The Power of Nature

Final Project

Master of Architecture, Texas A&M University

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Dedication

To my family:

Thank you for your love all the time, let me grow up happily!.Thank you for supporting me study abord. I love you!

To my fiancée Erli:

Thank you for being with me and bringing me infinite happiness. I love you!

Acknowledgement

FIrst of all, I would like to extended my sincere gratitude to my committee chair, Zhipeng Lu. Thank you for sparing no effort to share your knowledge, helping me make connection with William and pushing me to finish my final project successfully.

High tribute shall be paid to George J. Mann. Thank you for introducing this interesting project. This project gave me an excellent opportunity to learn the design of outpatient facilities.

I am also deeply indebted to Zofia K. Rybkowski. Thank you for your very helpful opinions on my design from different angles every time.

Also, I would like to appreaciate my studio instructor, Brian Gibbs. Thank you for your guidance in the past academic year. You have given me many professional opinions. I can't finish my final project successfully without your help.

Special thanks should go to my professinal advisor, William Eide. Thank you for helping me to revise the floor plan again and again. I have not only learned a lot knowledge about medical planning from you, but also a lot of the details of human design need to be considered in healthcare deisgn.

Committee Members

Zhipeng Lu - Committee Chair
Assistant Professor, Department of Architecture; Associate Director, Center for Health Systems & Design

George J. Mann - Committee Member
AIA, Professor, Department of Architecture, holder of the Ronald L. Skaggs, FAIA Endowed Professor in Health Facilities Design, Center for Health Systems & Design

Zofia K. Rybkowski - Committee Member
Associate Professor, Department of Construction Science, Center for Health Systems and Design

Brian Gibbs - Studio Instructor
AIA, Assistant Professor of the Practice, Department of Architecture

William Eide - Professional Advisor
Health Care Facility Planning And Development Consultant

Content

Chapter 1

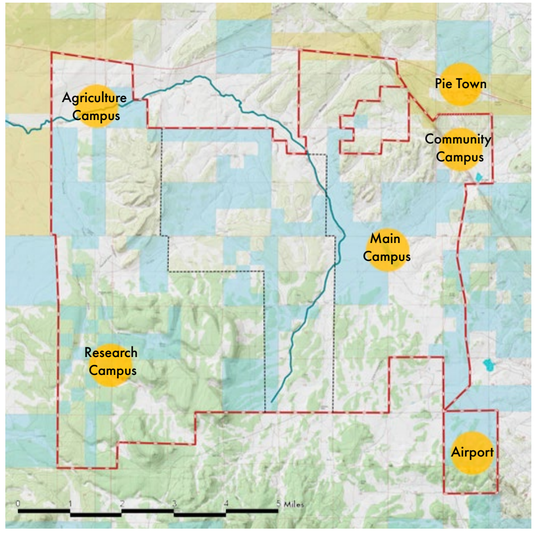
Introduction

Abstract

The project name is THE POWER OF NATURE. The topic of the project is an Outpatient Care Center located in a sanatorium resort, which focus on providing concierge medicine for VIP clients all over the world through Salutogenesis and biophilic design. Biophilic design is not a new concept and has been applied in many healthcare projects, but this project explored how to apply biophilic design strategies to reach the medical concept Salutogenesis. The form and space of the whole project are designed to better meet the physiological and psychological comfort of patients and medical staff. Two areas of concentrated focus were outdoor courtyards (healing gardens) design and the sight communication in indoor space.

Project Overview

This is a real project located in Pie Town, New Mexico, the client is Salutogenics – a corporation in Nevada. Five campus will be developed on the site. 1. The Community Campus will mainly be used as administration and logistic center, it will also provide residential, living and activity facilities for all staffs working in this sanatorium. 2. The Main Campus will include an outpatient clinic, an activity center, a rehabilitation center and more than 1000 residential units. 3. The Research Park will provide facilities to research. 4. The Airport will provide VIP clients over the world a quicker access to this sanatorium facility. 5. The Agriculture Campus will be a base to produce organic agricultural products. My final project is to design the outpatient care center on the main campus, this outpatient facility will include a clinic, an imaging department, an ambulatory surgery center, health consultant center and physical therapy rooms.



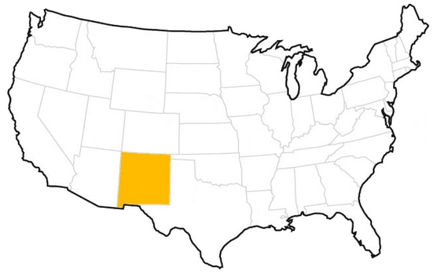
Site - Pie Town

Pie Town is located along U.S. 60, 83 miles (134 km) west of Socorro and approximately 290 miles (470 km) east of Phoenix, Arizona. [6][7] Albuquerque is 136 miles (219 km) to the northeast by other highways.

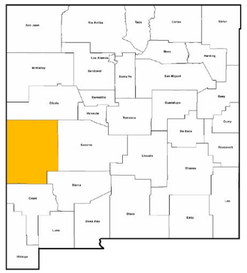
The center of Pie Town is 2 miles (3 km) west of where US 60 crosses the Continental Divide, and some visitors arrive by way of the Continental Divide Trail (CDT) that provides a respite between Silver City and Grants, New Mexico. For cyclists, equestrians, motorcyclists, and hikers, Pie Town provides a number of services, including lodging, supplies, and unique flavors of pie on request. In June 2007, three residents of Pie Town, Nita Larronde, Don Kearney, and Kathy Knapp, were awarded the Curry Trail Angel Award by the Adventure Cycling Association in recognition for their kindness and generosity.

The area of Pie Town is rich in relics of the Native Americans. Many Anasazi and Acoma pottery shards have been found in the area, along with grinding slicks, an ancient axe head, and petrified wood. Some fossilized bones have been found on the ground. The ruins of Native American communities, which consist of one to a few dozen structures, are found here.

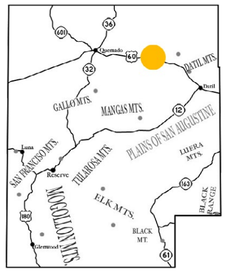
The Pie Town Annual Pie Festival includes a pie-baking contest, games and races, music, food, and arts and crafts.



New Mexico



Catron County



Pie Town

Pie town is located in Catron County on the plateau of Western New Mexico. The relatively high altitude (about 7000 feet on average) and temperate semi-arid climate bring dry and mild summer and make Pie town is a summer resort for outdoor activities.

Salutogenesis

Salutogenesis is the main concept of the company and its series of future projects.
Salutogenesis is the origins of health and focuses on factors that support human health and well-being, rather than on factors that cause disease (pathogenesis). More specifically, the "salutogenic model" was originally concerned with the relationship between health, stress, and coping through a study of holocaust survivors. Despite going through the dramatic tragedy of the holocaust, some survivors were able to thrive later in life. The discovery that their must be powerful health causing factors led to the development of salutogenesis. The term was coined by Aaron Antonovsky, a professor of medical sociology. The salutogenic question posed by Aaron Antonovsky is, "How can this person be helped to move toward greater health?"
Antonovsky's theories reject the "traditional medical-model dichotomy separating health and illness". He described the relationship as a continuous variable, what he called the "health-ease versus dis-ease continuum".[1]
Salutogenesis now encompasses more than the origins of health and has evolved to be about multidimensional causes of higher levels of health. Models associated with salutogenesis generally include wholistic approaches related to at least the physical, social, emotional, spiritual, intellectual, vocational, and environmental dimensions.

Pathogenesis	Salutogenesis
Avoiding a problem	Realising potential
Reactive	Proactive
Assumes we are inherently healthy	Assumes we are inherently flawed
Idealistic	Realistic

Biophilic Design

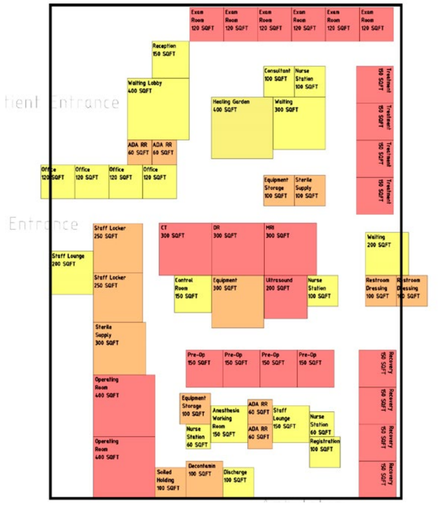
Biophilic design is a concept used within the building industry to increase occupant connectivity to the natural environment through the use of direct nature, indirect nature, and space and place conditions. Used at both the building and city-scale, there have been evidences those prove this idea has health, environmental, and economic benefits for building occupants and urban environments.

Chapter 2

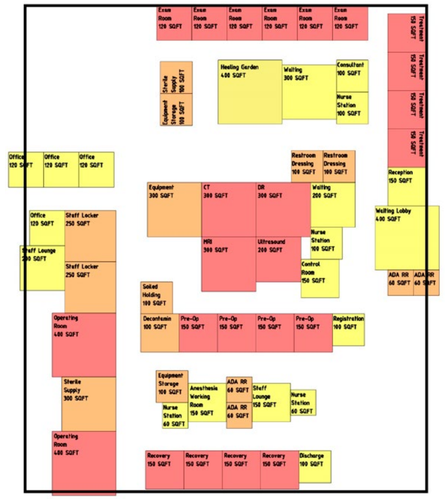
Design Programming

Space List

Outpatient Care Center	NSF	Quantity	Total NSF	DNSF	DGSF
Clinic				1800	
Exam Room	120	10	1200		
Waiting	200	1	200		
Consult	100	1	100		
Sterile Supply	100	1	100		
Equipment Storage	100	1	100		
Nurse Station	100	1	100		
Clinical Labs				500	
Lab	300	1	300		
Blood Drawing	200	1	200		
Pharmacy/Resource Center				400	
Pharmacy	300	1	300		
Consult	100	1	100		
Imaging Center				2290	
DR	250	1	250		
CT	300	1	300		
Ultrasound	200	2	400		
MRI	300	1	300		
Restroom/Dressing	100	2	200		
Control room	120	2	240		
Subwait	300	1	300		
Equipment	200	1	200		
Nurse Station	100	1	100		
Ambulatory Surgery Suites				5610	
Operating Room	400	4	1600		
Pre-Op/Recovery	150	10	1500		
PACU	120	4	480		
Registration	150	1	150		
ADA Restroom	60	2	120		
Decontamination	150	1	150		
Anethesia workroom	150	1	150		
Sterile Supply	300	1	300		
Soiled holding	100	1	100		
Nurse Station	80	2	160		
Scrub	30	1	30		
Med/Nourish	50	1	50		
Staff lounge	120	1	120		
Discharge	100	1	100		
Equipment Storage	100	1	100		
Waiting Lobby	500	1	500		
Admin/Public				1930	
Reception	150	1	150		
Office	120	4	480		
Restroom/Locker (Staff)	250	2	500		
Restroom/Locker	300	2	600		
Staff Lounge	200	1	200		
Mechanic	1000	1	1000		
Assessment Suites				1350	
Consult	120	5	600		
Physical Therapy	250	3	750		
Departmental Net SF				14880	
Factor: Net to Gross					1.35
Departmental Gross SF					20088



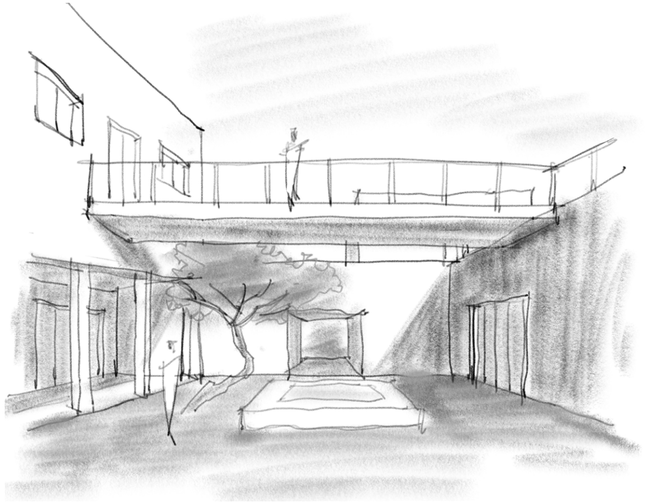
Option 1 places the entrances of patients and staff on the east and west sides respectively. The advantage is that the circulations of patients and staff can be clearly separated.

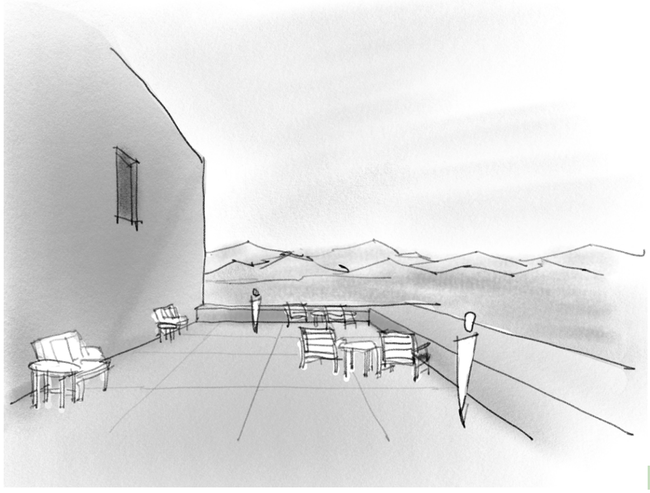


Option 2 places the patient's entrance on the west side and the staff's entrance on the south side to obtain the separated circulation and provide a high-quality view towards the lake on the west side.

Chapter 3

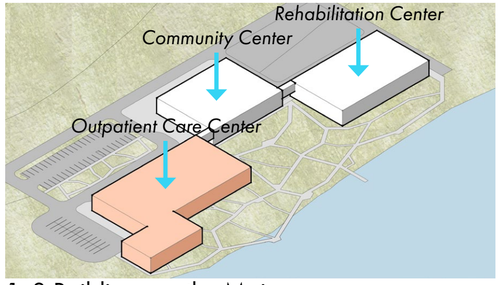
Design Development



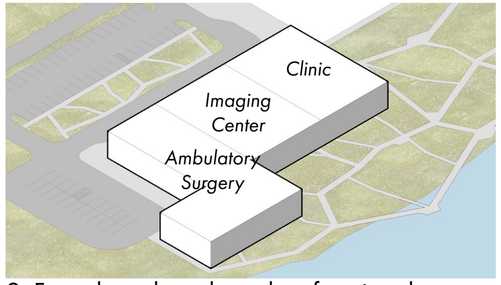


Sketches in design process

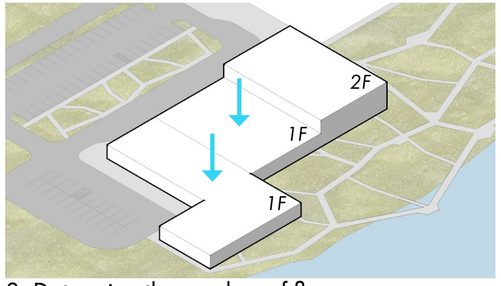
Parti Diagram



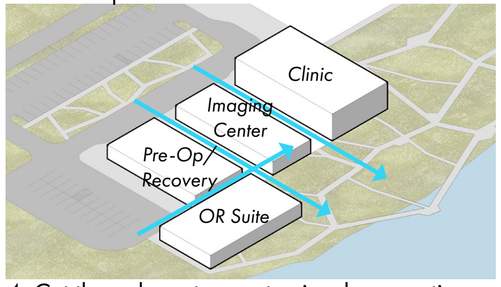
1. 3 Buildings on the Main campus



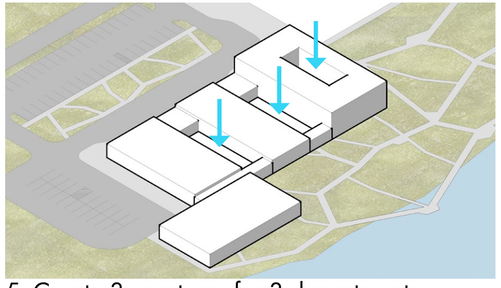
2. Form the volume based on functional relationship



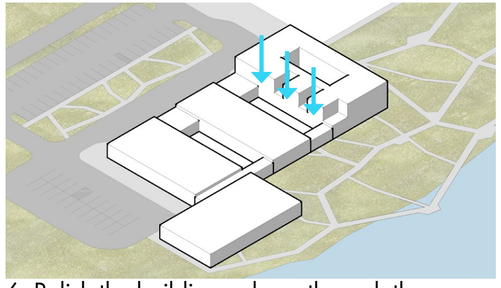
3. Determine the number of floors



4. Cut the volume to create visual connections and accesses to lakeshore

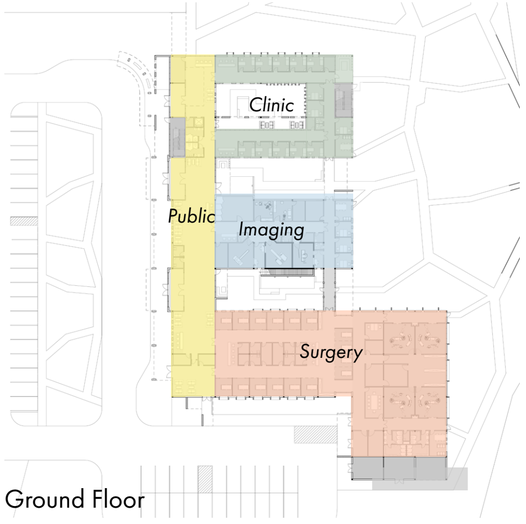


5. Create 3 courtyars for 3 departments

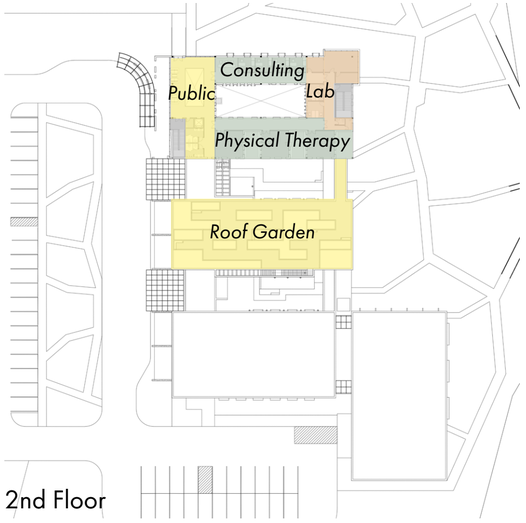


6. Polish the building volume through the terrace

Department Adjacency



Ground Floor



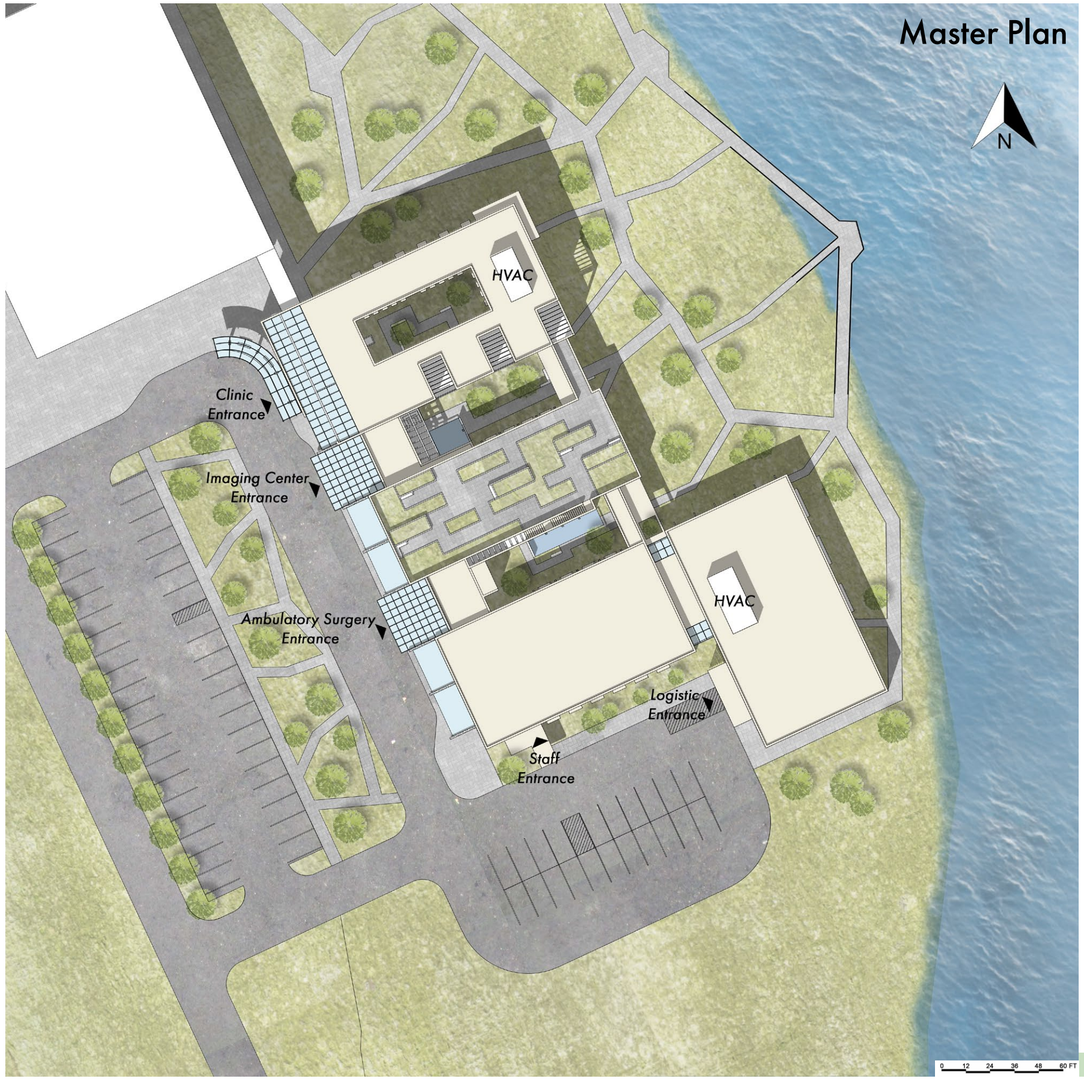
2nd Floor

The gaming method was used to organize the department adjacency and locations of rooms. For the ground floor, the Imaging Department was in center so it would be adjacent to both Clinic (north wing) and Ambulatory Surgery Department (south wing). A long public lobby on the west connected three departments.

Conculting rooms, Therapy rooms and Medical lab located on the sencond floor. A public lobby on the west serves both Conculting rooms and Therapy rooms. The Physical therapy rooms had balconys which connectted to a roof garden through a sky bridge.

Master Plan

Master Plan



Ground Floor Plan

- *Clinic*
- *Diagnostic & Treatment*
- *Staffs Support*
- *Patients Support*
- *Vertical Transportation*
- *Logistic & Storage*
- *Mechanic*

0 12 24 36 48 60 FT

Enlarged Ground Floor Plan - Clinic & Imaging Center

- *Clinic*
- *Diagnostic & Treatment*
- *Staffs Support*
- *Patients Support*
- *Vertical Transportation*
- *Logistic & Storage*
- *Mechanic*

MRI Room

Waiting Lobby

French windows enable the waiting lobby to directly see the courtyard and the lakeside scenery. The application of water as a landscaoe element in the design of courtyard helps to adjust the microclimate and reduce the discomfort of users in the semi-arid climate.

Enlarged Ground Floor Plan - Ambulatory Surgery Center

Diagnostic & Treatment

Staffs Support

Patients Support

Logistic & Storage

Mechanic

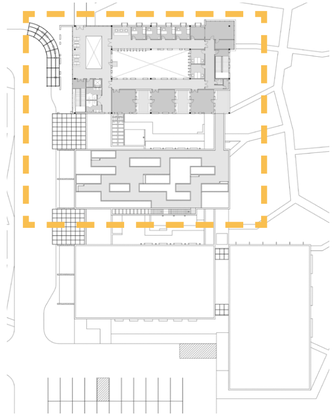
Operating Room

Post-Anesthesia Care Unit

The design of PACU ensures the convenience of staff to observe patients, but also introduces biophilic design.

Enlarged Ground Floor Plan - Ambulatory Surgery Center

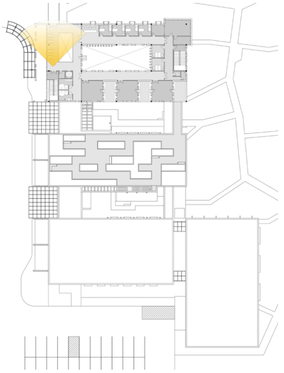
- *Diagnostic & Treatment*
- *Staffs Support*
- *Patients Support*
- *Logistic & Storage*
- *Mechanic*

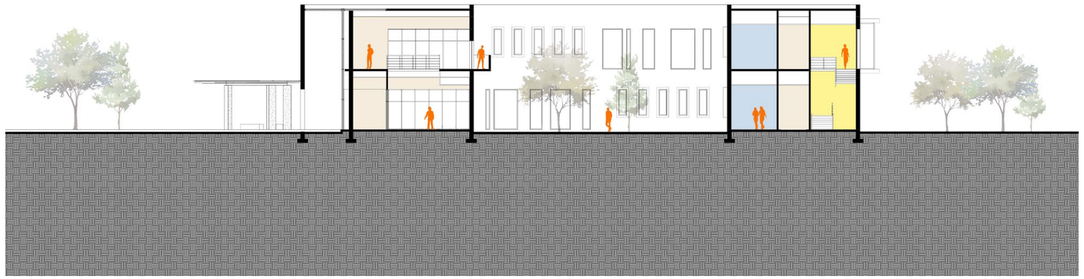


Balcony

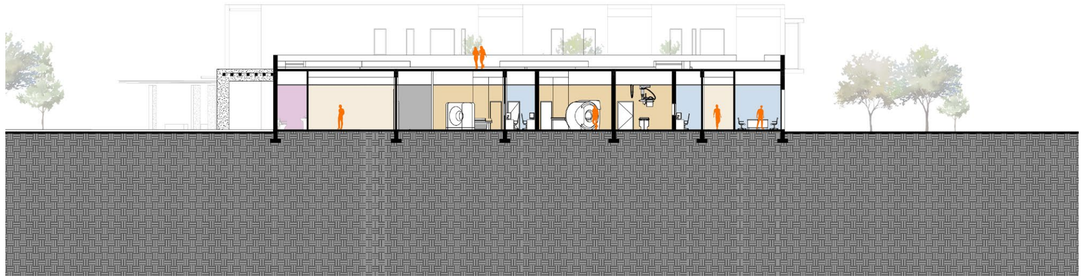
Waiting Lobby - 2nd Floor

The large curtain and glass roof introduce natural light and outdoor scenery to indoor space.

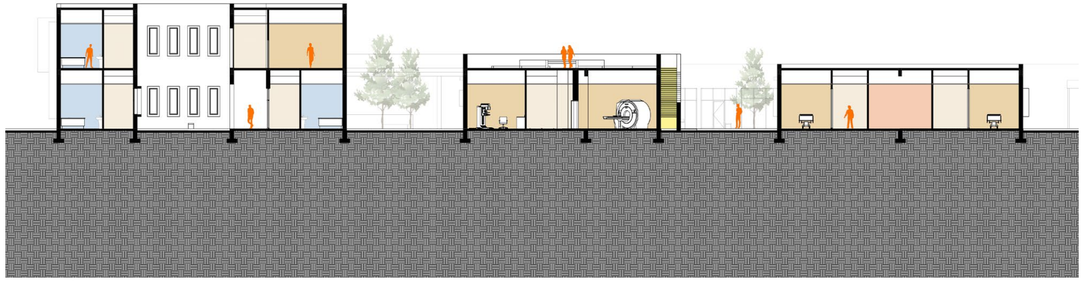




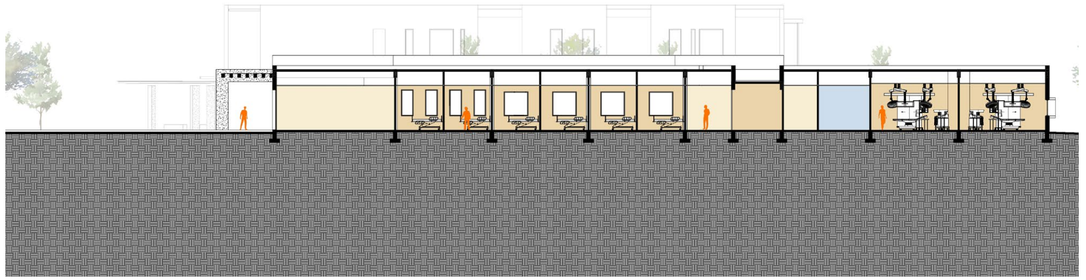
A-A Section



C-C Section

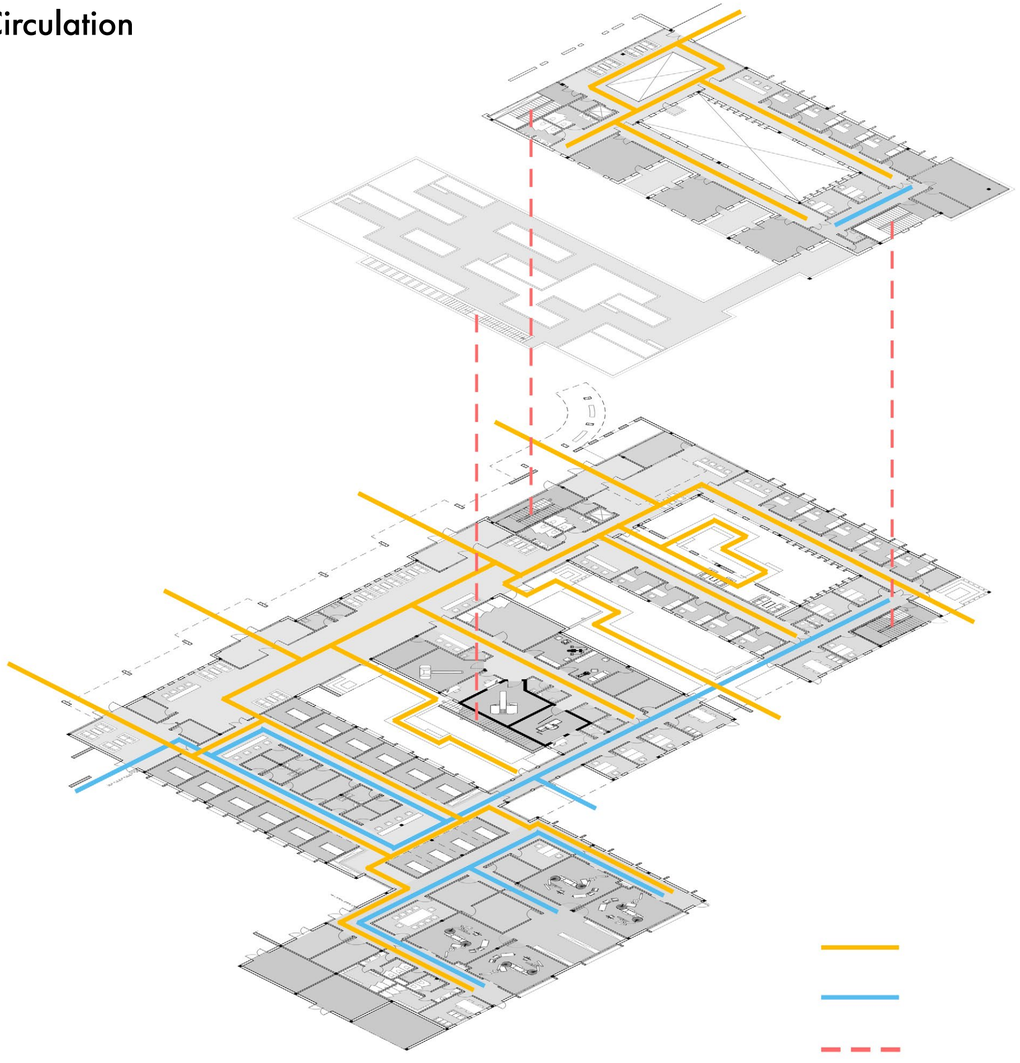


B-B Section

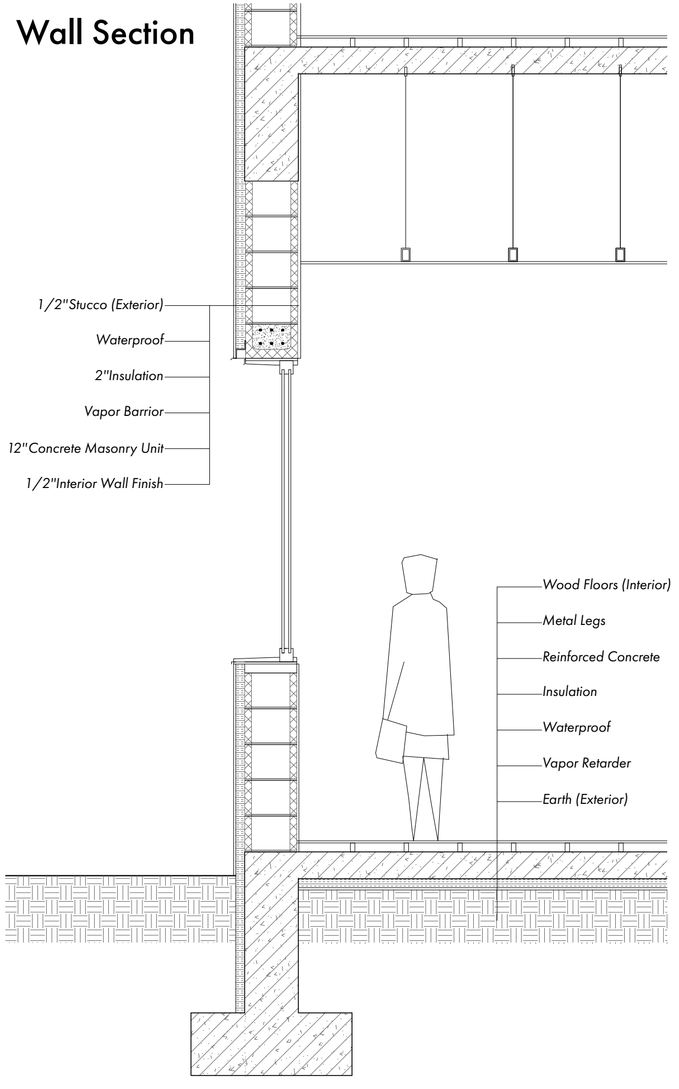


D-D Section

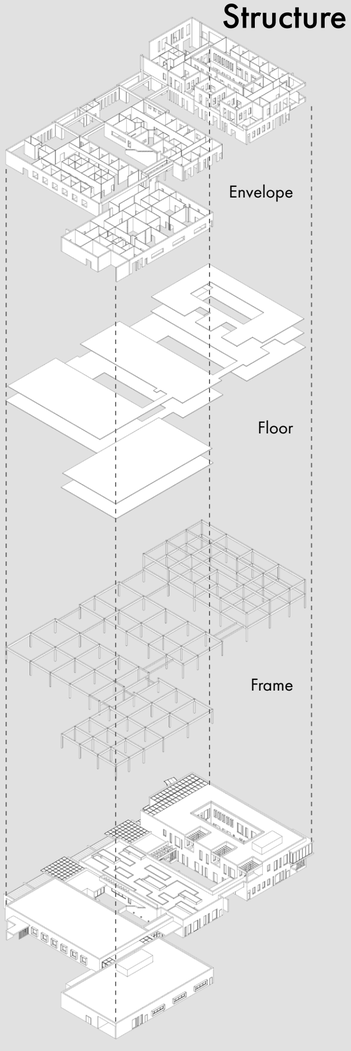
Circulation



Wall Section



Structure



Main Entrances

The main facade uses stucco and glass as the main materials to emphasize the contrast between solid surface and transparent surface. The transparent volume at the entrance provides a view directly towards the lake

Transitional space

The semi outdoor space at the main entrance provides a transition from outdoor space to indoor space, and can keep the users out from wind and rain.

Waiting Lobby

The large windows in the waiting lobby provides high quality views towards outdoor space. The glass roof and the double-height large space also directly introduce natural light into the lobby.

Conclusion

The big concept of my design is to provide connection with nature for both patients and healthcare staff. The 3 courtyards create a quiet and warm feeling by using biophilic design strategies. The design of indoor space also emphasizes the sight connection with outdoor natural landscape for users. Natural elements were used to not only cure patients, but also to help them produce and maintain their physical and mental health, to achieve the client's goal of Salutogenesis.

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