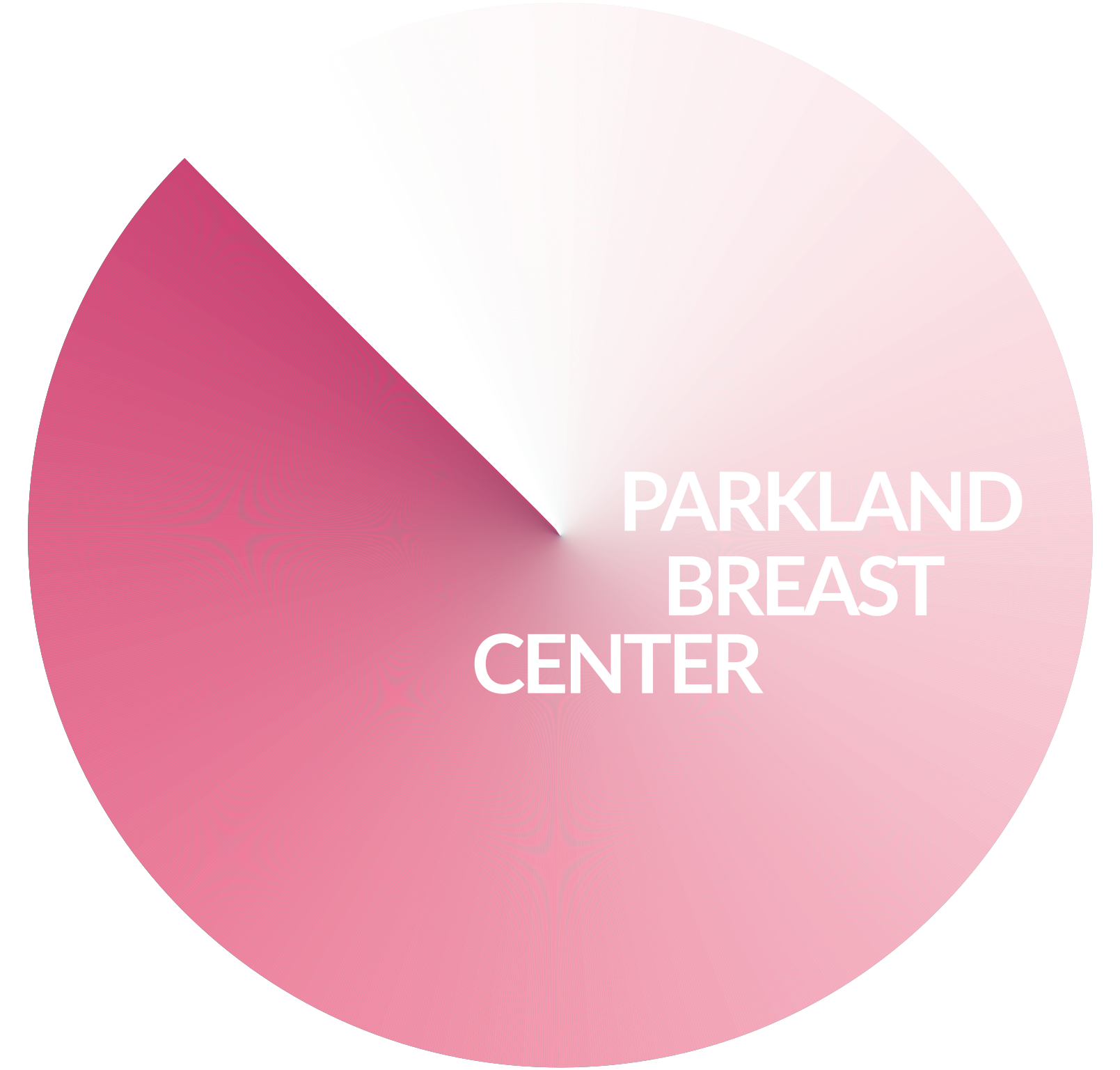


Parkland Breast Center



Yizhao Li



YIZHAO LI FINAL STUDY

HELLO



YIZHAO
LI

Yizhao Li was born in Hebei, China. She attended Texas A&M University from 2016 -2018 to attain a degree in Master of Architecture which will allow her to pursue a career healthcare design. She hopes to design for the people in need and make healthcare a better experience.

She also earned a Bachelor of Science in Architecture from University of Science Malaysia in 2015.

Additionally, she is passionate about art, particularly photography, music, and traveling.

Get Intouch

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ABSTRACT

PARKLAND BREAST CENTER

Imagine that there is one in every eight persons has breast cancer surround us. What if you know you got breast cancer, how do you feel? This project is a real one located in Dallas that will reduce stress for patients during treatment in breast cancer facilities.

Keywords: Stress, breast cancer



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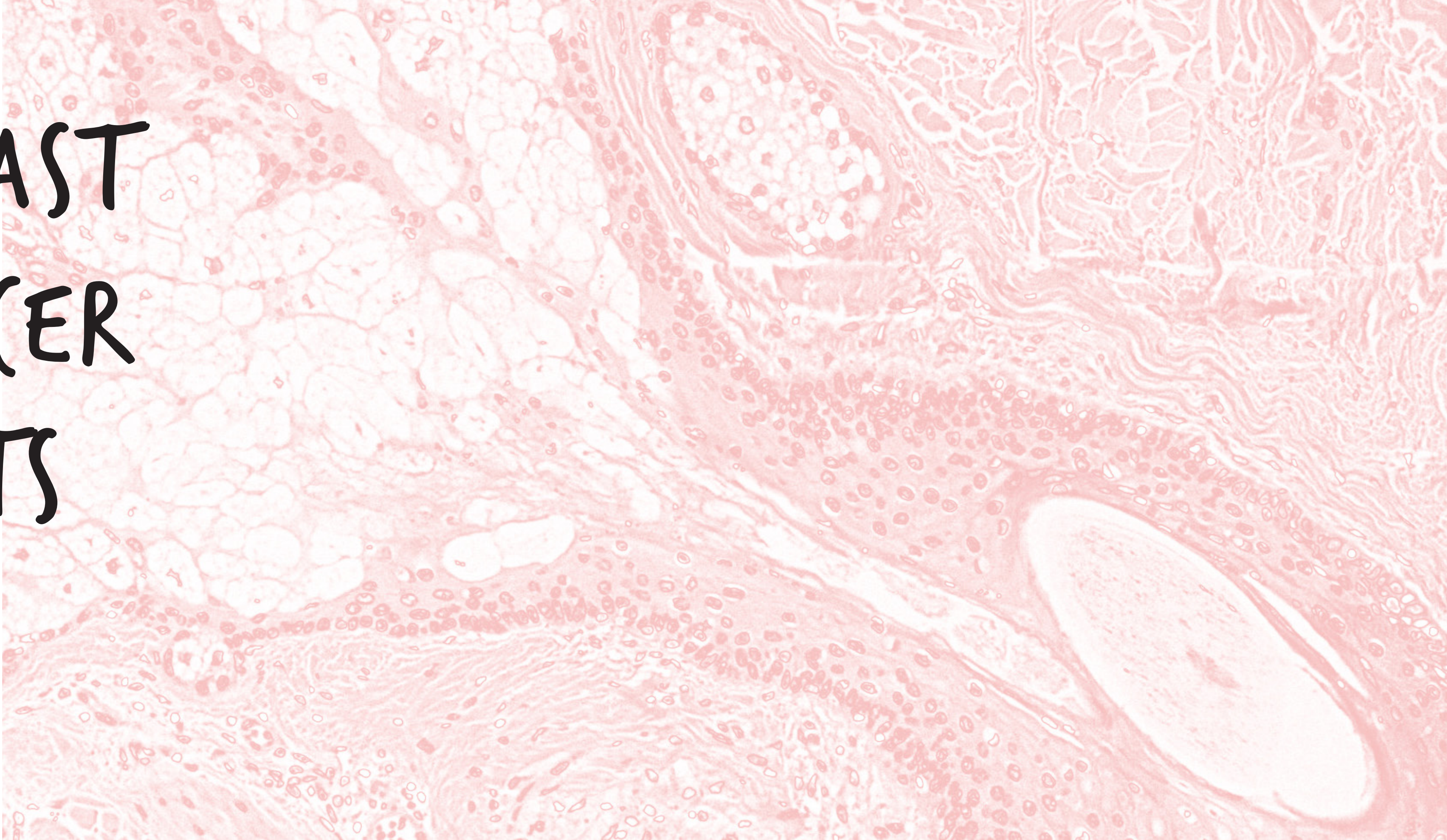
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BREAST CANCER FACTS



15.5 Million

Americans with history of cancer

1.6 Million

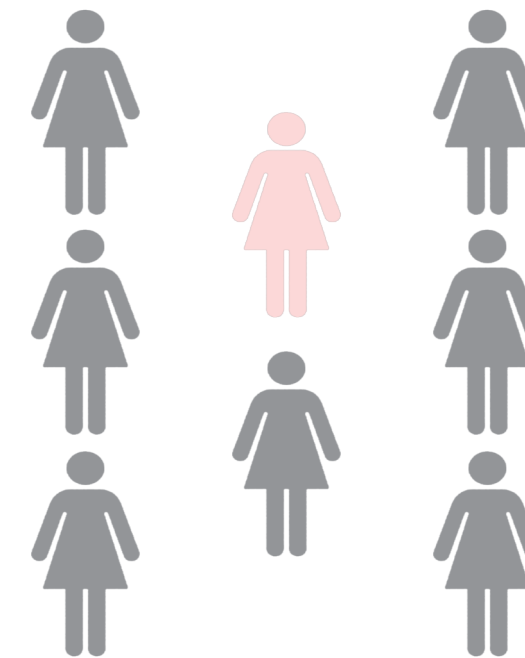
New cancer cases every year

600,000 Deaths

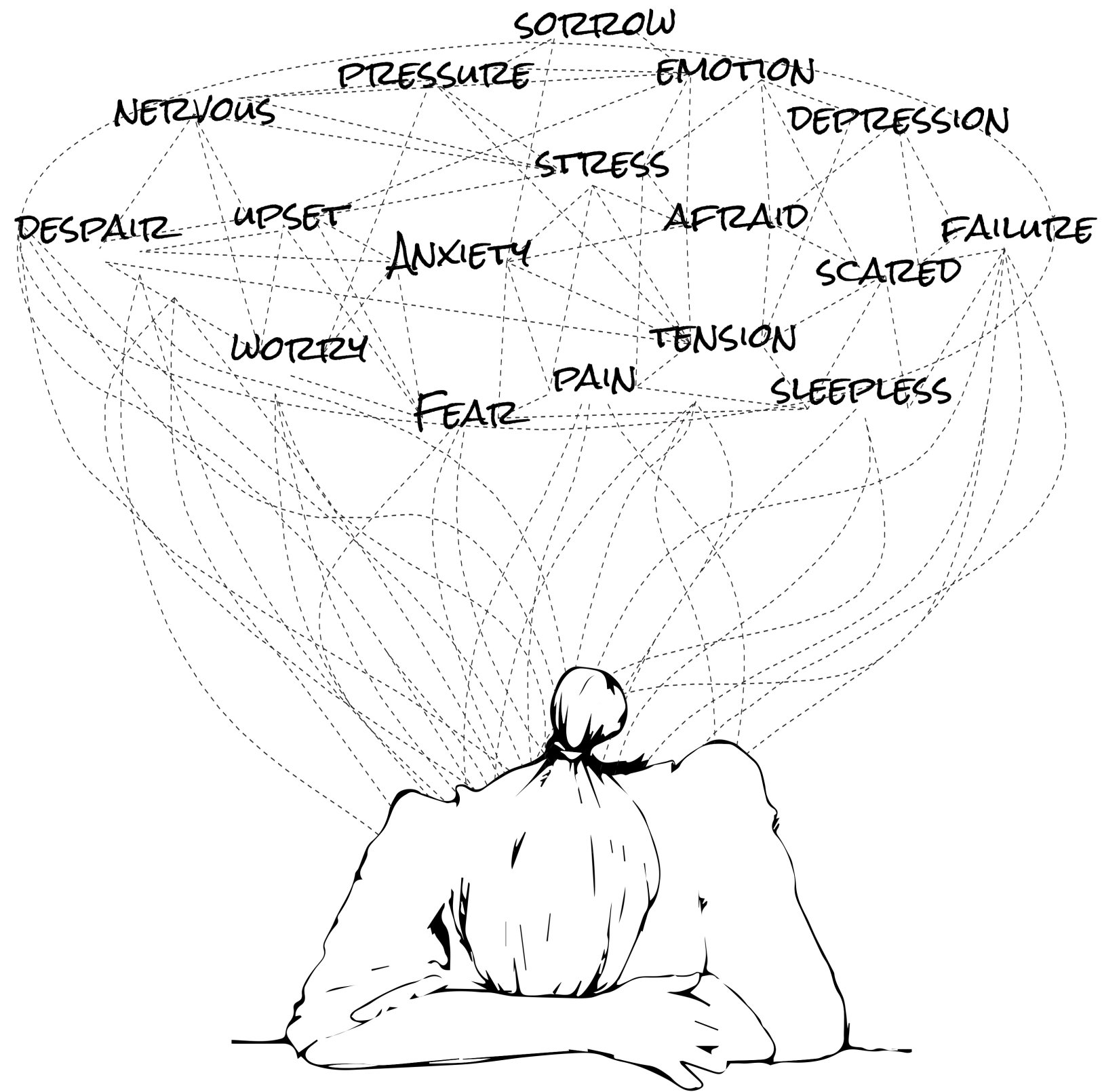
Per year, making breast cancer the 2nd most common death among women in the United States

BREAST CANCER FACTS

Breast cancer is the second leading cause of cancer deaths among women in the United States (2005-2009). Breast cancer deaths are going down the fastest among white women compared to women of other races and ethnicities. Black women have the highest death rates of all racial and ethnic groups and are 40% more likely to die of breast cancer than white women. The reasons for this difference result from many factors including having more aggressive cancers and fewer social and economic resources. To improve this disparity, black women need more timely follow-up and improved access to high-quality treatment.



1 IN 8 WOMEN
WILL DEVELOP BREAST CANCER



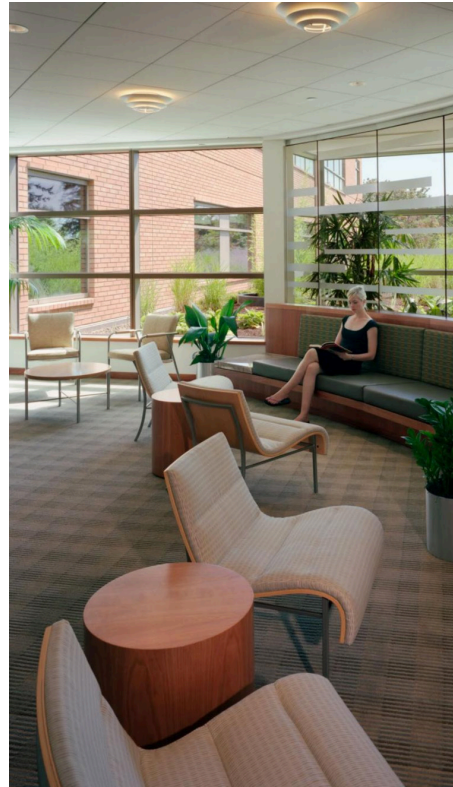
What if you know you got breast cancer?
How do you feel?

How to reduce patients' stress during
treatment in breast cancer facilities?

RESEARCH PROCESS



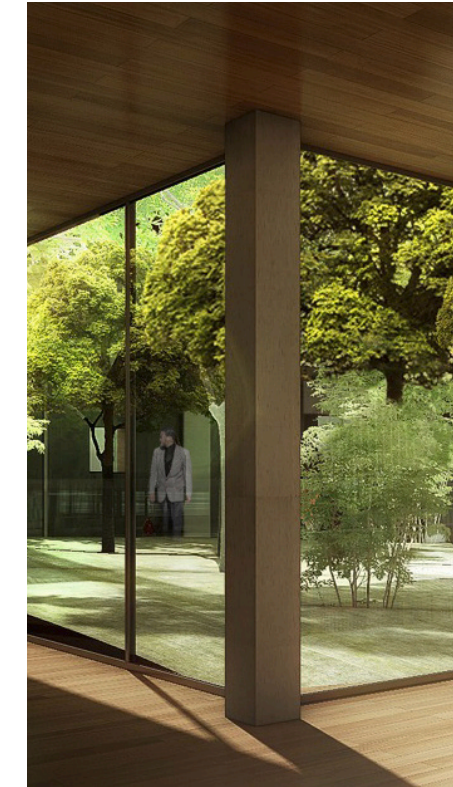
CASE STUDIES



LEGACY HEALTH, SALMON CREEK MEDICAL CENTER ZGF

Location: Vancouver, WA

ZGF planned and designed a six-story, 469,000 SF medical center that includes capacity for 220 beds, two four-story medical office buildings totaling 189,000 SF. Legacy Salmon Creek Medical is a facility with an emphasis on patients and their families—a medical center that is ultra-efficient, yet aesthetically beautiful, with a “healing” environment that is comforting and uplifting. The design intent was to create clear, definable circulation systems to orient patients, staff, and visitors beginning at the first entry to the site. Overhead glass-enclosed pedestrian bridges link the entire complex.



OASIS CANCER CARE CENTER WE ARCHITECTS

Location: Næstved, Denmark

In order to create a building inspired by the model of healing architecture, the Cancer Care Center was designed as an introvert building, opening up towards two inner courtyards.

From the street, the building materializes as a four-sided polygon covered by a soft landscape of explosive greenery. From the interior, the building appears as a transparent yet intimate space where the green gardens are incorporated in the indoor spaces.

LITERATURE REVIEW

ACCESS TO NATURE

The belief that plants and gardens are beneficial for patients in healthcare environments is more than one thousand years old, and appears prominently in Asian and Western cultures (Ulrich and Parsons, 1992). During the Middle Ages in Europe, for example, monasteries created elaborate gardens to bring pleasant, soothing distraction to the ill (Gierlach-Spriggs et al., 1998). European and American hospitals in the 1800s commonly contained gardens and plants as prominent features (Nightingale, 1860).

A growing awareness has developed in recent years in the healthcare community of the need to create functionally efficient and hygienic environments that also have pleasant, stress reducing characteristics. An important impetus for this awareness has been the major progress achieved in mind-body medical science. A substantial body of research has now demonstrated that stress and psychosocial factors can significantly affect patient health outcomes. This knowledge strongly implies that the psychological or emotional needs of patients be given high priority along with traditional concerns, including infection risk exposure and functional efficiency, in governing the design of hospitals (Ulrich, 2001). It also follows that conditions or experiences shown by medical researchers to be stress reducing and healthful, such as pleasant soothing distractions and social support, must become important considerations in creating new healthcare facilities. The fact that there is limited but growing scientific evidence that viewing gardens can measurably reduce patient stress and improve health outcomes has been a key factor in the major resurgence in interest internationally in providing gardens in hospitals and other healthcare facilities.

Findings from a few studies focusing on hospitals and other healthcare facilities suggest that views of nature can have important benefits in terms of improving patient clinical outcomes. At Uppsala University Hospital in Sweden, Outi Lundén, John Eltinge, and I (1993) investigated whether exposing heart surgery patients to simulated nature views would improve recovery outcomes. They assigned 160 patients in intensive care to one of six visual stimulation conditions: two nature pictures (either a view of trees and water, or an enclosed forest scene); two abstract pictures; and two control conditions (either a white panel, or no picture or panel). Re-

sults suggested that patients who viewed the trees/water scene were significantly less anxious during the postoperative period than patients assigned to the other pictures and control conditions. Moreover, patients exposed to the trees/water view suffered less severe pain, as evidenced by the fact they shifted faster than other groups from strong narcotic pain drugs to moderate strength analgesics. By contrast, a rather surprising finding was that an abstract picture dominated by rectilinear forms produced higher patient anxiety than control conditions of no picture at all.

Another study compared the recovery records of gall bladder surgery patients who had a bedside window view of either trees or a brick building wall with no nature (Ulrich, 1984). To control other factors constant that could affect outcomes, the methods ensured that the tree and wall view groups were equivalent, for example, in age, weight, tobacco use, and general medical history. The outcomes data showed that those with the nature view, compared to those who looked out at the wall, had shorter hospital stays and suffered fewer minor post-surgical complications (such as persistent headache or nausea) (Ulrich, 1984). Further, patients with the view of trees more frequently received positive written comments from staff about their conditions in their medical records (e.g. "patient is in good spirits"). Those in the wall view group, however, had far more negative evaluative comments (e.g. "patient is upset," "needs much encouragement"). Another major difference was that persons with the view of trees, compared to the wall view patients, needed far fewer doses of strong narcotic pain drugs.

The above findings not only indicated that views of nature in hospitals could enhance clinical or medical outcomes; but also suggested that nature could improve economic outcomes by reducing the costs of care. The findings clearly implied that by providing nature it would be possible to achieve cost savings, for instance, because length of hospital stays might be shortened, and some patients would have reduced need for costly injections of strong pain drugs.

Nowadays, hospitals and other medical centers have tapped the soothing qualities of nature increasingly over the past 10 years. It does not matter whether it is a tiny butterfly garden filled with bright blooms or an expansive landscape complete with paths lead-

ing through towering trees and trickling water features. Findings from studies have converged in indicating that simply viewing certain types of nature and garden scenes significantly ameliorates stress within only five minutes or less. Further, a limited amount of research has found that viewing nature for longer periods not only helps to calm patients, but can also foster improvement in clinical outcomes -- such as reducing pain medication intake and shortening hospital stays.

PRIVACY

In order to understand the special needs of women patients in hospital, I find that a study demonstrate that there are important gender differences in perceptions of medicinal care. A research team in Netherland aim at investigating on whether there are gender differences in patients' quality of care experiences during their hospital stay.

They used survey to collect information. In a cross-sectional group, patients who were admitted to a university hospital were invited to complete a questionnaire. Answers were compared between men and women of different ages, education levels, and health assessments, using the independent t-test. A linear regression model was performed to investigate the relationship between patient characteristics and hospital assessments Results: 4169 questionnaires were sent (41.8% returned). Women rated the hospital significantly (P = 0.007) lower than men, especially higher educated women and women between the ages of 18 and 44 years. Behaviors of nurses were perceived to be unsatisfactory by significantly more female patients than male patients (P = 0.016). One in six women wanted more privacy compared with one in ten men (P < 0.001), and ten percent more women suffered from pain (P < 0.001).

After analyzing the data, the research team draw a conclusion: women, particularly those higher educated and between 45 and 64 years of age, assess hospital care significantly lower than men. Women require more gender-sensitive nursing care, more privacy, and better pain management than they receive at present. As a designer, I think that the research shows an implication for our practice, to optimize patients' assessments of hospital care, women patients require more gender sensitive nursing care, more privacy, and better pain management than they receive at present.

SOCIAL INTERACTION

Several theoretical models suggest that social factors are linked to health anxiety. The cognitive-behavioral model of health anxiety states that health anxiety results from, and is maintained by, dysfunctional beliefs about illness and physical sensations, and these beliefs are partly shaped by interactions with, and support from, the person's social circle (Salkovskis & Warwick, 2001). Likewise, the interpersonal model of health anxiety suggests that social variables

(e.g., attachment styles) contribute to health anxiety, whereby those with insecure attachment engage in health anxious behaviors (e.g., health-related reassurance-seeking) as a way to elicit support from others (Stuart & Noyes, 1999).

The value of social support after a breast cancer diagnosis is well-documented. Women with breast cancer who have more confidants available (i.e., persons with whom one may discuss personal problems) or who have lower social isolation have greater chances of survival. The absence of social support networks is also linked to decreased immune function and to increased cancer progression (Nausheen, Gidron, Peveler, & Moss-Morris, 2009), underscoring the importance of an available support network. Notable in the literature on social support are the negative consequences of unsupportive social interactions, which may occur when even well-intentioned people respond in unhelpful or distressing ways to a person who is experiencing a life crisis. Some women with breast cancer report social support is either not available to them or is inappropriate or unhelpful, such as when others are responding critically to how the patient copes with cancer or are overly optimistic or protective (Chantler, Podbilewicz-Schuller, & Mortimer, 2005). Overall, research indicates that these responses may intensify patient distress, leading to elevated anxiety and depression.

Given the above findings, it is plausible that perceiving less adequate support and/or experiencing more unsupportive interactions following breast cancer may also be associated with elevated health anxiety. However, few studies have tested if social support is tied to health anxiety after a diagnosis of breast cancer. One study of a mixed cancer population indicated that illness-related worry was more likely to be a problem among patients with less social support (e.g., difficulty confiding in others), and this relationship was strongest among female cancer patients (Stefanek, Shaw, DeGeorge, & Tsottles, 1989). This promising initial finding highlights the need for further study of the link between health anxiety and social factors. Also, we need to think about how to balance the social factor with privacy needs, because of pretty challenging in planning a hospital with adequate communication space and protect individual's privacy in the as well.

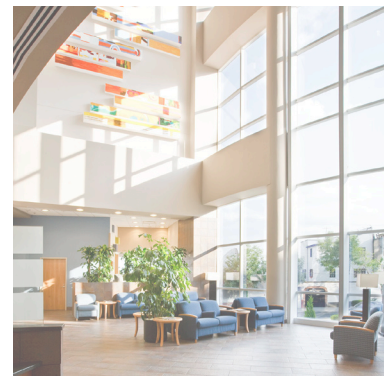
Because of the impact of treatment, breast cancer also influences the woman's support network, often creating physical and psychological stress, which leaves family members and supporting friends needing support and direction themselves. Assessing the processes of family support and the strengths that families bring to this task is crucial to ensuring that both the family and patient needs are adequately addressed and supported. As a designer, we need realize that women in this period need more social support than any other time in their lifetime, provide family space in patient room and exam room is critical in Breast Cancer Center design.

BIG IDEA





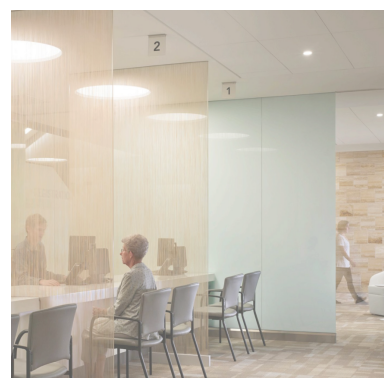
NATURE



DAYLIGHTING



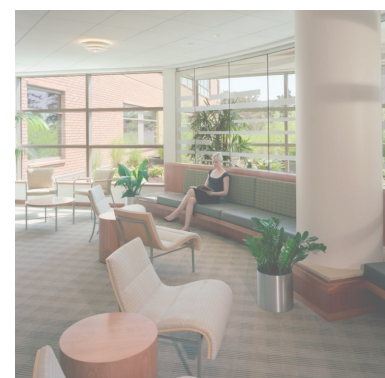
NOISE ABSORPTION



PRIVACY



SOCIAL SUPPORT



SENSE OF CONTROL



WARMTH AND HOSPITALITY



WAYFINDING



SUSTAINABILITY

HEALING ENVIRONMENT

“A great place to work. A great place to receive care.”

Dealing with intense emotions of anxiety and fear, they need an environment that soothes and reinforces their belief that they are receiving the best care possible. This is a nice place where cancer patients can relax and help take their disease off their mind. It is more than a building, it is what patients, staff, and community can feel relaxed and peaceful in the healing environment.

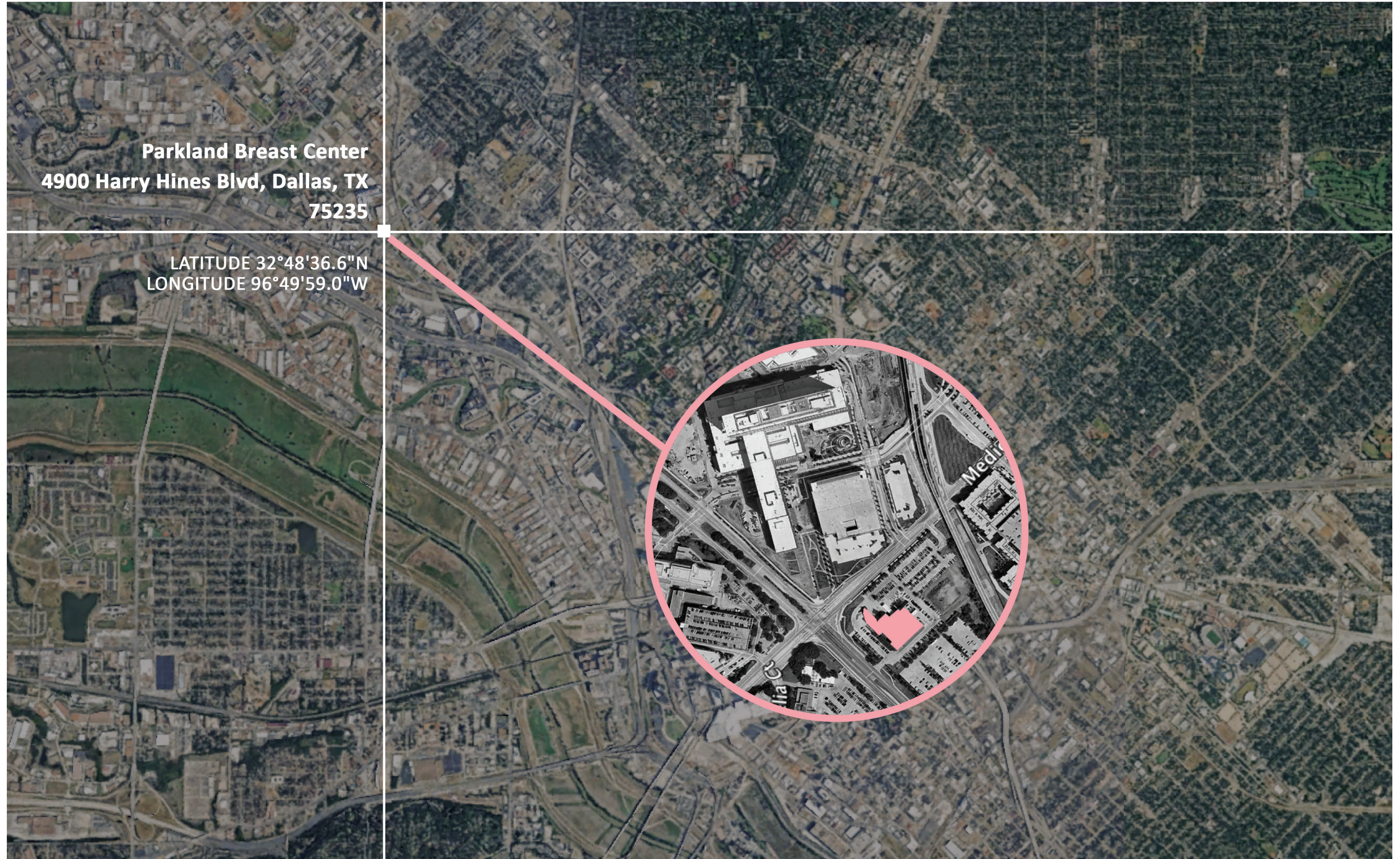
SITE & PROGRAMM



SITE

PARKLAND BREAST CENTER

Parkland Breast Center is a real project located in Dallas. It is part of the Parkland 2020 vision, which needs a new comprehensive breast center near their main hospital. Therefore, the project has been determined to be a two-floor vertical addition to the Simmons Ambulatory Surgery Center (ASC), which is an existing building near Parkland Hospital. The existing building is an operational two story ASC which will remain in operation throughout construction. A vertical expansion of two new floors has been proposed to which the initial structural design will support. The size of the project estimate around 33,000 square feet.



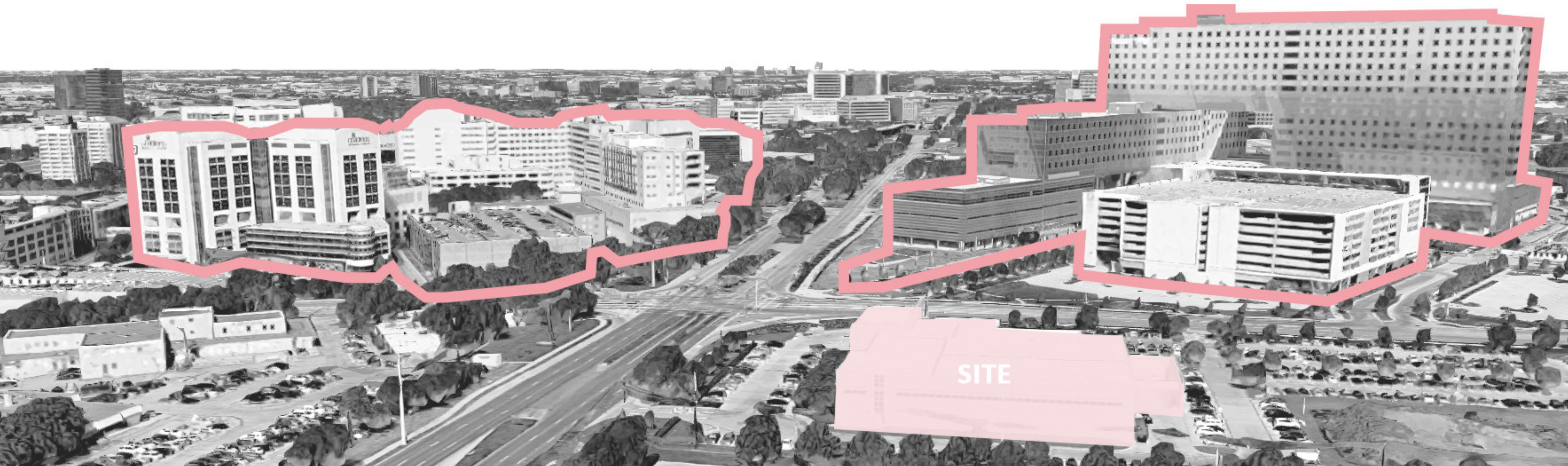


EXISTING BUILDING

The doctors and nurses at Parkland experienced rising numbers of patients in need of both emergency (unplanned) and ambulatory (planned) surgeries at the hospital. That's why Parkland built the Simmons Ambulatory Surgery Center. Today, the center is Parkland's main location for outpatient surgical and orthopedic procedures. The center's design features include large waiting areas for friends and family, covered arrival and discharge areas, an on-site lab, doctors' offices, six operating suites, 15 recovery beds and more.

SITE SURROUNDING

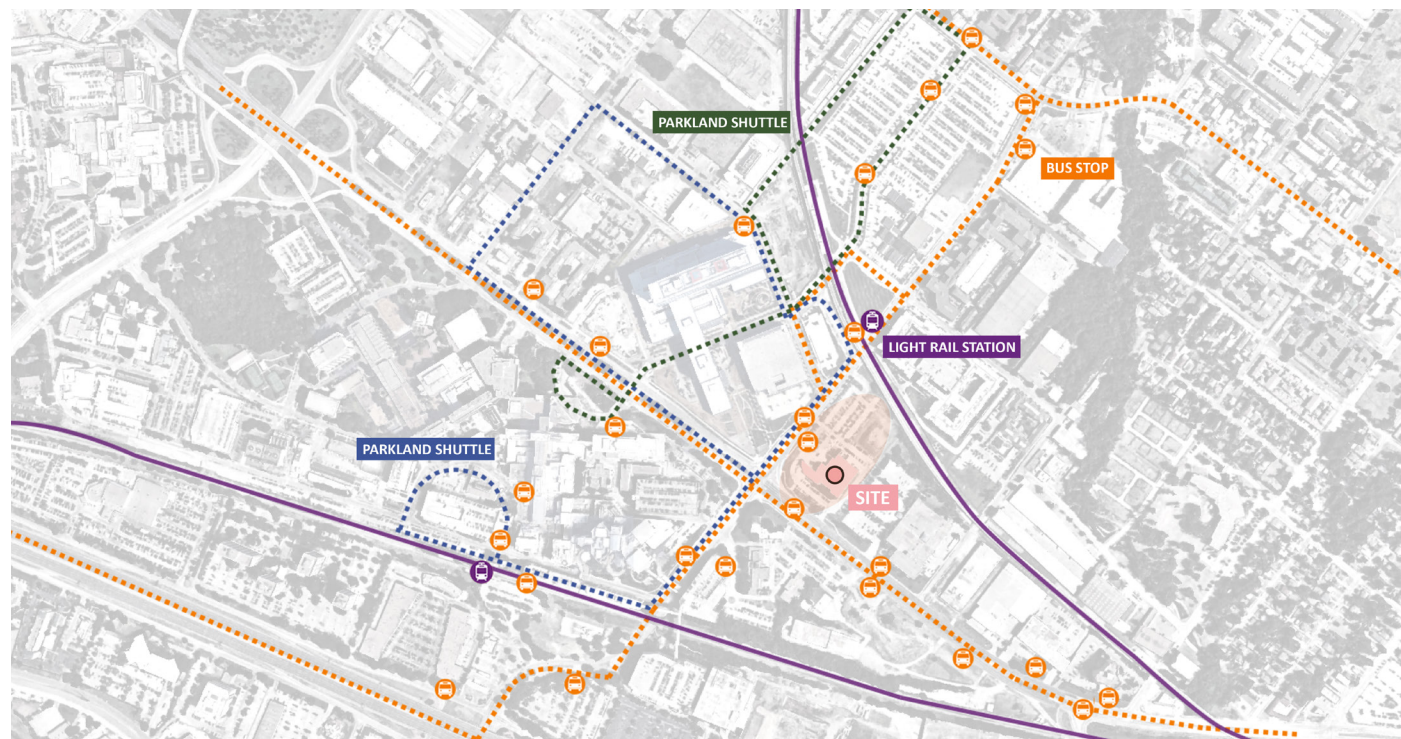
Large - scale hospitals like monsters around the site.





SURROUNDING HOSPITALS

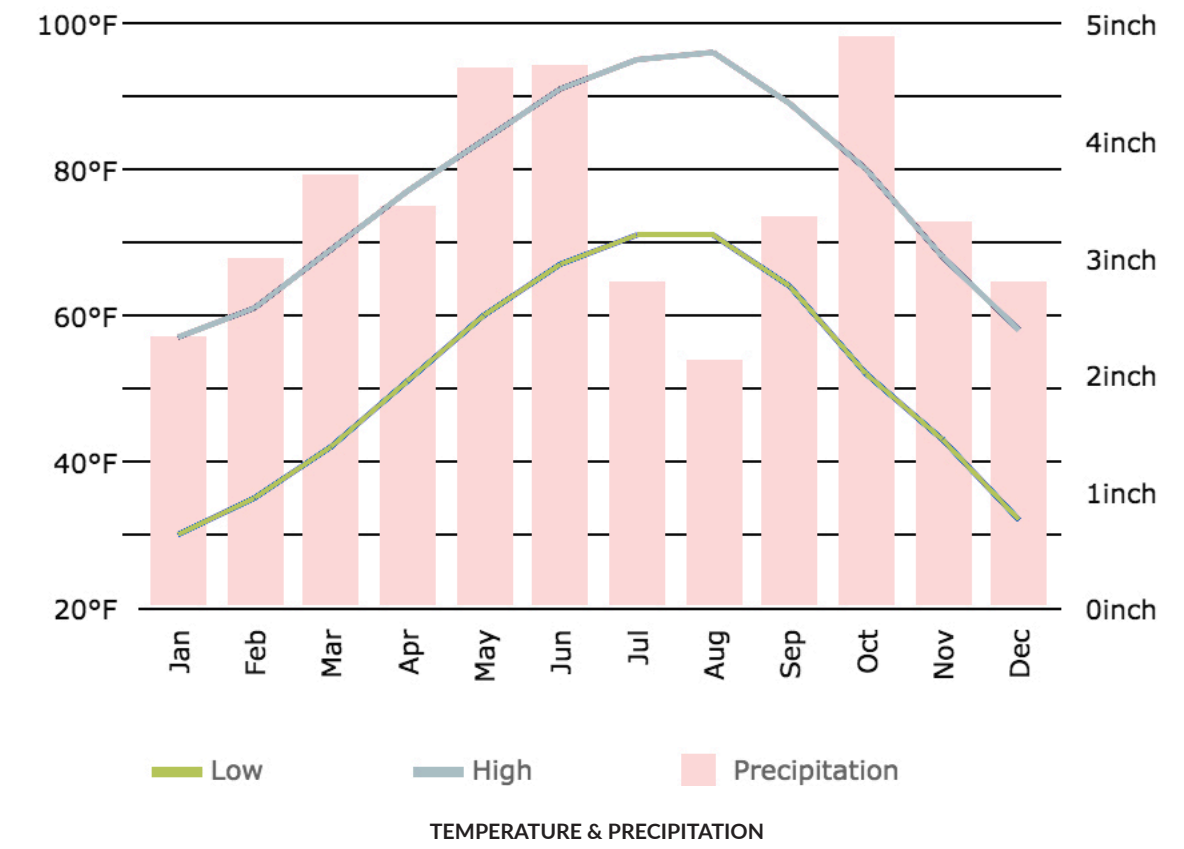
Surrounding the site, there are lots of large-scale hospitals, it is convenient but feels depressing.



TRANSPOTATION

High - stress urban environment with busy roadways.

CLIMATE



SUN

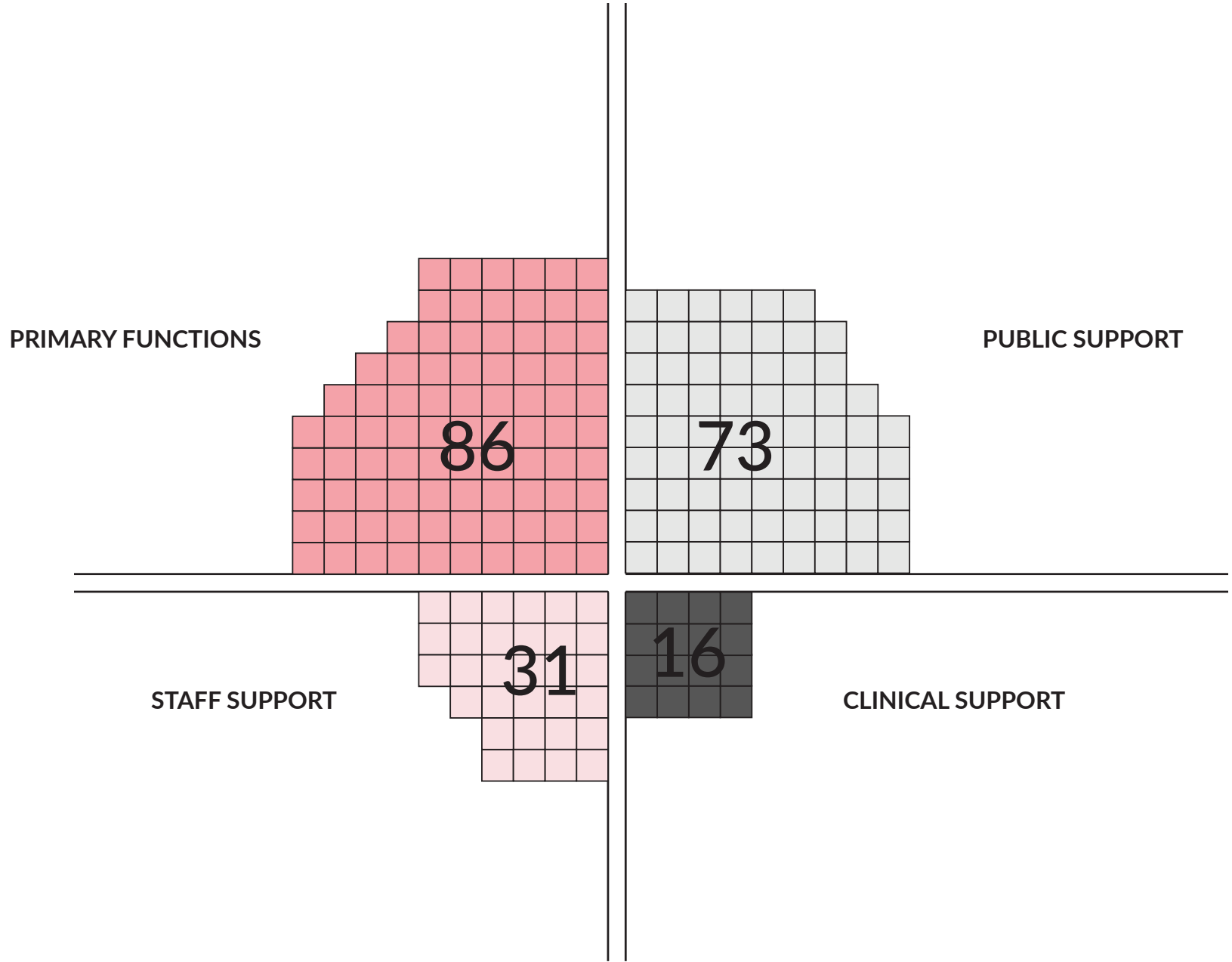
The climate of Dallas is humid subtropical, with hot summers and mild winters. It can get anywhere from over 90 degrees Fahrenheit to below freezing, although the latter is not too common. For this project it is imperative that the design caters to the Dallas climate, shielding the building's interior from the harsh sun in summers, and yet allowing the sun to pierce through in the winter.

In addition, it is also important to have strategies such as sun shading and internal heat gain, as to maximize the level of comfort, and lower energy costs in the long run of the breast clinic's operation.

WIND

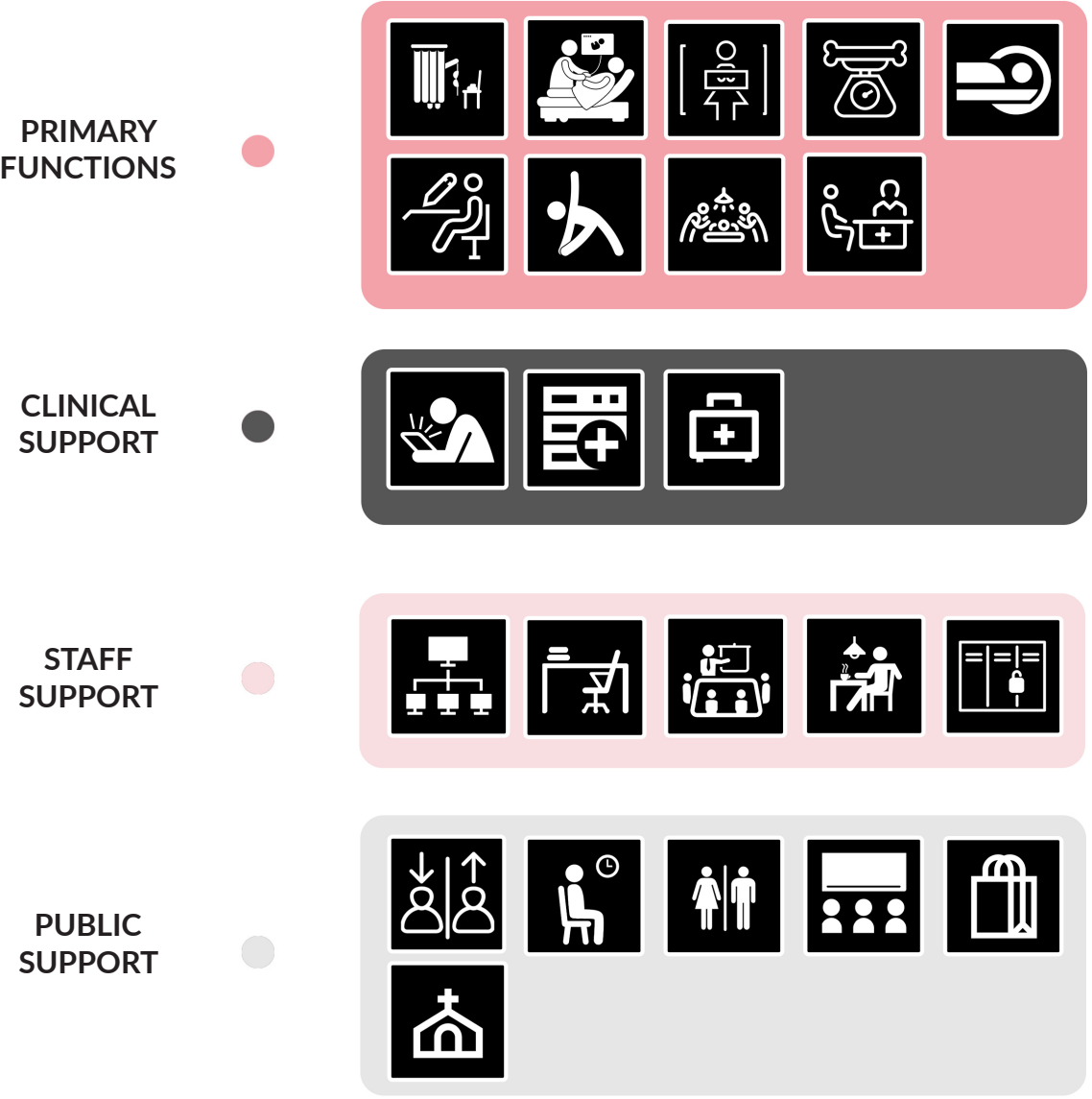
Wind will be most evident coming from the south, but it is also abundant coming in from the north. This has an effect on the design for wind loads, further strengthening the sun shading structure on the building's north-west and southwest sides, as those have the strongest wind loads.

PROPORTIONAL DIAGRAM

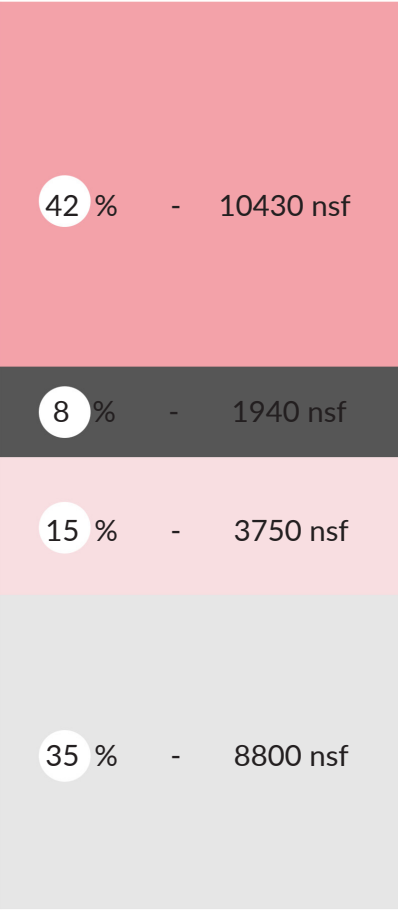


* Each square is a 11' x 11' module

PROGRAM DIAGRAM



PROGRAM DISTRIBUTION



TOTAL NET AREA: 24926 nsf
 Multiplier 1.4
TOTAL GROSS AREA: 34896 gsf

SPACE LIST

	Functional Element	# of Rooms	NSF per RM	TTL NSF ROOM	Remarks	
PRIMARY FUNCTIONS	Dressing Room - Unisex	8	60	480	Includes bench, mirror and gown storage	
	Dressing Room - Unisex ADA	2	80	160	Includes bench, mirror and gown storage	
	Gowned Waiting - Unisex	1	120	120	Seating for 6@20	
	Patient Locker Alcove	1	30	30	Near Gowned Waiting	
	Patient Toilet	4	65	260	2 near Gowned Waiting, 2 by Mammo	
	Ultrasound	7	160	1,120		
	Patient Toilet	4	65	260		
	Mammography - 3D	10	180	1,800	4 Screening, 6 Diagnostic, 5 Screening offsite	
	Stereotactic	1	180	180		
	Molecular Breast Imaging	1	180	180		
	Bone Density	3	120	360		
	MRI - Breast	1	600	600	3T Magnet Size, Outside Wall, RF Shielding; Screen by zone 3	
	Control	1	120	120	Zone 4 ACR entry required)	
	MRI Equipment Room	1	180	180		
	MRI Safety Zone	1	180	180		
	Prep/Recovery/Observation	1	400	400	3 Bays for procedure prep and short term recovery; includes clinical workstation; hand wash sink	
	Procedure Room	4	200	800		
	Physical Therapy Gym	1	400	400		
	Exam Room	15	120	1,800		
	Consultation Room	10	100	1,000	Seating around a small table, computer workstation for sharing images.	
SUBTOTAL-NSF		77		10,430		
CLINICAL SUPPORT	Team Workroom	2	350	700	Nursing, Resident, Physician, Teaching; 8 Work stations, Dictation / Charting; Staff consult, 3 MA	
	Reading Room	1	180	180		
	Radioactive Storage	1	80	80	For "seeds", not a full Hot Lab	
	Central Tech Workroom	1	200	200	Multiple work stations	
	Medication Room	1	80	80	Small Pyxis, sink, counter, refrigerator and double locked storage.	
	Clean Supply	1	140	140		
	Soiled Holding	1	80	80		
	Equipment Storage	1	150	150		
	Housekeeping	1	100	100		
	IT Server Room	1	150	150		
	Alcove, Clean Linen	1	20	20	Blanket Warmer	
	Alcove, Crash Cart	1	20	20		
	Alcove, Equipment	2	20	40		
	SUBTOTAL-NSF		15		1,940	

	Functional Element	# of Rooms	NSF per RM	TTL NSF ROOM	Remarks
STAFF SUPPORT	Workroom	1	80	80	Shared copy/fax/scanner, small files and lockable purse storage
	PFS Stations	4	80	320	Registration
	Office, Radiologist	8	100	800	
	Workstation, Patient Navigator	4	48	192	
	Workstation, Care Coordinator	4	48	192	
	Office, Nurse Specialist	2	120	240	
	Workstation, Diagnostic 8 Sche	8	48	384	
	Workstation, Clinic Manager	1	64	64	
	Workstation, Compliance 1 Proq	1	48	48	
	Workstation, Life Coach / 2 Psy	2	48	96	
	Office, Surgery	5	100	500	
	Staff Lounge Lockers	2	300	600	
	Toilet, Staff	4	60	240	132 people - additional family waiting; surgery and imaging waiting
SUBTOTAL-NSF		46		3,756	
PUBLIC SUPPORT	Waiting	1	5,600	5,600	Adjacent to Waiting Room
	Reception / Check-In	2	300	600	
	Public Restroom	2	300	600	
	Education Conference Room	1	500	500	
	Women's Boutique	1	500	500	
	Children Play Area	1	500	500	
	Church	1	500	500	
SUBTOTAL-NSF	SUBTOTAL-NSF	9		8,800	

COST ESTIMATE ANALYSIS

A. Building Cost	34896 S.F.at \$350.00/GSF	\$12,213,600
B. Fixed Equipment	(8% of A)	\$977,088
C. Site Development	(15% of A)	\$1,832,040
D. Total Construction	(A + B + C)	\$15,022,728
E. Site Acquisition/Demolition		\$500,000
F. Moveable Equipment	(8% of A)	\$977,088
G. Professional Fees	(6% of D)	\$901,363.68
H. Contingencies	(10% of D)	\$1,502,272.8
J. Administrative Costs	(1% of D)	\$150,227.28
K. Total Budget Required	(D + E through J)	\$19,053,679.8

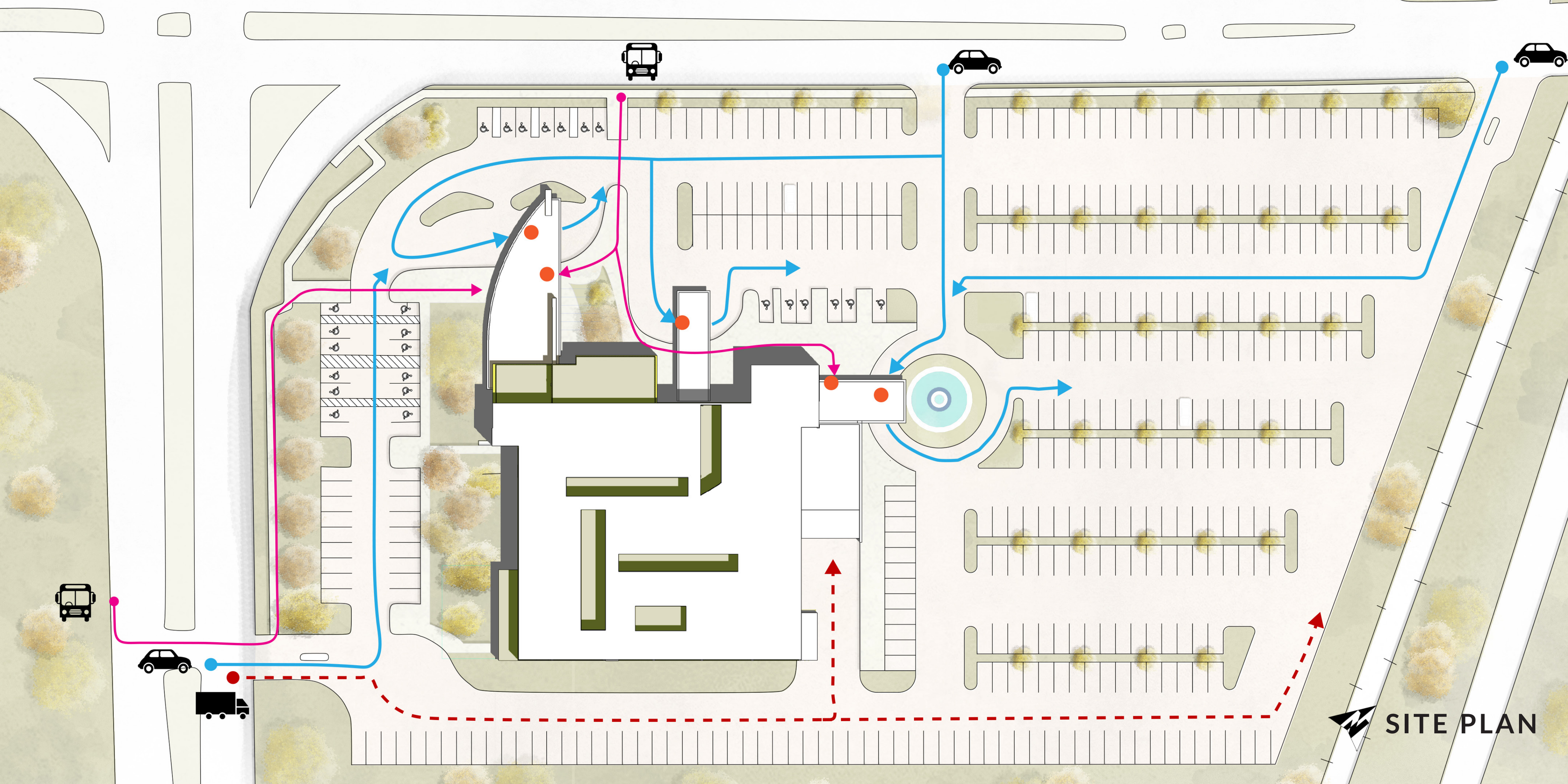
MASTER PLAN



VERTICAL EXTENSION



Parkland has a need for a new cancer center and a way to educate the community about the many different types of cancers. This came with a unique set of problems, where to build it, where will people park, how to educate people, and how will they locate this new building. I proposed, just like HKS, to build on top of the existing surgery center. Choosing to build on top of the surgery center gave us many advantages, from saving land to being able to use the existing systems and structure, while still creating a new form on top.



▲
SITE PLAN

PARKLAND BREAST CENTER

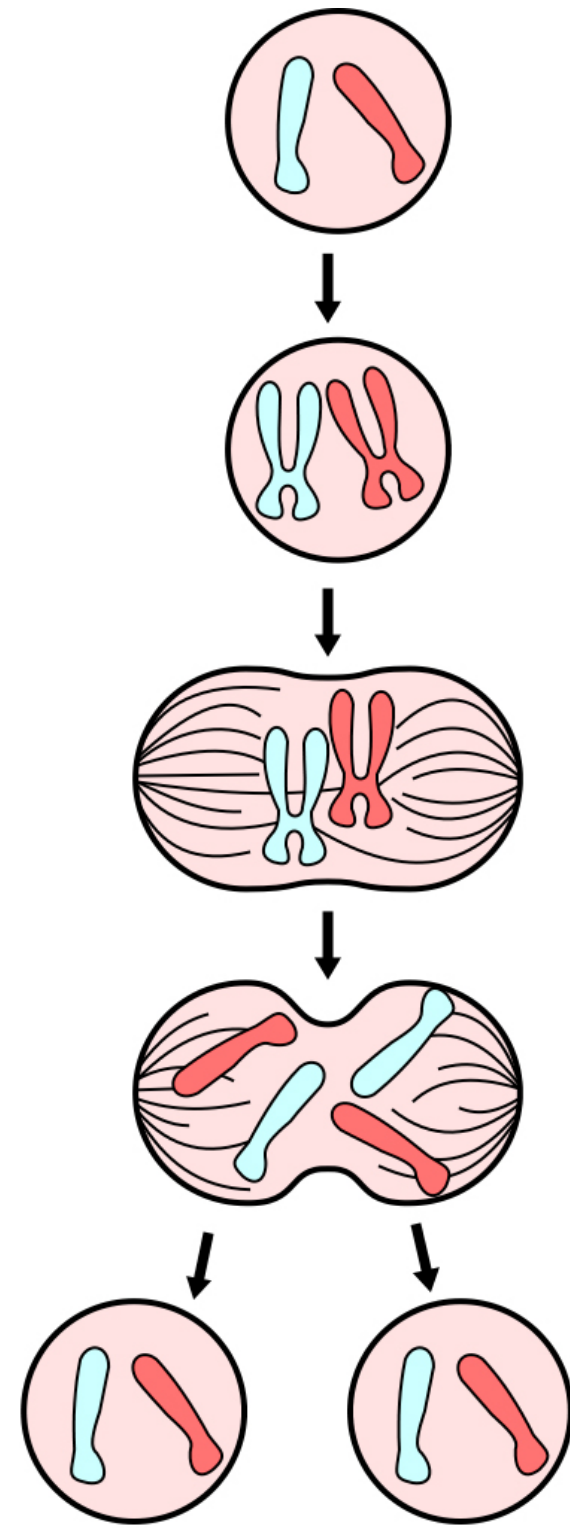


CONCEPT

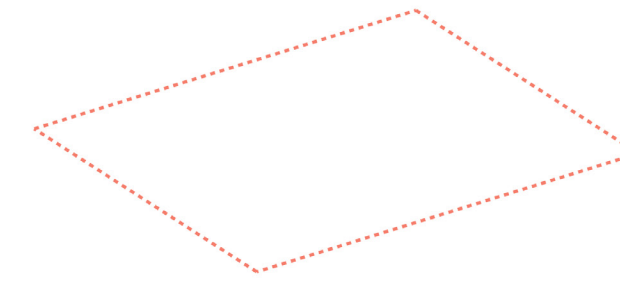
Cancer is caused by cell division. The cell spread quickly and they carry their chromosomes to everywhere through the body.

Utilize the characteristics of cell proliferation, and imagine the green courtyard as a cell to enrich the performance of the building and to overcome the negative effect. The green space can split out to create a smaller and more pleasant courtyard space.

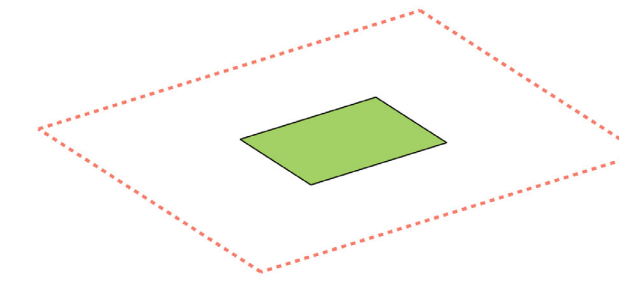
"∞" shaped traffic system that is both independent and integrated.



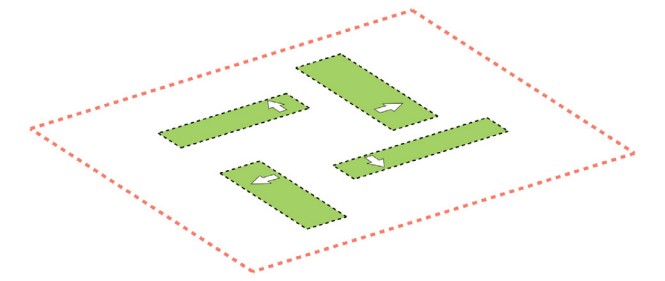
PARTI



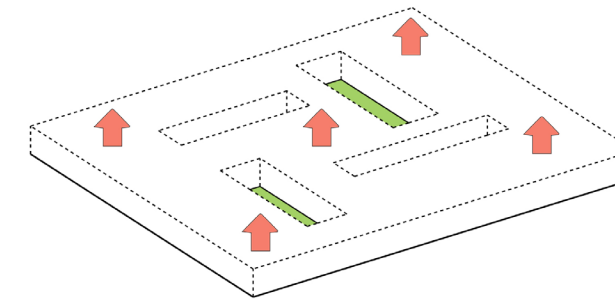
1. PLACE
Put one mass in the site



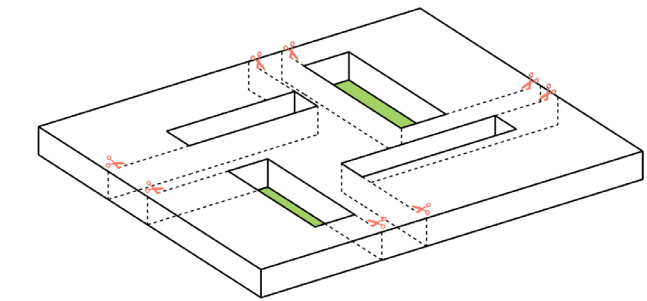
2. INSERT
Insert green space in the center



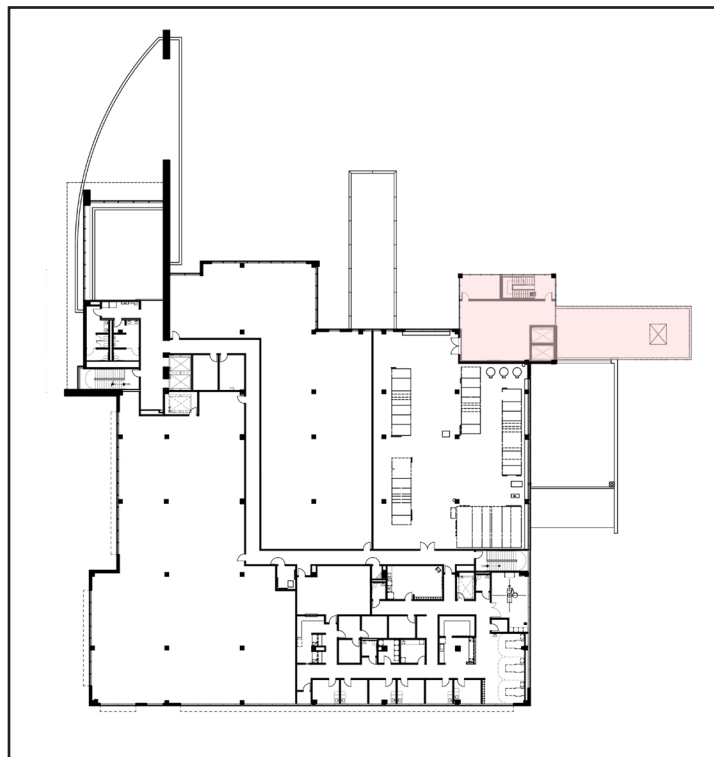
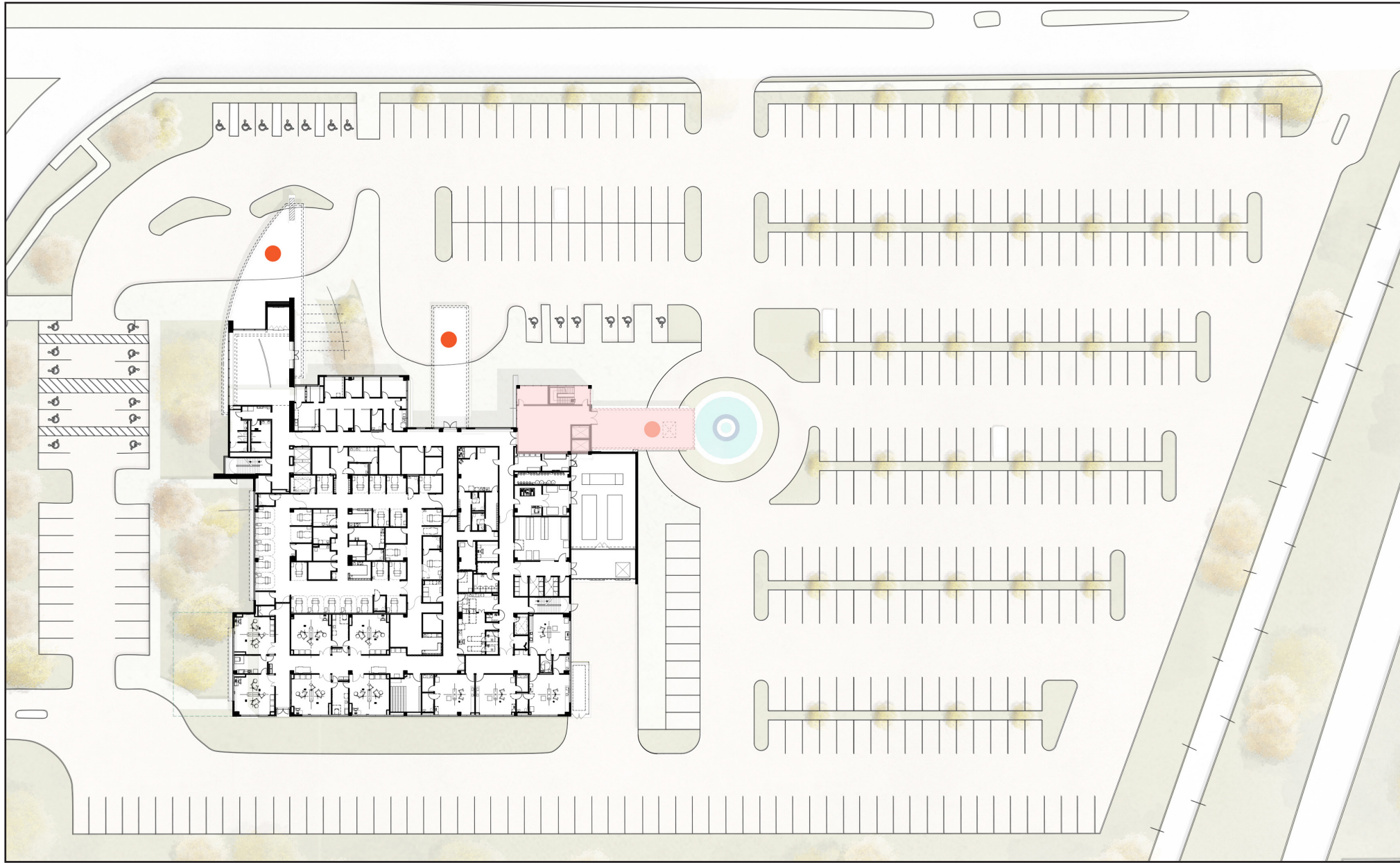
3. SPLIT
Split green space like cell division



4. UP
Increase the volume formed 4 inner courtyard



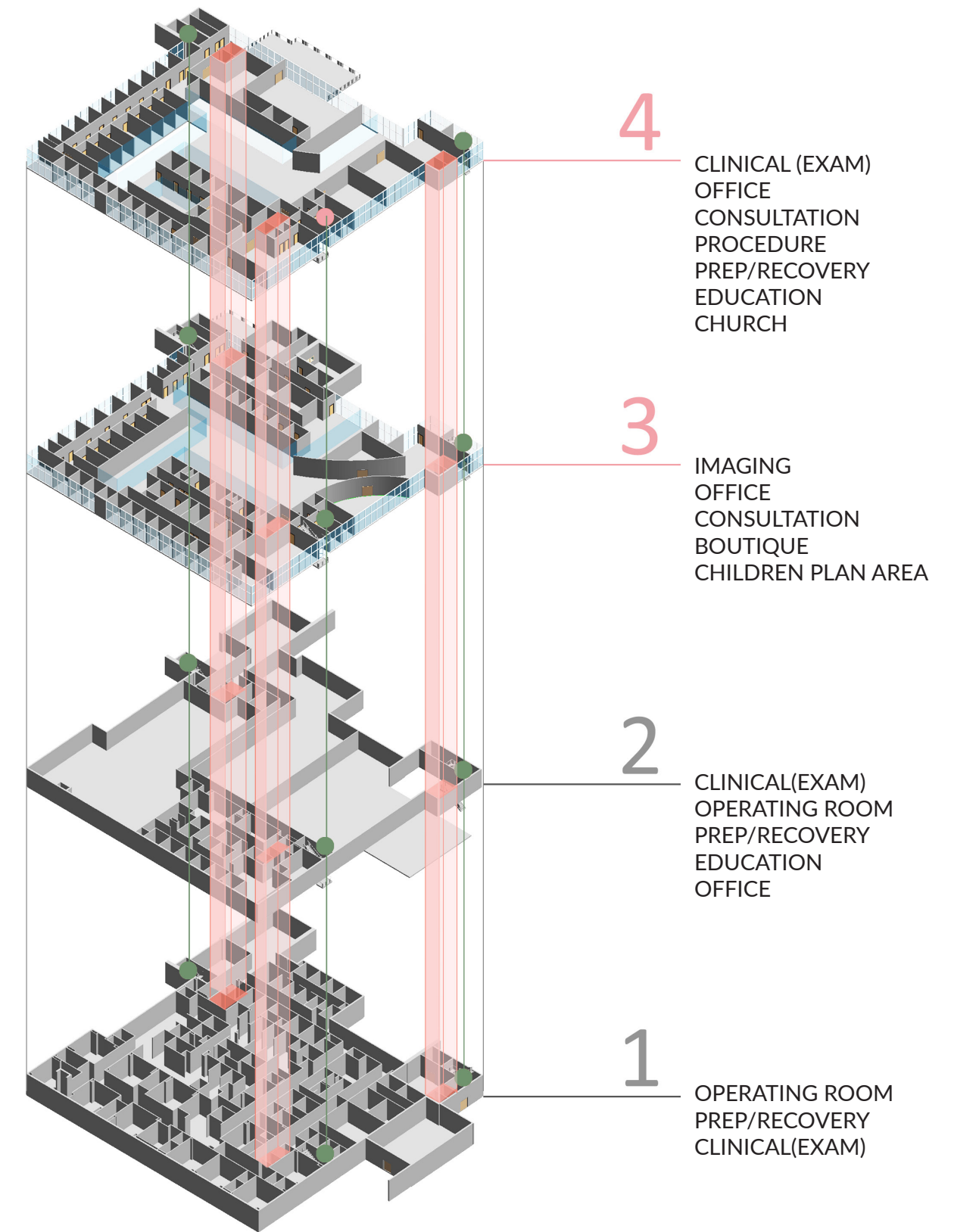
5. CUT
Functional area division

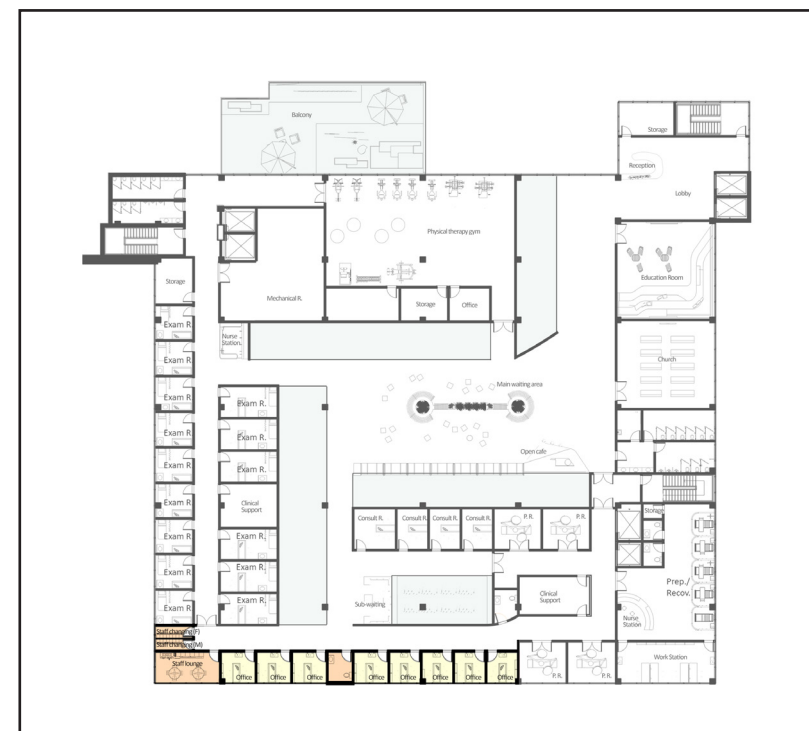
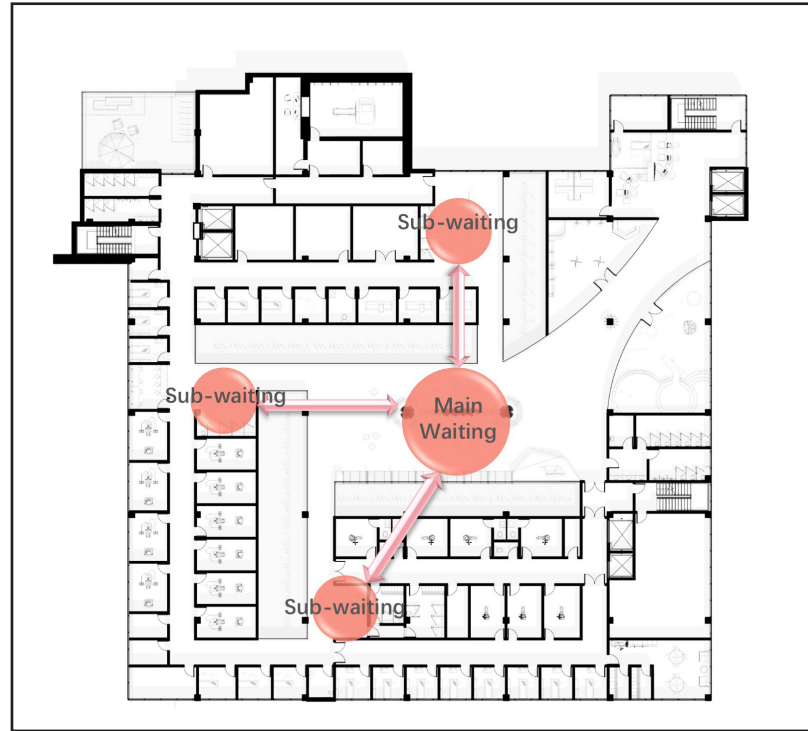
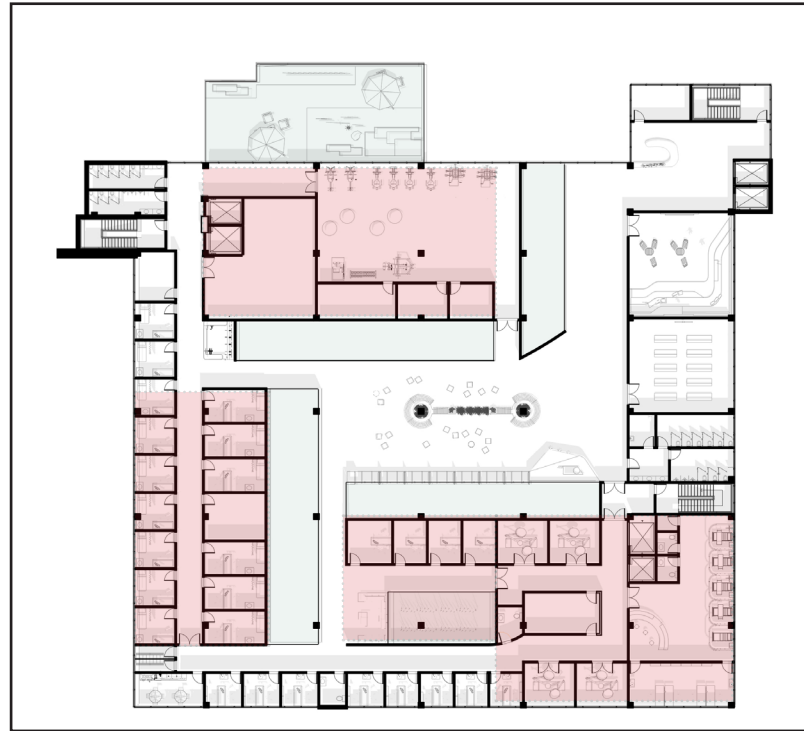
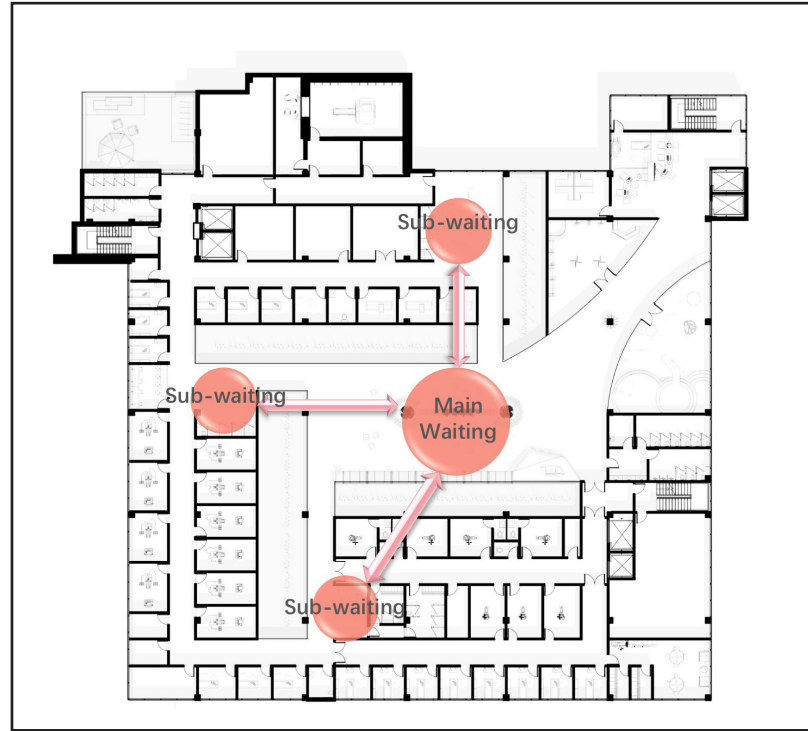
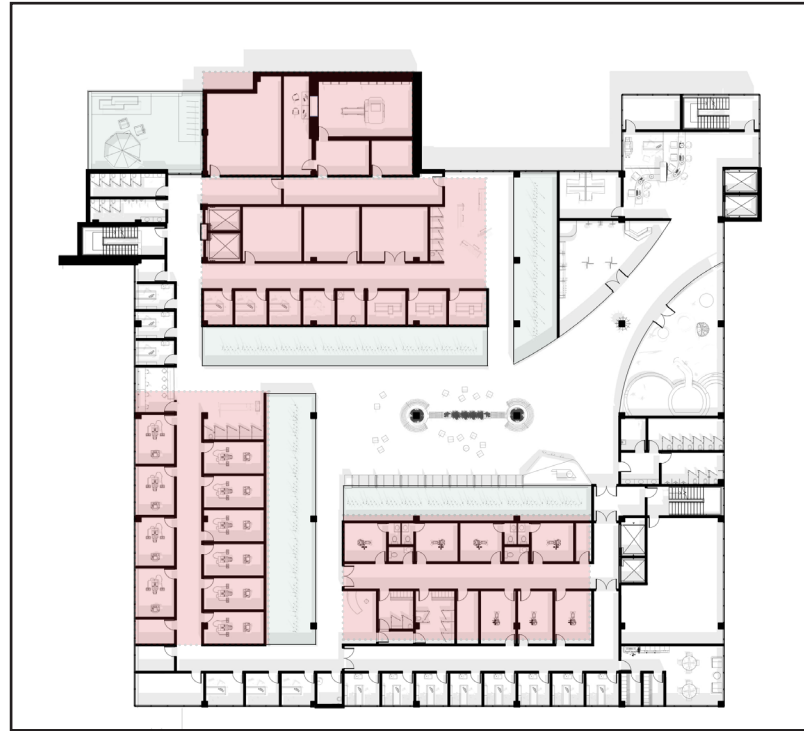


EXISTING FLOOR PLAN

The existing building is an operational two story Ambulatory Surgical Center which will remain in operation throughout construction. In order to ensure the operation of the existing hospital and avoid circulation crossed, a dedicated entry is added beside the building. There are two elevator spaces in the existing building, the one is used and the other one for future use. In existing building, the waiting area is too small to hold enough patients.

STACKING DIAGRAM





CLUSTER

Primary functions are designed as a cluster around the main waiting area making the plan looks so clear.

WAITING AREA

Big main waiting area in the center of the building which stay away from outside noise and can hold enough patients.

OFFICE

Offices are located in the south which have a good view to see the landscape and have enough daylight.

EGRESS

The circulation is clear and has no dead-end. Three fire stairs can be used in particular case.



DEAR, THE ENVIRONMENT
HERE RELIEVES ME A LOT
FROM ANXIETY

MAIN WAITING AREA

WAITING AREA DESIGN STRATEGY

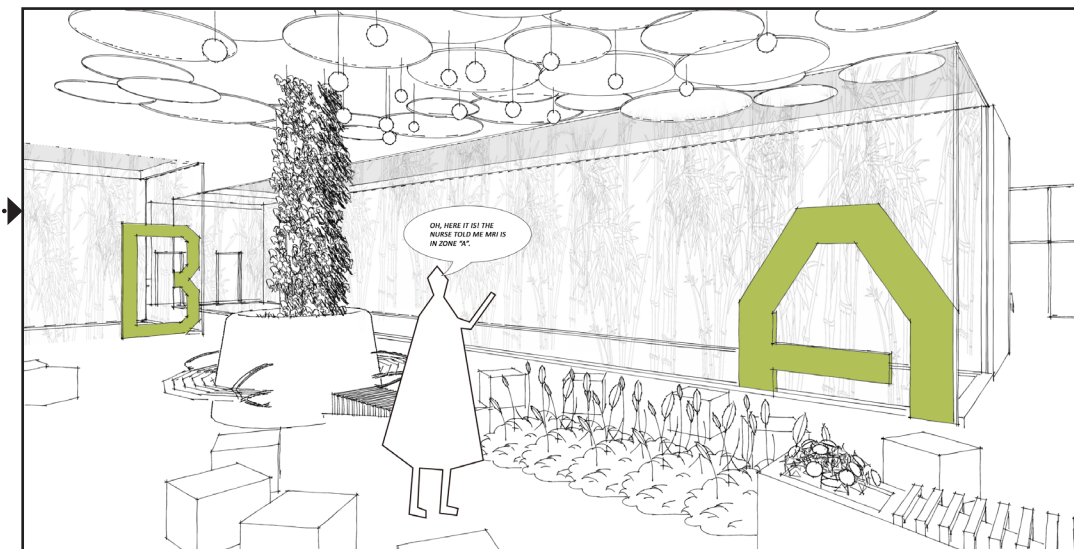
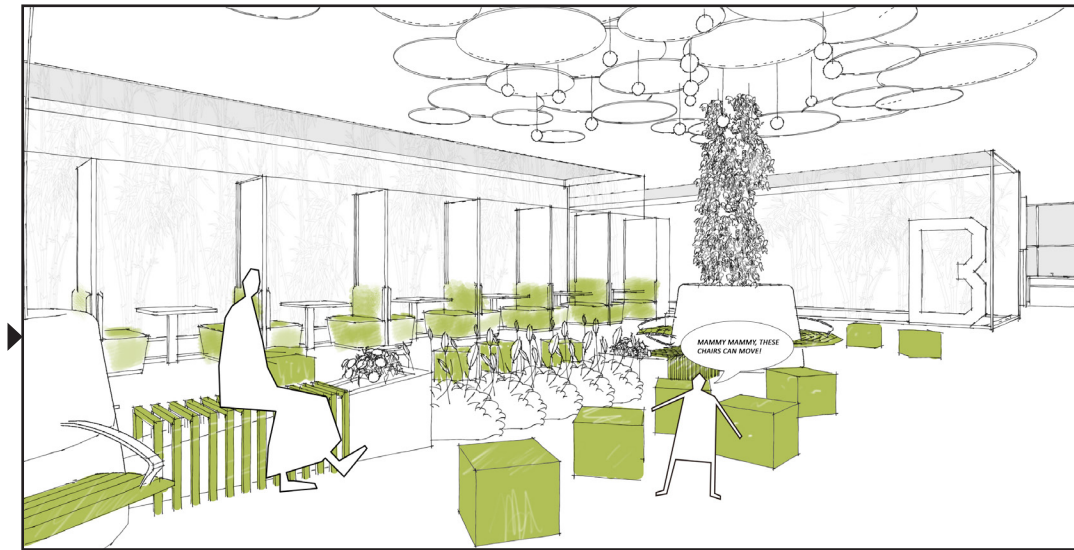
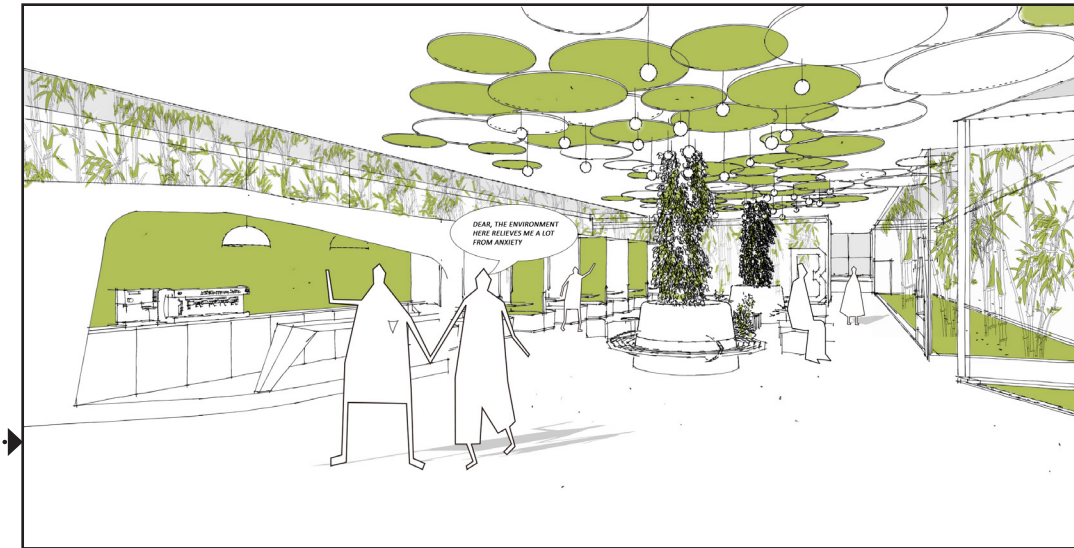
No one likes waiting. It is both monotonous and stressful. To minimize boredom and create a distraction, the waiting area should be comfortable, with different choices for seating, colors, and access to views, daylight, and gardens. The idea behind the interior design was to create comfortable spaces - both public and private - to lend a sense of security and tranquility.

Based on research and studies that show **nature** as being restorative, beautiful landscape environment which the hospital presents is helpful to make the patients pleased, speed up the recovery of the diseases. What is more, it can soothe patients' emotions and cultivate their sentiments, mental and physical recovery. The landscape around the waiting area was designed to be therapeutic, providing patients access to the natural environment. The columns are wrapped with leaves and full of green leaves ceiling. The whole environment looks like a forest, helping patients forget they are in the hospital.

Different choices of seating give patients more sense of control. There are also some **flexible seating** in the waiting area, people can move it to where they want. This main waiting area provides spaces for interaction with fellow patients, as well as spaces with complete privacy. Besides the cafe area, there are some private rooms with curtains for patients to seat.

Signage is used with purpose and meaning to support a three-clustered wayfinding system. "A, B, C" signage offers visual cues to make an often busy and stressful environment easier to navigate.

The serene, spa-like environment increased privacy and comfort in waiting area. It is a true place of healing for the body and soul.



INTERIOR DESIGN

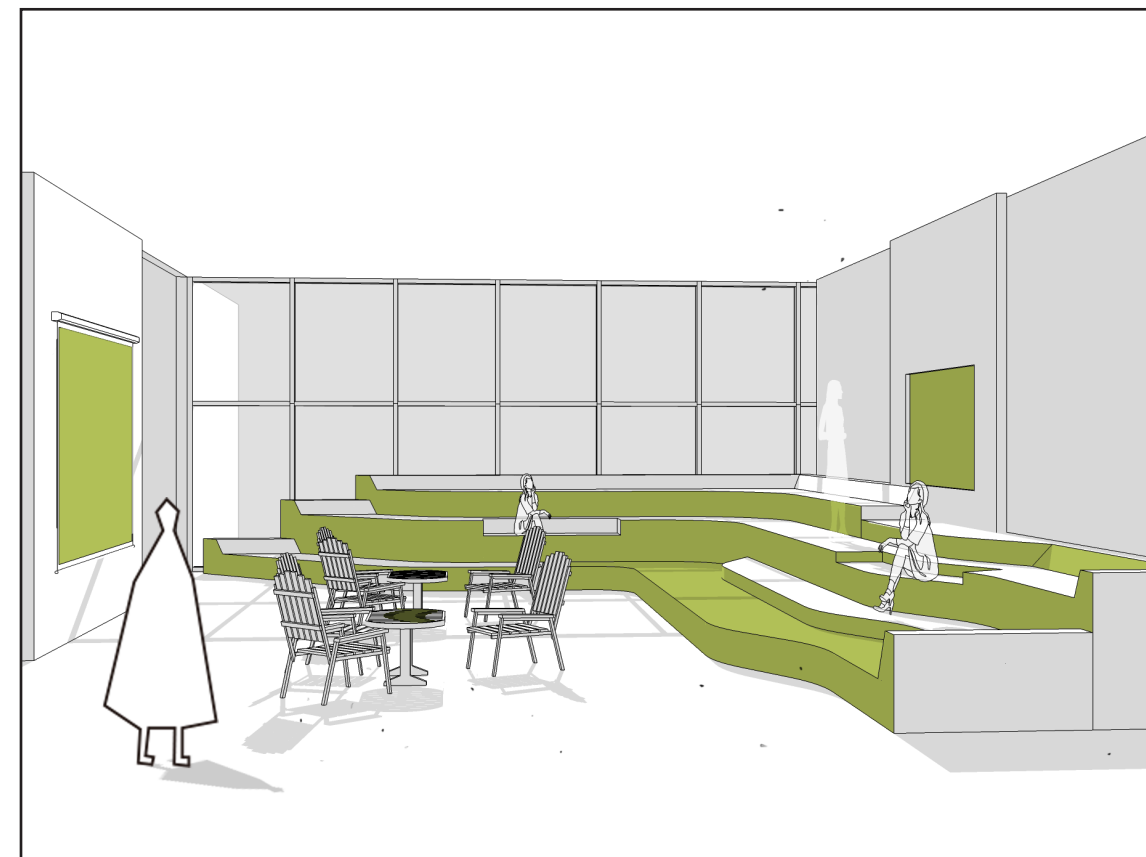
A host of amenities reinforce the atmosphere of care and convenience, including a boutique, cafe, chapel, education space, and gym.

Patients and their families can relax and learn about relevant knowledge here, and the nervous feeling of the patients can be relieved in such a fresh environment. The boring and lengthy visit seems more relaxing now.

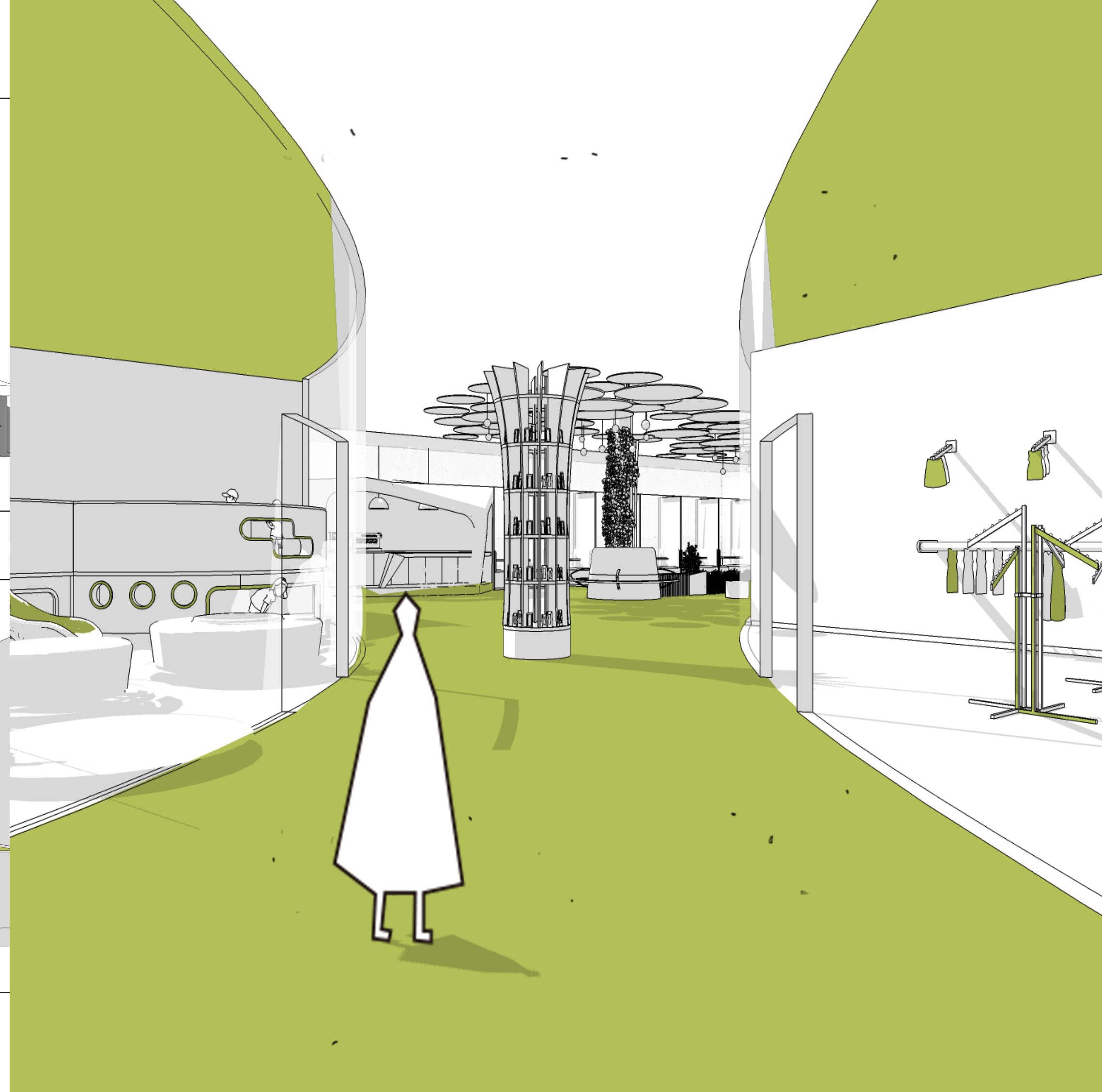
Popular science posters, recovery posters, mental healing knowledge, encouraging TV programs are placed in the passages to help the breast cancer patients to have scientific and specialized knowledge about the disease, as well as psychological counseling knowledge, strengthen their self-healing ability and promote the mental and physical recovery.



RECEPTION/ CHECK-IN



EDUCATION ROOM





Parkland
Breast Center

FACADE DESIGN

The additional building should use some of the previous material to achieve harmonize. The curtain wall and brick are used in the top two facade design. Considering the privacy, the curtain wall is highly reflective and cannot be seen from outside. Innovative double-skin façade for thermal buffer and increased energy efficiency. Some plants are planted on the building facade to isolate noise.

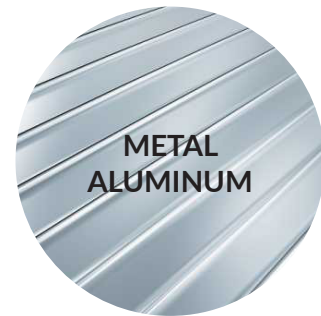
The entry to the Breast Center is easily identifiable as a destination and easy to navigate from the parking lot. A canopy over the drop-off ingress provides protection from the sun and rain.



CURTAIN WALL



BRICK



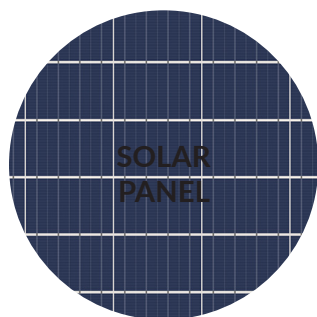
METAL ALUMINUM



WHITE MARBLE

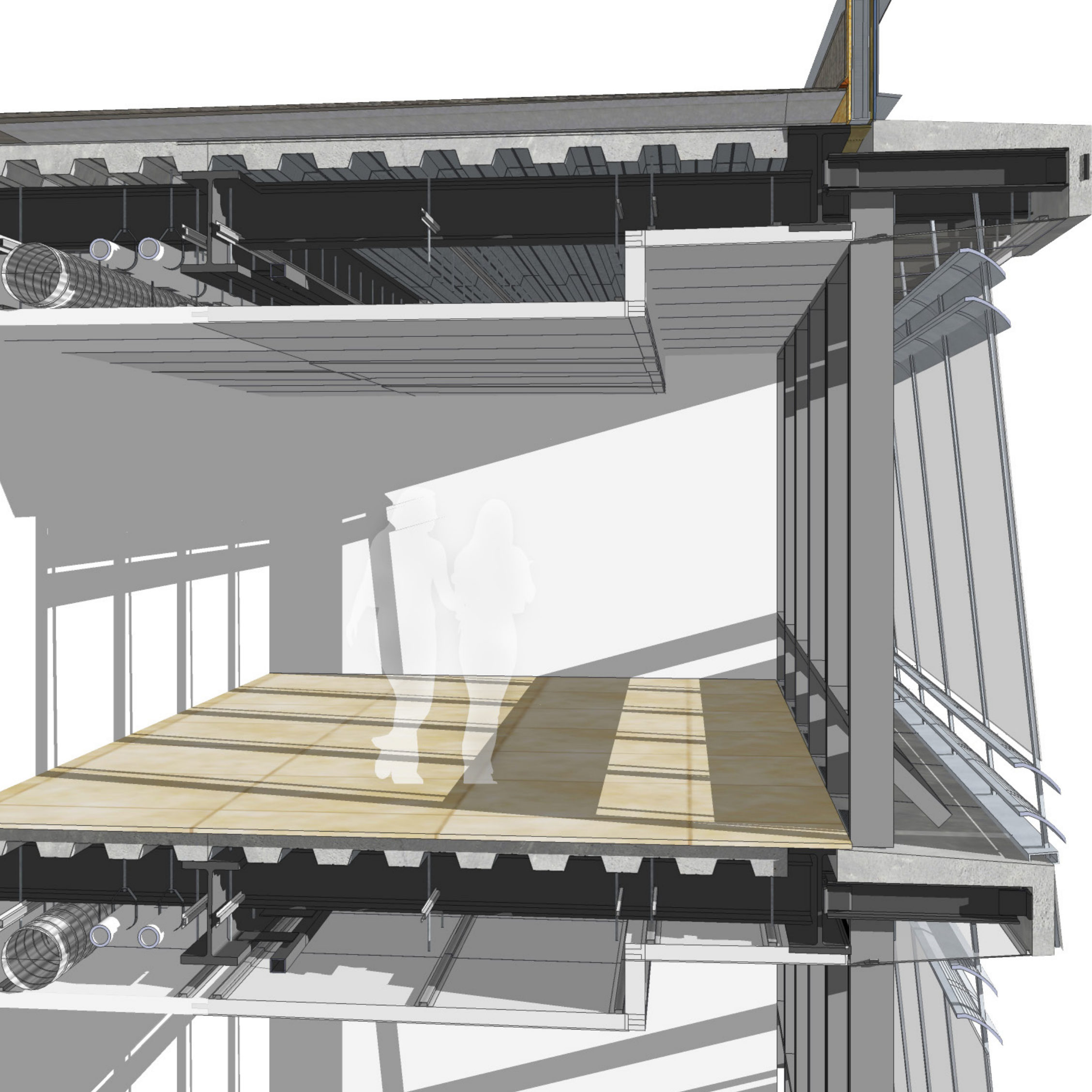


LOW-E GLASS



SOLAR PANEL





DOUBLE-SKIN FACADE

How do you stay warm in winter? You wear layers of clothing to insulate your body, right? If it's summer, you ventilate your face with a hand fan. Therefore we can use the same tactics to keep buildings warm or cool; a building's exterior wall is like the skin of human body.

Double skin façade (DSF) is important in regulating the energy cooling and heating loads within the interior spaces of buildings, thereby providing comfort for the occupants and also saving the long-time cost of maintenance as per energy is concerned in the building.

In winter, the DSF uses solar rays to preheat the air in the cavity. The thermal insulation reduces heating demand, which is particularly beneficial for cold climates.

In summer, the DSF controls the solar heat by protecting the building from excessive sun. Shading devices prevent sunlight from reaching the interior wall.

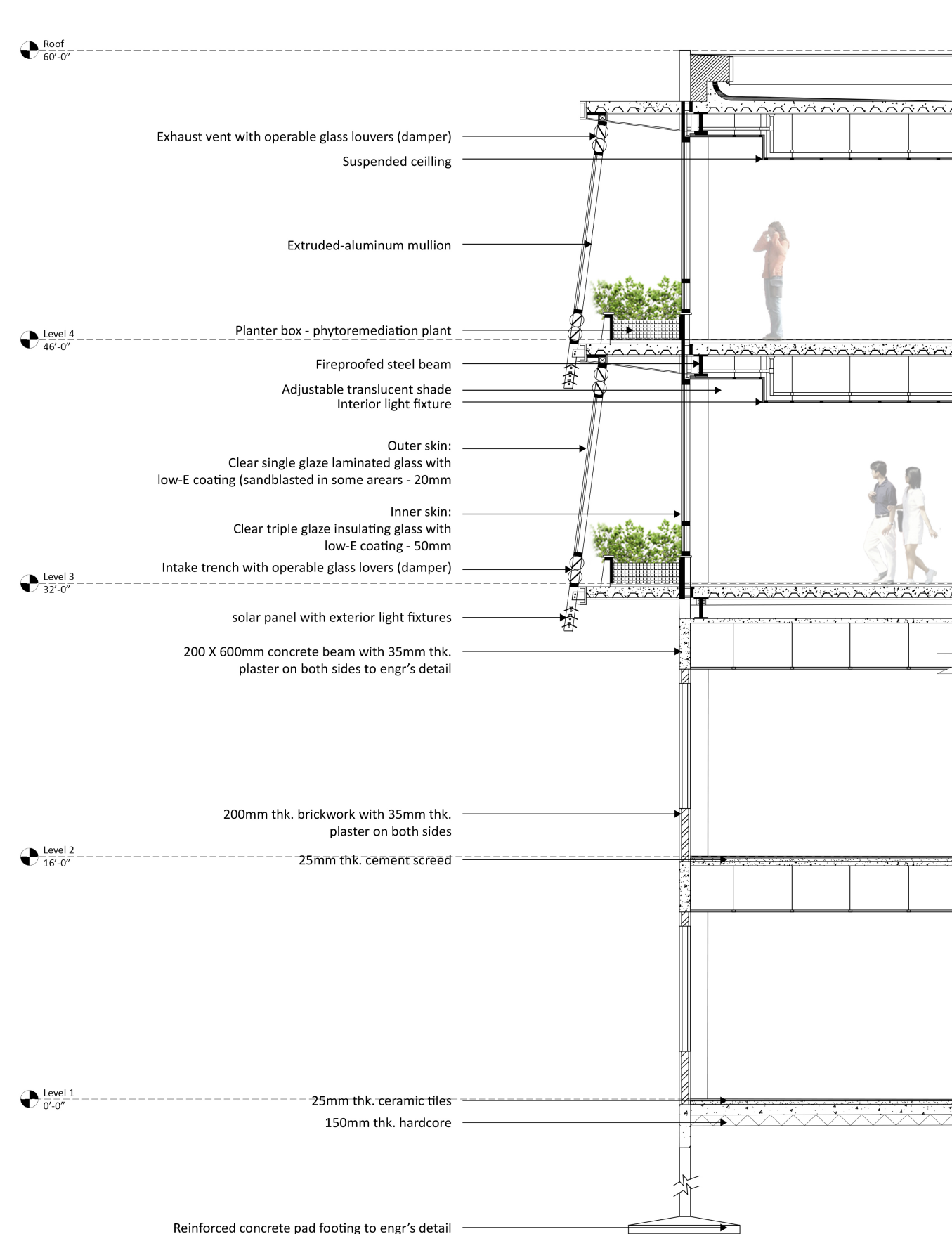
The DSF consists of three components: an exterior wall, a ventilated cavity, and an interior wall.

The exterior wall provides protection against the weather. It is a single layer of heat-strengthened safety glass or laminated safety glass.

The low-emittance glass used in the interior wall to reduce radiative heat gain. This layer has hopper windows.

The cavity is a buffer space and has grilles at each level, which allows access for maintenance and cleaning. The cavity insulates the building against wind, sound, and temperature. It pulls in outside air and uses it for the controlled ventilation of interior spaces.

WALL SECTION



ELEVATION



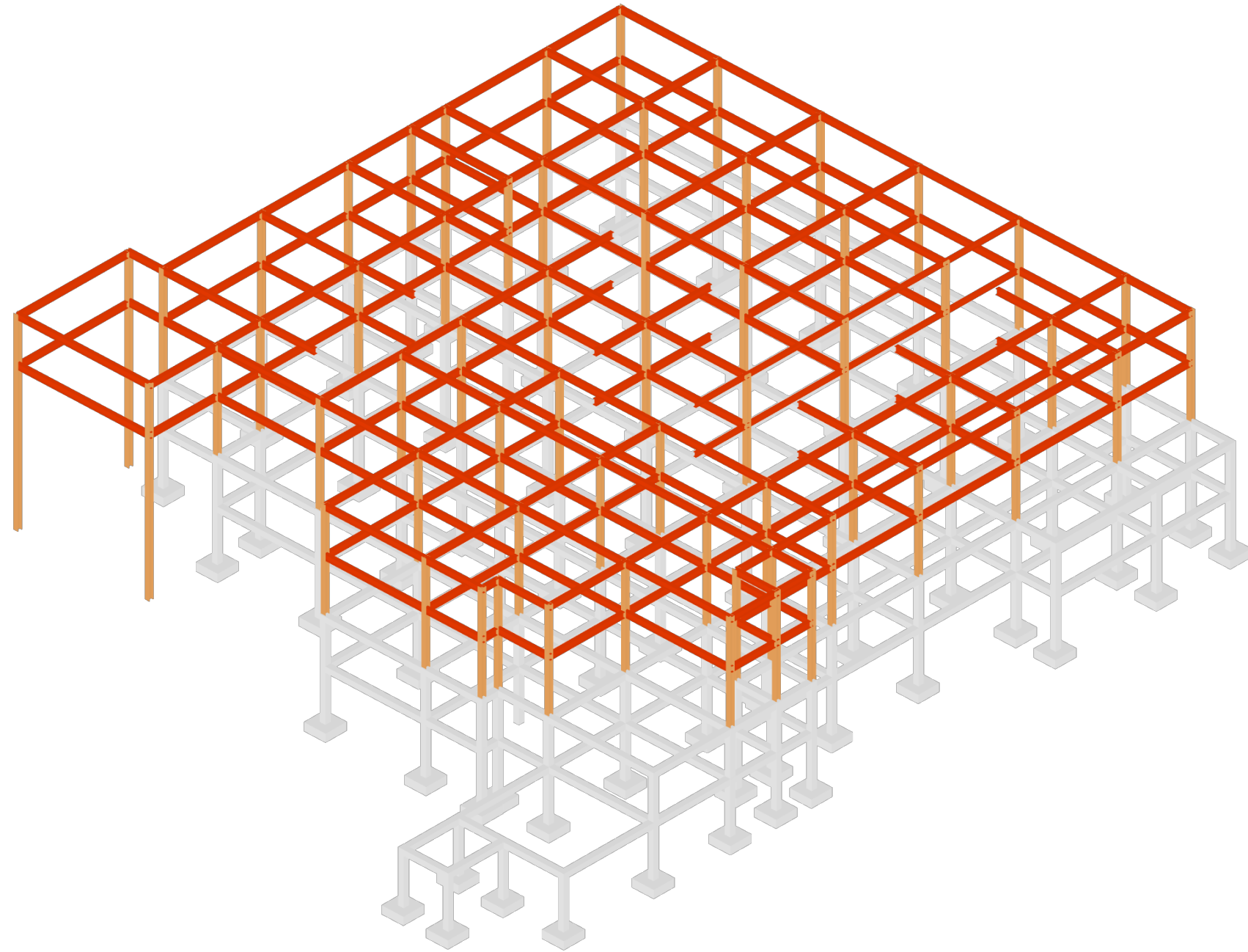
NORTH-WEST ELEVATION



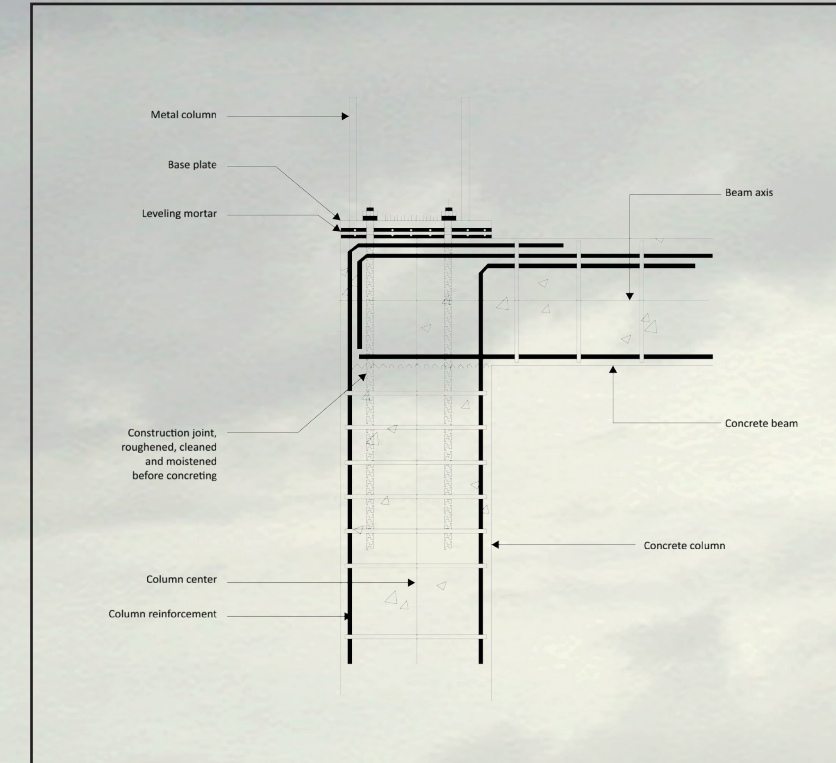
NORTH-EAST ELEVATION



STRUCTURE



I chose steel for the structural system because of the numerous benefits that it holds. Steel is generally very adaptable, cost-effective, and highly durable under loads. It can be produced in many forms to please any designer's aesthetic preference, yet it still maintains its strength and durability.



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