

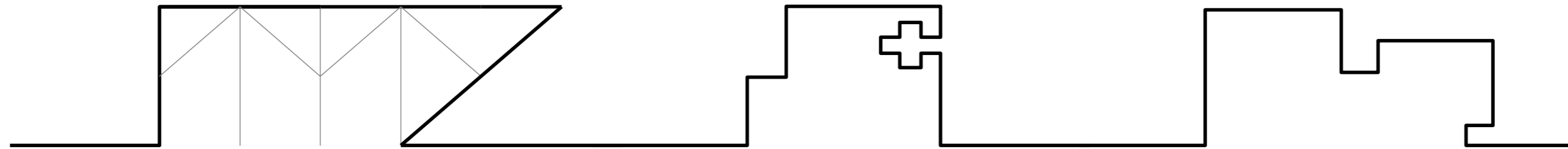
SIRAWIT KLINGGAM

A R C H I T E C T U R E

P O R T F O L I O

2022

C O N T E N T S



4

UNSW COMMUNITY CENTRE
(GRADUATION PROJECT- 2022)

LOCATION - UNSW, KENSINGTON,
SYDNEY, NSW, AUSTRALIA

HOW CAN AN ARCHITECTURE STIMULATE THE
SENSE OF HUMAN MIND THROUGH UNDERSTANDING
NEUROSCIENCE AND PSYCHOLOGY TO ULTIMATELY
IMPROVE UNSW STUDENTS' HEALTH AND
WELLBEING?.

28

CHA-AM INTERNAITONAL HOSPITAL
(BACHELOR THESIS- 2017)

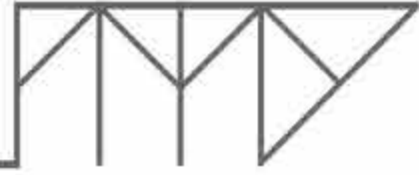
LOCATION - CHA-AM, THAILAND
GOOD ARCHITECTURE CAN PLAY AN IMPORTANT
ROLE IN HELPING PATIENTS MENTAL HEALTH
AND AIDING RECOVERY

54

COMMUNITY CENTRE
(SOLO PROJECT- 2021)

LOCATION - UNSW, KENSINGTON,
SYDNEY, NSW, AUSTRALIA
A RENOVATED COMMUNITY CENTRE
CONNECTED TO A NEW COMMUNAL
COOKING SCHOOL, BASED ON THE
CONCEPT OF SUSTAINABILIRY,

UNSW COMMUNITY CENTRE



GRADUATION MAJOR DESIGN, 2022 (SOLO PROJECT)

LOCATION

UNSW, KENSINGTON, SYDNEY, NSW,
AUSTRALIA

DESIGN STRATEGIES & INITIAL DESIGN

PUBLIC DOMAIN 1: 500



MENTAL ILLNESS IS WIDESPREAD AMONG EDUCATION STUDENT. MENTAL ILLNESS AFFECTS ROUGHLY 25% OF AUSTRALIAN UNIVERSITY STUDENTS, WITH STUDENTS FROM AT-RISK POPULATION GROUPS BEING AT EVEN GREATER RISK. MOREOVER, THE ILLNESS SUFFERS STUDENTS' ACADEMIC WHICH INCLUDES WORKLOAD, AND DEADLINE MANAGEMENT.

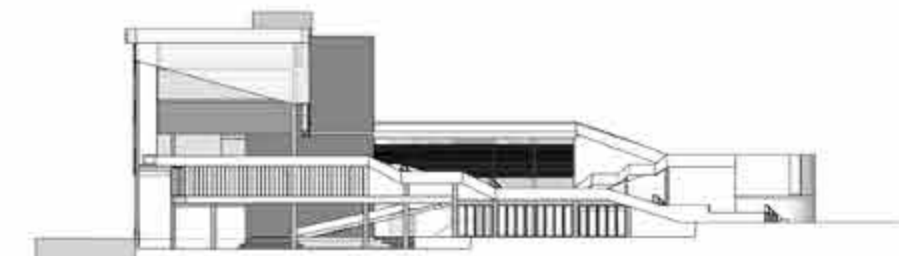
RIGHT ABOVE :
THE APPROACH TO THE BUILDING FROM ALUMNI PARK.
LEFT : LOCATION OF THE PROJECT.



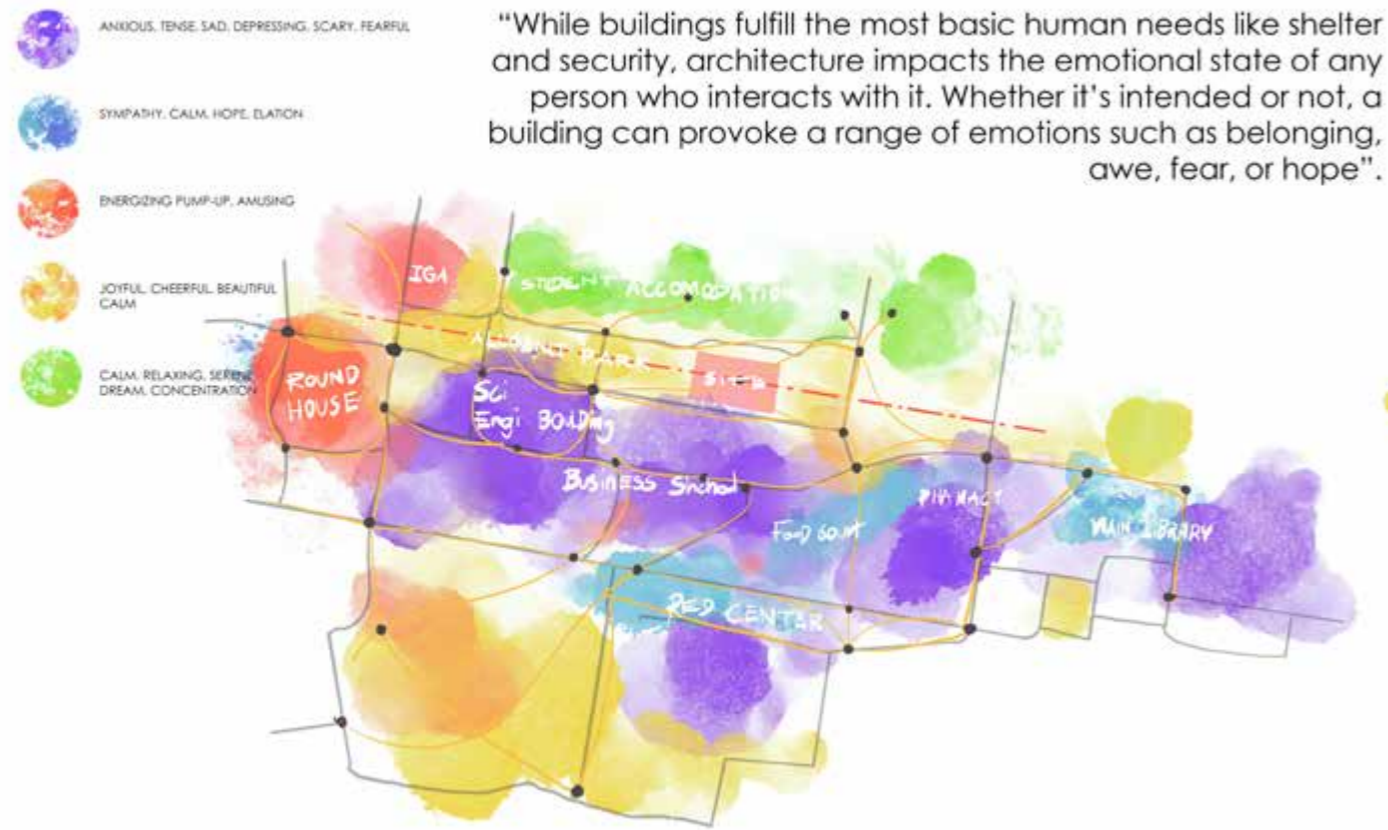
THIS PROJECT EXPLORES HOW CAN AN ARCHITECTURE STIMULATE THE SENSE OF HUMAN MIND THROUGH UNDERSTANDING NEUROSCIENCE AND PSYCHOLOGY TO ULTIMATELY IMPROVE UNSW STUDENTS' HEALTH AND WELLBEING. CLT AND GLULAM ARE USED FOR THE MAIN STRUCTURE OF THE BUILDING.

WIND-DRIVEN KINETIC FACADE ADDS DYNAMIC MOVEMENT TO THE BUILDING ENCLOSURE AND WALL SYSTEM TO STIMULATE THE HUMAN SENSES.

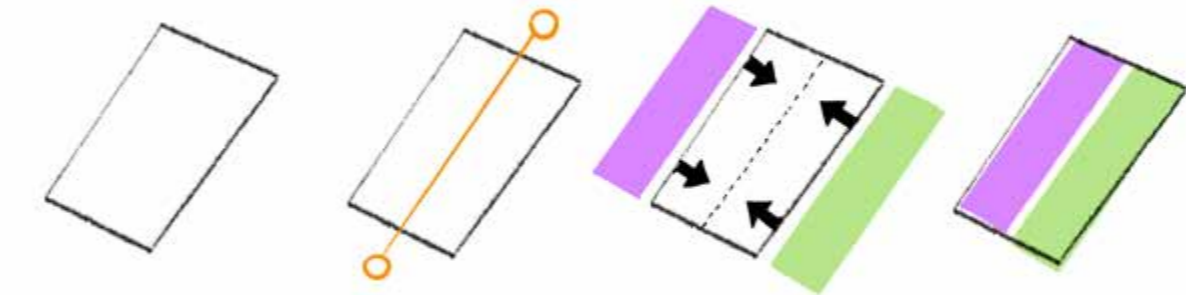
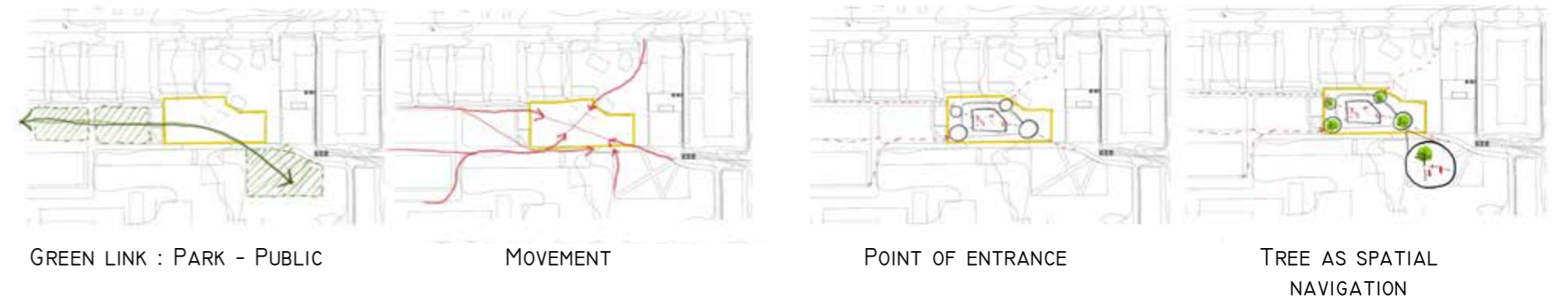
ELEVATION :
1. ELEVATION A 2. ELEVATION B



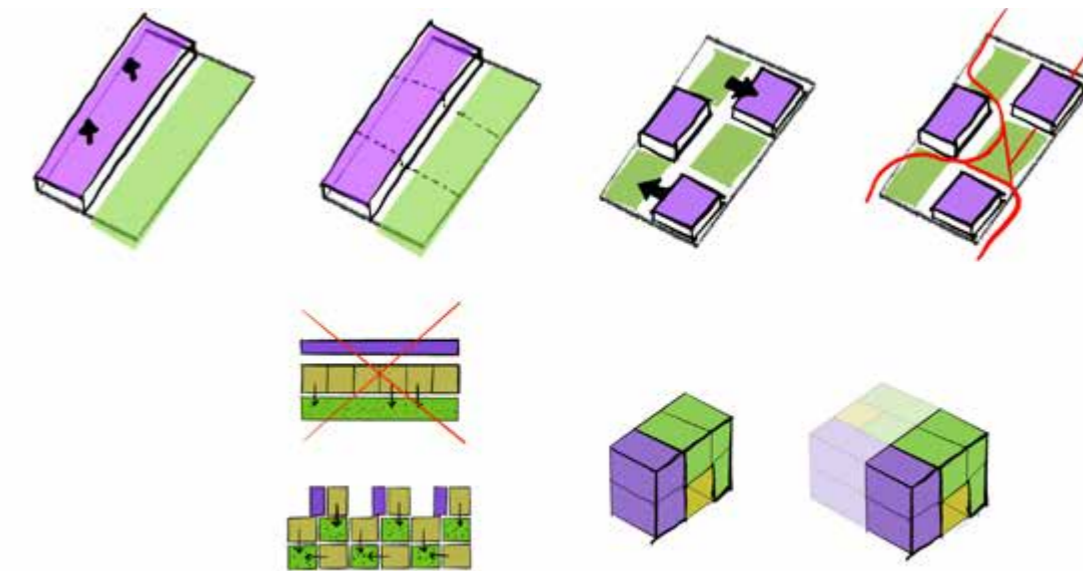
HUMAN-CENTERED DESIGN : UNSW EMOTION MAP



ACCESSIBILITY

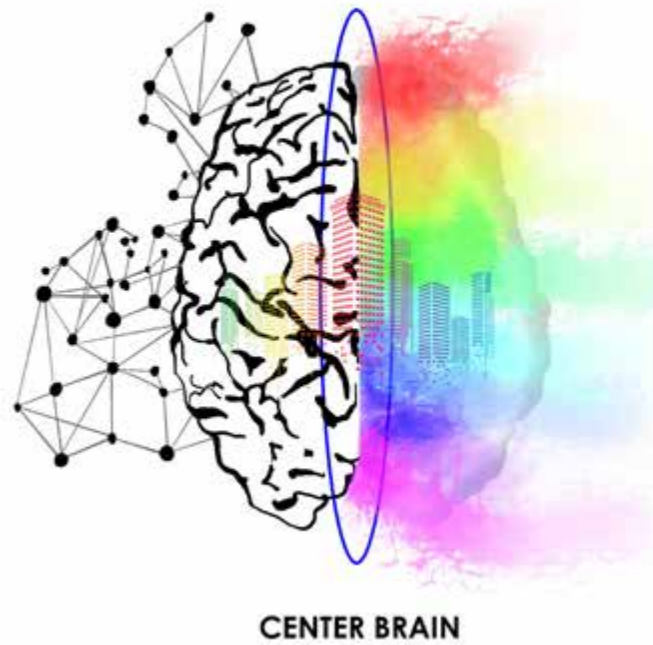


THE SITE IS INFLUENCED BY THE BUILDING SURROUNDS (EDUCATION BUILDINGS - STRESS AND STUDENT ACCOMMODATION - RELAXATION)

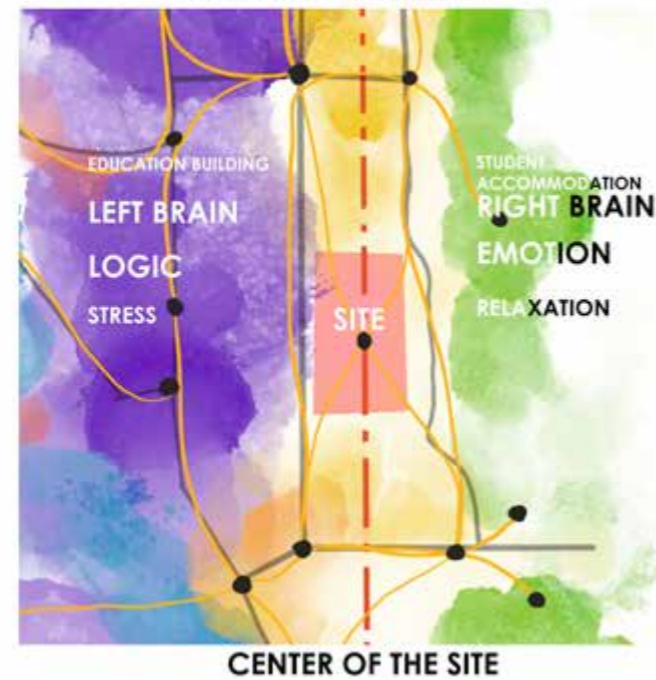


THE LEARNING AND RELAXATION AREA INTERVENED TO REDUCE THE LEVEL OF TENSION IN THE LEARNING BUILDING.

BRAIN SYSTEM



UNSW EMOTION MAP



UNSW EMOTION MAP SHOWS THAT THE SITE IS SIMILAR TO THE CENTRAL BRAIN. IT IS BETWEEN THE EDUCATIONAL AREA (LEFT-BRAIN, LOGIC) AND STUDENT ACCOMMODATIONS (RIGHT BRAIN, EMOTION). THE SITE ACTS AS A TRANSFER SPACE(CENTER-BRAIN) BETWEEN THEM. IT IS A GOOD OPPORTUNITY TO PROVIDE FACILITIES TO ENCOURAGE STUDENTS ON BOTH SIDES OF THE BRAIN POTENTIAL THROUGH ARCHITECTURE AS A CONNECTOR (CENTER-BRAIN)

- PURPLE = LEARNING AREA - LEFT BRAIN - STRESS
- YELLOW = COMMUNITY AREA - CENTER BRAIN - BALANCE EMOTION AND ABILITY
- GREEN = RELAXATION AREA - RIGHT BRAIN - POSITIVE EMOTION

AUTOMATICALLY BECOMING U SHAPE . IT WRAPS AROUND THREE SIDES OF THE COURTYARD TO CREATE A SHELTERED AREA, GARDEN, OR LANDSCAPE ELEMENT, ENCOURAGING USER'S ENGAGEMENT. THE EMPHASIS OF THE U-SHAPE IS THE FLOW OF THE BUILDING, SMOOTH CONNECTION BETWEEN THE INTERIOR AND EXTERIOR AREAS, AND SPATIAL RELATIONSHIPS BETWEEN FUNCTIONS.

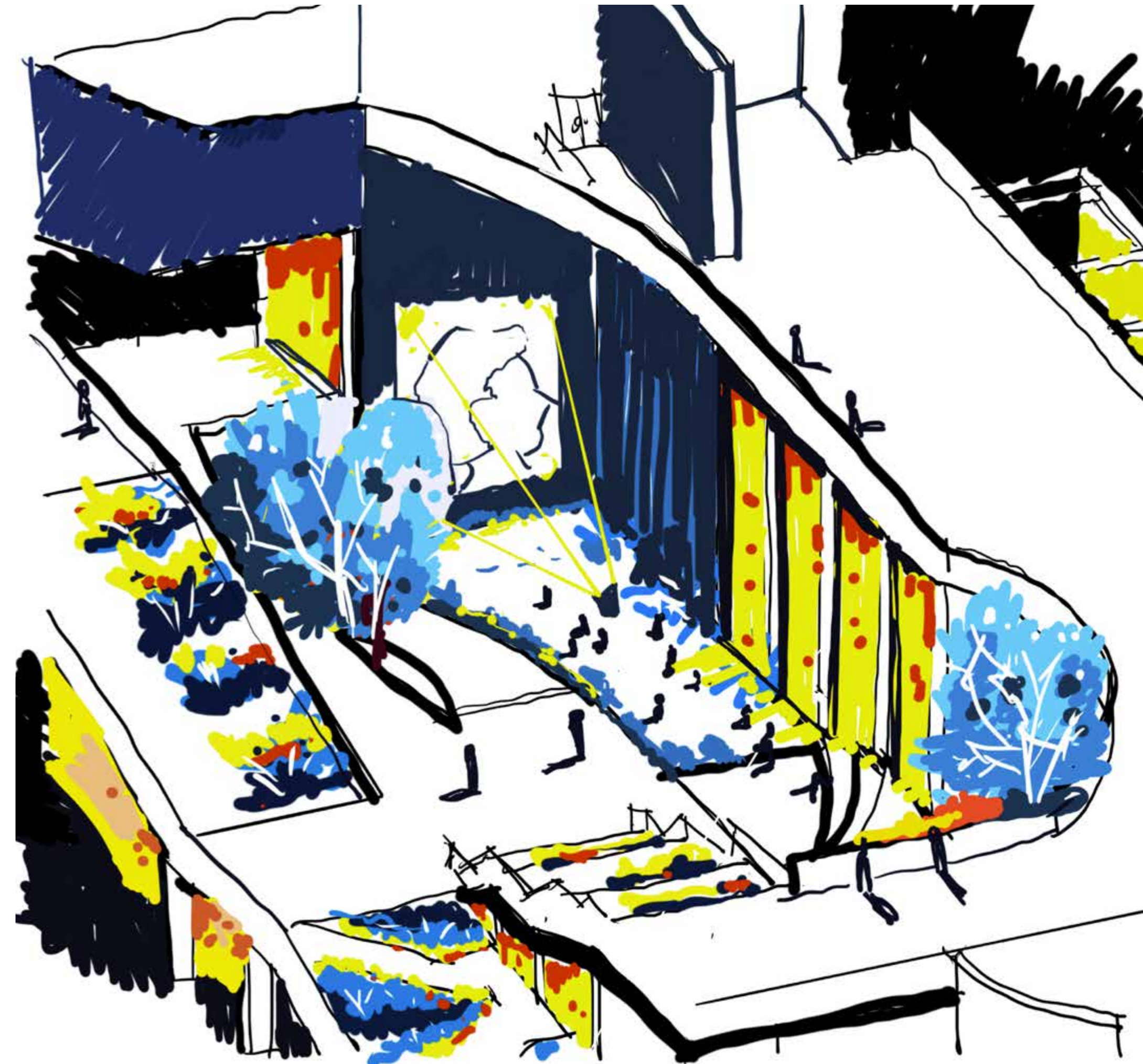
How can an **architecture** stimulate the sense of human mind through understanding **neuroscience** and **psychology** to ultimately improve students' **health and wellbeing**?



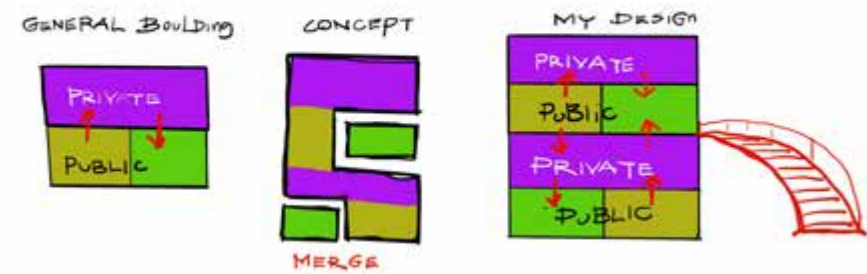
PSYCHOLOGY : PERMAH DESIGN



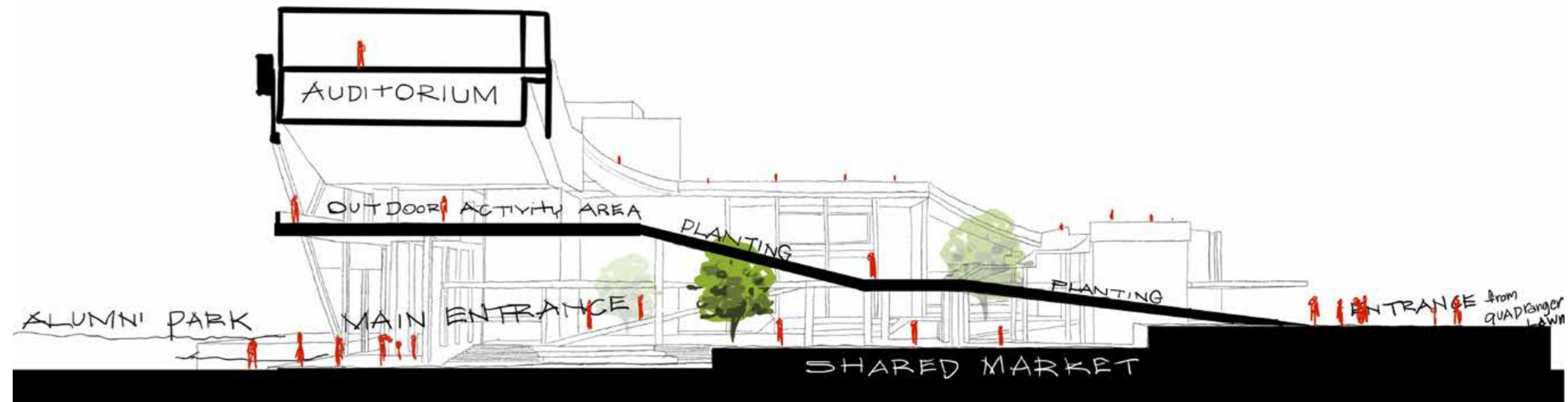
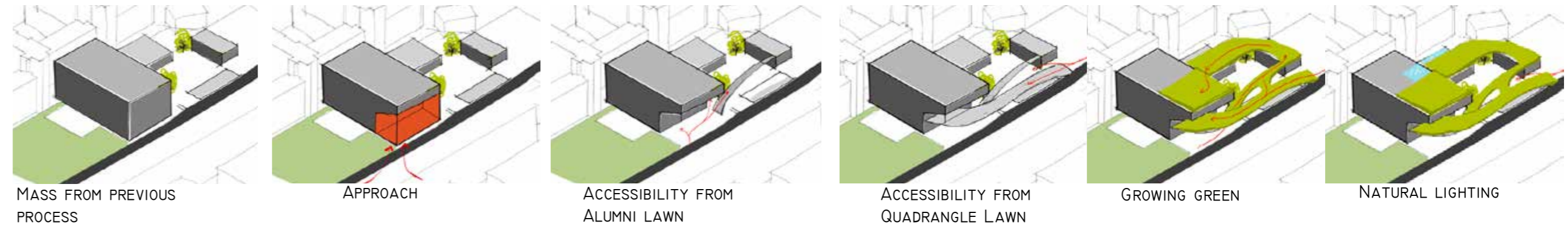
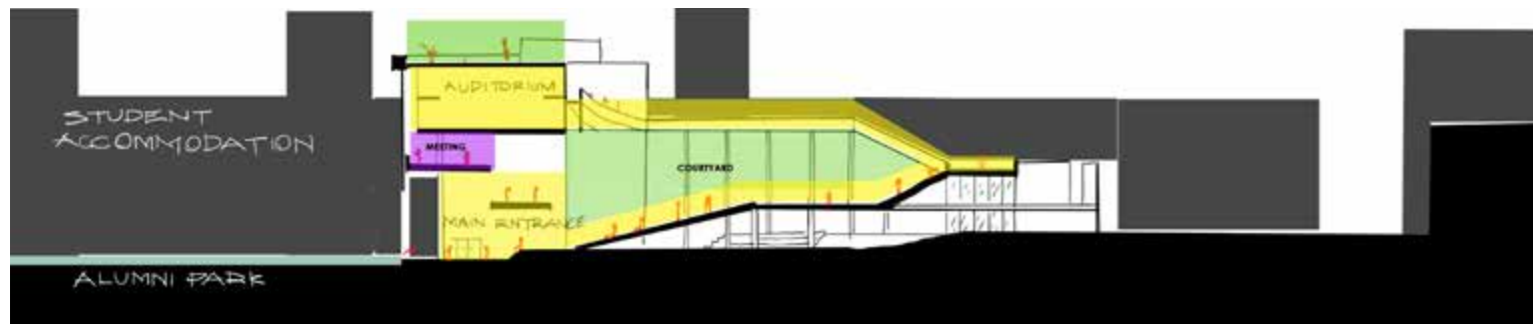
- | | | | | | |
|---|--|---|---|--|--|
| Positive Emotions
VIEW TO GARDENS
ATMOSPHERIC
MATERIAL CHOICES
SPACES THAT EVOKE
CONTENTMENT
A POSITIVE FEEL
SPACES FOR JOY
SEEING THE SKY
INDOOR PLANTS
AND GARDENS | Engagement
TRANQUIL SPACES
PLACES TO SIT
QUIETLY
PLACE FOR A
QUIET CUP OF
COFFEE
SPACES TO
REVITALISE | Relationships
PLACE FOR
GATHERING
SPACES THAT
INSPIRE AND
CONNECT
COMMUNITY
SHARED FACILITIES | Meaning
VIEW/CONNECTION
LANDSCAPE
PROGRAMME
MATERIAL
PROPORTIONS/
SPACES
DESIGN PROCESS | Achievement
AGE APPROPRIATE
SPACES
STRONG
COMMUNITY
LOW TOXIC
MATERIALS | Health
GOOD AIR
QUALITY AND
NATURAL
VENTILATION
LIGHT AND AIR
GOOD LIGHTING |
|---|--|---|---|--|--|



BUILDING FORM : VERTICAL DESIGN PROCESS



ADDING A STAIRCASE TO MERGE 3 EMOTION SPACES TOGETHER



THIS MASS IS CUT FOR THE BUILDING APPROACH, ADDING STAIRCASES TO ALLOW PEOPLE TO USE THE UPPER FLOOR, MAKING THE BUILDING MORE PUBLIC. A CONTINUOUS ROOF LINKS THE THREE DISTINCT BUILDINGS INTO ONE COHESIVE VOLUME. IT FRAMES OUT A COURTYARD: A SLOPED GARDEN, AND A GREEN PLAZA WHERE COMMUNAL ACTIVITIES TAKE PLACE. OUTSIDE STAIRS CONNECT PEDESTRIANS TO ACCESS THE BUILDING, PROVIDING "MOVEMENT" OF THE BUILDING. IT IS ALSO MORE INTERACTIVE BETWEEN PEDESTRIANS AND THE BUILDING.

LEFT: FORM DEVELOPMENT: VERTICAL DESIGN PROCESS.

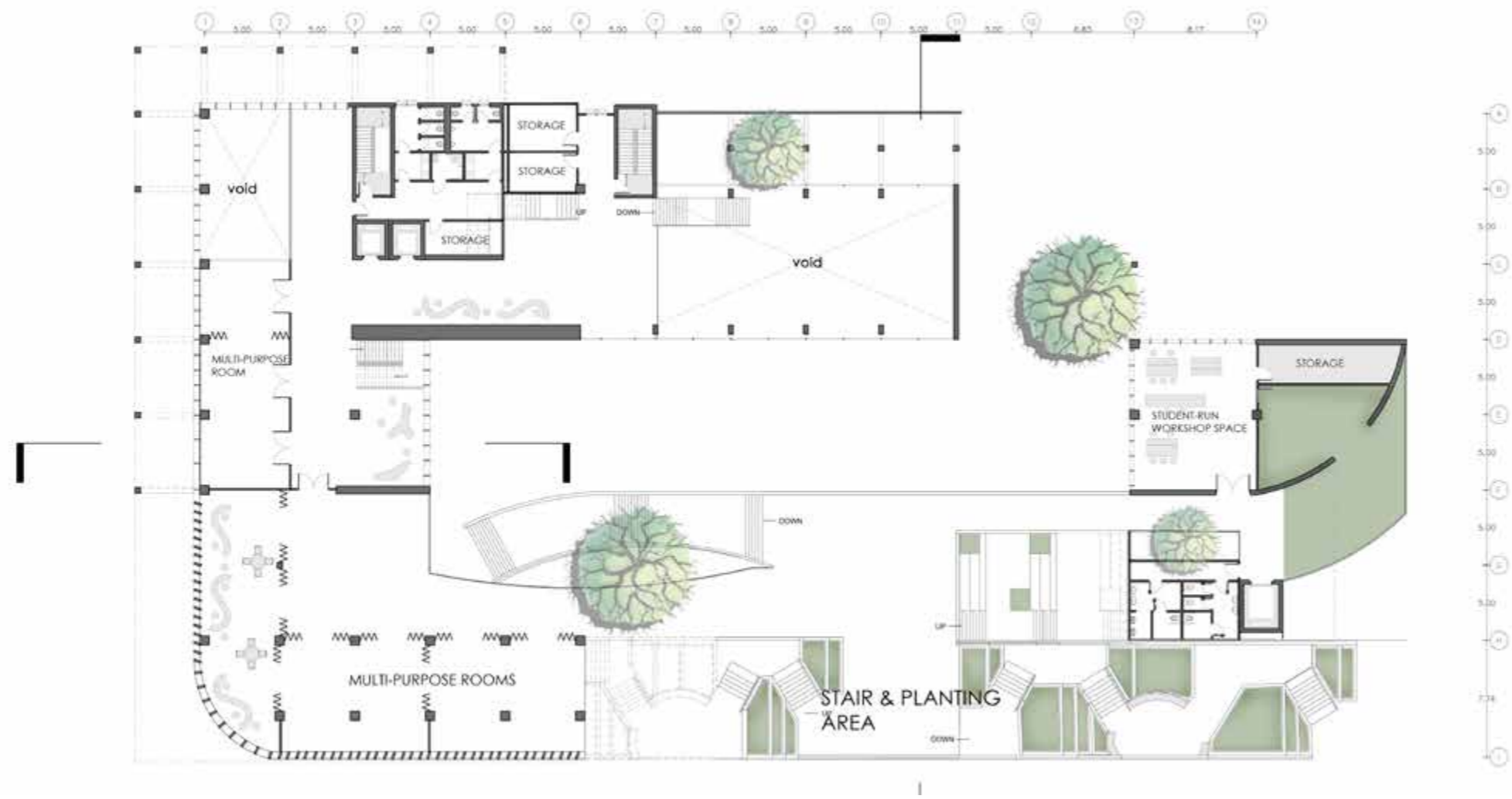
RIGHT : SECTION.



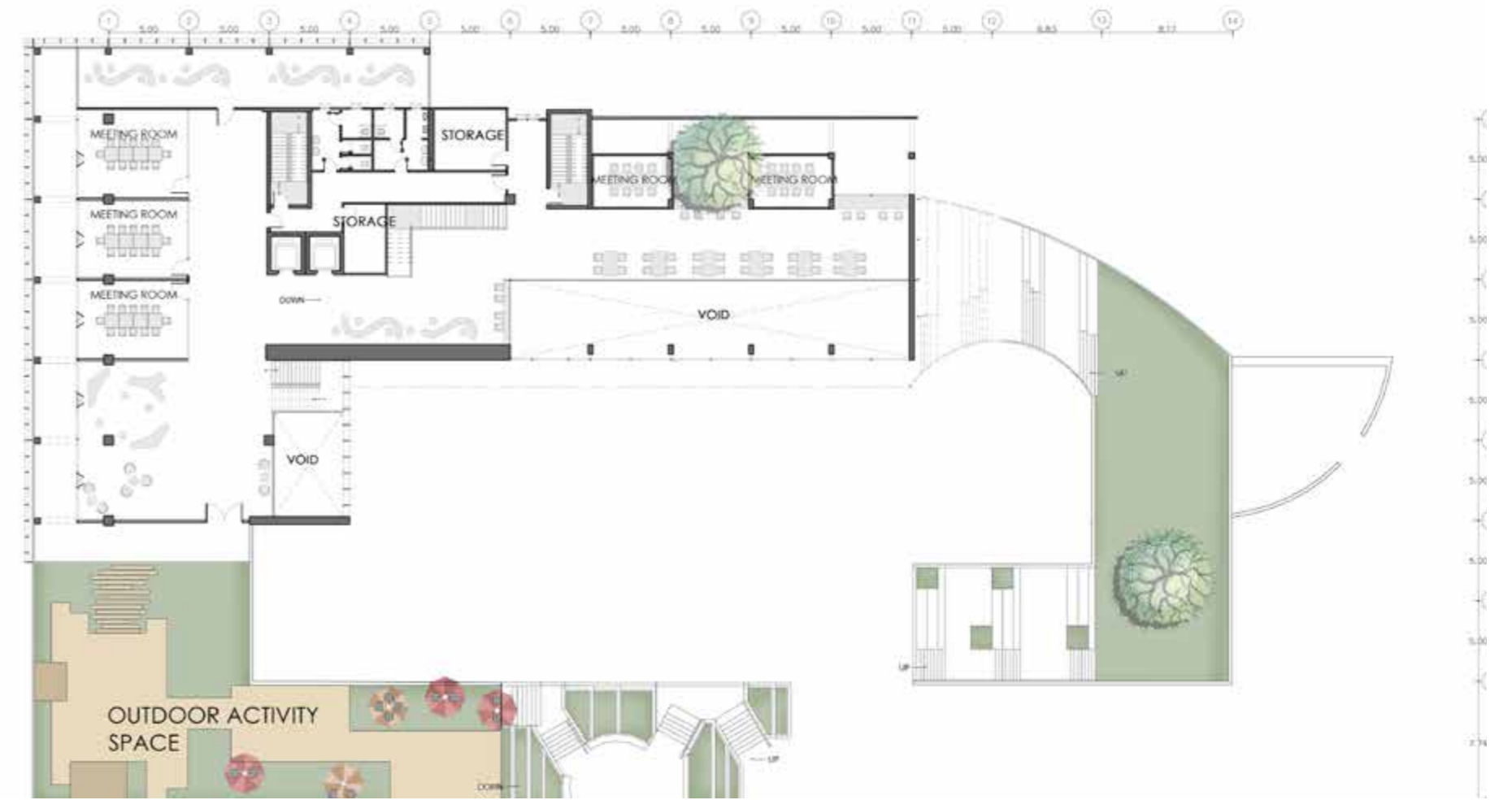
LEFT: SITE PLAN

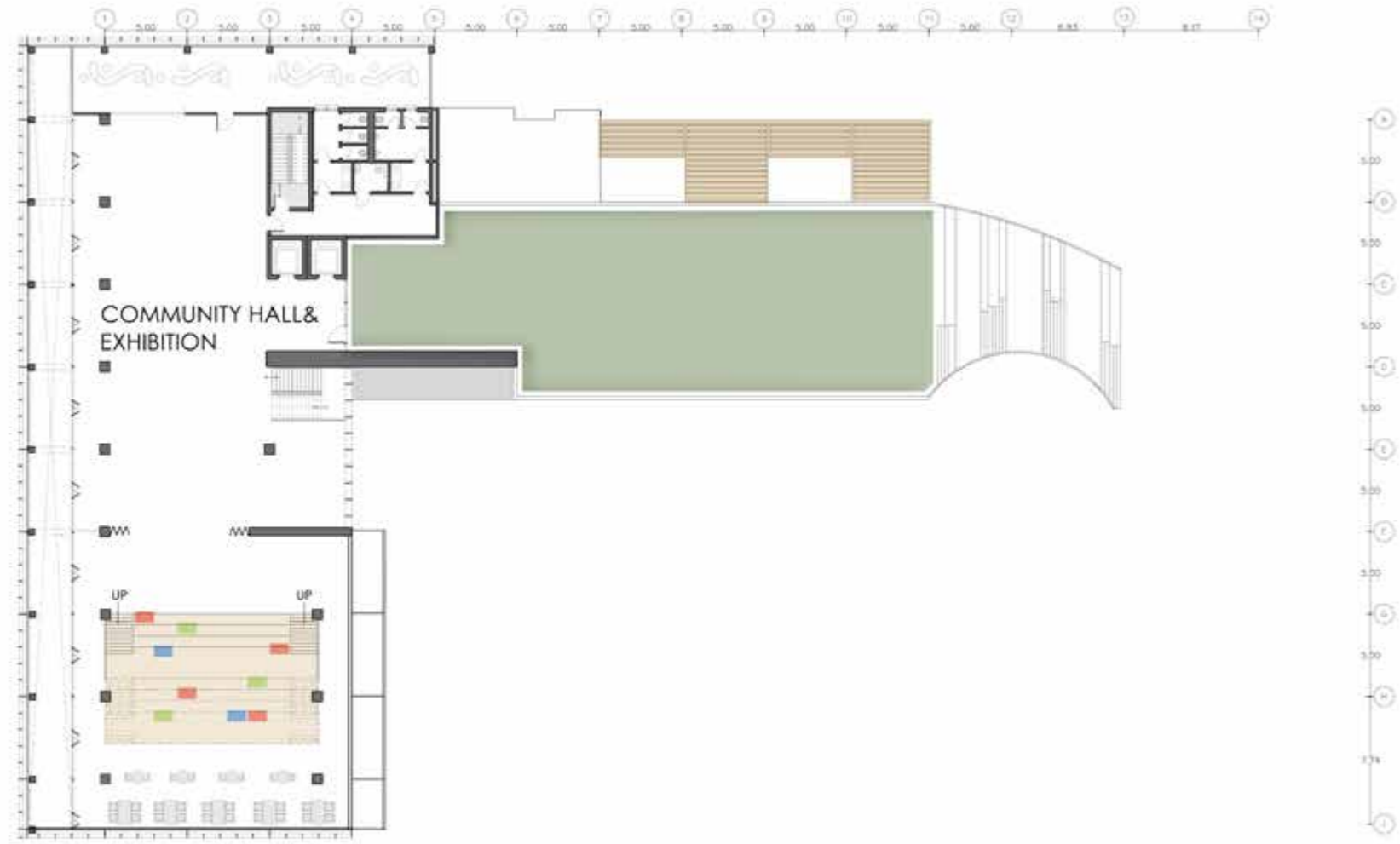
RIGHT: GROUND FLOOR PLAN



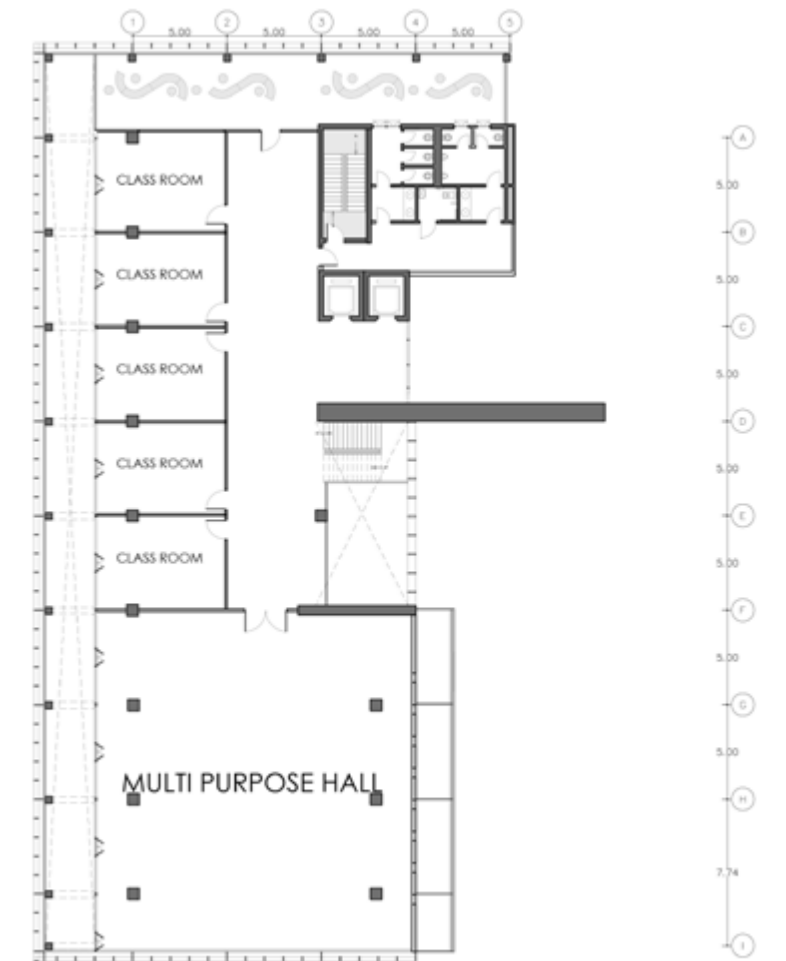
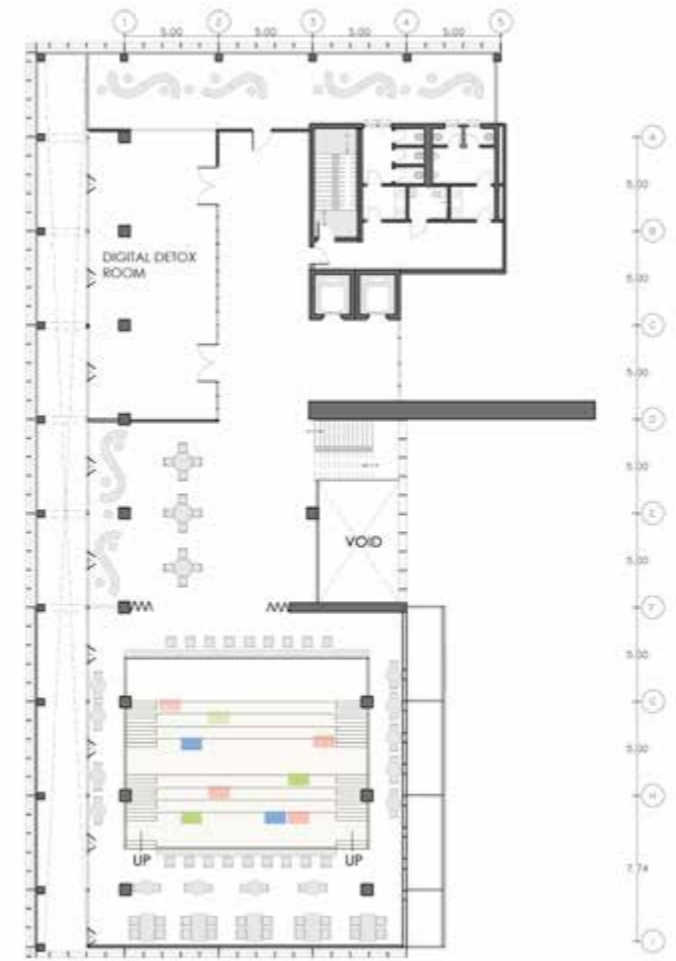


LEFT: FIRST FLOOR PLAN
 RIGHT: SECOND FLOOR PLAN
 14





LEFT: THIRD FLOOR PLAN
 RIGHT: FOURTH AND FIFTH FLOOR PLANS

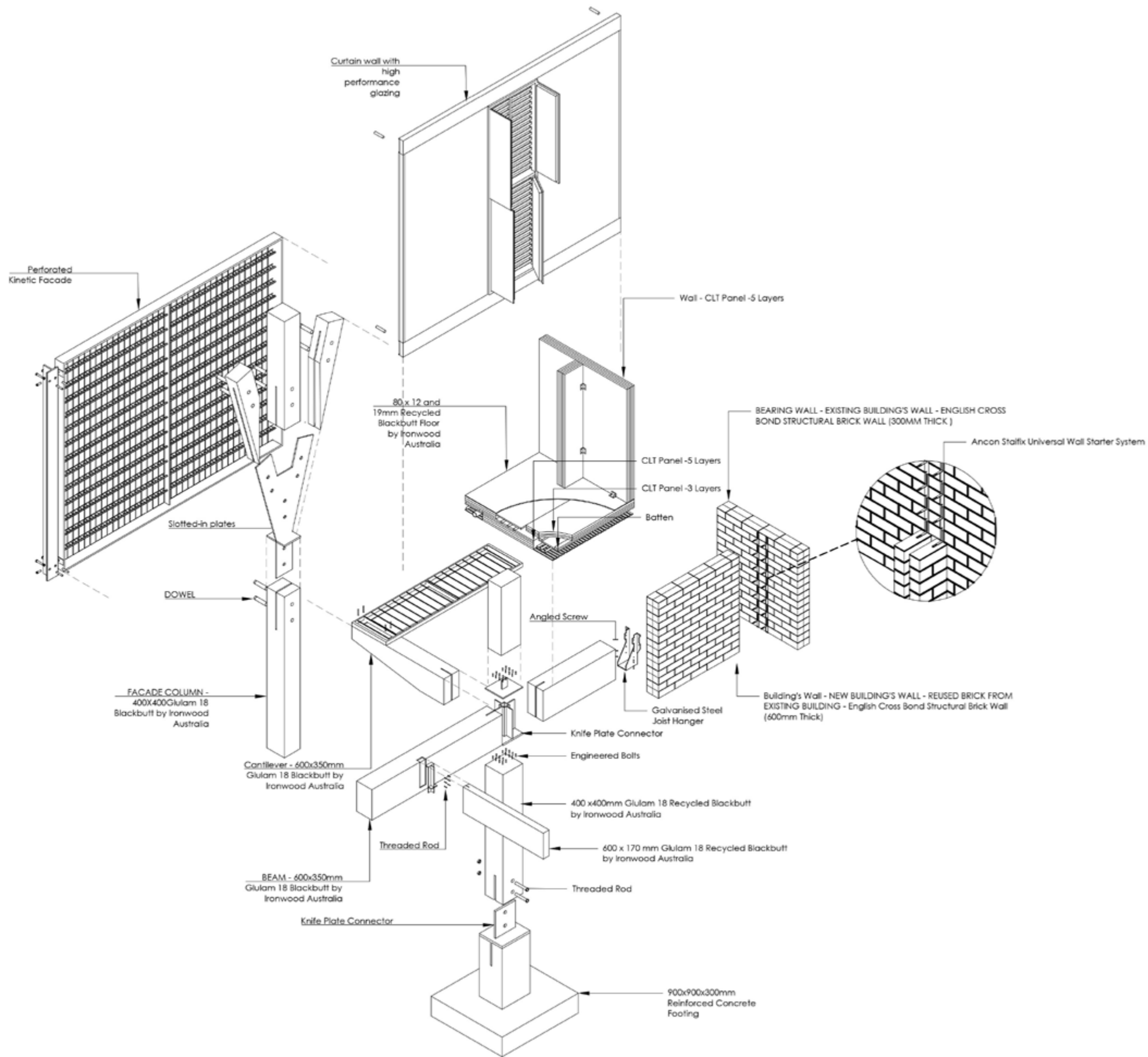






ABOVE: CENTRAL COURTYARD
 LEFT BELOW: COMMUNAL SHARED SPACE
 CENTRE BELOW: MARKET AREA
 RIGHT BELOW: CASCADING ROOF

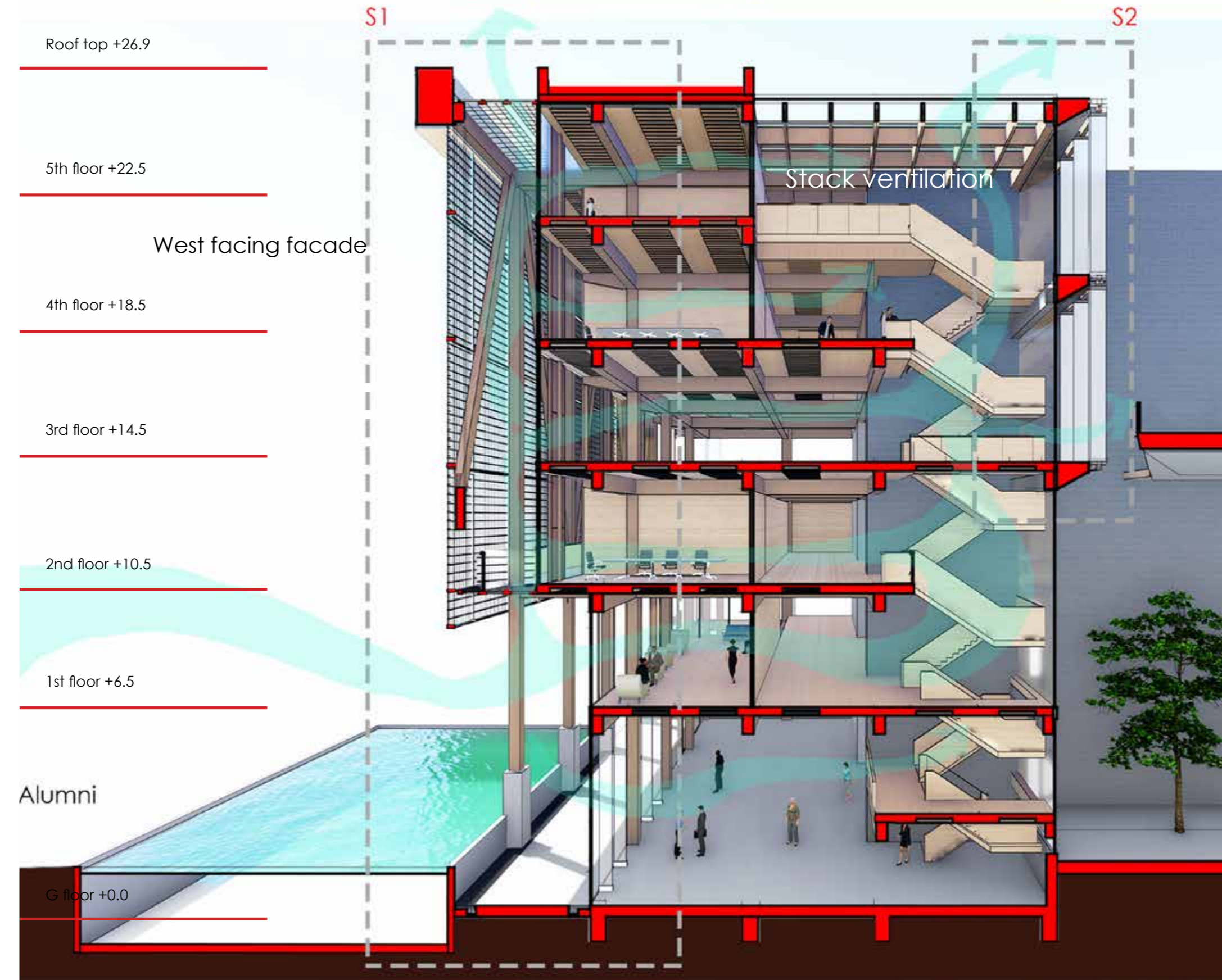
STRUCTURE AND CONNECTION

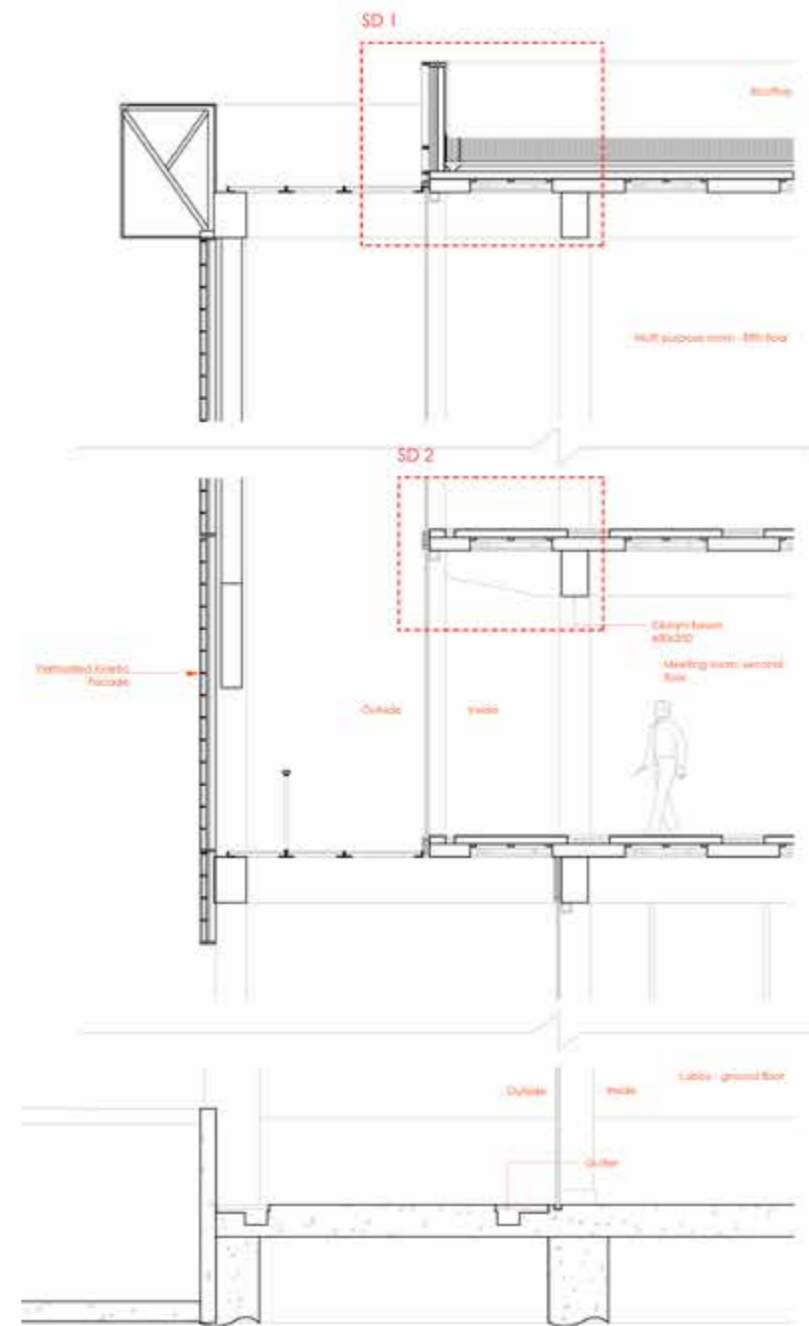
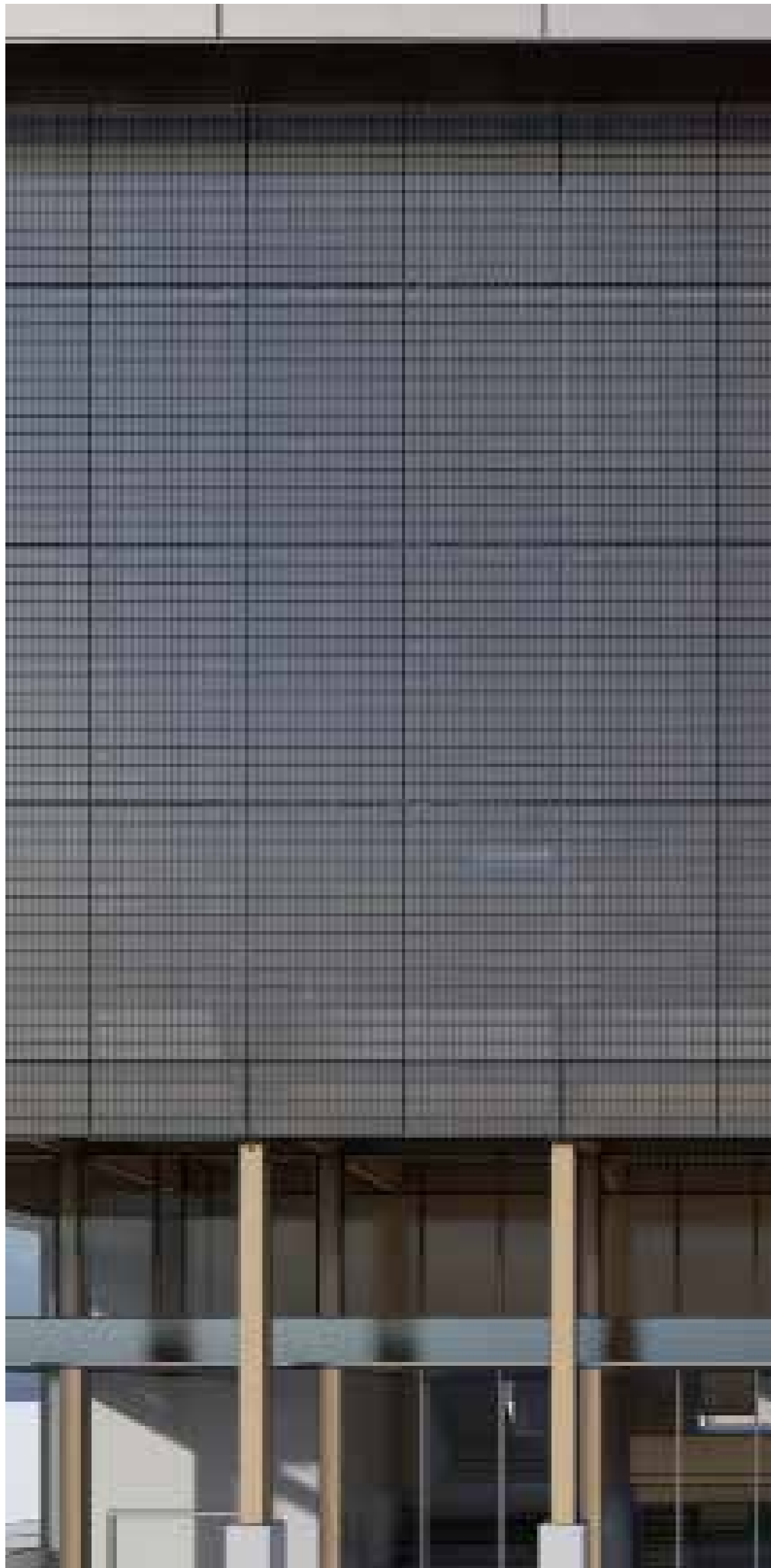


NATURAL VENTILATION

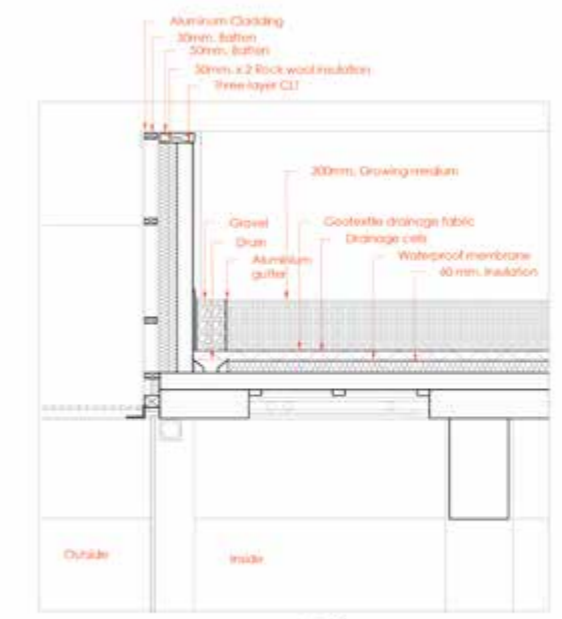
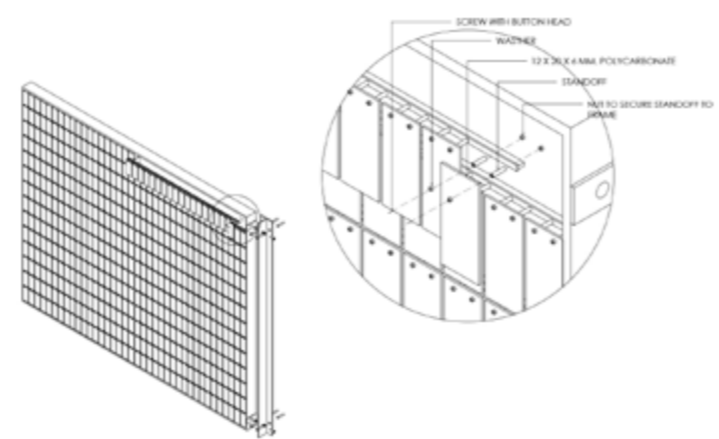
HYBRID VENTILATION

HYBRID VENTILATION

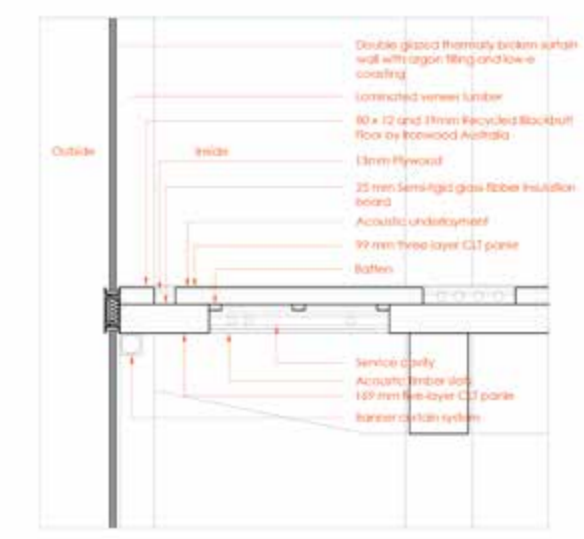




SECTION A
SCALE 1:50

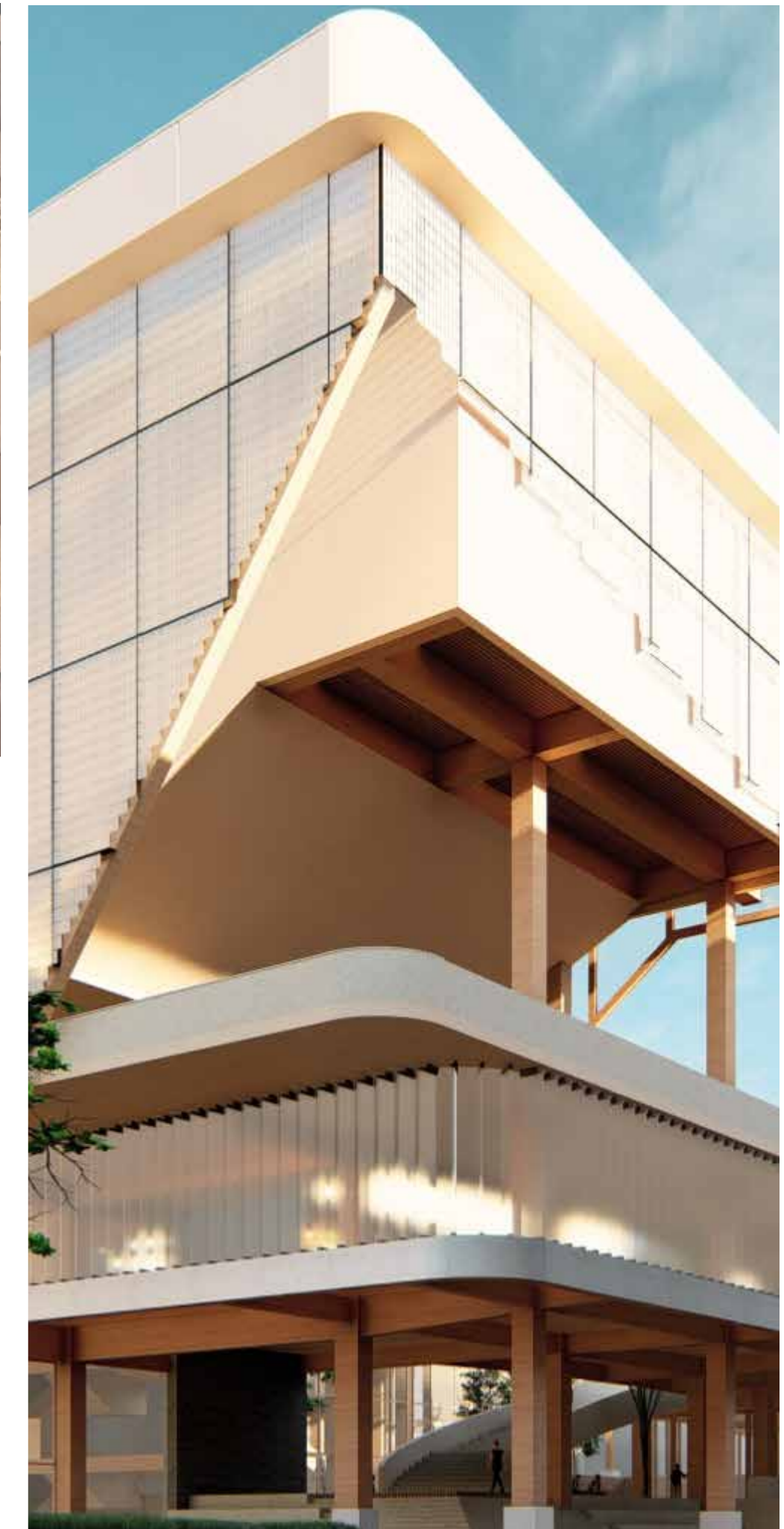


SECTION DETAIL ①
SCALE 1:20



SECTION DETAIL ②
SCALE 1:20





CONTRIBUTION

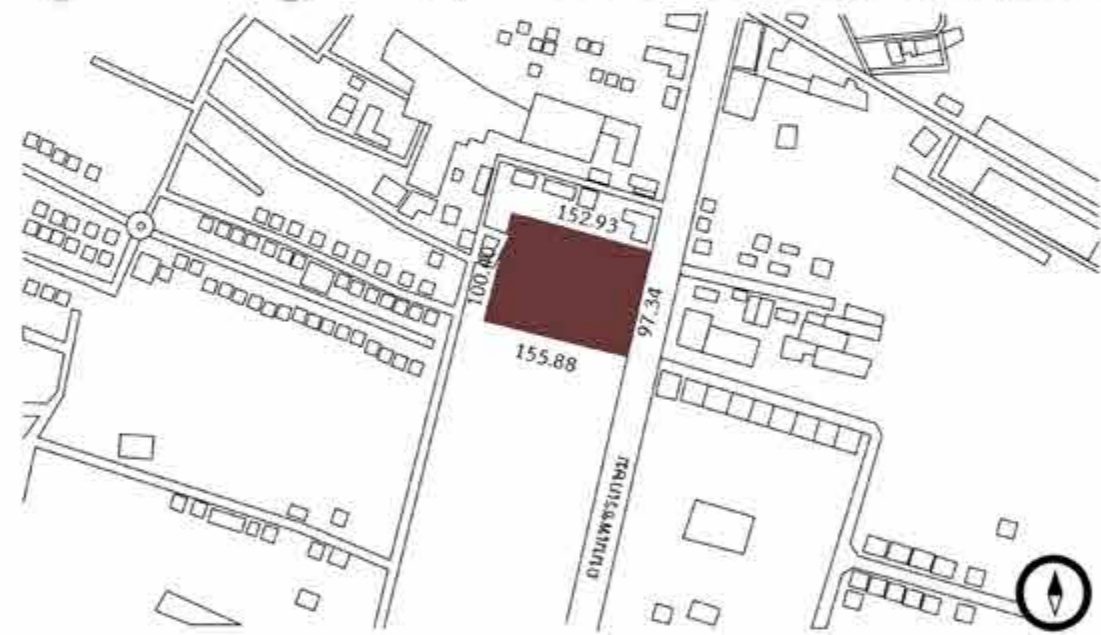
- RESEARCH, CONCEPT AND DESIGN DEVELOPMENT
- 3D MODELING BY SKETCHUP
- DRAWING BY AUTOCAD, PHOTOSHOP, AND PROCREATE
- INTERIOR AND EXTERIOR VISUALISATION BY LUMION
- CONSTRUCTION DETAILS BY AUTOCAD
- PHYSICAL MODELS BY LASER CUT AND CNC

CHA-AM INTERNATIONAL HOSPITAL

BACHELOR THESIS 2017

LOCATION

CHA-AM, PHETCHABURI, THAILAND,
3KM FROM CHA-AM BEACH.



CHA-AM IS A TOURIST DESTINATION WITH SOME 4,835,371 VISITORS PER ANNUM ATTRACTING CONSIDERABLE TOURIST SPEND WHICH BOOSTS THE THAI ECONOMY.

THERE ARE MANY NATURAL ATTRACTIONS INCLUDING THE BEACH AREA. CONSIDERABLE TRANSPORT INFRASTRUCTURE EXISTS INCLUDING BUSES, PUBLIC VANS AND TRAINS WITH A HIGH SPEED LINK TO BANGKOK AND MALAYSIA/ SINGAPORE UNDER CONSTRUCTION.

RIGHT ABOVE :
THE APPROACH TO THE BUILDING FROM THE ROAD.

LEFT :
LOCATION OF THE PROJECT.



THE HOSPITAL HAS 200 BEDS IS IN 40,000 SQ M AND CATERS TO THE PREMIUM MARKET OF HIGH AND MIDDLE INCOME EARNERS.

THE PURPOSE OF THIS PROJECT IS TO CREATE A GOVERNMENTAL POLICY

BEING A MEDICAL TOURIST HUB NOT ONLY ATTRACTS FOREIGN CURRENCY BUT ALSO BOOSTS TOURISM IN GENERAL.

ELEVATION :
1. ELEVATION A 2. ELEVATION B



1



2



ABOVE :
THE PICTURE ILLUSTRATE A PATIENT ROOM.

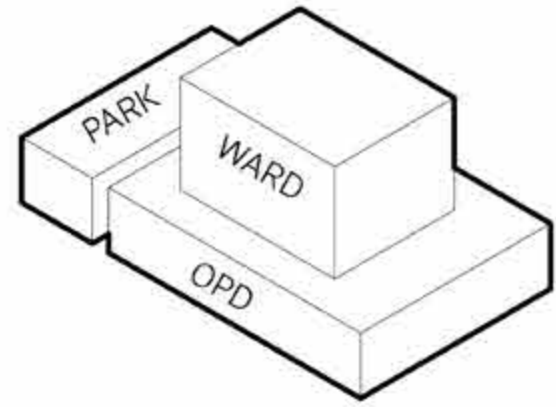
CONCEPT
"NATUROPATHY"

I BRING RELAXATION FROM NATURAL TO THE USERS. I BELIEVE THAT "THE BODY HAS THE ABILITY TO HEAL ITSELF".

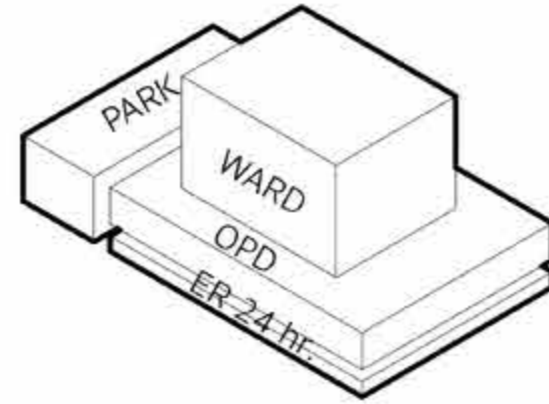
"NATUROPATHY CONCEPT" CAN ASSIST PATIENT TREATMENT AND REHABILITATION. ADDITIONALLY, IT MAY PROMOTE STAFF EFFICIENCY IN THE HOSPITAL AS IT ALLOWS MORE RELAXATION AND COMFORT. THESE MAY INCREASE THE EFFECTIVENESS OF TREATMENT IN PATIENTS AND LEVEL OF HAPPINESS OF WORKERS WHILE REDUCING THE PERIOD OF HOSPITALISATION. THE CONCEPT FOCUS-



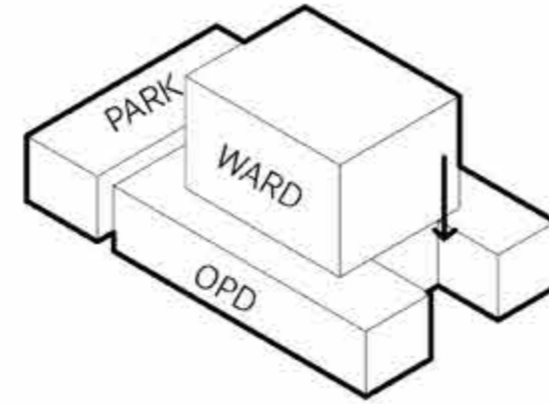
CONCEPT DIAGRAM



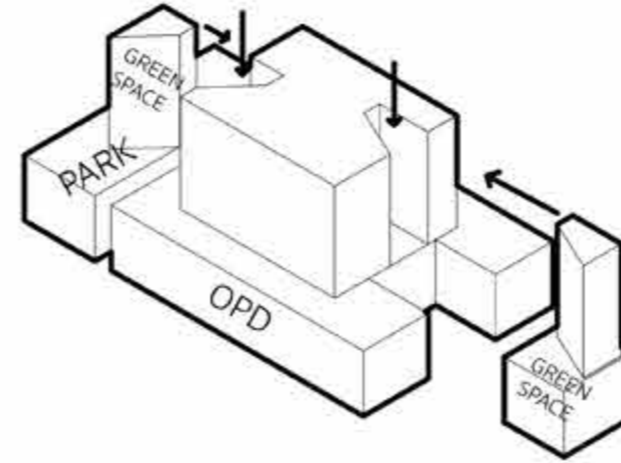
THERE IS A PARKING FACILITY AND SERVICES BUILDING TO THE REAR (WEST SIDE), RESULTING IN DECREASE SOLAR HEAT GAIN.



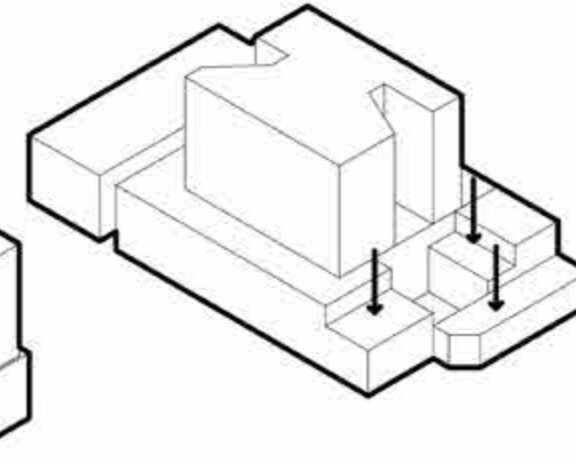
THE GROUND FLOOR IS DESIGNED TO BE 24-HOUR OPD.



OPENING A CENTRAL COURTYARD ALLOWS NATURAL LIGHTING INTO THE BUILDING.

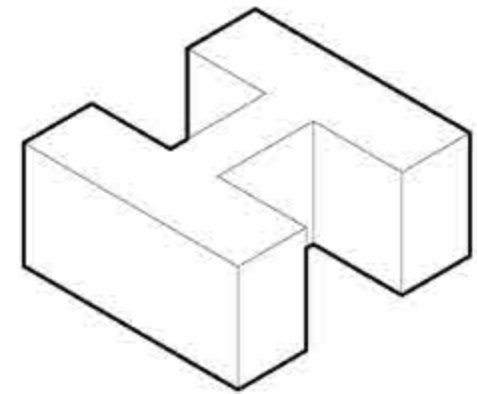


ADDING GREEN SPACE FOR THE OCCUPIER'S RELAXATION WHILST IN THE BUILDING.



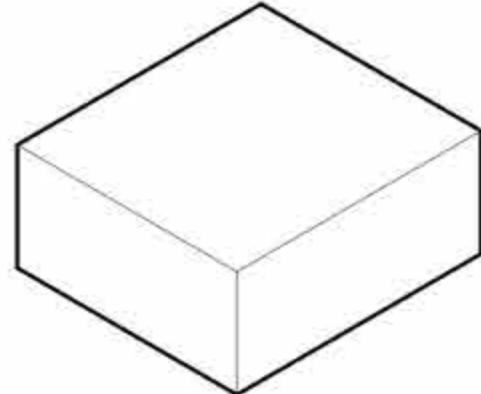
THE FRONT OF THE BUILDING HAS BEEN PUSHED OUTWARDS TO CREATE AN APPROACH TO THE BUILDING.

WORD DIAGRAM



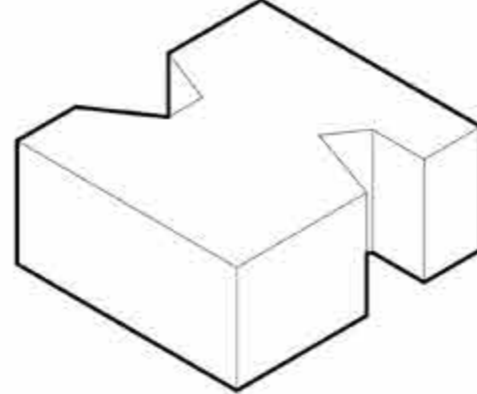
H-FORM

IT AFFORDS A GOOD VIEW OF THE BUILDING AND ALLOWS SHIELDING FROM SUNLIGHT HOWEVER THE CORRIDORS BECOME TOO LONG.



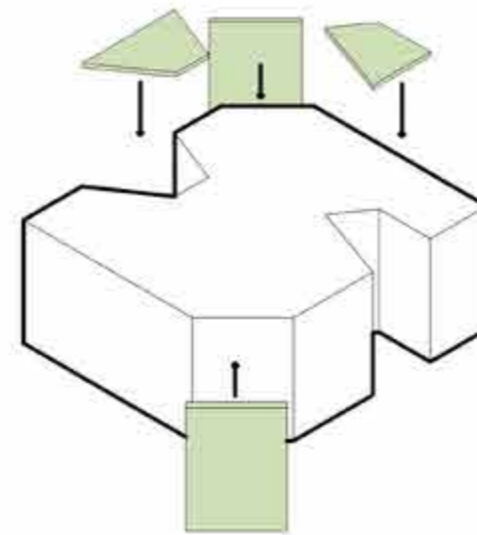
O-FORM

IT CAN REDUCE THE CORRIDOR LENGTH BETWEEN THE DOCTOR'S ROOM AND THE PATIENT ROOMS FACILITATING THE EFFECTIVE PROVISION OF MEDICAL CARE.



NEW-FORM

IT IS AN INTEGRATION BETWEEN THE H-FORM AND O-FORM AND ALLOWS FOR EFFICIENT PATIENT CARE WHILST REDUCING ENERGY CONSUMPTION IN THE HOSPITAL DUE TO SOLAR ABSORPTION.



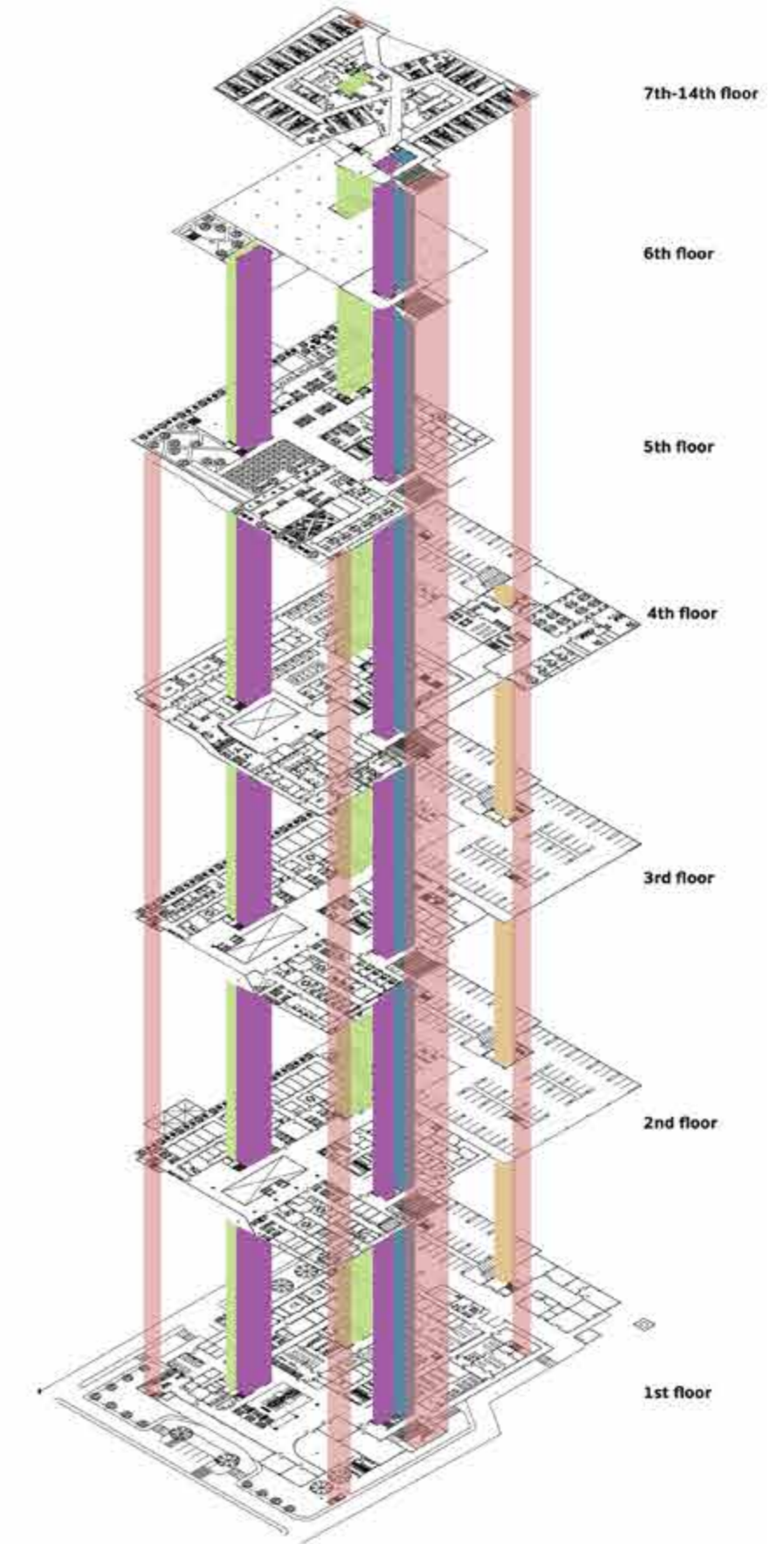
CUT AT THE ANGLE

THE WARD IS CUT AND GREEN SPACE IS SUBSTITUTED.



ALL PATIENT ROOMS WILL LOOK ONTO AND TOUCH NATURAL SPACE (DEPENDING ON THE RATE OF EACH ROOM).

LOGISTIC SYSTEM



- GENERAL LIFT
- DIRTY LIFT
- CLEAN LIFT, (FOR DOCTORS, NURSES AND STAFF)
- LIFT TO PARKING LEVEL
- FIRE ESCAPE



WAITING AREA GROUND FLOOR

- THE BUILDING IS DESIGNED TO BRING NATURE INTO THE BUILDING AS MUCH AS POSSIBLE.
- THE BUILDING USES NATURAL LIGHT INSTEAD OF ARTIFICIAL LIGHT.
- WOOD IS USED IN SOME AREAS TO GIVE A FRIENDLY AND WARM ATMOSPHERE.
- MOST AREAS ARE HOWEVER PREDOMINANTLY WHITE TO ACCENTUATE THE FEELING OF CLEANLINESS.



GROUND FLOOR PLAN





FIRST FLOOR PLAN

- | | |
|---|--|
| <ul style="list-style-type: none"> - ENT CLINIC - EYE CLINIC - MEDICAL CLINIC - ORTHOPAEDIC CENTRE - INFECTIOUS DISEASE CLINIC - SURGICAL CLINIC - BLOOD DRAW & PATHOLOGY - PARKING | <ul style="list-style-type: none"> GENERAL CORRIDOR SOIL CORRIDOR STERILE CORRIDOR SYSTEM FIRE EXIT |
|---|--|



SECOND FLOOR PLAN



THIRD FLOOR PLAN



FOURTH FLOOR PLAN





LEFT :
PERSPECTIVE OF THE HYDROTHERAPY ROOM.



RIGHT :
PERSPECTIVE OF THE MASSAGE THERAPY ROOM.



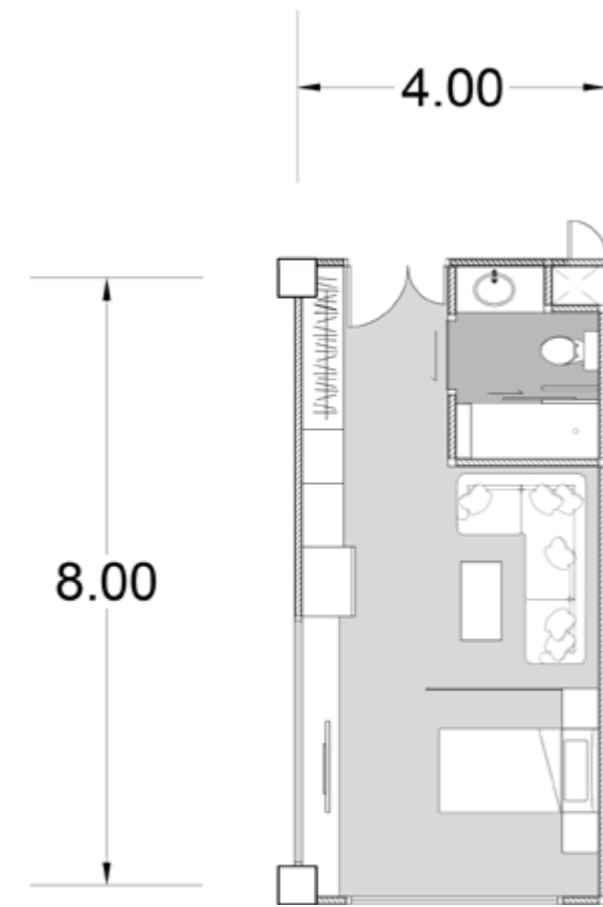
RIGHT :
PERSPECTIVE OF THE EXAMINATION ROOM



SEVENTH FLOOR PLAN



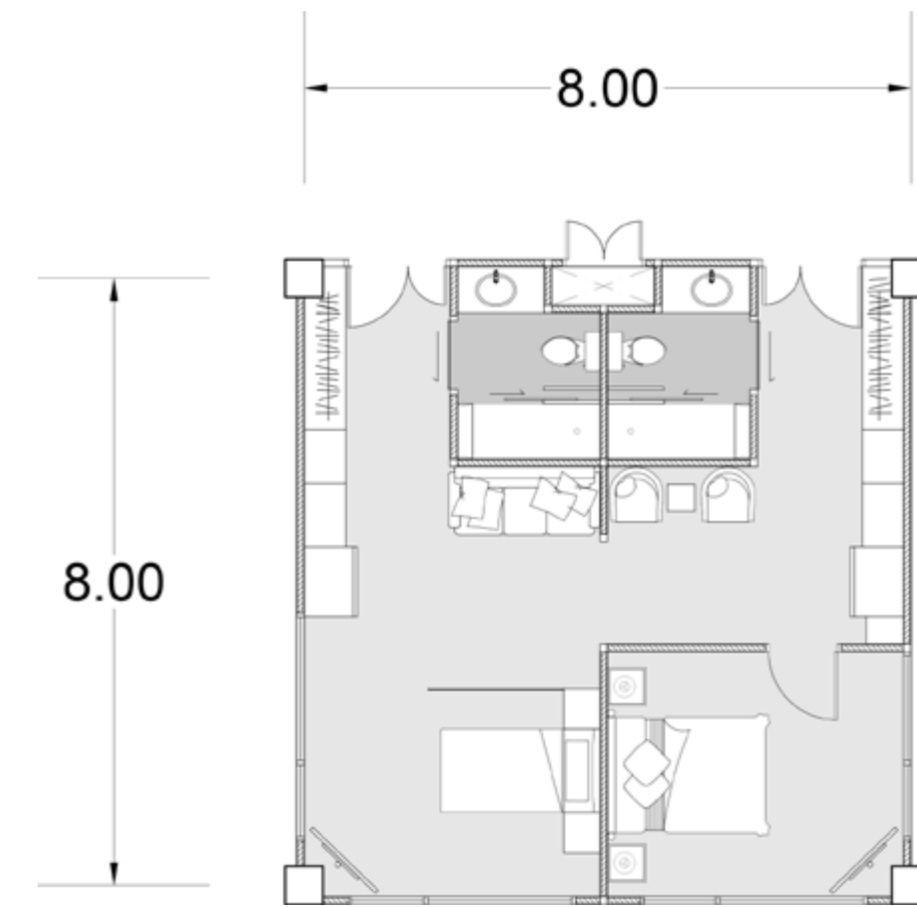
EIGHTH - SIXTEENTH FLOOR PLAN



SINGLE BED ROOM



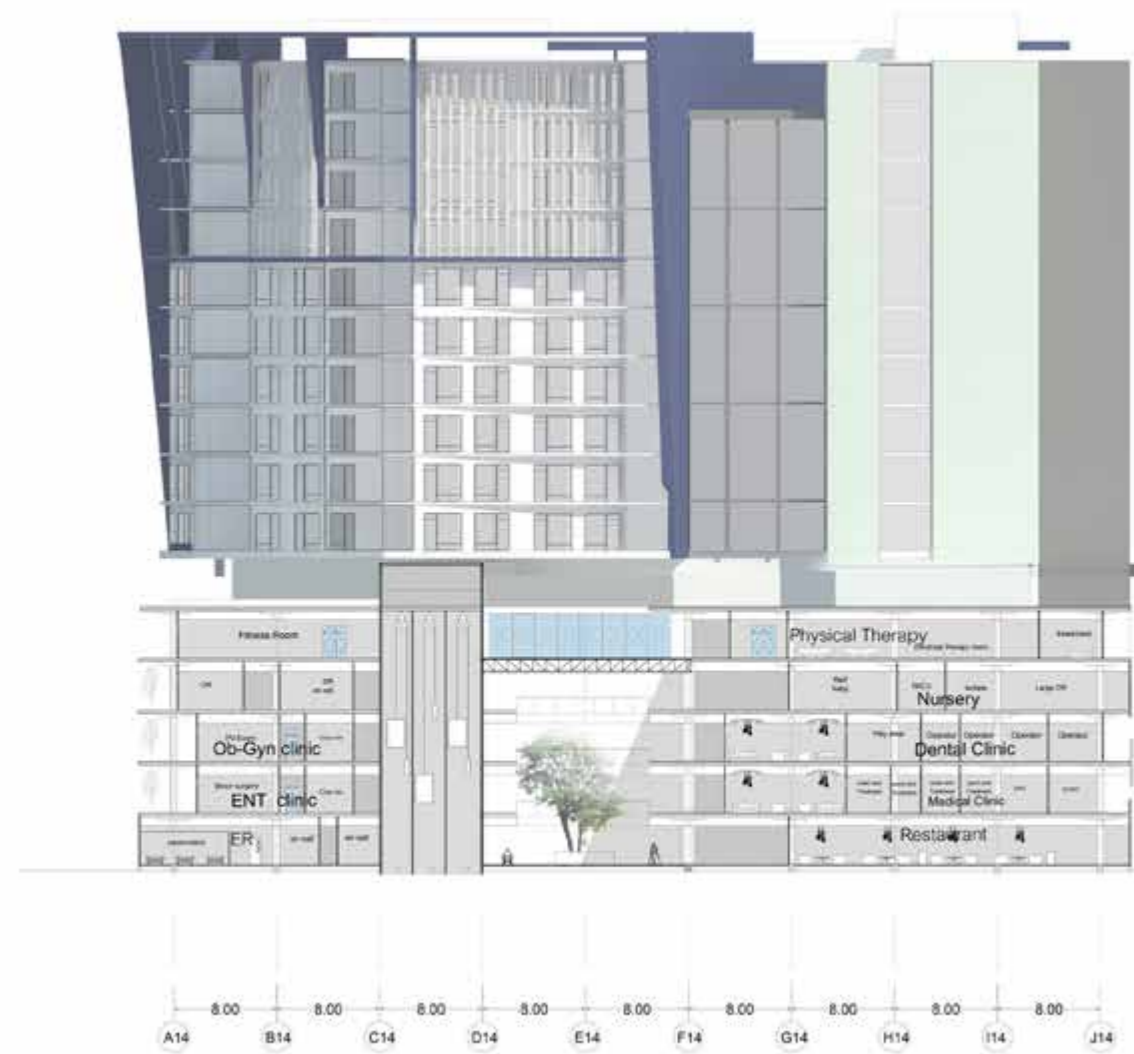
GRAND SINGLE BED



SUITE ROOM



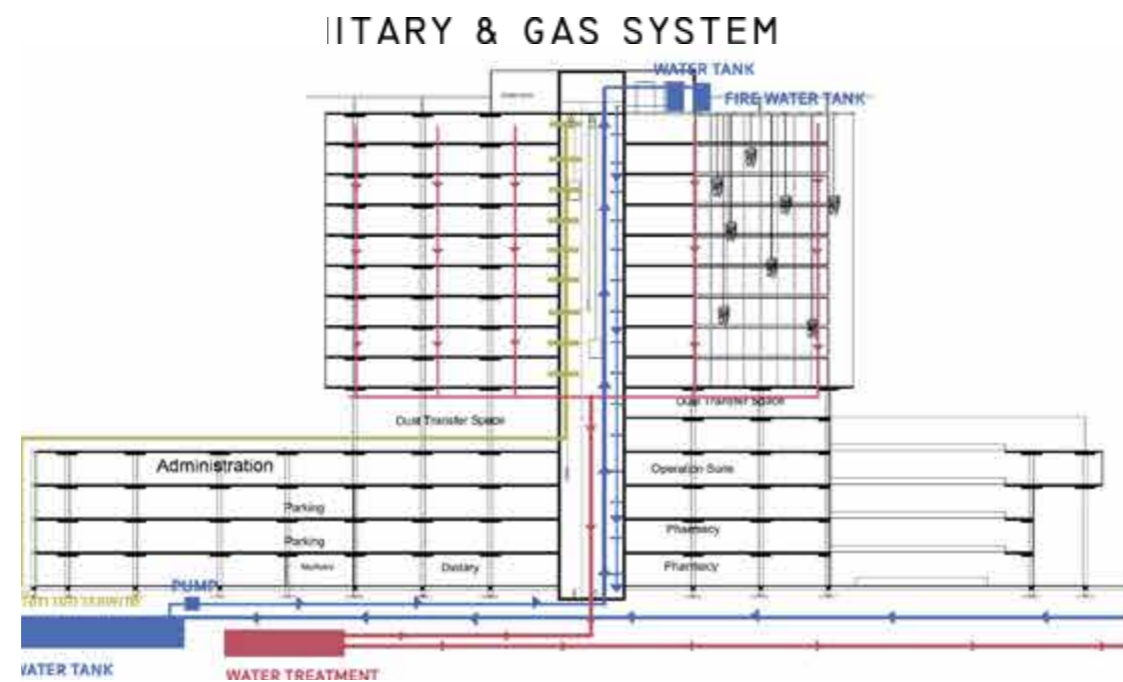
VIP SUITE ROOM



SECTION A
scale 1:200

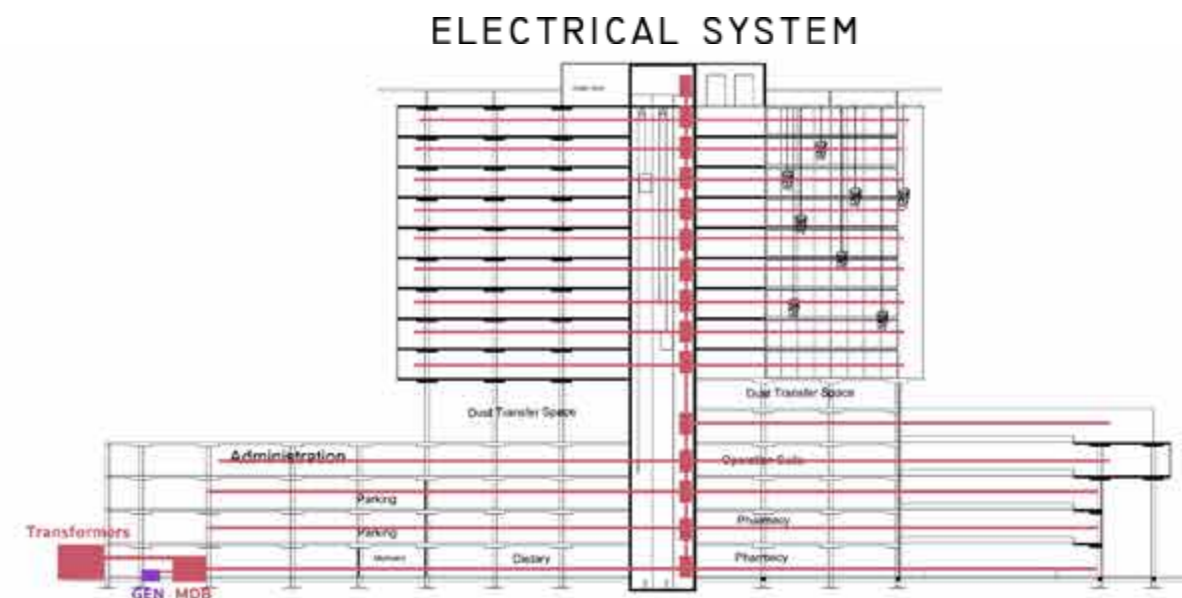


SECTION B
scale 1:200



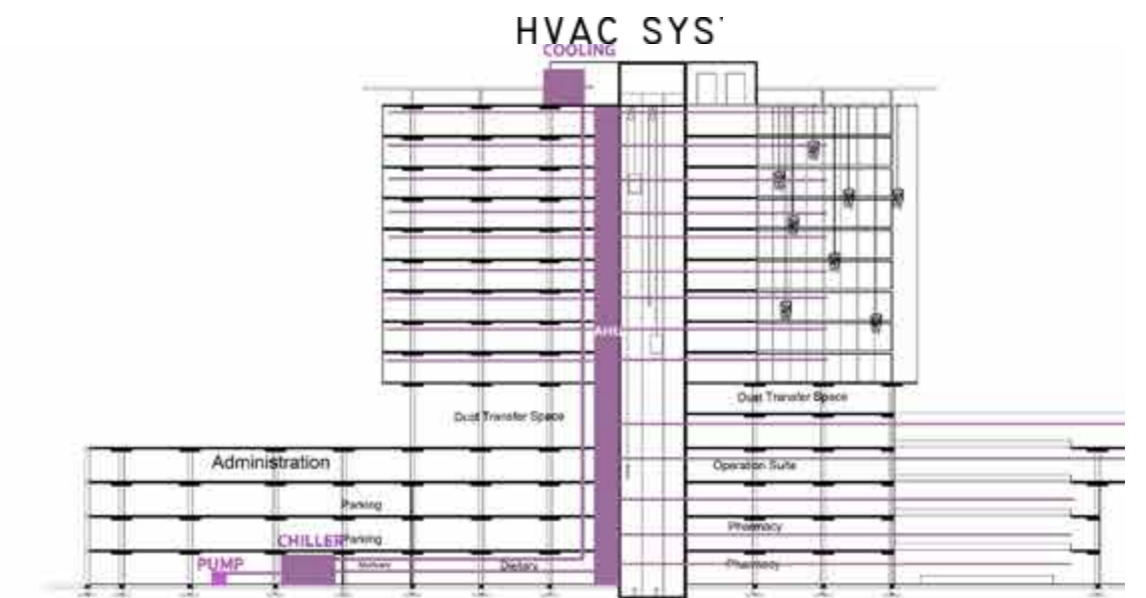
GENERAL HOSPITALS USING MODERN APPLIANCES. MAXIMUM CAPACITY IS 3,000 WATTS/BED (ON AVERAGE), SO THE 200-BED HOSPITAL REQUIRES 600 KW OF ELECTRICITY. BUT FOR PROPER AND SAFE USE IT SHOULD BE 100%.

THIS HOSPITAL SHOULD USE 600 KW OF POWER.

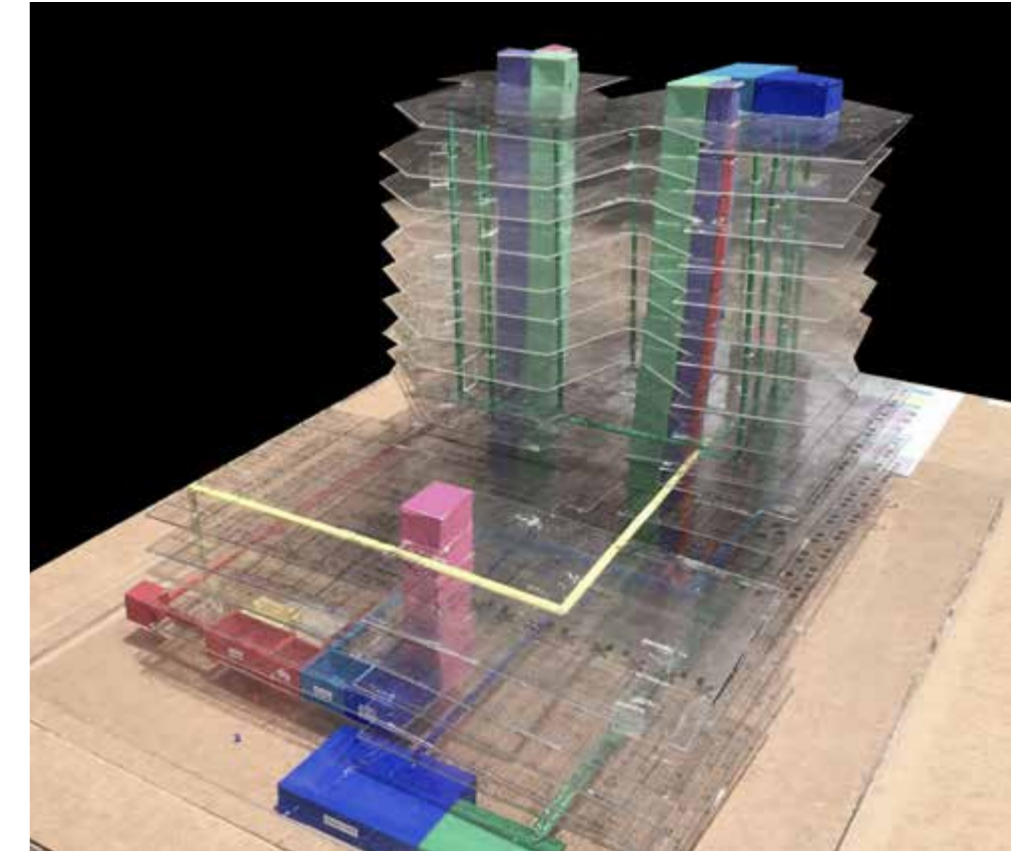


WATER CONSUMPTION OF BUILDING USERS = 296 CUBIC METRES
HOT WATER CONSUMPTION IN THE PROJECT = 180 CUBIC METRES
WATER CONSUMPTION OF AIR CONDITIONING SYSTEM = 175 CUBIC METRES
200-BED HOSPITAL WILL HAVE A WATER RESERVE OF 100 CUBIC METRES.

**THE 200 BED HOSPITAL USES A TOTAL OF 751 CUBIC METRES OF WATER
THE 200 BED HOSPITAL'S WASTE WATER TREATMENT SYSTEM WILL HAVE A CAPACITY OF 952 CUBIC METRES.**



THE AIR CONDITIONING SYSTEM OF THE PROJECT IS 971.41 TONS OR A 972 TONS.



CONTRIBUTION

- RESEARCH, CONCEPT AND DESIGN DEVELOPMENT
- 3D MODELING BY SKETCHUP
- DRAWING BY AUTOCAD AND PHOTOSHOP
- INTERIOR AND EXTERIOR VISUALISATION BY V-RAY AND PHOTOSHOP
- PHYSICAL MODELS BY HANDS

COMMUNITY AND GARDEN CENTER

INTEGRATED DESIGN 2021

LOCATION
63 MYRTLE ST, CHIPPENDALE NSW,
AUSTRALIA



A RENOVATED COMMUNITY CENTRE CONNECTED TO A NEW COMMUNAL COOKING SCHOOL, BASED ON THE CONCEPT OF SUSTAINABILITY, REFLECTS THE IDENTITY OF THE CHIPPENDALE COMMUNITY.



RIGHT ABOVE :
THE APPROACH TO THE BUILDING FROM PINE ST.
LEFT : LOCATION OF THE PROJECT.

DIFFERENT TECTONICS WERE TESTED TO COME UP WITH THE MOST SUSTAINABLE METHOD OF CONSTRUCTION FOR THE BUILDING WHILE STILL REFLECTING THE HERITAGE OF THE NEIGHBORHOOD.

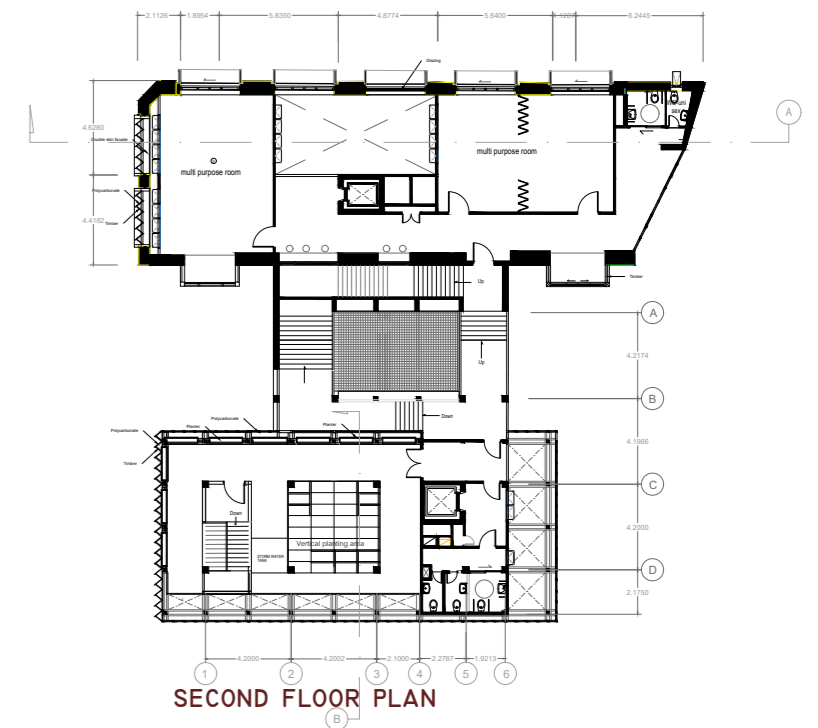
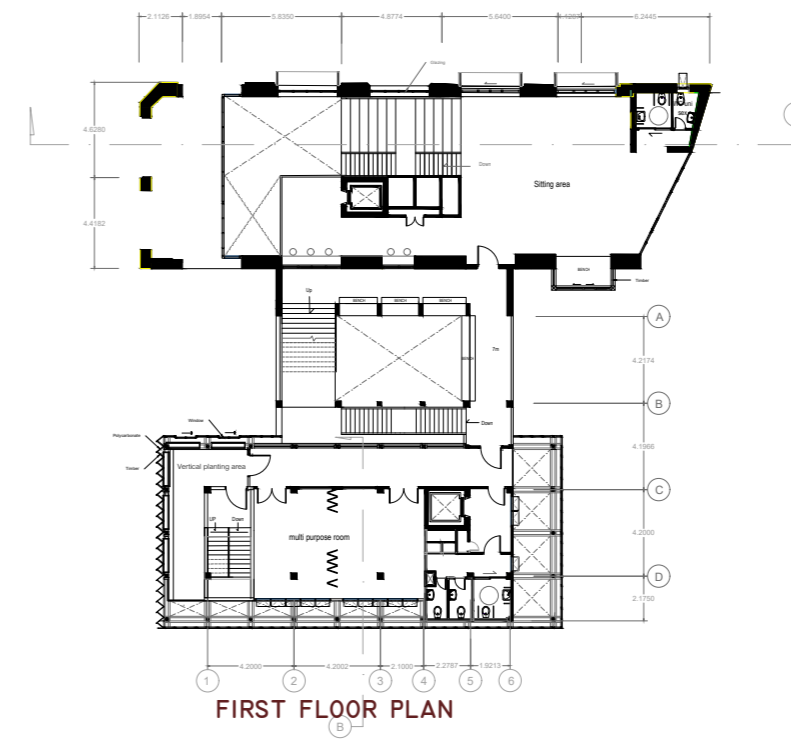
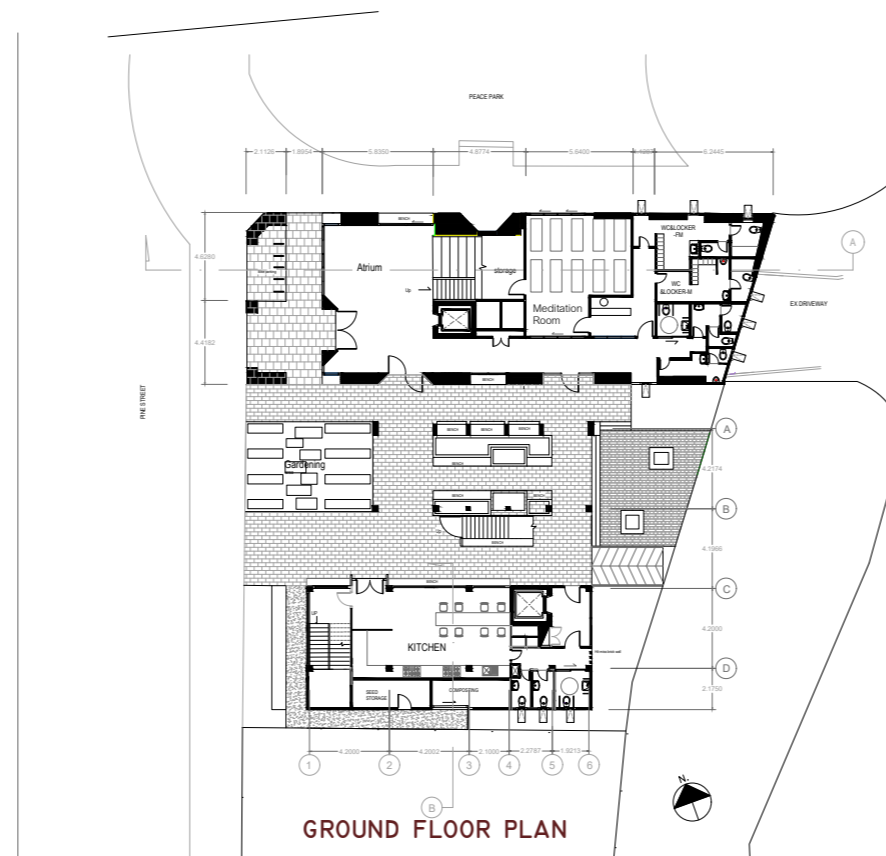
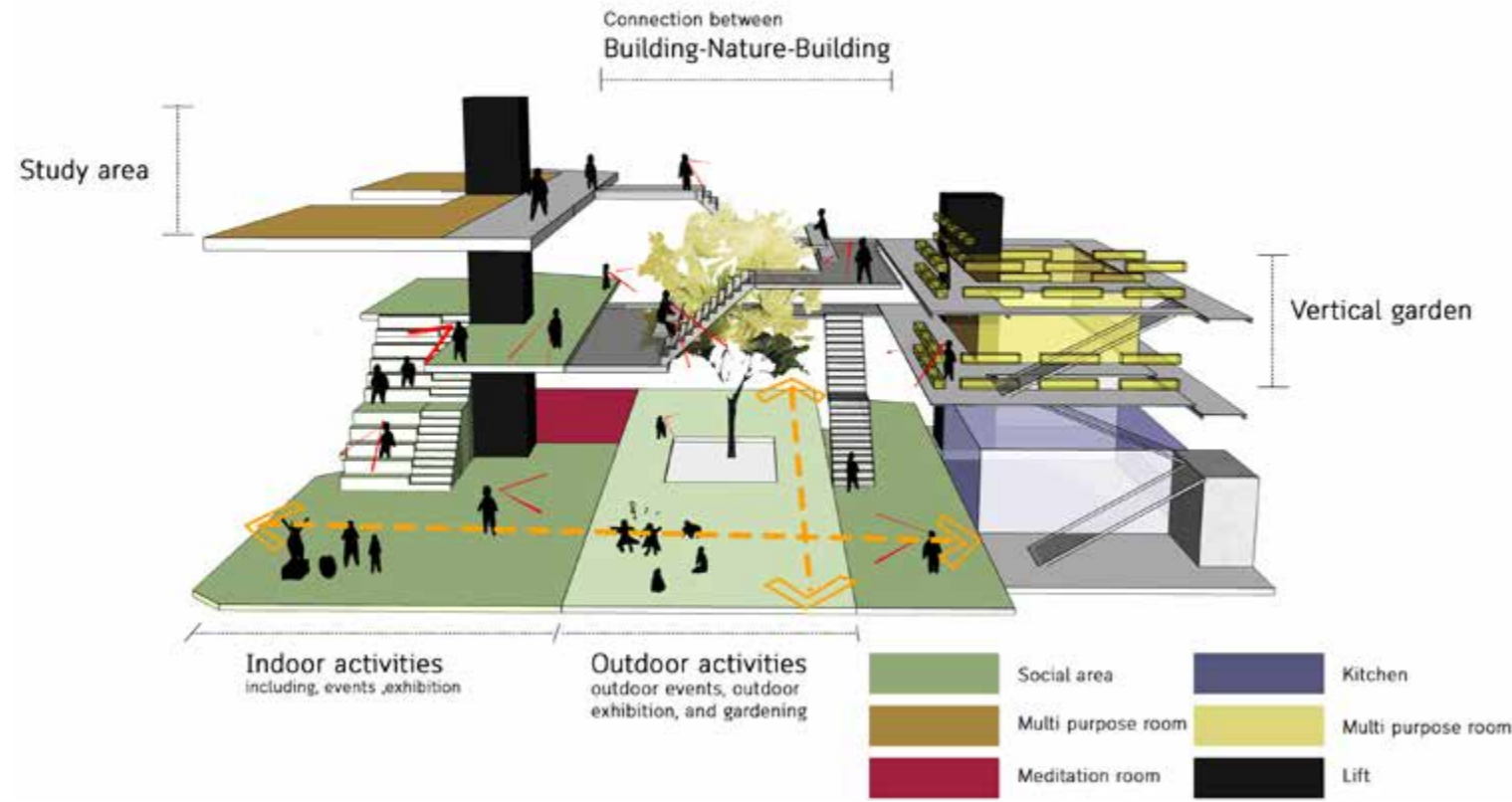
ELEVATION
1. ELEVATION A 2. ELEVATION B



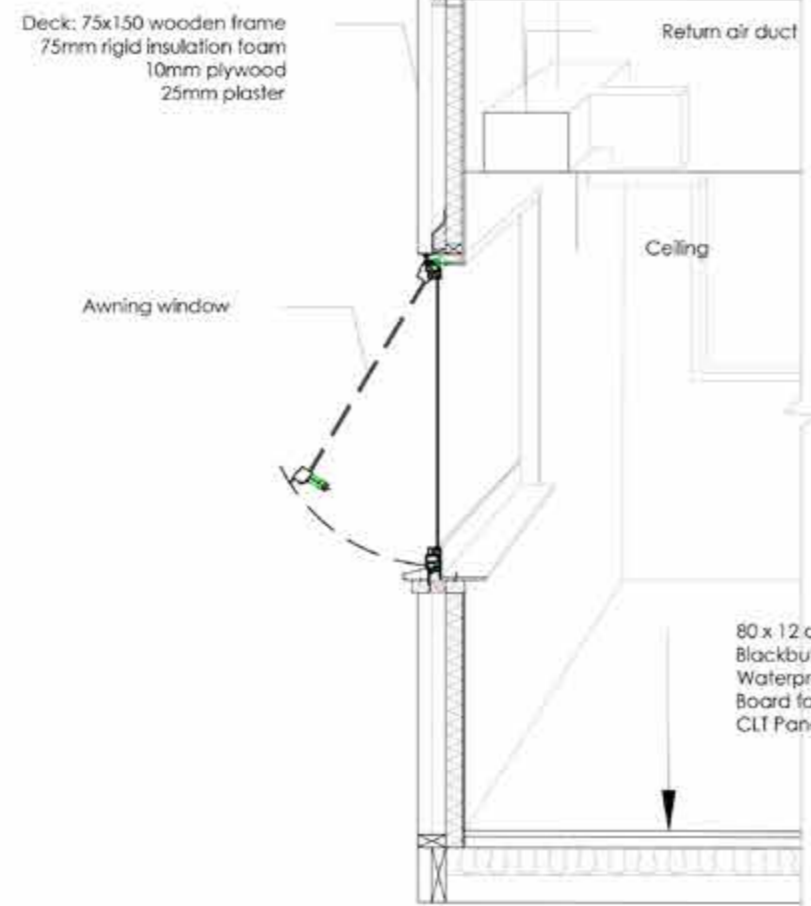
1



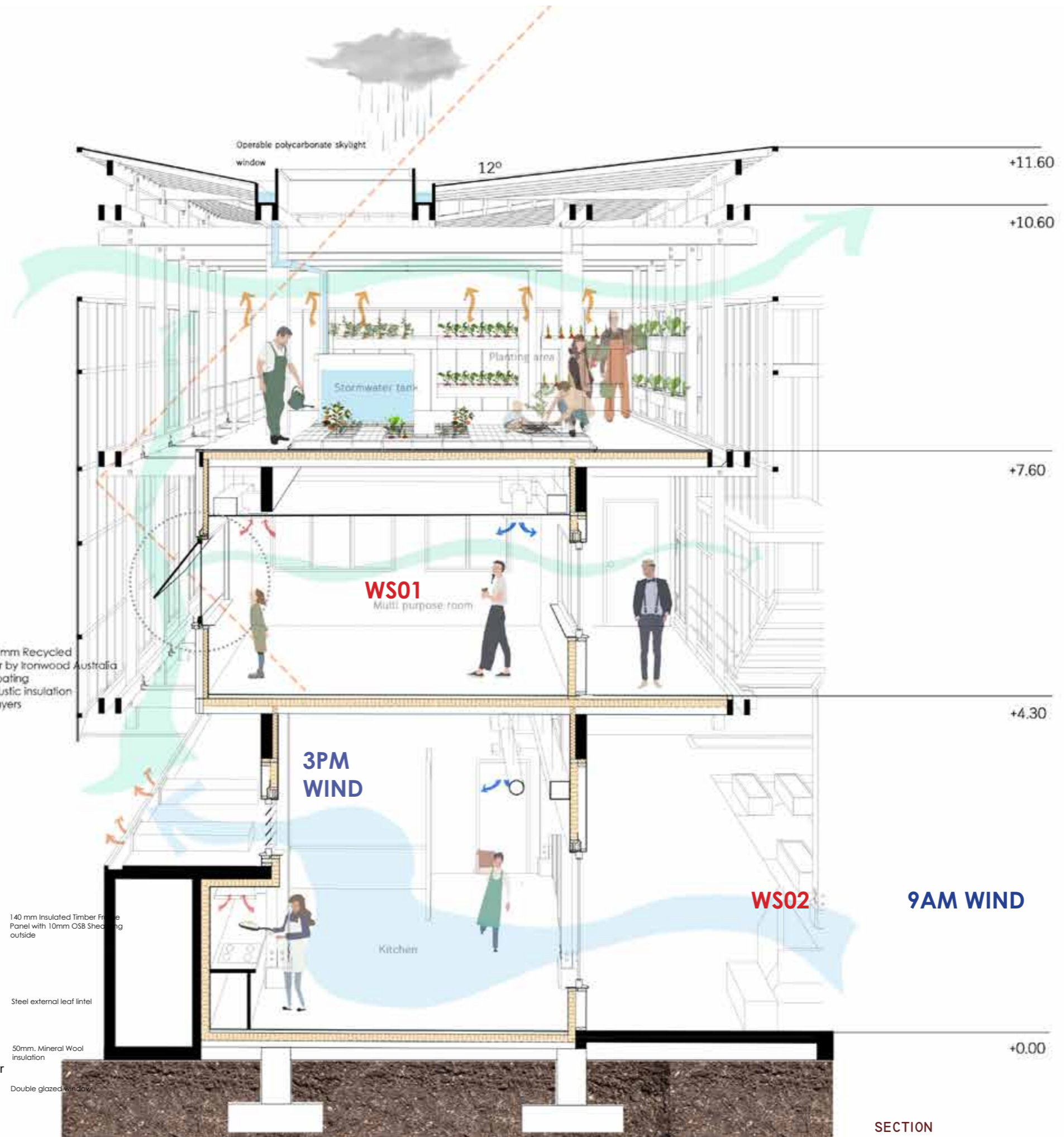
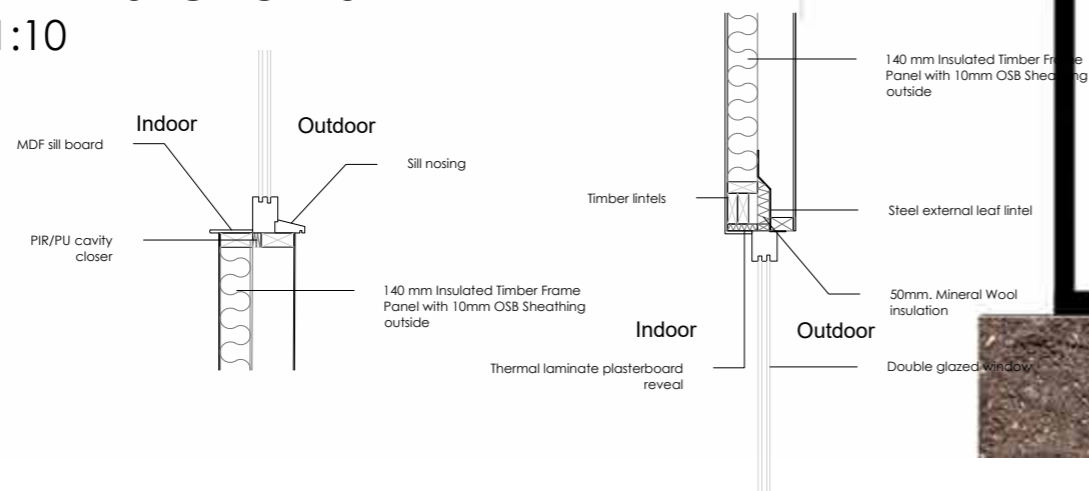
2

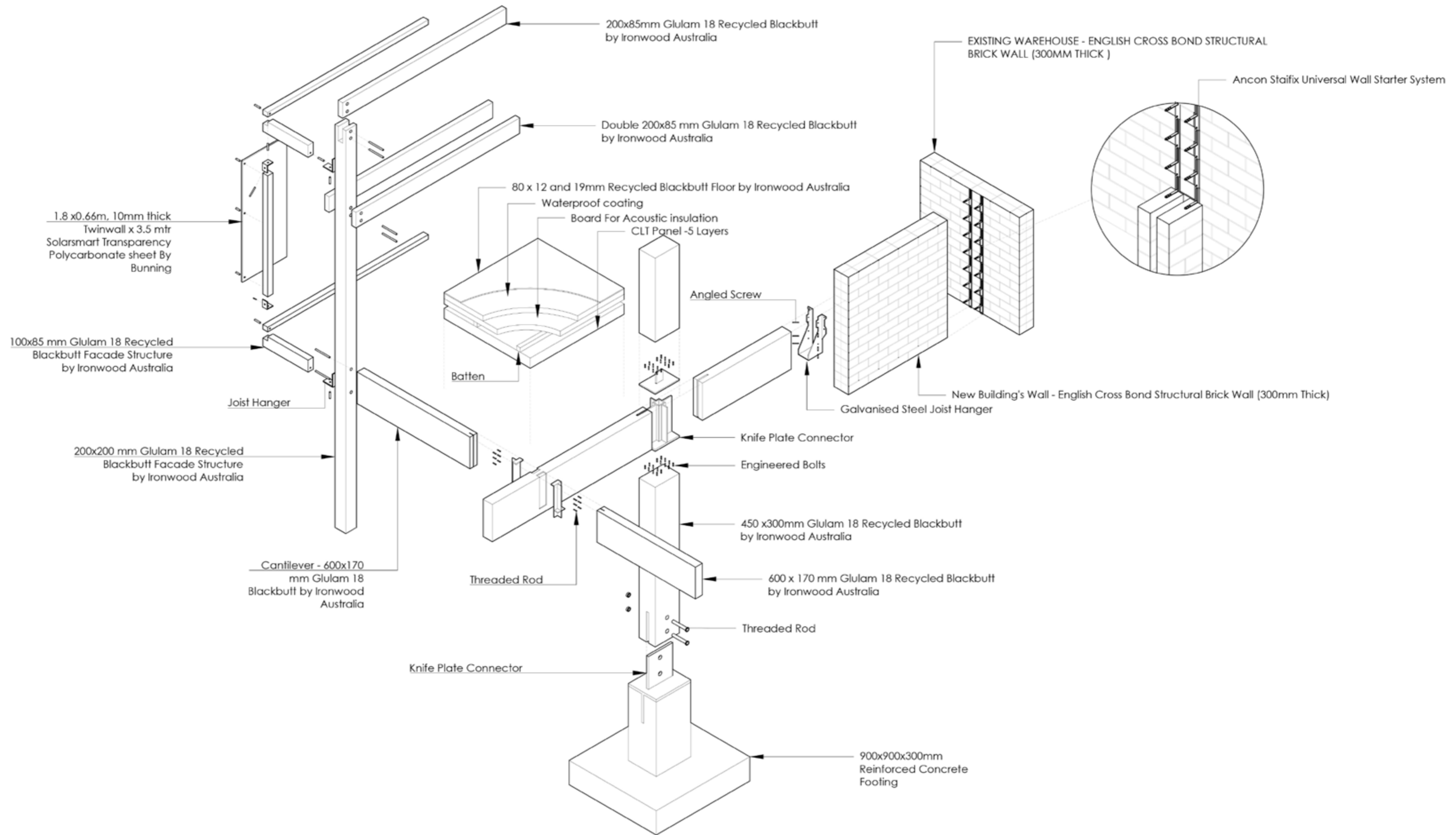


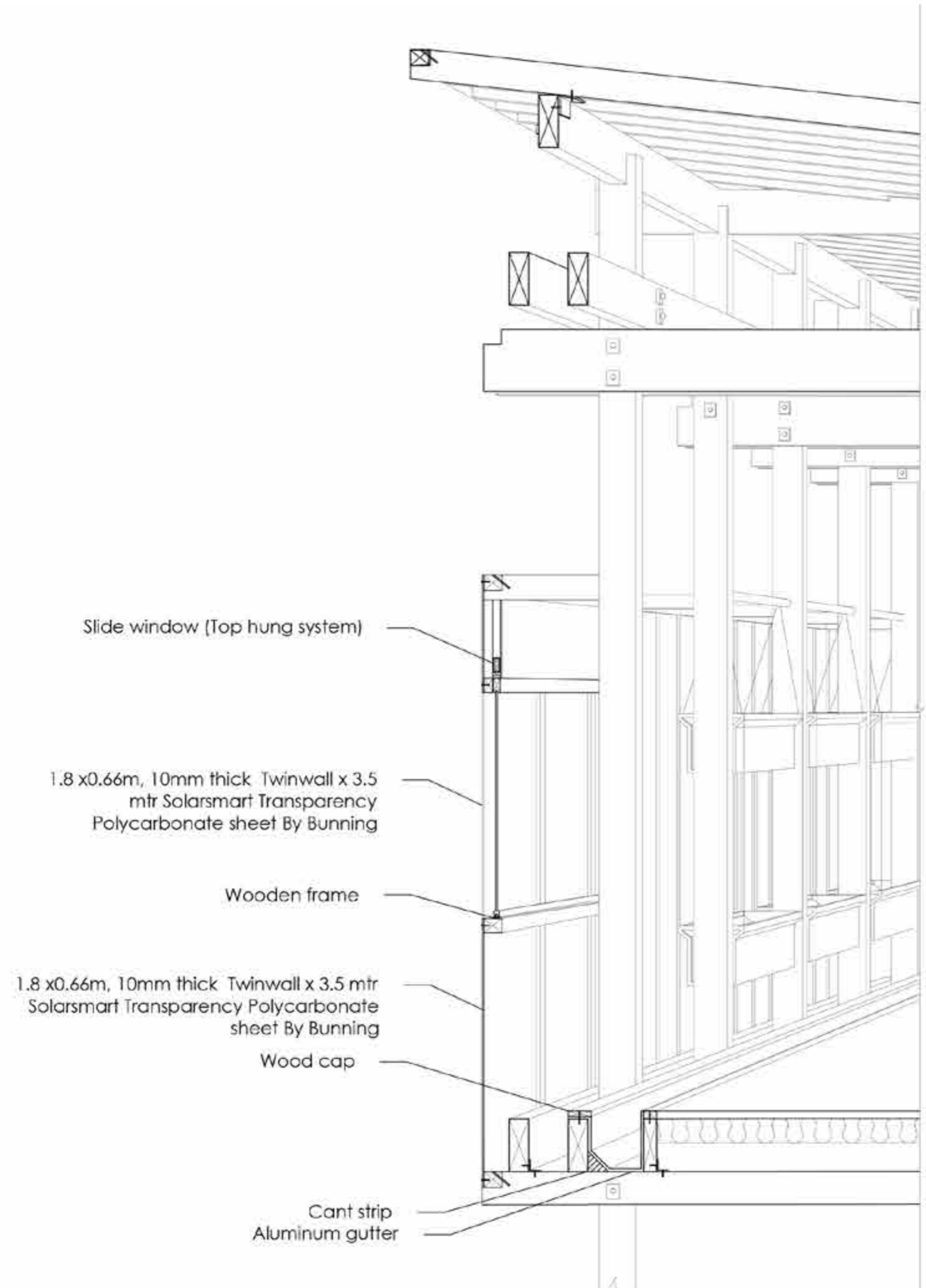
WALL SECTION 01
1:25



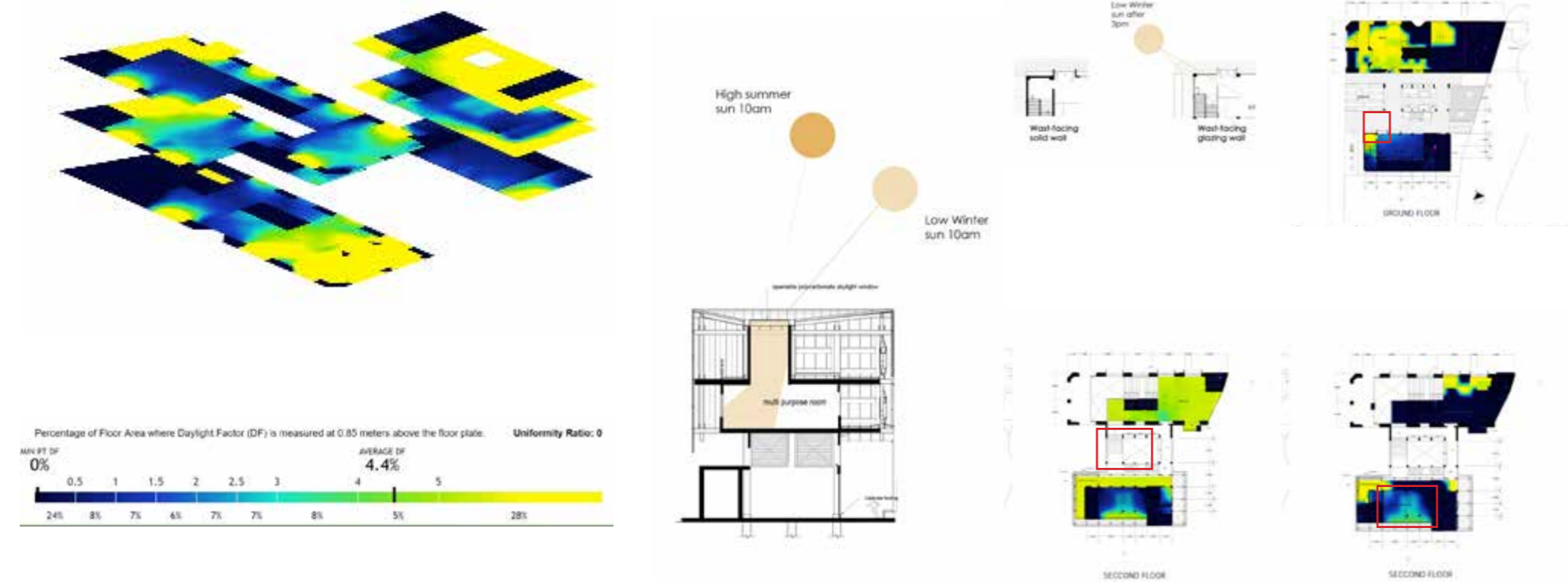
WALL SECTION 02
1:10



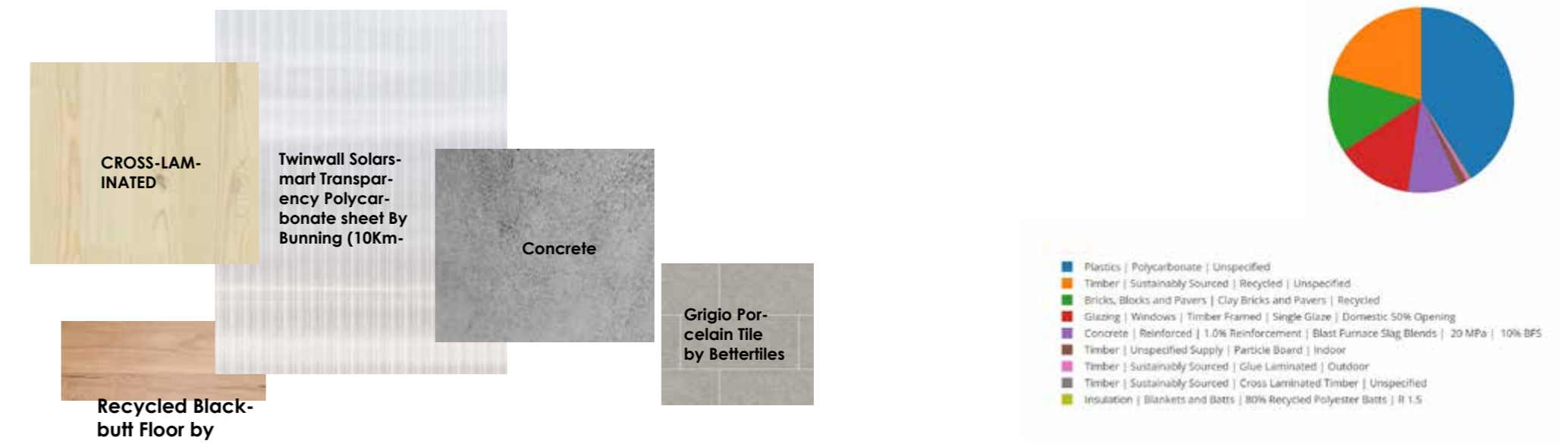




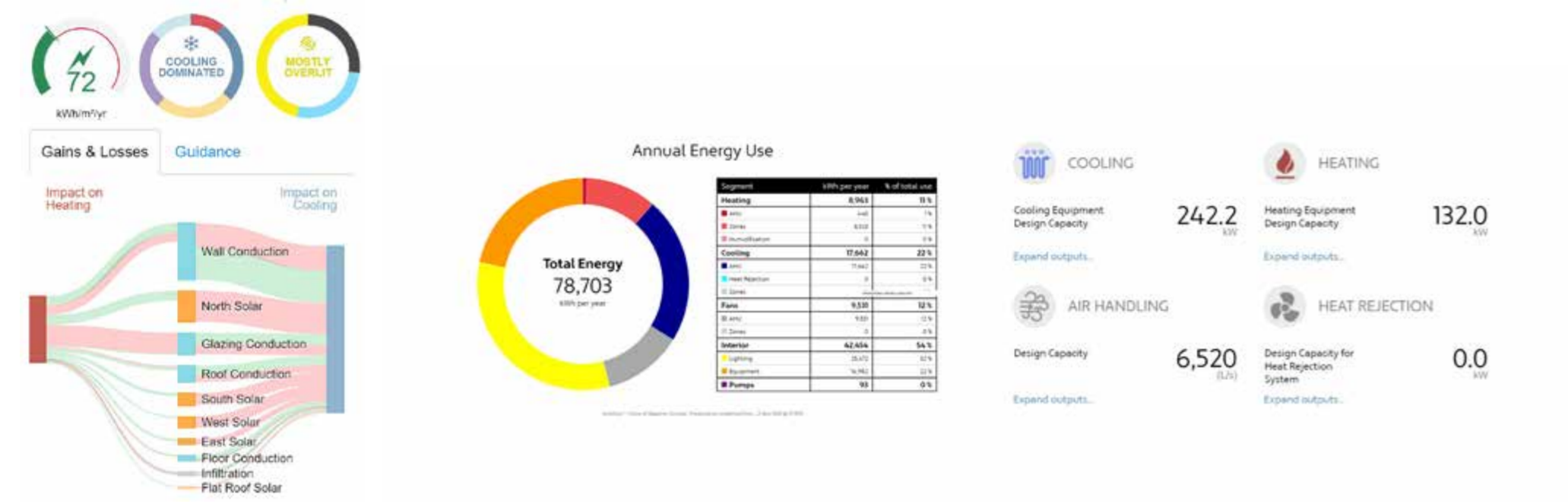
DAYLIGHTING ANALYSIS



EMBODIED ENERGY ANALYSIS



OPERATIONAL ENERGY



EMBODIED ENERGY ANALYSIS

RESULTS PER eTool CATEGORY

Category	Description	Quantity	Product Life	GWP(kg CO ₂ eq)
Bricks, Blocks and Pavers Clay Bricks and Pavers Recycled	Standard foundations brick wall	119.8 m ³	150 yrs	20,028
Standard foundations outdoor brick floor	167.7 m ³	150 yrs	16,154	
Concrete Reinforced 1.0% Reinforcement Blast Furnace Slag Blends 20 MPa 10% BFS	Standard foundations concrete slabs (warehouse)	44 m ³	150 yrs	23,487
Glazing Windows Timber Framed Single Glaze Domestic 50% Opening	Standard foundations window	320.46 m ² (Default) 80 yrs		34,881
Insulation Blankets and Batts 80% Recycled Polyester Batts R 1.5	Standard foundations insulation	386.8 m ² (Default) 55 yrs		171
Plastics Polycarbonate Unspecified	Standard foundations polycarbonate on roof top	8 m ³	150 yrs	106,642
Standard foundations timber floor	695.4 kg	75 yrs	530	
Timber Sustainably Sourced Glue Laminated Outdoor	Standard foundations facade frame	2,040.5 m ³	75 yrs	1,471
Timber Sustainably Sourced Recycled Unspecified	Standard foundations timber structure	79.66 kg	150 yrs	106
Standard foundations roof structure (timber)	57.96 m ³	150 yrs	53,064	
Timber Unspecified Supply Particle Board Indoor	Standard foundations partition wall	2.64 m ³	75 yrs	3,936
EPDs				0
Total				260,469

Impact Summary

Global Warming Potential, GWP

Products: 158,555

Transport: 12,426

Construction: 8,434

Recurring: 0

End of Life: 80,651

Product Reuse: 403

EPD: 0

Total: 260,469

Impact Summary

Embodied Energy

Products: 1,975,155

Transport: 31,340

Construction: 2,536

Recurring: 0

End of Life: 42,330

Product Reuse: 37,872

EPD: 0

Total: 2,089,233



CONTRIBUTION

- CONCEPT AND DESIGN DEVELOPMENT
- 3D MODELING BY SKETCHUP
- DRAWING BY AUTOCAD, PROCREATE, AND PHOTOSHOP
- INTERIOR AND EXTERIOR VISUALISATION BY LUMION



T
H
A
N
K

Y
O
U

SIRAWIT KLINGAM
CALL: +61421109424 AUSTRALIA
+66885726279 THAILAND

E-MAIL:TAH_TACK@HOTMAIL.COM