four Gardens, referring to the four divided sections of the main garden.

The existing building at the site of this practicum lacks sufficient space to address all the required spaces for the end users, so there will be a minor additional building attached to the existing building in this project. There are four geometrically distinct sections in the additional building, each serving a different purpose. A flowing water feature inside the interior environment can not only produce tranquillity and calmness in the environment but can also act as a divider for defining spaces and way finding for building users. Persian gardens are filled with the sound of flowing water. Persian gardens stimulate different senses, such as hearing stream water or smelling flowers, as well as enjoying nature's aesthetics. The sensory stimuli in the environment is used in the design section of this practicum project as positive distractions.

Persian gardens are product of a mindful design and were not only intended to provide greenery for the inhabitants but to create further interaction between humans and nature through a symbiotic relationship (Gharipour 2011).

Mindfulness & Zen[1]

The mindfulness practice includes a variety of meditation techniques designed to enhance awareness of one's thoughts, feelings, and behaviours. Through this process, practitioners are able to meet and respond to life's challenges with greater capacity and choice, which results in greater mental clarity, self-care, and well-being (Porter, Bramham, and Thomas 2017, 199). MS patients can practice mindfulness to cope the stress offered by the disease and take the treatments in this project.

There is evidence that mindfulness practice is effective in treating depression, addictions, and promoting general wellness and health (Hyland 2011). Today mindfulness therapies are used in healthcare settings, but the physical spaces in which they are conducted are not specified. However, Some spaces are more conducive to meditation than others, and this is due to a combination of physiological influences on environmental comfort for users such as thermal comfort, air flow, acoustics, lighting, personal space, safety, legibility, and biophilia that affect occupant comfort (CABE 2009). This chapter explored some of these psychological factors like biophilia earlier. In order to reach a better understanding of mindful design, this section aims to investigate Japanese Zen design as the origin of mindfulness. Zen aesthetic principles can be used to improve health-related well-being and foster a more embodied and authentic understanding of mindfulness. They can also be used to inform the design of mindfulness-based treatment approaches (Shonin et al. 2017). There has been an extensive attempt over the years to adumbrate the inherent principles of Zen art. This study emphasizes the seven principles of Zen aesthetics identified by Shin'ichi Hisamatsu because it is generally viewed as the most influential and widely used (Purser 2013).

1. Zen and mindfulness philosophy are broad areas and exploring all their aspects is beyond the scope of this practicum. The main focus is on Zen aesthetic principles related to the design of this project.

Zen Buddhist scholar, Tea Ceremony Master, and Kyoto University professor Shin'ichi Hisamatsu analyzed how Buddhism appeared in Japanese culture in his book *Zen and the fine arts,* and developed seven pillars to evaluate Zen aesthetics (Figure 7).

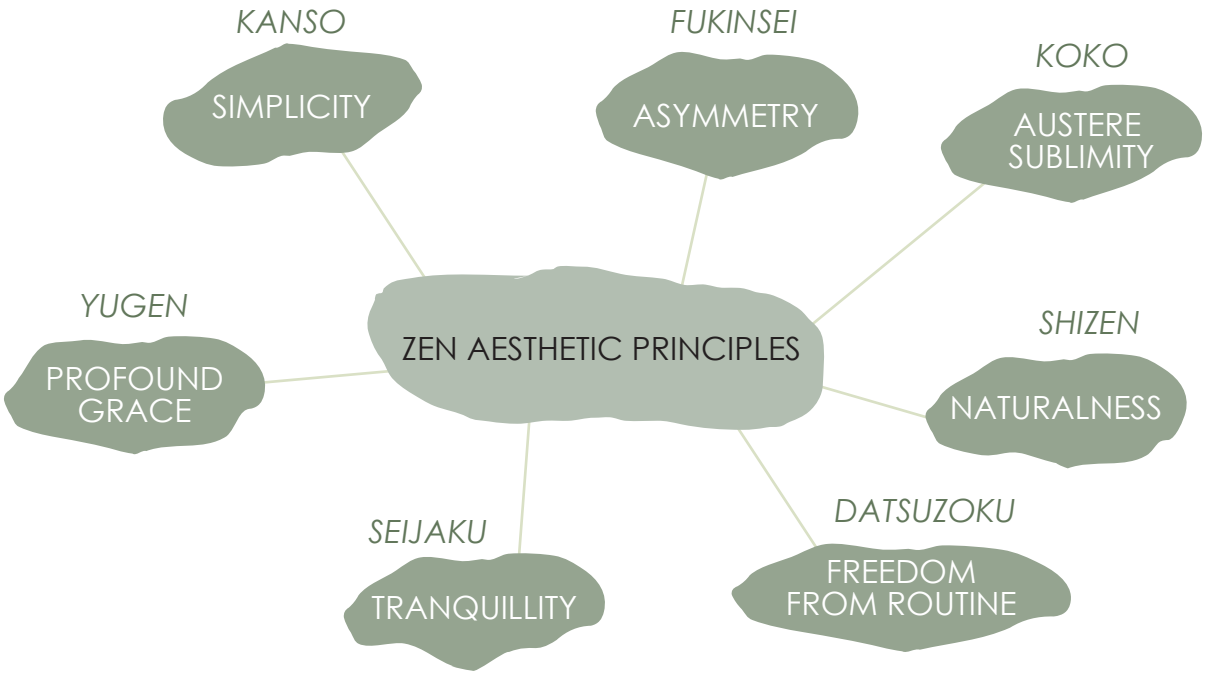


Figure 7. Seven pillars of Zen aesthetic by Shin'ichi Hisamatsu.

In this context, it is not necessary to explain all seven principles, and it is challenging to translate some of the concepts into another language other than Japanese. Pardis Center's design emphasizes *kanso* and *fukinsei* more than any other principles.

Kanso is the Japanese principle of simplicity (Purser 2013, 40). It is also called minimalism in modern architectural theories. It emphasizes the importance of purifying a space so that only what is truly meaningful to the perceiver becomes part of the environment. *Pardis Centre* utilizes the *Kanso* concept to emphasize bringing clarity to spaces by minimization of materiality and colour schemes and simplifying wayfinding layouts.

Hisamatsu identifies *fukinsei* as the second aesthetic principle. It refers to asymmetry or irregularity. As the acceptance of imperfect beauty, *fukinsei* represents the true nature of things (Shonin et al. 2017). In this project, for individuals living with MS and their families, acceptance of imperfection is a vital concept to facilitate acceptance of the new situation and help them live with it.

The aesthetic principles associated with Zen Buddhism represent a way of being that can improve health-related well-being and quality of life more generally (Shonin et al. 2017). Creating interior spaces based on these principles could result in a restorative atmosphere for end users. This project does not aim to recreate a Zen or Persian garden but to create an atmosphere that fulfills those philosophical ideas in the design section.

As described earlier, the Persian garden offers a sensory experience to visitors. It is in line with the description of the tea ceremony in *the Book of Tea* by

Japanese scholar and art critic, Okakura Kakuzō, as he notes in a section of his book: "Tea with us became more than an idealization of the form of drinking; it is a religion of the art of life." (Kakuzō 1919). It means that objects chosen for the ceremony stimulate all five senses. It is a sensory experience that includes the sound of boiling water, the smell of burning incense, the fragrance of tea, its flavour, the feel of the tea bowl in one's hands, the scroll in the alcove, and the movements of the Tea Master which might be interpreted as a dance (Freeman 2015). In this contemplative and grounding experience, all the senses are engaged and the mind is empty, creating an experience similar to Zen meditation.

Another core philosophy of Zen design is *Ma* means a gap, a pause or an interval. In Japanese gardens, *Ma* is omnipresent in dry gardens, *Ma* is the dynamic play created by asymmetrical placement of stones. It is the space in-between the stones in the Zen garden that regulate the rhythm of walking to allow a pause for a particular view to be enjoyed. In the words of Yoko Kawai, a Japanese architect who is specialized in the design of well-being spaces using Zen aesthetic principles:

> Becoming mindful does not always mean closing our eyes and shutting out the rest of the world. It is also important to be aware of the environment. Being mindful blurs the boundaries between space and body, simultaneously separating and connecting us. It is a key aspect of traditional Japanese architecture to dissolve the boundaries between self and space (Kawai 2019).

Through the blurring of the self-space boundary, the *Pardis* project offers mindful spaces to create moments of pause in the building so the users can stop and see nature inside through biophilic design or outside through openings in the building envelope framing an intentional view of the old monastery on the site, or the river and trees.

Summary and Conclusion

Theories explored in this chapter give direction to the following chapters of this practicum by informing the design approach and assisting in establishing the related categories of Biophilic design, Supportive environment theory, Japanese Zen design and Persian gardens.

Biophilic design plays a pivotal role in this practicum and acts as the keystone for the design of this project. Studies show that being exposed to nature reduces the stress levels of people. Incorporating nature into interior design can be accomplished through the Biophilic design principles provided by Stephen Kellert. In this project, direct, indirect and symbolic use of nature is going to be applied in the design phase of the practicum.

Biophilic design guides the design with the choose of finishing materials, shape and form of objects and spaces, opening locations for glazing. In other words, Biophilic design is more of a tangible or formal approach for the design of this project to shape the organic forms or use of natural materials like wood in the project. By using a Biophilic design, this project aims to create a symbiotic relationship between humans and nature. Having achieved that, users will be able to enjoy a restorative environment that enhances their quality of life.

The second theory discussed in this chapter was the Supportive Environment theory. A Supportive Environment offers psychological factors for designing healthcare facilities' interiors. In contrast to Biophilic design, this theory focuses on the functional requirements of the project.

Roger Ulrich coined the Supportive Environment theory. Ulrich argues that an interior environment promotes the health and well-being of its users by reducing stress and anxiety if it addresses the three needs of the people who use it. A sense of control over the space is the first step, the second need is access to social support in the healthcare facility, and access to positive distractions is the third requirement (Ulrich, 1991). The programming section of the design process is going to address the Supportive Environment theory requirements for this project.

Finally, the philosophical approach to the design chapter is explored under the healing gardens umbrella through the exploration of the Japanese Zen Garden as a mindful design, and the Persian garden design as a symbiosis example of Biophilic design. This part of the literary analysis introduces a philosophical design approach for fostering the five senses through interior design, providing the user with a new experience. The three different categories provided guidelines for designing the form, function and quality in the spaces of this project.

CHAPTER III

DESIGN PRECEDENT ANALYSIS

3.1
Introduction to the Chapter

The following precedent analysis provides insight into how other designers approach healthcare projects using theories discussed in Chapter 3. The following examples were specifically selected because they reflect certain concepts and theories discussed in the previous chapter, such as Biophilic Design, Supportive Environments, and Zen Aesthetics Principles. There are three precedents highlighted here:

1. Maggie's Leeds Centre (2020)-Figure 8
2. Maggie's Oldham Centre (2017)-Figure 9
3. *Sora no Mori* Healthcare Centre (2014)-Figure 10

The first two precedents are two separate Maggie's Centre[1] projects located in different locations in United Kingdom. Both projects exhibit the same typology and philosophy in their design and function but with different approaches. Maggie's Centre contribute to the cultural landscape and communicate the idea that illness does not have to be an isolated experience. It is in line with the major goal and objective of this practicum projects as mentioned in the introduction chapter (Chapter 1). Maggie's projects are small, carefully designed, usually close to a hospital, and are open to people diagnosed with cancer and their family members (Dominiczak 2013, 333).

Sora no Mori Healthcare Centre is the third project that emphasizes nature in its design. This project is located in Okinawa, Japan. Typology and design philosophy are both important factors in choosing this project. Through this

1. In July 2015, Maggie's Centers: A Blueprint for Cancer Care exhibition was supported in Winnipeg by the University of Manitoba, Idea Exchange Cambridge Ontario, Winnipeg Architecture Foundation and Manitoba Association of Architects.

project, humans and nature were directly connected as part of a vernacular approach to Biophilic design. This project exemplifies some Zen aesthetic principles that guide *Pardis Centre*'s design process.



Figure 8. Maggie's Leeds Centre. Source: Archdaily



Figure 9. Maggie's Oldham Centre. Source: Archdaily



Figure 10. *Sora no Mori* Healthcare Centre. Source: Archdaily

3.2

Maggie's Leeds Centre

- Location: Leeds, United Kingdom
- Date: 2020
- Architects: Heatherwick Studio
- Area: 462 m^2 - 4,973 sqf

Topic of Interest: Innovative approach to the biophilic design.

The Maggie's Centres are a series of non-residential buildings designed by prestigious architects like Zaha Hadid, Norman Foster, Rem Koolhaas, to name but a few, in a small, domestic scale. All the buildings share the same design goal, which is to provide free **supportive spaces** for people with cancer and their family and friends. Maggie's Centres are existing examples of what this practicum project is looking for. Unlike cancer, MS does not have a fatal outcome (MS Society of Canada, 2022), however, there is no cure for either disease at this time. Treatment is therefore an option for patients with MS and cancer to cope with their new situation. Patients at Maggie's Centre receive treatment in an informal setting that differs from hospitals and healthcare facilities by offering a supportive environment filled with nature.

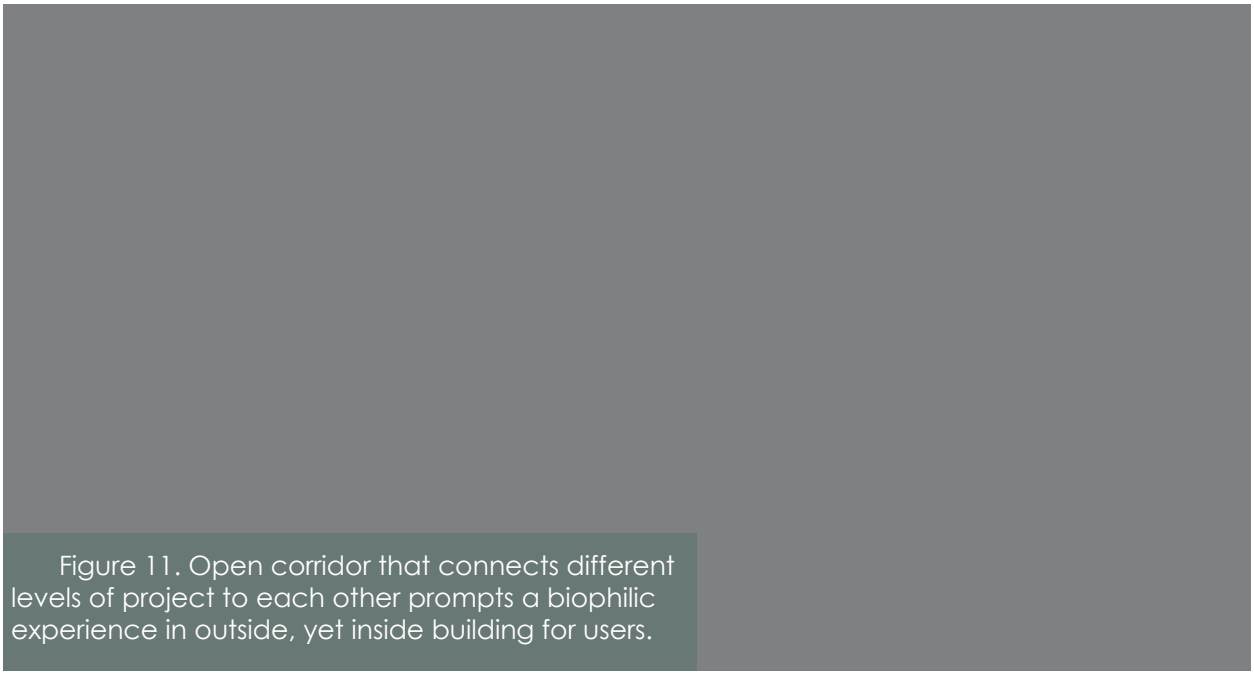


Figure 11. Open corridor that connects different levels of project to each other prompts a biophilic experience in outside, yet inside building for users.

A writer, gardener, and designer, Maggie Keswick Jencks faced a multitude of psychosocial problems and life-changing issues that affect cancer patients, and her story provides a unique inspiration (Dominiczak 2013, 333). Maggie was battling cancer in conventional hospital surroundings, and the idea for Maggie's Centres was born. When Maggie was told that she only had a few months to live after her breast cancer recurred, she wanted to find a place where she could get herself back (Takada 2017,640). As described by Maggie's Centre website:

> After hearing this, Maggie and her husband Charles Jencks were moved to a windowless corridor where they were left to process the news. They discussed the need for somewhere 'better' for people with cancer to go, outside of but nearby to the hospital (Maggie's Centre).

During the time Maggie was battling cancer, she wrote a book titled *A view from the front line* about her experience. She mentioned in her book that "generally, hospitals do not have a patient-friendly environment. Combined with poor lighting, interior spaces with no view outside and miserable seating against the walls, these factors contribute to an extreme mental and physical state of dread" (Jencks 2003, 21). These are simple, yet crucial descriptions of the qualities this practicum project must possess in the design section of the *Pardis Centre*. Unfortunately, Maggie passed away shortly before the first Maggie's Centre opened. She died while the plans for the first centre were on her bed at the hospital (Calkin 2021).

Maggie's husband, Charles Jencks fulfilled Maggie's wishes and opened the first Maggie's Cancer Caring Centre in Edinburgh in 1996, aiming to create a space where people could cope with cancer in comfort and find their way through their journey without feeling isolated from society (Jencks 2017).

Charles Jencks was a renowned theorist, landscape designer, and architectural historian, and he is known for his theories about post-modern architecture. His prestigious position among architects made it possible for him to recruit some of the best architects to design Maggie's Centres. As a result, currently, more than twenty Maggie's Centres worldwide are serving the well-being of people going through difficult times in life.

As shown in Figure 12, socializing was one of the main objectives of Maggie's Centres. Each centre addressed this goal with a unique architectural approach. In order to provide such spaces in this project, Maggie's Leeds Centre consists of a series of large-scale planters of differing sizes (Figure 13).



Figure 12. Open corridor that connects different levels of project to each other prompts a biophilic experience in outside, yet inside building for users.

Each planter's base provides a private place for visitors to meet or spend time alone, while the spaces between offer a relaxed and approachable atmosphere for group activities and conversation.

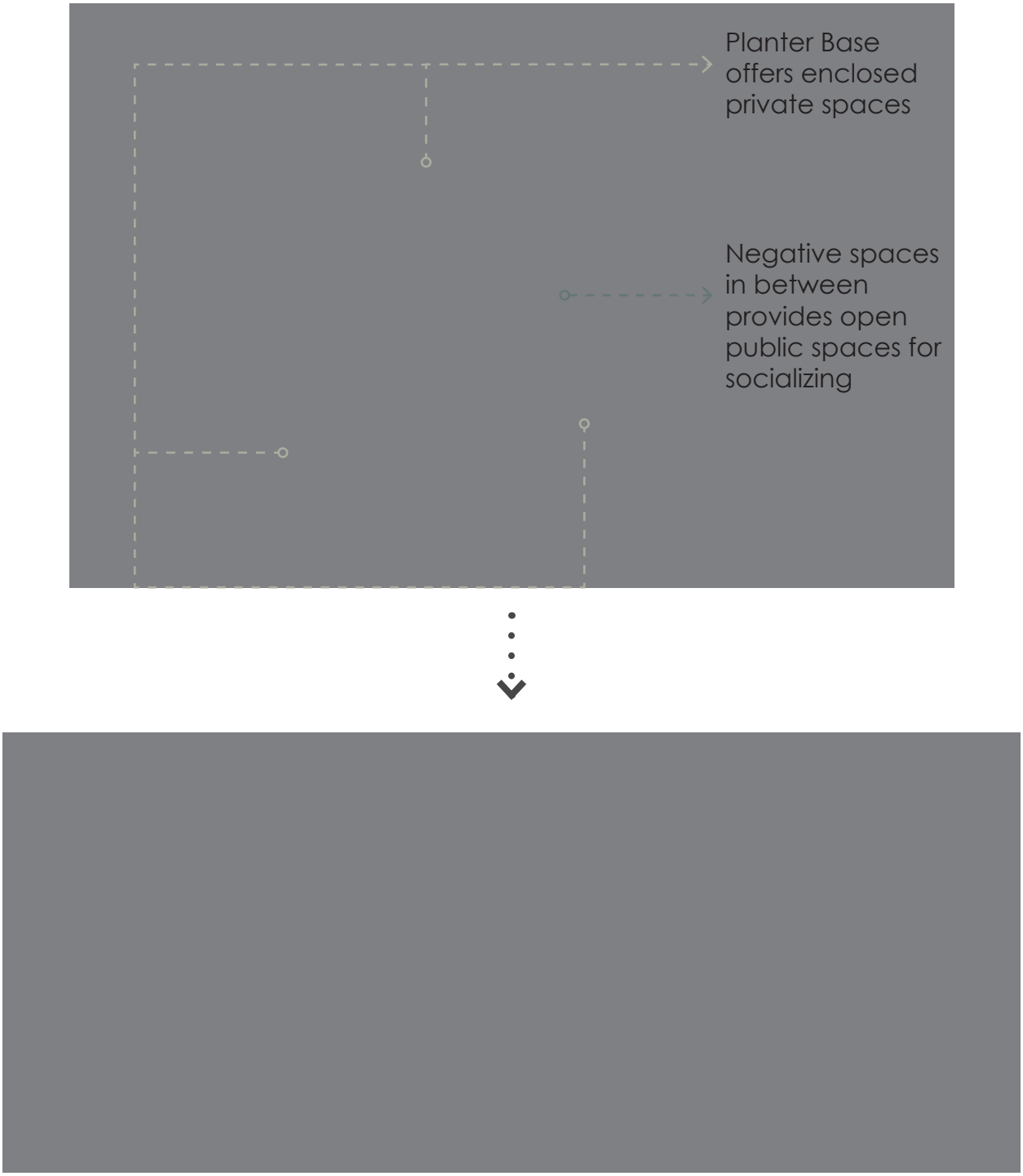


Figure 13 & 14. Private and public spaces created by negative and positive spaces created by plant boxes.

Maggie's Centre in Leeds, United Kingdom was the latest -the 26th centre in the UK- under Maggie's projects that opened in 2020 serves the same ideology that other Maggie's projects were looking for. However, this project was designed in a challenging location, as it is located on a sloped site on the corner of the campus of St. James's University Hospital, where it the only green space was remaining on the site (Figure 16). However, this limitation offered by the site shaped the whole idea of this project as the architects decided to preserve and even accentuate the site by creating the structure out of the garden itself by raising up the planted surface (Figure 17). Thus, they were able to create a biophilic environment that enhanced the quality of life of users and helped the landscape's greenery. In other words, this architectural problem-solving decision created a symbiosis relationship between the project and its context. This is one of the major goals for *Pardis Centre* as the outcome of this practicum project.



Figure 15 shows a small planter that shaped the idea of raising up the greenery on the site.

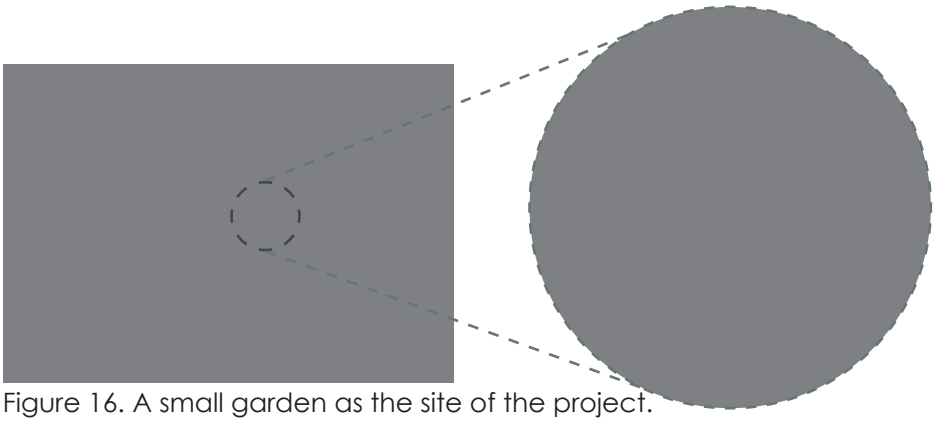


Figure 16. A small garden as the site of the project.

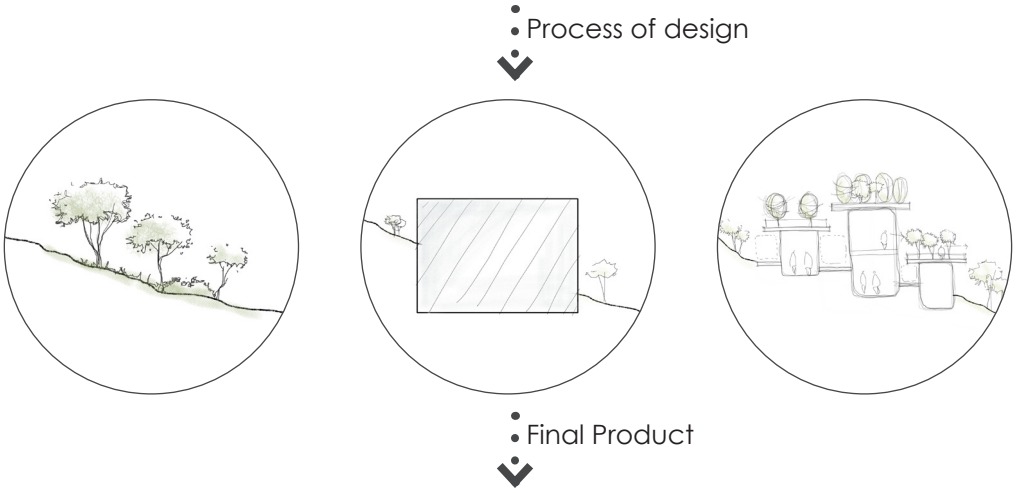


Figure 17. Due to the limitations of the site, the project design embraced a biophilic approach rather than destroying the existing greenery.

The interior design of this project follows both direct and indirect use of nature as its biophilic approach. As discussed in the previous chapter, using organic materials in the interior spaces creates a healthy environment for the users of the building as a direct use of nature in the built environment. Maggie's Leed Centre is built on a wooden structure that provides the building's users with closer contact with nature (Figure 18).

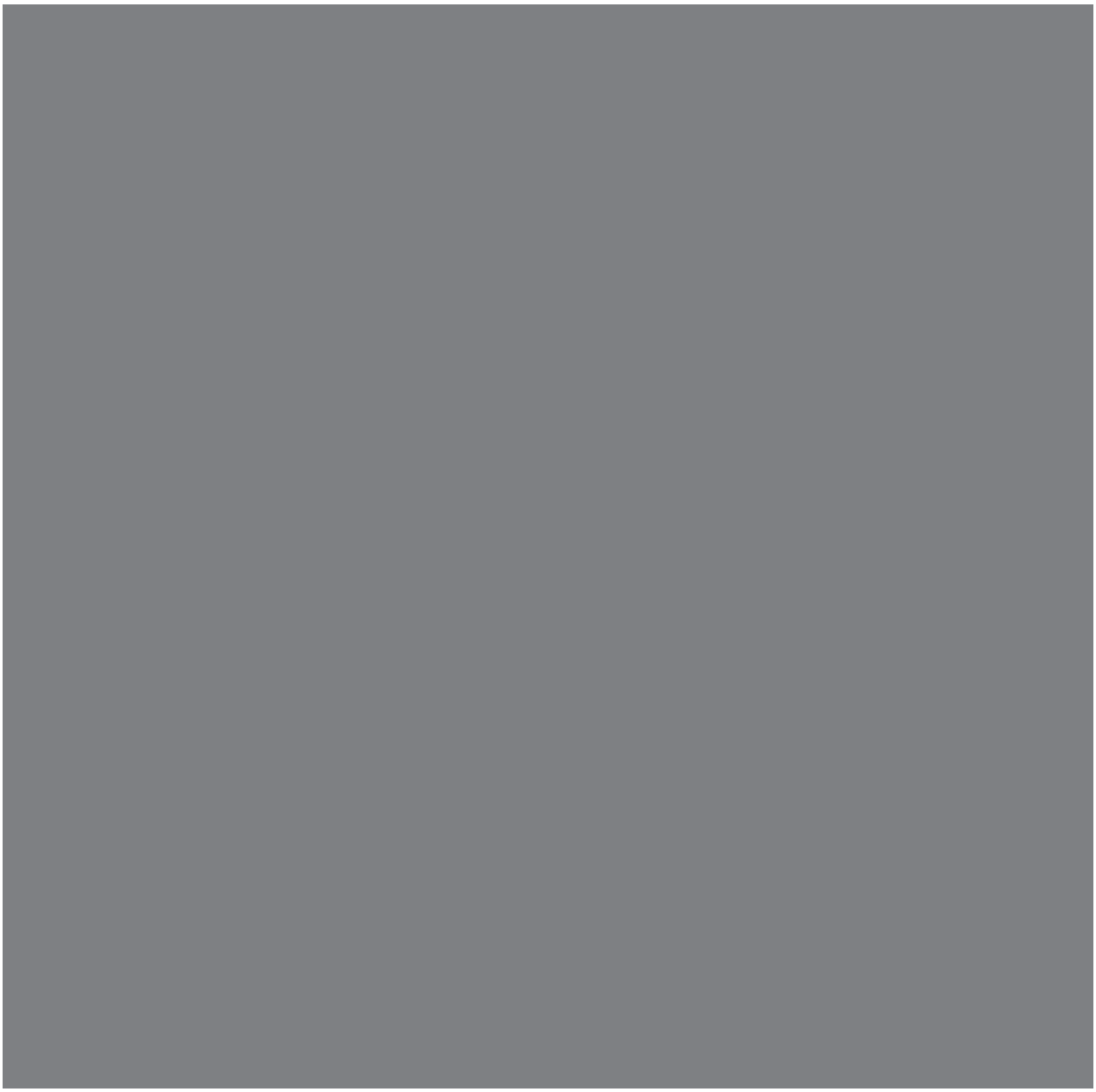


Figure 18. The organic-shaped wooden structure connects users to nature in both direct and indirect dimensions of biophilic design.

As an indirect use of nature, the organic-shaped elements of Figure 19 serve not only as the building's structure but also as a means of defining its interiors. For instance, as shown in Figure 20, the space between vertical elements provides horizontal shelves for putting plants on it. Here is where the direct and indirect use of nature as two dimensions of biophilic design meet in the building.



Figure 19. Curvilinear wooden structure follow an organic pattern as in direct use of nature in the project.

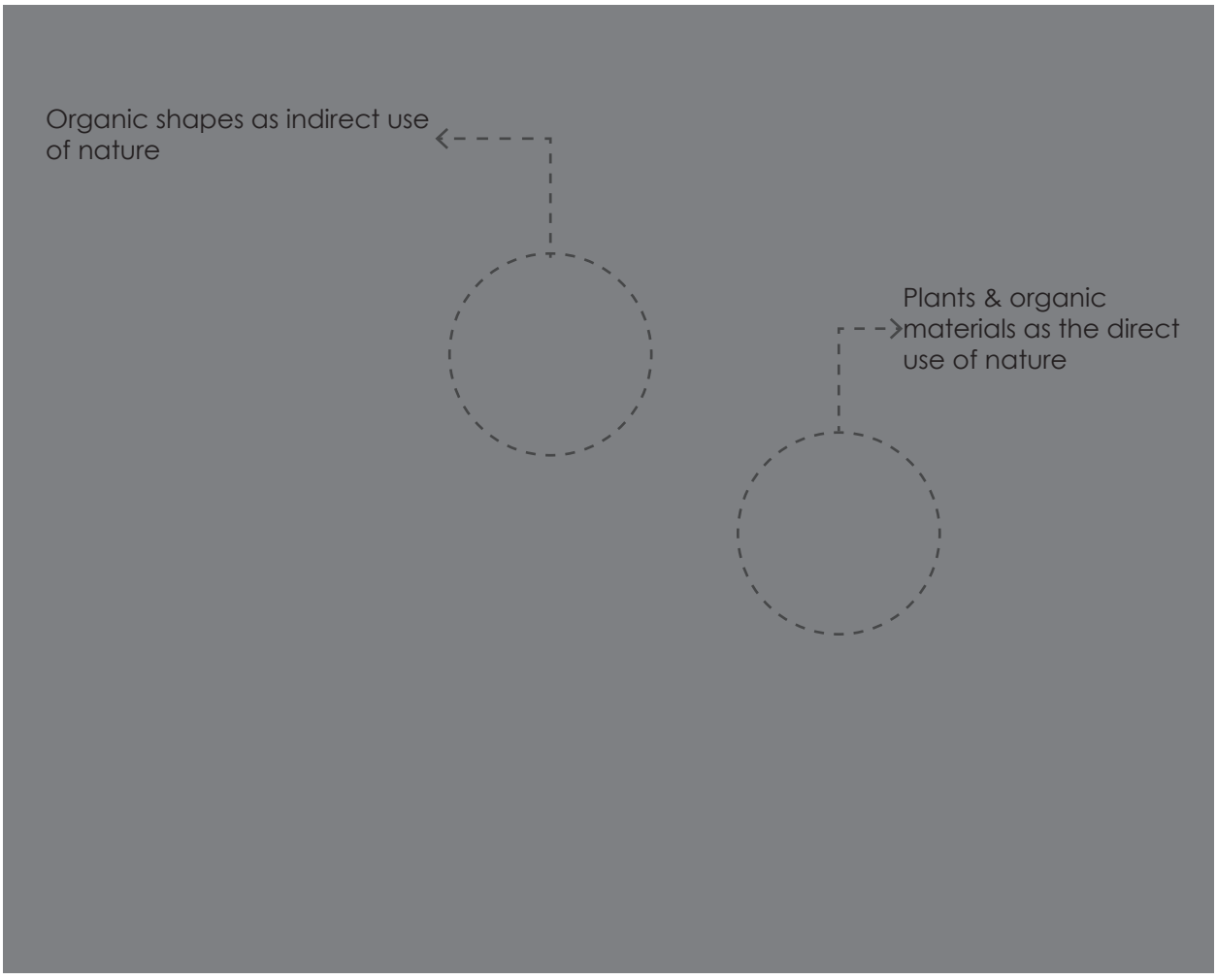


Figure 20. Exposed wooden structure holds the building and creates the interior atmosphere.

3.3

Maggie's Oldham Centre

- Location: Oldham, United Kingdom
- Date: 2017
- Architects: dRMM
- Area: 260 m^2

Topic of Interest: Sustainable approach in choose of materials and finishes.

Maggie's Oldham Centre like all other Maggie's carry the same idea and purpose but in a different and innovative way. There are similar approaches between all the Maggie's Centres including following biophilic design theory in an informal setting to create a welcoming atmosphere for people diagnosed with cancer and their family. This is in line with Maggie's envision of Maggie's Centre.

> By providing a pleasant waiting room with thoughtful lighting, a view of trees, birds, and the sky, and a variety of chairs and sofas, waiting time could be utilized positively. It may also include a coffee and tea machine, a small cancer library, and a video library for laughter (Jencks 2003, 21).



Figure 21. The Birch trees penetrate into the built environment.



Figure 22. Three layers of ground, tree, and sky are brought into the building through the organic glazing in the center.

The dRMM architects intentionally dismissed the idea of designing a regular healthcare centre. It is noticeable from the design of both exterior and interior of the building. Looking at the building from the street might convey the idea that the building is just a simple wooden box like a residential building. In the interior for instance, there is no reception desk in the entrance to welcome visitors. Instead, there is an organic shaped glazing acting as heart of the building that welcomes visitors as soon as they enter the space (Figure 22).

As mentioned in the previous precedent, Maggie's Centres are designed around an architectural element like a fireplace or kitchen island. In this project though, the tree in the centre of the building acts as the heart of the project and spaces are arranged around this core. The tree is a focal point in the project that gives a hug to visitors upon entering the building as Laura Lee, Maggie's cancer nurse who is now Maggie's CEO points out: "I want the building to feel like it gives you

a hug". Designers in this project translated this idea into the interior environment by thinking about the user's sensory experience in the project. Besides the visual warmth of wood as a natural material, they considered designing oak wooden handles for the doors and stairs handrail because touching a cold metal handle for opening doors is a painful experience for those undergoing chemotherapy (Figures 23-24). The *Pardis Centre* provides a multi-sensory experience, as stated earlier. In this way, natural materials in the building are less likely to transfer cold to the user's skin while touching them.

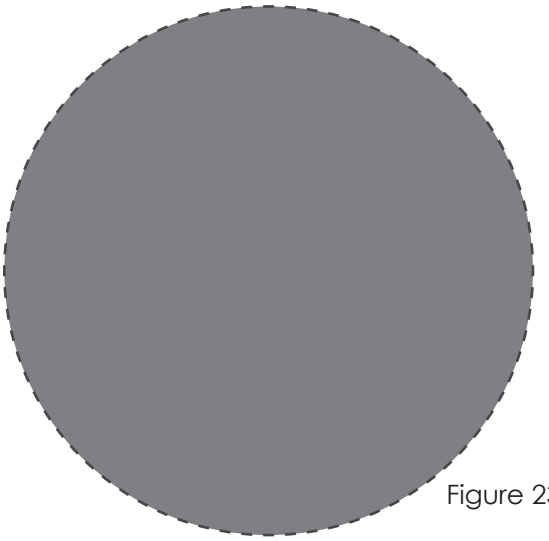


Figure 23. Designing wooden handrail and door handles.

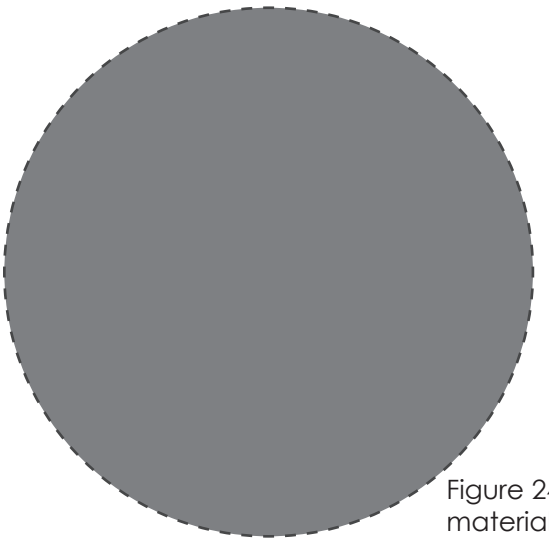


Figure 24. The ergonomic design of the handrail and wooden material conveys a warm feel for both sight and touch.

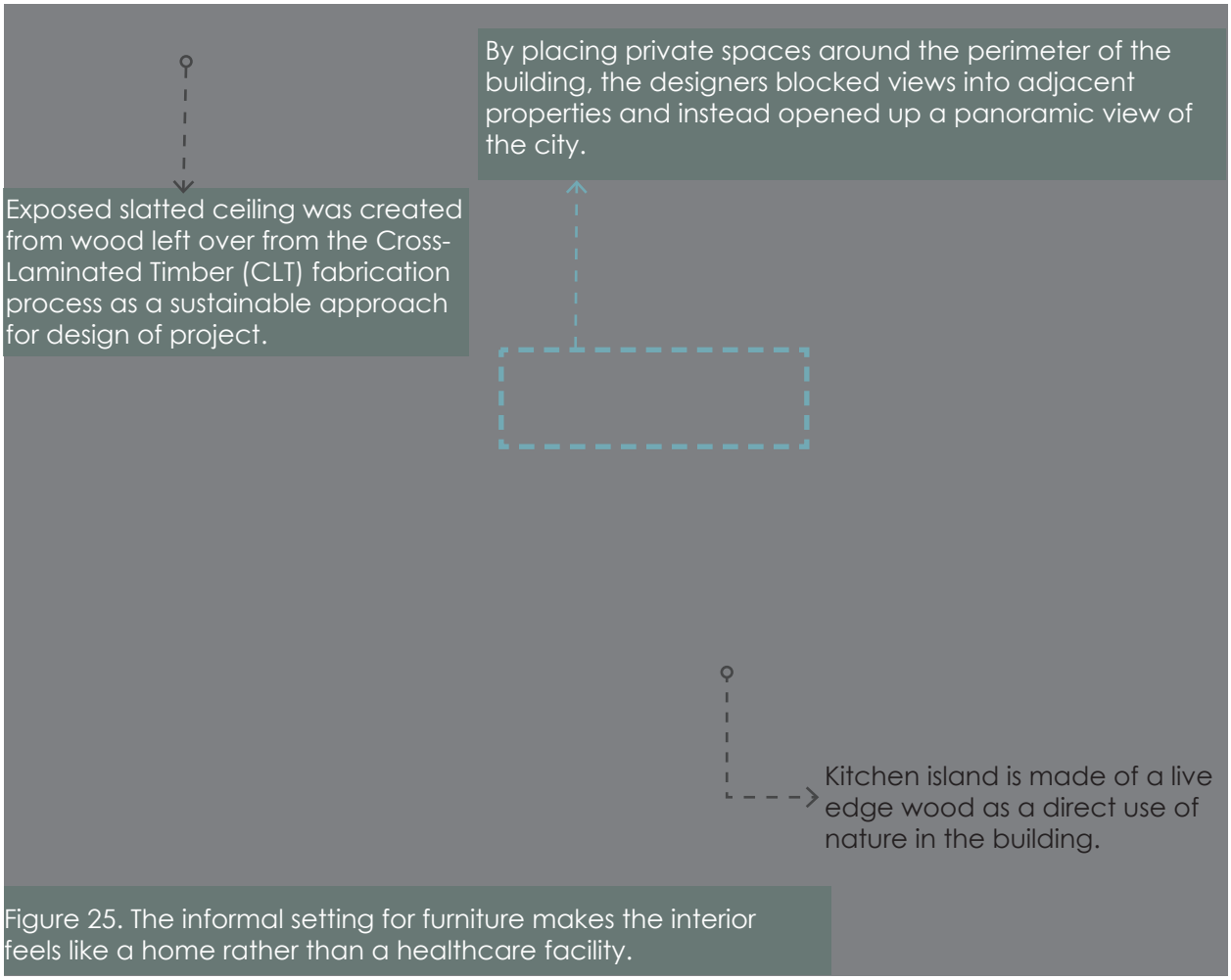
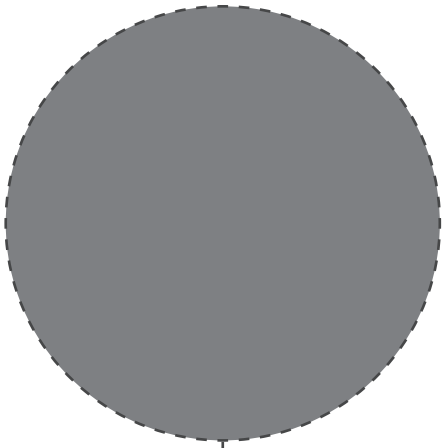


Figure 25. The informal setting for furniture makes the interior feels like a home rather than a healthcare facility.

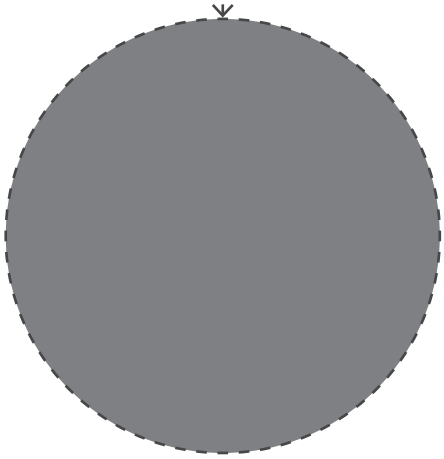
The design of this building incorporates sustainable approaches. On the ceiling, for example, wood slats were manufactured using leftover woods from the structure. A small pond is placed under the building to collect water on rainy days (figure 26) as another sustainable solution in this project. In the *Pardis Centre*, flowing water provides a sense of tranquility for the users, also collecting water from the precipitations in the site can be used for watering the gardens to make a symbiosis between the building and nature.

Figure 26. The pond collects rainwater.

A sense of control over the space plays a key role in cultivating energy and atmosphere within an interior space. Comprises of control can worsen health complications, including high blood pressure and depression (Ulrich et al. 1991). The sense of control is applied to this project through two main decisions; the first is the provision of operable furniture and the second is providing a greenhouse for cultivation. A movable curtain in the building provides more privacy for users during private meetings (Figure 29).



Figures 27 Garden.



Figures 28 Plants.

The small greenhouse within the project allows users to plant vegetables that can be used to cook in the kitchen. Besides giving a sense of control and agency over the space, the greenhouse and planting also offer users an opportunity to socialize (Figures 27-28).



Figure 29. The movable curtain provides the opportunity of control over the space for the users.

3.4

Sora no Mori Health Care

- Location: Okinawa, Japan
- Date: 2014
- Architects: Tezuka Architects
- Area: 2996 m^2

Topic of Interest: Japanese aesthetics in a healthcare facility and design according to the site's climate.

Sora no Mori is a healthcare centre located in the warm climate of Okinawa in Japan. Summers in Okinawa are hot, oppressive, wet, and overcast. Temperatures typically range from 14 °C to 32 °C throughout the year, rarely falling below 10 °C or rising above 33 °C.[1] Okinawa's forest provides the materials for this project. The designers intended to create an environment that would allow people to live close to nature. In order to accomplish this goal, there is no visible boundary between the interior and exterior of the building. As discussed in the Chapter 2, making a connection between exterior and interior of the building is one of the characteristics of Japanese architecture that used in designing the *Pardis Centre* in this practicum.



Figure 30. There is no strong border between the outside and inside of the project.

1. "Weatherspark.com." Okinawa Climate, Weather By Month, Average Temperature (Japan) - Weather Spark. Accessed January 22, 2023. https://weatherspark.com/y/142278/Average-Weather-in-Okinawa-Japan-Year-Round.

As shown in figure 32, there are several layers between the exterior and the interior of the building in the *Sora no Mori* project. Each layer serves as a conduit for circulation as well as a bridge between the exterior and interior of the building. There are a variety of walking options within the building, including open, semi-open, and enclosed areas. The climate in Okinawa allows architects to remove perimeter walls and replace them with structural columns to provide shade during the hot summer days. Additionally, it facilitates a comfortable interior climate by allowing sea breezes to penetrate the building and cool it down.

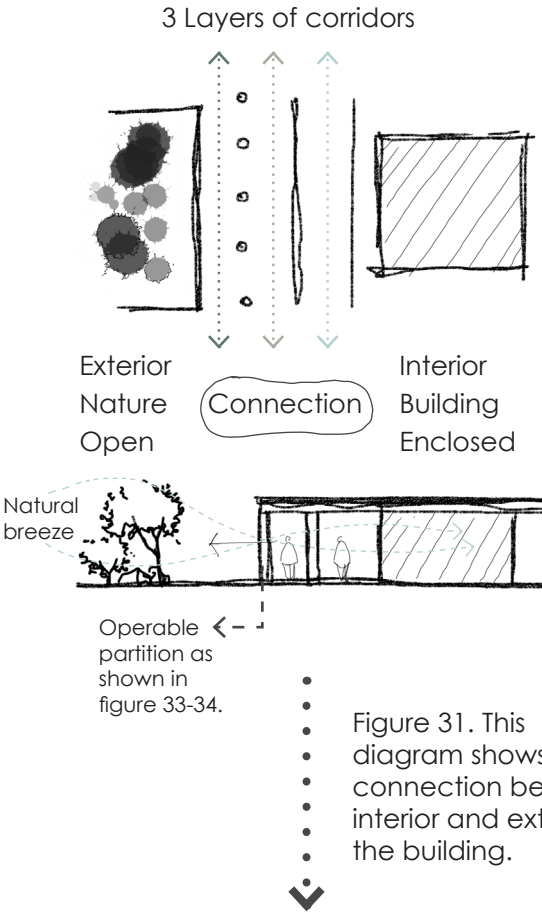


Figure 31. This diagram shows the connection between interior and exterior of the building.

Figure 32. Layers of corridors in this project connect the interior and exterior spaces.



Figure 33. No visual barrier to the garden.



Figure 34. Wood slat partition filters the light and views into the building.

There is a movable partition on the furthest corridor between the interior and the exterior, allowing users to have a sense of control over the space. The slatted partition provides shade while allowing users to feel the Okinawa breeze.

Interior simplicity or *Kanso* as the first Zen aesthetic principle is evident in the absence of finishing materials on the exposed structure and in the white colour of the space. This project tries to less focus on the built environment and instead frames nature using the spaces between wooden posts of the structure. This absence of material and void in between the posts is according to another Japanese design principle of *Ma* that explained in the previous chapter. For designing the small addition to the existing building on the site of *Pardis Centre*, openings on the envelope of the structure have been chosen to frame the intentional view of nature for users.

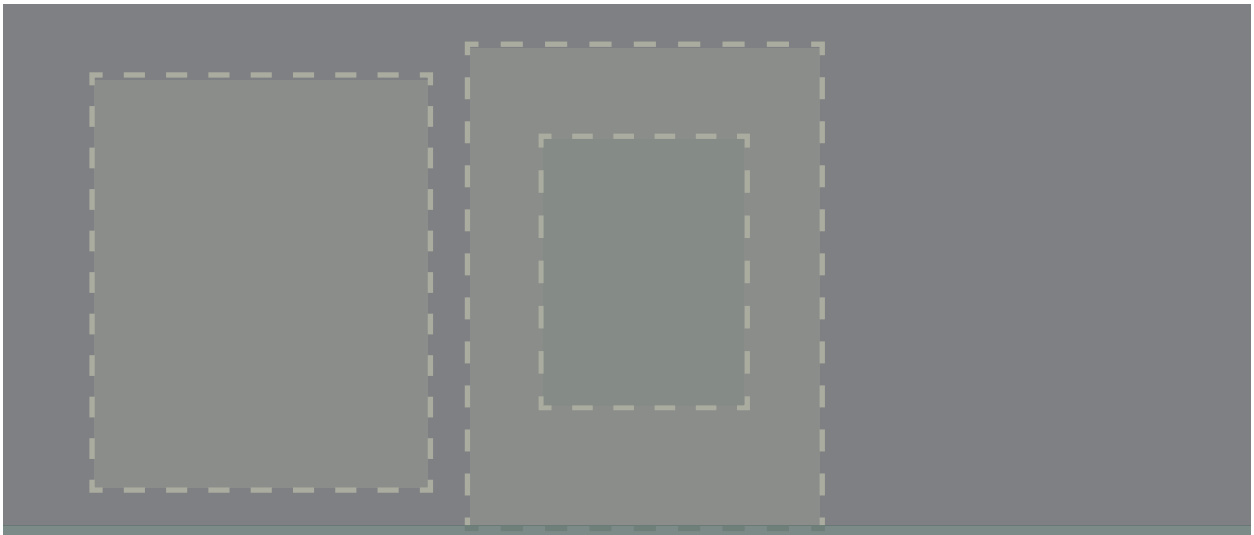


Figure 35. Simplicity and the concept of *MA* in the interior environment of the building.

3.5
Summary & Conclusion

This chapter examines three healthcare facility projects that were designed based on the theories explored in Chapter Two. The first two precedents are two different examples of Maggie's Centres in United Kingdom. Biophilic design and sustainable design are two main characteristics in Maggie's projects that were applied to the design of the *Pardis Centre* too. The informal atmosphere in the interior spaces of Maggie's Centres conveys a home-like feeling for the users. In Maggie's, staff and regular offices are removed from the entire building and instead informal collaboration spaces are provided for socializing and sharing experiences. The third precedent is a healthcare centre located in a warm climate in Japan. Zen principles of design and consideration of the local climate are key elements in the design of this project. The *Pardis Centre* is located on a site where the temperature fluctuates from cold to warm throughout the year. Therefore, it is imperative to understand the site and context of the project in order to design the project to cope with the local climate. This is in line with the vernacular dimension of biophilic design theory used in the design process of this practicum project in the next chapter in the site and building analysis section.

The first precedent is Maggie's Centre located in Leeds, United Kingdom. Maggie's Centres provide cancer patients with support in informal settings close to hospitals. The design process for this building was guided by maintaining the greenery on the site. There are three large planters on site, each with a different elevation, that provide enclosed spaces for private meetings and activities.

Between the planters, there are open spaces for socializing and collaboration for visitors. This project features an organic shape structure made out of wood with no boundary between the structure and the interior space. The structure plays a significant role in enhancing the atmosphere and aesthetics of the interior.

The second precedent is Oldham Maggie's Centre. This project is focused on sustainable design to create a healthy environment for both users and nature. This project features a movable partition and a greenhouse that provide users with a sense of agency over the environment, which is one of the three pillars of supportive environments theory. Designers carefully understand the users' conditions and requirements and designed the project accordingly. As an example, designing the door handles and stair handrails from wood to transfer warmth to users when touched is a way of paying attention to their sensory experience.

The third precedent is a healthcare facility located in a warm site in Japan. Half of the built footprint of the project consists of open courtyards and semi-open corridors for patients to meander and enjoy the landscape inside and outside the building. The project follows Japanese vernacular architecture principles such as making a connection between the interior and exterior by removing solid walls and replacing them with operable partitions. The interior design of the project is based on the combination of exposed local wooden structures and the white colour on the walls. The empty spaces between the structural posts make a moment of pause for users to stop and look at the garden in the courtyards or the outside landscape of nature around the project. Like the *Sora no Mori* project, *Pardis Centre* was designed to cater to the region's unique climate by taking a vernacular design approach. Moreover, the *Pardis Centre* offers users framed views of the landscape as well as local points in the interior of the project.

Overall, all three precedent projects share one important lesson: designing spaces that evoke a sense of tranquillity in users. Designing the *Pardis Centre* with a biophilic approach and leaving natural materials exposed without artificial membranes creates a relaxing environment that is not like a hospital. The site and context of the project are also crucial factors to consider when designing the project. *Pardis Centre* sits on a heritage site with many natural potentials such as the river, trees, and animals that influence the interior and exterior design of the project.

CHAPTER IV

DESIGN APPLICATION

4.1
Introduction

This chapter demonstrates how the theoretical and architectural examples explored in the previous sections are translated into a built environment for the *Pardis Centre*. As the last chapter of this journey, this chapter unfolds the final product of this practicum project. Built environments are the tangible results of architectural and interior design projects. The intangible part, however, is the process taken by the designer throughout the journey of design. This chapter describes the design process for the *Pardis Centre*. The first step in this journey is the study of the site and context of project. Having explored the site and buildings potentials, the next step is explaining the project's users and the fictional client. A design programming process was carried out based on the users' needs. Lastly, preliminary sketches shaped the design path of the *Pardis Centre* by translating the ideas learned from the previous chapters into the interior environment.



Figure 36. A view to the St. Norbert Art Centre, SNAC, through the Trappist Monastery's entrance.

4.2
Site and Building Analysis

The selected site for this project was briefly introduced in Chapter 1. The following section provides further information regarding the site and the building selected for this project. The information gathered in the literary analysis and design precedent analysis provided insight into the design of the *Pardis Centre* and assisted to find a suitable location for the project. An important aspect of choosing the location for this project was its proximity to nature rather than the urban environment based on the biophilic design theory. The proposed location, however, could not be too far from the city in order to facilitate access to healthcare facilities. Therefore, this project is located in the St. Norbert area in Winnipeg, Manitoba. Winnipeg is a city rich in both architecture and nature.

As far as architecture is concerned, Winnipeg is one of the most interesting cities in North America. Manitoba's capital is home to one of the largest collections of heritage buildings in North America due to the unexpected benefit of slow growth[1]. Besides the rich architectural character, Winnipeg also has plenty of parks and open spaces. According to the city of Winnipeg, there are over 3,500 hectares of parkland in Winnipeg[2]. This symbiosis between the city and nature makes Winnipeg a good fit for the location of *Pardis Centre* since one of the objectives of this project is to create a symbiosis relationship between the built environment and nature around it.

The *Pardis Centre* is located on a provincial heritage site in the St. Norbert area of South Winnipeg, Manitoba, Canada (Figure 37).

1. Gardiner, Karen. "Why Design Lovers Should Visit Winnipeg." Architectural Digest. Architectural Digest, January 30, 2020. https://www.architecturaldigest.com/story/why-design-lovers-should-visit-winnipeg.

2. "More than 1,000 Winnipeg Parks for You to Explore." City of Winnipeg, July 16, 2021. https://www.winnipeg.ca/people-culture/our-city-our-stories



Figure 37. Winnipeg map and the location of the *Pardis Centre* in St. Norbert, south of Winnipeg.

Pardis Centre is a hypothetical project that adaptively reuses an old guest house attached to the ruins of a former Trappist Monastery in St. Norbert provincial heritage park. Natural elements adorn this site, as the building sits amidst the winding *La Salle River* and is like an architectural gem hidden inside the forest (Figure 38-39).



Figure 38. Aerial view of the site

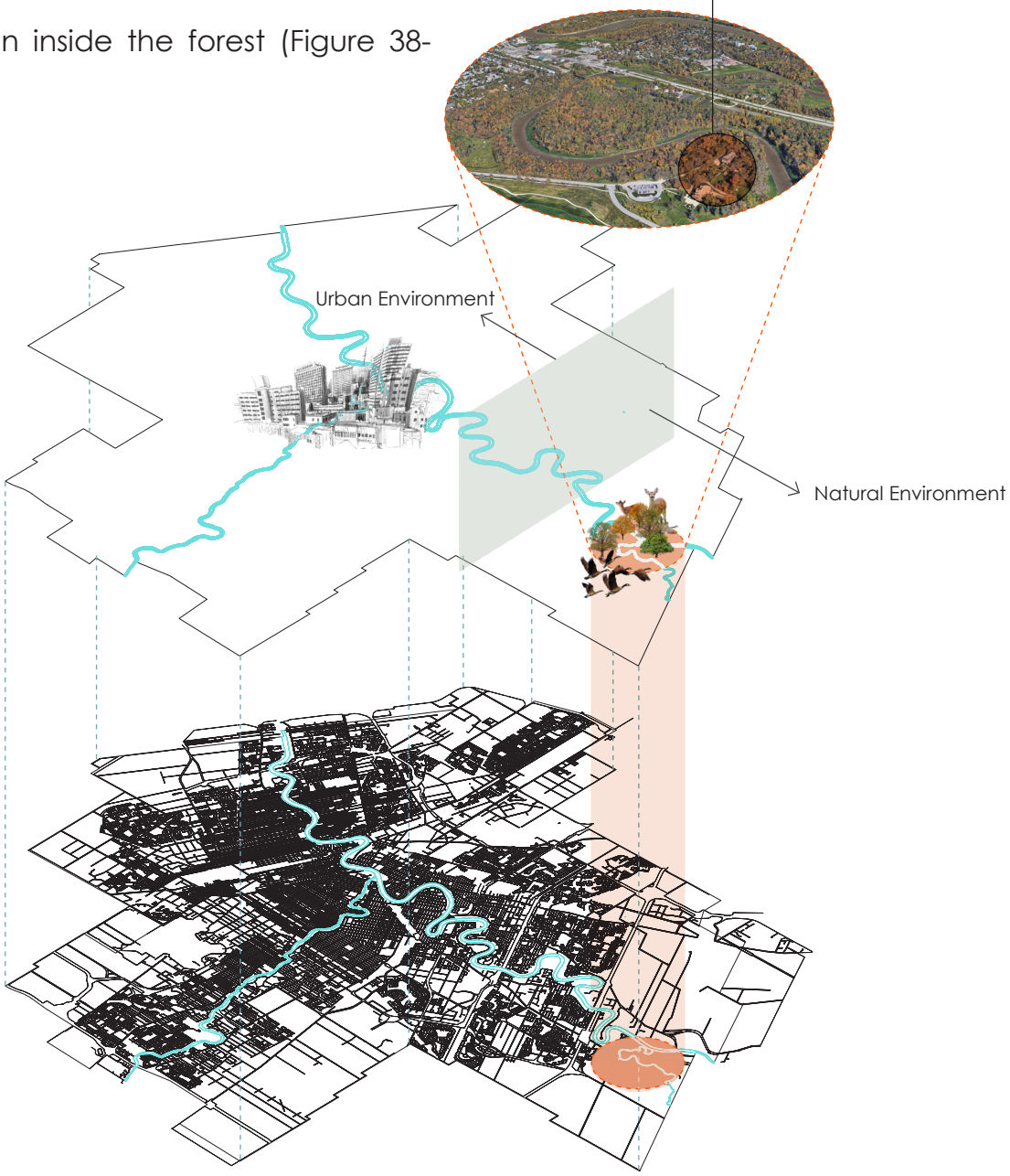


Figure 39. The site is located in the margin of Winnipeg, away from the urban environment and within nature.

St. Norbert was founded by aboriginal peoples over 125 years ago and developed into a French-speaking Métis settlement in the 1820s. This land was located along major trade and transporation routes and attracted many families and settlers from Québec and France. St. Norbert Provincial Heritage Park is located at the scenic junction of *Red* and *La Salle* rivers[1].

The Government of Canada sent surveyors to St. Norbert to prepare for an influx of new settlers. The French-speaking Métis took quick action to defend their land, and in July 1870 the Manitoba Act was proclaimed, guaranteeing the linguistic, religious and proprietary rights of its citizens[2].



Figure 40. The old guest house is now the St. Norbert Art Centre (SNAC).

1. "Tour Pioneer Log Houses at This Manitoba Park." To Do Canada, May 7, 2020. https://www.todocanada.ca/city/winnipeg/listing/st-norbert-provincial-heritage-park/.
2. "Monastery History." St. Norbert Arts Centre. https://www.snac.mb.ca/monastery.

The first monastery building was a three-storey wooden structure on a stone foundation, which featured a chapel, porch and bell tower (Figure 41). In 1912, the guest house was destroyed by fire. The monks replaced it immediately with a new guest house, the building now occupied by the St. Norbert Arts Centre[1]. (Figure 42).



Figure 41. The first monastery building.



Figure 42. St. Norbert Art Centre.

A Romanesque Revival construction of unmatched richness and clarity, the chapel was regarded as an outstanding example of architectural merit. It featured a beautiful rose window, a silver-domed bell tower, eight free-standing radiating columns, and a cluster of seven smaller chapels, and was constructed with Manitoba's international heritage Tyndall stone and brick[2] (Figure 43-44).



Figure 43. The Trappist Monastery.



Figure 44. The remains of the Trappist Monastery.

1. "Monastery History." St. Norbert Arts Centre. https://www.snac.mb.ca/monastery.

2. Ibid.

The Trappists moved to a more secluded location near Holland, Manitoba, in 1975, and the property was sold to Genstar Corporation, a Canadian land development company. Local residents set out to preserve the site's historical and cultural character, but tragedy struck in 1983 when vandals lit a fire which gutted the vacant chapel[1].

In 1988, the Province of Manitoba designated the guest house as a heritage site and the guest house was partially renovate. The St. Norbert Arts Centre was incorporated in 1991 and underwent an extensive renovation between January and July of 1995[2].



Figure 45. The St. Norbert Art Centre entrance from outdoor garden.

1. "Monastery History." St. Norbert Arts Centre. https://www.snac.mb.ca/monastery.
2. Ibid.

The site is shown in Figure 46 with nearby amenities, including the St. Norbert farmers market, Winnipeg's largest open space market, and the St. Norbert walk-in clinic. Due to its suburban location, the Trappist Monastery is best accessed by car. Pedestrians have to walk more than 20 minutes to get to the closest bus stop that goes to downtown Winnipeg from the *Pardis Centre*.

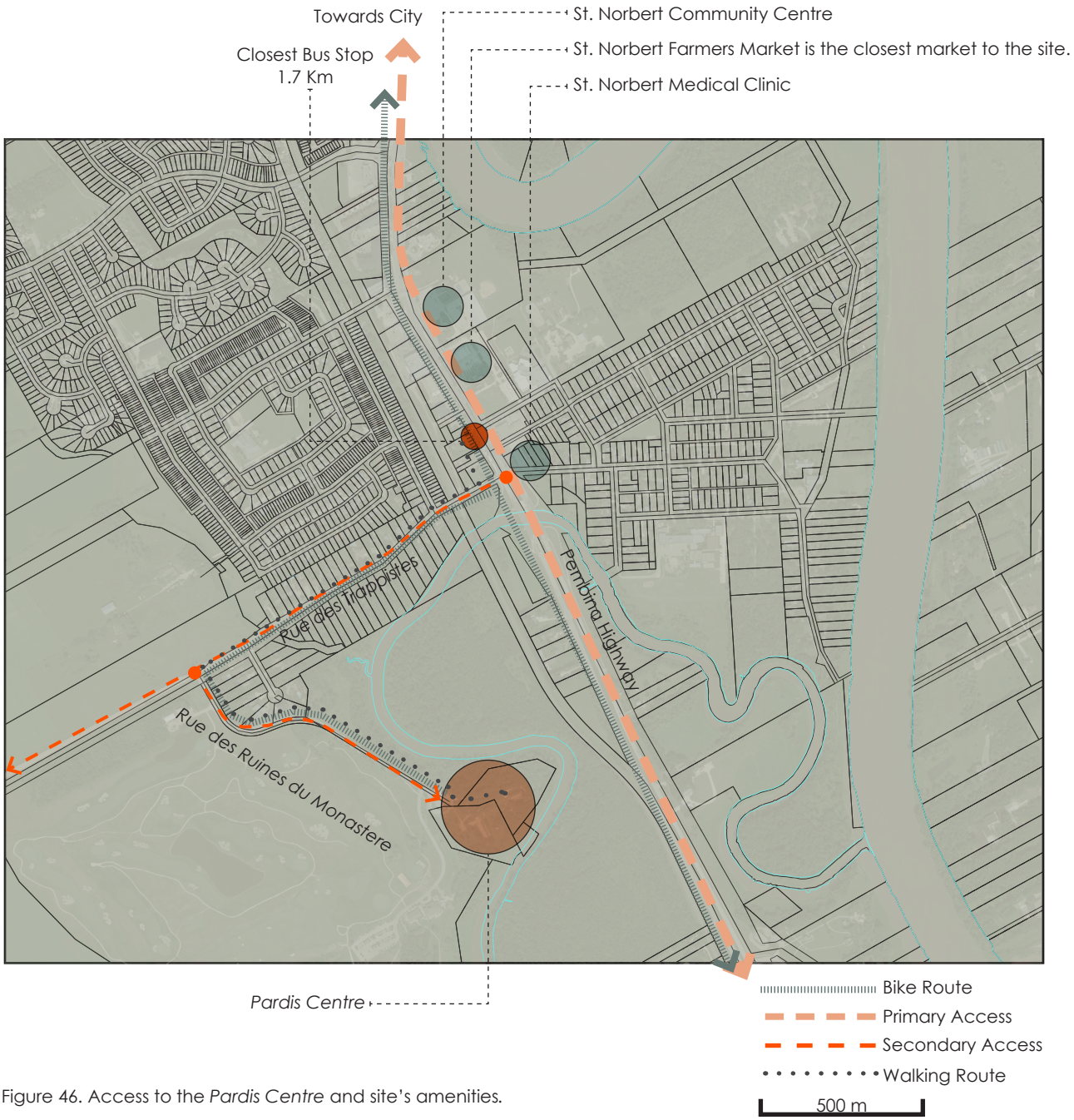


Figure 46. Access to the *Pardis Centre* and site's amenities.

Figure 47 illustrates the predominant wind directions and the sun path at the site. Due to the building's location, this site generally has a low level of noise due to the dense amount of trees between the highway and the building. Trees also block prevailing winds from the south and northwest of the site. According to the City of Winnipeg study, The prevailing wind direction is primarily from the south and secondarily from the north and northwest in the winter and spring months[1]. So, adding evergreen trees to the landscape on the north side of the building works as a natural shield against the severe cold wind during the winter.

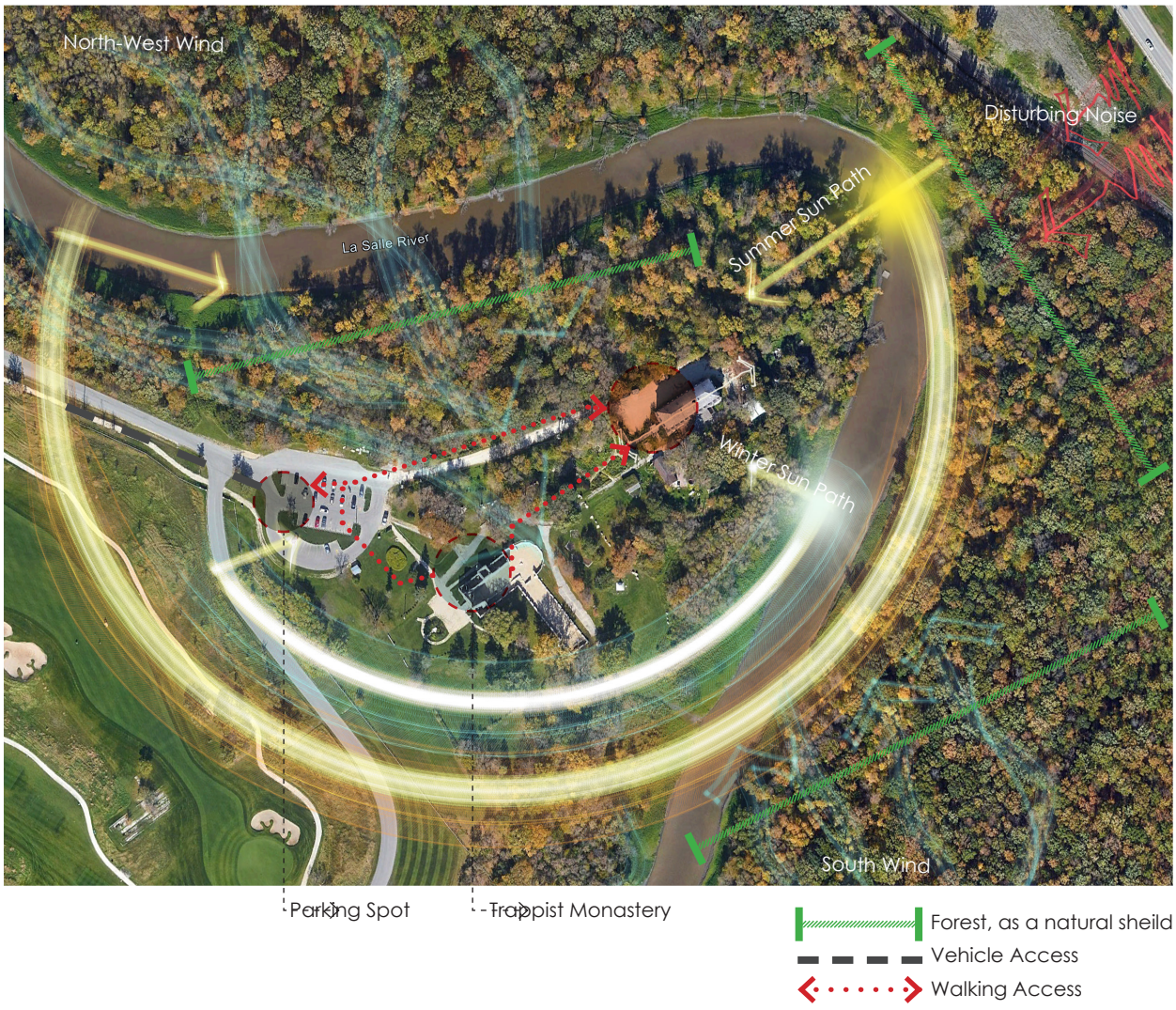


Figure 47. Site analysis.

1. "Section 6 - Environment Act License Proposal and Environmental Impact Statement." City of Winnipeg. Accessed January 29, 2023. https://www.gov.mb.ca/sd/eal/registries/5452disraeli/section_6.pdf.



Figure 48. Change of seasons in the site.

The St. Norbert Art Centre (SNAC) building is built on a wooden structure supported by a stone foundation. This is a three-story building with a basement and an attic level that is only accessible through the main staircase in the building.

As a heritage building, SNAC's exterior contributes to its context. Thus, the exterior of the building should not be changed in a way that overshadows the existing building. This is where interior design plays a crucial role in revitalizing the building. The next pages contain images of the building's interior.

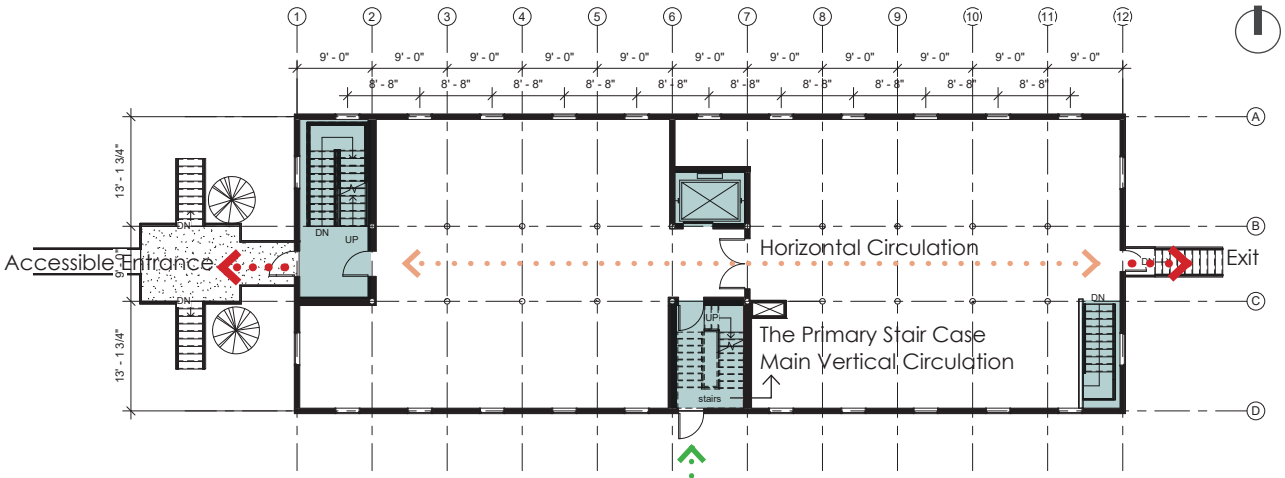


Figure 49. First Floor Plan of the SNAC.



Figure 50. Longitude Section of the SNAC.



Figure 51. Window on the Third floor.



Figure 52. Existing elevator.



Figure 53. The exit door on the east side of the building.

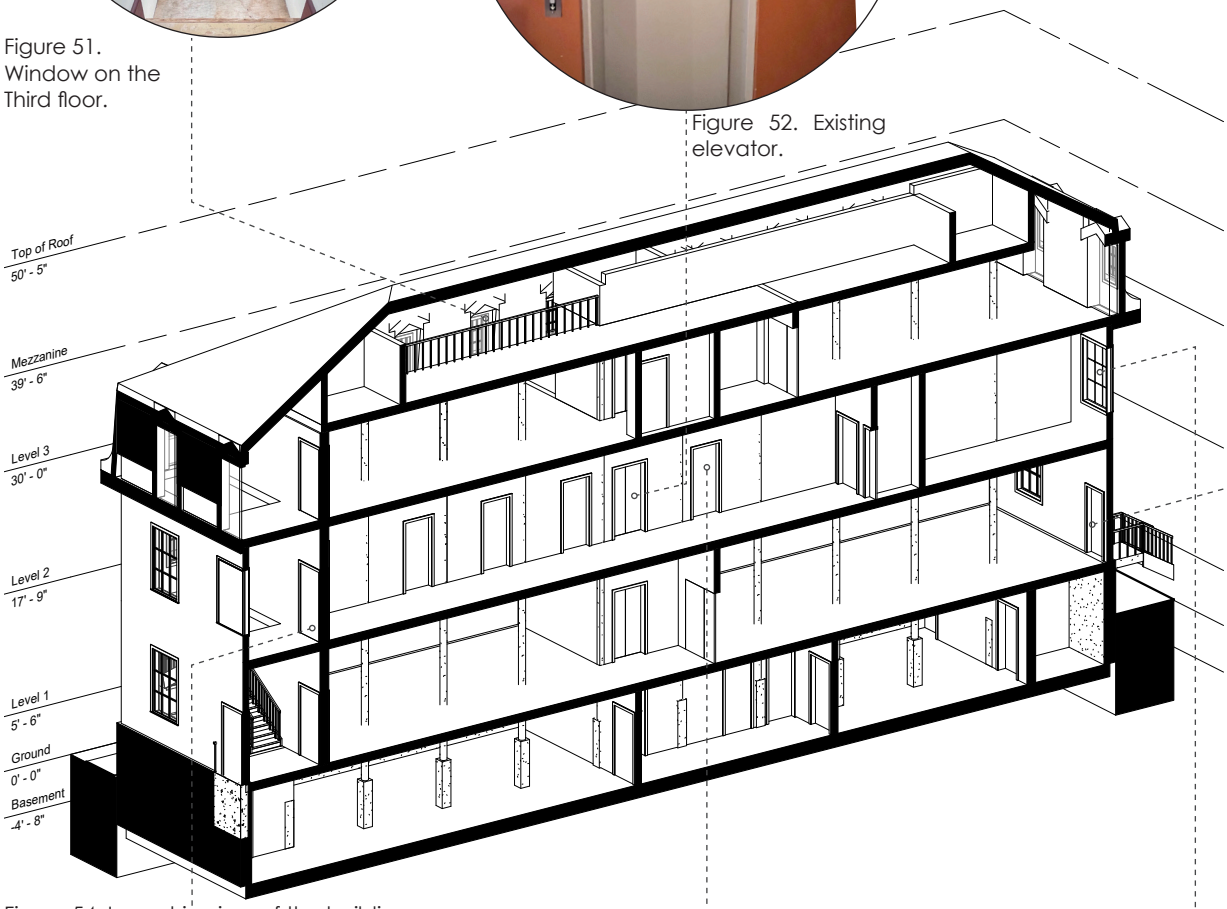


Figure 54. Isometric view of the building.



Figure 55. The door to the stairwell.



Figure 56. A door to the room.



Figure 57. Tall windows frame the exterior landscape.



Figure 58. The existing entrance into the building.



Figure 59. The main staircase in the building. Looking down to the first floor.



Figure 60. The corridor on the second floor.



Figure 61. Inside the existing store on the second floor.

A summer garden for planting medical herbs is located outside the building (Figure 62). There is also a small greenhouse in front of the summer garden, but it is in poor condition (Figure 63). Next to the greenhouse lies an open space designated for meditation and contemplation (Figure 64). From the time the guesthouse was built over 100 years ago, farming and contemplation were the main activities on this site. Gardens and meditation spaces are also part of the *Pardis Centre's* design program.



Figure 62. The existing summer garden in front of the building.



Figure 63. Existing mediation garden.



Figure 64. The existing greenhouse.



Figure 65. A view from the accessible entrance to the outdoor garden and the Trappist Monastery in the background.

Site and building opportunities:

- Located in a natural environment, this site is surrounded by trees and a river. Making a connection between the interior environment and nature on the exterior of the building is a biophilic design opportunity.
- The building was originally designed as a guest house intended for farming and meditation, and it complies with the functionality of the *Pardis Centre*.
- The existing gardens on this site make it easier to locate and design the new outdoor gardens in the *Pardis Centre*.

Site and building constraints:

- Due to its location outside of the city, the site is not easily accessible by bus.
- This site contains two heritage buildings and the new project should follow the rules and regulations for designing on heritage sites, including avoiding exterior changes. So, there should not be any changes to the windows' location and proportions.
- The building is an old structure and designing for accessibility is a challenge in such buildings.



4.3
Program Requirements

This section discusses the key considerations that have contributed to the design of the *Pardis Centre*. The first part is the user profile which identifies the primary, secondary, and tertiary users of this project and outlines their needs. Secondly, there are the functional requirements, which summarize the required spaces, fixtures, furniture, and equipment, as well as the desired atmosphere. A series of visual representations are also used to illustrate the relationship between the key spaces in the *Pardis Centre* by the zoning studies.

User Profiles:

- People living with MS are the primary users of This project. *Pardis Center* caters to the needs of MS patients, allowing them to spend time there in spaces that are tailored to their needs. There are three different types of spaces to accommodate the primary users in the centre. The first type of space is designed for visitors who intend to spend a brief time at the *Pardis*. Cafe areas and gardens provide public spaces where primary users can socialize and release tensions by spending time with others. It is also possible for visitors to receive treatments and consult about their situation while they spend time at the *Pardis Centre*. Short-term visits are similar to the typology of Maggie's Centres discussed in the precedence analysis chapter. There are two other types of accommodation available for users who wish to stay overnight and use the center's facilities. Primary users are provided with rooms with a capacity of two or four. MS patients can stay in the room alone or with their companion. All other facilities at the *Pardis Centre*, including the cafe, garden, library, and consult rooms are available to primary users.

- Companions of MS patients are considered secondary users of this project. The *Pardis Centre* offers secondary users the opportunity to stay close to nature, learn from others, and share their experiences. The gardens and socializing spaces are available to secondary users as well. *Pardis Centre* provides the opportunity to educate MS companions about the needs of a person with MS by spending time with the primary users in the centre. Secondary users can choose to stay with the MS patients during their treatment or spend their time in other spaces of the *Pardis Centre*.

- The tertiary users include all the staff and caregivers who work at the *Pardis Centre*. The tertiary users come to the centre daily and spend time in the facilities for services and support to the primary and secondary users such as consultation rooms, physiotherapy rooms, and massage rooms. Tertiary users require a parking lot, lockers, and private rooms.

Users and Quantity	Activities	Needs	Access Zone
(Primary Users) MS Patients 1-50	Relaxing Sensory Experience Learning Getting treatments Socializing Gardening	Accessible Design Flexible Spaces Informal Furniture Access to Nature Agency over the Space Stress Relief	Accommodation Supportive Restoration Social Service
(Secondary Users) MS Patients Companion 1-25	Managing the Museum Guiding Guest Giving Information	Seating Desk File Storage Washroom	Accommodation Supportive Restoration Social Service
(Tertiary Users) Staff Guest Lecturers Cleaning Staff 10-20	Cleaning Spaces Moving Objects Delivering Stuff	Storage Resting Area Seating Desk File Storage	Social Service

Figure 66 illustrates the major zones and their subcategory spaces in the *Pardis Centre*. The social zone serves as the heart of the project and arranges other zones around it. The restoration zone includes three types of gardens, open garden, Semi-open, and enclosed garden. The gardens are accessible directly from the accommodation zone or after passing through the social zone.

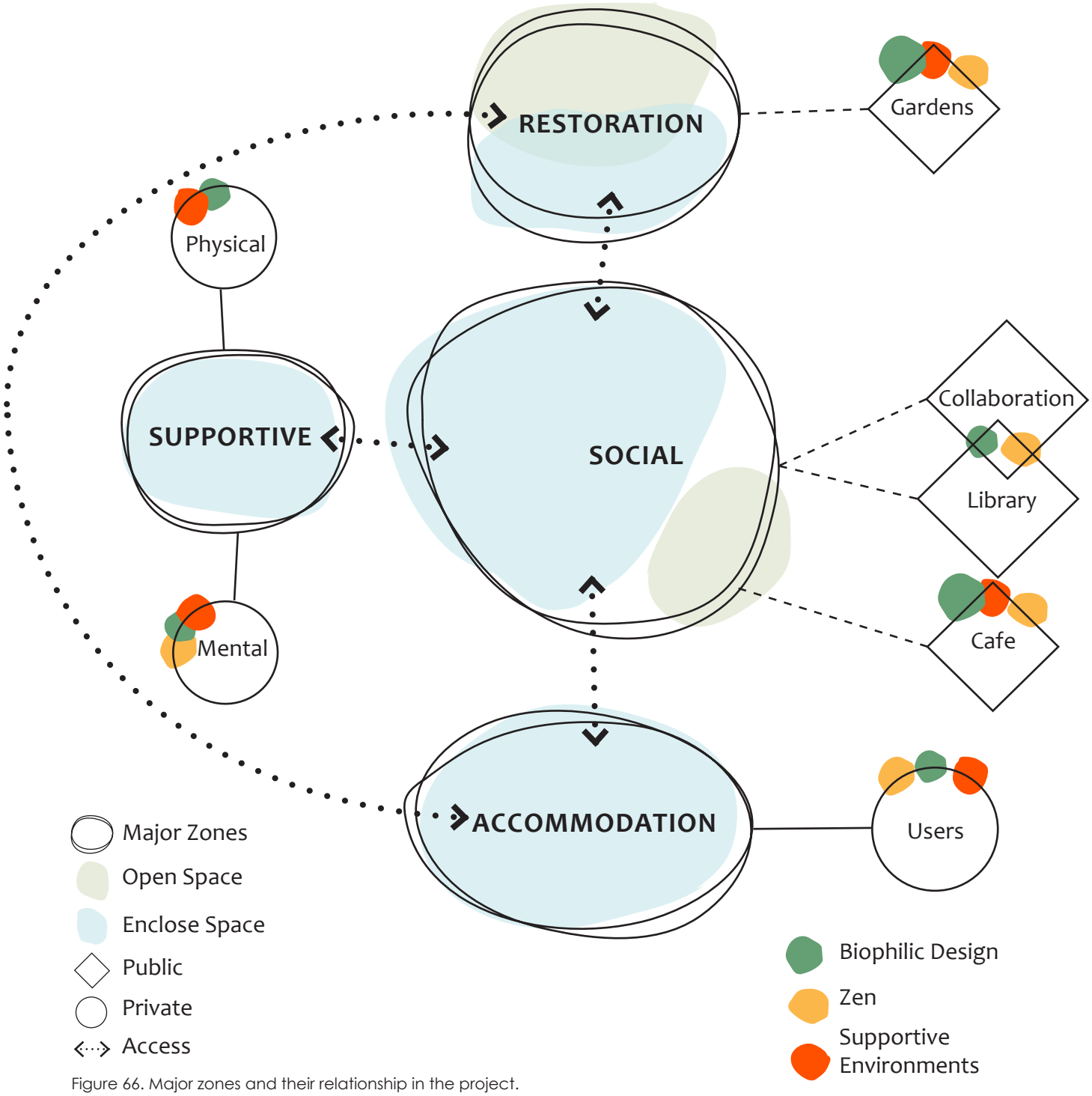
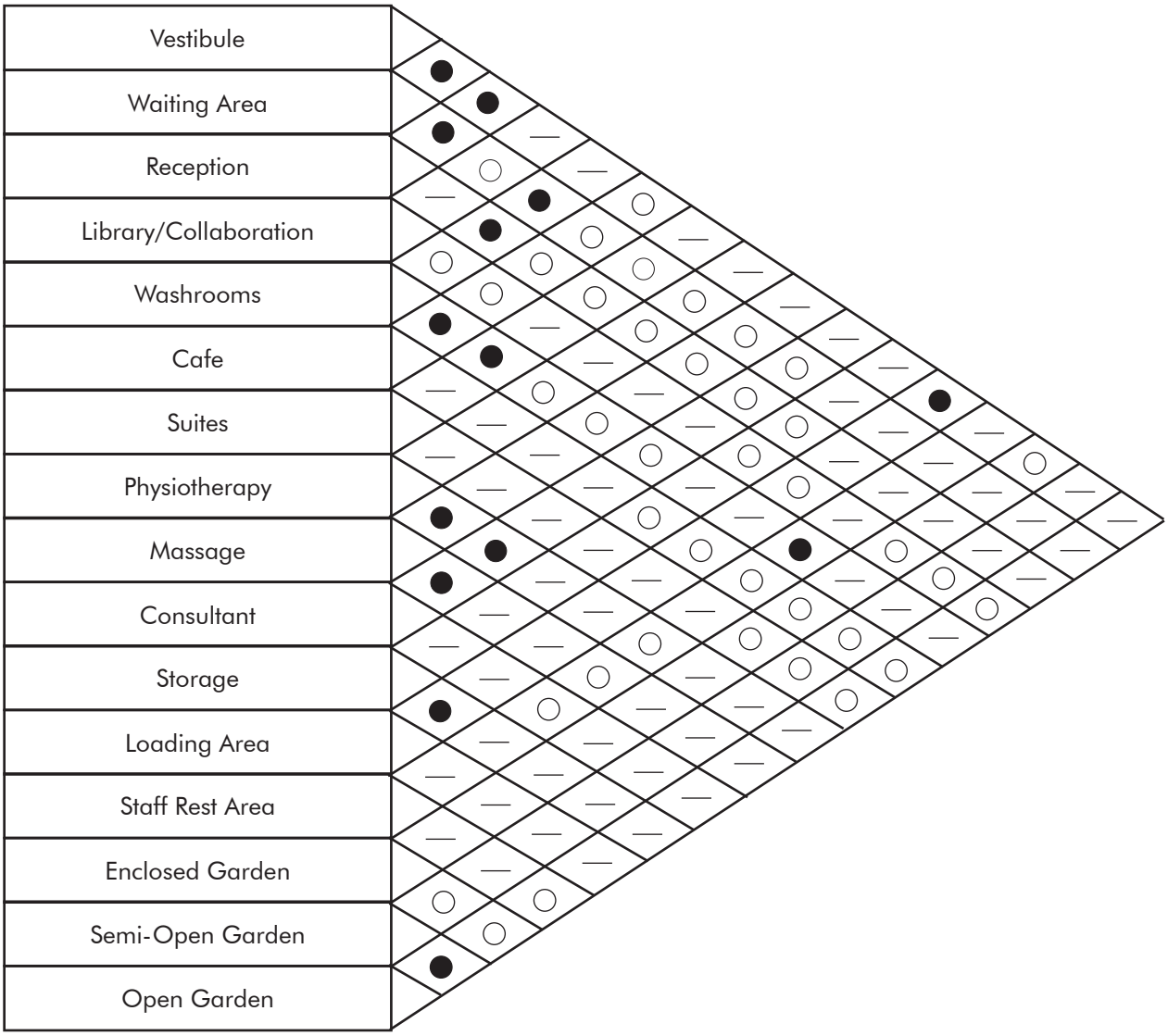


Figure 66. Major zones and their relationship in the project.

Furniture, Fixtures, and Equipment				
Space	Zone	Equipment	Approx Footage	Desired Atmosphere
Entrance/Vestibule Waiting Area/Lobby	Service	Signage Informal Furniture Lounge Seating Coat Rack	75 m^2	Accessible,Bright. Welcoming, Positive Distraction, Biophilic
1-2 Occupants Suite Quantity: 5	Accommodation	Informal Seating Bed Storage Acoustic Materials Universal Toilet Room (UTR)	100-125 m^2	Accessible, Quiet, Flexible Design, Biophilic, Bright, View to outside, Relaxing
1-2 Occupants Wheelchair Accessible Suite Quantity: 9	Accommodation	Informal Seating Bed Storage Kitchenette Acoustic Materials Universal Toilet Room (UTR)	150 m^2	Wheelchair Accessible Washroom, Quiet, Flexible Design, Biophilic, Bright, View to outside, Relaxing
Universal Toilet Room (UTR)	Service	Toilets Sinks Soap Dispensers Hand dryer	20 m^2	Accessible, Clean, Bright
Cafe	Social	Kitchen Stuff Dining Tables Lounge Seating Pendant Lights	50 m^2	Accessible, Positive, Flexible Design, Biophilic, Exposed Structure, View to outside, View to other spaces
Library and Collaboration	Social	Display Shelving Work Tables Lounge Furniture Desk	50-75 m^2	Accessible, Positive, Flexible Design, Biophilic, View to outside, Bright
Massage and Physiotherapy	Supportive	Acoustic Materials Bed Pendant Lightings Informal Seating	50 m^2	Accessible, Positive distraction, Biophilic
Consultant Room	Supportive	Lounge Seating-Screen File Storage-Printer	25 m^2	Accessible, Positive distraction, Biophilic
Enclosed Garden	Social	Fixed Seating, Gardening Facilities	350-400 m^2	Accessible, Biophilic, Natural light
Semi-Open Garden	Social	Fixed Seating, Gardening Facilities	350-400 m^2	Accessible, Biophilic, Natural light
Open Garden	Social	Fixed Seating, Gardening Facilities	350-400 m^2	Accessible, Biophilic, Natural light

Spatial Adjacencies



● Primary Adjacency

○ Secondary Adjacency

— Undesired Adjacency

Figure 67. This chart shows the spaces adjacencies in the project.

Bubble Diagram of Spaces Adjacency

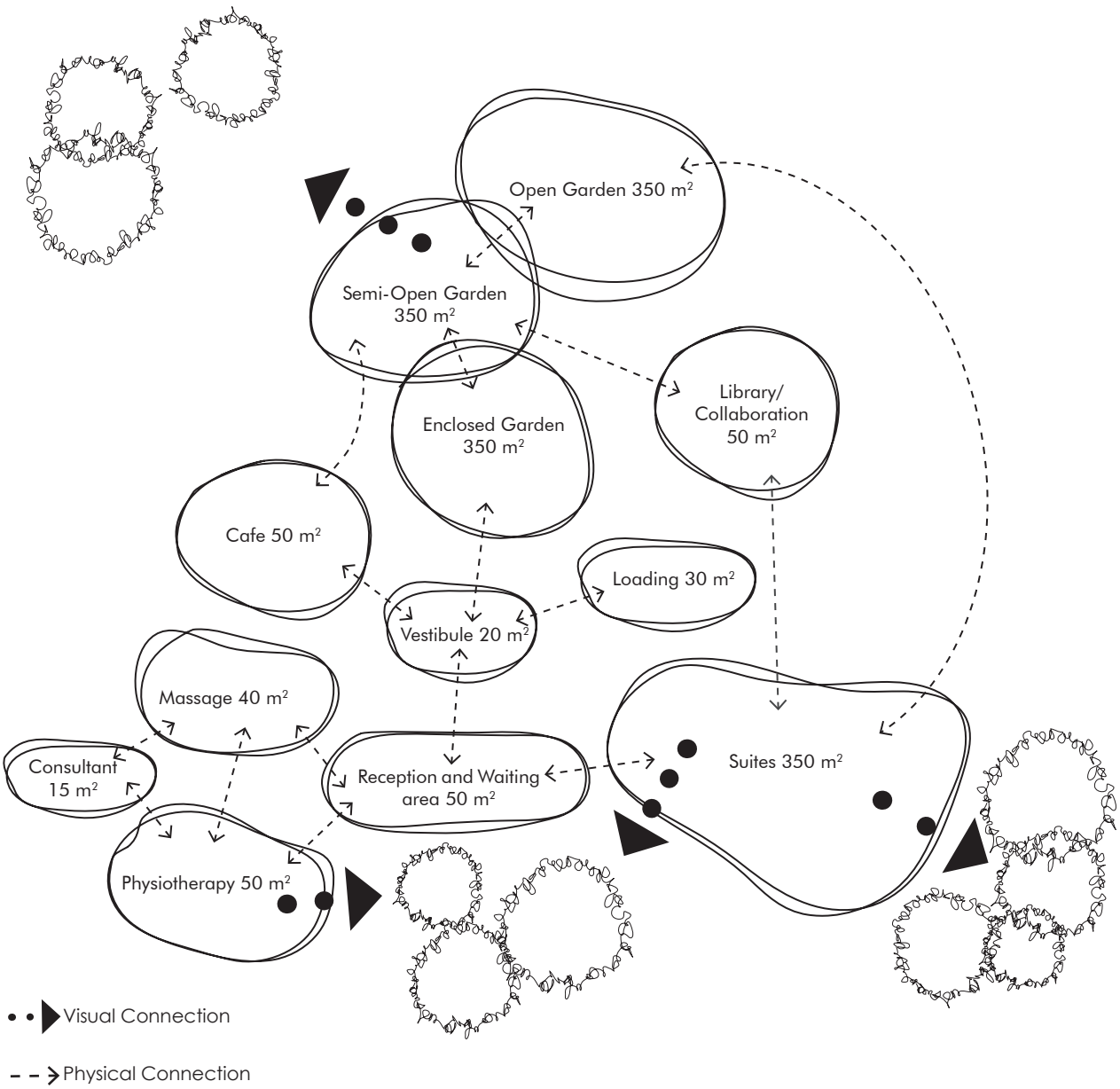


Figure 68. Bubble diagram of the spaces in the *Pardis Centre*.

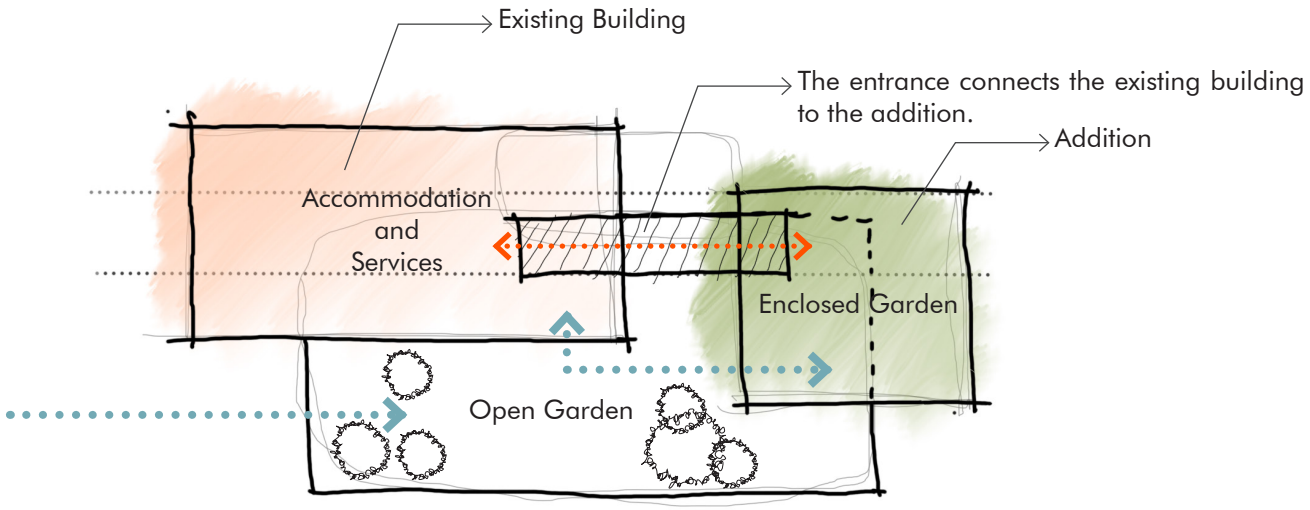


Figure 69. The horizontal adjacency of existing building and the addition.

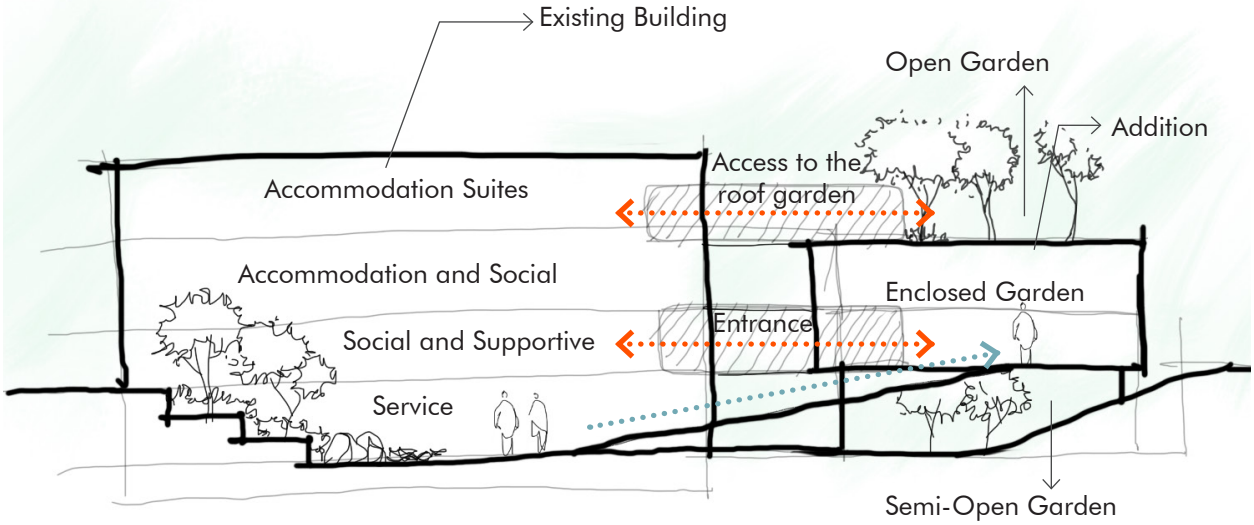


Figure 70. The vertical adjacency of spaces in the existing building and the addition.

4.4
Design Concepts and Process

The design proposed in this section is an extension and summary of the literary investigation and analysis and the precedent analysis presented in Chapters two and three. As a result of the site analysis in this chapter, the design program was prepared and the biophilic zone as the gardens complex was identified as the additional structure to the *Pardis Centre*. Using the garden zone, the *Pardis Centre* emphasizes the connection between nature and the built environment. The garden complex is a transitional space between the existing building on the site and the surrounding nature (Figure 71).

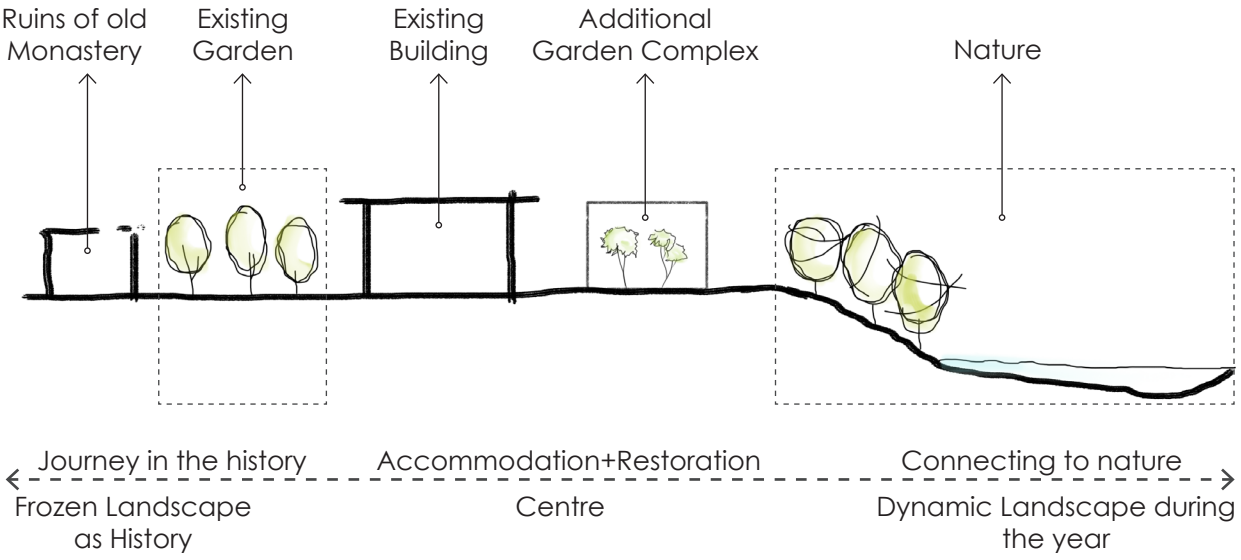
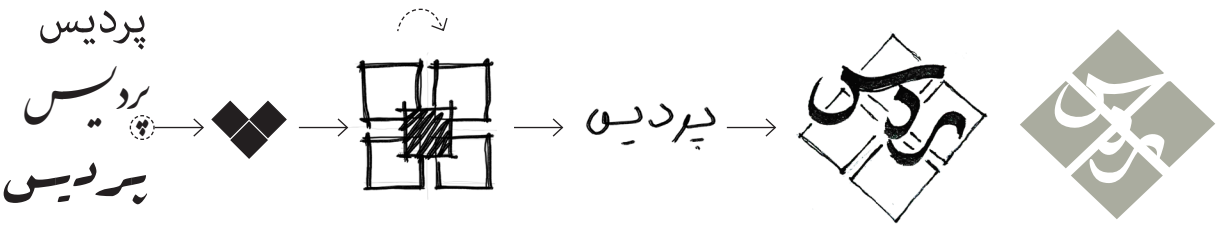


Figure 71. The Garden complex bridges nature to the built environment by creating a micro-climate in a building.

Beside the garden complex as the new structure on the site, there is an existing open garden between the existing building and the ruins of the old monastery that has been kept in this project to connect to the history and background of this site. The zoning arrangement of *Pardis Centre* is a personal interpretation of the Persian garden design discussed in Chapter 2. In addition to the zoning arrangement, the logo of the *Pardis Centre* was inspired by the concept of *Chahar-Bagh* or four gardens which is a key concept of Persian Gardens (Figures 72).



Word *Pardis* in three different fonts in Persian calligraphy

Dots in the letter P

Chahar-Bagh or Four Gardens, a major concept in Persian Gardens or *Pardis*

The calligraphy of the word *Pardis* with dots representing the *Chahar-Bagh*.

Figure 72. Logo design process for the *Pardis Centre*.

Pardis Centre was designed with the idea of revisiting the traditional Persian Garden concept of four gardens with a modern twist (Figure 73). As a result, the garden complex is made of four layers of gardens arranged atop one another in a vertical structure to form a whole garden of different characteristics.

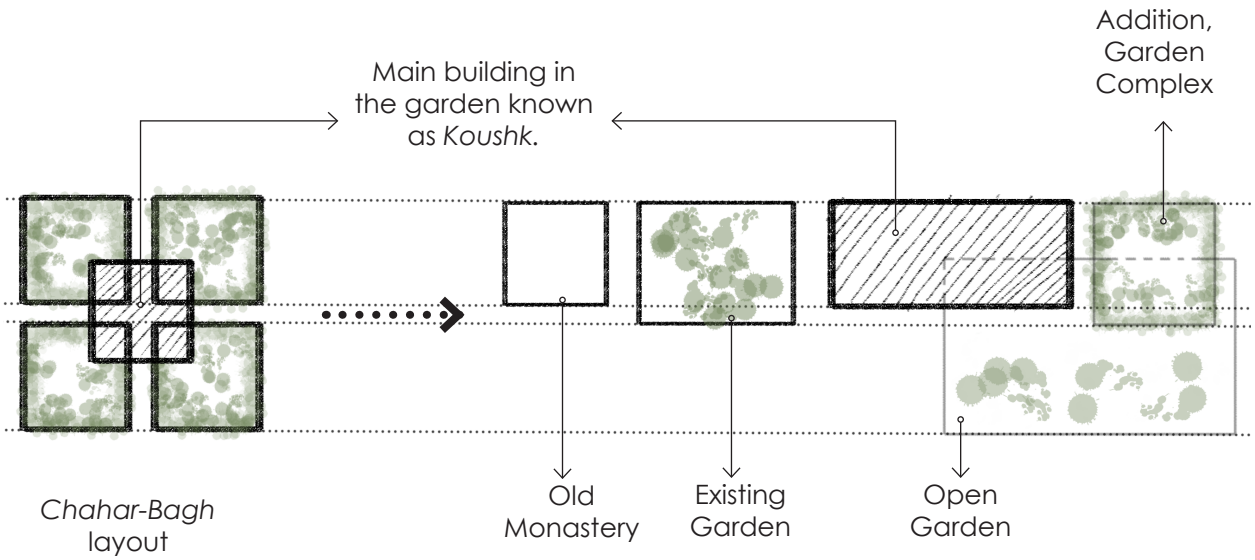


Figure 73. Reconstruction of *Chahar-Bagh* concept in the *Pardis Centre* design.

As the seasons change, both the open gardens on the ground floor and the rooftop are changing with them. Alternatively, the enclosed garden has a pleasant natural beauty which stays green throughout the year. This vertical garden concept is similar to the main idea of design for the Maggie's Centre in Leeds to make floating gardens from the ground up. The distribution of gardens within this project is depicted in Figure 74.

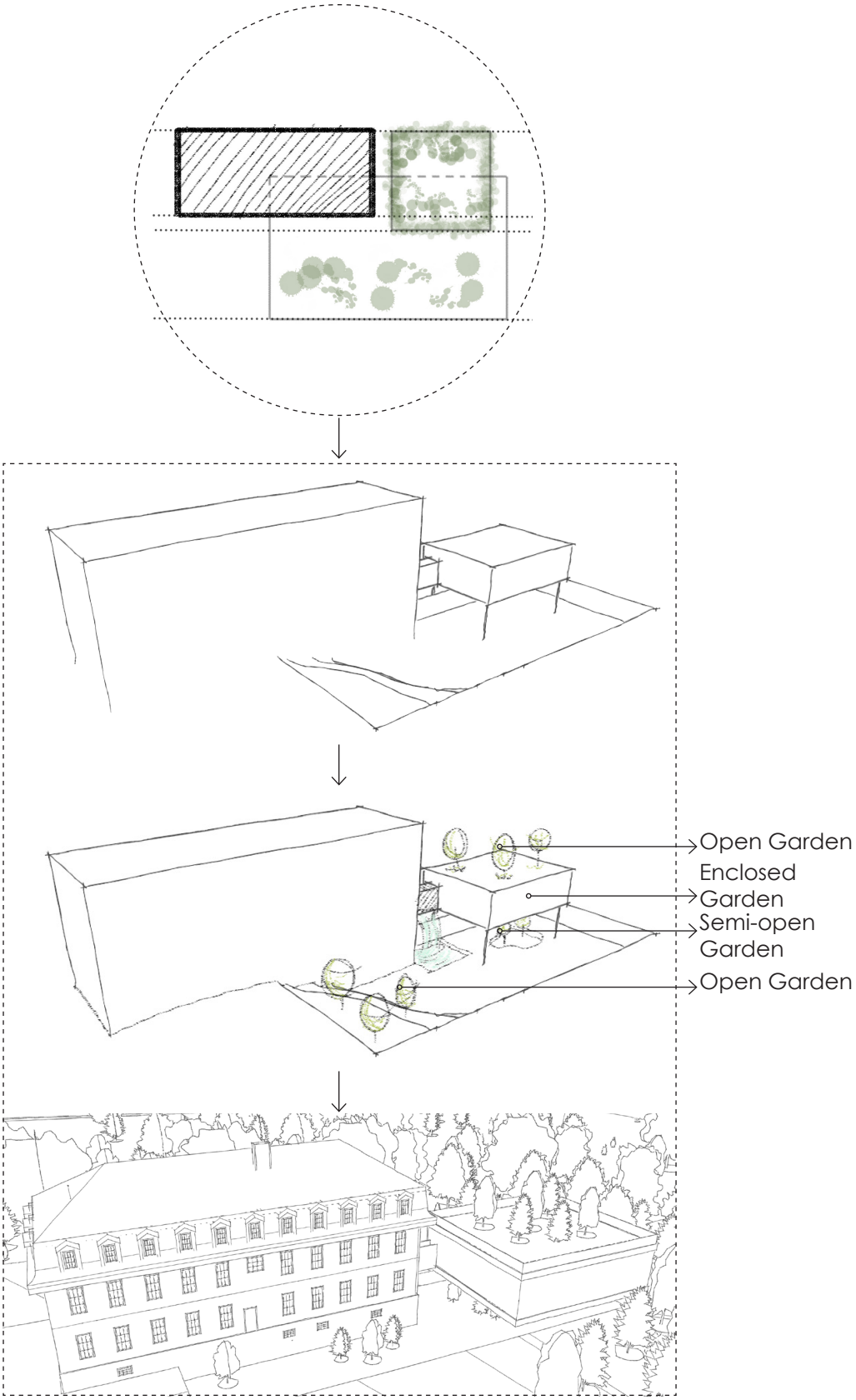


Figure 74. The distribution of gardens in the project.

4.5
Design Overview

Having defined the preliminary design, the layout, and the adjacency of spaces in the previous sections of this document, the design process of *Pardis Centre* focused on the theories explored in Chapter 2 including the biophilic design theory, the supportive environment design theory, and Zen aesthetic principles to reach the objectives mentioned in the first chapter of this practicum project. The following section focuses five major areas in the project including the entrance, cafe and library, shared kitchen, wheelchair-accessible suite, and garden complex as the new addition to the site, to explain the design strategies used in these spaces informed by the previously noted key theories and precedents.

As part of the adaptive reuse approach, the exterior of the existing building was preserved as an example of architectural heritage and the interior layout was altered instead. A new structure on the site follows an alternative design language from the existing structure to distinguish it from the heritage building on the site. That being said, the concept of transitioning from the old to the new building is achieved through the bridge that unites and separates two pieces of architecture simultaneously. The bridge is the entrance to the *Pardis Centre* that welcomes visitors and allows them to choose their next stop at the site (Figure 75).

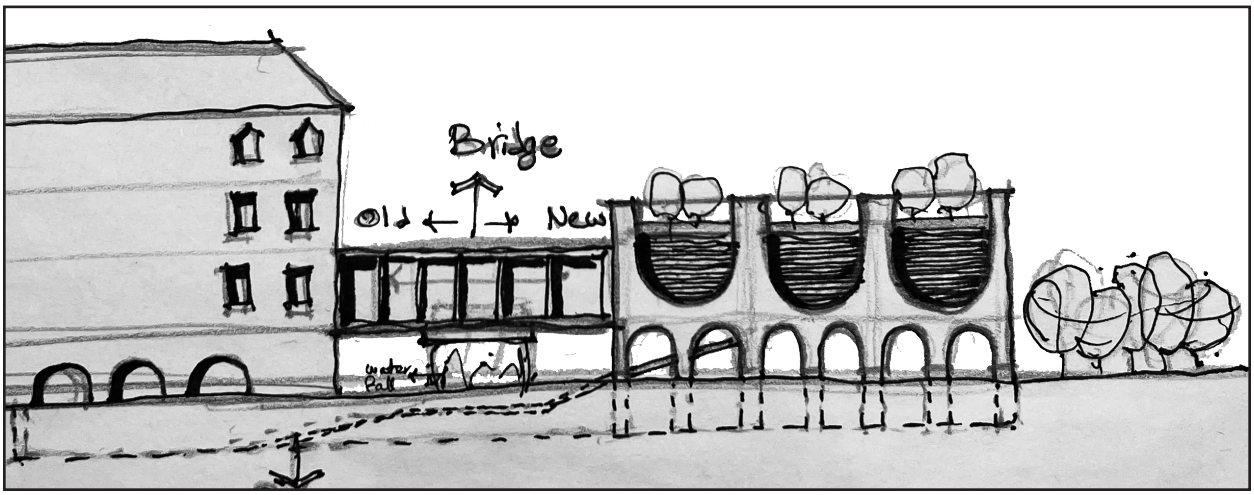


Figure 75. The preliminary sketch of the project emphasizes the importance of entrance space that serves as the threshold and transition between the existing and additional buildings.

The process of choosing the destination for users occurs at the entrance of the building. In addition to creating a visual connection to nature around the site through the transparent material on both sides of the entrance, the entrance space creates a physical connection between the two buildings. The entrance is the first intentional pause provided for users during their visit to the *Pardis Centre*, and it serves as a positive distraction in line with the theory of supportive environment design. As stated in the literary analysis chapter, the types of positive distraction in the interior environment divide into two categories that intentionally distract the patient's mind from the anxious feeling of visiting a healthcare facility. One type is providing a static source of distraction like hanging a framed picture or drawing on the wall in the space. Alternatively, the positive distraction can be dynamic like the sound of music in the space. In the entrance space, the focus was to enhance the visual connection between the interior and exterior for visitors by providing transparent material to frame the dynamic Biophilia outside the building.

A neutral plaster finish is used inside the entrance to draw attention to the full-height glazing walls on both the north and south walls of the space that frame the exterior environment. Visitors' eyes travel between the existing building and the garden complex due to the repeated lighting fixtures on the ceiling that guides users between the two buildings. A large frame of riverbank and trees in the south of the building ties use of the biophilic design theory with the positive distraction as a principle of the supportive environment design theory to welcome users to the entrance door located on the north side of the building as depicted in figure 76.



Figure 76. The entrance space serves as the first moment of pause for visitors and bridges the old building to the new additional garden complex.

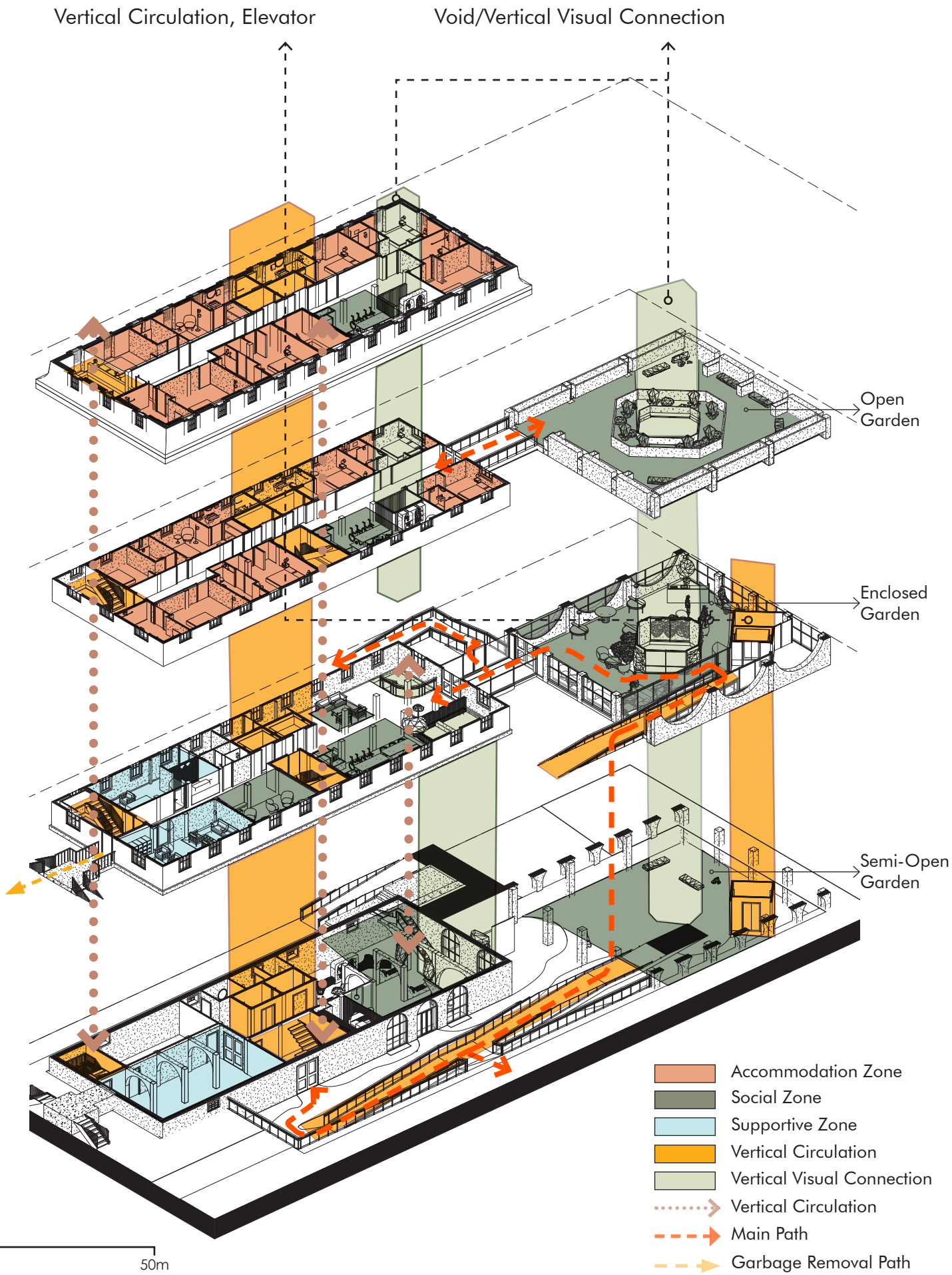


Figure 77. The exploded axonometric diagram illustrates the vertical and horizontal circulations throughout the *Pardis Centre* to travel between different zones.

As illustrated in figure 77, users have several options for circulating inside the *Pardis Centre*. Vertical circulation is provided with stairwells and elevators in the building. Moreover, the ramp plays a crucial role in circulation in the project. The ramp provides horizontal circulation as well as a vertical connection from the exterior underground level into the enclosed garden complex. Like the entrance, the ramp also conveys the concept of transition between the different environments in the *Pardis Centre*. Users enjoy the dynamic view of surrounding nature while using the ramp and experience the gradual change of interior and exterior atmosphere while coming up and down from the ramp. Unlike the entrance, as the other threshold and transition space in the project, there is no tangible physical border between the exterior and the interior environment while exploring the project by ramp (Figures 78-79).



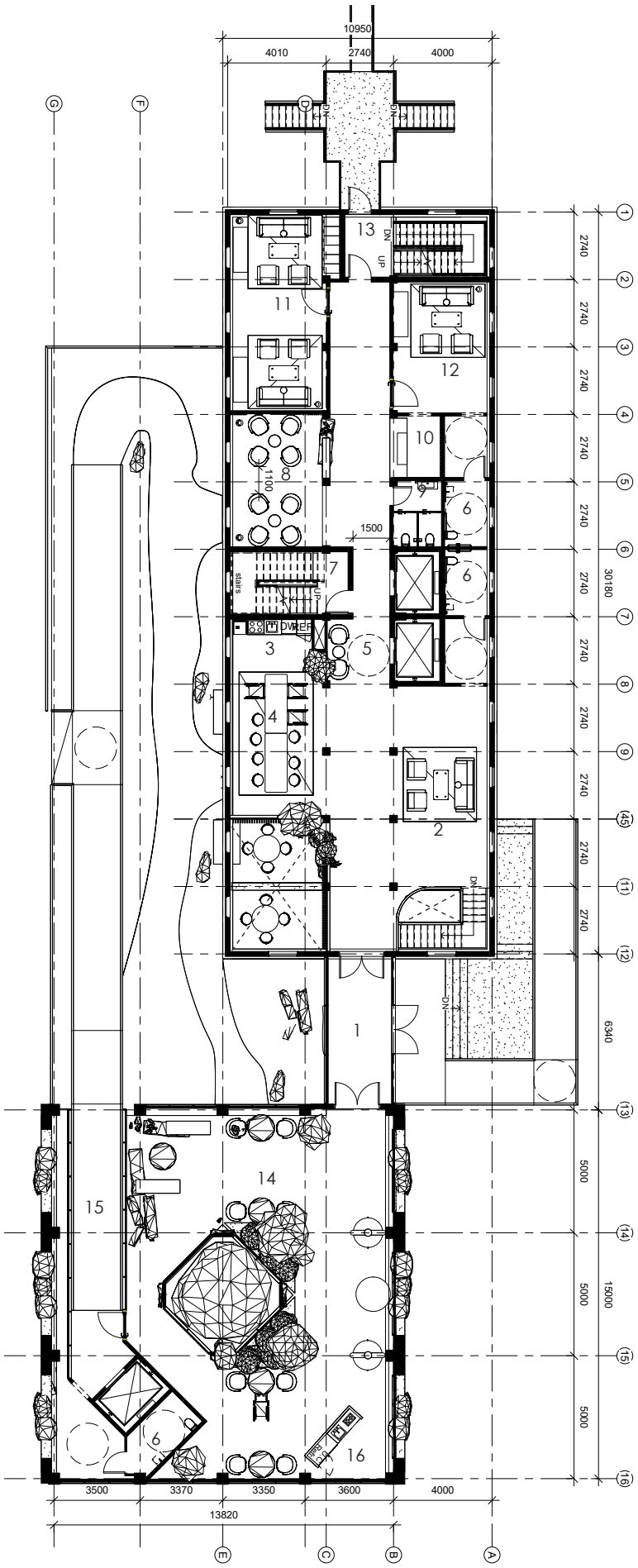
Figure 78. Going up from the ramp to enter the enclosed garden from the basement level of the project.

As discussed in the site analysis section of this chapter, the site of *Pardis Centre* benefits from the ample sunlight from the south. Besides, there are major winds from the south and north of the project that makes the cold days of winter feel more severe. However, the two-layer facade on the south of the garden complex provides shelter against the southern winds yet allows direct sunlight to penetrate inside the space for warming the interior of the garden (Figure 79). During the summer days, on the other hand, the sun locates at a higher elevation and the two-layer facade stops the direct sunlight from coming into the interior to keep the garden's temperature pleasant during the year. Providing different layers of the corridor is similar to the *Sora No Mori* project design approach to cope with the site climate explored in the precedent chapter.



Figure 79. Going down from the ramp provides diverse frames of the interior and exterior environments.

First Floor



1. Entrance
2. Lounge
3. Kitchen
4. Dining
5. Elevator Lobby
6. UTR
7. Stairwell A
8. Waiting Area
9. Gender Neutral Washroom
10. Reception
11. Consultant Room
12. Staff Room
13. Stairwell B
14. Enclosed Garden
15. Ramp
16. Bar

Figure 80. First Floor Plan. N

0 1m 5m 10m

In the *Pardis Centre*, the social zone connects not only users in the centre but also all other zones in the project. Socializing zone is the only space that is available on every floor of the project. To travel between zones, users must pass through one social zone (Figure 77). There are several social and collaboration spots including the lounge seating, kitchen and waiting area on the first level of the facility for different groups of people (Figure 80).

To the left of the entrance, there is the enclosed garden that is open to everyone as the largest social zone in the project. Patients and staff can sit in an informal seating that is surrounded by greenery and plants and discuss a patient's condition. On the right side of the entrance, the existing building also has lounge seating for informal gatherings among patients and sharing of experiences. In the existing building, however, the open kitchen located on all levels is the main socializing spot similar to the Oldham Maggie's Centre explored in Chapter 3.

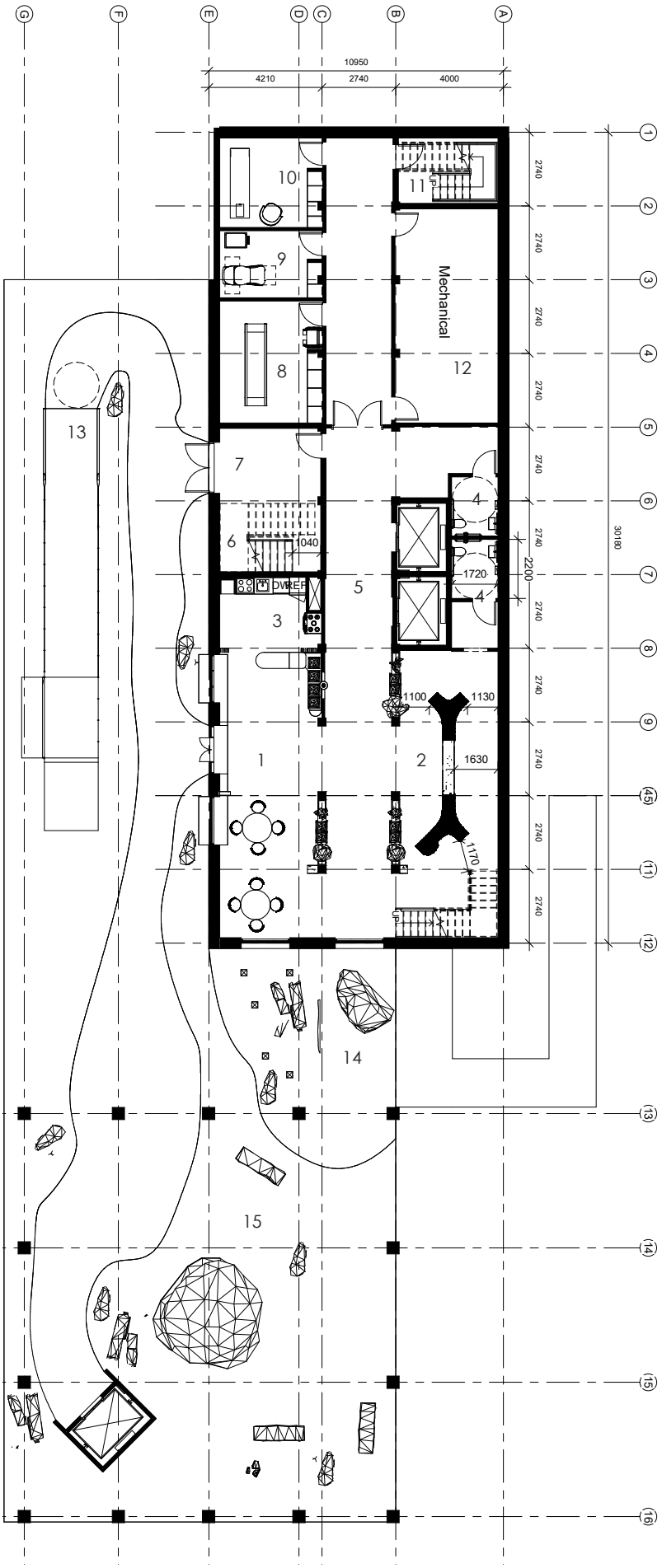
During the day, cooking is a common activity that brings people together. In the *Pardis Centre*, users have access to three different kitchens where they can cook their meals using vegetables they planted in the open garden during the summer, or exchange recipes and learn them from others. All three kitchens on the first, second, and third floors are visually connected through the void space beside the kitchen. Like the process of the Japanese tea ceremony, a multi-sensory experience occurs in the kitchens when someone smells the food cooking, tastes it, and starts a conversation with others about it as they enjoy the view.

On the first floor, the kitchen is dedicated to visitors who do not plan to stay overnight in the *Pardis Centre*. Aside from connecting with nature, daily visitors benefit from the social and collaboration spaces and release their daily tensions through the amenities provided in the *Pardis Centre*. In this project, the kitchen is the main collaboration space with a focus on inclusive design. There are adjustable pieces of furniture in the kitchen, as shown in figure 81, so different groups of users can use the kitchen's cooking and dining facilities at the same time. The adjustable dining table, for instance, provides a large counter for people in wheelchairs and others who are sitting in the same spot without being separated.



Figure 81. The kitchen area in the first floor of the *Pardis Centre* with adjustable pieces furniture.

Basement Floor



1. Cafe
2. Library and Collaboration
3. Kitchen
4. UTR
5. Elevator Lobby
6. Stairwell A
7. Vestibule
8. Physiotherapy
9. Nursery
10. Massage
11. Stairwell B
12. Mechanical Room
13. Ramp
14. Pond
15. Dry Garden

Figure 82. Basement Floor Plan.

N

0 1m 5m 10m

There are two separate zones on the basement floor of this project. An enclosed space houses massage room, physiotherapy, and a nursing station in the supportive zone. The public cafe is a part of the social zone that is located on the basement level as well. The cafe is open to both daily visitors and primary users who spend the night at the facility for meals or drinks. Unlike the kitchens on other floors, the public cafe's kitchen is not accessible to visitors. Next to the cafe is a library and collaboration area, with modular seating that can be added or removed according to users' needs. The cafe and library both function together by sharing seating spots in both spaces. A curvilinear shape between the structural columns of the cafe and library is used to create a stronger visual connection between the two spaces, encouraging users to use both spaces (Figures 83-84).



Figure 83. View to the cafe and library.

As part of a sensory experience in the *Pardis Centre*, the void located at the entrance of the existing building provides a visual connection between the first floor and the cafe on the basement level. The sound of people in the cafe leaks into the first floor's entrance and it makes visitors curious about the space below as a positive distraction and encourages them to explore the basement as well.



Figure 84. Curvilinear forms connects the structural columns and the void to make visual framings inside the space and prepare fixed seatings for the cafe.



Figure 85. View to the kitchen in the cafe.

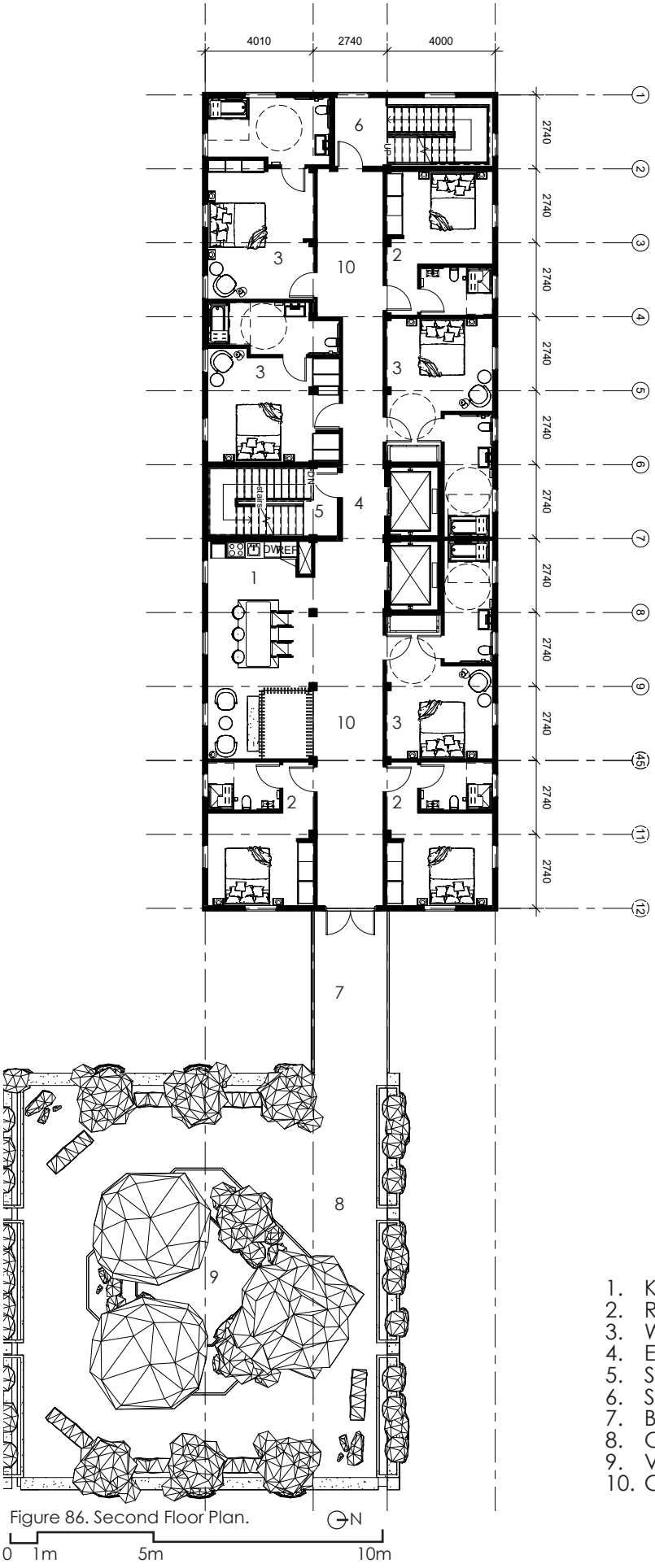


Figure 86. Second Floor Plan.

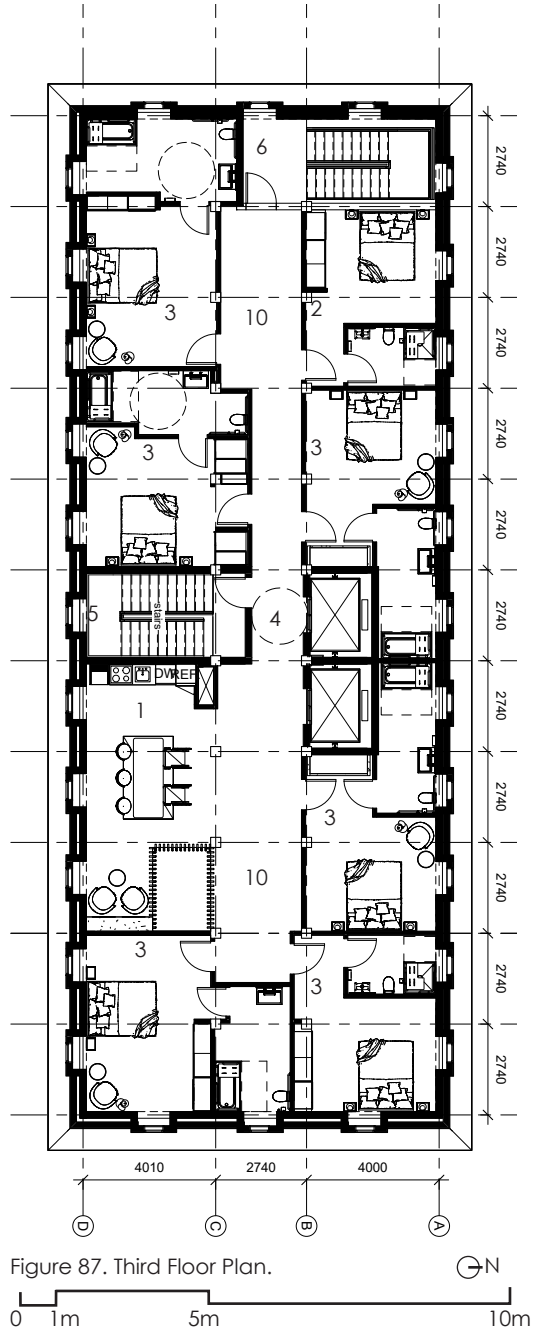


Figure 87. Third Floor Plan.

1. Kitchen
2. Regular Suite
3. Wheelchair Accessible Suite
4. Elevator Lobby
5. Stairwell A
6. Stairwell B
7. Bridge
8. Open Garden, Rooftop
9. Void, Open To Below
10. Corridor

The second and third floors are dedicated to users staying the night in the facility to complete their treatments and avoid travelling between their homes and the facility. There are seven suites on the second floor, three of which do not have wheelchair-accessible washrooms. These suites are suitable for people who do not require a wheelchair. A total of four larger suits are designed to meet the needs of people in wheelchairs. Wheelchair-accessible suites meet Manitoba's building code requirements for accessible washrooms and spaces.

Through the use of warm and neutral shades of finishing materials in the suites, the intention is to create a cozy, private space for users to enjoy their time alone or with a companion. As part of the sensory experience in the suites, each suite has openings in the room and the washrooms to the surrounding nature. During warmer days, the windows allow users to enjoy the fresh breeze touching their skin and hear the sound of trees in the wind, as well as look at the dynamic view of Biophilia.

Another multi-sensory experience for users in the suites is the possible smell of cooking food coming from the shared kitchen on the floor. Users are encouraged to spend time in shared kitchens as an opportunity for socializing as they prepare meals together. Nevertheless, every suite has its kitchenette for preparing coffee, tea, or warm food. As an indirect application of biophilic design, the curvilinear lines in the space tie the suites to other spaces such as the public cafe, library, and the enclosed garden complex in the *Pardis Centre* (Figures 88:90).



Figure 88. The wheelchair accessible suite.



Figure 89. The wheelchair accessible suite with the kitchenette.



Figure 90. The wheelchair accessible washroom with the view to the old monastery and surrounding nature.

Walking is a basic workout for everyone, especially for people living with MS to strengthen their muscles and improve their physical balance. For primary users, *Pardis Centre* offers alternative circulation paths for exploring the site and buildings. Although there are different levels in this project, all levels are accessible by foot or wheelchair, except for the third floor, which is completely devoted to the suites. The ramp in the open garden provides access to the first floor of the garden complex. The second floor of the existing building also has a connection to the gardens' rooftop using the bridge on top of the entrance, which provides visitors with a panoramic view of the surrounding landscape (Figure 91).



Figure 91. A view from the open garden in the rooftop.

The enclosed garden on the first floor of the additional building is the only place in the *Pardis Centre* that stays green during the year. The garden blends with nature during the summer due to the large openings around the building. With the change in seasons and during the winter, the contradictory environment inside the enclosed garden and outside makes this space appeal for users to relax by the indoor fireplace and plants. There is a void space in the centre of the garden complex and one evergreen tree penetrates from the ground level to the rooftop to enhance the visual connectivity from the ground to the rooftop (Figures 92-93).



Figure 92. Enclosed garden.



Figure 93. Enclosed garden with the void in the centre that ties all three levels of the garden complex.

To enhance the symbiosis relationship between the building and nature, the rainwater and melted snow collect from the garden's rooftop and use for watering the landscape plants as gray water. During the summer, gray water is also used to irrigate the pond and waterfall, enhancing the multi-sensory experience for users by providing a sense of tranquillity in the environment. Before seeing the water, visitors hear the waterfall's running water. Visitors are encouraged to follow the sound and locate its source near the entrance by following the sound. By doing so, visitors to the site are guided by the waterfall on their first visit. It is similar to the role of water in the traditional Persian gardens explored in Chapter 2.

Winnipeg is subject to flooding during the spring and summer due to the rivers' overload. *Pardis Centre* is located near the river and to protect the building from the flood, the additional building is designed to cope with the flood by rising up from the ground (Figure 94). The empty space under the building is designated as the dried garden. Whenever it floods, the dried garden becomes a large pond under the garden complex, making the structure look like a floating garden.



Figure 94. View to the pond and the dry garden as part of the garden complex.

4.6
Summary and Conclusion

During this chapter, the theories explored in the second chapter of the project were translated into a design language to create an environment that enhances users' quality of life. The final step for the research methodology was to conduct a site analysis to maximize the potential of the project's site. Investigating the site of the project shaped the orientation of the additional building and the general layout of spaces in the project.

Having analyzed the site and its limitations and potential, the next step during the design process of *Pardis Centre* was the programming. The theory of supportive environment was the main reference for the programming section of this project to determine the major zones in the project and their relationship throughout the project. The programming process determined the building's design to meet the needs of the building's users. As an example, the quality of the space as well as the quantity of fixtures, spaces, and amenities was defined in accordance with the needs of the users. The programming section also worked as a complement to the site analysis to finalize the zone layouts and adjacencies of the spaces.

The process of design for this project was not linear. In order to answer the questions posed in the first chapter, the design process revisited the previous chapters to find the clues in each part and based on the site analysis and programming techniques, the design was shaped by connecting each clue to make a whole as the final product of this practicum project. The supplementary information that helped the design process of the *Pardis Centre* was the national building code and requirements for the universal design. Taking to account Manitoba's building code, this project is fully accessible to users with wheelchairs.



Figure 95. Reception and the waiting area.

Conclusion

A variety of theories were utilized for this practicum, including supportive environment design theory and Zen aesthetic principles. Biophilic design, however, was the key theory that covered all the resources involved in this project's research and design. Apart from the hypothetical users for this project, I benefited from the application of biophilic design theory during the process of designing the *Pardis Centre*. It is in line with Nikos Salingaros's arguments about the positive influence of biophilic design on architects and designers while working on the design of the project (Salingaros 2015). The design process of the *Pardis Centre* provided me with a satisfying experience as I visualized the spaces with biophilic qualities.

The biophilic approach in this journey was not merely the use of natural elements and plants in the interior spaces. Reaching a deeper understanding of the biophilic design principles was a personal achievement that I did not expect before starting the design chapter of this practicum project. By exploring Zen's design philosophy, I was able to integrate nature into my project in a creative way that I had not experienced before. It is crucial to note that my investigation of the Zen concept was only scratching the surface of this deep and broad topic. Further investigations into the theory of mindfulness and Zen is needed for my future as an interior designer.

As stated earlier in this document, the field of health and well-being is evolving every day due to the dynamic nature of science. As a result, the purpose of this practicum project was to examine how interior design as a multi-disciplinary field addresses environmental factors related to individual's well-being. Due to this interdisciplinary characteristic of interior design, the proposed design for the *Pardis Centre* is grounded in a wide range of discourse and theories. Therefore, it is necessary to return to the research questions listed in Chapter 1 that reflect the research and design process of this practicum project.

The research questions are as follows:

1. How can interior environments contribute to a person's health and well-being?

As discussed in Chapter 1, people spend most of their time in the indoor environment. This practicum is dedicated to the well-being of individuals diagnosed with MS who are at risk of being isolated from the rest of society due to the mobility limitations caused by MS. Providing a healthy environment in interior spaces is necessary for all people, especially for those diagnosed with MS. As discussed in the literary investigation and analysis in Chapter 2, there is evidence that connecting with nature is beneficial for a person's well-being. Keeping this in mind, an interior environment that enhances the connection between nature and humans contributes to a person's well-being and health. To enhance this connection between the individual and nature in the interior realm, interior designers are responsible to incorporate their skills to build a mutual symbiosis between the built environment and its inhabitant so both sides benefit from the relationship.

2. How does an interior design enable people diagnosed with MS to feel independent and have agency over their environment?

As discussed in Chapter 1, even though people with MS can lead a normal life, there is a high risk of becoming unemployed due to the disease and losing their independence. The unsupported environment in which people with MS live is one reason for this issue. Besides the limitations for those dependent on wheelchairs, there are other common issues caused by MS for a person living with it. For instance, extreme fatigue is the major problem that people with MS experience in different periods of disease that stops them from working and feeling productive. To cope with fatigue during the day, an individual with MS needs access to a restorative environment to refresh between the tasks they are doing. Providing a flexible space with the ability to adjust based on the individual's needs is one approach to creating an interior environment that leads MS patients toward independence.

From a design perspective, findings in the literary analysis such as the three principles of the theory of supportive environment design including access to social support, access to positive distraction, and having a sense of agency over the space guide interior designers to enhance the sense of domesticity as a feeling at home for users in the space. For instance, making a balance between private and public spaces in a project is a crucial design strategy that takes place in programming as one of the earliest stages of design. In other words, to maximize the sense of agency over space, users need to be able to contribute to their personal space and feel privacy in their own space. On the other hand, the project should provide public spaces for people to not feel isolated and be able to use the space to gather and collaborate with others. In this way, an individual with MS feels a sense of belonging to both the space and the group of people. This sense of belonging and feeling at home is the result of a supportive environment that enhances the independence of the people occupying the space.

3. In what ways can vernacular design techniques be applied to today's architecture as a sustainable approach to designing a project?

Research related to this question took place in all three stages of the research methodology of this practicum. For instance, as established in the literary analysis chapter, the vernacular design approach leads to a sustainable product, if the designer creates a symbiosis relationship between the built environment and nature as the context of the project. Mutualism symbiosis occurs when both sides of the relationship benefit from each other. In this case, one side of the relationship is the built environment created by humans. The human being is a part of nature and is the other symbiont of this relationship. Consequently, the mutualism symbiosis takes place when the designer creates the built environment as part of nature as in the context of the project. By doing so, the building respects its environment and does not conflict with it. Vernacular design is a result of paying close attention to the site and context of the project to create an environment that mimics its context.

Paying attention to the site of the project was one common feature among the three precedents in Chapter 3. This shows the importance of precedent analysis in the process of design of architectural projects. *Sora No Mori* project, for instance, responds to the hot climate on site as the main limitation facing the project in a way that takes advantage of the natural situation to shape the design of the project. Another example discussed in this practicum is the traditional Persian gardens. Lack of water as one of the main components of gardening made Iranians embrace the limitation offered by the site, respect it, and try to find a sustainable solution to cope with the issue. It is necessary for interior designers to pay close attention to regional precedents and the project site in order to understand their limitations and how precedents addressed them.

This practicum project was the start of a journey towards the design of spaces for boosting users' moods and improving the quality of life among a specific group of people as the primary and secondary users of *Pardis Centre*. The main focus in the research and design of this project was on the investigation of the quality of an environment that helps people cope with stress. Alternatively, to expand my horizon in this area, there is further possible research on the quality of environments that cause stress in the first place. Although this practicum explored a portion of this area, different variables cause stress in the built environment that requires further studies. By detecting and understanding the factors that increase the stress level of individuals, designers are able to use their problem-solving techniques to find solutions to address these factors in their projects.

APPENDIXES



Figure 96. Material Pallet.

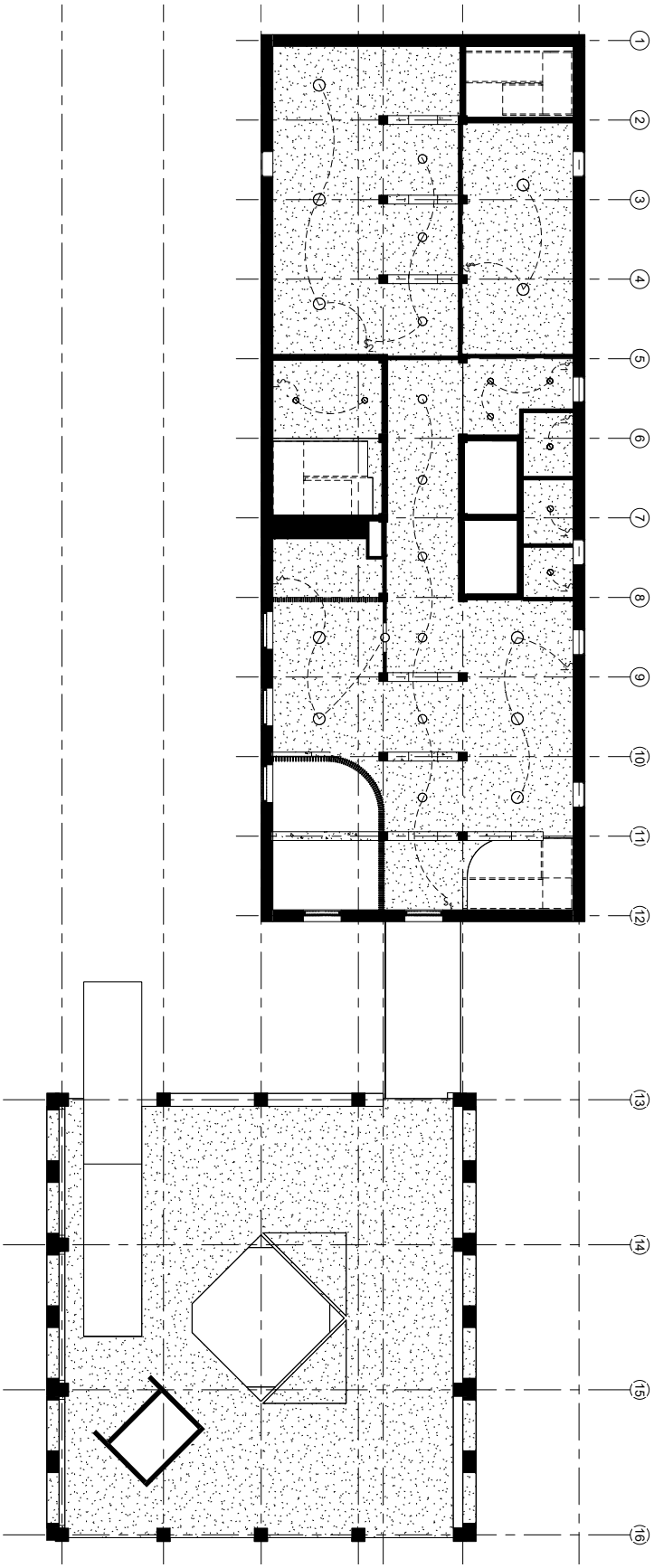


Figure 97. Basement level-Reflected Ceiling Plan
Scale. 1:150
N

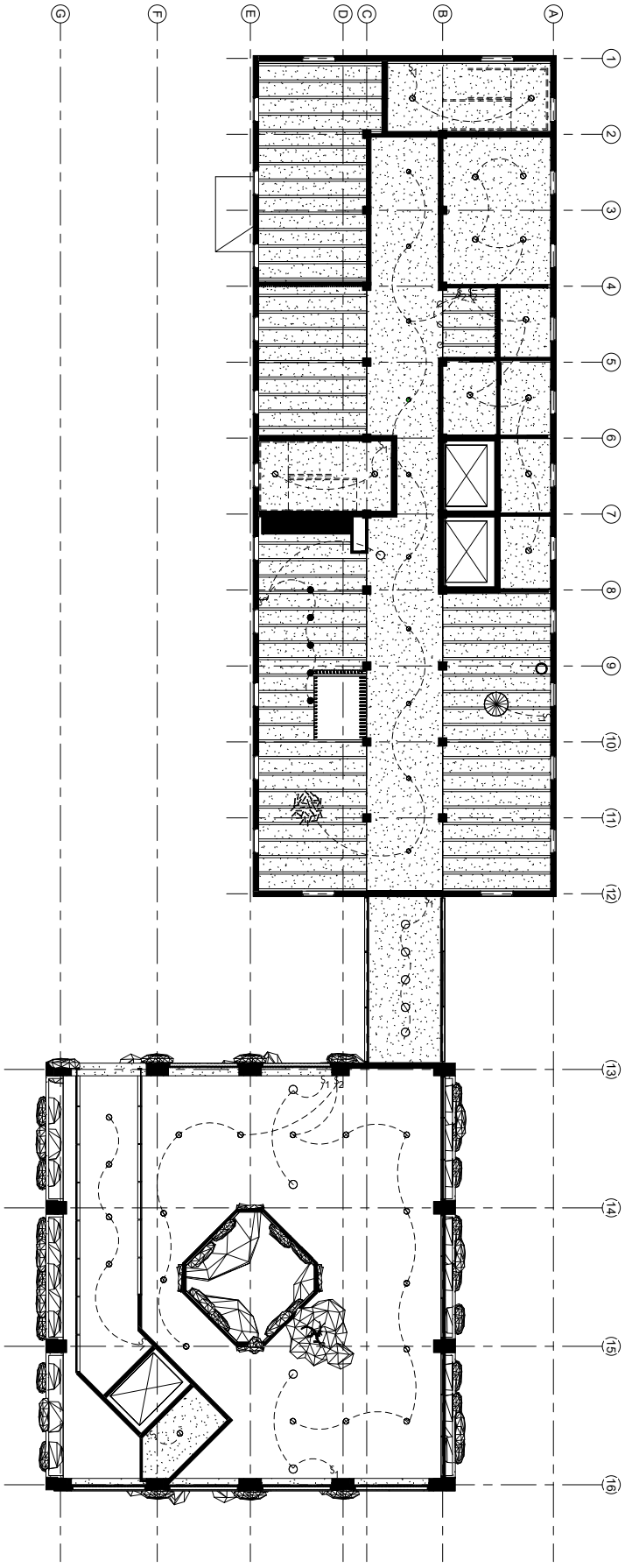


Figure 98. Level 1-Reflected Ceiling Plan
Scale. 1:150
N

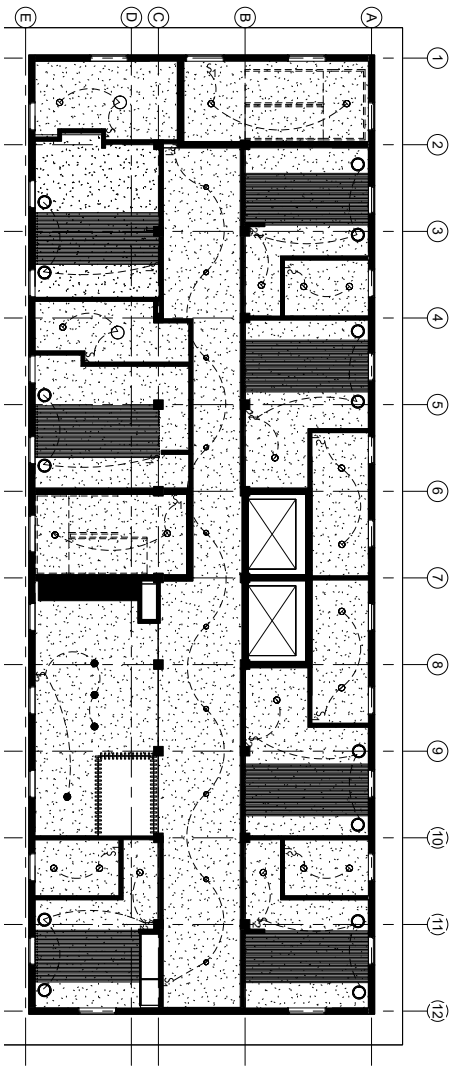


Figure 99. Level 2-Reflected Ceiling Plan
Scale. 1:150
N

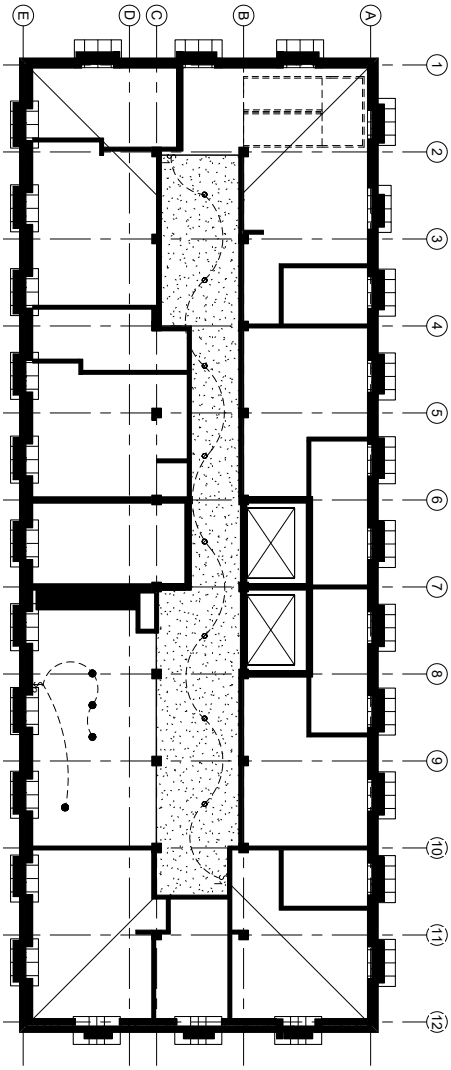


Figure 100. Level 3-Reflected Ceiling Plan
Scale. 1:150
N

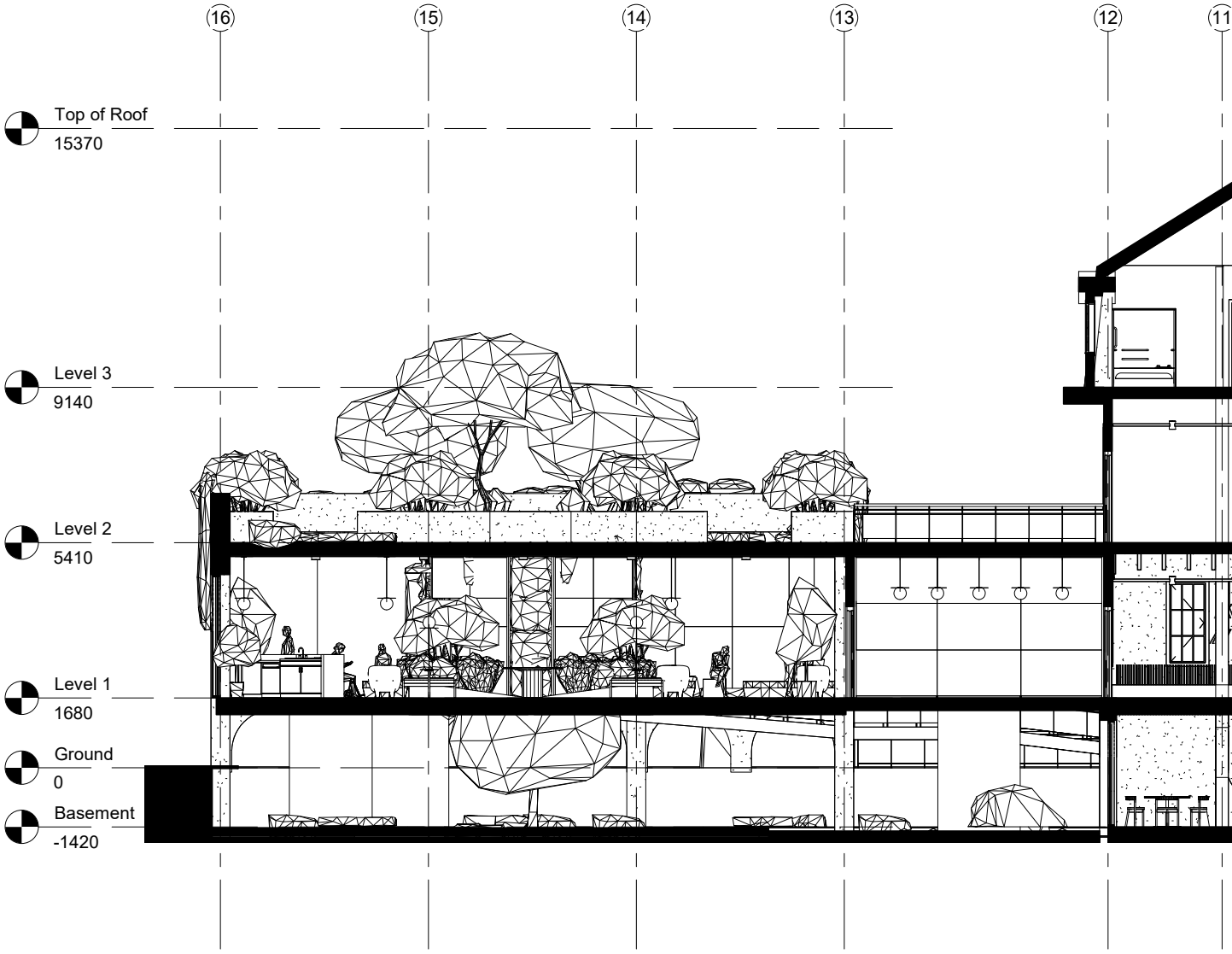
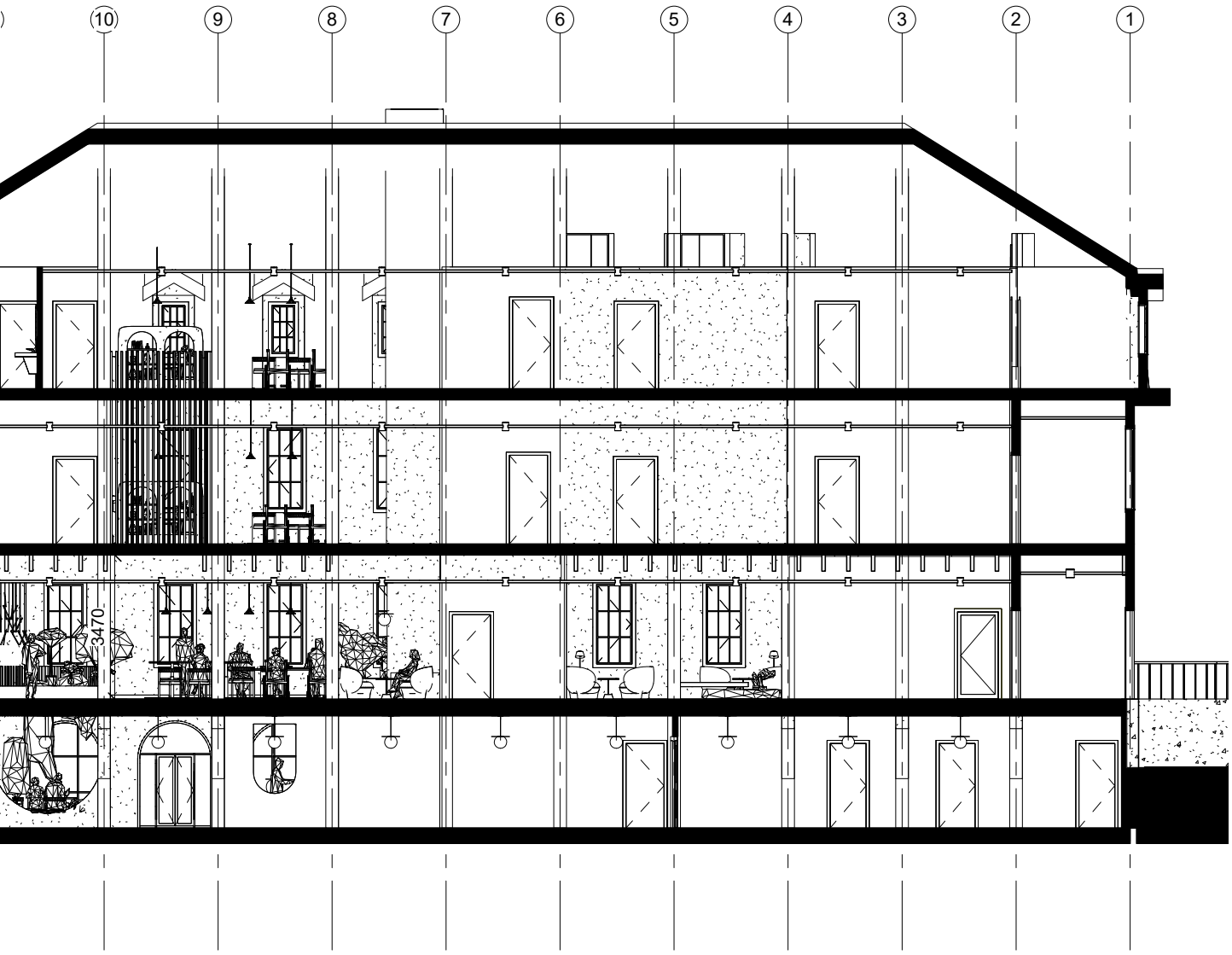


Figure 101. Longitudinal Section
Scale. 1:100


10
9
8
7
6
5
4
3
2
1
3470

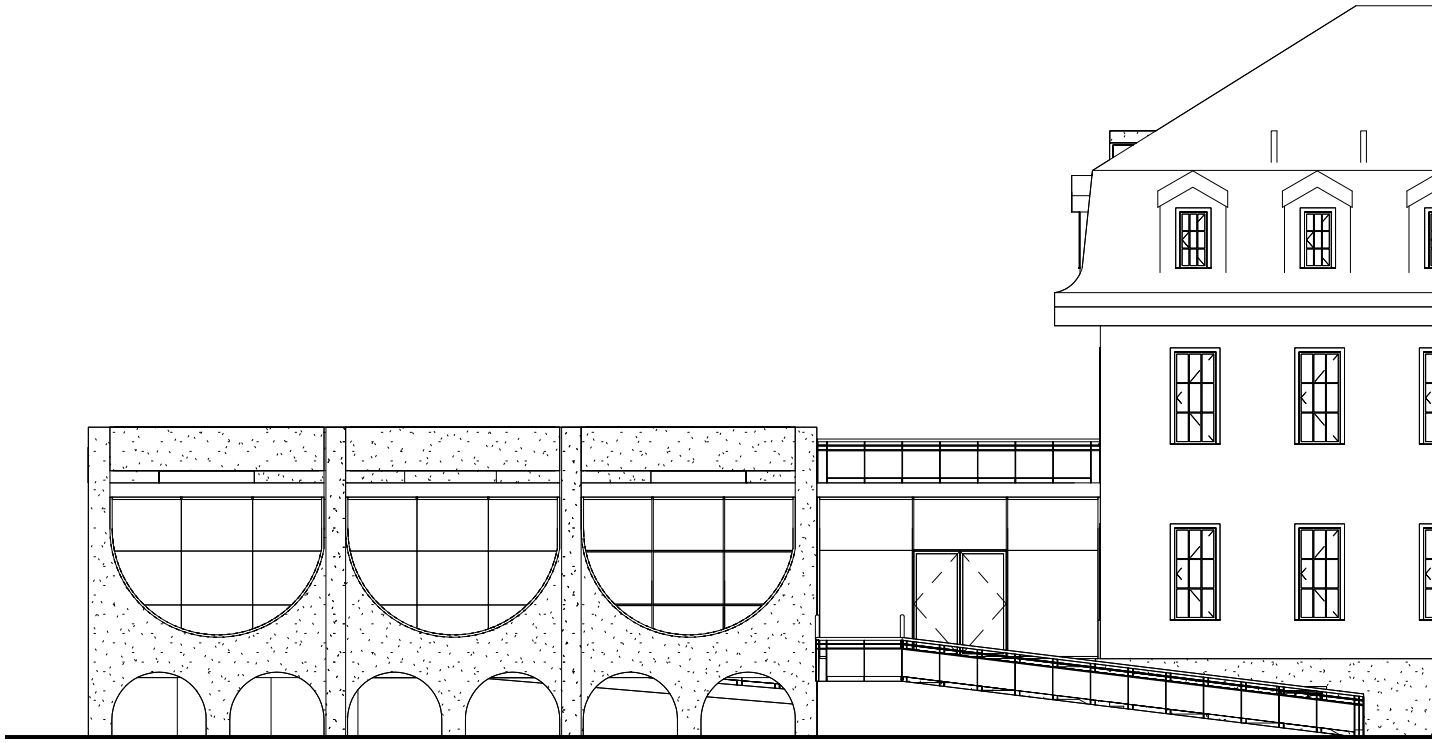


Figure 102. North Elevation
Scale. 1:100

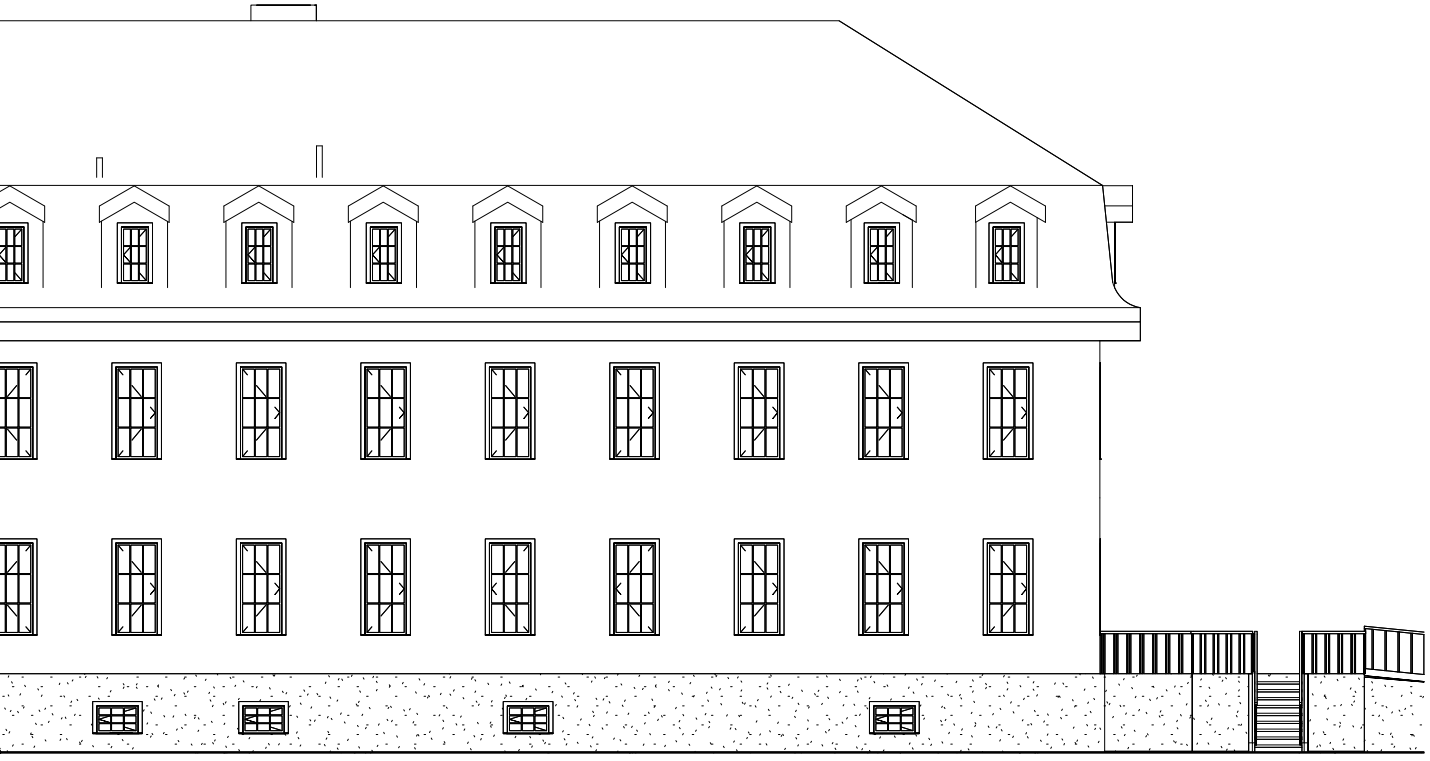




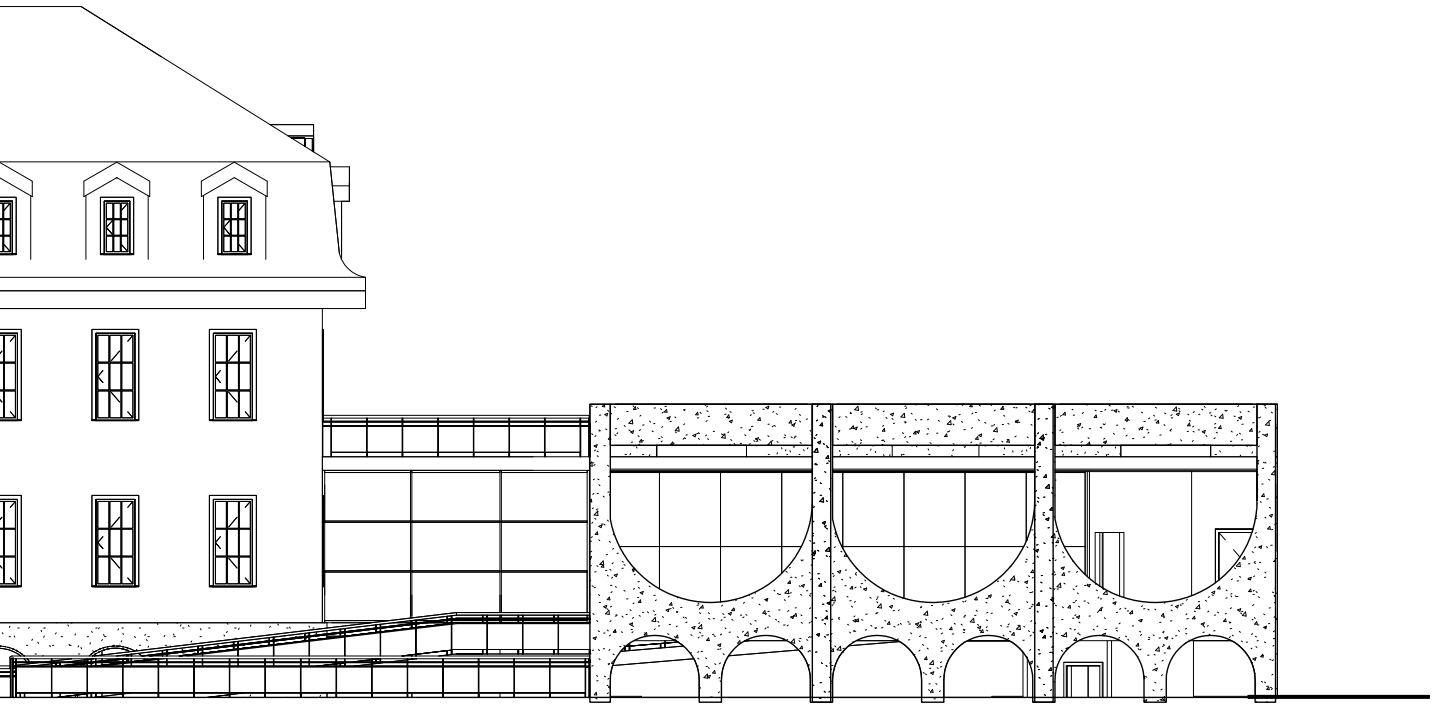
Figure 103. East Elevation
Scale. 1:100



Figure 104. West Elevation
Scale. 1:100



Figure 105. South Elevation
Scale. 1:100



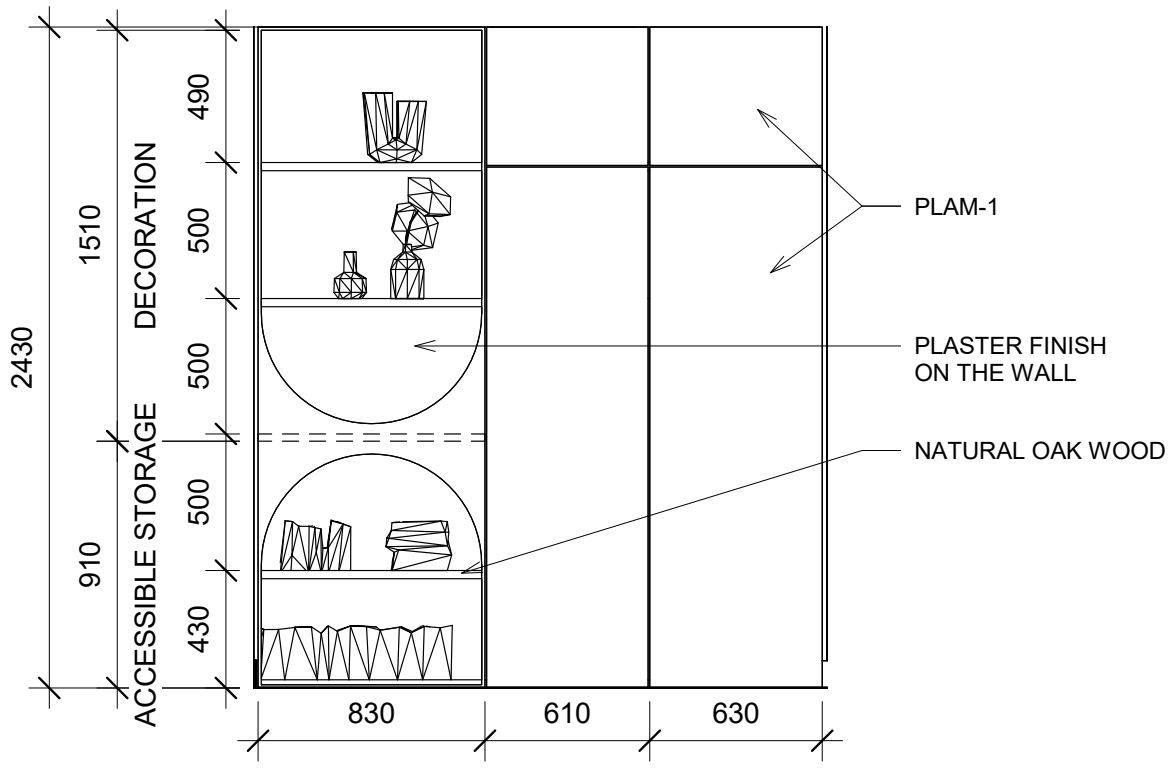


Figure 106. Millwork Elevation
Scale. 1:25

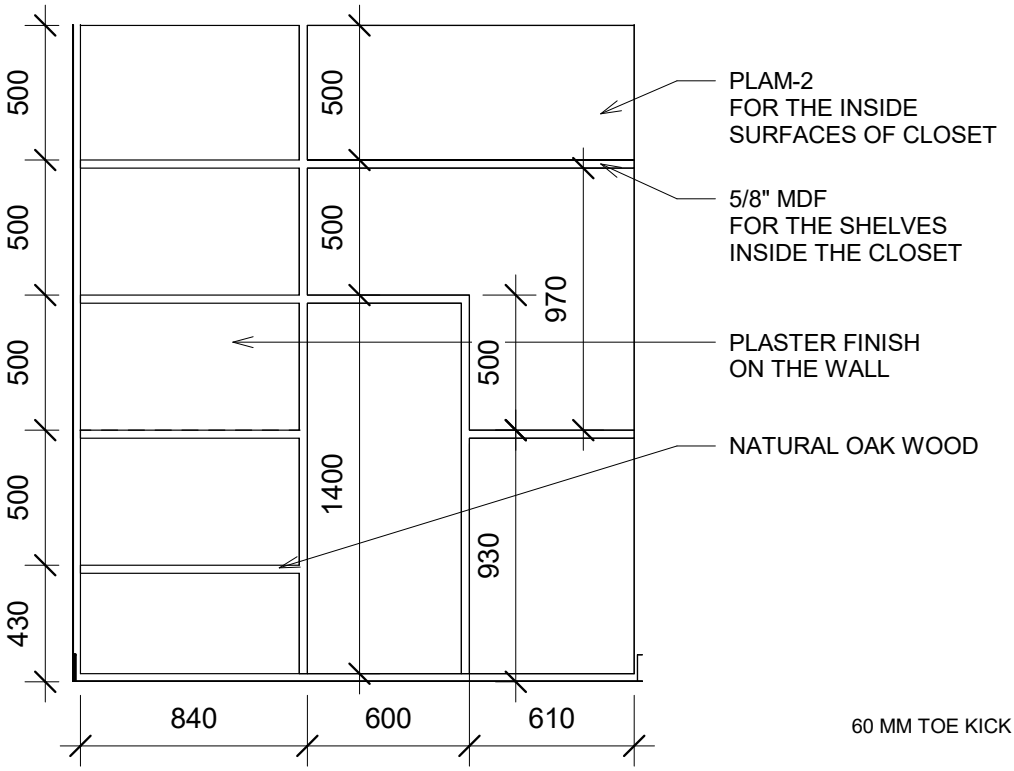


Figure 107. Millwork Inside Elevation
Scale. 1:25

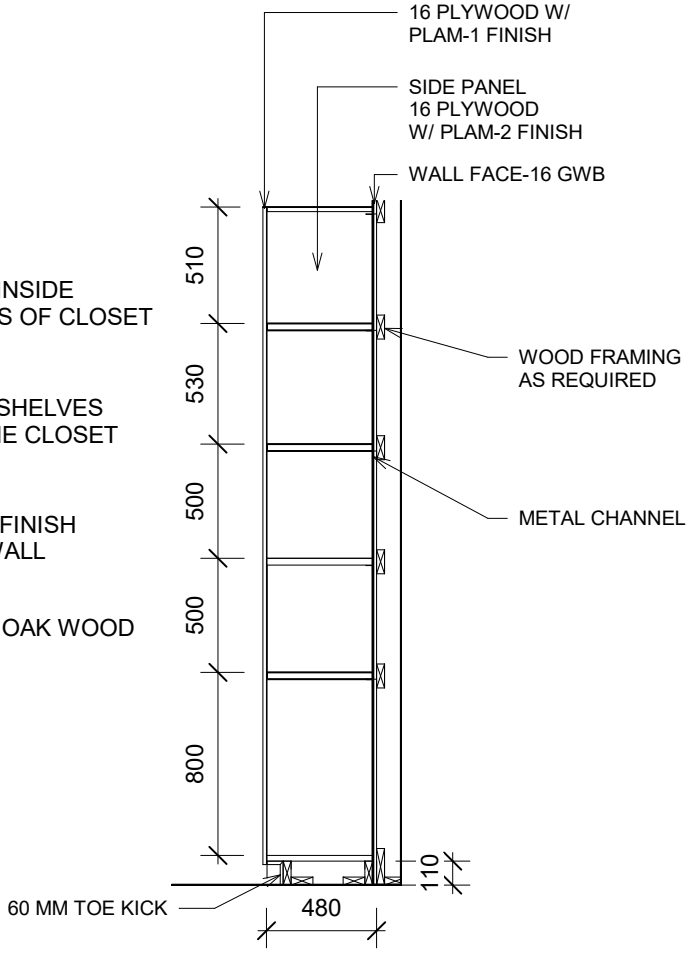


Figure 108. Millwork Section
Scale. 1:25

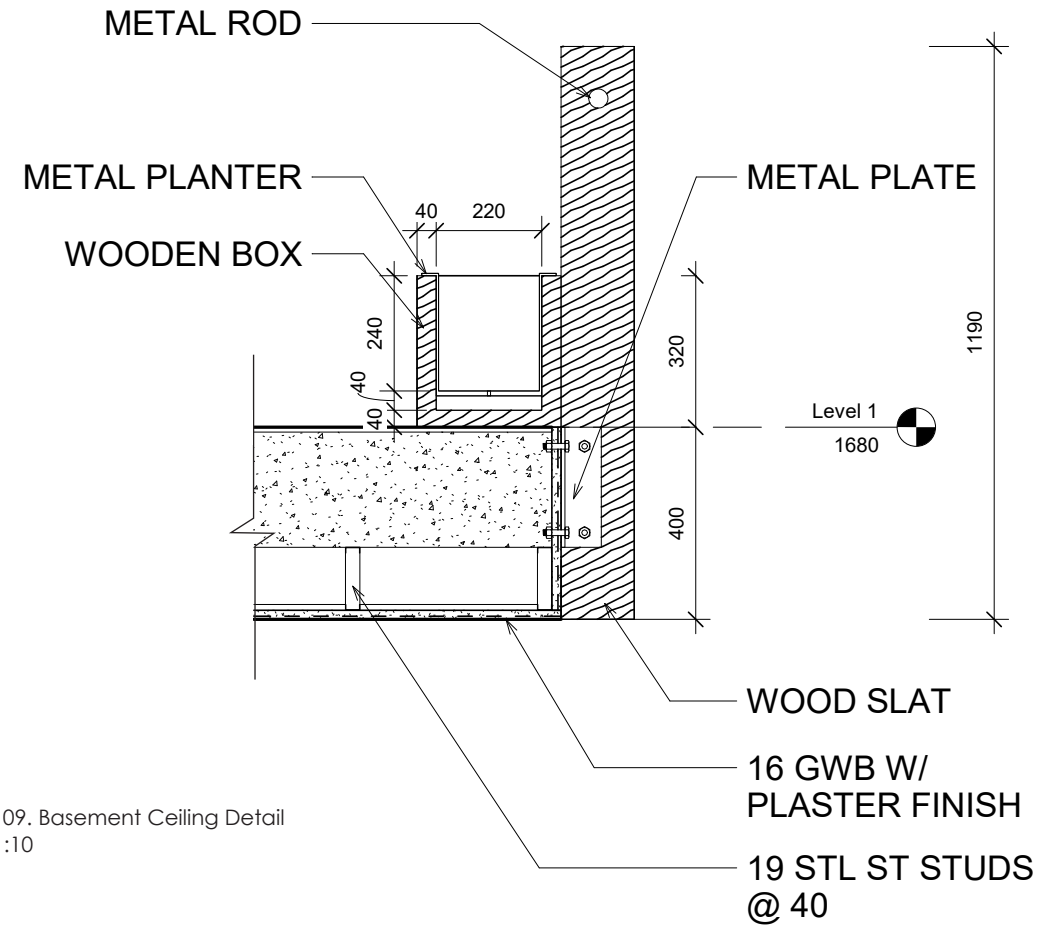


Figure 109. Basement Ceiling Detail
Scale. 1:10

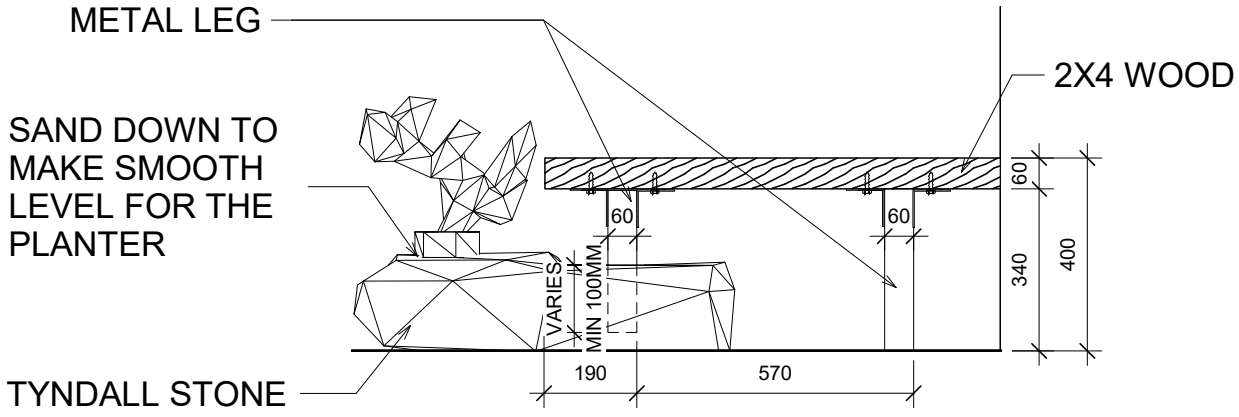


Figure 110. Washroom Bench Detail
Scale. 1:10

Item	National Building Code Data Matrix Parts 3 & 9		NBC Reference	
1	Project Description:	☑ Change of use ☐ New ☑ Addition ☐ Alteration	☐ Part 3	☐ Part 9 9.10.1.3
2	Major Occupancy(s)	Group B - Division 2	3.1.2.1.(1)	9.10.2
3	Building Area (m^2)	Existing: 230 New: 210 Total 440	1.4.1.2	1.4.1.2
4	Gross Area (m^2)	Existing: 920 New: 210 Total 1130		
5	Number of Storeys	Above grade: 3 Below grade: 1	3.2.1.1 & 3.2.2.15	
6	Height of Building (m)		1.4.1.2	
7	Number of Streets/Access Routes 1		3.2.2.10 & 3.2.5.5	
8	Building Classification		3.2.2.20-.90	9.10.4
9	Sprinkler System Proposed	☑ Entire building ☐ Basement only ☐ In lieu of roof rating ☐ Not required	3.2.2.20-.90 3.2.1.5 3.2.2.17	9.10.8.2
10	Standpipe Required ☐ Yes ☑ No		3.2.5.8	
11	Fire Alarm Required ☑ Yes ☐ No		3.2.4	9.10.18.2
12	Water Service/Supply Is Adequate ☑ Yes ☐ No		3.2.5.7	
13	High Building ☐ Yes ☑ No		3.2.6	
14	Permitted Construction	☐ Combustible ☑ Non-combustible ☐ Both	3.2.2.20-.90	9.10.6
	Actual Construction	☐ Combustible ☑ Non-combustible ☐ Both		
15	Mezzanine(s) Area (m^2)		3.2.1.1.(3)-(7)	9.10.4.1
16	Occupant load based on ☐ m^2/person ☑ Design of building Basement: Occupancy ____ Load 35 persons 1st Floor Occupancy ____ Load 45 persons 2nd Floor Occupancy 10.00 Load 15 persons 3rd Floor Occupancy 10.00 Load 18 persons		3.1.17	9.9.1.3
17	Barrier-free Design ☑ Yes ☐ No (Explain)		3.8	9.5.2

Consolidation of the National Building Code - Section 3.8., Barrier-Free Design to include Manitoba Building Code amendments pertaining to Section 3.8

Section 3.8. Barrier-Free Design

3.8.1. General

3.8.1.1. Application

1) The requirements of this Section apply to all *buildings* except,

a) detached houses, semi-detached houses, houses with a *secondary suit*, duplexes, triplexes, town houses, row houses and boarding or rooming houses (see A-1.4.1.2.(1), secondary suit, in appendix A of Division A

b) *buildings* of Group F, Division 1 *major occupancy*, and

c) *buildings* that are not intended to be occupied on a daily or full time basis, including automatic telephone exchanges, pumphouses and substations.

3.8.1.2. Entrances

1) Except as provided by Sentence (2), all pedestrian entrances to a building referred to in Sentence 3.8.1.1(1) shall be barrier-free and shall lead from

a) the outdoors at sidewalk level, or

b) a ramp that conforms to Article 3.8.3.4 and leads from a sidewalk.

2) If an alteration to an existing building is undertaken and it is not practical to comply with Sentence (1) in respect of every applicable entrance, then at least one pedestrian entrance shall be barrier free.

3) A barrier free entrance required by Sentences (1) or (2) shall be designed in accordance with Article 3.8.3.3.

4) Doors at each end of a bank of doors at every entrance shall be designed in accordance with Article 3.8.3.3.

5) If a *walkway* or pedestrian bridge connects two *barrier-free storeys* in different *buildings*, the path of travel from one *storey* to the other *storey* by means of the *walkway* or bridge shall be *barrier-free*.

3.8.1.3. Barrier-Free Path of Travel

1) Except as required elsewhere in this Part and except as permitted in Subsection 3.8.3.3, pertaining to doorways, unobstructed width of a *barrier-free* path of travel shall be not less than 1 100 mm and shall be barrier free in accordance with the requirements of Sentences 3.3.1.9.(3) and (4)"; and

2) Interior and exterior walking surfaces that are within a *barrier-free* path of travel shall,

a) have no opening that will permit the passage of a sphere more than 13 mm in diam,

b) have any elongated openings oriented approximately perpendicular to the direction of travel,

c) be stable, firm and slip-resistant,

d) be bevelled at a maximum slope of 1 in 2 at changes in level not more than 13 mm, and

e) be provided with sloped floors or ramps at changes in level more than 13 mm.

f) have detectable warning surfaces where a change in elevation is greater than 225 mm, that must

i) include changes in colour, texture, resiliency and sound from the surrounding surfaces,

ii) be the full width of stairs or a ramp, and

iii) where the surface is a stair, be a minimum of 900 mm deep, starting one tread depth back from the edge of the stair.

3) A *barrier-free* path of travel is permitted to include ramps, passenger elevators or other platform equipped passenger elevating devices to overcome a difference in level.

4) The width of a *barrier-free* path of travel that is more than 30m long shall be increased to not less than 1500mm for a length of 1500mm at intervals not exceeding 30m.

3.8.1.4. Access to Storeys Served by Escalators and Moving Walks

1) In a *building* in which an escalator or inclined moving walk provides access to any floor level above or below the entrance floor level, an interior *barrier-free* path of travel shall be provided to that floor level.

2) The route from the escalator or inclined moving walk to the *barrier-free* path of travel that leads from floor to floor required by Sentence (1) shall be clearly indicated by appropriate signs.

3.8.1.5. Controls

1) Except as required by Sentences 3.5.2.1.(3) for elevators, controls for the operation of *building* services or safety devices, including electrical switches, thermostats and intercom switches, that are intended to be operated by the occupant and located in a *barrier-free* path of travel shall be accessible to a

person in a wheelchair, operable with one hand and mounted between 400mm and not more than 1 200 mm above the floor.

3.8.2. Occupancy Requirements

3.8.2.1. Areas Requiring Barrier-Free Path of Travel

1) Except as permitted by Sentences (2) and (3), a barrier free path of travel from entrances required by Sentence 3.8.1.2.(1) and (2) to be barrier free shall be provided throughout the building and to all of the buildings exits. (See Article 3.3.1.7. for additional requirements regarding floor areas above or below the first storey to which a barrier free path of travel is required.)

2) A barrier free path of travel is not required to
a) service rooms,
b) elevator machine rooms,
c) service spaces,
d) crawl spaces,
e) attic or roof spaces,
f) high-hazard industrial occupancies,
g) portions of a floor area with fixed seats in an assembly occupancy where those portions are not part of the barrier free path of travel to spaces designated for mobility device use,
h) within floor levels of a suite of residential occupancy that are not at the same level as the entry level to the suite,
i) within a suite of residential occupancy that has not been designated by an authority having jurisdiction to be accessible for use by persons with physical disabilities, or
j) interior paths of travel that are not a means of egress.

3) A barrier free path of travel through the exits is not required from a floor area where that floor area conforms to 3.3.1.7(1) (a) to (c).

4) In an assembly occupancy, the number of accessible spaces within rooms or areas with fixed seats shall conform to Table 3.8.2.1. (See also Article 3.8.3.6. for additional requirements.)

Designated Spaces for People Using Mobility Devices
Forming Part of Sentence 3.8.2.1.(4)

Number of Fixed Seats in Seating Area	Number of Spaces Required for People Using Mobility Devices
Up to 50	2
51 – 100	4
101 – 300	6
301 – 500	8
501 – 1 000	10
1 001 – 1 700	12
each increment of up to 700 seats in excess of 1 700	two additional spaces

3.8.2.2. Access to Parking Areas

1) If exterior parking is provided, A *barrier-free* path of travel shall be provided between the exterior parking area and a *barrier-free* entrance conforming to Article 3.8.1.2 (See Appendix A)

2) If a passenger elevator serves one or more indoor parking levels, a *barrier-free* path of travel shall be provided between at least one parking level and all other parts of the building required to be provided with *barrier-free* access in accordance with Article 3.8.2.1.

3) If an exterior passenger loading zone is provided, it shall have

a) an access aisle not less than 2 440 mm wide and 7 400 mm long adjacent and parallel to the vehicle pull-up space,

b) a curb ramp, where there are curbs between the access aisle and the vehicle pull-up space, and

c) a clear height of not less than 3 600 mm at the pull-up space and along the vehicle access and egress routes.

3.8.2.3. Washrooms Required to be Barrier-Free

1) Except as permitted by Sentence (2), a barrier free washroom is required on each level of a multi-level building where public washrooms are provided.

2) A washroom need not conform to the requirements of Sentence provided

a) it is located within a suite of residential occupancy, or

b) other barrier free washrooms are provided on the same floor area within 45 m.

3) If one or more washrooms are required to be provided on a storey of an assembly, care, treatment, mercantile or business and personal services occupancies, one of them shall have a universal toilet room.

4) A public washroom that is located on a floor in a residential occupancy shall have a universal toilet room.

5) A minimum of one universal toilet room conforming to Article 3.8.3.12. shall be provided on each floor of a newly constructed building where public washrooms are provided.

6) A universal toilet room

a) may be substituted for one non-accessible stall in a gender-based washroom, if alterations are made to an existing building, and

b) can be provided in lieu of one gender-based washroom in small public buildings requiring two washrooms, one per gender.

7) If a single toilet room is required in Article 3.7.2.2., it shall conform to Article 3.8.3.12.

3.8.3. Design Standards

3.8.3.1. Accessibility Signs

1) Signs incorporating the international symbol of accessibility shall be installed to indicate the location of barrier free facilities.

2) Room identification signage shall

a) have at least one sign located with centerline at 1 350 mm from the finished floor and 150 mm from the door jamb on the latch side of the door,

b) have a clear space free of obstacles or protrusions immediately in front of the sign at least 1 500 mm long by 900 mm wide, and

c) include appropriate raised text, graphics and braille.

3) All directional signage shall

a) provide the necessary information at inaccessible entrances, washrooms, and facilities to reach accessible locations,

b) at a minimum, have one sign be located with centerline at 1 350 mm from the finished floor,

c) have a clear space free of obstacles or protrusions immediately in front of the sign at least 1 500 mm long by 900 mm wide, and

d) include appropriate raised text, graphics and braille.

4) Signs incorporating the symbol of accessibility for persons with hearing disabilities shall be installed to indicate the location of facilities for persons with hearing disabilities. (See Appendix A.)

3.8.3.2. Exterior Walks

1) Exterior walks that form part of a barrier free path of travel shall:

a) have a slip-resistant, continuous and even surface,

b) have not less than 1 200 mm in clear width, except in the case where the pedestrian walkway is immediately adjacent to and at the same level as moving vehicles, in which case a minimum of 1 500 mm clear width shall be provided,

c) have no obstacles protruding into an exterior path of travel from the pedestrian walkway surface to 2 100 mm above grade,

d) shall have a turning space or passing lane of 1 500 mm by 1 500 mm every 9 m, and

e) have the path of travel well defined with a contrasting colour and texture from the surrounding surface.

3.8.3.3. Doorways and Doors

1) Every public pedestrian doorway shall have a clear width of not less than 825 mm when the door is in the 90° open position, measured from the face of the door at the hinge to the face of the door stop at the door jam.

2) The doorway to at least one full bathroom within a suite of a residential occupancy shall have a clear width of not less than 825 mm when the doors are in the 90° open position, measured from the face of the door at the hinge to the face of the door stop at the door jam. (See Appendix A.)

3) Door operating devices shall be mounted no higher than 1 100 mm from the finished floor and be of a design which is useable by a single fist with limited strength and does not require tight grasping or twisting of the wrist. (See Appendix A.)

4) A threshold for a doorway referred to in Sentences (1) or (2) shall be not more than 13 mm higher than the finished floor surface and shall be bevelled to facilitate the use of mobility devices.

5) The following doors shall be equipped with a power door operator that allows persons to activate the opening of the door from either side:

a) at least one door in every exterior pedestrian entrance to an assembly, care, mercantile or business or personal services occupancy;

b) at least one door in every pedestrian entrance to a residential occupancy, and c) at least one door into a washroom facility with multiple stalls,

5.1) Where multiple sets of doorways are provided at an entrance, at least one of the outermost sets of doors must be equipped with power door operators.

5.2) The following requirements apply in respect of a door that is required to be equipped with a power door operator under Sentences (5) or (5.1):

a) if the power door operator is activated by a push button, the push button shall

i)be located at least 235 mm, but no more than 900 mm, from the finished walking surface, and

ii) be installed such that the pedestrian using the door will remain outside of the swing of the door,

b) for a swing-type door at an exterior entrance, the door shall have a guard on the hinge side that is colour contrasted and have horizontal guards at 150 mm, 600 mm and 1 050 mm from the finished walking surface.

6) Sentence repealed.

7) Except as permitted in Sentence (8), and except for doors with power operators, closers for doors in a *barrier-free* path of travel shall be designed to permit doors to open when a force of not more than 38 N is applied to the handles, push plates or latch-releasing devices in the case of exterior doors and 22 N in the case of interior doors

8) Sentence (7) does not apply to doors at the entrances to *dwelling units*, or where greater forces are required in order to close and latch the doors against prevailing differences in air pressures on opposite sides of the doors.

9) Except for doors at the entrances to *dwelling units*, closers for interior doors in a *barrier-free* path of travel shall have a closing period of not less than 3 seconds measured from when the door is in an open position of 70° to the doorway, to when the door reaches a point 75 mm from the closed position, measured from the leading edge of the latch side of the door.

10) Unless equipped with a power door operator, a door in a *barrier-free* path of travel shall have a clear space on the latch side extending the height of the doorway and not less than,

a) 600 mm beyond the edge of the door opening if the door swings toward the approach side, and

b) 300 mm beyond the edge of the door opening if the door swings away from the approach side.

11) A vestibule in a barrier-free path of travel shall be arranged to allow the movement of mobility devices between doors and shall provide a distance between two doors in series of not less than 1 500 mm plus the

width of any door that swings into the space in the path of travel from one door to another.

12) Vestibules referred to in Sentence (11) that are used to enter a stairwell that is not an area of refuge shall provide a distance between two doors in series of not less than 1200 mm plus the width of any door that swings into the space in the path of travel from one door to another.

13) At least one door measuring at a minimum of 900 mm in a multiple-leaf door shall have a clear opening of 825 mm.

3.8.3.4. Ramps

1) A ramp shall

a) have a clear width not less than 900 mm between handrails or between the inside of the guard (See A-3.4.3.4 in Appendix A),

b) have a slope not more than 1 in 12 (see Appendix A),

c) have a level area not less than 1 500 mm by 1 500 mm at the top and bottom at a intermediate level of a ramp leading to a door, so that on the latch side, the level area extends no less than

i)600 mm beyond the edge of the door opening where the door opens towards the ramp, or

ii) 300 mm beyond the edge of the door opening where the door opens away from the ramp,

d) have the following level areas:

i) in the case of a ramp that is more than 9 m in length, a level landing not less than 1 500 mm by 1 500 mm at intervals not more than 9 m along its length,

ii) in the case of a ramp with a change in direction greater than 90°, a level landing at the directional change that has a width of not less than 1 500 mm and a length of not less than 1 800 mm,

iii) in the case of a ramp with a change in direction less than or equal to 90°, a level landing at the directional change that is not less than 1 500 mm by 1 500 mm,

e) except as permitted in sentence (2), be equipped with handrails and guards conforming to Articles 3.4.6.4. and 3.4.6.5., and

f) shall be designed according to 3.8.1.3.(2)(f) – Detectable Warning Surfaces.

2) The requirement for handrails in Clause (1)(e) need not apply to a ramp serving as an aisle for fixed seating.

3) Floors or walks in a *barrier-free* path of travel having a slope steeper than 1 in 20 shall be designed as ramps.

3.8.3.5. Passenger Elevating Devices

1) A passenger elevating device referred to in Article 3.8.2.1. shall conform to CAN/CSA-B355, "Lifts for Persons with Physical Disabilities".

3.8.3.6. Spaces in Seating Area

1) Spaces designated for wheelchair use in Sentence 3.8.2.1.(3) shall be,

a) clear and level or level with removable seats,

b) not less than 900 mm wide and 1 525 mm long to permit a wheelchair to enter from a side approach, and 1 220 mm long where the wheelchair enters from the front or rear of the space,

c) arranged so that at least two designated spaces are side by side,

d) located adjoining a *barrier-free* path of travel without infringing on egress from any row of seating or any aisle requirements, and

e) situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.

3.8.3.7. Assistive Listening Devices

1) In a building of assembly occupancy, all classrooms, auditoriums, meeting rooms and theatres with an area of more than 100 m^2 shall be equipped with an assistive listening system encompassing the entire seating area.

2) Except as provided by Sentence (3), Assistive Listening Devices (ALDs) must be provided for assistive listening systems in each assembly area in accordance with Table 3.8.3.7.

3) Where a building contains more than one assembly area and two or more of the assembly areas in which assistive listening systems are required to be provided are under the control of one person, the total number of required ALDs shall be calculated with reference to the total number of seats in those assembly areas, provided all the receivers are usable in all the areas.

Forming part of Sentence 3.8.3.7.(2)

Capacity of Seating in Assembly Area	Minimum Number of Required ALDs	Minimum Number of ALDs Required to be Hearing Aid and Cochlear Implant Compatible
50 or less	2	2
51 to 200	2, plus 1 additional for each 25 seats, or portion of 25 seats, over 50 seats	2
201 to 500	2, plus 1 additional for each 25 seats, or portion of 25 seats, over 50 seats	1 of every 4, or any portion of 4
501 to 1000	2, plus 1 additional for each 33 seats, or portion of 33 seats, over 500 seats	1 of every 4, or any portion of 4
1001 to 2000	35, plus 1 additional for each 50 seats, or portion of 50 seats, over 1 000 seats	1 of every 4, or any portion of 4
2001 and over	55, plus 1 additional for each 100 seats, or portion of 100 seats, over 2 000 seats	1 of every 4, or any portion of 4

3.8.3.8. Water Closet Stalls

1) Where a washroom is required by Article 3.8.2.3. to be *barrier-free*, at least 1 water closet stall or enclosure shall,

a) be at least 1 500 mm in width by 1 600 mm in depth,

b) be equipped with a door that shall,

(i) be capable of being latched from the inside with a mechanism that is operable by one hand,

(ii) provide, when the door is in an open position, a clear opening of at least 850 mm,

(iii) swing outward, unless sufficient room is provided within the stall or enclosure to permit the door to be closed without interfering with the wheelchair, (see Appendix A)

(iv) be provided on the inside with a door pull not less than 140mm long located so it's midpoint is not less than 200mm and not more than 300mm from the hinged side of the door and not less than 900mm and not more than 1000mm above the floor (see Appendix A)

(v) be provided with a door pull on the outside, near the latch side of the door, and

c) have a water closet located so that the clearance between the fixture and the wall on one side is not less than 285 mm and not more than 305 mm,

d) be equipped with grab bars that shall,

(i) are mounted horizontally on the side wall closest to the water closet and shall extend not less than 450mm in both directions from the most forward point of the water closet (see Appendix A)

(ii) if the water closet does not have an attached water tank, are at least 600mm in length, mounted horizontally on the wall behind the water closet and centered on the toilet bowl,

(iii) are mounted not less than 840mm and not more than 920mm above the floor,

(iv)are installed to resist a load of at least 1.3 kN applied vertically or horizontally,

(v) be not less than 30 mm and not more than 40 mm in diameter, and

(vi) have a clearance of 35 mm to 45 mm from the wall,

e) be equipped with a coat hook mounted not more than 1 200 mm above the floor on a side wall and projecting not more than 50 mm from the wall,

f) have a clearance of at least 1 700 mm between the outside of the stall face and the face of an in-swinging washroom door and 1 400 mm between the outside of the stall face and any wall-mounted fixture or other obstruction, and

g) when a toilet paper dispenser is provided, provide a dispenser that is,

(i) wall mounted,

(ii) located below the grab bar,

(iii) in line with or not more than 300 mm in front of the toilet seat, and

(iv) not less than 600 mm above the floor.

3.8.3.9. Water Closets

1) Where a barrier-free washroom is required by Article 3.8.2.3, at least one water closet in the washroom shall be equipped with

a) a seat that is not less than 400 mm and not more than 460 mm above the floor,

b) hand-operated flushing controls that are easily operable or automatically operable, and

c) a seat lid or other back support.

3.8.3.10. Urinals

1) If urinals are provided in a barrier free washroom, at least one urinal shall be wall mounted, with the rim located between 488 mm and 512 mm above the floor.

2) A urinal described in Sentence (1) shall have

a) a clear width of approach of 850 mm, centred on the urinal, b) no step in front, and
c) grab bars that are
i) vertically mounted to the back wall,
ii) located on both sides of the urinal and not more than 380 mm from the centerline of the urinal,
iii) not less than 600 mm long, with the vertical centerline 950 mm above the floor, and
iv) colour contrasted with the colour of the back wall.

3.8.3.11. Lavatories

1) A barrier-free washroom shall be provided with a lavatory that shall,
a) be located so that the distance between the centreline of the lavatory and the side wall is not less than 460 mm,
b) be mounted so that the top of the lavatory or, where the lavatory is in a vanity, the top of the vanity is not more than 840 mm above the finished floor,
c) have a clearance beneath the lavatory not less than,
(i) 760 mm wide,
(ii) 735 mm high at the front edge,
(iii) 685 mm high at a point 205 mm back from the front edge, and
(iv) 230 mm high over the distance from a point 280 mm to a point 430 mm back from the front edge,
(d) have insulated pipes where they would otherwise present a burn hazard or have water supply temperature limited to a maximum of 43°C,
e) has a soap dispenser that is operable with one hand that is
i)surface mounted, or
ii) wall mounted, in which case the soap dispenser shall be located close to the lavatory and have the operable part be not more than 150 mm above the counter or lavatory rim, and

f) has a towel dispenser or other hand-drying equipment that is located not more than 1 200 mm above the floor and close to the lavatory, in an area that has a clear floor space of no less than 900 mm wide and 1 200 mm deep.

2) A barrier-free washroom must be equipped with at least one mirror, which shall be mounted with its bottom edge not more than 1 000 mm above the floor.

3.8.3.12. Universal Toilet Rooms

1) A universal toilet room shall,

a) be served by a *barrier-free* path of travel,

b) have a door capable of being locked from the inside and released from the outside in case of emergency and that has,

(i) a graspable latch-operating mechanism located not less than 900 mm and not more than 1 000 mm above the floor,

(ii) if it is an outward swinging door, a door pull not less than 140 mm long located on the inside so that its midpoint is not less than 200 mm and not more than 300 mm from the hinged side of the door and not less than 900 mm and not more than 1 000 mm above the floor, and

(iii) if it is an outward swinging door, a door closer, spring hinges or gravity hinges, so that the door closes automatically,

c) have one lavatory conforming to Article 3.8.3.11.,

d) have one water closet conforming to the requirements of Article 3.8.3.9. and located,

(i) so that its centreline is not less than 460 mm and not more than 480 mm from an adjacent side wall on one side, and

(ii) not less than 1 020 mm to the wall on the other side,

e) have grab bars conforming to Clause 3.8.3.8.(1)(d),

g) have a coat hook conforming to Clause 3.8.3.8.(1)(e) and a shelf located not more than 1 200 mm above the floor,

h) be designed to permit a wheelchair to back in alongside the water closet in the space referred to in Subclause (d)(ii),

i) be designed to permit a wheelchair to turn in an open space not less than 1 700 mm in diameter, and

2) If a storey of a building is not serviced by an elevator or inclined moving walk, it shall be equipped with a universal toilet room that conforms with Article 3.8.3.12. or a washroom that conforms with Article 3.8.2.3. (washrooms required to be barrier free).

3.8.3.13. Showers and Bathtubs

1) Except within a *suite* of *residential occupancy*, if showers are provided in a *building*, at least one shower stall in each group of showers shall be *barrier-free* and shall,

a) be not less than 1 500 mm wide and 900 mm deep,

b) have a clear floor space at the entrance to the shower not less than 900 mm deep and the same width as the shower, except that fixtures are permitted to project into that space provided they do not restrict access or use to the shower,

c) have a slip-resistant floor surface,

d) have a bevelled threshold not more than 13 mm higher than the finished floor,

e) have a hinged seat that is not spring-loaded or a fixed seat that shall be,

(i) not less than 450 mm wide and 400 mm deep,

(ii) mounted approximately 450 mm above the floor, and
(iii) designed to carry a minimum load of 1.3 kN,

f) have a horizontal grab bar conforming to Subclauses 3.8.3.8.(1)(d)(iv) to (vi) that is,

(i) not less than 900 mm long,
(ii) mounted approximately 850 mm above the floor, and
(iii) located on the wall opposite the entrance to the shower so that not less than 300 mm of its length is at one side of the seat,

f.1) have a vertical grab bar on each of the side walls of the shower that

i) conforms to Subclauses 3.8.3.8.(1)(d)(iv), (d)(v) and (d)(vi) (see Appendix A),
ii) are not less than 900 mm long, and
iii) are mounted with the bottom of the grab bar no less than 700 mm to 800 mm from the floor;

(g) have a pressure-equalizing or thermostatic mixing valve controlled by a lever or other device operable with a closed fist from the seated position,

(h) have a hand-held shower head with not less than 1 500 mm of flexible hose located so that it can be reached from the seated position and equipped with a support so that it can operate as a fixed shower head, and

i) have a shelf that is reachable from the seated or standing position, located between 800 mm and 1 200 mm from the floor, provided that it does not restrict access to and use of the shower.

3.8.3.14. Counters

1) Every counter at which the public is served, shall have at least one barrier free section not less than 800 mm long centred over a knee space conforming to Sentence (3). (See Appendix A.) (See also A-3.8.2.1. in Appendix A.)

2) A barrier free counter surface shall be not more than 800 mm above the floor.

3) Except as permitted in Sentence (4), the knee space beneath a barrier free counter intended to be used as a work surface shall be not less than

a) 800 mm wide,
b) 700 mm high, and
c) 500 mm deep.

4) A counter that is used in a cafeteria, or one that performs a similar function whereat movement takes place parallel to the counter, need not provide a knee space underneath it.

3.8.3.15. Shelves or Counters for Telephones

1) Where built-in shelves or counters are provided for public telephones, they shall be level and shall

a) be not less than 350 mm deep, and

b) have, for each telephone provided, a clear space not less than 500 mm wide having no obstruction within 250 mm above the surface.

2) The top surface of a section of the shelf or counter described in Sentence (1) serving at least one telephone shall be not more than 800 mm above the floor.

3) If a wall-hung telephone is provided above the shelf or counter section described in Sentence (2), it shall be located so that the receiver and coin slot are not more than 1 200 mm above the floor.

3.8.3.16. Drinking Fountains

1) Where drinking fountains are provided, at least one shall be *barrier-free* and shall,

a) have a spout located near the front of the unit not more than 915 mm above the floor, and

b) be equipped with controls that are easily operated from a wheelchair using one hand with a force of not more than 22 N or be automatically operable.

3.8.3.17. Bathtubs

1) If a bathtub is installed in a suite of residential occupancy required to be *barrier- free*, it shall

a) Be located in a room complying with the dimensions stated in Sentence 3.8.3.12.(1)

b) Conform to Article 3.7.2.9., and

c) Be equipped with a hand-held shower head conforming to Clause 3.8.3.13.(1)(h) but with not less than 1800mm of flexible hose.

References

"*About MS.*" About MS - MS Society of Canada. Accessed December 29, 2022. https://mssociety.ca/about-ms.

Amankwah, Nana, Maryam Oskoui, Rochelle Garner, Christina Bancej, Douglas G. Manuel, Ron Wall, Philippe Finès, Julie Bernier, Karen Tu, and Kim Reimer. "Cerebral Palsy in Canada, 2011-2031: Results of a Microsimulation Modelling Study of Epidemiological and Cost Impacts." *Health Promotion and Chronic Disease Prevention in Canada 40*, no. 2 (2020): 25–37. https://doi.org/10.24095/hpcdp.40.2.01.

Batista, Alondra. *Healing Architecture: Defeating Depression with a Built Environment That Stimulates Human Perception.* Boston: Boston Architectural College, 2017.

Beardsley, Gemma Rose, and Paul Caffrey. *Biophilic Design: Its Impact on the Environment and People's Well-Being*, 2013.

Beatley, Timothy. "*Biophilic Architecture and Design.*" *Handbook of Biophilic City Planning and Design*, 2016, 149–72. https://doi.org/10.5822/978-1-61091-621-9_15.

Brown, Mary Jean, and David E. Jacobs. "Residential Light and Risk for Depression and Falls: Results from the Lares Study of Eight European Cities." *Public Health Reports* 126, no. 1_suppl (2011): 131–40. https://doi.org/10.1177/00333549111260s117.

CABE [Commission for Architecture and the Built Environment]. *Future Health: Sustainable Places for Health and Well-Being*. London: CABE, 2009.

Calkin, Jessamy. "'Maggie Didn't Quite Die – Her Spirit Is Very Much Alive'." The Telegraph. Telegraph Media Group, November 26, 2021. https://www.telegraph.co.uk/christmas/2021/11/26/maggie-didnt-quite-die-spirit-much-alive/.

Canada, Environment and Climate Change. "Government of Canada / Gouvernement Du Canada." Climate. Government of Canada / Gouvernement du Canada, December 1, 2022. https://climate.weather.gc.ca/climate_normals/index_e.html.

Chew, Nicholas W.S., Grace K.H. Lee, Benjamin Y.Q. Tan, Mingxue Jing, Yihui Goh, Nicholas J.H. Ngiam, Leonard L.L. Yeo, et al. "A Multinational, Multicentre Study on the Psychological Outcomes and Associated Physical Symptoms amongst Healthcare Workers during COVID-19 Outbreak." *Brain, Behavior, and Immunity* 88 (2020): 559–65. https://doi.org/10.1016/j.bbi.2020.04.049.

Dominiczak, Marek H. "Illness and Culture: Maggie's Centres." Clinical Chemistry 59, no. 1 (2013): 333–34. https://doi.org/10.1373/clinchem.2012.188318.

Foucault, Michel. "Of Other Spaces* (1967)." Heterotopia and the City, 2008, 25–42. https://doi.org/10.4324/9780203089415-8.

Gardiner, Karen. "Why Design Lovers Should Visit Winnipeg." Architectural Digest. Architectural Digest, January 30, 2020. https://www.architecturaldigest.com/story/why-design-lovers-should-visit-winnipeg.

Groetzinger, Deanna. MS, Multiple Sclerosis: Its Effects on You and Those You Love. Edited by Lynn Laccohee and Dawn Young. Toronto, Ontario: Multiple Sclerosis Society of Canada, 1986.

Jencks, Charles. "Maggie's Architecture: The Deep Affinities between Architecture and Health." Architectural Design 87, no. 2 (2017): 66–75. https://doi.org/10.1002/ad.2154.

Jencks, Maggie Keswick, and Marcia Blakenham. *A View from the Front Line*. London: Maggies Centres, 2003.

Kaplan, Stephen. "The Restorative Benefits of Nature: Toward an Integrative Framework." Journal of Environmental Psychology 15, no. 3 (1995): 169–82. https://doi.org/10.1016/0272-4944(95)90001-2.

Kellert, Stephen R., Judith H. Heerwagen, and Martin L. Mador. *Biophilic Design: The Theory, Science, and Practice of Bringing Buildings to Life*. Hoboken: Wiley, 2008.

Kirby, Michael. *Toward Recovery & Well-Being: A Framework for a Mental Health Strategy for CANADA*. November 2009. Mental Health Commission of Canada, 2009.

Locher, Mira, and Terunobu Fujimori. *Zen Garden Design: Mindful Spaces by Shunmyo Masuno, Japan's Leading Garden Designer*. Tokyo: Tuttle Publishing, 2020.

Locher, Mira. *Zen Gardens: The Complete Works of Shunmyo Masuno, Japan's Leading Garden Designer*. Toyko: Tuttle Pub., 2012.

"Monastery History." St. Norbert Arts Centre. Accessed January 28, 2023. https://www.snac.mb.ca/monastery.

"More than 1,000 Winnipeg Parks for You to Explore." City of Winnipeg, July 16, 2021. https://www.winnipeg.ca/people-culture/our-city-our-stories/more-1000-winnipeg-parks-you-explore#:~:text=Getting%20outside%20and%20being%20active,and%20plentiful%20amenities%20to%20enjoy.

Moynihan, Elizabeth B. *Paradise as a Garden: In Persia and Mughal India*. London: Scolar, 1982.

Okakura Kakuzō. *The Book of Tea: Japanese Harmony of art culture and the simple life*, 1919.

"Our Story." Maggie's Centres. Accessed January 18, 2023. https://www.maggies.org/about-us/how-maggies-works/our-story/.

"The Persian Gardens." Essay. In *The World's Heritage*. UNESCO, Collins, 2018.

Porter, Nicole, Johanna Bramham, and Martin Thomas. "Chapter 17. Mindfulness and Design: Creating Spaces for Well Being." Essay. In *Creative Practices for Improving Health and Social Inclusion: 5th International Health Humanities Conference*, 199–209. Sevilla: Universidad de Sevilla, Vicerrectorado de Investigación, 2017.

Purser, Ronald E. "Zen and the Art of Organizational Maintenance."*Organizational Aesthetics 2* (2013): 34–58. https://oa.journals.publicknowledgeproject.org/index.php/oa/article/view/21.

Salingaros, Nikos Angelos. *Biophilia & Healing Environments: Healthy Principles for Designing the Built world.* New York, LLC: Terrapin Bright Green, 2015.

School of Architecture, Yale. "Yoko Kawai." Yale Architecture. Yale School of Architecture. Accessed January 16, 2023. https://www.architecture.yale.edu/faculty/344-yoko-kawai.

"Section 6 - Environment Act License Proposal and Environmental Impact Statement." City of Winnipeg. Accessed January 29, 2023. https://www.gov.mb.ca/sd/eal/registries/5452disraeli/section_6.pdf.

Takada, Yoshie. "Maggie's Tokyo's Human Support the Meaning of Where Now? And Cancer Journey." *Gan To Kagaku Ryoho*, 2017, 640–43. https://pubmed.ncbi.nlm.nih.gov/28860432/.

Ulrich, Roger S., Robert F. Simons, Barbara D. Losito, Evelyn Fiorito, Mark A. Miles, and Michael Zelson. "Stress Recovery during Exposure to Natural and Urban Environments." *Journal of Environmental Psychology* 11, no. 3 (1991): 201–30. https://doi.org/10.1016/s0272-4944(05)80184-7.

"Weatherspark.com." Okinawa Climate, Weather By Month, Average Temperature (Japan) - Weather Spark. Accessed January 22, 2023. https://weatherspark.com/y/142278/Average-Weather-in-Okinawa-Japan-Year-Round.

Wilber, Donald Newton. "Persian Gardens and Paradise." Essay. In *Persian Gardens and Garden Pavilions*, 13–53. Washington, D.C.: Dumbarton Oaks, 1979.

Zhong, Weijie, Torsten Schröder, and Juliette Bekkering. "Biophilic Design in Architecture and Its Contributions to Health, Well-Being, and Sustainability: A Critical Review." *Frontiers of Architectural Research*, 2021. https://doi.org/10.1016/j.foar.2021.07.006.