



GREEN Asi ARCH 2017

E X H I B I T I O N
O N

Green & Sustainable Architecture of Member Countries

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Compiled by: Ar. TUSHAR SOGANY, IIA



BAIT UR ROUF MOSQUE,

FAIDABAD , DHAKA, BANGLADESH

Architect: Marina Tabassum
Land Area: 753.45 sqm
Cost of the project: 150,000 US\$

Consulting Firm: MTA
Year of Completion: 2012
Awards: Shortlisted- Aga Khan Awards

Bait ur Rouf Mosque is located in the northern expansion of Dhaka, a fast growing community of lower middle income families. 7200sft of area donated for the mosque is flanked by roads on west and south. The site axis creates a 13 degree angle with the axis of qibla which called for an innovation in the layout.



Light remains at the core of design. A carefully scaled and proportioned volume that is the prayer hall is contemplative in nature is evenly lit to enhance the feeling of all as equal. The space is naturally lit and ventilated with open courts on four sides.

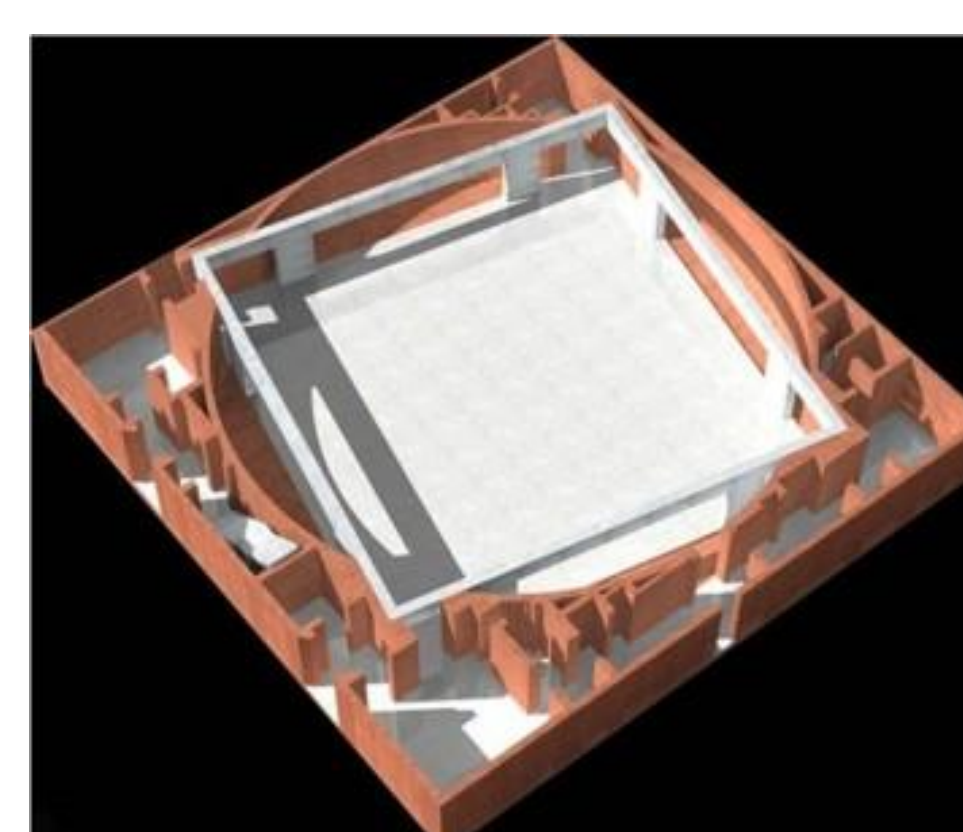
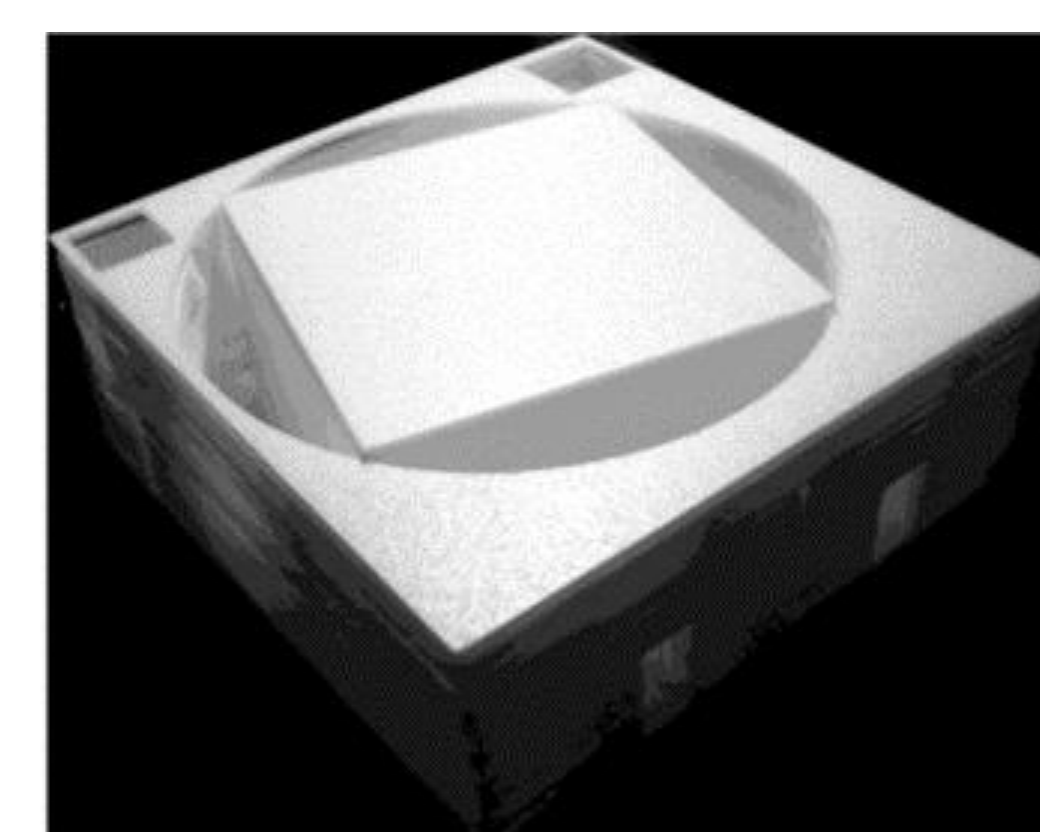
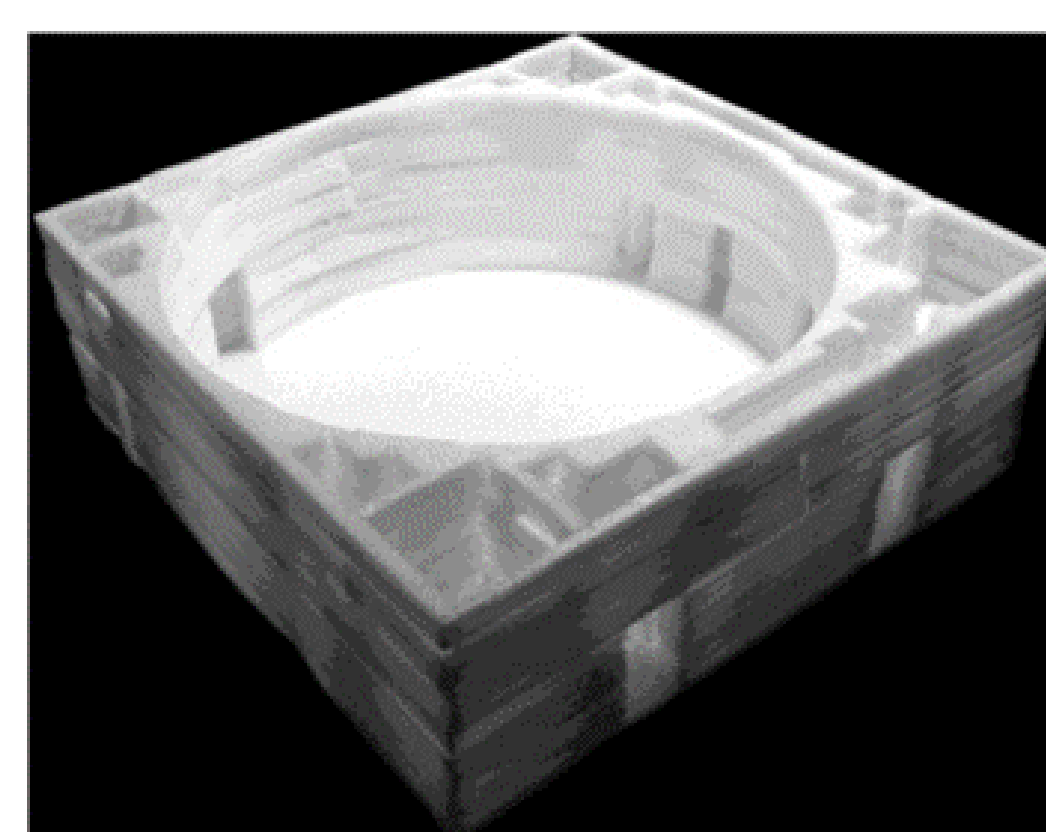
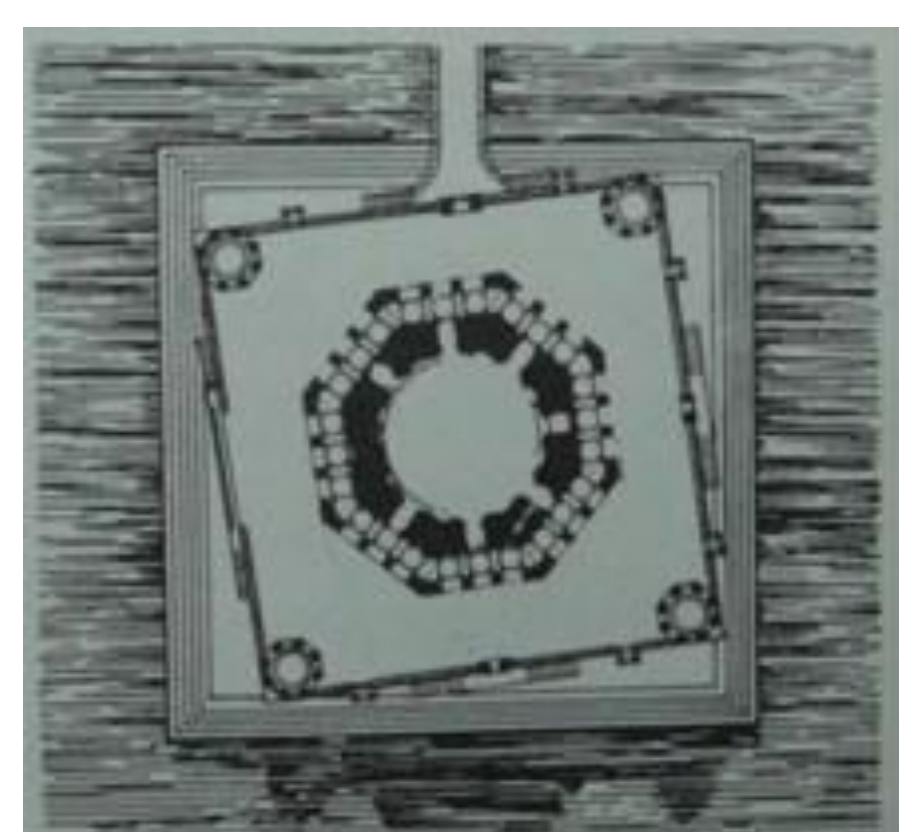
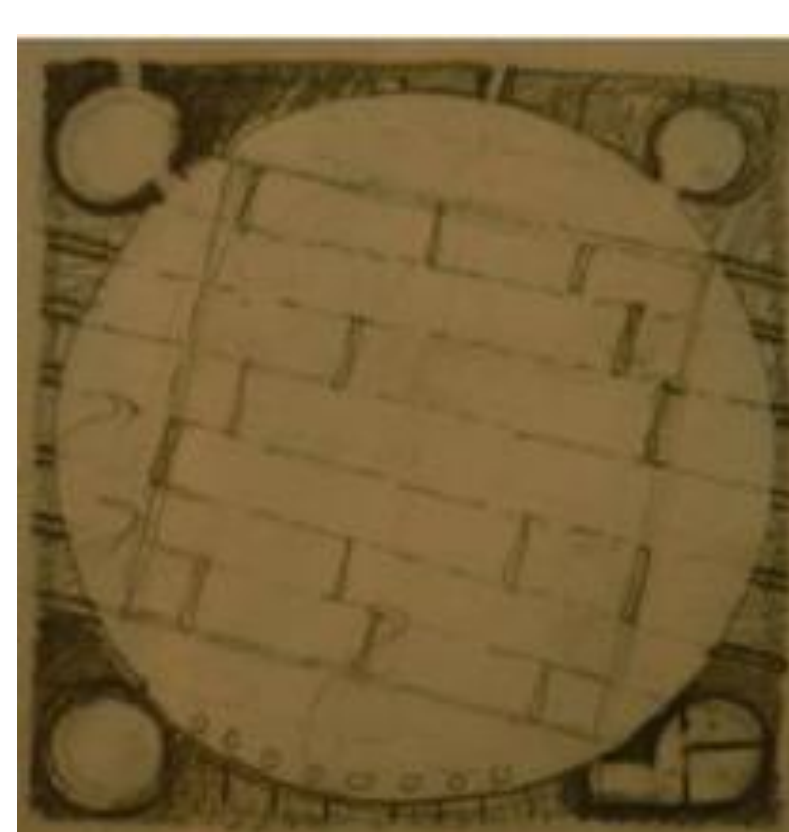
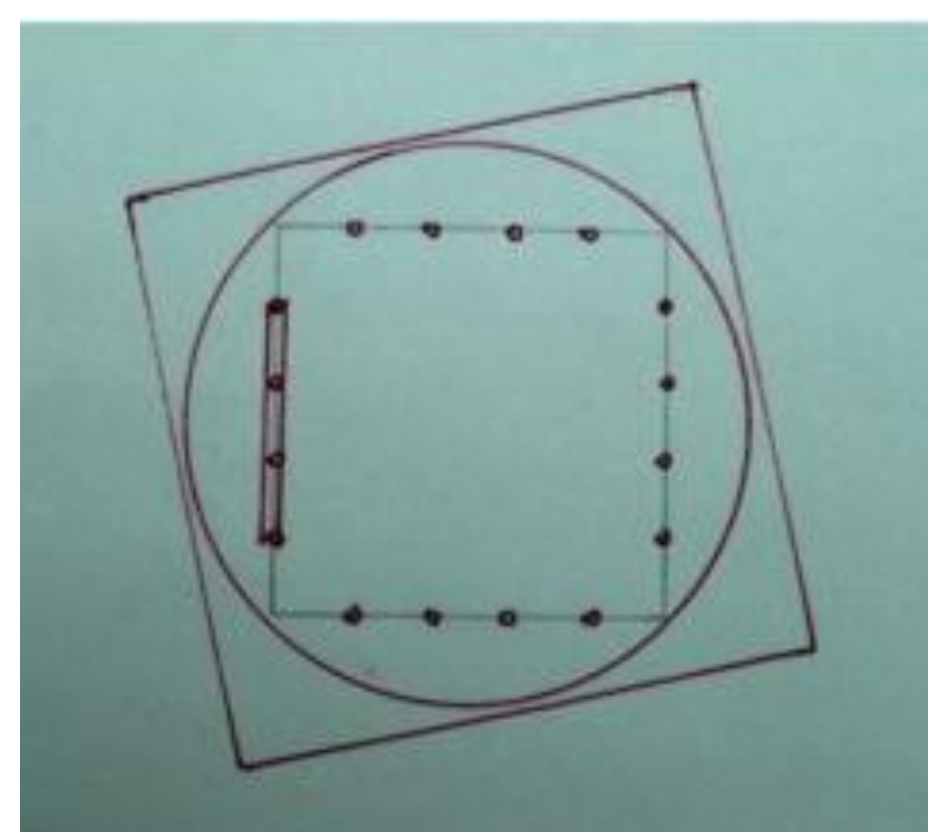


Three volumes were introduced, one inserted within the other to create sequence of spaces. The outer most volume is a 75'x75' square of 25' height that is situated parallel to the road creates the main façade of the mosque.

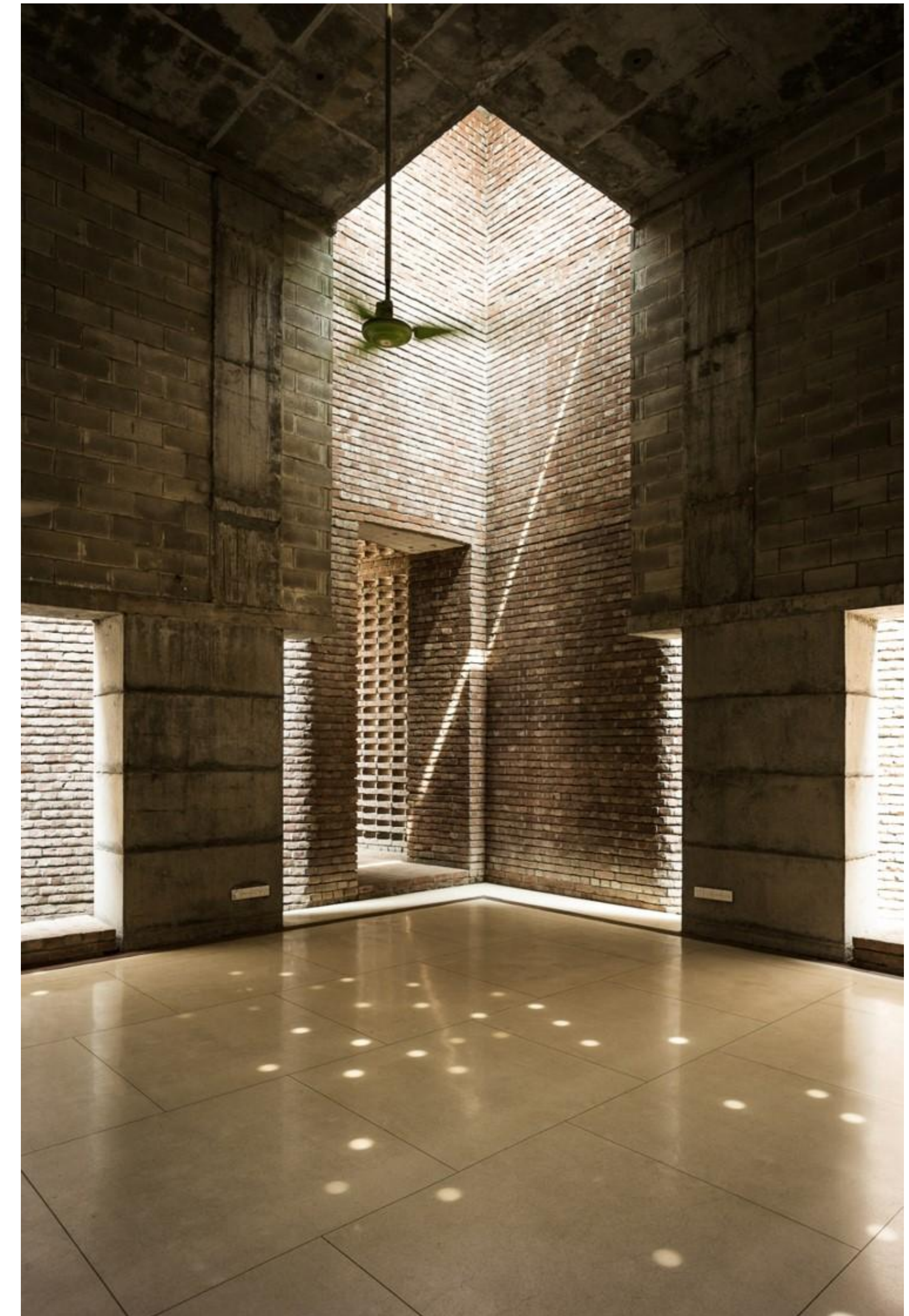


A cylindrical volume is inserted into it that facilitates the rotation of the prayer hall simultaneously formulating light courts on four sides. All ancillary functions such as the entrance courts, ablution and toilet facilities, Imam's office and stair are located within the space created by the outer square and cylindrical volume.

Bait ur Rouf Mosque is an attempt to trace the lost glory of mosque architecture of Bengal that begin with the advent of Islam during the Sultanate period. Thus the use of local material and craftsmanship of handmade architecture is celebrated through the making of the mosque.



This part of the design is conceived as load bearing brick construction; whereas, the prayer hall is in concrete. The main prayer hall is a column free space, 50'x50' in square and 35' in height.



CIC ZERO CARBON BUILDING

KOWLOON BAY, HONG KONG, CHINA

Architect: Ronald Lu & Partners

Site area: 14,800 sq. m.

Engineers: Ove Arup & Partners Hong Kong Ltd.

Project Manager: AECOM Asia Co. Ltd.

GFA: 3,300 sq. m. 2011 to 2012

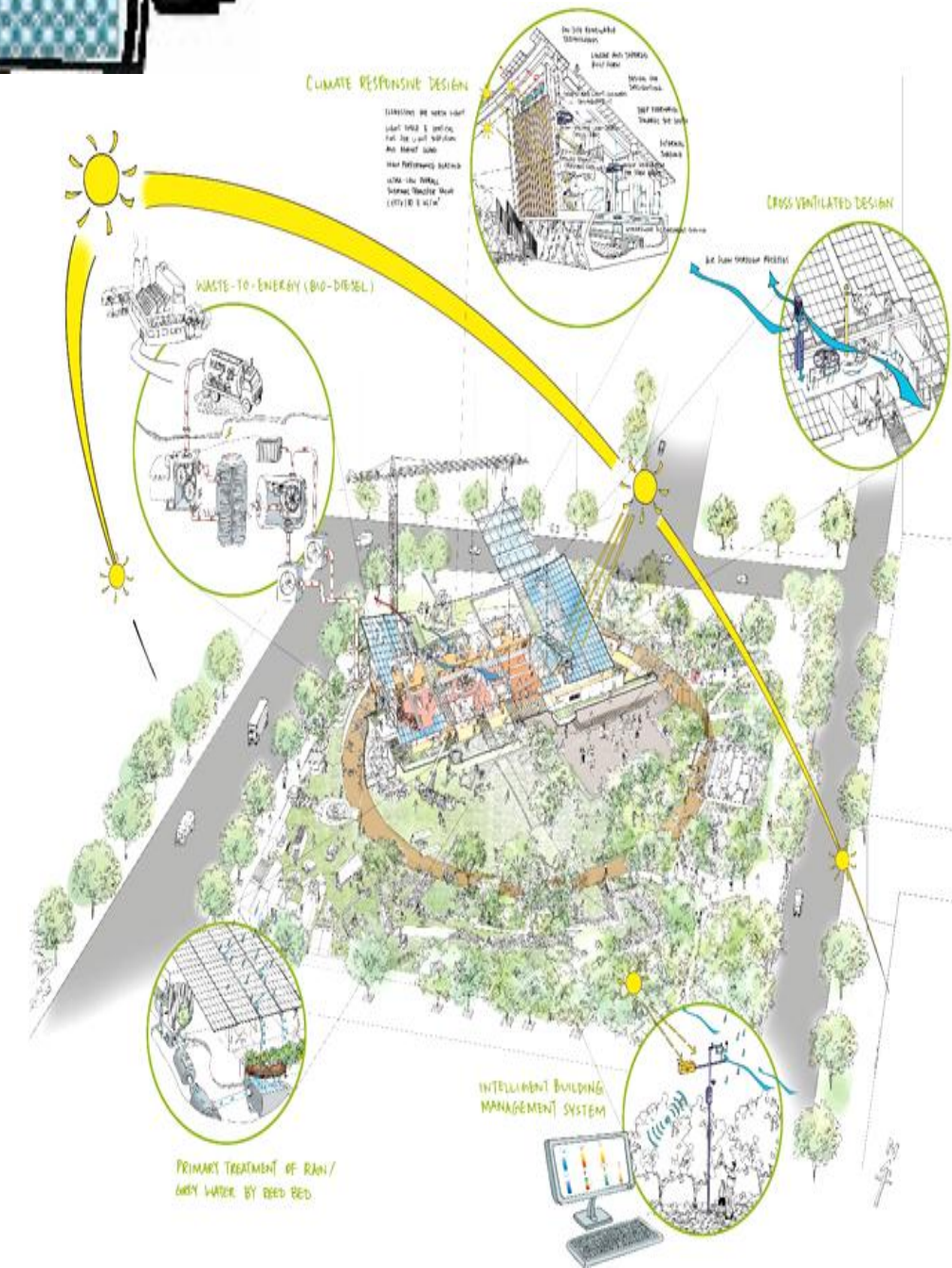
Client: Construction Industry Council

Landscape Architect: Urbis Ltd.

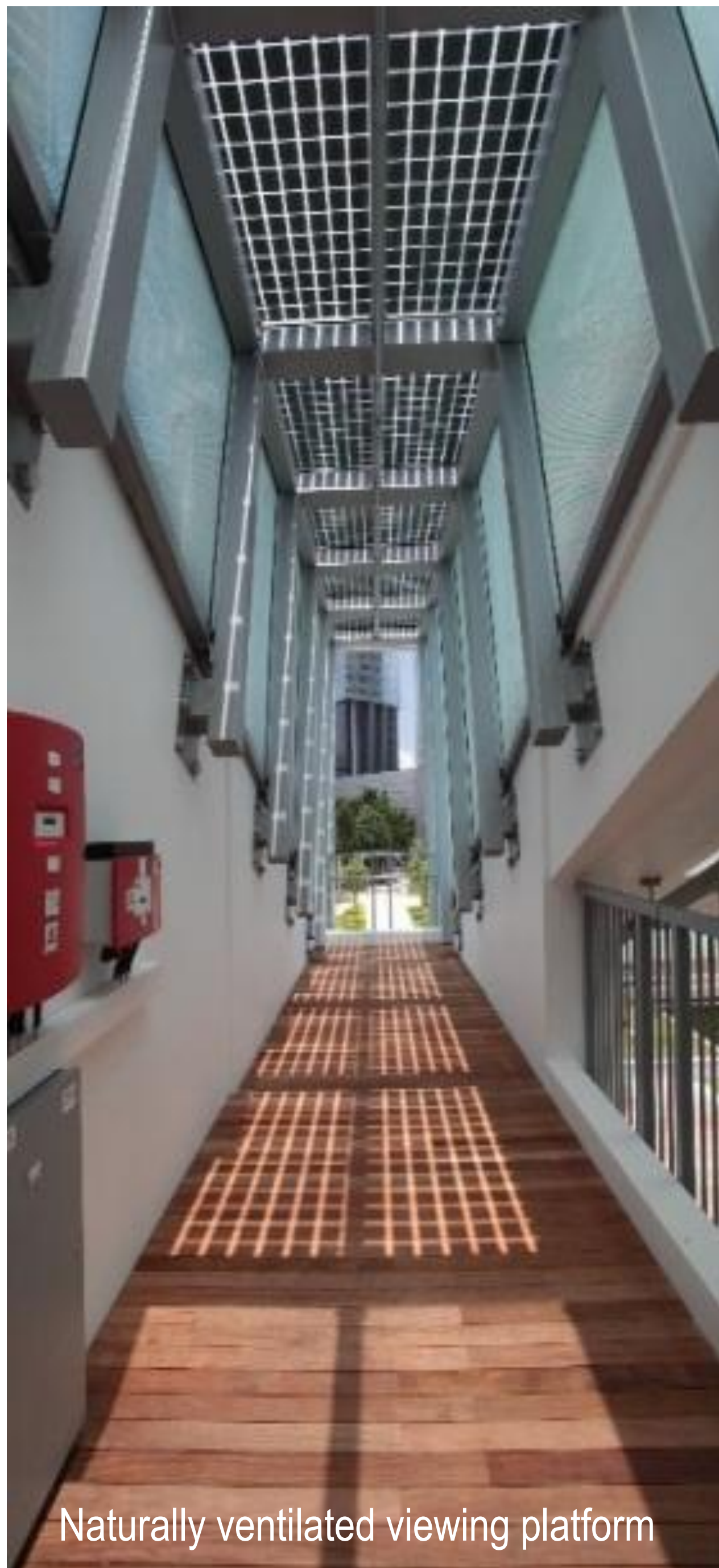
Main Contractor: Gammon Construction



Low embodied emission design is adopted with reuse of concrete debris salvaged from the demolition works, and use of low-carbon materials.



ZCB is a zero carbon building specially designed for the sub-tropical urban context. It is a visitor education centre and houses a green office, a demonstration home for low carbon living, a multi-function room, the first urban native woodland of Hong Kong and other outdoor landscaped / event spaces.



Naturally ventilated viewing platform



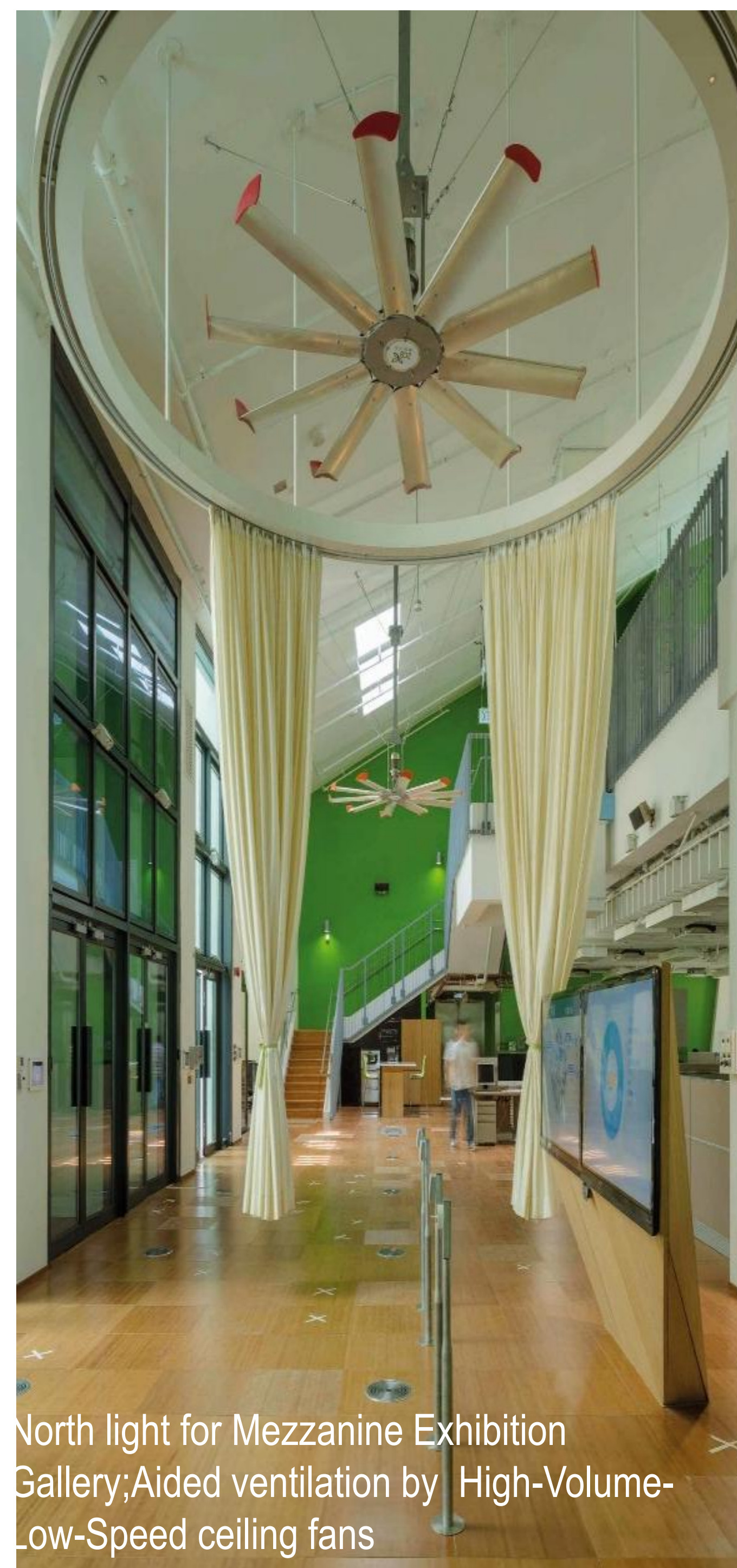
Recess spaces along southeast facade for air and light penetration



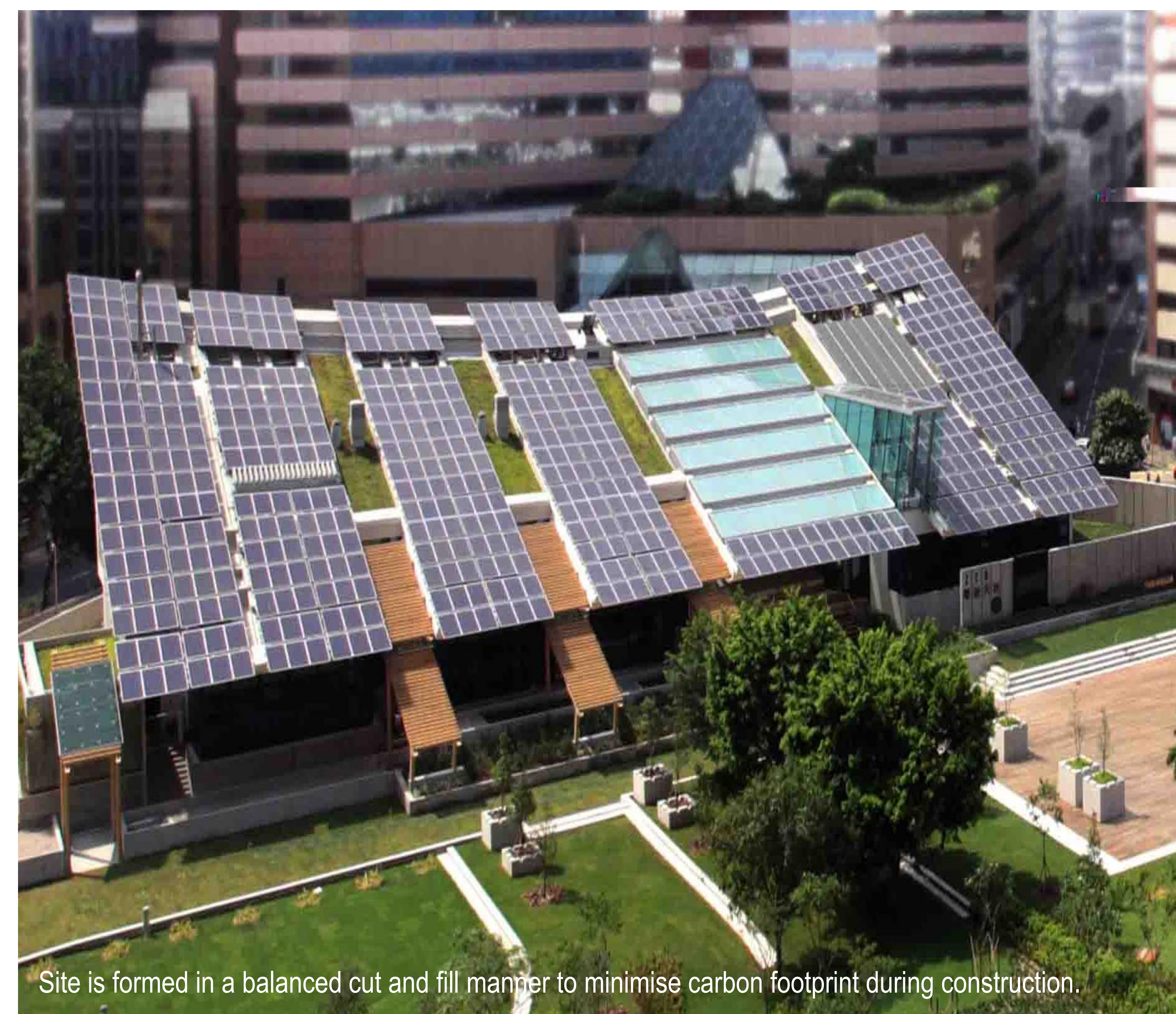
Built form and orientation are optimised to create good cross ventilation. Daylight from north windows is further amplified by the sloped ceiling. High performance building envelope minimises solar heat gain. The urban native woodland and high greenery coverage (about 50%) not only enhance biodiversity and amenity, but also serve as 'carbon sink' and a 'heat sink' cooling the prevailing wind.



Open plan layout for hybrid ventilation with smart facade



North light for Mezzanine Exhibition Gallery; Aided ventilation by High-Volume-Low-Speed ceiling fans



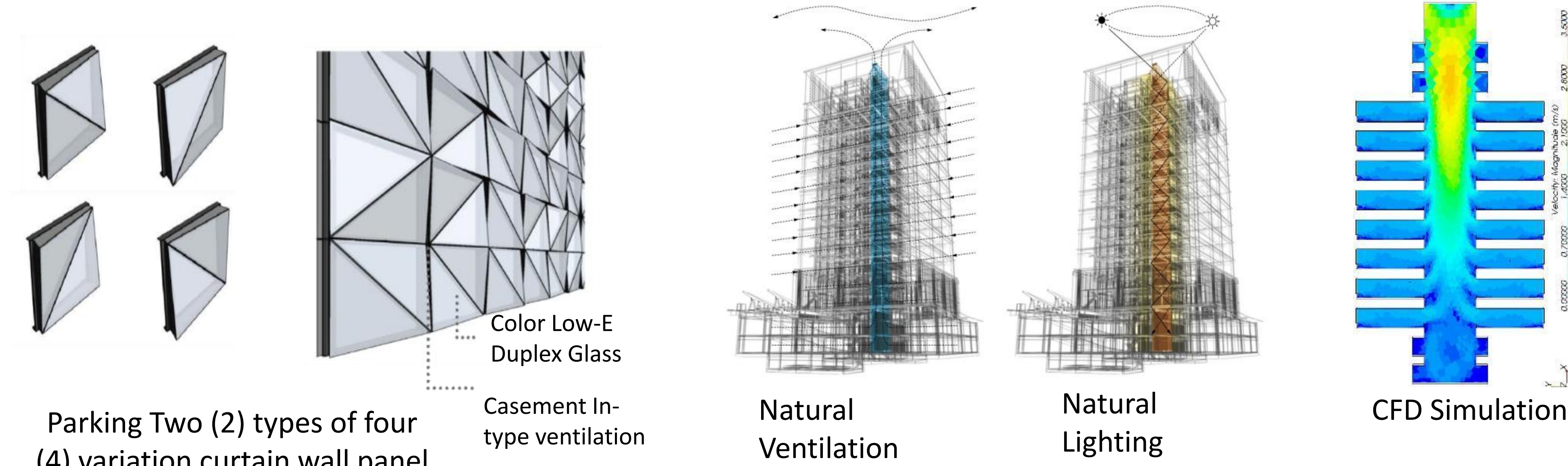
Site is formed in a balanced cut and fill manner to minimise carbon footprint during construction.

JEONNAM KSCFC HEADQUARTERS

MOKPO, SOUTH KOREA

Architect: PARKiz
 Land Area: 1,961.80 sq m
 BIM Awards: 2010

Completion: Nov 2011
 Built Area: 12,590.72 sq m
 Construction Cost: 12,800,000 USD



Parking Two (2) types of four (4) variation curtain wall panel

Color Low-E Duplex Glass

Casement In-type ventilation

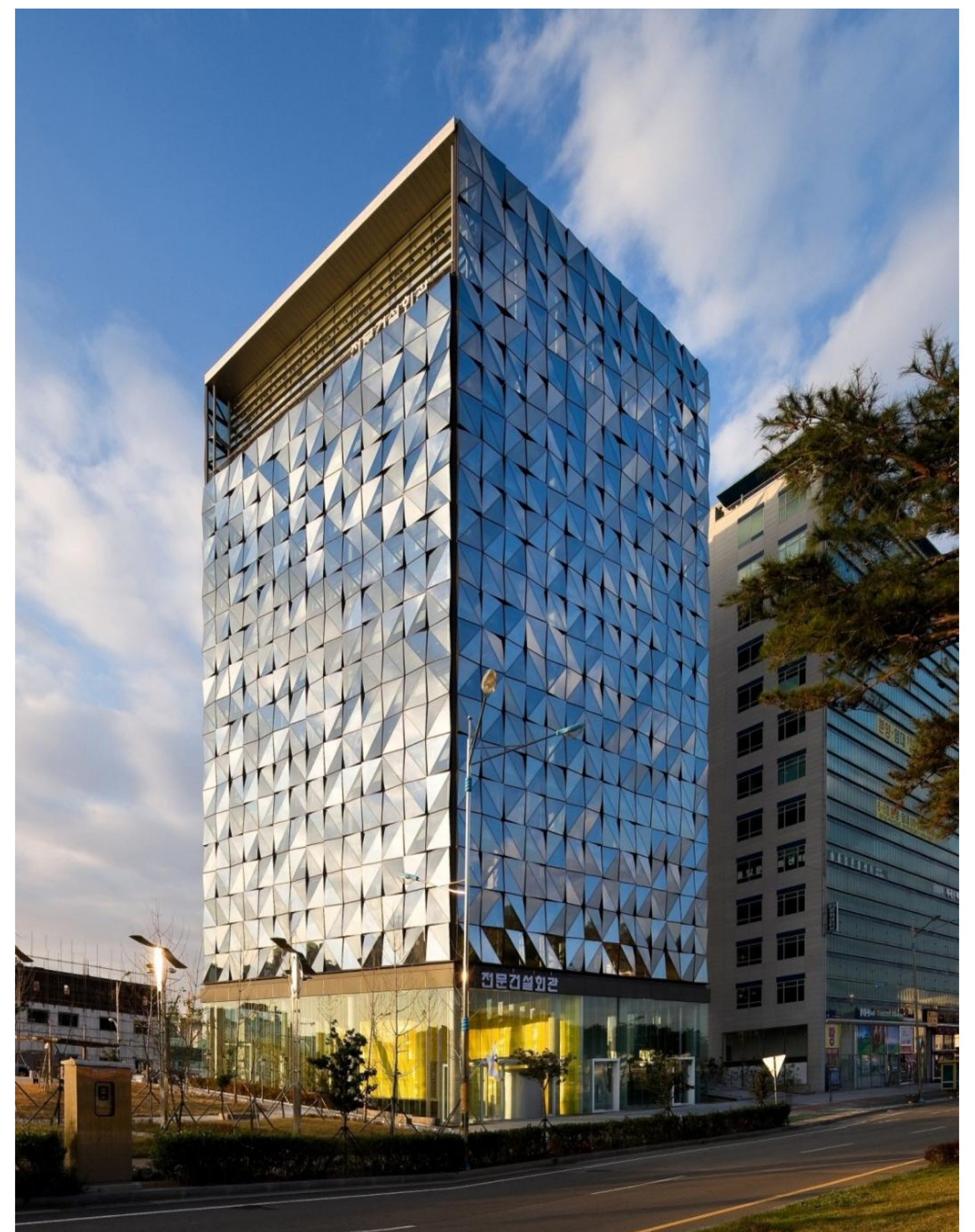
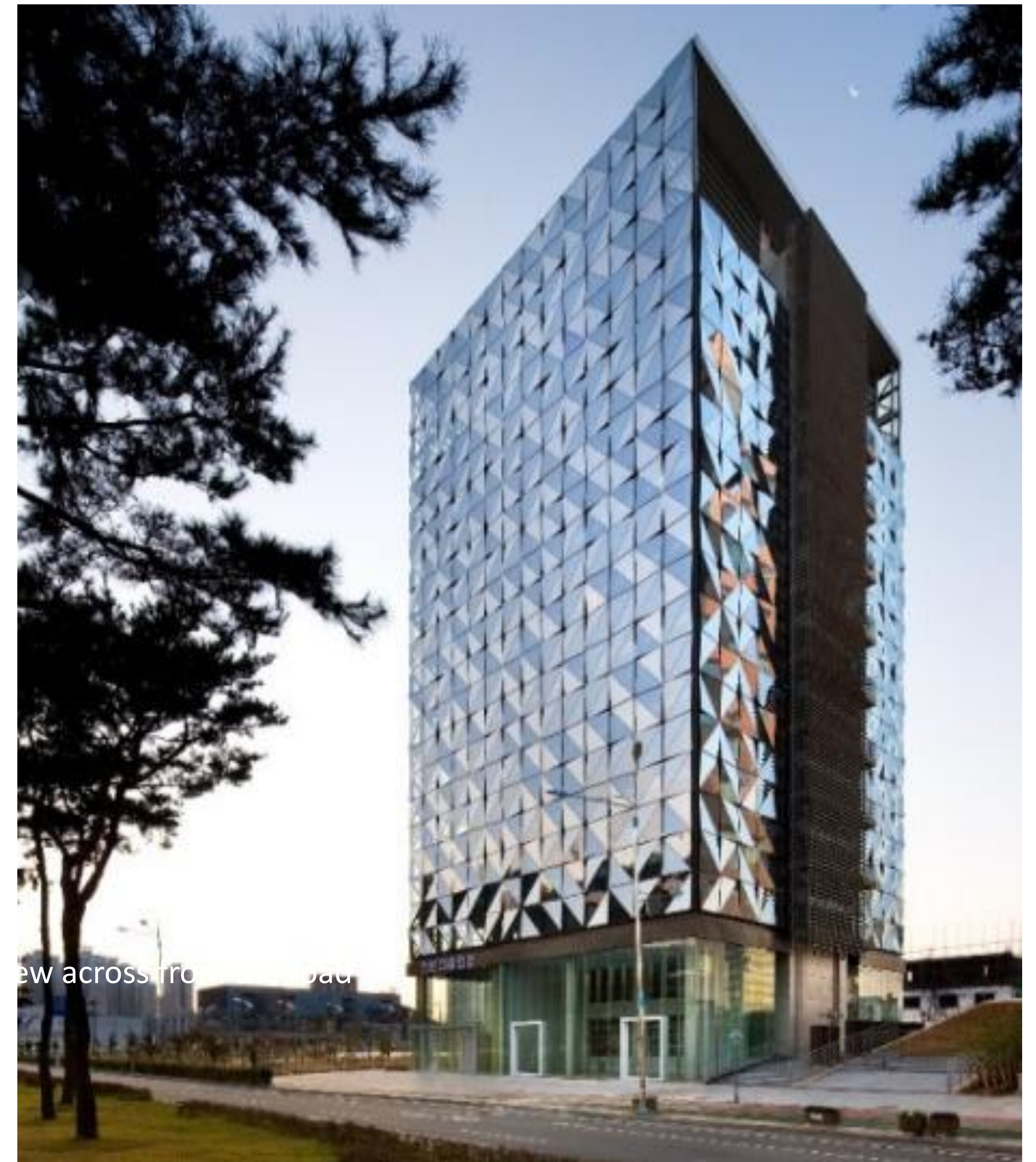
Natural Ventilation

Natural Lighting

CFD Simulation

"I planned the function of the building as well as its exterior appearance to carry the features of the building as a Special Contractor Association building. The dimensional combination of the skin adjusts the sunlight, and the gap between the dimensional panels becomes a space for ventilation. The creative design made the skin of the building carry originality of elevation and be multifunctional. It also shows the changes of a day, months, and seasons. The skin appears to change with the passing of time, over a day, months, and seasons."

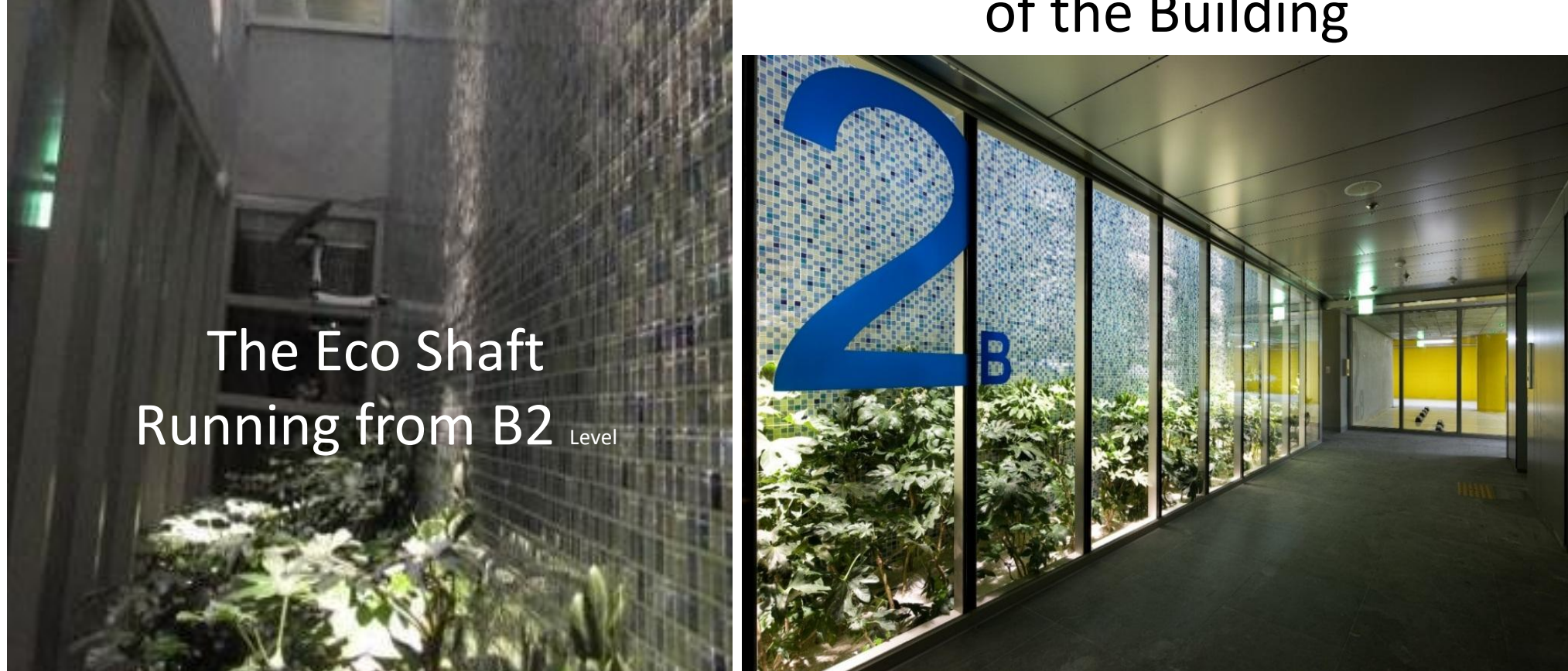
1. green technology
2. BIM
3. public in terms of visual and spatial aspects
4. lower part of the building is as open as possible
5. Increased floor-to-floor height above maximum permissible height
6. cutting edge technology
7. skin of the building does not disturb the surrounding area.



The Lighting is Sufficient for Having Plants at the Lower Part of the Building



Banquet Room



The Eco Shaft Running from B2 Level

- natural lighting and ventilation for all floors (from underground to attic)
- no burden of installation cost except economic performance of maintenance
- applicable in the almost all building regardless of usage
- bigger synergy amalgamating similar technological department
- smoke control system

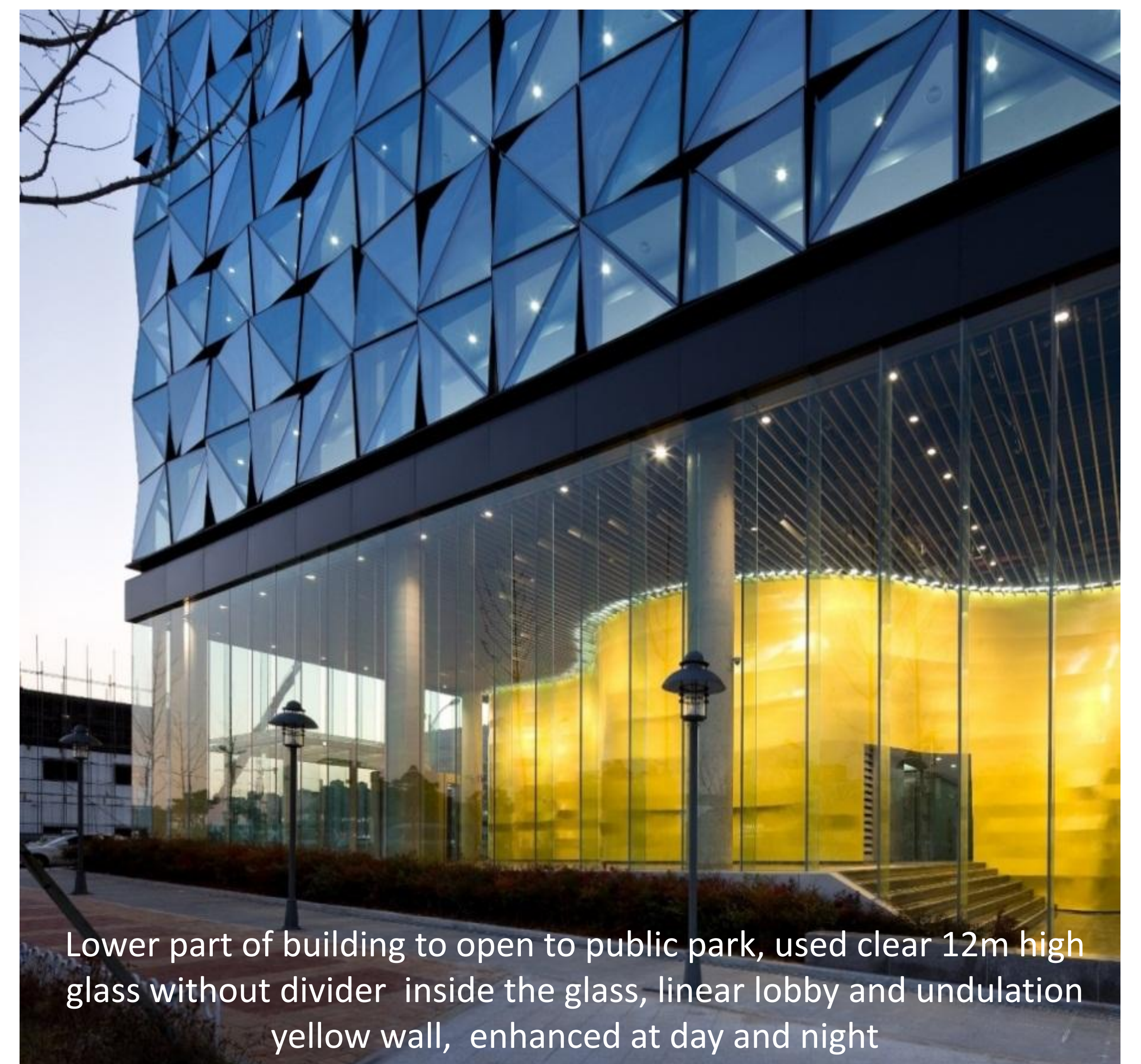
- small wind power generation
- closer to natural environmental system
- enhances quality of living environment
- improves quality of living in the central part of building
- reduces carbon expenditure
- cost efficient
- adaptable



Facade shows various pattern by day, months, seasons, and user's position



Parking entrance & side facade



Lower part of building to open to public park, used clear 12m high glass without divider inside the glass, linear lobby and undulation yellow wall, enhanced at day and night

HANKOU TOWN

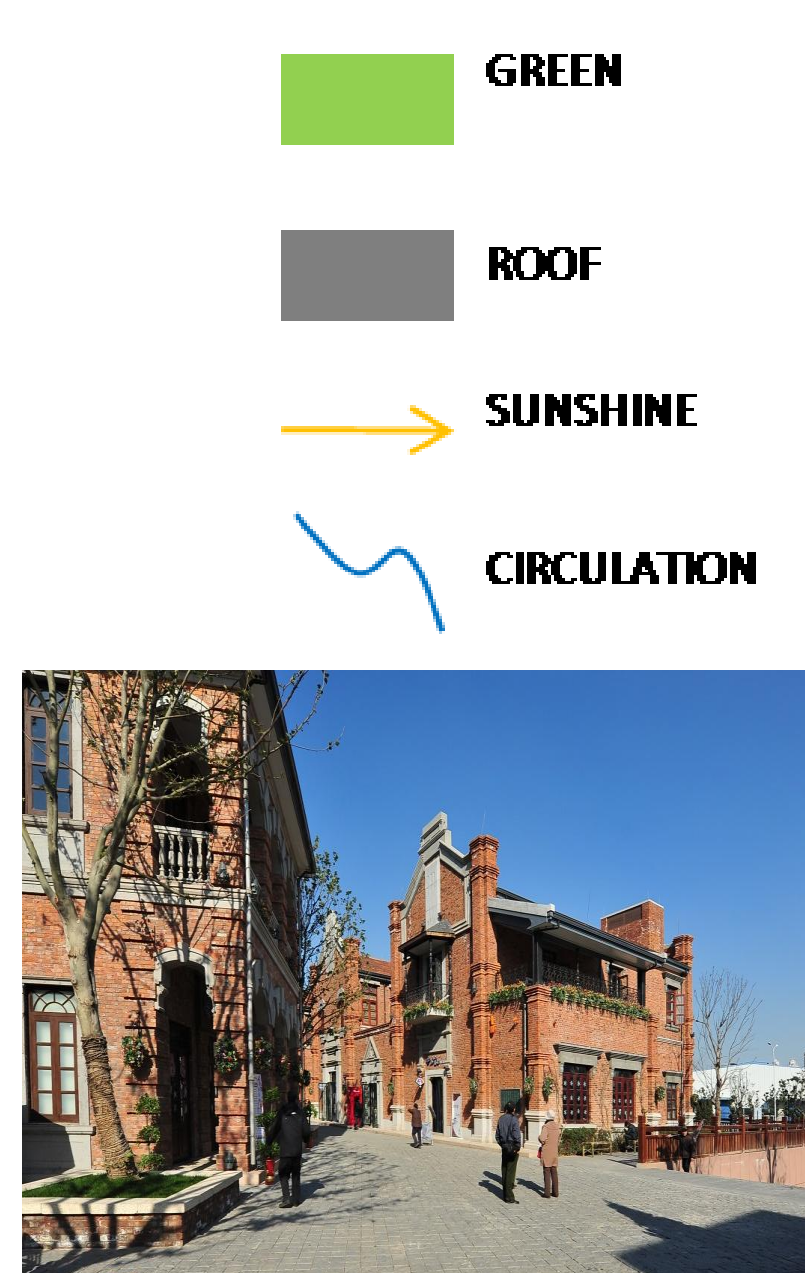
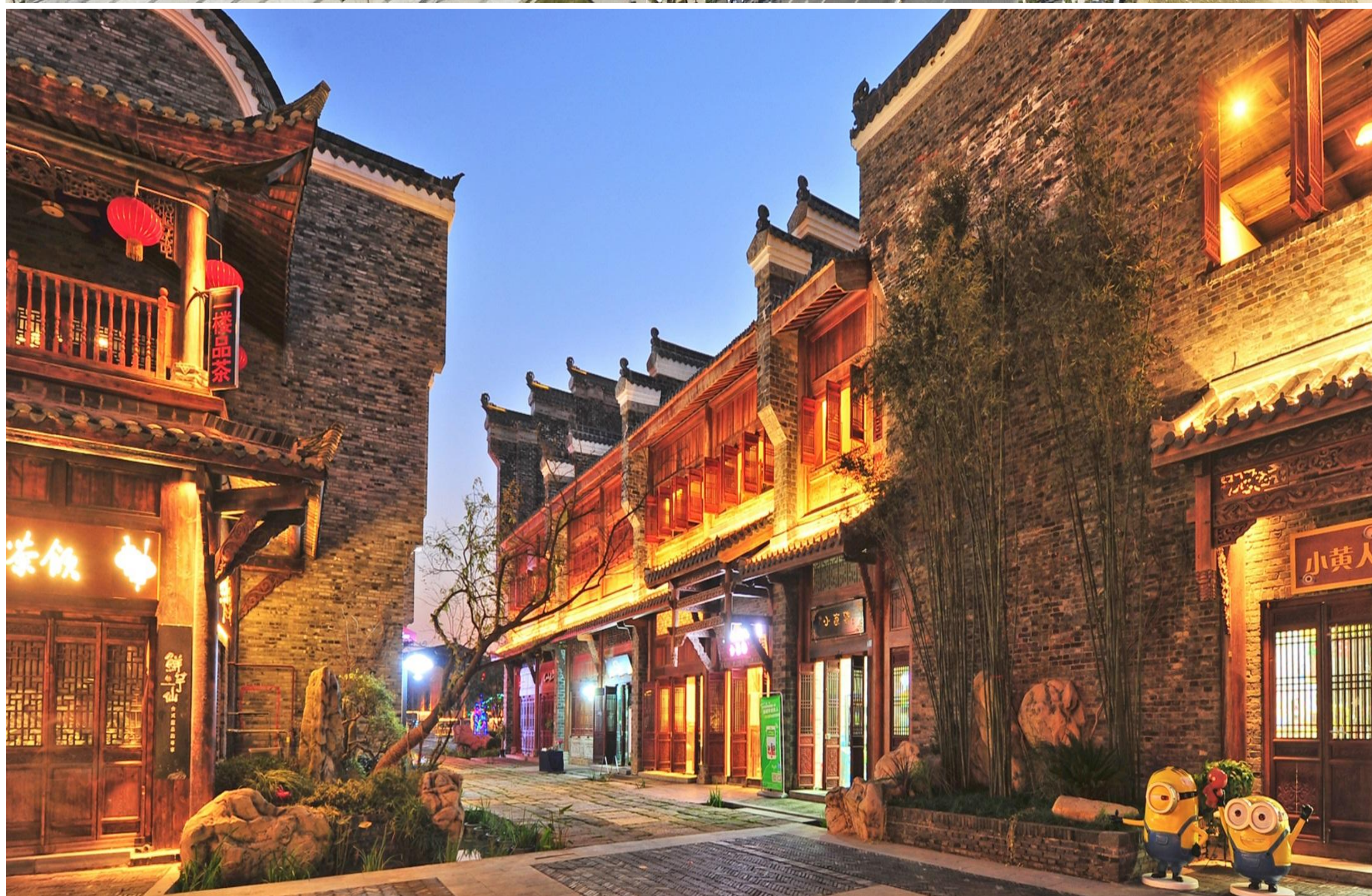
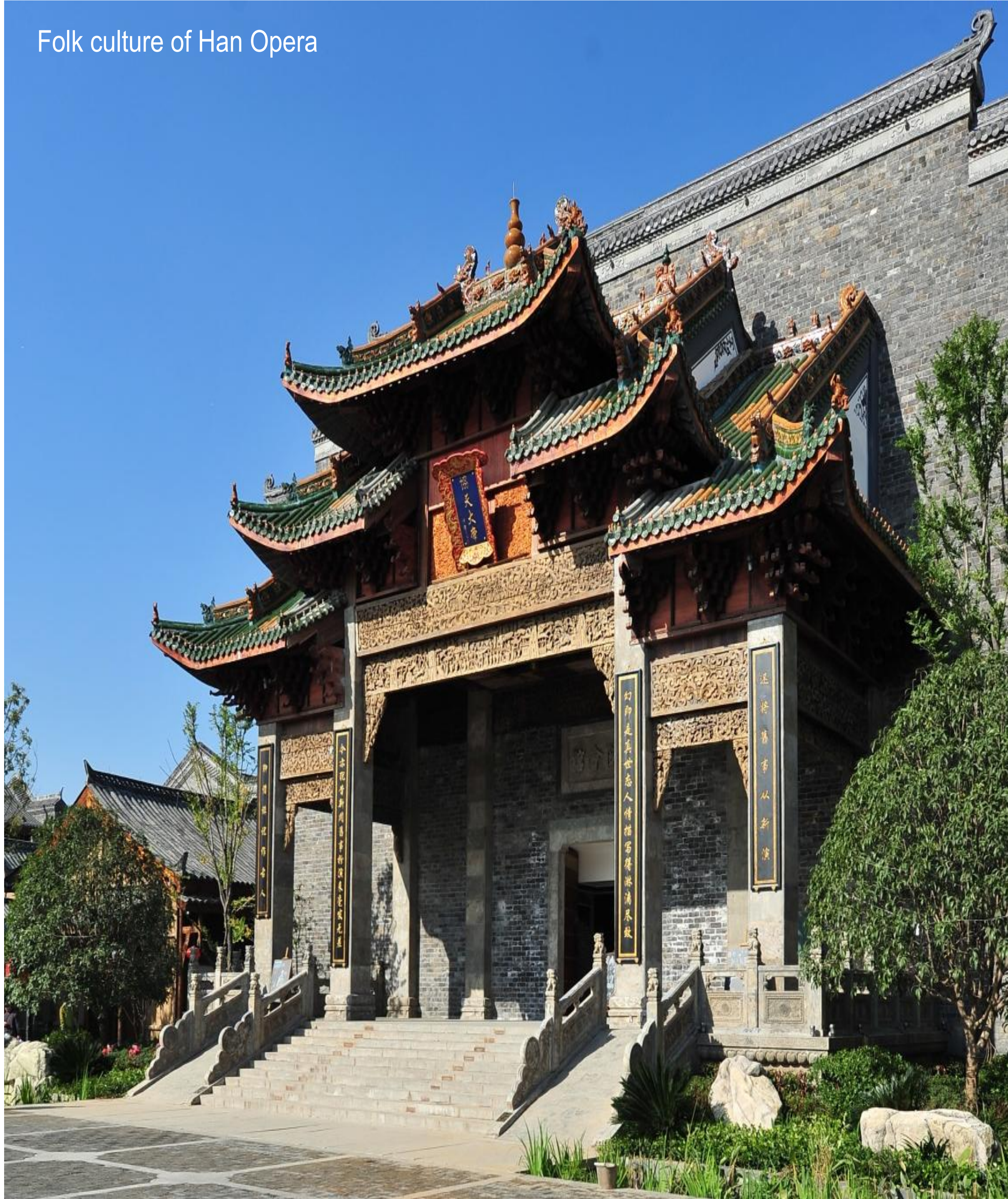
THE 10TH CHINA INTERNATIONAL GARDEN EXPO

Architects: Xiao Wei * Xiong Xiaofei
Land Area: 40710 m²
Built Area: 21460 m²
Completion: 2015
Project Cost: US \$ 35 million

Engineers:
 •Engineering General Contracting Company of China
 •Construction Third Engineering Division Co., Ltd.
 •Engineering Division Co., Ltd.

Award:
 •1st place of China Wuhan Excellent Architectural Design Prize 2016

•Most popular business tourism service building of the 10th China (Wuhan) International Garden Expo
 •Leisure business street with old Hankou style in China
 •Master work of China Jingchu architectural culture



Lifen in Wuhan: As a city with a long history, Wuhan now has a great number of traditional streets with unique features, dominated by 'Lifen'. We studied traditional local architecture and produce our own design of combining old and new.

Inspiration is explored from the ecological idea of traditional architectures for architectural examples, and the ecological idea led by culture is then put into practice. The features of traditional architecture are manifested using modern architectural language and green technique and the organic development of green district is better promoted by exploring culture deeply and inheriting culture.

Traditional architectures are generally in the form of courtyard buildings. The orientation of residential buildings is dominated by east or southeast direction so as to fully use sunshine, comply with the dominant wind direction at local area and benefit indoor natural ventilation.

Through reappearance of traditional classical building space and scene, arouse the memory forgotten by people under the fast pace of life at present; recall and reuse the gradually disappeared traditional techniques at buildings of various types; positively push the inheritance and development of traditional techniques; attempt of transformation from traditional residence to modern architecture, an example of exploring the integration of traditional culture with modern context



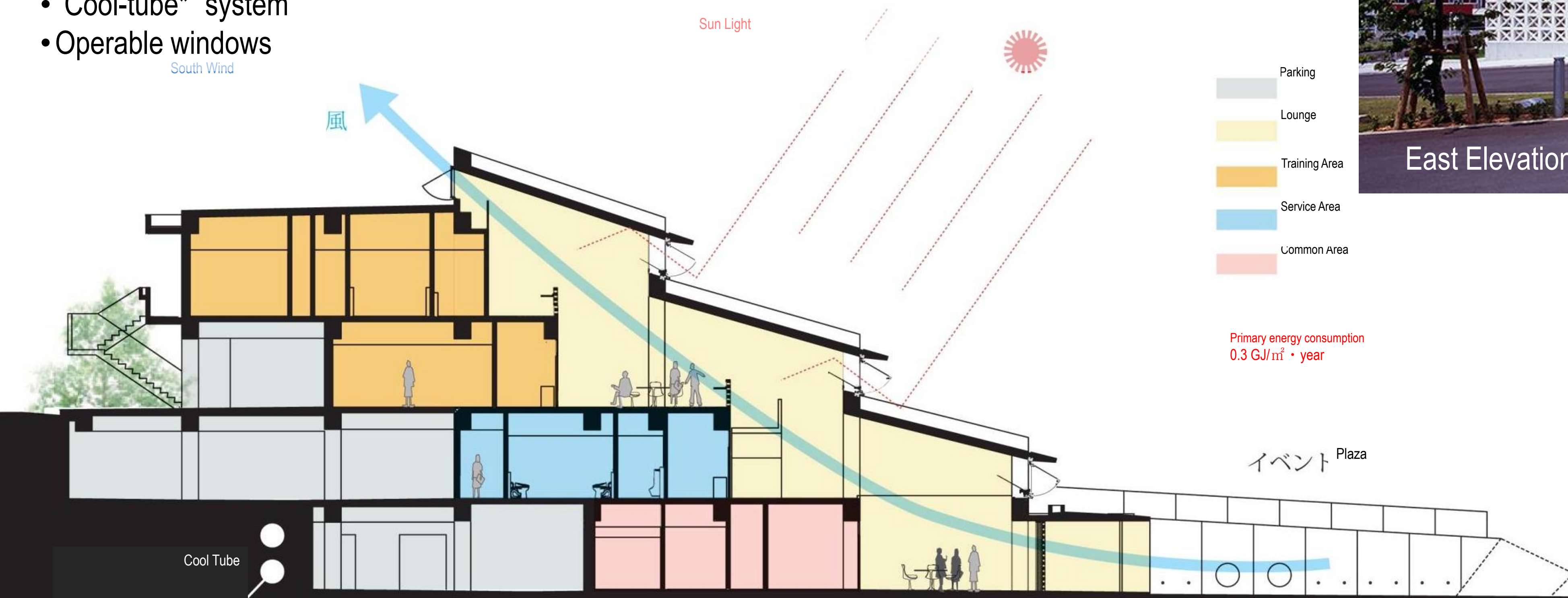
OKINAWA NURSING TRAINING CENTER

HAEBARU, OKINAWA JAPAN

Architect: IIDA Archship Studio

“Okinawa Nursing Training Center” is a new head office of Okinawa prefectural nursing association and also a training center for nurses to train various practical techniques. We proposed a new Architectural style that could be realized only in this place and also deeply related to the environment and climate of the place.”

- Four (4) large RC roofs block out Okinawa's very strong summer sunlight, and create a large shade underneath, called “lounge”.
- No air conditioning
- Passive lighting
- Natural winds
- Reflected sunlight
- Stable underground heat
- “Cool-tube” system
- Operable windows



Okinawa Nursing Training Center is the building is located in a very harsh climate conditions. Four layers of RC roofs for the terraced lounge space effectively block the sun and rain while allowing natural wind and daylight to penetrate gently inside. This efficient ventilation system works as earth-air heat exchangers while slit top lights induce gentle diffusion of light. These environmental programs are inspired by Okinawa's vernacular architectural system such as “Amahaji space”, a kind of veranda space, and shallow roofing. In addition, the use of local materials like “Hana block”, one of popular materials in Okinawa, has contributed a design of architecture.



Lounge Space from Ground Floor



South Elevation (Automatic Opening and Closing Windows, and Schiesser)



Lounge Space



Hana Block



Amahaji Space

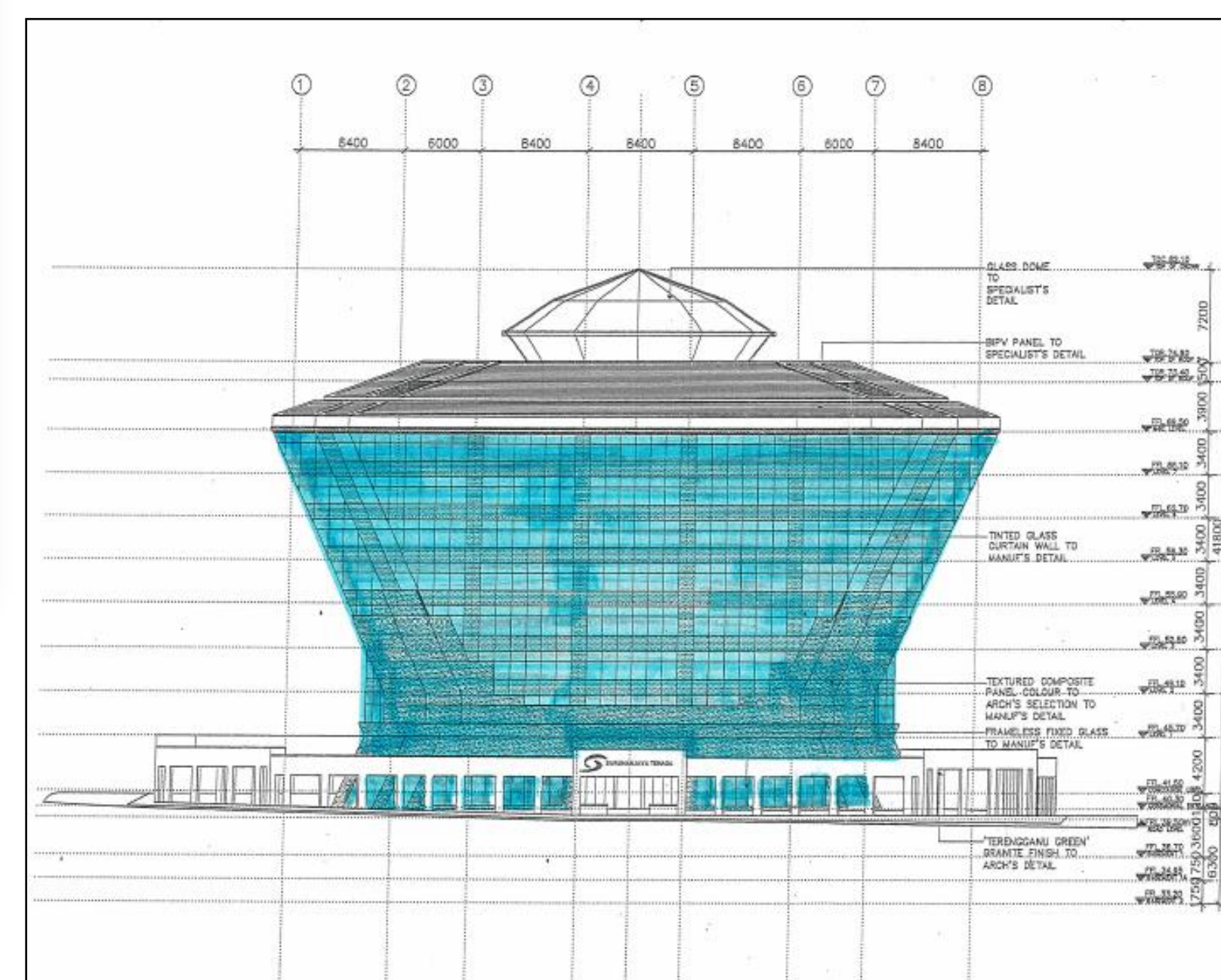
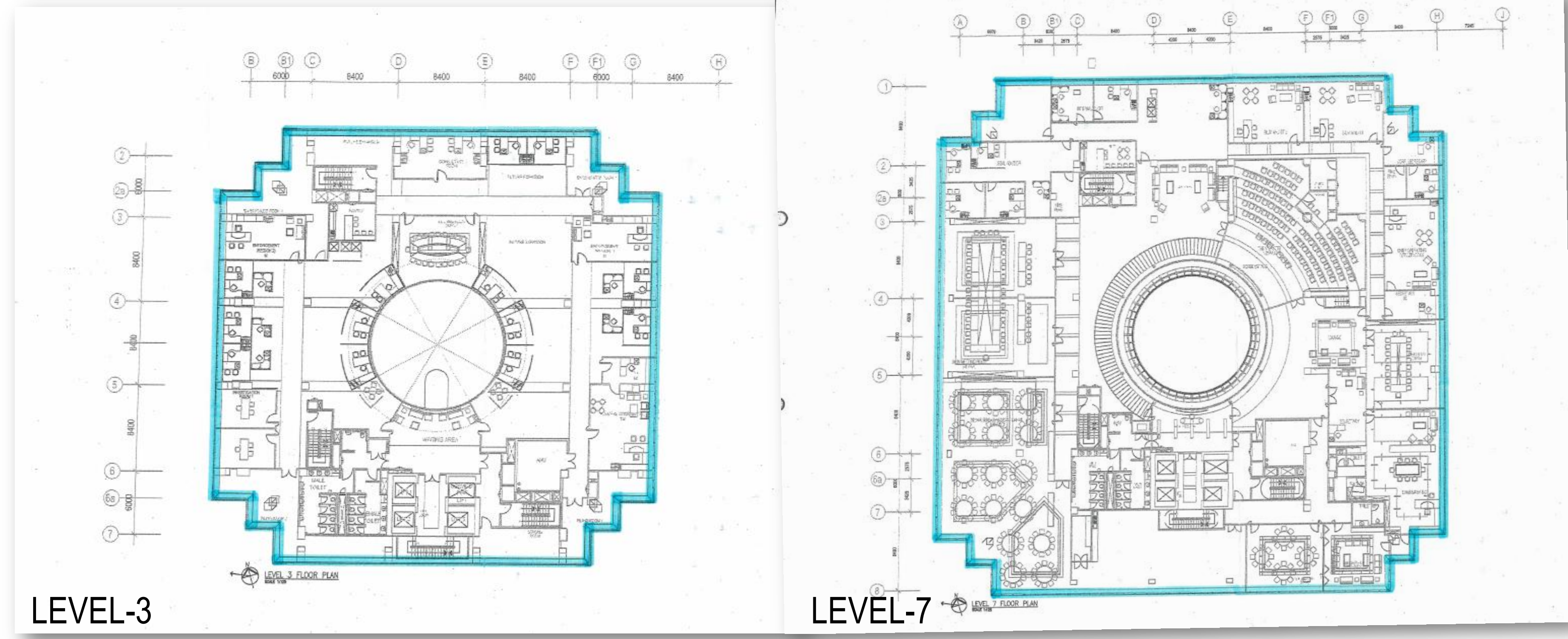
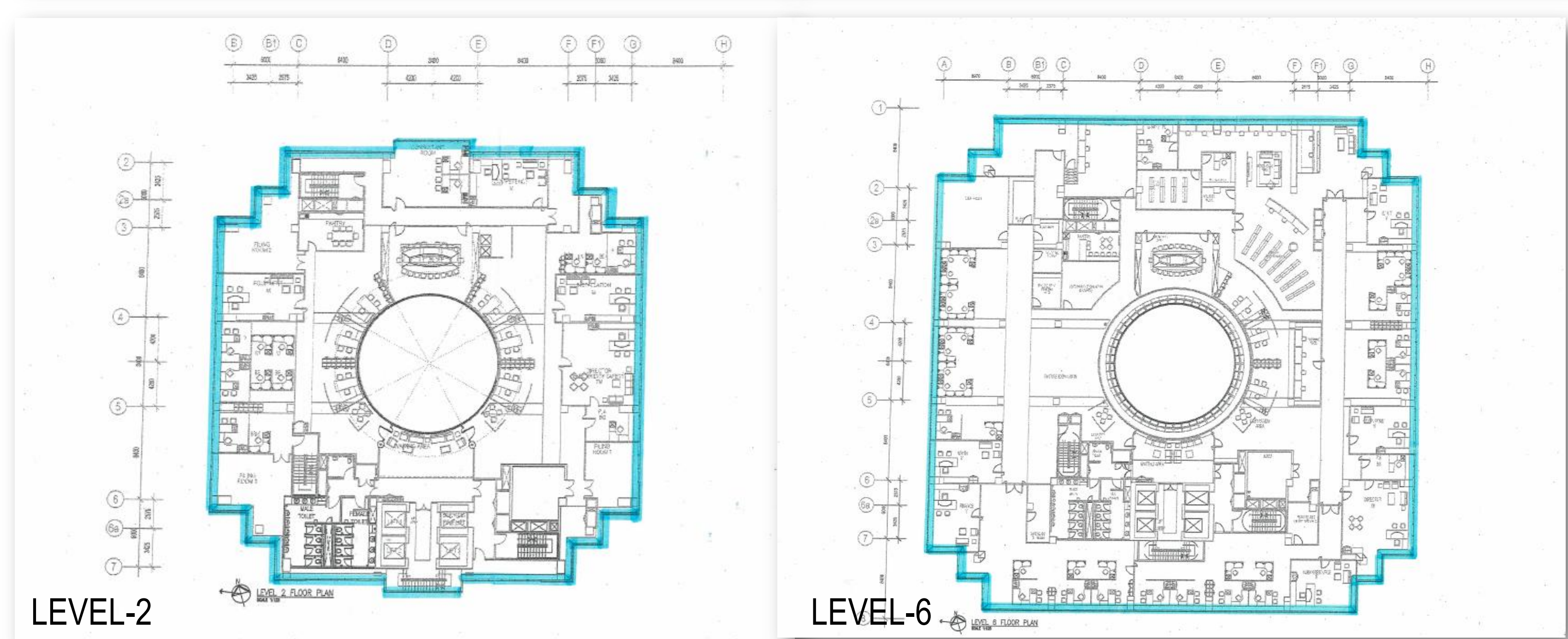
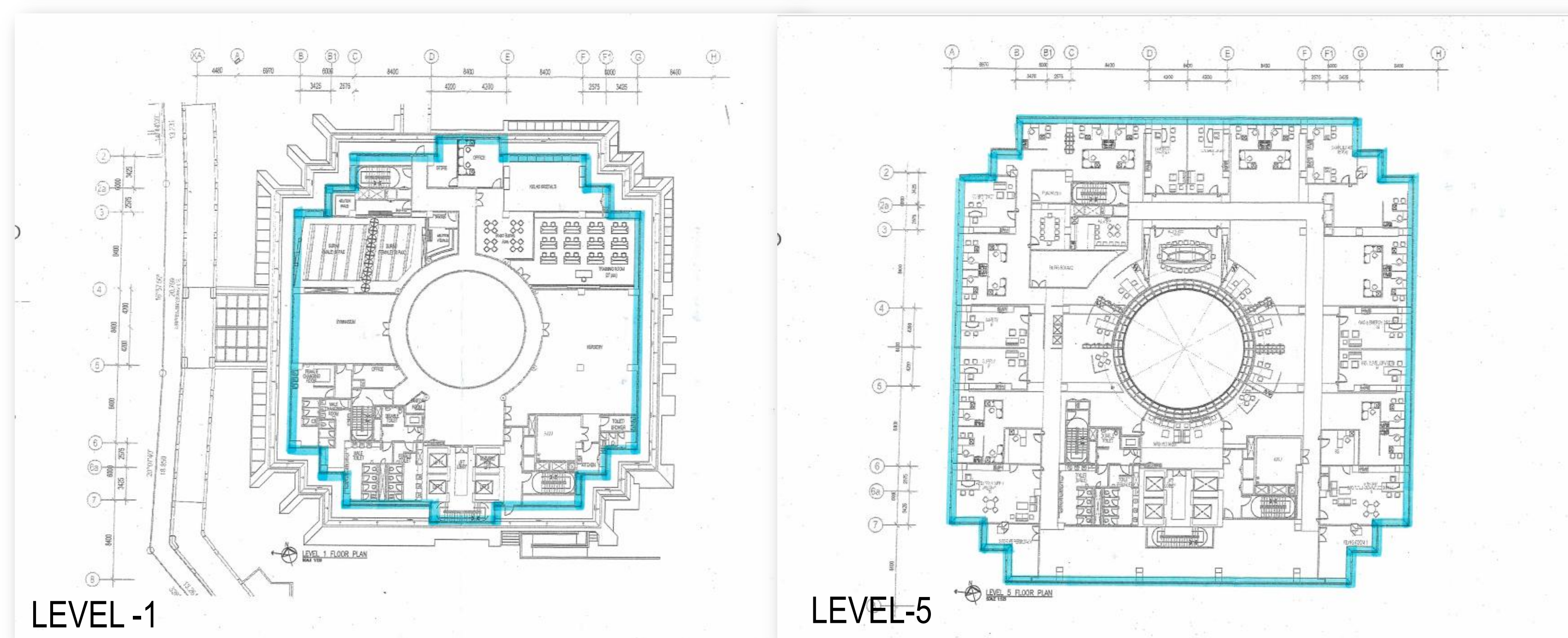
ENERGY COMMISSION MALAYSIA

BANGUNAN SURUHANJAYA TENAGA

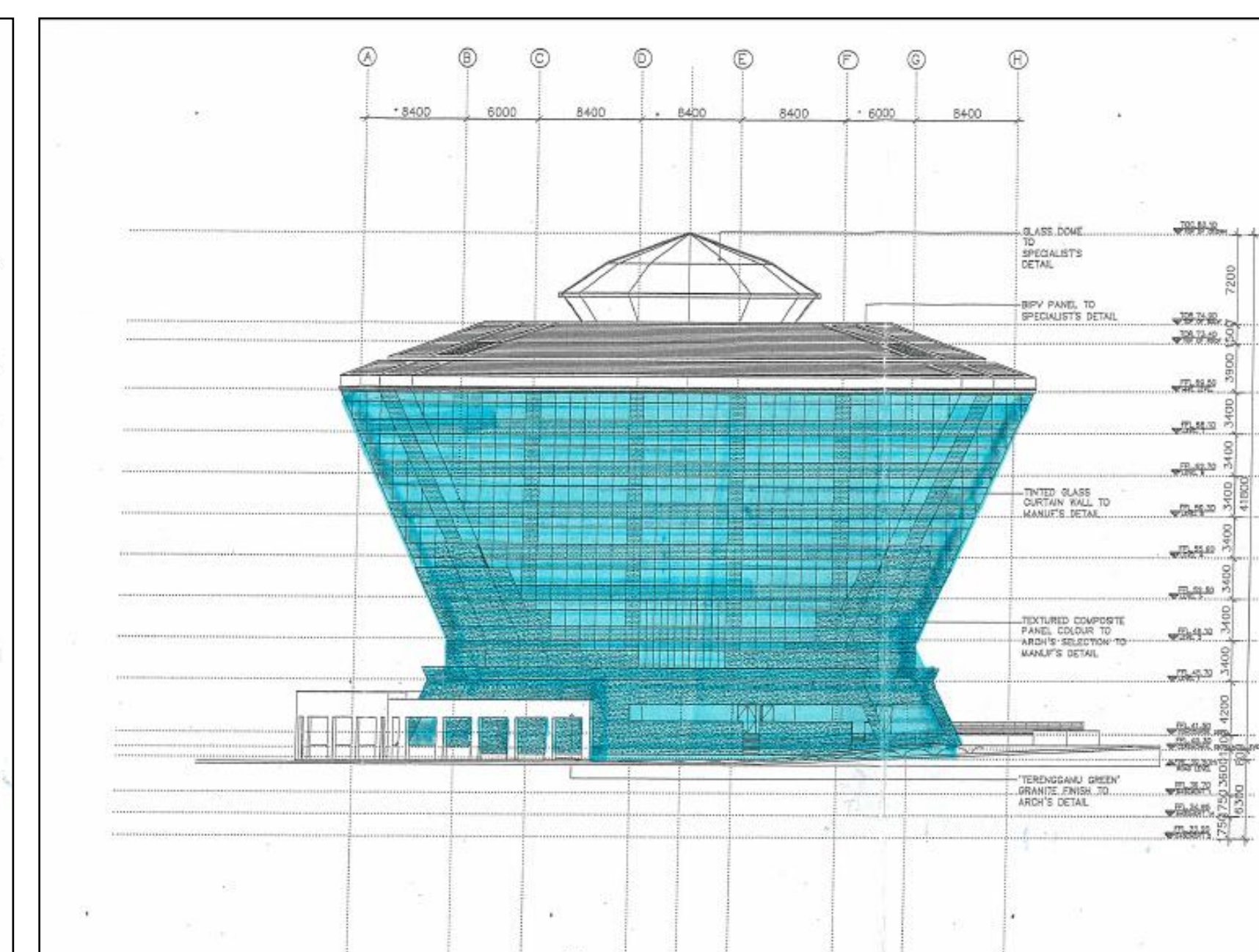
Architect: NR Architect
Consultants: Civil & Structural Engineer: Perunding SM Cekap
 Mechanical & Electrical Engineer: Primetech Engineers Sdn Bhd
 Quantity Surveyor: ARH Juruukur Bahan Sdn Bhd

GBI Facilitator: Exergy Malaysia Sdn Bhd
GBI Commissioning Specialist: Pureaire Sdn Bhd
Main Contractor: Putra Perdana Construction Sdn Bhd

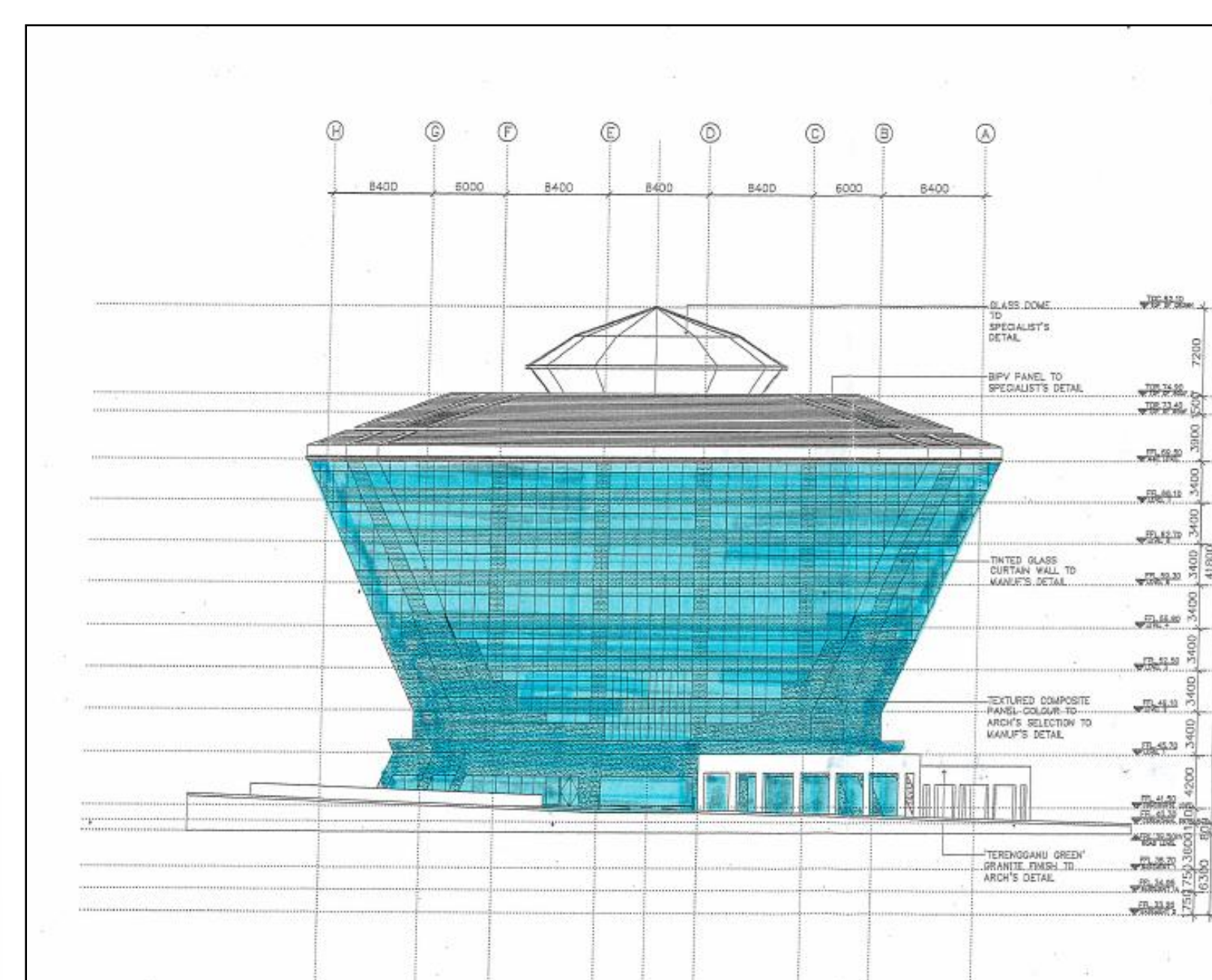
- GREEN STRATEGIES:**
- reduction in fossil fuels
 - water conservation
 - sustainable building materials
 - waste minimization and avoidance
 - indoor environmental quality
 - traffic and transport management
 - construction and demolition management plan



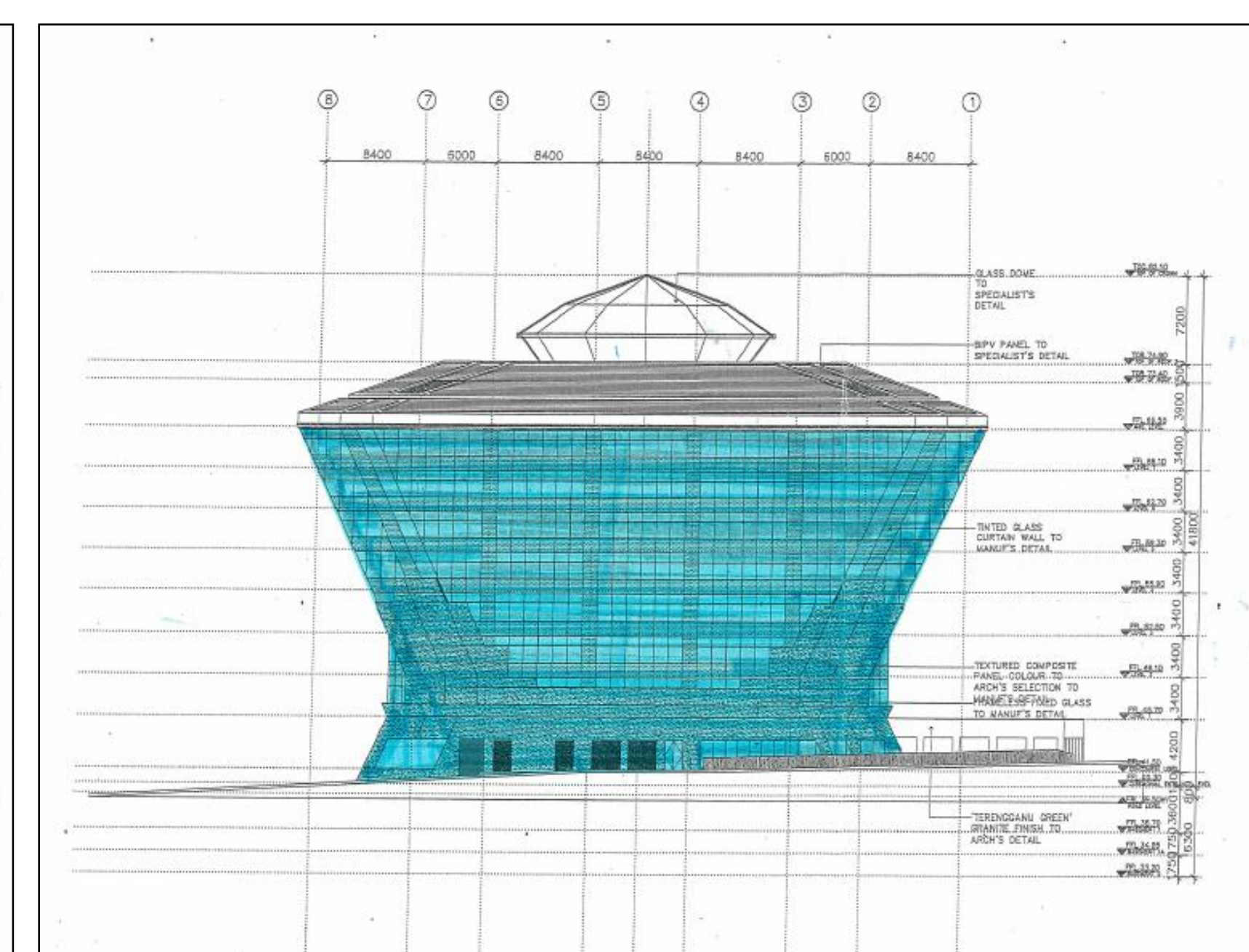
FRONT ELEVATION



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

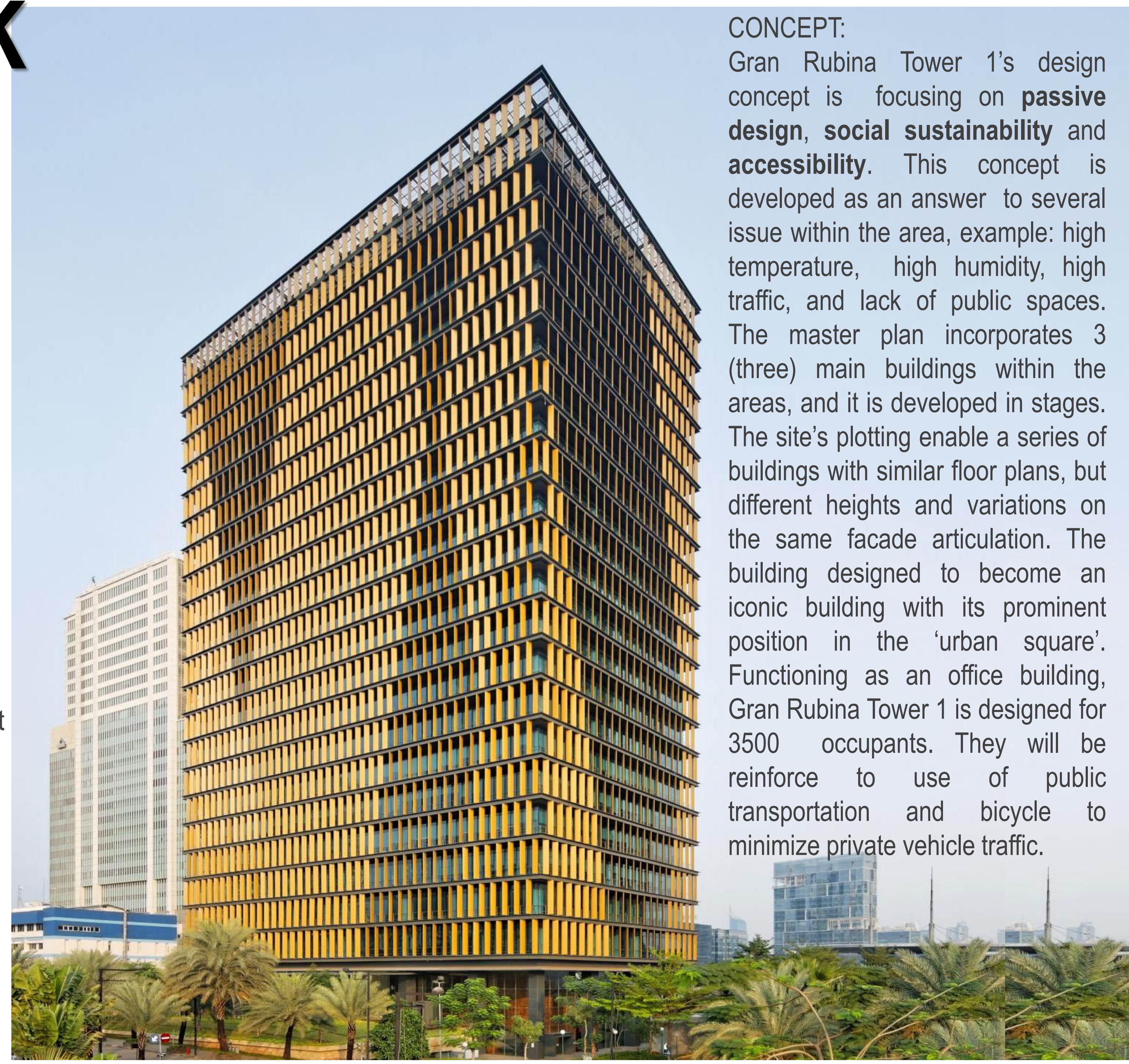


REAR ELEVATION

The Diamond Building is targeted to reduce energy usage by **65%**, with an energy index of **85 kWh/m² per year at 2,800 hours usage**, as compared to a normal office building which has an energy index of 250 kWh/m² per year.

GRAN RUBINA BUSINESS PARK

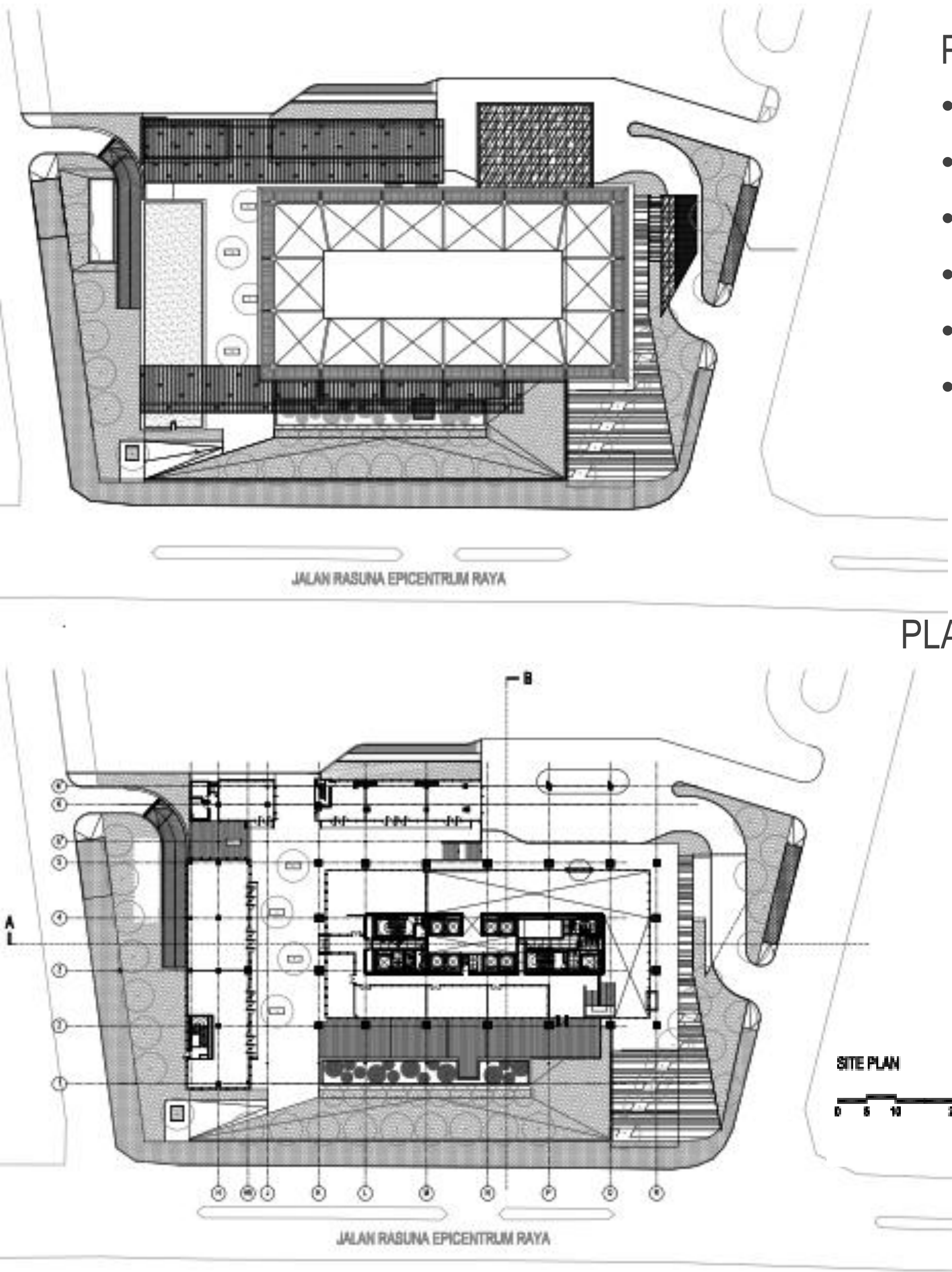
SETIABUDI, JAKARTA, INDONESIA
Architect : PDW Architects
Land Area: 7.144 m²
Built Area: 42.359 m²
Completion: March 2015
Principal: Prasetyoadi, St., Mudd., IAI
Design Team: Marc Wilson, Enriko Thamrin, Brian Sheldon, Mohamad Habibi
CONSULTANTS
Structural: PT. Gistama Inti Semesta
MEP: PT. Sigmatech Tatakarsa
Cost of the Project : US\$ 26.5 Million
Landscape: PDW Architects



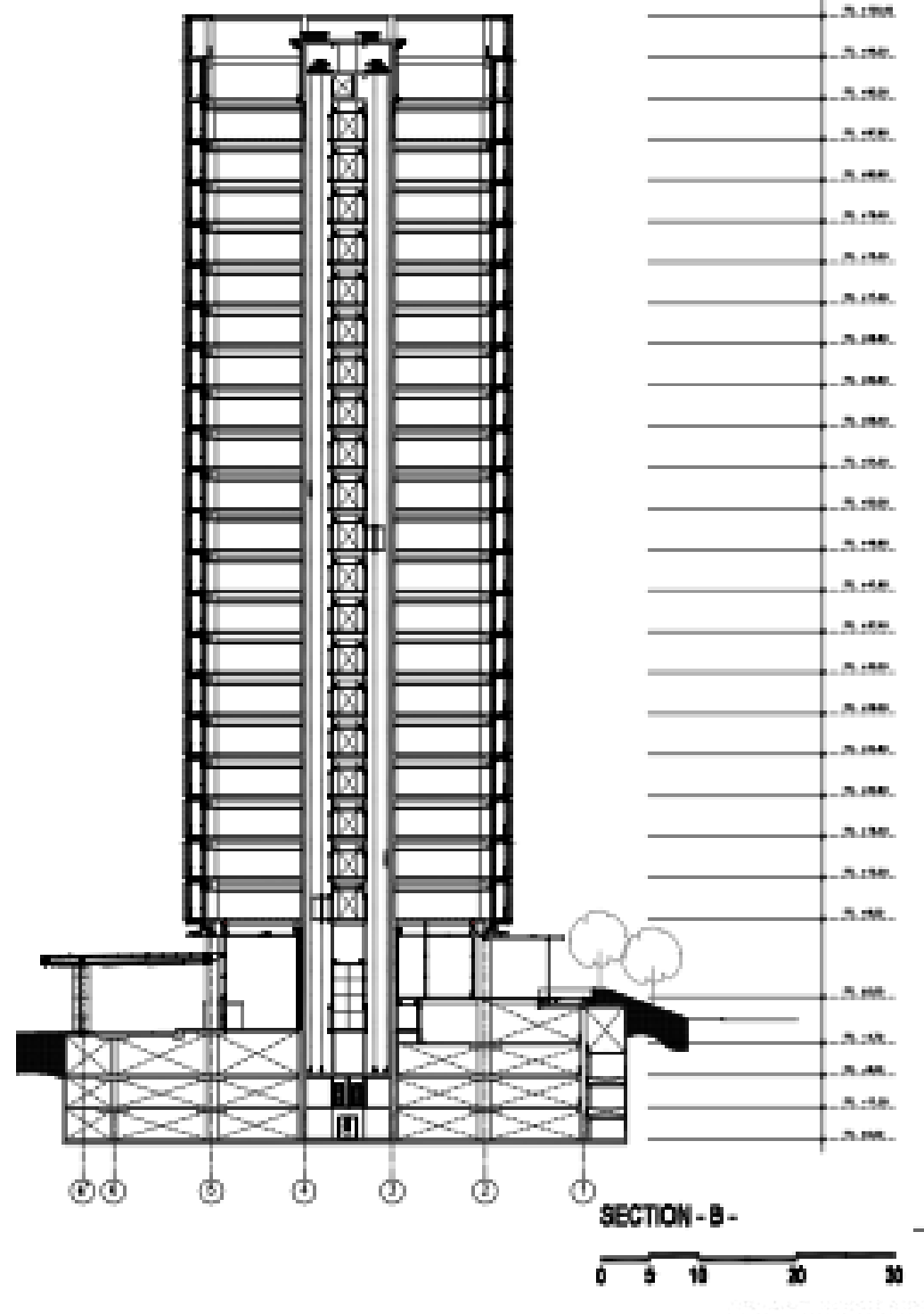
CONCEPT:
 Gran Rubina Tower 1's design concept is focusing on **passive design, social sustainability and accessibility**. This concept is developed as an answer to several issue within the area, example: high temperature, high humidity, high traffic, and lack of public spaces. The master plan incorporates 3 (three) main buildings within the areas, and it is developed in stages. The site's plotting enable a series of buildings with similar floor plans, but different heights and variations on the same facade articulation. The building designed to become an iconic building with its prominent position in the 'urban square'. Functioning as an office building, Gran Rubina Tower 1 is designed for 3500 occupants. They will be reinforce to use of public transportation and bicycle to minimize private vehicle traffic.

PROJECT BRIEF

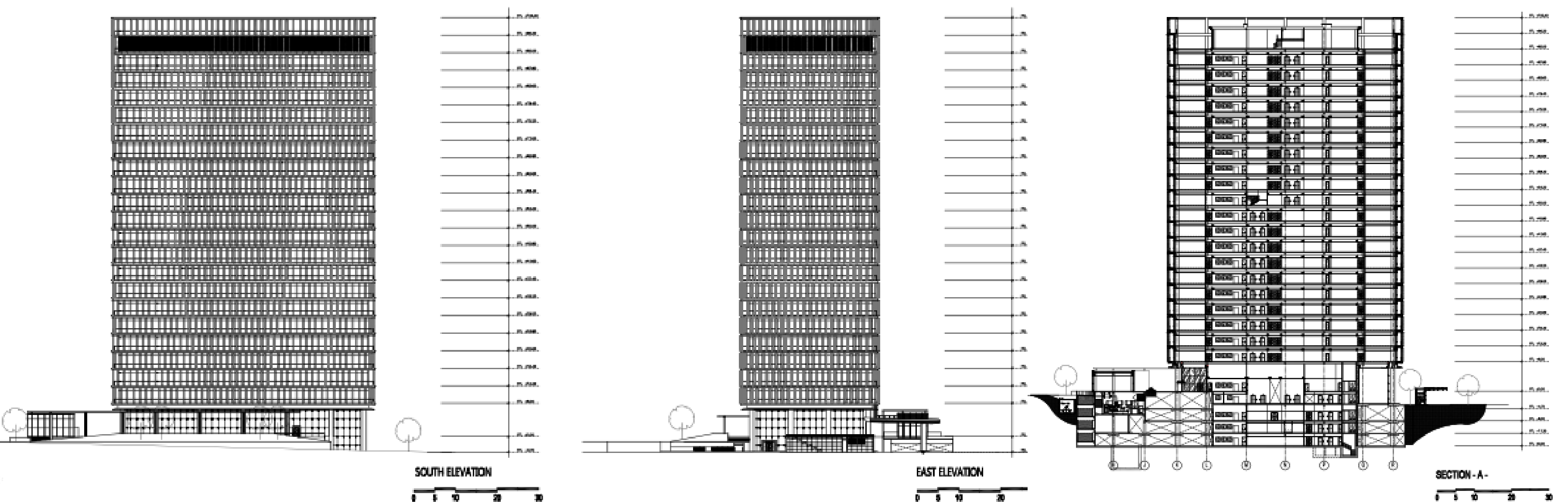
- An iconic building for the benchmark of the company
- Efficient building design implementing green building concept
- Commercially viable building and accepted by the market
- Incorporating health and safety features
- Easily accessible
- Prime public amenities



PLANS



SECTIONS

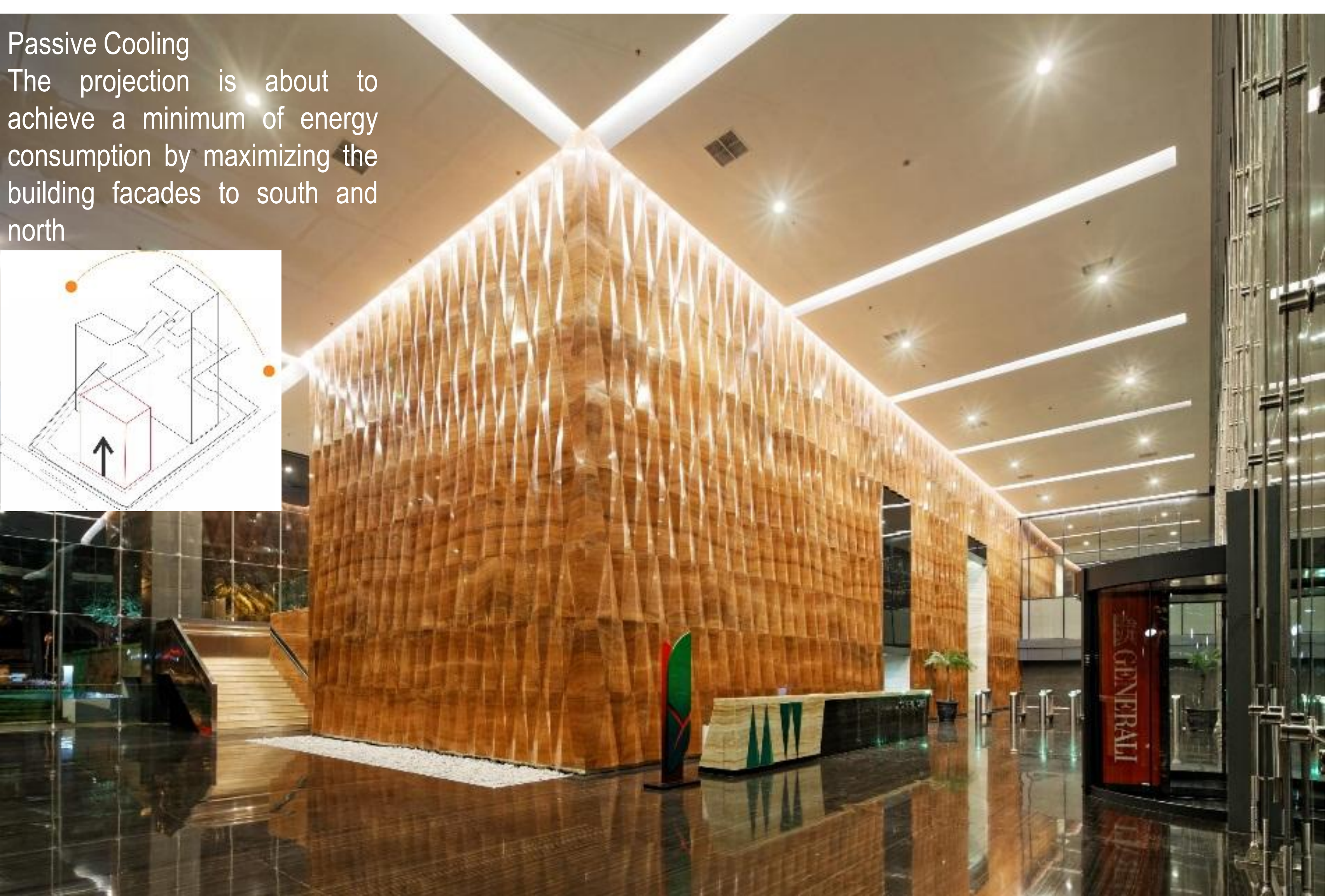


HORIZONTAL SHADING

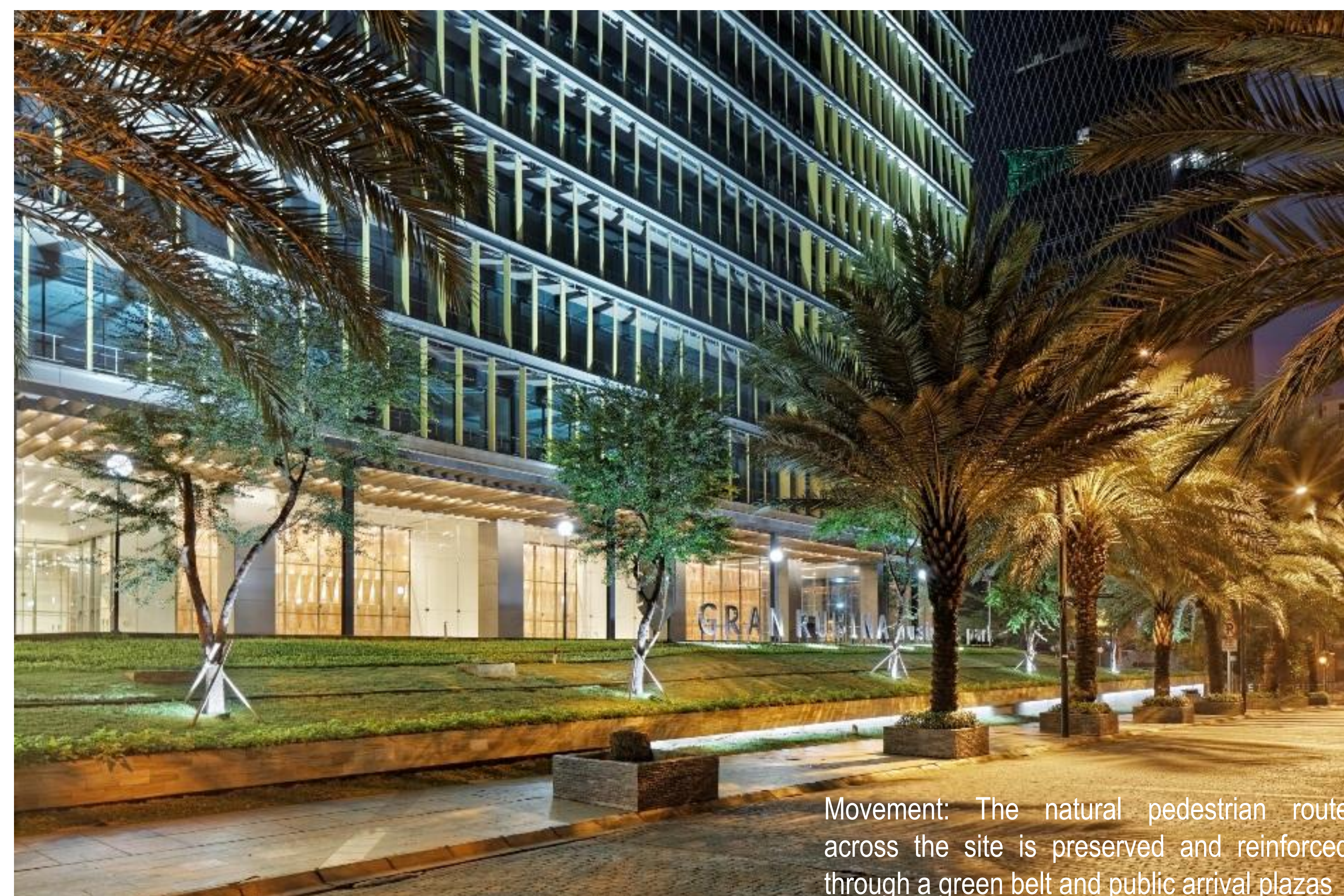
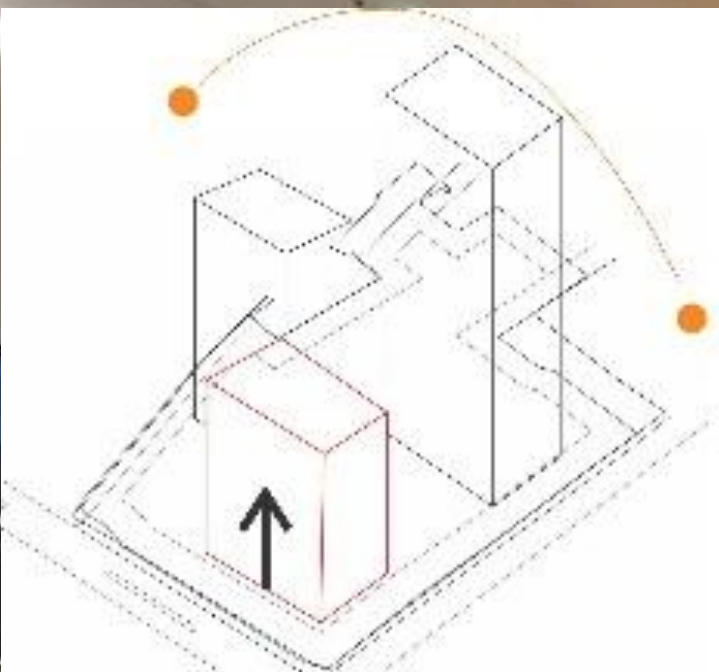
To prevent solar gain on the northern and southern facades the building are wrapped in horizontal shades doubling as access catwalks

VERTICAL SHADING

Vertical fins prevent early morning and evening solar gain on eastern and western facades

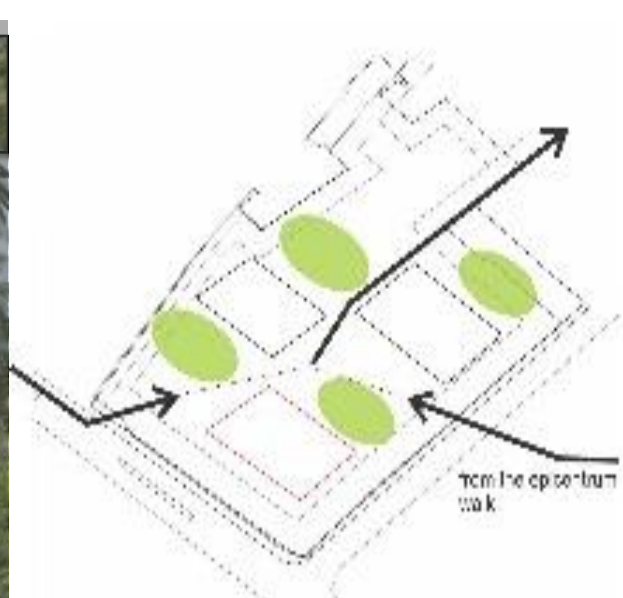


Passive Cooling
 The projection is about to achieve a minimum of energy consumption by maximizing the building facades to south and north



Movement: The natural pedestrian route across the site is preserved and reinforced through a green belt and public arrival plazas

Public Space
 Public space is the placement of retail units and sport facilities creating a destination supported by shaded and protected outdoor spaces



URBAN RETREAT

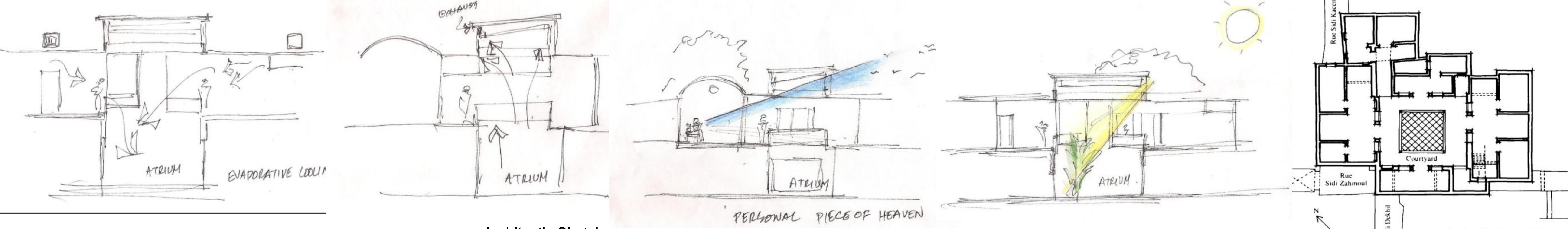
LAHORE, PAKISTAN

Architect : Ar. Amina Qayyum Mirza, Ar. Ali Zafar Qazi, OMD–Office of Metropolitan Design
Land Area: 24804 Sq.ft **Built Area:** 11500 Sq.ft
Completion: 2008
CONSULTANTS: Interior: Ar. Amina Qayyum Mirza, Ar. Ali Zafar Qazi
 Engineering consultants: ATA - Amin Tariq Associates
 Landscape: Ar. Amina Qayyum Mirza
Cost of the Project: US\$ 88000



PROJECT BRIEF

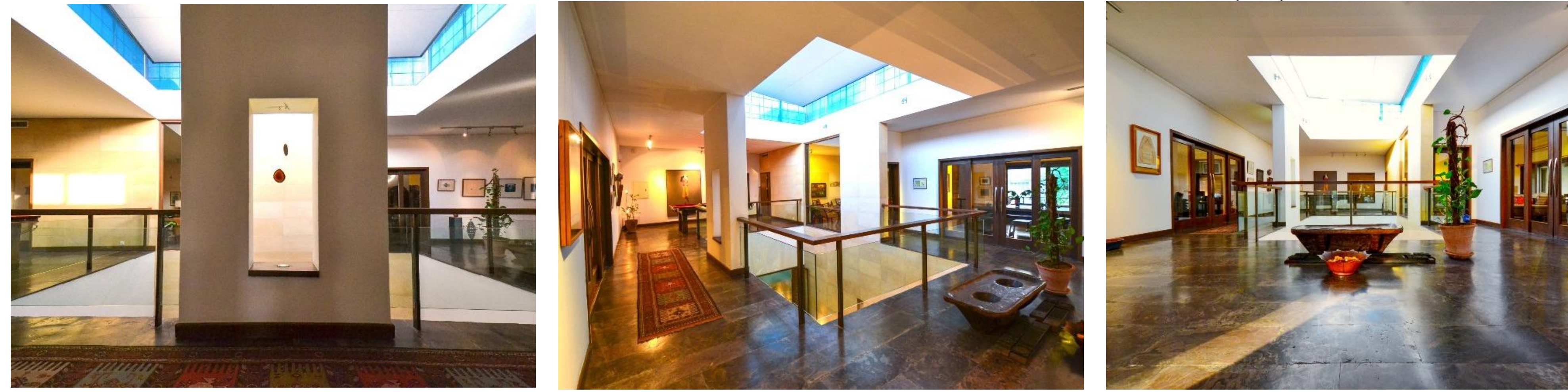
- The functional aspects of the project includes hierarchy, flow of space, climatic considerations and space making, that would reflect client's shared values.
- The design was a response to a deep rooted appreciation of the regional context and interpretation of it in a contemporary idiom. Showcasing the various local stones, timber and expressing the unique beauty of each natural product by rendering it with various finishing techniques.
- The dark interior of the living space was brought to life by creating a light core which brought the soul - the flow of energy to the static existing structure. The opening up of inner space, created the connection between the inhabitants and nature, at many levels.
- A special consideration was given to the ecology of the surrounding landscape which created a harmonious environment.
- The project responded to a stressful political time in the country by creating an oasis 'retreat' were one could 'spiritually rejuvenate'.



Architect's Sketches

LANDSCAPE FEATURES:

- Aesthetics of the plains of Punjab
- Native trees and flora planted
- Specific plantation of 'Oxygen Bombs', Aloe Vera, Ivy, Spider Plant, Dracaena etc.
- Home to various native species of birds, native kite, hariyal (yellow toed green pigeon), humming birds, parrots, myna, bulbul, hoopoe, crows, house sparrow
- Garden provides a respite, a resting spot for the migratory birds within an urban setting
- Garden as a healer



- Use of local materials and craft.
- Climatic Consideration: Strategic plantation of trees to block 'direct radiation' and lowering the ambient temperature.
- Devising a system of ventilation and air circulation through the central atrium space.
- The atrium roof is tilted at an angle with a minimal glazed area opening to the hot south side and maximum face of the glazing is on the north, bringing in the 'north light'.
- A system of "pardas" - fabric covering panels is also used in the hot months to the south face of the atrium skylight to block the direct sun.
- The use of water feature and plantation in the central atrium helps to lower the temperature in the hot summer months.
- Low energy consuming desert coolers placed on the roof provide adequate evaporative cooling during the dry summer months.
- LED lighting fixtures have been used to decrease the electric load significantly.
- All private areas such as bathrooms and dressing rooms are lit by indirect natural light by skylights and roof monitors. Reducing the lighting load during the day.



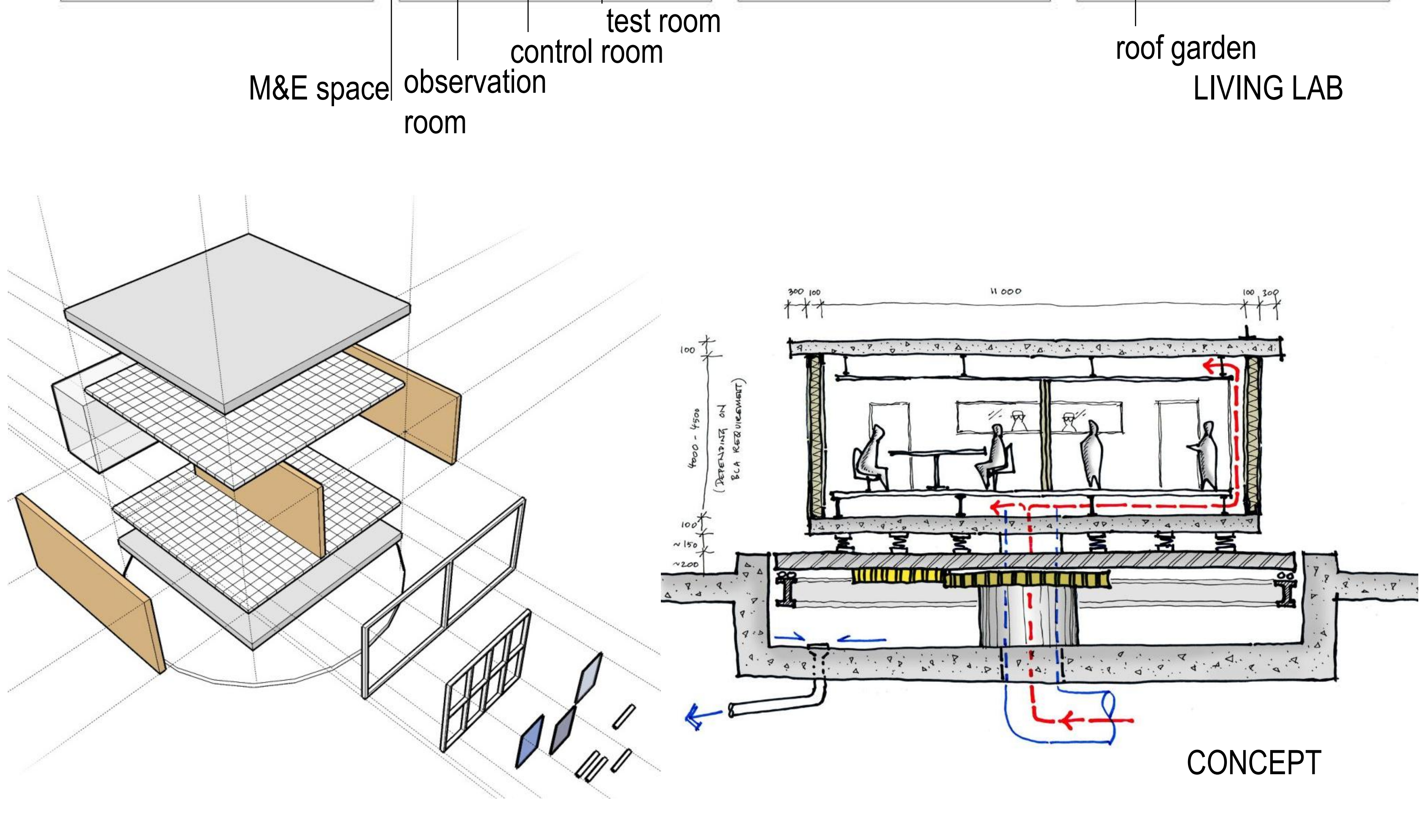
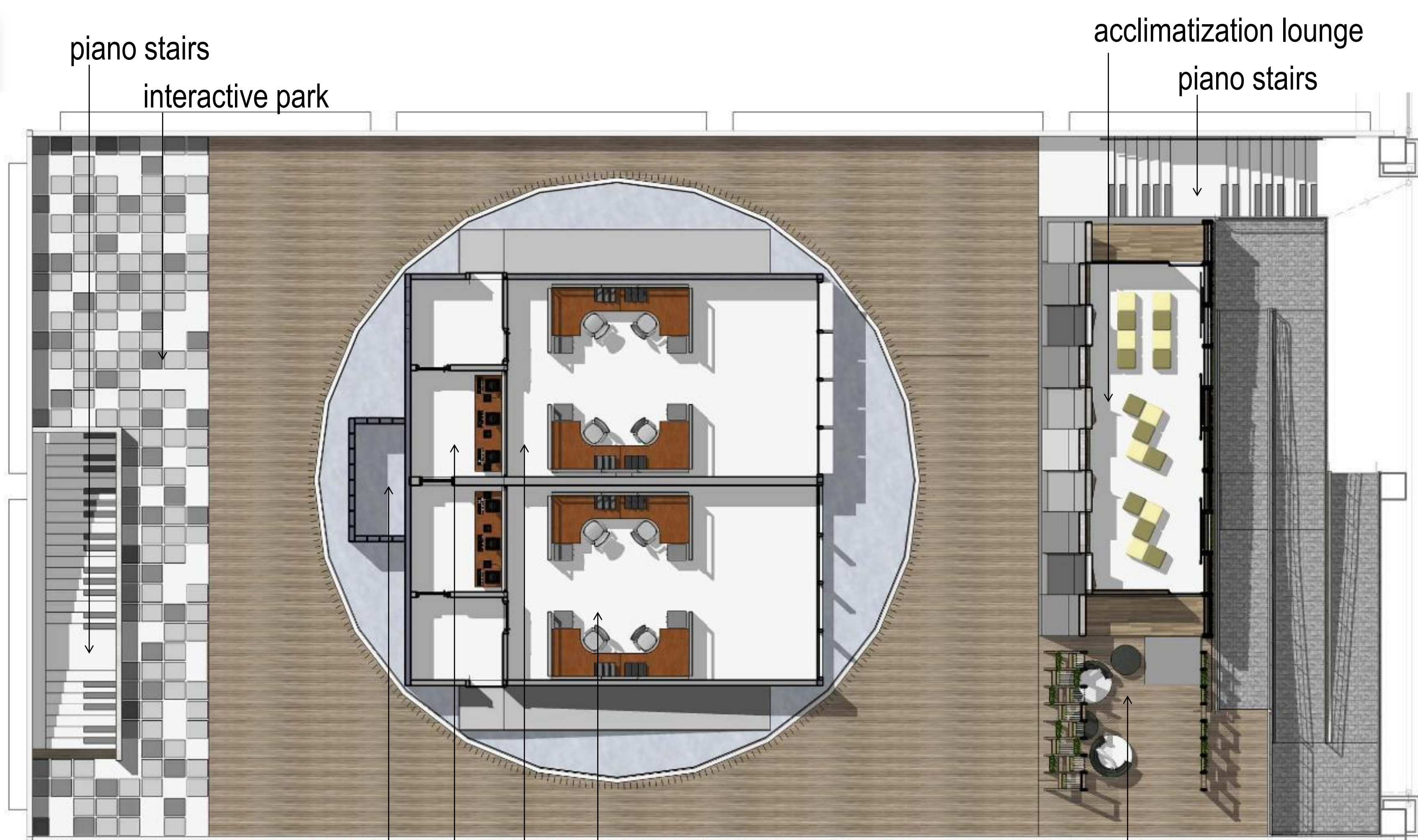
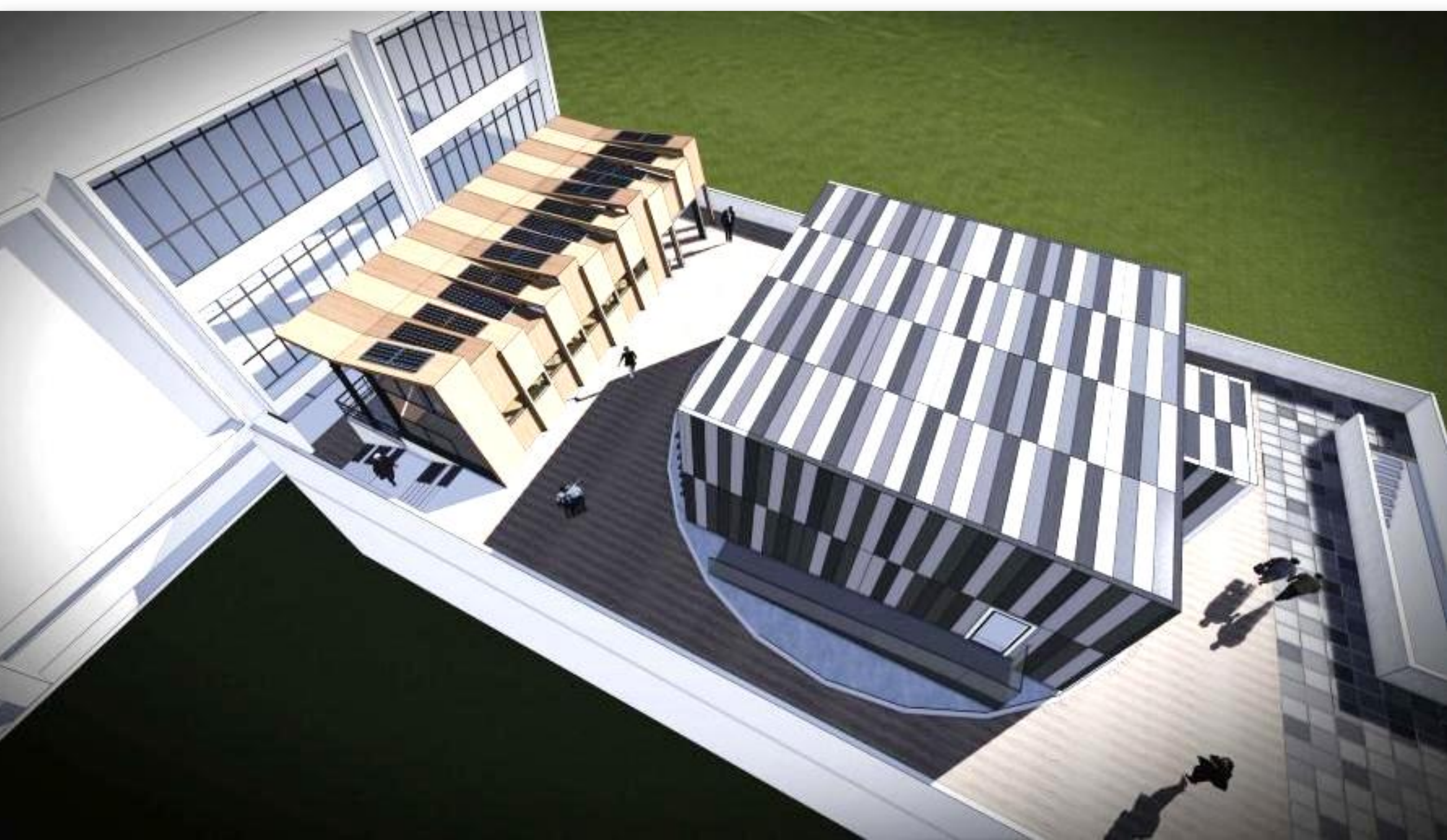
BCA SKYLAB

BCA ACADEMY, SINGAPORE

Architectural: Surbana Jurong Consultants Pte Ltd
C&S, M&E, QS, ESD, ID
Site Area: 687 M²
GFA: 276 M²
Client: Building & Construction Authority, Singapore

The **BCA SkyLab** is a state-of-the-art **test laboratory** for **new sustainable building technologies**. Being the world's first high-rise rotatable laboratory for the Tropics, it is pivotal to developing innovative energy efficient building technologies. Housed in a 130sqm test cell sitting on top of a rotating platform, the UTBF allows for plug-and-play technologies, including façade, lighting and air conditioning systems, to be tested for performance and human comfort – at any orientation within a 360-degree range.

Adjacent to the UTBF is a 40sqm acclimatization and visitor's lounge, which allows test individuals (for human comfort) to acclimatize prior to testing. It also acts as a visitor's lounge and live laboratory for the UTBF. Together, these two systems form a Sustainable Living Laboratory.



PAVILIONS HIMALAYAS

POKHARA, KASKI, NEPAL

Architect: Wonaw & Associates

Pavilions Himalayas is a unique and first of its kind self-sustainable Eco Resort. It sets an unprecedented new standard in the hospitality industry with many environment friendly features.

Features

- Fusion of Contemporary & Nepali Design
- Rain Water
- Waste water
- Cooking Gas
- Food
- Solar Electricity
- Hot water
- Heating & cooling
- Low VOC Paint
- Social Benefits



Swimming Pool:

Rain water is integrated into the pool and regular salt along with a salt chlorinator is used to clean the pool water.

Food:

Fresh organic food, staple crops, fruits, vegetables, milk and meat are farmed within the resort for the guests throughout the year.



Waste Water: Grey water are treated using natural methods by bio sand filters and plants, and then reused for flushing the toilets and landscaping.



Water:

Rainwater harvesting provides almost a quarter of the resorts water needs.

Hot Water:

Flatbed solar panels heat water for the majority of the year, this is supplemented by Centralised heat pumps which transfers 70% of the energy in the air to heat the water.



Black Water: The sewage from the villas flows into a centralised bio gas plant, and along with the cattle manure from the farm, methane gas is produced



Electricity: The resort is run by solar electricity produced within the resort. Carefully selected electrical lights and appliances used in the villas.



Ceiling, Floor & Walls:

Insulation has been laid on top of the roof slab and clad with natural stone slates and also between the external cavity walls, in conformity with local Architecture.



Windows:

Large double glazed windows have been placed strategically to allow natural air flow into the rooms as well as to provide a clear and open view to surrounding landscape



LOTTERY TOWER

HO CHI MINH CITY, VIETNAM

Architect: Ar. Nguyen Truong Luu



GOVARDHAN ECO VILLAGE

GALTERE MAHARASHTRA, INDIA

Architects: Biome Environmental Solutions
Land area: 63 Acres
Built Area: 15,000 M²
Completion: 2013
Consultants:
Electrical: Nagesh SV, MCDBERL Pvt.Ltd
Plumbing: MCDBERL Pvt.Ltd
Structure: Prof. M R Yogananda, Ravindranath, Bontadka, PramodA.V
Contractor: Ravi K
Project Cost: US \$ 1,500,000

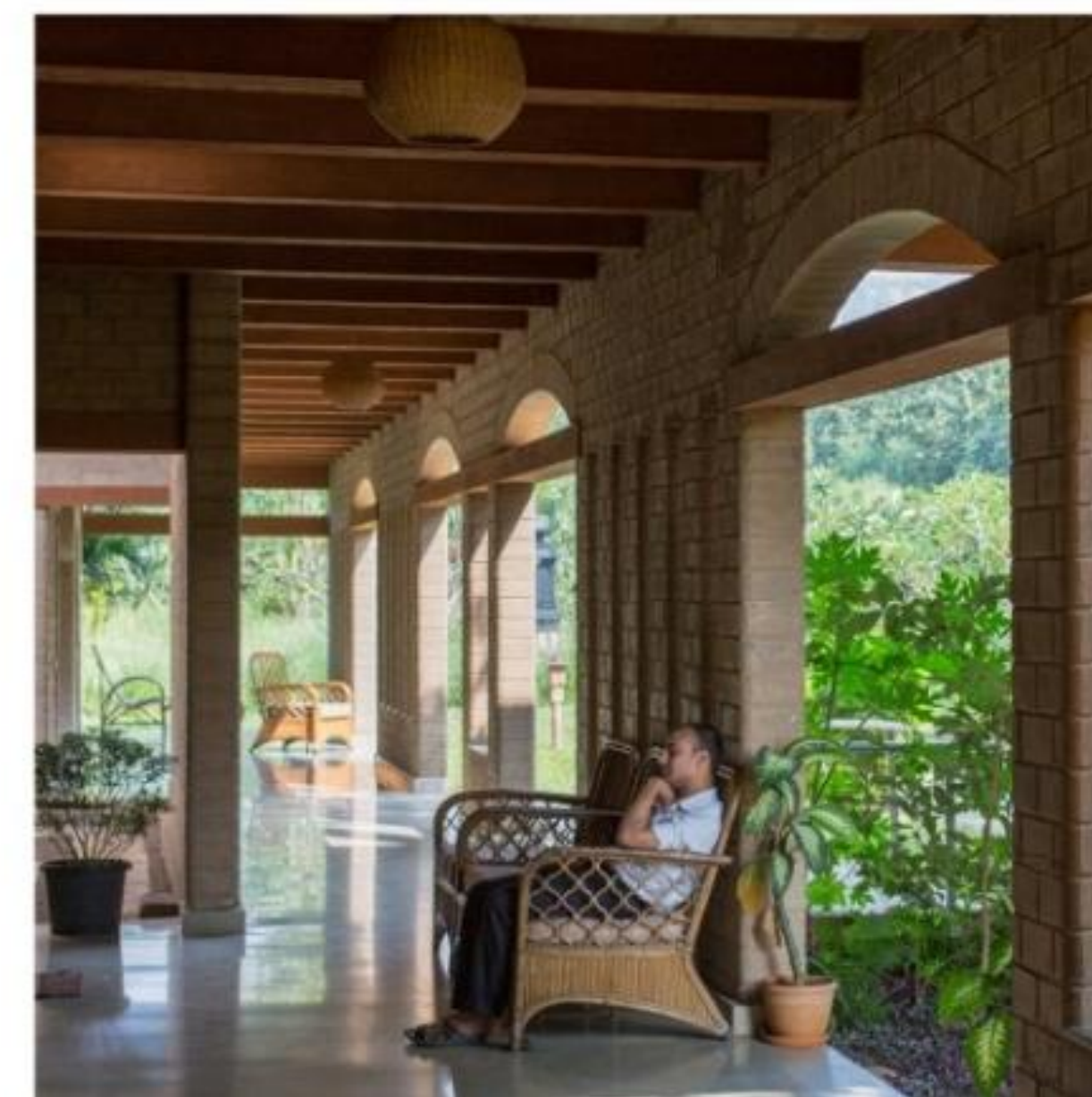
The project is a retreat for the devotees of ISKCON, (Iskcon Society for Krishna Consciousness) Girgaum Chowpatty Mumbai. The project includes accommodation facility for devotees and visitors, seminar halls, prayer and wellness spaces, dining facilities and a cowshed for hundred indigenous cows, bulls and calves.

Besides the spatial needs, the construction should tread softly on Mother Earth, be passive and not create waste during operation.

The buildings are built on higher harder ground whereby the foundation is minimal, while also garnering better ventilation. The buildings are built with locally sourced soil from nearby village and in the site.



- The concept was to create an ecological development which addressed resource and skill for building, responsible water use and energy.
- Earth is the medium for construction and the development is now is a Centre for technology transfer.
- Groundwater management is integrated into the planning whereby all the rain is harvested and treated wastewater is used for agriculture. The waste water treatment is done through technology called Soil Bio Technology developed in IIT Mumbai.
- Solar systems are in place for electricity and water heating, Biomass and Biogas based systems for cooking energy needs are incorporated in the overall planning.

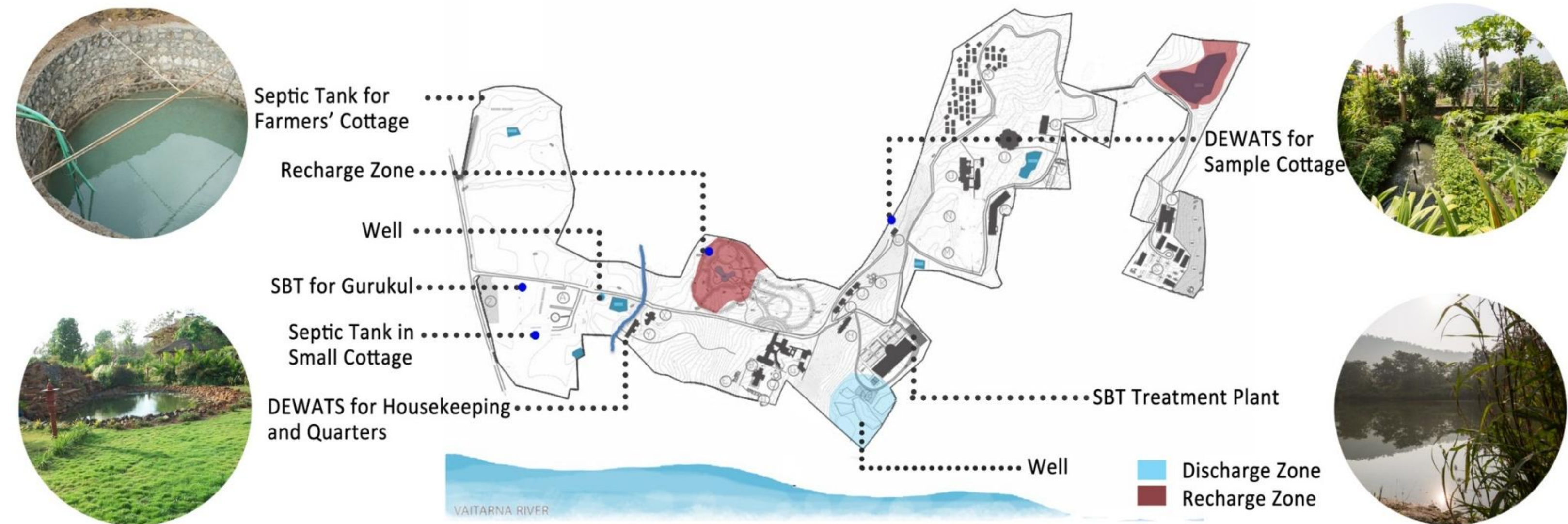


Master Plan

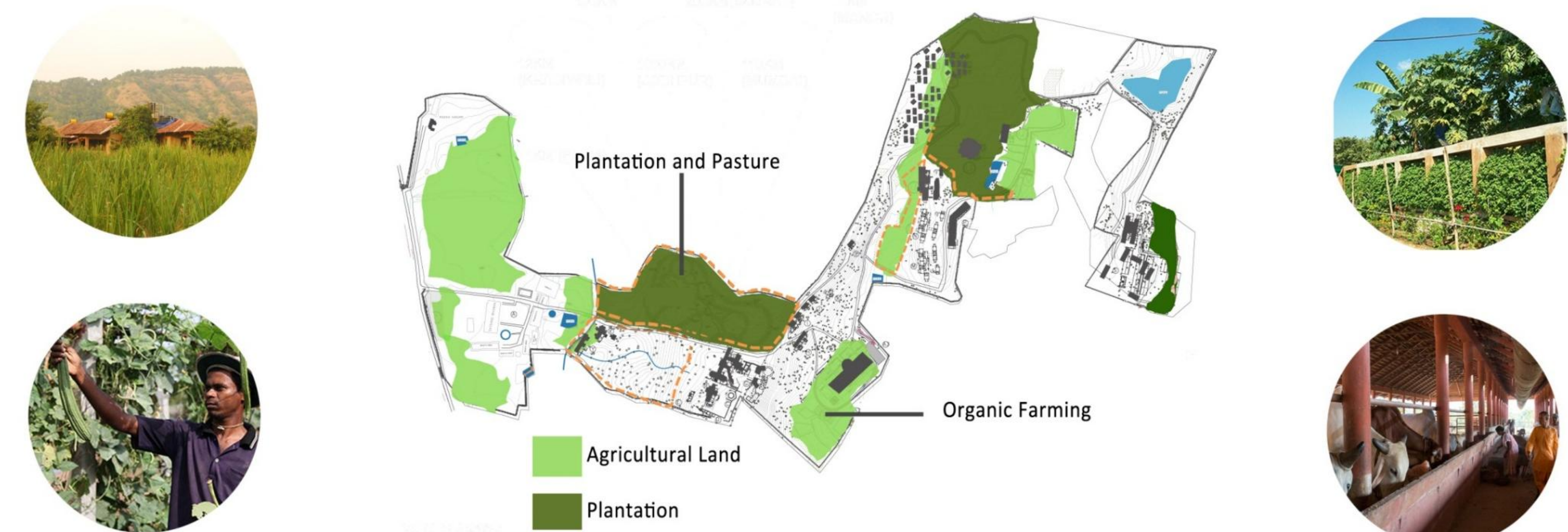


Legend

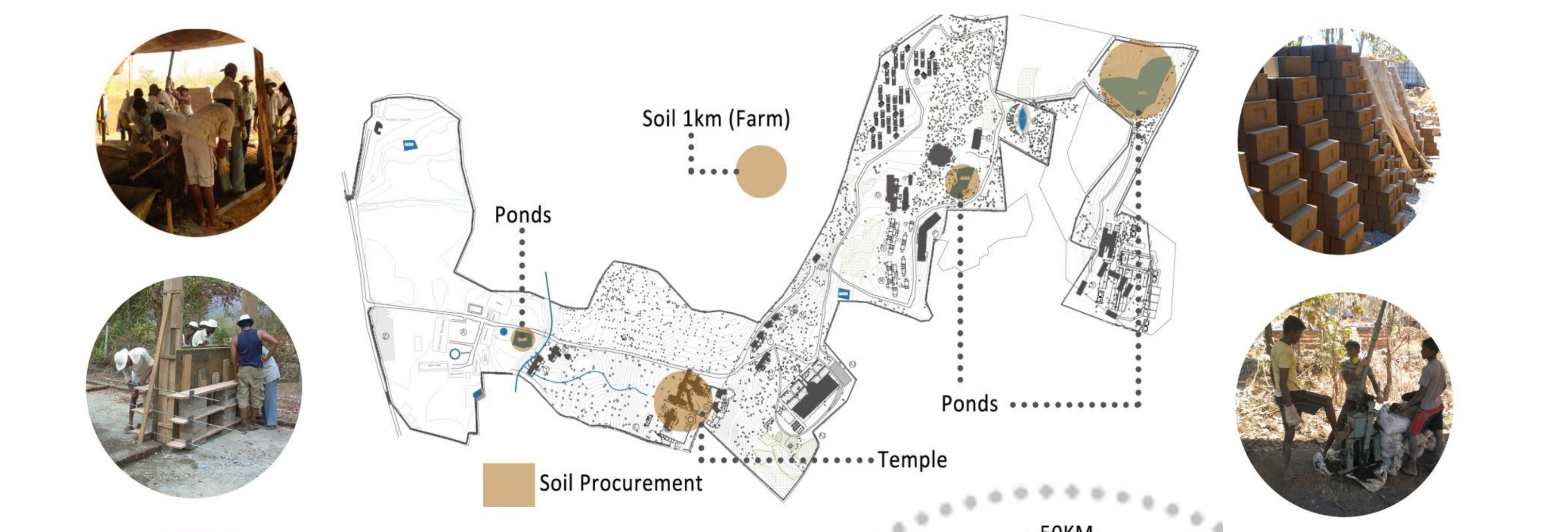
Water Management: Recharge & Recycle



Land Management: Enhancement of Existing Land Use



Resource Management: Site as a Quarry

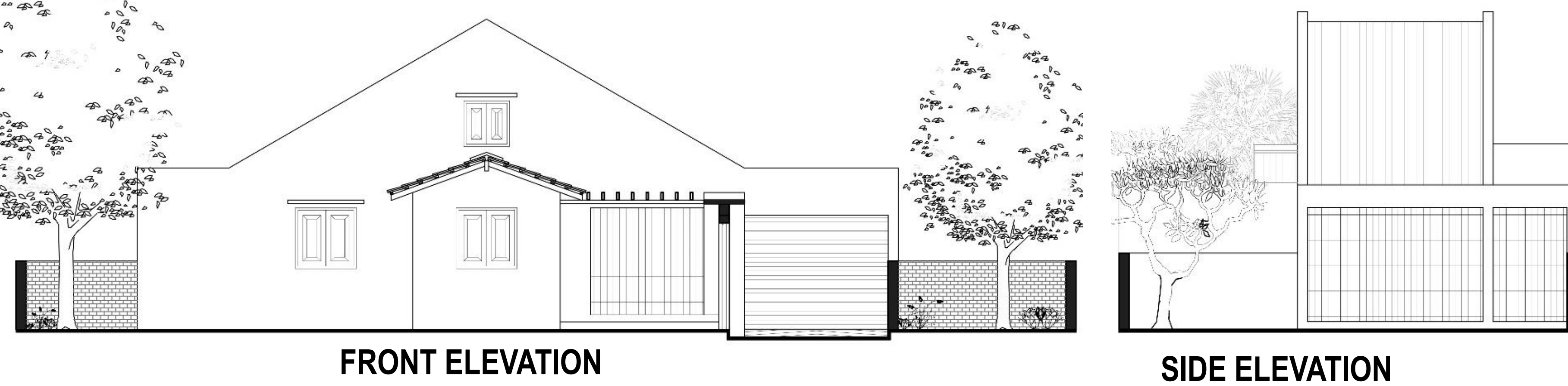
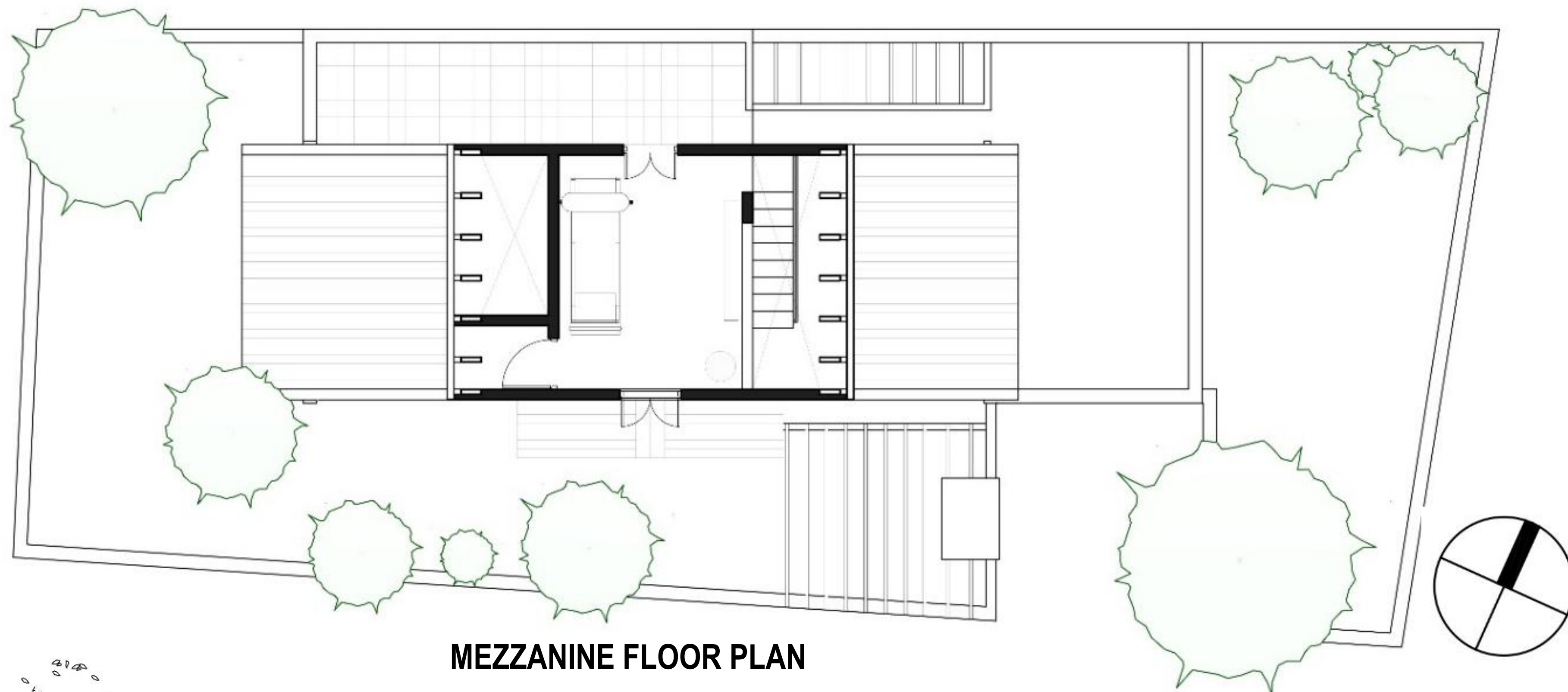
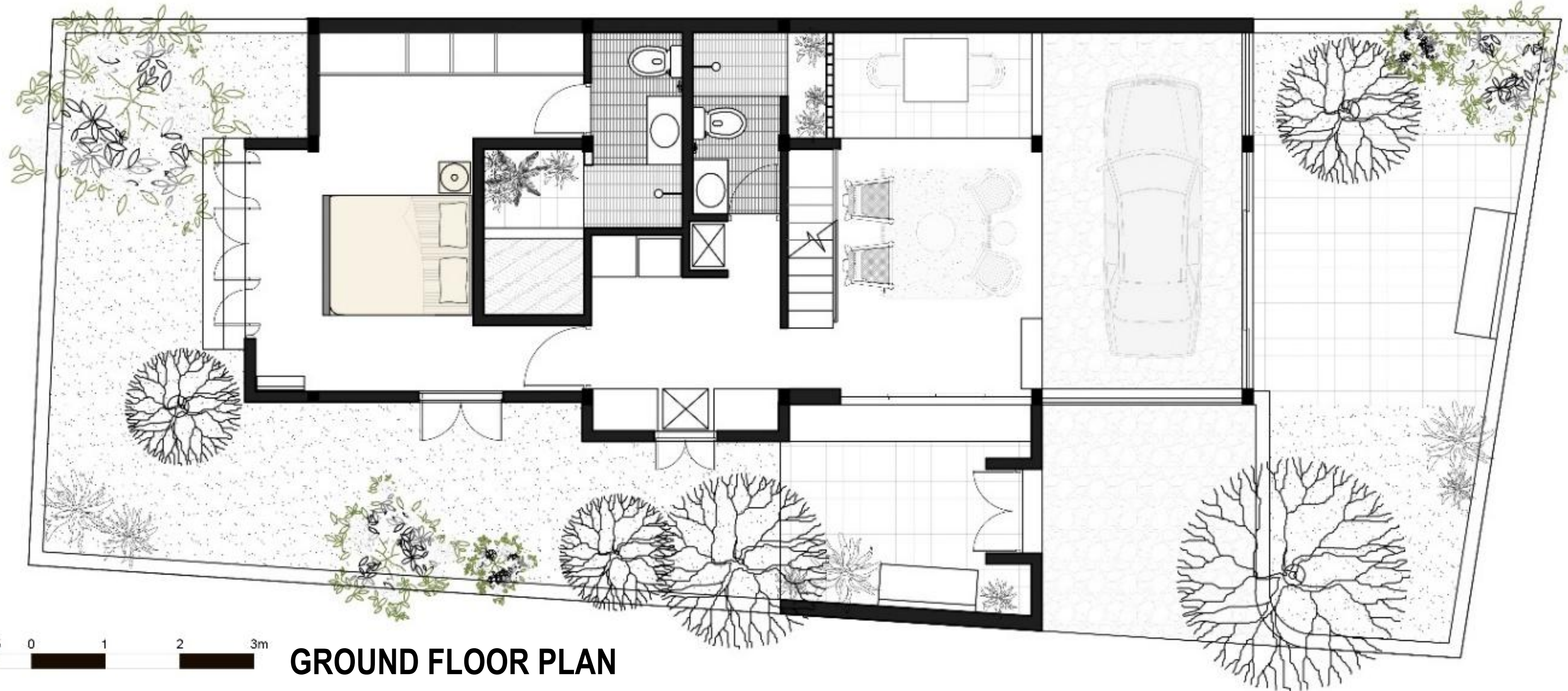


SAMARASINGHE FAMILY HOUSE

COLOMBO, SRI LANKA

Architect: Thilina Wijekoon
 Land Area: 177.05 M²
 Built Area: 71.08M²
 Project Cost: US\$ 18,621
 Completion: 2015
 Engineer: Deeptha Senanayake

The proposal was to build a house for a newly married couple in Colombo. The Client, Dileepa and Mahishka who were just starting their new life wanted to have a house with minimal requirements of two rooms, two bathrooms, pantry, living, dining and a garage. They had allocated only 13,793 USD (2,000,000 LKR) for the project.



Having the design generator as the project cost, there were other factors that helped to bring life into the design. Above all, the Client has a very simple and minimalistic lifestyle. They love nature and Traditional Sri Lankan Architecture. Such characteristics of them helped to have more open spaces merging the interiors with outside garden spaces. The floor area of the house was maintained at 83.83 sqm. Due to cost constraints. The materials were chosen carefully to bring-out a traditional Sri Lankan style into the spaces while maintaining the cost at a low level. Towards the end of the project, the client managed to pull another 4828 USD (700,000 LKR) in for final finishes , landscaping and furniture. .

HYUNDAI LOGISTICS CENTER

CALAMBA CITY, LAGUNA, PHILIPPINES

Architets: Dominic Galicia Architects
Consultants:
Structural: Engr Carlos Villaraza
HVAC / Plumbing / FP: Engr. Herminio David
Electrical: Engr Rita Taguines
Landscape Architect: Ar. Mary Ann Espina
Sustainability Consultants : Ar. Emelito Punsalan
 Ar. Michaela Rosette M. Santos



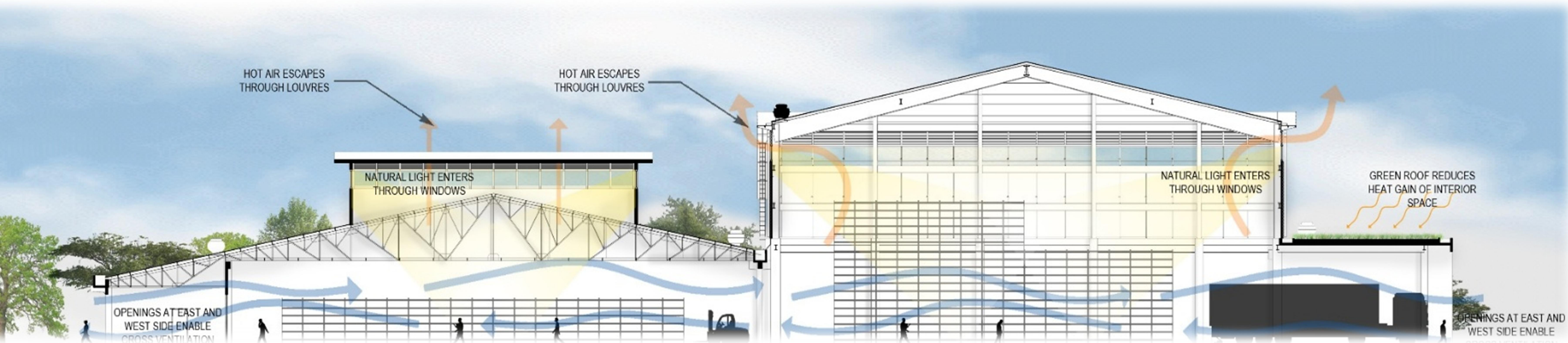
PROJECT BRIEF

- Central Logistics Center of Hyundai Asia Resources Inc., the exclusive distributor of Hyundai Cars and Commercial Vehicles in the Philippines
- situated in the industrial area of Laguna, south of Metro Manila, along a national highway
- originally used as a garments facility
- includes: central stockyard, parts warehouse, outsource, accessories, training center, service center and executive offices
- started construction in 2013

	Annual Energy Use Savings	52 to 70%
	Recovered Energy	12.11%
	Renewable Energy Use	5 to 6%
	Energy Utilization Index (EUI) in kWh/Sq M/Year	≤ 46.3
	Annual Greenhouse Gas Emissions Reduced (in CO2)	488 MT
	Site Utilization & Environmental Response	Sustainable
	Material Use and Sourcing	Low Impact
	Solid Waste Collection & Segregation	Practiced
	Annual Water Use Savings	30.7%
	Passive Design (Daylighting & Natural Ventilation)	Excellent
	Thermal Comfort	Acceptable
	Indoor Air Quality	Acceptable
	GREEN Construction & Building Operations	Practiced & Documented
	Climate Change Resiliency	Prepared

SUSTAINABLE CONCEPTS

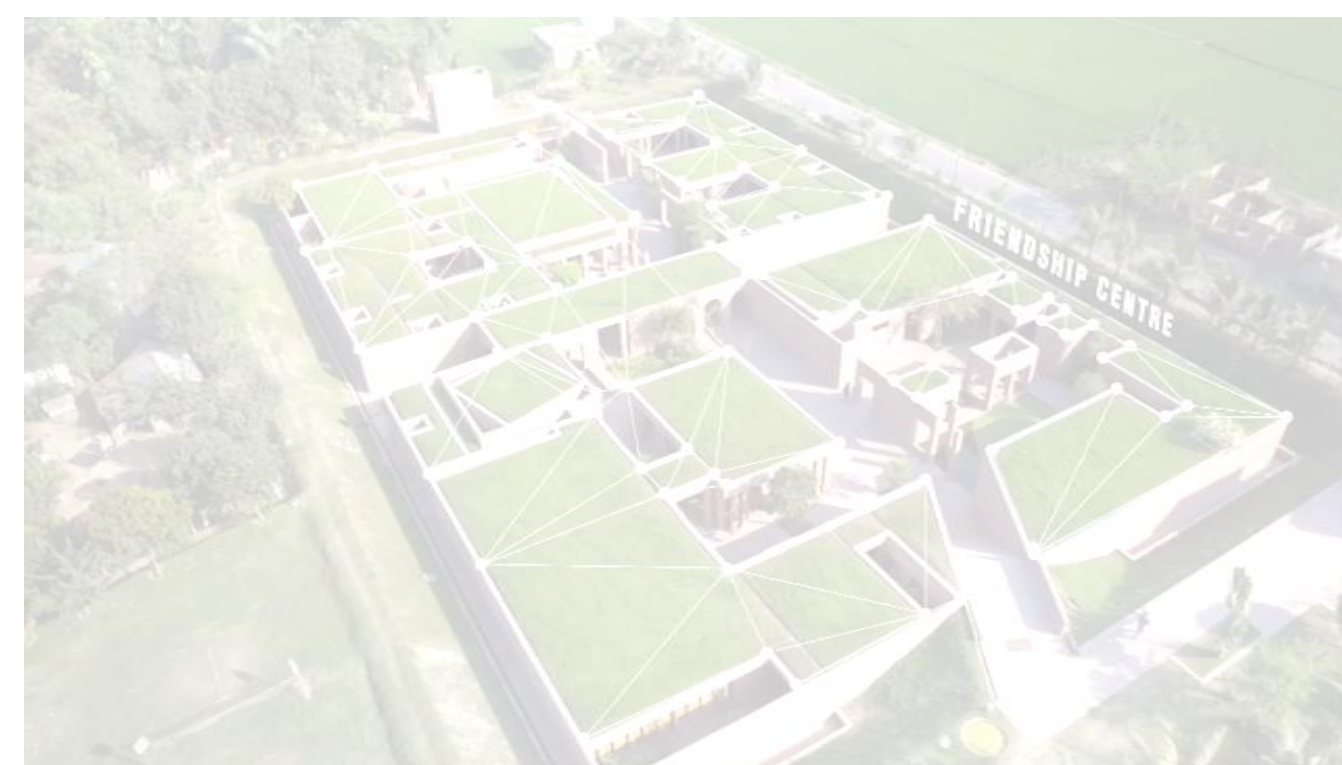
- Adaptive re-use of an existing building
- Passive design: natural ventilation & daylighting
- Sustainable site and biodiversity: permeable surfaces and greeneries (cool environment)
- Insulated building envelope
- Energy-efficient lighting and cooling system
- Indoor air quality and energy recovery
- Renewable energy-use: PV system
- Water efficiency: stormwater collection and re-use
- Sewage treatment
- Climate-change resilient



Friendship Centre

Gaibandha, Bangladesh

Architect: Kashef Mahboob Chowdhury
Consulting Firm: Kashef Chowdhury/URBANA
Land Area: 9,210 sqm
Built Area: 3,053 sqm
Year of Completion: 2011
Cost of the project: 900,000 US\$
Awards: Shortlisted - Aga Khan Awards
 International Baku Architecture Awards 2015
 AR+ Emerging Architecture Award 2012



The Friendship Centre is located near the district town of Gaibandha in Bangladesh, in a low lying land which is under threat of flooding but an extensive program with a very limited fund meant that raising the structures above flood level (a height of eight feet) was not an option: nearly the entire available fund would be lost below grade.

The centre serves and brings together some of the poorest of poor in the country and -by extension - in the world, yet in the extreme limitation of means was a search for the luxury of light and shadows; of the economy and generosity of small spaces; of the joy of movement and discovery in the bare and the essential.

Built on existing low lying land prone to flooding, the complex is protected by a mini embankment. Extremely restrictive budget meant area allocation, materials, techniques and all aspects had to be cost optimized. Inspired by ruins of Buddhist monasteries, the architecture is spare, meditative. Rain water harvest through the introduction of pools and excavated pond. Open pavilion type architecture, courtyards and light wells, pools and plantation and earth covering on roofs contribute to a naturally ventilated scheme. 'Non-building' approach helped to integrate built environment with the surrounding rural landscape.



The design relies on a mini-embankment for flood protection while building directly on existing soil, in load bearing masonry. Rainwater and surface run-off are collected in internal pools and the excess is pumped to an excavated pond, also to be used for fishery.

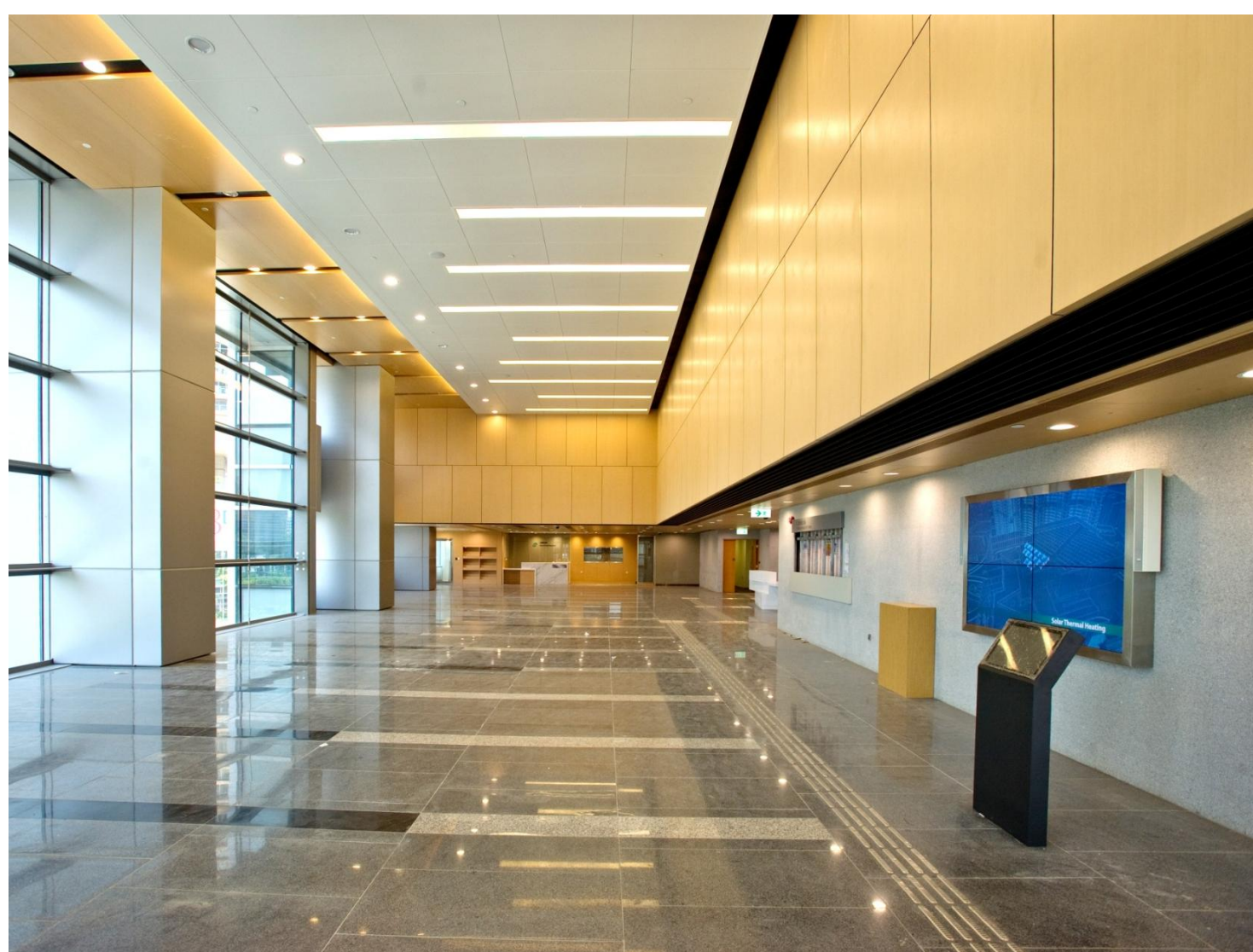
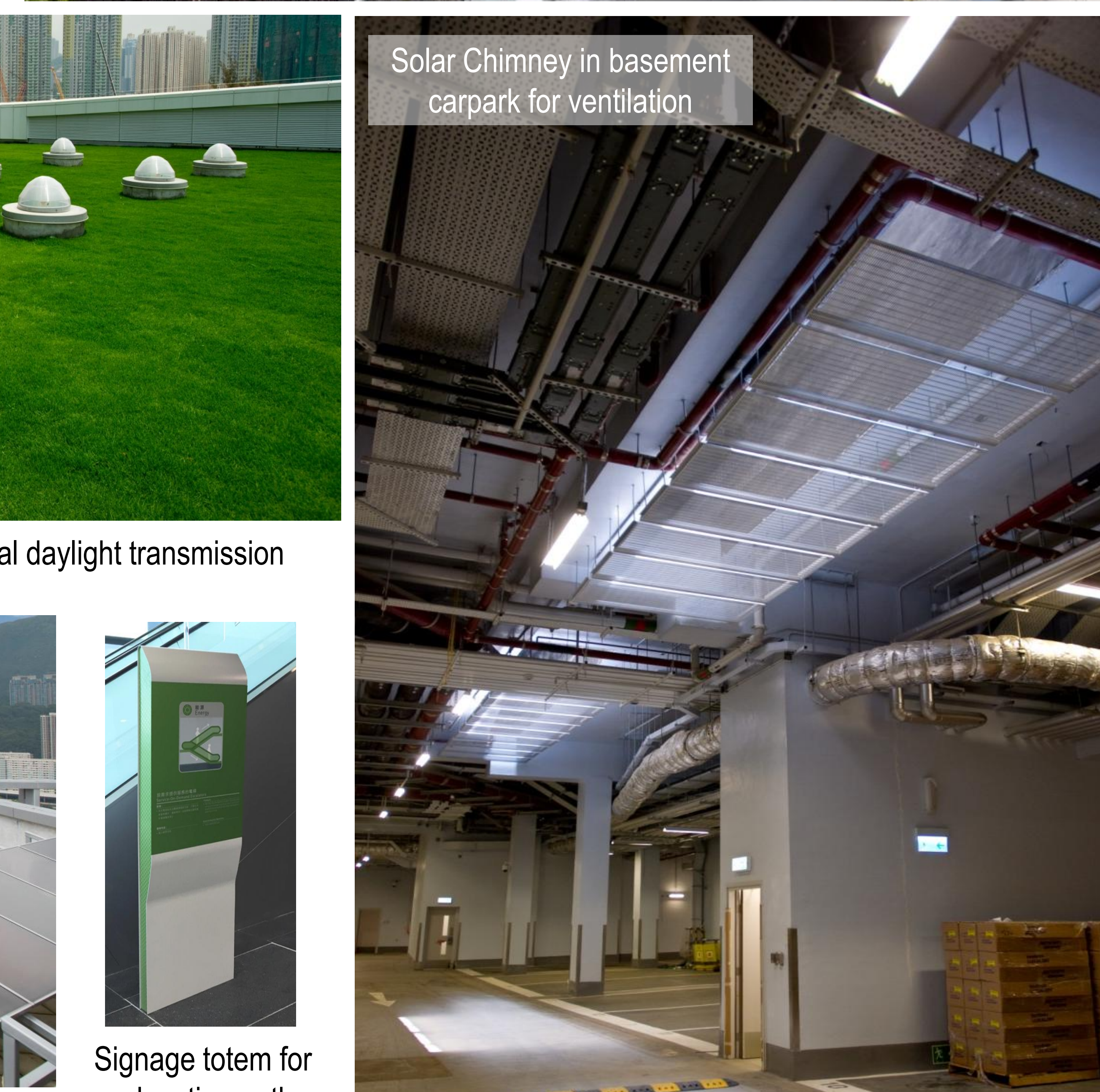
The design relies on natural ventilation and cooling, being facilitated by courtyards and pools and the earth covering on roofs. An extensive network of septic tanks and soak wells ensure the sewage does not mix with flood water.

Trade and Industry Tower

Hong Kong

Architects: Architectural Service Departments
Wong Tung & Partners Limited

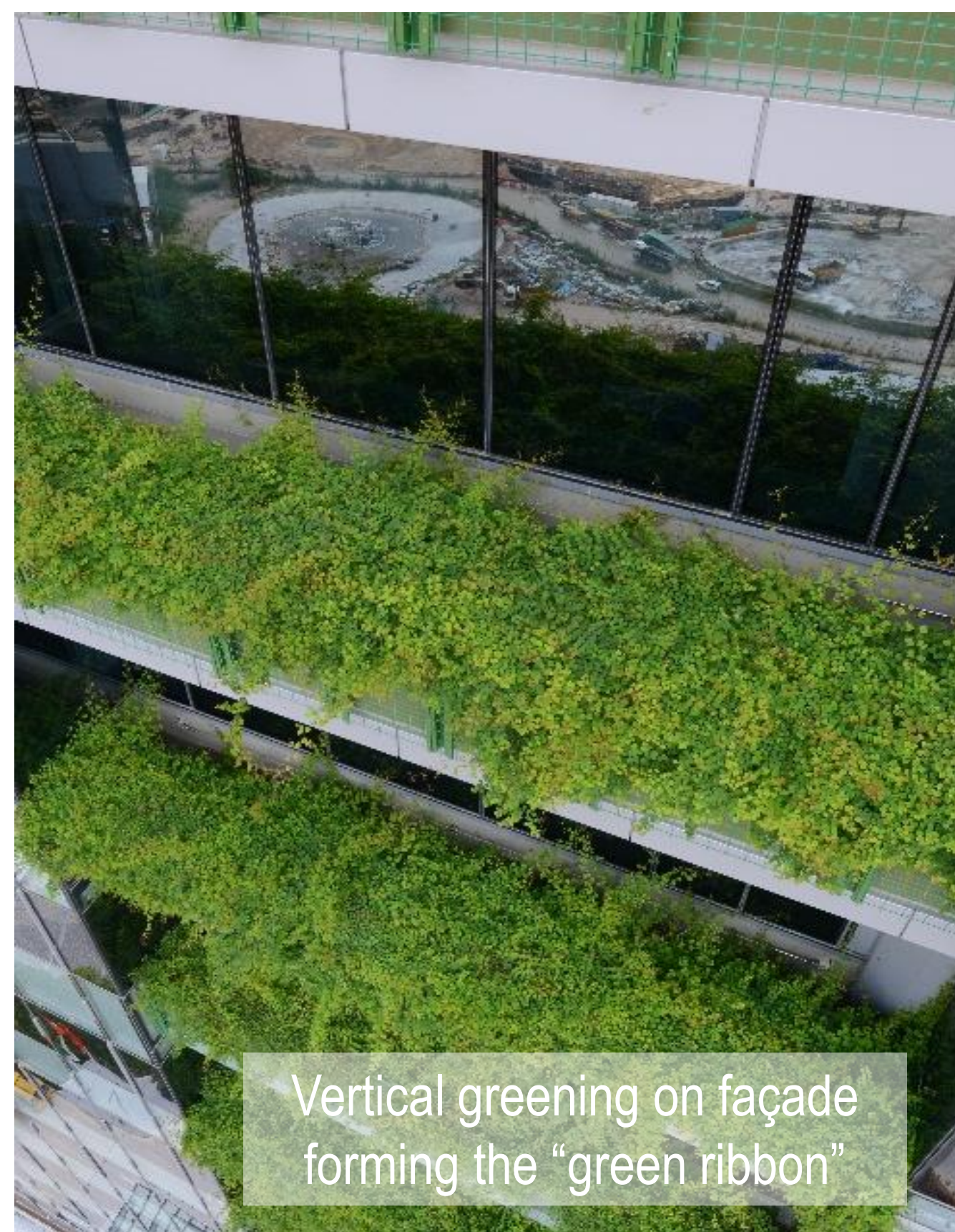
Site Area 8,300 m²
Floor Area 66,600 m²
Year of Completion 2015
Cost of project US\$ 339M
Grand Award Green Building Award
Provisional Platinum "Building Environmental Assessment Method" (BEAM Plus)
Platinum certified "Leadership in Energy and Environmental Design" (LEED)



Interactive display in 1/F lobby as start of education path



Vertical and horizontal sunshades on facade



Vertical greenery on façade forming the "green ribbon"



Community hall green roof



Anidolic light pipes for horizontal daylight transmission



Solar hot water panel in external landscaped area



Light pipes in community hall roof for vertical daylight transmission



Automatic Refuse Collection System (container in basement carpark and inlet on each typical floor)



Photovoltaic panels on upper roof



Signage totem for education path

JIRISAN NATURAL PARK ECO-LEARNING INSTITUTE

JIRISAN JEOLLANAM - DO REPUBLIC OF KOREA

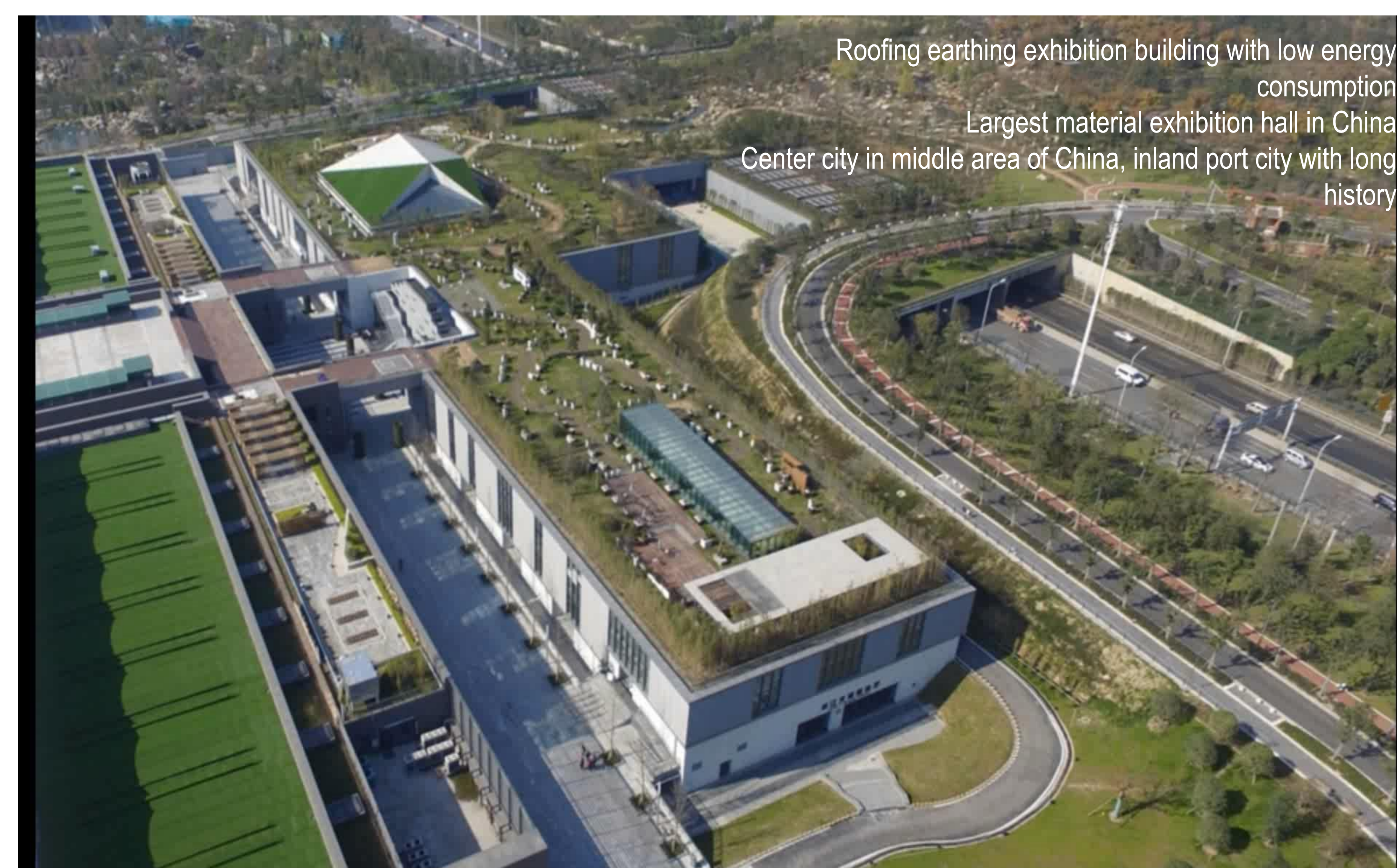
Architects: Chang Ki Yun & Seung Joong Yang
Land Area: 23,411.00m²
Built Area: 3,903.15m²
Completion: 2015
Consultants:
 Structural: Mirae Eseudiji
 Landscape: Atelier Namoo
Project Cost: \$8,010,680
Award: 2015 Republic of Korea Green Building competition Grand Prize



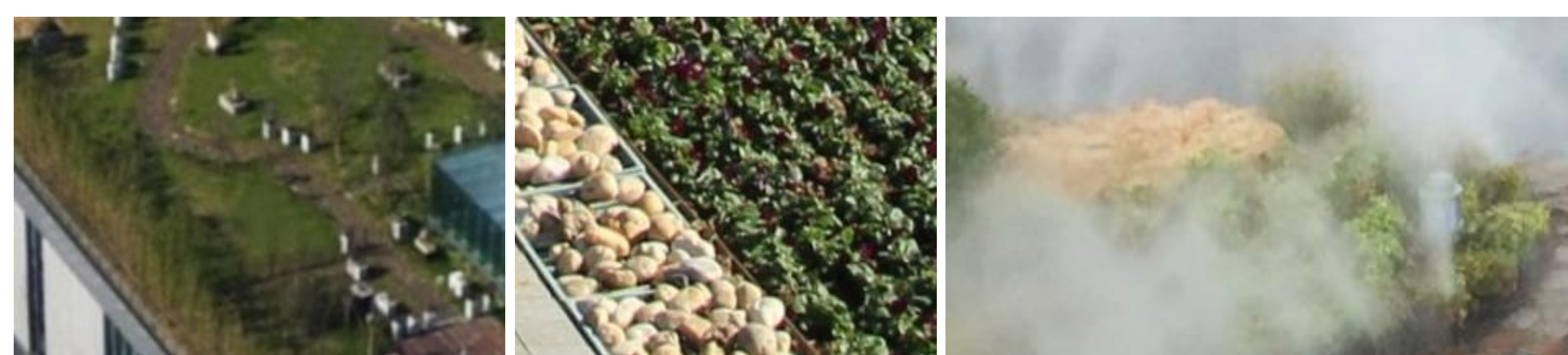
MATERIALS GARDEN PAVILION

The 10th China International Garden Expo

Architects: Xiao Wei and Xiong Xiaofei
Land Area: 30,100m²
Built Area: 28,375m²
Completion: 2015
Consultants:
 Water supply and drainage: ChenYu
 Heat and ventilation: CITIC Building Design & Research Institute Co., Ltd., Lei Jianping
 Electrical: CITIC Building Design & Research Institute Co., Ltd.
 Structural: Hu Jun, CITIC Building Design & Research Institute Co., Ltd.
 ChenSong
Project Cost: US \$24 million
Award: China Wuhan Excellent Architectural Design Prize 1st place 2016



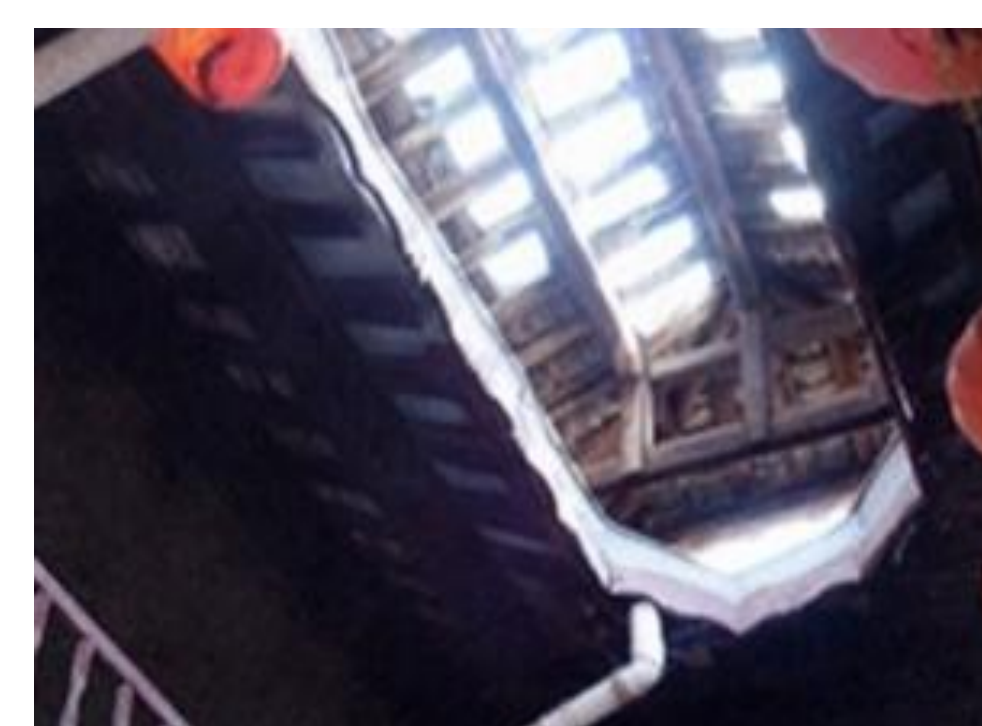
Roofing earthing exhibition building with low energy consumption
 Largest material exhibition hall in China
 Center city in middle area of China, inland port city with long history



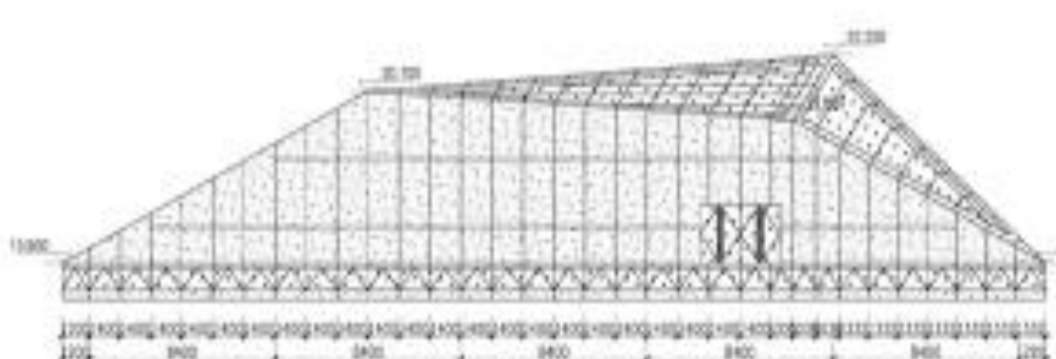
ROOF GARDEN

RAIN COLLECTION

FROG SYSTEM



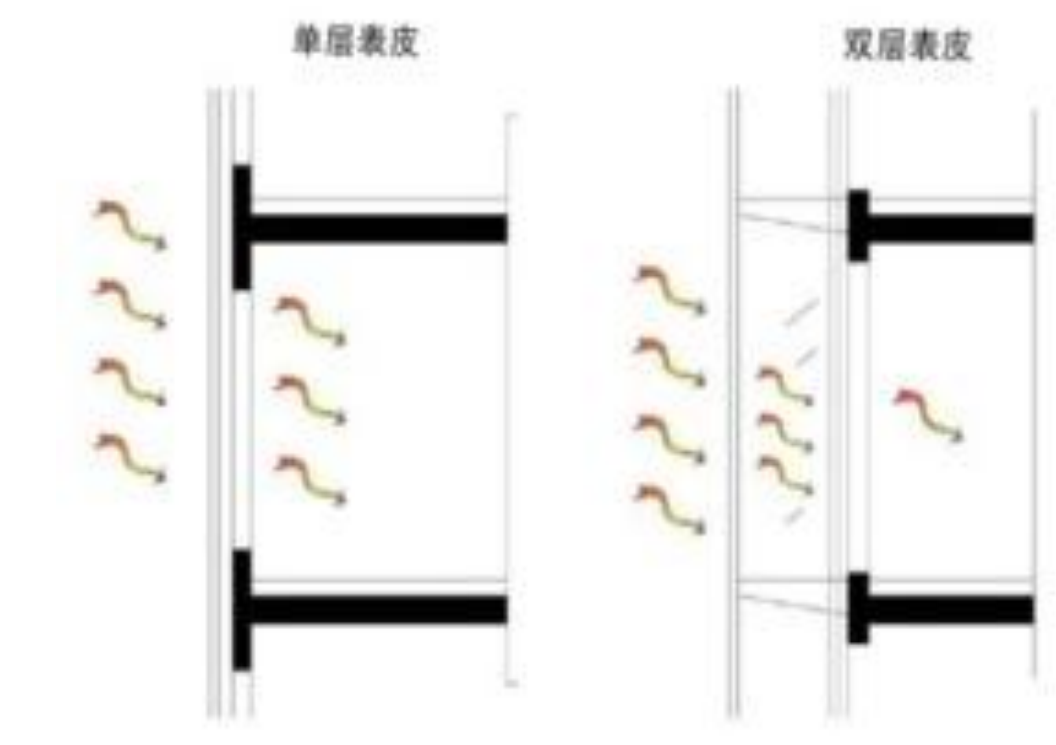
TIANDOU



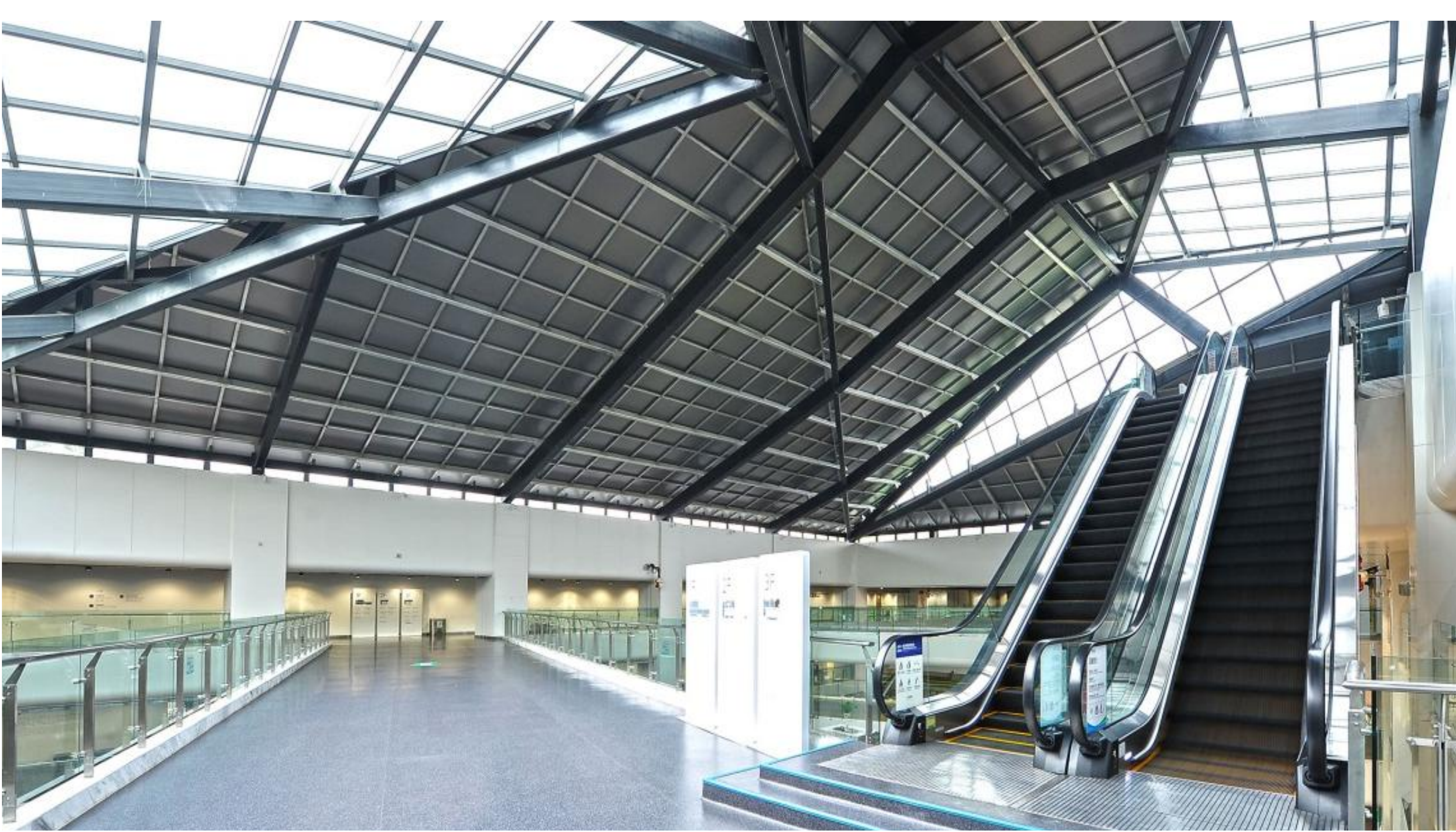
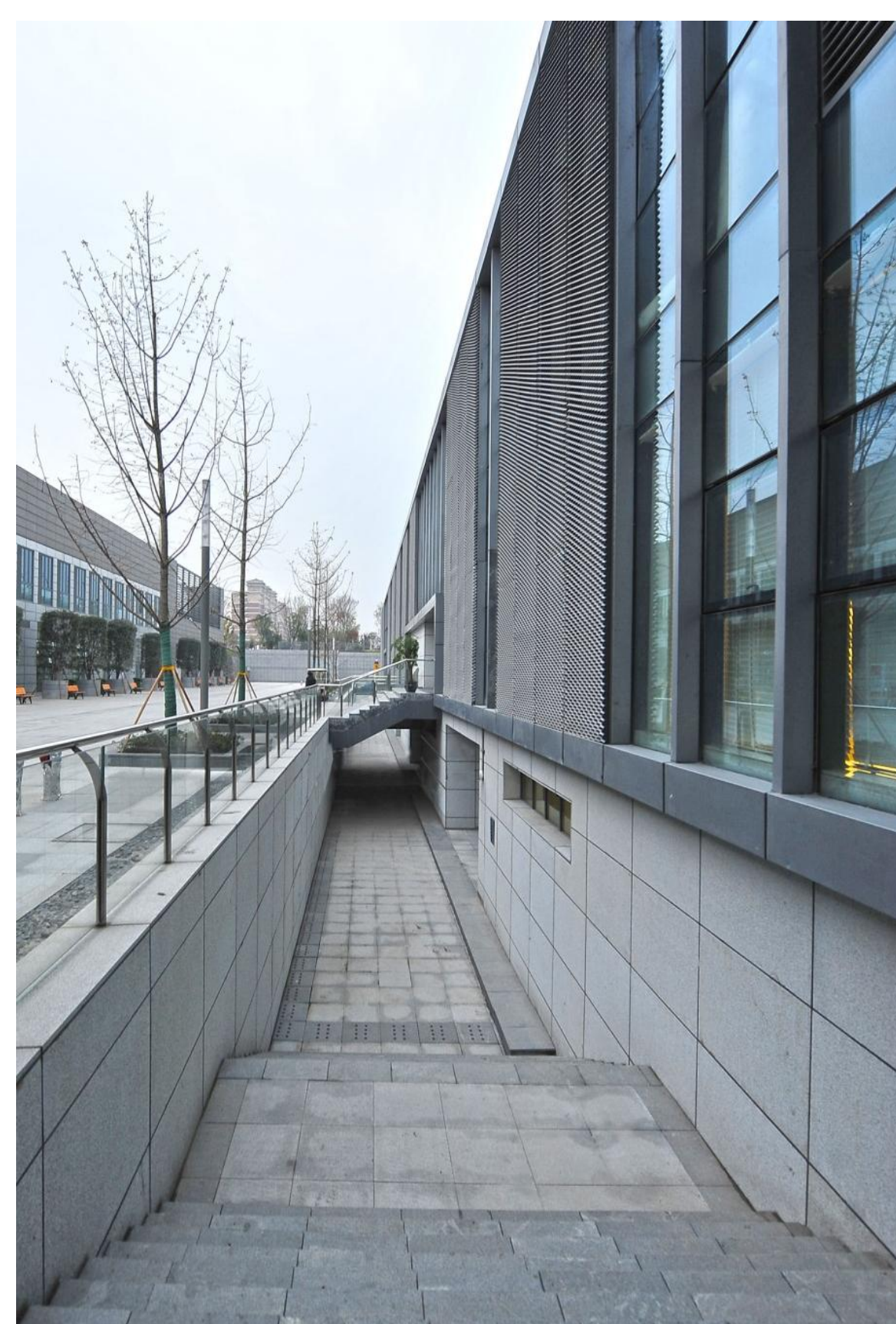
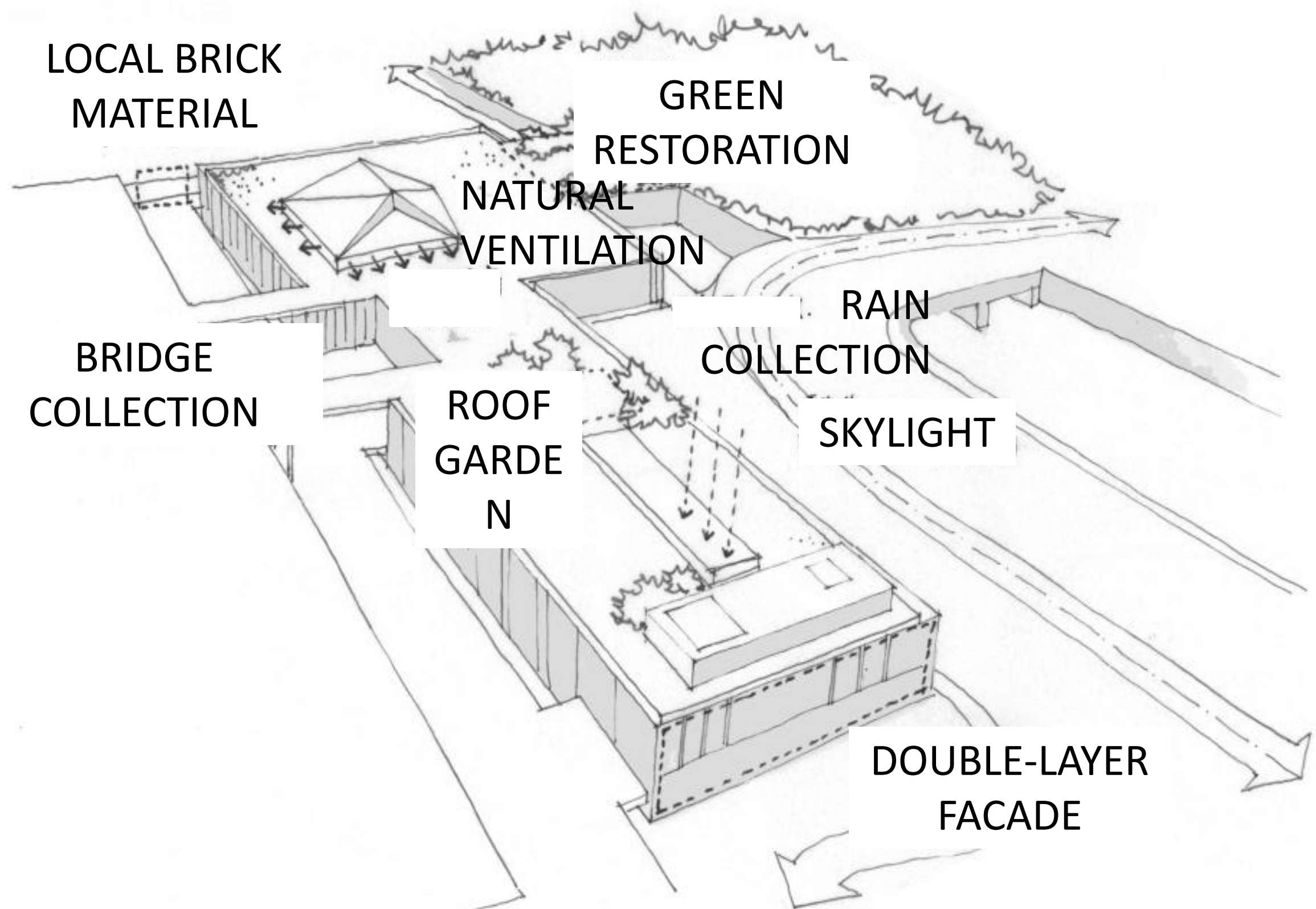
'TIANDOU' APPLICATION
 Chinese-style square dome is a unique structure of traditional Chinese architecture, effectively improving interior microclimate. The raised roof looks like dome of the sky.



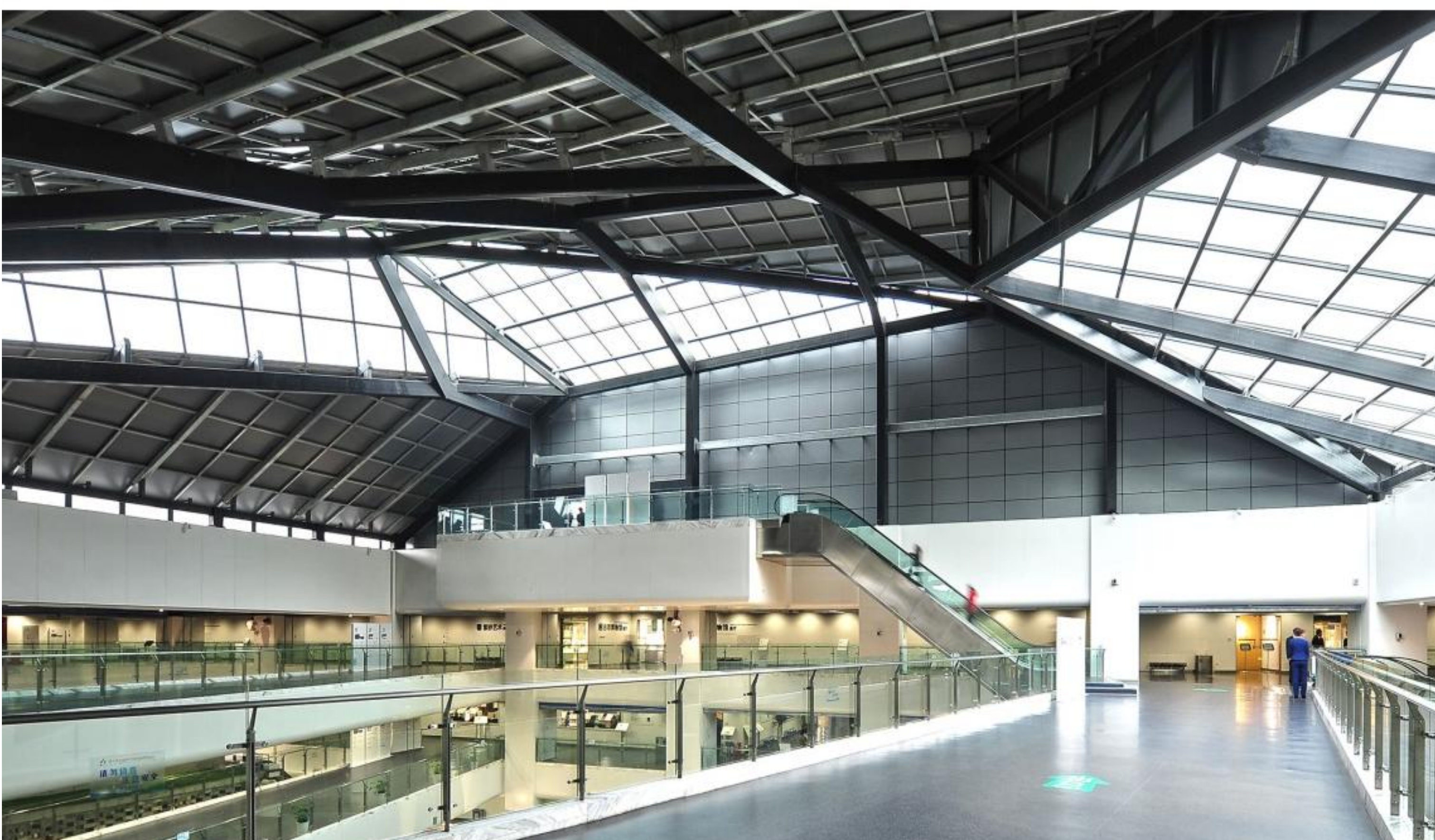
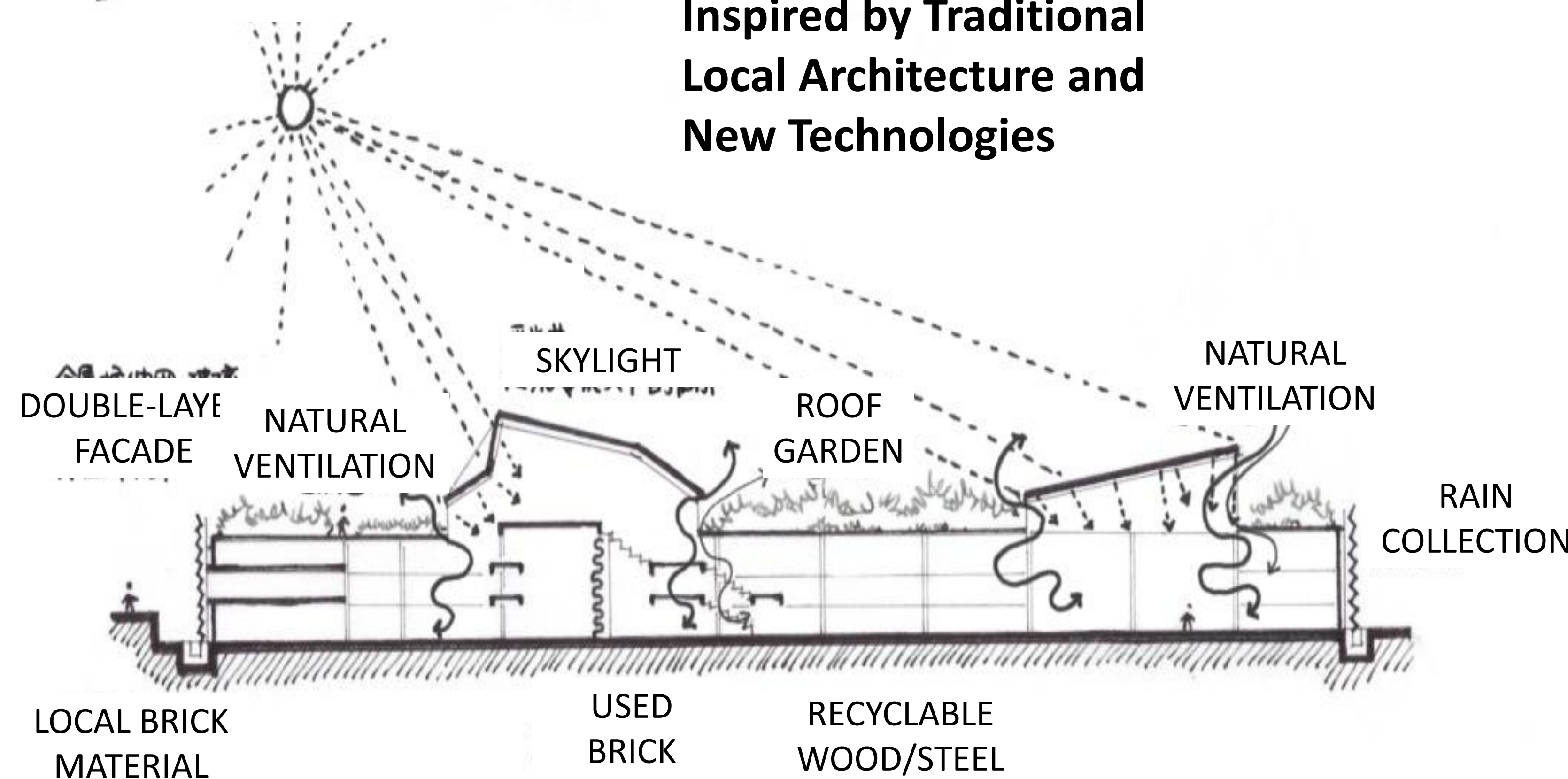
DOUBLE LAYER



DOUBLE-LAYER FACADE
 Steel, glass, aluminum veneer tensile net and other recyclable materials are used on the atrium and double-layer façade, which is a green design with colorful light and shade effect.

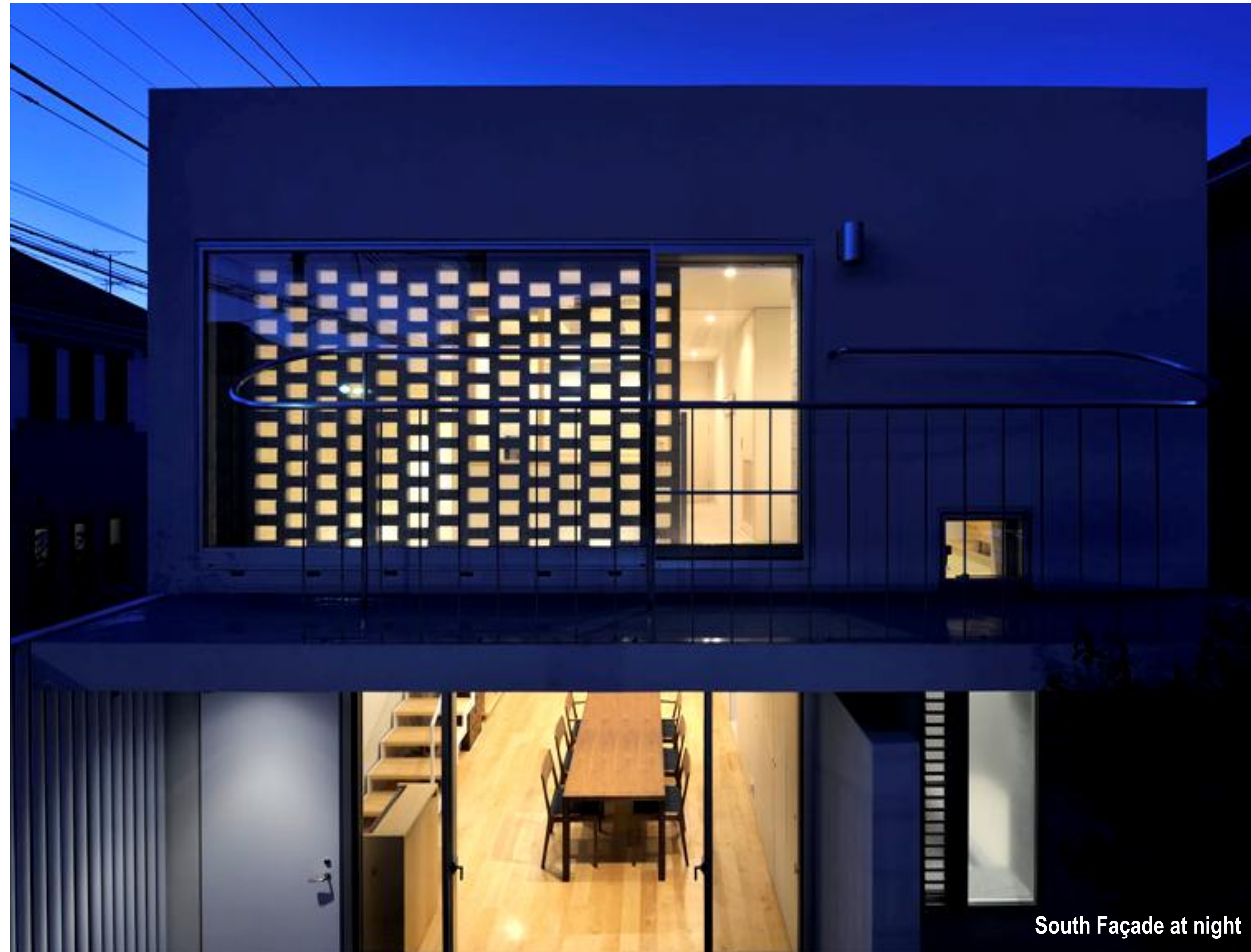


Inspired by Traditional Local Architecture and New Technologies

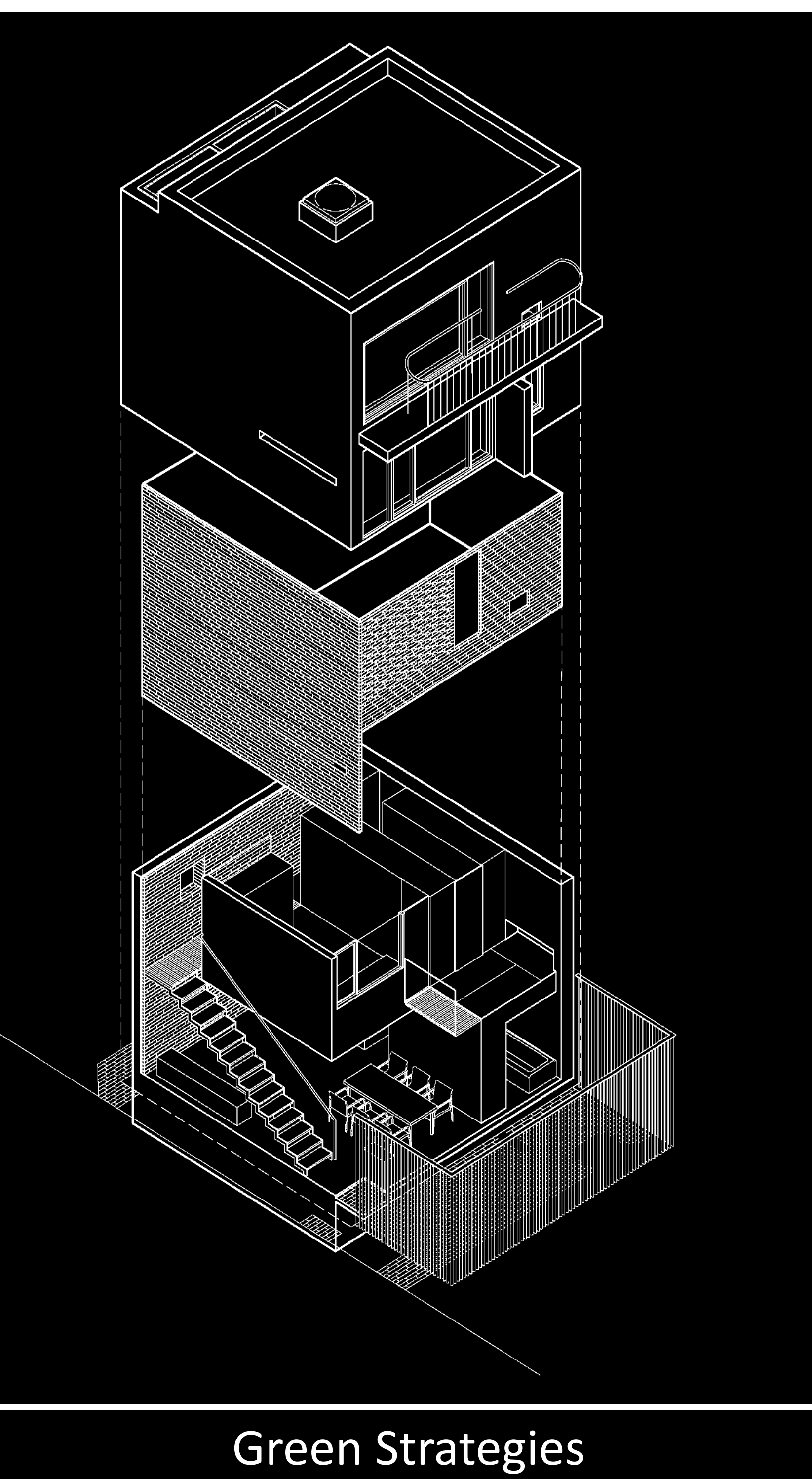


[[[cell]]]
SUGINAMI-KU, TOKYO, JAPAN

Architect: Yasuda Atelier
Location: Suginami-ku, Tokyo, JAPAN
Land Area: 95.46m²
Built Area: 47.61m²
Completion: 2012
Design Team: Koichi Yasuda and Akihiro Kitada
Design Cooperation: Yoko Ito
Structural Engineer: Kanebako Structural Engineers
HVAC Engineering: ES ASSOCIATES
Landscape Design: Masanori Nishida Landscape Design
Lighting Advisor: Koichi Kaiho



South Façade at night

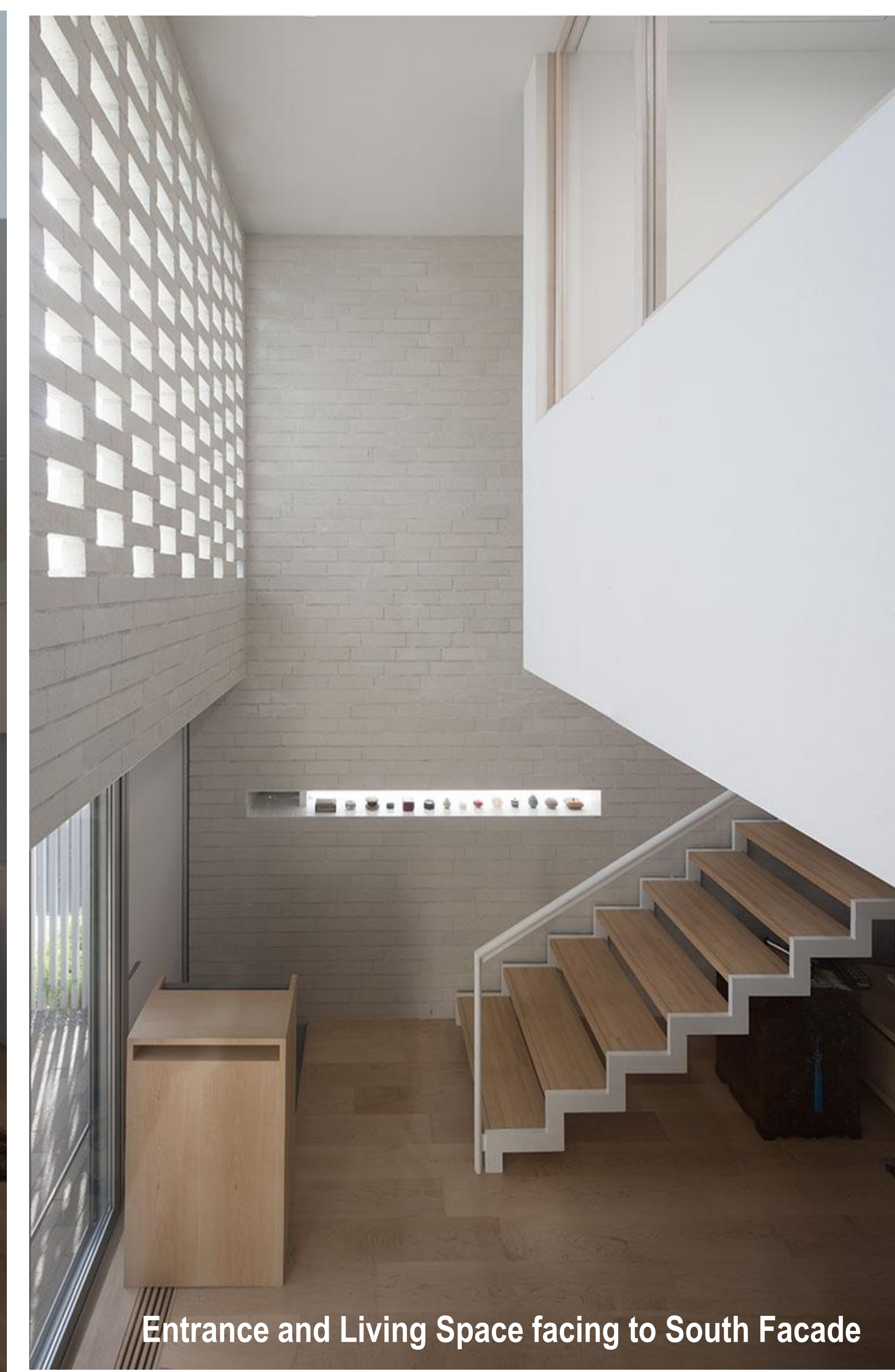


Green Strategies

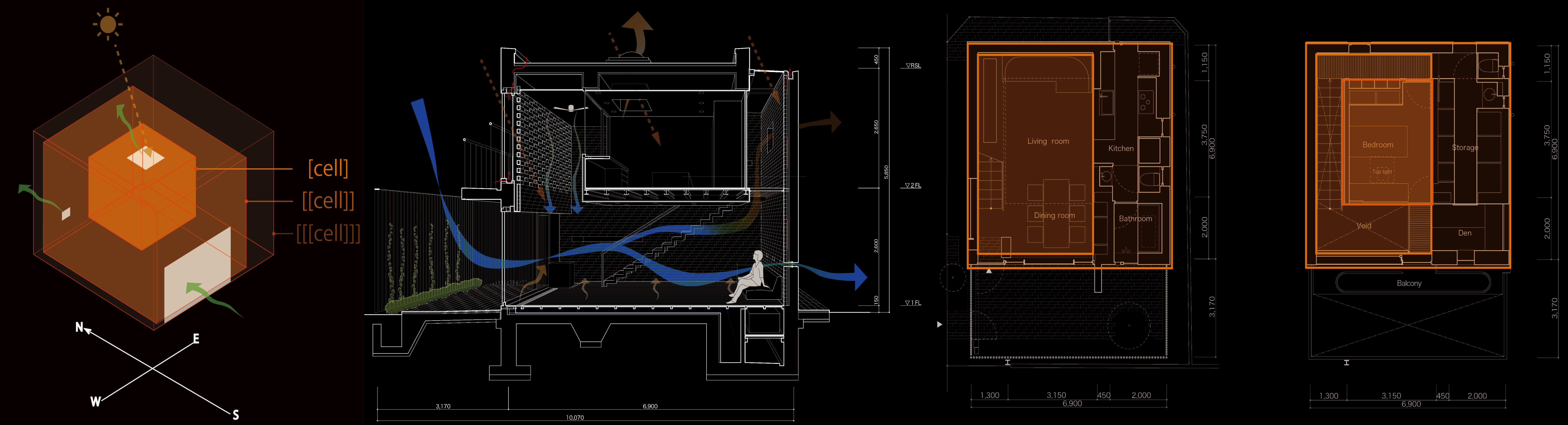
This is a home planned for residential areas of Tokyo. It is a nested structure of three cells, with RC outer walls, white brick inner walls, and a bedroom floating inside. It acts as a closed box to the surrounding environment, and white is main openings face the garden on the south side, it has small windows and skylight all over to bring in natural light and natural ventilation, producing a bright and comfortable interior space. The breeze coming in through the brick-sized natural air supply holes behind the sofa passes through the staircase and void to exit through the second-floor windows. Daylight in through the checker-patterned bricks and the slatted upstairs floor into the living room, shifting over time, while the white bricks give a soft brightness to the interior. The bedroom shows close attention to comfort, with details such as a top light, a view, natural ventilation, and bringing cool air in through multi-hole diffusers. This design satisfied both the architect and client down to the level of details, was built,



Living Space with Floating Bedroom



Entrance and Living Space facing to South Façade



CYBERJAYA MOSQUE

SELANGOR DARUL EHSAN, MALAYSIA

Architect: ATSA Architects Sdn Bhd
Location: Cyberjaya, Selangor, Malaysia
Client: Jabatan Agama Islam, Selangor
Completion Date: January 2015
Gross Floor Area: (mq)11158.36
Project Cost: US\$ 44 Million (Approx)
Civil & Structural: Ingenieur Bersekutu
Mechanical & Electrical: Jurutera Perunding SAGA Sdn Bhd
Main Contractor: Koridor Padu Sdn Bhd



The energy generated from the mosque's solar panels are also supplied to the national grid, contributing to the country's supply of renewable energy. The mosque's main prayer hall has been designed to be air-conditioned for two hours during Friday prayers and during prayers of other special Islamic occasions.

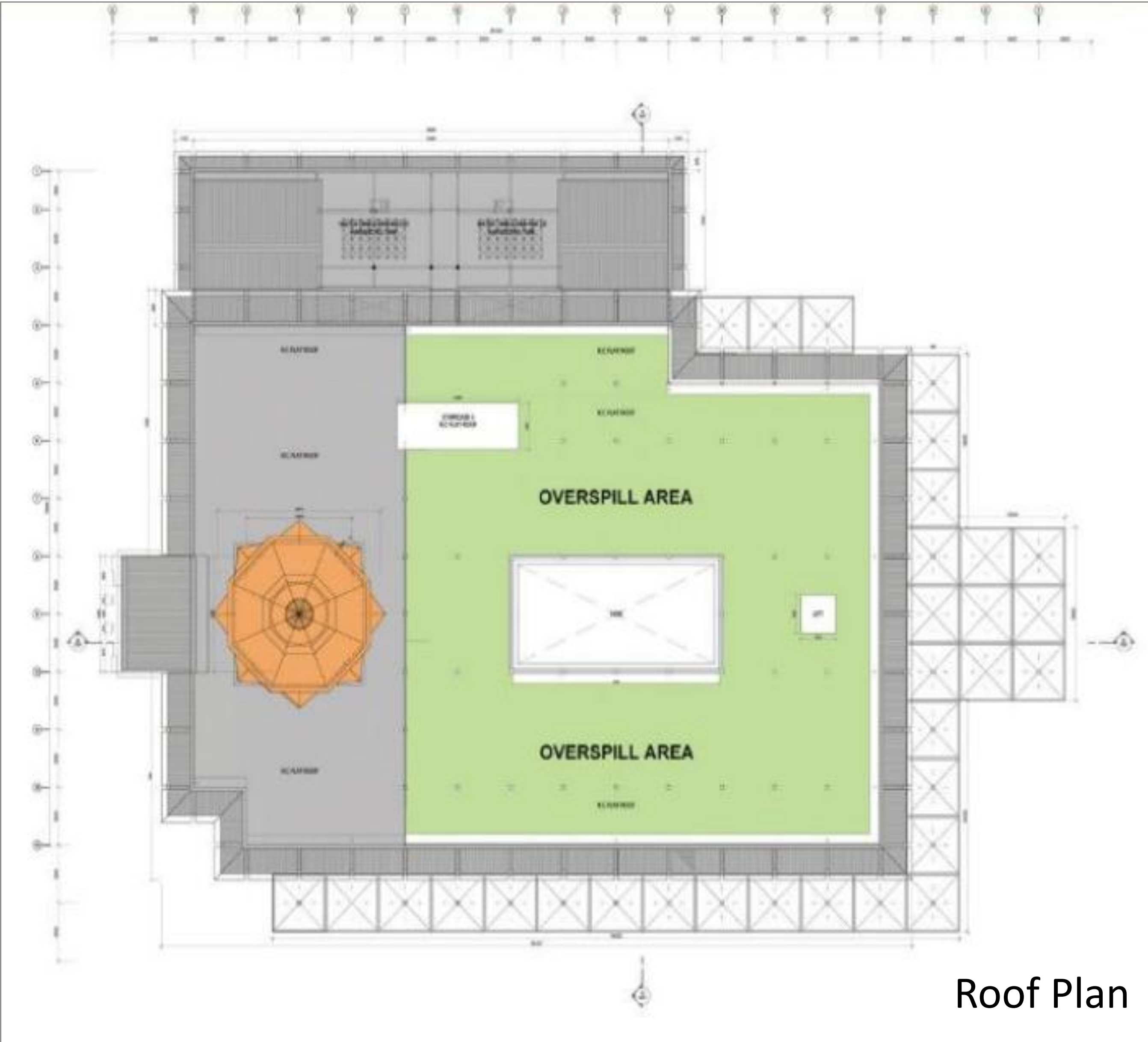


The new state-of-the-art Cyberjaya Mosque has been shortlisted for The Plan International Award 2016 for its groundbreaking green technology and sustainable design.

Besides adhering to the industry's highest standard Platinum rating of the Green Building Index (GBI), by incorporating recyclable materials and energy efficient equipment, the mosque minimizes energy usage to reduce its running costs.



Its contemporary modern design incorporates traditional Islamic design elements with a goal of portraying Islam as a progressive religion, as well as reflecting the simplicity and purity of modern Malaysian mosque architecture. The design is in line with Cyberjaya being a 'green city of the future', with main emphasis towards a modern approach.

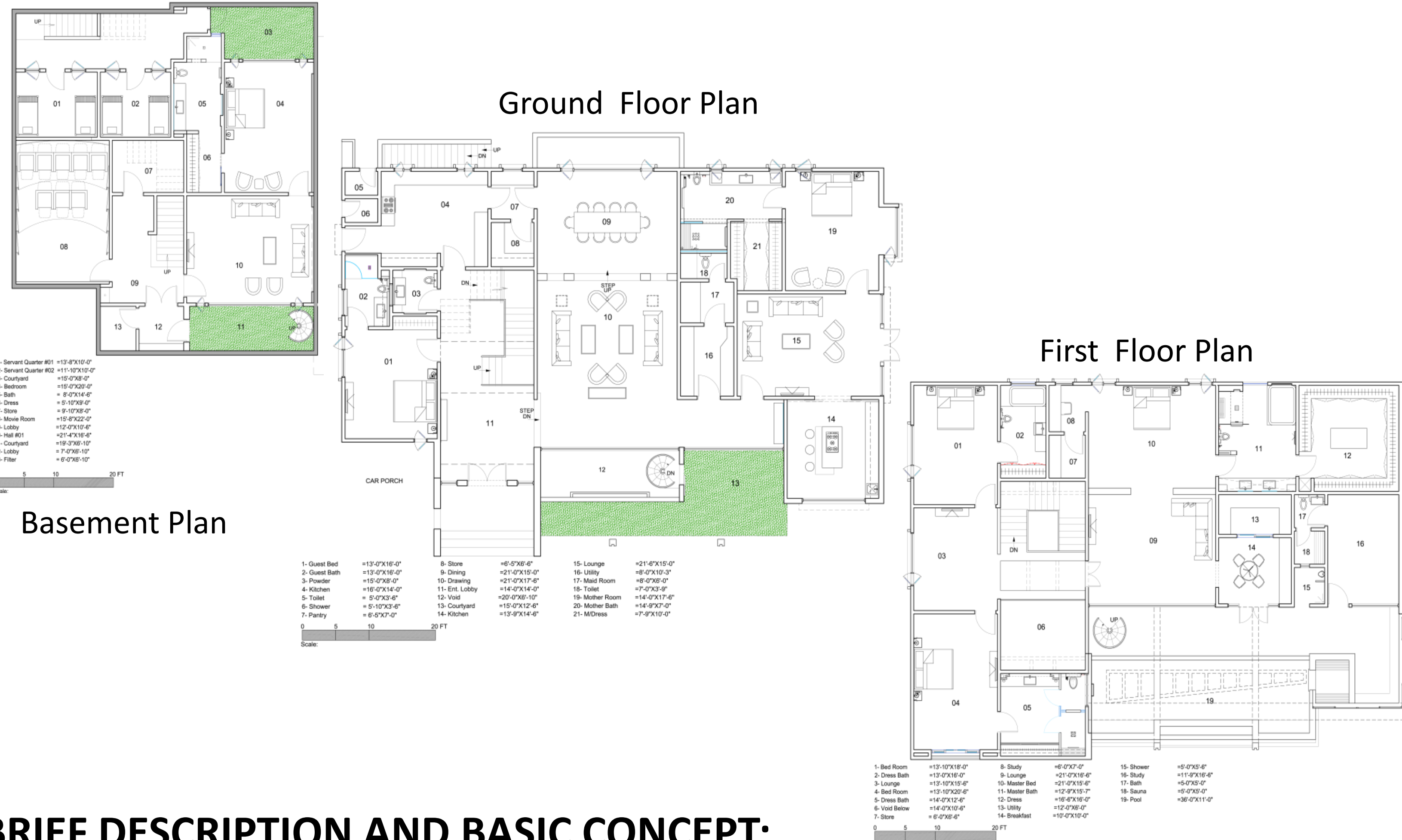


Fans and ventilators will be sufficient to sustain an average daytime temperature of 26 degrees Celsius within the mosque's main prayer hall. Built at a cost of RM173.3 million, the architect drew inspiration from the bespoke design of the 51-year old Masjid Negara in Kuala Lumpur. The mosque was completed last year after construction was commissioned in 2012.

RESIDENCE OF MR. ALI NAQVI

KARACHI PAKISTAN

Architect : Mr. Ali Naqvi
Area : 1000 Sq.Yds
Built Area : 18,000 Sq.Ft
Year of Completion : 2014
Structure : Mr. Saifuddin
MEP : Fahim Nanji & Desouza (Pvt) Ltd
Landscape : Mrs. Irfan
Interior : Ali Arshad Associates
Cost of Project : \$920,000



BRIEF DESCRIPTION AND BASIC CONCEPT:

The architect's impression of this house has been beautifully realized in this residence, skillfully marrying contemporary design with traditional architecture based purely on the principles of Green Architecture.

The orientation of the house is based on the sun and wind direction with elements like solar panels, rain water harvesting systems, the use of inverter AC's, LED lights etc incorporated in the house.

The house carefully incorporates passive and active strategies of sustainable architecture. Longer sides of the plan face North and South so the building gets minimum solar exposure.

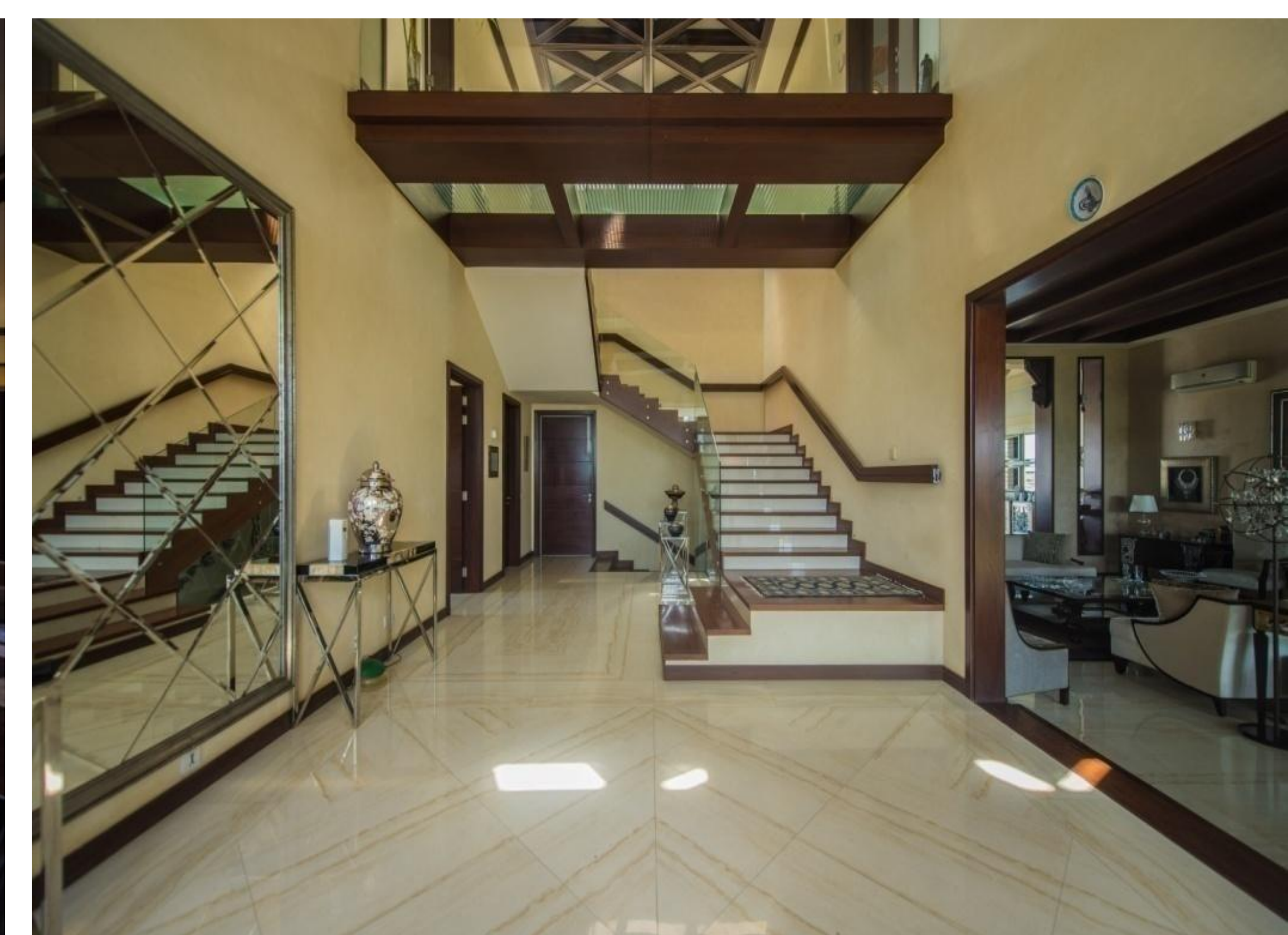
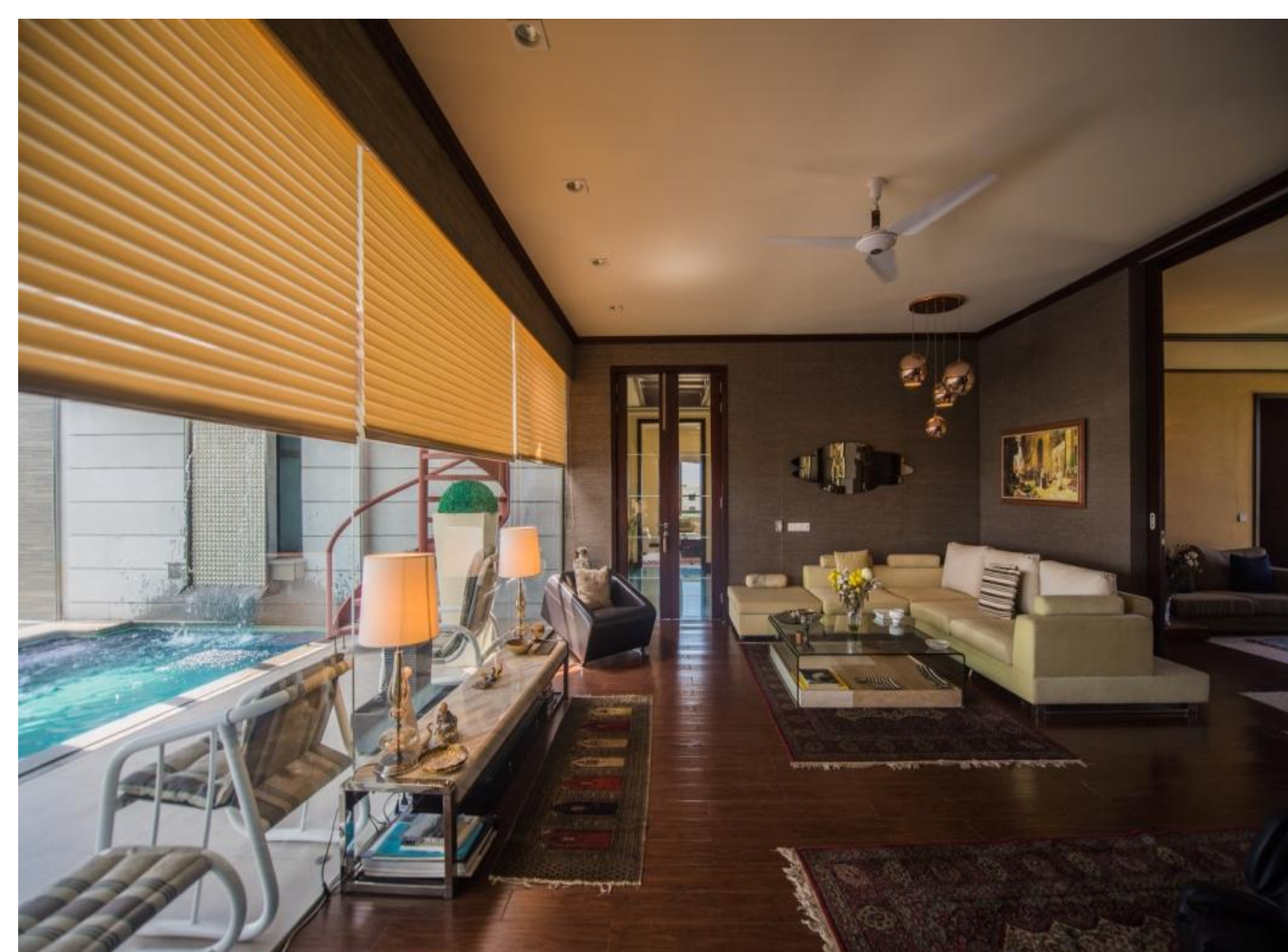
Double outer walls, use of hollow blocks and double glazed windows provide good thermal insulation. Deep cantilevers are provided towards the entire length of the façade to cut down on heat gain throughout the day.

To maintain an ambient temperature in the house, the thermal insulation has been controlled so that heat naturally flows from foliage / courtyard on the ground floor and through the swimming pool on the first floor; which is strategically placed at the edge of the house. This provides a natural cooling effect when the air flows into the house. Similarly, there is a pond in front of the drawing room for cooling the air.

The house completely runs on solar power with a backup generator. All spaces are in total harmony with the light pouring in throughout the house.

A huge fan is installed for air intake after which is run into the stainless steel coils installed within the underground water tank. This fresh air induction through layers of filtration drops the air temperature down by 3 – 4 degrees before it enters the house.

Further to this, exhaust fans are installed in all the skylights in the opposite direction of the natural air flow in order to create a negative pressure thereby extracting hot air out of the house.



YISHUN COMMUNITY HOSPITAL (YCH)

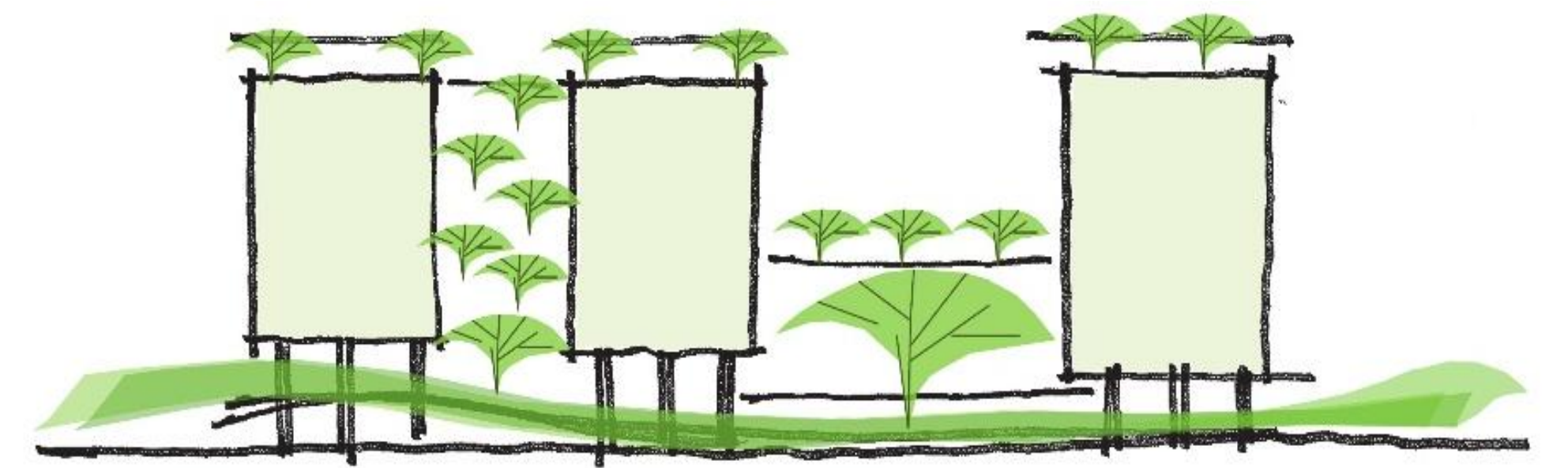
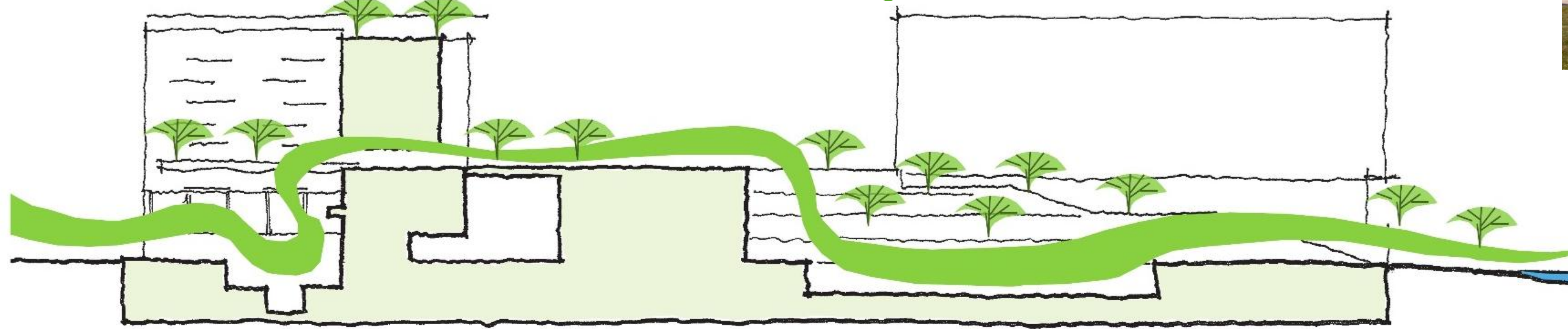
2 YISHUN CENTRAL 2, SINGAPORE

Architect: Kahler Slater
CIAP Architects pte Ltd

Yishun Community Hospital (YCH) brings healthcare and community together in the heartlands of public housing in Singapore. Ready for the Silver Tsunami (ageing population), YCH endears itself as a community space and seamless healthcare facility. It redefines ageing in place as community spaces infused with healthcare make recuperating elderly citizens always part of the community.

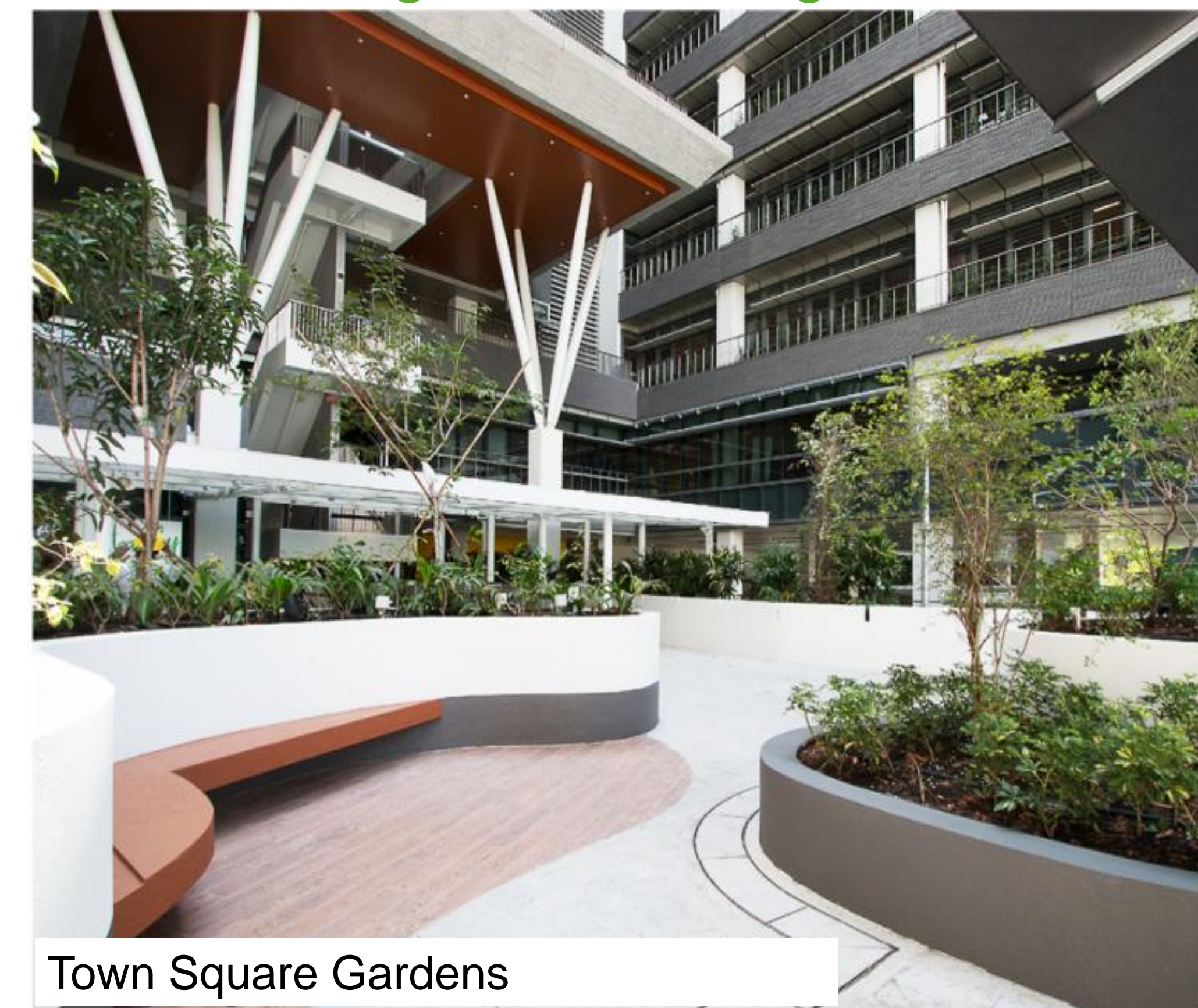


A Continuous Healing Environment



A Unified Village with Buildings Lifted from the Ground in the Tradition of a Tropical Kampong

A Modern Tropical Kampong



Town Square Gardens



main drop-off

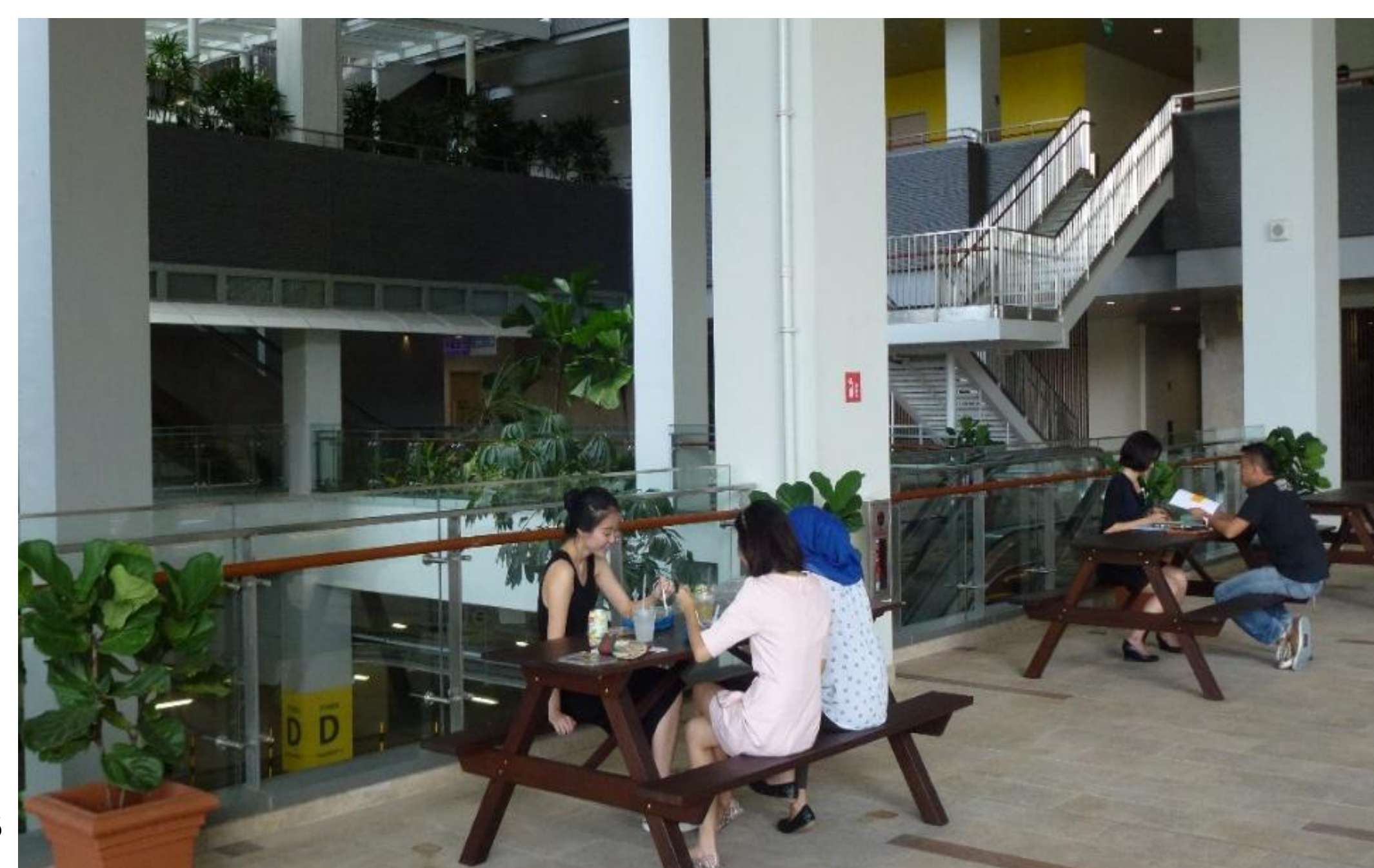
Main Drop Off



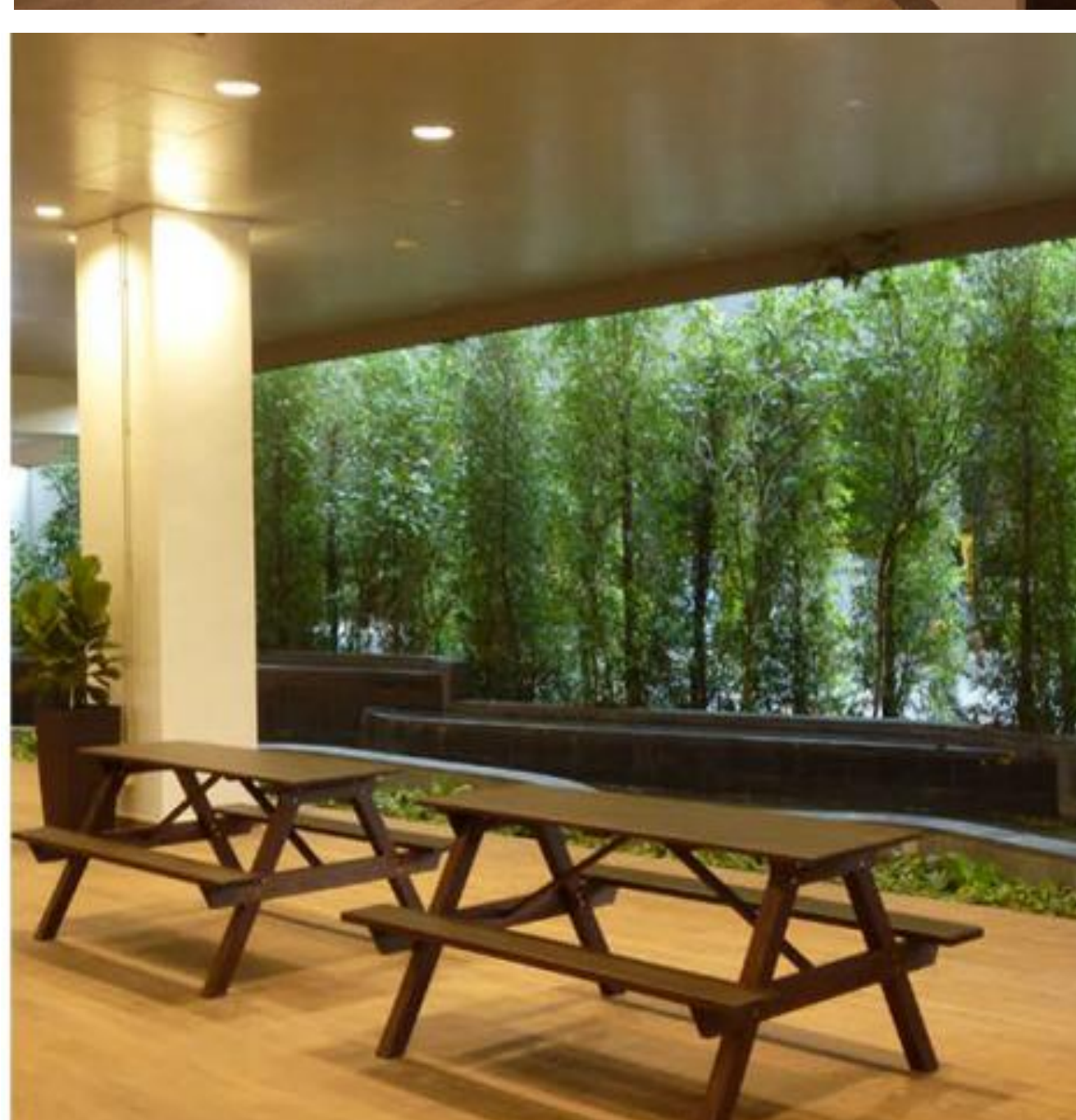
View of town square garden (community spaces) on level 2



Typical Naturally Ventilated Ward

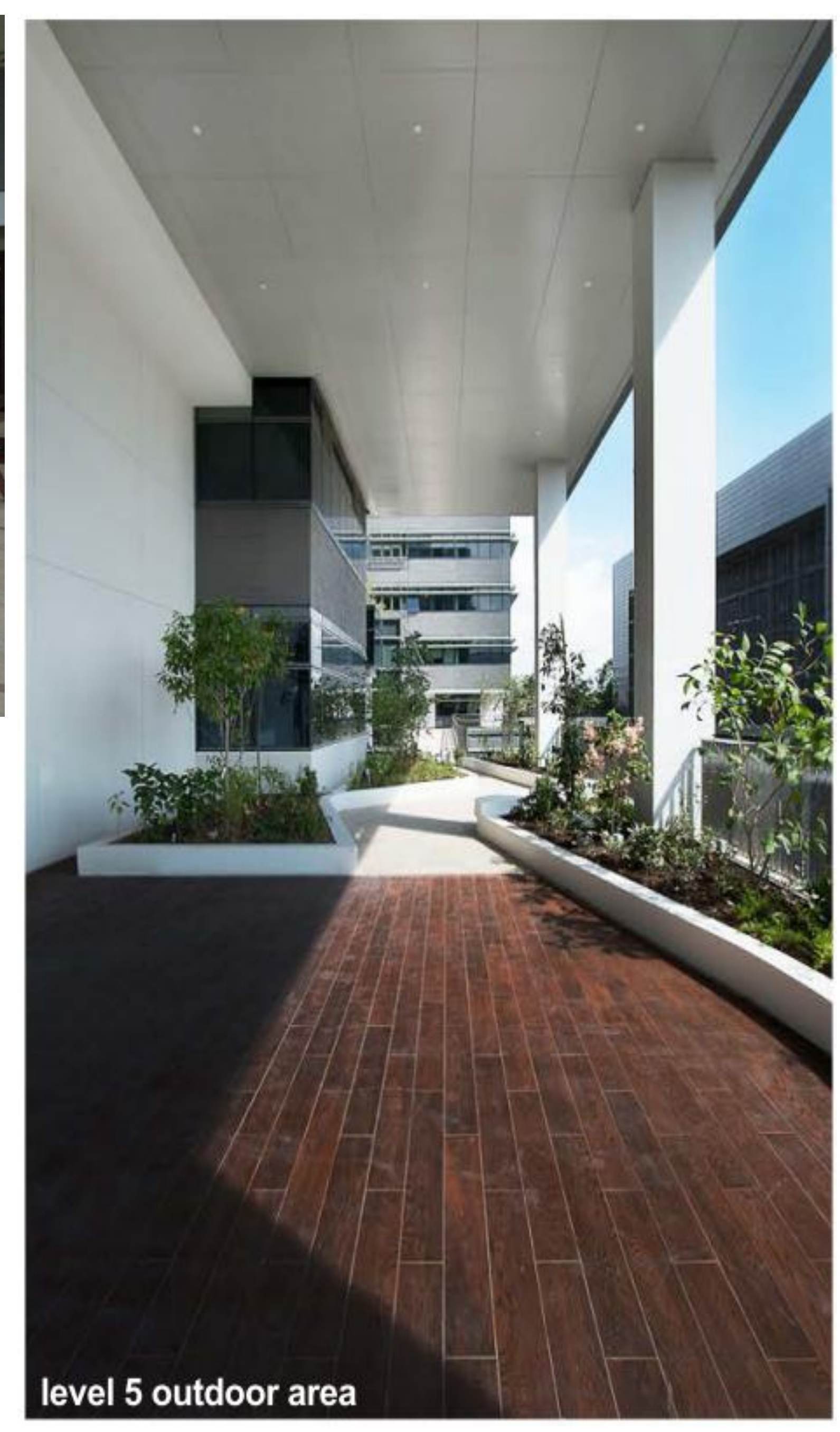
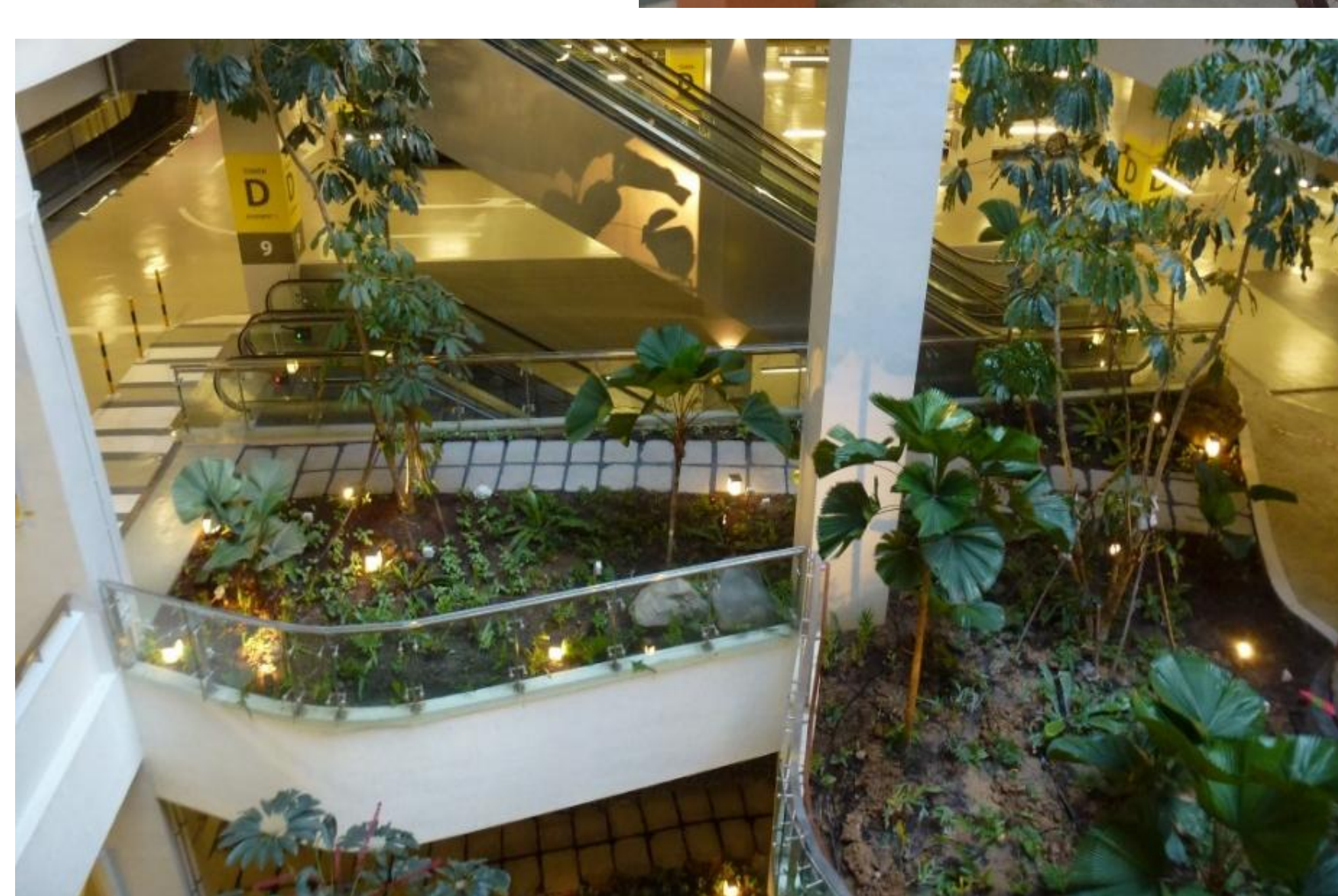


Community Interaction Spaces



Lvl 1 Community Spaces

Porosity of spaces from upper to basement floor



level 5 outdoor area

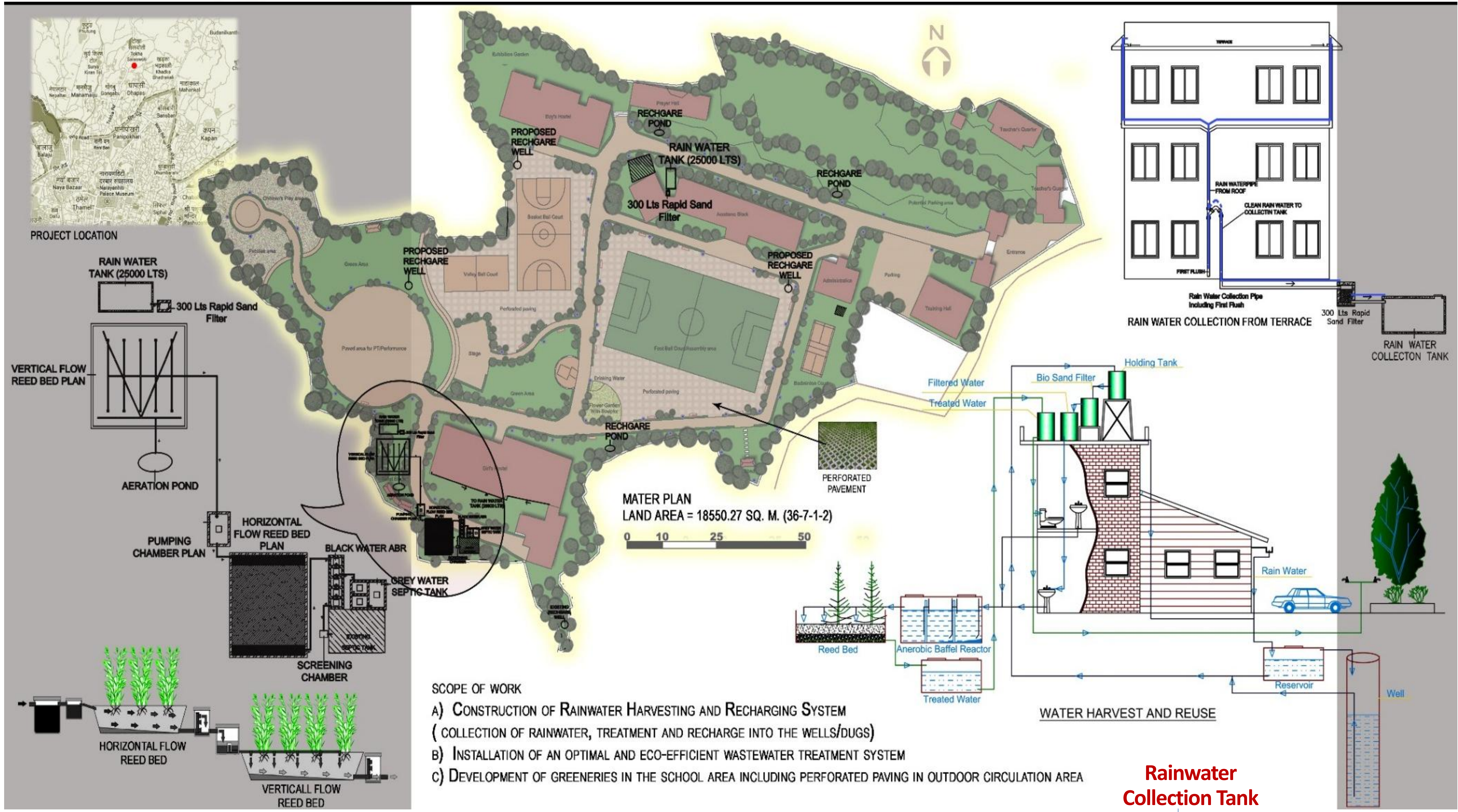
ECO - EFFICIENT WATER & ENERGY INFRASTRUCTURE

SATHYA SAI SHIKSHA SADAN, TOKHA, KATHMANDU, NEPAL

Architects: Neeraj Dangol, Sacheen Maharjan, Suman Maharjan
Land area: 18,550.27 sqm
Built Area: 2,084.24 sqm (11.2 %)
Completion: April to July 2014 (3 months)
Project Cost: US \$ 70,000



- Piloting of eco-efficient water and energy infrastructure in peri-urban area of Kathmandu i.e. Sathya Sai Shiksha Sadan School;
- To raise awareness of the project and to train operation of the system in the school;



DESIGN CONCEPT

- Wastewater treatment (DEWATS) & Reuse
- Rainwater harvesting & Ground Water Recharge
- Expand greening
- Landscape Design for the School Complex

The components of system includes as follows:

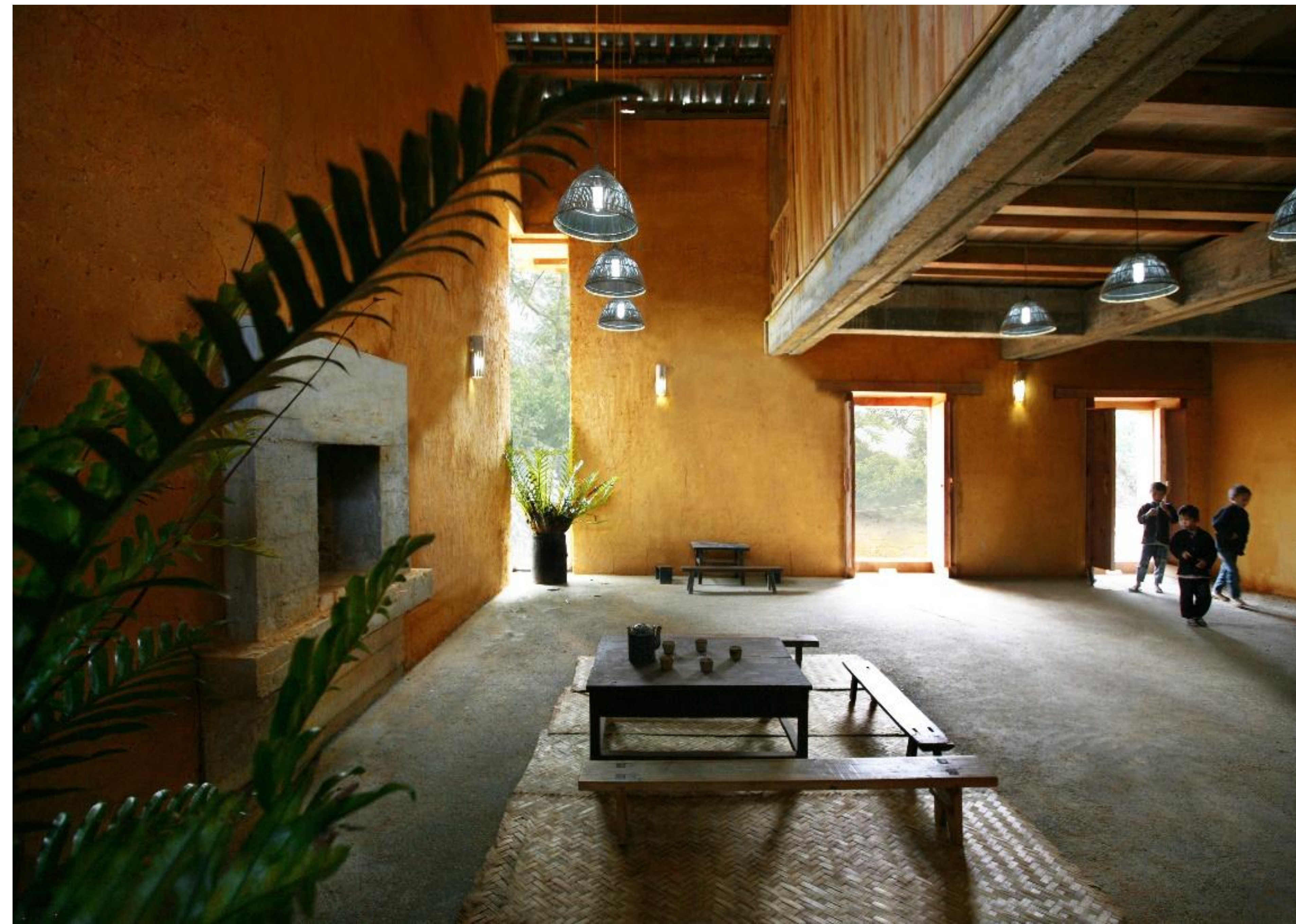
- Septic Tank for Grey Water (10 m³)
- ABR (Anaerobic Baffled Reactor)
- Horizontal Flow Reedbed
- Pumping Chamber (8000 lts.)
- Vertical Flow Reedbed
- Aeration pond



EARTH VILLAGE

HA GIANG PROVINCE, VIETNAM

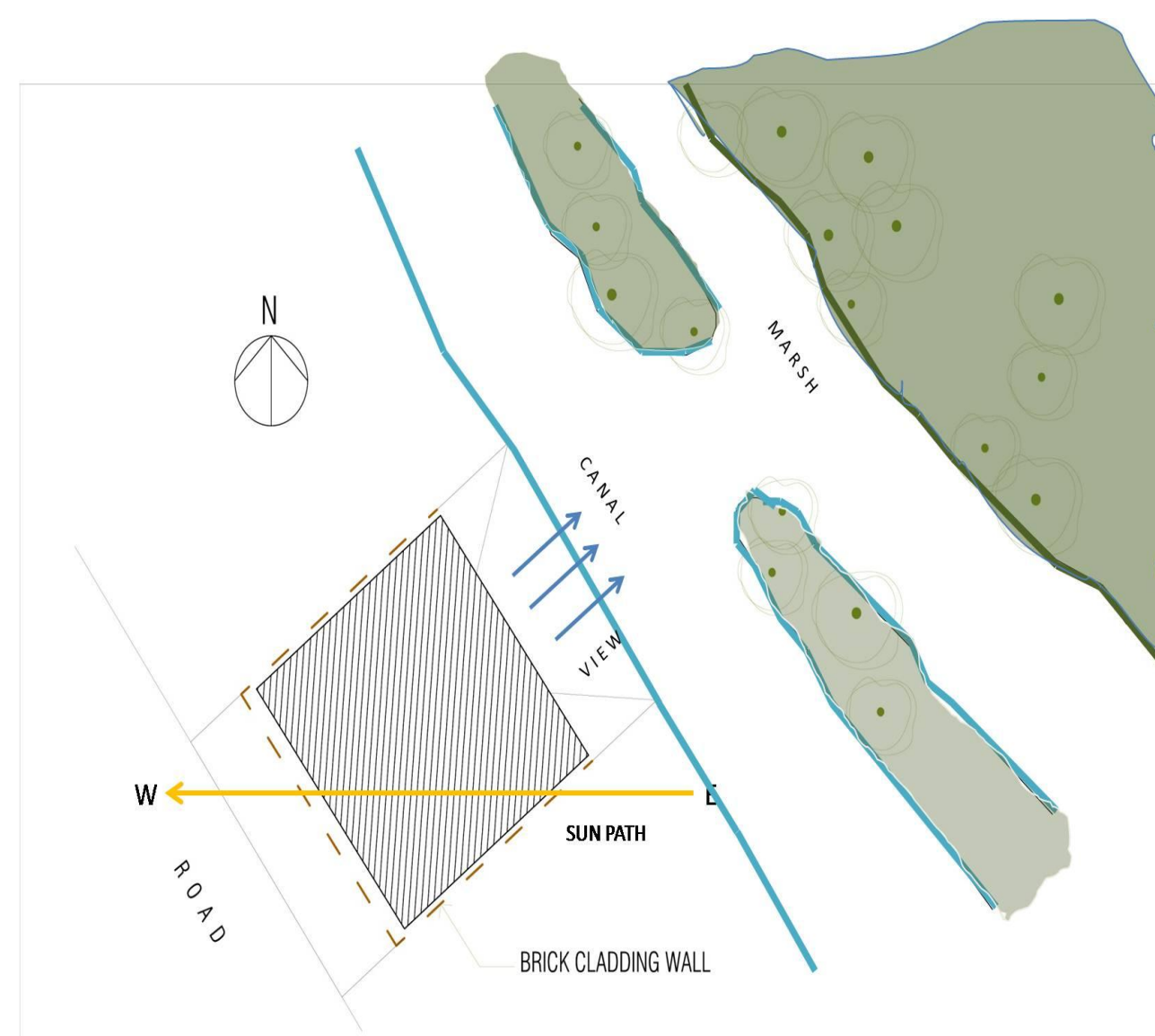
Architect: Ar. Hoang Thuc Hao & Nam Dam Community International Architecture



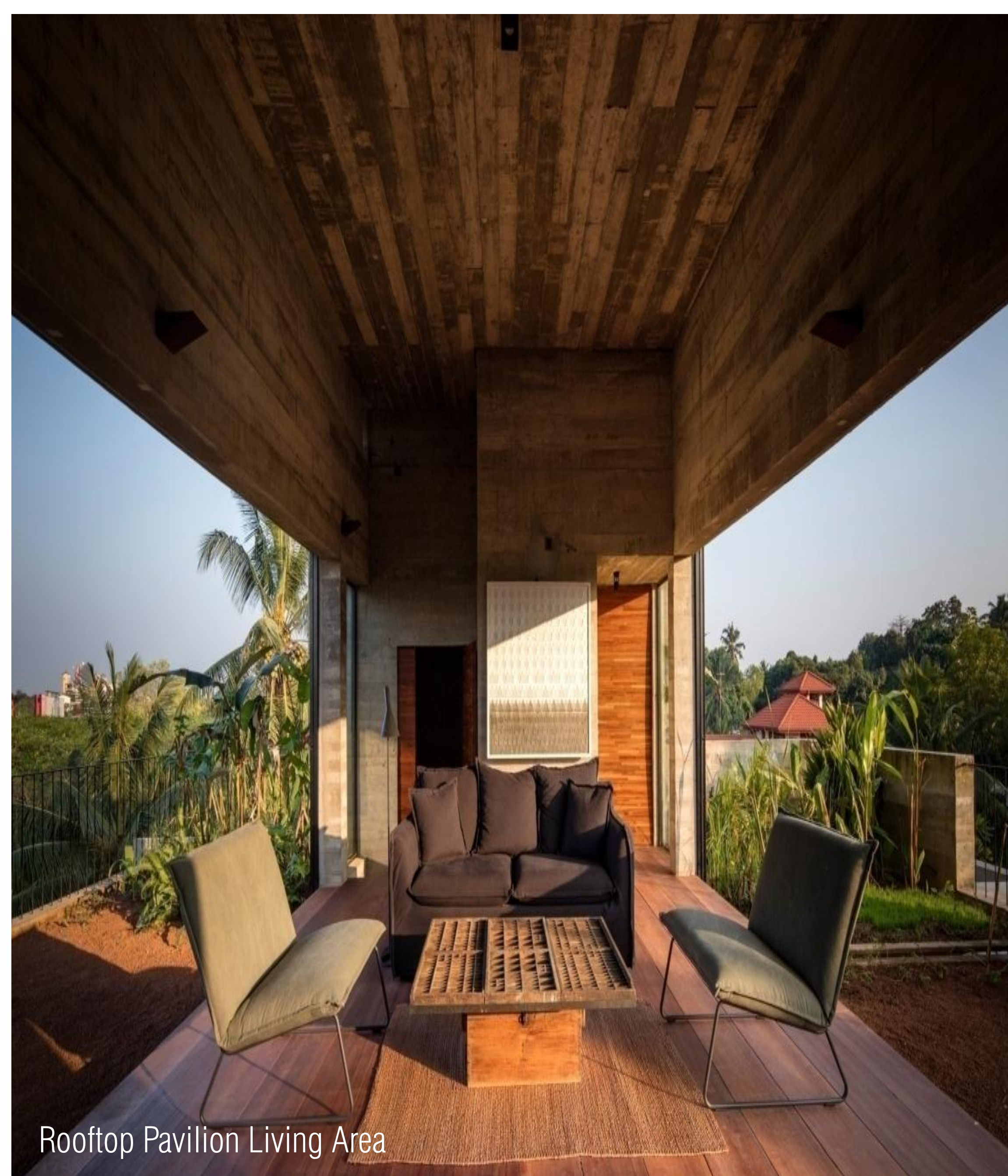
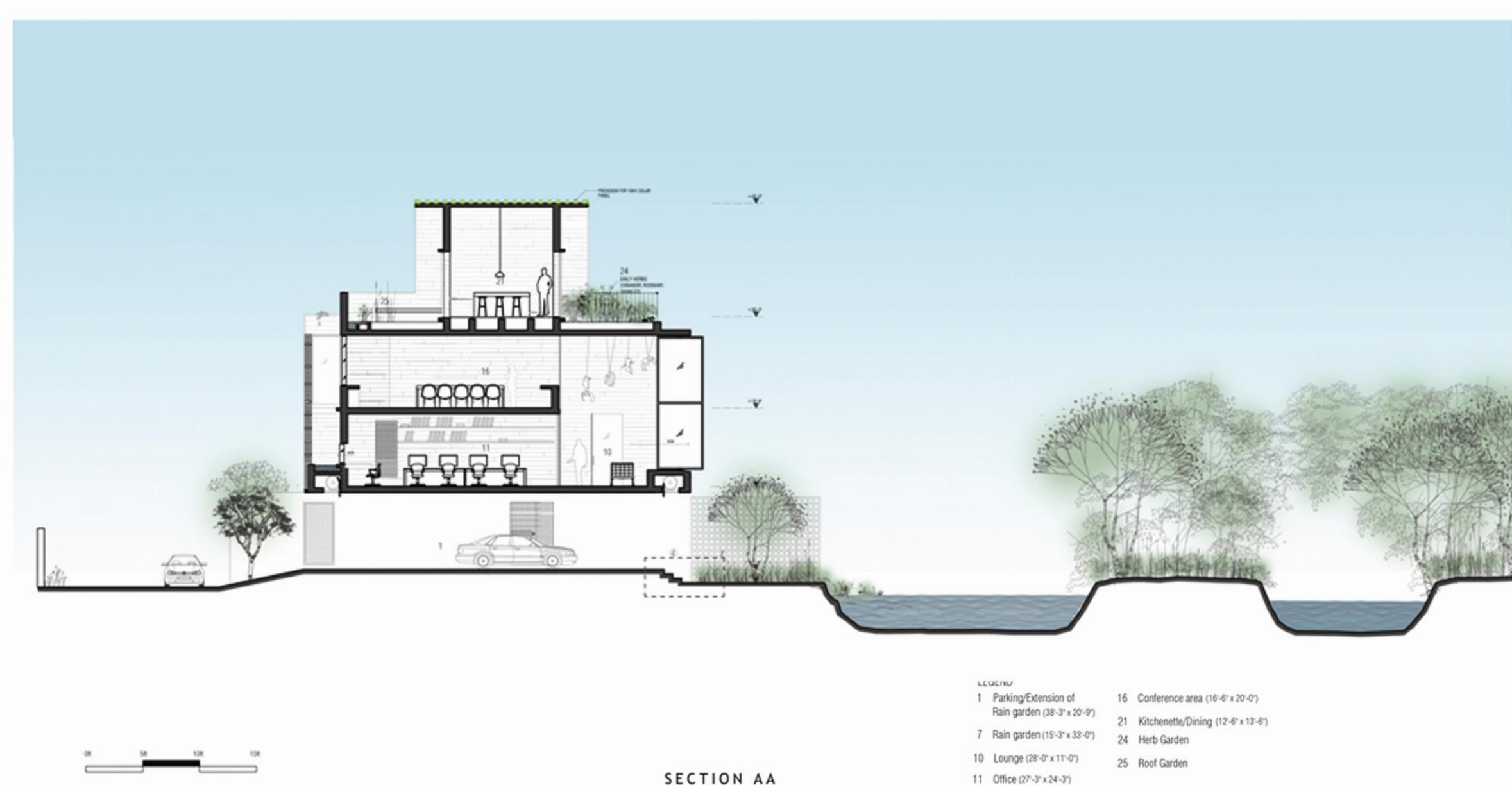
STUDIO DWELLING AT RAJAGIRIYA

RAJAGIRIYA, SRI LANKA

Architect : Palinda Kannangara
Lot Area: 450 M² (4843 sqft)
Built up area: 382 M² (4111 sqft)
Completed : 2015
Project Cost: US\$ 162,380
Consultants: Structural: Ranjith Wijegunasekara
 Landscape: Varna Shashidhar
 Quantity Surveyor: Sunanda Gnanasiri



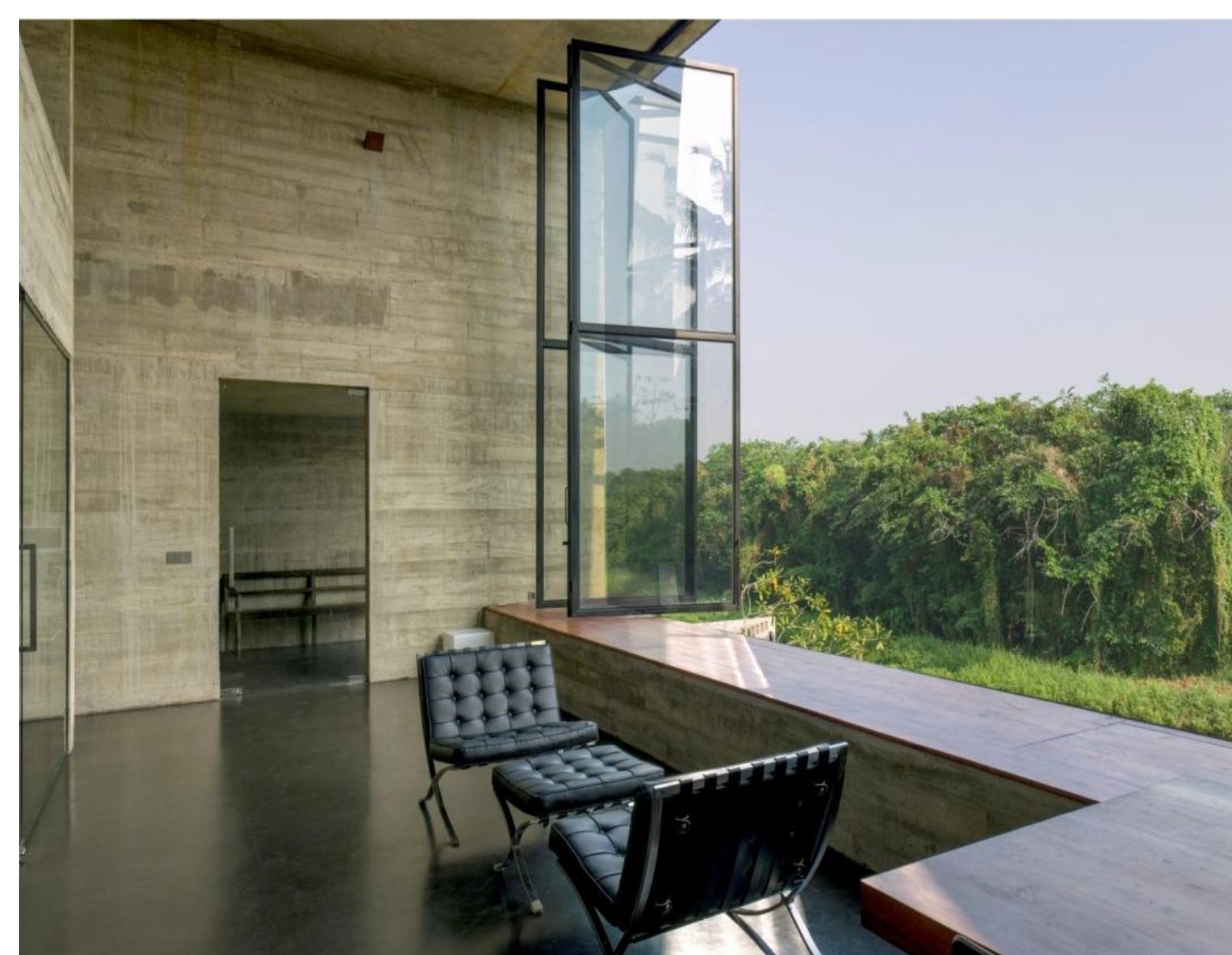
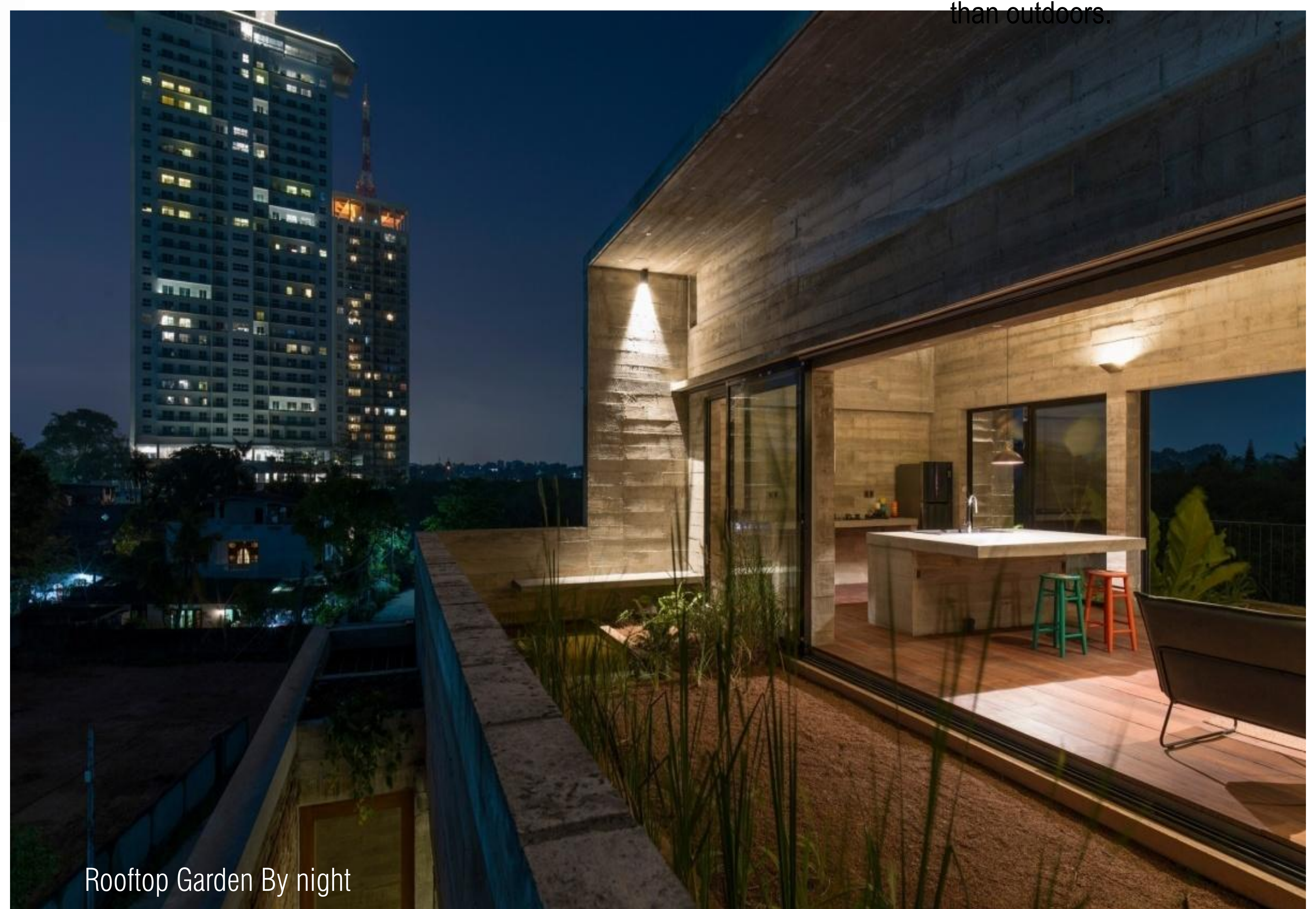
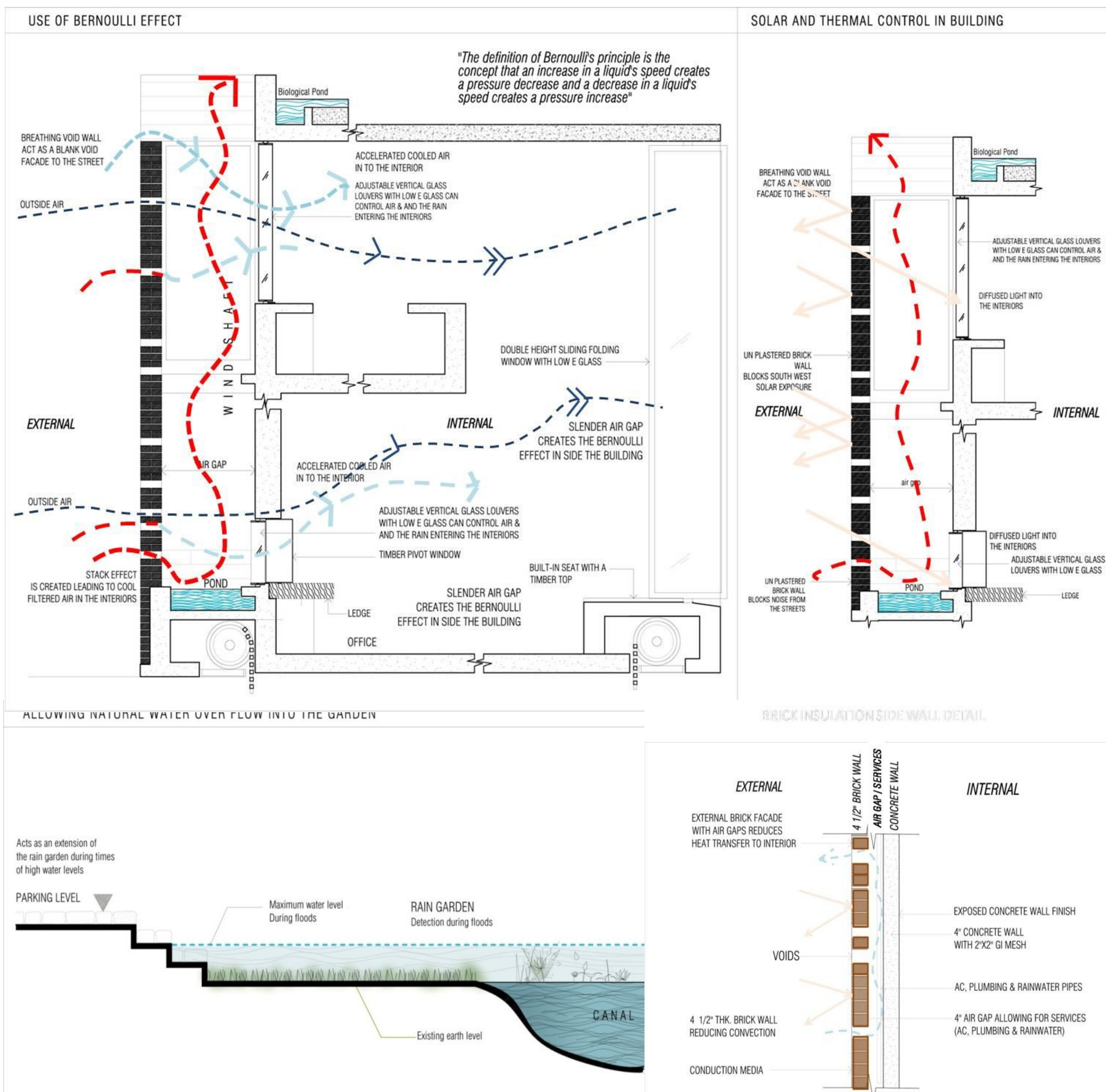
Awards: Winner of 2016 Architecture Asia Awards for Emerging Architects



The design also takes into account its location by the water, creating garden spaces that act as detention area during monsoons, thus preventing the living/workspaces from flooding.

Recent studies conducted by a student project of University of Moratuwa on the building have indicated that the indoor temperature within the building is several degrees cooler than outdoors.

The building plays with volumes to create many areas for living, work and leisure, and also with materials and tectonic devices to create a cooler microclimate within the building, encouraging daylight, and views to the marsh, harvesting and regulating rain water, and creating gardens for biodiversity.



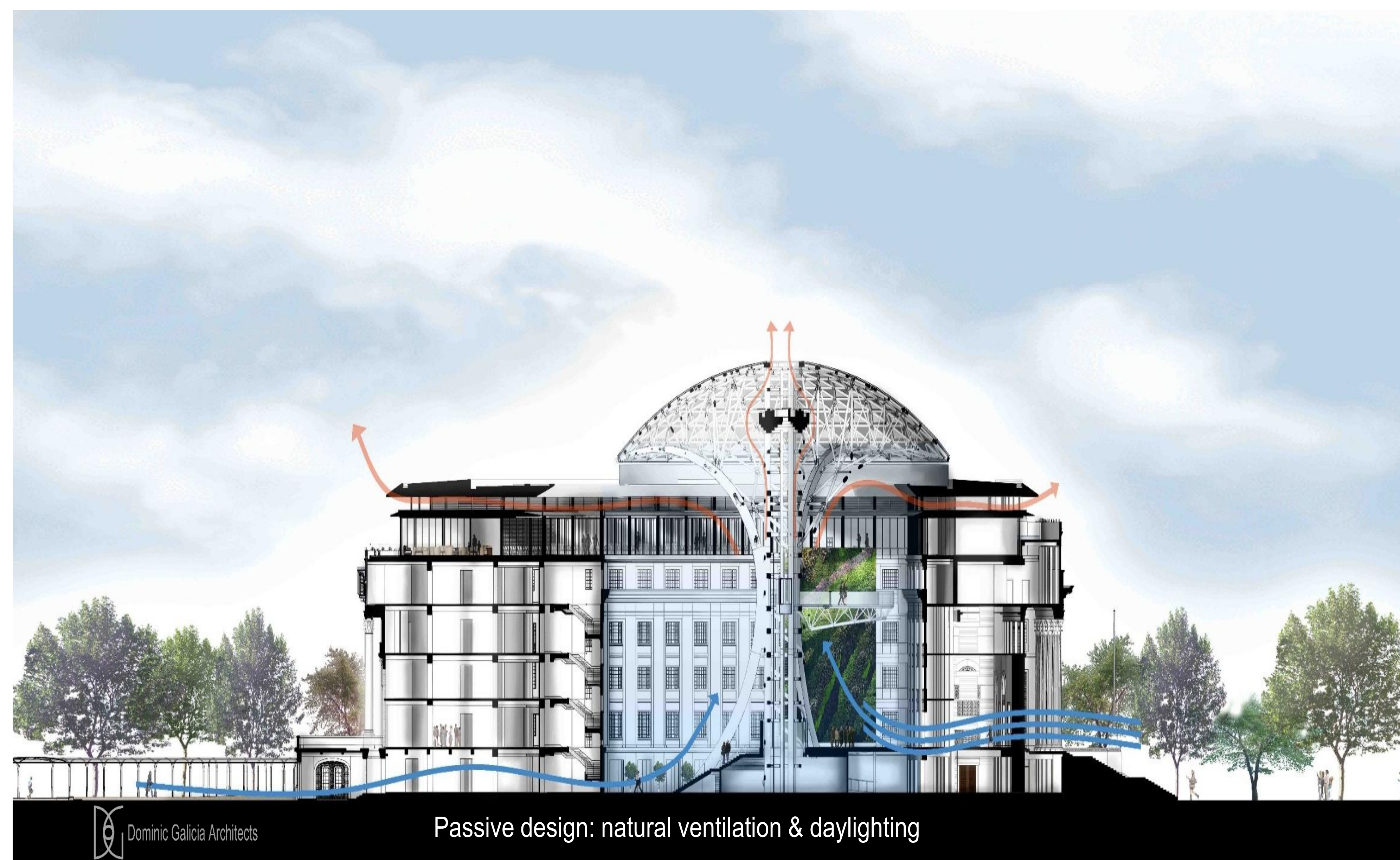
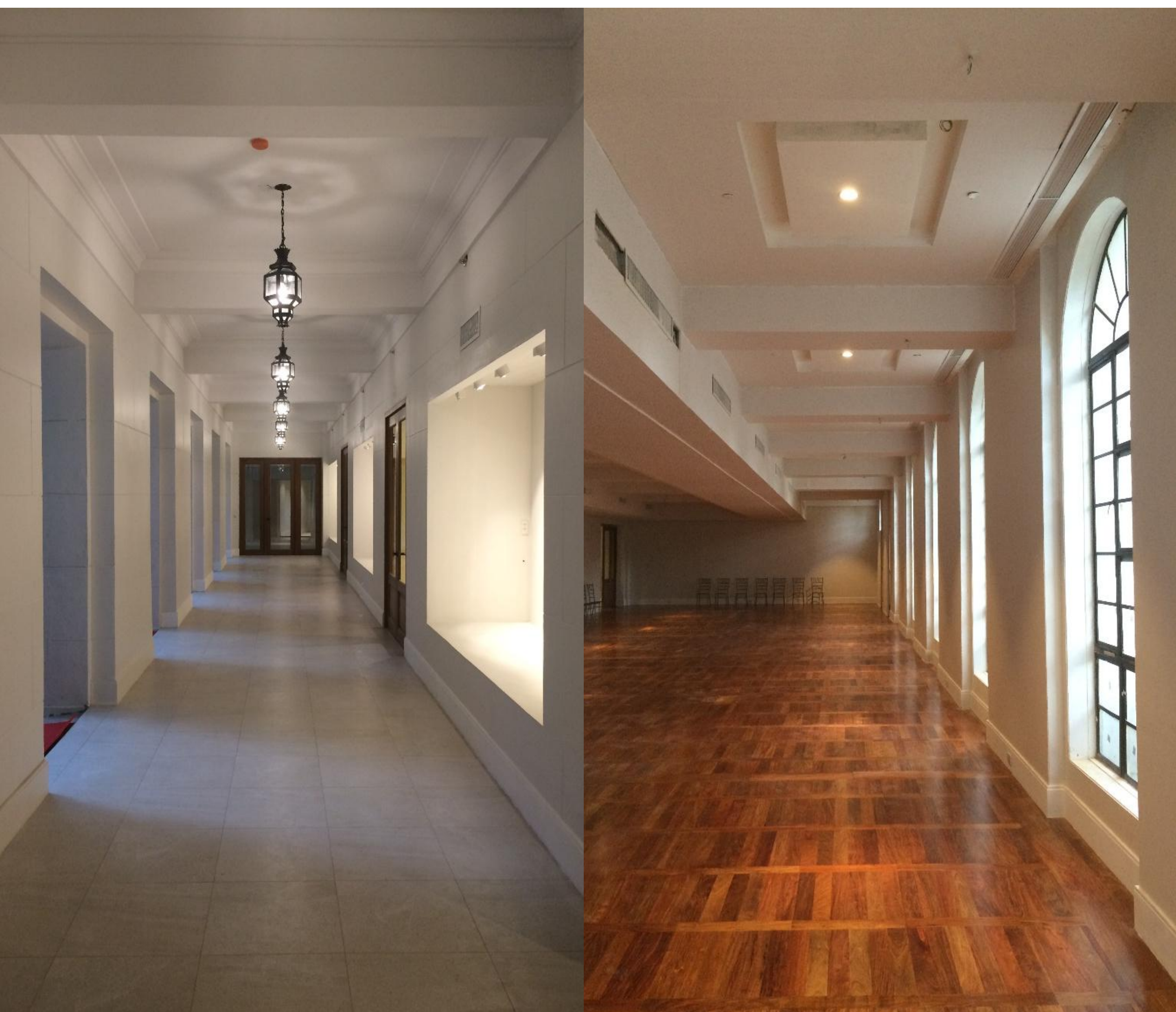
NATIONAL MUSEUM OF NATURAL HISTORY

MANILA PHILIPPINES

Architects: Dominic Galicia Architects
Land Area: 1.4 hectares
Building Gross Floor Area: 24,579.34 Sq M
Completion: On-going
Consultants: Structural: ARUP Philippines
 Electrical / HVAC / Plumbing / FP: ARUP Philippines
 Interior Design: Periquet-Galicia
 Museum Consultant: Cultural Solutions
 Sustainability Consultants: Ar. Emelito Punsalan
 Ar. Michaela Rosette M. Santos

ABOUT

- The National Museum of Natural History
- Situated in the tourist district of Manila, Philippines
- Adaptive re-use of a neo-classical building designed by Ar. Antonio Toledo during the pre-war period as the Agriculture Building and then re-used as the Department of Tourism Building
- Includes: galleries, conservation laboratories, offices and a courtyard with a dome called the Tree of Life
- Start of construction: 2013



- KEY FEATURES:**
- Adaptive re-use of an existing building
 - Passive design: natural ventilation & daylighting
 - Sustainable site: accessibility & community connectivity
 - Insulated building envelope
 - Energy-efficient lighting and cooling system
 - Indoor air quality
 - Water efficient plumbing system
 - Re-used materials
 - Climate-change resilient



GREEN VER 2.0 2012						FORM NO. 00-04
Geared for Resiliency and Energy Efficiency for the Environment						
PROJECT NAME:	NATIONAL MUSEUM OF NATURAL HISTORY			DATE:	Mar-15	
LOCATION:	MANILA, PHILIPPINES			ACCREDITED ASSESSOR		
OWNER:	REPUBLIC OF THE PHILIPPINES			AGUILOS/JA VIER/PUNSALAN/SANTOS	ACCREDITATION NUMBER	
PGBI PRE CERTIFIED RATING						
GREEN						
GREEN CATEGORIES	POINTS AVAILABLE	POINTS ACHIEVED	CATEGORY SCORE	RELATIVE WEIGHT	WEIGHTED SCORE	
Energy & the Environment	32	21	66%	30%	19.7%	
Sustainable & Responsive Sites	15	15	100%	17.5%	17.5%	
Materials Sustainability	15	9	60%	17.5%	10.5%	
Indoor Environmental Quality	15	14	93%	15%	14.0%	
Water & Waste Water Management	6	4	67%	10%	6.7%	
Climate Change Resiliency	6	6	100%	5%	5.0%	
Construction Organization & Management	5	5	100%	2%	2.0%	
Building O & M Management	5	5	100%	2%	2.0%	
Credits	1	1	100%	1%	1.0%	
TOTAL	100			100%	77%	
PRE CERTIFIED PGBI RATING						77.4%

NARRA 40 to 54% • YAKAL 55 to 69% • MOLAVE 70 to 84% • KAMAGONG 85 to 100%