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ATELIER
OF ARCHITECTS

SQ

8.18

AFRICVS
GREEN BUILDING
DESIGN & CONSULTING

THE NEW HEADQUARTER OF COUNCIL OF ENGINEERS THAILAND

AATTN8A

ATIVICH STUDIO

ATELIER OF ARCHITECTS

TEAM SQ

TEAMG

NEXT 2ND INNOVATION

8.18 STUDIO

AFRICVS

THE INTERNATIONAL PROPERTY AWARDS

MIXED-USE ARCHITECTURE: E7

Main Entrance

COE building, located in one of the busiest areas of Bangkok, provides a friendly entrance with a gigantic roof garden. Public activities or events can be seen from the light-rail train (yellow line) while local people can spend their time on this public area.

Contents


สภาวิศวกร
COUNCIL OF ENGINEERS

A Overview :
Design Brief and Site considerations

1.Describe client main requirement, occupancy and facilities. Explain all use of the building

Client’s background and objective

Council of Engineers Thailand (COE) is a non-profit organization established in 1999. The professional engineering services in Thailand are regulated and controlled under the Act which is the central regulatory body for engineering services in Thailand.

Lists of COE’s objective

1. to issue license to applicants for the Regulated Engineering Profession
2. to suspend or revoke the license
3. to certify the degree, diploma or certificate required for practicing the Regulated Engineering Profession
4. to certify knowledge and experience of a person practicing the Regulated Engineering Profession
5. to enhance and improve skill of engineers

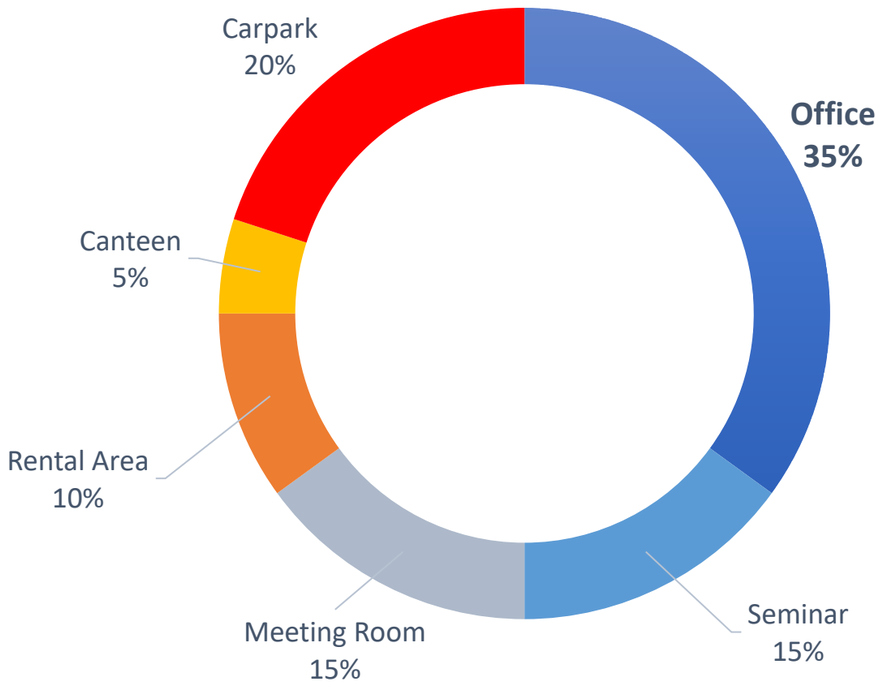
Lists of COE’s Activities

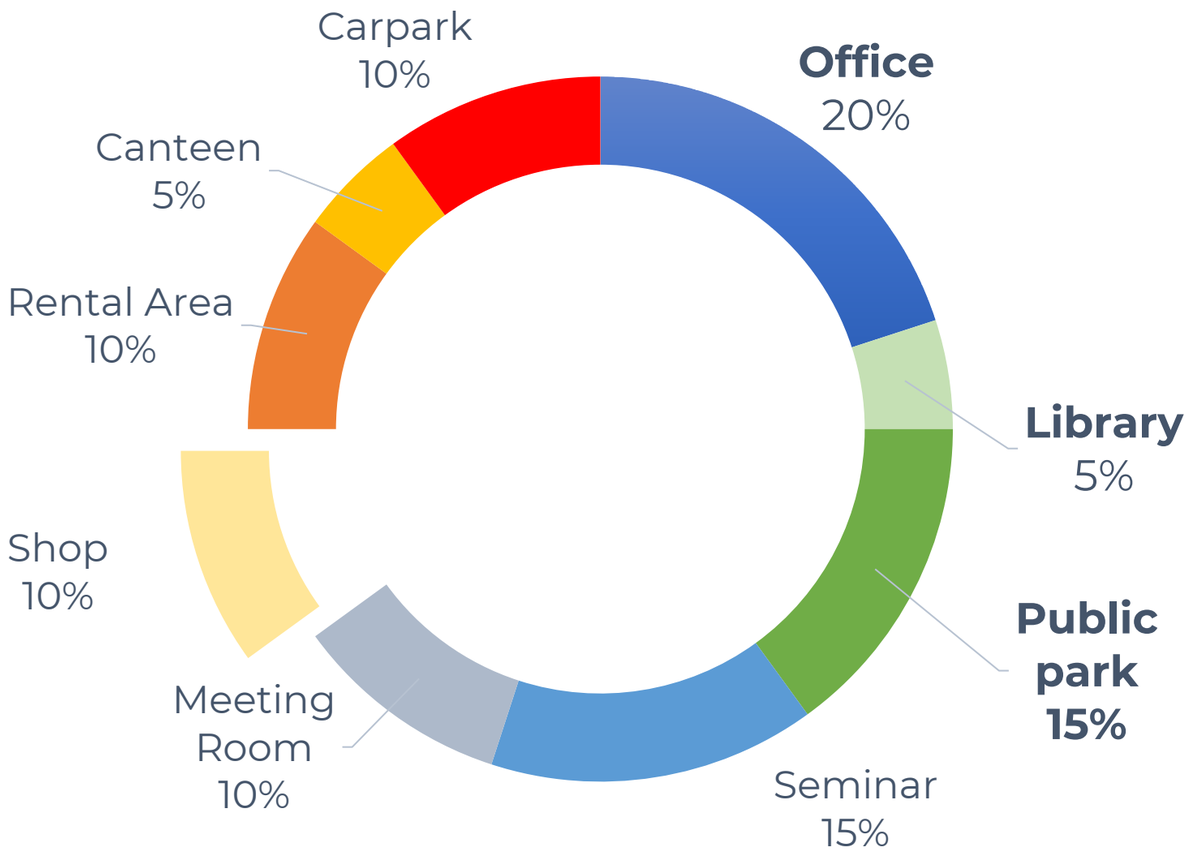
1. Engineering Profession test organizer
2. Engineers Profession service
3. Receive and judge the determination of prohibited characteristics
4. University and college Degree Qualifications
5. Training and seminar organizer

CONVENTIONAL BUILDING

In 2019 COE planned to build a new headquarter building and relocated from Suburb (Ramkhamhaeng Road) to Bangkok's Downtown (Ladphrao Road). The new building serves COE's goals; to represent vision of the future engineer and to improve public relation.

To find the best architectural design that suitable for them missions, COE created an open to public architecture design competition. The Competition announced winner in May 2019 and Selected AATTN8A's conceptual design which researched and re-planning all function to increase more efficiency use and transformed unusable area to public. The transformation from office to mixed-use building would raise the number of visitors, financial income for long-term operation and revitalize shophouses along the Ladphrao road that all was closed and abandoned.





Main Requirement function ratio

1. Office	**35%**
2. Seminar room and Banquet Hall	15%
3. Meetings room area	15%
4. Rental office	10%
5. Canteen	5%
6. Car Park	20%

Competition Winner Designed function ratio

1. Office	**20%**
2. Seminar room and Banquet Hall	15%
3. Public park	**15%**
4. Library	**5%**
5. Meetings room area	10%
6. Shop / Commercial	**5%**
7. Office Rental	**5%**
8. Canteen	**5%**
9. Car Park	10%

First IDEA

The flying box ; expresses the advance structural engineering design while integrated with multimedia technology to created the movement and information on the façade , Floating in the gigantic public park which able to learn and touch ecosystem in the environment

2. a Show concepts, sketched and any evolution in the design process mention what influenced or inspired the direction of the design

Engineering; Adapt, Adopt and Apply

Engineering is the integration of scientific principles and Human's craftmanship to create everything new thing in the world, for example machines, building, product, medicine, and vehicle.

Engineering shaped the world around us.

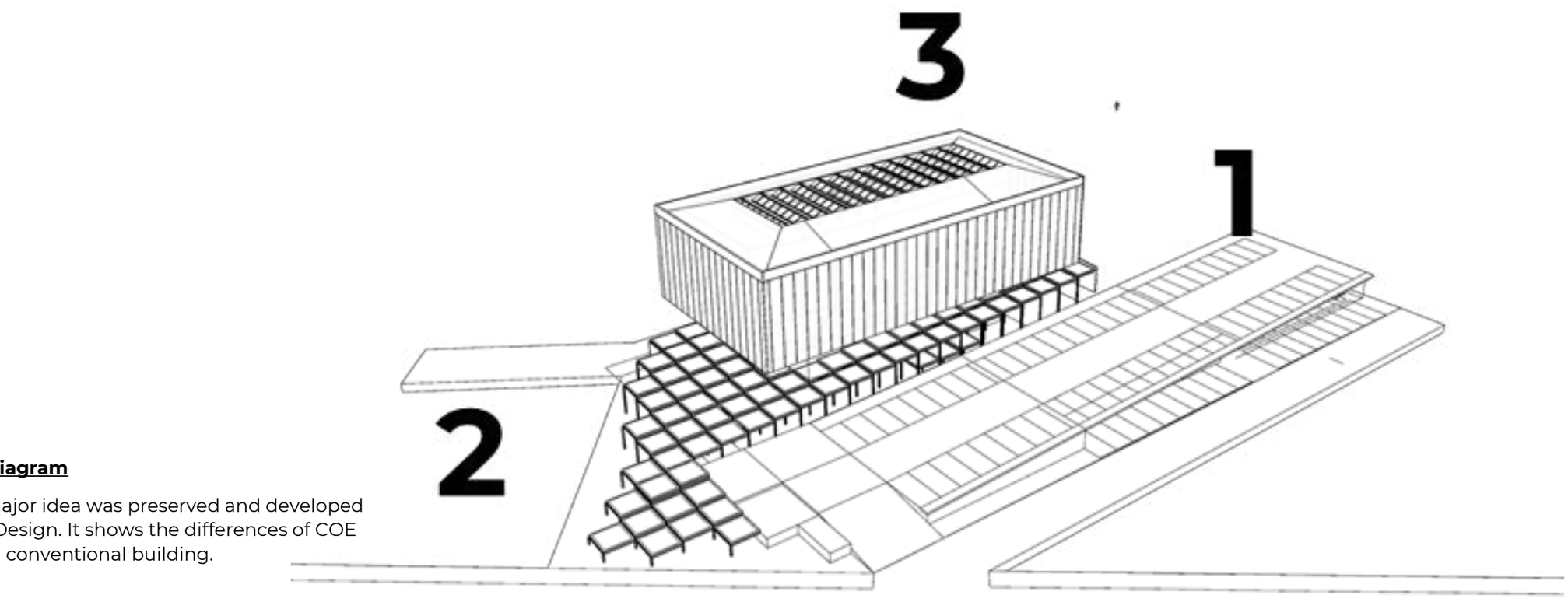
In Our life we use various type of engineering product that improve our quality of life, more convenient, and applied for the innovation. Most of them has single core idea is that "Problem solving" which is the result of human experiences and information. The mans who call "Engineer".

Council of Engineers:
A Place for all engineers and people.

The new COE Building plan to be a hub for innovators and people.
A new office building would not be only the office building. Not only a club of engineers where they can share, learning, and giving for the others. But also, a node and a place where local people can live their life.

3 Major idea

1. Grand Park
with sustain environment
2. New workplace planning
Flexible and New Modular system
3. Easy to switching Function
For Public and Corporate



First IDEA Diagram

The major idea was preserved and developed to the Final Design. It shows the differences of COE building and conventional building.

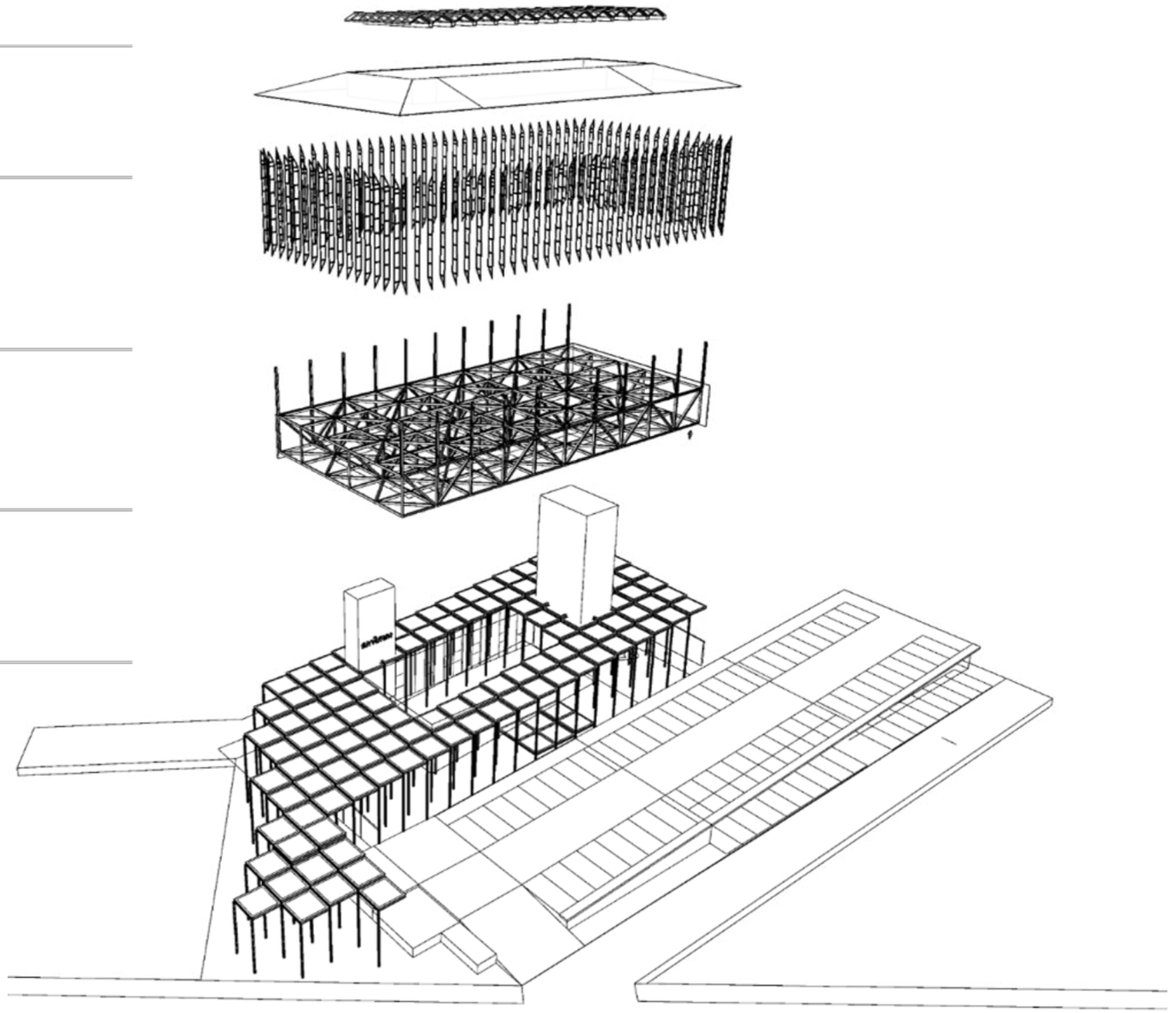
Solar Panels
Natural Light Opening

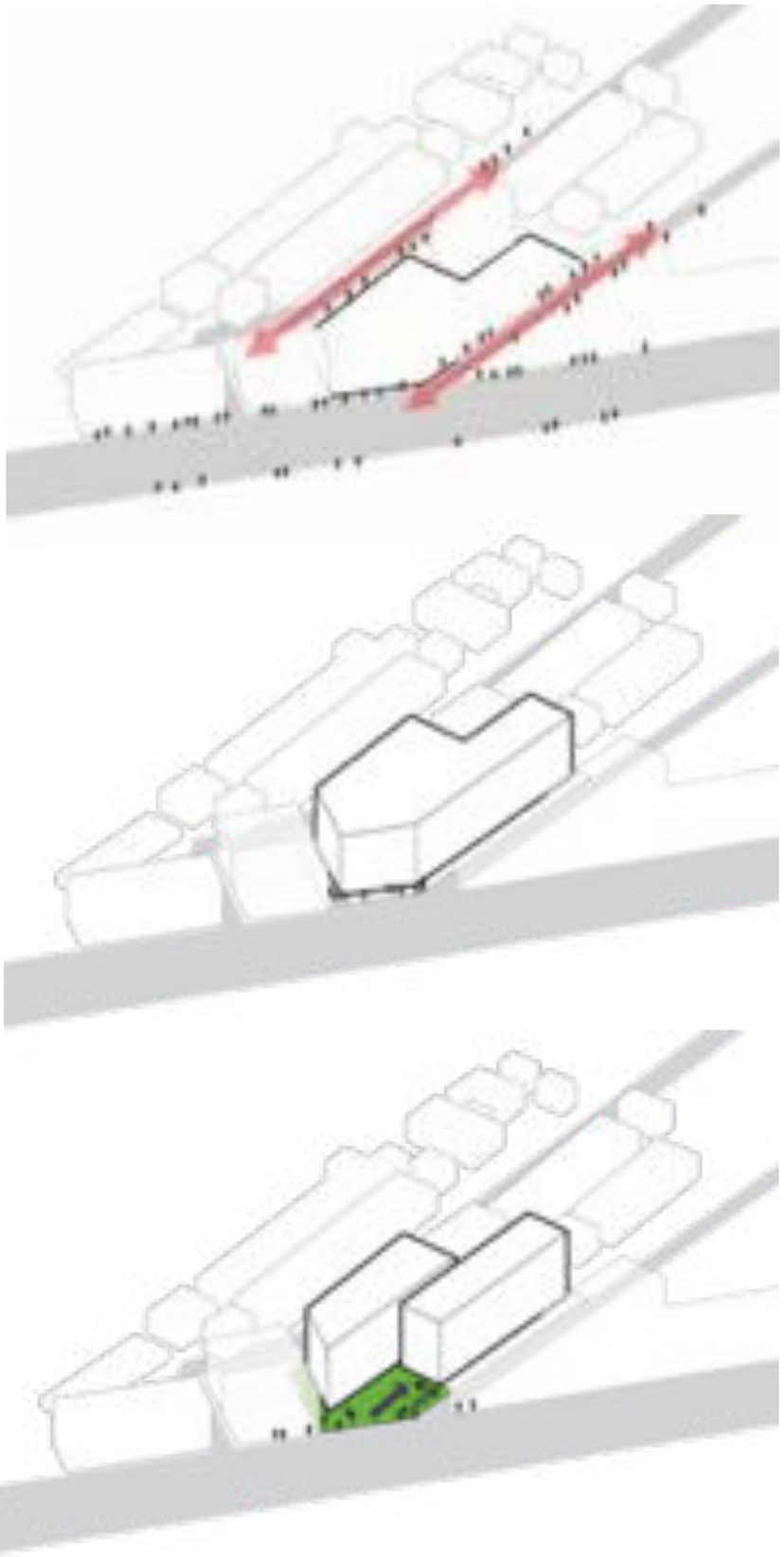
Media Facade
Translucent Facade

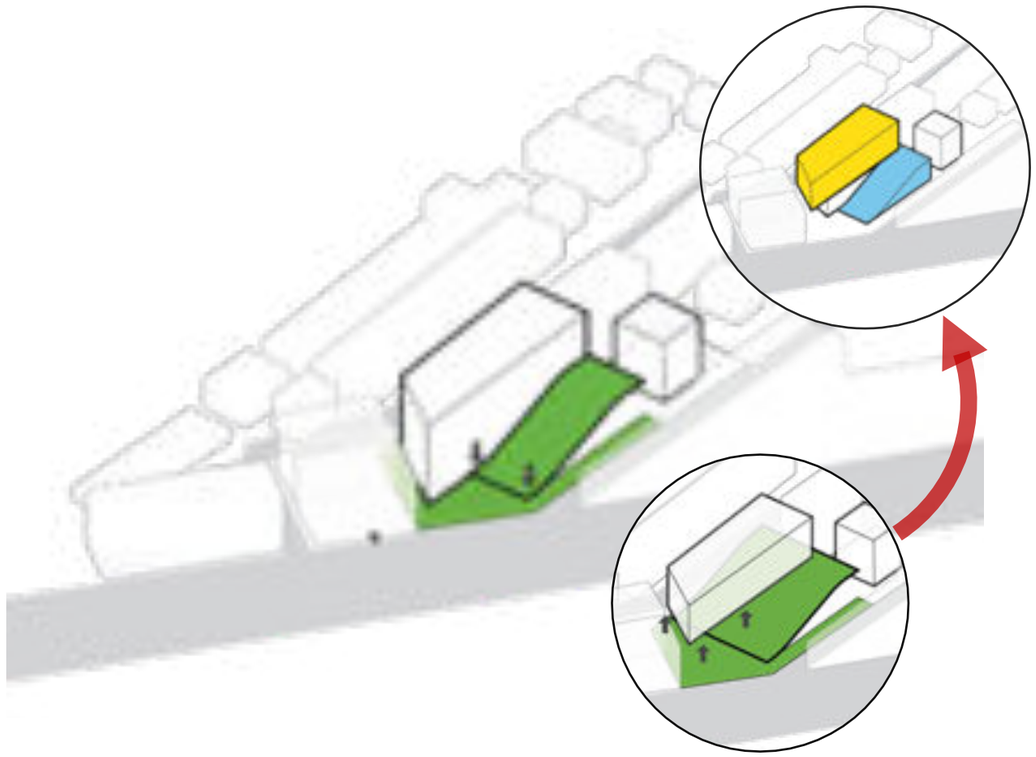
Mega Structure

Grand - Park Deck

Flexible Workplace





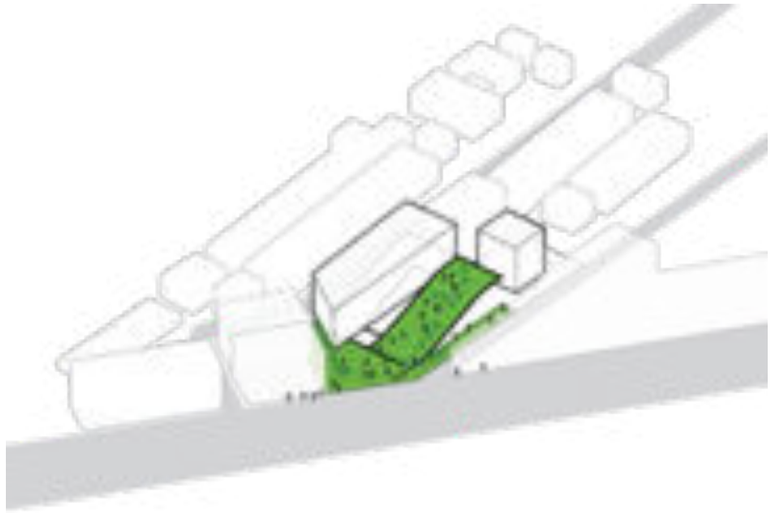


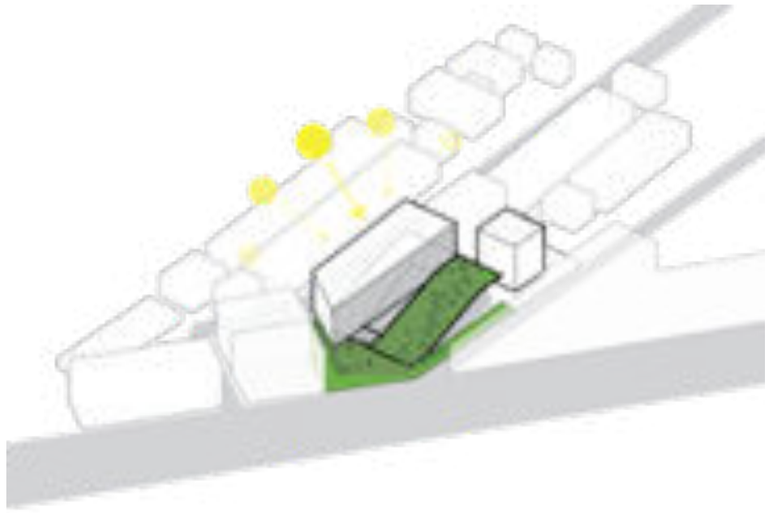
CITY PEOPLE ENGINEERING

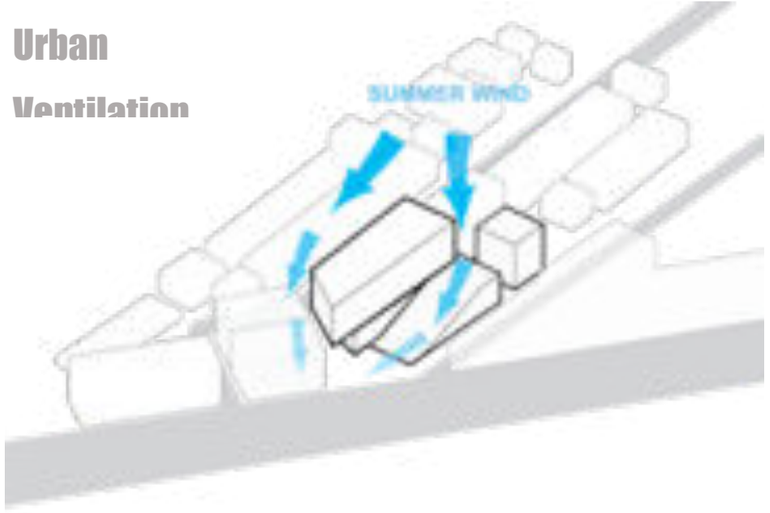
The 3 major ideas were developed to 3 main concepts of the building.

CITY

The building was divided into 2 small buildings; main building and parking tower; which their size is not too larger than neighbors and preserve the ground-level ventilation of the city. Moreover, the appearance of the low- level building was designed by adaptation of local shophouse façade to create the harmony of the city pattern while the appearance of high-level floor was designed to be an iconic sculpture stand-out from the ground level city. The new headquarter also designed with urban responsibility by improves the urban environment by increase trees in the city and reduce heat islands.







PEOPLE

"Quality of life", The new headquarter was designed with the user's research and behaviors. The conventional office building was replaced with new common area that increase living and interacting area, for the people, for example library, public park, and 24/7 canteen. Moreover, the neighborhood office layout was applied to design the new office space will reduce the unusable area and improve staff's relationship with co-working space and meeting spots.

Not only the member and personnel, but also the local people and all visitors. All main circulations and facilities were planning by universal design. The library will be the knowledge hub for student and innovator. The public park will open to public for every day. Hence, the COEHQ will be a place to enjoy every moment in your life.

ENGINEERING

The advance engineering design was integrated to all elements of the building: the hanging cantilever structure, the ecosystem of the ecology in the park, the inventions for energy saver, and fully automated car park. We also selected some materials and finishes by use the recycling products which reduce waste and less consume natural resource.

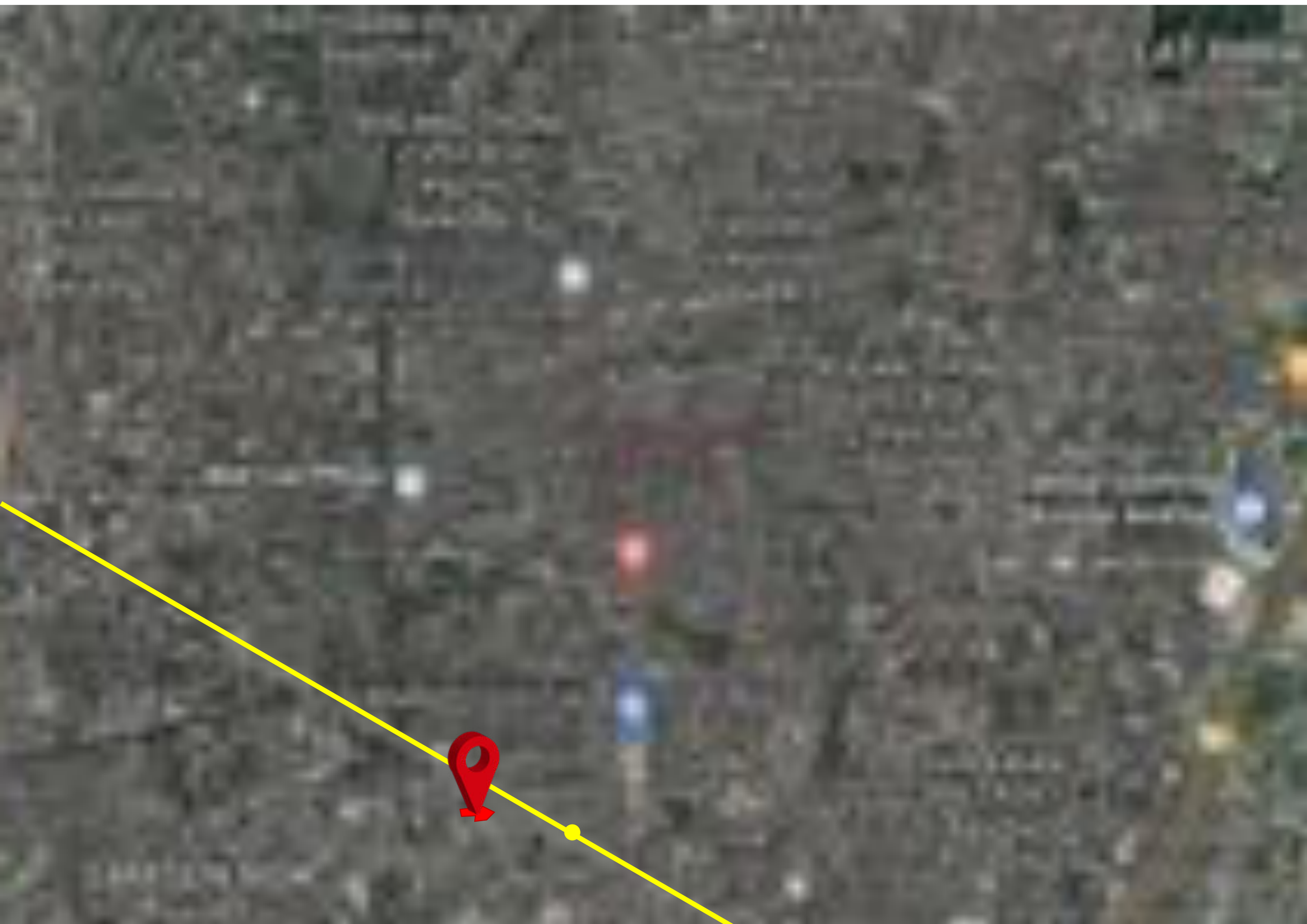
Building automation is the core system, it controls the balance of energy production by solar and energy consumption. The building safety with addressable system. And the smart sensor manages air purifier, lighting, and temperature control.

2. b. Highlight the client- approved design and give reasons why this design was selected

The iconic building is the creation of the non-profit organization who thought about social responsibility and wellbeing. That are clearly expressed their vision by the architectural design.

“Represent the Future Engineers with Architecture and Technology”

Professor Dr. Suchatvee Suwansawat
COE President 2019-2021



B Location :
Surrounding and Local building

1.a Provide detail of the location and position of the development

LAT-PHRAO District

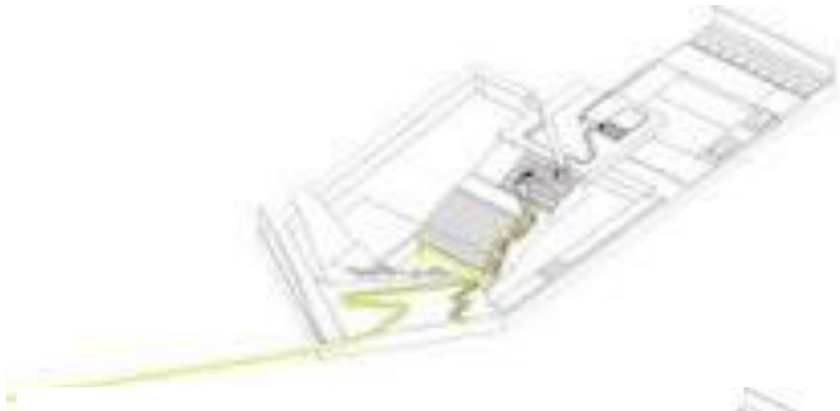
Lat-Phrao Road located on the north of Bangkok city. It was the residential development since 1960 which consisted of the shophouses along the road and the detached houses in the alley. People move in and their property value and economic rapidly growth until 1990. Large number of migration cause of severe traffic jam, not parking road policy and demolished sidewalk to expand the road. hence, most of local business down and leave or changed their property to a house without parking. The property value raises while low number of move-in. Nowadays lots local shophouses along the lat-Phrao road are closed and abandoned.

CHOKCHAI 4 MARKET

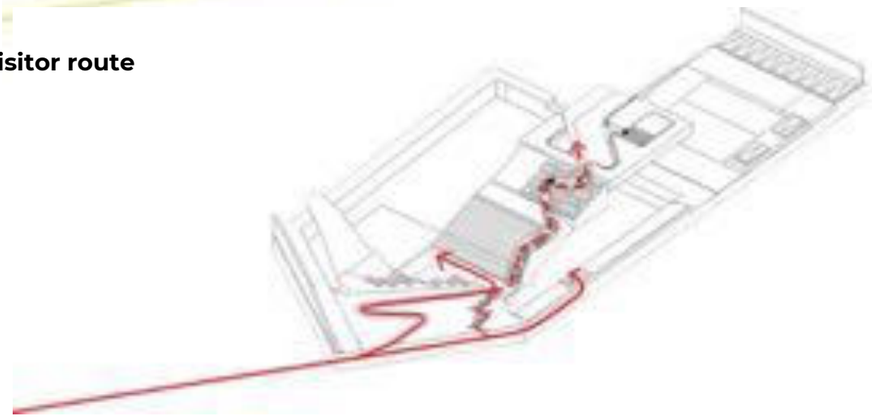
Chokchai 4 is the high-density commercial area which located in the middle of Lat-Phrao Road. The gigantic fresh market, popular restaurant, and shopping mall used to take a big profit and expanded their business in this area. Only 10 percent of commerce still there Presently.

REVITALIZE CHOKCHAI 4 LIFE

Coming of mass transportation (light rail train) would bring walking people back. The keys to build a new architecture into this area is having a public space and feeling safe. After the construction began, the beside shophouses start their renovation and local business which is the great sign of revitalization.



Visitor route



Public use and commercial route

300 meters from LRT station “Chokchai 4”

COEHQ model that shows the size
of the building and existing surrounding.

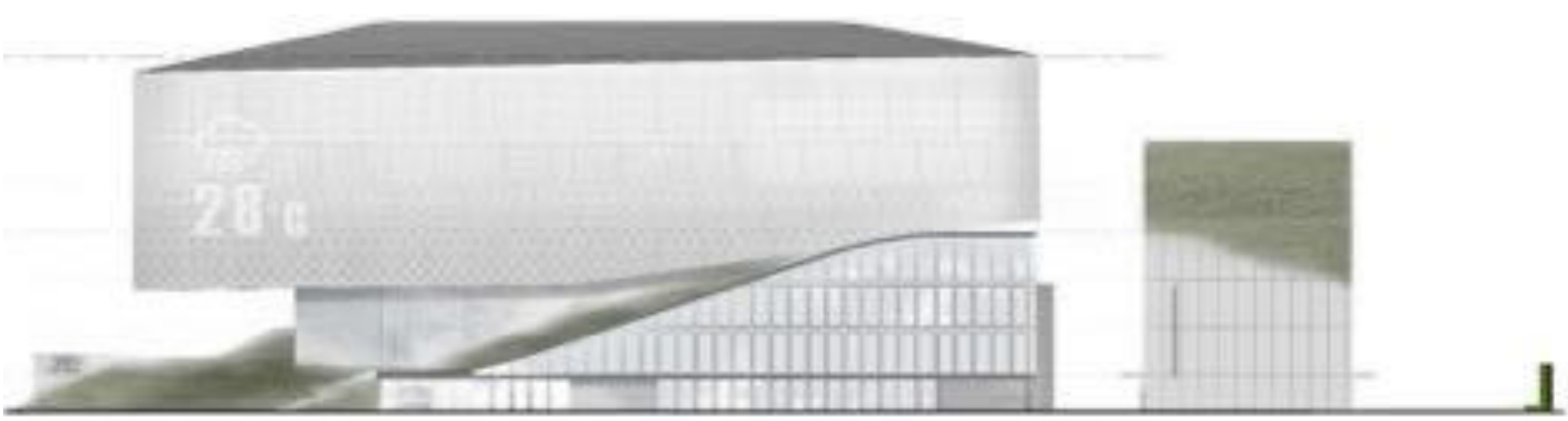
1.b Provide Outline details of any surrounding buildings and if your design had to follow any local vernacular building styles or regulations.

Language in Architecture

TIMELESS ARCHITECTURE & FUTURISTIC
PART & PRESENT

“Identity of Thai Modern architecture”

Along Lat-Phrao Road, there a shophouse built in the period of modern architecture, around AD.1800 – 1980. The main character is the concrete sun shaded façade, 3-4 stories, and finished with color painted. The modern architecture movement made the less decoration elements and kept the functionable objects. To living in shophouse, the first floor is a shop and commercial area while the upper levels are living area and bedrooms. Most of shophouse design in Bangkok also had a cantilever concrete canopy to protecting the sun light and rain in tropical climate.



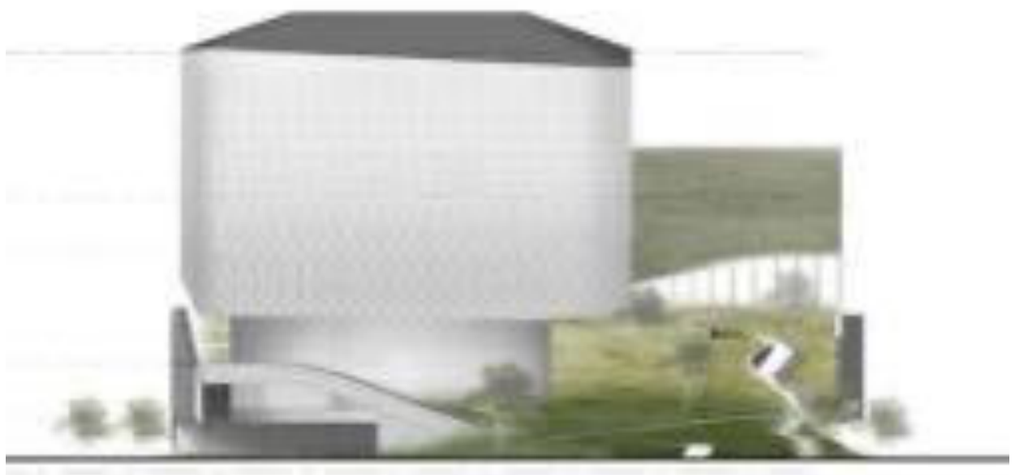
1.c Show the finished concept in relation to its surroundings using one or more of the following; Photography, maps, site layout ,CG Imagery

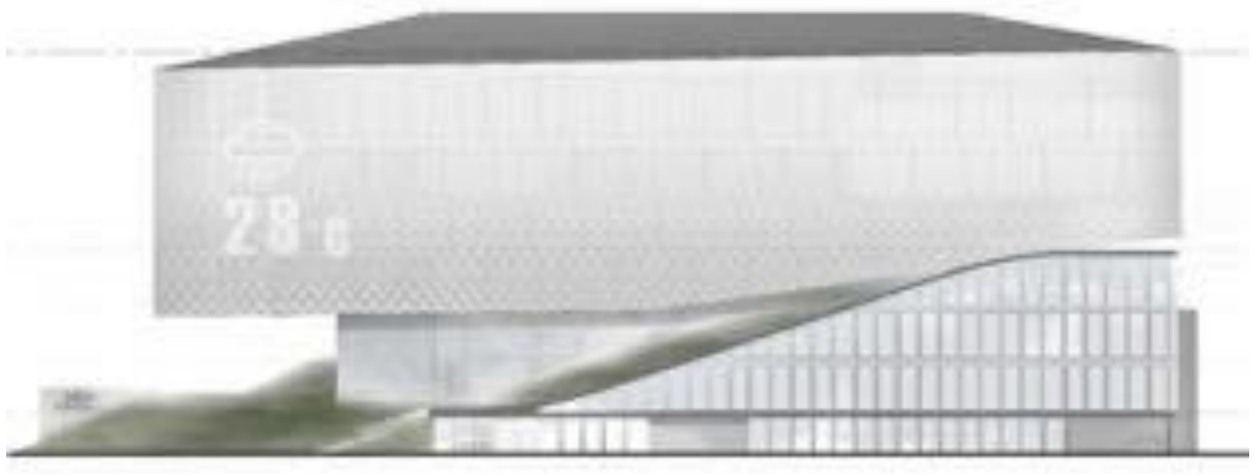
FOR TODAY AND FOR TOMORROW

COE Building was separated in to 2 parts, lower zone and Upper zone. The lower zone designed by transformed Thai modern architecture in to the GRC façade with vertical and horizontal pattern which be sun shading device for office area. The ground floor is commercial shop that the sunlight and rain was protected by cantilever concrete floor.

The upper zone is the sculptural form with the perforated aluminum façade which reduce the energy consumption and expresses the functional area that less natural light used.

The roof garden is the transitional area for lower zone and upper zone and reduce urban heat island effects from concrete roof.





Thai Modern Architecture

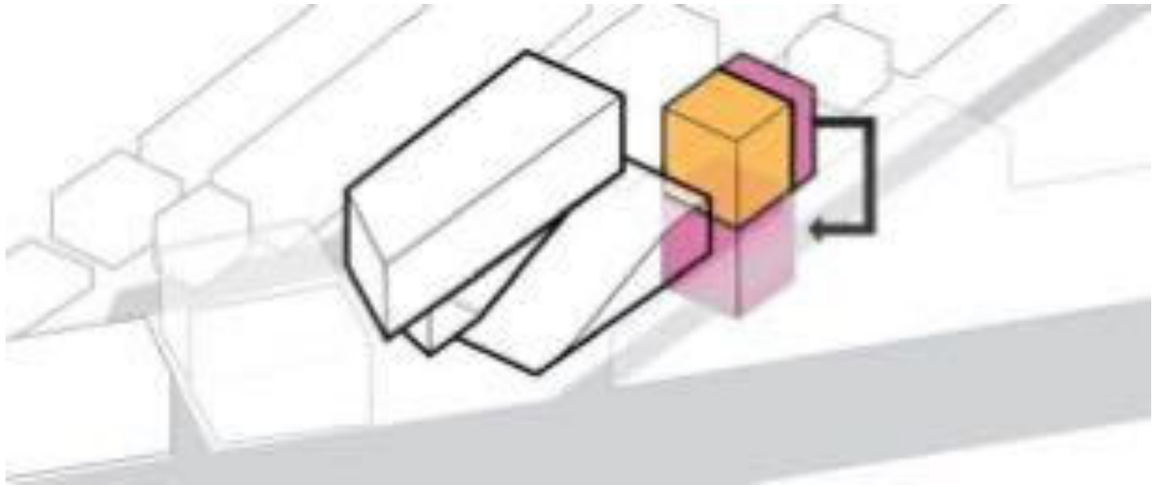
The shophouse façade was applied to create a sun shaded for office building and automated parking building.

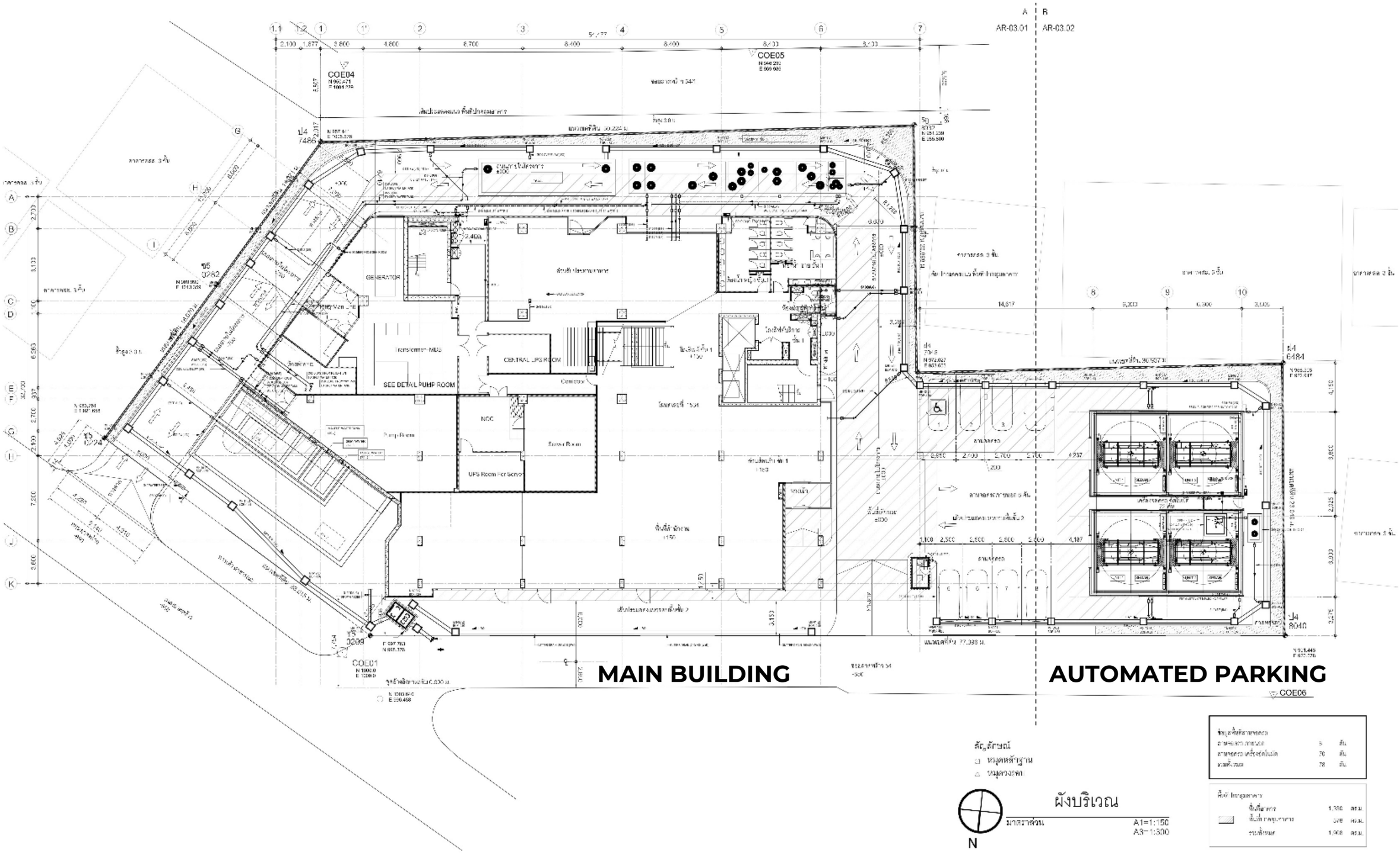
Automated parking Facade

The automated parking building uses Thai modern architecture and the transparent ground floor to remind the memory of shophouse.

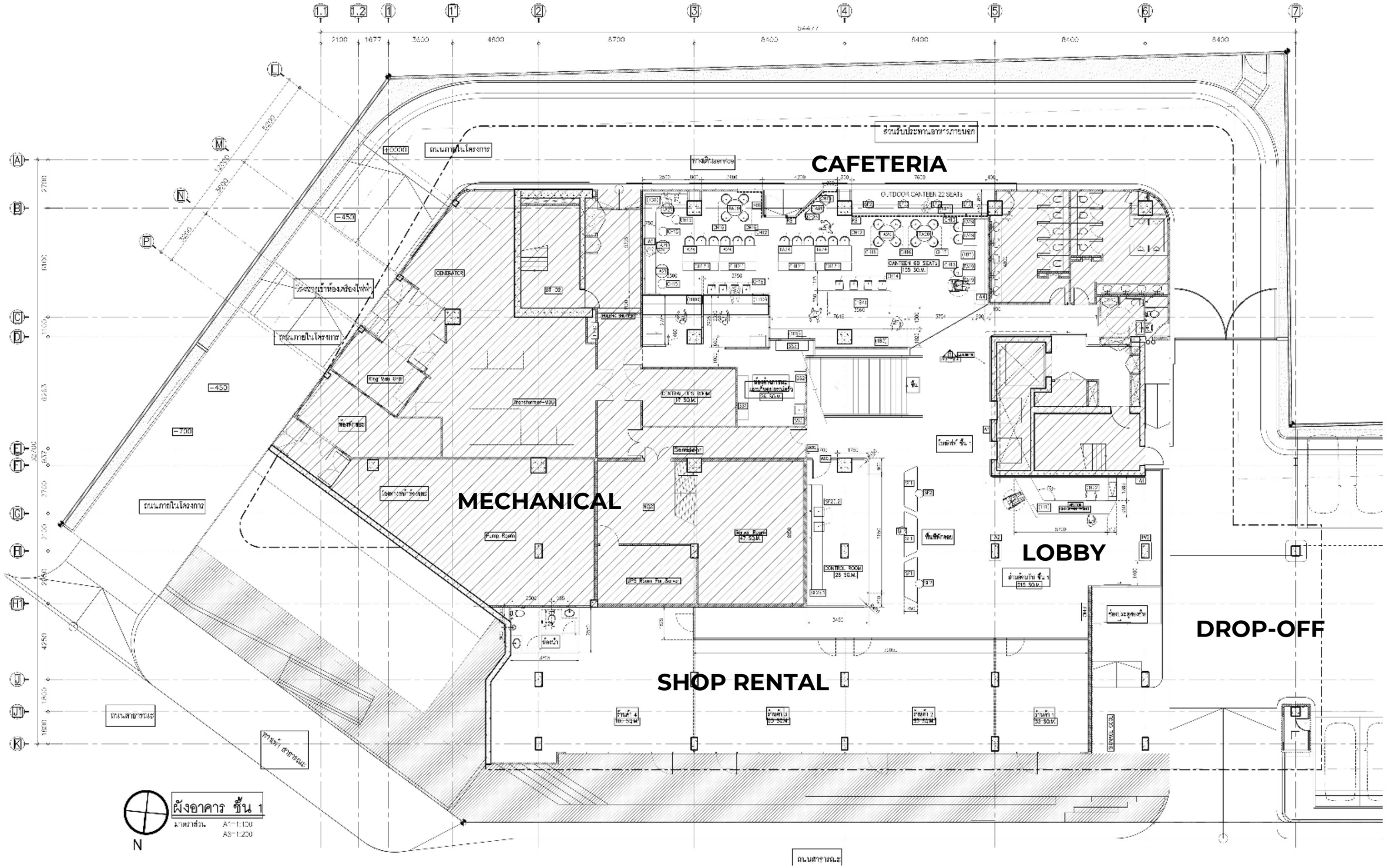
C Architecture and use of space :
Planning and design

1.a Provide floorplans of the a single unit and a plan of the development as a whole.

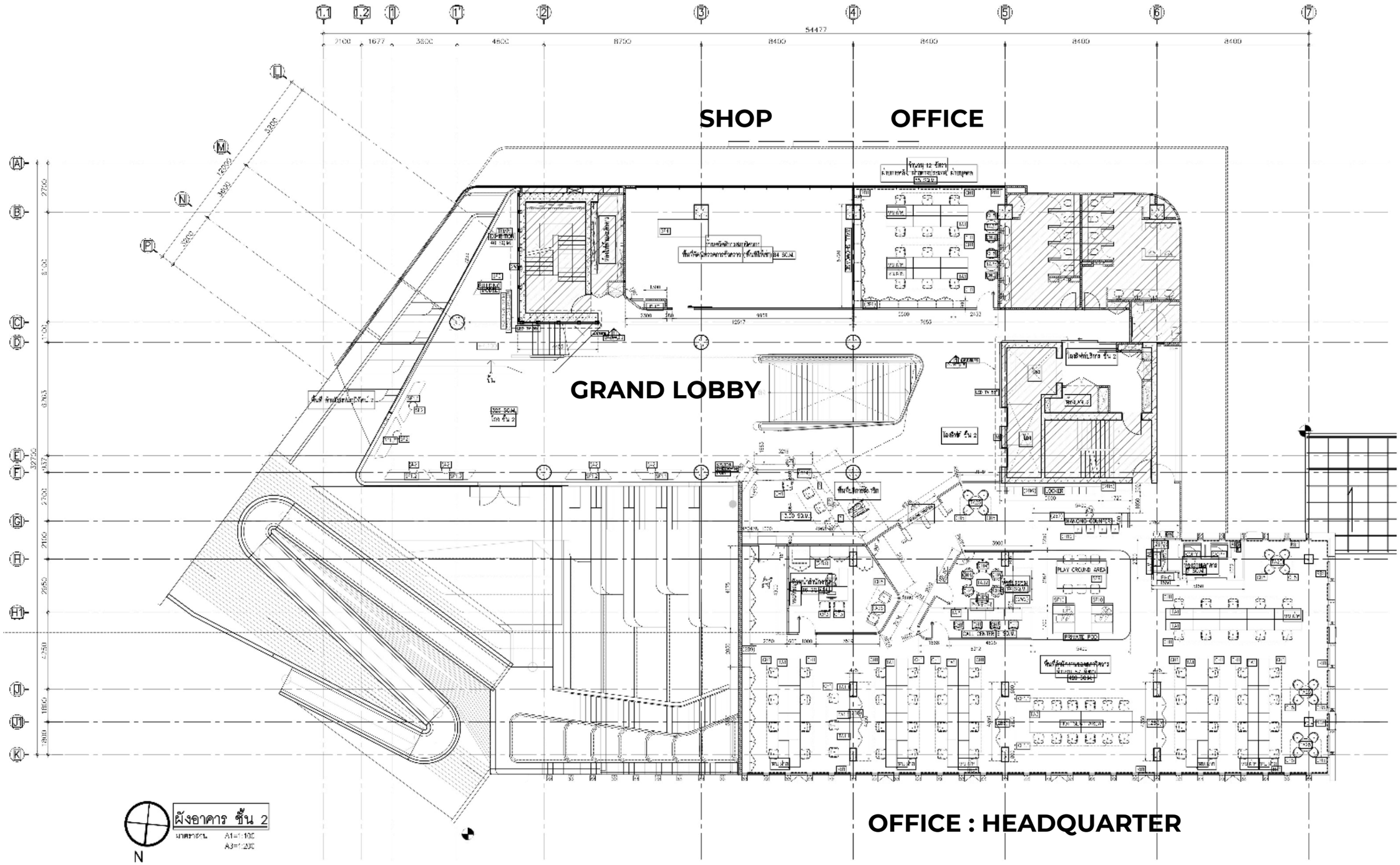



A
B
AR-03.01
AR-03.02
COE04
COE05
COE01
COE06
GENERATOR
Transformer MDB
CENTRAL UPS ROOM
SEE DETAIL PUMP ROOM
MDC
Server Room
UPS Room For Server
Pump Room
MAIN BUILDING
AUTOMATED PARKING
ผังบริเวณ
มาตราส่วน
A1=1:150
A3=1:300
N

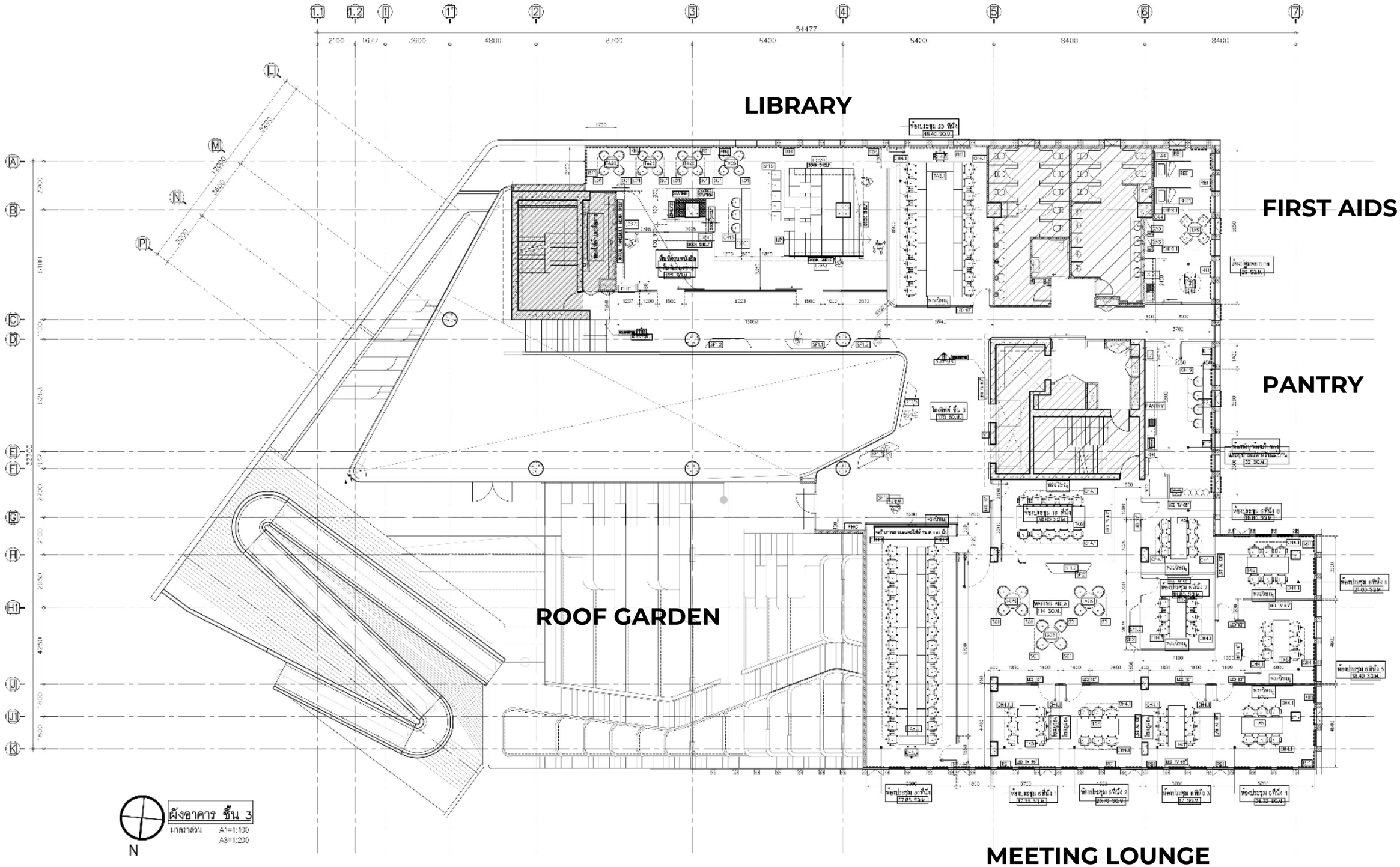
LAYOUT PLAN



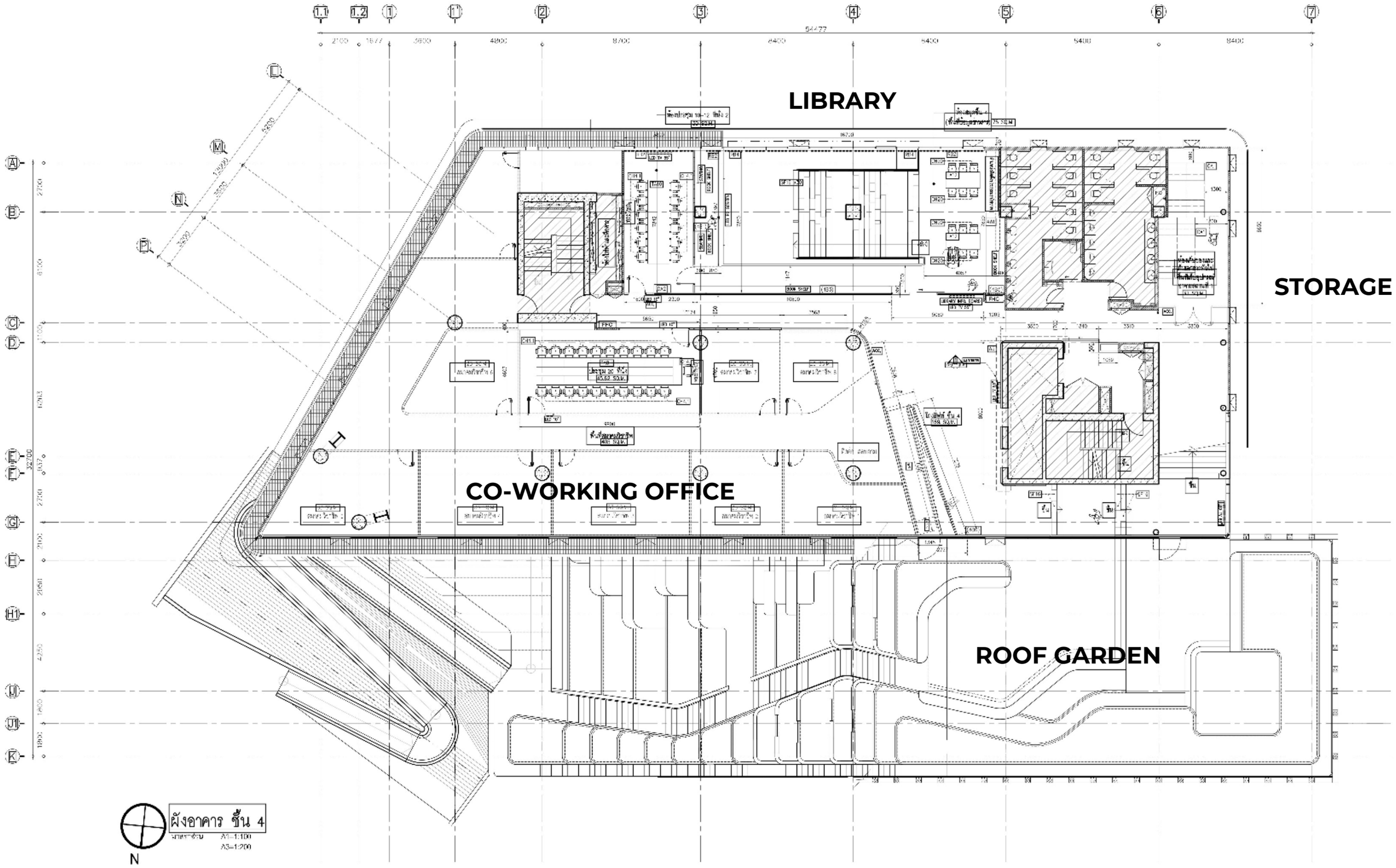
GROUND FLOOR PLAN



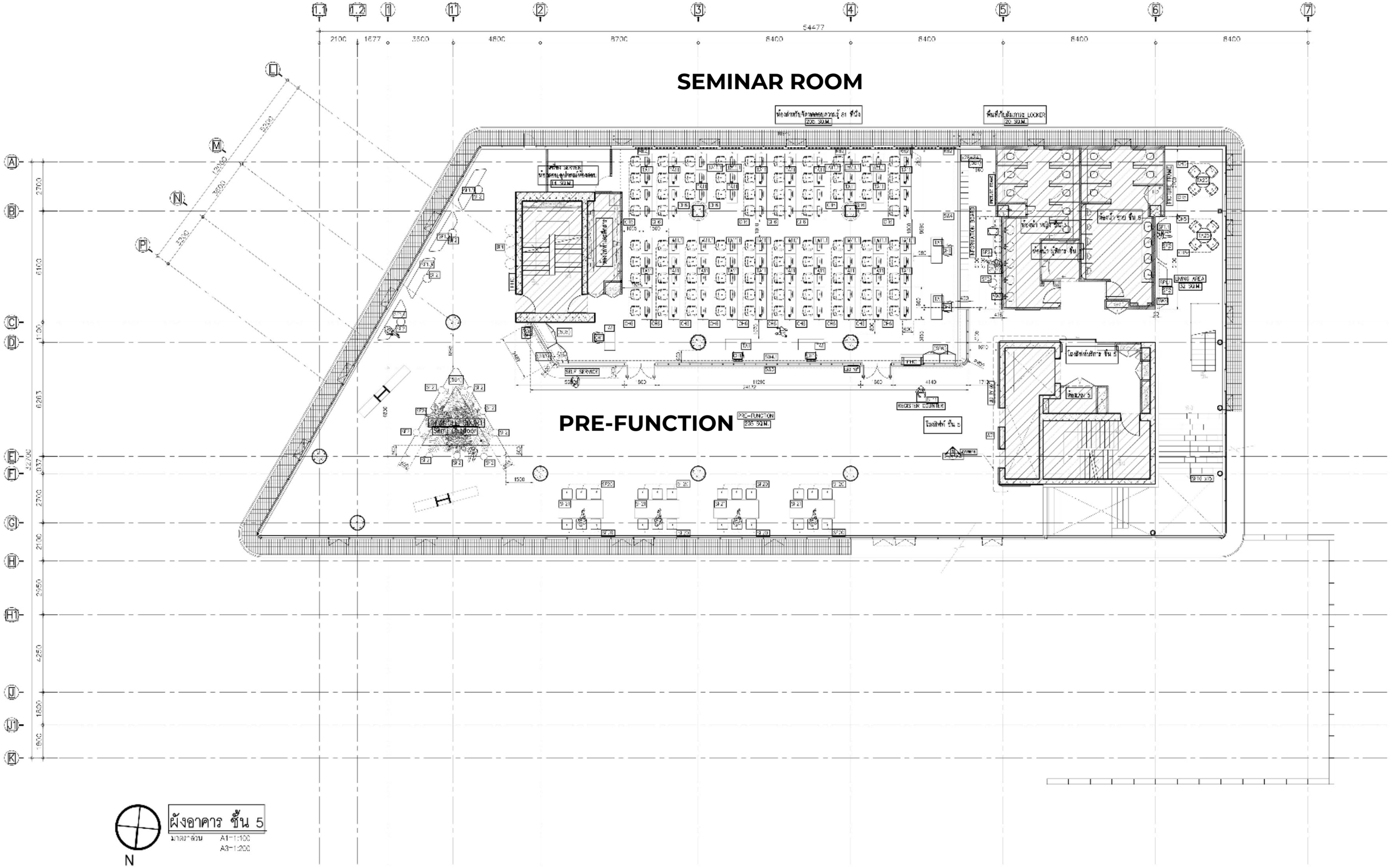
2nd FLOOR PLAN



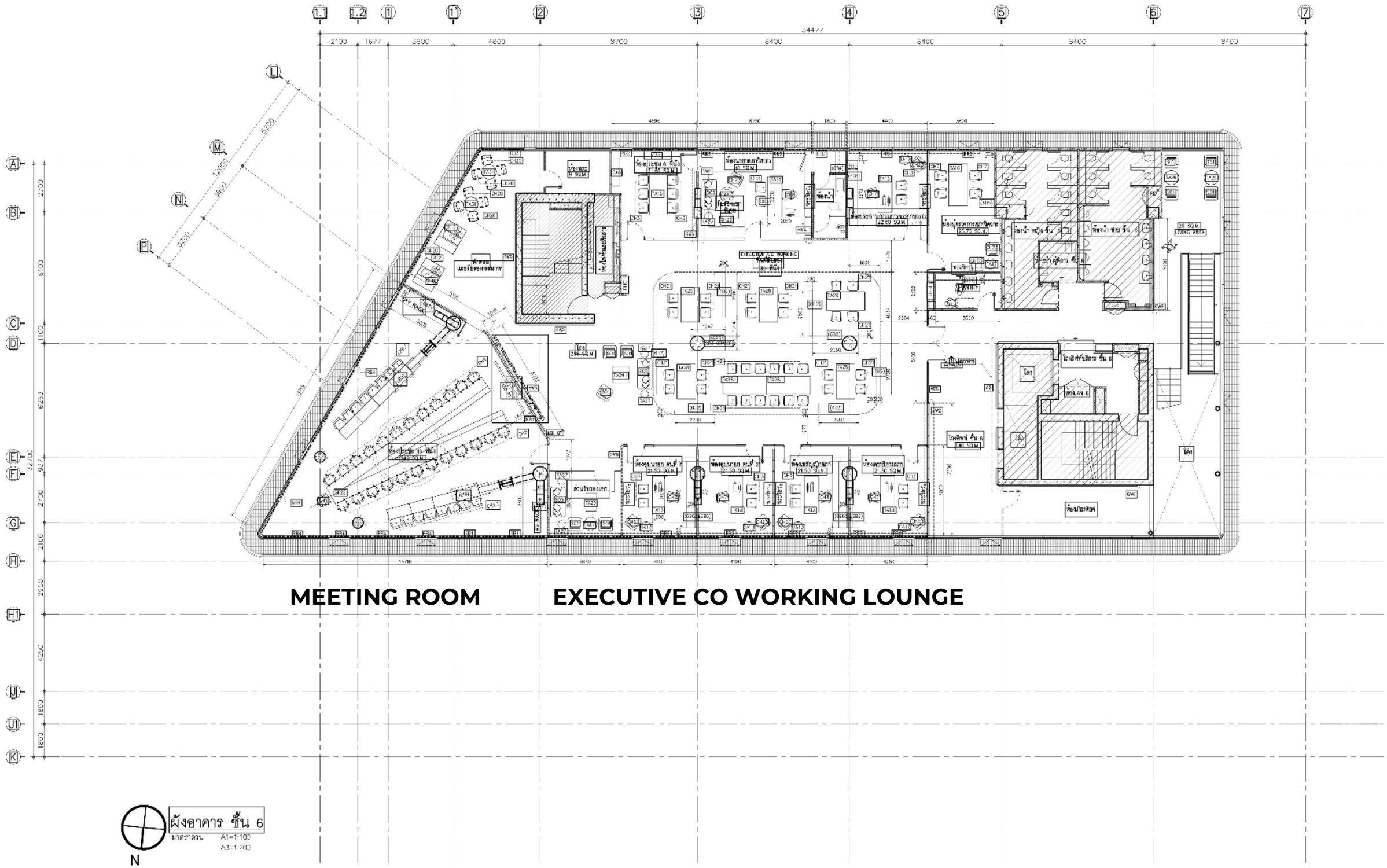
3rd FLOOR PLAN



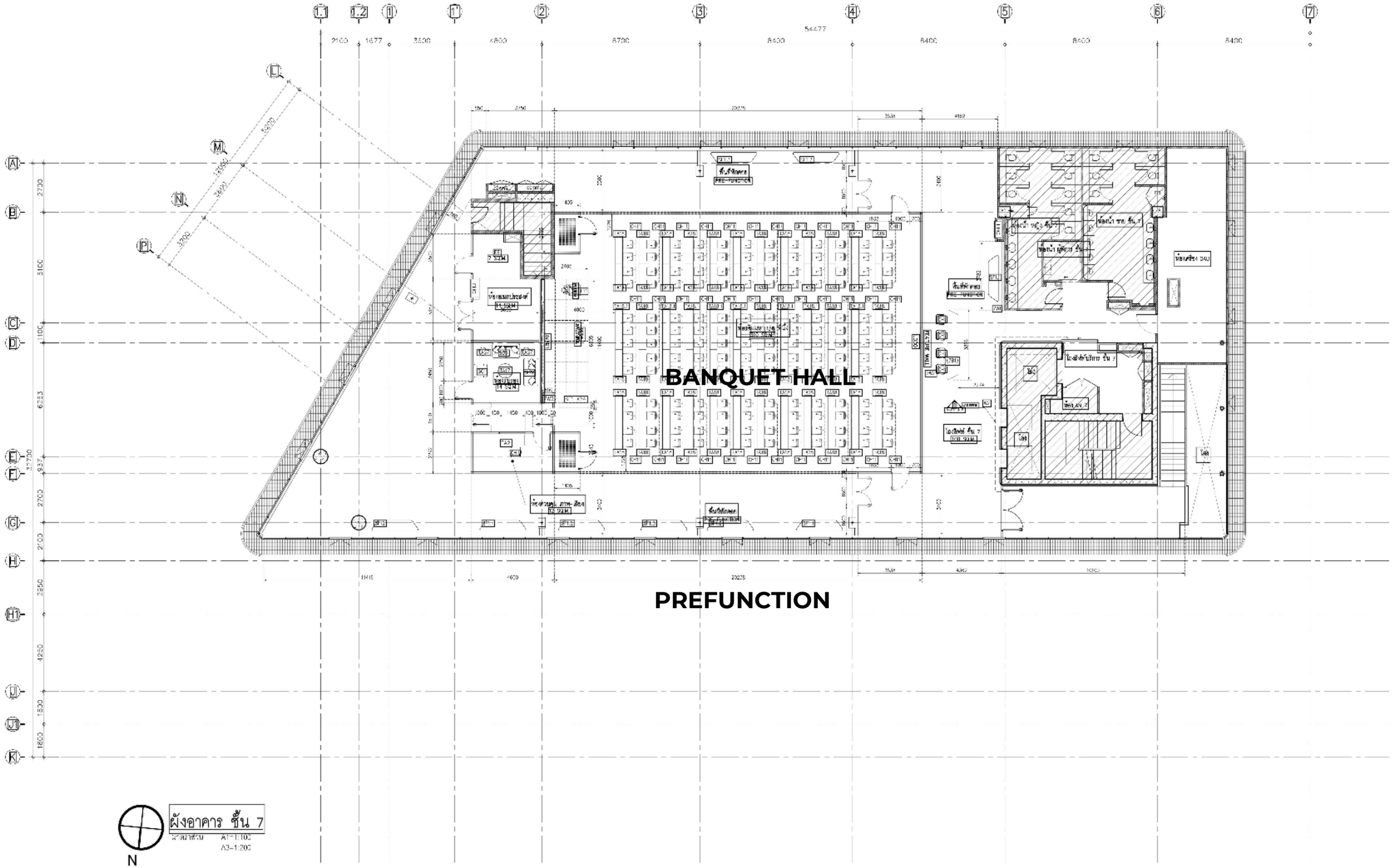
4th FLOOR PLAN



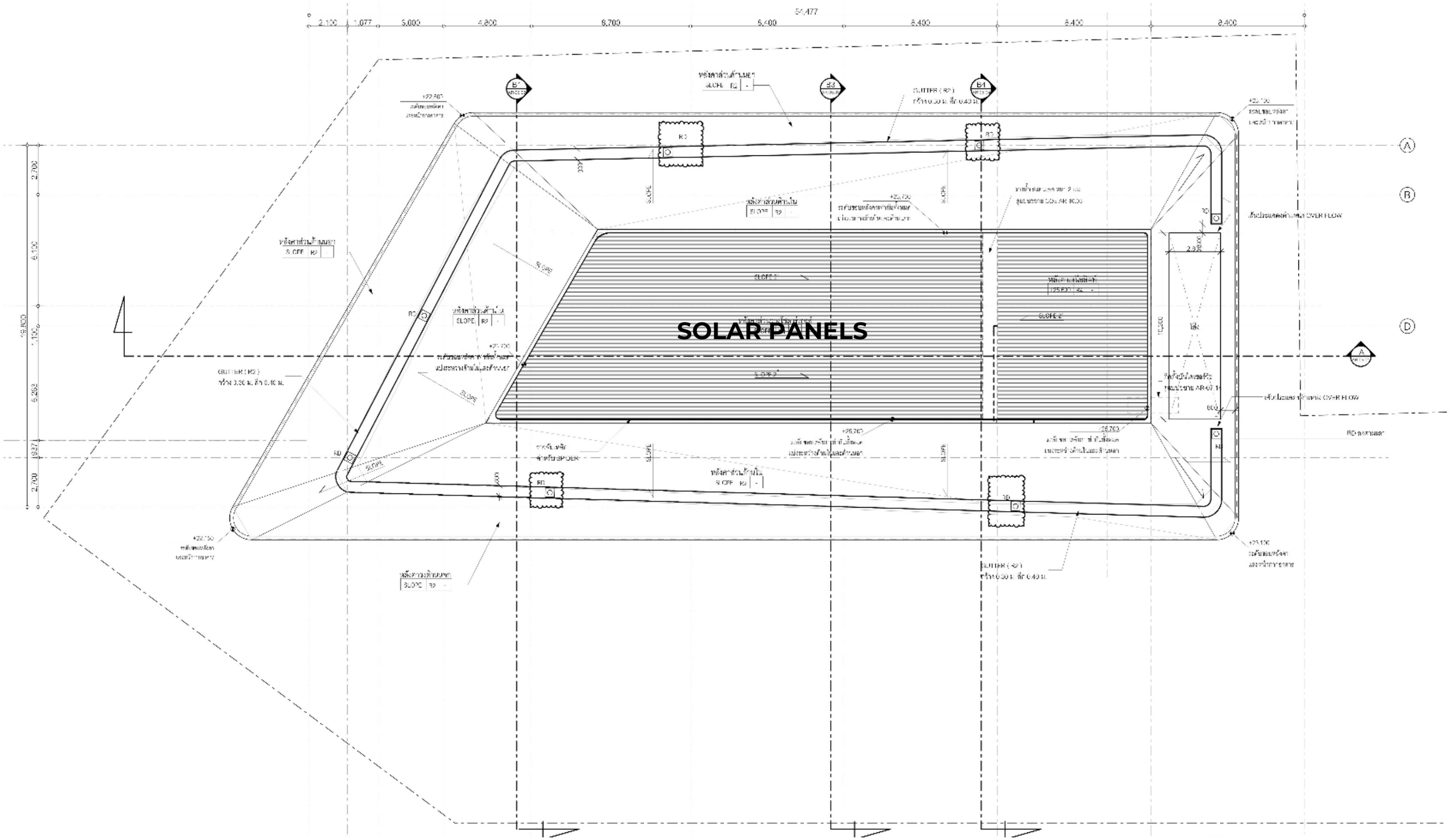
5th FLOOR PLAN



6th FLOOR PLAN



7th FLOOR PLAN



ROOF PLAN

1.b Show the key areas of the overall design including rendering of the facilities including exterior and interior

LOW ZONE: 1-3 FLOOR

HIGH ZONE: 4-7 FLOOR

MAIN ENTRANCE

ROOF GARDEN 2nd FLOOR

ROOF GARDEN 4th FLOOR

CITY VIEW

GRAND LOBBY

LOBBY 1st FLOOR

CAFETERIA

SEMINAR ROOM 5th FLOOR

EXECUTIVE MEETING ROOM

LIBRARY

BANQUET HALL

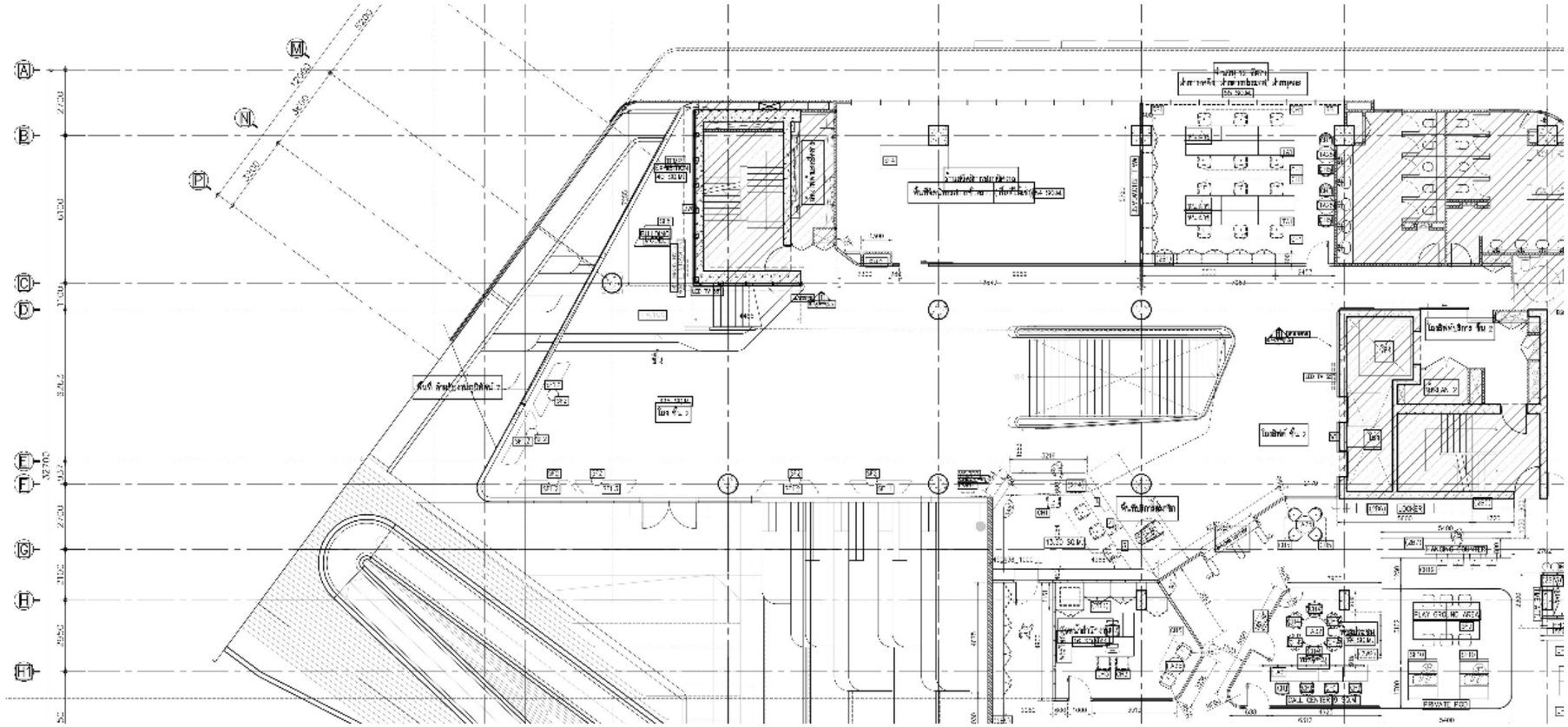
2. Demonstrate the use of space throughout the development.

GRAND LOBBY: Open area for ALL Activities

Reflecting the Future

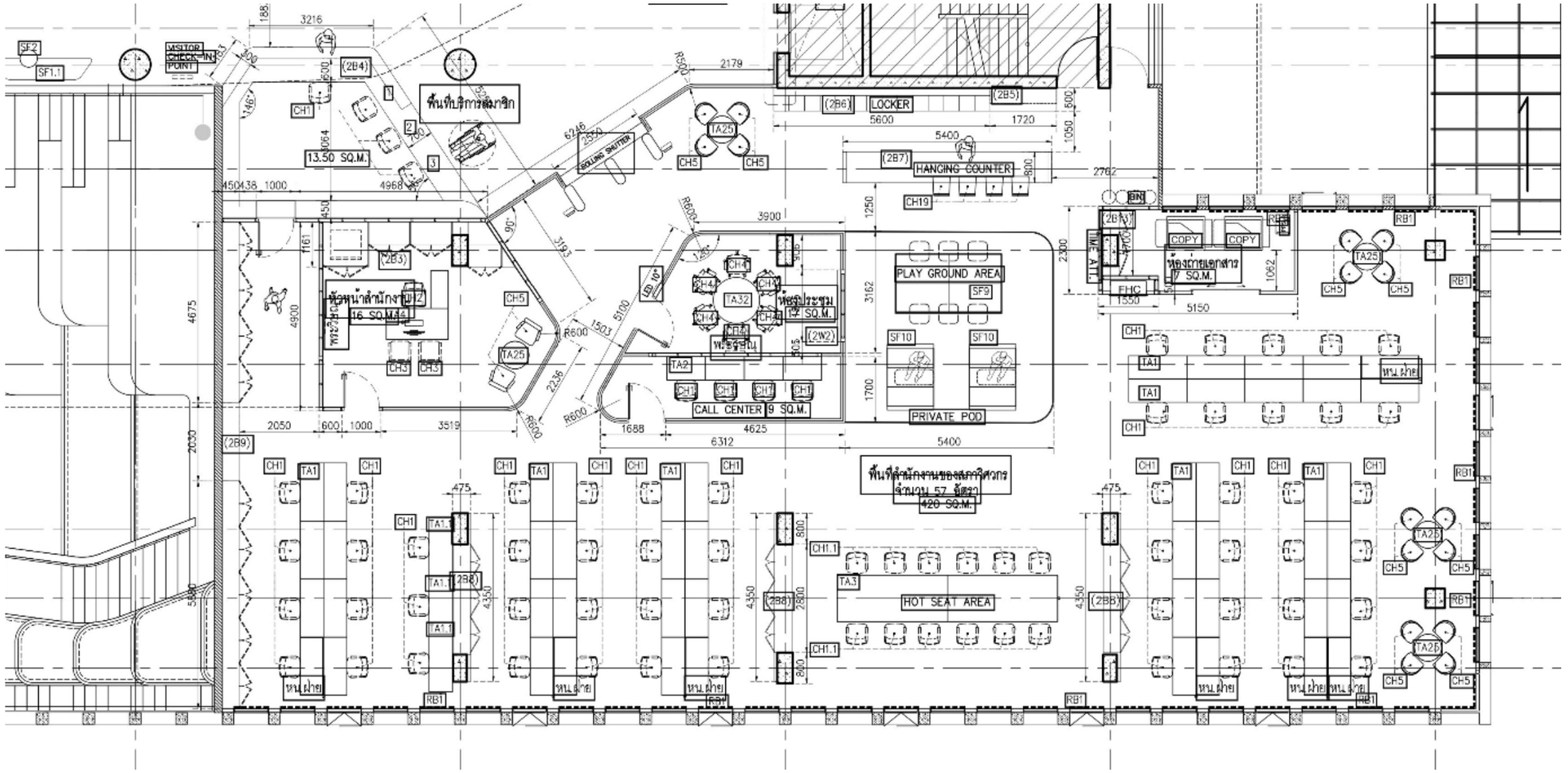
To build the relation between city, nature, and the building, The half area of grand lobby covered by the gigantic reflective ceiling which reflects the tree in the garden, train, and people who walks on the sidewalk.

The lobby is the triple volume area that was designed for the multi-purpose activities that may occur in the future. For example; opening stage for seminar, alumni meeting, workshop, leisure, and press conference.



OFFICE SPACE : Neighborhood office layout

The office area was planning with the new working trend; neighborhood layout which increases work efficient, reduce use of space, and improves leisure area for staff relationship.



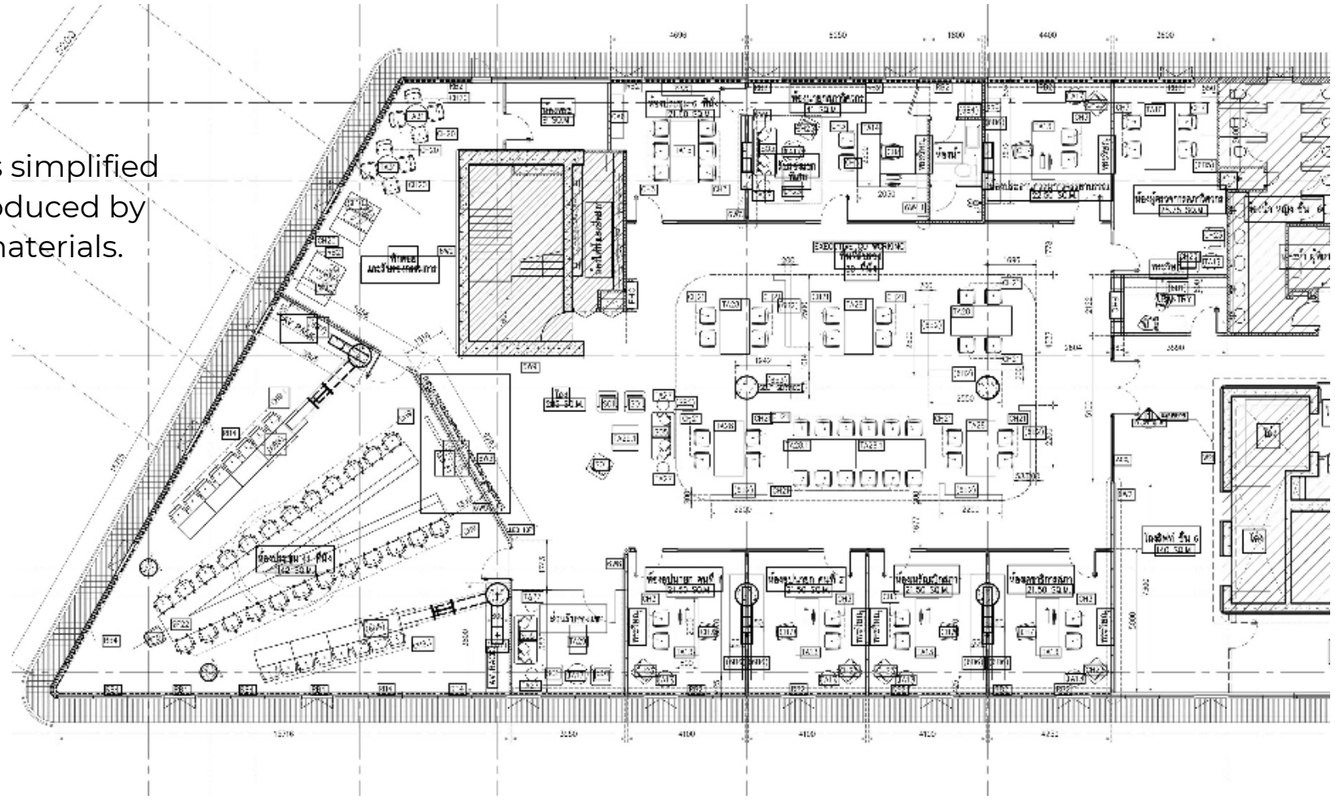
MEETING AREA AND EXECUTIVE CO WORKING LOUNGE:

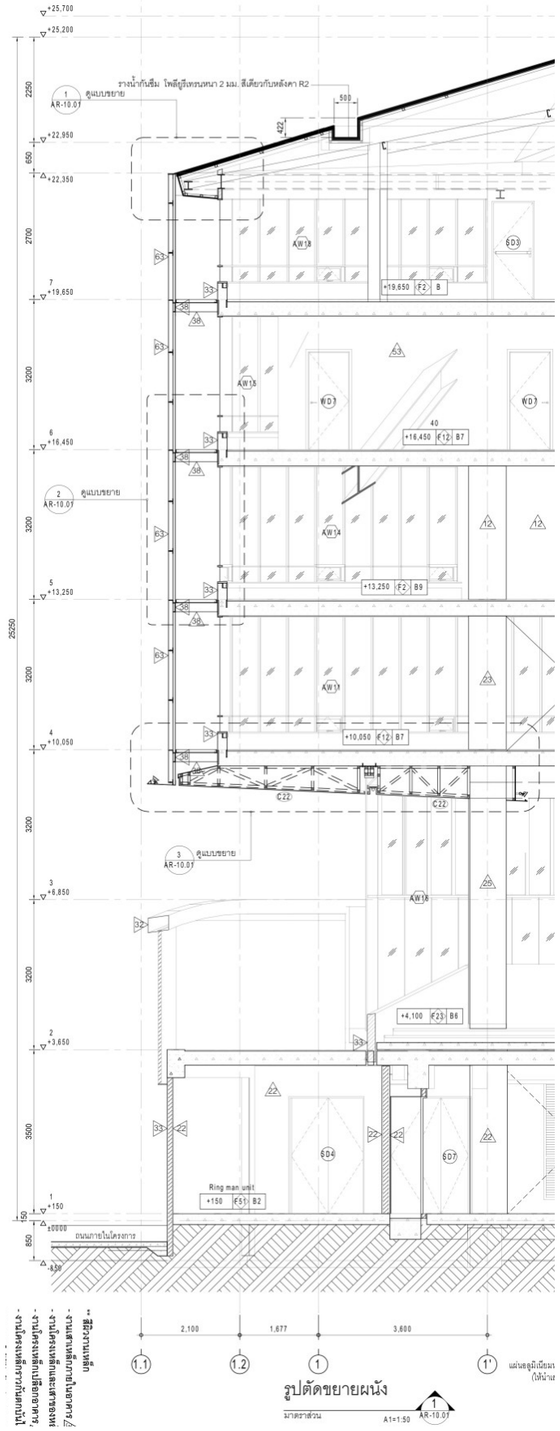
Open area to talk, rest, and meet

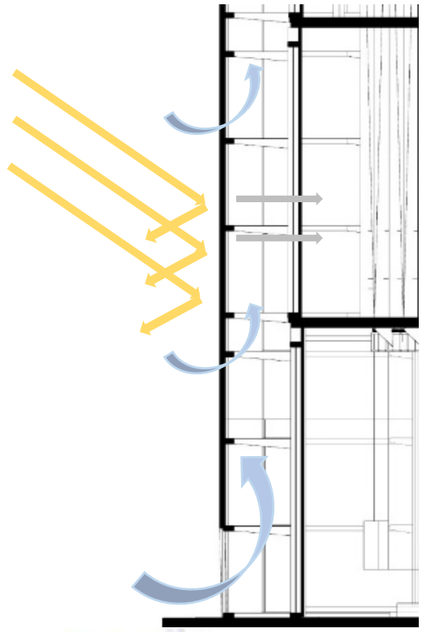
Not only the room, but the waiting area is also the first pre-meeting area that everyone have a conversation, casual talking and got a deal. Designer decided to re-planning the meeting room to change the unusable area to the bigger waiting area and build a co-working environment.

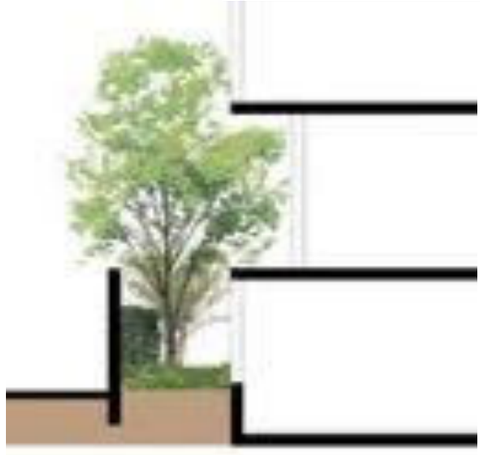
Leisure mood for working

The meeting area for member and executive was simplified by using of simple color and material. The furniture produced by local woods, local furniture brand, and some recycled materials.









3. Describe and show in the detail any innovations in the architectural design of the building

Double-Skin Façade (High zone)

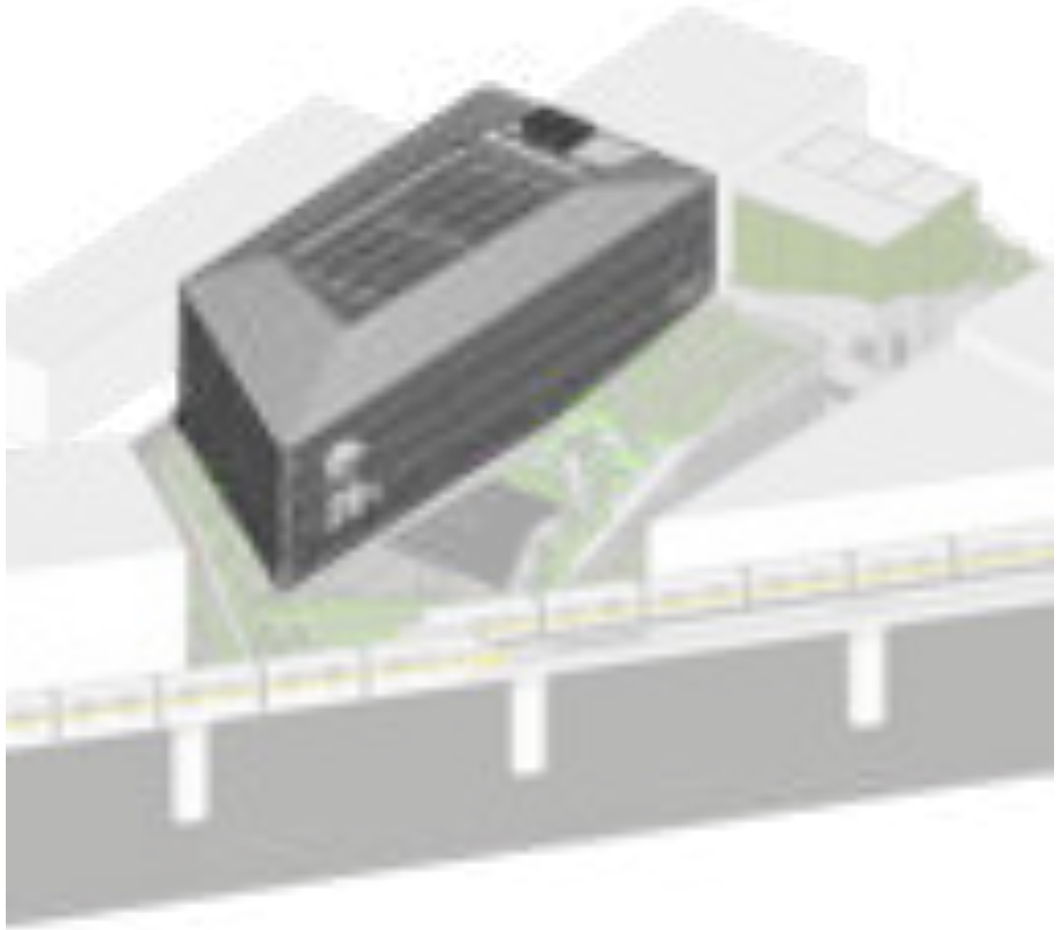
To design a new green building, architects selected the simple shading device with passive energy saving technology which low maintenance cost and decorative.

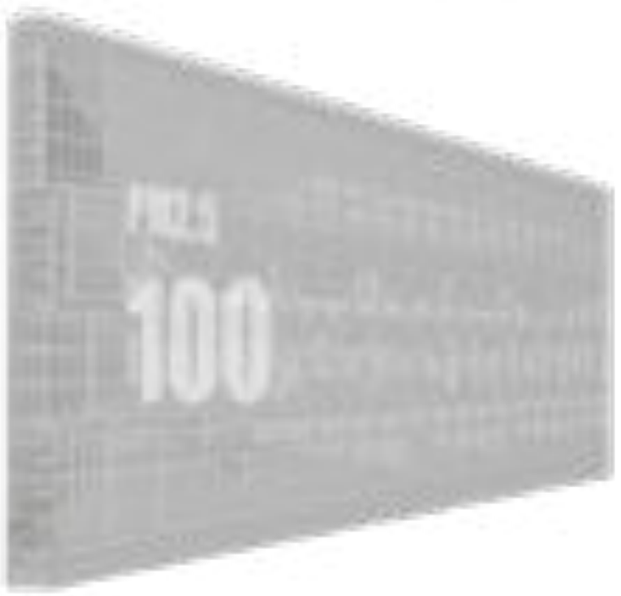
The perforated aluminum with steel grating for service canopy used for the main envelope. The hole was punched by the designated positions with 3 sizes by the sunlight and climate. The solid aluminum will absorb heat and radiation while the light pass through. There higher temperature of solid aluminum panel be a cause of stack ventilation effect and cool down them self and inner envelop.

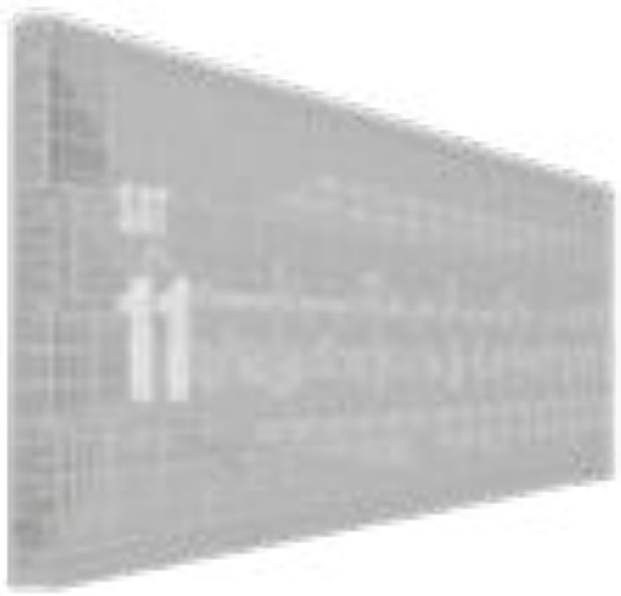
Interactive Transparent LED Façade

To giving back to community, the building must not only serve a user and staff but also give an information to public who drive and ride. Temperature, weather forecast, date, and time, and PM2.5 dust is the most important information in daily life to display its real-time that was selected by Engineering designer.

The 8x8 meter LED Transparent installed hidden behind the perforated aluminum panel which easy to service and maintenance. In emergency case or disaster, COE will be one of media to give trusted information direct to the people to safe their life.

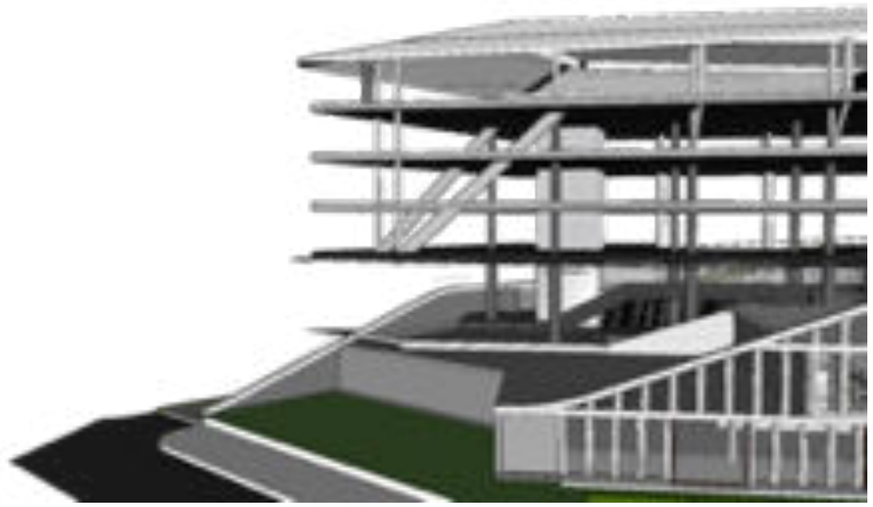






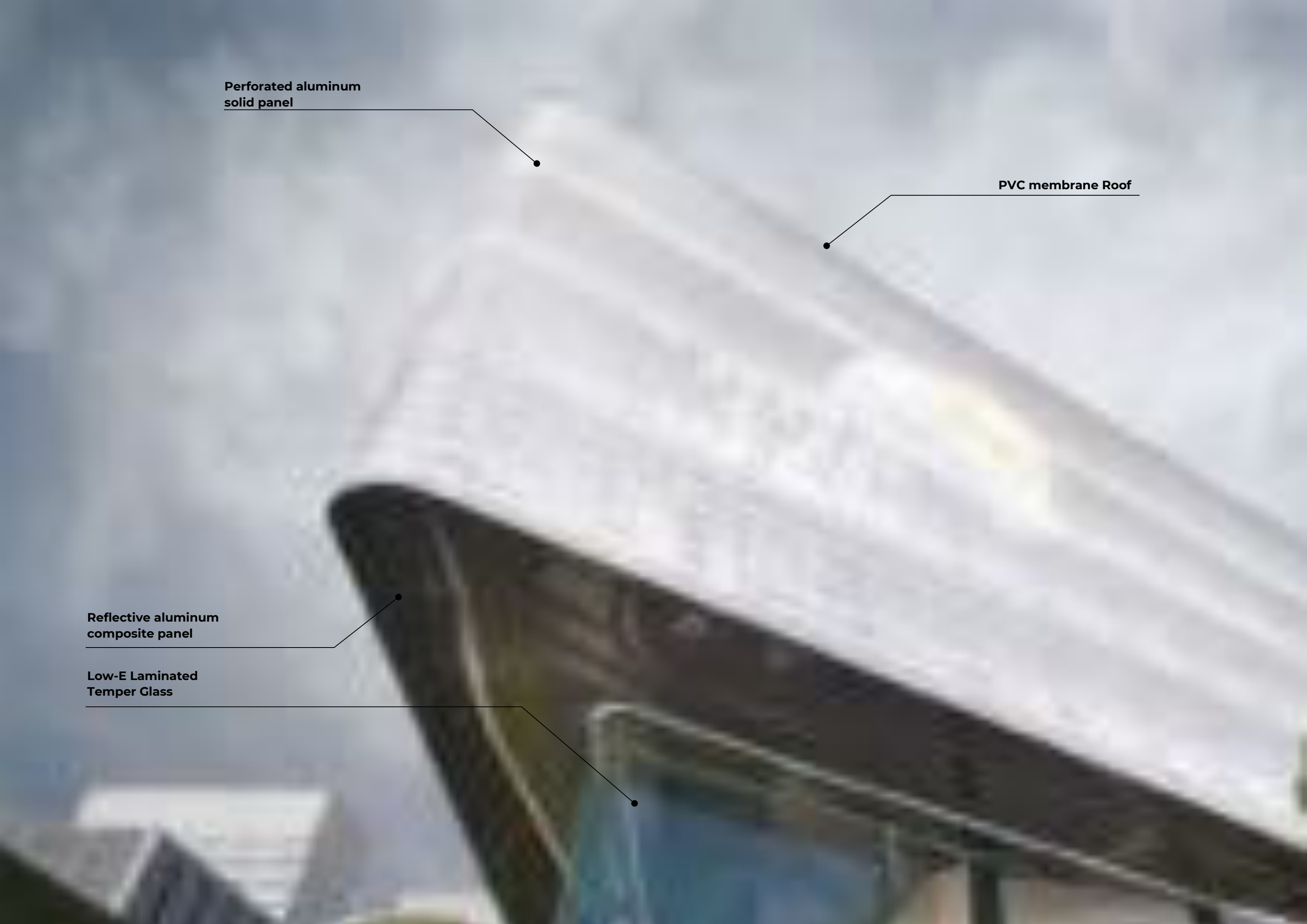
Hanging cantilever Steel Structure

To keep second floor column-free for grand lobby, structural engineers designed by advance engineering of hanging structure. The building has 2 main pillars from the ground to roof and hang the 2 small pillars from 4^{th} – 7^{th} floors. 16 meters cantilever post-tension concrete floor is a result of their invention.

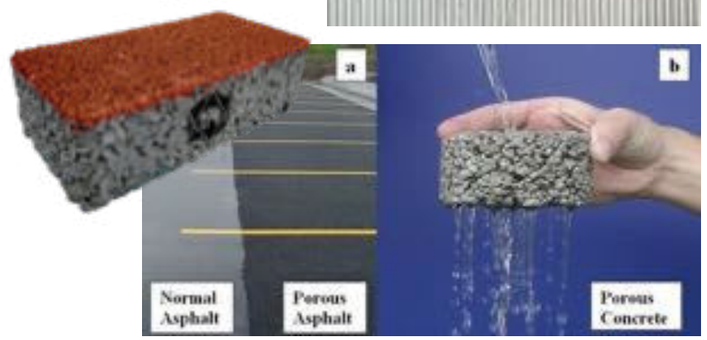


Fully Automated Parking Tower

Automated Parking is a solution of land-use efficient and reducing time and waste carbon combustion of the car engine that find an available lot. There are 64 parking slots that support 3 types of vehicles: sedan, SUV, and van. With 4 towers and 4 car's elevators, the driver will get their car faster than conventional drive and waiting exit queue at the same time.


Perforated aluminum
solid panel
PVC membrane Roof
Reflective aluminum
composite panel
Low-E Laminated
Temper Glass

D Appearance and finish:
Futuristic, sustain, and craft



1.a What are the main materials Used in the appearance and finish of the structure? In addition to listing the materials, show rendering CGI and or Photography to demonstrate the final appearance of the design

Concept of Material Selection

1. Reasonable price
2. Recycling Product
3. Local production / In country Production
4. Innovation and Social Responsibility

List of Architecture Materials

- Perforated Aluminum Solid Panel
- Reflective Aluminum Composite Ceiling Panel
- Aluminum composite Panel (Open-Joint)
- Low-e Laminated Glass
- Stainless steel
- Glass fiber Reinforced Concrete

List of Landscape Materials

- Fiber-rebar (GFRP)
- Grooved Concrete wall
- Porous asphalt
- 20 mm. Porcelain Tile R-10


Glass fiber Reinforced
Concrete (GRC)
Grooved Concrete Wall
Porcelain Tile R10
Perforated aluminum
solid panel

Glass fiber Reinforced Concrete (GRC)

Aluminum composite panel (open-joint)

Fiber Rebar (GPFR)

E Sustainability, Energy Conservation, and Innovation:

1. List of materials, design, and Construction elements That reduce the building's energy Consumption.

Materials

Aluminum solid panel

Low-E Laminated Glass

Self-Cleaning and UV protect acrylic paint

Light color Porcelain Tile

Grooved cement plaster (reduce heat on wall)

PVC membrane with PU Foam (Insulation)

Design

Double skin façade

Cantilever Ceiling

Steel grating canopy; shading device

Heat exchange and DOAS

Lighting and Temperature Sensor

Building automation system

Separated function type (Low zone; office, High zone; seminar)

Roof Garden and Trees around the building envelope

Air ventilation fan (for semi-outdoor area)

Construction elements

Glass fiber Reinforced Concrete (shading device)

LED High efficiency

Inverter Air condensing unit (FCU)

2.a List any environmentally Friendly and sustainable construction materials and techniques used.

Materials

Low VOC polyurethane paint

Fiber rebar (GFRP) (Upcycling Product)

Fabric (Upcycling Plastic waste Product)

Wood (from Forestation)

Porous Asphalt Block (reduce water run-off)

Artificial stone Countertop (Upcycling Plastic waste Product)

Design

Humidifier Green Wall
Water Cooled Magnetic Bearing Chiller

Crossflow Cooling tower

Roof Garden

Grey Water Treatment Garden

Rainwater collecting tank

Daylight auto-dimmer in office area

Waste management room

Construction techniques

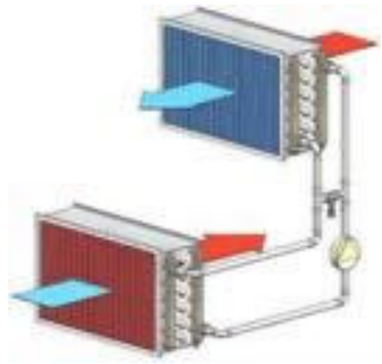
Prefabrication façade

Open joint Aluminum composite Façade

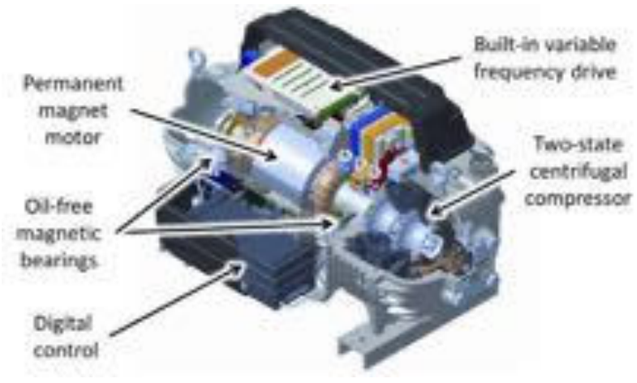
Exposed Ceiling in common area

BIM Design and Construction

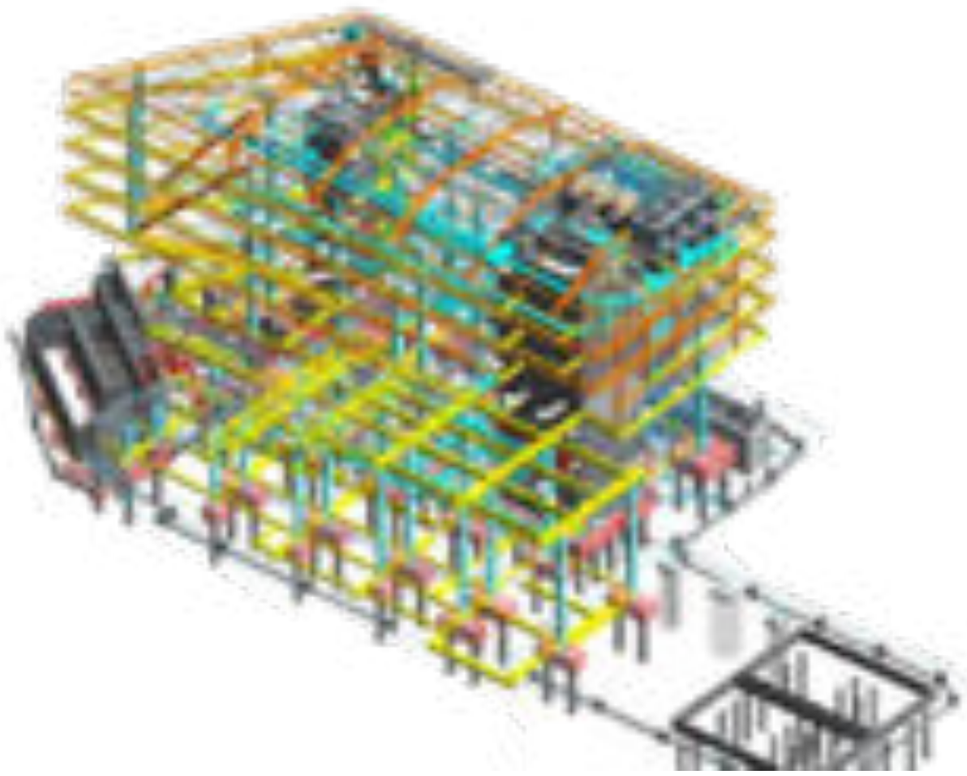
DOAS (Fresh air Filler)

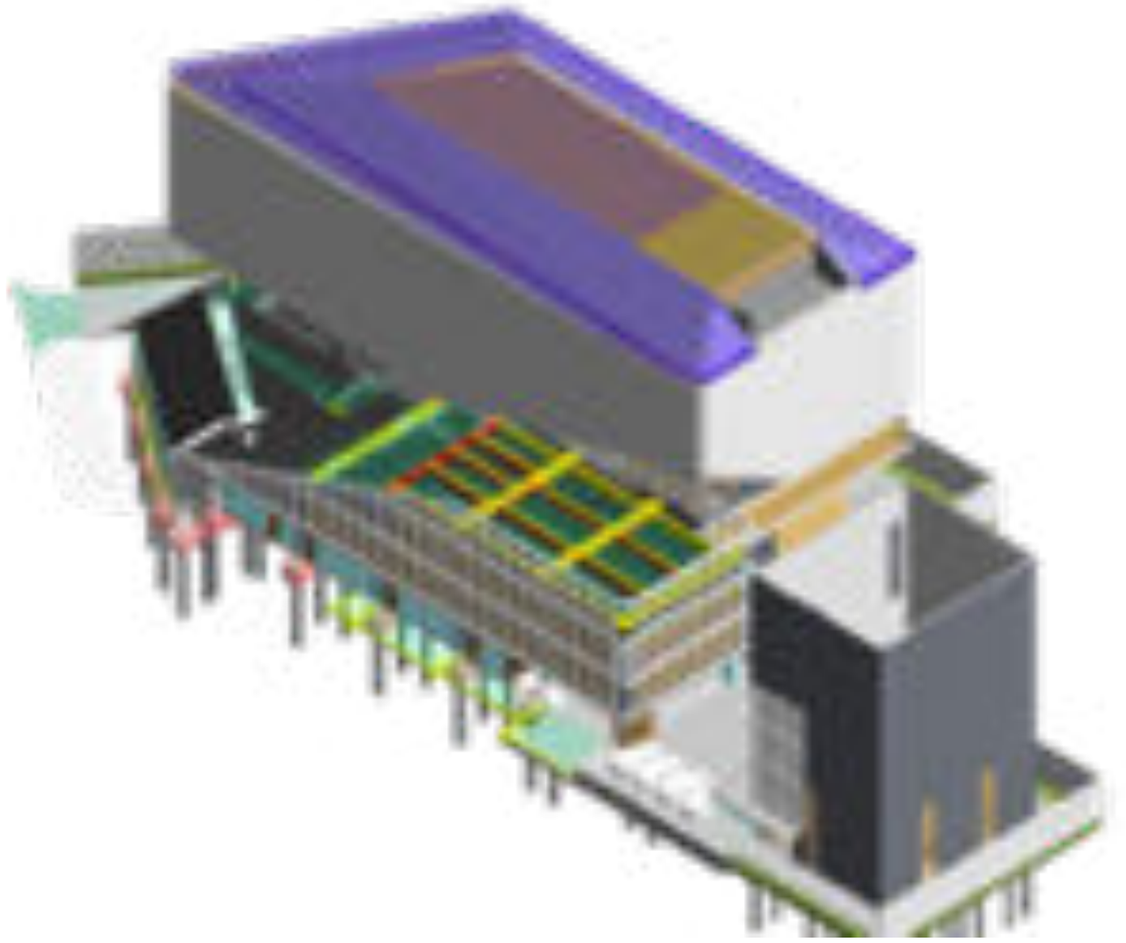


Run Around Coil (Heat Exchanger)



Magnetic Chiller





BIM Design and Construction

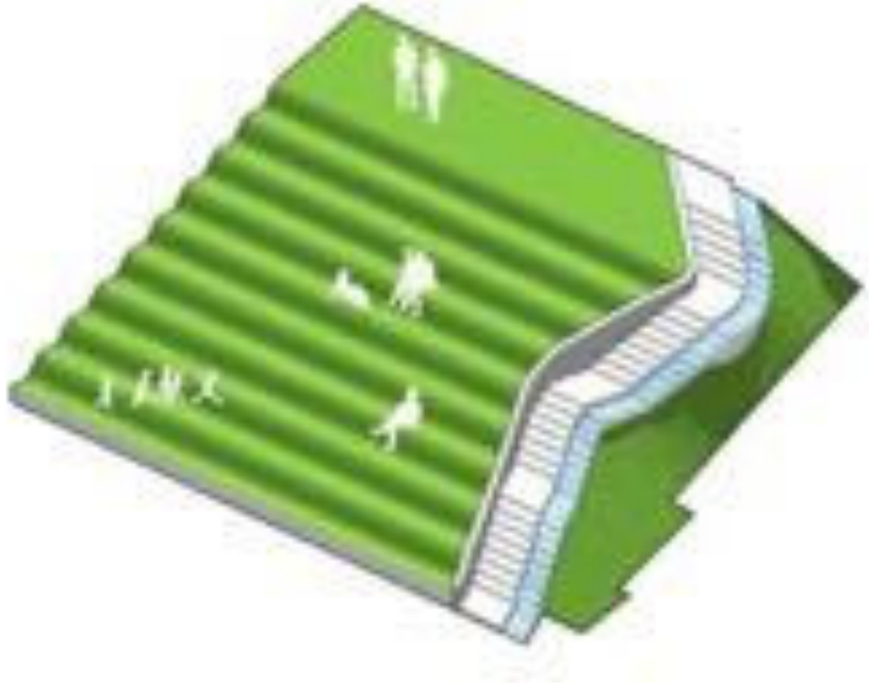
2.b What methods or materials are incorporated into the design to use renewable energy?

Water Treatment Garden

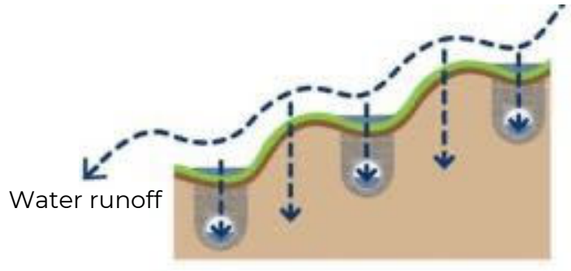
The water garden is one of the landscape features that people appreciate. Moreover, the landscape designer designed the waterfall with water-filtration plants that will clean building's grey water.
The filtration plants will build their micro-ecology and build sustain biology for the garden.

Rainwater collector and Reuse

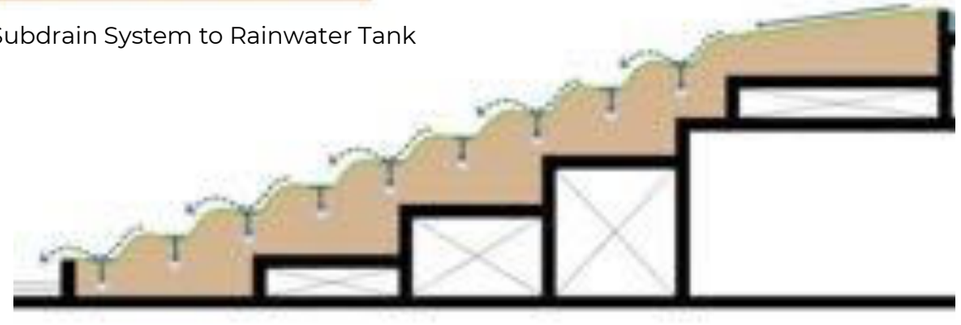
Thailand is tropical climate that half of the year are raining. Landscape designer designed his roof garden with court and step seating which included the drain that collect rainwater to separated water tank. This idea will reduce the cost of maintenance.



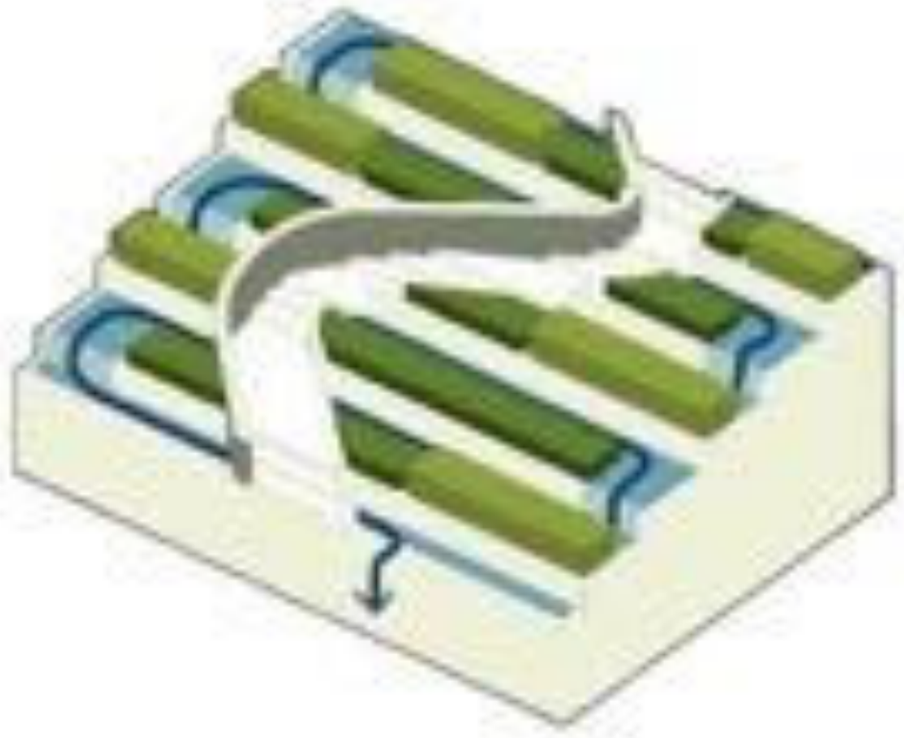
Multipurpose court for public



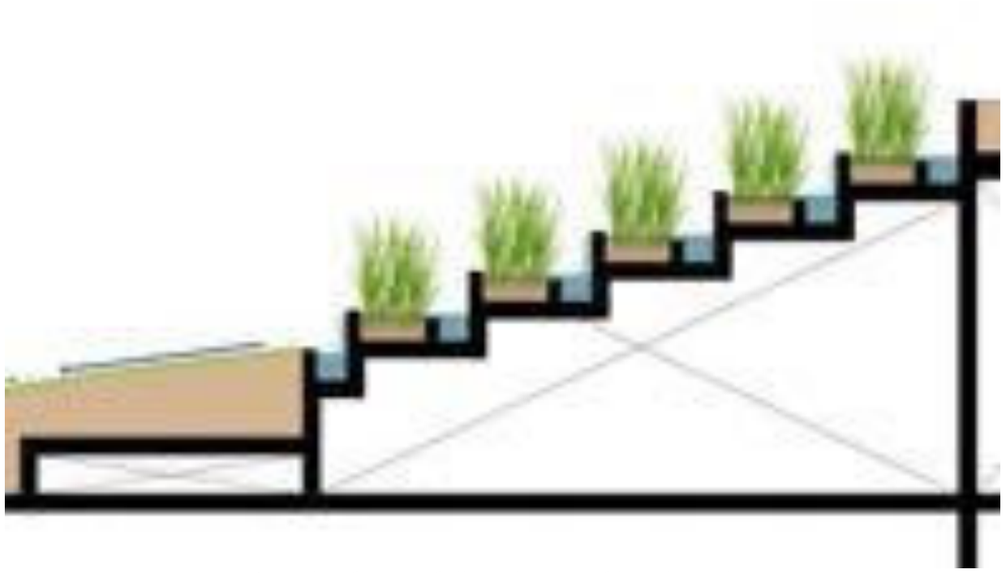
Subdrain System to Rainwater Tank



Berms reduce water runoff



Grey water filtration: water feature



Levels of waterfall and water filtration plants

High Efficiency Solar Panel
7-10% self-energy production (45 Kw)

A hundred solar panels (470w) over the roof were planned to produce electrical power more than 7 percent of whole building energy maximum consumption.

F Safety and Security :
Over requirement to be the role model

Council of Engineers has a mission to build a Prototype Building which include high-performance security and safety system for future education and research.

1. **List all the features included in the property that improve the safety and security of occupants and highlight any of these measures that go beyond the minimum required by building code / law.**

List of standard requirements by code

Building type: <10,000 square meter

1. 1 x Fire Extinguisher / Floor
2. 2 x Fire Escape Stairs / Floor
3. 1 x Accessible toilet / Floor

List of conventional safety and security features

4. 24/7 Security guard
5. Visitor Keycard
6. No-Blind spot CCTV

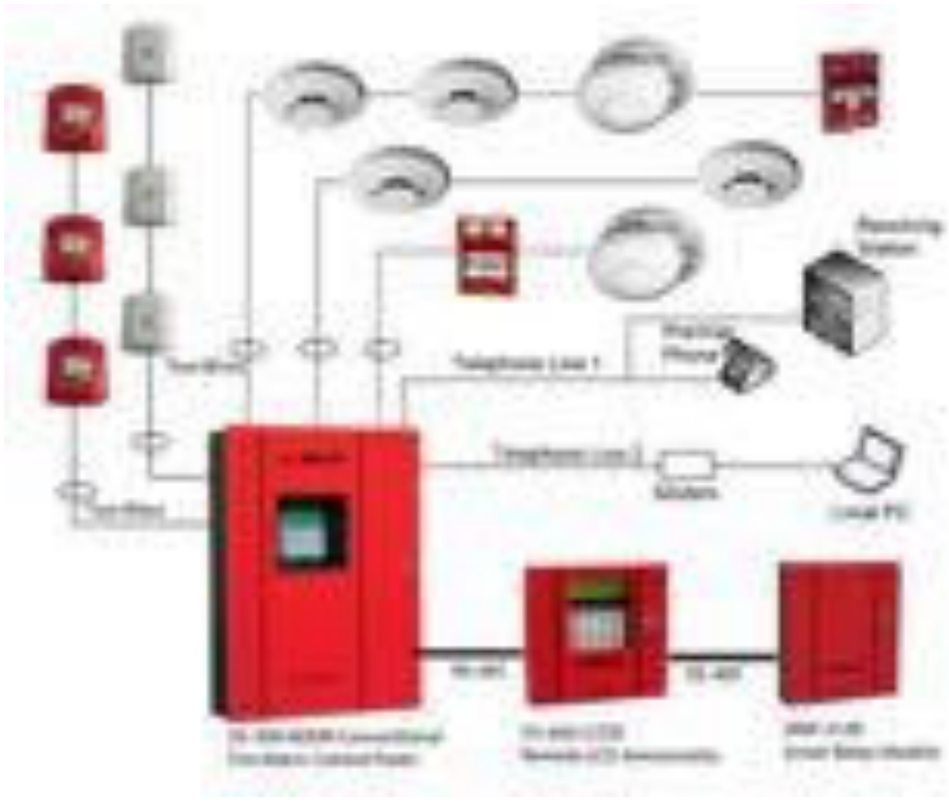
Automatic car's number-plate recognition

AEDs

EAS

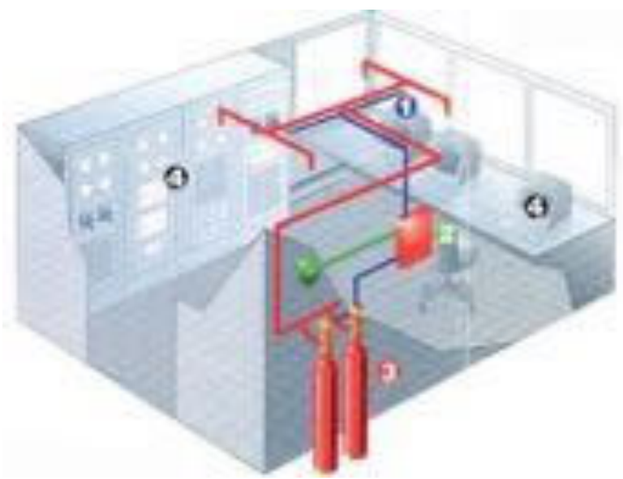
List of extra safety and security features in the COEHQ

7. **1 x Fire Escape Outdoor stair / Floor**
8. **2-3 x Fire Host Cabinet / Floor**
9. **Fully Fire Sprinkler System**
10. **FM-200, NOVAC 1230 for Data Center Room**
11. **Generator and Emergency Light 30 Minutes**
12. **Addressable Fire alarm system**
13. **2x Diesel & Electric Fire Pumps**
14. **Fireman Elevator**
15. **Public HHC (for neighbors)**
16. **First Aids Room**
17. **AEDs: Automated External Defibrillator for Sudden Cardiac Arrest**
18. **Electronic Article Surveillance System for officer**
19. **Automatic car's number-plate recognition**
20. **Emergency call for accessible toilets**
21. **Nursing Rooms**



Addressable Fire Alarm system

Fully Fire Sprinkler System



NOVAC 1230

FHC

2. Describe any fire prevention or suppression systems.

Fire Prevention

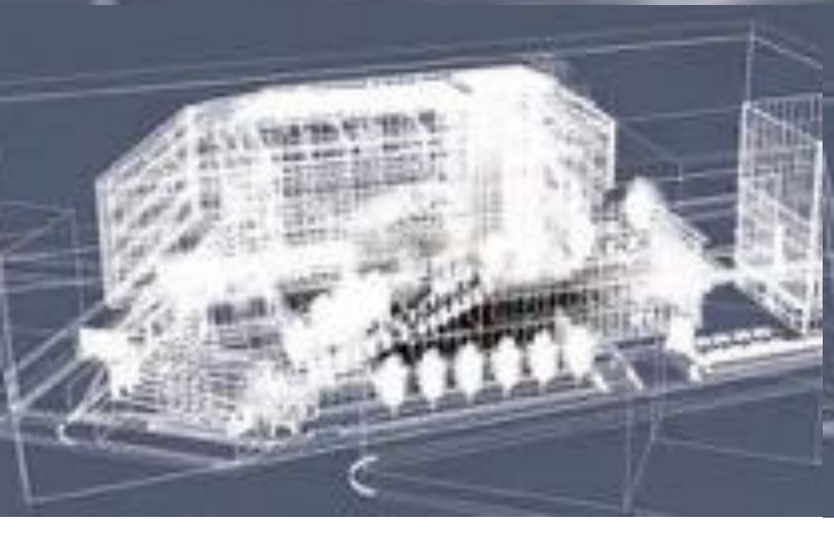
1. Non-Flammable materials (Aluminum composite Panel, Fabric curtain, fabric furniture)
2. No Indoor smoking Policy and Have outdoor smoking zone
3. Separated Carpark Building
4. Fire and Explosion Simulation
5. Emergency Route Map

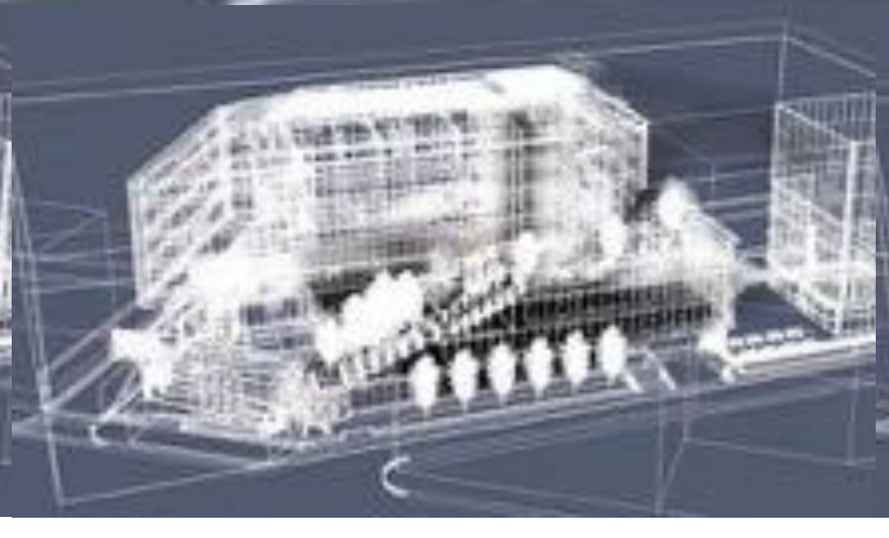
Fire suppression

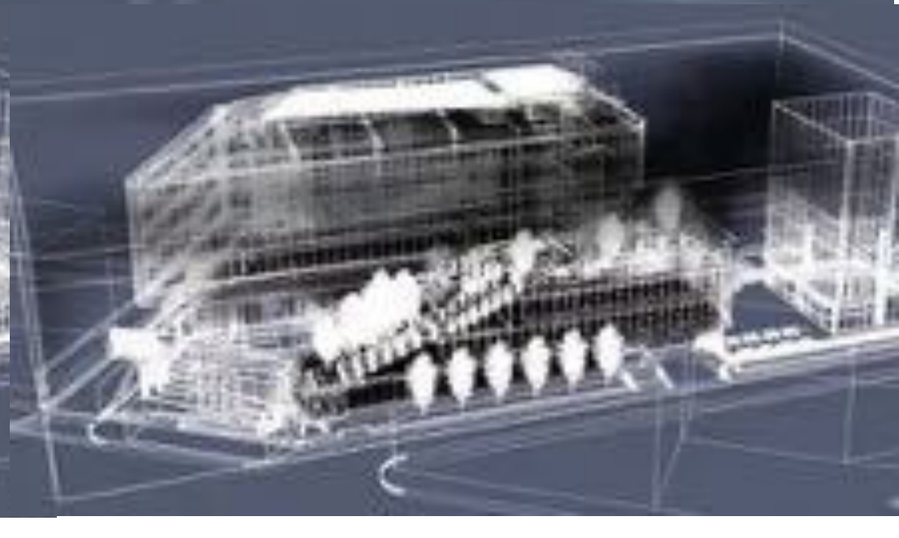
1. Addressable Fire Alarm system
2. Use water sprinkler system and Fire Host Cabinet
3. Electric and Diesel fire pump
4. FM-200, NOVAC 1230 for Data Center room
5. Outdoor Fire escape route
6. Openable Façade in case emergency exit or entrance
7. Public Fire Host Cabinet for the neighbors

Fire Protection system In BIM Model

COEHQ Fire and Explosion Simulation







G

Nowaday :
30 January 2022

The construction plan will finish on 1 May 2022. And fully operated on June 2022. Under the Covid-19 pandemic, all participants are working hard and fully with enthusiasm to make the best together.


SM


ok

Project: The New Headquarter of Councils of Engineers Thailand

Client: Councils of Engineers Thailand

City: Bangkok

Country: Thailand

Area: 9,900 + 1,200 m^2

Year: 2019-2022

Conceptual Designer: Ativich + Atelier of Architects

Architects: Ativich + Team SQ

Landscape Designer: 8.18 studio

Interior Designer: Team SQ

Structural Engineer: Team Consulting & Management

Electrical & Telecommunications: Pornprasert Techamaytheekul

Fire Protection engineers : Next2nd Innovation

Mechanical Engineer: Next2nd Innovation

Lighting Engineers: Lighting studio

Energy & Environmental: Africvs

Construction General Contractor: Siam Multi Cons

Construction Managers: Stonehenge Inter

Media Artwork: Ativich + Atelier of Architects