Final Architectural Design Studio

Design Of Widuri

Salacca Processing Center at kaliaji reservoir in Turi, Sleman with Eco-Factory approach



Supervisor:

Ir. Tony Kunto Wibisono, M.Sc

Bhinaturata Putra Wicaksana
18512171

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Student's Name : Bhinaturata Putra Wicaksana

Student's Identification Number : 18512171

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Supervisor	1st Jury	2nd Jury
Ir. Tony Kunto Wibisono, M.Sc , GP	Ar. Baritondi Buldan Rayaganda Rito S.T., M.A., IAI., GP	Dr.Ing. Putu Ayu P. Agustiananda, S.T., M.A.

Acknowldeged by :
Head Of Architecture Undergraduate Program

Ir. Hanif Budiman , M.T., Ph.D

Statement Of Autenticity

Student's Name	: Bhinaturata Putra Wicaksana
Student's Identification Number	: 18512171
Final thesis defense on	: 24 June 2024

I hereby declare that my final project entitled 'Salacca Processing Center at Kaliaji Reservoir in Turi, Sleman with Eco-Factory approach' is a work of my own creation, except for referenced works, and was not assisted by any other parties in its production process. I also submit this work to the Department of Architecture, Universitas Islam Indonesia, for educational and publication purposes.

Yogyakarta, 2 July 2024



Bhinaturata Putra Wicaksana

Direktorat Perpustakaan Universitas Islam Indonesia
Gedung Moh. Hatta
Jl. Kaliurang Km 14,5 Yogyakarta 55584
T. (0274) 898444 ext.2301
F. (0274) 898444 psw.2091
E. perpustakaan@uii.ac.id
W. library.uii.ac.id

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Bismillaahirrahmaanirrahiim

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Nama	: Bhinaturata Putra Wicaksana
Nomor Mahasiswa	: 18512171
Pembimbing	: Ir. Tony Kunto Wibisono, M.Sc
Fakultas / Prodi	: Teknik Sipil dan Perencanaan/ Arsitektur
Judul Karya Ilmiah	: Salacca Processing Center at kaliaji reservoir in Turi, Sleman with Eco-Factory approach

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Muhammad Jamil, SIP.

Abstract

The significant drop in salak prices to Rp1000 per kilogram in Turi Sleman has led to substantial losses for local farmers, who are compelled to sell raw produce due to the lack of processing facilities. This thesis aims to design and implement the first salak processing center with an eco-factory approach at Embung Kaliaji, Turi, as a solution to this issue. The eco-factory approach is selected to integrate environmental principles into the design and operation of the facility, thereby maximizing production and tourism potential.

The research focuses on three main aspects: firstly, creating the inaugural eco-factory in Turi, which currently lacks processing facilities, using an ecological approach to enhance production and attract tourists. Secondly, designing the layout and integrating the eco-factory within the site as a cohesive unit that supports mutual functionality, including utilizing site contours, natural light, and rainwater for energy efficiency and sustainability. Thirdly, developing a building design that leverages the surrounding environment, particularly Embung Kaliaji, to create an atmosphere that connects with nature, ensuring comfort and safety for production processes, employees, and visitors.

This approach is expected to increase the added value of salak products, promote local economic sustainability, and enhance Turi's tourism appeal. The findings will provide guidelines for similar facility developments in other regions and contribute to the theory of eco-factory concepts in agricultural contexts.

Keywords: Eco-factory, salak processing, ecological approach, environmentally friendly design, tourism potential, Embung Kaliaji, Turi.

Tittle Explanation

a. Tittle : Design of Widuri Salacca Eco-factory at kaliaji reservoir in Turi, Sleman with Eco-factory

b. Tittle Description

1. **Design**: "Design is an intellectual activity that creates representations of various kinds to provide new insights into problems and solutions." - Richard Buchanan
2. **Salacca or Salak**: Salak, also known by its scientific name Salacca zalacca, is a type of tropical fruit originating from Southeast Asia. Salak is a popular fruit known for its distinctive sweet taste and the soft texture of its flesh. It is also commonly referred to as "snake fruit" due to its wrinkled skin resembling snake scales.
3. **Salacca Eco Factory**: This is a specialized facility or location used for processing, preparing, and packaging salak fruit. Its purpose is to enhance the added value of salak fruit and produce various processed salak products such as jam, candies, juice, chips, and other food items. The salacca processing center also encompasses advanced processing facilities, including peeling, cutting, seed removal, and packaging of end products.
4. **Embung Kaliaji Turi Sleman**: This is an artificial reservoir located in Turi, Sleman, where the reservoir is situated in the salak farming region of Turi. As a result, there are numerous salak farms managed by the local village and residents in the vicinity of the reservoir, making it an ideal location for a salak processing center.
5. **Eco-Factory Approach**: An eco-factory epitomizes a transformative paradigm in industrial manufacturing, meticulously engineered to harmonize productivity with ecological integrity. Anchored by a foundational commitment to sustainability, eco-factories meticulously integrate innovative design principles and cutting-edge technologies to curtail resource consumption, mitigate environmental impact, and optimize operational efficiency. By prioritizing energy efficiency, renewable energy integration, waste minimization, sustainable materials sourcing, and green manufacturing processes, these facilities exemplify a holistic approach to industrial ecology. Through their steadfast dedication to reducing carbon footprints, conserving resources, preventing pollution, and preserving biodiversity, eco-factories emerge as beacons of environmental stewardship and catalysts for a more sustainable future.

The price of Salak or Salacca in Sleman Regency, Yogyakarta, has significantly dropped this year . During this year's Eid holiday season, the price of Salak Pondoh has drastically decreased compared to the previous year.

Hundreds of Salak farmers from Wonokerto Village, Turi Subdistrict, staged a protest at the office of the Regent of Sleman . They met with the Regent of Sleman, Sri Purnomo, to express their concerns about the plummeting prices of Salak. Despite the fact that the Turi and Tempel Subdistricts are key centers for Salak farming.

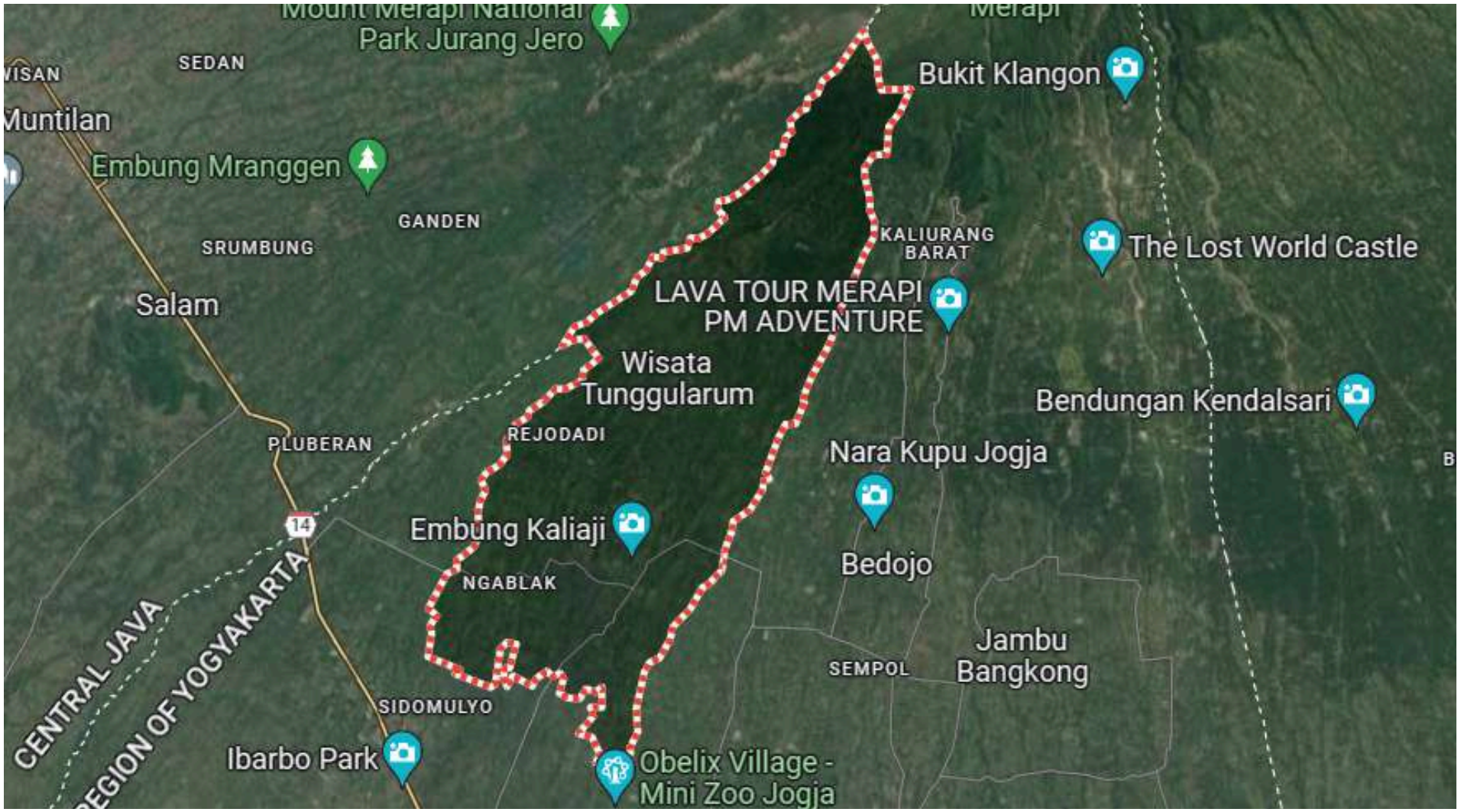
They complained that the prices have been steadily decreasing from the fasting month until after Eid. Salak prices from farmers now range from IDR 1,500 to 2,000 per kilogram. In contrast, last 2 year, prices reached IDR 5,000 to 7,500 per kilogram. In some places where Salak is sold, such as Jl. Magelang, Tempel, and even in the Salam Subdistrict of Magelang Regency, Salak Pondoh is being sold for IDR 3,000 to 3,500 per kilogram.





Salak, scientifically known as Salacca zalacca, is a fruit that belongs to the Arecaceae family. It is characterized by its unique brown, scale-like, snake-skin textured peel and sweet, juicy flesh. The fruit typically has an elongated shape with one end being more blunt and the other end sharper.

Salak is indigenous to tropical regions and is commonly found in Southeast Asia, particularly in countries like Indonesia, Malaysia, and Thailand. The fruit is consumed fresh and is known for its sweet and slightly tangy flavor, making it a popular choice in various dishes, desserts, or processed into products like jams, preserves, or juice. Due to its distinctive appearance, salak is also referred to as "snake fruit" or "dragon fruit." It is a nutritious fruit rich in fiber, vitamins, and minerals, contributing to its excellent nutritional value. Additionally,



Turi Sleman

Turi is a subdistrict (kapanewon) in Sleman Regency, Special Region of Yogyakarta, Indonesia. The Turi subdistrict is the northernmost district in Sleman Regency and shares a direct border with Magelang Regency, Central Java. The distance from the subdistrict's administrative center to the Regency's administrative center (capital) is 8 kilometers. The subdistrict's office is situated on Jl. Turi-Tempel Km.2, Kiringan, Wonokerto.

Turi has gained prominence for its salak production. It can be considered one of the primary contributors to Sleman's iconic fruit, salak. Supported by data from the Sleman Regency Statistics Bureau (BPS) as of 2015, the cultivated area for productive salak plantations in this subdistrict exceeds half of the total productive plantations in Sleman. To provide specific figures, the data retrieved from BPS indicates a total of 3,720,978 clusters of salak pondoh trees out of a grand total of 5,651,363 clusters. Furthermore, 3,557 clusters of salak gading trees were recorded out of a total of 4,837 clusters within the Turi subdistrict.Regarding production quantities, salak pondoh from Turi reaches 488,661 quintals annually, constituting a significant portion of the Sleman Regency's aggregate production, which amounts to 730,053 quintals. Similarly, for salak gading, the Turi subdistrict yields 1,975 quintals annually from a total of 2,667 quintals. The contribution of the Turi subdistrict to Sleman's salak production significantly surpasses 50 percent of the overall annual yield.

Regrettably over the course of the past three years, the salak pondoh market has experienced a significant downturn, primarily attributed to the aftermath of the COVID-19 pandemic. Prices for this particular variety of salak have plunged dramatically, plummeting to an all-time low of 1000 rupiah per kilogram. This unfortunate trend has prompted a substantial number of salak farmers to make the difficult decision of leaving their produce unharvested. The reason behind this decision is the stark decline in market demand for salak pondoh, which has caused the fruit to lose its economic viability. Compounding this issue, the cost associated with harvesting salak now surpasses the selling price of the fruit. It very sad because significant proportion of the Turi community relies on salak farming as their primary livelihood.



Gambar 1.1 Foto petani salak demo di kantor bupati sleman . Sumber : Detik.com, 2017

In light of this challenging situation, a collaborative effort between the government and the local community of Turi is urgently required. The objective of this collaboration is to establish commercial infrastructure that can not only revitalize the local economy but also specifically bolster the salak industry. This concerted endeavor seeks to provide comprehensive education regarding salak and its various benefits, while simultaneously leveraging indigenous knowledge to attract tourists. By doing so, it is hoped that the market value of salak, which serves as the cornerstone of the Turi community's economy, can be enhanced and sustained in the face of these economic adversities.

WIDURI Mean Wisata Dusun Turi is part of program desa pengembangan potensi lokal turi di site

SALACCA ECO-FACTORY

An eco-factory epitomizes a transformative paradigm in industrial manufacturing, meticulously engineered to harmonize productivity with ecological integrity. Anchored by a foundational commitment to sustainability, eco-factories meticulously integrate innovative design principles and cutting-edge technologies to curtail resource consumption, mitigate environmental impact, and optimize operational efficiency. By prioritizing energy efficiency, renewable energy integration, waste minimization, sustainable materials sourcing, and green manufacturing processes, these facilities exemplify a holistic approach to industrial ecology. Through their steadfast dedication to reducing carbon footprints, conserving resources, preventing pollution, and preserving biodiversity, eco-factories emerge as beacons of environmental stewardship and catalysts for a more sustainable future.

The processing of salak involves a series of activities that encompass the preparation and transformation of harvested salak fruit from its raw condition into a product ready for consumption or sale. This process includes cleaning, cutting, seed separation, washing, processing into alternative food, and packaging. The purpose of salak processing is to maintain the fruit's quality, enhance its added value, and meet food safety standards.

Proccesing CENTRE

According to the General Guidebook for Tourism Villages (2012), a visitor center is a place where tourists can get a variety of general to specific information about the loca- tion or place they visit, either in the form of maps, books or other information media.

According to The role of Visitor Centresin UNESCO Designated Sites (2018), the core function in developing visitor centre are :

1. Information
Provide information concerning the value of the site (to facilitate its understanding and appreciation), and facili- titating the site visit (service, schedule, itenerary, etc)

2. Education
Visitor Centres able to influence the behaviour of visitors, both during the visit. In this case, Visitor Centre facilitates to increase the understanding, appreciation, and conserving-behaviour of the heritage and the surrounding environment.

3. Accessibility
Centres can play a key role in facilitating real and virtual access to the sites. This may include measures to support mobility, overcome physical barriers, enjoy virtual reconstructions, as well as to promote access through a complementary recreational, gastronomic, or cultural offer.

More generally, accessibility functions should be intended in the broader sense to facilitate information access to numerous audiences, with diverse intellectual needs, aiming at stimulating curiosity and contributing to a positive experience.

Moreover, UNESCO in The role of Visitor Centresin UNESCO Designated Sites (2018) also analyzed challenges and opportunities to further expand the Centres' role. Those opportunities are :

1. Interfacing
The Centres' multiple scope of action permits them to act as meeting points between locals and visitors. Interpretation, educational and visitors' management strategies are effective approaches to connecting these main audiences and to strengthening mutual appreciation and empathy.

2. Integrating
Providing the opportunity for their greater involvement in relevant socio-economic dynamics as supporter for local development. Visitor centre must be fully integrated into the respective site management system, and be involved regularly in the related planning processes.

3. Inspiring
Through heritage interpretation, awareness raising and education for sustainable development, as well as by posing themselves as role models for responsible practices, Visitor Centres have an enormous potential to in-

TYPOLOGICAL STUDIES

VISITOR CENTRE

According to Philip L. Pearce (2004) in The Functions and Planning of Visitor Centers in Regional Tourism there are “Four Plus” or four additional features of the visitor center function, namely:

1. Promotion Function

This function refers to the active role of the region, city or region in promoting its tourism. Basically this function plays a role in stimulating tourism demand in order to increase the income of a region. Through this function, the visitor center can provide real and reliable sources of information and guarantee the quality of the information services provided.

2. Orientation and Visit Enhancement Functions

The second function is to see the quality of the experience/impression given to visitors. This quality is supported by efforts to provide a form of display, suggest new locations or tourist attractions, and in general provide information to visitors about the features of the area they visit.

3. Control and Filtering Function

In this function, the visitor center plays a role in controlling the flow of visitors/tourists who come so that their resources and arrangements remain under the control of an area. The visitor center acts as the entrance and becomes the point (center) to exercise control over visitors/tourists who come to an area.

4. Substitution Function

The substitution function is also referred to as a substitute function where the visitor center can be a substitute for a tourist attraction, or at least the visitor center is one of the tourist attractions of a certain area.

Eco-Architecture

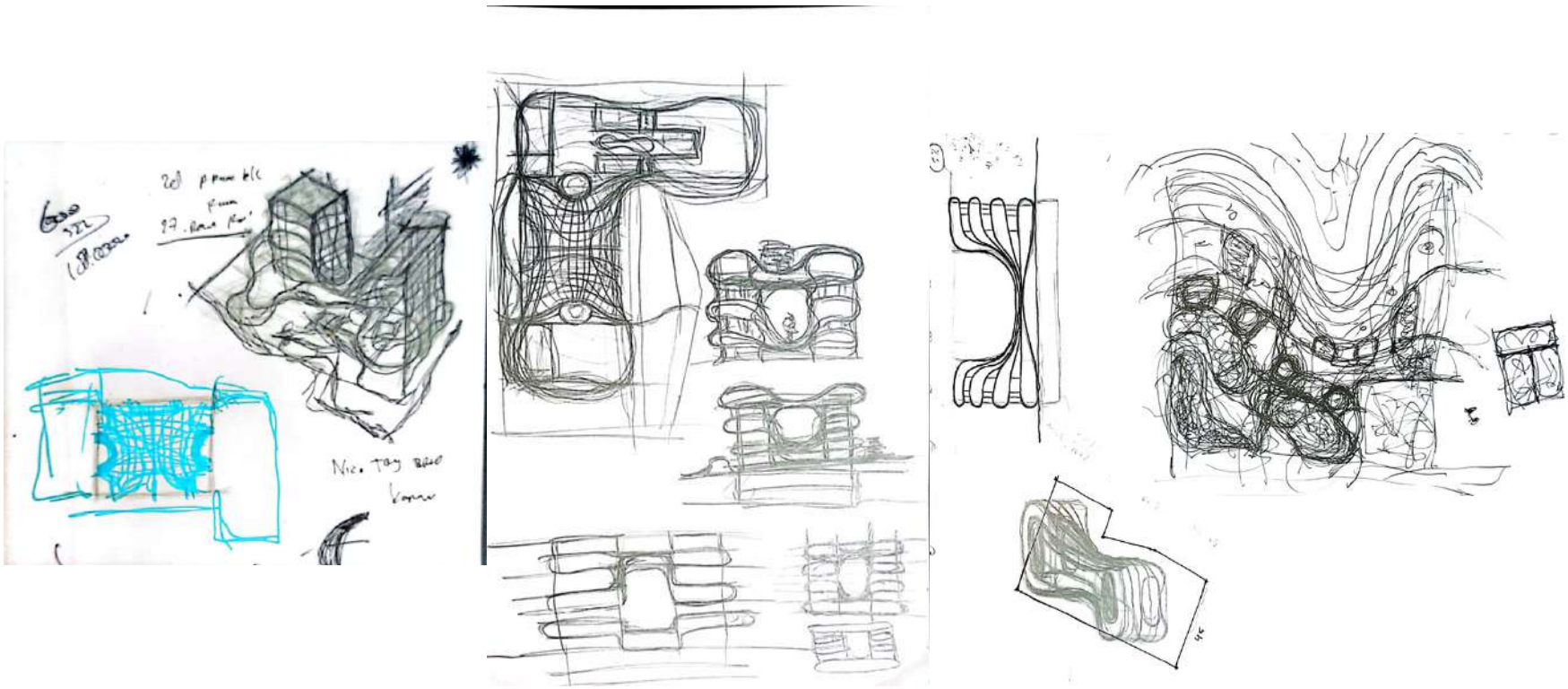


Eco-architecture is an approach to architectural design that prioritizes sustainable and environmentally friendly principles inspired by nature. It integrates biological and ecological concepts into the planning and construction of buildings to create structures that harmonize with the natural environment.\

This architectural philosophy involves a careful consideration of the ecological impact of construction materials, energy consumption, waste management, and the overall footprint of the built environment. Bio-architecture aims to create structures that not only minimize their negative impact on the environment but also actively contribute to ecological well-being.

In the design process, Eco-architecture often draws inspiration from natural forms, processes, and systems. It seeks to mimic the efficiency and sustainability found in ecosystems, utilizing principles such as biomimicry to enhance the functionality and efficiency of buildings. This approach may include incorporating green roofs, utilizing renewable energy sources, maximizing natural light and ventilation, and implementing other strategies to reduce the reliance on non-renewable resources.

The goal of Eco-architecture in this thesis is not only to construct functional and aesthetically pleasing buildings but also to establish a symbiotic relationship between the built environment and the surrounding ecosystem. By adopting Eco-architectural principles, the aim is to create a sustainable and ecologically responsible salak processing center, market, and agro-education hub in Turi, ensuring a positive impact on both the local community and the broader environment.



Gambar 1.1 Design . Sumber : doluptature, 2006

Design Definiton

In a general sense, "design" refers to the process of conceiving, planning, and creating something with a specific purpose or function. It involves the intentional and creative act of shaping an idea or concept into a tangible form. Design is a multidisciplinary field that can apply to various domains, from product design and graphic design to architecture, fashion, and digital interfaces.

Definition of Design According to Experts:

Christopher Alexander: "Design is the most powerful human activity in determining the quality of all aspects of human life."
Donald Schön: "Design is the act of depicting or exploring a previously unknown problem."
Richard Seymour: "Design is a social statement that is the first step to shaping culture."
Charles Eames: "Design should be not only functional and practical, but also beautiful."
Vitruvius: One of the famous Roman architects, Vitruvius, defined design by three basic principles: “Utility” (suitability to function), “Firmitas” (structural durability and strength), and “Venustas” (beauty or aesthetics).

So that it can be concluded that Design is a creative process that involves planning, conceptualization and developing ideas into concrete solutions that meet specific needs and goals.

"Architectural Ecology: A Concept for Sustainable Design"

Ecology is the science that studies the interrelationship between living organisms and their environment. The term "ecology" originates from the Greek words "oikos" (habitat) and "logos" (science), making it the discipline that investigates the interactions between living organisms and their surroundings. The term "ecology" was first coined by Ernst Haeckel (1834-1914). As a result, architectural ecology can be understood as a design concept aimed at preserving nature and the environment for sustainable living through the efficient use of energy and natural resources in architectural activities, contributing to the overall goal of environmental, economic, social, and cultural sustainability.

Ecological Objectives

Ecological architecture can be achieved through the process of architectural design that employs an ecological approach, using nature as the foundation of design. This involves utilizing nature as a strategy for conserving natural resources and improving the environment at all levels, thereby creating building forms, landscapes, settlements, and cities through the application of design technology.

Principles of Ecological Architecture

Ecological Architecture Principles in General

According to the journal by Dinur (2007) in 'Interweaving Architecture and Ecology: A Theoretical Perspective,' there are three ecological principles, which include:

1. **Fluctuation**
Buildings are designed as destinations where different cultural and natural processes can interact. A building should reflect the processes taking place within its site and facilitate their success by continuously connecting people to the site's reality.

2. **Stratification**
Buildings are organized through the interaction of different levels of characteristics. Such organization allows for a coherent and well-structured complexity.

3. **Interdependence**
The relationship between building characteristics is reciprocal. Observers (designers and users) and the site are inherently interconnected and interdependent, influencing each other's properties throughout the building's lifespan."



Embung Kaliaji Turi

Embung Kaliaji, located in Turi, Sleman, serves multiple purposes as a significant water reservoir. The reservoir is man-made, nestled in the scenic landscape of Turi, Sleman. It plays a vital part in local water management, with a dam and spillway designed to control water flow and prevent flooding. The area around the reservoir is rich in biodiversity, providing a habitat for various plant and animal species. It contributes to the local microclimate and helps recharge groundwater. Moreover, it supports agriculture and prevents flooding downstream.

Kaliaji Reservoir in Turi, Sleman, has significant potential to be established as a salak processing center that supports the local economy and enhances the value of salak. Due to its strategic location and crucial role in water resource management, this reservoir can offer various benefits for salak processing.

Firstly, Kaliaji Reservoir can be used to supply irrigation water to the salak orchards in the surrounding area, ensuring optimal salak growth. This will assist farmers in increasing the production and quality of their salak fruits. Secondly, the reservoir can serve as a source of clean water for salak processing facilities. With easy access to clean water, the processing of salak fruit can be carried out efficiently and hygienically. Furthermore, the picturesque location of the reservoir also holds the potential for ecotourism. By integrating the concept of ecotourism into the salak processing center, tourists can be invited to understand the salak processing process, experience the beauty of the surrounding natural environment, and purchase high-quality salak products. By harnessing the potential of Kaliaji Reservoir as a salak processing center, this could be a positive step in boosting the local economy while preserving the local environment and culture. Cooperation among the government, salak farmers, and other stakeholders is necessary to realize this potential.



Gambar 1.1 Judul Gambar. Sumber : doluptature, 2023

Area 1 North Embung Kaliaji

The area comprises village treasury land with alredy build joglo insite although it is rarely used. To the south, there is the Kaliaji reservoir with a stunning view, as the land is elevated 3 meters above the reservoir, offering a wide panorama. To the east, there is a river stream that feeds into the Kaliaji reservoir, which can be utilized as part of ecotourism, thus adding uniqueness to the space. To the north, there is a mosque and residential houses, while to the west, there is a salak plantation, which can provide additional value to the salak processing center. The Kaliaji reservoir and its surroundings are village treasury lands leased to the local residents.

- **Advantage**

Large area with diffrent countur can be uniqe thing for design
Located in salak farming area so will reduce carbon footprint (suronding people is mayority salak farmer)
Close to jalan alternatif magelang solo jogja sehinga memberikan kemudahan untuk distribusi produk olahan salak
Close to shopping centers(pasar turi), culinary places and other necessities so you can walk
400 meter from perempatan turi

- **Disadvantage**

Area have diffrent contour so need good design analusis to slove the countur and structure problem

- **Potency**

This site is sourrond by element penunjang untuk pusat produksi salak turi seingga berpotensi menjadi solusi dari masalah salak turi

Problem Formulation

Problem Statement

The urgency of the Bio-Architecture approach in designing Salacca processing center, market and edutaiment at kaliaji reservoir is an effort to increase the value of Salacca and tourism potential which can be empowered optimally so that it can help increase economic value, of course, in the tourism sector, it also balances the potential that exists around it as well. Based on the background of the problem that has been described, the formulation of the problem is as follows:

Problem in General

How to Design Salacca Eco-Factory at kaliaji reservoir in Turi, Sleman that can optimally function sallaca production, tourism and can increase the economic sector with an Ecological approach?

Special Problem

- How to create the first salak Eco-factory in Turi (where there is currently no processing facility, leading farmers to send raw produce to the city instead of finished products) using a Ecological approach to maximize production and tourism potential in Turi?
- How to layouting and integrate the salak Eco-Factory within the site as a cohesive unit that mutually supports each other?
- How to design a building that can leverage the surrounding environment, especially the Kaliaji reservoir, to create an atmosphere that connects with nature, providing comfort and safety for the production process, employees, and visitors?

Objective and Target

Objectives:
The objective of this design is to enhance the likelihood of increasing the market value of snake fruit and stimulate the economy of the Turi community, predominantly composed of snake fruit farmers. This will be achieved by establishing a snake fruit processing center, cultivating facilities, and educational programs about snake fruit with an eco-tourism approach. Embung Kaliaji is integrated as a supporting element.

Targets:
1. Providing a platform for snake fruit farmers to sell, process, and distribute snake fruit.
2. Offering an experiential journey to visitors about snake fruit cultivation, processed products, processing methods, and a recreational area that utilizes Embung Kaliaji as a supporting element.

Space and Building Typology:
Designing spaces and structures that respond to the snake fruit processing process.

Site Potential Development and Local Wisdom of Turi:
Developing the potential of the site and incorporating the local wisdom of Turi to achieve the objectives of this design.

Problem Mapping

Desain Salacca Eco-Factory in embung kaliaji with ecological approach

Isue Makro

Turi is the largest salak producing area in Sleman

Salak Processing Center as the identity of the Turi tourist area

Salak and its processed products are the basis of the Turi community's economy

A place to learn about planting, processing, products and benefits of snake fruit

Kaliaji Embung as a supporting element of tourist eco-tourism

Issue Mikro

Issue Mikro

Mendesain fasilitas komersial untuk menggerakan roda perekonomian masyarakat turi dengan memanfaatkan eko-tourisme turi

Turi has very few snake fruit processing places and the location is very far even though Turi is the biggest producer of snake fruit in Sleman

Tourism development that can increase the value of salak so that the income of the tourist community recovers

Tourism opportunities in the form of eco-tourism typical of Turi, namely salak

It has the potential to be integrated with the snake fruit processing center, providing an added value to attract tourist interest.

Problem Formulation

"How to design functional facilities and supporting facilities for the Snake Fruit Processing Center at Kaliaji Reservoir, Turi, with an Eco-tourism approach?"

Variable and parameter

"Study on the typology of the snake fruit processing center in Turi."

1. Functional facilities and supporting facilities for snake fruit processing.
2. Design criteria.
3. Criteria for commercial spaces selling processed snake fruit.
4. Precedent studies."

Approach study

The study of principles and implementation of Eco-tourism into the snake fruit processing center at Kaliaji Reservoir, Turi.

Site and Surrounding study

1. Map and general overview of the location.
2. Map of the physical property and microclimate.
3. Thematic map of circulation.
4. Data on the potential of the site."



Strengths:

Ecotourism Potential: The ecotourism approach holds significant potential for attracting environmentally-conscious tourists to the location.
Biodiversity: The Kaliaji reservoir and Turi regions offer a rich biodiversity, appealing to ecotourism, including salak orchards and natural beauty.
Sustainability: By focusing on ecotourism, the project can integrate sustainable practices into its design and operations.
Local Community Participation: Involving the local community in this project can strengthen support and foster local cultural integration.

Weaknesses:

High Costs: Integrating ecotourism with salak processing and sustainable architecture may require substantial initial investments.
Maintenance: Maintaining ecotourism facilities and the salak processing center demands sustainable resources and labor.
Permits and Regulations: The project may face challenges in obtaining permits and complying with environmental regulations.

Opportunities:

Local Economic Boost: The project can directly benefit the local community by providing jobs and business opportunities.
Environmental Education: The project can offer environmental education to tourists, enhancing their understanding of sustainability.
Market Expansion: The salak processing center and ecotourism can help expand the market for salak products.

Threats:

Environmental Impact: An increase in visitor numbers can have a negative environmental impact if not managed effectively.
Seasonal Dependence: Salak production depends on seasons, potentially affecting product availability.
Climate Change: Climate change poses a threat to salak production and ecotourism, necessitating adaptation planning.

Design Problem Solving Method

a. Data Collection

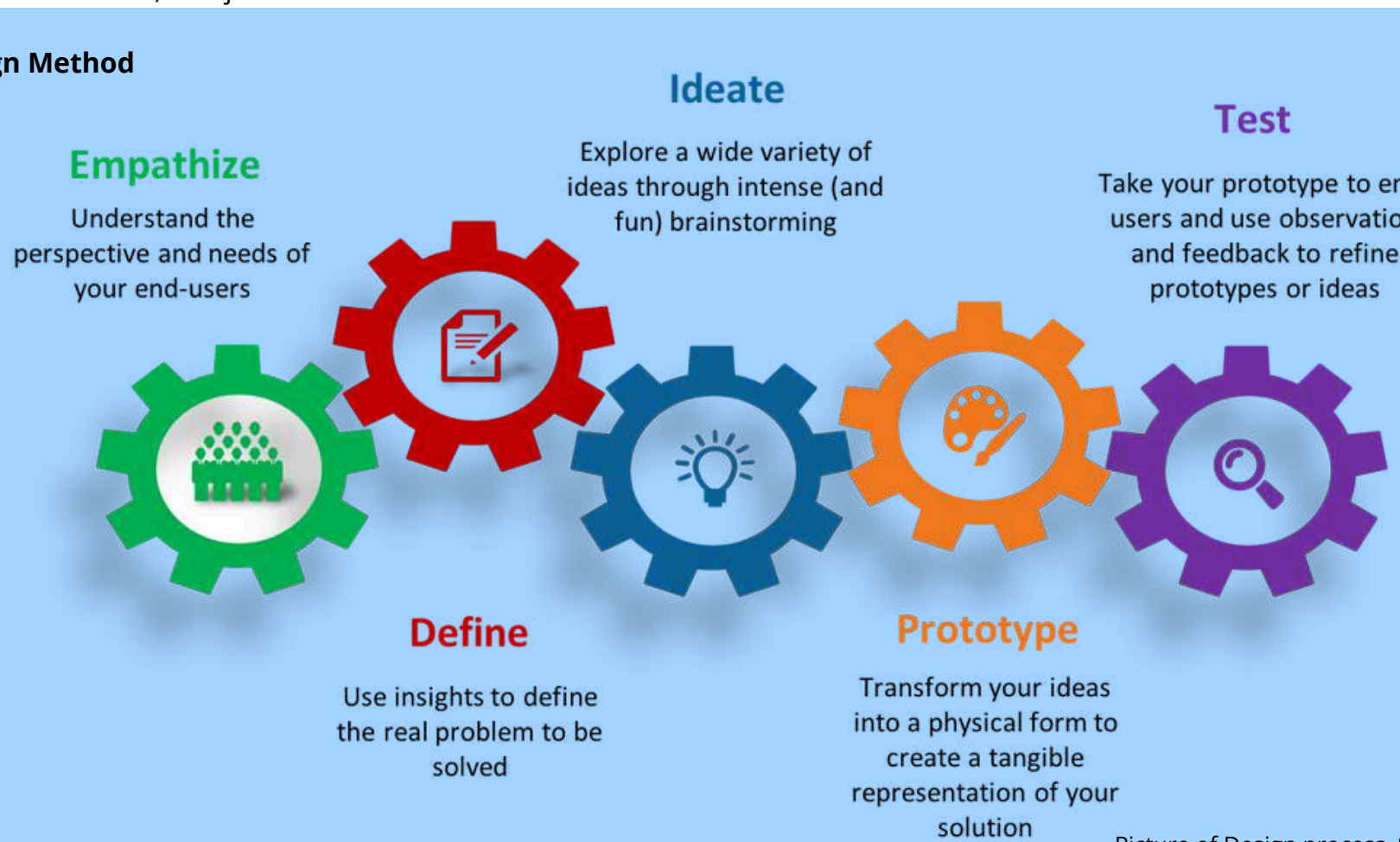
Primer data is collected through direct on-site observations, researching the activities of space occupants and activities in the vicinity of the site.
Secondary data is gathered by examining the factors influencing the functional and technical aspects of public space facilities in terms of anthropometrics in Yogyakarta, obtained through a review of literature from books, journals, the internet, e-books, and relevant institutions.

b. Type Of Data
Data Primer

The physical site data comprises observations of activities within the site area, user activities, and the condition of built structures within the site. Documentation is facilitated through the capture of photographs.

Data Sekunder
Site data is obtained through online platforms such as Google, providing information about the geographical location, territorial boundaries, and maps. Literature data is derived from various sources including articles, books, e-books, internet resources, relevant institutions, and journals available.

c. Design Method



Picture of Design process ,Source : Pinterest.com

d. Testing Design
Testing is carried out in both small and large scales. Small-scale testing involves assessing technical drawings, 3D modeling, and relevant simulations, followed by an examination of the predetermined parameters and indicators. On the other hand, large-scale testing relies on logical design testing tools or existing precedent examples, with unique variations and additions.

FRAMEWORK

Desain of Salacca processing center at kaliaji reservoir in Turi, Sleman with ecotourism approach

Initial Analysis

Location Identification:
Determine the precise location for the salak processing center and ecotourism facilities.

Environmental Assessment:
Conduct a comprehensive environmental study to understand the biodiversity, ecosystems, and potential environmental challenges in the area.

Stakeholder Engagement:
Identify stakeholders, including the local community, salak farmers, and local government agencies.

Ecoturisme Approach:

Studying ecotourism and then utilizing the data obtained from the initial analysis process to create a salacca processing center by applying data and analysis from ecotourism to conservate nature and culture, while providing economic benefits to the local community

Efficient Use of Space:
Optimize the layout of apartment units to maximize the use of available space. Implement open floor plans and multifunctional spaces to ensure efficiency.

Flexibility:

Design adaptable spaces that can evolve to meet changing needs or preferences of the salacca proccesing center.

Community Spaces:

Create communal areas to foster a sense of community. Promote social interaction among user through well-designed common spaces.

Universal Design:

Incorporate universal design principles to make the design accessible to a wide range of user, including those with disabilities.

Local Context:

Integrate elements of Turi local culture and architecture into the design, creating a sense of place and identity.

Affordable Materials:

Use cost-effective but durable building materials to keep construction and maintenance costs reasonable.

Security and Safety:

Prioritize security features like controlled access, surveillance, and well-lit common areas. Design safety measures such as fire exits and sprinkler systems.

Energy Efficiency:

Implement sustainable design principles to reduce energy consumption and environmental impact. Use energy-efficient appliances, lighting, and cooling systems.

Technological Integration:

Implement smart building technologies to enhance resident comfort and security

Precedent

LVL timber for widespan



Widespan Laminated Veneer Lumber (LVL) is a type of engineered wood product commonly used in construction for applications requiring long spans and high load-bearing capacity. It's made by bonding together thin layers of wood veneers or strands using adhesives and then pressing them together under high heat and pressure. This manufacturing process results in a strong and durable timber product that can outperform traditional lumber in many applications.

Widespan LVL (Laminated Veneer Lumber) is a type of wood product commonly used in construction because of its strength and versatility.

Composition: It's made by stacking thin layers of wood veneers or strands together. These layers are glued and pressed under high heat and pressure. The wood used is usually from fast-growing trees like pine or spruce.



Manufacturing Process:

They're coated with a special adhesive to hold them together.
The layers are stacked and aligned to the desired thickness and orientation.
They're then pressed together tightly using machines.
Finally, the resulting panels are trimmed to size and finished as needed.

Properties:

Strength: Widespan LVL is very strong, able to support heavy loads without bending too much.
Stability: It doesn't warp or twist easily, staying straight and true over time.
Consistency: Each piece of LVL is made to the same high standard, so you can rely on its quality.
Versatility: It comes in different sizes and shapes, making it suitable for many different building needs.



Advantages:

Longer spans: LVL can cover longer distances without extra support, saving on materials and labor.
Less waste: It's made efficiently, using less wood than traditional lumber.
Predictable performance: Builders can rely on LVL's consistency for their designs.
Environmental benefits: Often sourced from sustainably managed forests, making it an eco-friendly choice.

Precedent

ZCB Bamboo Pavilion

The ZCB Bamboo Pavilion is a public event space built for the Construction Industry Council's Zero Carbon Building (ZCB) in the summer of 2015 in Kowloon Bay, Hong Kong. It is a four-storey-high long-span bending-active bamboo gridshell structure with a footprint of approximately 350m² and a seating capacity of 200 people.

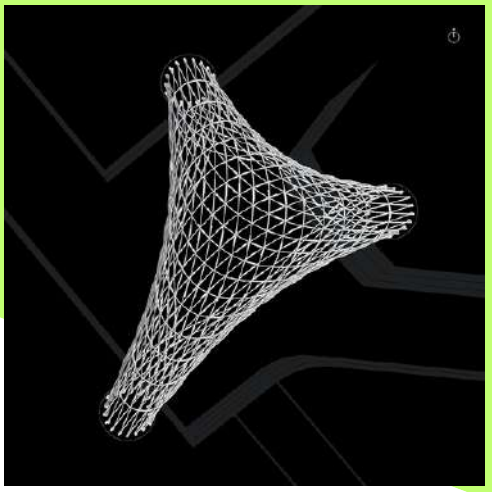
It is built from 475 large bamboo poles that are bent onsite to shape the structure and that are hand-tied together with metal wire using techniques based on Cantonese bamboo scaffolding craftsmanship. The shape is a large diagrid shell structure that is folded down into three hollow columns. These columns rest on three circular concrete footings. A tailor-made white tensile fabric is stretched over the structure and is brightly lit from inside the three legs.

The project is the outcome of the concerted efforts of the Construction Industry Council (CIC), The Chinese University of Hong Kong (CUHK) and different contractors. It was designed by a research team led by Prof. Kristof Crolla at CUHK School of Architecture. The research investigates how computational design tools can be strategically inserted into existing construction methods to allow for a more engaging and innovative architectural outcome. The ZCB Bamboo Pavilion showcases this and illustrates how the endangered craftsmanship of bamboo scaffolding construction in Hong Kong can be expanded through the introduction of digital form-finding and real-time physics simulation tools.

The project's design is based on an architecture student design internship held at the CUHK School of Architecture. The design was developed further by the research team in collaboration with structural engineers and bamboo consultants, using digital physics simulation engines, physical model making, and large-scale prototyping to derive its final form.









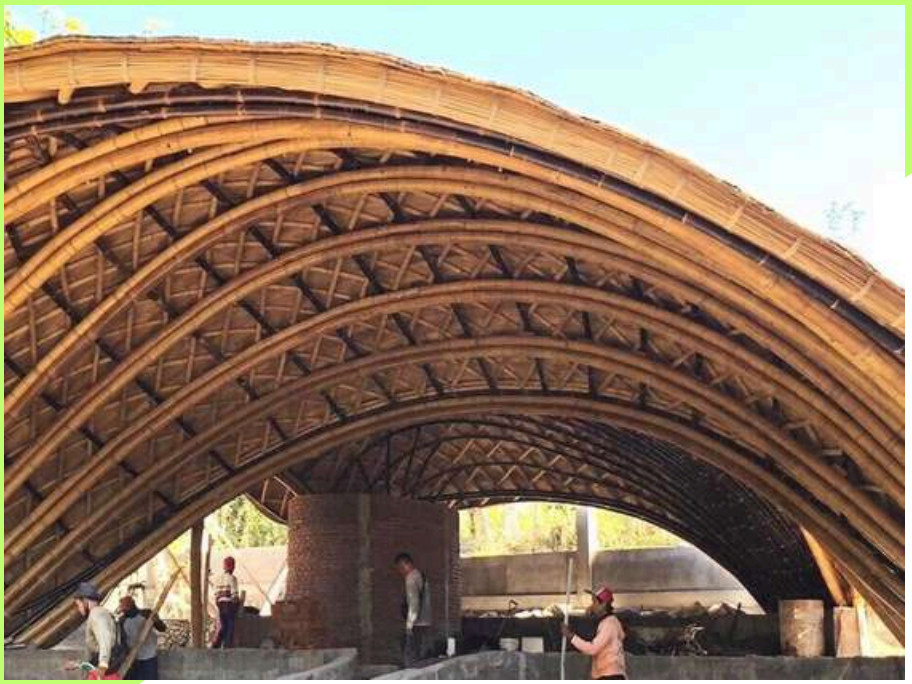
Precedent

Bamboo widespan

A widespan bamboo structure refers to a building or any other construction that utilizes bamboo as a primary material for spanning large distances without requiring additional support columns or beams. Bamboo is a versatile and sustainable material that has been used for construction for centuries in various parts of the world, particularly in Asia and South America. Here's an explanation of key aspects of widespan bamboo structures:

1. Material Properties: Bamboo possesses remarkable strength-to-weight ratio, making it an excellent choice for structural applications. Its tensile strength is comparable to steel, while its weight is significantly lighter. Additionally, bamboo is flexible, durable, and resistant to pests and decay when properly treated.
2. Construction Techniques: Widespan bamboo structures typically employ traditional construction techniques adapted to modern engineering standards. These techniques include methods such as lashing, weaving, and joining bamboo poles using traditional ties or modern connectors. Advanced techniques may involve laminating bamboo strips or treating bamboo with preservatives to enhance its longevity.
3. Design Considerations: Designing widespan bamboo structures requires careful consideration of structural stability, load-bearing capacity, and environmental factors. Engineers and architects must assess factors such as wind loads, seismic activity, and moisture levels to ensure the structural integrity and safety of the building.
4. Applications: Widespan bamboo structures can be used for various purposes, including residential buildings, pavilions, bridges, and community centers. They are particularly suitable for tropical and subtropical regions where bamboo is abundant and traditional building techniques are still prevalent.
5. Sustainability: Bamboo is a highly sustainable material due to its rapid growth rate and minimal environmental impact. Harvesting bamboo does not require deforestation, as it can be selectively harvested without killing the plant. Additionally, bamboo forests contribute to carbon sequestration, making widespan bamboo structures an eco-friendly alternative to conventional construction materials.
6. Challenges: Despite its numerous advantages, widespan bamboo construction may face challenges such as limited availability of high-quality bamboo, lack of standardized building codes, and perceptions of bamboo as a "poor man's material" in some regions. Overcoming these challenges requires investment in research, development, and education to promote bamboo as a viable and culturally acceptable construction material.





Precedent

Wood use in industrial buildings

Located at the center of the small village of Matt in Switzerland, a replacement building for a wood construction company was designed after a fire had destroyed the original production facility. The new hall resembles the old one, but the construction was rethought. Wood was chosen as the main construction material, making use of its endless possibilities.

The combination of different types of wood with their particular colors, grains, and structures results in spatial variation and affects the perception of every room. Visitors and clients can easily understand the multiplicity of possibilities that wood offers.

This report introduces prefabricated industrial timber buildings and the wide variety of applications for this building structure.
The wood design and construction industries have undergone major changes in the last 25 years. The introduction of computer-aided design and drafting and robotic CNC machinery has transformed the industry.

Today, modern timber buildings arrive on site with all timber pieces pre-cut. Structural members are pieced together in a similar way as a steel building. In fact, in comparison to steel, the construction of a timber building often takes less time and the work of other trades is made easier.

Cross-laminated timber (CLT) can be used for walls and roofs to achieve a similar durability to a masonry or concrete wall. When a robust surface is not required, prefabricated timber panels can provide an economical and energy-efficient option.







Precedent

Industri Kusuma kampung apel malang



Kusuma Agro Industri started in the year 2000 as a Home Industry under the umbrella of the Kusuma Agrowisata business division (apple picking and trading), focusing on the production of processed products made from apples. Initially, the company produced apple juice, apple porridge, apple wingko (traditional Javanese cake), apple cider, and apple vinegar.

In early 2006, the industry separated into its own Industrial Division, and products began to be marketed in East Java, Central Java, Jakarta, and Bali.

As a pioneer in the apple-based product industry and with the distinctiveness of being located in the city of Batu, many other local producers followed suit, recognizing the excellent market prospects of such products.

By early 2011, our products were being marketed nationwide, with distributors across Indonesia. To meet market demands, the Industrial Division continued to enhance quality, innovate, and launch new products known under the name SIIPLAH.

Some well-known products in the market include SIIPLAH Fruit Juice and SIIPLAH Tea. Moving forward, we hope that our products can compete and become an integral part of the beverage business in Indonesia.

4 APEL PRODUCTION PHASE

1. WASHING



2. PRODUCTION



3. PACKING



4. STORING AND TRANSFER



Precedent

Kampung Cokelat Blitar

Kampung Cokelat, or "Chocolate Village," in Blitar, Indonesia, is a unique destination with a rich history. This village's origins can be traced back to a desire to promote the local cacao industry and create a tourist attraction centered around chocolate.

The concept of Kampung Cokelat was initiated to support the cacao farmers in the Blitar region, which has a long history of cacao cultivation. The idea was to develop a village dedicated to the promotion and production of chocolate products, fostering economic growth in the area.

Kampung Cokelat's history is closely tied to the growth of the chocolate industry in Indonesia, and it has evolved over the years. Initially, it started as a small chocolate-making workshop and gradually expanded into a comprehensive chocolate-themed destination, welcoming tourists from various parts of Indonesia and beyond.

As the years passed, Kampung Cokelat developed into a place where visitors could learn about the entire chocolate-making process, from cacao bean cultivation to the final chocolate product. It also became a hub for chocolate enthusiasts, offering various activities, workshops, and opportunities to explore the world of chocolate.

Throughout its history, Kampung Cokelat has played a significant role in promoting local cacao farming, supporting the local economy, and providing educational and recreational experiences for tourists. Today, it stands as a testament to the successful fusion of chocolate, tourism, and community development, making it a fascinating and enjoyable destination for visitors interested in the history and production of chocolate.









Gambar Precedent
Sumber :
Inhabitat.com/ThinkTank
, 2022

Precedent

Kampung Cokelat Blitar

Kampung Cokelat, located in Blitar, is a unique and charming destination in East Java, Indonesia. This place is known for its chocolate-themed attractions and activities, making it a delightful experience for chocolate lovers and tourists alike.

Kampung Cokelat translates to "Chocolate Village" in English, and it lives up to its name with a variety of chocolate-related experiences. Visitors can explore chocolate factories, learn about the chocolate-making process, and even participate in hands-on activities like making their own chocolate creations.

The village is adorned with chocolate-themed decorations, sculptures, and exhibits, creating a fun and whimsical atmosphere. You can also find a range of chocolate products, from traditional Indonesian chocolate to international chocolate brands, making it a paradise for chocolate enthusiasts.

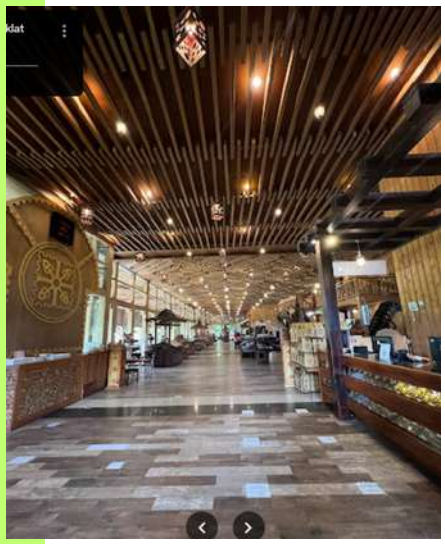
In addition to the chocolate-related attractions, Kampung Cokelat offers a pleasant and picturesque environment surrounded by lush greenery. It's a place where you can relax, enjoy the sweet aroma of chocolate, and immerse yourself in a world of cocoa delights.

















Gambar Precedent
Sumber : Inhabitat.com/ThinkTank, 2022

Precedent

Shanghai Natural History Museum

This building is the Shanghai Natural History Museum in Shanghai, China. It is constructed with the principle of being connected to nature, and its architectural design seamlessly integrates with the surrounding landscape, featuring a grass-covered roof. The circulation of the building extensively explains the relationship between the structure, nature, and humans by applying natural forms.

The Shanghai Natural History Museum is an astonishing piece of architecture located in Shanghai, China. Designed by the renowned architecture firm Perkins+Will, it was completed in 2015. The design reflects modern architectural principles inspired by nature and sustainability.

One of the distinctive features of the museum is its roof designed to resemble a mountain peak covered with natural grass. This creates a spectacular appearance, like a green hill blending with the surrounding landscape. The building is designed to create a harmonious balance between architecture and nature.

In terms of circulation, the museum is carefully designed to provide an informative and awe-inspiring visitor experience. There is a circulation path surrounding the central atrium, connecting various galleries and exhibitions. This offers beautiful views of the green open space on the roof and efficiently supports the flow of visitors.

The architecture of the museum reflects a commitment to sustainability through the use of eco-friendly building materials and the optimization of natural lighting. Furthermore, the fusion of natural elements and strong structural design gives the museum a unique allure in the architecture of Shanghai.

Overall, the Shanghai Natural History Museum is an inspiring example of modern architecture that respects nature and creates a strong connection between architecture and the surrounding environment.









Gambar Precedent
Sumber : Inhabitat.com/ThinkTank, 2022

Precedent

Sharma Springs, Indonesia

iBUKU Architect

Sharma Springs Bali is an extraordinary example of sustainable and contemporary architecture in Bali, Indonesia. This building was designed by architect Elora Hardy and her team at Ibuku, a design company focused on bamboo and sustainable materials. Built in 2015, Sharma Springs combines the beauty and durability of bamboo with modern design sophistication.

The house consists of three stories and includes various spaces, such as bedrooms, living rooms, family rooms, and more. Sharma Springs fully utilizes bamboo's potential as the primary construction material. The entire structure, including columns, beams, walls, and furniture, is made from sustainably grown bamboo.

Its design exploits bamboo in the form of arches and curves that create a naturally flowing space. The combination of traditional and modern elements creates a unique atmosphere and offers a living experience in harmony with nature. With an open concept, ample natural light enters, creating a strong connection between the interior and exterior spaces.

Sharma Springs also prioritizes sustainability. The use of fast-growing bamboo as the primary material helps reduce environmental impact. Additionally, its design allows for natural air circulation, reducing the reliance on air conditioning. This is an excellent example of how architecture can combine the beauty of nature and sustainability in a captivating building.

This principle is very interesting when applied to the Salak Processing Center, especially since bamboo is one of the abundant natural resources in the Turi area. Connecting natural materials like bamboo with ecotourism can add more appeal to attract people to visit and spend their holidays. By integrating natural materials into the design of the salak processing center, we can create a more sustainable and attractive environment for visitors.







Gambar Precedent
Sumber : Inhabitat.com/ThinkTank, 2022

Precedent

Omah Salak Sleman

lOCAL ARCHITECT

Omah Salak is not only a natural tourist destination but also an educational attraction in Yogyakarta. As known, Yogyakarta is a prominent producer of Pondoh salak, making Omah Salak a distinct tourism target compared to other locations. The establishment of the Omah Salak tourist village is closely tied to the natural disaster of Mount Merapi eruption in Yogyakarta in 2010. Similar to the Kali Kuning area, the salak plantations are situated around the highlands of Mount Merapi in Yogyakarta. For those curious about Pondoh salak plants and eager to savor salak directly from the tree, Omah Salak comes highly recommended. Omah Salak's tourist location was established in 2011, precisely one year after the Mount Merapi eruption in 2010. This natural disaster posed a significant challenge for the residents who relied on salak plantations in the Mount Merapi area. The existence of Omah Salak serves as a means for recovery and motivation for local salak farmers to rise again. Through collaborative efforts, Omah Salak has become a noteworthy tourist destination worth visiting.
Spanning 27 hectares, visitors to this plantation can enjoy salak and engage in various activities such as exploring the salak plantations, picking salak, dining, and even camping and outbound activities. The variety of salak available here includes Pondoh salak, Bali salak, Gading salak, and around 14 other salak species.

The multitude of tourist activities at Omah Salak is complemented by several facilities available on-site. Some of the facilities at this location include:

- Cafeteria / Culinary Area
- Camping Ground
- Outbound Attractions
- Homestay
- Plantation Area
- Parking Area
- Restrooms
- Other amenities.

Entrance Ticket Prices:
Various fees are applicable to partake in activities at Omah Salak. The entrance ticket itself incurs a charge of IDR 10,000. Visitors also have the option to enjoy Omah Salak's attractions along with additional costs for tourism packages ranging from IDR 50,000 to IDR 900,000. For activities such as picking and purchasing salak, the selling price per kilogram ranges from IDR 3,000 to IDR 5,000. Additional fees apply for other activities available at this tourist location.







Gambar Precedent
Sumber : Inhabitat.com/ThinkTank, 2022

EXCELENCY, ORIGINALITY AND NOVELTY

The development of the proccesing center, adopting an ecological tourisme architecture approach, has undergone collaboration from various parties. However, distinctions in project issues and focus emerge when compared to the proposed title by the author. To ensure the integrity of the report preparation and planning process and to prevent plagiarism, the author has incorporated several references into their work. These references serve as a foundation, contributing diverse perspectives and insights to enrich the overall design and content of the proccesing center project.

Perancangan Fasilitas Wisata Lingkungan dan Budaya di Kampung Wisata Kedung Semurup Yogyakarta Dengan Penerapan Arsitektur Ekologis

Author : Nadia Salsabila
Year : 2020
Similiarity : aproach
Differences : problem and function

Design of Eco-Edu Forest Visitor Center in Bunder National Reserve, Playen, Gunungkidul by Environmental Design Approach

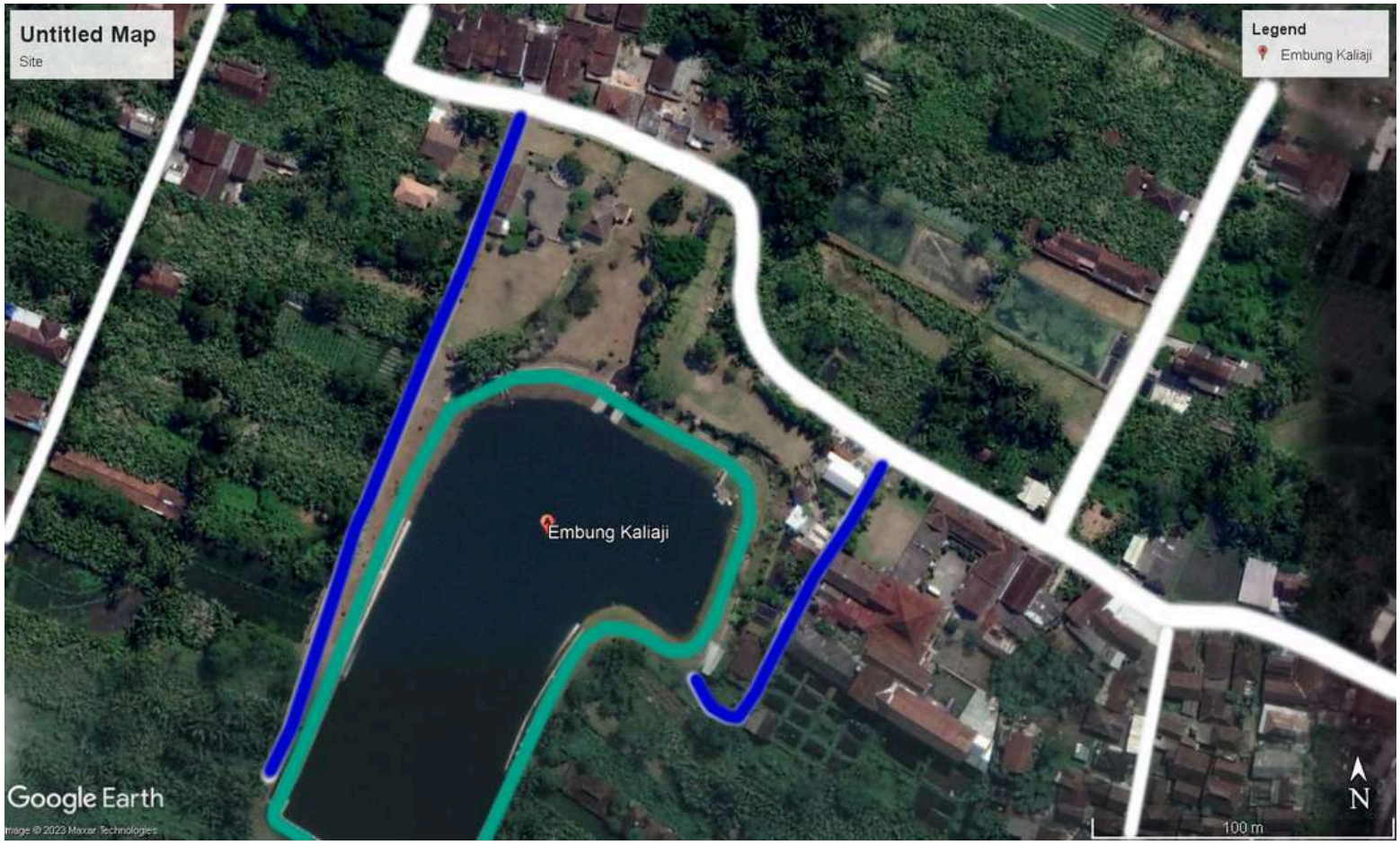
Author : Sofiana Estiningtyas
Year : 2020
Similiarity : Approach and idea
Differences : problem and design

Perancangan Community Center Dan Rekreasi Air Di Manyaran Dengan Konsep Lingkungan Ramah Anak

Author : SAfiRA TASYA KAMITHA
Year : 2020
Similiarity : suing nature and surrounding
Differences : approach and function

Perancangan Pusat Pengunjung Ngeteh Dengan Pendekatan Arsitektur Ekologis Di Desa Nglinggo, Kulon Progo

Author : HANIFAH HESTYAS KHUMAIRA
Year : 2020
Similiarity : approach
Differences : function and design



The site is traversed by a two-way asphalt-paved arterial road, a single-lane asphalt-paved road for vehicles in one direction, and an unpaved road for pedestrians.

Activity

Public



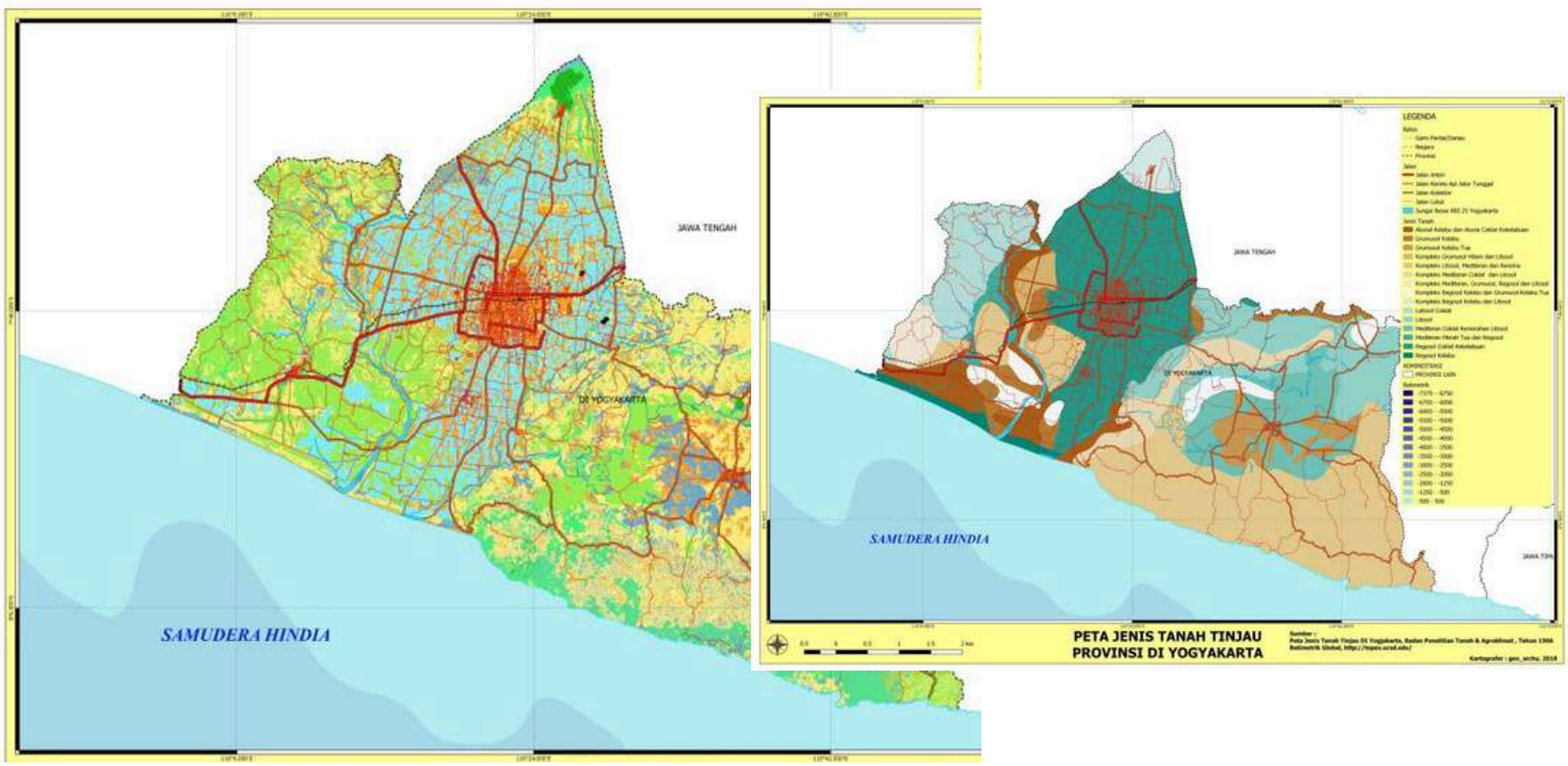
Joging around the resevoir



Fishing often and releasing fish (if big event happend)



Activities on August 17 where the local community witnessed competitions held at Resevoi, such as pillow fights, tracing codes and others.



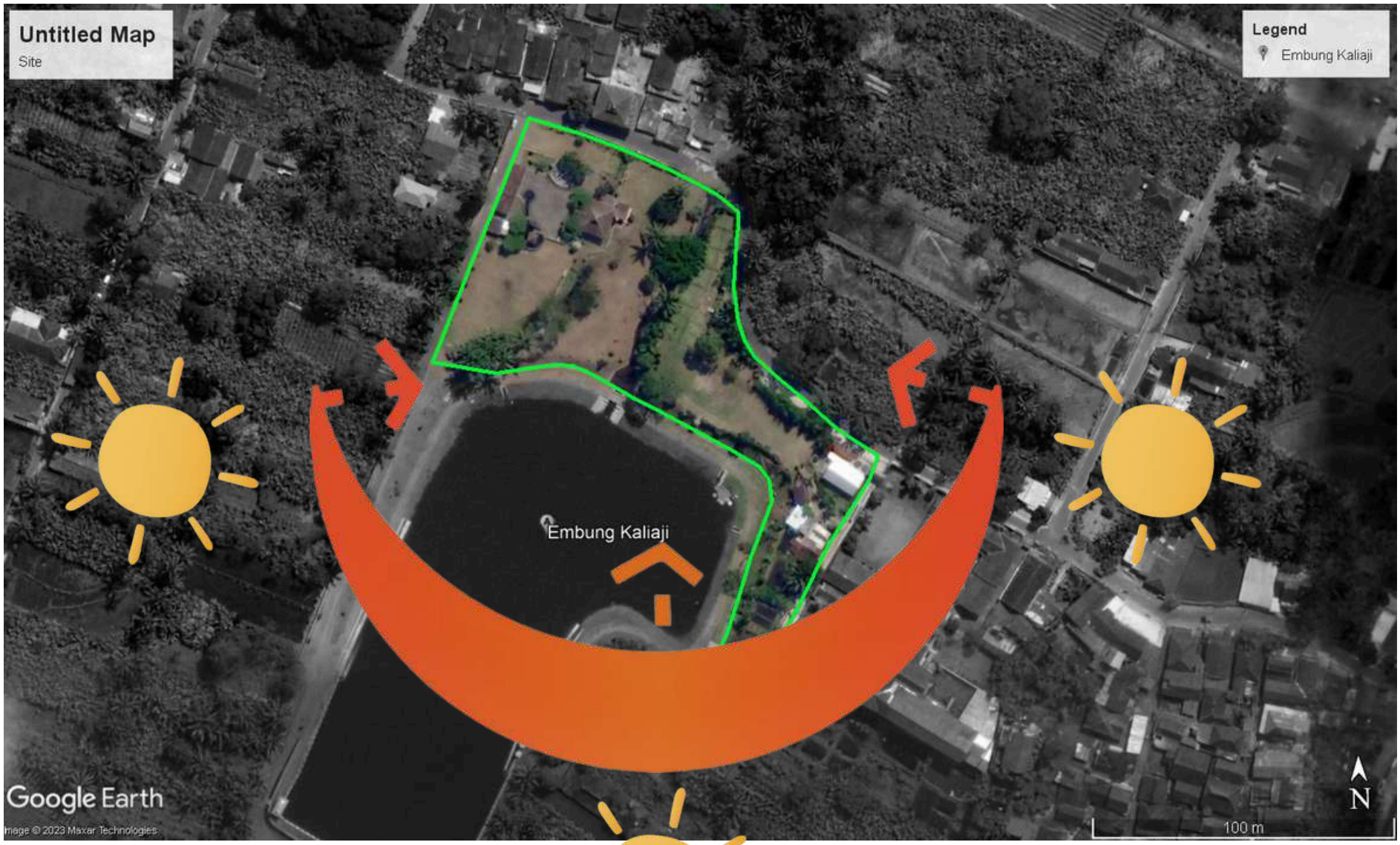
Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

The author looked for data on the type of soil at the site for the use of the bio engineering concept and found that the type of soil at the site is alluvial soil type. Alluvial soil is a type of soil that is formed by the deposition of sediment carried by rivers, streams or other water bodies. It is commonly found in floodplains, river valleys and delta regions.

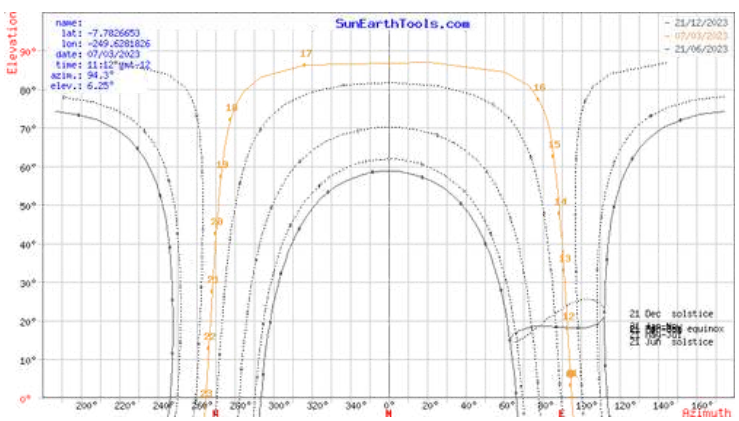
Alluvial soil is highly fertile and is prized for its agricultural productivity. It is composed of fine particles such as silt, clay, sand, and organic matter that have been transported and deposited by water over time. The deposition process tends to sort the sediment by particle size, resulting in layers of different soil textures.

But for building foundations, alluvial soil is very fragile and unstable so it requires careful consideration and planning to build settlements on it .

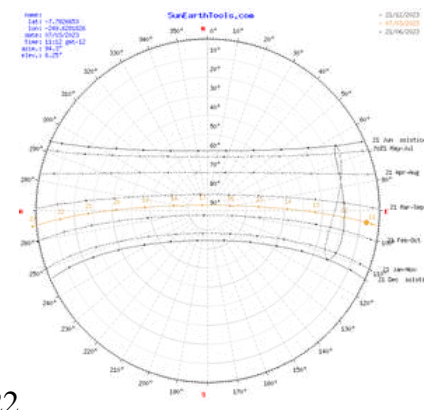
Sun Path



Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

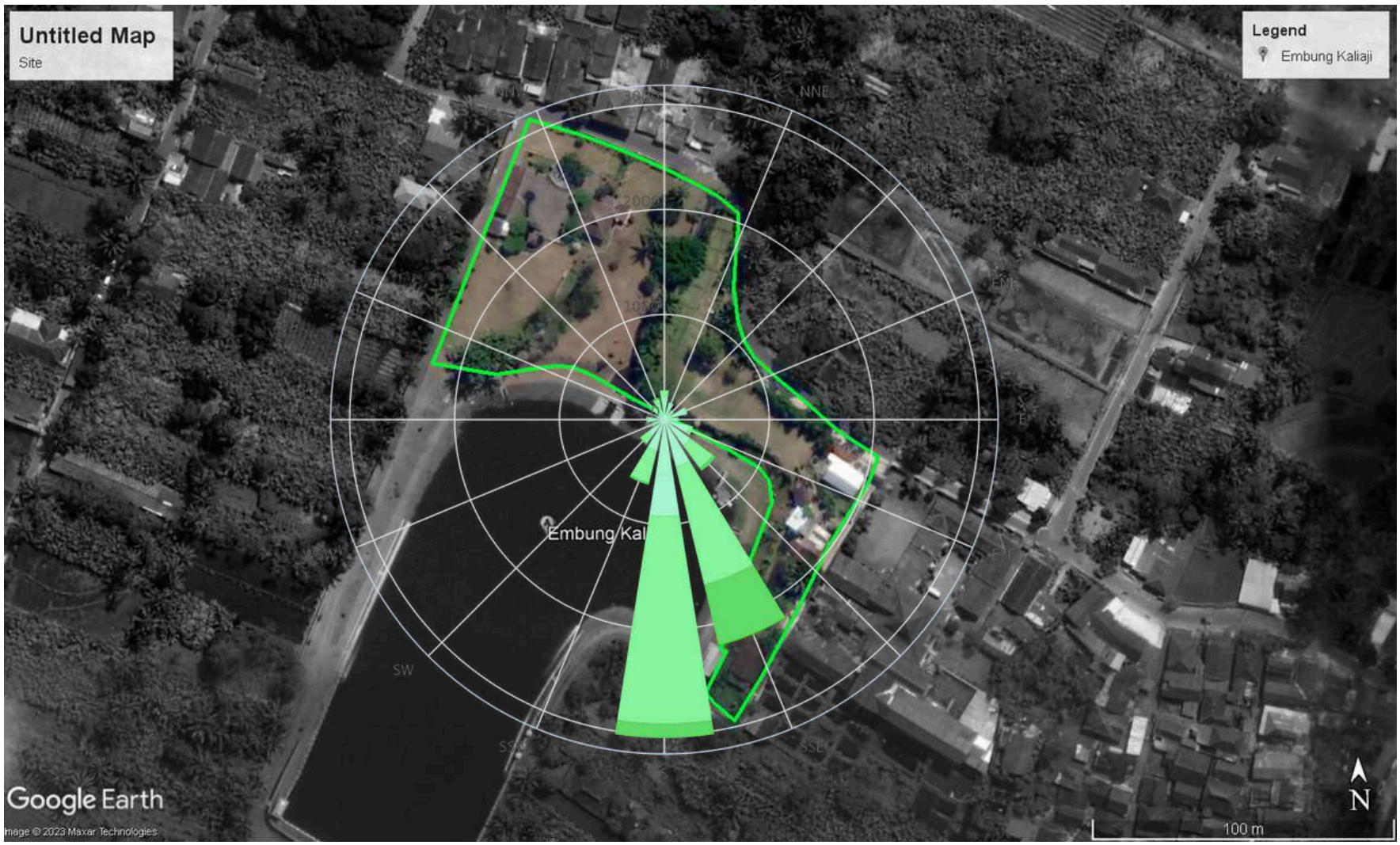


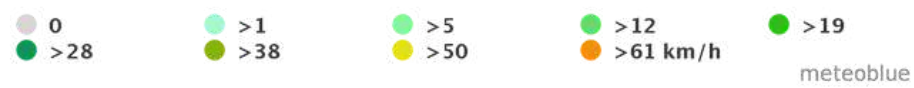
Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

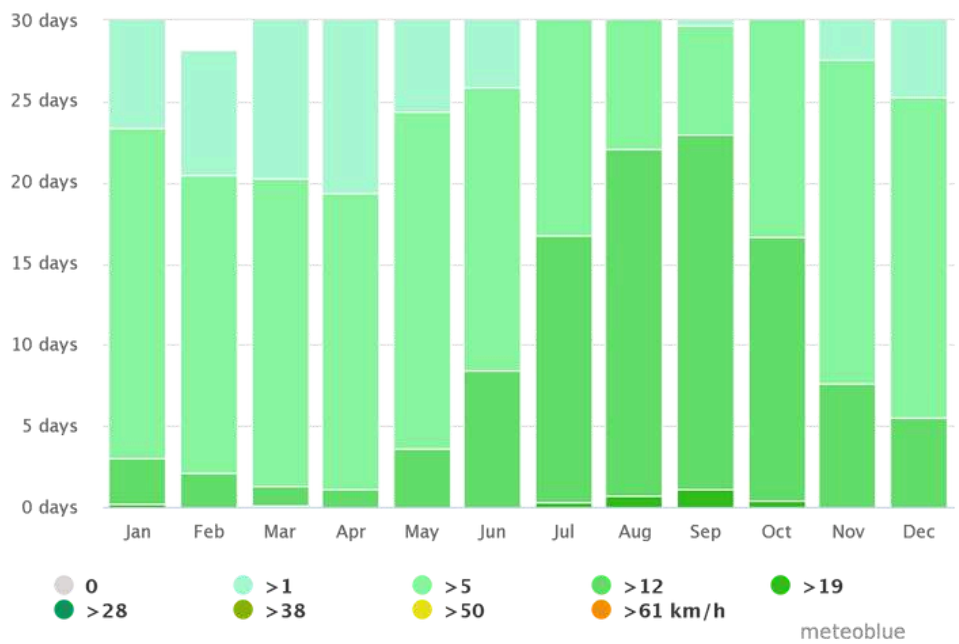


From the data it is known that the sun moves from east to west with a critical point occurring in August and the lowest critical point occurring in February. Data ini menjadi dasar untuk perhitungan shading device

Wind Rose data for site



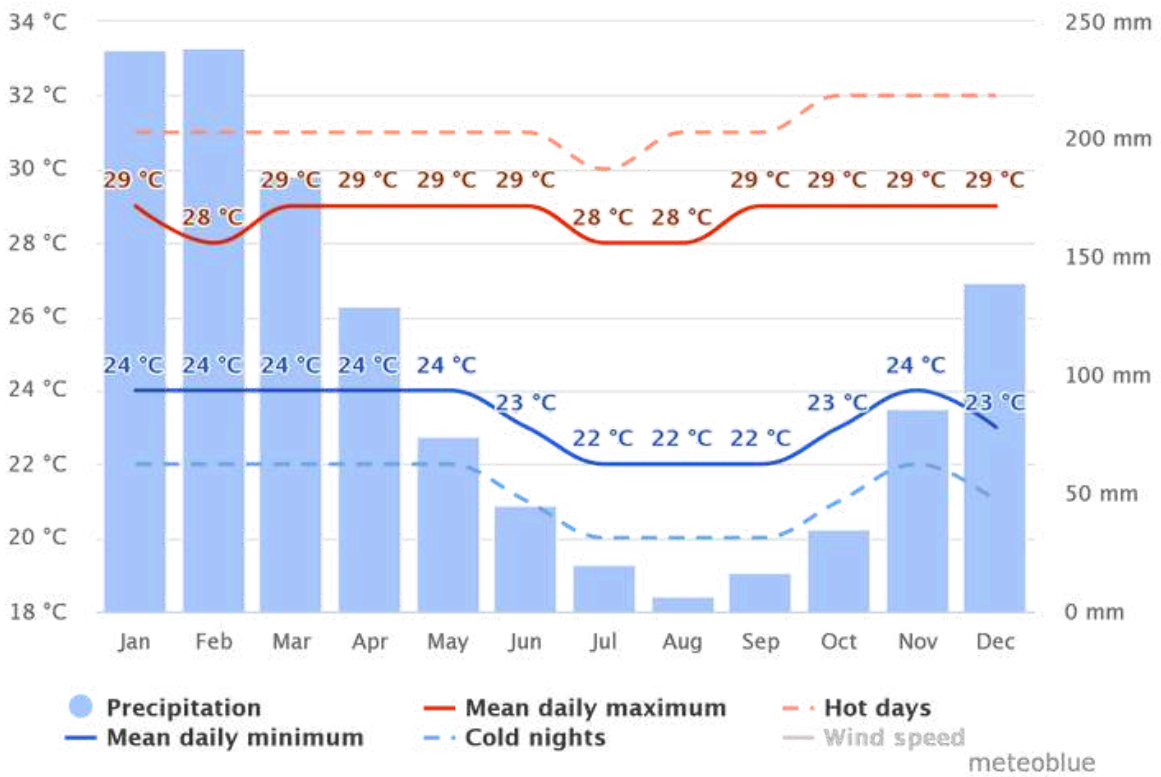




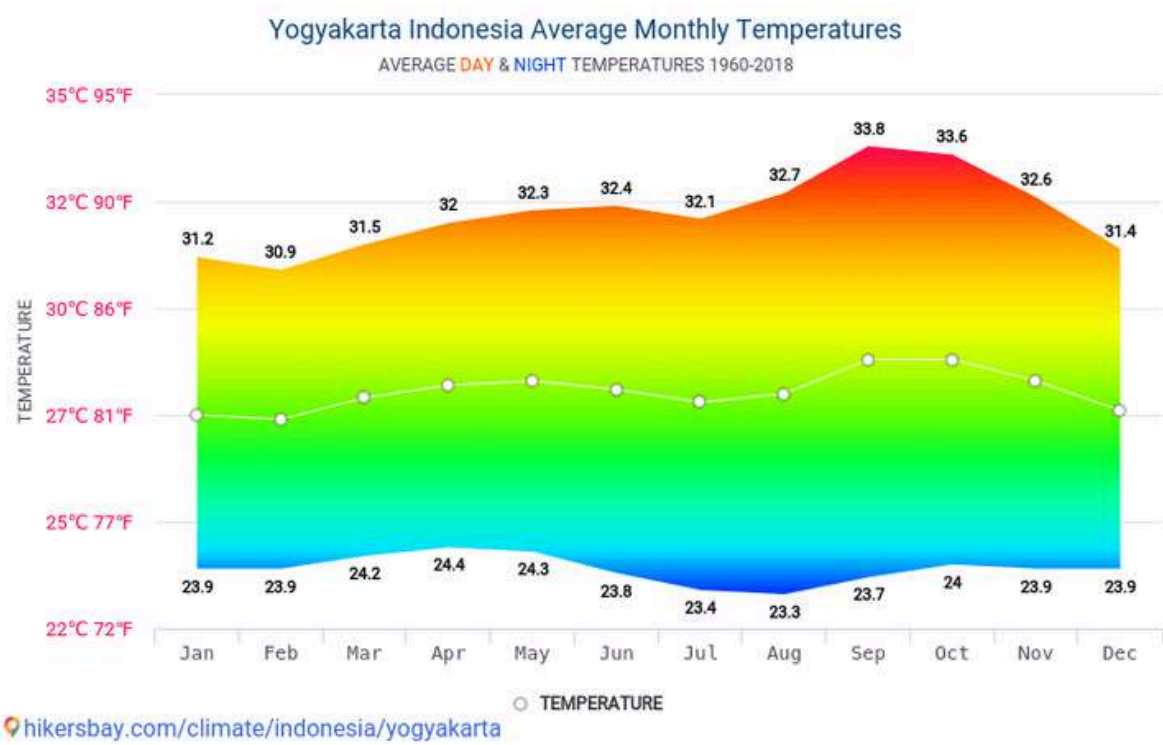
Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

From this data it is found that the wind comes from the south with moderate speed and can be used for passive cooling

Temprature data for Turi



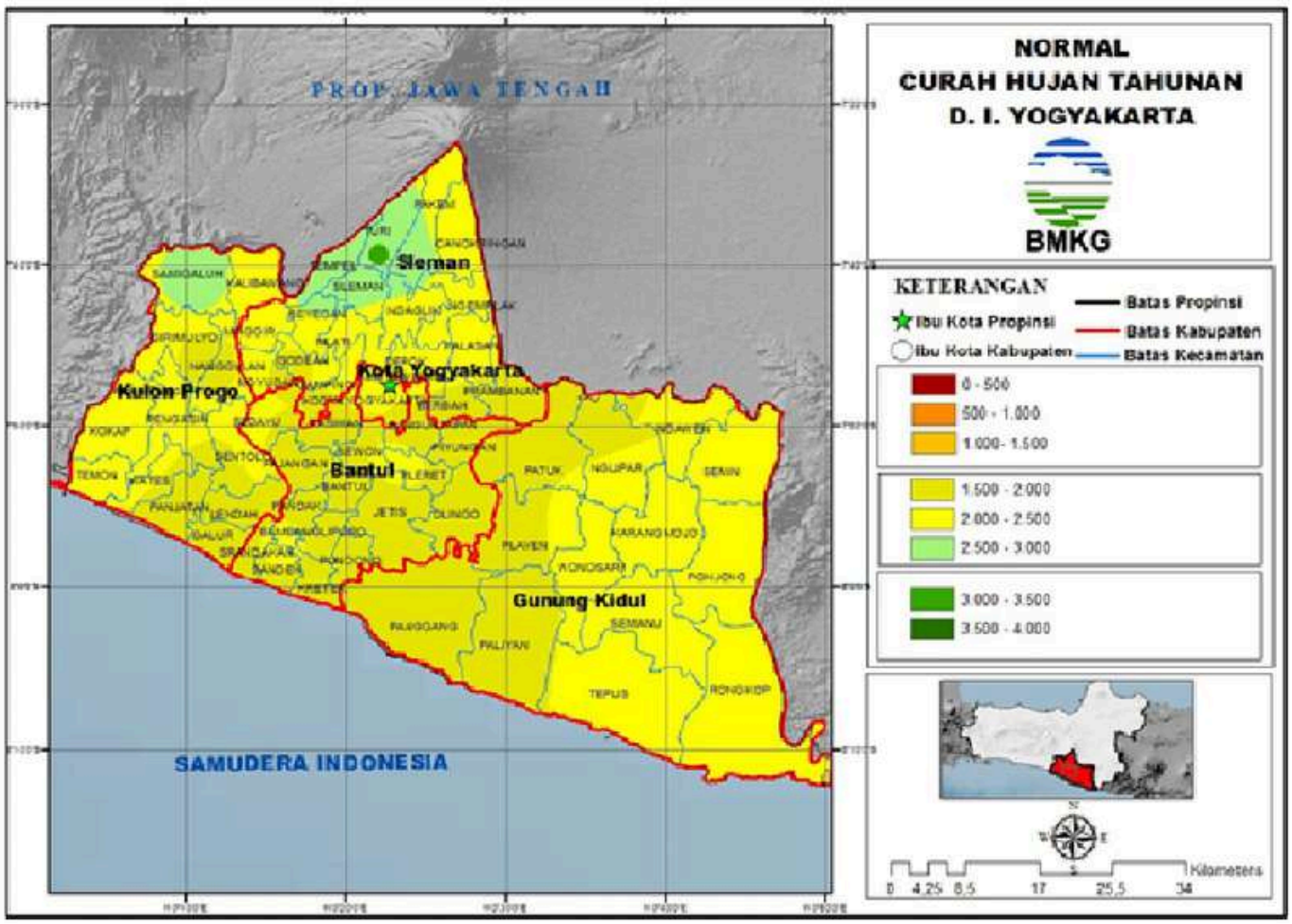
Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

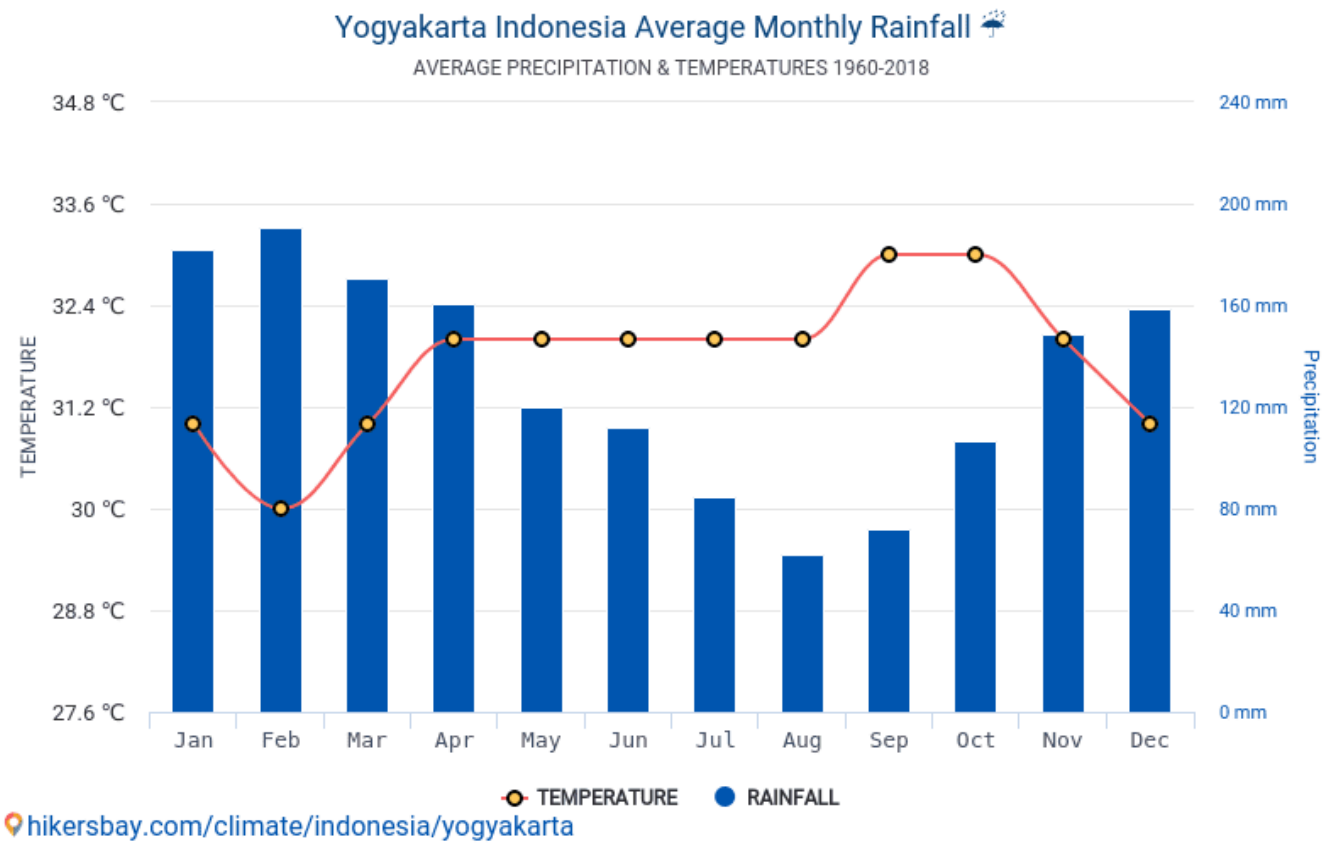


Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

From the data it is known that the temperature in Turi varies with high humidity values where the highest temperature reaches 33 degrees Celsius with the lowest temperature reaching 22 degrees Celsius . And from this data knowed that air movement will give big impac to create thermal comfort

Rainfall Data for Turi





Based on the data it was found that the average rainfall in Turi is high and stable with the highest rainfall occurring in February and the lowest occurring in August. So we need design for drainage for rainfall wate.

Gambar 2.1 Peta lokasi Makro - Mikro perancangan Sumber : openstreetmap.org dengan modifikasi penulis, 2022

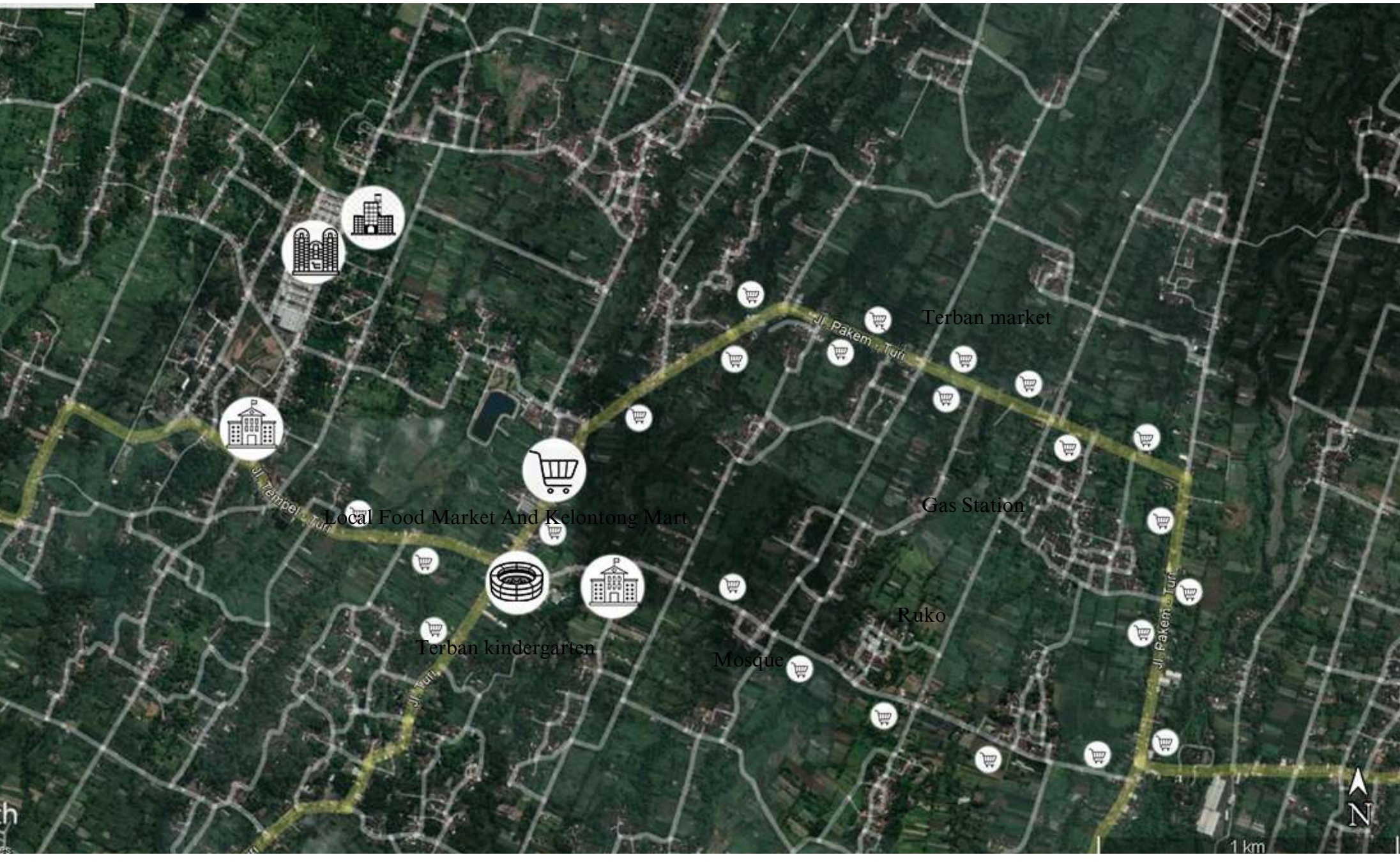
Site Zone



Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

The area is classified into four sections, where the ash section represents the former outbound area, green is the former camping area and development of Widuri, ash serves as a parking area and open field across the river, and cream is dedicated to the sale of local beverages with a traditional Javanese house (joglo) inside.

Importan Building In Site



Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

Public facilities around the site are predominantly schools such as SMK 1 Turi, SMA Negeri 1 Turi, and SMP 1 Turi. However, there are also soccer fields and office and residential complexes. As for notable spots, there is a small white point represented by a snake fruit (salak) vendor along the alternative road from Magelang to Solo, bypassing the city center, making it a busy route for vehicles.

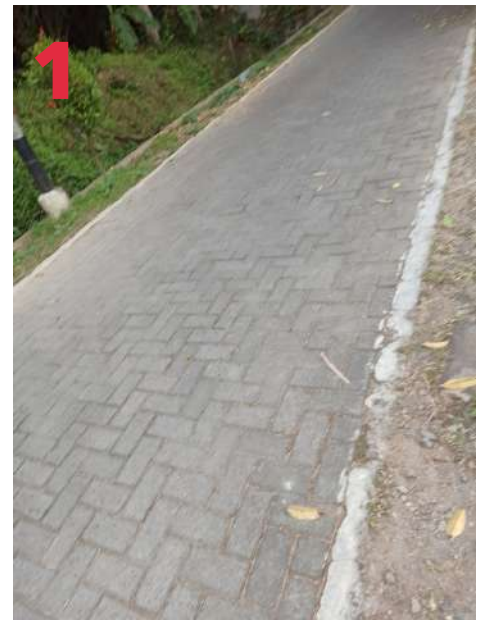


The site is situated on the alternative route from Magelang to Solo, bypassing the city center, making it a heavily traveled route by vehicles. The road is also wide and well-maintained, being a major highway, making it highly suitable for transporting products and collecting snake fruit from farmers. The route to Yogyakarta is also convenient, with well-maintained and good-quality roads.

Site Entrance



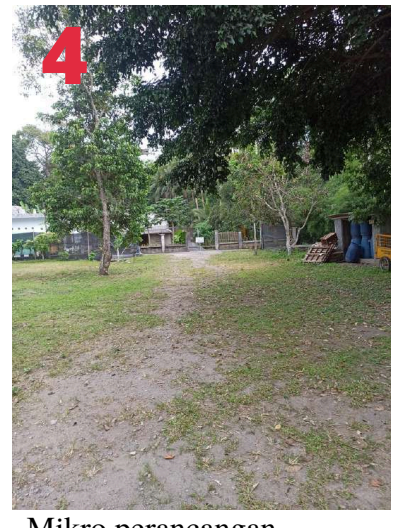




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openstreetmap.org dengan modifikasi penulis, 2022

Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2

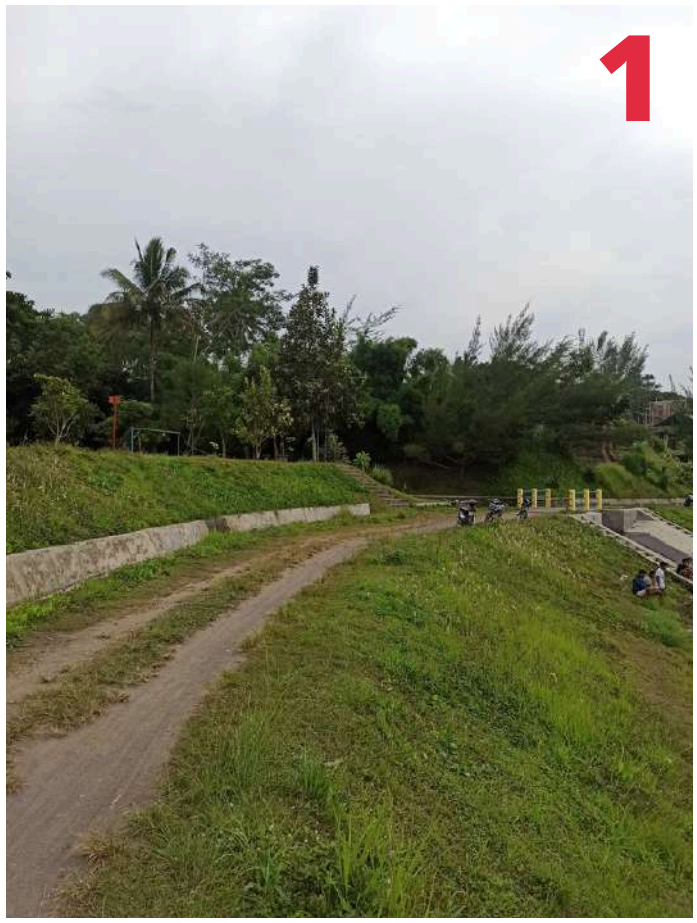




Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022

The site has three main entrances originating from the east. The main entrance is numbered 2 and serves the eastern side of the river. Following that, entrance number 1 is for the western side of the river, and entrance number 3 is for the southern side. Additionally, from the north, there is entrance number 4, which faces the residential area.

Insite Entrance Picture



Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022



Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2022



Entrances number 1 and 2 are accessible by cars, but entrance number 2 is equipped with a iron gate barrier and both does not have a paved surface, remaining a dirt road. Entrance number 3 is also accessible by cars and has a concrete road surface.

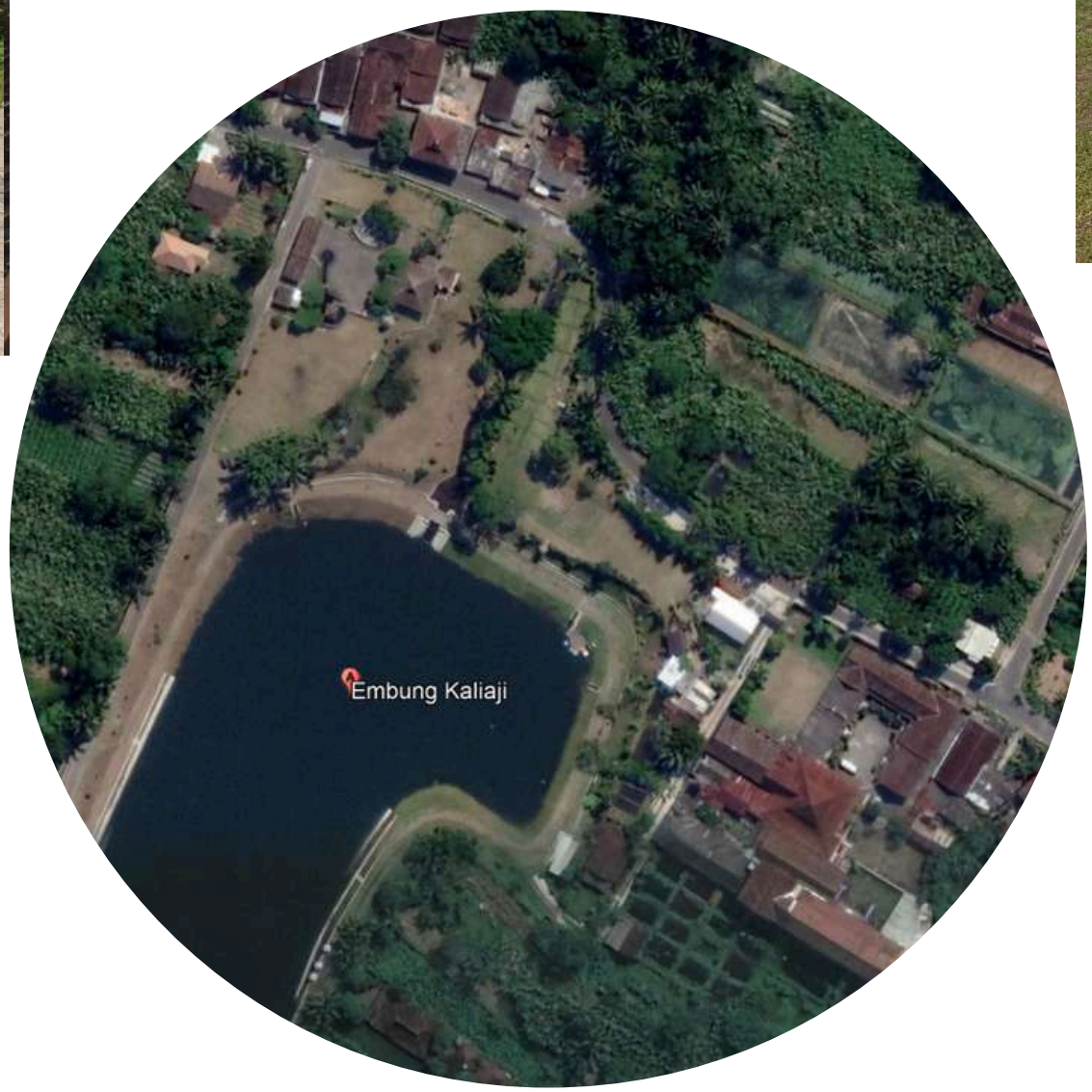
Insite Circulation



2



1







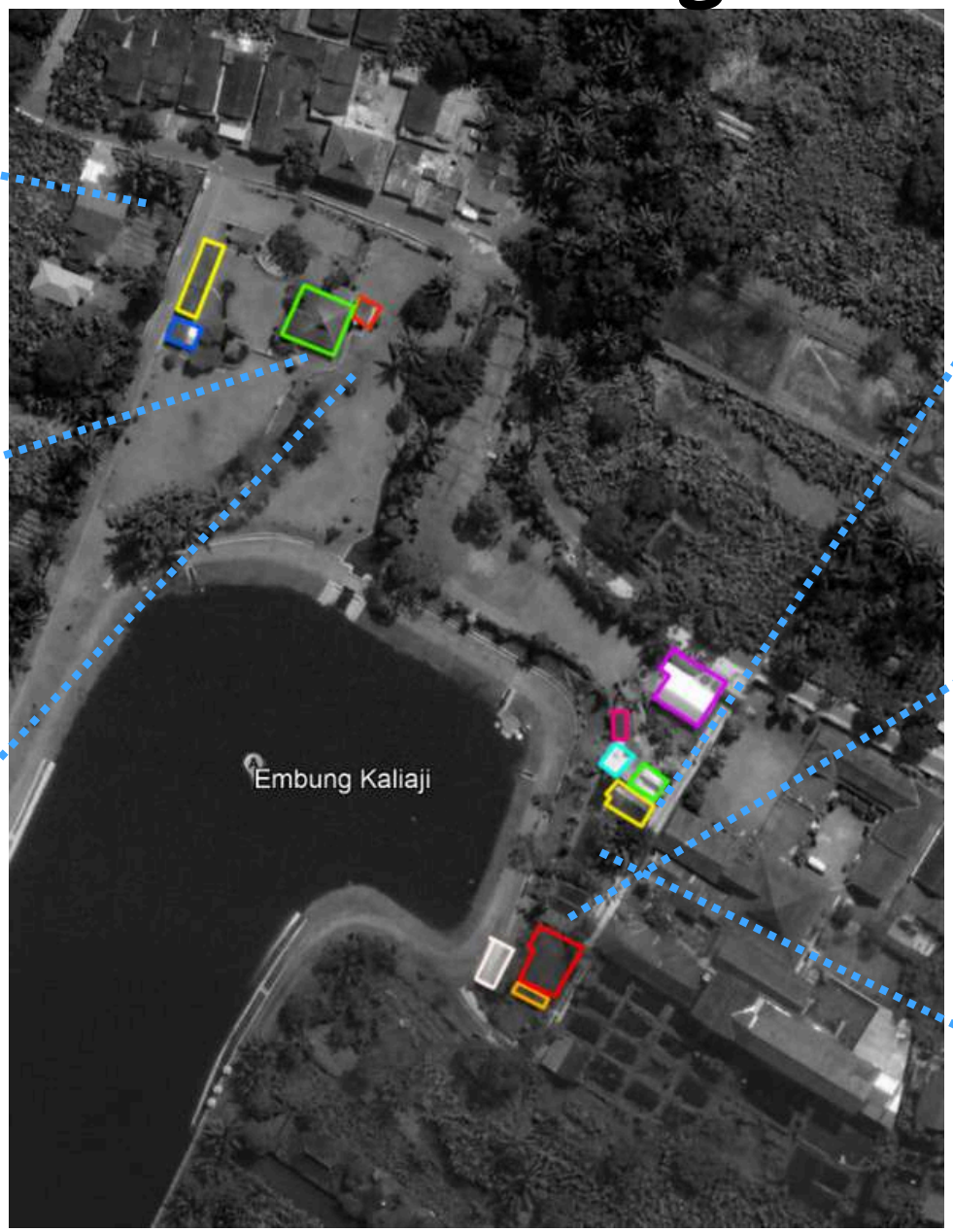
Circulation within the site is predominantly on dirt roads, with a small portion already paved with concrete.

Insite Building

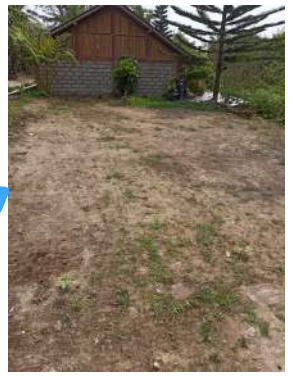












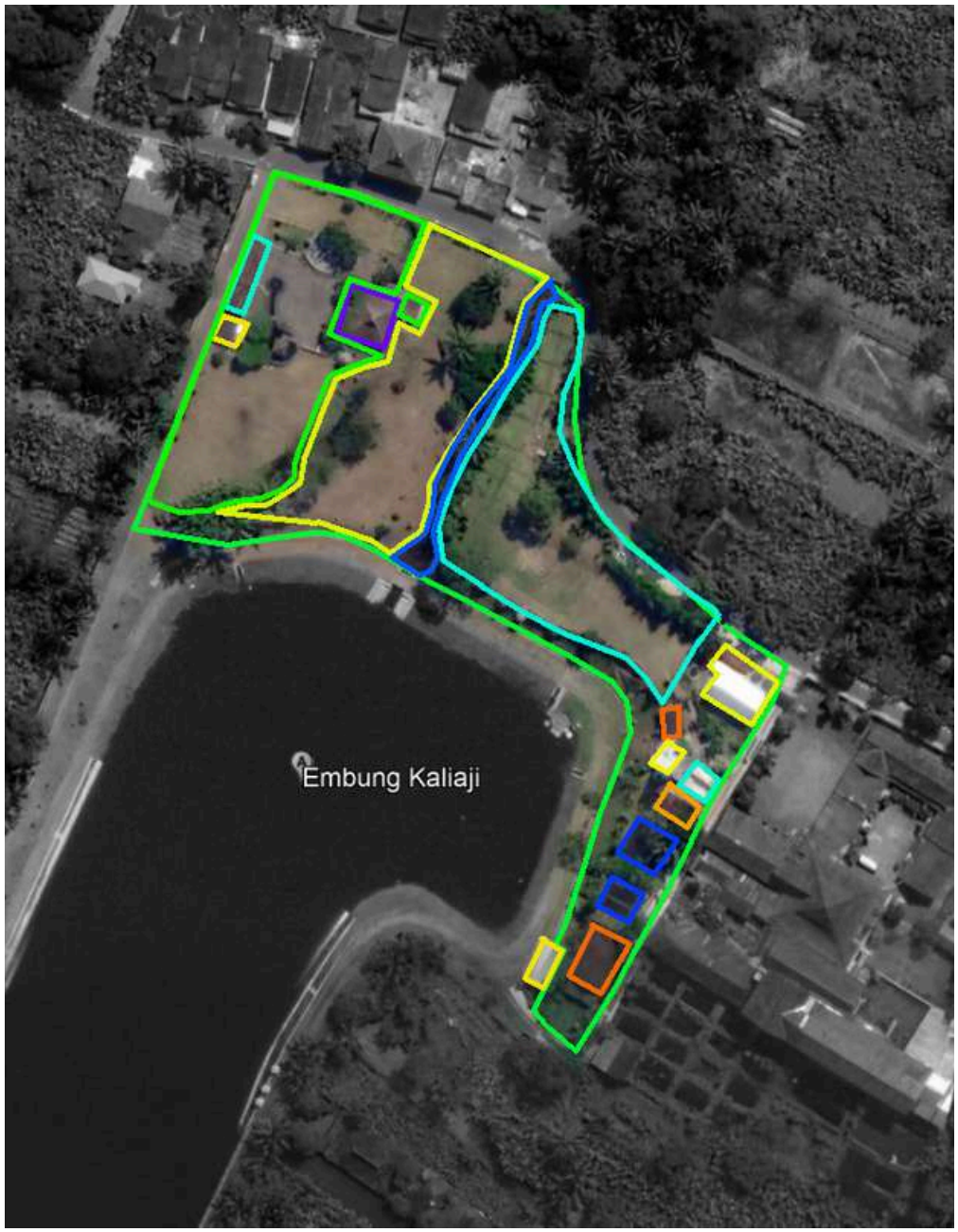


Site Circulation Picture
Source : Writer Documation and Google Earth Pro with writter modification , 2023

Within the site, there are numerous buildings, but some of them are old and abandoned (remnants of the old outbound facilities). Additionally, some structures are situated in areas that conflict with setback regulations, such as those related to cliffs, roads, and rivers.

ANALYSIS

BUILDING AND SITE EXISTING



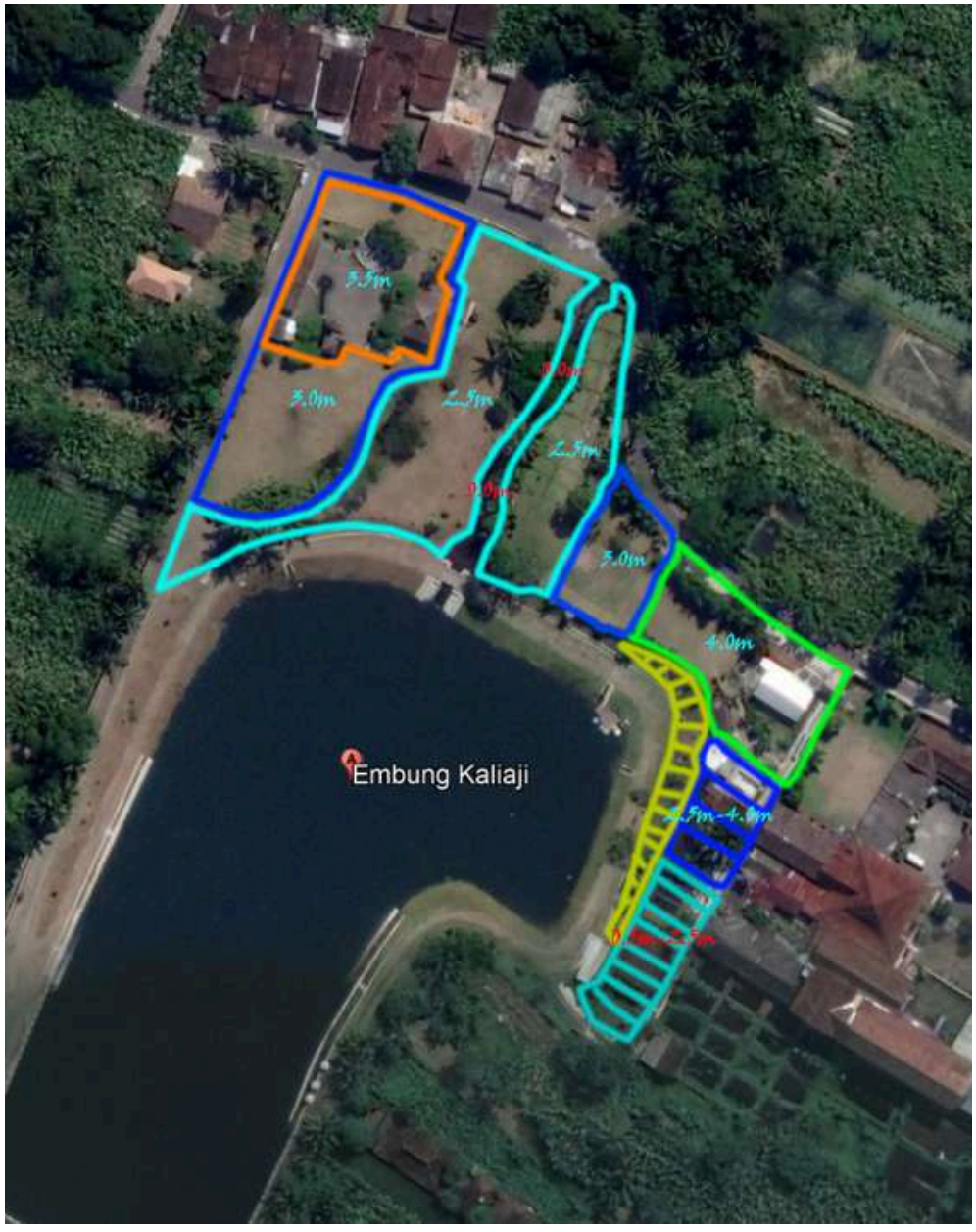
Gambar 2.1 Peta lokasi Makro - Mikro perancangan
Sumber : openstreetmap.org dengan modifikasi penulis, 2023

The site is divided into 4 zones. The first zone, located in the eastern part, is the former Turi outbound area that has been closed and is planned to be developed into Widuri. Most of the buildings on this part of the site are damaged and semi-permanent, with no water supply in the bathrooms. The second zone is the central part on the eastern side of the river, characterized by uneven terrain and dense vegetation (intended for Widuri development by the village). This area has the potential to attract tourists.

Moving on to the third zone, located on the western side of the river, is commonly used as a parking area due to its flat terrain. It can be utilized and has the potential for a snake fruit processing factory. The last zone is the western part, where there is an existing local sales area with a neglected traditional Javanese house (joglo). The structures are semi-permanent, made of makeshift materials like wood and thatch. This area has the potential to become a dining and coffee shop focusing on snake fruit products.

ANALYSIS

SITE CONTOUR EXIST



The site features uneven terrain with varying elevations, and in some areas, it is quite extreme (the eastern part borders a 4-meter-high cliff, indicated in yellow). The elevation difference between the ground level of the Kaliaji reservoir and the highest point of the site (Green) is 4 meters. This significant variation has the potential to offer excellent views for visitors and can harness strong and refreshing passive cooling winds, making it suitable for passive cooling strategies.

Additionally, the river area has a 2.5-meter elevation difference from the riverbank, making it a potential supplementary river tourism attraction to attract visitors. The different contour features of the site are described according to the accompanying picture.

ANALYSIS

Building Regulation

Based on Regulation of the Regent of Sleman Number 20 of 2021 concerning Building and Environmental Plan of Kulon Progo Regency, there are several building code that should be fulfilled. Stated on Article 13, the several building codes for trade and services area :
Meanwhile, based on RDTR Kulon Progo, the site was included as area that still should be preserved.



KDB	Max. 75%
KDH	Min 10%
KLB	3
Floor Height	Max. **4 floors**

- The regulations regarding Building Setback from road classes in the Sleman Regency area are as follows:

  1. Along the provincial road environment, the building distance from the road axis is 11.5 meters.
  2. For inter-environment roads (A) and (B), the distances are 9 meters and 8 meters, respectively.
  3. In rural environment I, the building distance from the road axis is 6 meters.
  4. For rural environment II, the building distance from the road axis is 5.5 meters.
  5. In inter-household rural environment III, the building distance from the road axis is 5 meters.
  6. For rural environment IV, the building distance from the road axis is 4.5 meters.
  7. In village/countryside roads, the building distance from the road axis is 3.5 meters.

  It is important to adhere to these regulations in the planning and construction processes within the Sleman Regency area.

The Building Land Ratio (KDB) according to Government Regulation Number 16 of 2021 is used as a factor to classify buildings based on their location. The classification based on location includes:

1. **Dense Location:** Typically found in trading/commercial centers or city centers and/or areas with a Building Land Ratio (KDB) of more than 60%.

2. **Medium Location:** Generally located in residential areas and/or areas with a Building Land Ratio (KDB) between 40% and 60%.

3. **Sparse Location:** Typically situated in the outer periphery of the city or areas serving as absorptive zones and/or areas with a Building Land Ratio (KDB) of 40% or below.

ANALYSIS

Building Regulation

Tabel 4. Kriteria penetapan lebar sempadan sungai menurut Permen PU 63/1993

No	Tipe sungai	Tipikal potongan melintang sungai	Di luar kawasa perkotaan		Di dalam kawasan perkotaan		Pasal
			Kriteria	Lebar minimal	Kriteria	Lebar minimal	
1.	Sungai bertanggul (diukur dari kaki tanggul sebelah luar)		-	5 m		3 m	Pasal 6
2.	Sungai tak bertanggul (diukur dari tepi sungai)		Sungai besar (luas DPS < 500 KM^2)	100 m	Kedalaman > 20 m	30 m	Pasal 7 & 8
					Kedalaman 3m sd. 20 m	15 m	Pasal 7 & 8
			Sungai kecil (luas DPS < 500 km^2)	50 m	Kedalaman sd. 3 m	10 m	Pasal 7 & 8
5.	Sungai yang terpengaruh pasang surut air laut (dari tepi sungai)		-	100 m	-	100 m	Pasal 10

Tabel 5. Klasifikasi sungai besar, menengah dan kecil berdasar luas DAS

Nama	Luas DAS	Lebar Sungai
Kali kecil dari mata air	0-2 km^2	0-1 m
Kali kecil	2-50 km^2	1-3 m
Sungai sedang	50-300 km^2	3-10 m
Sungai besar	> 300 km^2	> 10 m

Sumber : Heinrich & Hergt, 1999.

C. Penentuan Sempadan Sungai yang Terpengaruh Pasang Surut

Ketentuan lebar sempadan sungai pada sungai-sungai yang terpengaruh pasang-surut dapat ditemukan pada Permen PU 63/1993. Lebar sempadan sungai untuk sungai-sungai yang terpengaruh pasang surut selebar 100 m dihitung dari tepi sungai dan berlaku baik untuk kawasan perkotaan maupun di luar kawasan perkotaan. Untuk kawasan semi perkotaan tidak diatur dalam Permen

Tabel 8. Hasil kajian lebar sempadan sungai

Lebar Sempadan Sungai (Ls)	Kawasan Perdesaan		Kawasan Peri Urban (interpolasi antara kawasan pedesaan dan perkotaan		Kawasan Perkotaan			
	Kriteria	Ls	Kriteria	Ls	Kriteria		Ls	
Sungai Bertanggul (mengacu Permen PU 63/1993)	Dari kaki tanggul luar	5 m	Dari kaki tanggul luar	4 m	Dari kaki tanggul luar		3 m	
Sungai didak bertanggul (identik Permen PU 63/1993 dan mengacu litertur pada tabel 6,7 dan 8. Interpolasi untuk luasan DAS menengah dan kawasan peri urban)	Kriteria Identik dengan Permen PU 63/1993		Kriteria Identik dengan Permen PU 63/1993		Lebar (L) Sungai mengacu literatur pada tabel. 5		Kedalaman (H) Sungai, mengacu Tabel 2,3,4, 5 dan modifikasi Permen PU 63/1993	
					Kriteria lebar sungai (L)	Lebar sempadan (Ls)	Kriteria tinggi tebing (H)	Lebar sempadan (Ls)
	Sungai besar, DAS > 300 km2	100 m	DAS > 300 km2	75 m	L >15 m	50 m	H > 15 m	50 m (3 H < Ls <7,5 H)
	Sungai sedang, 50 < DAS < 300 km2 (interpolasi)	75 m	50 < DAS < 300 km2	50 m	3 m < L ≤ 15 m	25 m	3 m < H ≤ 15 m	25 m (3 H <Ls< 7,5 H)
	Sungai kecil, DAS < 50 km2	50 m	DAS < 50 km2	30 m	L ≤ 3 m	10 m	H ≤ 3 m	10 m (3 H < Ls< 7,5 H)
Tepi sungai	Tepi sungai dapat ditetapkan bersama masyarakat dengan ketentuan sesuai dengan Gambar 9, 10, 11, 12.							
Sungai terpengaruh pasang surut dan tsunami	Belum dapat direkomendasikan, perlu penelitian khusus sempadan sungai pada daerah terpengaruh pasang surut dan tsunami							

Regulation of the Minister of Public Works and Public Housing Number 28/PRT/M/2015 of 2015 concerning the Determination of River and Lake Boundary Lines specifies the regulations regarding the establishment of boundary lines for rivers and lakes.

Building Regulation

The setback line of the channel on the cliff, as referred to in Article 3 paragraph (2) letter c, is determined as follows:

a. At least 1 (one) meter away from the upper edge of the cliff if the height of the cliff is less than or equal to 1 (one) meter;
b. At least 2 (two) meters away from the upper edge of the cliff if the height of the cliff is more than 1 (one) meter up to 2 (two) meters;
c. At least 3 (three) meters away from the upper edge of the cliff if the height of the cliff is more than 2 (two) meters up to 3 (three) meters;
d. At least equal to the height of the cliff from the upper edge of the cliff if the height of the cliff is more than 3 (three) meters.

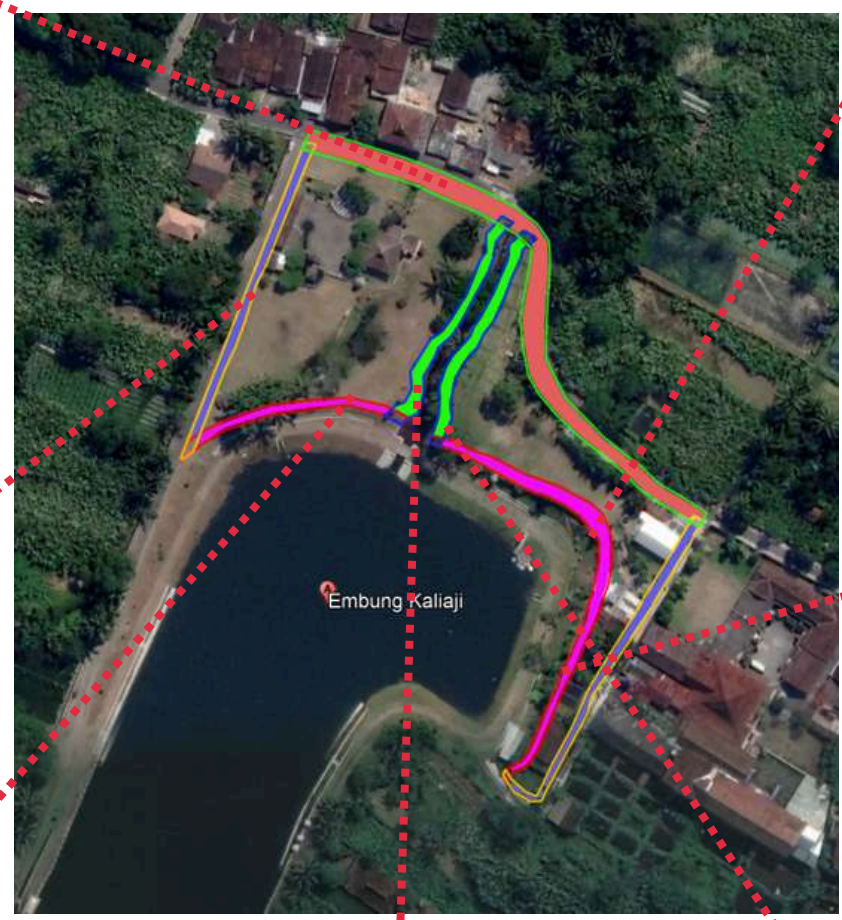
The setback line of the embankment irrigation channel, as referred to in Article 3 paragraph (2) letter b, is determined as follows:

a. At least 1 (one) meter away from the left and right edges of the embankment if the height of the embankment is less than or equal to 1 (one) meter;
b. At least 2 (two) meters away from the left and right edges of the embankment if the height of the embankment is more than 1 (one) meter up to 2 (two) meters;
c. At least 3 (three) meters away from the left and right edges of the embankment if the height of the embankment is more than 2 (two) meters up to 3 (three) meters;
d. At least equal to the height of the embankment from the left and right edges of the embankment if the height of the embankment is more than 3 (three) meters.

ANALYSIS

BUILDING SETBACK ACCORDING TO REGULATION

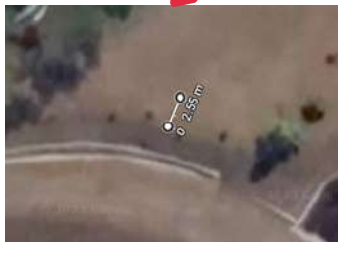








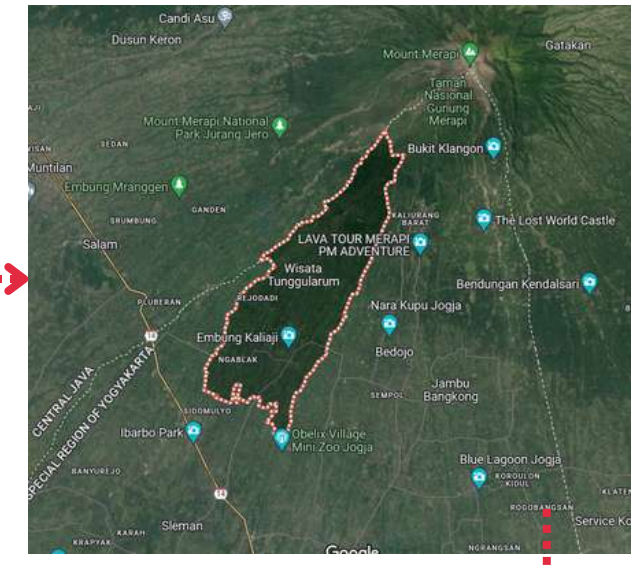








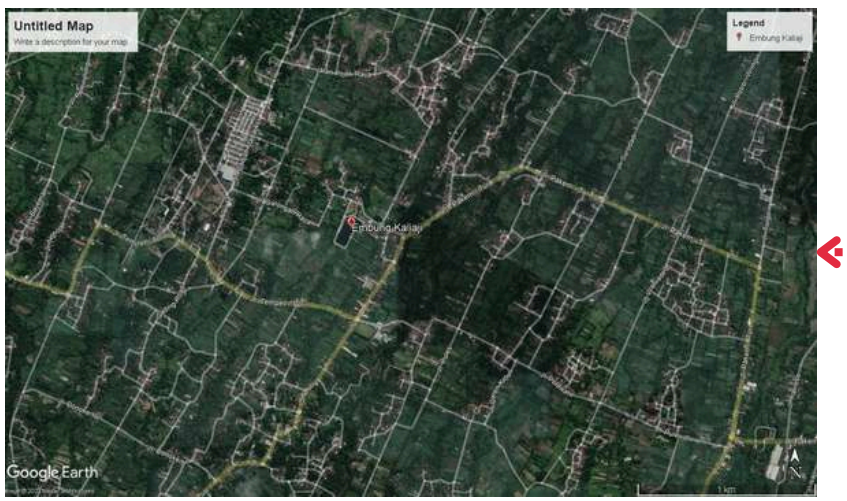




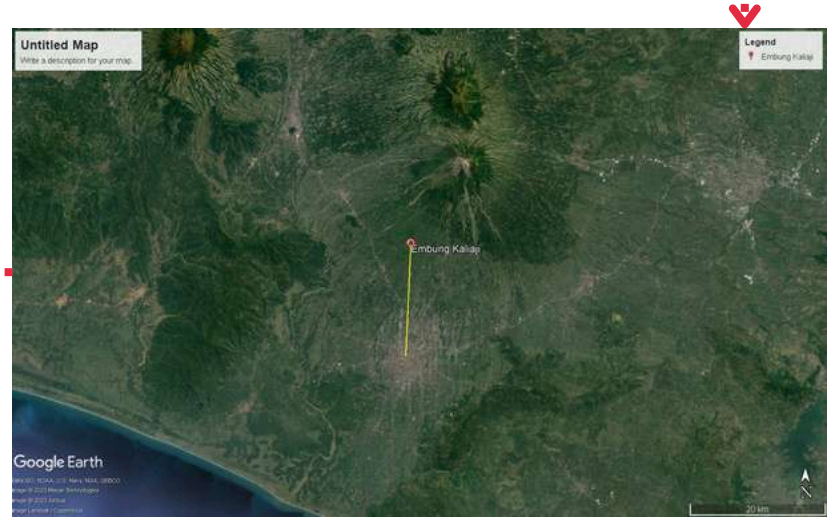
Location : WONOKERTO, TURI, SLEMAN, RT.003/RW.028, Sangurejo, Donokerto, Kec. Turi, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55551



SITE
LOCATION



9234 m2





SITE LANDUSE



EXPLORATION OF ECOTOURISME

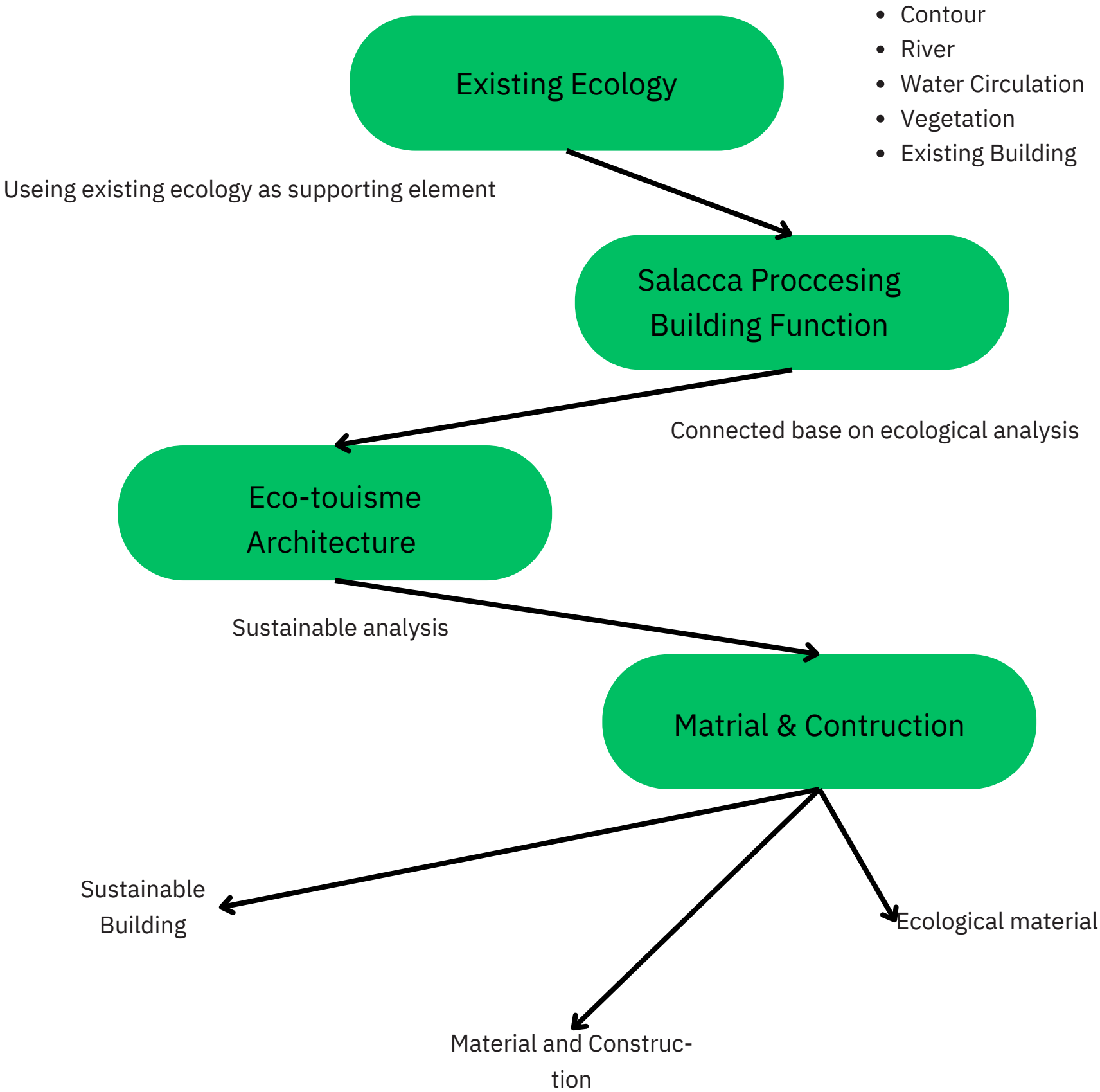
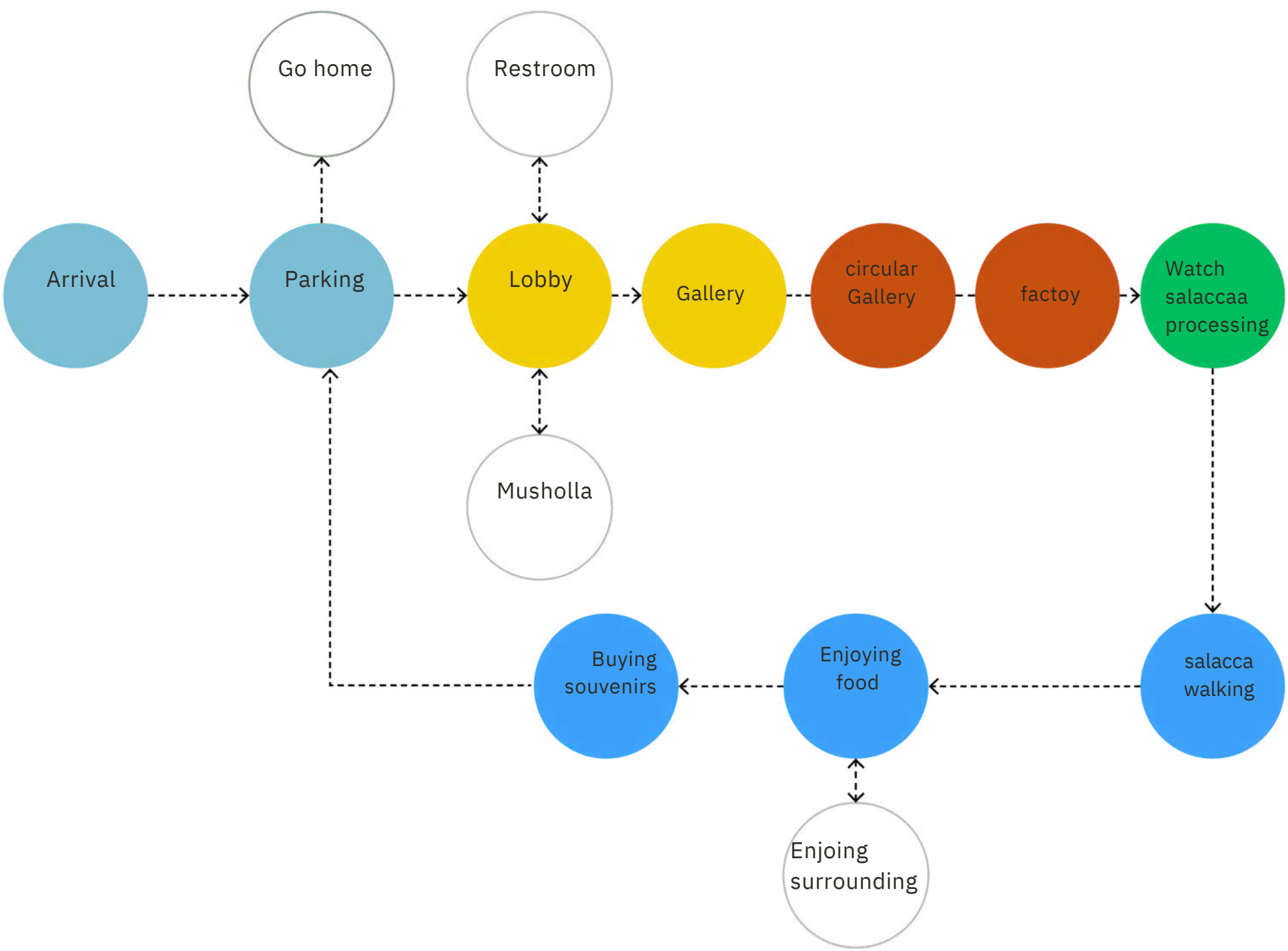


Figure 2.1 Mind Map of Ecotourismne Architecture Approach implementation on design Source : Author, 2024

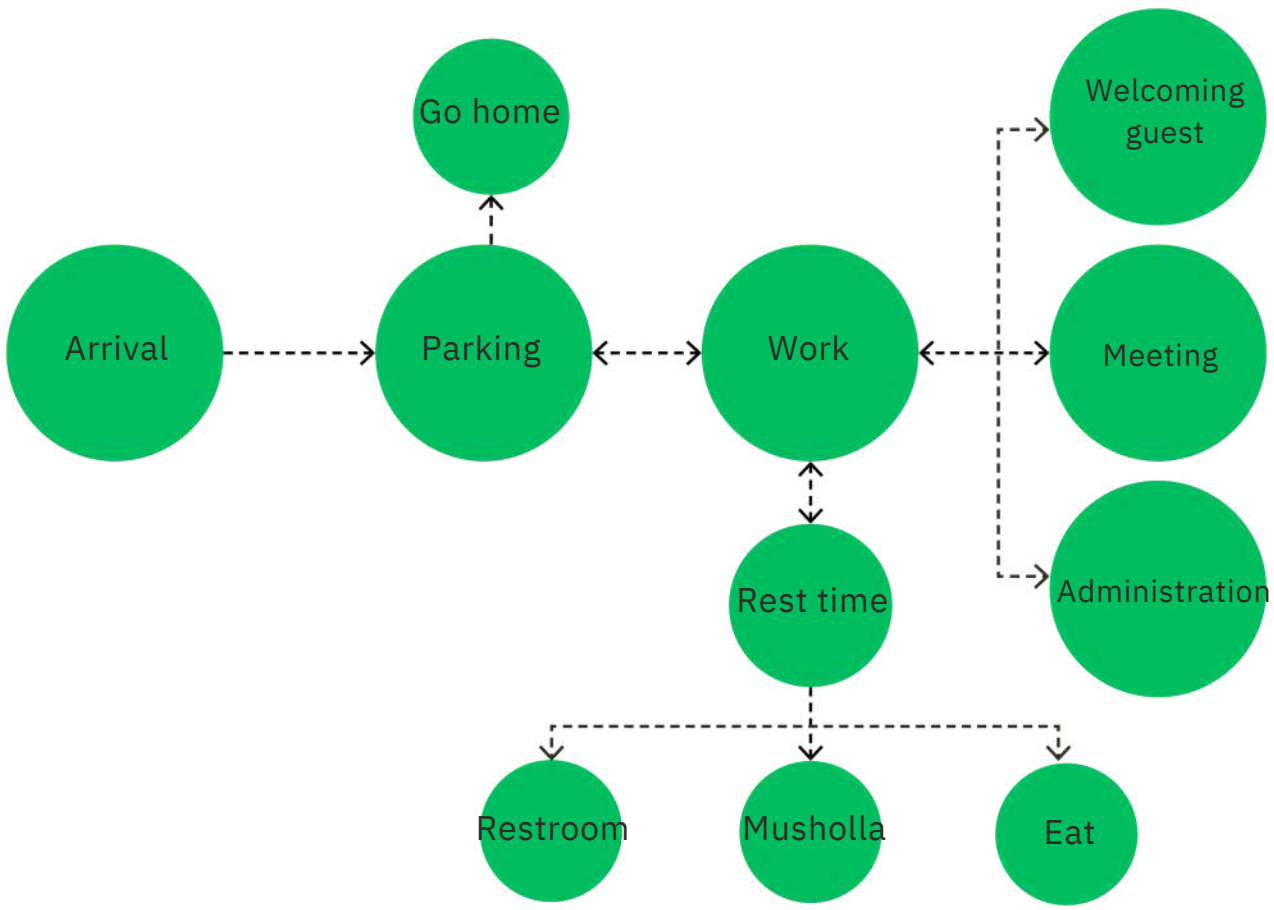
ANALYSIS

ACTIVITIES FLOW ANALYSIS

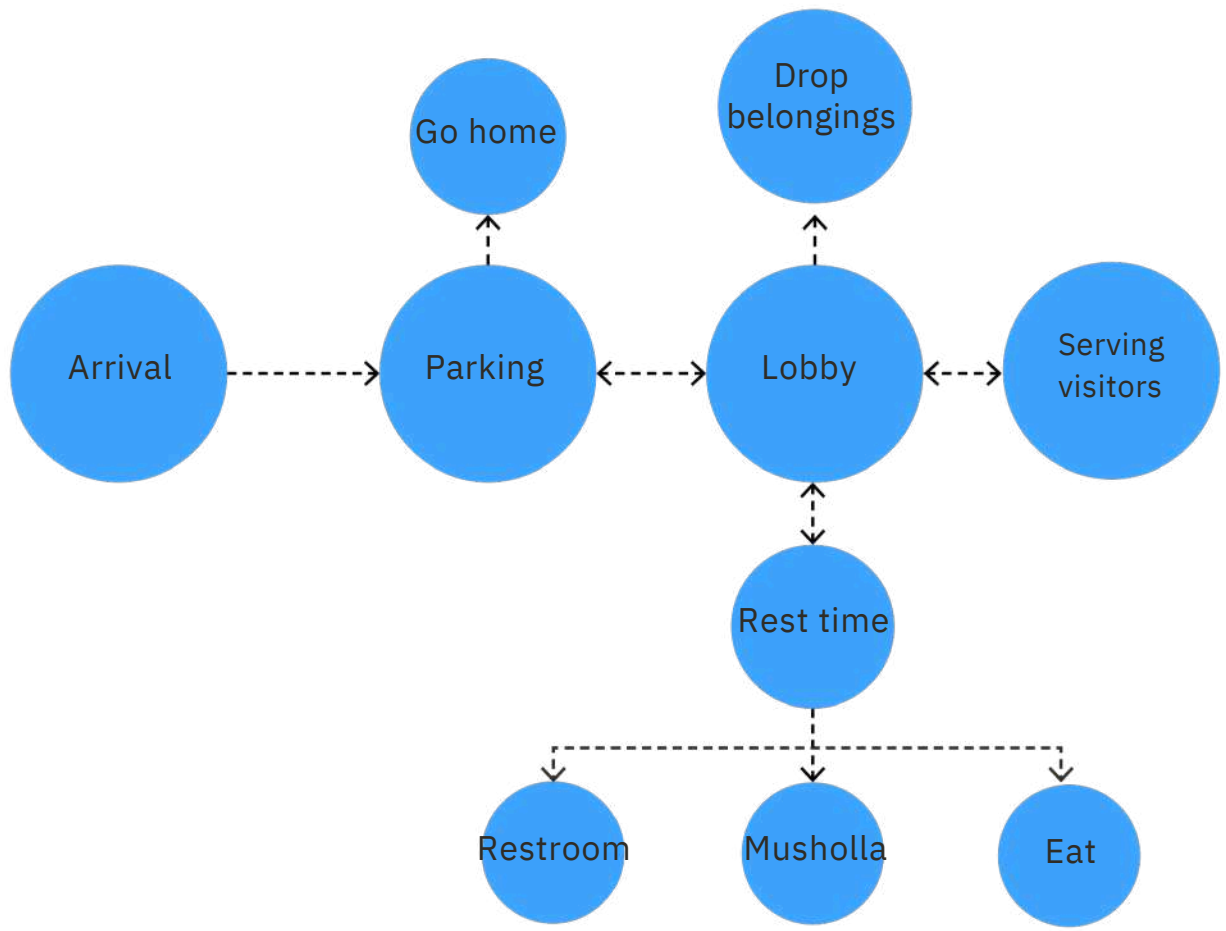
Visitors



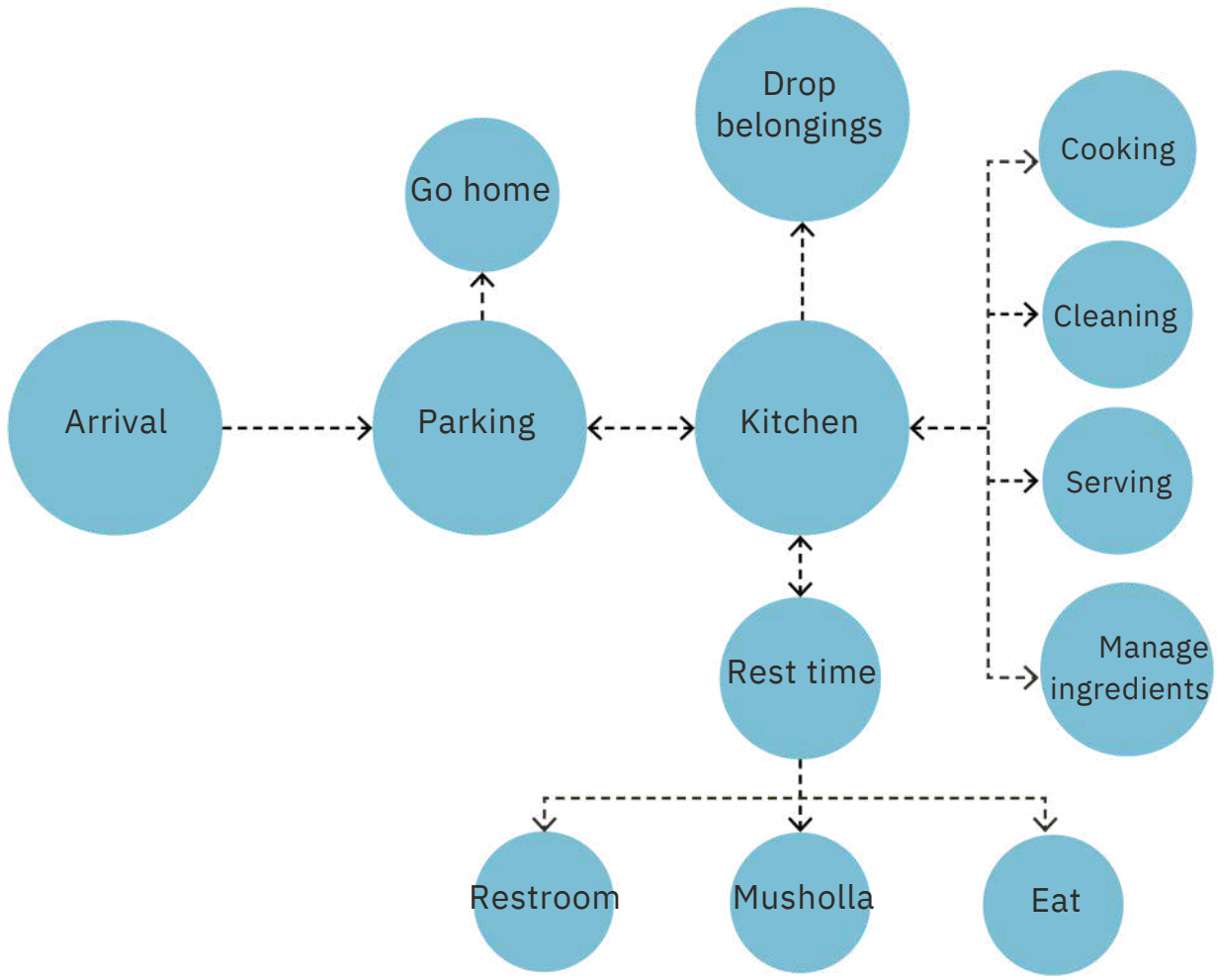
Management -
Office Staff



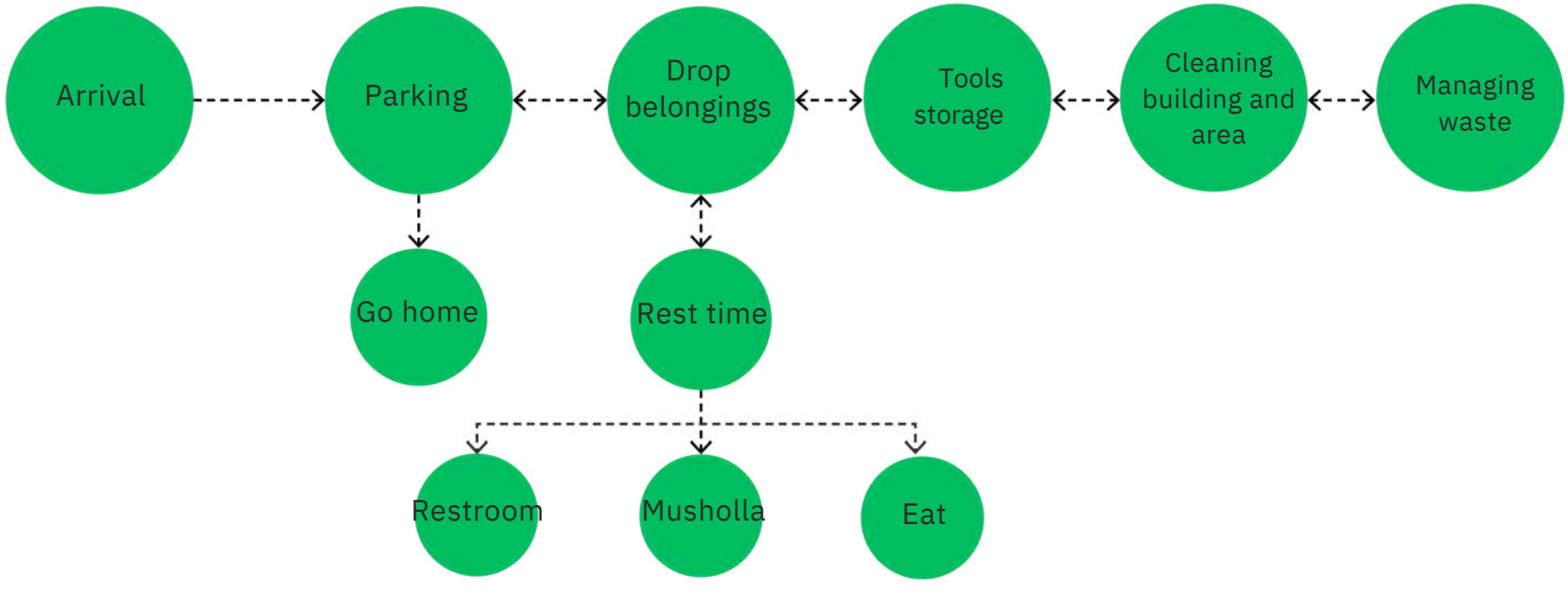
Management -
Receiption Staff



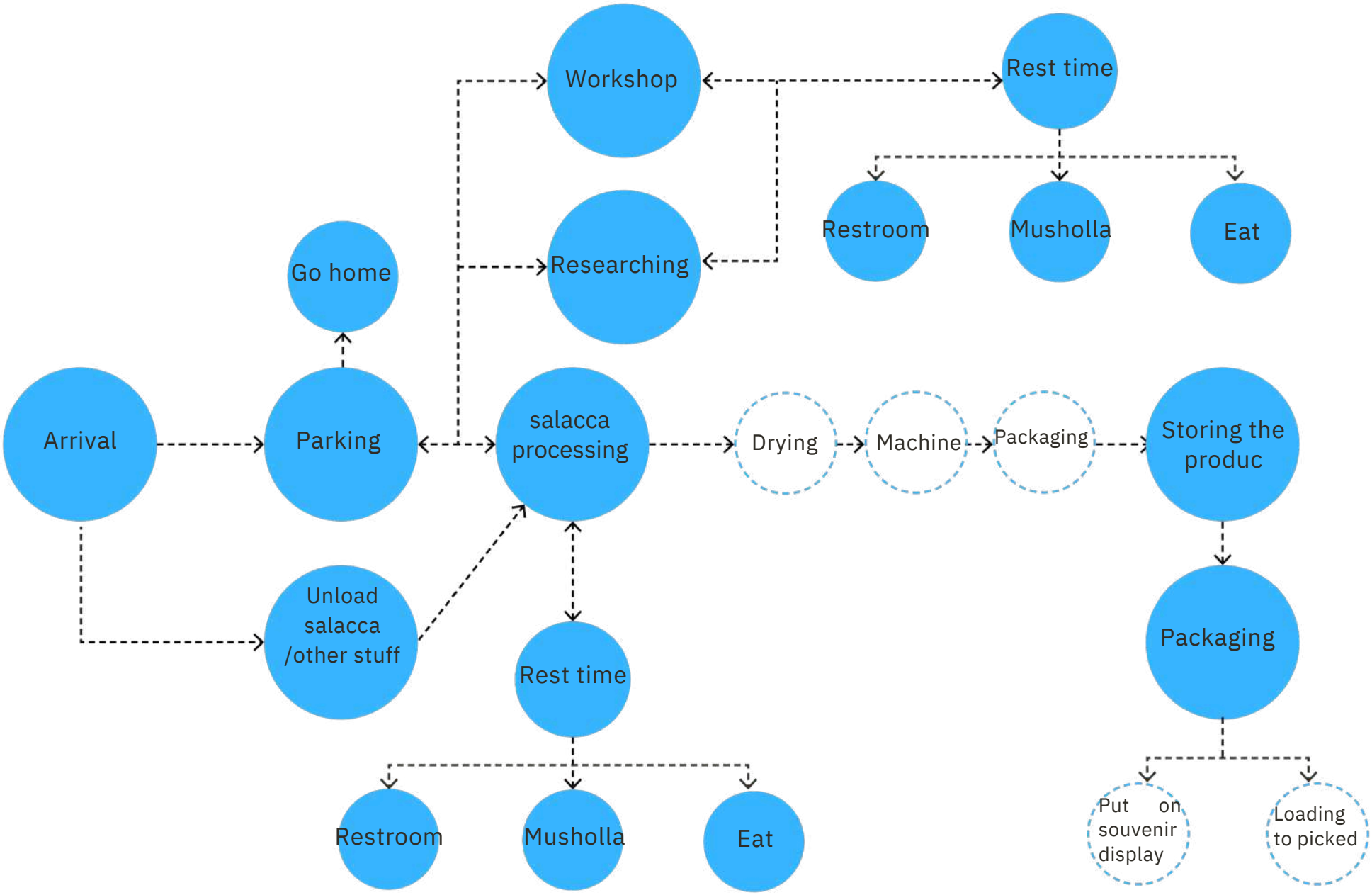
Management - Kitchen Staff



Management - Cleaning Staff



Community


Workshop
Rest time
Restroom
Musholla
Eat
Researching
Go home
Arrival
Parking
salacca processing
Drying
Machine
Packaging
Storing the produc
Unload salacca /other stuff
Rest time
Restroom
Musholla
Eat
Packaging
Put on souvenir display
Loading to picked


Embung Kaliaji

ANALYSIS

SPACE ANALYSIS

Information

Activities	Character	Spesific functions	Accomodation
Understanding brief information about the site	Public, open greeting	Giving information and education about salacca and the existing site	Information centre/Lobby

Gallery

Activities Character		Spesific functions	Accomodation
Observing/ collecting i	infor-Interactive, slow movemationment, inclusive	Giving information and education about sallaca and the existing site	Gallery, audio visual room
Research	Private, serious	Research activities (observation, Studying	Laborator y
Workshop	Condusive, semi-private	Discussion, presentation, group activities	Workshop room
Watch sallaca processing	Open, transparant	Educate the visitors about how the sallaca produc will be made	Observation deck

salacca Community Area

Activities	Character	Spesific functions	Accomodation
sallaca processing	Wide, could be displayed to the visitors	Depend On Product	Factory
Sharing/Presentation	Open, inclusive	Sharing knowledge to the specific visitors	Workshop room

Management and Community Services

Activities	Character	Spesific functions	Accomodation
Cleaning Private	Private	Storing cleaning ap-plieances	Cleaning storage
Cooking Private	Private	Preparation, frying, grill, washing	Kitchen
Working	Private	Office work, meeting, greeting guest	Office, meeting room, guest room
Drop belongings	Private	Dropping belongings be-fore going to work	Locker room

Visitor Service

Activities	Character	Spesific functions	Accomodation
Doing bological business	Private, clean, comfortable	Complete biological busi-ness	Toilet (rest room)
Praying	Private, clean, comfortable	Praying (sholat)	Musholla, ablution area

ANALYSIS

PROPERTY SIZE

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
Information Area	Information	1.5 sqm/person	2	1	3
	Centre/Lobby Office	2 sqm/person	8		16
	Locker Room	12 sqm			12
	Janitor	6 sqm			6
	Total				37
	Circulation (40%)				51,8

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
Education and Gallery	Gallery	2 sqm/person	75	1	150
	Laboratory	1.5 sqm/person	10	1	15
	Workshop room	1.5 sqm/person	15	1	22.5
	Observation deck	1.5 sqm/person	15	1	22.5
	Total				210
	Circulation (40%)				294

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
Accessibility	Souvenir Shop	2 sqm/person	10	1	20
	salacca kitchen	3 sqm/person	20	1	60
	cafeteria	16 sqm		1	16
	Storage	6 sqm		1	6
	Total				102
	Circulation (40%)				142,8

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
sallaca Area	Processing Centre	400 sqm			

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
Parking	Car parking	12.5 sqm	10		125
	Motorcycle parking	1.5 sqm	30		45
	Total				170
	Circulation (30%)				221

Function	Space	Standard	Capac-ity	Quantity	Total Area (sqm)
Service	Toilet	1.5 sqm/person	4	3	18
	Musholla	1.5 sqm/person	8	1	12
	Ablution	1 sqm/person	2	2	4
	Security	1.5 sqm/person	2	1	3
	Ticketing	1.5 sqm/person	2	1	3
	Total				40
	Circulation (20%)				48

ANALYSIS

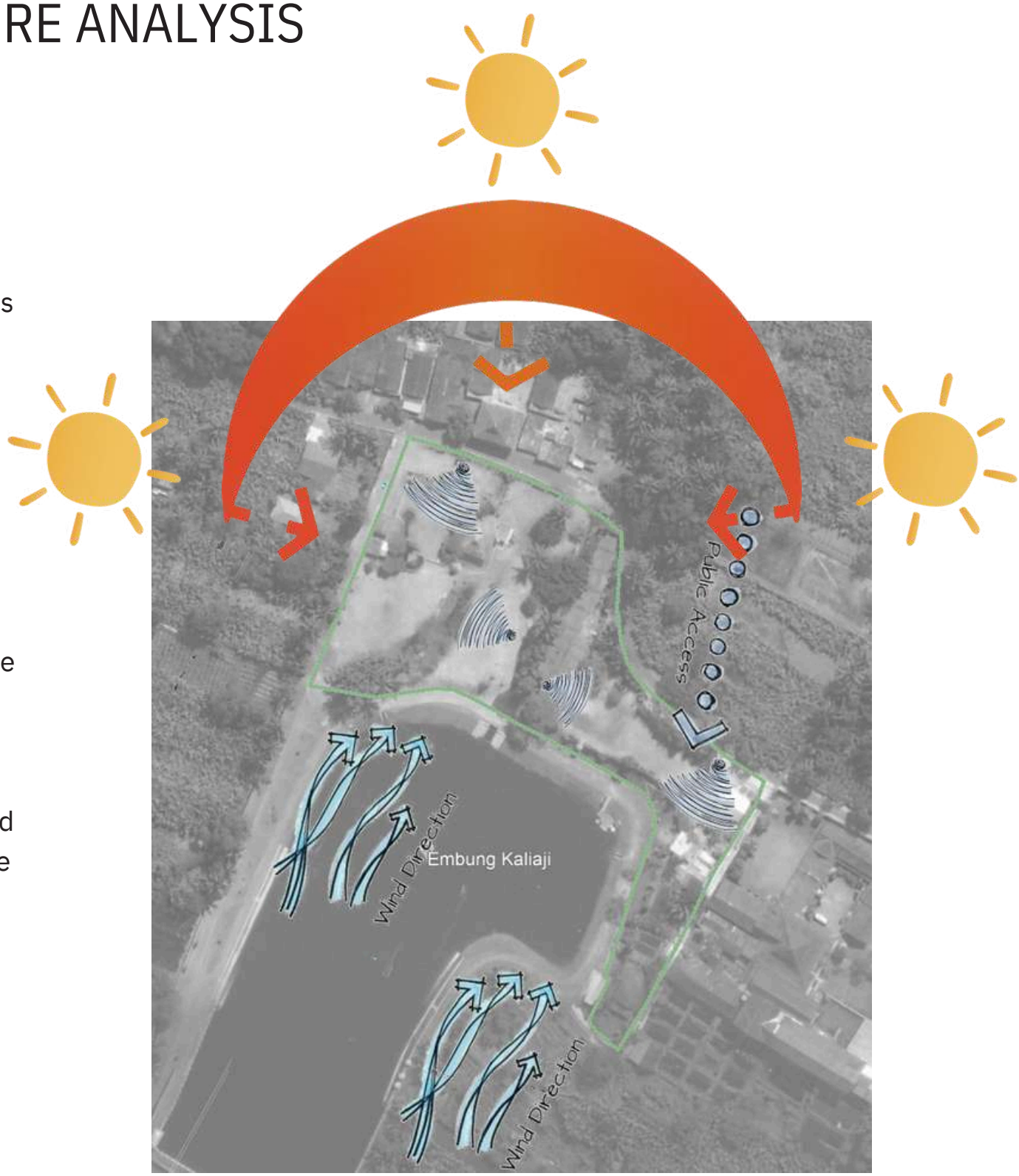
SURROUNDING NATURE ANALYSIS

The surrounding area is abundant with natural elements that can support the building.

WIND:
The wind blows from the south at speeds ranging from 5 - 22 m/s, providing potential for passive cooling. Due to the cool and humid atmosphere in Turi, it is excellent for integrating a natural ambiance into the site.

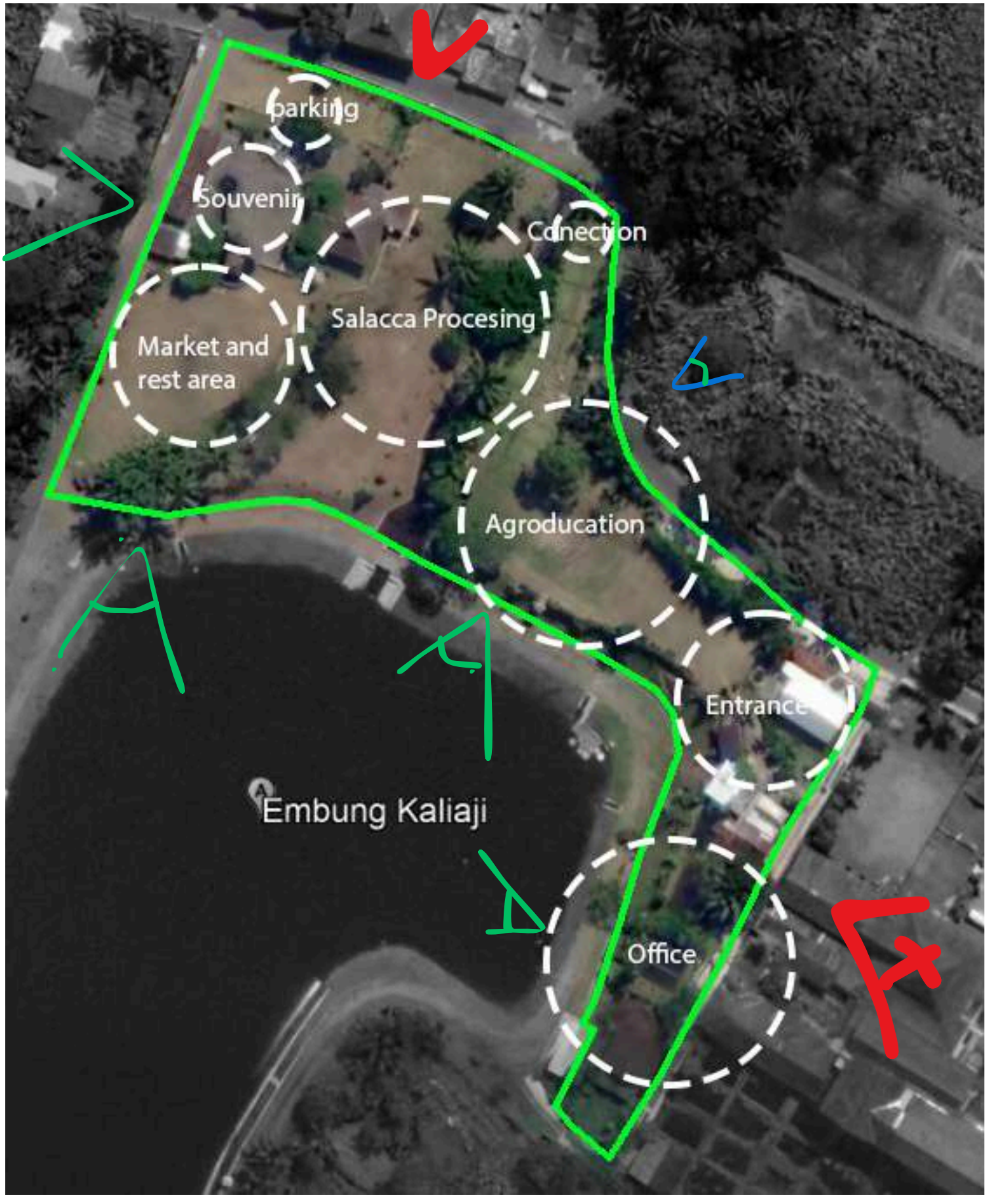
NOISE:
Noise originating from vehicles is categorized as undesirable, so efforts are made to avoid it by placing closed buildings near the road to buffer the sounds. Positive noises such as the sound of flowing water from the river and the wind are embraced. Open spaces are strategically placed to create a natural atmosphere within the site by utilizing the surrounding natural conditions.

SUNLIGHT:
Morning sunlight brings warmth to the site, as temperatures can drop to 17 degrees Celsius at night. Utilizing and emphasizing the orientation of morning sunlight over afternoon sunlight becomes crucial for natural lighting within the site.



ANALYSIS

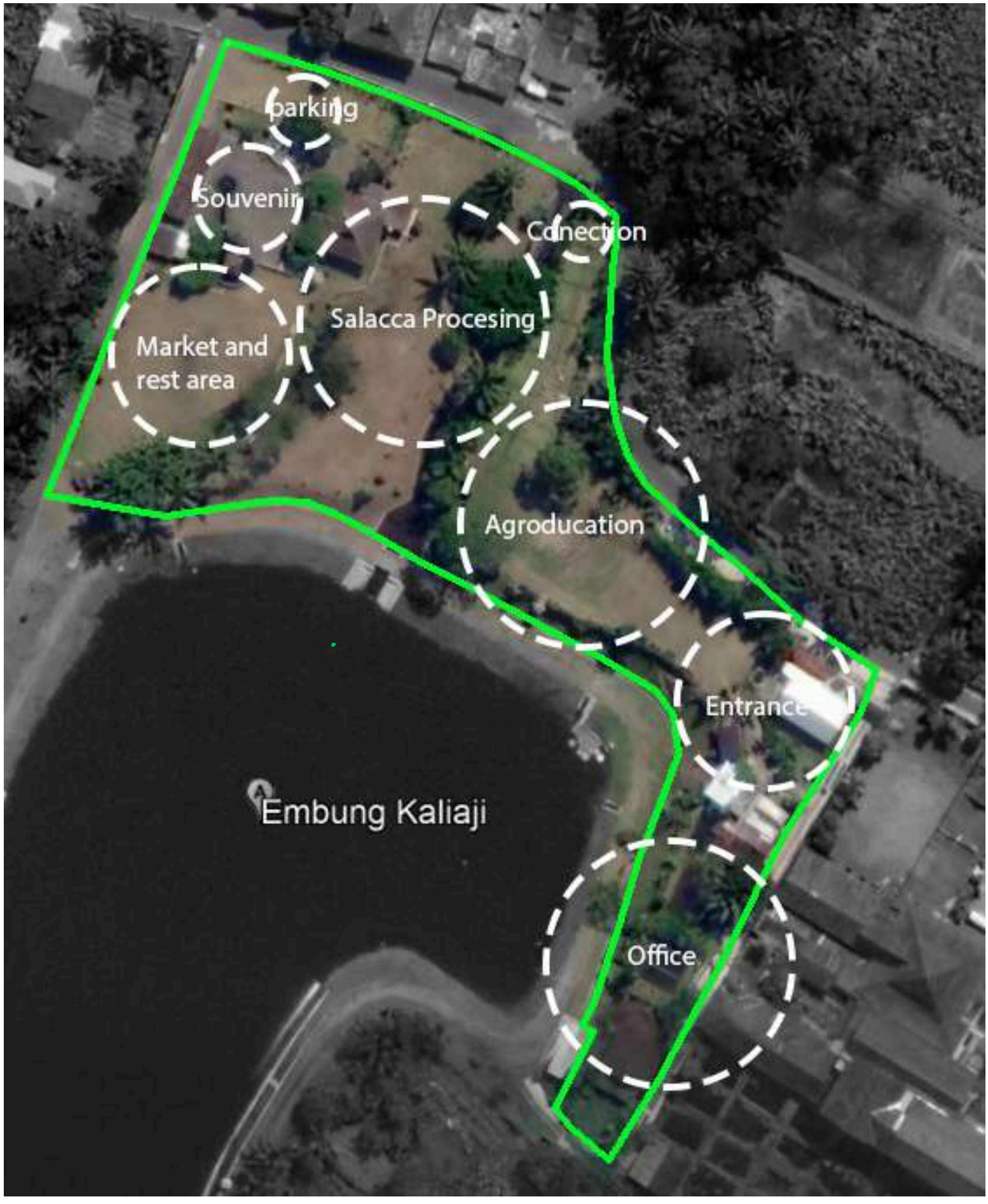
SPATIAL PLACEMENT ANALYSIS



"Based on the bubble diagram analysis, activity analysis, and site condition analysis such as wind, sunlight, topography, and water, the placement is determined as shown in the accompanying picture."

ANALYSIS

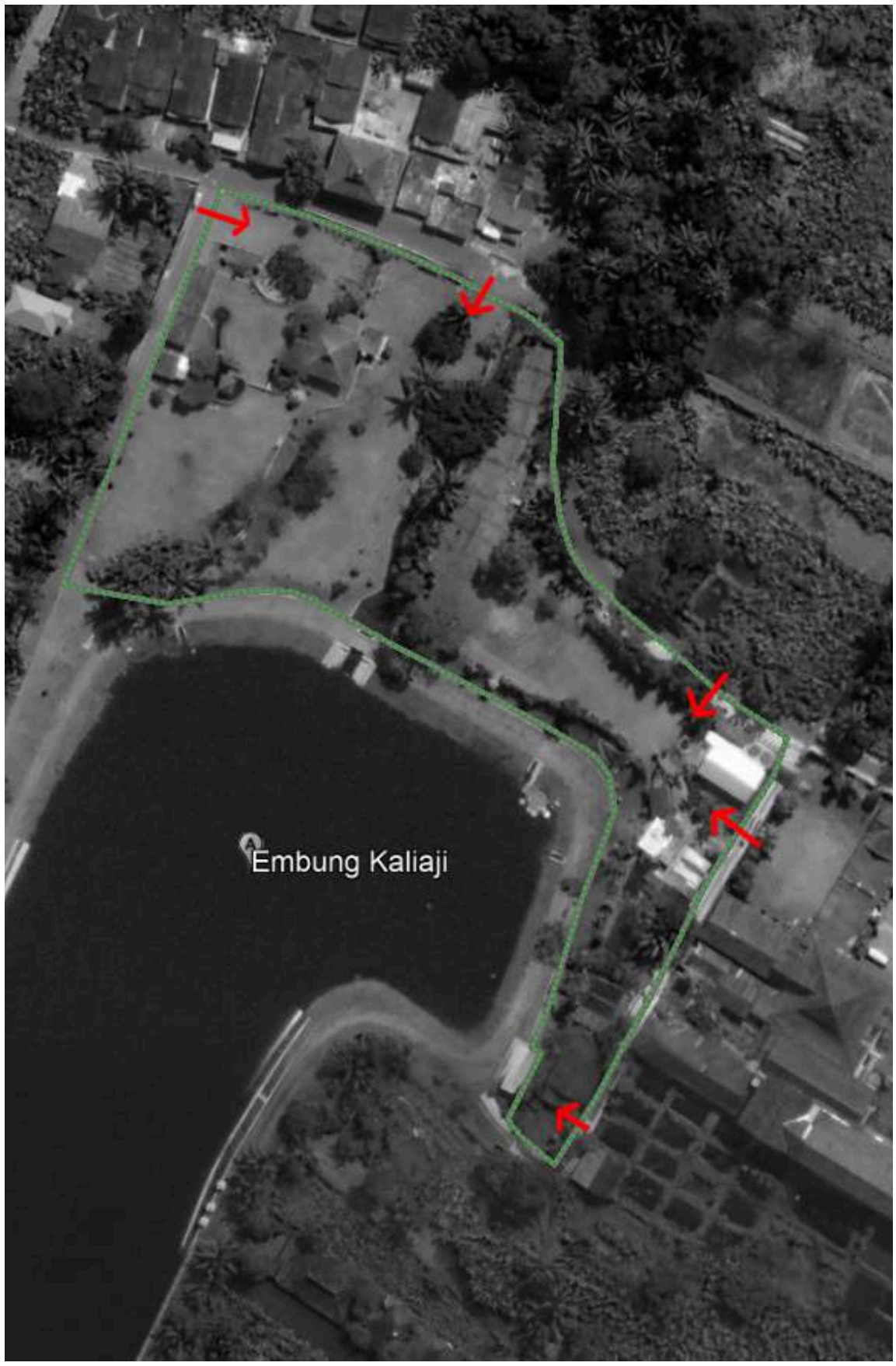
SPATIAL PLACEMENT ANALYSIS



ANALYSIS

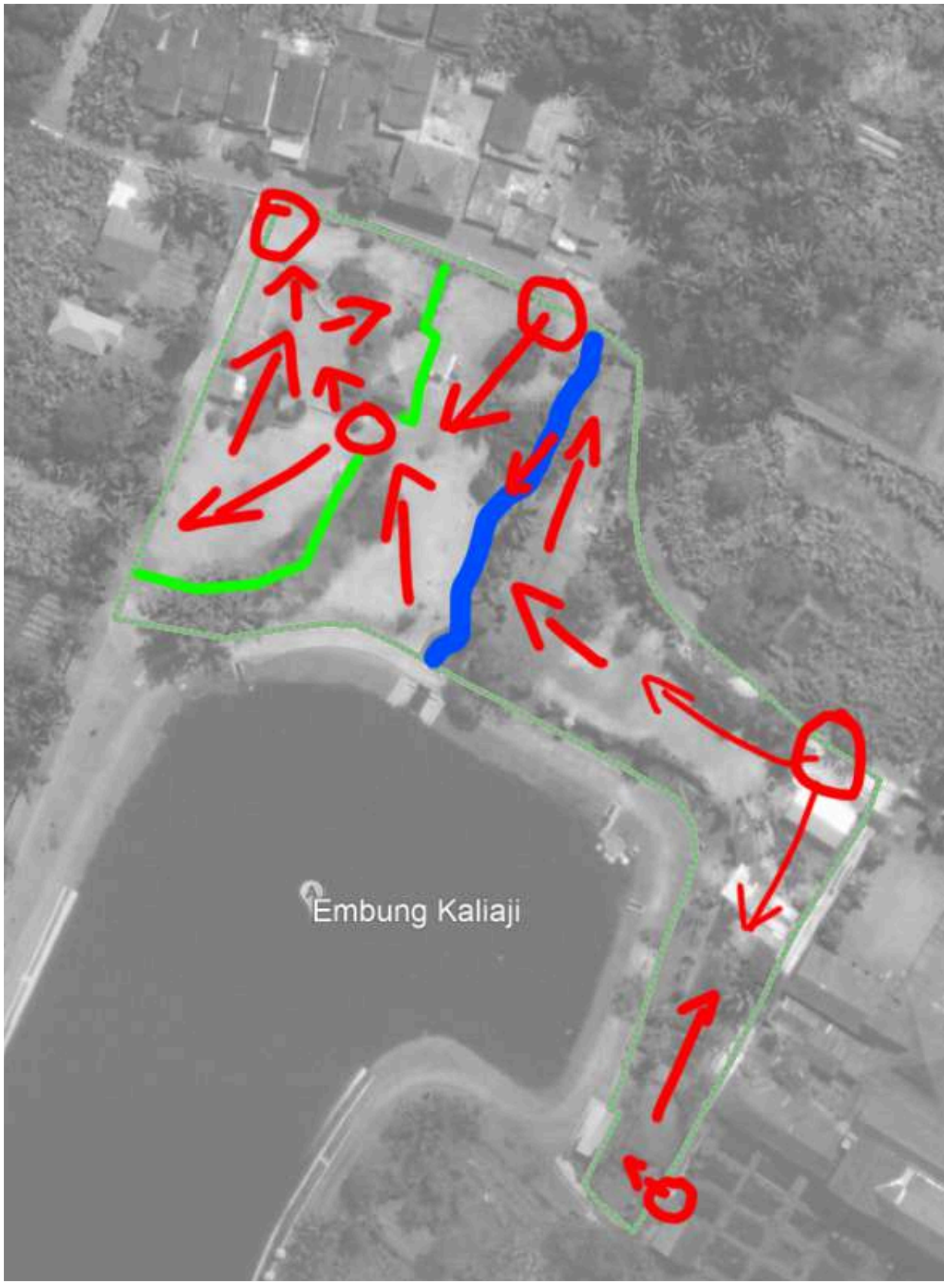
SPATIAL PLACEMENT ANALYSIS ENTRANCE

"Based on the entrance analysis, the focus is on utilizing entrance points as shown in the diagram to facilitate activities within the site."



ANALYSIS

CIRCULATION ANALYSIS

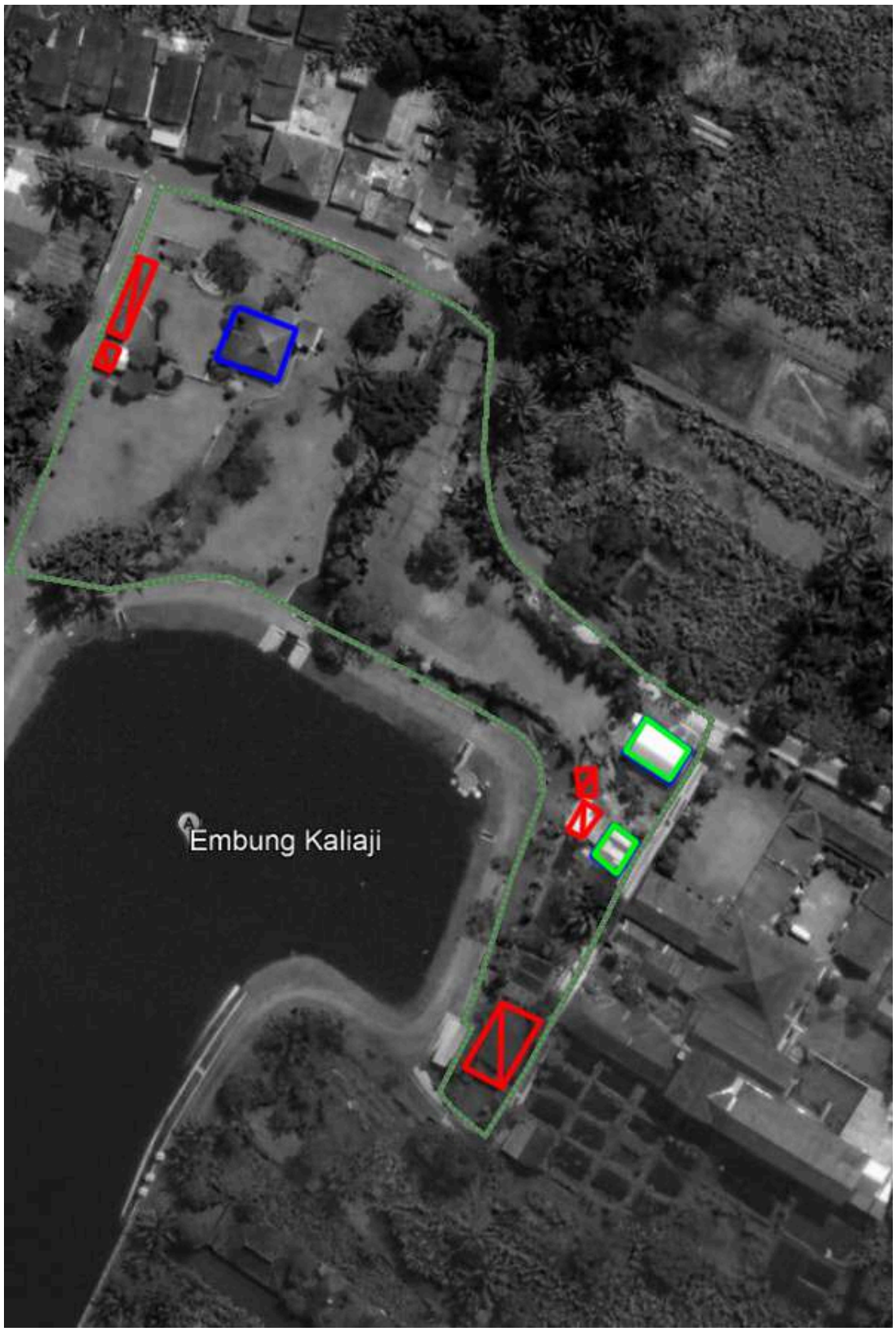


"The diagram alongside illustrates the potential analysis results of combinations with the previously analyzed entrances."

ANALYSIS

SPATIAL PLACEMENT ANALYSIS

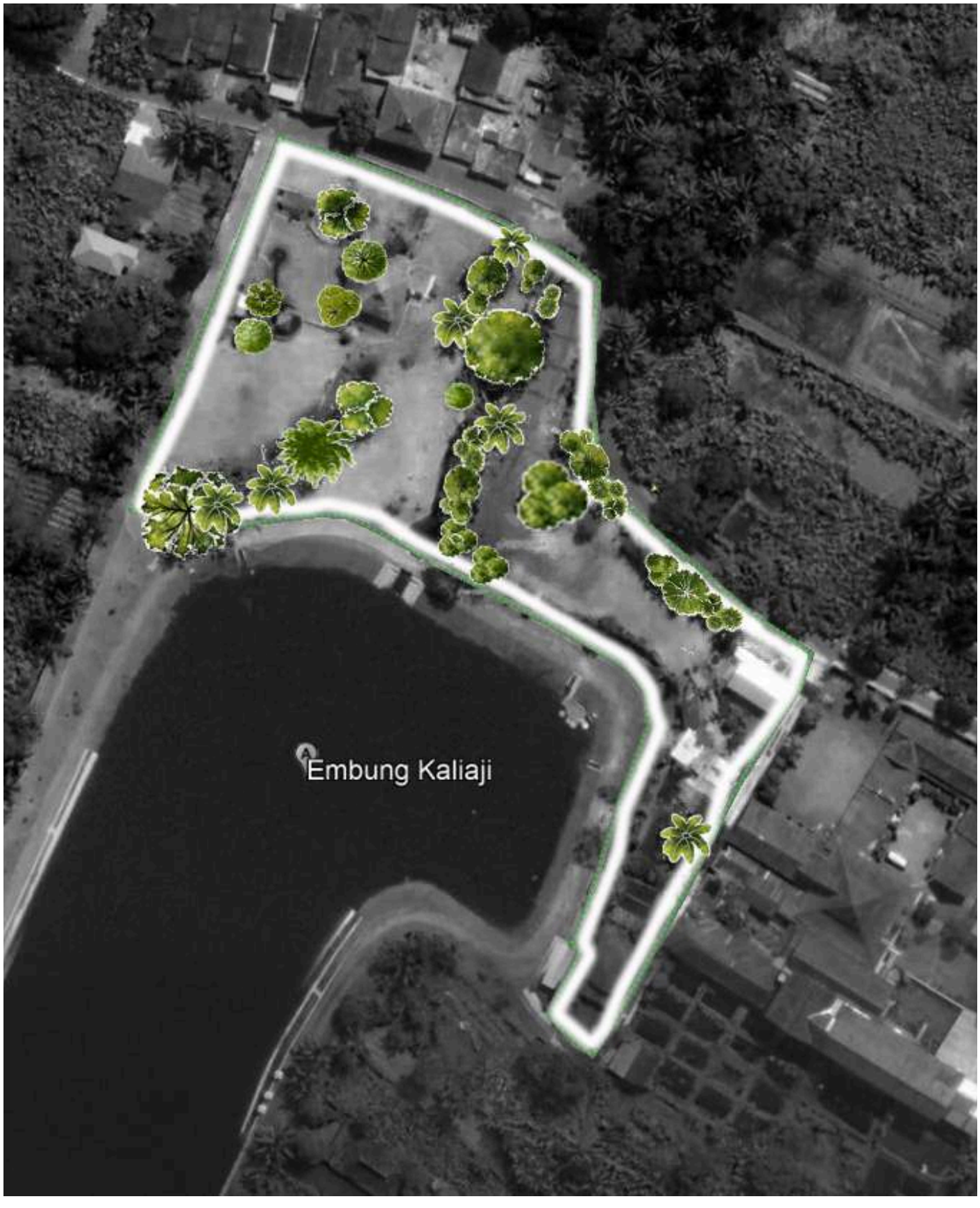
"The red building is a structure that was demolished due to regulatory violations and being located in a hazardous area. The blue building is a structure whose framework is repurposed to support the construction of a new building. Meanwhile, the green building is a relocated structure, where its framework, especially in the case of joglo structures, is reused for a new building."



ANALYSIS

VEGETATION ANALYSIS

"The vegetation within the site is highly diverse, including trees such as ketapang, coconut, shrubs, mango, banyan, and bamboo. Large canopy plants will be incorporated into the landscaping of new buildings without alterations. Shrubbery will be cleared and arranged, while bamboo along the river will be repurposed as a structural element for new buildings, with the shoots retained on the site as part of the new vegetation. Hazardous trees will be cut down and repurposed, for instance, coconut trees on the edge of the cliff will be utilized as a structural element."



Salacca Procces Pre-harvest

The process of planting salak involves several crucial steps from fertilization to harvesting. Here are the common steps in the salak planting process:

1. Location Selection:

Choose a location with sufficient sunlight.
Ensure good soil drainage to prevent waterlogging.
Make sure there are no threatening pests or diseases in the vicinity.

2. Fertilization:

Conduct initial fertilization before planting to prepare the soil.
Use organic or compost fertilizers to improve soil fertility.
Determine the fertilizer dosage according to the soil type and salak's needs.

3. Seed Selection:

Choose healthy salak seeds free from diseases and pests.
Seeds can be salak seeds that are planted or previously grown seedlings.

4. Planting:

Dig planting holes of adequate size and depth according to the seedling's root size.
Plant the seedling in the hole and cover it with soil.
Maintain a sufficient distance between salak plants for optimal growth.

5. Care:

Water regularly, especially during dry seasons.
Apply fertilizer periodically according to the recommended fertilization schedule.
Regularly inspect the plants to identify signs of diseases or pests and take immediate control measures.

6. Pruning:

Pruning is necessary to maintain the shape and health of the tree.
Pruning can help promote the growth of good-quality fruit.

7. Protection from Pests and Diseases:

Apply appropriate pest and disease control methods, such as using organic insecticides or fungicides when needed.

8. Harvesting:

Salak is typically harvested once it reaches maturity. The timing of harvesting depends on the variety.
Harvesting should be done carefully to avoid damaging the fruit.

Source : Dinas Pertanian Dan Ketahanan Pangan Sleman

Salacca Procces Post-harvest

The salak processing involves a series of steps to turn fresh salak fruit into final products that can be consumed or sold. Here are the common steps in salak processing and some of the final products:

1. **Harvesting:**
Salak fruits are harvested when they are ripe. The harvesting period can vary depending on the salak variety.



2. **Cleaning:**
After harvesting, salak is cleaned to remove dust and dirt.

3. **Sorting:**
Cleaned salak is sorted to separate the defective or unfit ones from the good quality ones.

4. **Cutting:**
Salak is then cut to remove the outer skin and seeds. This process can be done manually or with machines.

5. **Processing:**
The cut salak can be processed into various products.

Selai Salak: Daging salak diolah menjadi selai yang bisa digunakan sebagai olesan roti atau tambahan makanan.	Manisan Salak: Potongan salak dimaniskan dan dikeringkan untuk membuat manisan.	Jus Salak: Daging salak dijus untuk menghasilkan jus segar.	Keripik Salak: Salak dipotong tipis dan dikeringkan untuk membuat keripik.	Kopi Biji Salak pengolahan seperti kopi biasa

6. **Packaging:**
The final products are packaged in appropriate containers, such as bottles, cans, jars, or bags, depending on the type of product.

7. **Distribution:**
The final products are distributed to both local and international markets for sale to consumers.

Source : Dinas Pertanian Dan Ketahanan Pangan Sleman

ANALYSIS

APEL PROCESSING INDUSTRIAL







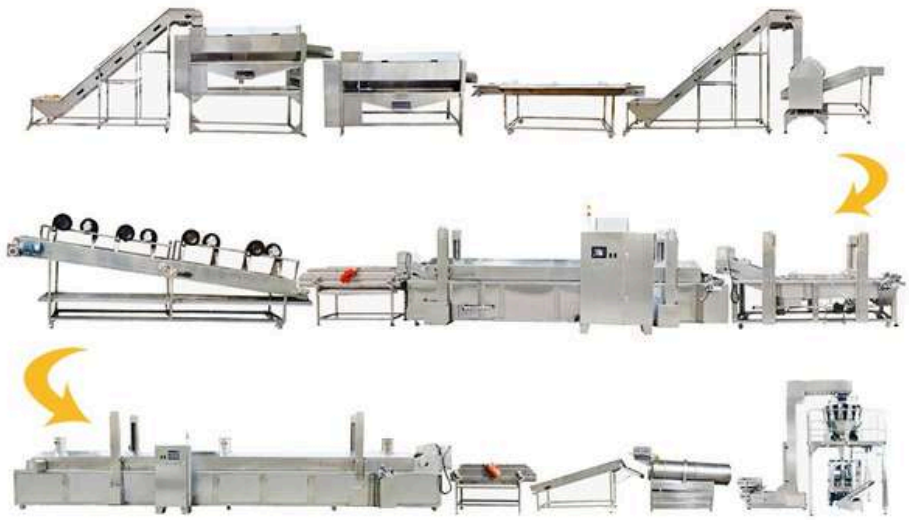




ANALYSIS

CHIPS MAKER MACHINE SIZE AND ITEM





NAMA PERANGKAT	Contoh	Dimensi (mm)	Daya	Material
Konveyor pengumpanan	TJ-4600	4600*1000*2800	0,75kw	SUS304
Sikat untuk membersihkan alat	QX J-2400	2800*950*2720	3,5 KW	SUS304
Membersihkan mesin yang terkelupas	QPJ-2400	2800*950*1670	4,55 KW	SUS304
Memilih garis	ALT-3000	3000*1120*1410	0,55 KW	SUS304
konveyor	FGX-3000	3500*1400*3000	7,17KW	SUS304
Pemotong kentang keripik	QPJ-1000	880*770*1222	2.25 km	SUS304
konveyor	FGX-2500	2500*1400*3000	7,17KW	SUS304
Alat pencuci gelembung	QXJ-4500	4559*1931*2120	7,5KW	SUS304
Blanching Machine	PTJ-5500	5500*1850*1000	3kw	SUS304
Saluran pendingin udara	FGX-5000	5000*1100*1800	3kw	SUS304
Saluran konveyor cepat	SSJ-1500	Tambah-penukar ASCII pada Tambah bintik-bintik pada 2000 pada 820. 1370	0,75KW	SUS304
Mesin menggoreng	XDL-8500	8500*2300*2200	24kw	SUS304
Alat berat dengan deep bergetar	ZDS-1500	1500*1400*800	0,37KW	SUS304
konveyor	FGX-3000	3500*1400*3000	7,17KW	SUS304
Mesin bumbu penyedap	TWJ-3500	3500*1200*1800	0,75KW	SUS304
konveyor kombinasi	SSJ-5500	5500*800*1200	0,55 KW	SUS304
Multi-head pembobotan dan mengemas alat berat	BZJ-420/10	4000 *3500 *4000	2KW	SUS304

ANALYSIS

JUICE MACHINE SIZE AND ITEM



Parameter Produk

Contoh	Kapasitas	Daya (KW)	Ukuran
GG-0.5	0,5T/H	1.5+0,55KW	900*320*1100MM
GG-1.5	1,5T/H	4+1.5 KW	1560*450*1640-MM
GG-2.5	2.5T/H	11+2,2KW	TAMBAH-TAMBAH PADA TAMBAH BINTIK DI 2200 PADA 600 TAMBAH BINTIK



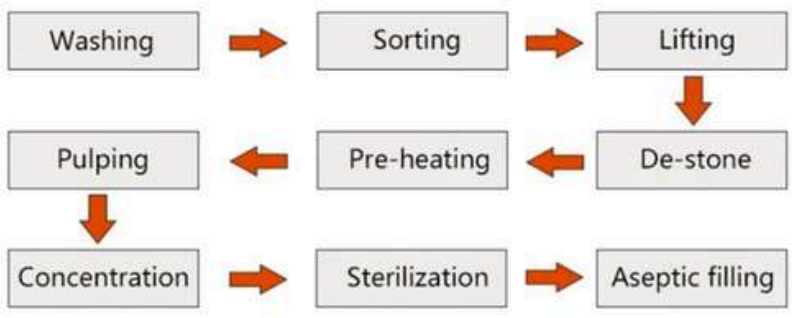
washing machine



drying machine



pulping machine



ANALYSIS

JUICE PACKAGING MACHINE SIZE AND ITEM



Alat berat Apple Juice fill buatan Cina

Referensi Harga FOB ⓘ Dapatkan Harga Terbaru >

US$10.000-20.000 / Atur | 1 Atur (Pesanan Minimum)

Sertifikasi:	CE, ISO9001
Sumber Daya:	Elektrik
Memproses:	Filling Machine
Kelas Otomatis:	Otomatis
Aplikasi:	Filling Machine
Disesuaikan:	Disesuaikan

♡ Favorit | Bagikan

Deskripsi Produk | Informasi Perusahaan

Informasi dasar.

garansi	12 bulan	material	baja anti karat
kapasitas	3000-4000 B/H	kondisi	baru
berat	2500kg	Paket Transportasi	Wooden Cases
Spesifikasi	2400*1500*2300mm	Merek Dagang	Genyond
Asal	Shanghai, China	Kode HS	8422301090
Kapasitas Produksi	10000 Pieces Per Year		

ANALYSIS

PACKAGING MACHINE SIZE AND ITEM





nformasi dasar.

Tidak. Model.	CHCI-J	Struktur	Satelit
Aplikasi	Karton yang telah dicetak sebelumnya	Kelas Otomatis	Semi-Otomatis
Kecepatan Pencetakan	200 m/mnt	drum	drum tengah
warna	lebar penuh dengan 6 warna satu sisi (satu sisi muka)	mengemudi	memberi yang besar
dokter bersusun	ruang dokter bersusun	EPC	kontrol posisi tepi
poros	poros udara	pompa	dua pompa diafragma pneumatik
kecepatan anda	kecepatan tinggi	ketegangan	pengontrol tegangan otomatis
Paket Transportasi	1*40 Hq Container	Spesifikasi	L*W*H: 6.6m*2.7m*3.4m
Merek Dagang	ChangHong	Asal	China Mainland Zhejiang
Kode HS	84431400	Kapasitas Produksi	100 Sets/Year

Coffe Salacca Bean

1. The salak seeds are sun-dried or stored in a dry and non-humid place so that the salak seeds become dry, and the liquid inside the salak seeds can be reduced.

2. After the salak seeds are dry, the dried salak seeds are then roasted in a large pan until they have a black color like coffee.

3. When the color of the salak seeds has turned black, the salak seeds can then be turned into coffee powder by grinding them with a stone grinding tool.

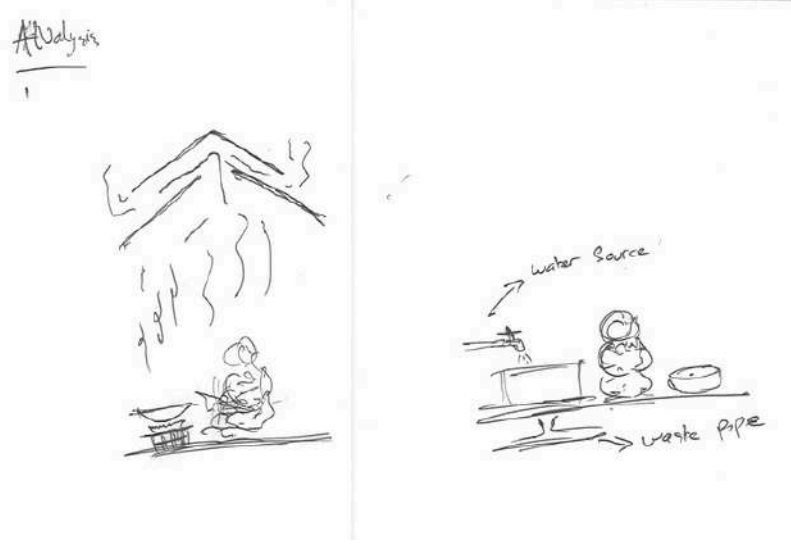
4. To obtain a finer texture, the coffee beans that have been ground with a stone are then blended.

5. To separate the fine coffee beans from some others that are still coarse, the powdered coffee beans are sifted, and only the sifted results are taken.

6. Only then can this salak seed coffee powder be served as a coffee drink by brewing it."







ANALYSIS

COFFE SALLACA BEAN MACHINE SIZE AND ITEM



Parameter Produk

Contoh	Kapasitas	Motor	Daya/Gas konsumsi energi	Ukuran (mm)	Berat bersih
JW-KFD01	1,0kg/batch	100W*380W*1	0,35 kg/jam	1060*780*1210	120 kg
JW-KFD02	2,0kg/batch	320W	0,55 kg/jam	1100/800/1400	140kg
JW-KFD03	3,0kg/batch	180W*1100W*2 90W*1	0,75kg/jam	1100/800/1400	150kt
JW-KFD06	6,0kg/batch	745W*1180W*3	1,2 kg/jam	1520*960*1490	220kg
JW-KFD10	10 kg/batch	1HP*1 2HP*1 1/2HP*2	1,3kg/jam	1700*1100*1850	410kg
JW-KFD15	15kg/batch	750W*2 1500W*1375W*1	2kg/jam	1800*1100*2000	385kg
JW-KFD20	20 kg/batch	370W*2 3000W*1 750W*1	3 kg/jam	1950*1100*1950	450kg
JW-KFD30	30kg/batch	750W*2 3000W*1 1500W*1	7kg/jam	2650*1500*2400	850kg

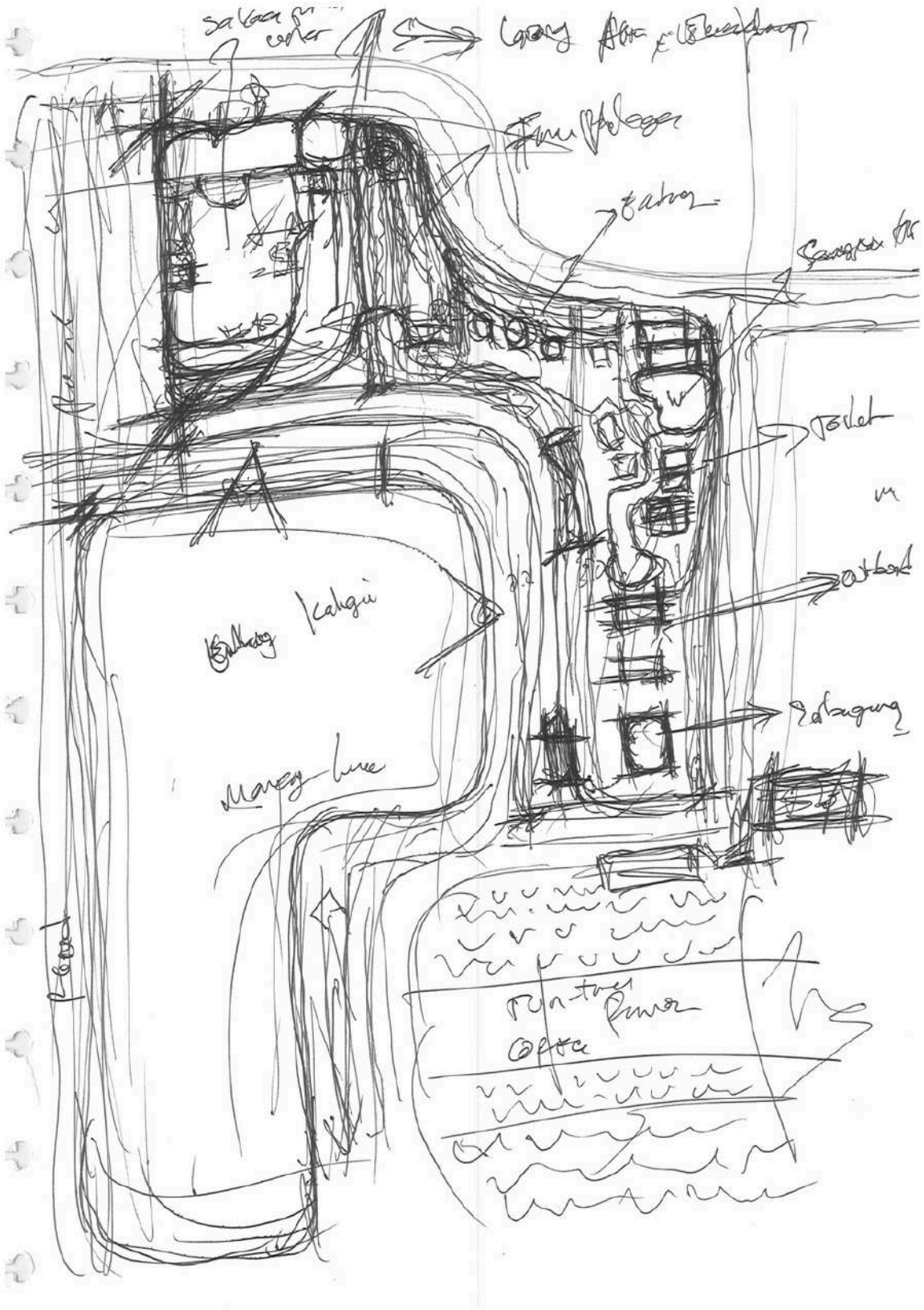
Foto detail

Unfortunately, even though Turi is the largest producer of snake fruit in Yogyakarta, there is no large-scale snake fruit processing facility in Turi itself. As a result, the snake fruits are sold in their raw form and exported to other areas without prior processing. This leads to a rapid deterioration of the fruits, causing price wars among farmers and traders. In an attempt to avoid spoilage before sale, traders compete by lowering prices, resulting in market instability.

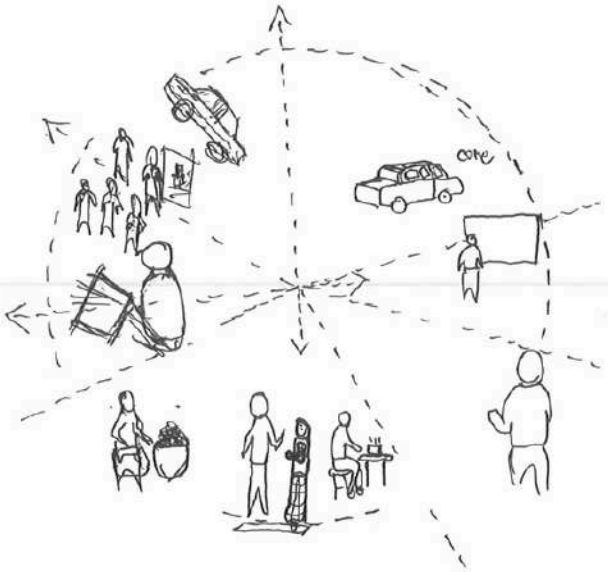
The establishment of a snake fruit processing facility is expected to increase the value of snake fruit by expanding exports and imports, as well as providing longer storage options. This, in turn, is anticipated to absorb more snake fruits from farmers, creating market stability and potentially increasing prices.

ANALYSIS

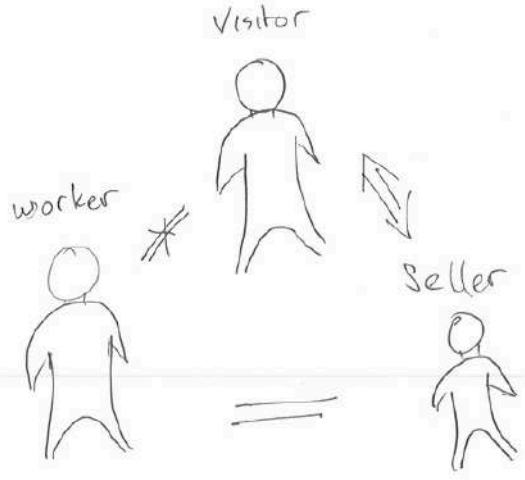
SPATIAL PLACEMENT ANALYSIS



Morning



MID DAY



ANALYSIS

SPATIAL PLACEMENT ANALYSIS

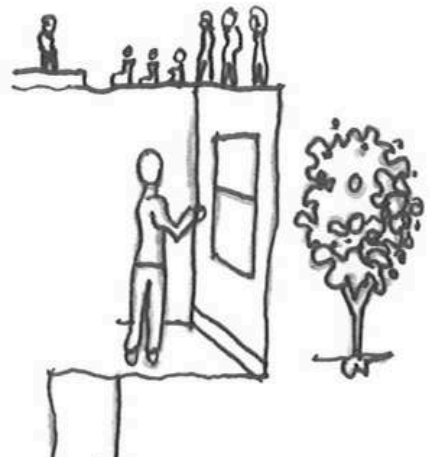
STORE AND GODS DISTRIBUTION



TIME CONSUME PLAN



WEXPLANATION POSIBILITU AGRODUCATION



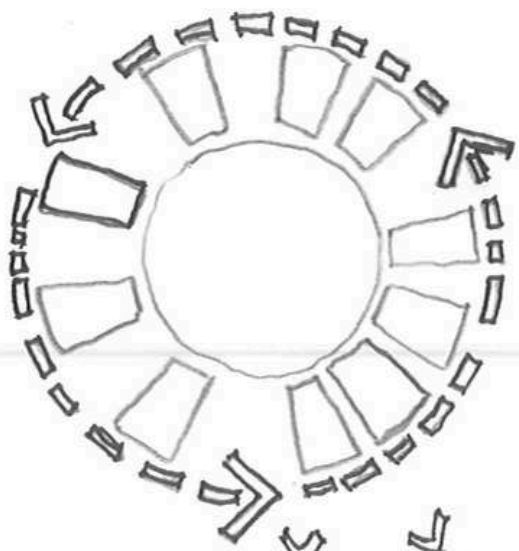
POSIBILITY USER



NATURE VIEW

AGRODUCATION





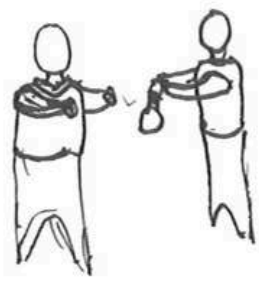
LOBY WAITING

EATING AREA





AREA WITH CONTURE

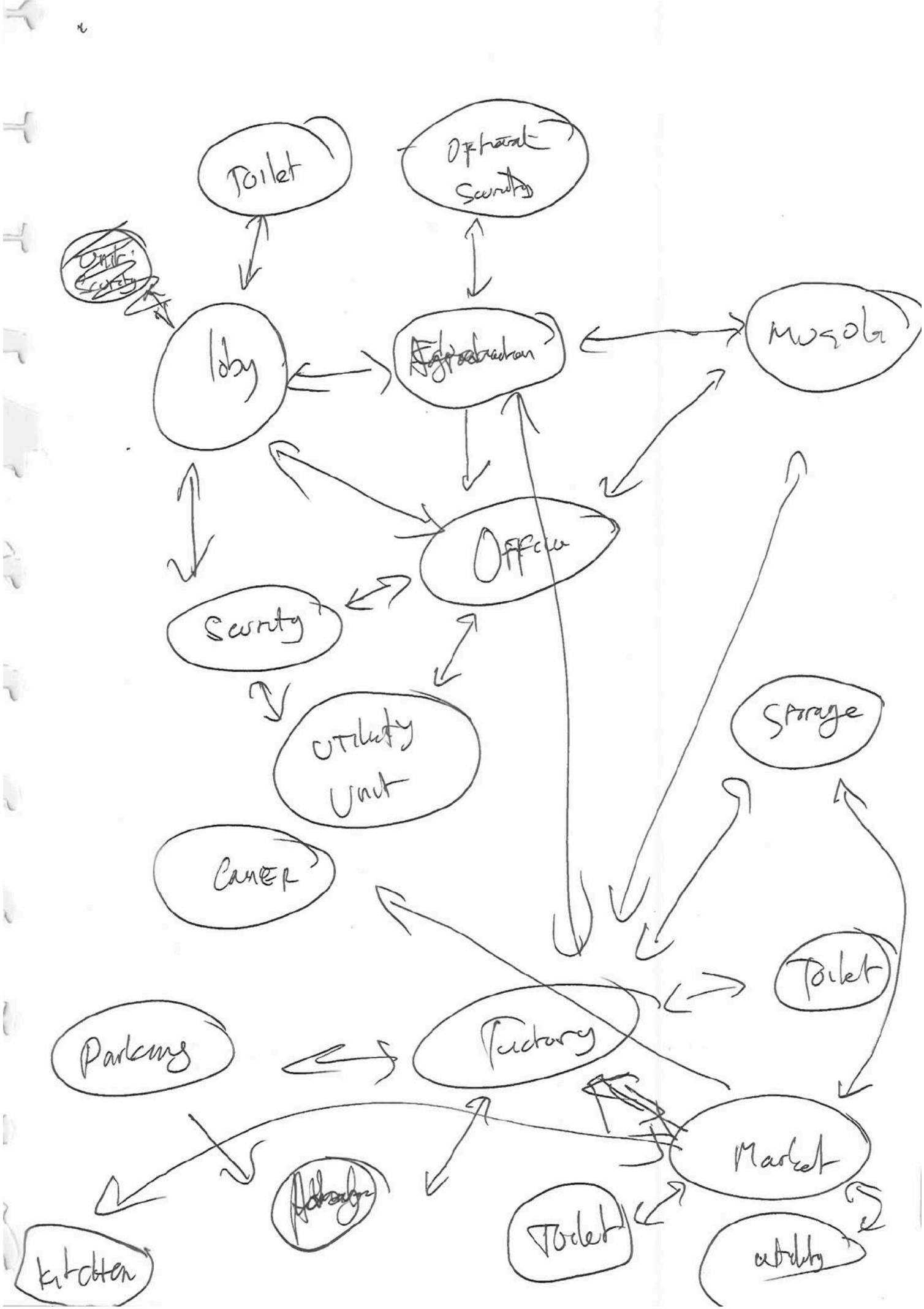


VISITOR POSIBILITY OF COVERSATION

CONECTED WITH EXISTING TREE

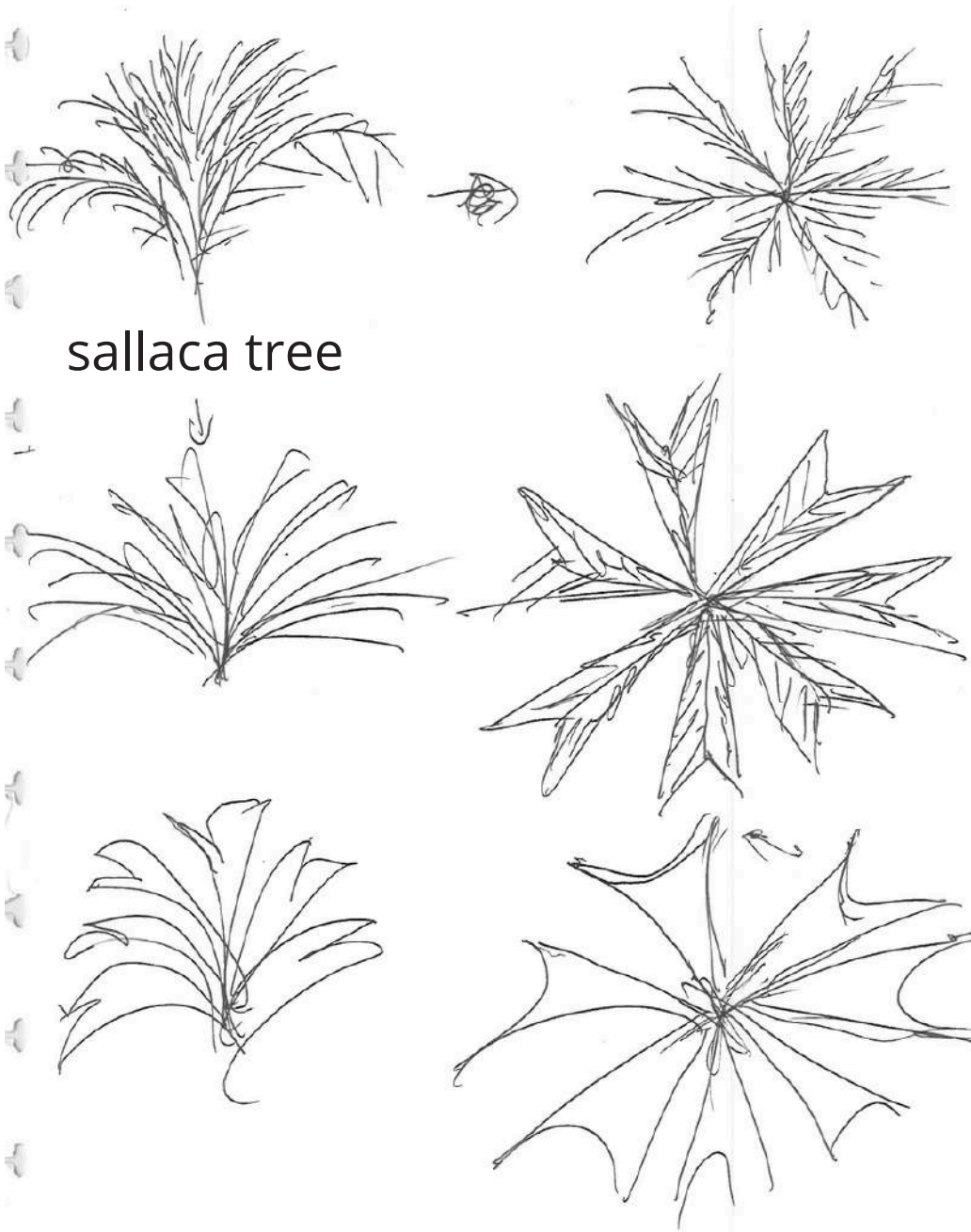
ANALYSIS

Conection

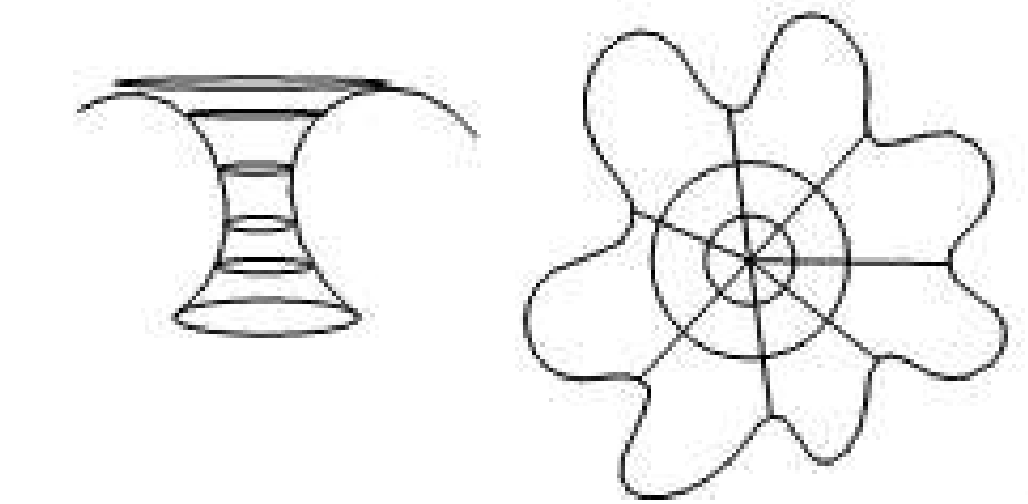


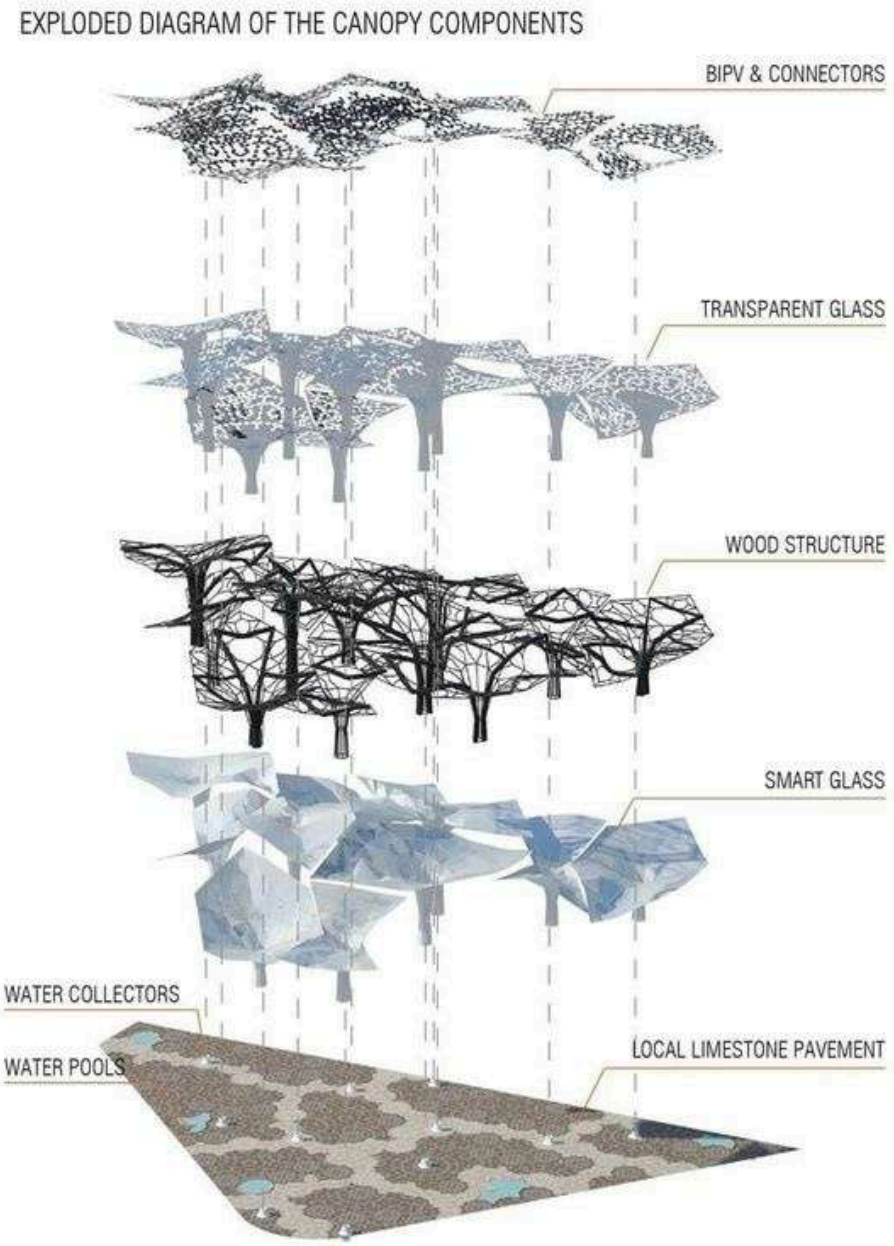
ANALYSIS

CONCEPT ANALYSIS



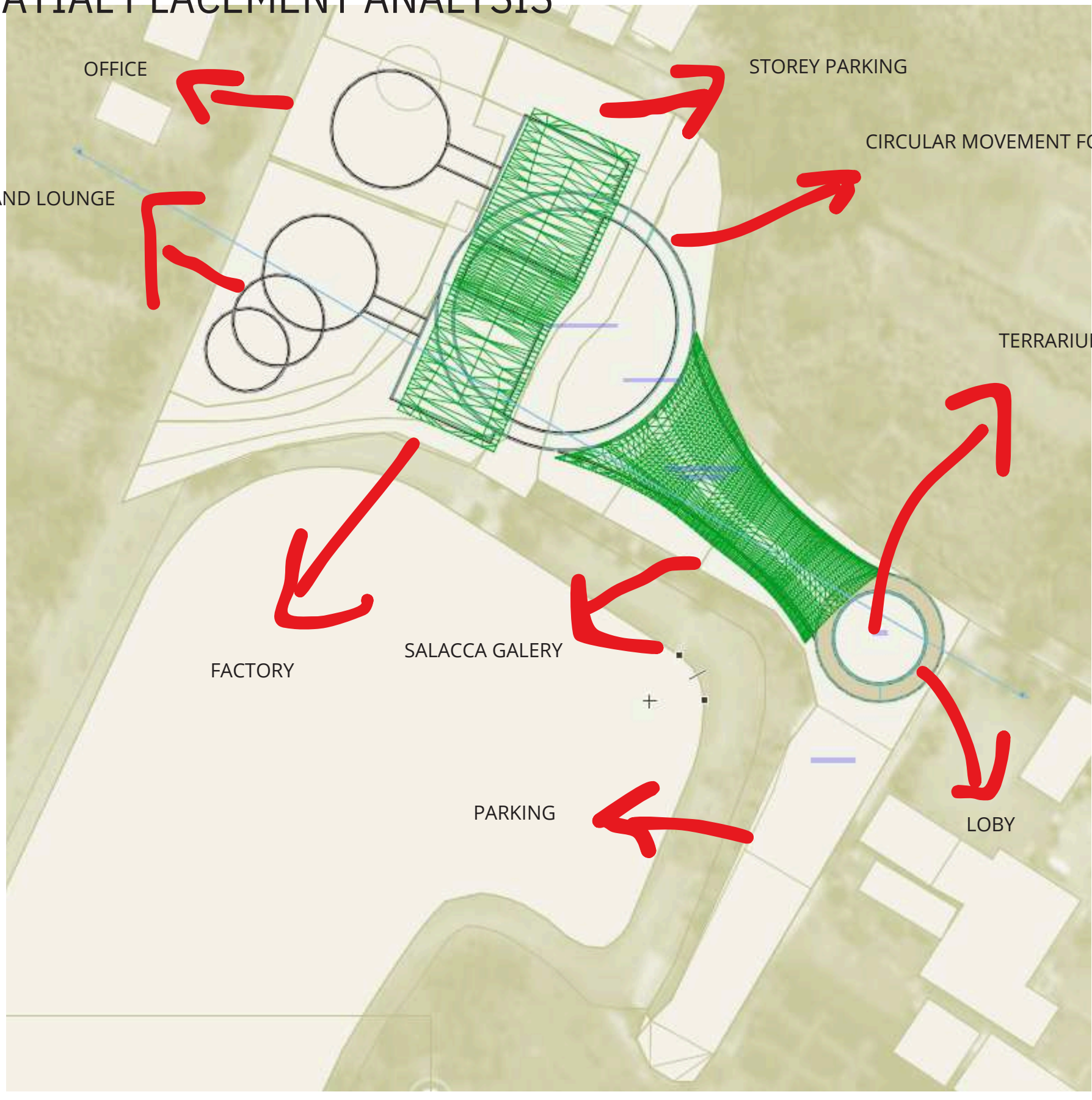
sallaca tree





ANALYSIS

SPATIAL PLACEMENT ANALYSIS

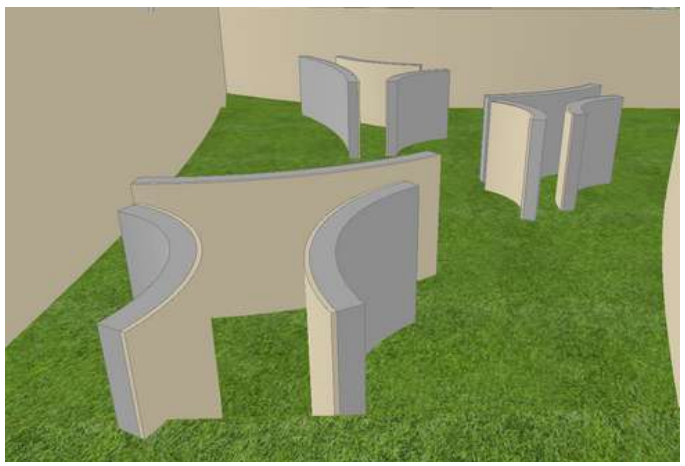


Idea Schematic



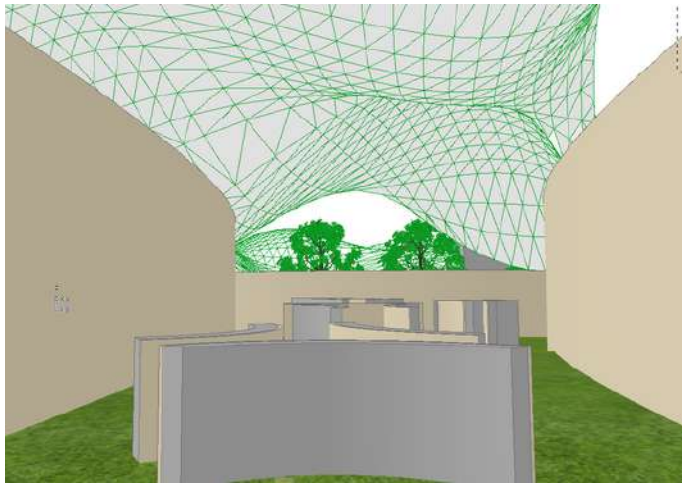
Enjoying sunset in embung kaliaji while eating salacca product





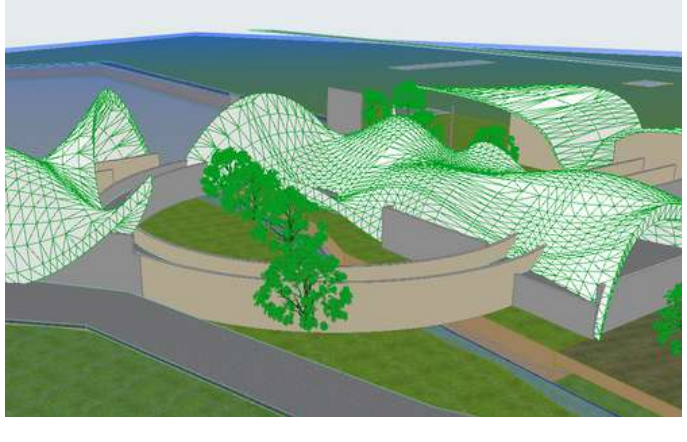
education area using nature matrial





Gallery with ecological approach using nature





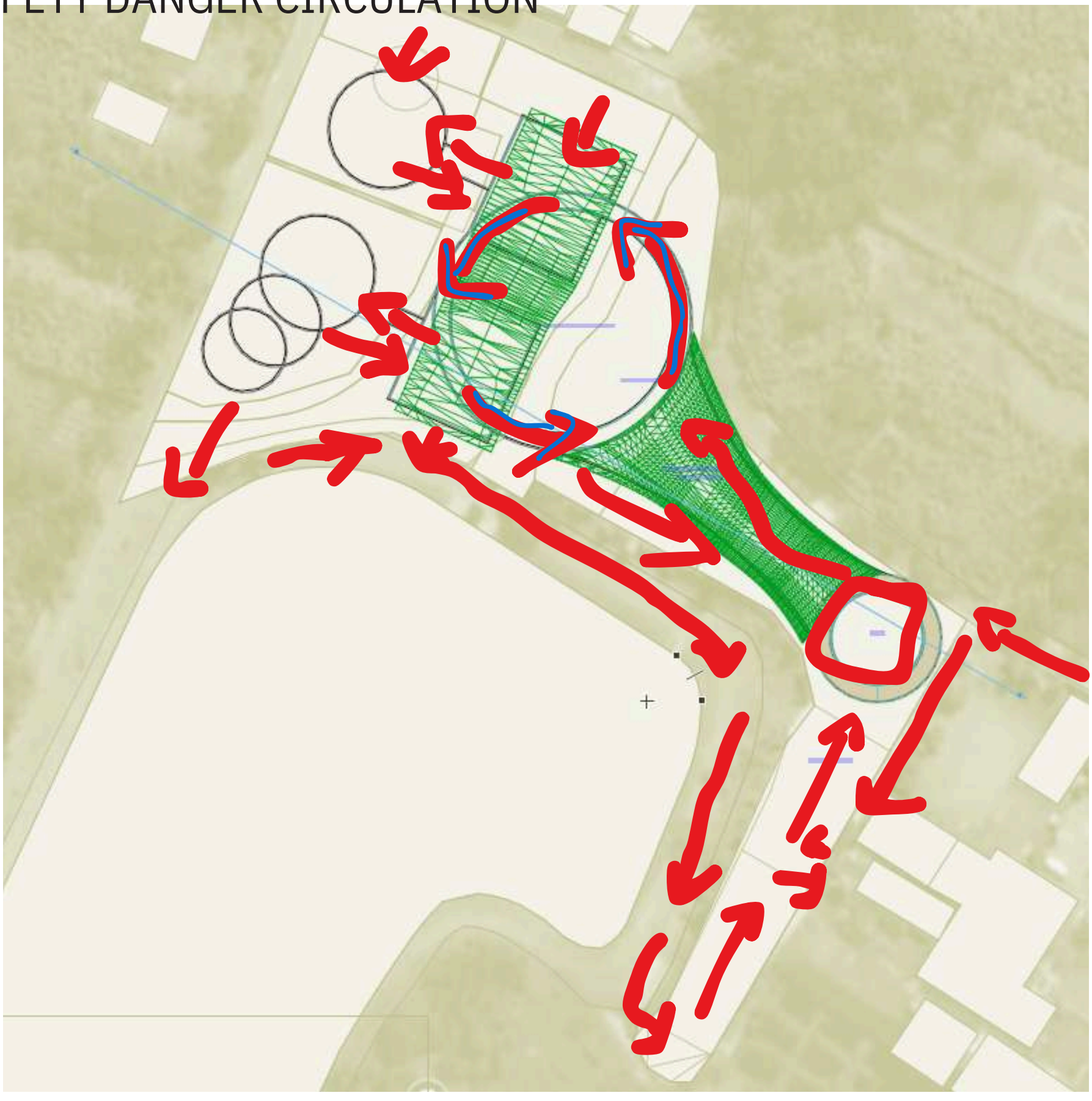
bridge that exploring surrounfing ecology



Source : Pinterest

ANALYSIS

SAFETY DANGER CIRCULATION



ANALYSIS

GREY WATE SCHEMATIC



ANALYSIS

ELECTICITY SCHEMATIC ANALYSIS



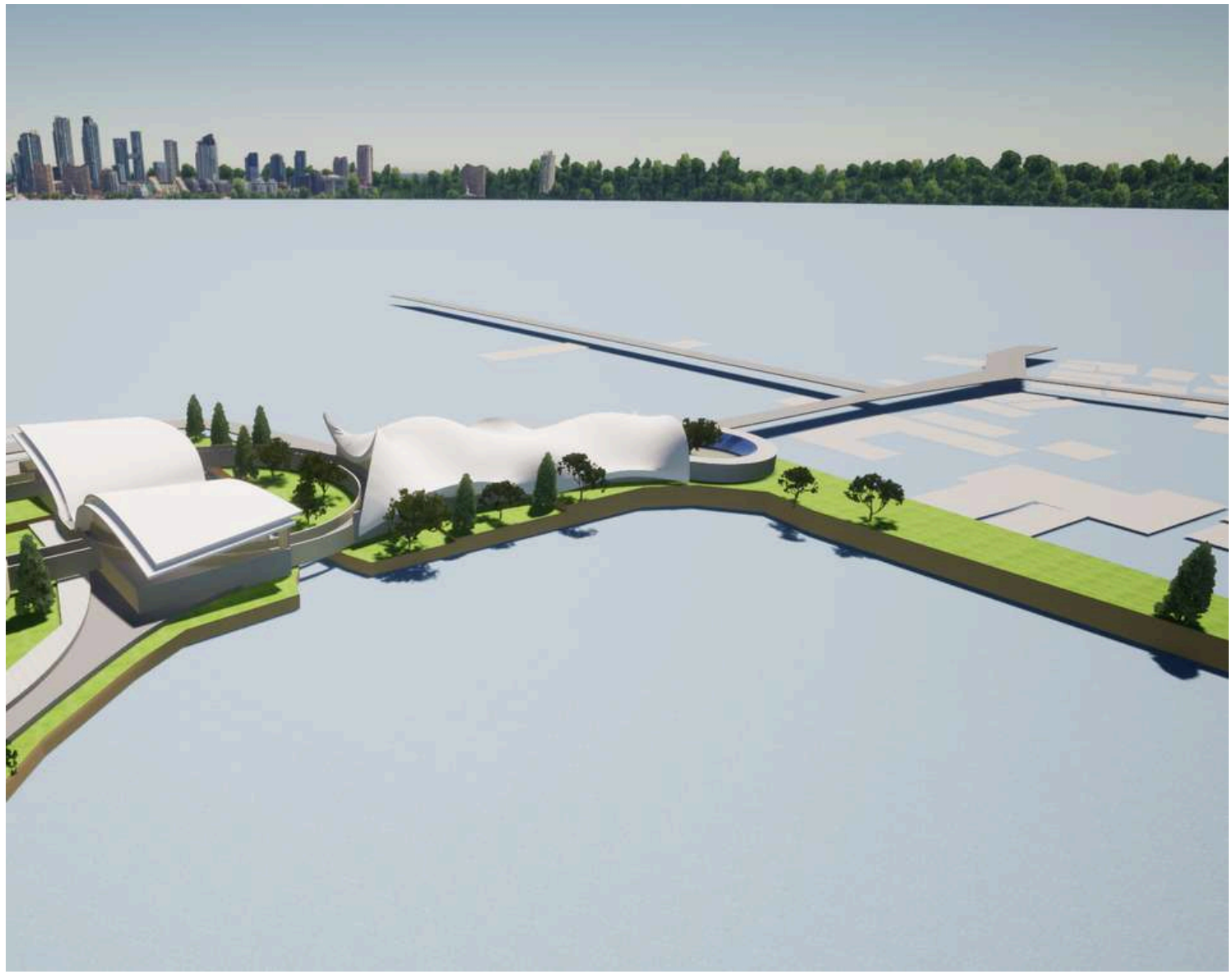
ANALYSIS

ELECTICITY SCHEMATIC ANALYSIS



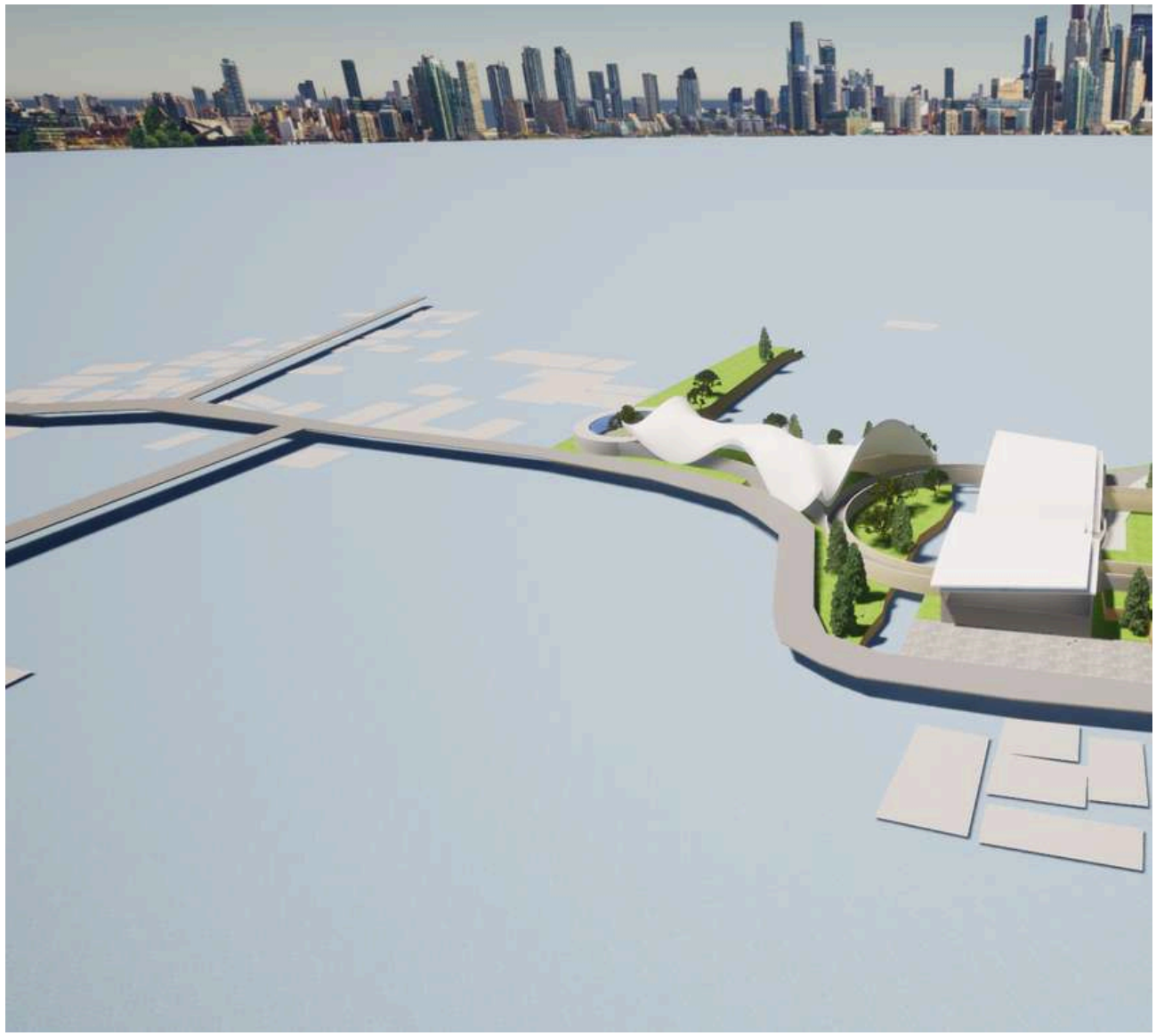
Technical Drawing

RENDER EXTERIOR 1



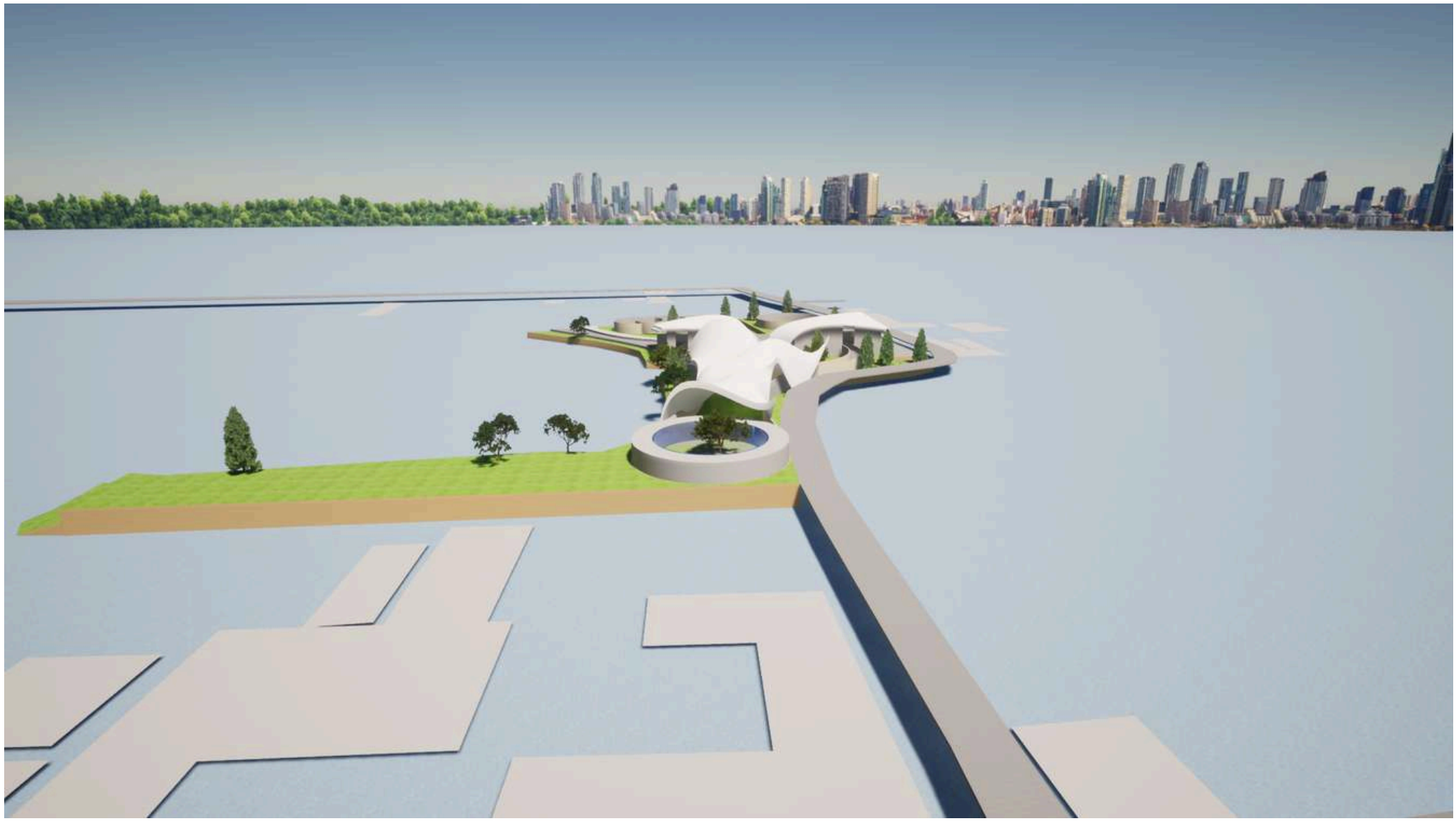
Technical Drawing

RENDER EXTEIOR 2



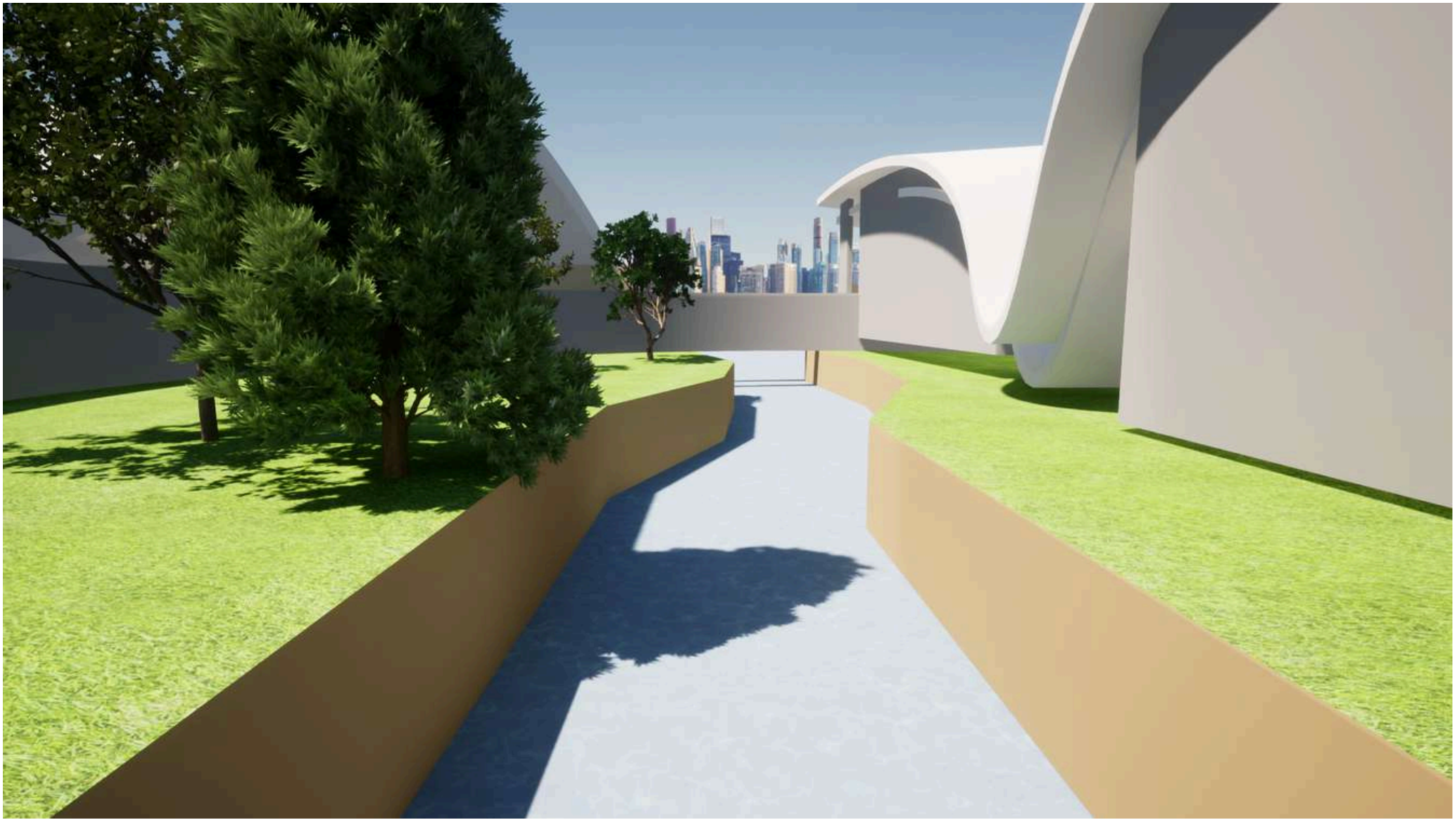
Technical Drawing

RENDER EXTERIO 3

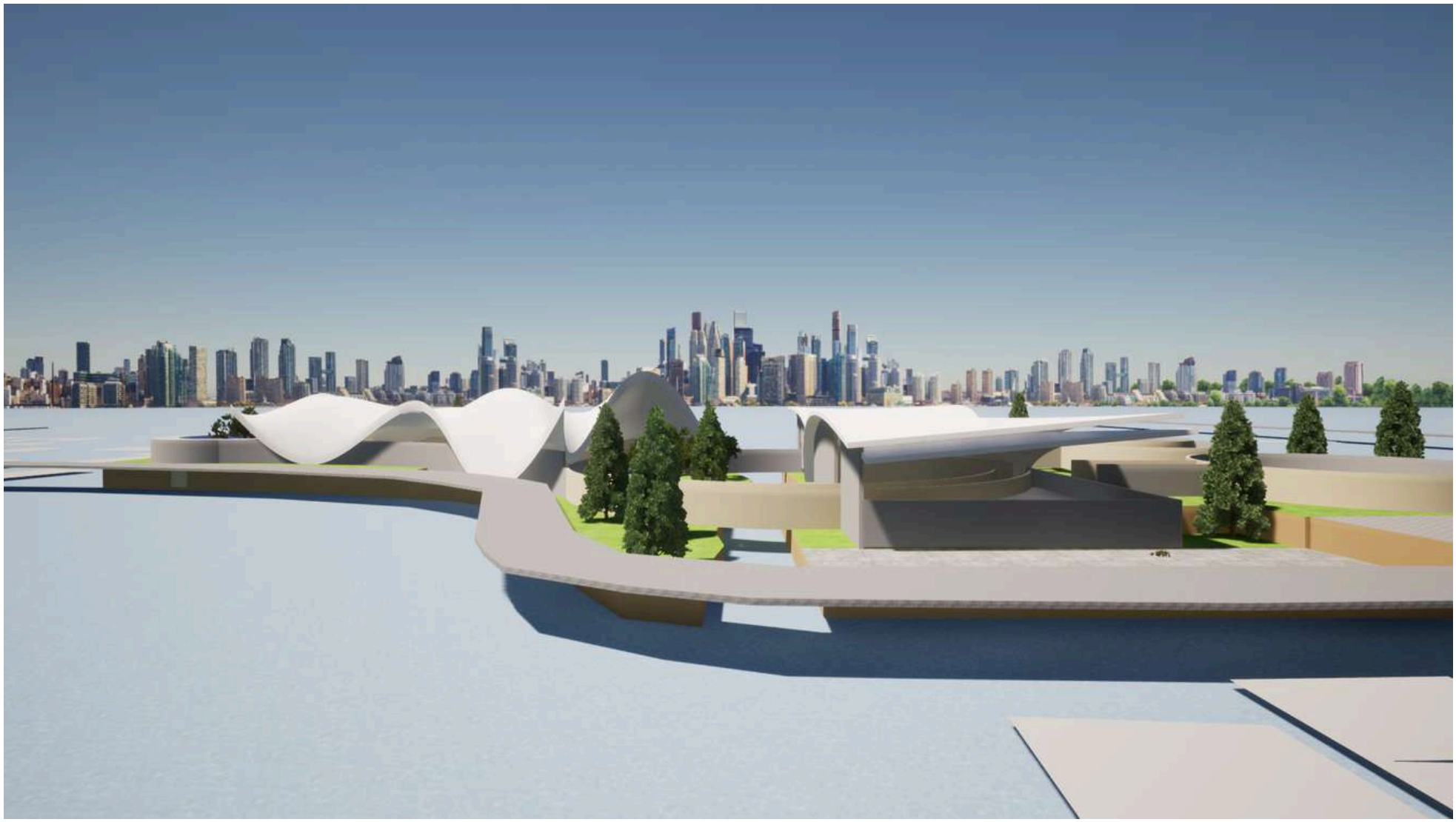


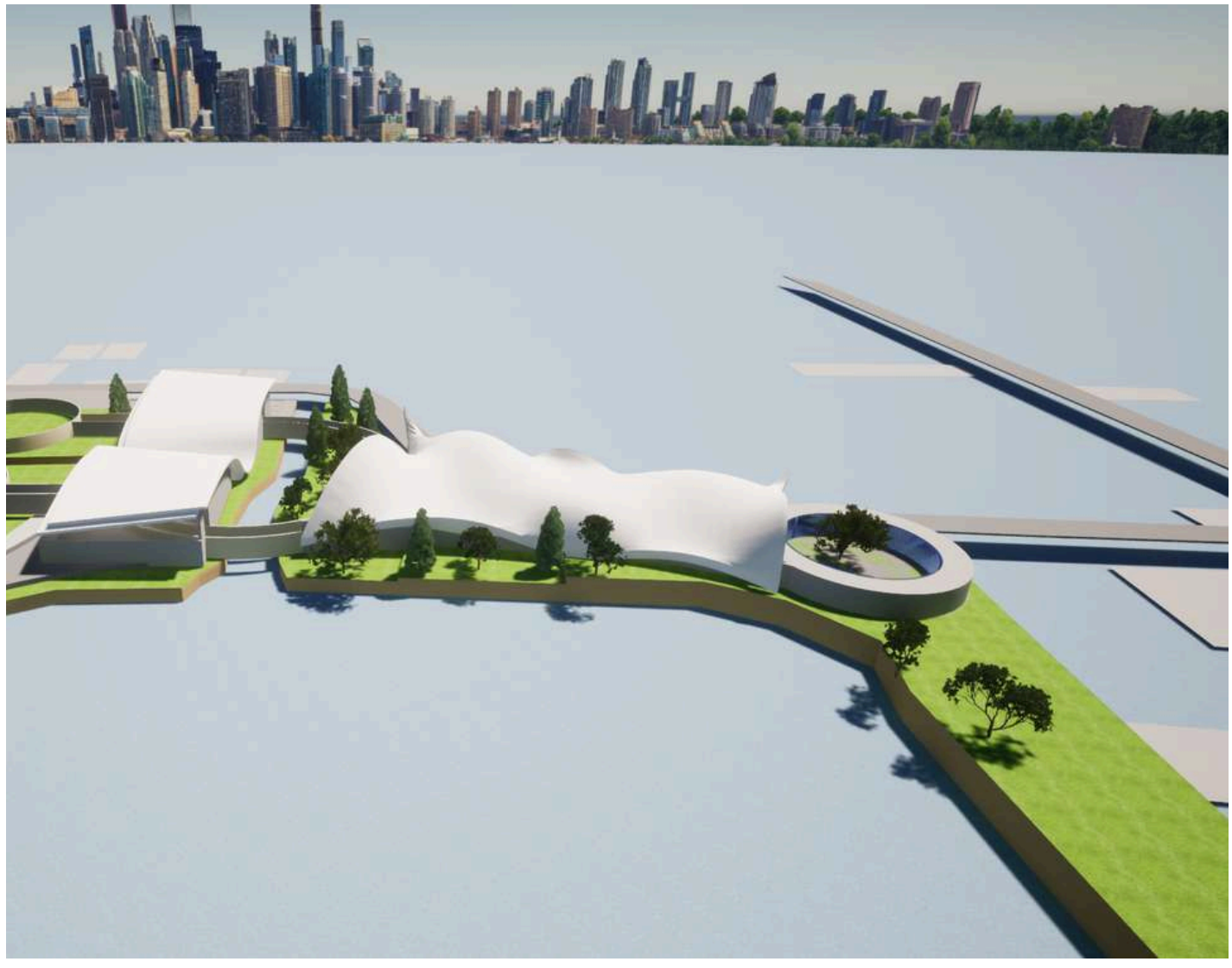
Technical Drawing

RENDER INTERIOR 1





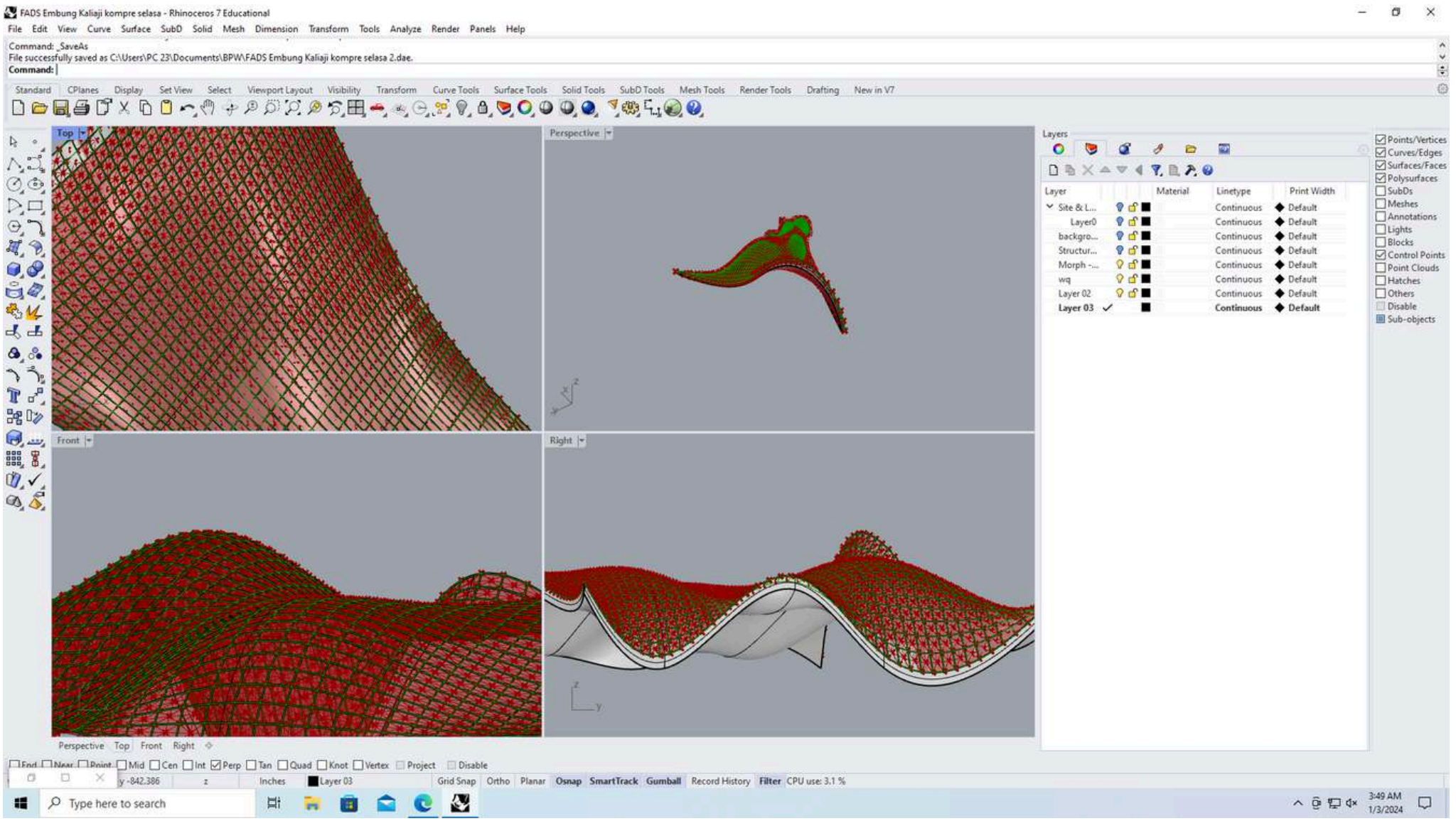






SCHEMATIC DESIGN OF

BUILDING ENVELOPE



SCHEMATIC DESIGN OF

BUILDING ENVELOPE CONECTION

KBA SCHEMATIC IDEA

The design concept aims to create a natural ambiance that connects with the environment, intending to be a refreshing and educational destination appealing to tourists tired of their daily routines. The goal is to make it a weekly recreational spot not only for local visitors but also for those coming from international locations. The use of parametric bamboo design serves as a marketing parameter to attract tourists globally.

It is hoped that this building will become a landmark for Turi Village, known as the largest producer of snake fruit in Sleman. Snake fruit itself has high market value, but its low durability prevents it from being fully absorbed. Despite being a fruit loved by almost everyone and having numerous benefits.

The author's idea is to introduce snake fruit through a marketing design approach that is connected with nature as a means of education, refreshment, and product sales. This way, snake fruit can be promoted actively and passively.

Embung Kaliaji, as a supporting element, aims to attract tourists and become a lasting memory for weekend entertainment.

Calculation

Prep & Unloading Works

- Land acquisition 9234 m2 -> 2.000,000/m
2,000,000 x 9234 m2 = 18,468,000,000

Landscape work -> 1,500,000/m
1,500,000 x 9234 m2 = 13,851,000,000

32,319,000,000

Building Construction Cost

-Architectural Works -> 100.000.000/m
100.000.000 x 8.446,178 m2 = 844,600,000,000
Total Building Construction Cost = 844,600,000,000

Infrastructure and Utilities Cost
-MEP jobs -> 4,500 m2 x 3,500,000 = 15,750,000,000
- Utilities -> 4,500 m2 x 3,500,000 = 15,750,000,000
Total Infrastructure and Utilities Cost = 31,500,000,000

876,100,000,000

Licensing Fee

-Land & Environment Permits -> 50.000
50,000 x 9234 m2 = 461,700,000

-Building Permit -> 100,000
100,000 x 9234 m2 = 923,400,000

1,385,100,000

Calculationa

Total Overall	846,985,100,000

Marketing Fee for Visitor
First marketing total equal to 1,5% of 846,985,100,000 = 12,704,776,500

Total Overall Building Cost	834,161,310,500

Feasibility Analysis of Commercial Space Rental Business Investment

Entrance ticket ->100,000/pax
300 x 100.000 = 30,000,000/day -> 900,000,000/month ->10,800,000,000/year

Parking -> 5,000/unit
200 units x 5,000 = 1,000,000/day -> 30,000,000/month -> 360,000,000/year

Caffe and Restaurant-> 50.000/pax
300 people x 50,000 = 20,000,000/day -> 600,000,000/month -> 7,200,000,000/year

Market > 100,000/person
100 people x 100,000 = 10,000,000/day -> 300,000,000/month -> 3,600,000,000/year

Sallaca Production
Volume produksi 1% total salak Sleman Perbulan = 42,5 ton/Month = 1,416 Ton Perhari
Ratio salaca buah/Biji = rata-rata 70%
0,9916 ton Daging buah (Juice, Chips , Sugarly, Selai) dan 0,425 ton biji (coffe)

Juice, Chips , Sugarly, Selai profit
20,000 =100 grams
0,9916 Ton x 1,000,000 = 991,600 grams /100 = 9,916 pax x 20,000 Rp = 198,320,000/Day
5,949,600,000 Rp/Month => 71,395,200,000/ year

Coffe Bean
0,425 Ton x 1,000,000 = 425,000 grams /100 = 4,250 pax x 19,000 Rp = 80,750,000/Day
2,422,500,000 Rp/Month => 29,070,000,000/ year

Calculationa

Total Annual Income 123,055,200,000.

-Worker Fee -> 40%
40% x 123,055,200,000 = 49,222,080,000

-Property Management Fee -> 5%
5% x 123,055,200,000 = 6,152,760,000

-Energy and Water Cost -> 5%
5% x 123,055,200,000 = 6,152,760,000

So, Total Profit Yearly -> 123,055,200,000 - (49,222,080,000 + 6,152,760,000 + 6,152,760,000) = 61,527,600,000

-Insurance -> 0.10% of 61,527,600,000 = 61,527,600
-Tax -> 0.50% of 61,527,600,000 = 307,638,000
-Manager -> 0.50% of 61,527,600,000 = 307,638,000

So, Profit after tax -> 61,527,600,000 - (61,527,600+307,638,000+307,638,000) = 60,850,796,400

Total Investment = 834,161,310,500
Time of Return on Investment (Years) = Total Investmen div Profit = 834,161,310,500 Div 60,850,796,400 = 13.70

Time of Return on Investment (years) = 13.70 years

Time of Return on Investment (years) = 13.70 years

DETAIL DRAWING

CHAPTER 4

4.1 DESIGN OF THE SITE AREA



Islamic University Of Indonesia

Jl. Kaliurang No.Km. 14,5, Krawitan, Umbulmartani, Kec. Ngemplak, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55584

Design Of Widuri

WONOKERTO, TURI, SLEMAN, RT.003/RW.028, Sangurejo, Donokerto, Kec. Turi, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55551

Drawing Name

Drawing Status

Modified by Date

Checked by Date

Drawing Scale

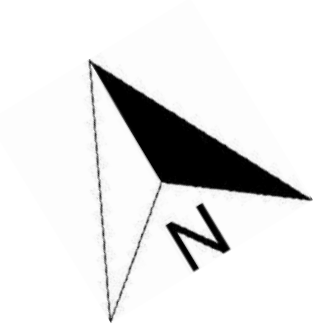
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Layout ID Revision

A.01.3

VEGETATION PLAN





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Modified by Date

Checked by Date

Drawing Scale

Layout ID Revision

Site Plan

SITE PLAN



1. Lobby 2. Parking area 3. Market 4. Cliff 5. Galery 6.Toilet 7. Round Corridor 8. Water Treatement 9. Inner Nature 10. Visitor Line 11. Factory 1 12. Factory 2 13. Outdoor Nature 14. Embung Kaliaji Entrance 15. Office And Store 16. Office Parking Area 17. Loading Deck Product 18. Loading Deck Fruit 19. River 20. Embung Kaliaji 21. Embung Kaliaji Side Road 22. Caffe and Resto 23. Exit Corridor

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Drawing Name

Drawing Status

Modified by Date

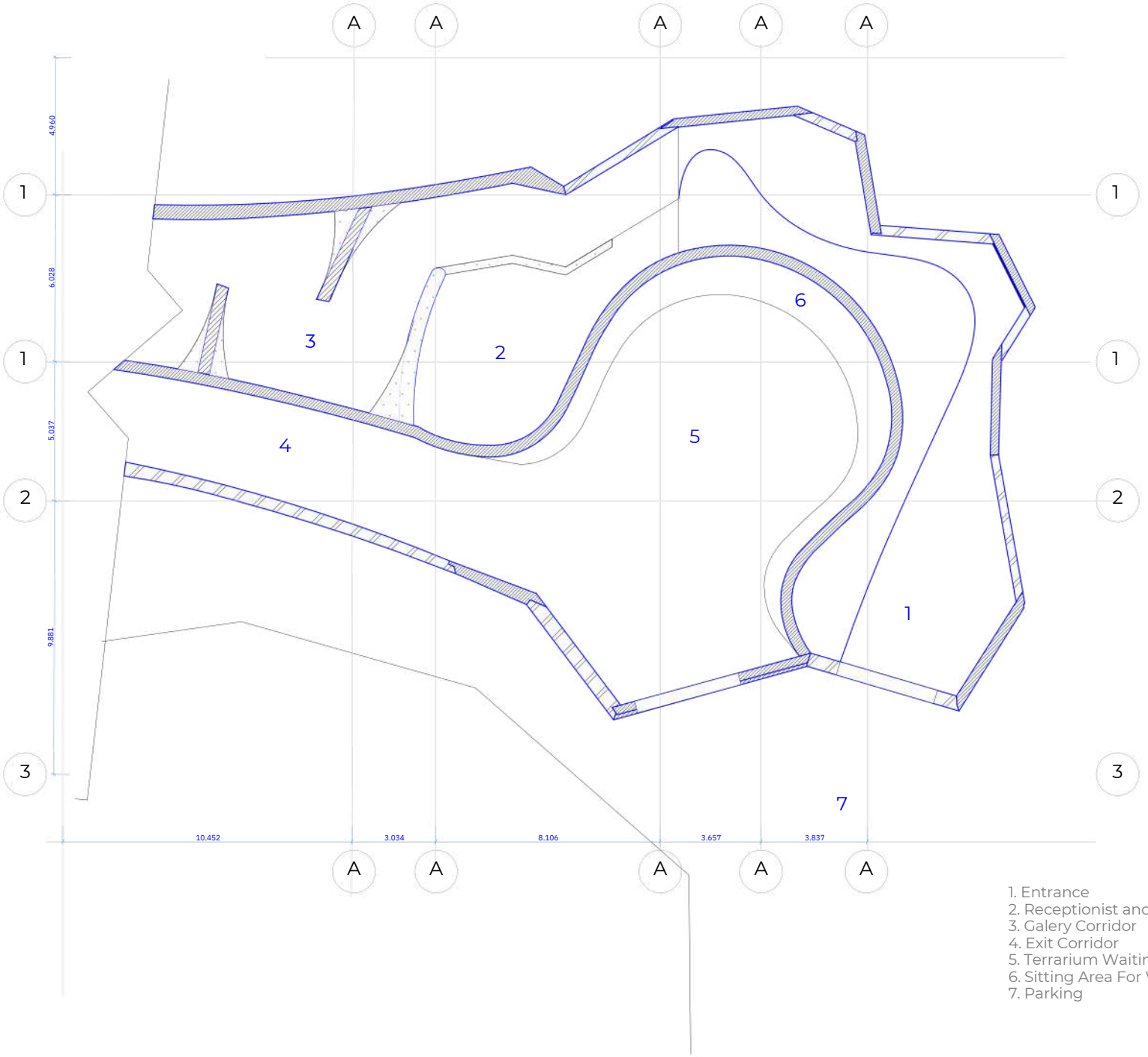
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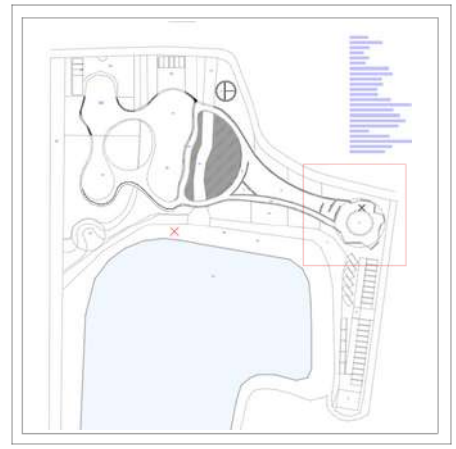
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Layout ID Revision

A.01.1

LOBY





1. Entrance
2. Receptionist and Ticketing
3. Galery Corridor
4. Exit Corridor
5. Terrarium Waiting Area
6. Sitting Area For Waiting
7. Parking

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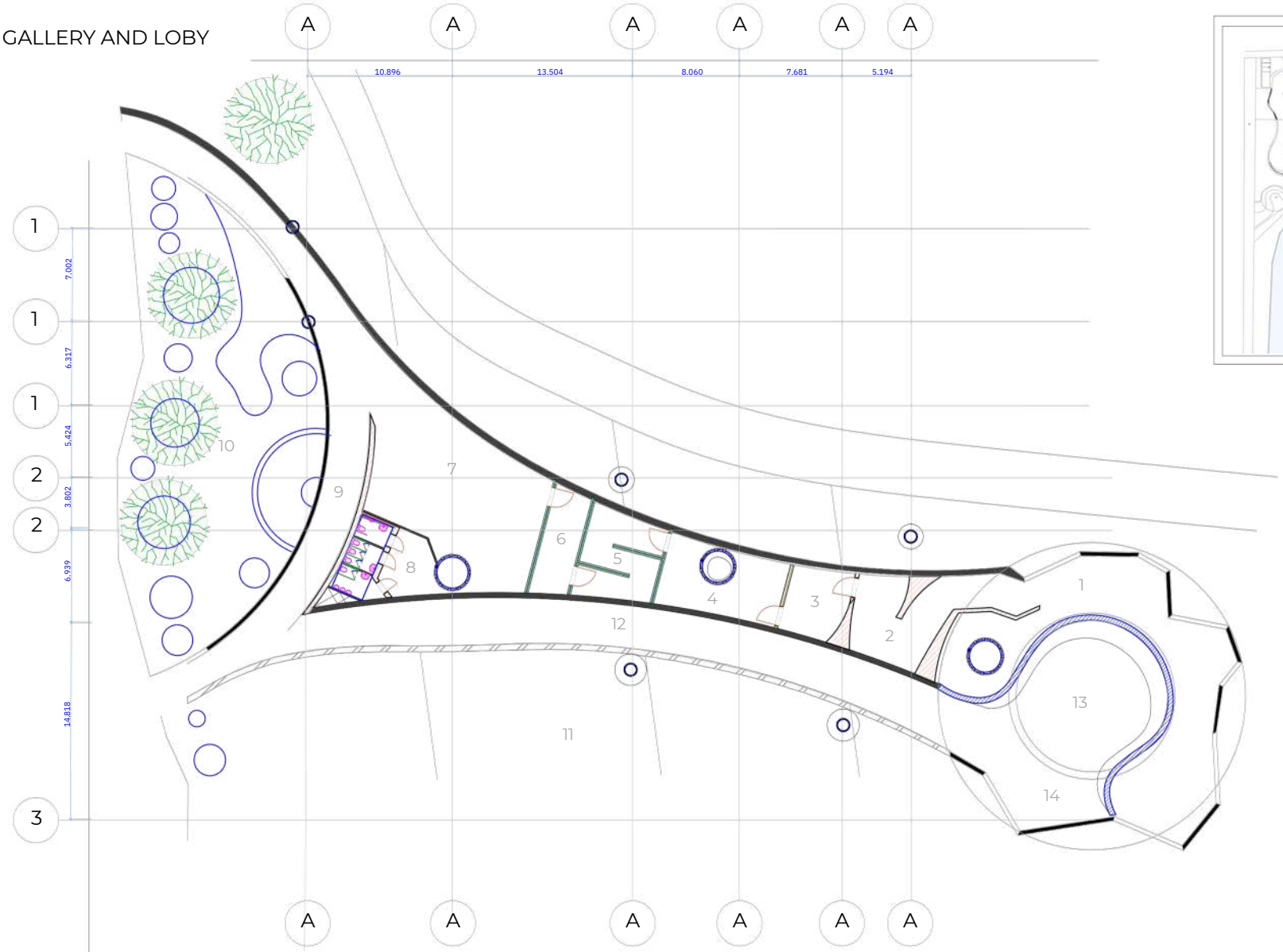
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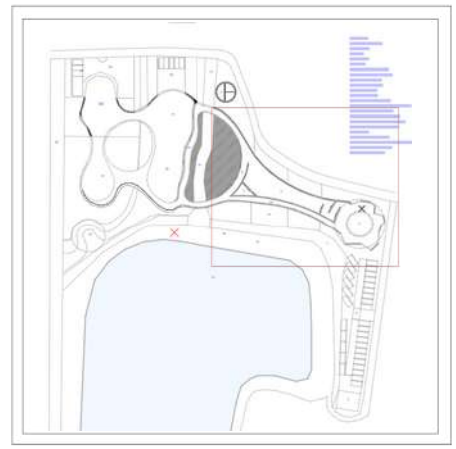
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Layout ID Revision

A.01.4

GALLERY AND LOBY





1. Loby
2. Salacca History Corridor
3. Salacca History Audio Visual
4. Rest area and salak tasting place
5. Corridor about salak processed products, salak crafts and salak factories (about all salak products)
6. Virtual Reality Area (tech)
7. Salacca Galery and Product
8. Toilet Man, Woman And Disability
9. Circular Corridor
10. Iner Garden and Pond
11. Restaurant and Coffeshop Outdoor
12. Exit Corridor
13. Waiting Area
14. Exit Door

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Drawing Name

Drawing Status

Modified by Date

Checked by Date

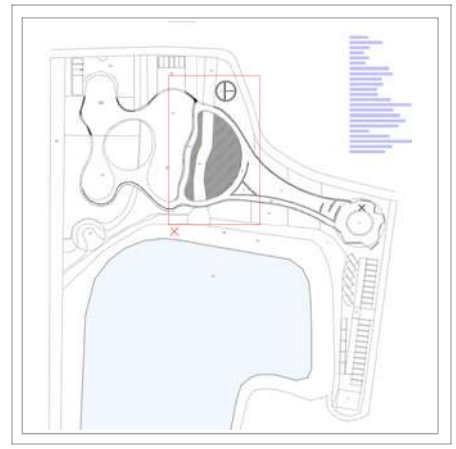
Drawing Scale

Layout ID Revision

A.01.5

ROUND CORRIDOR





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Drawing Name

Drawing Status

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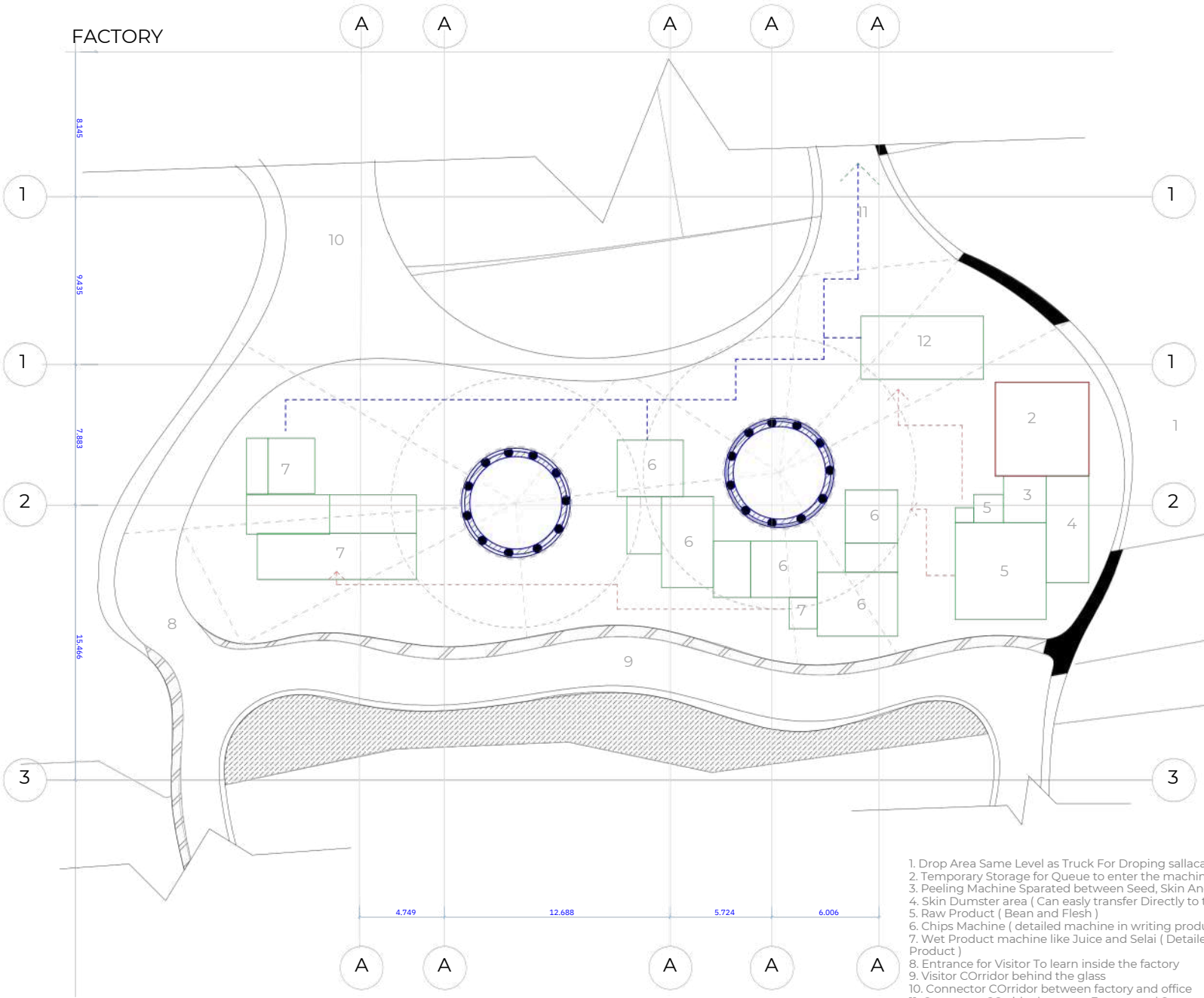
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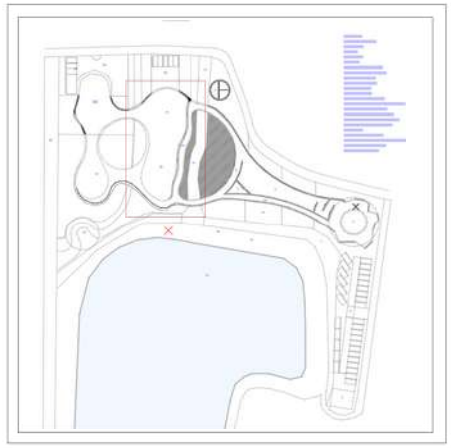
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Layout ID Revision

A.01.6

FACTORY





1. Drop Area Same Level as Truck For Droping sallaca
2. Temporary Storage for Queue to enter the machine
3. Peeling Machine Sparated between Seed, Skin And Flesh
4. Skin Dumster area (Can easly transfer Directly to the garbage Ouside)
5. Raw Product (Bean and Flesh)
6. Chips Machine (detailed machine in writing product)
7. Wet Product machine like Juice and Selai (Detailed Machine In writing Product)
8. Entrance for Visitor To learn inside the factory
9. Visitor COrridor behind the glass
10. Connector COrridor between factory and office
11. Connector COrridor between Factory and Storage
12. Sallaca Coffe Machine

Blue Line = Finished Product To the Storage

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Drawing Name

Drawing Status

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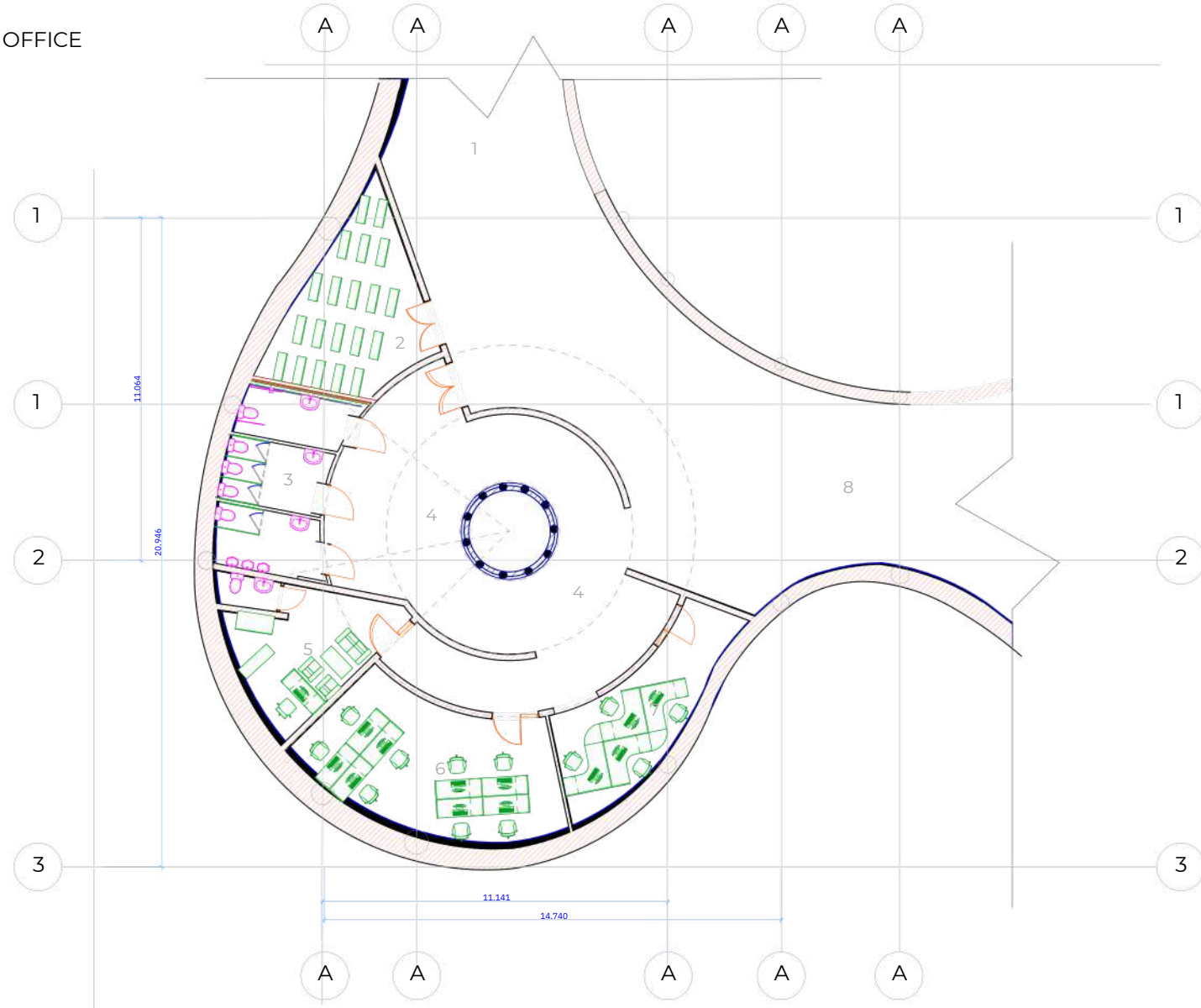
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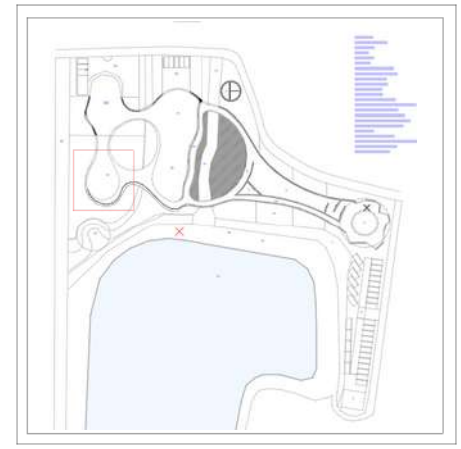
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Layout ID Revision

A.01.7

OFFICE





1. Conection Corridor between Storage and Office
2. Locker Room
3. Toilet Man , Woman And Disabilitas
4. Corridor Conection around Parametric Primer Structure
5. CEO Office
6. Accounting Office
7. Marketing Office
8. Conection Corridor Between Factory and Office

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Drawing Name

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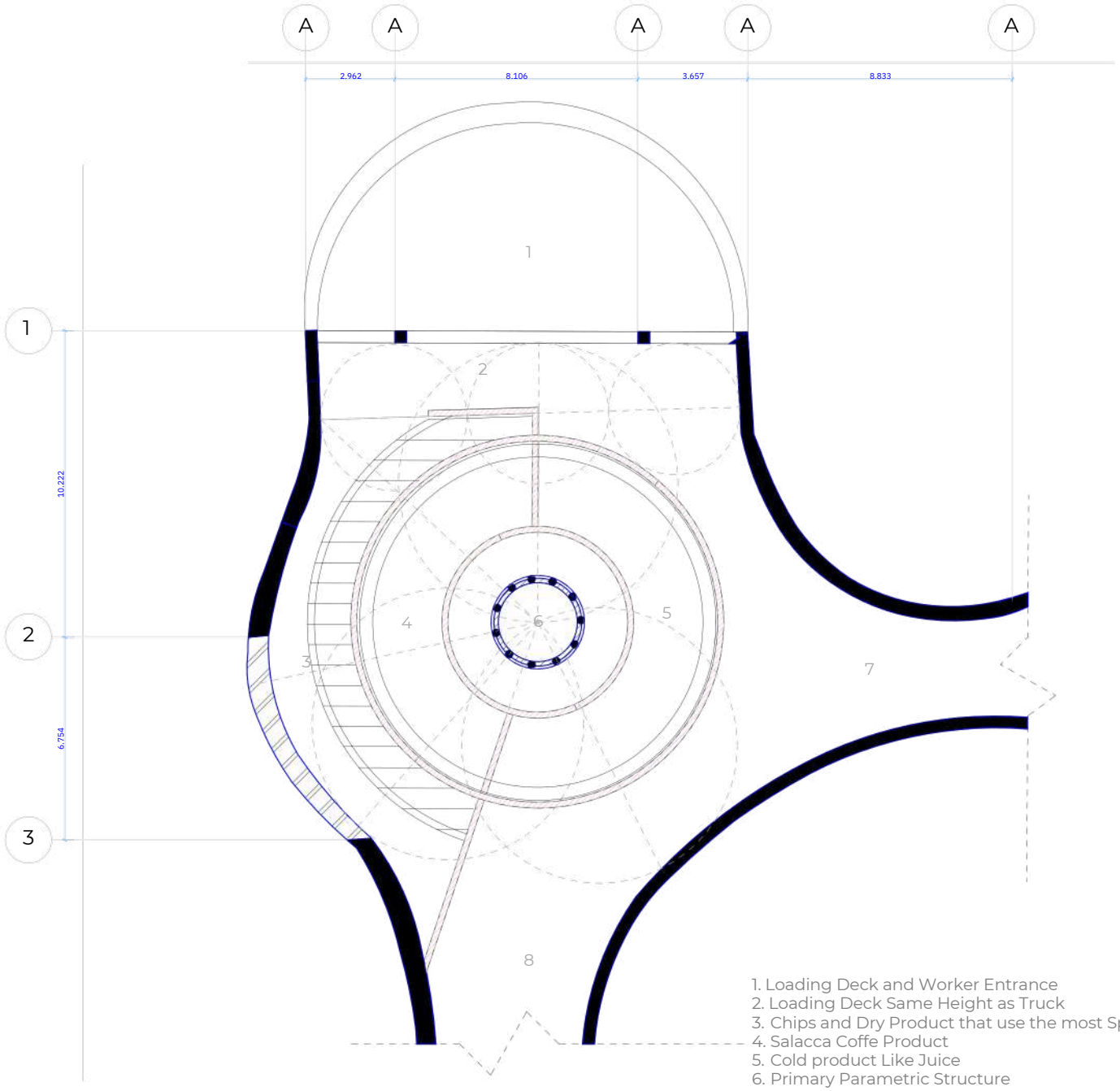
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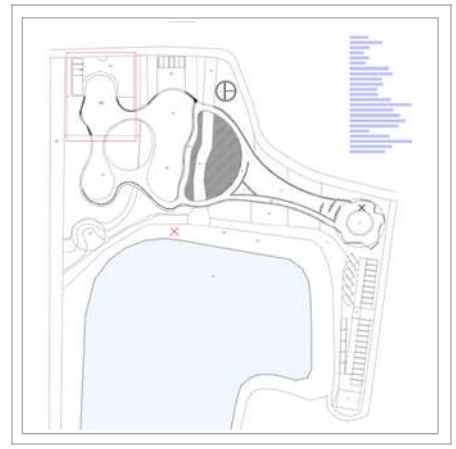
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Drawing Scale

Layout ID Revision

A.01.8





1. Loading Deck and Worker Entrance
2. Loading Deck Same Height as Truck
3. Chips and Dry Product that use the most Space (Tiered storage racks)
4. Salacca Coffe Product
5. Cold product Like Juice
6. Primary Parametric Structure
7. Corridor Conection Between Factory and Storage
8. Conection Corridor Between Office and Storage

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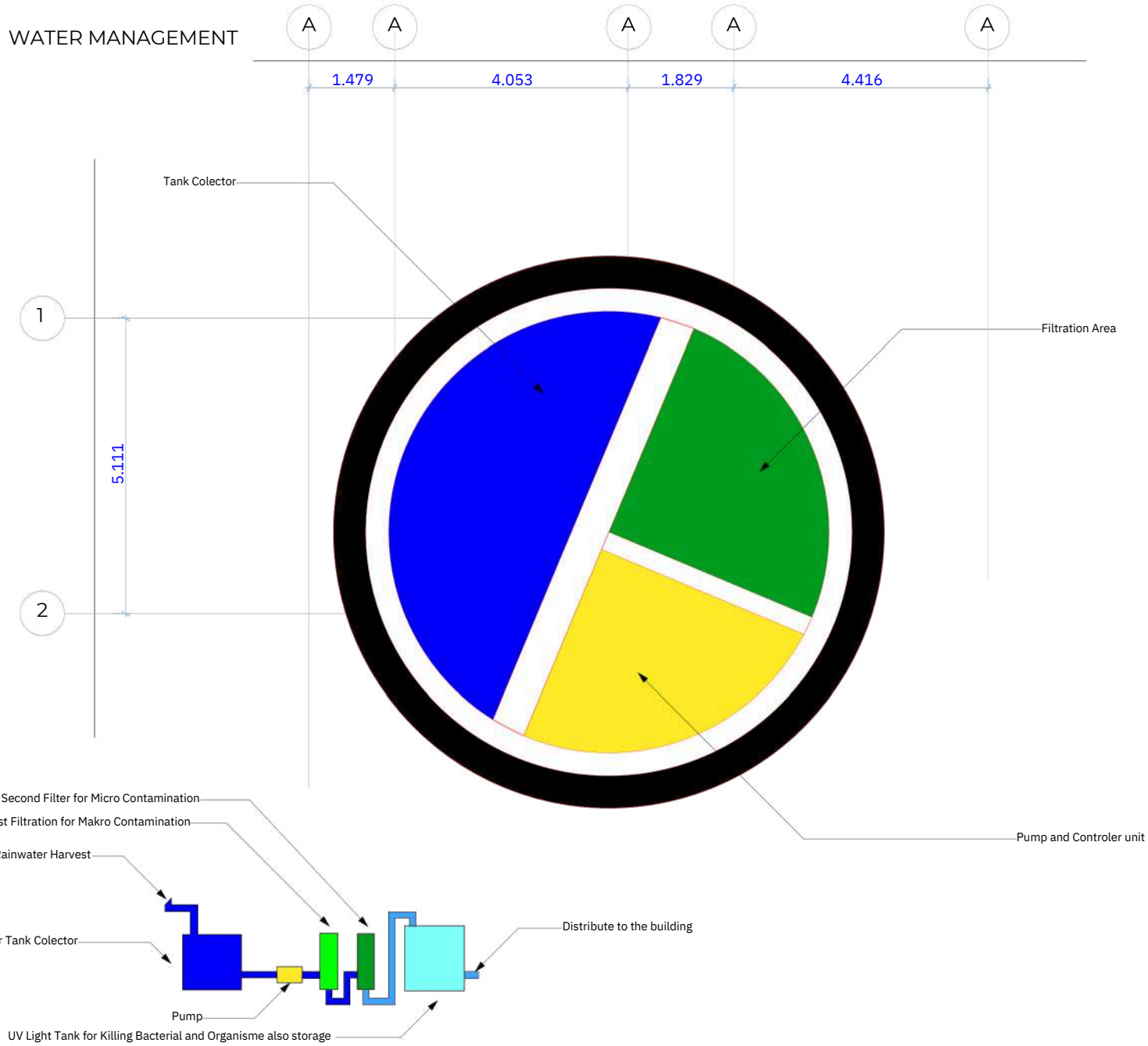
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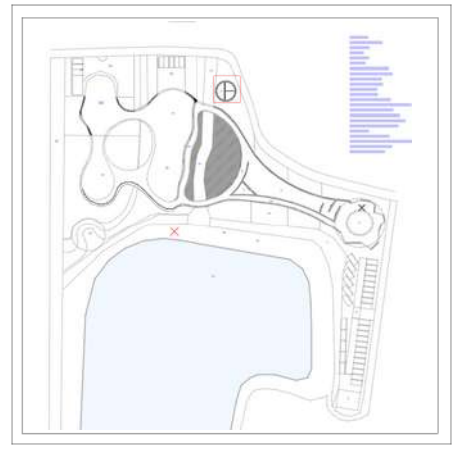
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A.01.9

WATER MANAGEMENT





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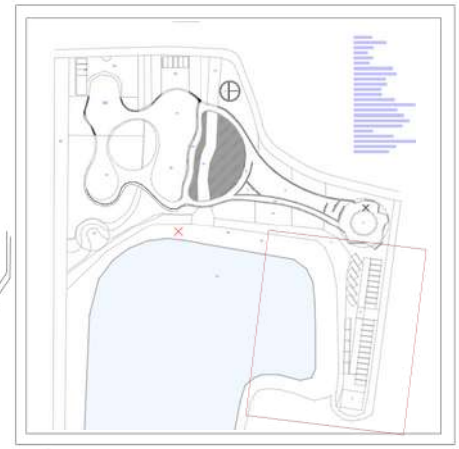
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Layout ID Revision

A.01.10

PARKING AREA





32 Car Parking and 80m2 Motorcycle Parking

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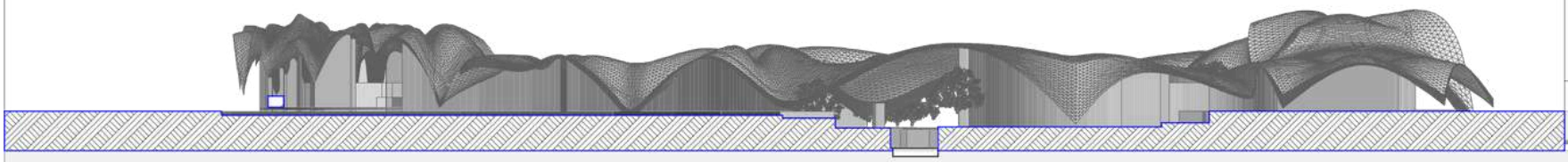
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A.01.11



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Drawing Status

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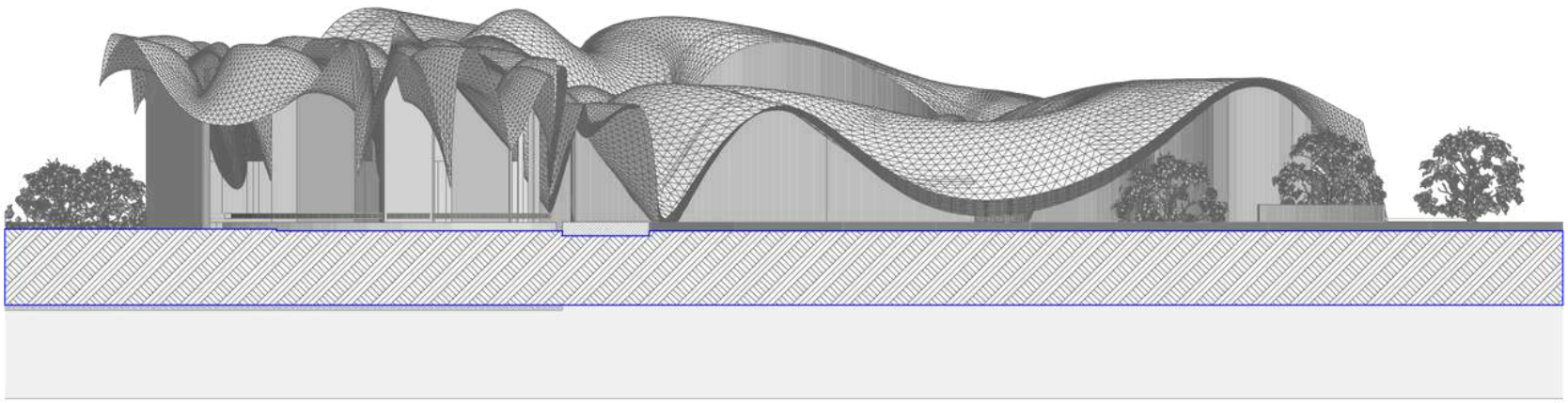
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Layout ID Revision

A.02.1



1 10 30 50

E-03 Elevation 1:200

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Drawing Status

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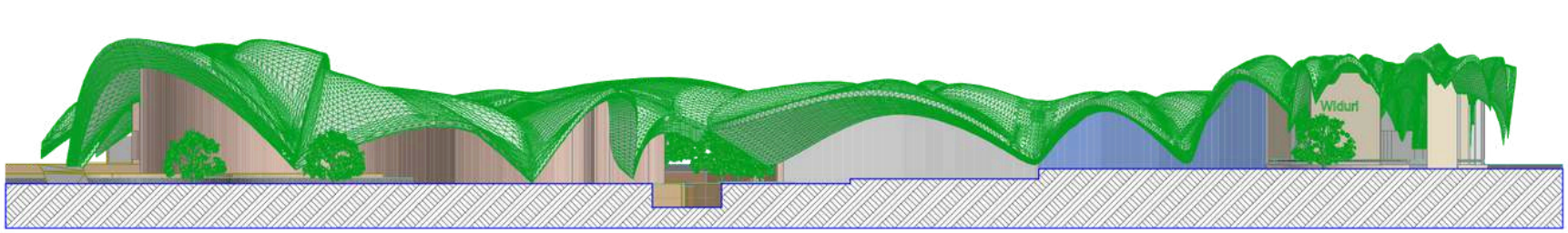
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1:200

Layout ID Revision

A.02.2

NORTH ELEVATION



E-02 Elevation 1:350

1 10 30 50

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Drawing Name

Drawing Status

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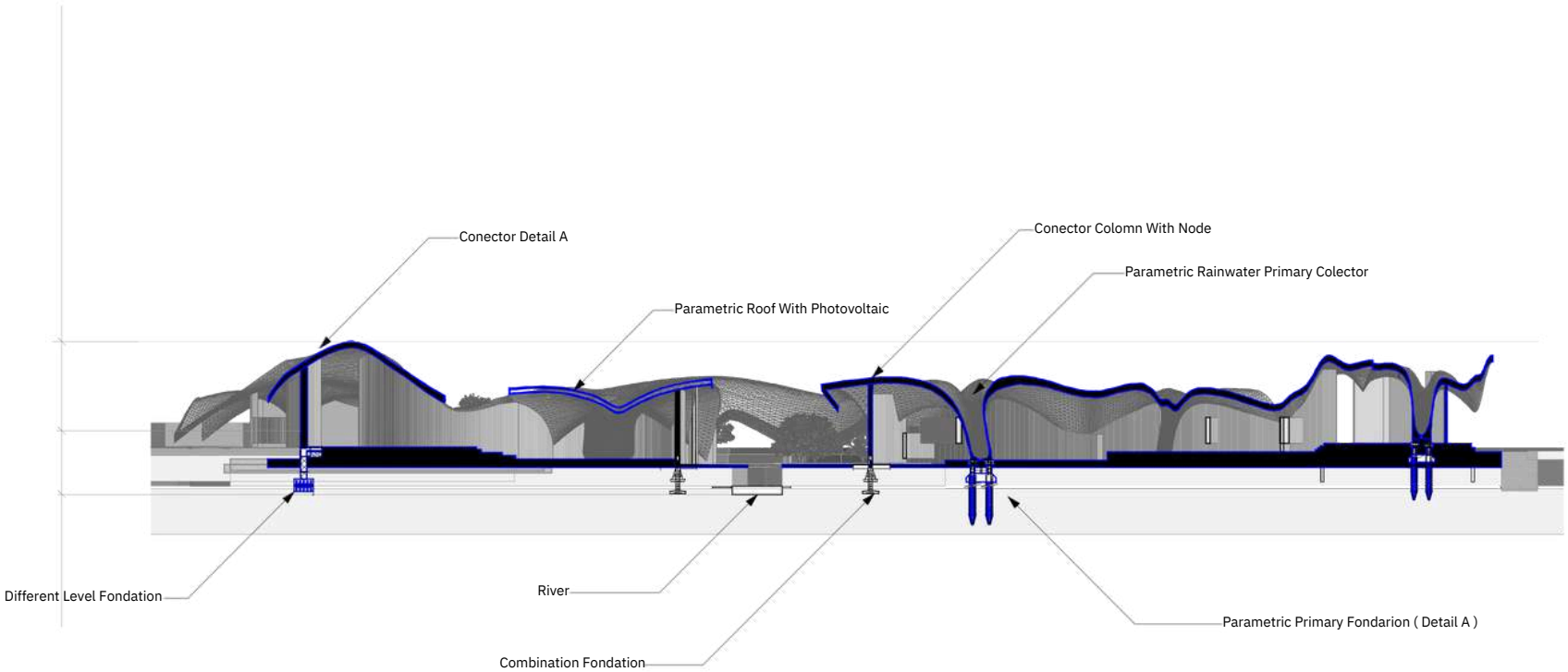
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Layout ID Revision

A.02.3

SITE SECTION A



1 10 30 50

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Drawing Status

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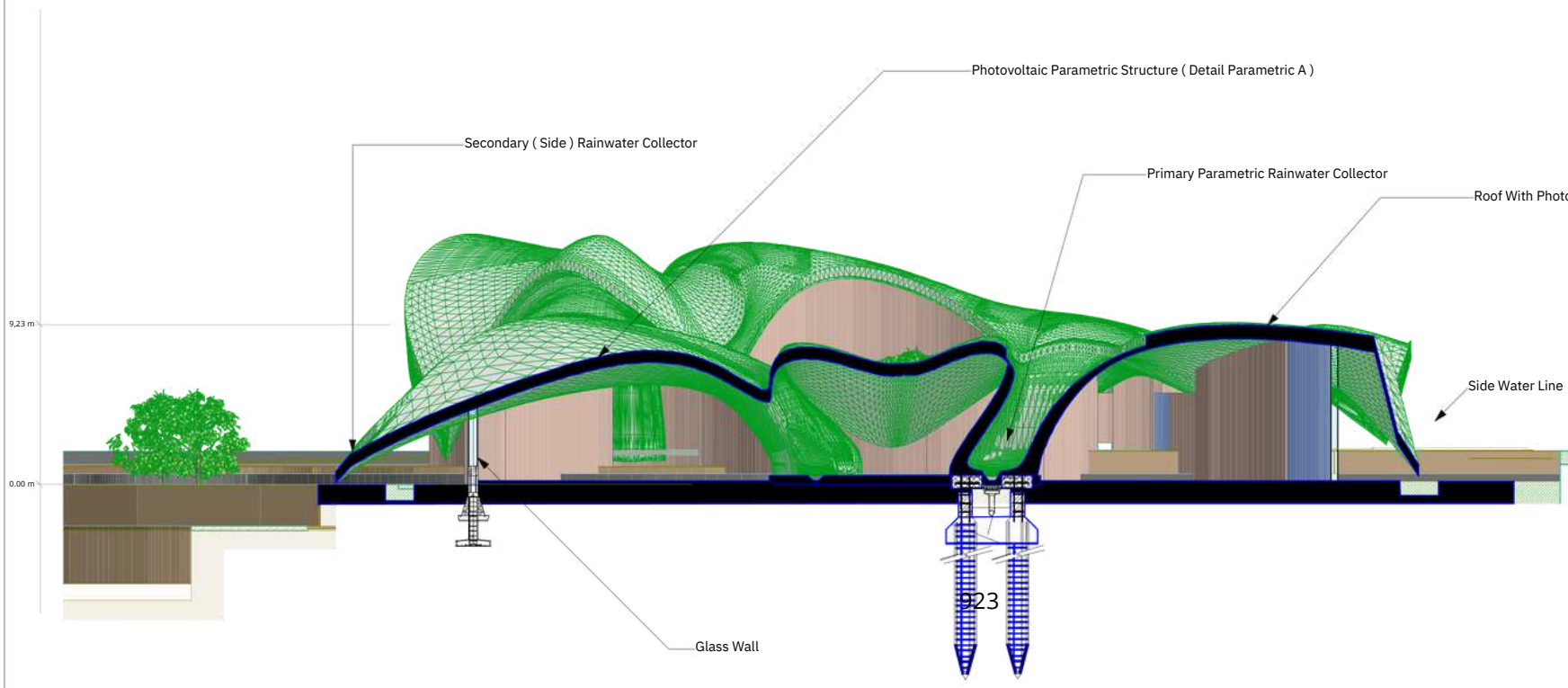
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Layout ID Revision

A.03.1 Site



Building Section (1)

1:200

1 10 30 50

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Drawing Status

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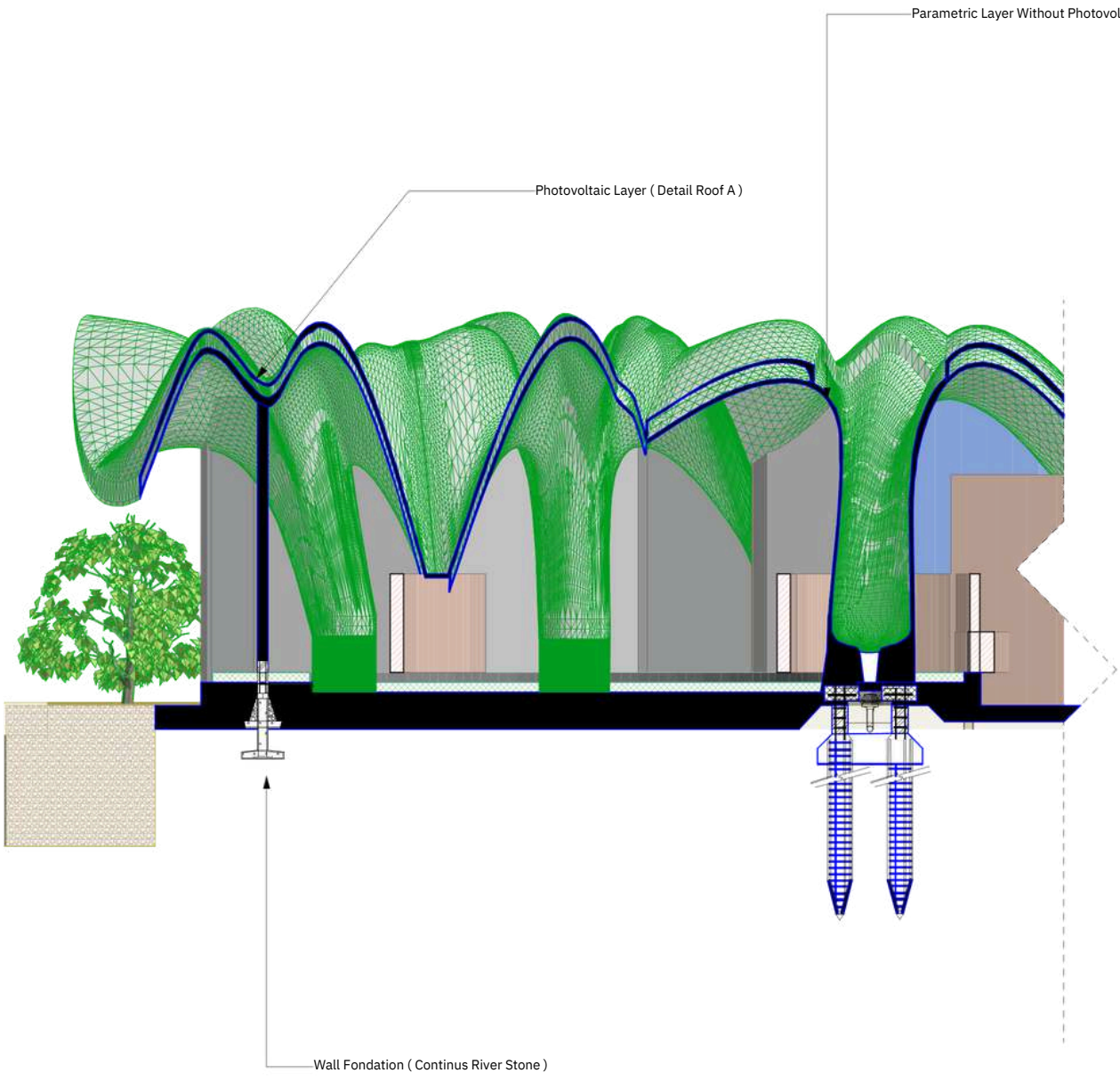
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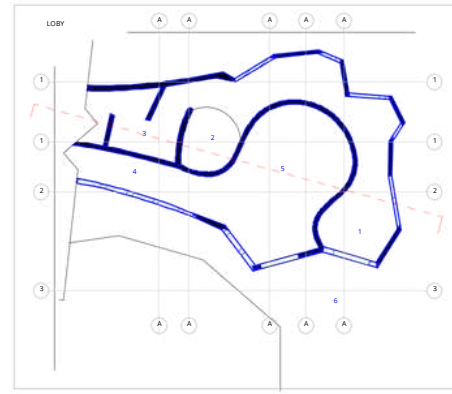
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Layout ID Revision

A.03.2 SIte





S-08 Loby Section 1:100

1 10

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Drawing Name

Drawing Status

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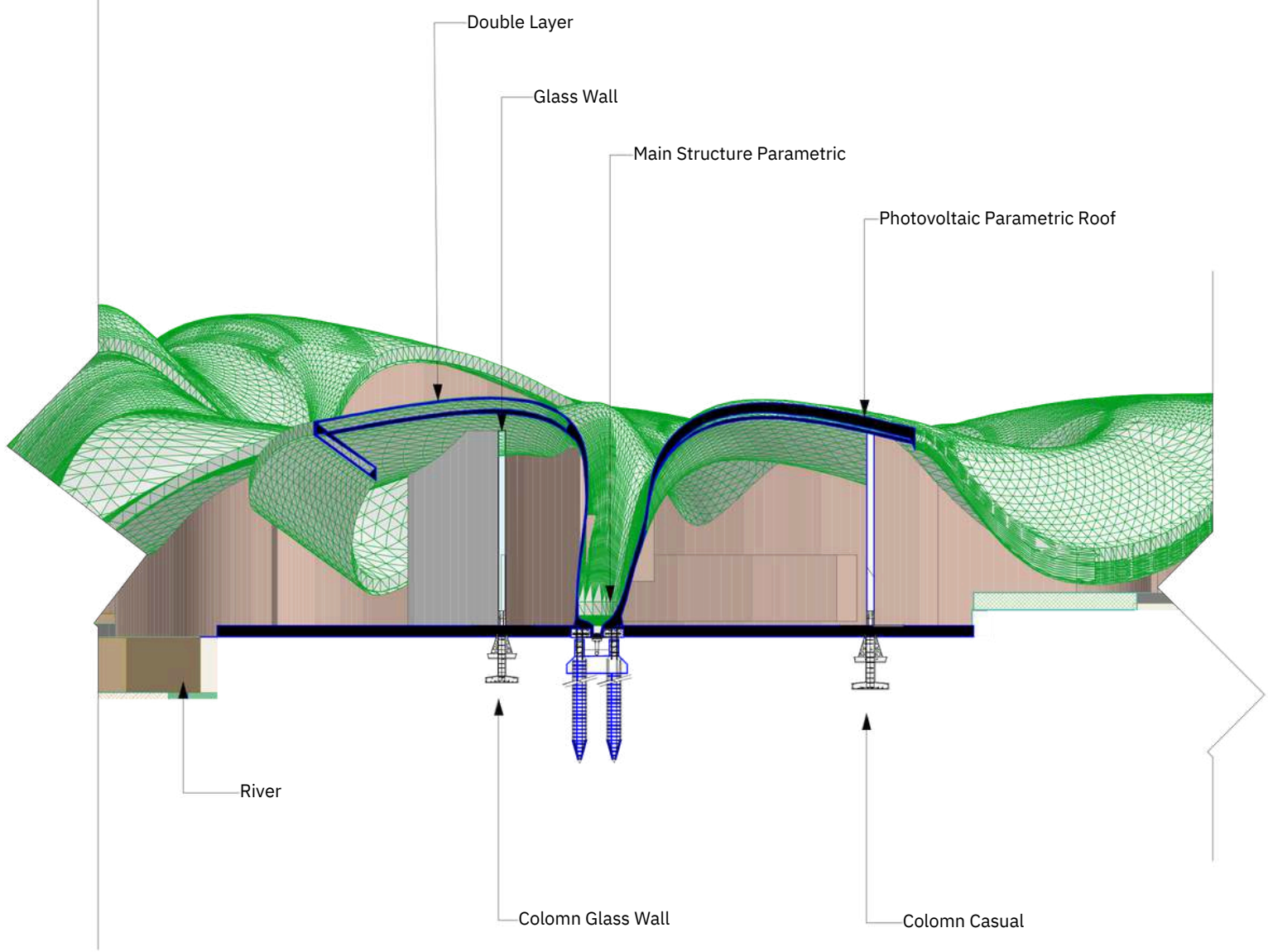
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Layout ID Revision

A.03.3 Loby AA



S-07 Building Section 1:138.00

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Drawing Status

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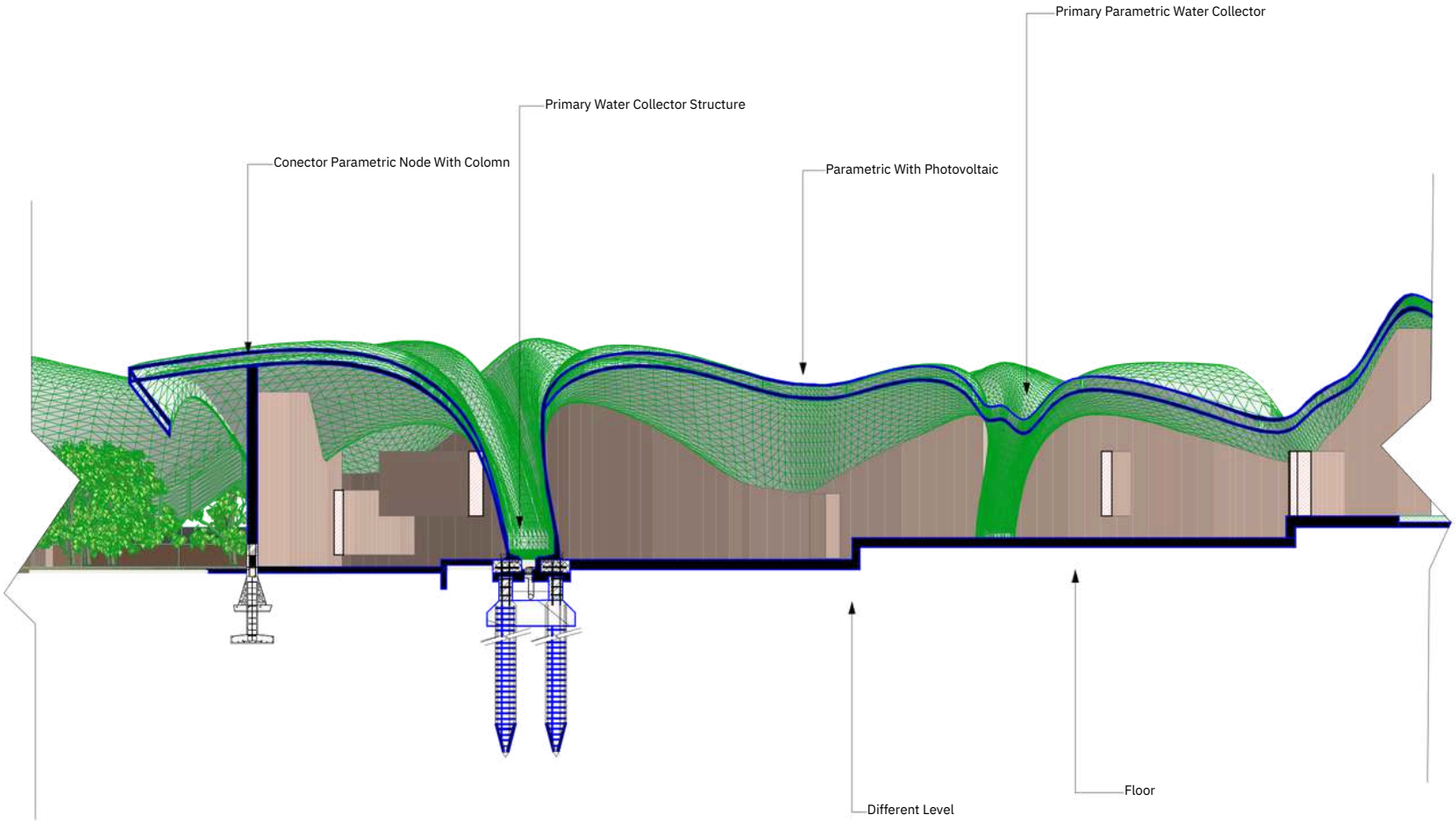
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Drawing Scale

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Layout ID Revision

Galery Section



S-01 Building Section (2) 1:150

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Drawing Status

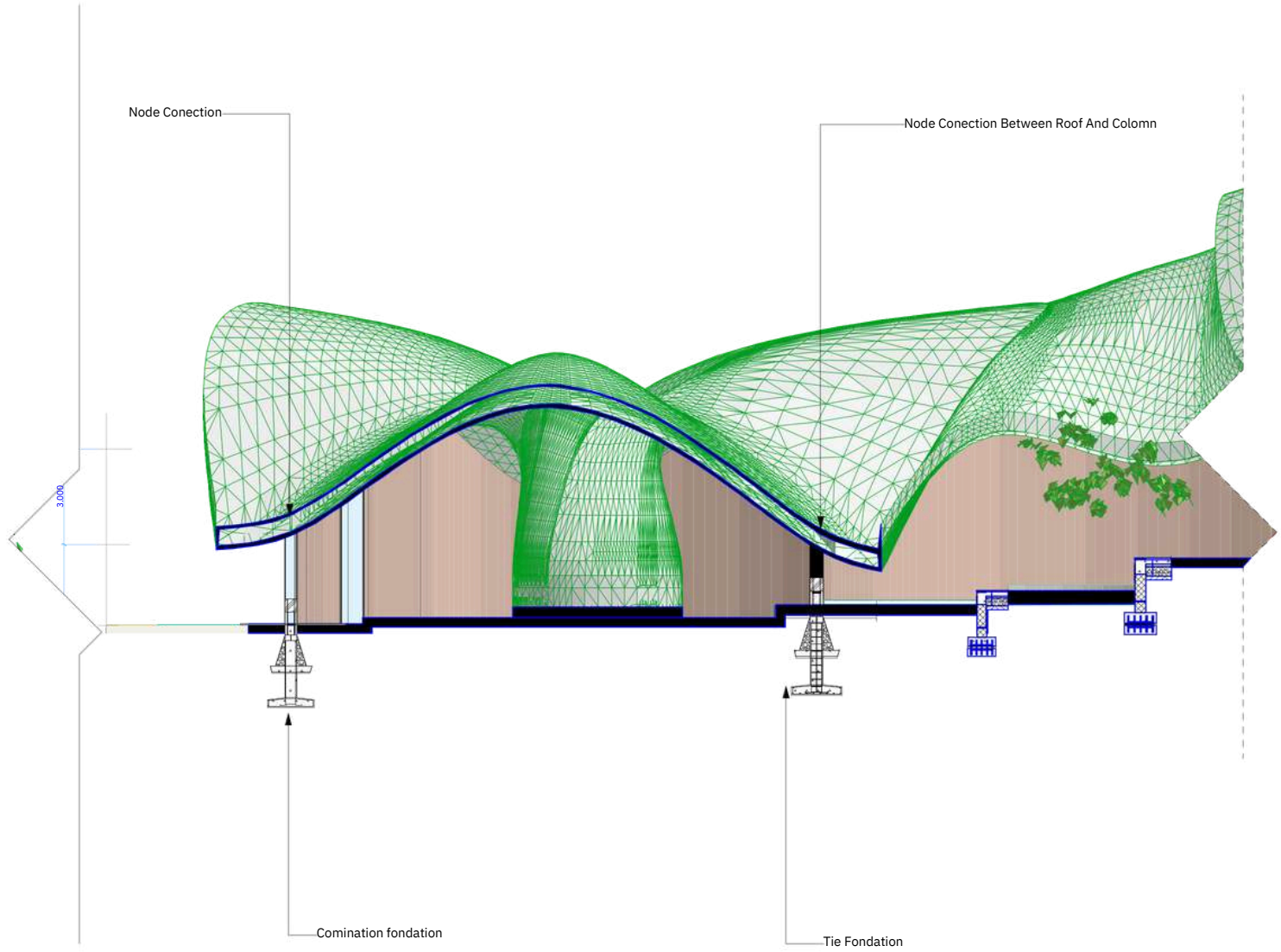
Modified by Date

Checked by Date

Drawing Scale

1:150

Layout ID Revision



S-10 Factory Section B 1:100

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Drawing Name

Drawing Status

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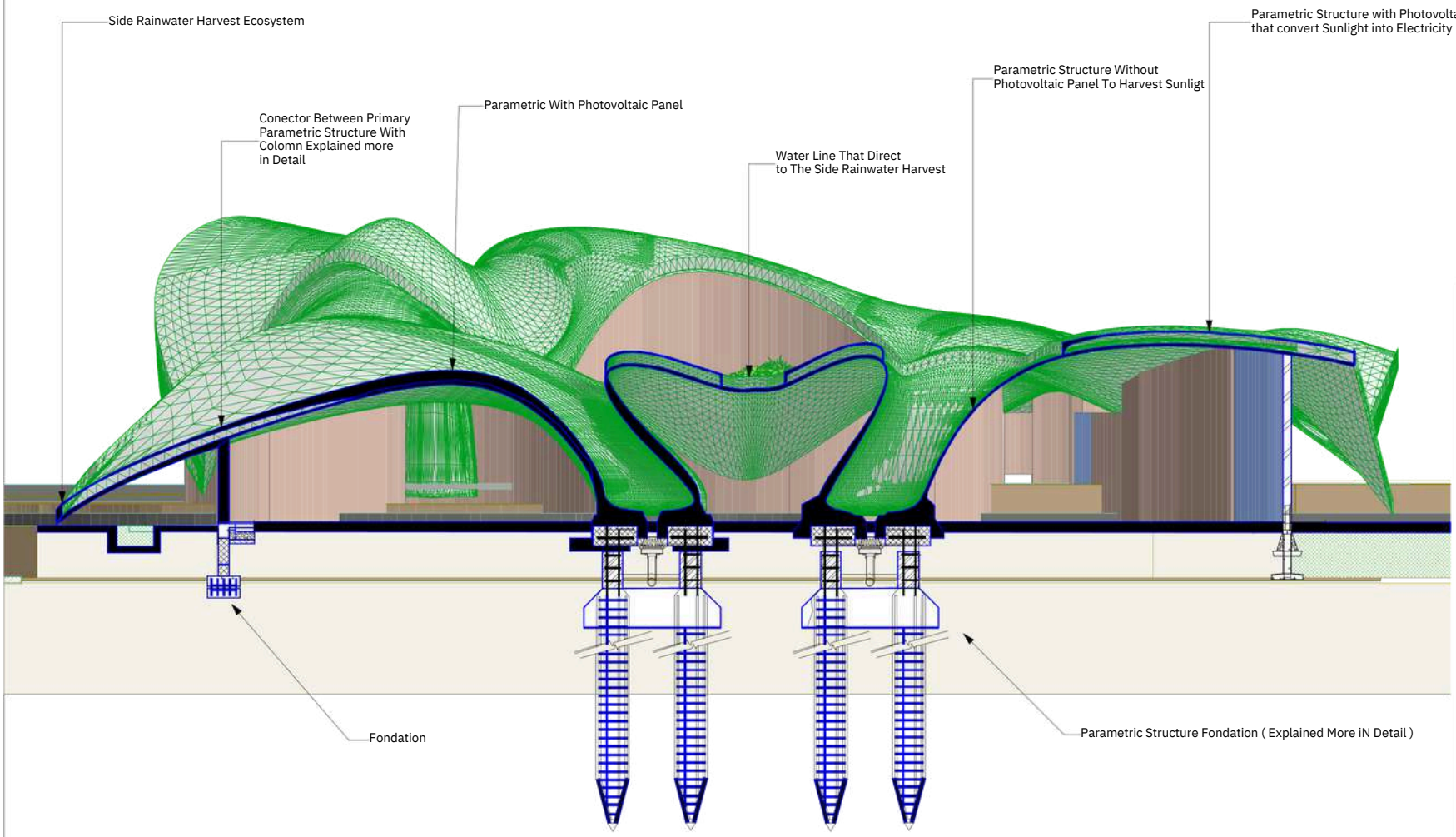
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Drawing Scale

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Layout ID Revision

A.03.6 Factory



Elevation (1)

1:150

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Drawing Status

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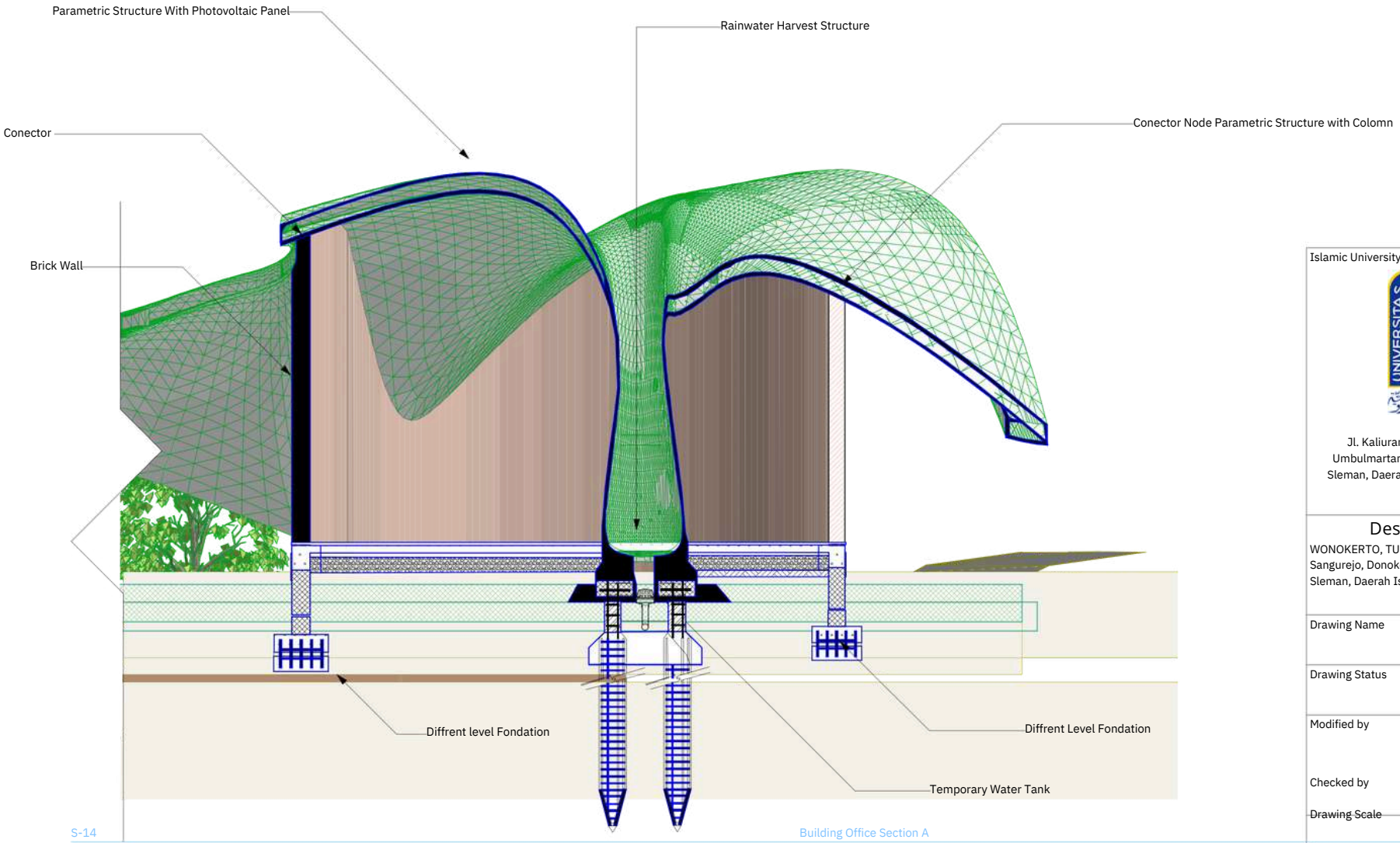
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Layout ID Revision

A.03.7 Factory



S-14

Building Office Section A

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Drawing Name

Drawing Status

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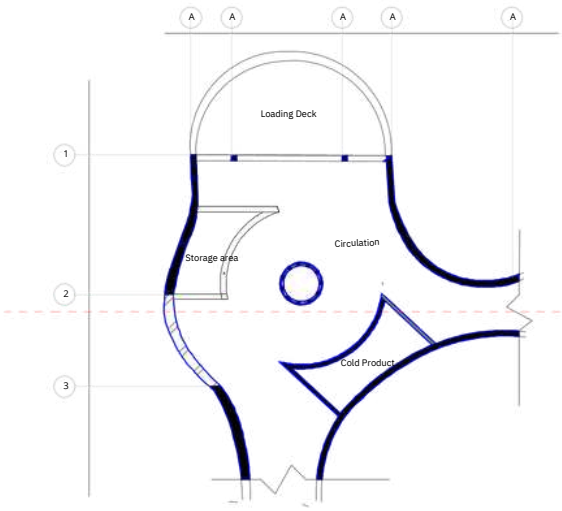
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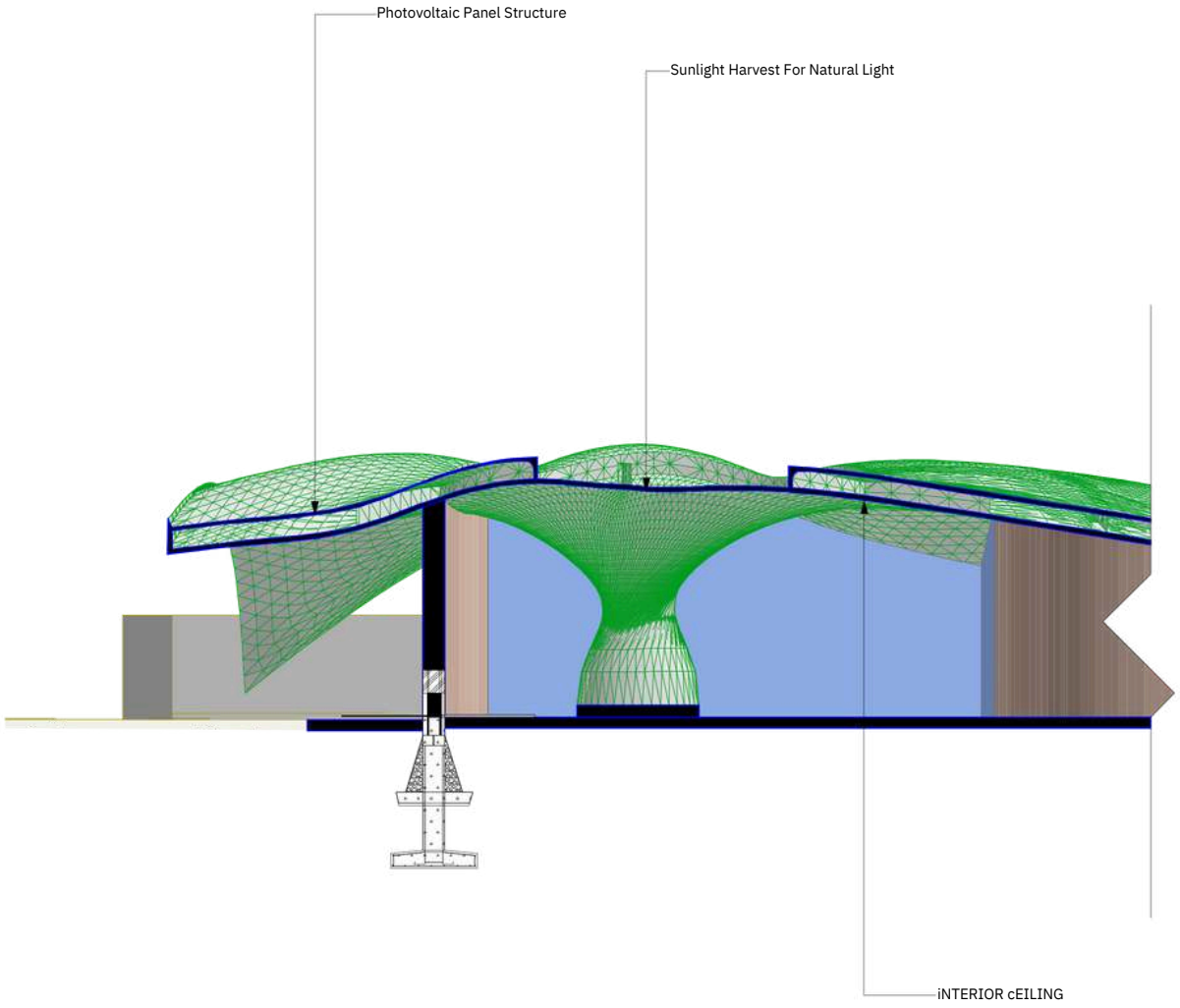
Drawing Scale

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Layout ID Revision

A.03.8 Office





S-12 Building Storage Section A 1:100

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Drawing Name

Drawing Status

Modified by Date

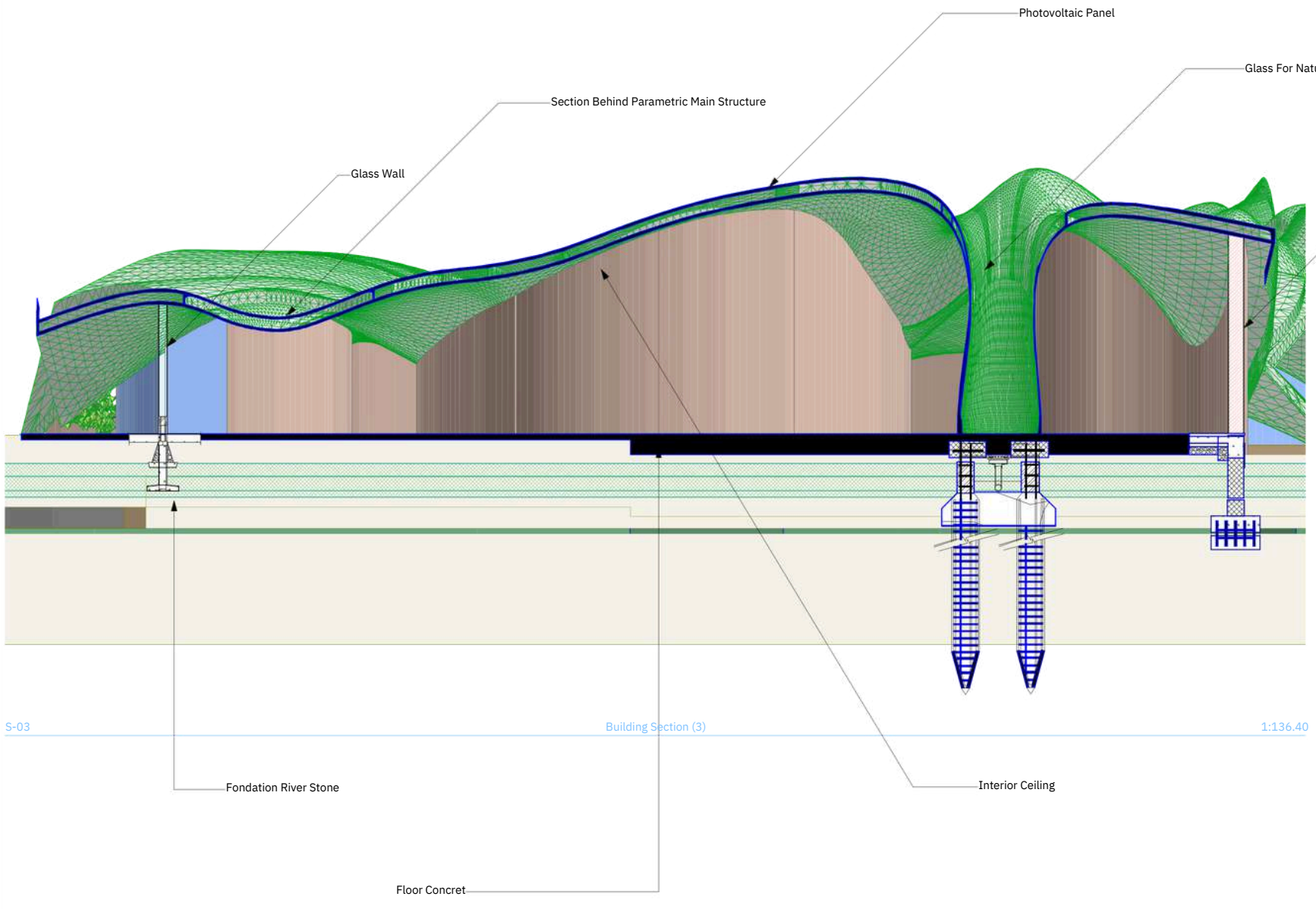
Checked by Date

Drawing Scale

1:100

Layout ID Revision

Storage



S-03 Building Section (3) 1:136.40

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Drawing Name

Drawing Status

Modified by Date

Checked by Date

Drawing Scale

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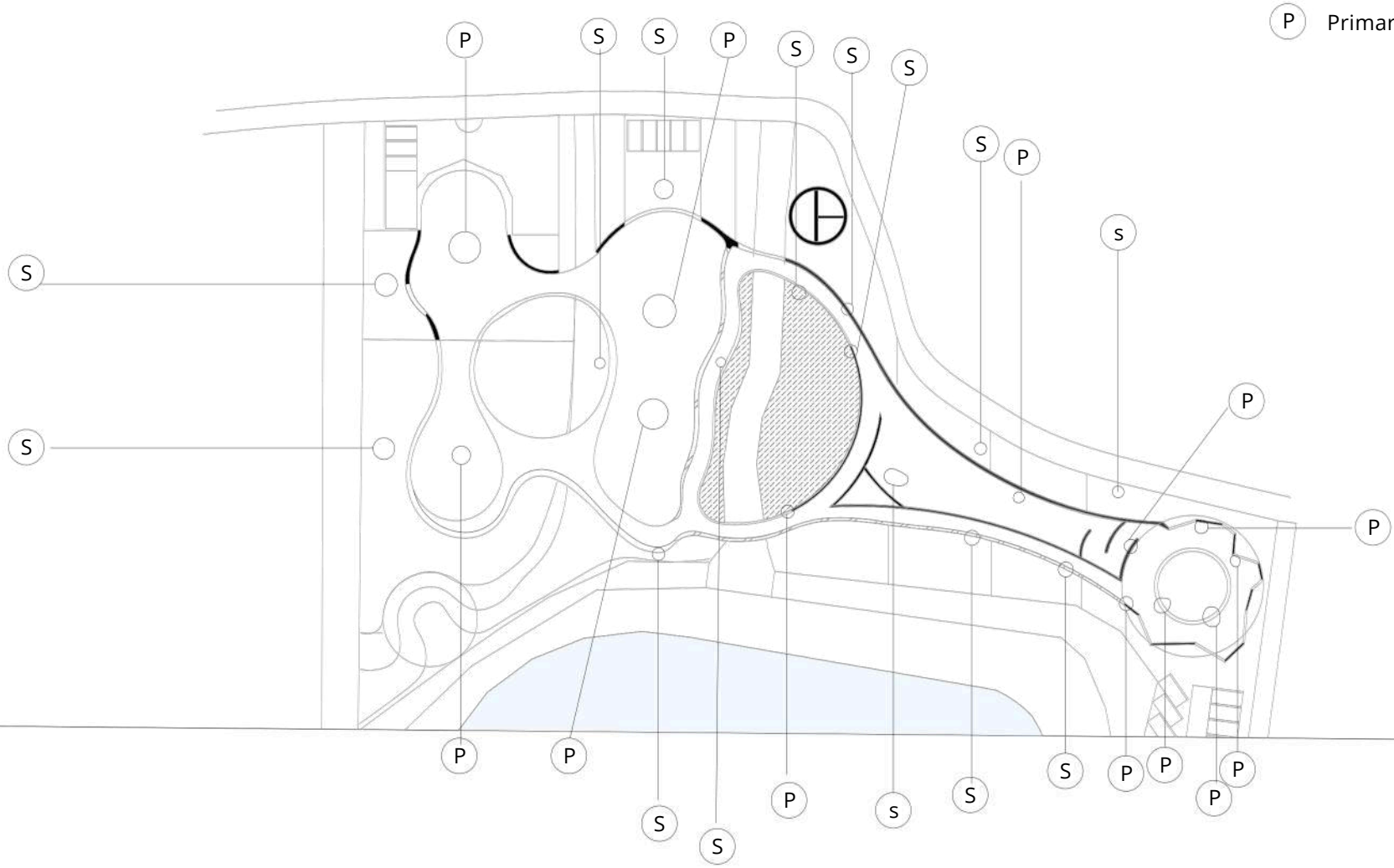
Layout ID Revision

A.03.10 Storage

Fondation Plan

S Secondary

P Primary Structure



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Drawing Name

Drawing Status

Modified by Date

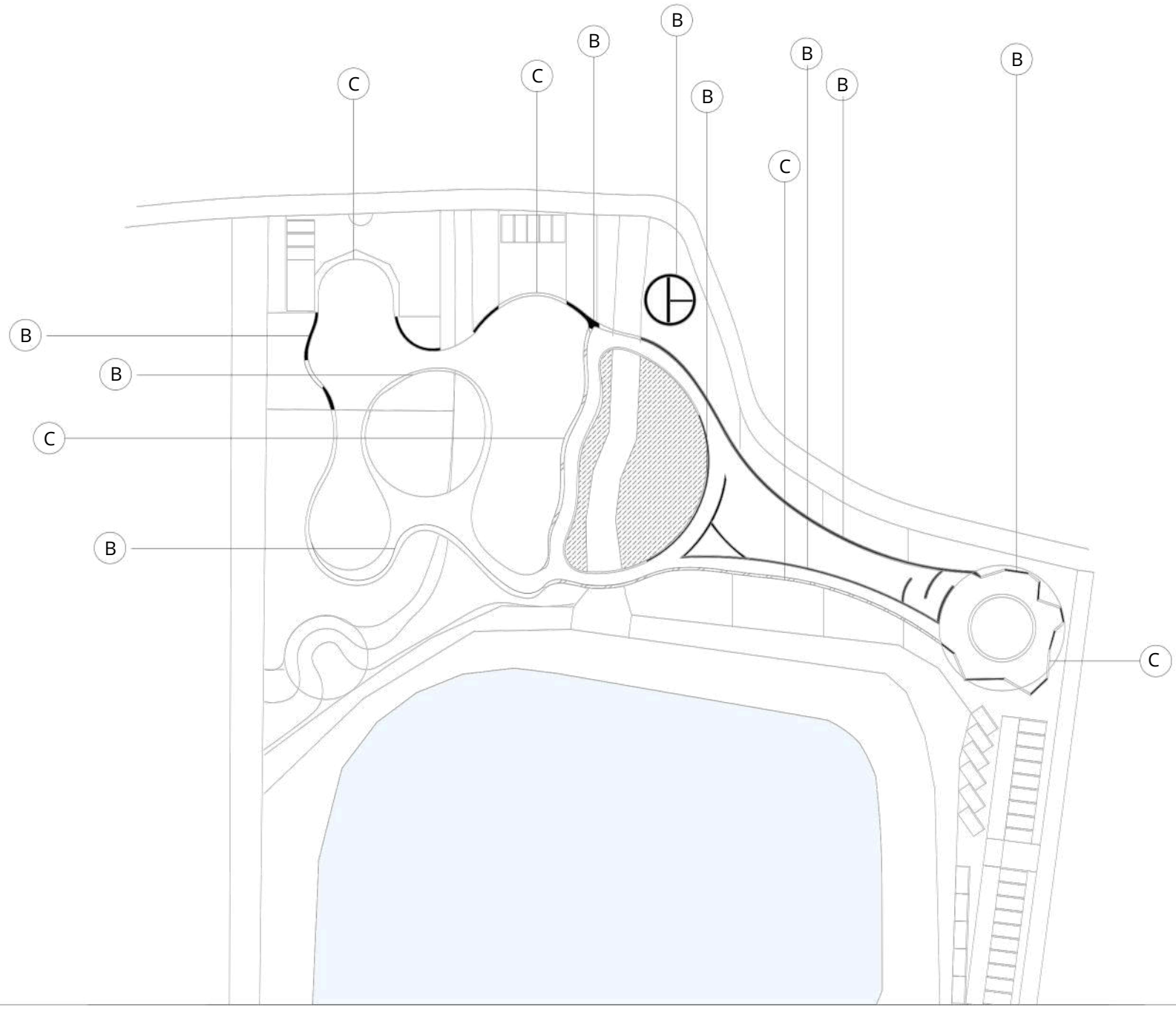
Checked by Date

Drawing Scale

Layout ID Revision

A.05.1

WALL PLAN STRUCTURE



C Combine Glass and Wall

B Brick Wall

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Drawing Name

Drawing Status

Modified by Date

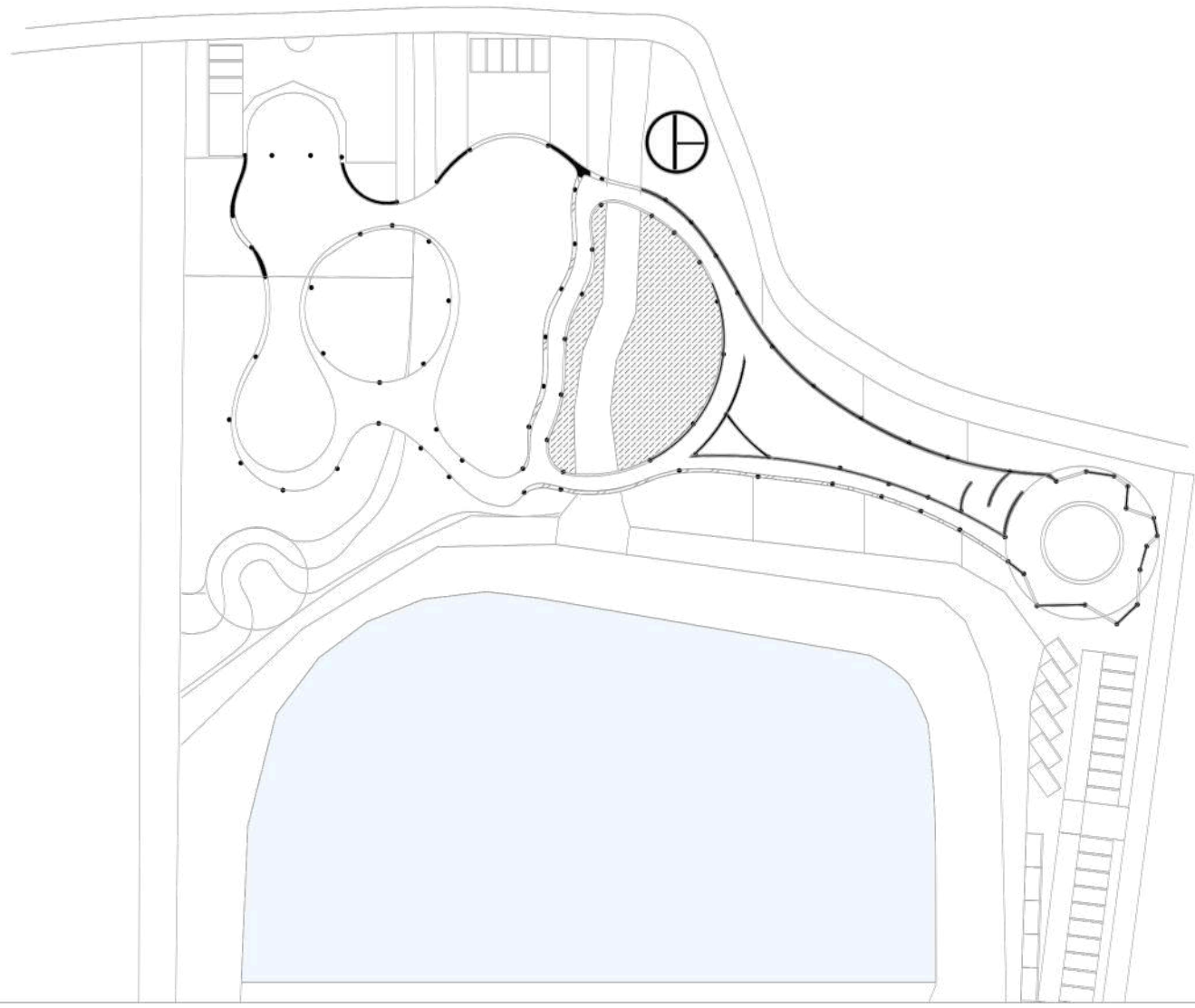
Checked by Date

Drawing Scale

Layout ID Revision

A.05.2

Colomn Plan



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Drawing Name

Drawing Status

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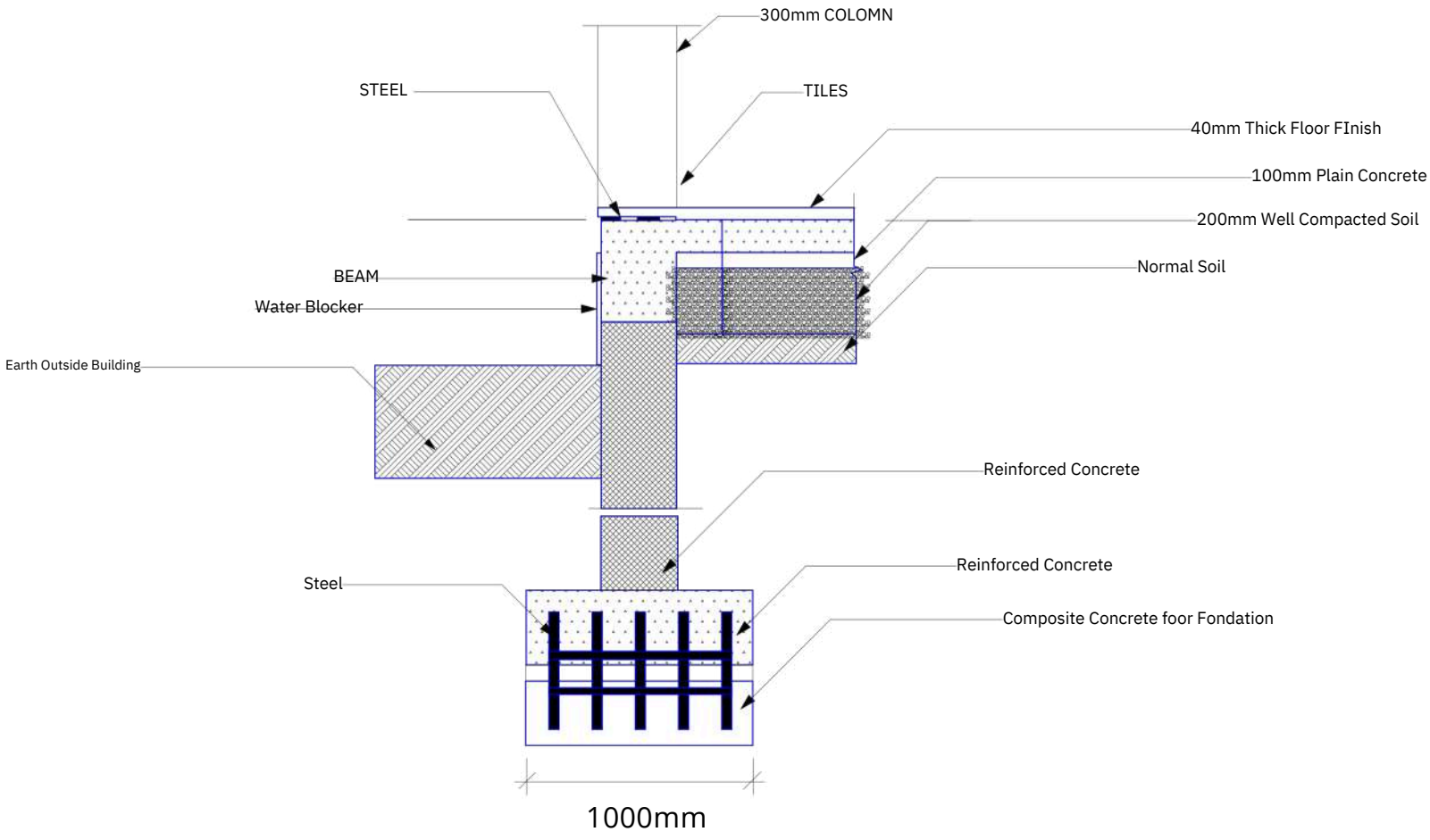
Checked by Date

Drawing Scale

Layout ID Revision

A.05.3

Diffrence level detail



Scale
1:10

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Drawing Name

Drawing Status

Modified by Date

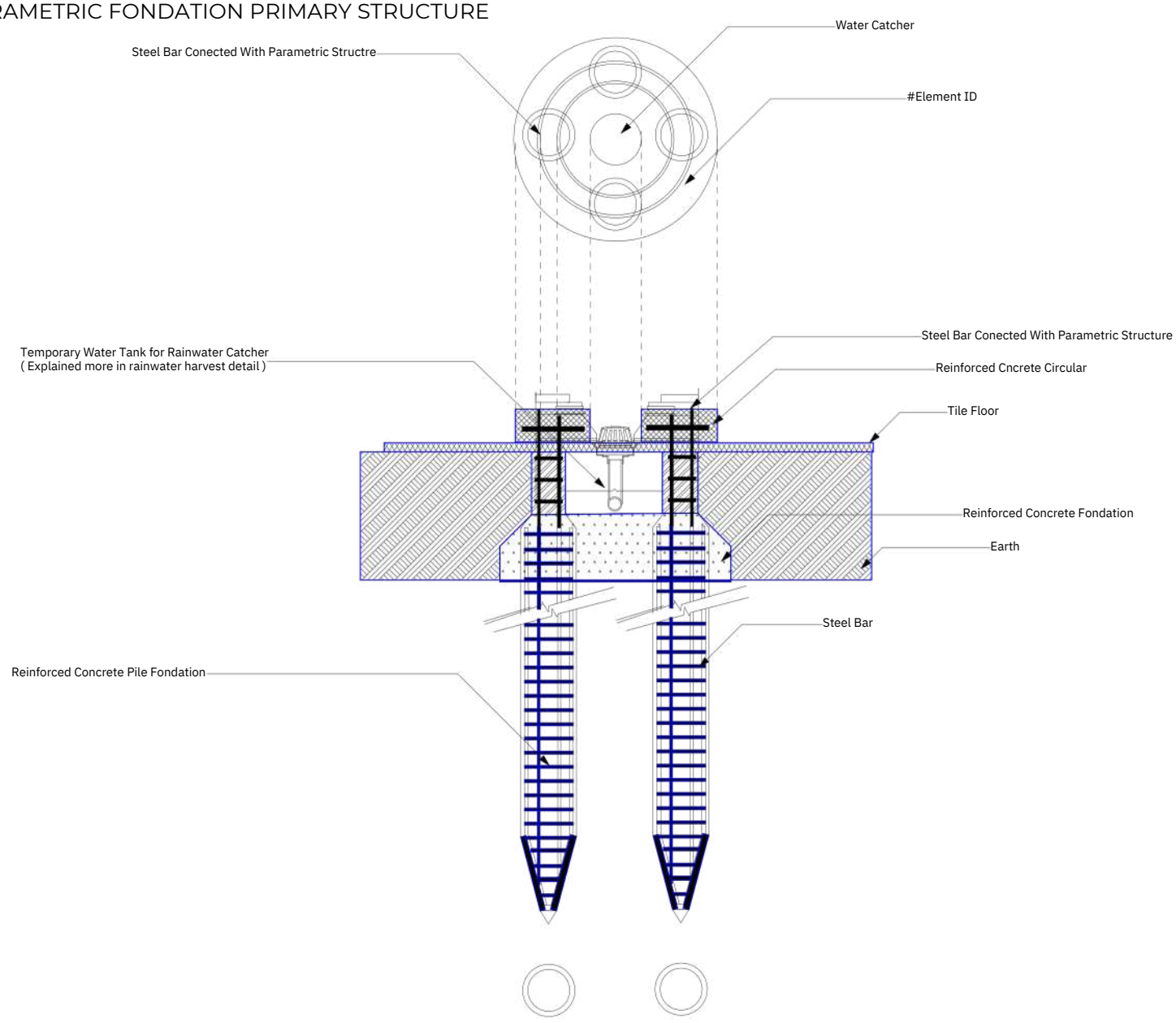
Checked by Date

Drawing Scale

Layout ID Revision

A.05.4

PARAMETRIC FONDATION PRIMARY STRUCTURE



CIRCULAR PILE

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Drawing Name

Drawing Status

Modified by Date

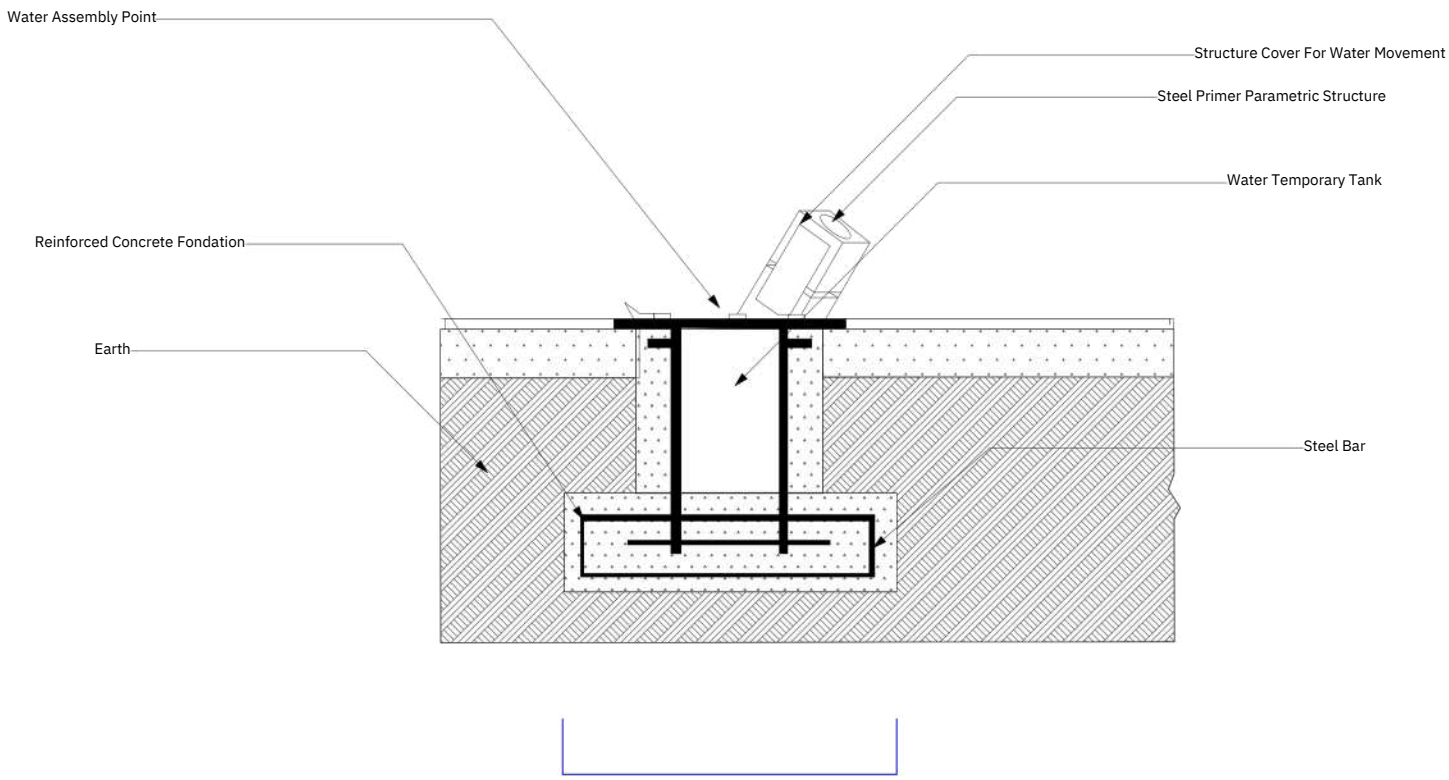
Checked by Date

Drawing Scale

Layout ID Revision

A.05.5

SIDE RAINWATER HARVEST DETAIL



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Drawing Name

Drawing Status

Modified by Date

Checked by Date

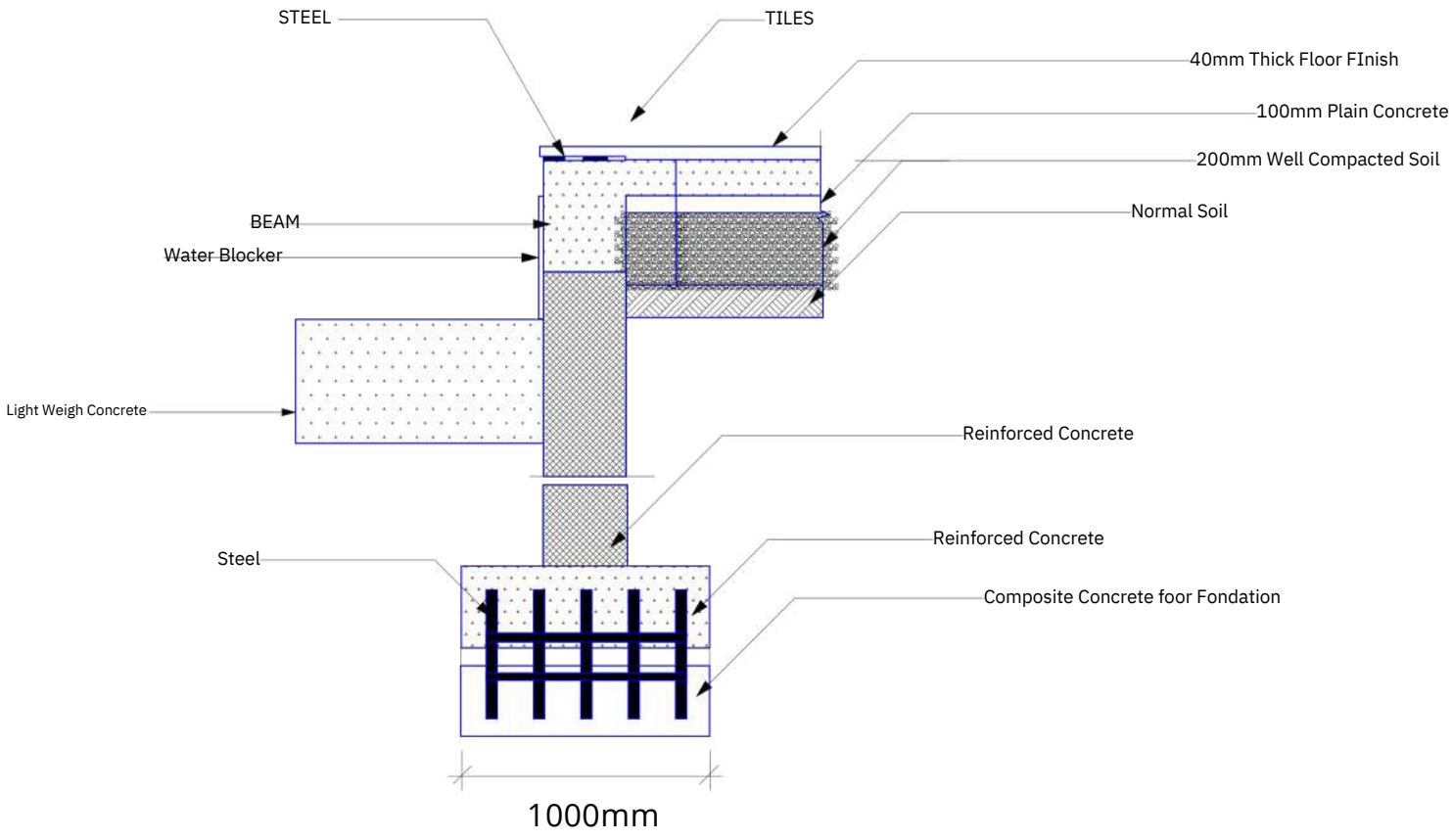
Drawing Scale

Layout ID Revision

A.05.6

DIFFRENCE LEVEL DETAIL NO WALL OR COLOMN

Diffrence level detail



Scale
1:10

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Drawing Name

Drawing Status

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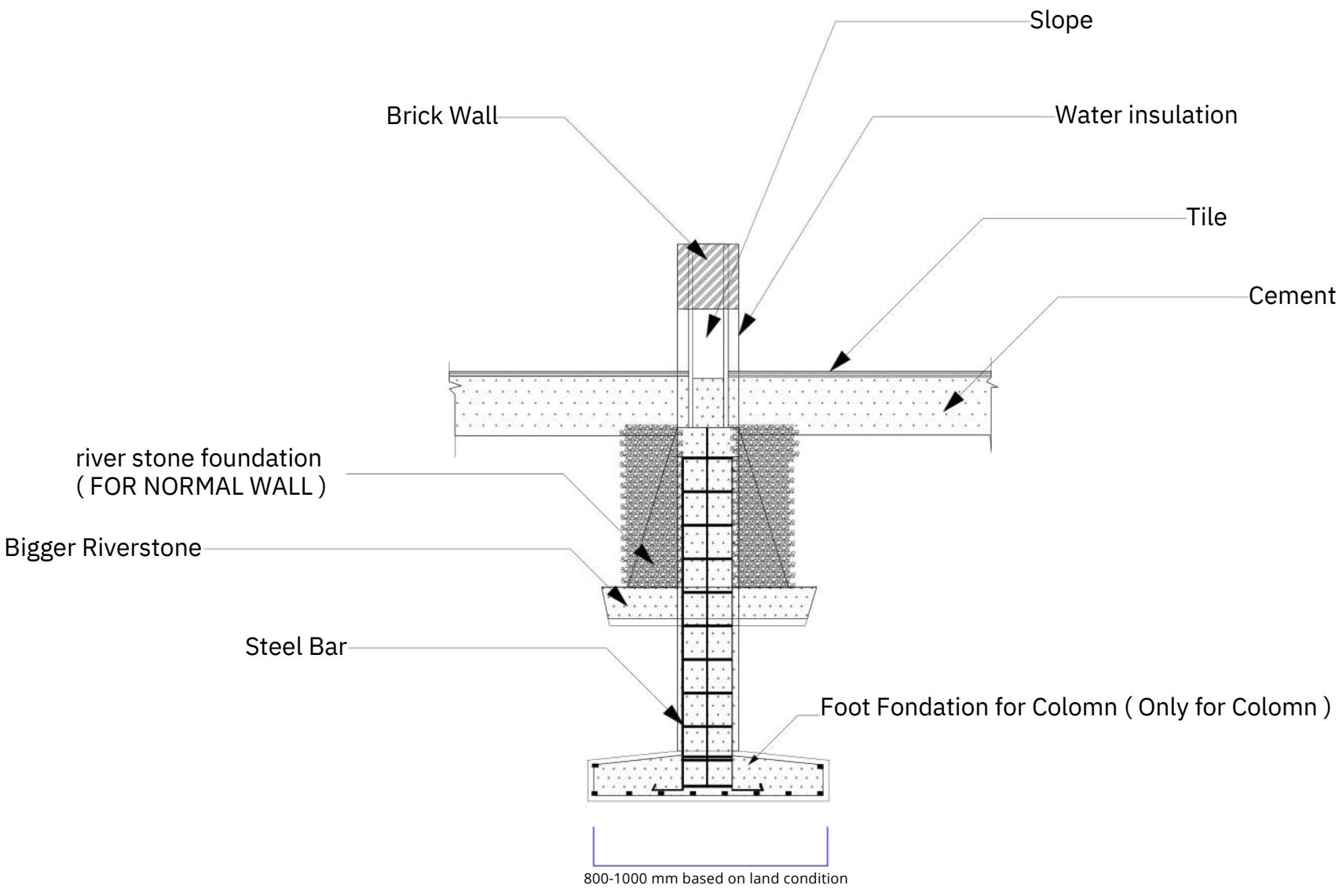
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Drawing Scale

Layout ID Revision

A.05.7

FOOT PLAT FONDATION AND CONTINUOUS RIVER STONE FONDATION DETAIL



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Drawing Name

Drawing Status

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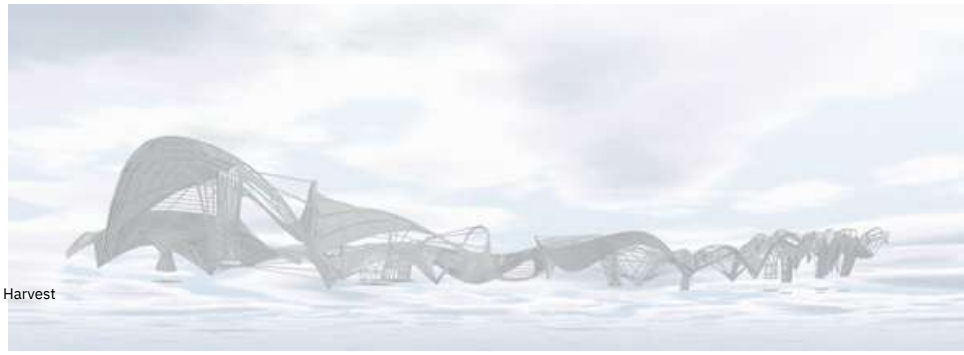
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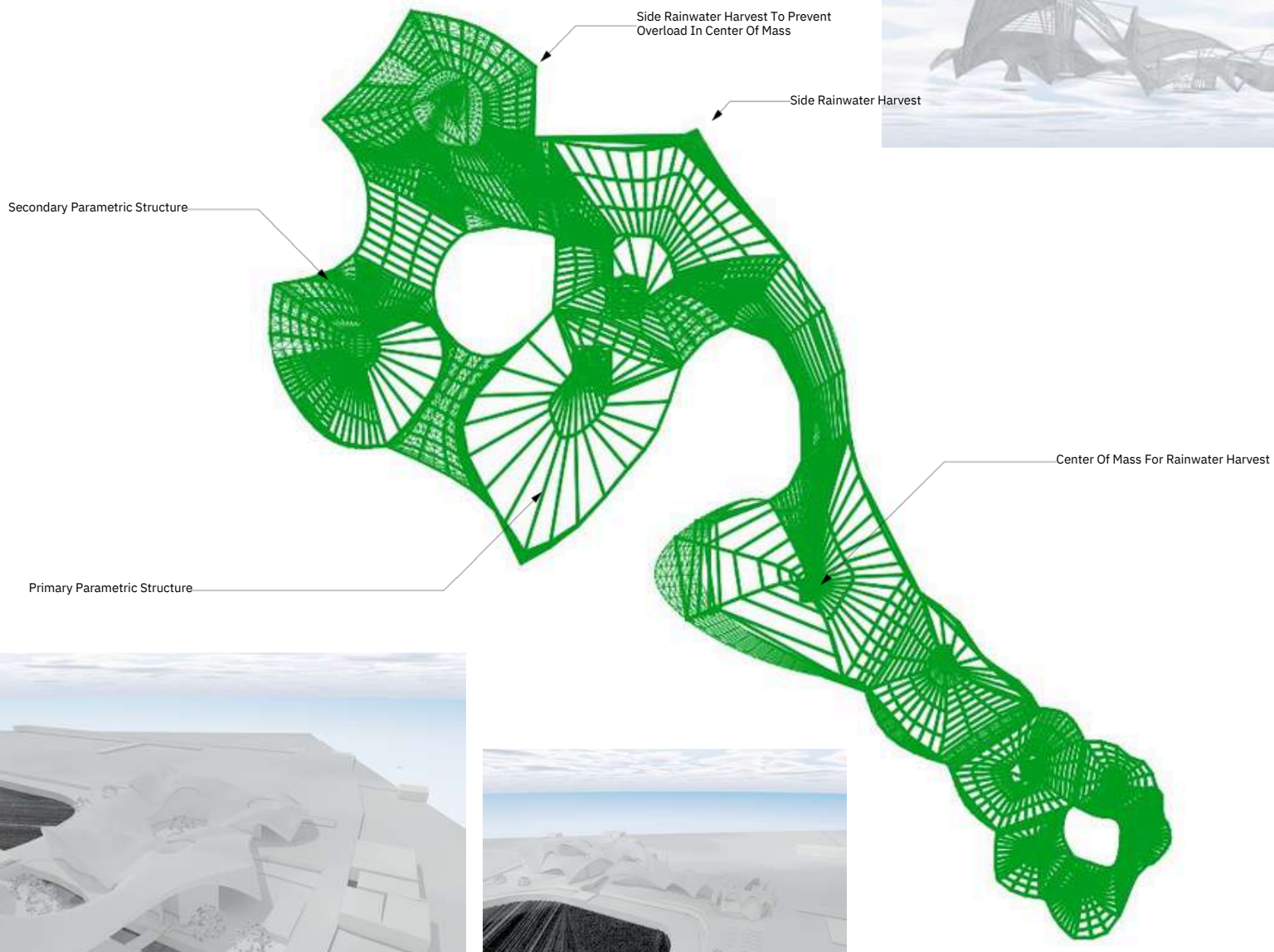
Drawing Scale

Layout ID Revision

A.05.8

PARAMETRIC ROOF STRUCTURE EXPOSED DETAIL A





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Drawing Name

Drawing Status

Modified by Date

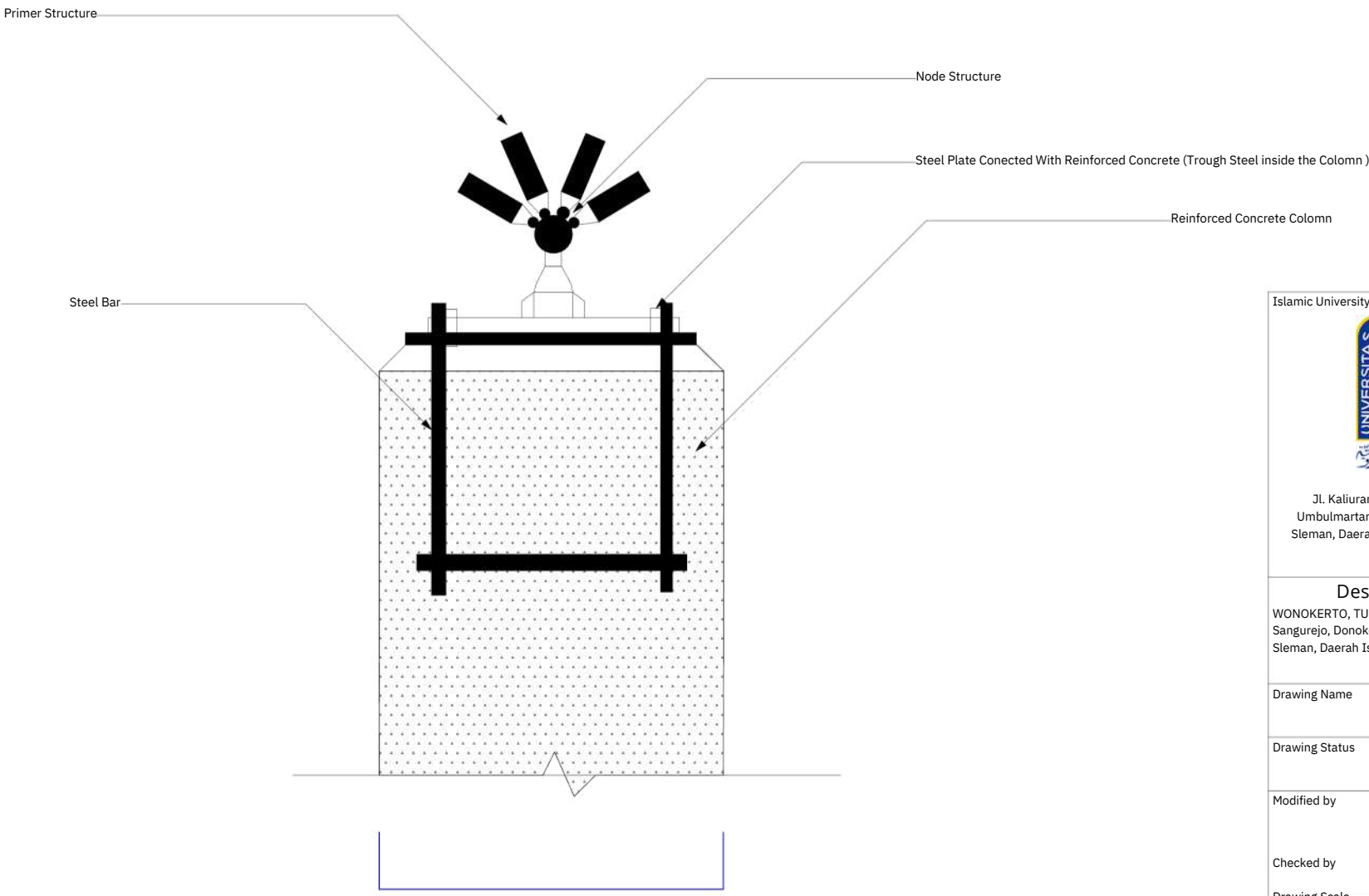
Checked by Date

Drawing Scale

Layout ID Revision

A.05.9

CONNECTION BETWEEN COLOMN AND PRIMARY PARAMETRIC ROOF STRUCTURE DETAIL



300-400 mm based on land condition and fondation

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Drawing Name

Drawing Status

Modified by | Date

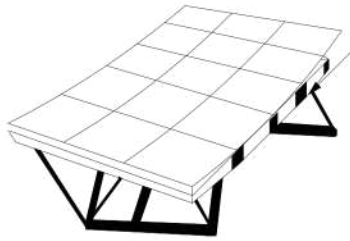
Checked by | Date

Drawing Scale

Layout ID | Revision

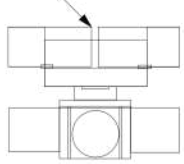
A.05.10

PARAMETRIC ROOF DETAIL B

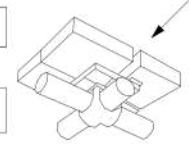


Solar Panel Ecosystem like WIre , temporary batry and Photopoltaic Membrane

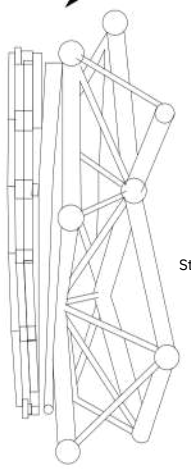
Conection Between Structure to Solar Panel Ecosystem



Bottom View for Conection



Section



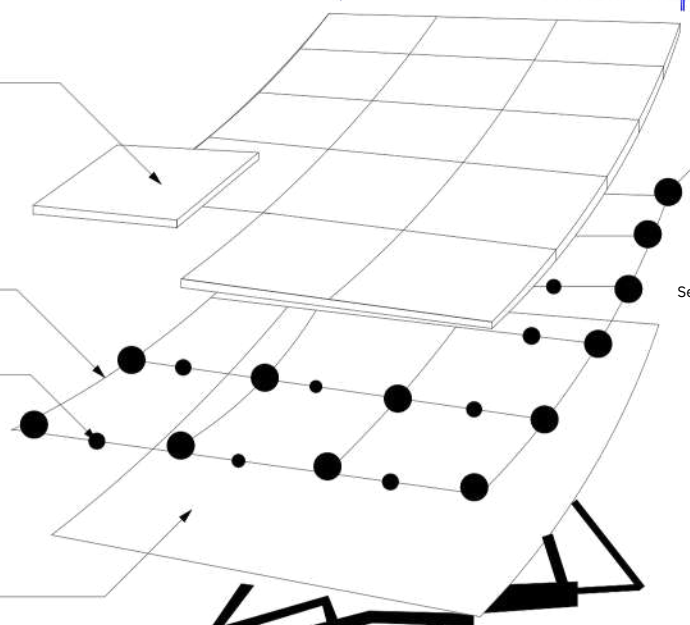
Size panel based on rhino shape Calculation

Solar Panel

Solar Panel Node for Main Conection

Primer Pipe Structure

Secondaru Pipe Structure

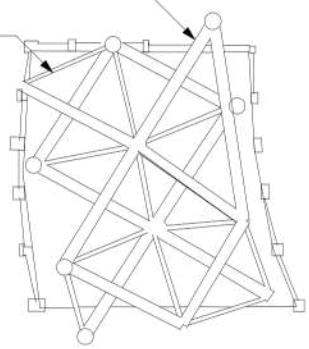


Steel Pipe Represented by Line

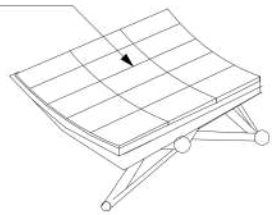
Sealed Rubber

Photovoltaic Base

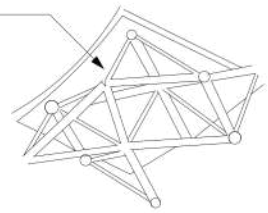
Main Pipe Structure



Solar Panel Pointing at Sun



Structure Perspective



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Drawing Name

Drawing Status

Modified by Date

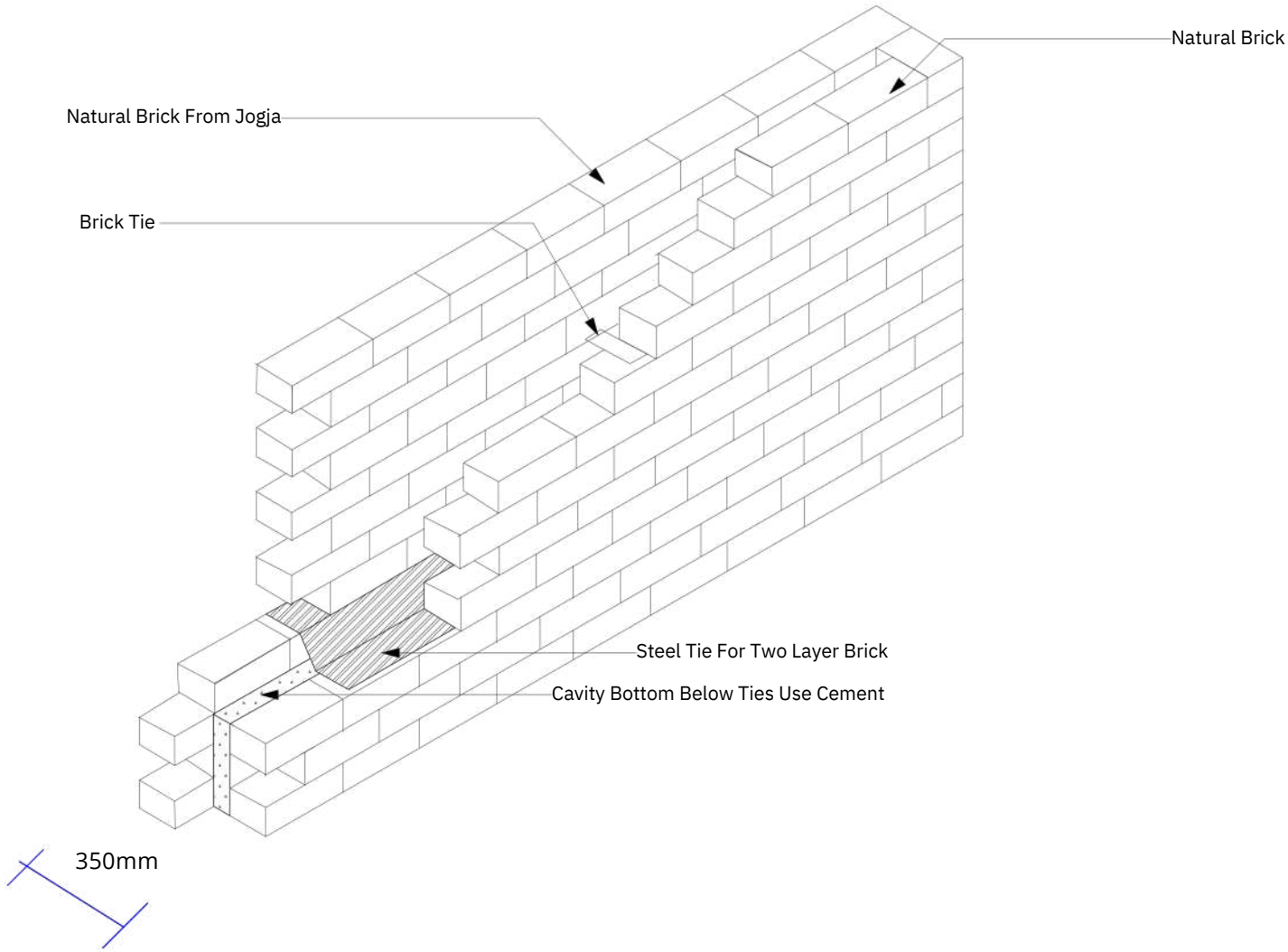
Checked by Date

Drawing Scale

Layout ID Revision

A.05.11

BRICK WALL DETAIL



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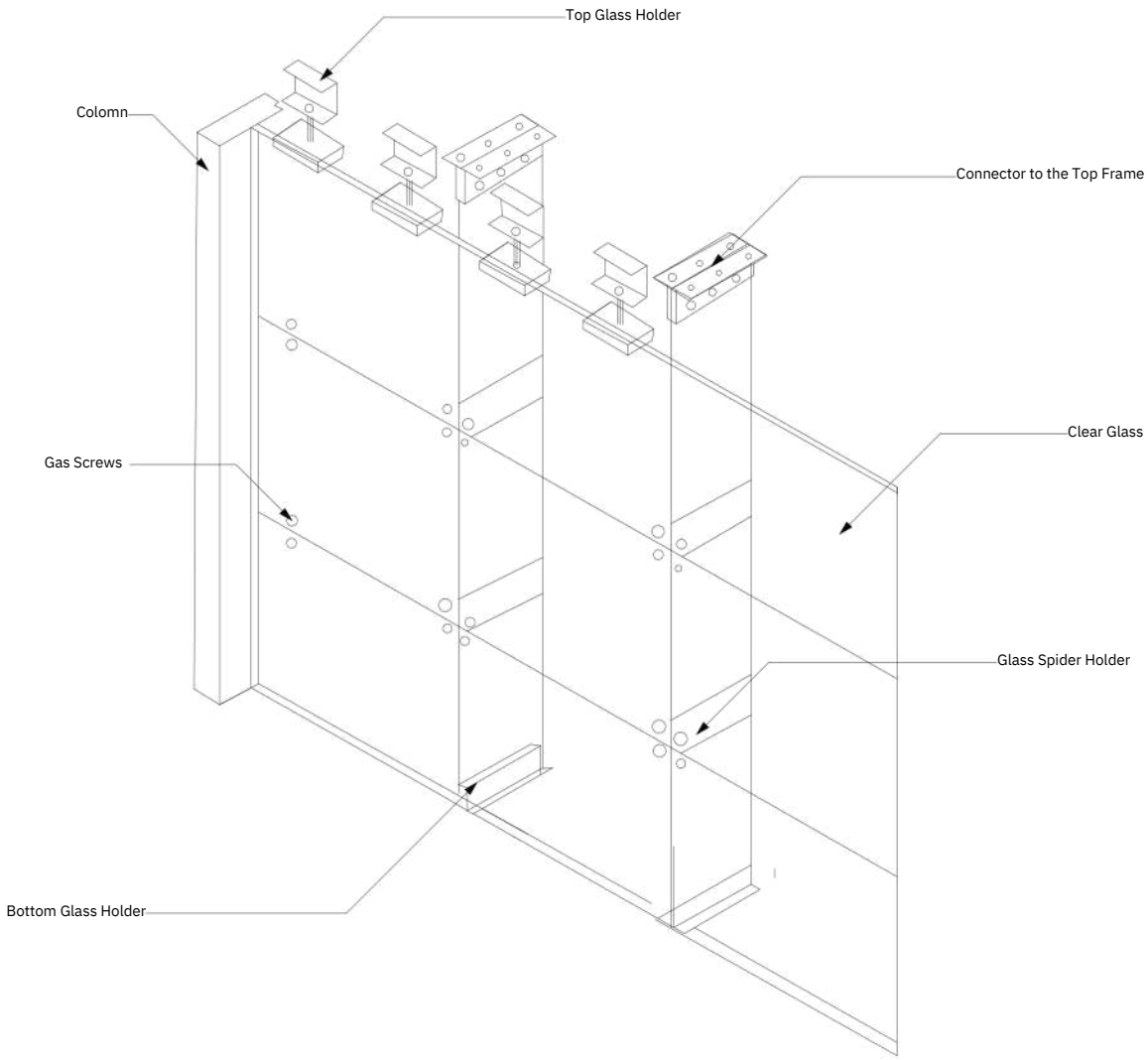
Checked by Date

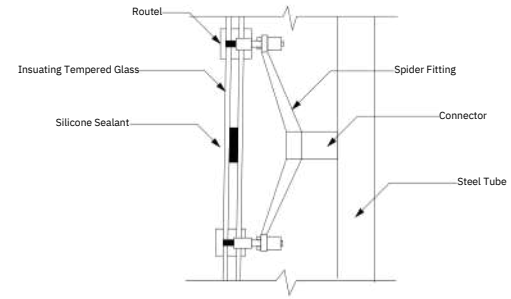
Drawing Scale

Layout ID Revision

A.05.12

GLASS WALL DETAIL A





Glass Spider Holder

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Modified by Date

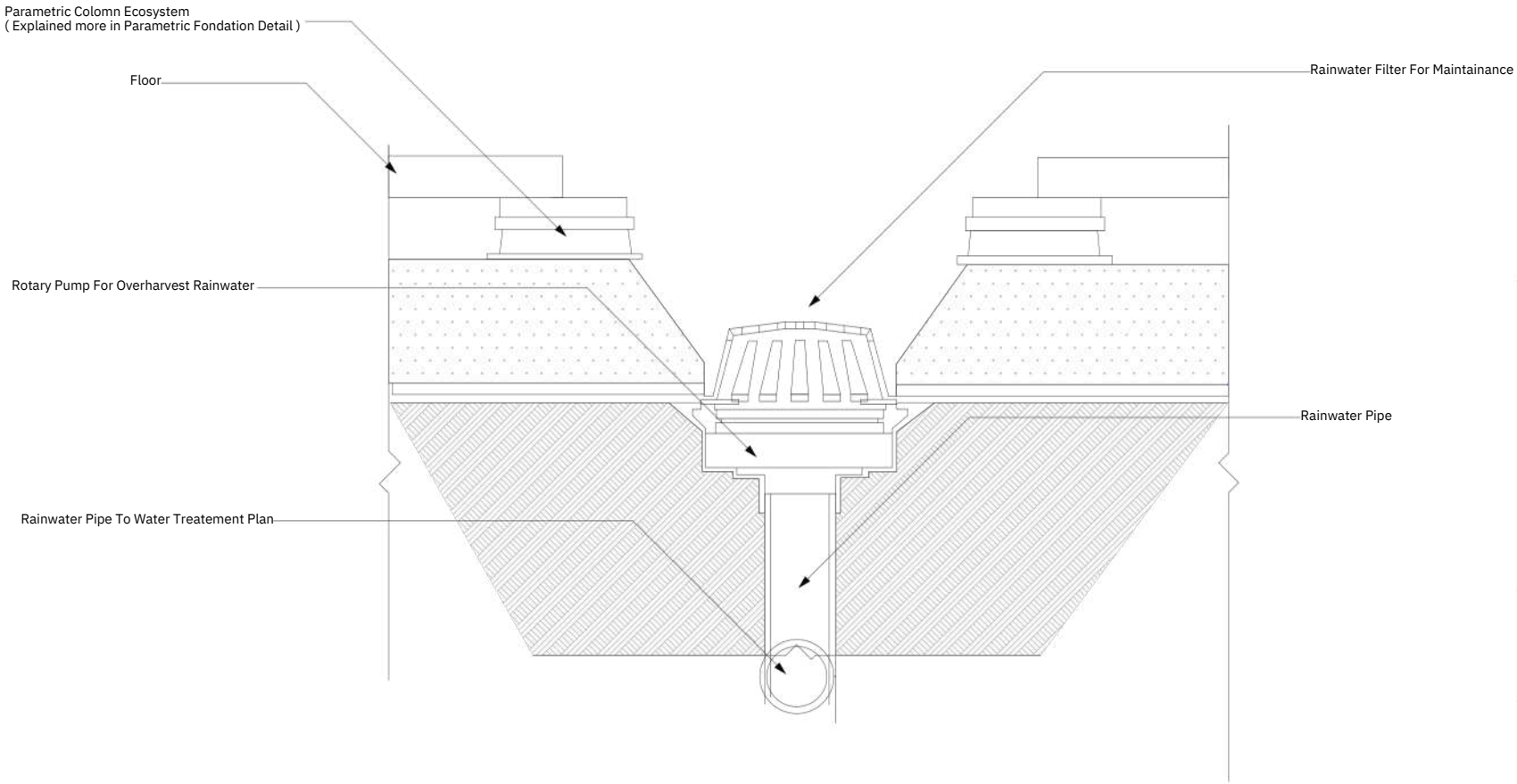
Checked by Date

Drawing Scale

Layout ID Revision

A.05.13

RAINWATER HARVEST DETAIL B



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Drawing Name

Drawing Status

Modified by Date

Checked by Date

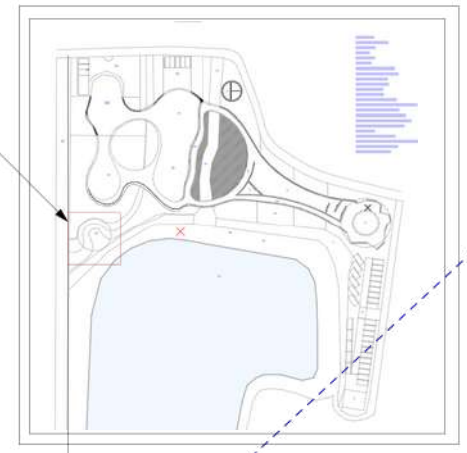
Drawing Scale

Layout ID Revision

A.05.14

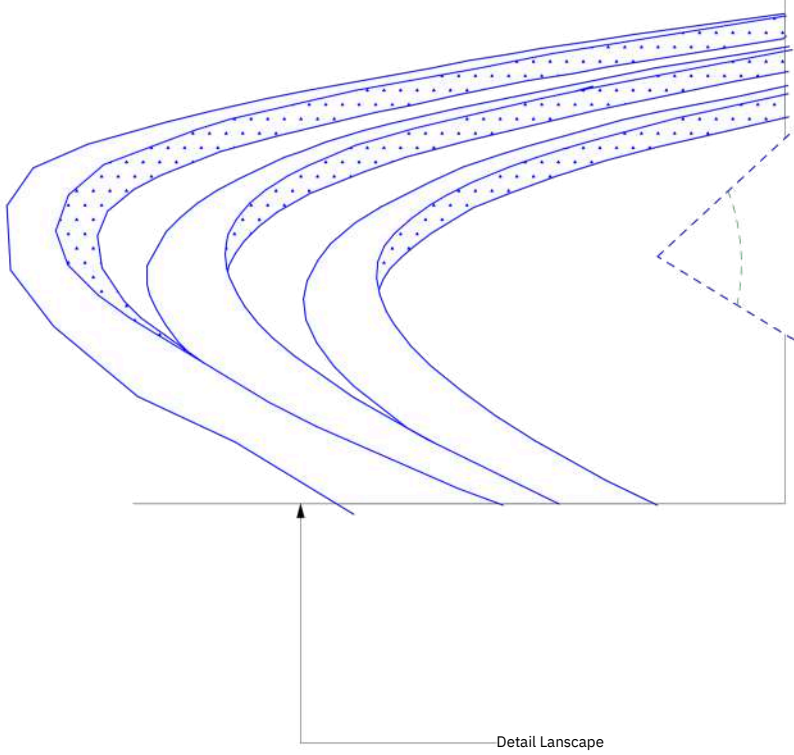
LANDSCAPE DETAIL SCHEMATIC

Location Lanscape



Landscape Facing Embung Kaliaji





Detail Lanscape

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Drawing Name

Drawing Status

Modified by Date

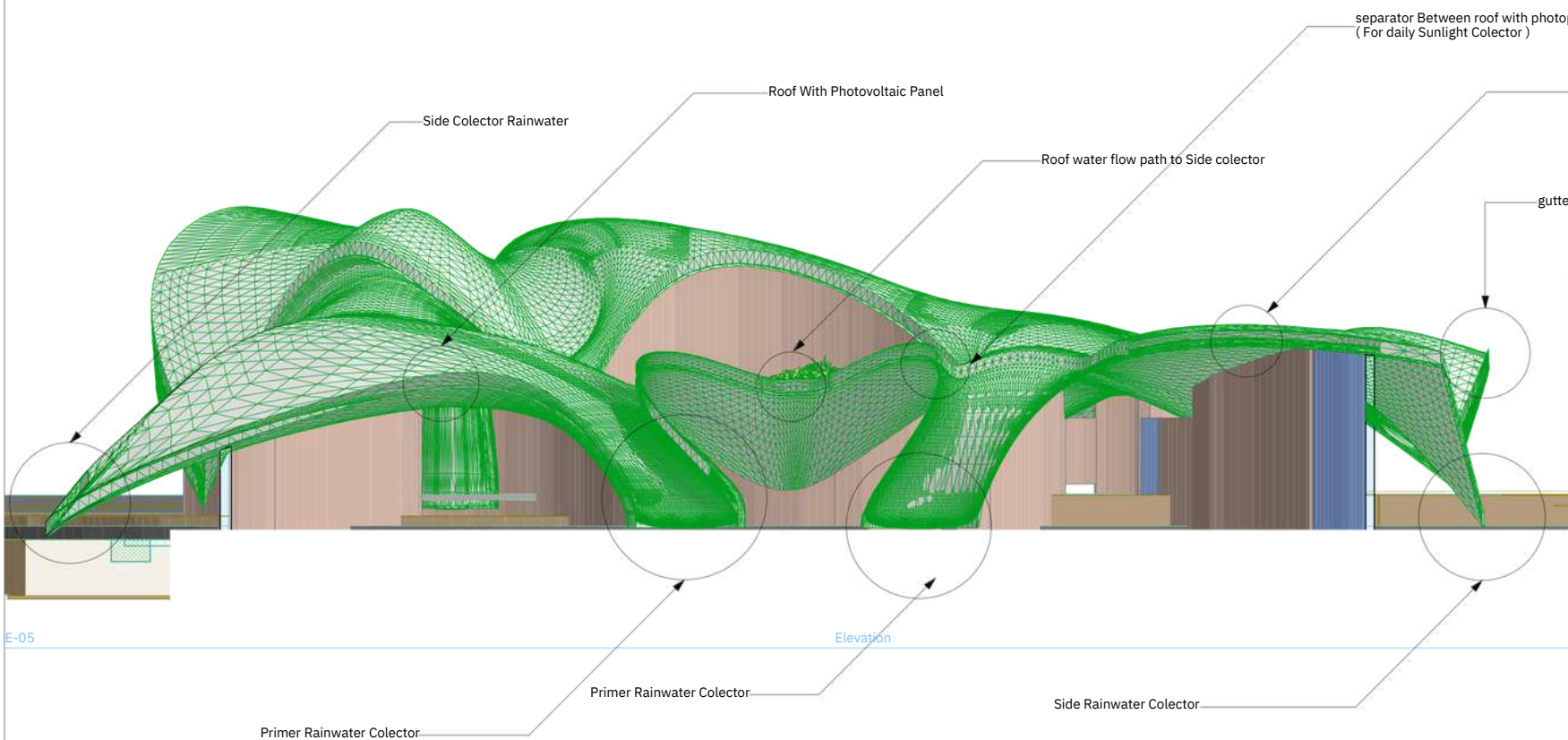
Checked by Date

Drawing Scale

Layout ID Revision

A.06

PARAMETRIC ROOF FUNCTION DETAIL



E-05 Elevation

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Drawing Name

Drawing Status

Modified by Date

Checked by Date

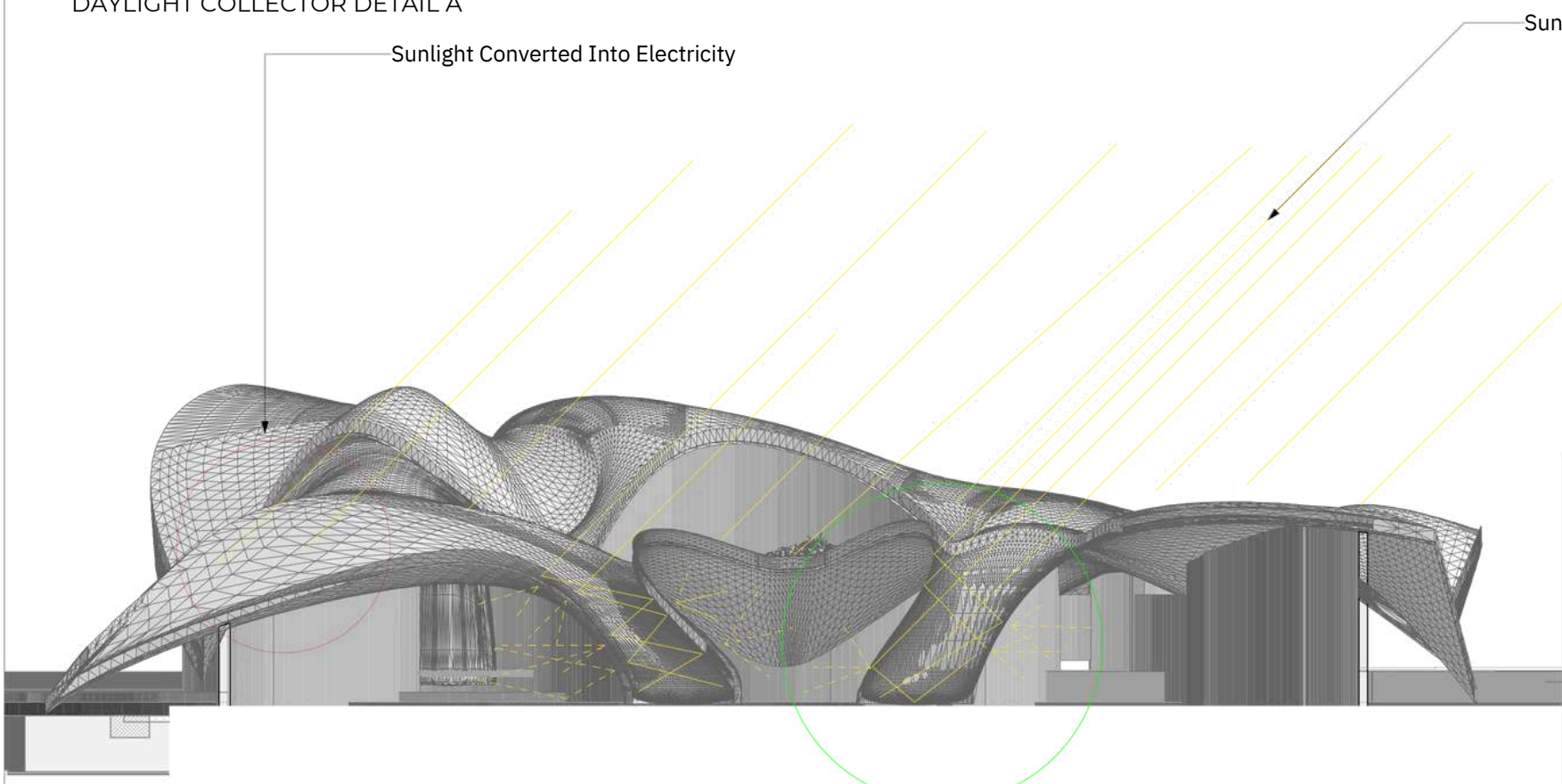
Drawing Scale

1:150

Layout ID Revision

A.07

DAYLIGHT COLLECTOR DETAIL A



E-05

Elevation

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Drawing Name

Drawing Status

Modified by Date

Checked by Date

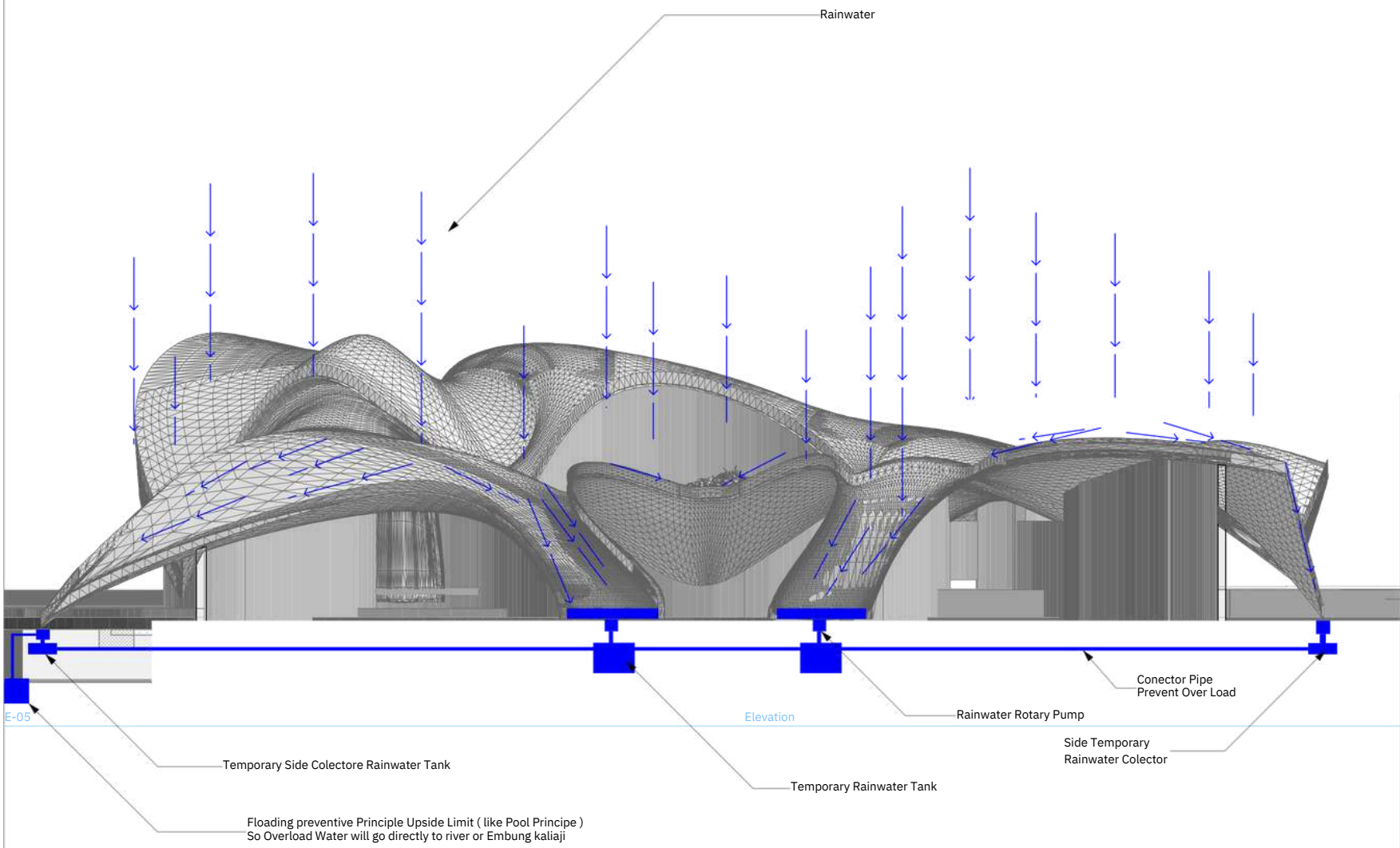
Drawing Scale

1:150

Layout ID Revision

A.08

RAINWATER HARVEST DETAIL A



E-05 Elevation

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Drawing Name

Drawing Status

Modified by Date

Checked by Date

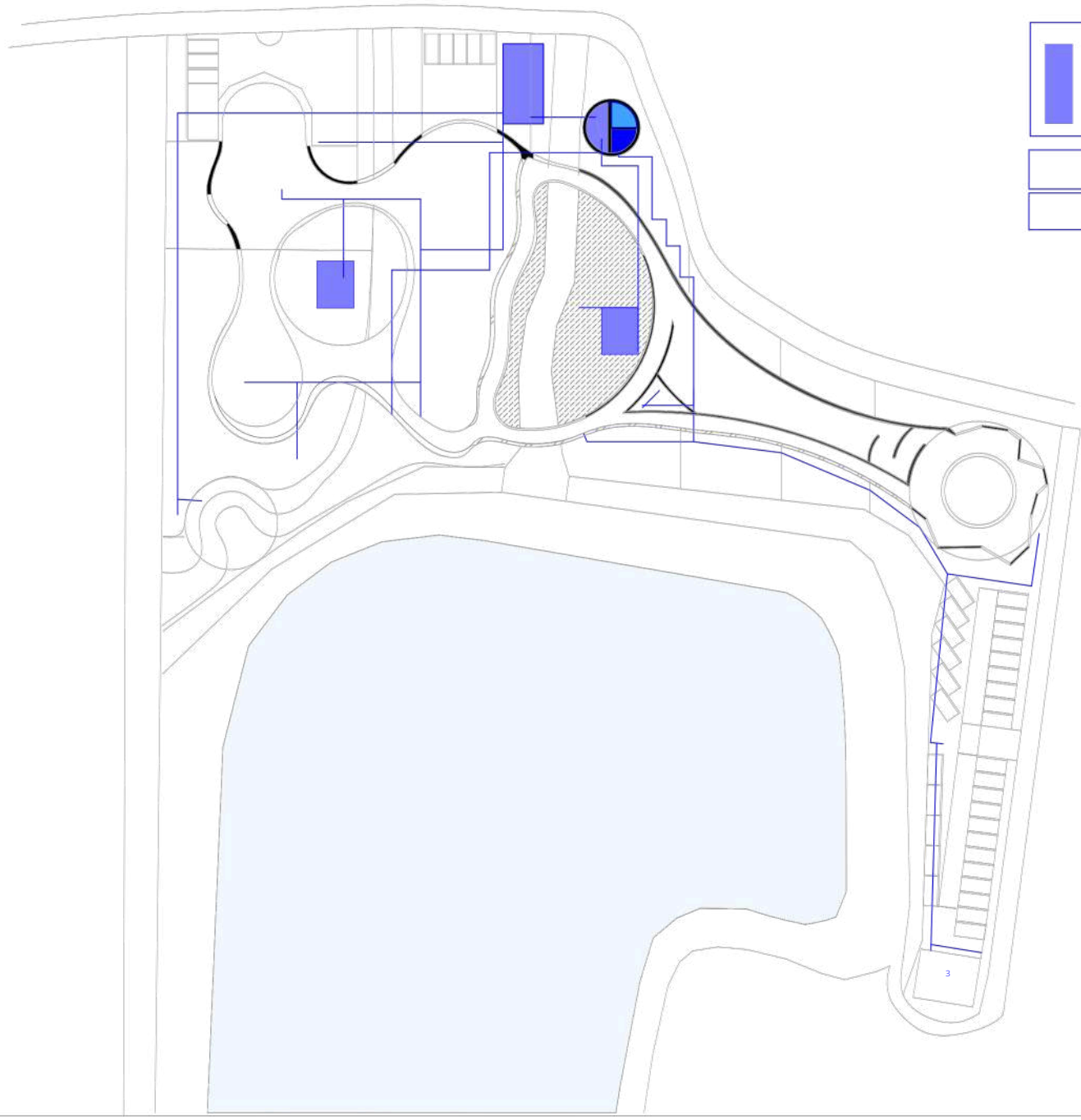
Drawing Scale

1:150, 1:3.84

Layout ID Revision

A.09

CLEAN WATER DETAIL SCHEMATIC



Rainwater Harvest

First Layer Filtered Water

Clean Water

*Filter Process Detailed in Water Treatement Plan

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Drawing Name

Drawing Status

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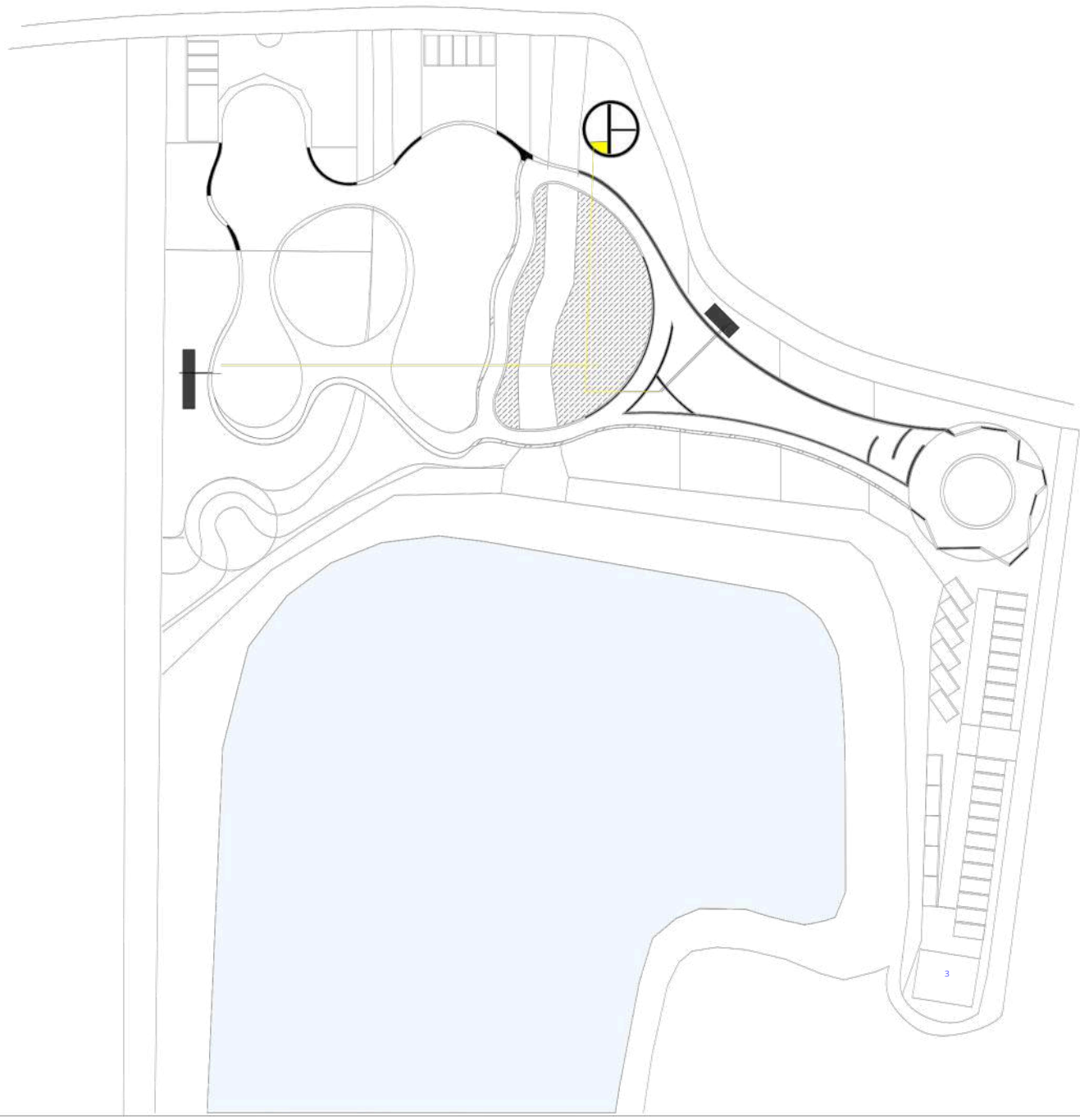
Checked by Date

Drawing Scale

Layout ID Revision

A.10.1

GREY WATER , BLACK WATER DETAIL SCHEMATIC



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Drawing Name

Drawing Status

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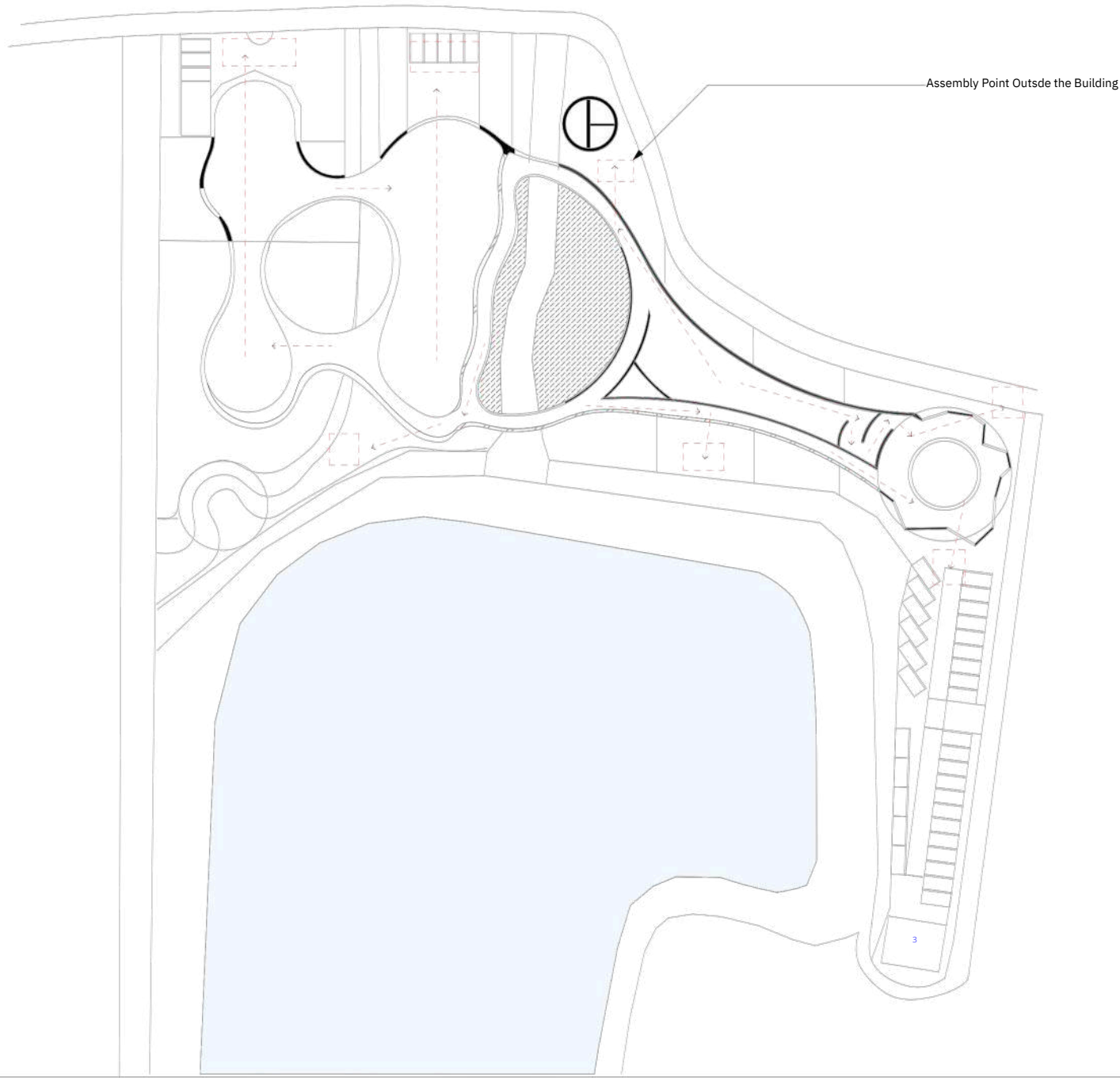
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Drawing Scale

Layout ID Revision

A.10.2

FIRE ROUTE SCHEMATIC



Islamic University Of Indonesia

Jl. Kaliurang No.Km. 14,5, Krawitan, Umbulmartani, Kec. Ngemplak, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55584

Design Of Widuri

WONOKERTO, TURI, SLEMAN, RT.003/RW.028, Sangurejo, Donokerto, Kec. Turi, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55551

Drawing Name

Drawing Status

Modified by Date

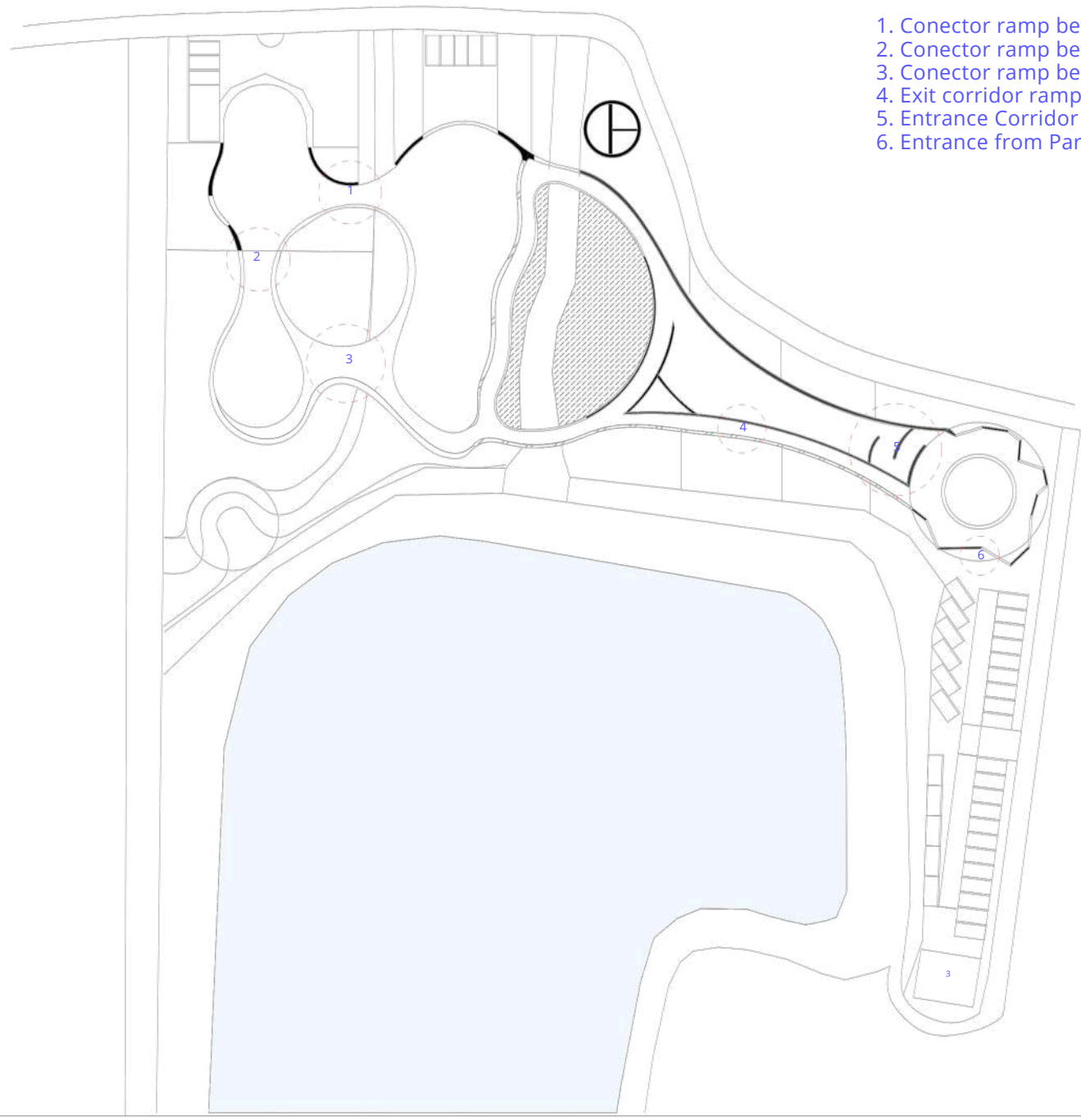
Checked by Date

Drawing Scale

Layout ID Revision

A.10.3

BARRIER FREE DESIGN



1. Conector ramp between factory and storage
2. Conector ramp between office and storage
3. Conector ramp between office and factory
4. Exit corridor ramp
5. Entrance Corridor ramp
6. Entrance from Parking Ramp

Islamic University Of Indonesia

Jl. Kaliurang No.Km. 14,5, Krawitan, Umbulmartani, Kec. Ngemplak, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55584

Design Of Widuri

WONOKERTO, TURI, SLEMAN, RT.003/RW.028, Sangurejo, Donokerto, Kec. Turi, Kabupaten Sleman, Daerah Istimewa Yogyakarta 55551

Drawing Name

Drawing Status

Modified by Date

Checked by Date

Drawing Scale

Layout ID Revision

A.10.4

OUTDOOR RENDERING

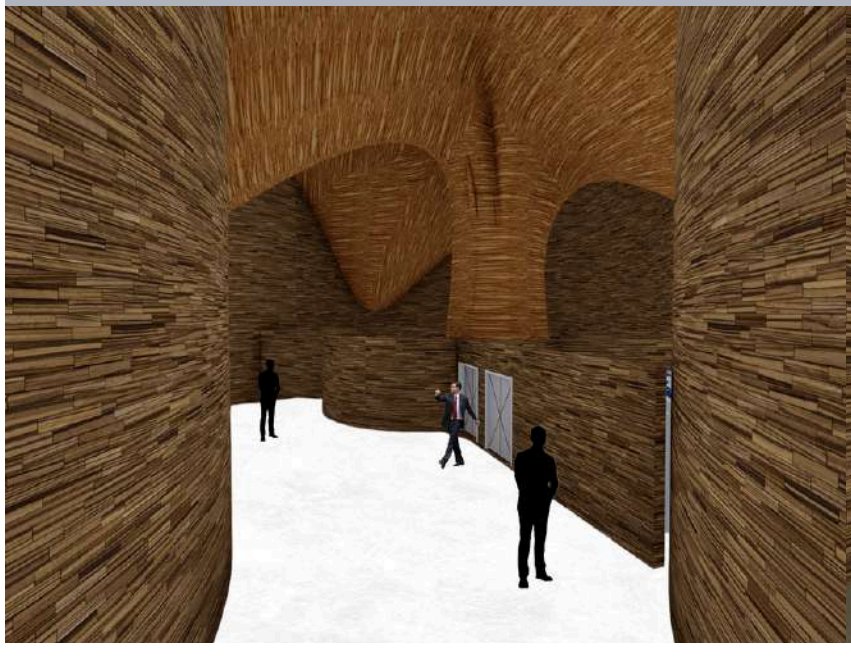


GALLERY RENDER 3D



fACTORY AND OFFICE







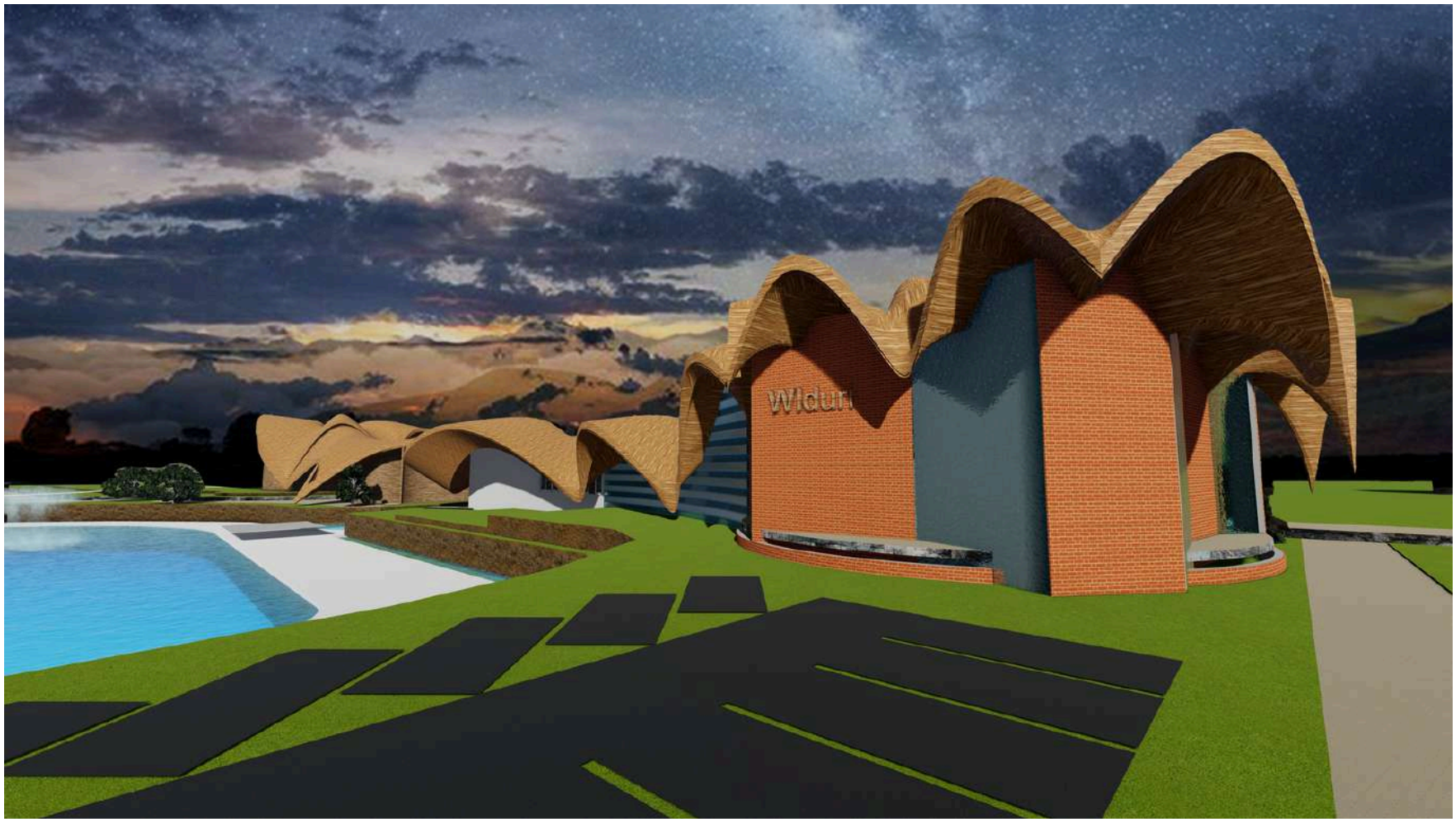
OUTDOOR RENDERING



ROUND CORRIODR



OUTDOOR RENDERING



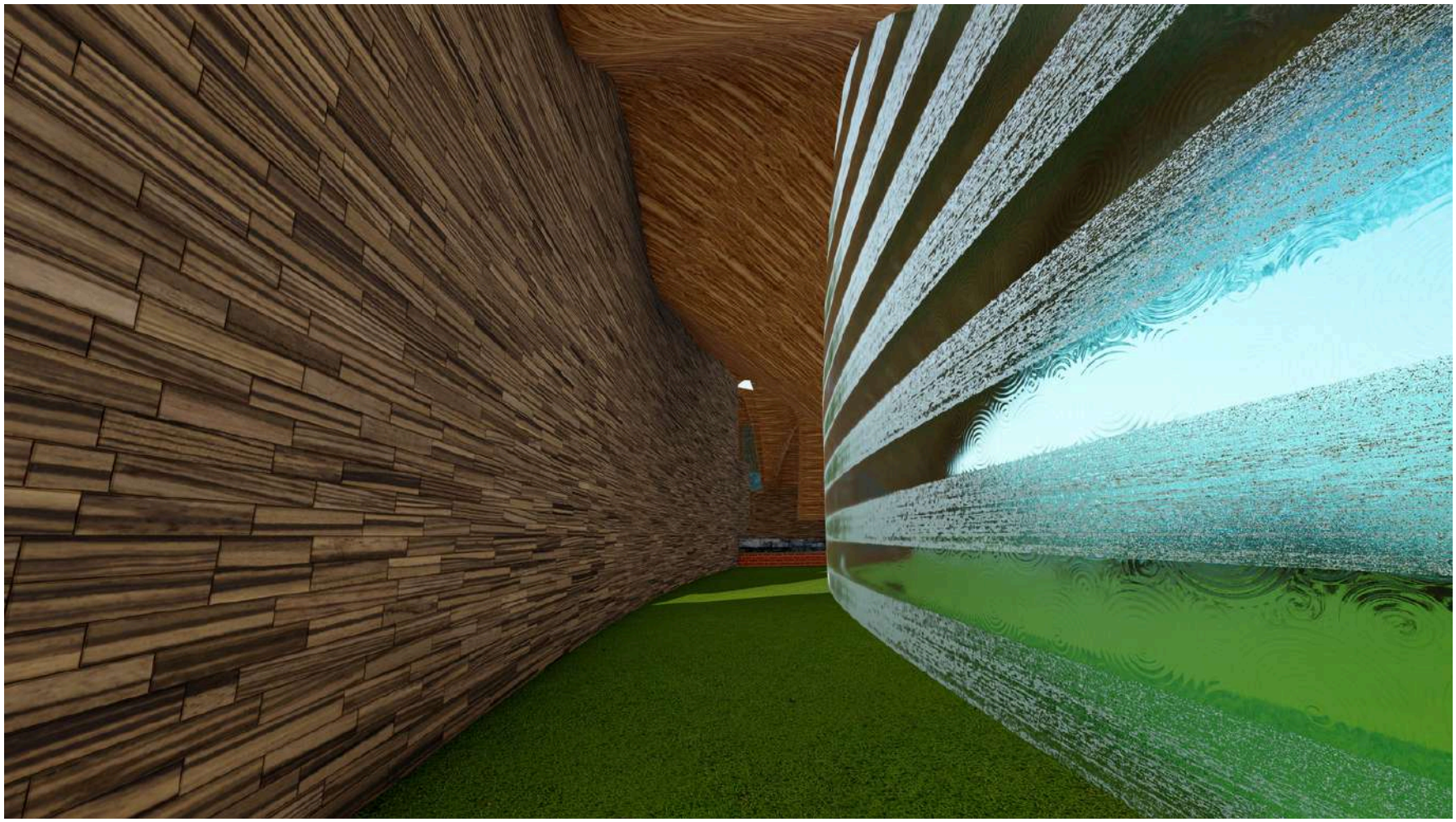
OUTDOOR RENDERING



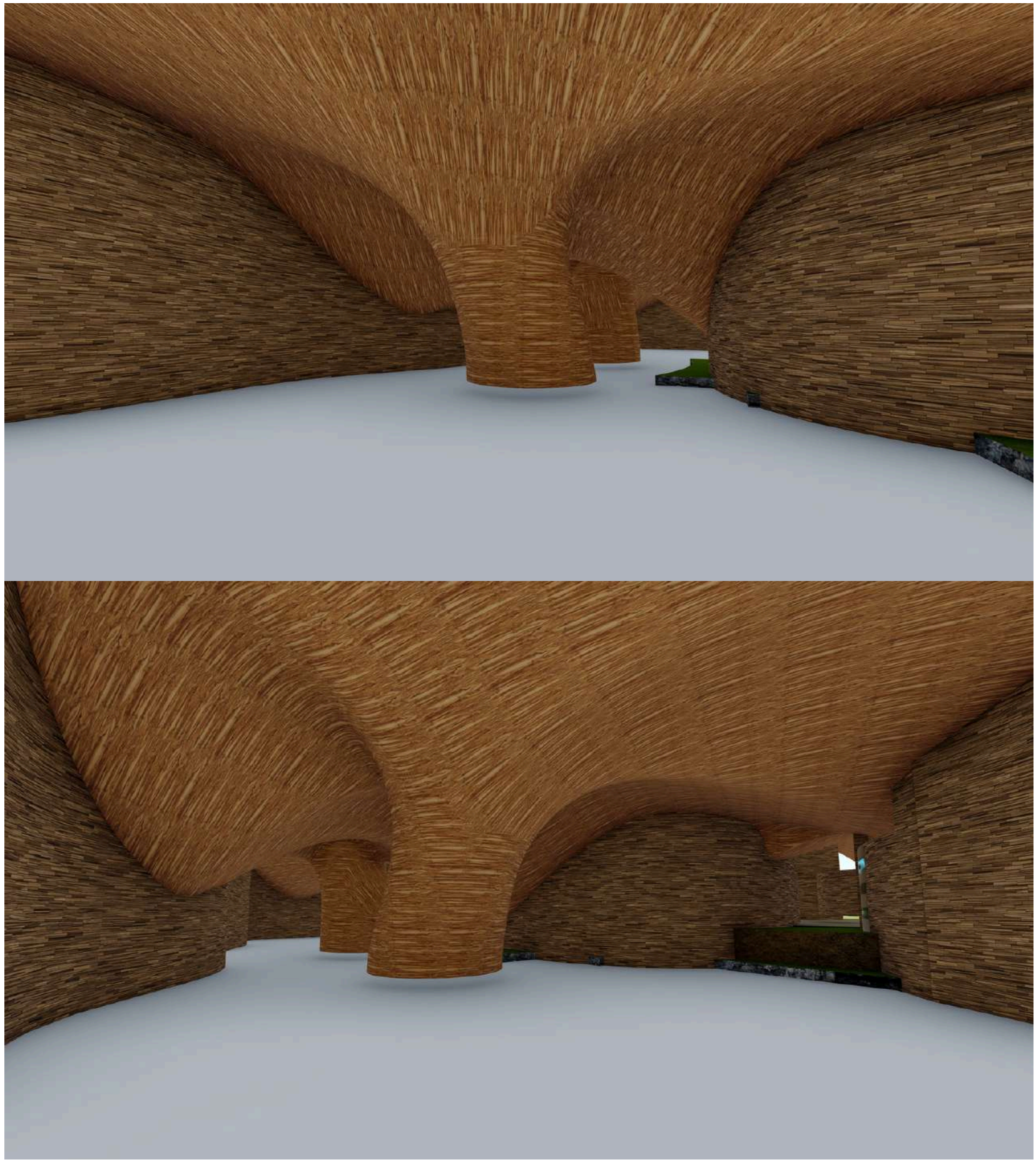
OUTDOOR RENDERING



OUTDOOR RENDERING



OUTDOOR RENDERING



B.P. Wicaksana
@Carberuses
+62 882 3270 6351
Instagram.com/bhinaturata