

# Diospi Suyana Building Hope in the Andes

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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

**Master of Architecture**  
in  
**Architecture**

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May 7th, 2018  
Alexandria, VA

Keywords: Cancer, Healing, Nature

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## ABSTRACT

How to design with empathy?

*“The very essence of architecture consists of a variety and development reminiscent of natural organic life. This is the only true style in architecture.”<sup>1</sup>*

Alvar Aalto

For me architecture has the power to enhance human’s lives. Our beautiful world needs a fine and delicate touch to modify their nature and abstract their essences without changing its soul.

The focus of this thesis is to empathize with nature and use it as an instrument to heal the mind and provide comfort to the body. The empathy of architecture with the users and the environment is a key to provide healing. For that reason, the architecture tends to create more than a building; it also creates it’s own spirit.

This project is a Cancer Treatment Center located in the Andes of Peru, which purpose is to response to the emotions and needs of the patients and staff. Cancer is a complex disease, which can make the patient feel lost in the world. The interplay with nature will create a healing environment and a spiritual retreat, which creates relief and connection with the universe. The building provides the users places to breath deeply, think and connect with each individual belief.

The design looks for a natural organic plan, which takes advantage of the light and the surroundings. The green design works as a placebo for the patients, which are passing through theses difficult stages. Following the new trends and trying to separate of the idea of a mega hospital, the center is small in scale, but it has a program, which provides care and treatment at the same time. The walls are strong and solid to show the support and protect the inhabitants, but they are also flexible to blend with the high mountains in the horizon. It also has a green oasis, which is the heart of the project that runs from the beginning to end and merged with the natural slope land.

The culture plays an important role in the planning of the design. Adjusting to the customs and beliefs, the building respects the vernacular architecture, and gets inspiration of traditional materials and construction methods that the Inca’s empire used like adobe and stone.

# Diospi Suyana Building Hope in the Andes

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## GENERAL AUDIENCE ABSTRACT

This thesis is an architectural project which main function is a cancer treatment center located at the Andes of Peru. Cancer is a difficult disease that takes many lives every year. In Peru, the lack of facilities and the little concern to take care for the Quechuas (usually indigineous population from Peruvian highland, and decendents of the Inca's Empire) create a big need for this kind of healthcare centers. The current cancer problematic in the country and the new trends of healthcare make of "Diospi Suyana Hospital" (a Christian non-profit organization) the perfect site to discover the connection between architecture, nature and healing.

Since ancient times the approach to a natural environment has been a powerful tool to help cure the body and mind of patients. The urbanized societies and the fast advance of technology has left behind the sensibility for the human scale and affiliatation to nature. The patients with cancer have to deal with high pressure and a mix of feelings. It is relevant to designing with empathy, the architectural design tend to seek for nature as a placebo to bring back emotions and build a hope atmosphere.

The purpose of this project is to enhance the ambient of care with the introduction of natural light, green areas and earth materials creating a healing environment and a spiritual refuge where mind and body could compenetrate.

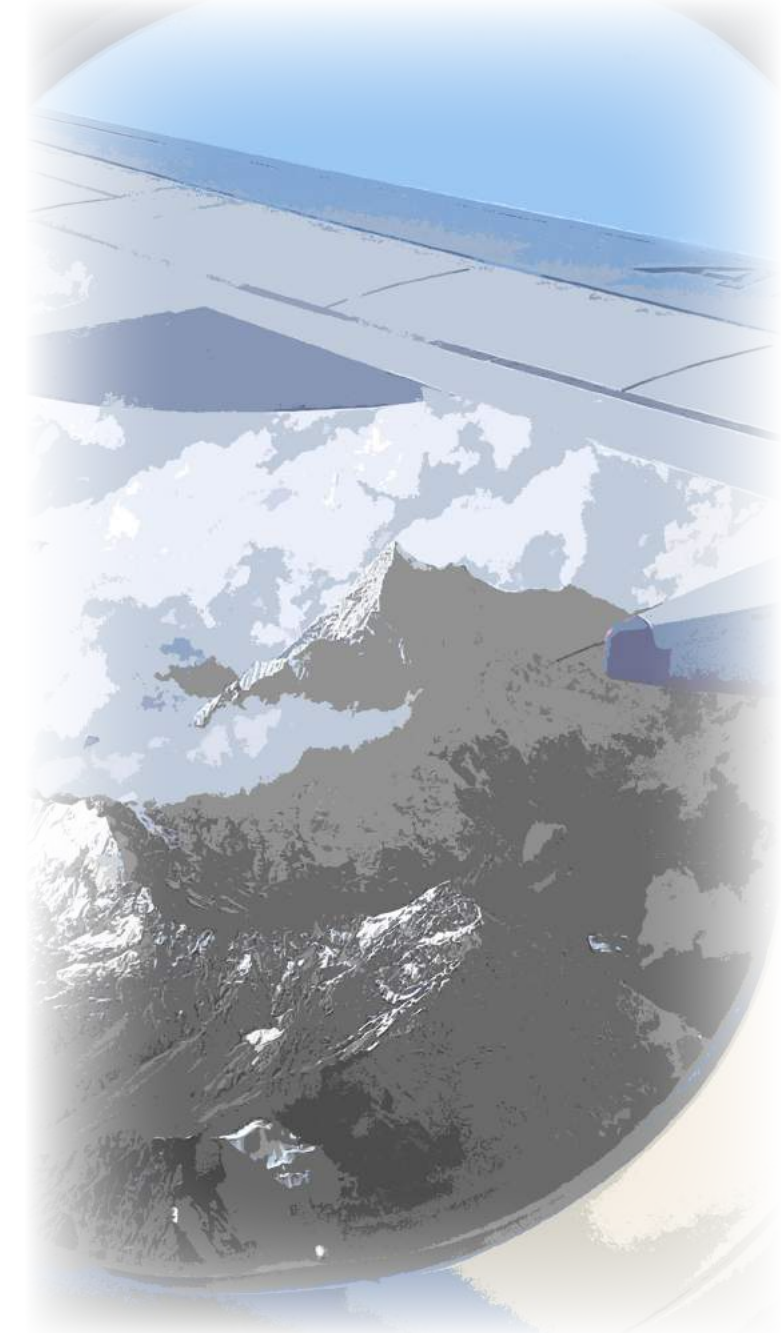
Hopefully this journey can be a proof that green architecture (architecture based on nature and sustainability) makes a difference in healing providing the users a better enviroment to cure their illness and soul.

## Diospi Suyana Building Hope in the Andes

### Dedication

To my mom (Mery Lucy Ponce León): I will miss your laugh, I will miss your words, I will miss you saying: "You can make it, you are my daughter". But I will always have your courage, passion and love for life to remember you. There is nothing that can put us down if we are ready for the battle.

With Love for You and all cancer patients



### Acknowledgements

The completion of this Master Thesis could not have been successful without the collaboration and support of family, committee, and friends.

First, I would like to thank my grandparents (Papa Felipe), and (Mamamita). Thank you to both for giving me all their unconditional love and becoming my first teachers since I was born. Their teachings and wisdom are my best guidelines.

I would like to recognize and thank my parents for all their love and dedication. For encourage me to pursue my dream no matter how far they are. Thank you for letting me fly and expand my wings on a new horizon. Thank you for being my best coaches.

All my Family in the United States and Peru, thank you for being there for me whenever I need it. Thank you for making me feel at home in two different parts of the world. I extend my special thanks to my committee:

Paul Emmons, I can not express my gratitude for becoming my committee chair. All these years in the WAAC would not have been so rewarding, if I had not received your guidance and advice.

Marcia Feuerstein, Thank you so much for your teachings, support and patience. Also, thank you for making time for my critiques even in your sabbatical time.

Markus Breitschmid, Thank you for becoming part of my committee even when you were abroad, It really means a lot to me to have received your knowledge and wisdom in each critique.

I would like to especially thank Jodi La Coe for been a valuable addition to my committee. Thank you for your time and words to help me succeed.

In addition, I would like to thank Diospi Suyana's Staff in general because you opened the doors of your hospital, and showed me your commitment for faith.

## Diospi Suyana Building Hope in the Andes



## Table of Contents

<b>ROOTS: Discovering the Paths</b>	1
Prints	2
Choosing the place?	9
Current Cancer Statistics	10
Healing and Green Architecture	11
Culture and History	12
Maggie's Centres	13
References	14
Program	19
<b>TRUNK: Discovering the Site</b>	20
Site Analysis	21
Site Conditions	28
Diospi Suyana	30
<b>BRANCHES: Designing with Care</b>	33
Sketching Ideas	34
Studio drawings	38
<b>LEAVES: Designing with Hope</b>	42
Site Plan Context and Hospital	43
Floor Plans	44
Elevations	47
Sections	49
Detail Construction	53
Views	55
Physical Model	66
Bibliography	77
Image Credits	78

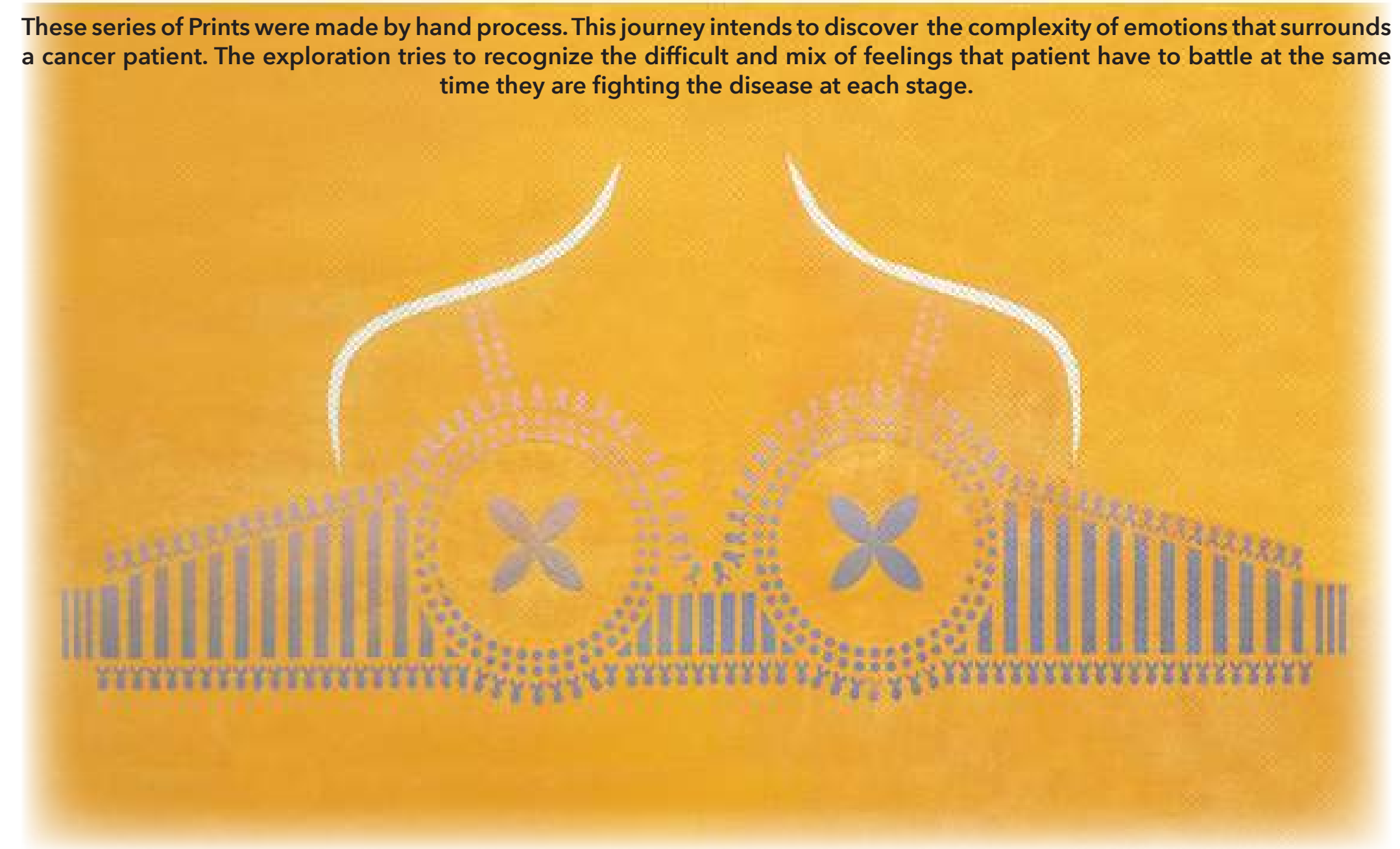
Diospi Suyana Building Hope in the Andes

# Discovering the Paths

ROOTS

## PRINTS

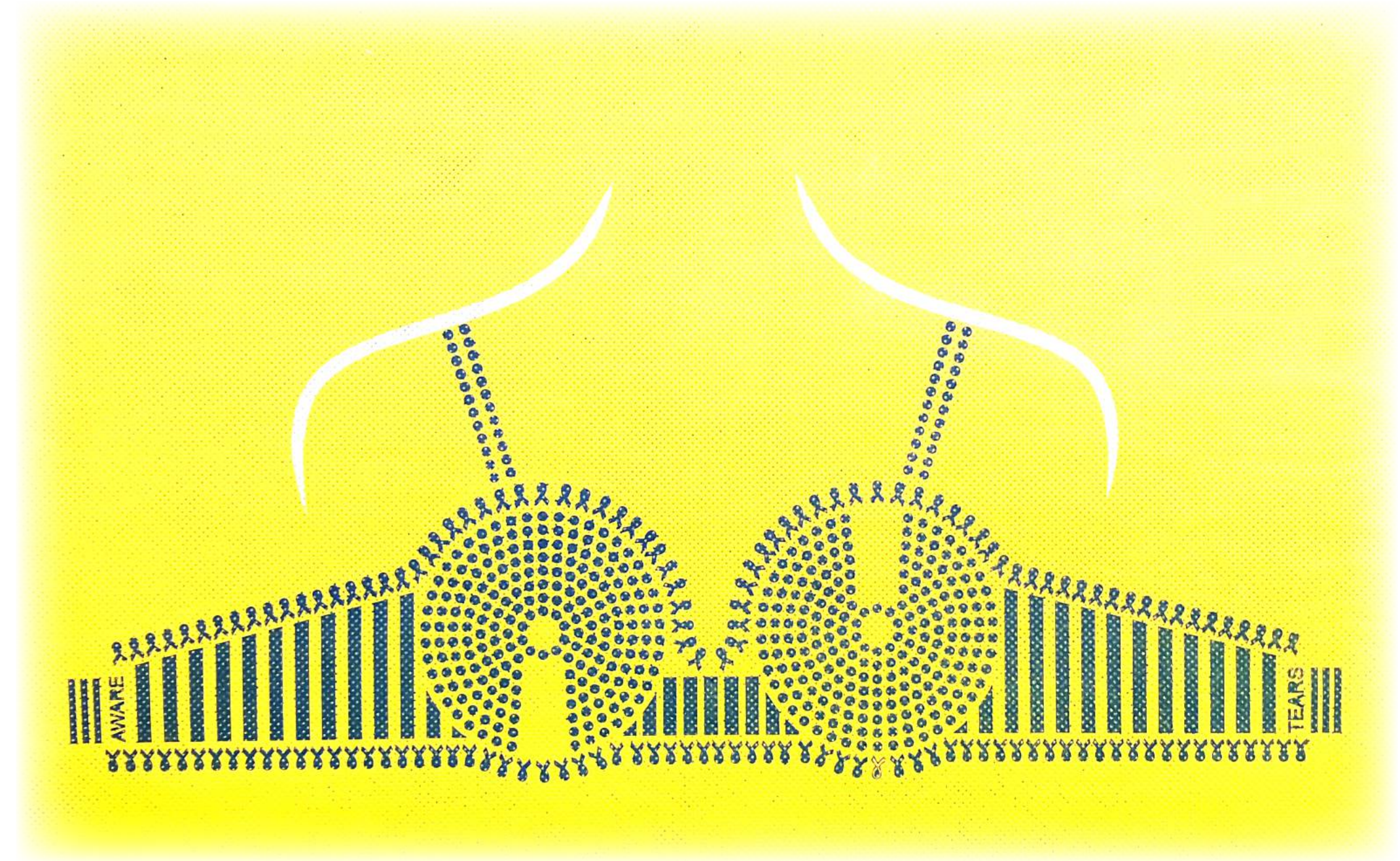
These series of Prints were made by hand process. This journey intends to discover the complexity of emotions that surrounds a cancer patient. The exploration tries to recognize the difficult and mix of feelings that patient have to battle at the same time they are fighting the disease at each stage.



**Blooming**

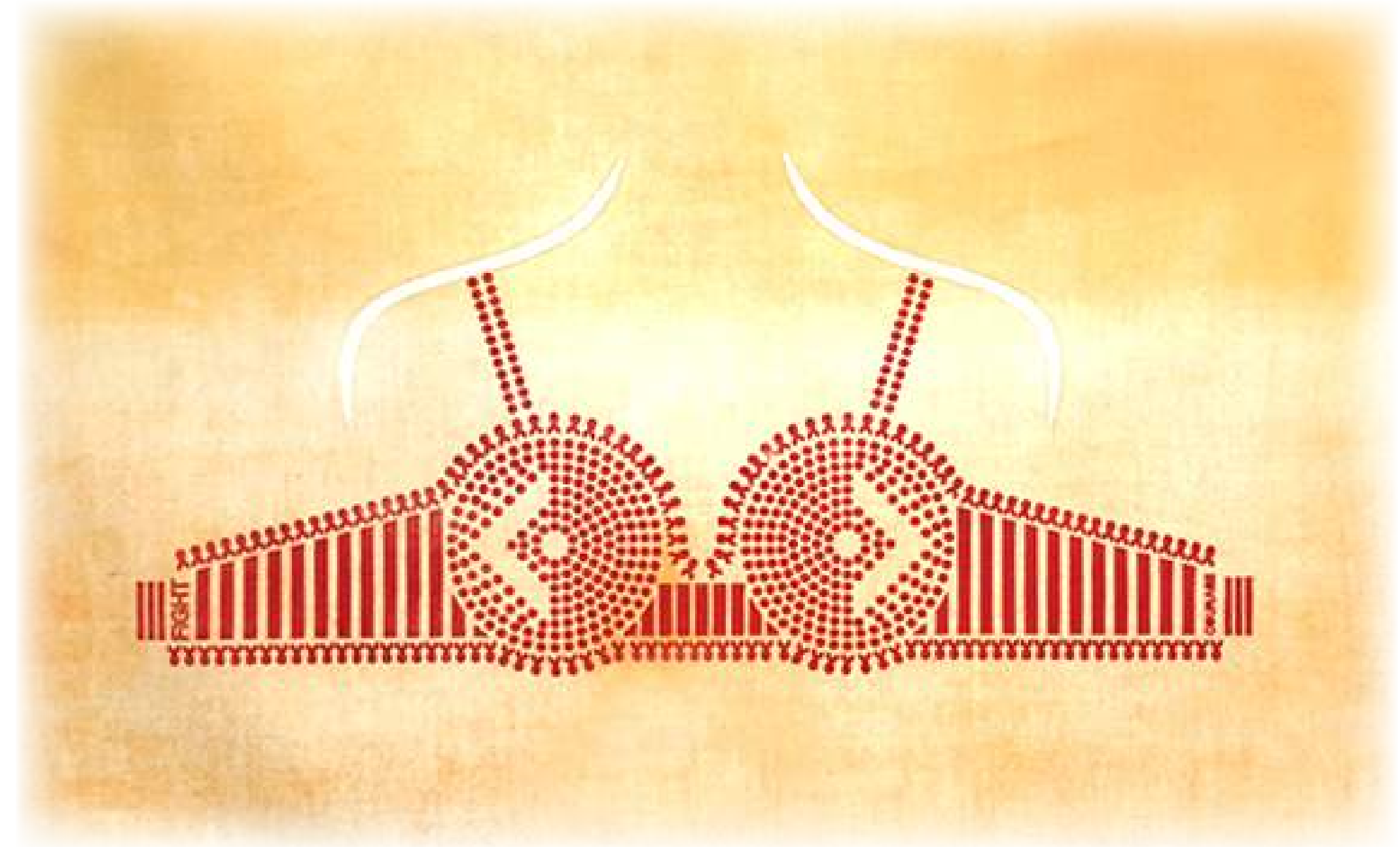


# PRINTS



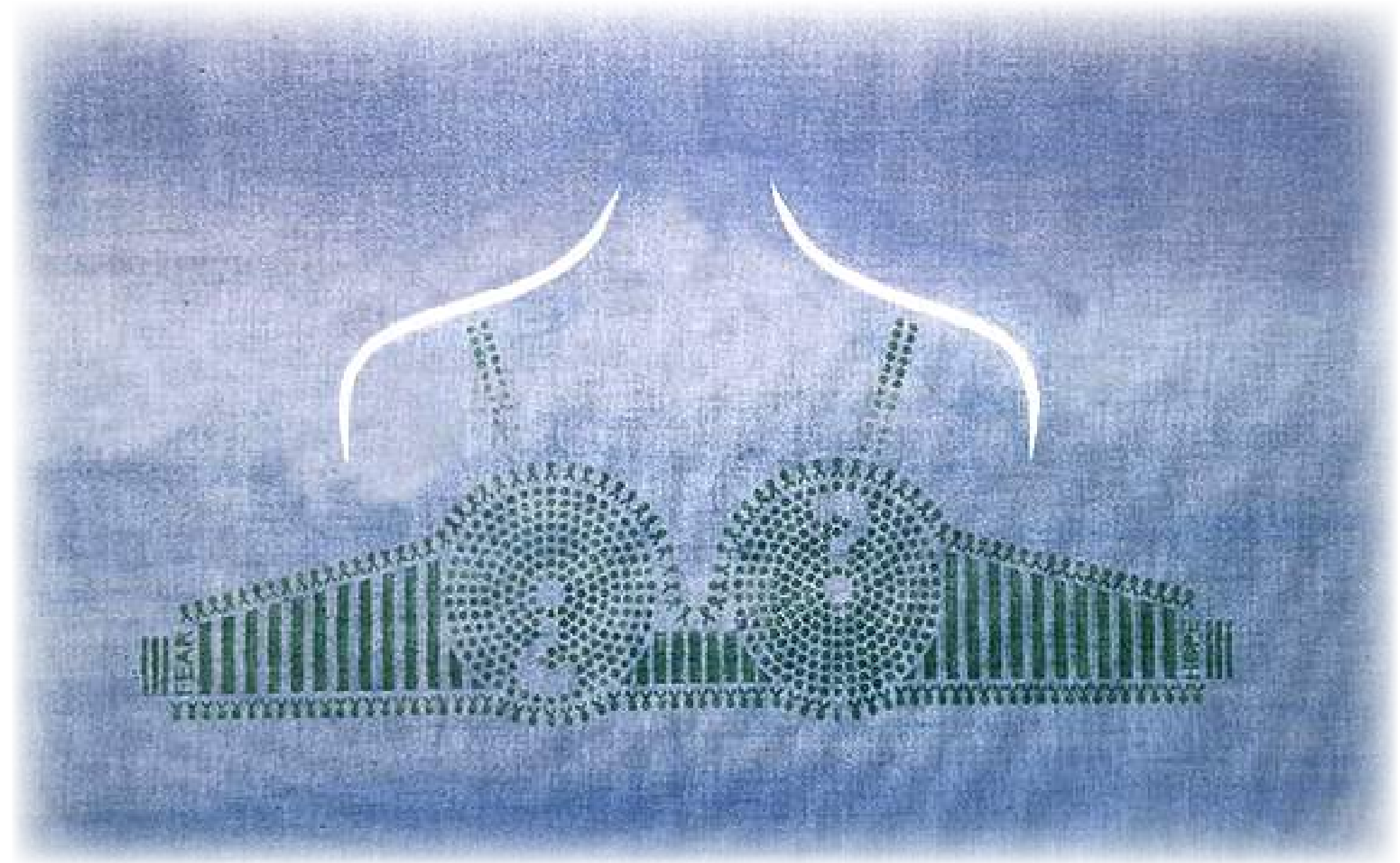
Alarm and Tears

# PRINTS



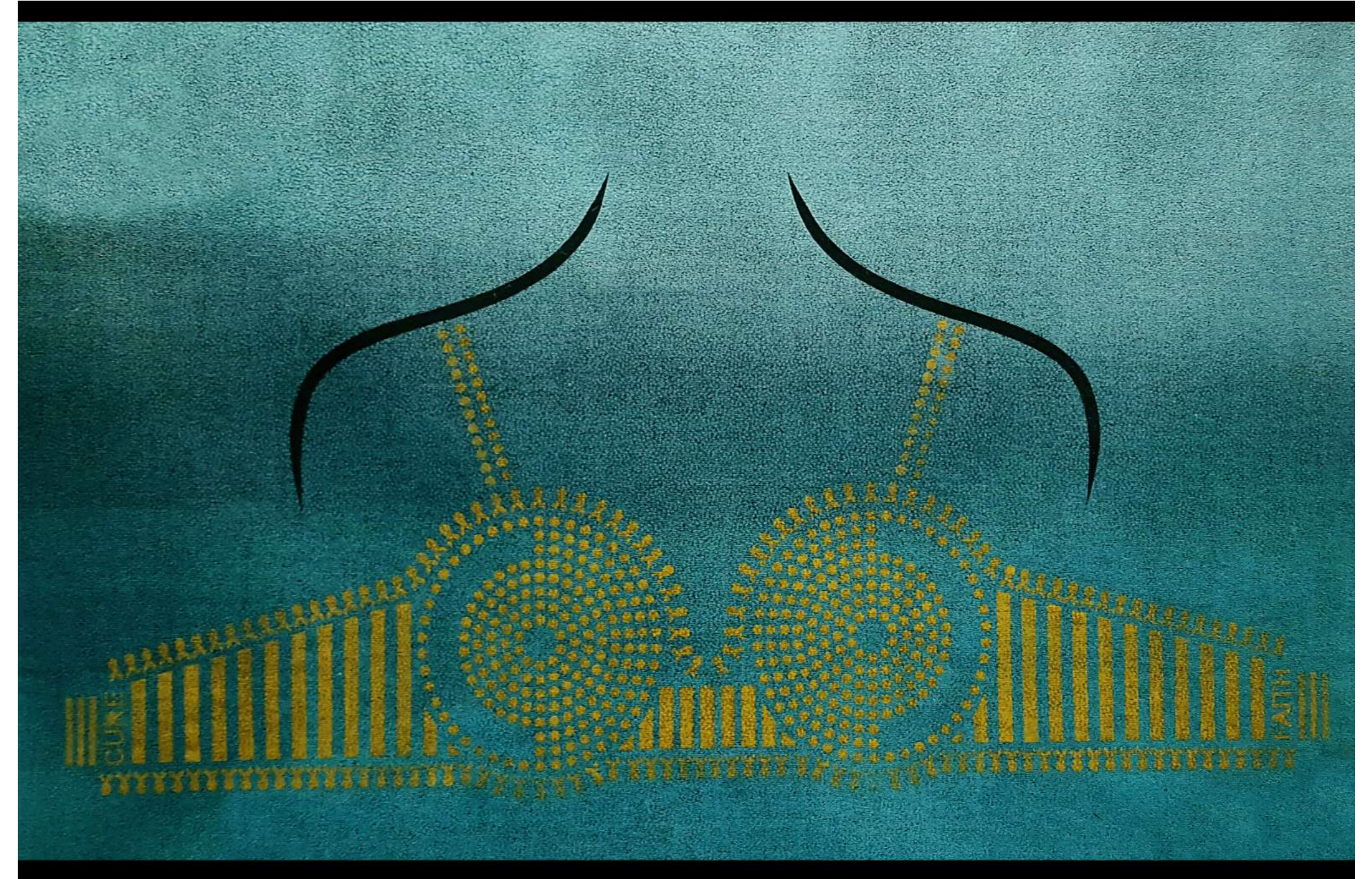
Fight and Courage

## PRINTS



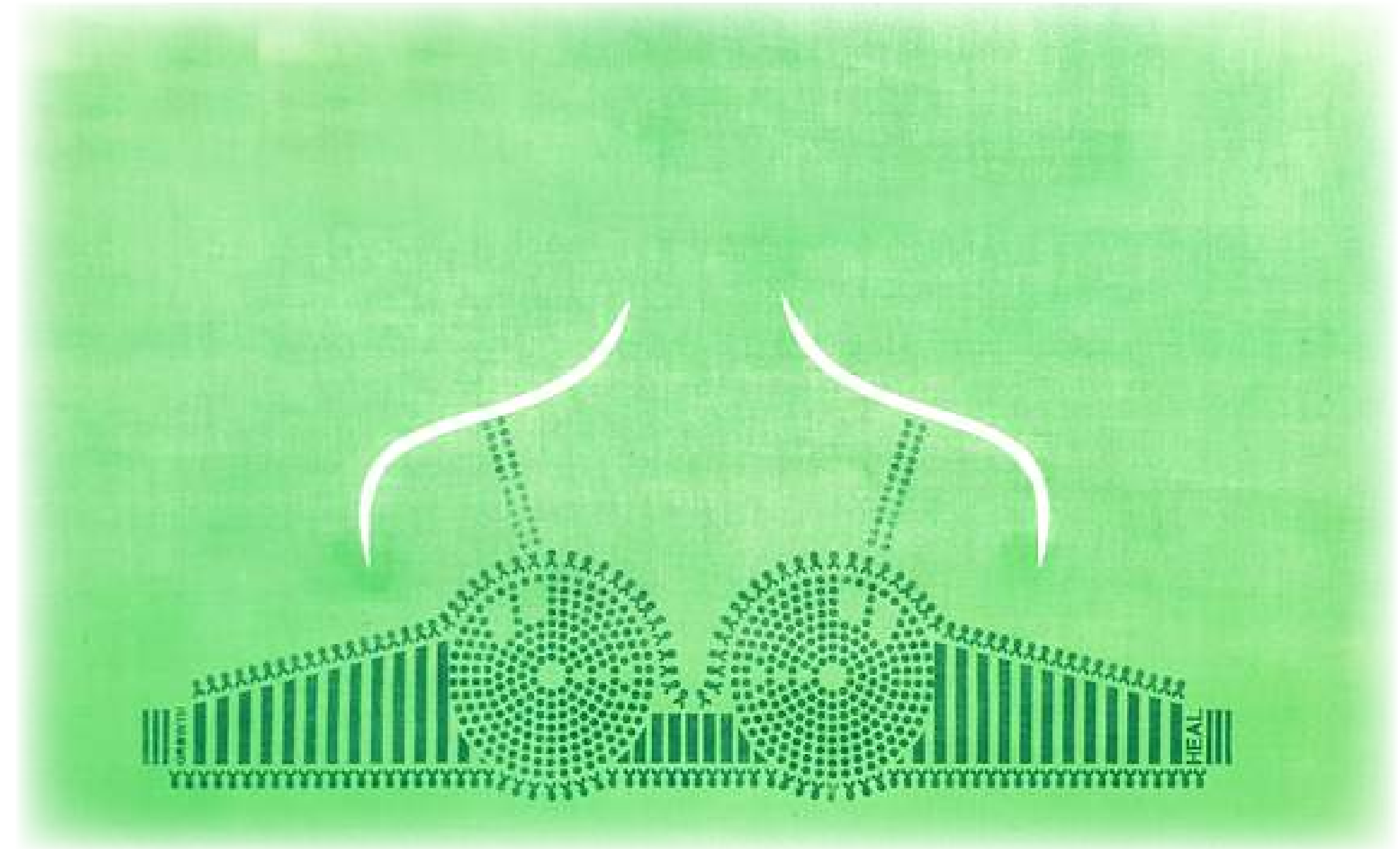
Fear and Hope

PRINTS



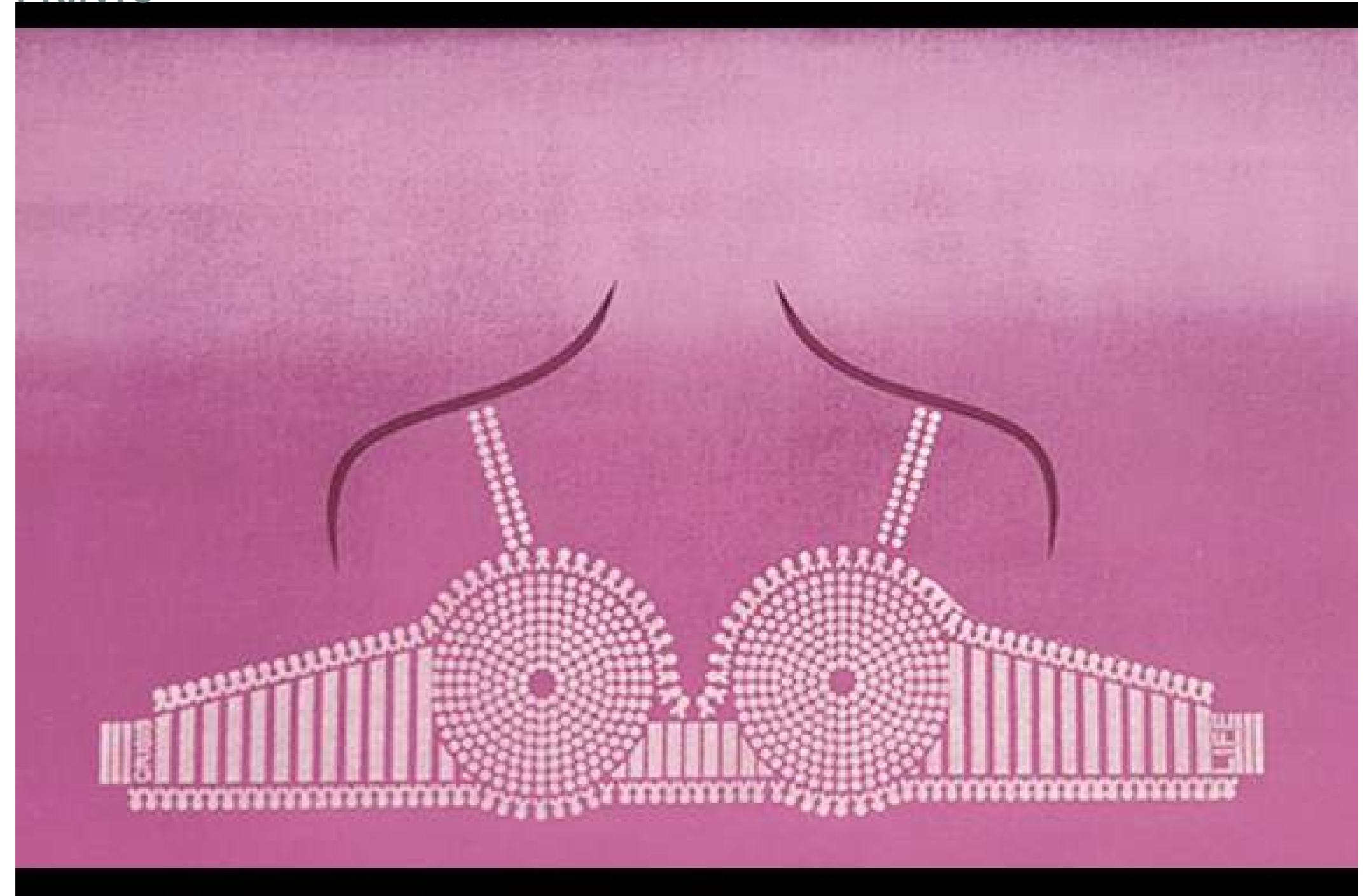
Cure and Faith

# PRINTS



Compassion and Heal

PRINTS

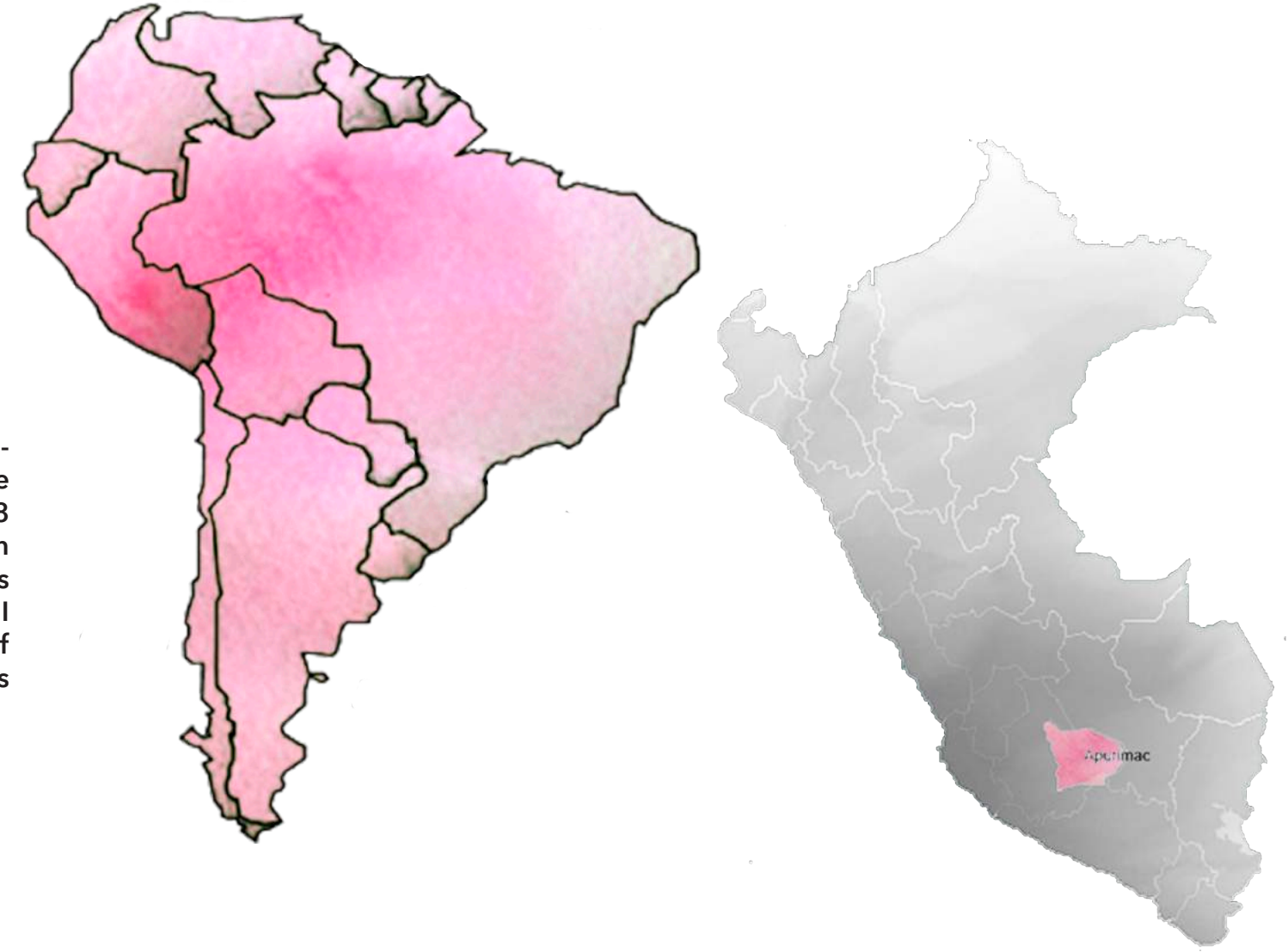


Happiness vs Death



## CHOOSING THE PLACE?

This project tries to stick to the reality of the world where unfortunately people with less economic resources do not have access to health. For that reason, I proposed to look for a place where my building can make a difference in the society even if it is not going for construction. I am native from Peru, I know the most vulnerable people are those who are almost forgotten in the Andes. As a result, in my research for a site, I focused on the mountain ranges of Peru where there are urgent needs for a healthcare center for cancer.



The project is located in South America - Peru, which has a total population of more than 32.5 million. However, more than 8 million people live in the capital, which creates having the main health institutes accessible only in Lima. The region that I found less protected was the southwest of Peru where I located my building, which is in the Apurimac Region.

# CURRENT CANCER STATISTICS

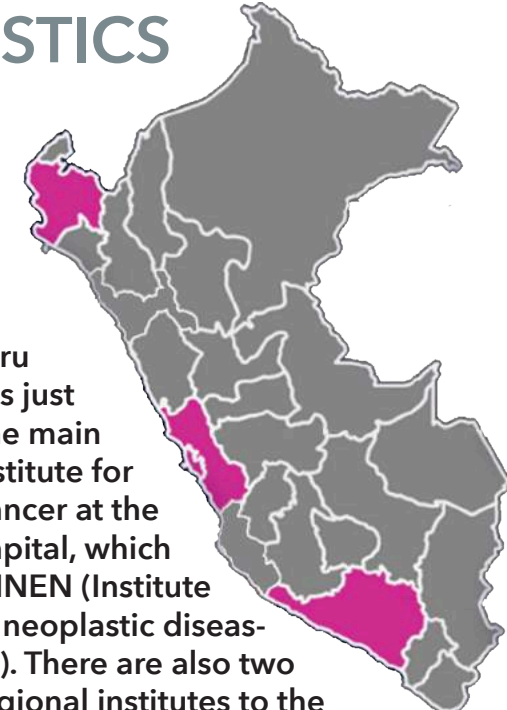
Peru

Cancer Statistics	
Population in 2008:	28.8m
People newly diagnosed with cancer (excluding NMSC) / yr:	39,300
Age-standardised rate, incidence per 100,000 people/yr:	157.1
Risk of getting cancer before age 75:	15.5%
People dying from cancer /yr:	24,800

Data from IARC GlobalCam (2008)



Peru has just one main Institute for Cancer at the Capital, which is INEN (Institute of neoplastic diseases). There are also two regional institutes to the north and south. Unfortunately, the current location of these main institutes facing the coast creates a barrier in providing care and help for cancer patients at the central areas of Peru or to the West.



Distribution of clinical oncologists according to Region and Institution Peru-2013

REGION	MINSALUD	ESSALUD	PNP	FF.AA	PRIVATE INSTITUTES	TOTAL
Amazonas	-	-	-	-	-	0
Ancash	1	-	-	-	-	1
Apurimac	-	-	-	-	-	0
Arequipa	5	9	-	-	-	14
Ayacucho	-	-	-	-	-	0
Cajamarca	-	-	-	-	-	0
Callao	2	4	-	3	-	9
Cusco	-	2	-	-	-	2
Huancavelica	-	-	-	-	-	0
Huánuco	-	-	-	-	-	0
Ica	1	-	-	-	-	1
Junín	-	2	-	-	-	2
La Libertad	3	3	-	-	2	8
Lambayeque	1	3	-	-	1	5
Lima	39	23	3	4	21	90
Loreto	1	-	-	-	-	1
Madre de Dios	-	-	-	-	-	0
Moquegua	-	-	-	-	-	0
Pasco	-	-	-	-	-	0
Piura	-	1	-	-	-	1
Puno	-	-	-	-	-	0
San Martín	-	-	-	-	-	0
Tacna	-	2	-	-	1	2
Tumbes	-	-	-	-	-	0
Ucayali	-	-	-	-	-	0
Perú	53	49	3	7	25	137

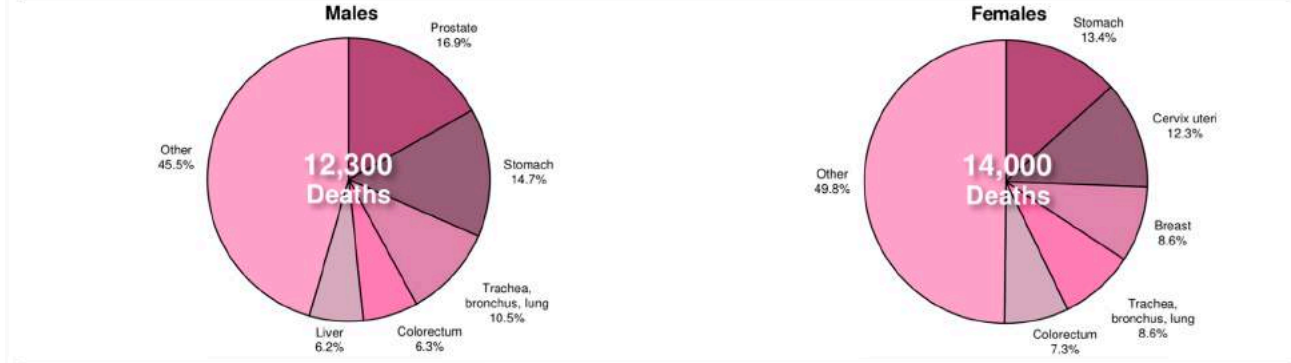
Source: Plan Esperanza

## Peru

Total population: 29,988,000  
Income group: Upper middle

Total deaths: 132,000  
Life expectancy at birth: Total:77 Males:75 Females:79

### Cancer Mortality Profile



Data from WHO (World Health Organization)

Reported Cases of Cancer according to age group and sex Period 2006-2011



Source: National Epidemiological Surveillance



# HEALING AND GREEN ARCHITECTURE

To achieve a healing architecture, it is necessary to look for a strong connection with nature to compliment the need of belonging to the land of human beings. The evidence based Design has proven that just a simple window can have a great healing effect on the mood of the patients and medical staff.

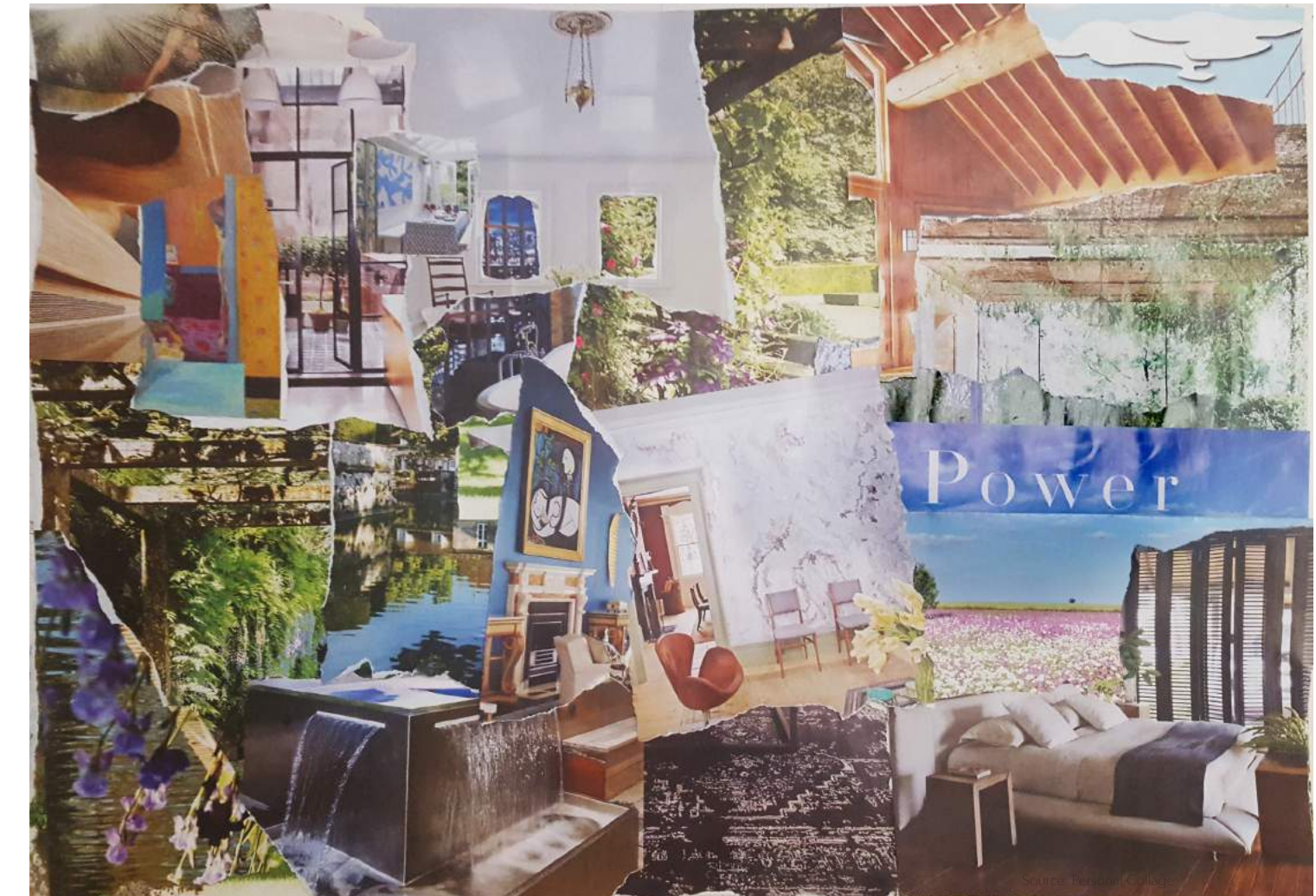
Another healing environment research topic is to reduce the uncomfortable stressors with the use of good Architecture. Environmental stressors such as noise, glare, and poor air quality create serious repercussions for the patients that can carry negative effects even after the moment of vulnerability.

In addition, a new current trend is to promote social support for the patient. There was a time where healthcare centers had to be separated from society, however, nowadays the new system intends to facilitate the interaction between the community and the patient.

Another topic that helps architecture become an instrument of healing is creating positive distractions. The worse thing that cancer patients have to face is the continuous questions about death. Creating positive distraction using nature can give their mind a break from the fear inside of their hearts.

*"In the Woods, we return to reason and faith. There I befall me in life - no disgrace, no calamity, (leaving me my eyes,) which nature cannot repair. ... In the tranquil landscape, and especially in the distant line of the horizon., man beholds somewhat as beautiful as his own nature."*<sup>1</sup>

Phillip Jodidio



<sup>1</sup>Jodidio, P. (2006). Architecture nature. Munich: Prestel.

## CULTURE AND HISTORY

Charles Jencks mentions that the Placebo effect could be subdivided into three aspects: the effect of style, the cultural effect and the effect of the caregiver. The cultural effect is relevant to this project because it also tends to rescue the identity of the place. It is necessary to adjust to the culture and style of the people of the site to transcend their feelings. This place is rich in history for having one of the best legacies of builders in the world. The empire of the Inca left its landmarks in the surroundings, and people still follow its teachings.



## MAGGIE'S CENTRES

I discovered Maggie's Centers as a new trend on healthcare institutions. There are seventeen Maggie's centers, and a few under construction. The majority is located in the UK, Scotland and one new international in Hong Kong. This new vision has created a new language and esthetic for healthcare that breaks the typical scheme of hospital institutions. In the beginning, Maggie's role is to support the patients, integrating nature, beauty, and art. Maggie's centers aims to transform the doubts and fear of people to get a better life. They are hybrid buildings that can feel as a house, museum and sanctuary.



"Maggie's is a haven of peace. The relaxed atmosphere means you can talk about anything, you can cry, but you can also laugh."

Jim Carr, Maggie's Fife

"Maggie's is a place of sanctuary, somewhere I can have a cup of tea and a chat with people who understand the emotional and physical toil of lengthy, often debilitating treatment."

Louise, Maggie's Oxford visitor

Source: Maggie's Centres

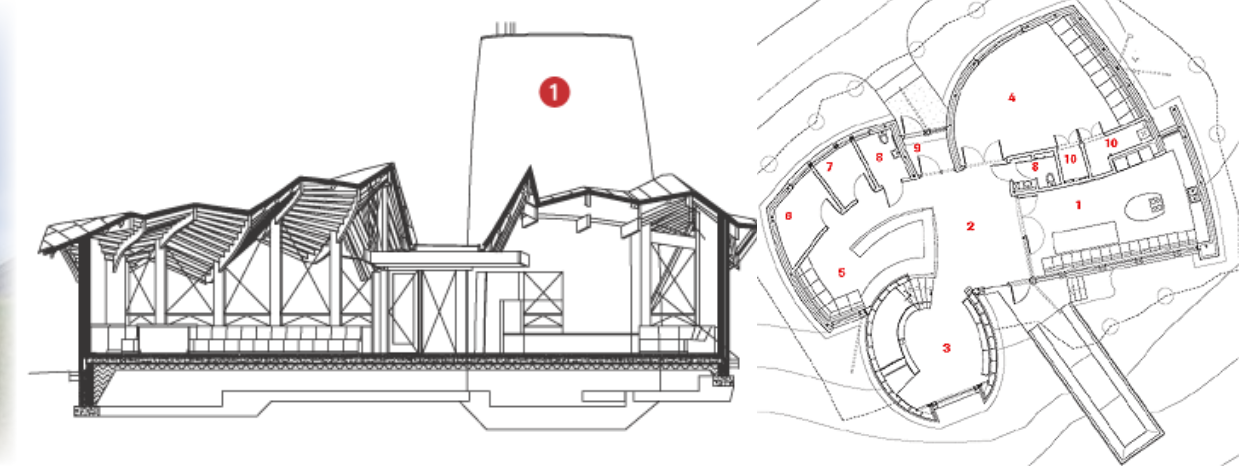
The Centers were founded by Maggie Keswick Jencks and her husband Charles Jencks. Maggie was a great landscape architect who was diagnosed with cancer in 1993. Charles, an architectural critic and historian, has continued with the organization and her efforts to develop an architecture where landscape plays an important role in healing. Lily Jencks, who is their daughter, also become a landscape architect and has collaborated in some of Maggie's Centers such as Tuen Mun Hospital.



## MAGGIE'S DUNDEE



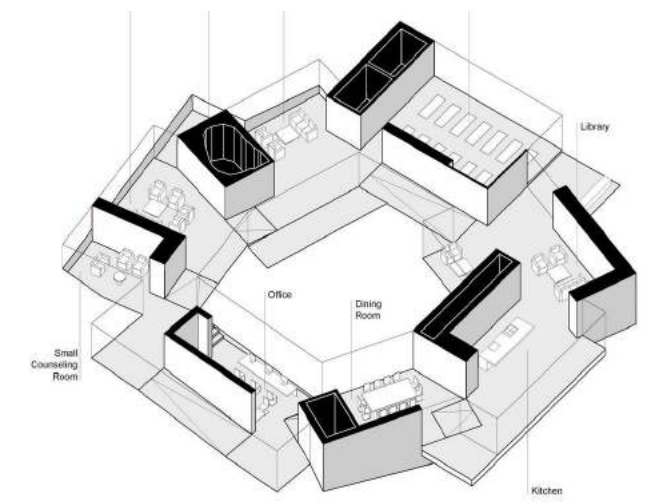
## CONTEXT



## FRANK GEHRY

I selected these two projects for their adjustment to context. Frank Ghery's project is inspired in lighthouses, which seeks to overlook the Firth of Tay and the surrounding Landscape. Rem Koolhaas' project successfully manages to control the inside to the outside. This provides different views from the internal courtyard and the exterior woodlands.

## MAGGIE'S GLASGOW



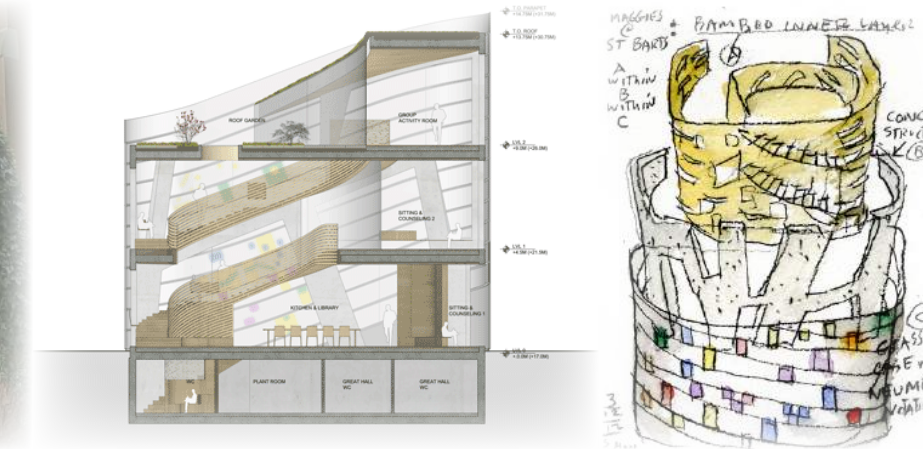
## REM KOOLHAAS



## MAGGIE'S BARTS

## SENSITIVITY

## STEVEN HOLL



Richard Rogers creates the concept of a heart in the center which will be protected by a wrap of walls, but with a roof that opens to the sky creating fine details contrasting the light. The project objective was to create space, which welcomes and provides comfort. On the other hand, Steven Hall creates a layering facade, which is accentuated with colored glass that follows the rhythm of a medieval music piece. The light through the glass will create movement and orientation of the time through the day for the users.

## MAGGIE'S LONDON

## ROGERS + PARTNERS



## MAGGIE'S LANARKSHIRE



## LANDSCAPE



## REIACH AND HALL ARCHITECTS



The project from Reich and Hall Architects has a simple planning focused on gardens and landscape as the matrix of the design. This Maggie's Centre has four small courtyards with different dimensions that hover with gold perforated metal that creates a reflection with the sunlight. Norman Foster building extends as an airplane with open wings that connects the building with the green areas of the each facade. The project has a central open corridor that ends in a greenhouse that seems to expand with the landscape. The surrounding of trees along the perimeter seems to blend with the scale of the neighborhood.

## MAGGIE'S MANCHESTER



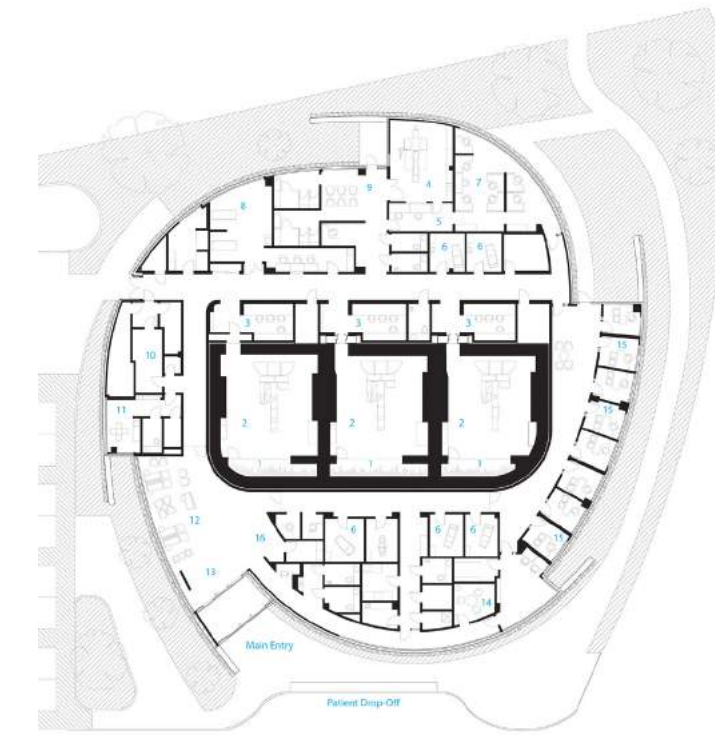
## NORMAN FOSTER PARTNERS





# KRAEMER RADIATION ONCOLOGY CENTER

YAZDANI STUDIO  
ANAHEIM, CALIFORNIA  
2015  
AREA: 16 000 SF





# PROGRAM



## Maggie's Center

- Office
- Consulting rooms
- Kitchen
- Dining
- Library
- Communal Therapy
- Information Area
- Exercise
- Private Rooms
- Internal courtyard
- Outdoors Activities
- Garden
- Greenhouse



## Cancer Treatment Facility

- Lobby
- Conference
- Office
- Reception
- Cancer MED Surg.
- Linear Accelerator
- Control room
- Work Area
- CT control Room
- Exam Room
- Treatment Planning
- Patient Holding
- Sub-Waiting
- Electrical Room
- Staff Lounge
- Waiting Area



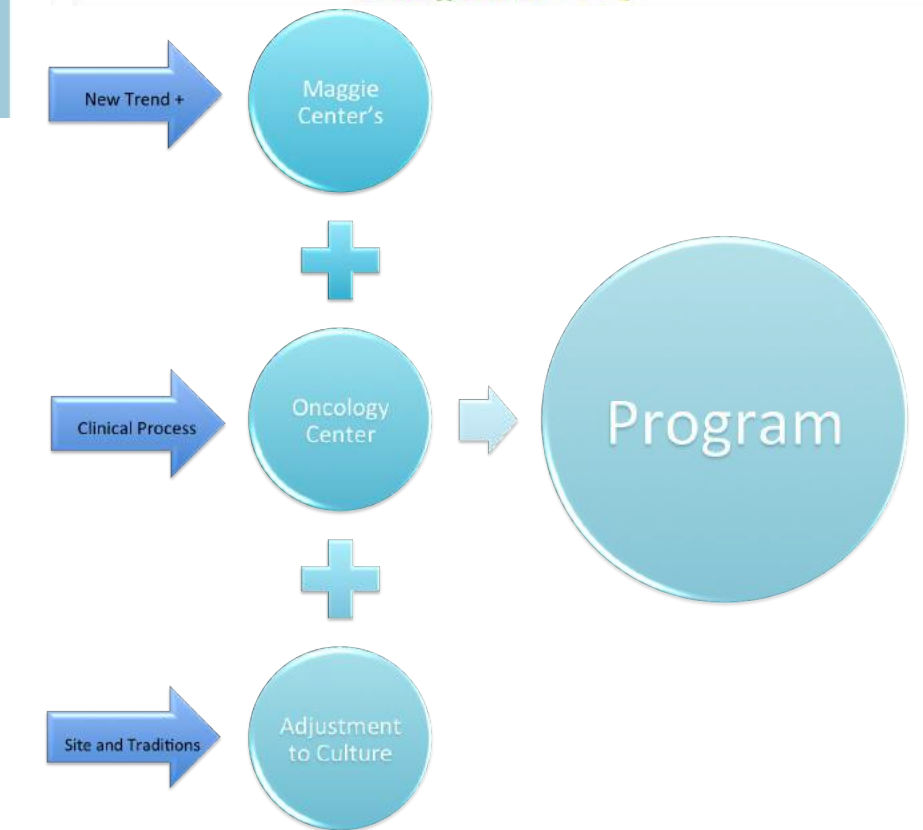
## Culture

- Atrium
- Chapel
- Ceremonial Plaza
- Kitchen/Agriculture



Slowly the mega-hospital is moving along with world trends in a positive direction. Looking for the connectivity to a general hospital to make more effective their labor, but creating a new identity smaller in scale and more connected to nature. Even though this theory of more connected to nature and community had been available since the Greeks and Romans, when the hospices were near amphitheatres and were encrusted to the hills; this new infrastructure and theory has been showing up in the last years revolutionizing the parameters and providing that healing through architecture that can make a difference in the patient.

The program for this project consists of introducing the idea of Maggie Center which offers to empower and support cancer patients. But at the same time, analyzing the current situation of the site that does not provide primary care for patients, making patients travel to the capital to get the basics treatments such as chemotherapy and radiotherapy. For that reason the program is a mix of current trends in healthcare and a clinic facility for daycare centres.



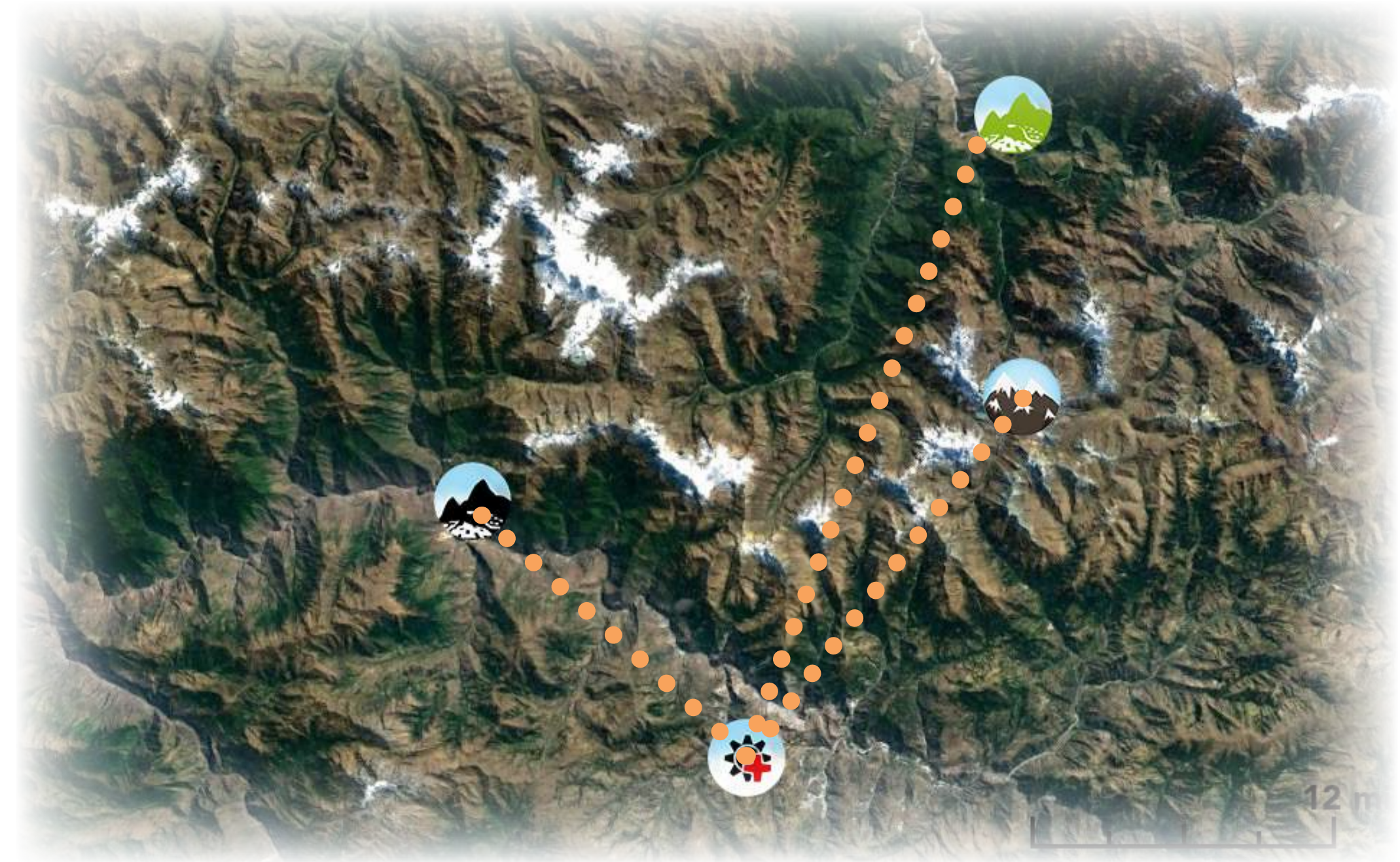
Diospi Suyana Building Hope in the Andes

## Discovering the Site

TRUNK

## SITE ANALYSIS

The site analysis opens the boundaries to look for further connections with places of cultural sanctuaries such as Macchu Picchu, Choquequirao, and the highest point at the mountain ranges as the Salkantay. These places were of high importance for the ancient culture because it was the sacred and ritual meaning to reconnect with the earth and the Gods.



## SITE ANALYSIS

The site is located at the high mountains in the Andes of Peru. The region is Apurimac and the province is Abancay. The small town called "Curahuasi" has a Spanish and Quechua origin which means "House of Healing". The name "Curahuasi", it comes from "Huasi" which means home and "Cura" that refers to heal or "Ccora" that means herbs. So it appears that even the name of the place has a relation to being a healing environment. The river that surrounds the region is called River Apurimac.



## SITE ANALYSIS

Curahuasi is located at a high altitude, approximately 2688m (8819 FT) over sea level. The climate varies during the day, but it has a constant temperature that range between the 40° and 70° (°F). The raining season period goes from November to April. The coldest time of the year is the month of June. The eighty percent of the population has a primary language of Quechua, but the majority can understand and speak Spanish at a good level. The total population of the district of Curahuasi is 18 556, but in the surrounding areas with a radius of 3 hours, live approximately 750 000 habitants.





## SITE ANALYSIS

The town of Curahuasi is located a two hour and a half of the Imperial city of Cusco. The main connector road is the route 3S, which is part of the Panamericana Road, providing easy access from different towns around the region, even outside of the boundaries of the country such as Bolivia. The building is located in the site in front of the Diospi Suyana Hospital and is connected with the primary access road, which has the main entrance to the hospital. The Secondary road between the hospital and the site is used for the emergency access.



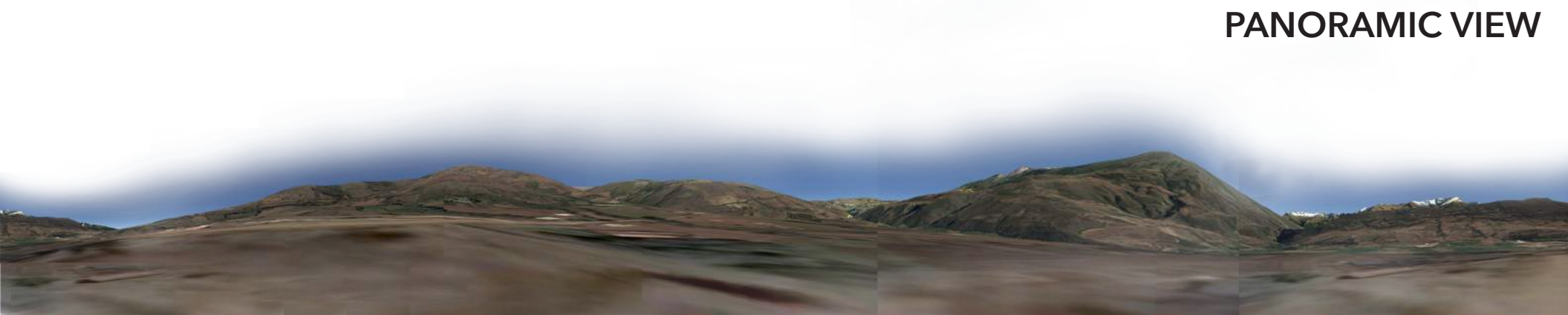
# SITE ANALYSIS

Curahuasi is called the capital of the Anise, and the town's main economic business is the production of it, and to craft alcohol. Agriculture is the focus on the town, for that reason this rural place looks untouched with beautiful crop fields that compliment the landscape and vast greenery.



# SITE ANALYSIS

## PANORAMIC VIEW



West

South

East

North

SALKANTAY IS THE HIGHEST PEAK OF THE VILCAMABA RANGE MOUNTAINS, AND ITS ELEVATION IS 20 754' . FROM SIDE TO THE NORTH, THE GLACERS OF THE ANDES MOUNTAINS ARE VISIBLE.





# SITE ANALYSIS

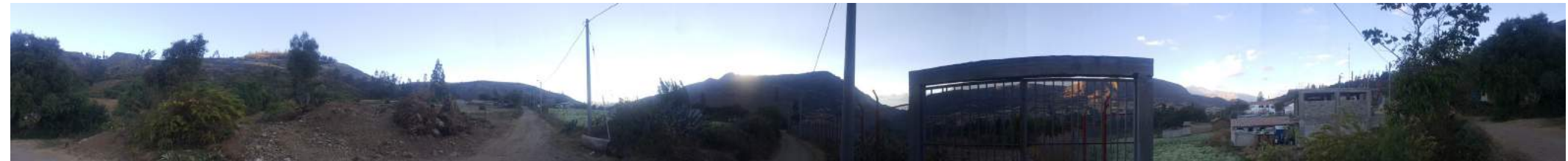
The site is situated crossing the secondary road of Diospi Suyana Hospital . The area is approximately 140 000 SF. The elevation is 8800 feet over the sea level.



## SITE CONDITIONS



Panoramic View from the Main Entrance of Diospi Suyana Hospital



Selected Site Panoramic View



Panoramic view overseeing the Hospital and Amphitheatre

# SITE CONDITIONS



# DIOSPI SUYANA



Diospi Suyana is a general Hospital founded by German Christian couple Martina John and Klaus-Dieter John. Titles like " Angels in the Andes" and "The Miracle of Diospi Suyana" were entitled many local newspaper and magazines. This is a charity organization that based in donation and strong faith in God has built a modern hospital, which provide a high quality of care for the Quechuas (Indigenous descents) and surrounding population. Diospi Suyana is actually a Quechua name which meaning is "Trust in God". The hospital area is about 34 thousand square feet, which is equipped with fifty five beds, and four operating room.



## SPECIALTIES

- Pediatrics
- Internal Medicine
- Gynecology
- Family Medicine
- Obstetrics
- Urology
- General Surgery
- odontology
- Physiotherapy
- X-rays
- Ophthalmology



# DIOSPI SUYANA



Photos from the main entrance road and atrium



Entrance to the Dining Area

Main Waiting Area

View to the Amphitheater



Inside Dining Area

Main Sub-Waiting Area

Hallways

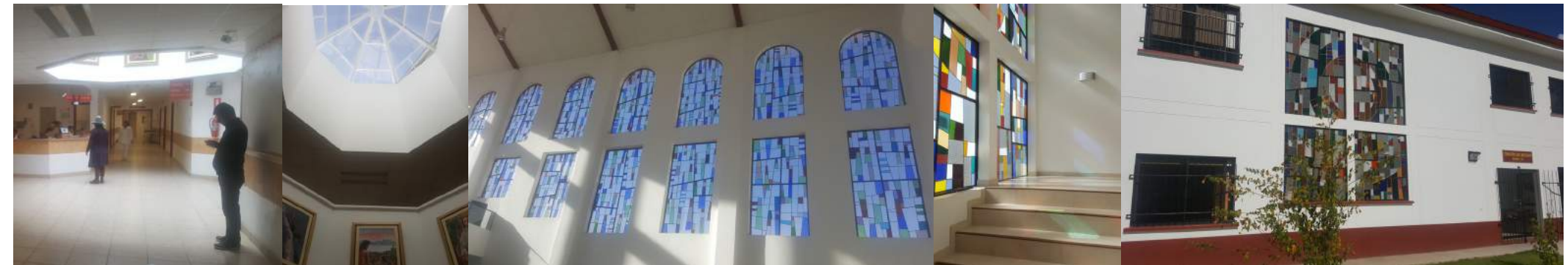
# DIOSPI SUYANA



Stone Retaining Wall Amphitheater

Emergency Access

Facing North



Skylight

Mosaic Glass windows Church



Exterior View and Interior Courtyards

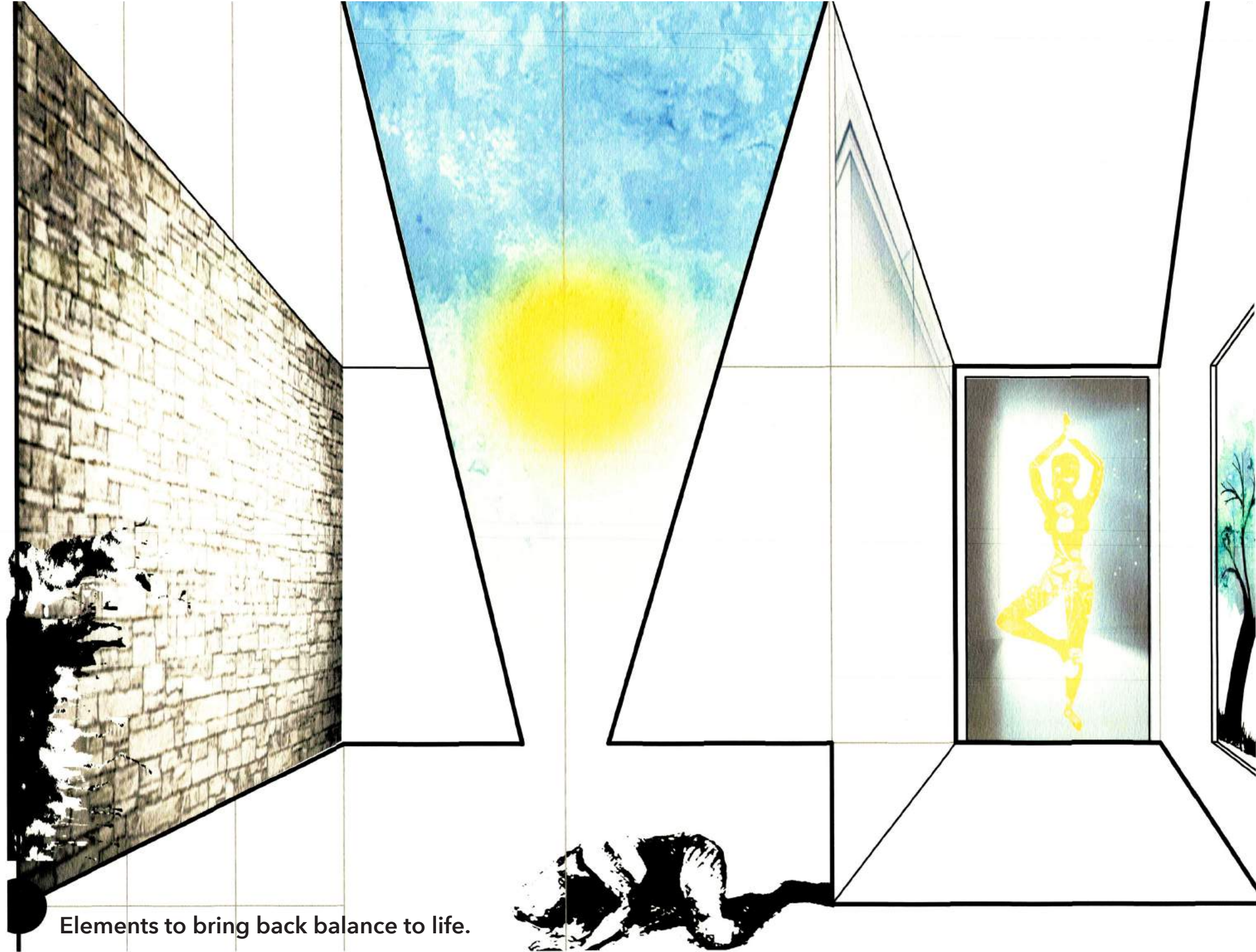
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BRANCHES

Designing with Care

SKETCHING IDEAS

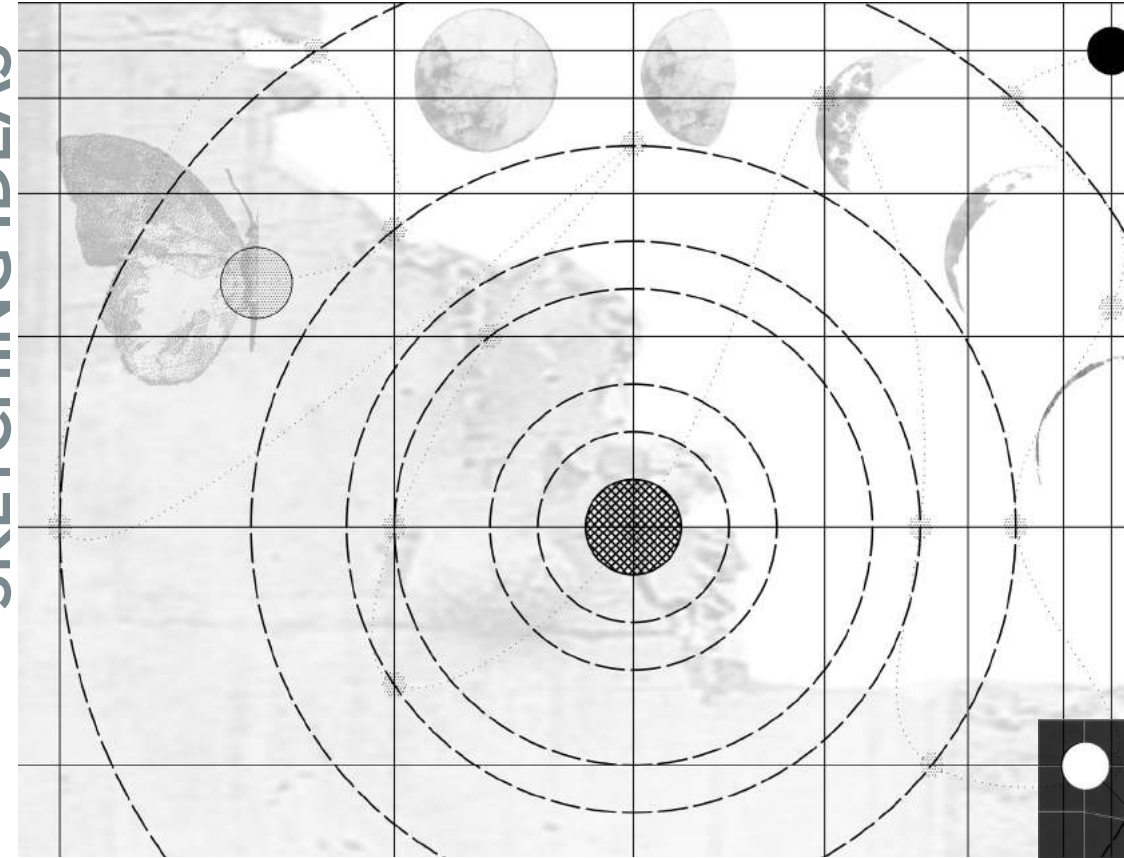
First Architectural Sketch



Elements to bring back balance to life.

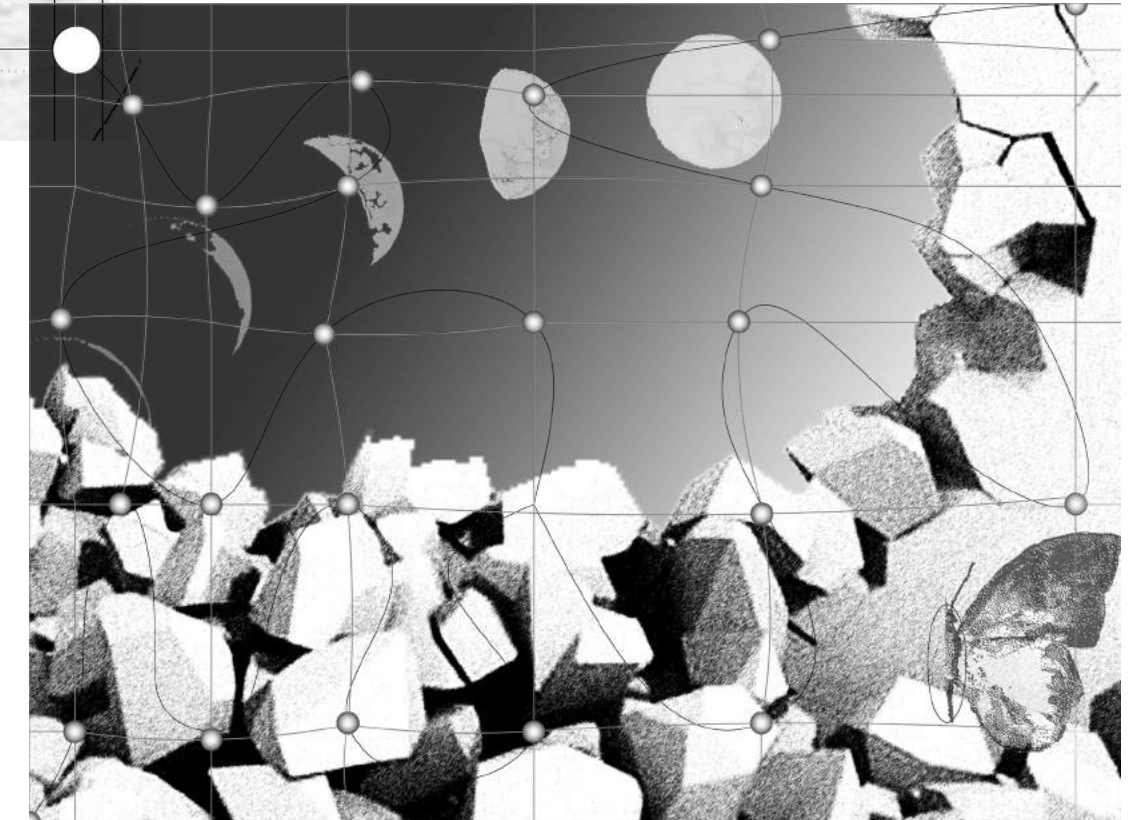


SKETCHING IDEAS

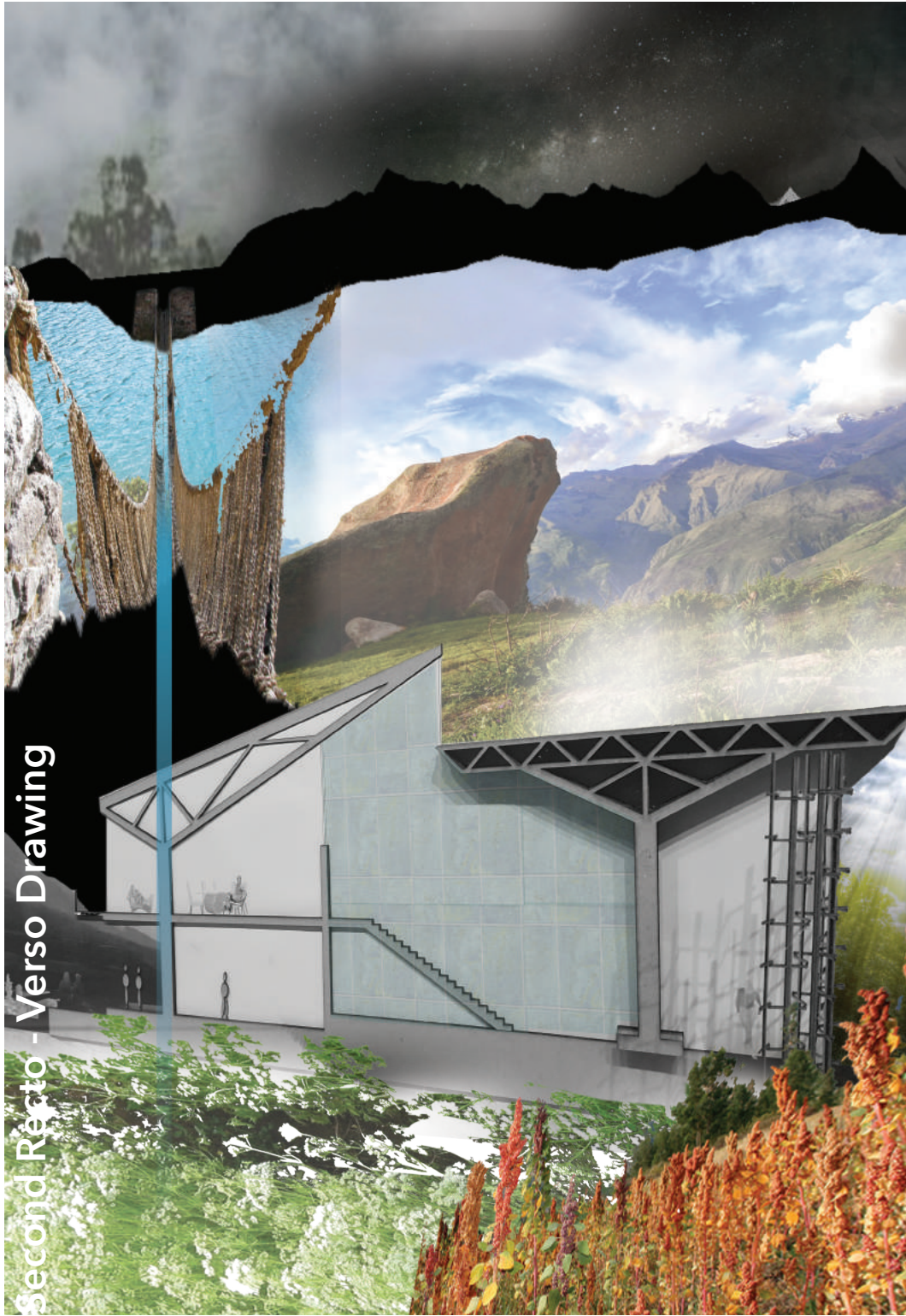


Getting inside of the wanderings of the mind of cancer patient.  
The passing of time and universe movement.

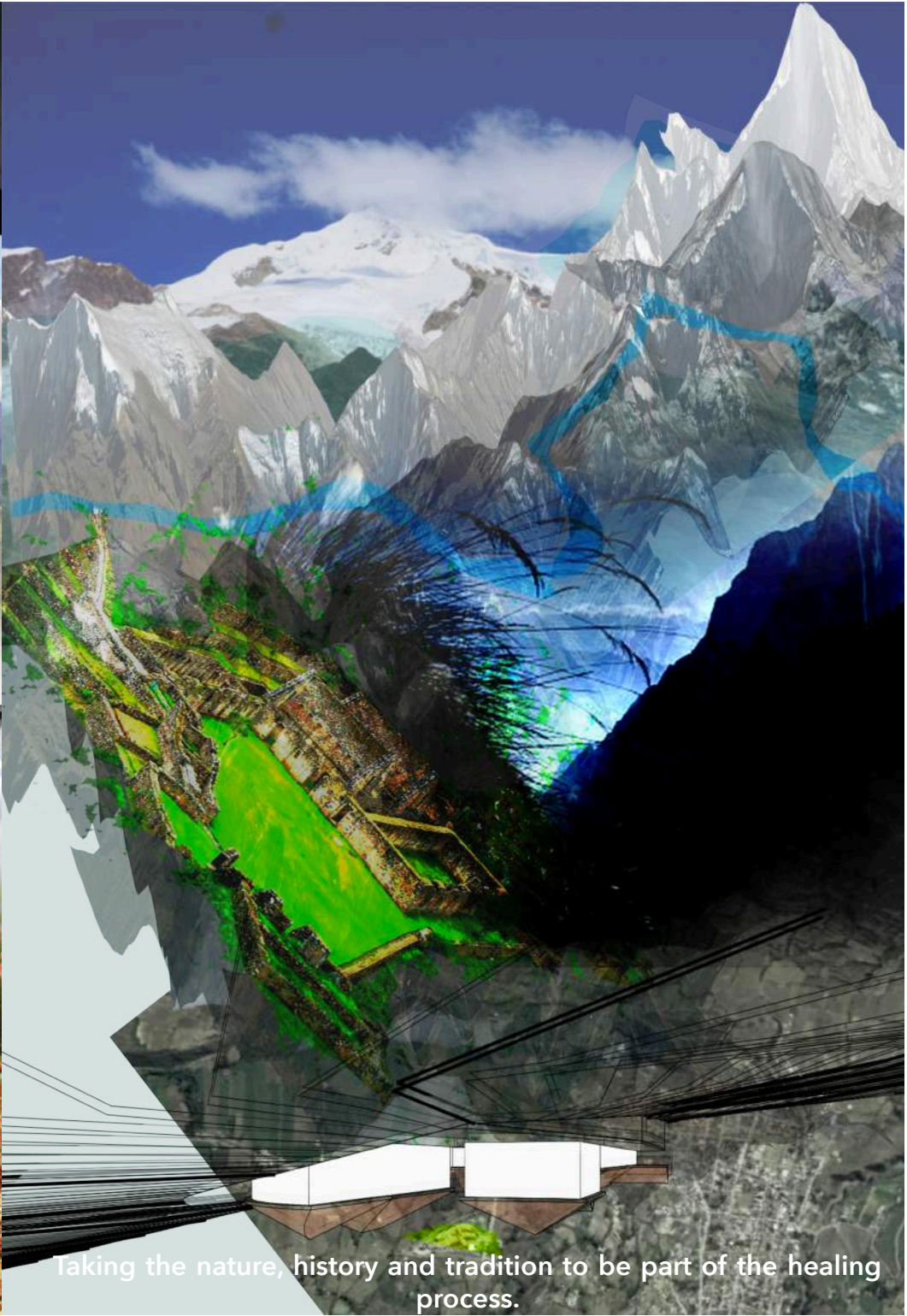
First Recto - Verso Drawing



SKETCHING IDEAS



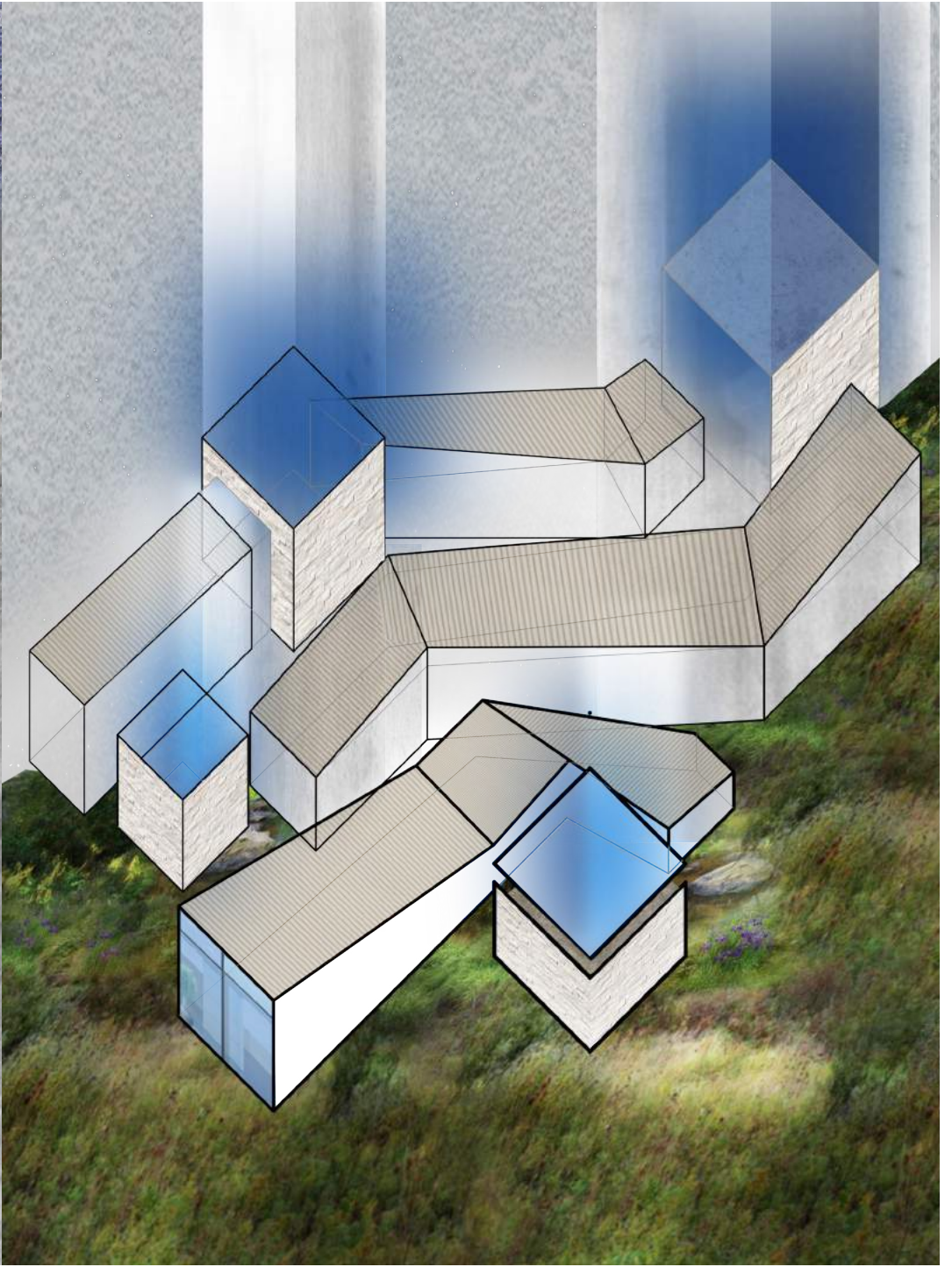
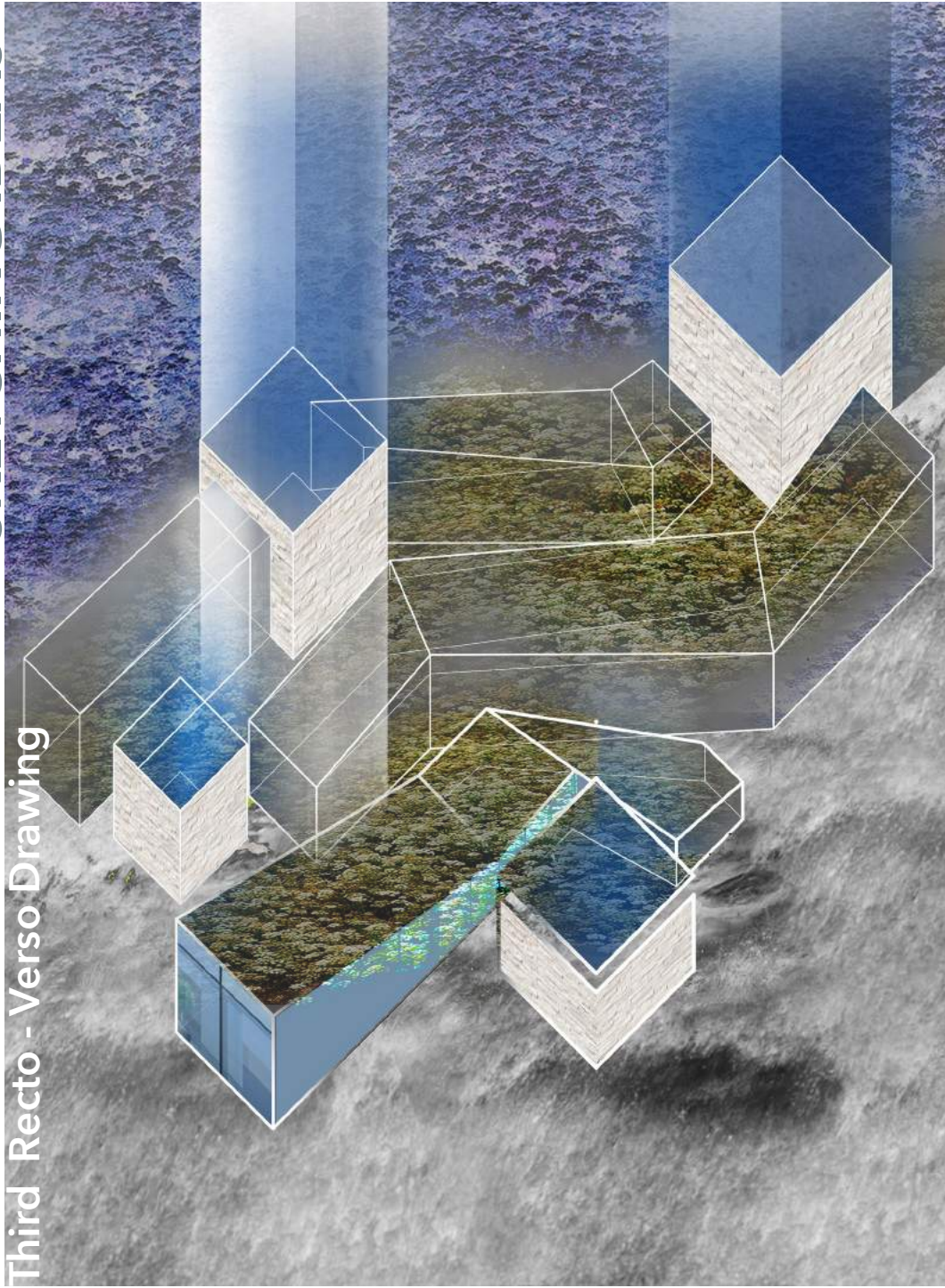
Second Recto - Verso Drawing



taking the nature, history and tradition to be part of the healing process.

SKETCHING IDEAS

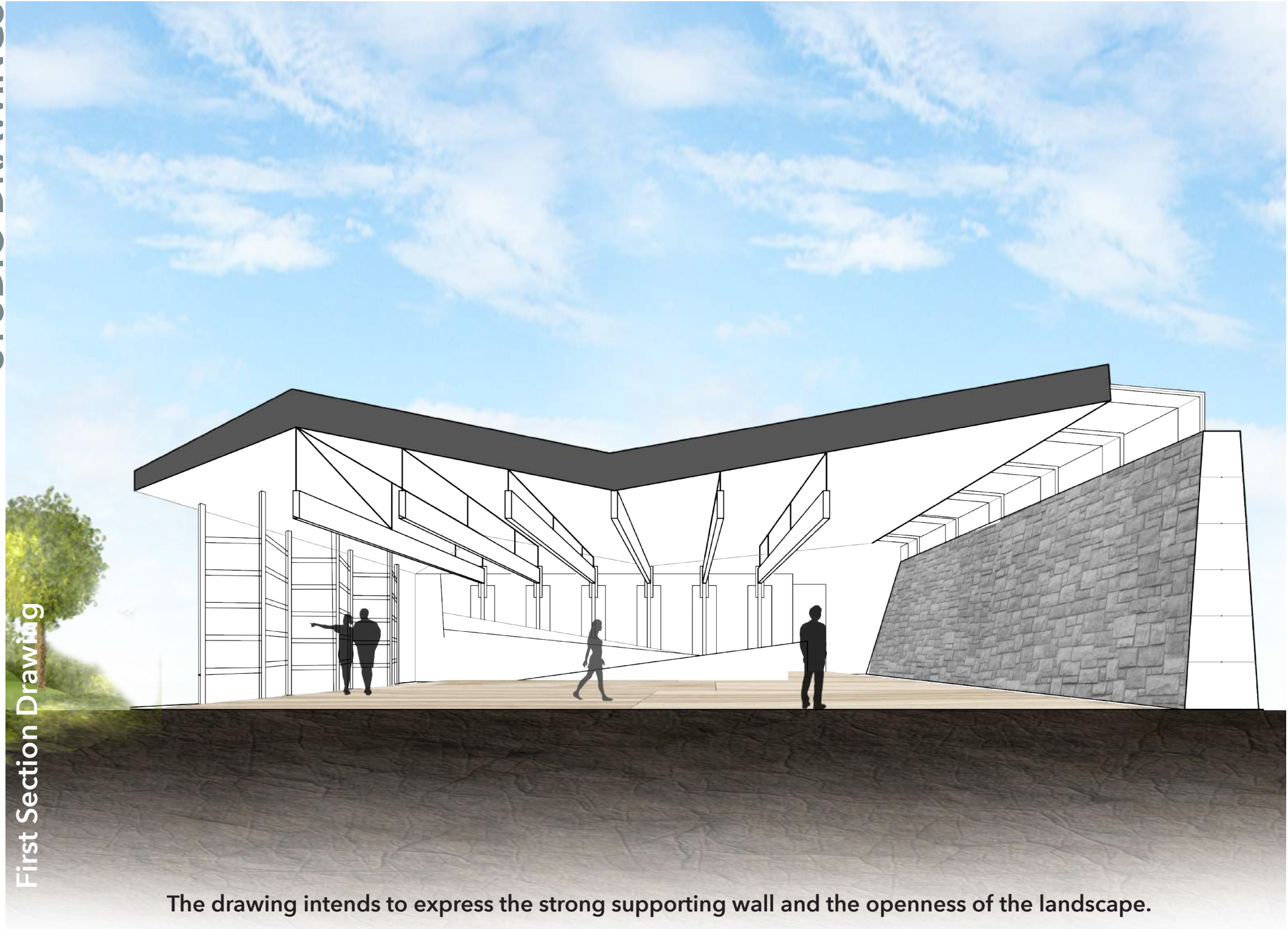
Third Recto - Verso Drawing



Nature that reclaims to being part of the building and building that proclaims being part of the nature.

STUDIO DRAWINGS

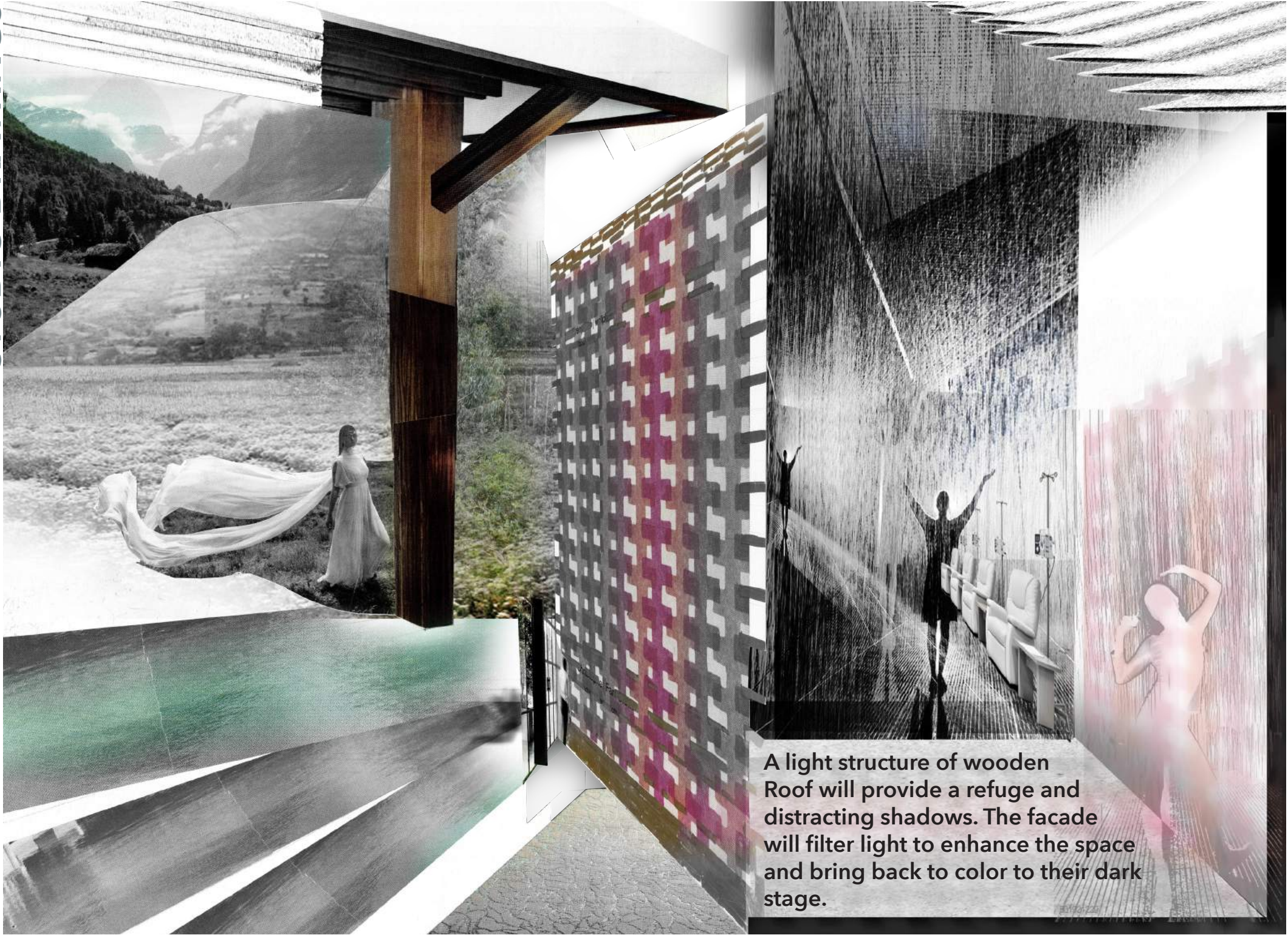
First Section Drawing



The drawing intends to express the strong supporting wall and the openness of the landscape.

Second Section Drawing

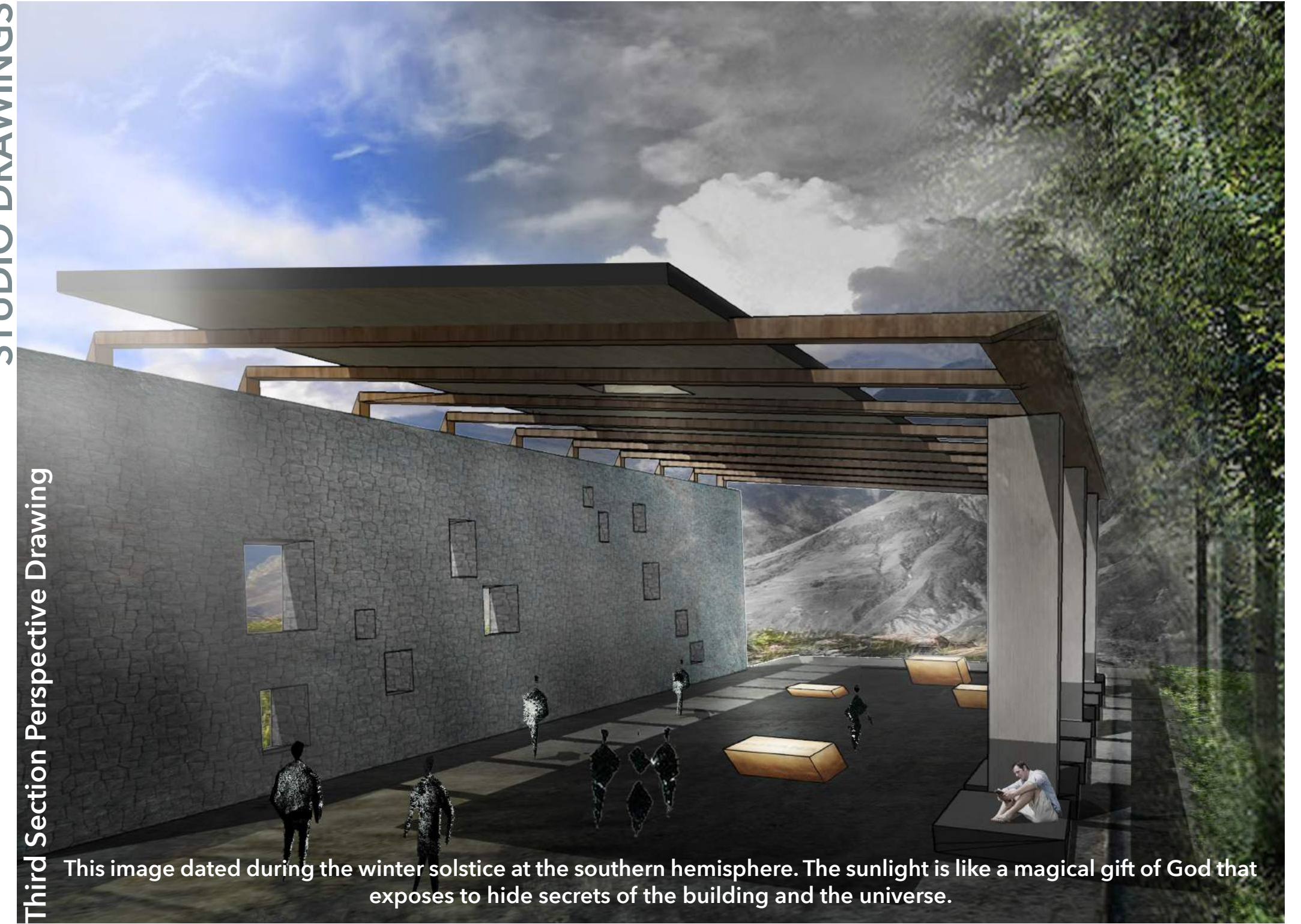
STUDIO DRAWINGS



A light structure of wooden Roof will provide a refuge and distracting shadows. The facade will filter light to enhance the space and bring back to color to their dark stage.

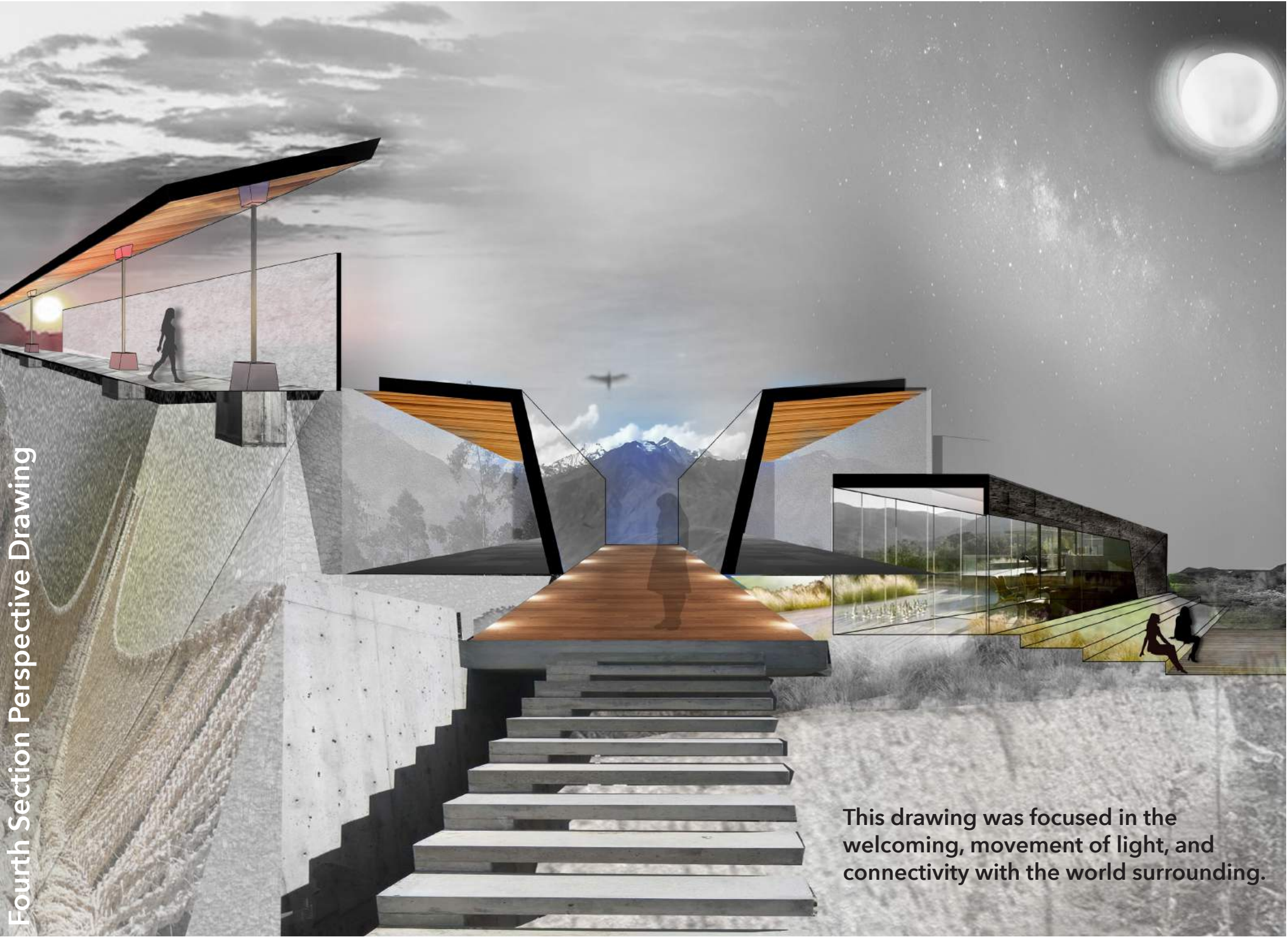
STUDIO DRAWINGS

Third Section Perspective Drawing



This image dated during the winter solstice at the southern hemisphere. The sunlight is like a magical gift of God that exposes to hide secrets of the building and the universe.

STUDIO DRAWINGS



Fourth Section Perspective Drawing

This drawing was focused in the welcoming, movement of light, and connectivity with the world surrounding.

Diospi Suyana Building Hope in the Andes

# Designing with Hope

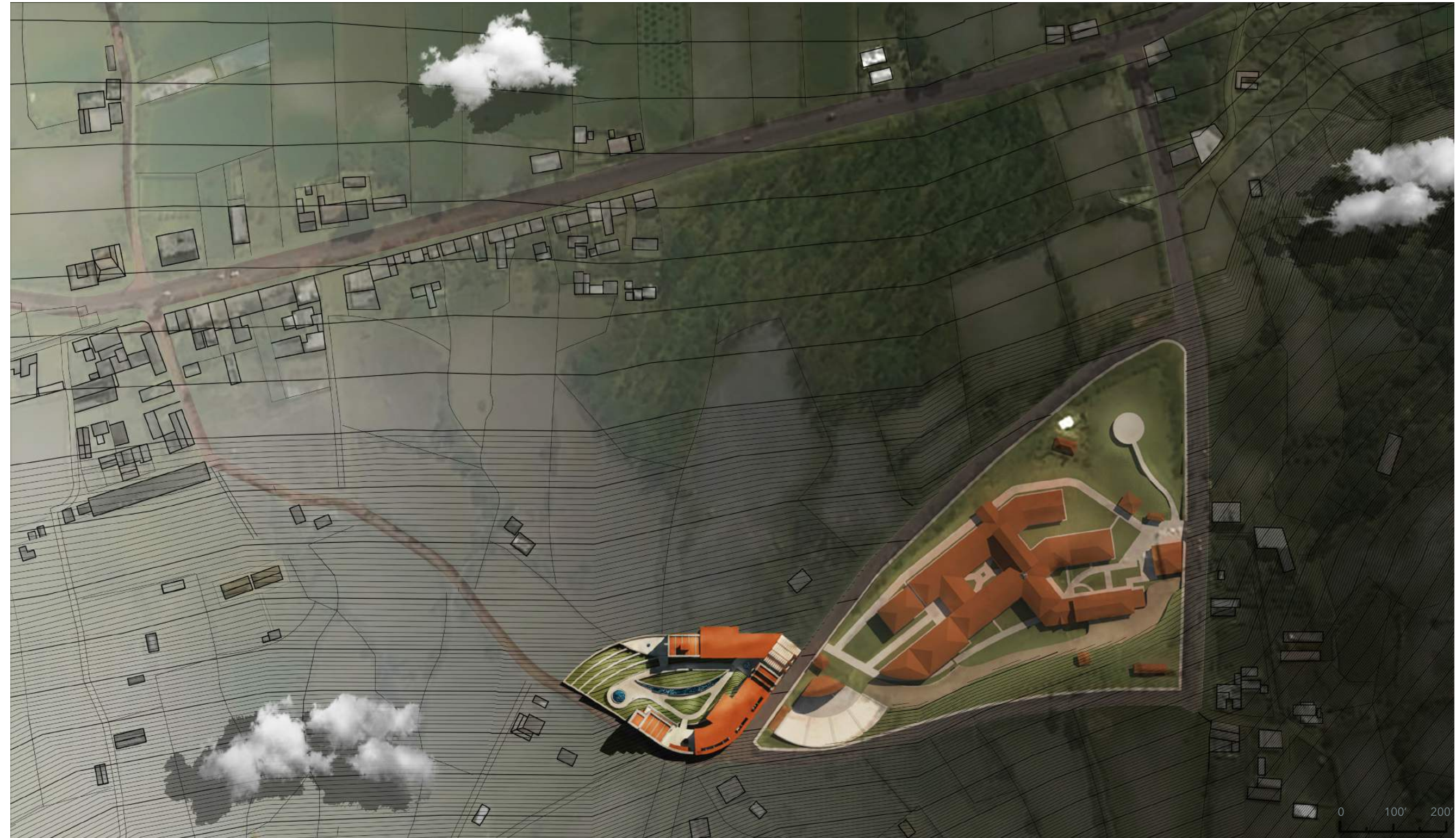
LEAVES



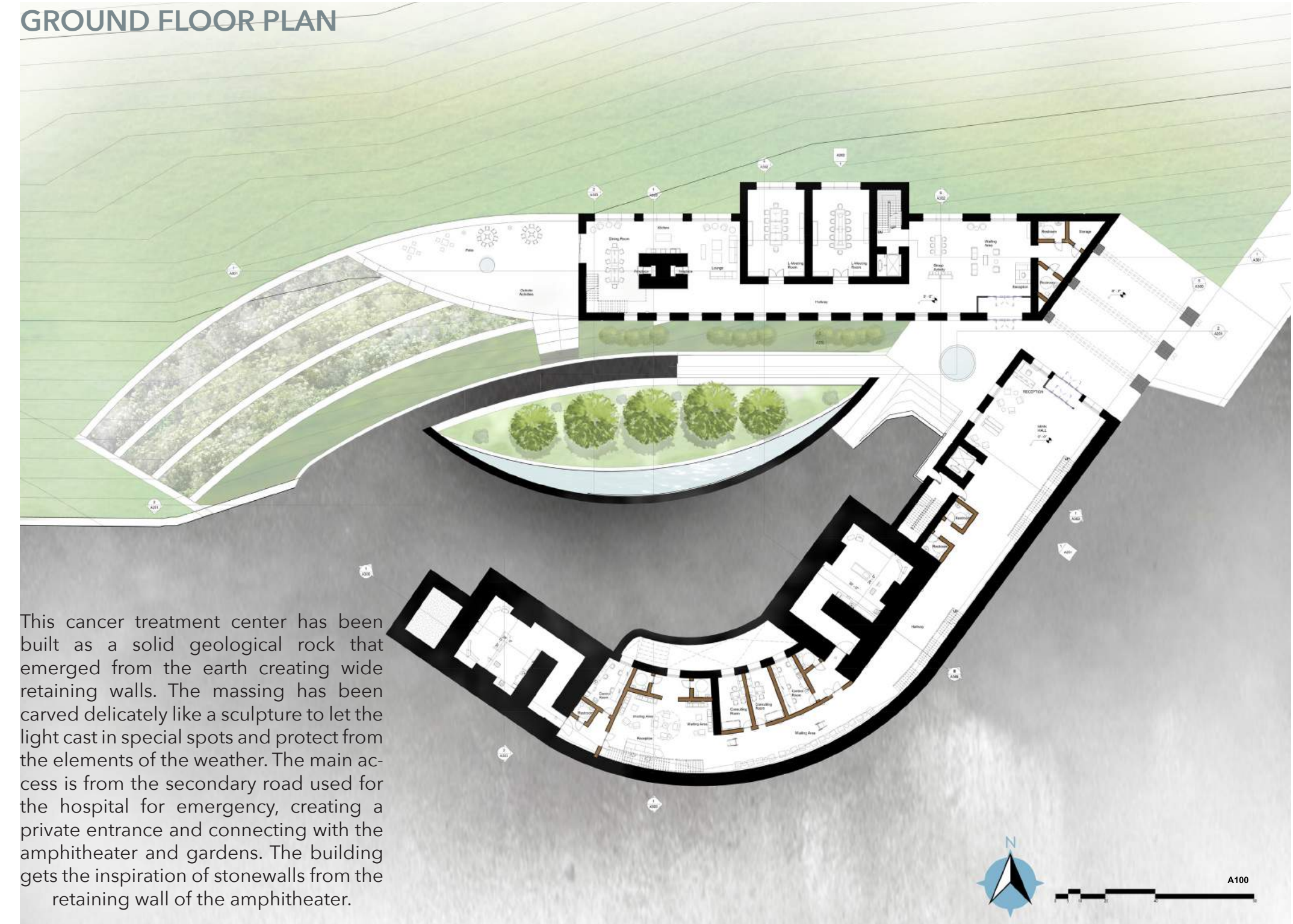
People who face cancerous diseases go through a period of great distress. The goal of this project is to improve the patient's environment to help relieve pain and suffering. For this reason, the main focus is the bond between architecture and nature as a healing effect. This solid relationship would act as a placebo, which probably would not find the cure, however, it will create a pleasant environment, which will influence the mind and body of the users.

The building follows new trends, as a result, it is small in scale, but it is connected to a general hospital to satisfy all the requirements of the disease. Working independently and bringing a new face to the institution. The location of the site was decided thinking on the ancient hospices that were connected to the society and entertaining such as the Amphitheatre of Epidaurus. With this inspiration where society and hospital can share the space, the site selected was right in front of the amphitheater.

## SITE PLAN CONTEXT AND HOSPITAL



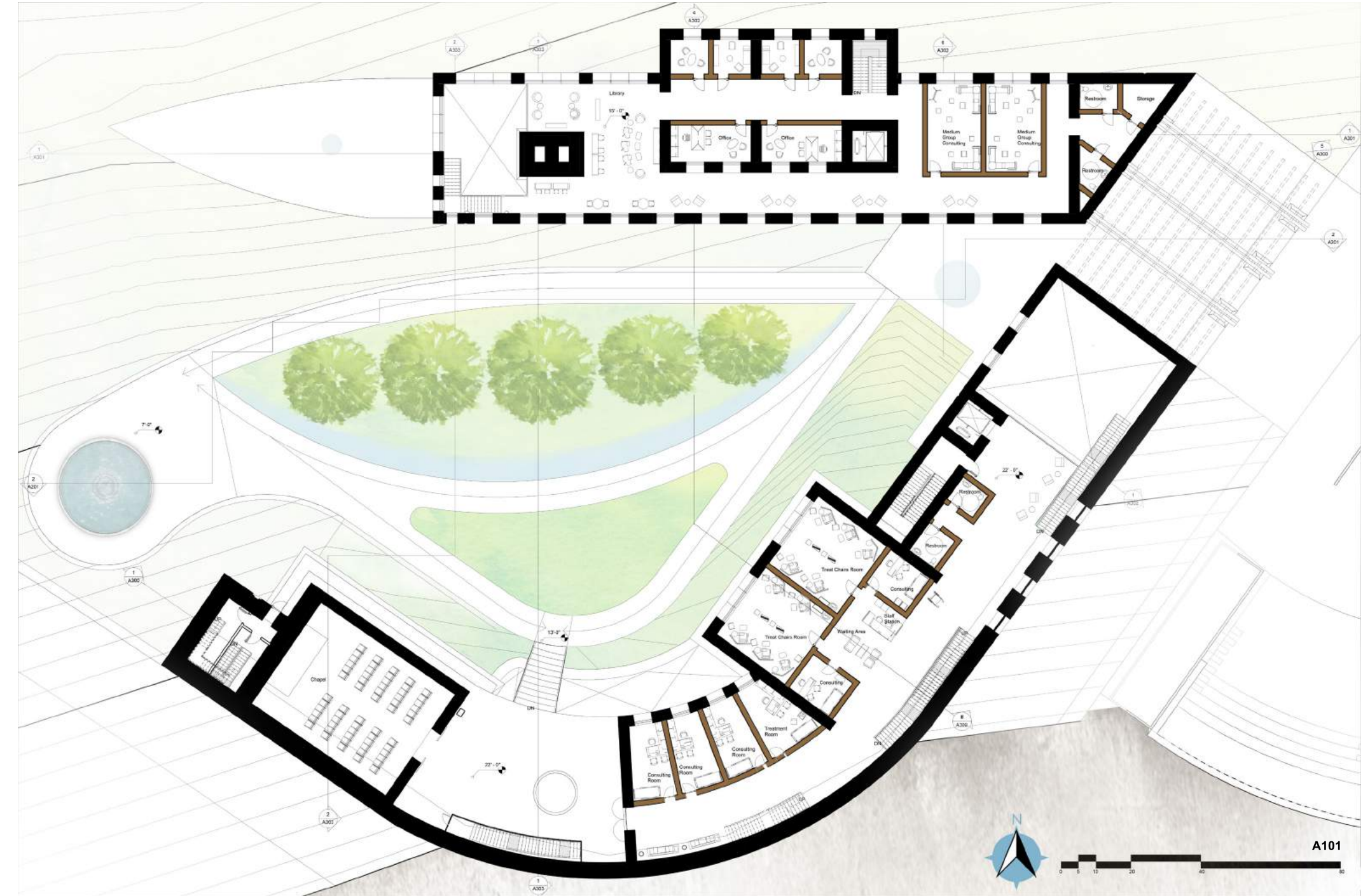
## GROUND FLOOR PLAN



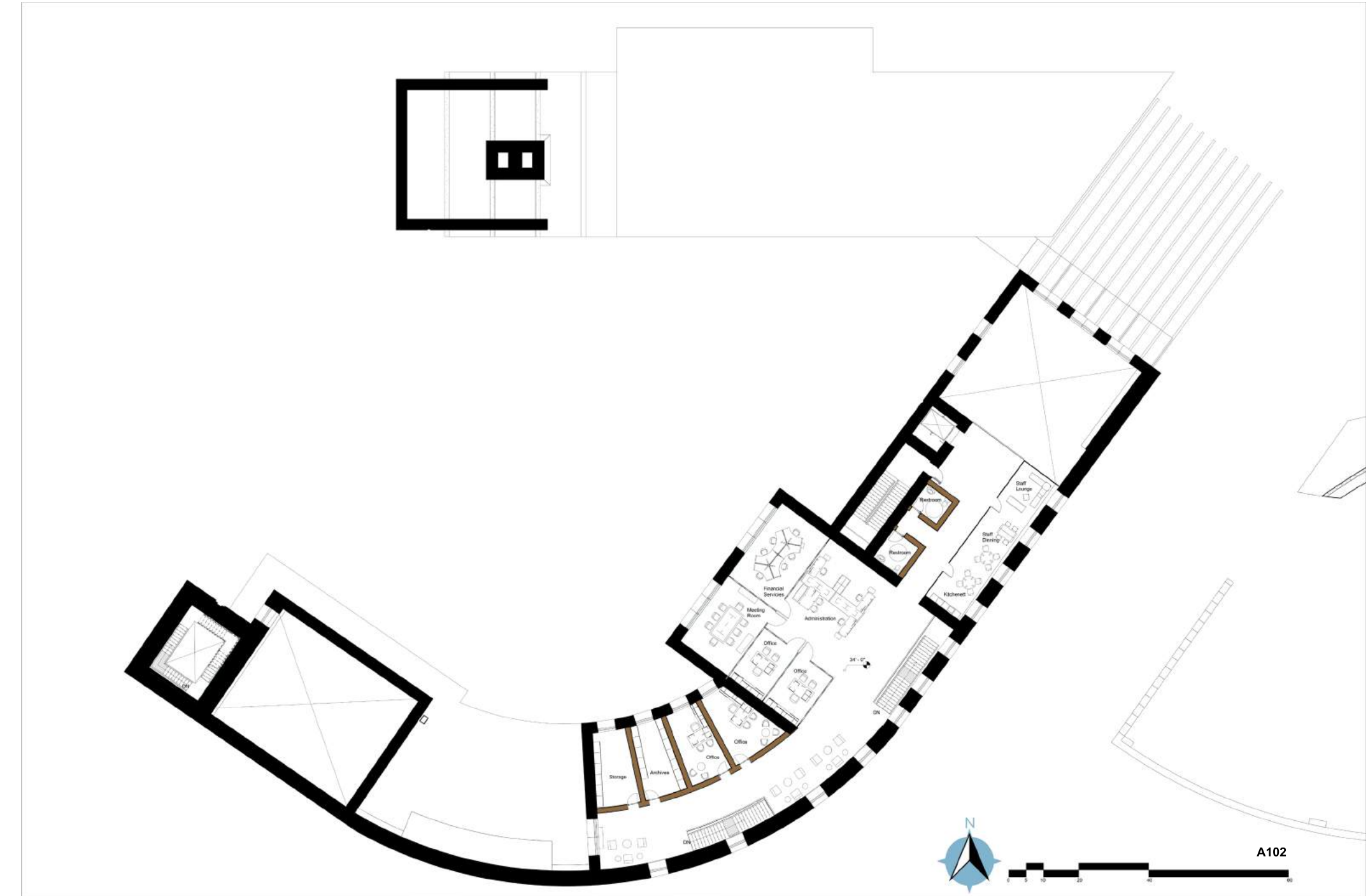
This cancer treatment center has been built as a solid geological rock that emerged from the earth creating wide retaining walls. The massing has been carved delicately like a sculpture to let the light cast in special spots and protect from the elements of the weather. The main access is from the secondary road used for the hospital for emergency, creating a private entrance and connecting with the amphitheater and gardens. The building gets the inspiration of stonewalls from the retaining wall of the amphitheater.

## FIRST LEVEL

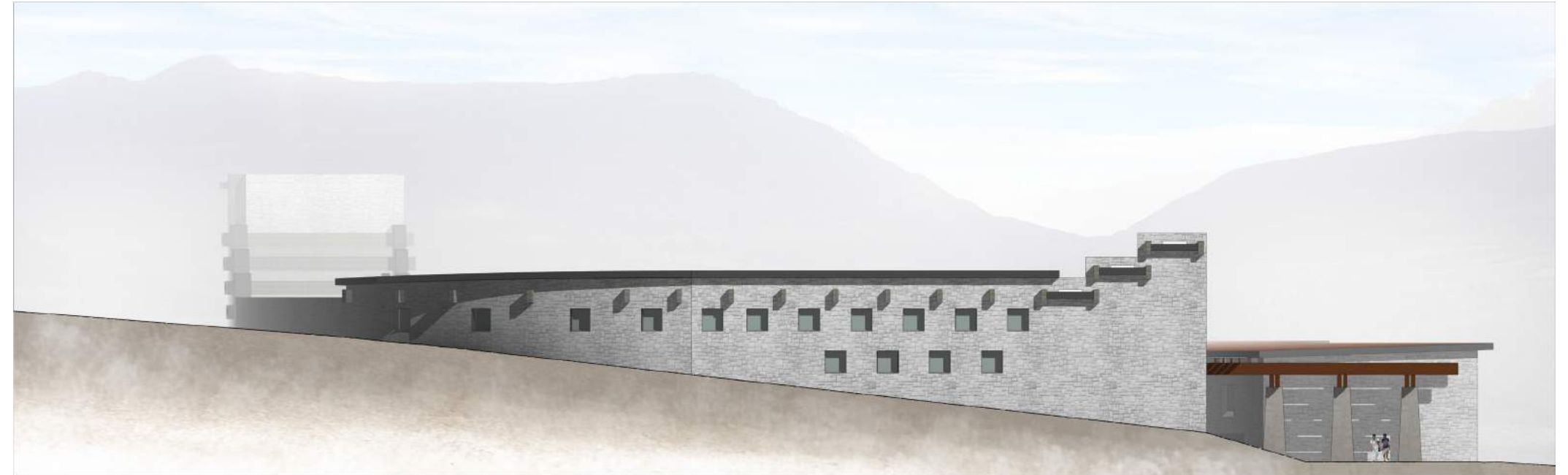
One of the main pieces of the project was the construction of a chapel. A place for spiritual relief is relevant to heal the soul of the patient and encourage the users to care for the patients with love. Diospi Suyana is a hospital built in vision of "God is Hope" and German missionaries gave extra care for these people in the Andes. As well, the indigenous people have a strong belief to the earth and their Gods such as the "Sun". The majority of people in the town are Catholic, however, all the diversity of belief meet in one icon which is the cross. For that reason the building planning is based on the four stars of the South Cross Constellation. These stars become part of the garden design as fountains and skylights. In addition, to reinforce the faith the Chapel is the highest point of the project and the central piece when you enter to the garden.



# SECOND LEVEL



FRONT ELEVATION



GARDEN NORTH SECTION ELEVATION



NORTH ELEVATION



GARDEN SOUTH ELEVATION

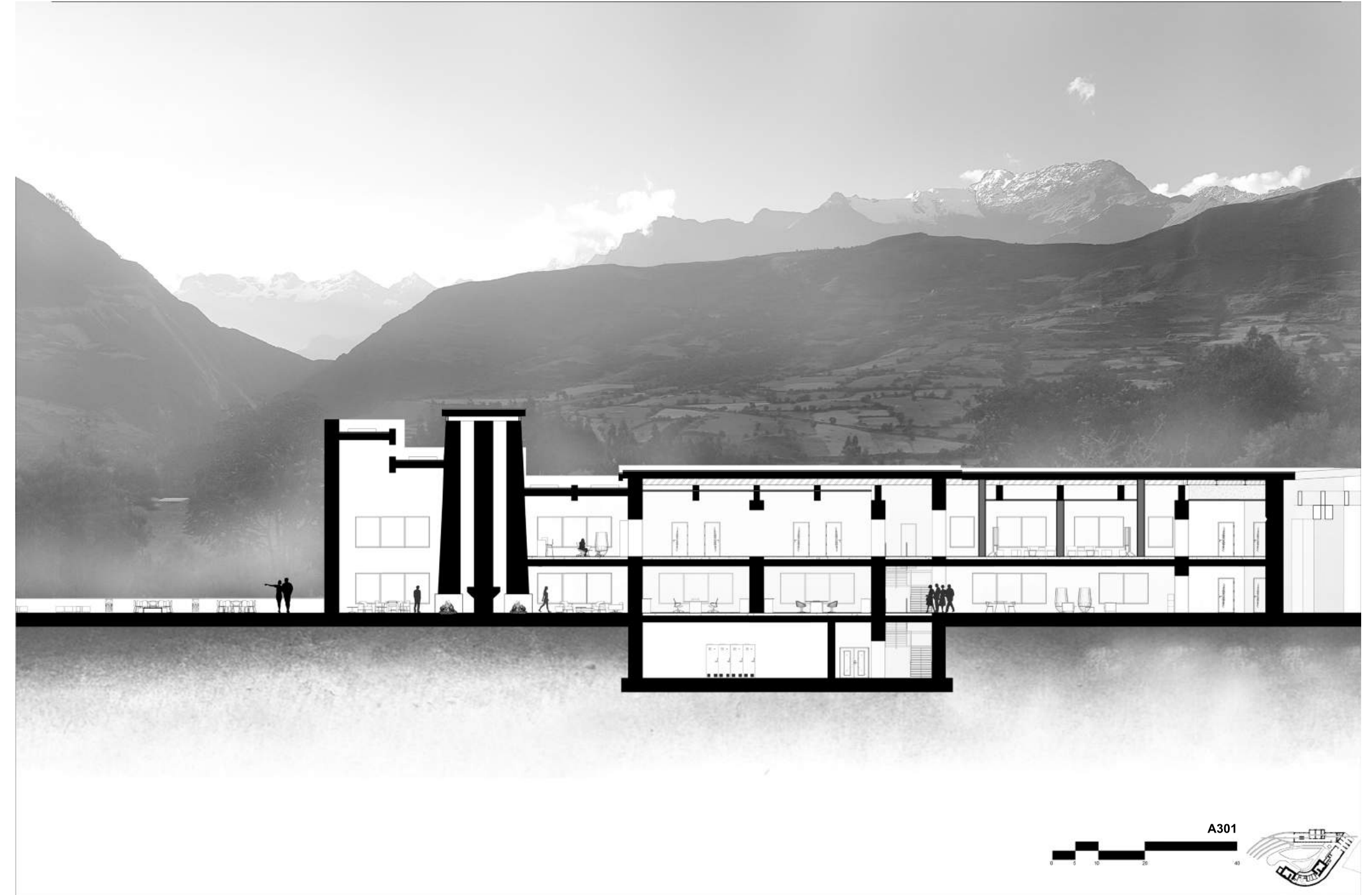


# SECTION A



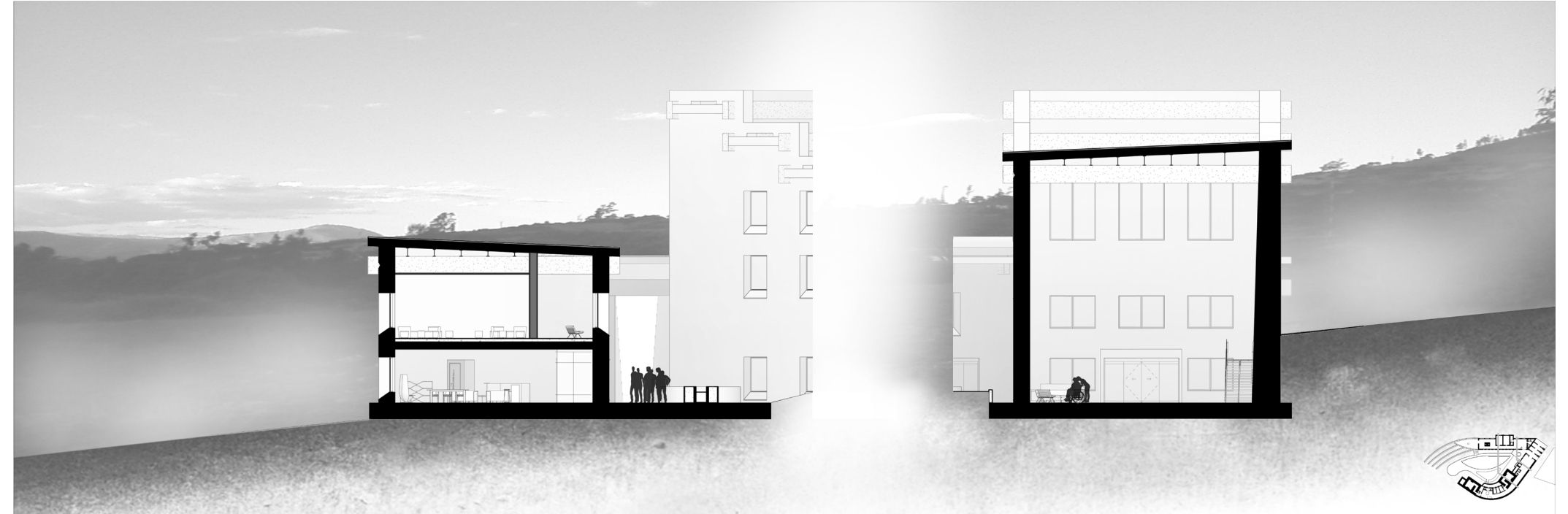
The roof design plays an important role with the intention of getting light with a magical touch. The strong concrete beams help to create a movement in the roof of special places such as chapel, and halls. The clerestory and skylights around corridor let the light wash the wall and change the roughness of the stone providing a warm and peaceful effect. A continues staircase welcome the patients and medical staff from the hall areas. This staircases are design to help comfort the patients, for that reason the risers are six inches high.

SECTION B





SECTION C



SECTION D



SECTION E

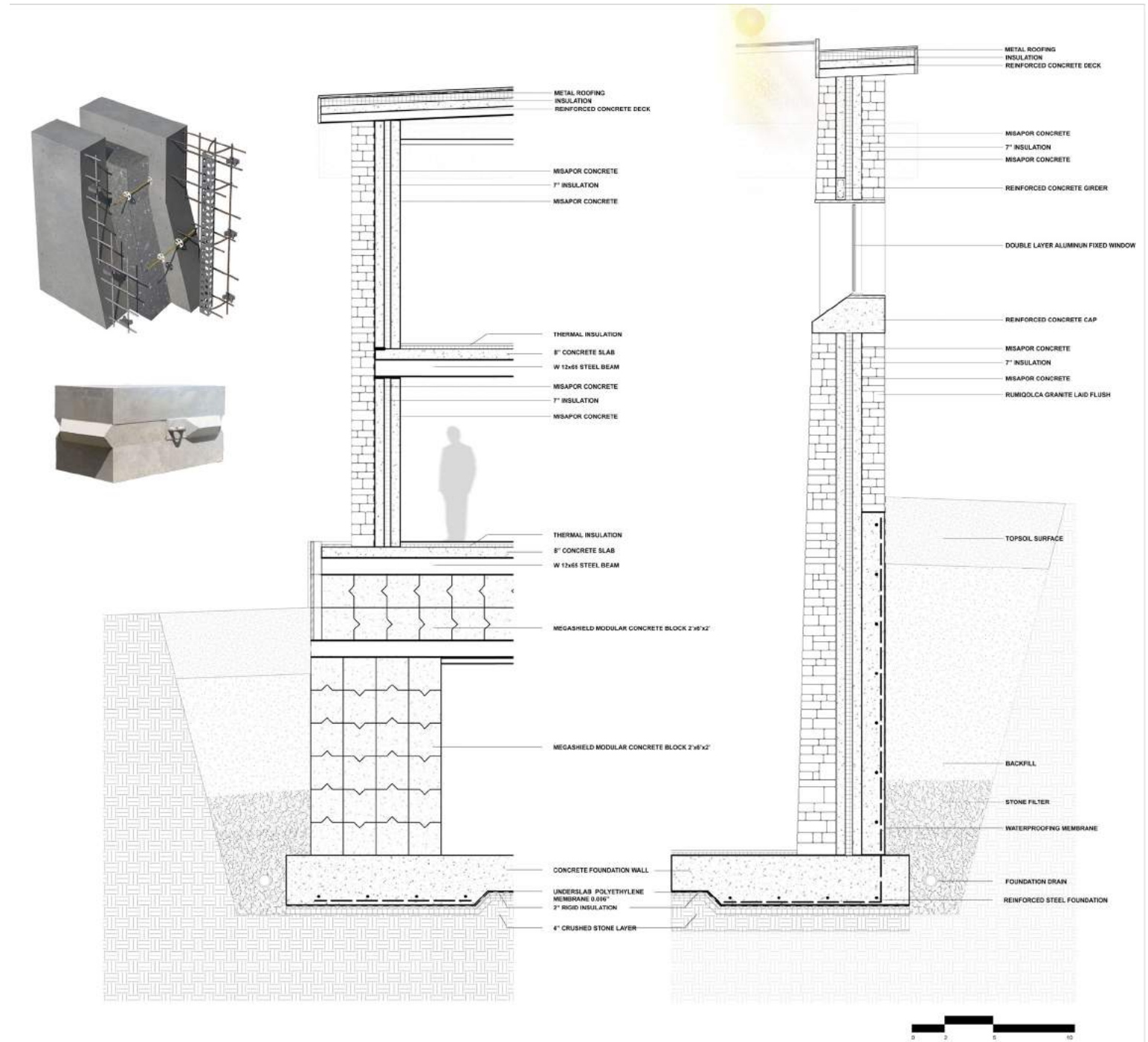
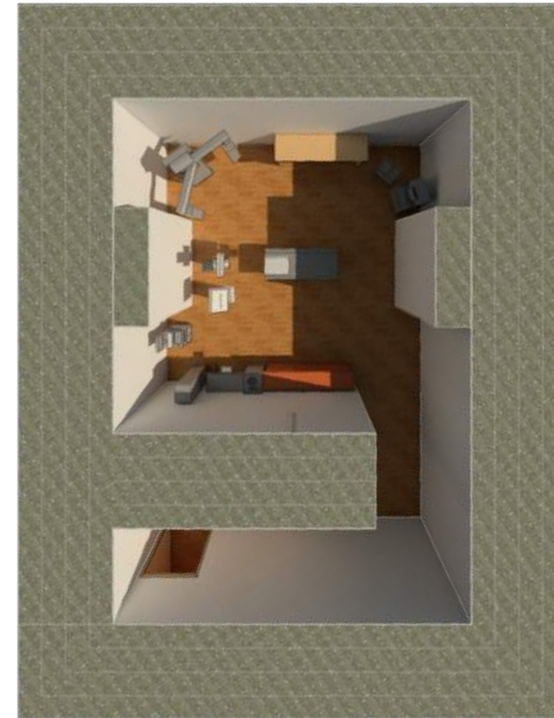


SECTION F



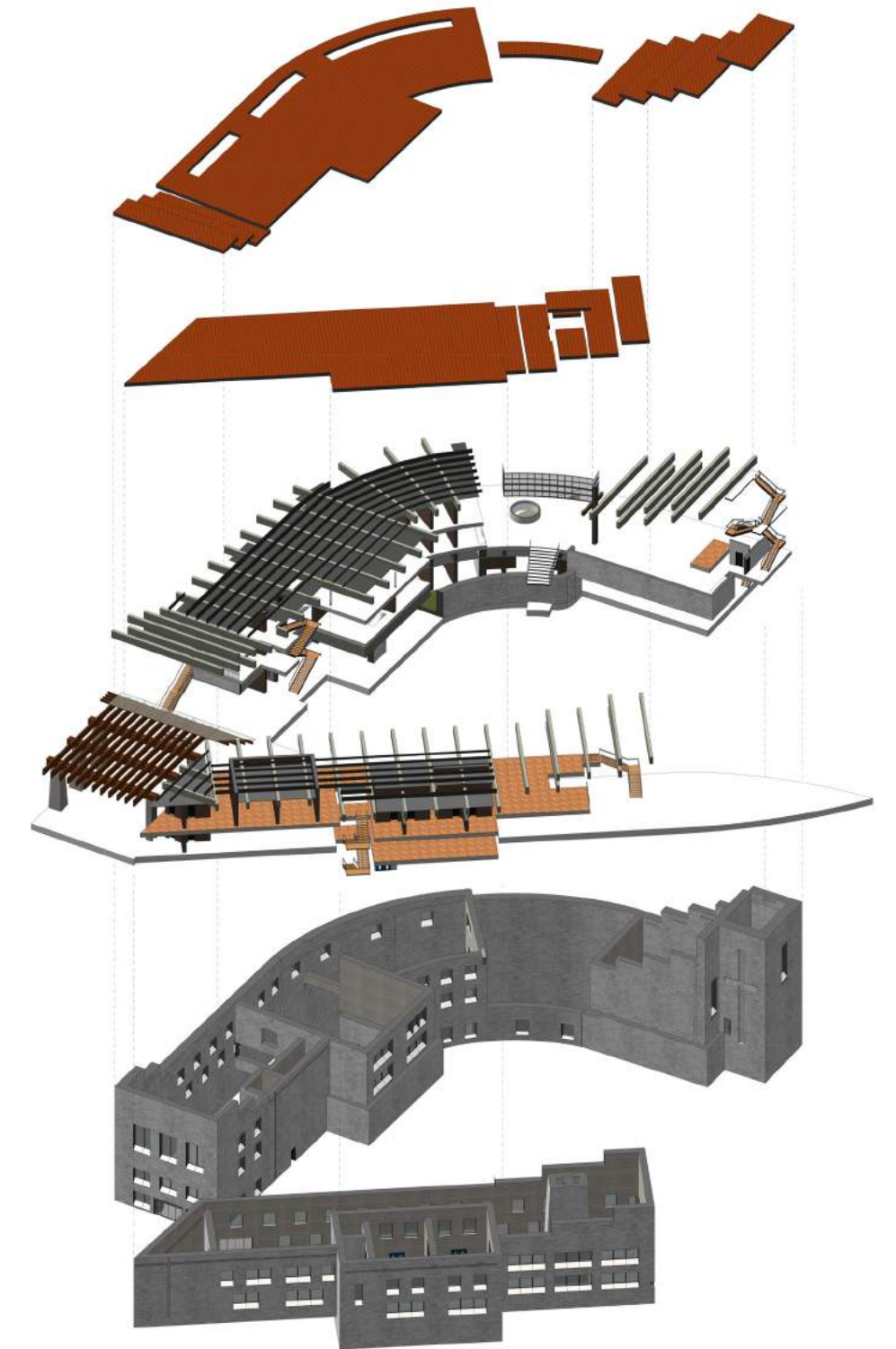
# DETAIL CONSTRUCTION

The Radiology rooms are built as a bunker to protect the user from any possible contamination. They are 8 feet wide and the roofs are 7 feet thick. The walls are constructed with megashield Concrete Blocks that are 2 feet high by 6 feet wide by 2 feet deep. This concrete blocks use a similar design of construction as the megalithic wall of the Incas.



## DETAIL CONSTRUCTION

The building materials are based on the vernacular architecture that uses stone, adobe and wood. The stone in the Inca's culture were used for ceremonial places or palaces. The project tries to rescue the rich history using the same local materials such as granite, and adobe blocks. The use of concrete is mixed with the stone construction to reinforce the building and make it strong to resist the earthquakes and inclement weather using extra layers of concrete insulation. Concrete beams will raise the roof with a long span that cross the facades.



PERSPECTIVE FROM TERRACES



PERSPECTIVE FROM ACCESS ROAD



ATRIUM



CENTRAL GARDEN





CHAPEL ATRIUM



CHAPEL INTERIOR VIEW



RADIOLOGY WAITING AREA



CHAIR ROOM



HEALING CENTER MAIN HALL



LIBRARY AND KITCHEN



LARGE MEETING ROOM

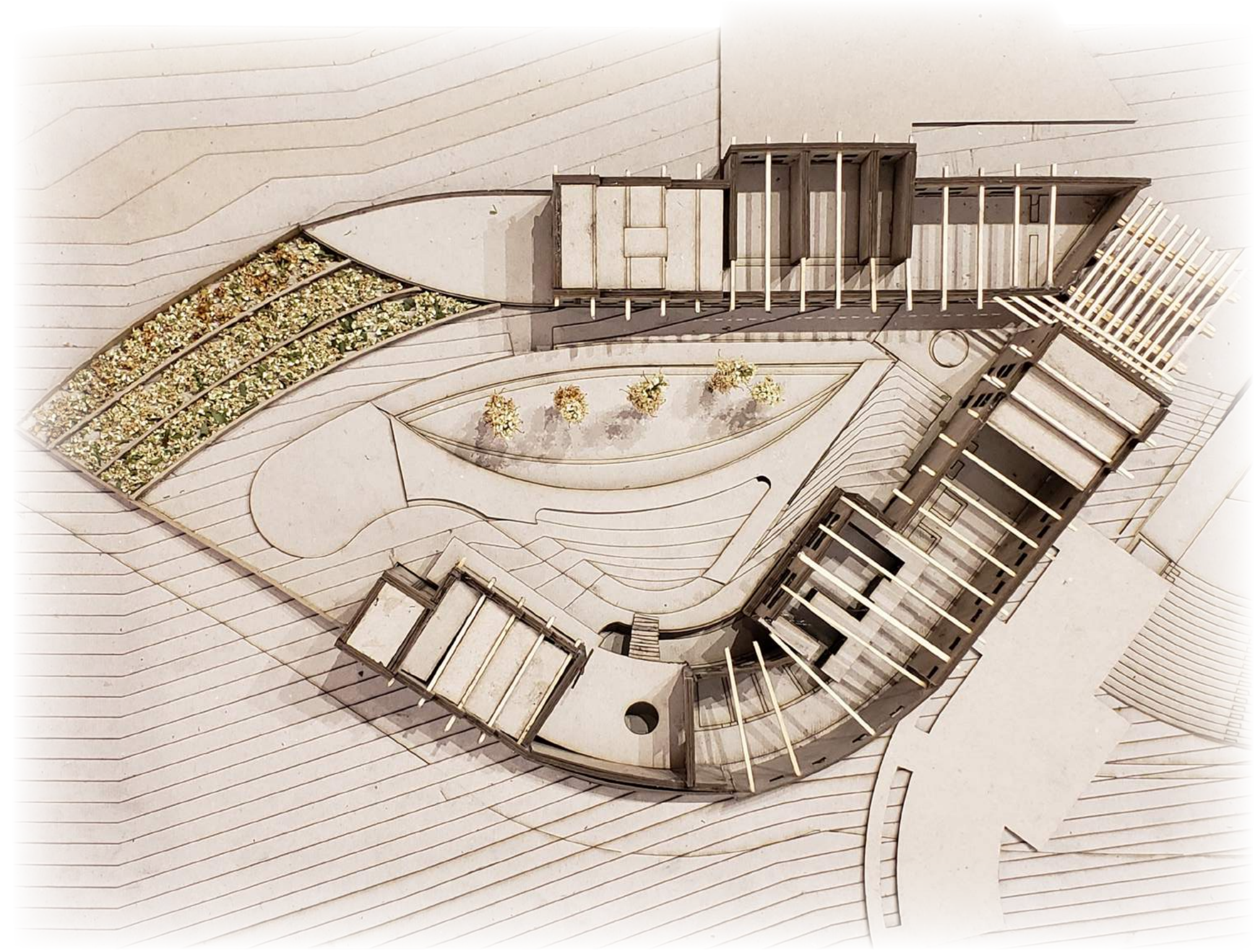


PHYSICAL MODEL: WORKING MODEL - FINAL MODEL





**PHYSICAL MODEL: MODEL INTERIOR STRUCTURE**



PHYSICAL MODEL: NORTH VIEW



PHYSICAL MODEL: EAST VIEW



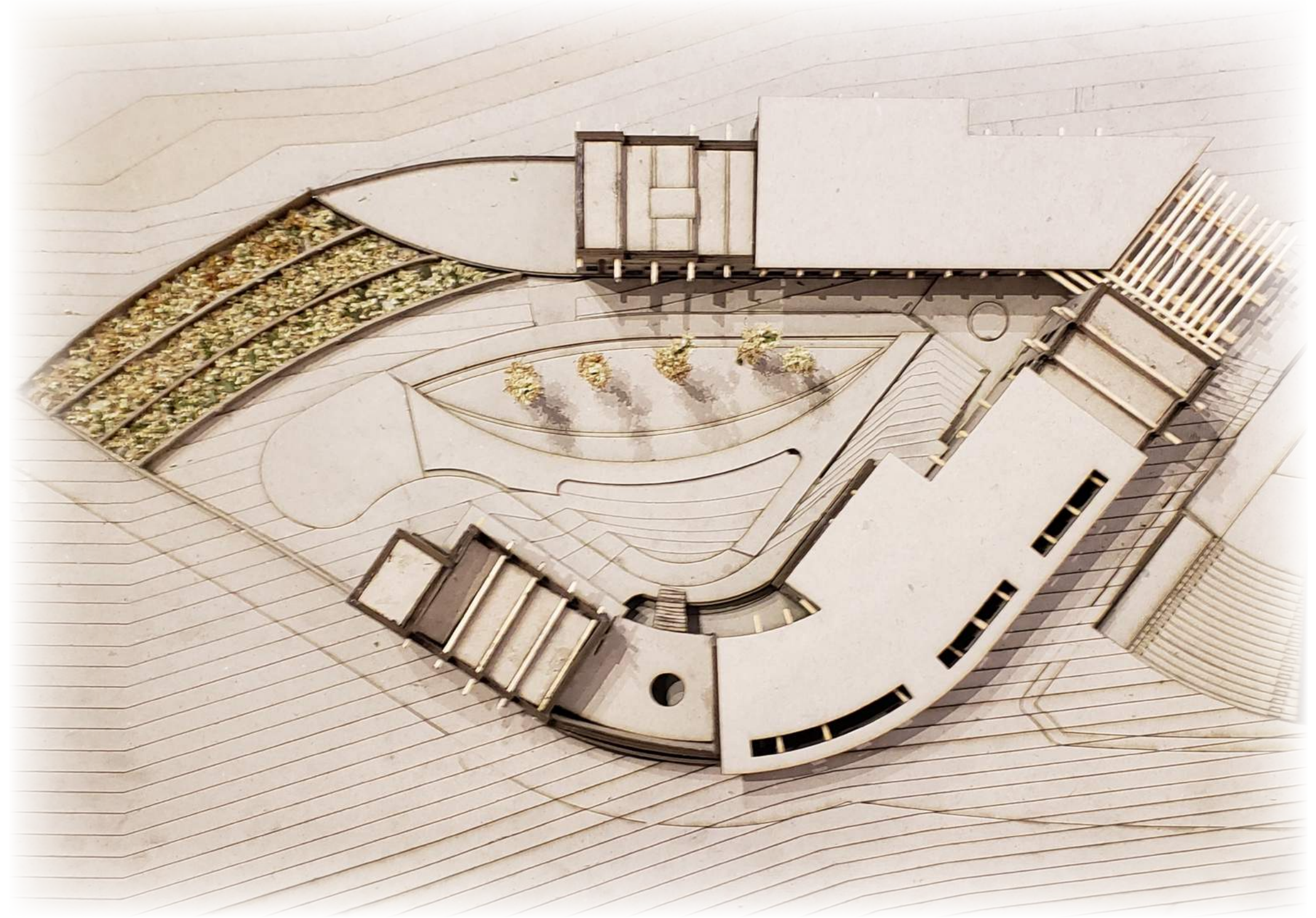
PHYSICAL MODEL: SOUTH VIEW



PHYSICAL MODEL: WEST VIEW



PHYSICAL MODEL: TOP VIEW



PHYSICAL MODEL: NORTH - EAST



PHYSICAL MODEL: NORTH - WEST





PHYSICAL MODEL: SOUTH - EAST



PHYSICAL MODEL: SOUTH - WEST



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