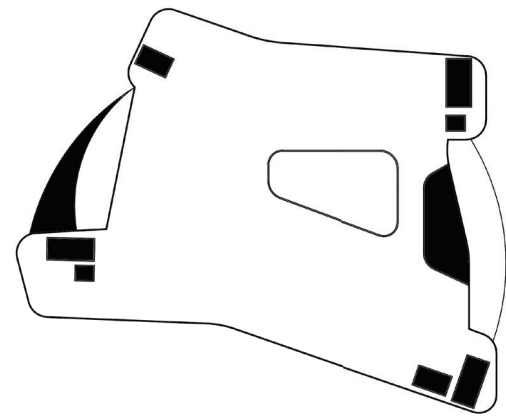


The Parkland Breast Center Design

Xinlu Wang





PINK RIBBON

The Parkland Breast Center Design





A. Ray Pentecost (Studio Instructor)

FAIA, FACHA, LEED AP, Ronald L. Skaggs and Joseph G. Sprague Chair of Health Facilities Design, Director, Center for Health Systems & Design, Professor of Practice

Department of Architecture, Center for Health Systems & Design



Rodney Culver Hill (Committee chair)

Presidential Professor & Piper Professor for Teaching Excellence, ING Professor of Excellence, Professorship of the Harold Adams Interdisciplinary Professorship of Architecture.

Department of Architecture



Susan Rodiek (Committee member)

Associate Professor

Department of Architecture, Center for Health Systems & Design

Chang-Shan Huang (Committee member)

AICP Associate Professor Registered Landscape Architect

Department of Landscape Architecture & Urban Planning, Center for Health Systems & Design



George J. Mann

RA, AIA, Professor, holder of the Ronald L. Skaggs, FAIA Endowed Professor in Health Facilities Design

Department of Architecture, Center for Health Systems & Design



D. Kirk Hamilton

Julie & Craig Beale Endowed Professor of Health Facility Design, FAIA, FACHA, EDAC

Department of Architecture, Center for Health Systems & Design



The Parkland Breast Center



Abstract

Stress-related aspects of breast cancer treatment

Breast cancer is currently the second most common fatal disease for women in the US. Breast cancer patients may experience much stress every time they go to the breast cancer center. Patients' family members and friends may also suffer a lot while accompanying their beloved ones. Also, medical staff working in such a stressful environment are more likely to make medical errors, and this kind of pressure is harmful to their health. Since a breast cancer center is a place that both patients and their families need to go multiple times and stay for a long time, it needs to be very homey and cozy to attract patients and therefore reduce their stress and anxiety.

Design strategies to help relieve stress

This project will focus on several aspects to improve the design of breast cancer centers, including nature views, social support, physical activity, and therapeutic landscapes. Through these methods, improving the occupants' well-being will come true. The research part will explore documented literature and case studies on strategies that will reduce occupants' stress and provide a cozy environment as solutions to improve the design of the breast cancer center. We will also discuss evidence-based design hypotheses of how to relieve the everyday stress of breast cancer occupants as well as strategies for measuring the effectiveness of these solutions.

Dedication

To my family

Without your love, constant support and encouragements, I couldn't accomplish this work. Thank you for your infinite love and dedication. I love you.

To CHSD

My final study could not be done without the help of CHSD, almost every professor in this center has devoted their effort and knowledge to support me not only complete and improve the project, but in many other aspects as well, conveying the information that CHSD is a warm united big family.

Acknowledgements

First, I would like to express my sincere gratitude to my instructor, Prof. Ray Pentecost, for his guidance and encouragement through my design process for the whole year. From the beginning of the third semester, he helped me to find a project and then he has always been helpful and supportive to make great contributions to my project.

I would also like to sincerely thank to my chair, Prof. Rodney Hill for his patience and guidance. He is a very nice professor who never sets limitations for my design, his smile is mild and powerful, saying that "go for it, try your best". Thanks to his open-mindedness, I had the opportunity to design the building on my preference.

I would like to thank my committee member, Prof. Susan Rodiek, who is extremely nice and supportive. She is available during holidays and weekends, sacrificing her relaxing time to give me very good and detailed suggestions. Her knowledge is very helpful and easy to practice in the real project, besides, she takes care of my study condition and many other aspects.

Table of Contents

Chapter 1- About breast cancer	1-4
Chapter 2- Research	
Therapy methods	5-6
Case study 1	7-10
Case study 2	11-18
Case study 3	19-26
Chapter 3 -Design Approach	
Site photos	27-28
Site	29-30
Site conditions	31
Program	32
Parti	33-34
Nolli map	35
Perspectives	36-38
Site plan	39-40
Plans	41-44
Elevations	45-46
Section perspectives	47-50
Interior & Landscape	51-54
Wall sections & Roof drainage	55-56
Physical model	57-58
Conclusion	59
References	60

Chapter 1

About Breast Cancer

Cancer is a leading cause of death in women, especially in some population groups. Parkland treats many cancer patients in the Dallas area.

BREAST CANCER FACTS

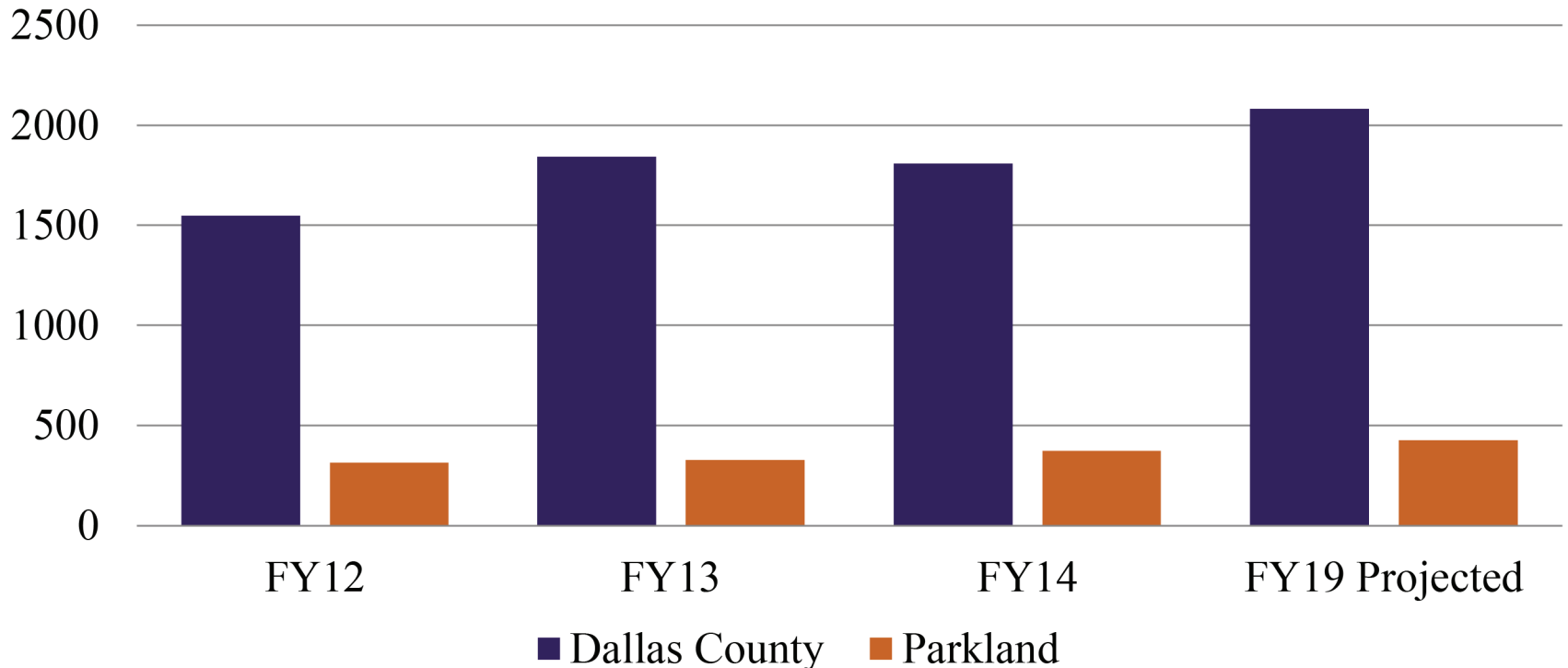
- ▶ Most commonly diagnosed cancer in women
- ▶ 2nd leading cause of death among women
- ▶ 40,000 women and 410 men will die each year
- ▶ African-American women 40% more likely to die
- ▶ #1 cause of cancer death in Hispanic women



Parkland patients are often younger, diagnosed at a later stage, and are found to have more aggressive cancers

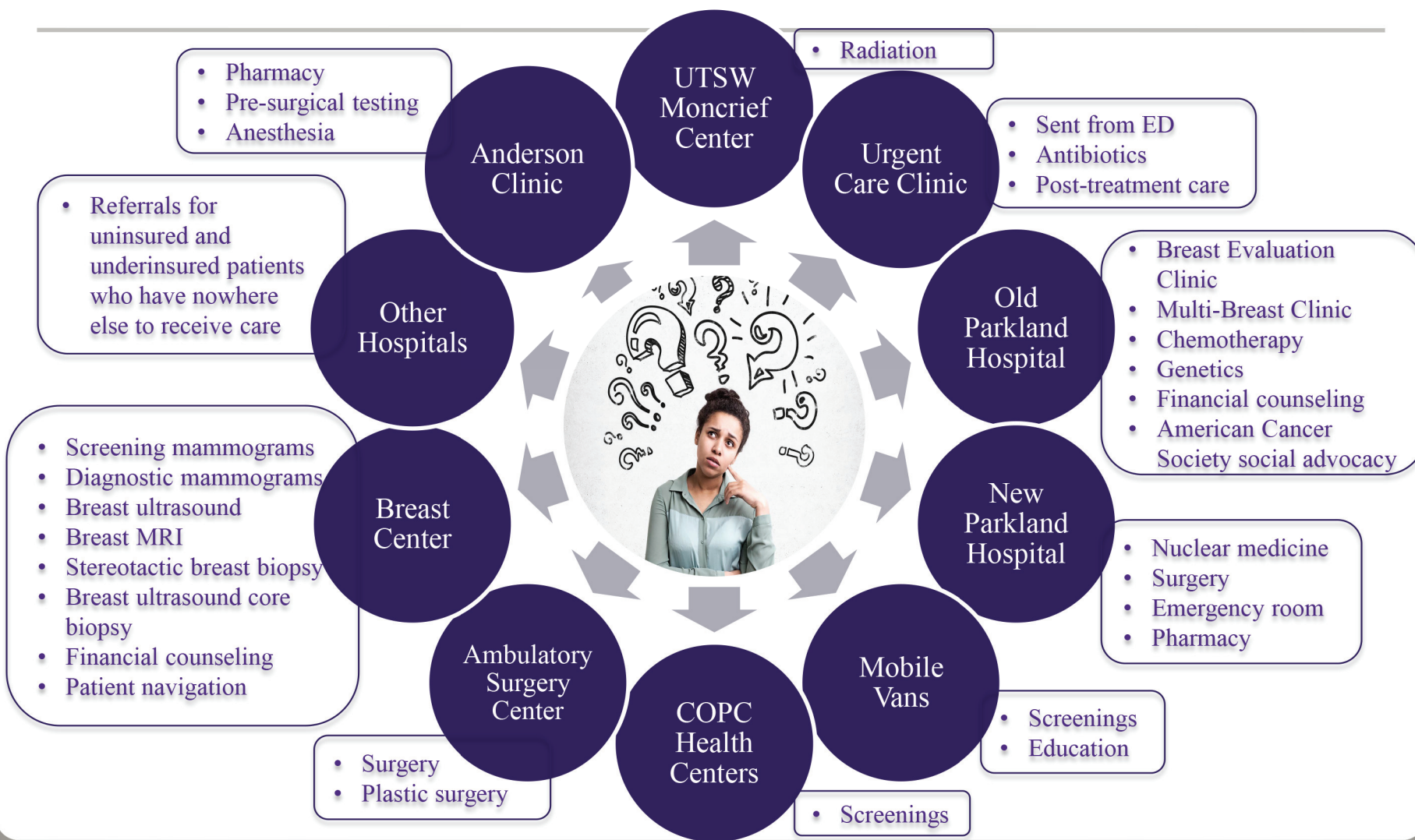
BREAST CANCER INCIDENCE

Parkland Treats 20% of Breast Cancer Patients in Dallas County

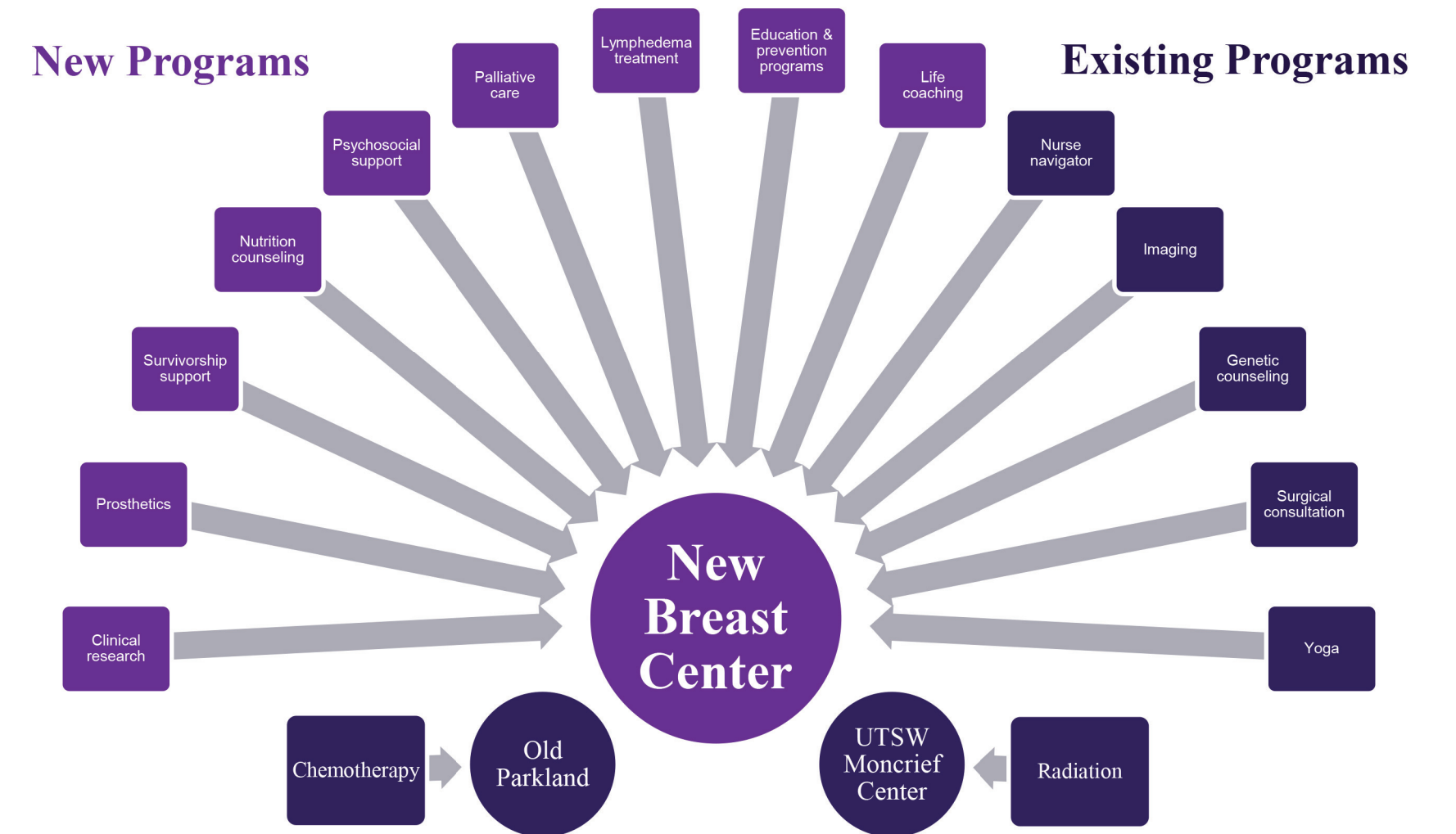


Source: Parkland, Dallas TX

DECENTRALIZED CARE



CENTRALIZED CARE

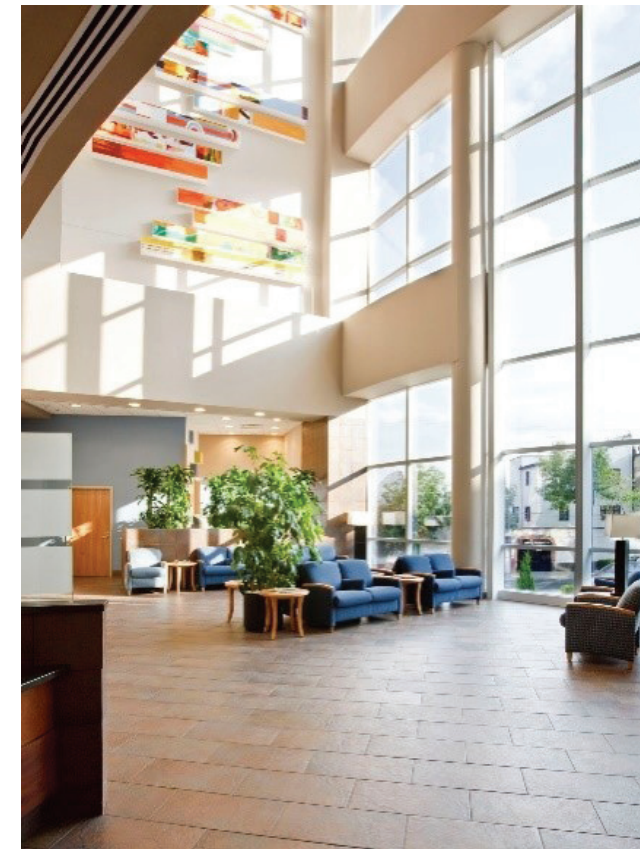


Chapter 2

Therapy methods



Therapeutic Landscapes –Smilow Cancer Hospital at New Haven
The healing garden has become the characteristic design feature of Smilow Cancer Hospital. It provides calm and comfort for patients who did their chemotherapy treatment here.



Physical Activity – The Cancer Center at Memorial Hermann- the Woodlands Medical Center
Yoga as an effective therapy method has been applied in some hospitals, it is also feasible to design a yoga therapy room in the breast cancer center in Dallas.

Social support – The synergy of the Centro de Cancer ABC

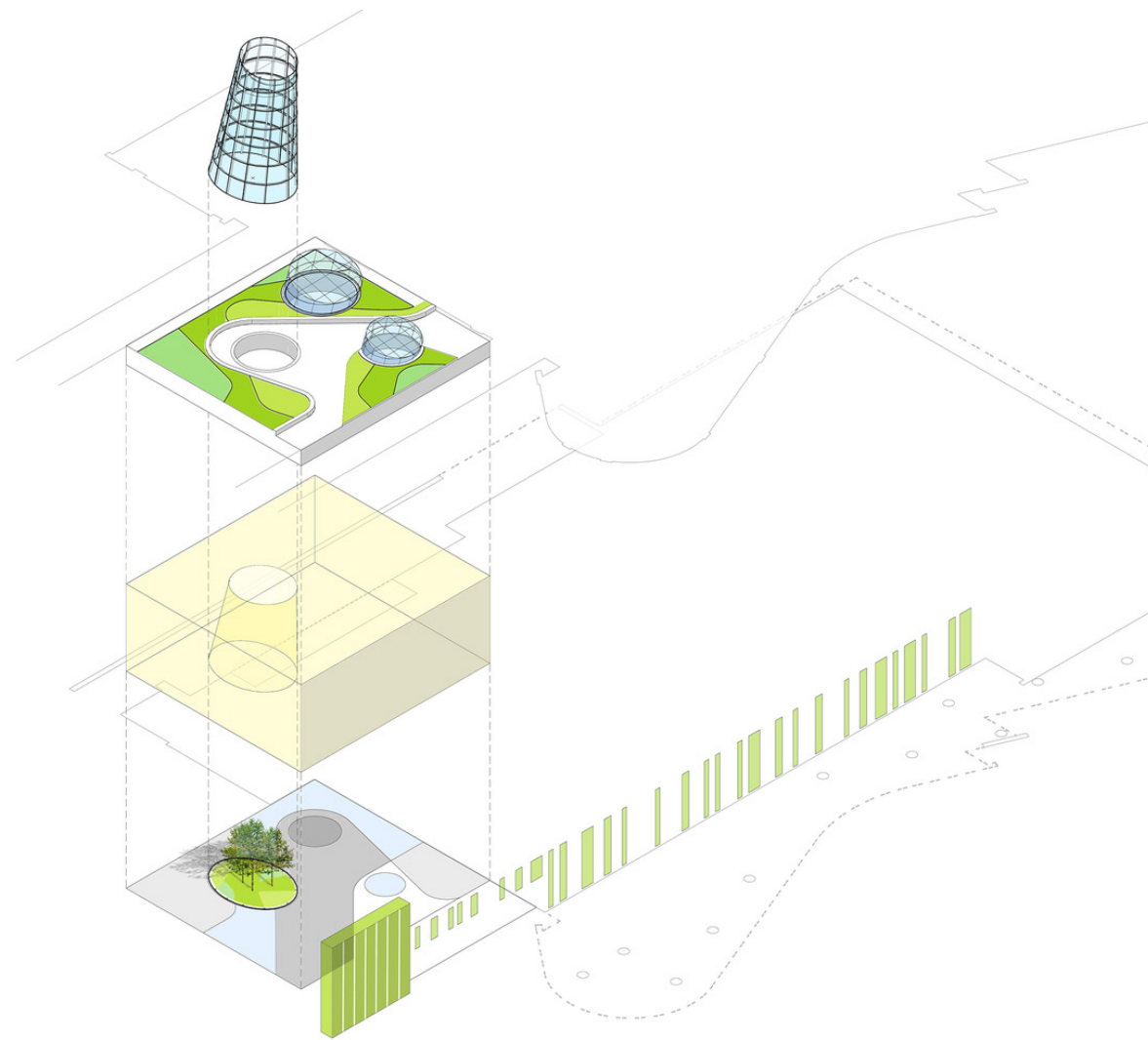
Case Study 1

Rush University Medical Center
Chicago, United States

This hospital is part of a campus-wide transformation project, which also includes an orthopedic building, parking structure and new loading and delivery systems. The 800,000-square-foot hospital consists of 386 patient beds along with diagnostic and treatment facilities, such as surgery, radiology and emergency departments. The hospital is sited adjacent to the Eisenhower Expressway (a major arterial feeding the central area of Chicago) on the north, Ashland Avenue on the east and Harrison Street, the major internal street for the Rush Campus, on the south.
(<https://www.archdaily.com/443648/new-hospital-tower-rush-university-medical-center-perkins-will>)

At the junction of new and old hospital is a multi-story entry pavilion whose roof is landscaped to provide a patient staff garden at level four that connects by bridge to the existing parking structure and has upper level patient check-in facilities. Skylights act as roof garden sculptural elements and provide natural light for the entry pavilion below. The walls of one of these skylights project down to the floor. Of the entry pavilion to introduce an exterior landscaped space without compromising internal contamination issues associated with plantings. (<https://www.archdaily.com/443648/new-hospital-tower-rush-university-medical-center-perkins-will>)





Case Study 2

Aiyuhua Hospital for Women and Children BEIJING, CHINA

With the expanding demand for women and children's health services, providers must raise the bar for patient care. Hospital staff are not just caring for a single patient. They are also tending to the needs of the patient's family in support of the patient's overall well-being.

Aiyuhua Hospital for Women and Children is China's first women and children's medical center. The hospital provides world-class prenatal care, obstetrics, maternity monthly stay service, pediatrics and child health management of the entire medical and health management services.

(<http://www.hksinc.com/places/aiyuhua-hospital-for-women-and-children/>)

The Vision and Design
The design goals are to create a family-centered as well as staff-focused healing environment. The basic design principles include building a humanized, high-tech digitized and sustainable hospital.

The hospital's design utilizes natural light and spacious interiors to create a calming and healing environment. Clear way finding uses light and color to announce destinations, define pathways and create intuitive navigating cues. The hospital is designed for both horizontal and vertical expansion.

(<http://www.hksinc.com/places/aiyuhua-hospital-for-women-and-children/>)



The lobby and reception areas has large glass window, the transparency is benefical for way finding as well as providing an illuminated space for patients and medical staff.



A variety choice of seating areas are provided in lobby area and other sub-waiting spaces, which provides patients and their families and friends or even doctors and nurses to choose the most comfortable and suitable seats for large groups of people, small groups of people, or individuals.

This design fully considers patients' needs in healthcare facilities. One important element is that they feel they have the sense of control, which is helpful to their recovery. They may avoid the embarrassment of seating together with strangers, meanwhile, they could choose group seatings when they come with friends or family members.



Decentralized nursing station is very common in hospitals, in early times most healthcare facilities only have centralized nursing stations, which will unavoidably increase nurses' and doctors' travel distances, decreasing their work efficiency. Later on, a prototype of decentralized nursing stations become popular, nurses could directly observe their patients from a view outside the inpatient rooms. The design of decentralized nursing stations has some basic rules, for example, the depth of the alcoves should not be too deep. Sometimes, one nurse may not be able to handle some emergencies, so that another adjacent nurse will notice this situation and come to help. Also, a window should be designed properly, to make sure nurses from this angle could see patients' heads.



Family-centered patient room has four zones, the patient zone, family zone, hygiene zone, and staff zone. It is very spacious and could accommodate families to sit while visiting the patients. And it utilizes warm color to create a hotel-like environment, instead of institutional facility.



Case Study 3

New Stamford Hospital Stamford, CT

To improve outcomes within the healthcare setting, the Planetree organization has long championed an empathetic approach to the design process. Embracing a human-centered approach, the Planetree philosophy filters all decisions through three focused lenses – Empowerment, Dignity and Compassion – with an underlying foundation in safety, effectiveness, and well-being for patients and caregivers.
(<https://www.eypae.com/publication/2016/under-planetree-design-philosophy-embrace-care-heal>)



The hospital design is inspired by three key concepts: Embrace, Care and Heal. The new facility balances high tech and high touch to demystify medicine and create a healthy environment for patients, families, and staff.
(<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



The pediatric waiting room in the emergency department has hanging fish artwork and an aquarium, allowing kids to gaze upon varying saltwater fish.
(<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



The surgery department's family waiting room features seating configurations using the emblem and form created during the design of the hospital. The waiting room also includes a nourishment bar.
(<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



Environmental graphic design, integrated with architecture and interiors, enhances the patient and family experience to evoke calm and confidence in the high-tech hospital environment. A seaside theme celebrates the City of Stamford's pride of place on the Long Island Sound.

Private patient rooms are spacious to accommodate family members and allow play.
(<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



A dedicated family lounge offers space for respite and play.
(<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



Dedicated staff lounges offer clinicians a private space to relax and recharge. (<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)



A dedicated roof-top terrace and respite area for staff members offers seating and a place to recharge and relax. (<https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>)

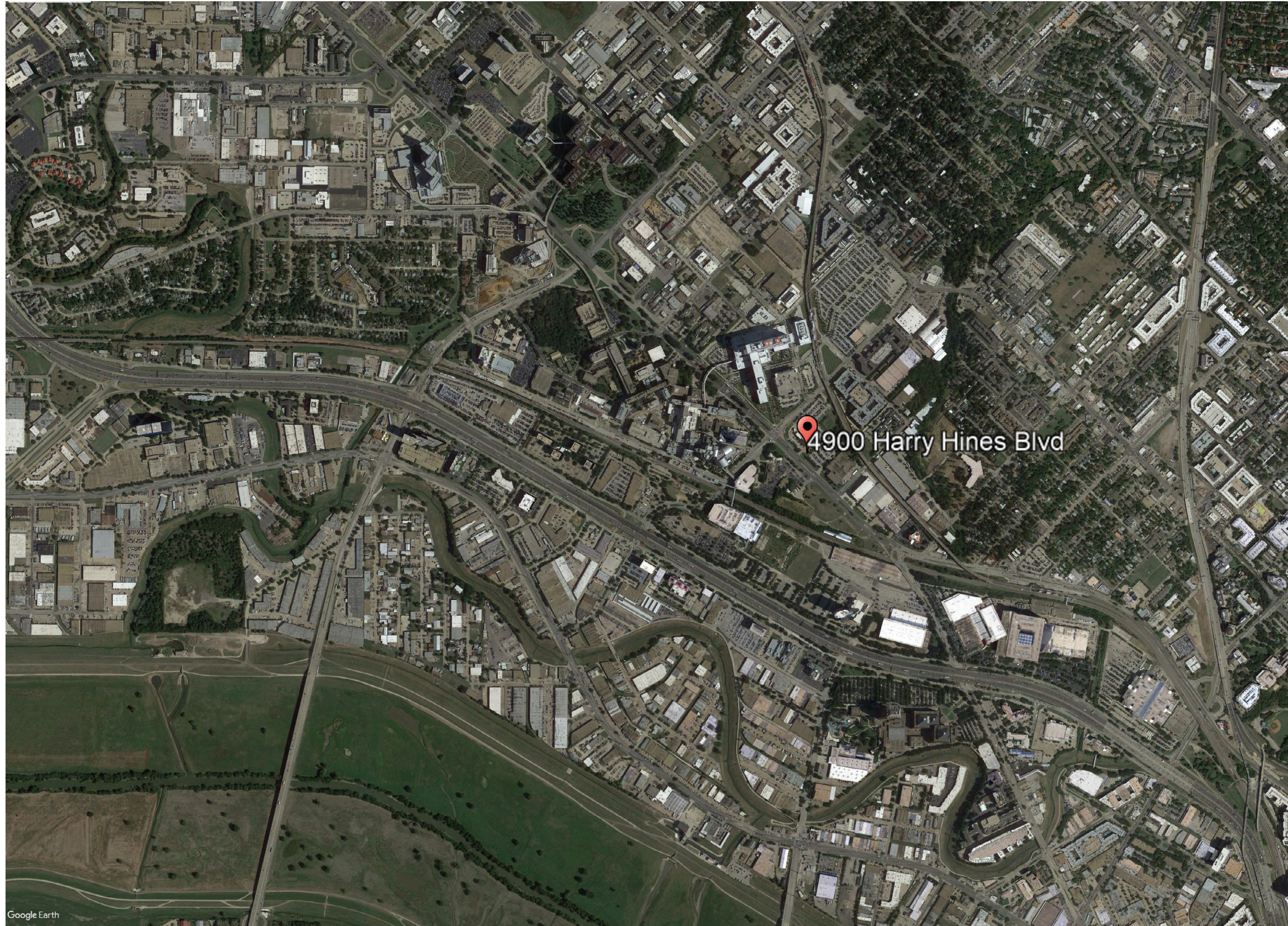
Chapter 3

Design approach

Site Photos



Site

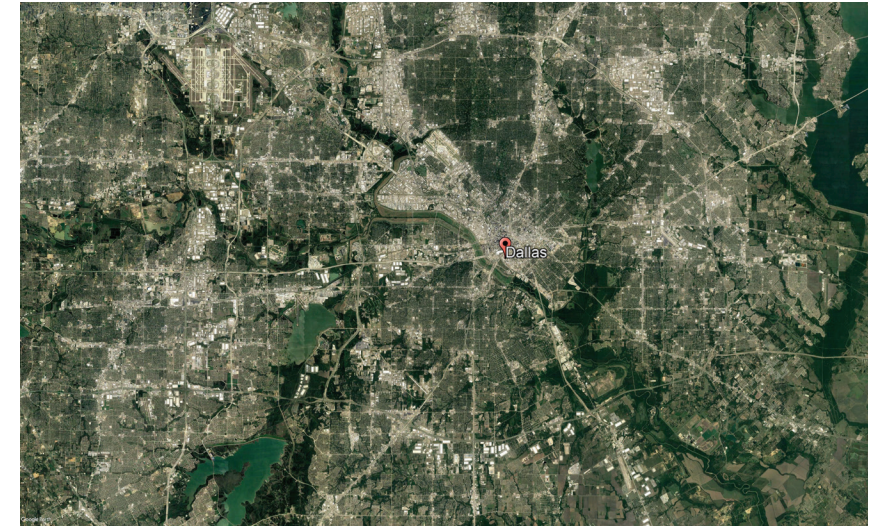


Google Earth

Texas



Dallas



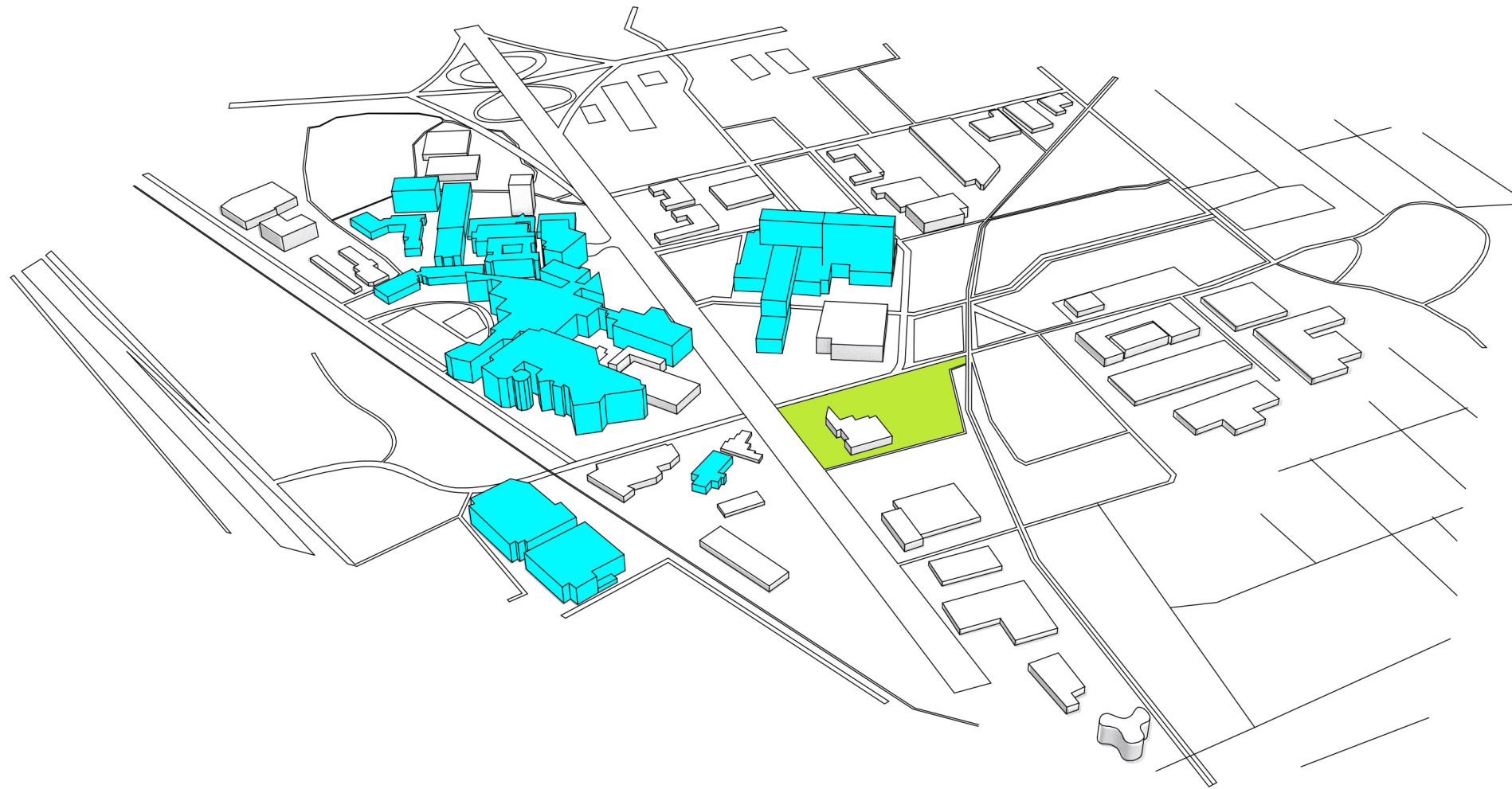
Campus



Possible Sites



Site Conditions



Program

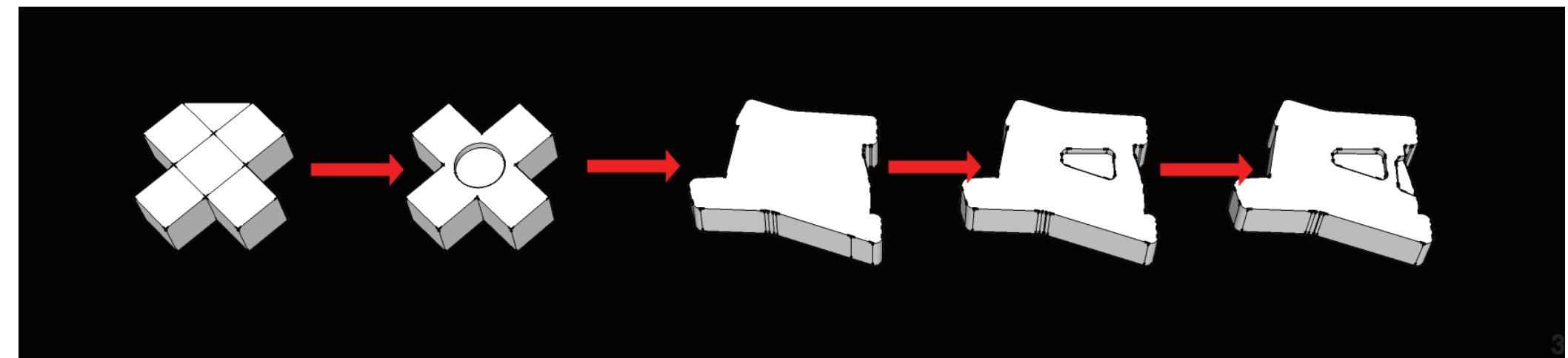
Space Program
Breast Center in Dallas, Texas
Client Parkland Health & Hospital System
Associates HKS & Texas A&M College of Architecture

Code	Functional Element	# of Room	NSF	TTL NSF R
A. Primary Functions				
1	Dressing Room - Unisex	8	60	480
2	Dressing Room - Unisex ADA	2	80	160
3	Dressing Room - Jail	2	60	120
4	Gowned Waiting - Unisex	1	120	120
5	Gowned Waiting - Jail	1	80	80
6	Patient Locker Alcove	1	30	30
7	Patient Toilet	4	65	260
8	Ultrasound	7	160	1120
9	Patient Toilet	4	65	260
10	Mammography - 3d	10	180	1800
11	Stereotactic	1	180	180
12	Molecular Breast Imaging	1	180	180
13	Bone Density	3	120	360
14	MRI - Breast	1	600	600
15	Control	1	120	120
16	MRI Equipment Room	1	180	180
17	MRI Safety Zone	1	180	180
18	Prep/Recovery/Observation	1	400	400
19	Procedure Room	4	200	800
20	Physical Therapy Gym	1	400	400
21	Yoga Studio	1	600	600
22	Exam Room	15	120	1800
23	Consultation Room	12	100	1200
Subtotal - NSF				11430
B. CLINICAL SUPPORT				
1	Team Workroom	2	350	700
2	Radioactive Storage	1	80	80
3	Central Tech Workroom	1	200	200
4	Reading Room	10	80	800
5	POC Testing Alcove	1	32	32
6	Pneumatic Tube Station	1	15	15
7	Mediation Room	1	80	80
8	Clean Supply	1	140	140
9	Spoiled Holding	1	80	80
10	Equipment Storage	1	150	150
11	Housekeeping	1	100	100
12	IT Server Room	1	150	150
13	Alcove, Clean Linen	1	20	20
14	Alcove, Crash Cart	1	20	20
15	Alcove, Equipment	1	20	20

C. STAFF SUPPORT				
1	Workroom	1	80	80
2	PFS Stations	6	80	480
3	Office, Radiologist	8	100	800
4	Workstation, Patient Navigator	4	48	192
5	Workstation, Care Coordinator	4	48	192
6	Office, Nurse Specialist	2	120	240
7	Workstation, Diagnostic Scheduling Team	8	48	384
8	Workstation, Research Coordination	5	48	240
9	Workstation, Clinic Manager	1	64	64
10	Workstation, Clerical Manager	1	48	48
11	Workstation, Genetic Counselor	4	48	192
12	Workstation, Compliance Program Manager	1	48	48
13	Workstation, Grant Writer	1	48	48
14	Workstation, Language Assistants	2	48	96
15	Workstation, Life Coach / Psychologist	2	48	96
16	Workstation, Shared Ancillary	4	48	192
17	Office, Surger	5	100	500
18	Workstation, Senior Medical Asst	3	64	192
19	Workstation, Social Worker	1	48	48
20	Workstation, Business Ops Spr	1	48	48
21	Multidisciplinary Team Conference	1	300	300
22	Staff Lounge / Lockers	1	300	300
23	Toilet, Staff	1	60	60
24	Collaboration Space	4	150	600
Subtotal - NSF				5440
D. PUBLIC SUPPORT				
1	Waiting	1	3290	3290
2	Reception / Check-In	1	400	400
3	Check-Out	1	400	400
4	Public Restroom	2	200	400
5	Education Conference Room	1	400	400
6	American Cancer Society	1	200	200
7	Women's Boutique	1	600	600
Subtotal - NSF				5690
GSF				25147

Parti

The pink ribbon is an international symbol of breast cancer awareness. Pink ribbons, and the color pink in general, identify the wearer or promoter with the breast cancer brand and express moral support for women with breast cancer. (https://en.wikipedia.org/wiki/Pink_ribbon)



Nolli Map



Nolli Map 

Perspective

The first glimpse of this building is a curved wall with the words Breast Center on it, indicating that this is the entrance of the breast center, making the way finding much easier and avoiding confusion with the existing 2-story surgical center.

View from the main entrance





View from southeast

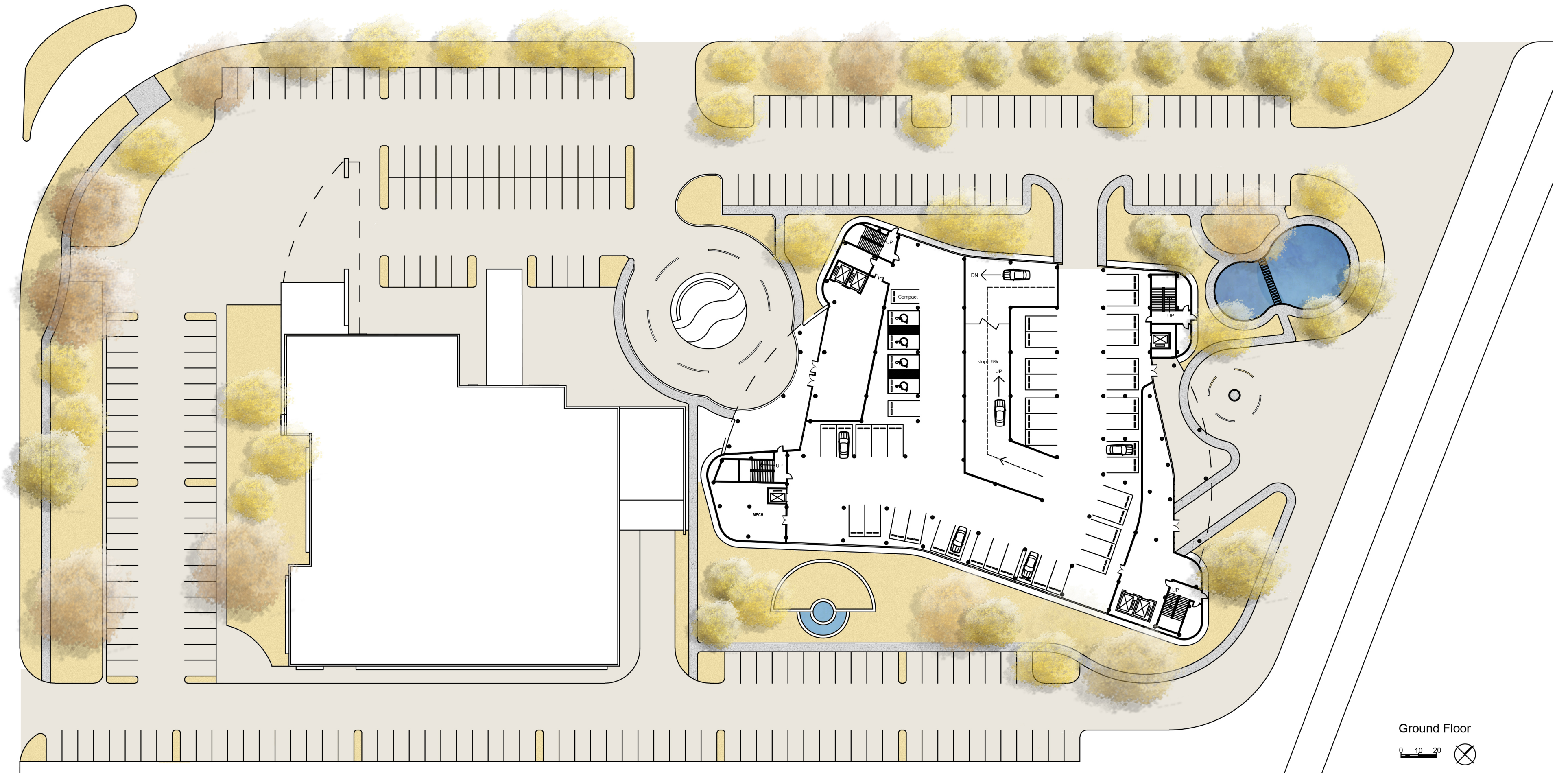


View from northeast

Site Plan



Ground Floor Plan

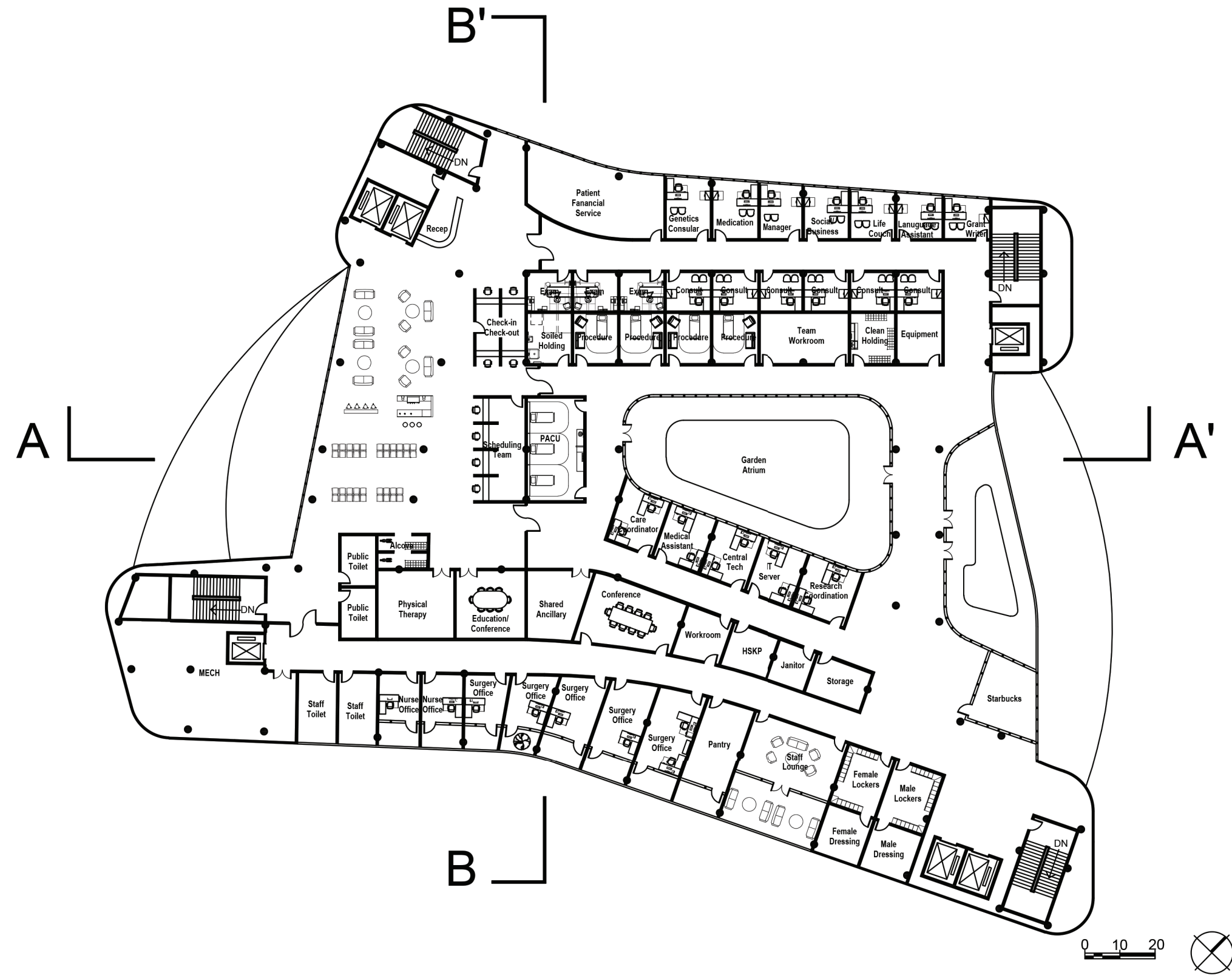


Ground Floor
0 10 20

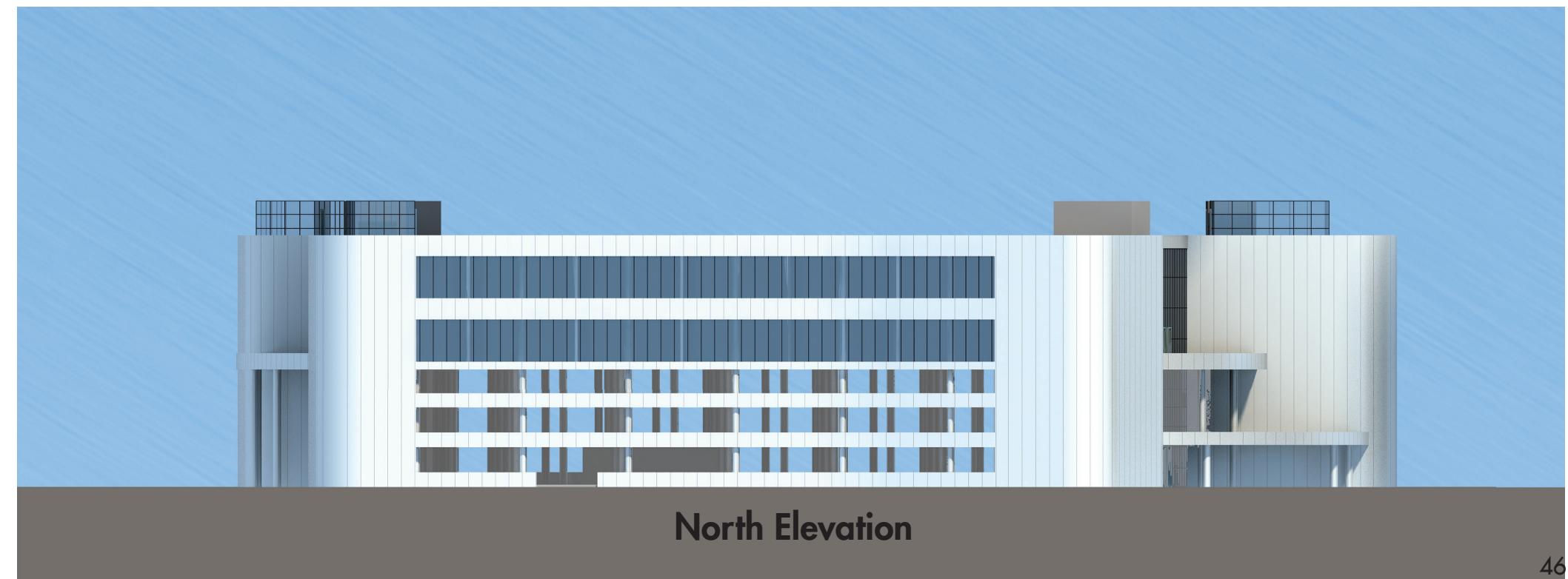
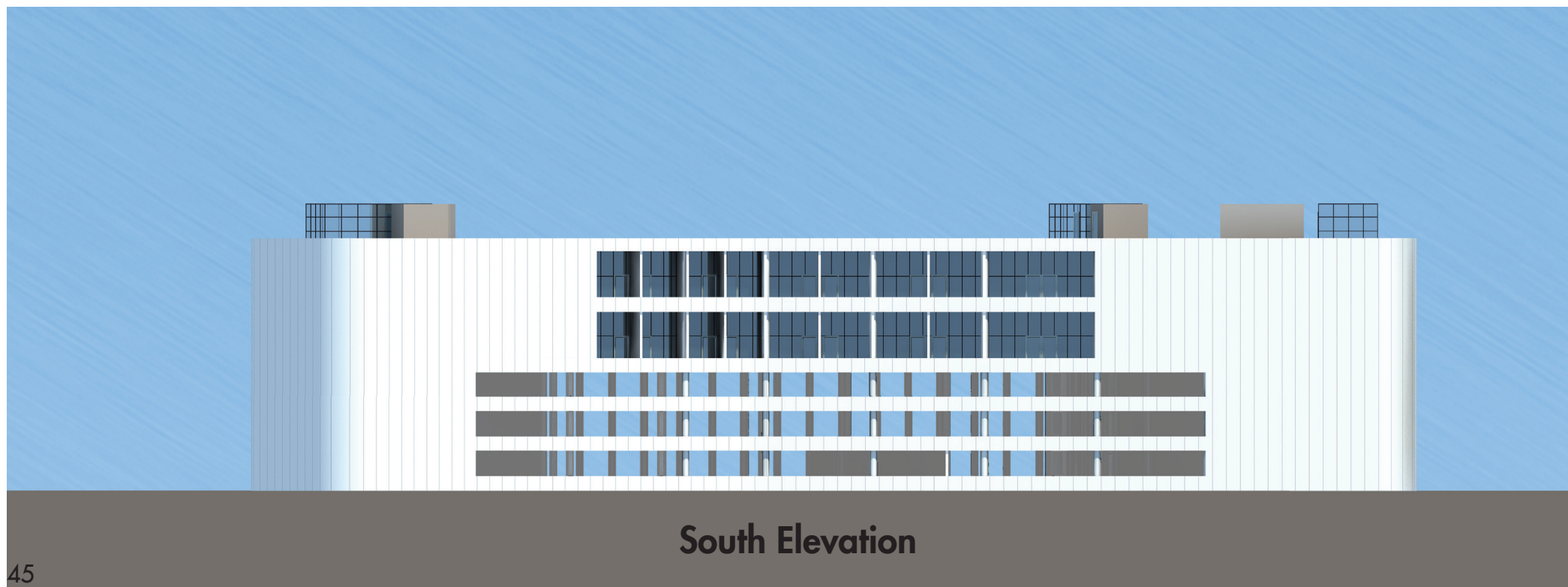
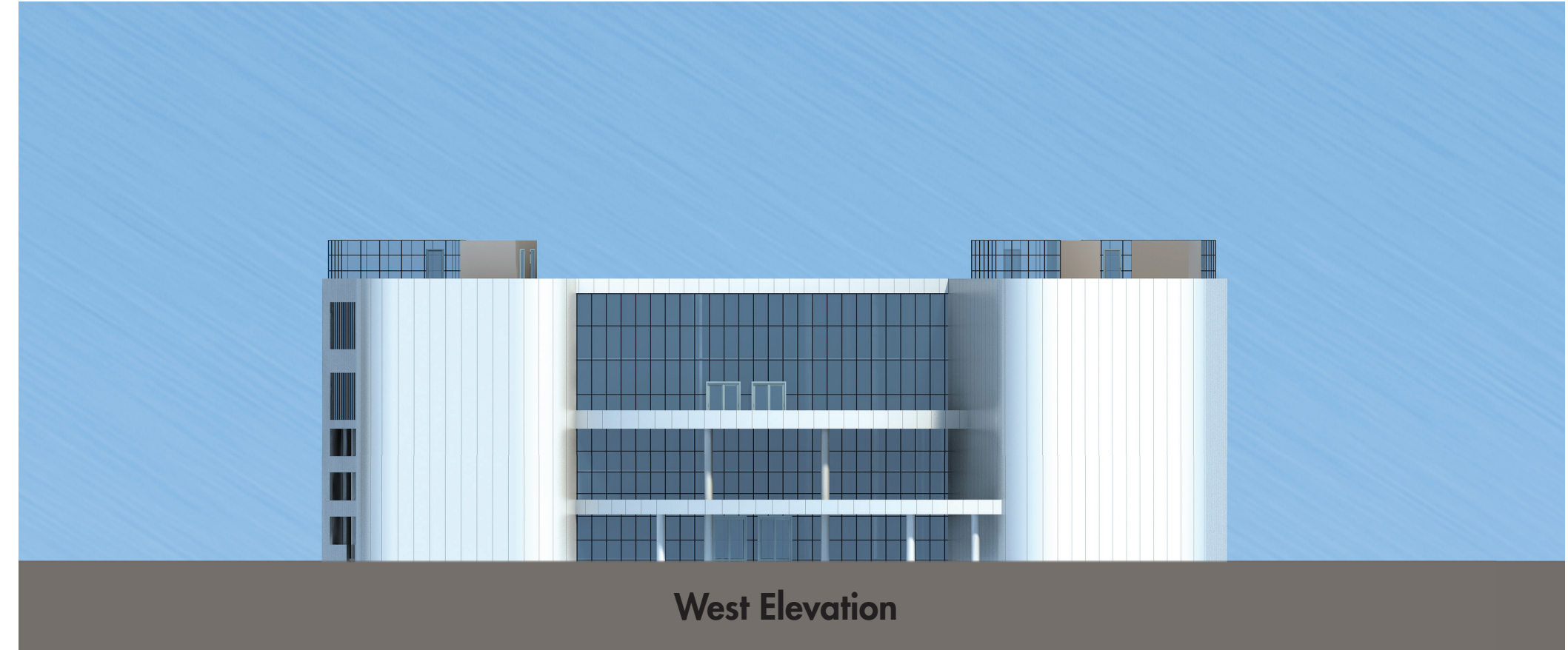
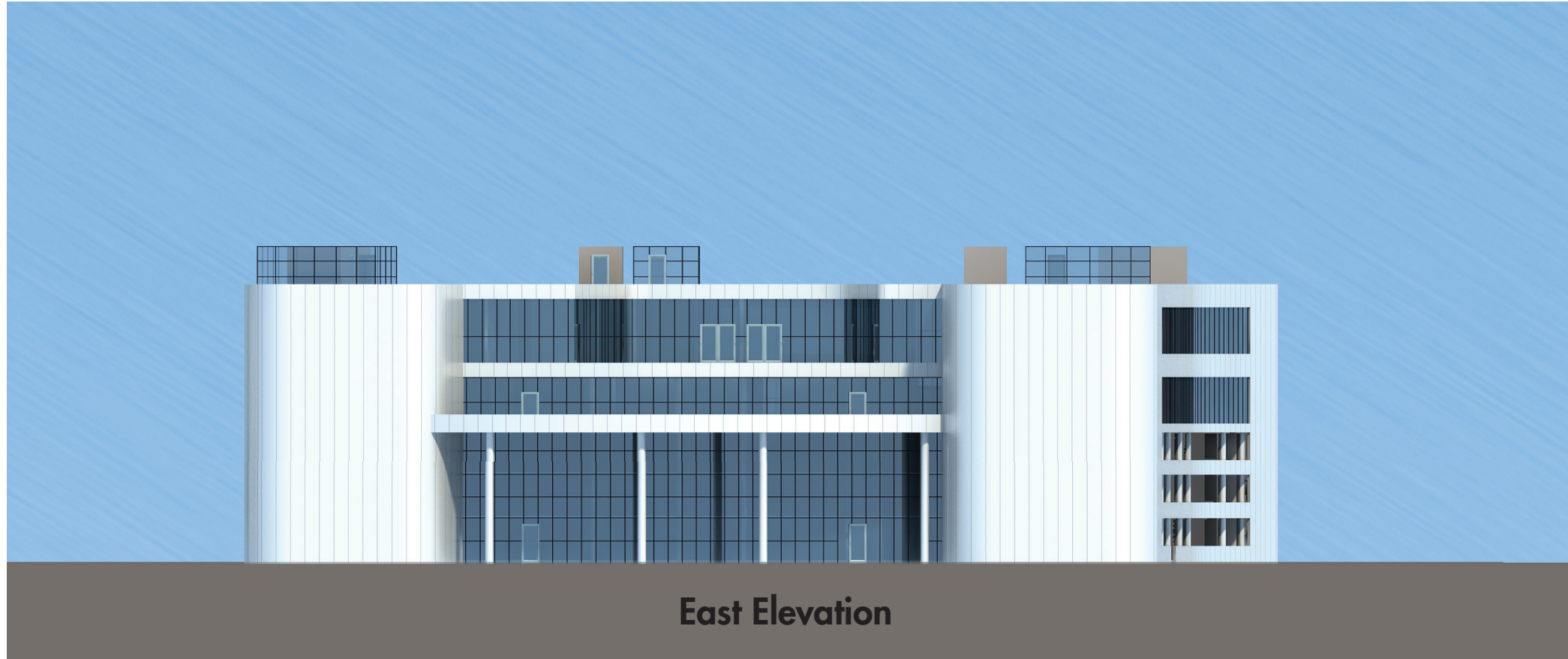
4th Floor Plan



5th Floor Plan



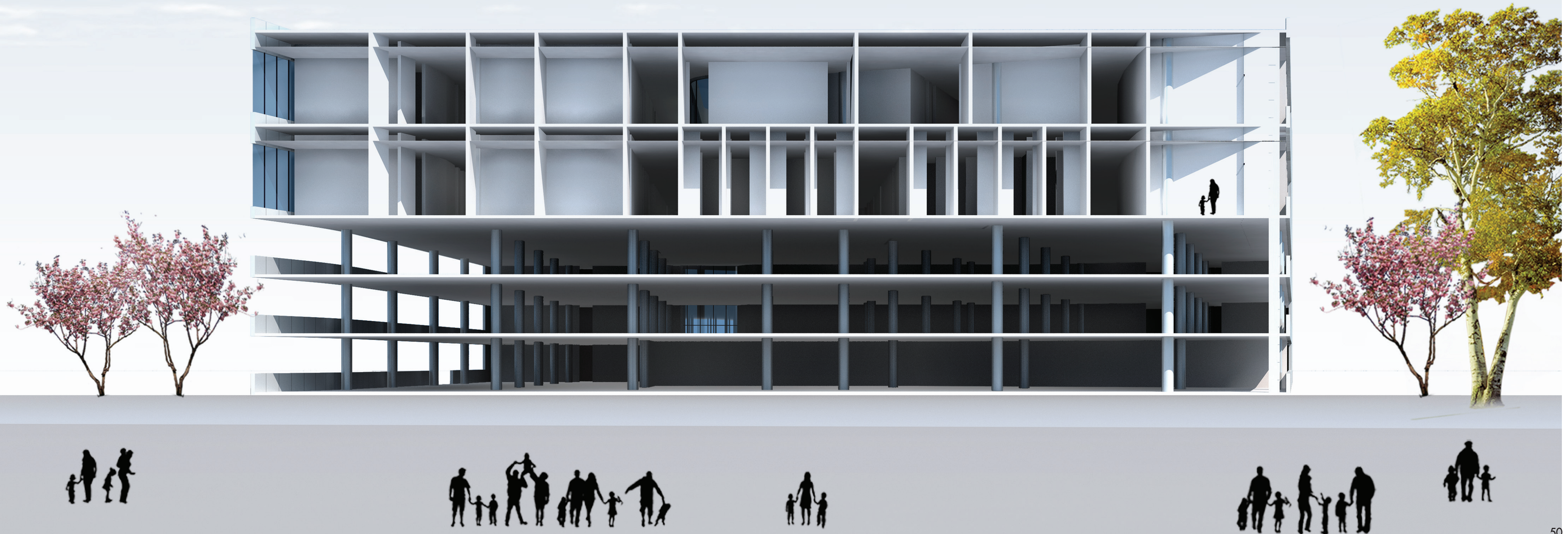
Elevations



Section Perspective A-A'



Section Perspective B-B'



Interior & Landscape

In order to create a comfortable and soothe environment, I choose warm color and wood floor as material. The MRI suite has a control room and a MRI room, allowing doctors to watch the results on their computer screen.



MRI Suite

The starbucks cafe is located next to the 5th floor roof terrace, and it is adjacent to doctors' offices, which could provide a refreshing space for doctors and nurses.

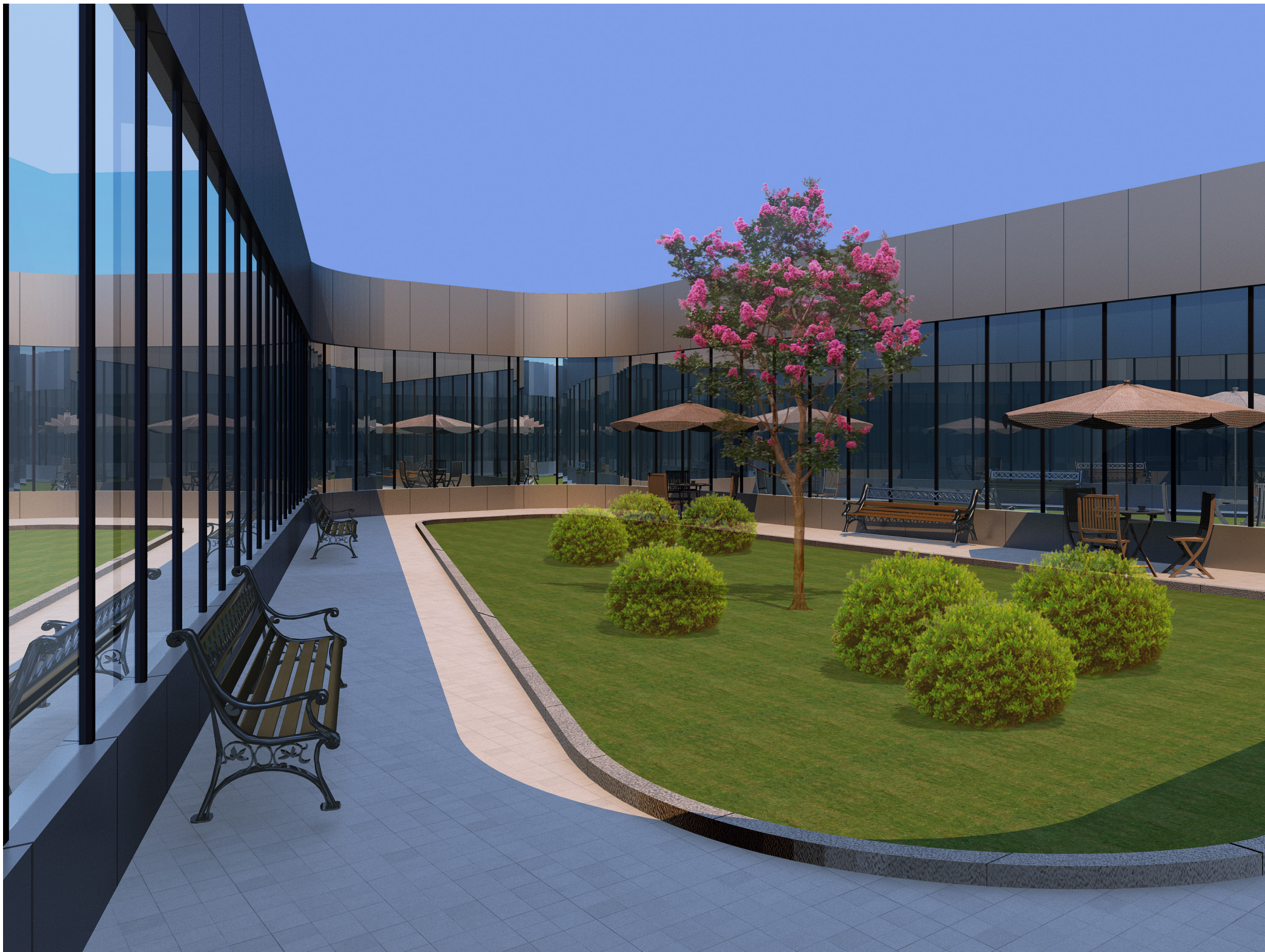


Starbucks

The typical doctor's office uses wall paper to create a homy environment, it has a sink for doctors to wash their hands frequently to reduce the risk of infection.

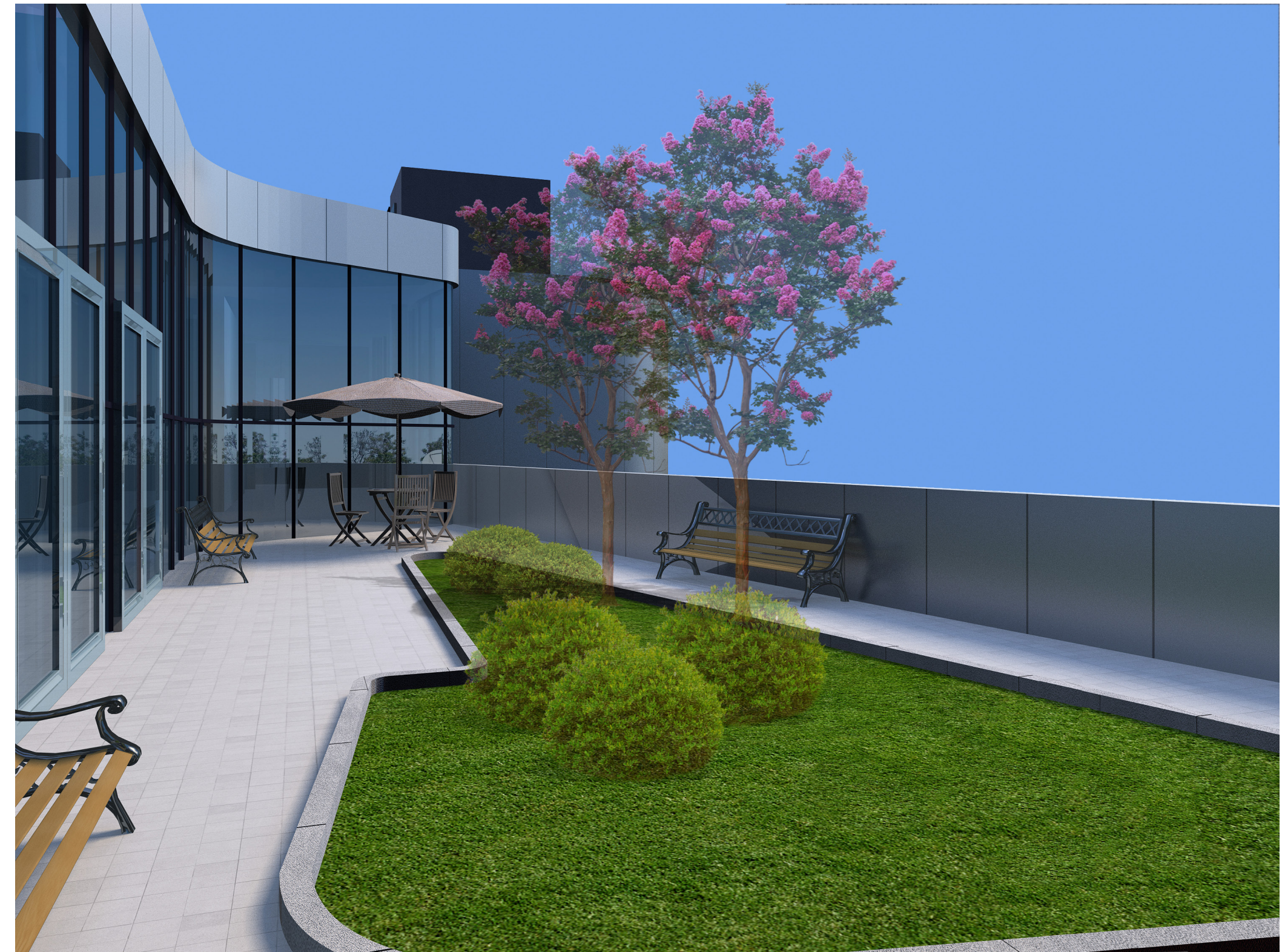


MD office



Garden Atrium

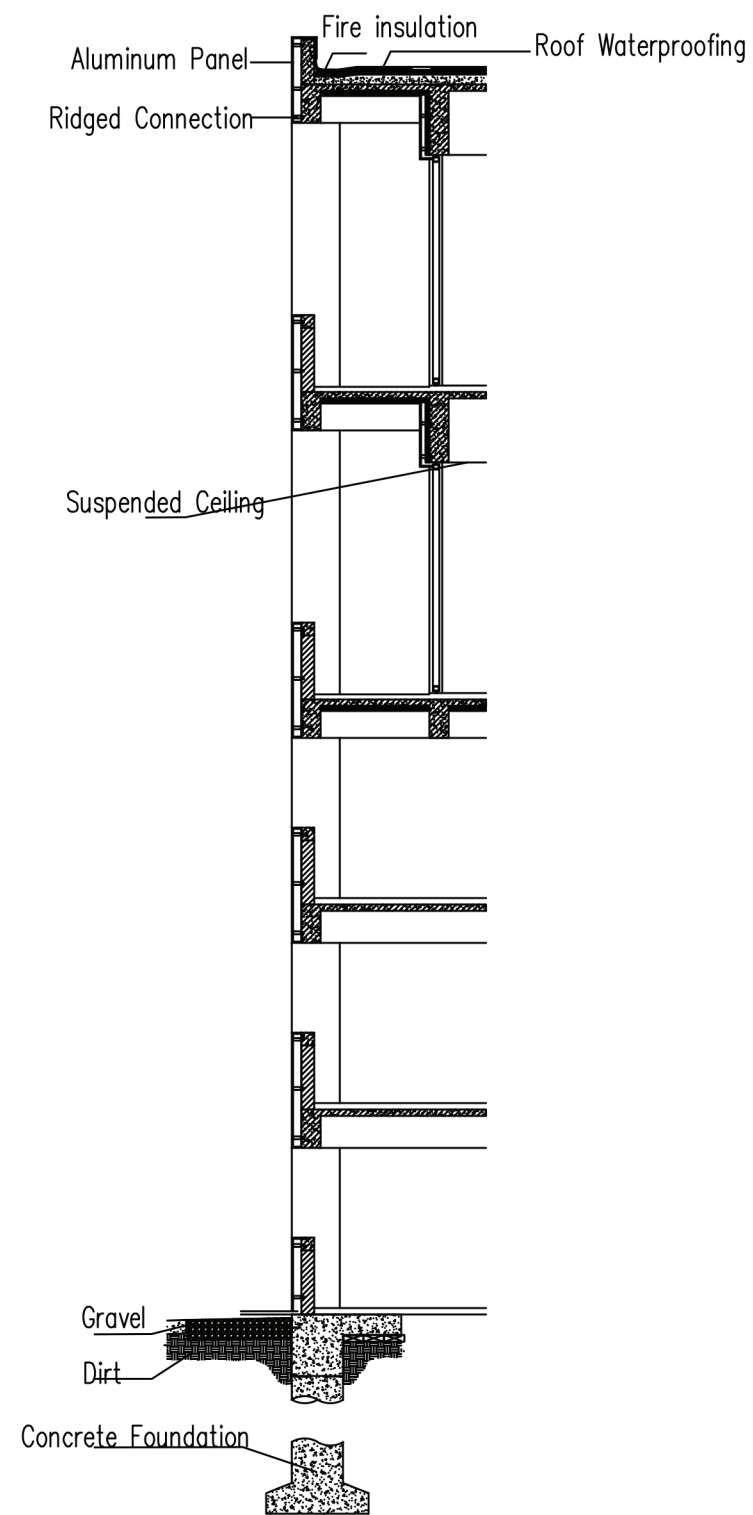
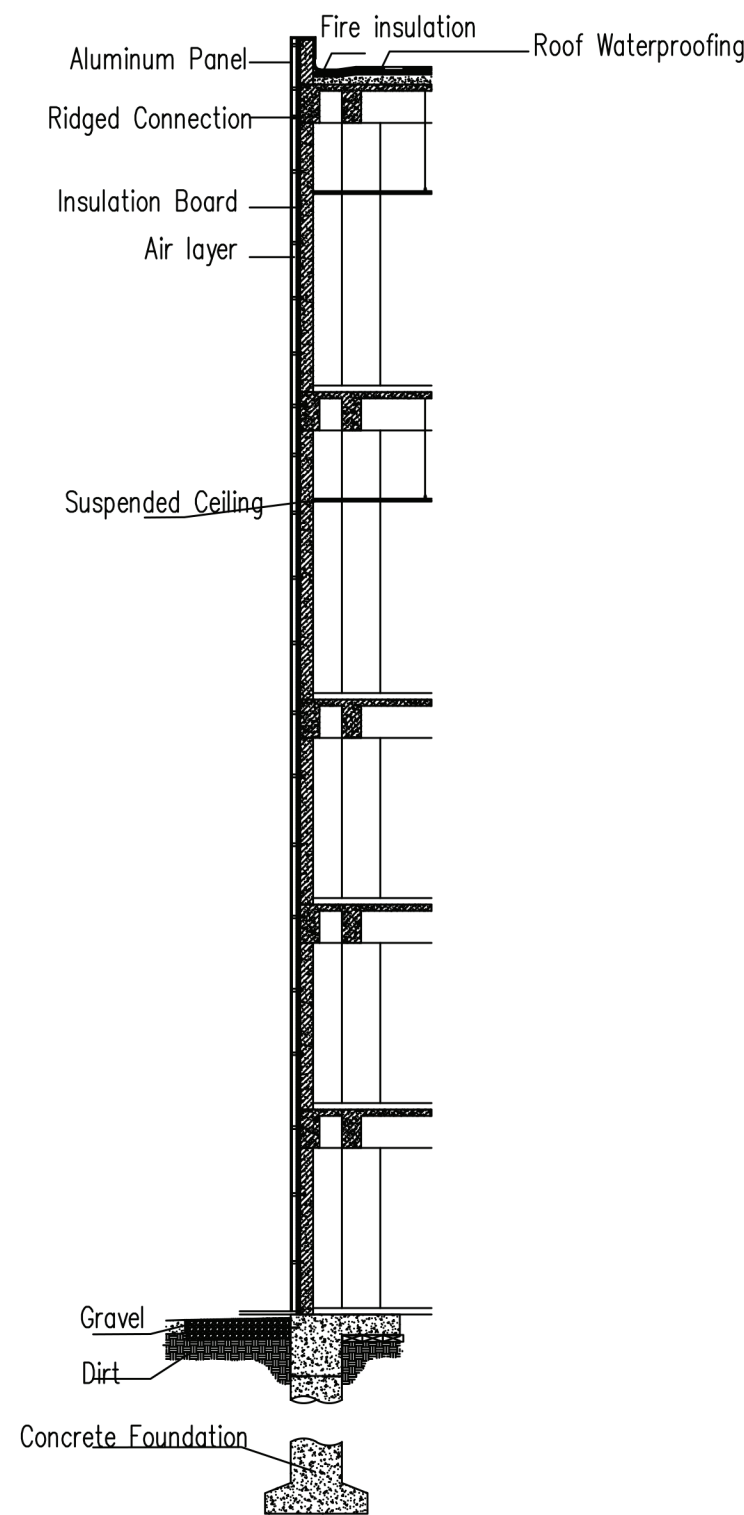
The garden atrium is located in the central area of the 5th floor, it could provide natural daylighting for offices as well as a space for people to relax.



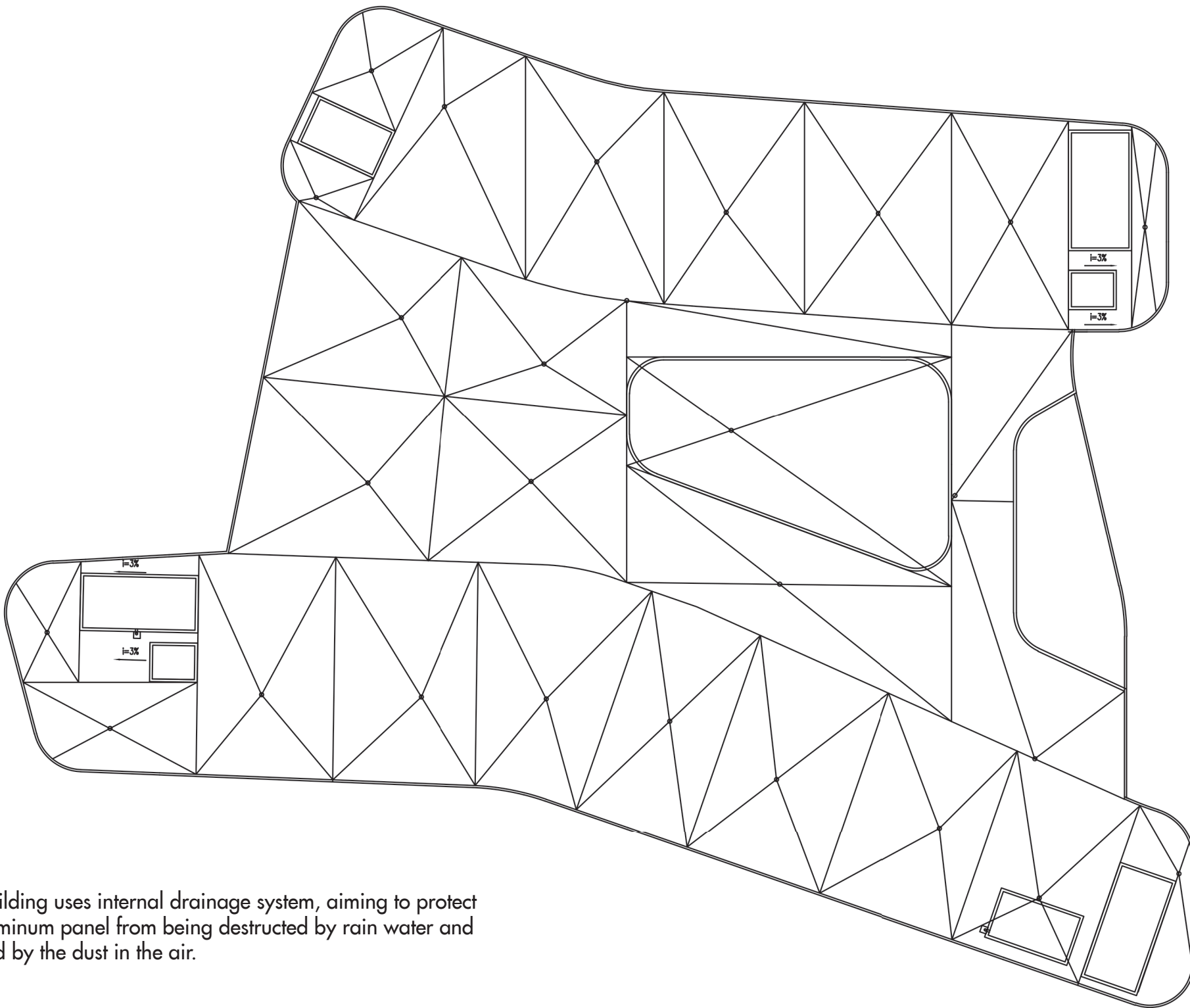
Roof Terrace

The roof terrace is facing southeast, providing an excellent view for people who sit here or walk here. The benches and umbrella seatings give people more choice whether they are a large group or just individuals.

Wall Sections

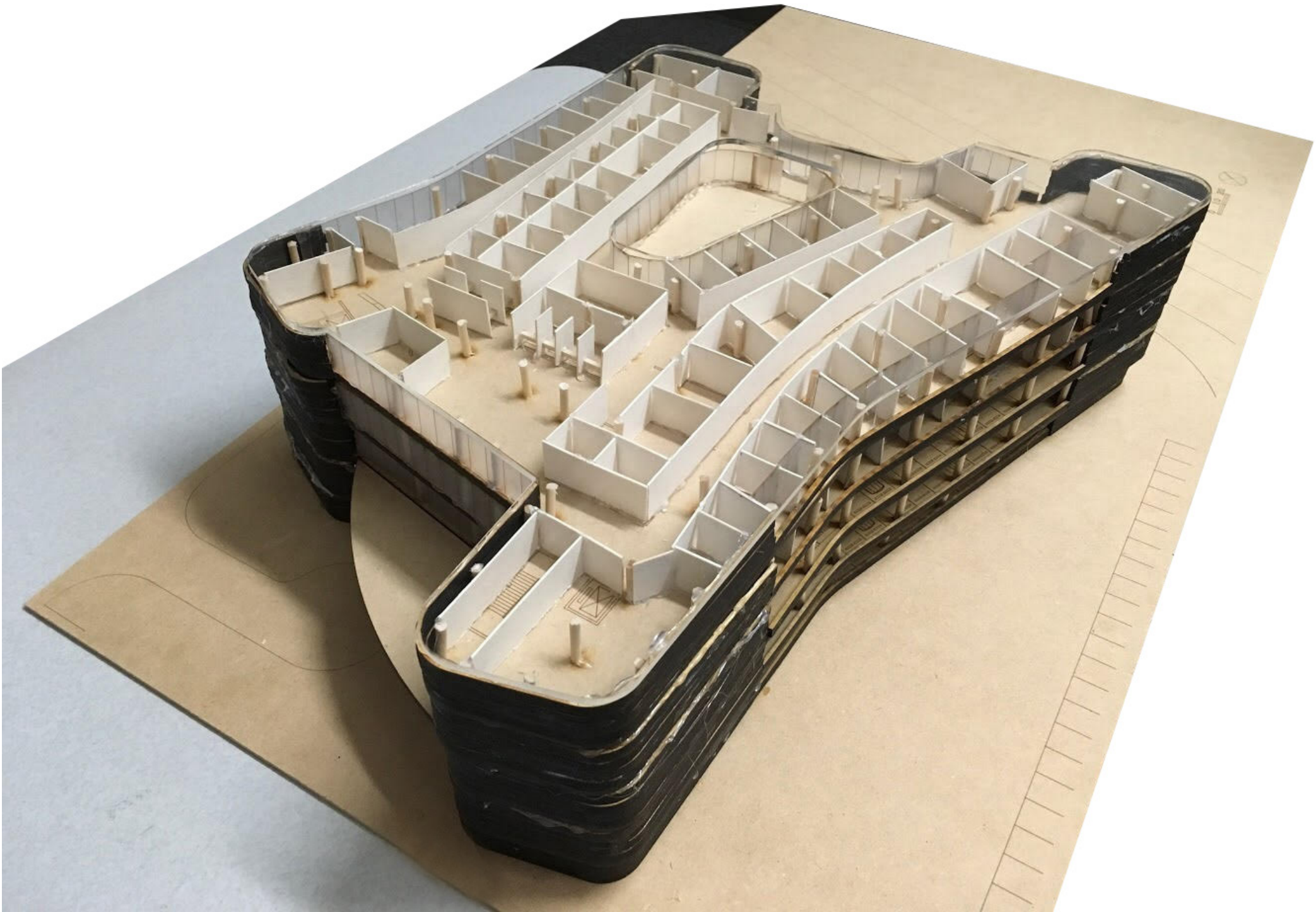
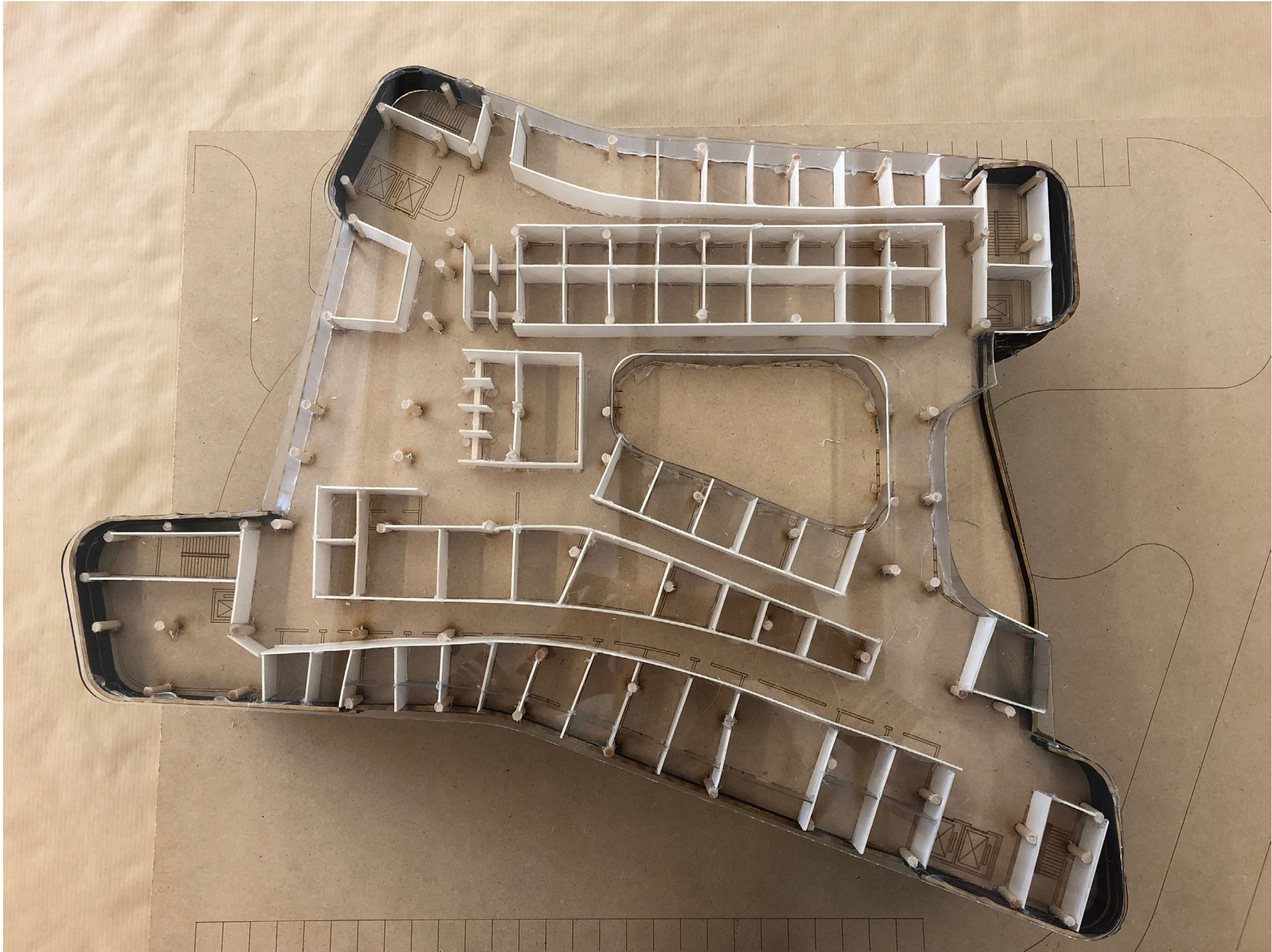


Roof Drainage



This building uses internal drainage system, aiming to protect the aluminum panel from being destructed by rain water and polluted by the dust in the air.

Physical Models



Conclusion

The one-year long project of Parkland breast center has come to an end. During this process, I have learned a lot of knowledge from so many professors. The beginning is always difficult, but once I figured out how to arrange imaging department and clinic area and staff working area, the floor plans have taken into shape. Another challenge is how to put the parking garage in an irregular shape, since I'd like to have the concept of "Pink ribbon", which represents the breast cancer, it adds more difficulties as well as playfulness to this design. Luckily I have got a lot of help from my studio professor, committee chair and members, and even many professors not on my committee are offering help. So it turned out good which owns satisfying quality, aesthetic shape and also functional spaces as well as easy circulations. The atrium garden on the top floor could provide a relaxing space for medical staff, besides, the top floor also has a terrace facing east. Considering people on the 4th floor may lack the opportunities to get access to nature, I also added another terrace on this floor. For the parking garage located from ground floor to the 3rd floor, I opened the space up to allow natural ventilation, and this strategy is economic since it could save money to run the air-condition system. For sustainability, I designed a retention pond near the staff entrance. In wet seasons, it could function as a storage pond, while in dry seasons, it plays the role of landscape. There are a series of stepping stones on the water surface, people might like to take a walk here, experiencing the peace of water. For material selection, I choose aluminum panel and glazing to create a shining appearance. To protect the aluminum panel, internal drainage system is preferable, and a lot of drainage holes are placed against walls or columns to minimize the influence on the interior environment.

References

- Kobus, R. L., Skaggs, R. L., & Borrow, M. (2000). *Healthcare facilities*. Chichester: Wiley.
- Peña, W. (2012). *Problem seeking: An architectural programming primer*.
- Ching, F. (2008). *Building construction illustrated*. Hoboken (N.J.): Wiley.
- Verderber, S., & Fine, D. J. (2000). *Healthcare architecture: In an era of radical transformation*. New Haven, CT: Yale University Press.
- Ramsey, C. G., Sleeper, H. R., Hoke, J. R., & Ramsey, C. G. (1998). *Ramsey/Sleeper architectural graphic standards, ninth edition*. New York: J. Wiley & Sons.
- Kobus, R. L. (2008). *Building type basics for healthcare facilities*. Hoboken, NJ: John Wiley & Sons.
- Lewis, P., Tsurumaki, M., & Lewis, D. J. (2016). *Manual of section*. New York: Princeton Architectural Press.
- Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Shlomo, A. (1977). *A pattern language: Towns, buildings, construction*. New York: Oxford University Press.

Image Sources

- <https://www.archdaily.com/443648/new-hospital-tower-rush-university-medical-center-perkins-will>
- <http://www.hksinc.com/places/aiyuhua-hospital-for-women-and-children/>
- <https://www.eypae.com/client/stamford-hospital/new-stamford-hospital>
- <https://www.eypae.com/publication/2016/under-planetree-design-philosophy-embrace-care-heal>
- <https://www.eypae.com/acute-care>

