International Undergraduate Program in Architecture

Final Architectural Design Studio

Design of

Nguter Jamu Factory in Sukoharjo

A Multisensory Spatial Experience

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Authentication Sheet.

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A Multisensory Spatial Experience

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Statement of Authenticity.

I declare that all parts of this work are my own work, except the works mentioned by reference and that there is no assistance from other parties, either wholly or partially in the process of making it.

I also declare that there is no conflict of intellectual ownership of this work, so that all thoughts and writings contained in this work are the main author and supervisor. The final results are submitted to the Department of Architecture, Universitas Islam Indonesia to be used for educational and publication purposes.

Yogyakarta, 26 July 2021
Author,

Muhammad Naufal Rizqita

Preface.

Praise and gratitude I pray for the presence of Allah SWT, as well as our prayers and greetings to our lord Prophet Muhammad SAW and his family and friends. because only by Their grace and grace, the author was able to complete the Final Architectural Design Studio entitled "Design of Nguter Jamu Factory in Sukoharjo: A Multisensory Spatial Experience" as best and as possible.

In the preparation of this undergraduate final project, the author received a lot of help, input, guidance and support from various parties. On this occasion, the author would like to express his appreciation and gratitude to:
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For all the prayers, support, and assistance that has been given, hopefully get a reply from Allah SWT. The author is aware that this work has not been closed from the word perfect, therefore all constructive criticism and suggestions for the perfection of this undergraduate final project are expected. Hopefully this final project can help increase knowledge and experience for readers, become a reference and also learning materials and corrections can improve for the better in the future.

Yogyakarta, 28 July 2021
Author,

Muhammad Naufal Rizqita

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"Para pemuda-pemudi di Nguter kebanyakan sudah dari golongan yang berkecukupan, sehingga banyak yang tidak mau untuk turun langsung berpartisipasi dalam pemberdayaan jamu. Kalau semakin dibiarkan bisa-bisa kegiatan jamu di Nguter ini berhenti di generasi saya."

Mrs. Suwarsi Moertedjo,
Head of Koperasi Jamu Indonesia Sukoharjo

01

JAMU: The Art of Herbal Healing

See through inside the jamu as traditional herbs and permaculture in Indonesia.

Design Premise

The current pandemic situation has taught us something that we usually forget. Before pandemic occur maintain a healthy body sometimes is a matter of trivial or unimportant for us. Now the industry of herbal and pharmaceutical drug is on the rise and people starting to aware and seek for the benefit of traditional herb (jamu).

With those consideration, In the heart of jamu industry, Nguter Village at Sukoharjo in 2019 established as a tourist destination for traditional herb. However the effort to introduce jamu in Nguter Village limited only to production at home-factory and distribution at nearby market, without significant effort to education or tourism (beside Bude Jamu movement). The industry itself is not centralized with middle to lower economic conditions make building performance is not effective enough to produce jamu. The proposal will be designing integrated edu-recreational jamu factory where it incorporate villager union to engage as stakeholder. To encourage visitor curiosity the spatial arrangement is consider to bringing particular human senses with jamu as receptor stimulation. User can touch the herb vegetation, see and hear the herb being pounded, and smell and taste the jamu itself. The building could be a beneficial catalyst for neighbourhood jamu production in Nguter, Sukoharjo, and as a educational and recreational facility to introduce jamu towards wider community.

Figure 1. Traditional Herbs Seller at Pasar Jamu Nguter
Source: solotribunnews.com (accessed on 24 February 2021)

Figure 2. Various Kinds of Liquid Type Jamu in Bottles.
Source: https://en.wikipedia.org/wiki/Herbal_medicine#/media/File:Jamu.jpg (accessed on 24 February 2021)

Tracing Back the Existence of Jamu

Jamu comes from the word djampi (prayer / mantra / healing using potions) and oesodo (health), then it became jamu as an acronym. Jamu has become a cultural heritage which is consumed by the community from generation to generation. In the other hand jamu is a Indonesian's local wisdom. It is a proof that humans observe nature, have common knowledge, and use its for its own benefits.

Quoted from Kompas "Jejak Mataram Kuno di Sindoro" (2016) Jamu originated back from Mataram Kingdom era, around 770 BCE. This is proven by the stone mortar and pestle with long cylindrical stone mortar, which is the type commonly used in today's traditional jamu making, was discovered in Liyangan archaeological site on the slopes of Mount Sundoro, Central Java. Since Dutch colonial period, several research studies and investigation has conducted related to the types of plants in the Indonesia and their uses, both for medical and commercial purposes.

In 1816, Thomas Horsfield published an article as some of the first recorded discuss about jamu entitled "Short Account of the Medicinal Plants of Java" inside "Verhandelingen van het Bataviaasch Genootschap der Kunsten en Wetenschappen" journal. He wrote about the types of plants used as medicine by the natives. Furthermore, panacea or cure effect from jamu has been researched by botanist J. Kloppenburg-Versteegh

who published research book "Wenken en Raadgevingen Betreffende het Gebruik Van Indische Planten" in 1911. She believes that jamu potion and its plants had proven by medical results.
The emergence and evolution of herbs industry from home to factory industry started in Central Java around 1900. Marked by the established of several largest jamu factory in Indonesia such as Sido Muncul, Nyonya Meneer, Jamu Jago, and Jamu Air Mancur. Until now, the use of herbal medicines is still ongoing and during the pandemic people have looked back at local plants that were used as healing substances.

Previous to the pandemic COVID-19 spread, the use of herbal medicine has been widely used by the community. RISKESDAS (2010) reports that 95.60% of Indonesians who consume traditional medicine (jamu) state that consumption of jamu is beneficial for the body. The percentage of the population who felt the benefits of consuming herbal medicine ranged from 83.23% to 96.66%. The increasing use of herbal medicines by the community also linear with the number of industries that produce traditional medicines has also increased. Kemenkes (2011) reported that there is significant increase in the number of traditional medicine industry (IOT) and small or home-based industry of traditional medicine (IKOT) from total 39 industries at 2002 until 1293 industries at 2009. Collected data also stated that almost all of jamu industry centralized at Java Island with the largest distribution networks and consumption.

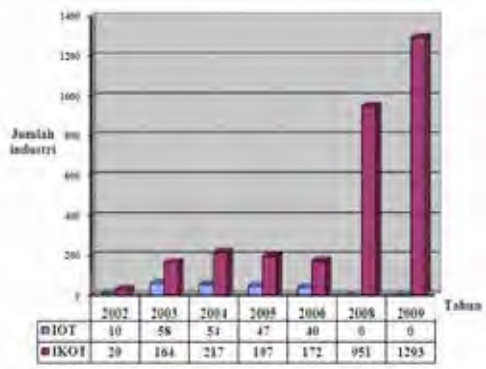


Figure 3. Inside Sabdo Palon Jamu Factory at Nguter, Sukoharjo.
Source: https://www.youtube.com/watch?v=oMm9tG8o9jo (accessed on 24 February 2021)

Figure 4. Number of IOT and IKOT in Indonesia
Source: Hutami, 2014.

Figure 5. Launching of Bugar dengan Jamu Movement.
Source: http://sehatnegeriku.kemkes.go.id/wp-content/uploads/2015/01/Bugar-dengan-Jamu-BuDe-Jamu.jpg(accessed on 24 February 2021)

Source: Laporan Tahunan. Balai Besar Pengawasan Obat dan Makanan. 2008

Source: Charles Saerang, "Jamu, antara Realitas dan Tantangan Masa Depan". www.alumni-ipb.or.id, 7 January 2009.

Source: Kajian Potensi Pengembangan Pasar Jamu. Puslitbang Perdagangan Dalam Negeri Departemen Perdagangan RI. 2009

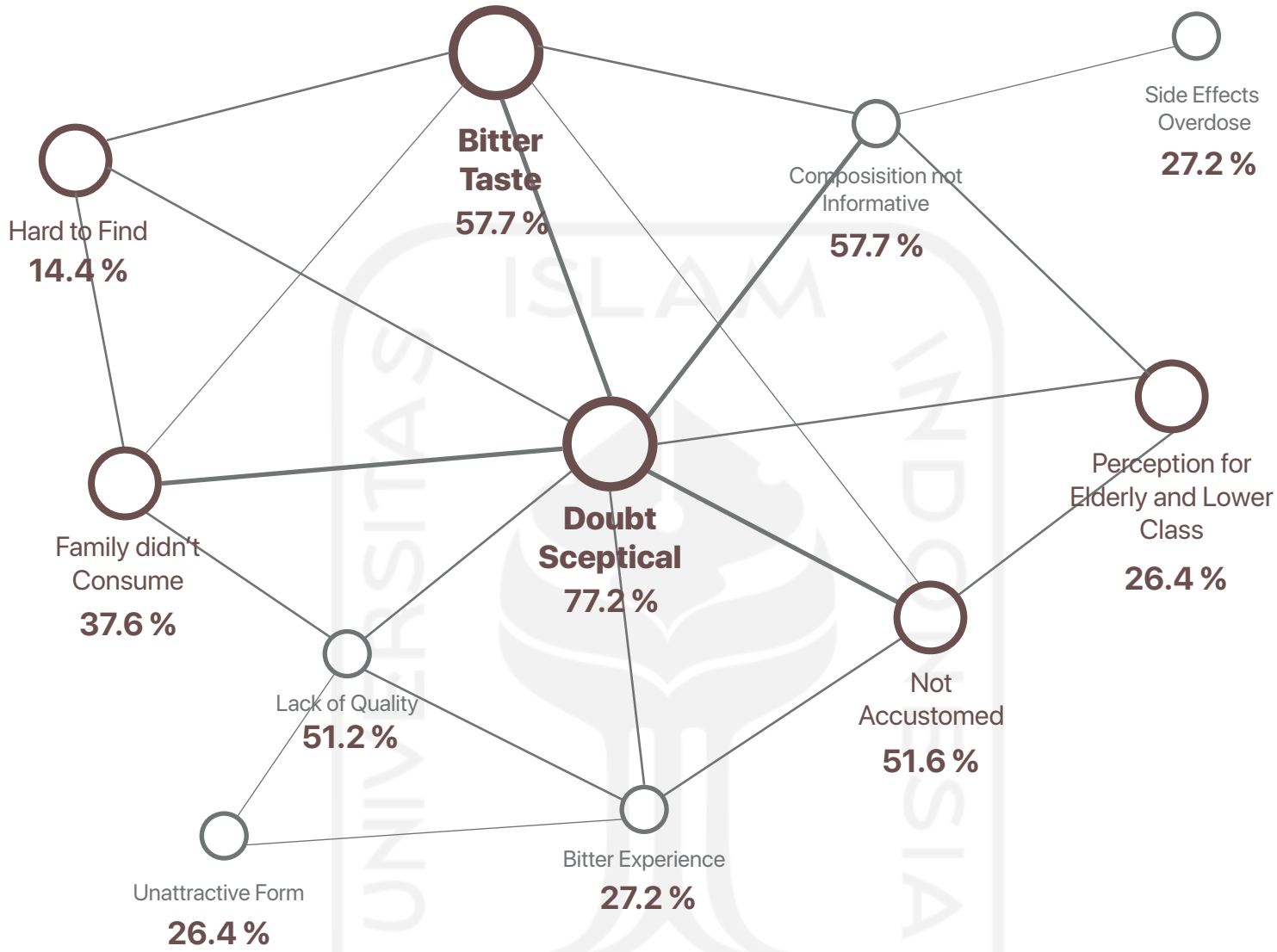
Education and Perception of Jamu

During its development, the government has committed to facilitate the Indonesian herbal medicine industry. In 2015 the Bude Jamu (Bugar dengan Jamu) movement was launched to promote and educate jamu to improve fitness and can be enjoyed by public in a form that is practical, delicious, nutritious and introduce it as a part of lifestyle.

In its economic activity, the Indonesian jamu industry market has shown significant growth with sales value reaching Rp. 6 trillion, has created three million jobs, and with the largest consumer area on the island of Java reaching 60% in 2007 (Laporan Tahunan BPOM, 2008).

However, in the midst of this success there are still many obstacles faced by the national jamu industry. From the public's point of view, the perception of jamu is allegedly very concerning, Indonesian people seem to have rarely consumed jamu (Puslitbang Perdagangan Dalam Negeri Departemen Perdagangan RI. 2009). Most public perceptions associate jamu with a bitter taste, jamu is only for the elderly, even jamu is a drink for "*orang kampung*", without seeing the various properties and stimulation of the senses, both taste and smell.

On the other hand, jamu industries face challenges to develop specific strategies to increase brand awareness and image of Indonesian people towards jamu products. This is because at this time it turns out that many of the non-consumer community view jamu as an outdated product. This perception is not good as it positions jamu as the last



alternative and will not be able to increase its market potential. It takes a revolution in the way of education and commercialization of jamu to be innovative and adapt to the development of public demand.

By looking at the results of data processing, what must be done to increase the consumption of jamu in Indonesia is through activities or actions that can revive the community's habit of consuming jamu. On the other hand, the emergence of a habit must be done by providing clear information about the uses of jamu so that people understand more about what is obtained by consuming it.

Figure 6. Challenge and Negative Perception Framework Towards Jamu
Source: Author, 2021. Adapted from Kajian Potensi Pengembangan Pasar Jamu. Puslitbang Perdagangan Dalam Negeri Departemen Perdagangan RI. 2009

Figure 7. Jamu Kuat selled as Sabdo Ginseng from Sabdo Palon and Jamu Kewanitaan.
Source: https://jamusabdopalon.com/media/k2/items/cache/fe392f78a62c6fc460cf8c2a182b395f_XL.jpg

Types of Jamu Functions

Jamu is a type of medication that does not have a definite standard for each ingredient, as well as how it is processed. Different regions, endemic plants, and communities in an area, thus how to process herbal medicine is different, according to the culture of each region. Jamu that circulating in the market can be classified into 6 (six) large groups based on functions, namely jamu kuat, jamu for feminity, jamu for body care and beauty, jamu tolak angin, jamu pegel linu, and other types explained below:

1 Jamu Kuat

Jamu kuat is a herbal medicine that functions to maintain stamina, healthy body and increase male vitality. This particular type of jamu usually only consumed by male.

2 Jamu Kewanitaan

This jamu is used for female to treat the feminine area, including menstrual herbal medicine, herbal medicine for vaginal discharge, and fragrant herbal medicine. This group includes herbal medicine after giving birth.

3 Jamu Kecantikan

This jamu has functions to keep the body healthy and fresh as well as caring for and maintaining facial skin. In this jamu group also includes herbs that are useful for slimming and herbs to get rid of acne.

4 Jamu Tolak Angin

This particular jamu herbal medicine which serves to cure cold symptoms such as flatulence, nausea, dizziness, lethargy, and chills.

5 Jamu Pegel Linu

Jamu Pegel Linu known to serves and relieve symptoms of aches in the body, pain in joints.

6 Specific Jamu

Included in this jamu group are various types of herbal medicine which are not included in the above groups, for example, medicinal herbs for treatment (cough, asthma, stone urination, ulcers, rheumatism, high blood pressure) and non-medicinal herbs (adding blood, facilitating breastfeeding, sedating, etc.).

Types of Traditional Jamu

1 Jamu Beras Kencur

Jamu beras kencur used to relieve body aches and as a refresher after work. This herbal medicine uses the main ingredients of rice and galangal with the addition of other ingredients such as rhizomes.

2 Jamu Cabe Puyang

Jamu cabe puyang is known to get rid of rheumatic pain in the body. The basic ingredients of the puyang chili herbs are the herbal chilies and the lempuyang rhizome.

3 Jamu Kudu Laos

This potion serves to lower blood pressure. However, there are also those who say to improve blood circulation, warm the body, The main ingredients are noni fruit (mengkudu) and laos rhizome.

4 Jamu Kunir Asam

This particular jamu known to refreshing the body or can make the body especially stomach become cold. It is made with the main ingredients of tamarind fruit plus turmeric.

Figure 8. From Top: Jamu Beras Kencur, Jamu Kunir Asam, and Jamur Cabe Puyang
Source: https://merahputih.com/media/92/2a/7c/922a7c37d27be2c2e7372683e19a8baa.jpg (accessed on 9 March 2021)

5 Jamu Pahitan

Jamu pahitan is used for various health problems such as antibacterial, harsh itching and diabetes. The basic raw material for the herbal medicine pahitan is sambiloto. The concoction of bitterness varies greatly, some only consist of sambiloto, but some also add other ingredients that taste bitter like brotowali.

6 Jamu Kunci Suruh

Jamu Kunci Suruh is mostly used by women for treat vaginal discharge or to eliminate body odor. Basic ingredients consists of fingerroot rhizome and betel leaf.

7 Jamu Uyup-Uyup

This jamu is only known to be used for increase the production of breast milk in mothers who are breastfeeding. The ingredients varies greatly, but in general using galangal, ginger, laos, turmeric, katuk leaves, ginger, puyang, and temu giring.

Figure 9. From Top: Jamu Pahitan, Jamu Batok Uyup-Uyup at Kotagede, and Jamu Kunci Suruh. *Source: https://statik.tempo.co/?id=146940&width=650*

Jamu Making and Processing

With various scales, both large and small, herbal medicine processing has its own way of producing herbs using certain tools and methods. Generally, jamu medicine production is divided into two:

factory production and traditional. Both production serves for different market and making different types of jamu product, from liquid drink to capsule, and powder sachets.

Factory Production

1 Ingredients Sorting

Sorting aims to separate foreign objects such as the desired plant parts and other impurities that are still there and left behind.

2 Cleansing & Drying

Washing of materials is carried out to clean adhered dirt, especially materials that come from the soil and also materials contaminated with pesticides.

3 Milling & Sifting

The milling and sifting process aims to obtain quality material refinement that will facilitate further processing.

Figure 10. From Top: Ingredient Sorting, Drying, and The Result from Milling Process.
Source: https://cdn1-production-images-kly.akamaized.net/hlDgWM07V2Wk96UvM00K9-Pembuatan-Jamu-8.jpg(accessed on 9 March 2021)

Figure 11. From Top: The Process of Making Traditional Jamu From Milling, Grating, and Boiling.
Source: https://blue.kumparan.com/image/upload/auto:best,w_640/v1565951819/rxfbhgkqqdddp68wigih.jpg

Traditional Home Industry

1 Cleansing

Clean and rinse the herbs ingredients to remove unwanted dirt and risks of contaminated with pesticides. The process involving visual and haptic senses to select and filter the herbs.

2 Milling or Grating

Finely grind, mill, or grate the ingredients to extracting out all the nutrient essence. The process of both grind and mill release intense characteristic smell of herbs that processed. The crashing sound from pestle when milling the herbs also evoke certain background sounds of "*dug-dug-dug* " that create soundscapes of jamu home-factory.

3 Boiling

Boil the ingredients to further eliminate the possible risks of intoxication and extracting the nutrient. The heat from stove that radiated through thick steam when it open induce the sense of warm through the body while releasing the smell of jamu which almost done.

4 Filtering

Filter the boiling liquid to get the final result of jamu. Usually this method only create liquid drink type of jamu.

Figure 12. Satellite imagery of Nguter Village, Sukoharjo from 2004 until 2020, Showing the development of Pasar Jamu Nguter.
Source: Google Earth (accessed 5 February 2021).

Strengthen Identity of Jamu Village
Nguter Sukoharjo

Nguter Village, Sukoharjo Regency is the center for the tourism of jamu industry based on the instruction of the governor of Central Java No. 518/23546 Year 2011 concerning Development of Leading Rural Products through One Village One Product (OVOP) in Central Java.

The jamu herbal medicine industry has been chosen as a regional potential product because of its products have regional characteristics, as the local traditional medicinal products, and have been passed down from generation to generation so that the market for herbal medicine products is still wide open.

This industry has been around for a long time, as it can be seen from development of its clusters. In addition, the structure of this industrial center business unit is dominated by small and home industries. This jamu industry center has been designated as an area designated for industry in accordance with the direction of the RTRW of Sukoharjo Regency 2011-2025 and has been designated a herbal village by the Ministry of Health as well as a market for selling jamu. Furthermore the government is really concerned about developing the herbal medicine industry center in Nguter village seeing such a huge potential to be developed through existing programs and policies.

Future Development of Jamu
Pemda and KOJAI Sukoharjo

"Para generasi muda harus ikut berpartisipasi menjaga eksistensi produk jamu. Mereka diberi edukasi mengenai berbagai jenis dan manfaat tanaman obat tradisional. Pemerintah juga tak henti-hentinya memberi bantuan dan pembinaan terhadap pengrajin jamu."
Wardoyo Wijaya, Bupati of Sukoharjo.

"Dari Pemda Sukoharjo, BPOM, Dinas Pertanian, dan perusahaan asuh Konimex memang sudah ada isu setelah lebaran ini untuk merencanakan fasilitas edukasi untuk jamu."
Suwarsi Moertedjo, Head of KOJAI Sukoharjo.

Direct interview with the chairman of Koperasi Jamu Indonesia (KOJAI) Sukoharjo, Mrs. Suwarsi Moertedjo, strengthens the argument for the urgency of building an educational facility for jamu in Nguter, Sukoharjo.

A glimpse of the KOJAI Sukoharjo, originally was an organization that was not yet a legal entity and consisted of jamu craftsmen in the Sukoharjo area and its surroundings. This organization was started in 1977 with 15 members of jamu craftsmen. Until finally KOJAI got the trust of the government in the form of APBD funds and revolving funds from the Kementrian Koperasi and Usaha Kecil Menengah (UKM).

From the narrative of Mrs. Moertedjo, it is stated that indeed from the Sukoharjo Regional Government, BPOM, Ministry of Agriculture, and the assistance from the Konimex as foster company since the completion of the Nguter Jamu Market, there are plans to develop an educational facility for herbal medicine in Nguter, Sukoharjo.

It is said that developing educational facilities requires a long process because it is related to the government bureaucracy and the need for support from both parties, namely the community and the Sukoharjo Regional Government. "The most important thing is that there was a herbal plant garden first, as a place for education for children. Because here, even though the name is Jamu Village, we can't see the plants around Nguter."

Furthermore, the development of these educational facilities is planned to have a jamu exhibition place for visitors to choose local jamu products and production houses as a representation of jamu medicine manufacturing.

Figure 13. Voice Memo Interview with Mrs. Suwarsi Moertedjo. *Source: Google Drive, 2021.*

Source: http://www.koransolo.co/2019/03/19/sukoharjo-menuju-destinasi-wisata-jamu/, (accessed 21 April 2021).

Missing Jamu Linkage

Branding of Jamu

Nguter itself as has potency to develop into a succesful tourism jamu industry, however they missing the key to connect between these elements. They have Pasar Jamu Nguter as the supplier of jamu ingredients and the home-industry village as the actors of the jamu industry. But they did not have the proper marketing place to introduce and educate jamu to wider public.

To succesfully develop the tourism of jamu industry required places for educational and recreational value to connect and link between the jamu

home-industry, the market, and the proposed design project.

Therefore all of the elements get their benefit and public exposures from the influences of proposed design project.

Figure 14. Satellite Imagery of Nguter, Sukoharjo Showing the Missing Connection of Supplier, Factory, and Marketing.
Source: Google Earth (accessed 29 March 2021).

Actors of Traditional Jamu
Nguter Sukoharjo

Figure 15. Pasar Jamu Nguter.
Source: Google Images (accessed 5 February 2021).

1 Jamu Industry

The flow of jamu activity in Nguter starts from jamu production from the scale of small home-industry with 5-10 workers up into middle class factory with estimated 50 workers.

Yet the function of jamu industry itself solely on the production of jamu and its development does not lead to tourism though there are local government of Sukoharjo intention to realizing this into jamu tourist destination.

2 Pasar Jamu Nguter

With most of the selling activity centralized at Pasar Jamu Nguter, this market is a manifestation of jamu dynamic activities in Nguter.

Although the name is Pasar Jamu, most of the goods that selled are the raw ingredients or "*mpon-mpon*" with few actual jamu seller. Thus we can not found the authentics jamu drinking at Pasar Jamu Nguter, let alone the educational value.

Actors of Traditional Jamu
Nguter Sukoharjo

3

Rhizome Seller

Majority of the vendor at Pasar Jamu Nguter prefer to sell the raw ingredients or "*mpon-mpon*" as most of the outside Nguter visitor usually only seek to those goods and brew by themselves.

Therefore the sales of jamu at the market are irronically rivaled by the sales of those jamu raw ingredients.

4

Traditional "*Mbok*" Jamu

Although there is still exist the traditional jamu seller that usually "*mbok-mbok*" carrying those jamu and selling around, strangely it is hard to found them near the location of Pasar Jamu Nguter, which is the activity point of jamu.

Most of them did not sell around there because most of the visitor from middle to upper class did not interested to buy their jamu. Thus their market limited to selling inside the kampong and neighbourhood.

Figure 16. Traditional Mbok Jamu
Source: Google Images (accessed 29 March 2021).


ADAPTASI
KEBIASAAN BARU
PAKAI MASKER

Activity Flow of Jamu Industry

Nguter Sukoharjo

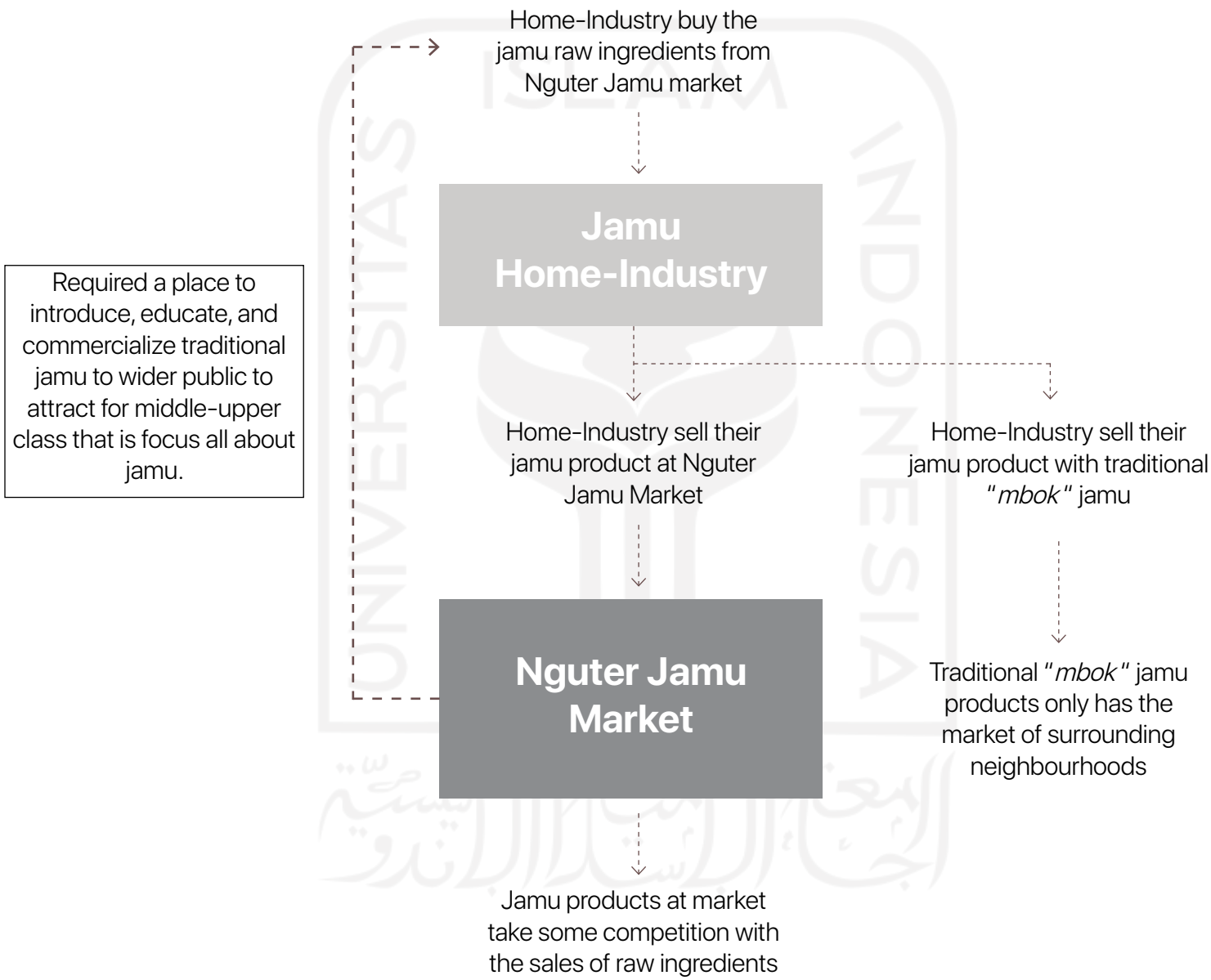
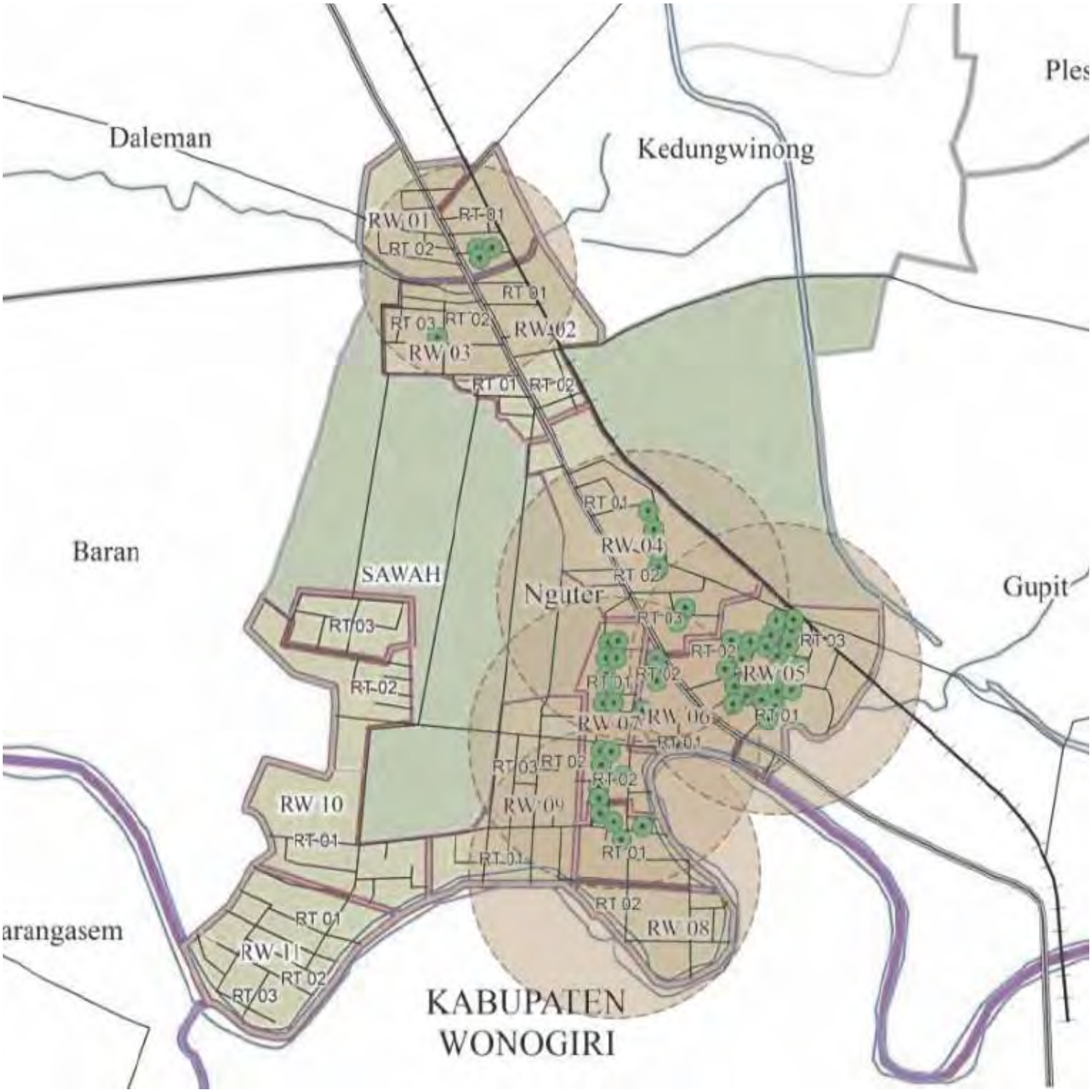


Figure 17. Activity Flow of Nguter Jamu Industry.
Source: Author, 2021.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Sprawl Distribution Map
Nguter Jamu Industry

According to field observations, Nguter Village has been included in the designated industrial area according to the RTRW of Sukoharjo Regency 2011-2031 and there are more than 5 small / medium industries to be precise about 60 business actors with the same product in the form of herbal products at that location, the location is quite sufficient.

Strategically connected to the primary collector road and access to industrial centers is also easy because there is a Nguter station that is passed by the railbus from Solo to Wonogiri with an affordable commuter and ticket system. Not only that, the location of employers and workers is so close because both of them are local residents and the location of raw jamu ingredient materials that are easily available in Sukoharjo Regency and its surroundings, it is appropriate if the location is called an industrial center based on the potential contained therein.

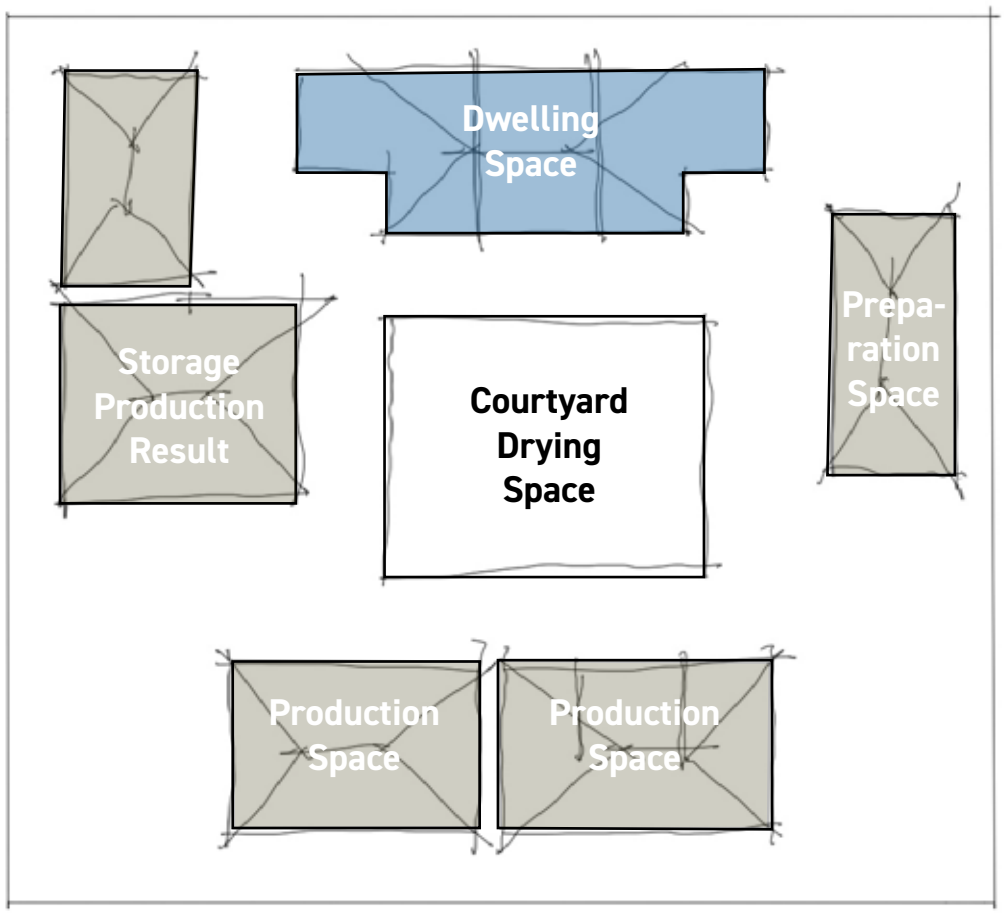
In the center, the spatial aspect can be seen in the form of the development of business units that are grouped into a cluster. Several jamu industry that located in Nguter:

1. Kupu
2. Joglo
3. Kresno
4. Sabdo Palon
5. Gunung Mas
6. Wisang Geni
7. Gatot Kaca
8. Akor Arun
9. Ketut
10. Muncul Jaya
11. Wijaya Kusuma

Although most of the jamu industries already clustered, some are separated quite apart from the Pasar Jamu Nguter. Furthermore whilst clustered most of the function are limited only to production and distribution, there is no educational facility that accomodate besides the occasional events held at Pasar Jamu parking area. Thus with the consideration of cluster distance the proposed site should be near Nguter Jamu Village.

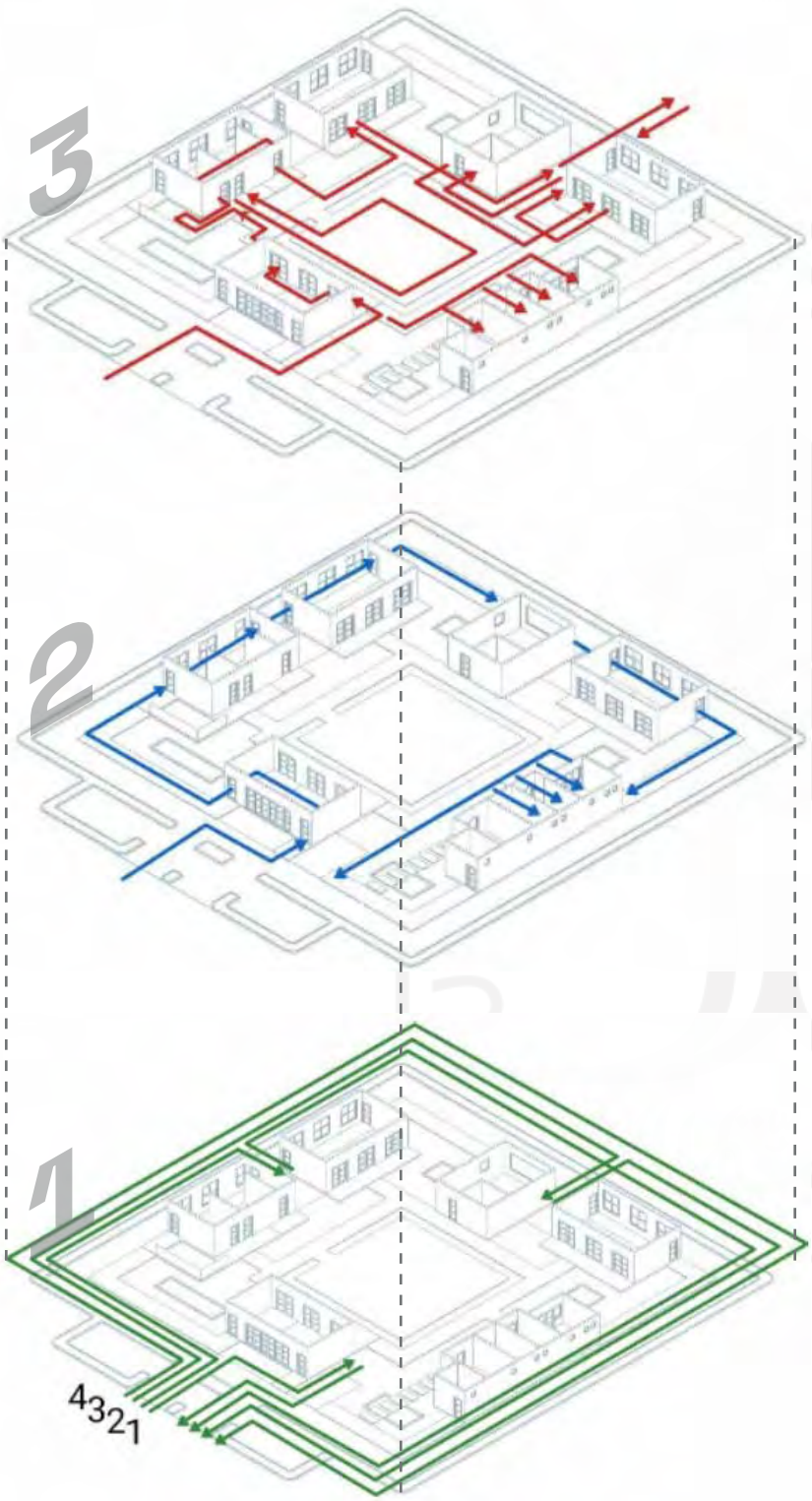
Figure 18. Distribution Map Of Jamu Industry at Nguter, Sukoharjo.
Source: Adhi Wicaksono, B. 2018. Persepsi Pelaku Industri terhadap Program Pengembangan Sentra Industri Jamu di Desa Nguter Kabupaten Sukoharjo.

Building Typology
Traditional Jamu Home Industry



Based on one example of a herbal medicine production house in Nguter, the main zoning is divided into two functions, namely as production space (space / production unit) and dwelling space (space / residential unit). The production space will then be divided based on the raw material preparation zone, production zone and finished product storage zone. The raw material preparation zone consists of a drop off area and a sorted material warehouse. In the production zone there are washing, drying, milling and weighing places. In the production storage zone, it is accommodated in a finished product warehouse that has passed the test as well as a quality testing laboratory. In the dwelling space function, the space

Figure 19. Zonation of Traditional Jamu Home Industry
Source: Author, 2021. Adapted From Adhi Wicaksono, B. 2018. Industry Performer Perception towards Development Program of Herbal Medicine Center in Nguter Village Sukoharjo District.



will accommodate residential activities such as when at home, with the presence of a resting / sleeping room, toilets, and a prayer room.

User Circulation

1

Vehicle Circulation

In the existing jamu home-industry usually the distribution vehicle circulation is located on the outside of the building area. Usually there are two drop off points for loading and unloading vehicles, for both preparation and final product warehouse.

2

Visitor Circulation

In certain circumstances where there are visitors, visitor circulation is usually free to see the process of making jamu without any special routes. Visitors can see except in the warehouse.

3

Worker Circulation

employee circulation is usually focused on the inside of the building so that the distance between rooms is closer and it is easier to access the drying place in the middle of the building.

Figure 20. User Circulation in Traditional Jamu Industry.
Source: Adhi Wicaksono, B. 2018. Industry Performer Perception towards Development Program of Herbal Medicine Center in Nguter Village Sukoharjo District.

Activity Diagram
Traditional Jamu Home Industry

Figure 21. Activity Diagram in Traditional Jamu Industry.
Source: Author, 2021.

Spatial Requirements

Traditional Jamu Home Industry

General Building	1. The building is protected from pollution and does not cause pollution, the building is resistant to the effects of weather and pests, and a clear division of space. 2. Room arrangement is in accordance with the flow of the production process and separated from each other to avoid cross contamination
Ware-house	1. The storage area for fresh rhizomes and the storage area for herbs must be separated. In addition to simplifying the loading-unloading process of fresh rhizomes (during the harvest season) and herbs (at the time of sale), this is done to maintain the quality of the herbs produced. 2. temperature and humidity control factors are needed to maintain the quality of the material stored.
Produc-tion Area	1. Production area needs to be controlled climately (temperature and humidity) to ensure the correct process of making jamu.
Private Space	1. Several room such as ingredients warehouse, final products warehouse should not be enter except for the worker as it is sensitive and to avoid the risks of contamination, or create clear separation where the visitor can only observe from distance.
Public Space	1. In the existing example of jamu factory, production area such as sorting, cleansing, drying, milling, boiling, testing, and packaging room could be seen and observe by visitor from closed as it create interesting senses experience and it could be shared together between other jamu producer.

Production Flow

Traditional Jamu Home Industry

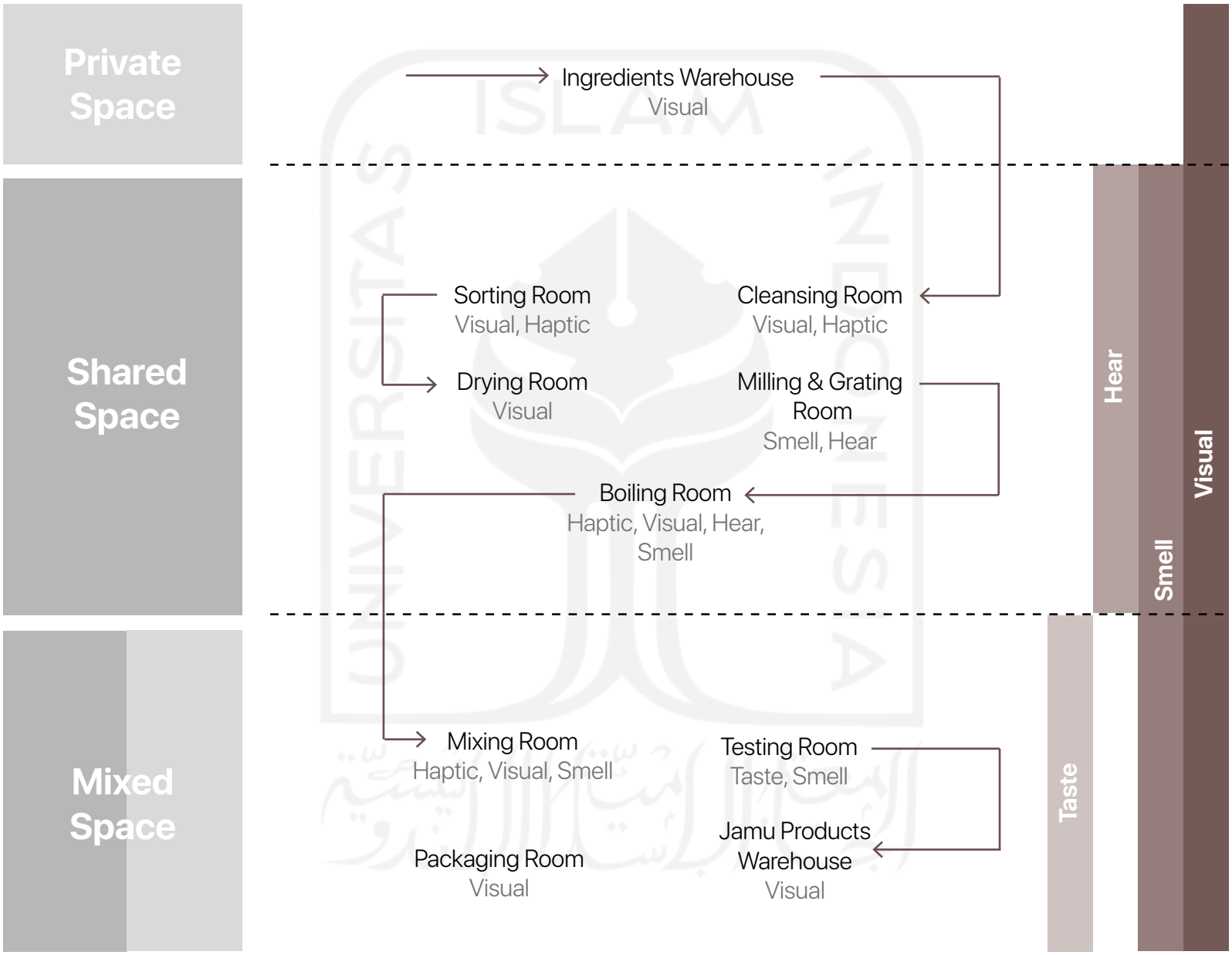


Figure 22. Production Flow in Traditional Jamu Home Industry.
Source: Author, 2021.

SWOT Formulation

Outside Factors	Inside Factors: Strength	
	Nguter Village has already been established as center for the herbal medicine.	
Opportunity Pandemic COVID-19 raised public awareness of traditional herbs (jamu) usage.	**S-O Strategy** Continuing the government action through developing attraction related to jamu.	
Threats Economic and usage competition with generic drugs force herb industry to need breakthrough. Public knowledge about jamu limited only to distribution at market.	**S-T Strategy** Implementation of jamu characteristics reflected at edu-recreational factory to optimize those potency.	

Weaknesses

Existence of home-industry jamu building inadequate to support hygienity production.

Sprawl and ineffective production of jamu home-industry.

W-O Strategy

Transform public perception about jamu as a non-standardized medicine through spatial arrangement of proposed building.

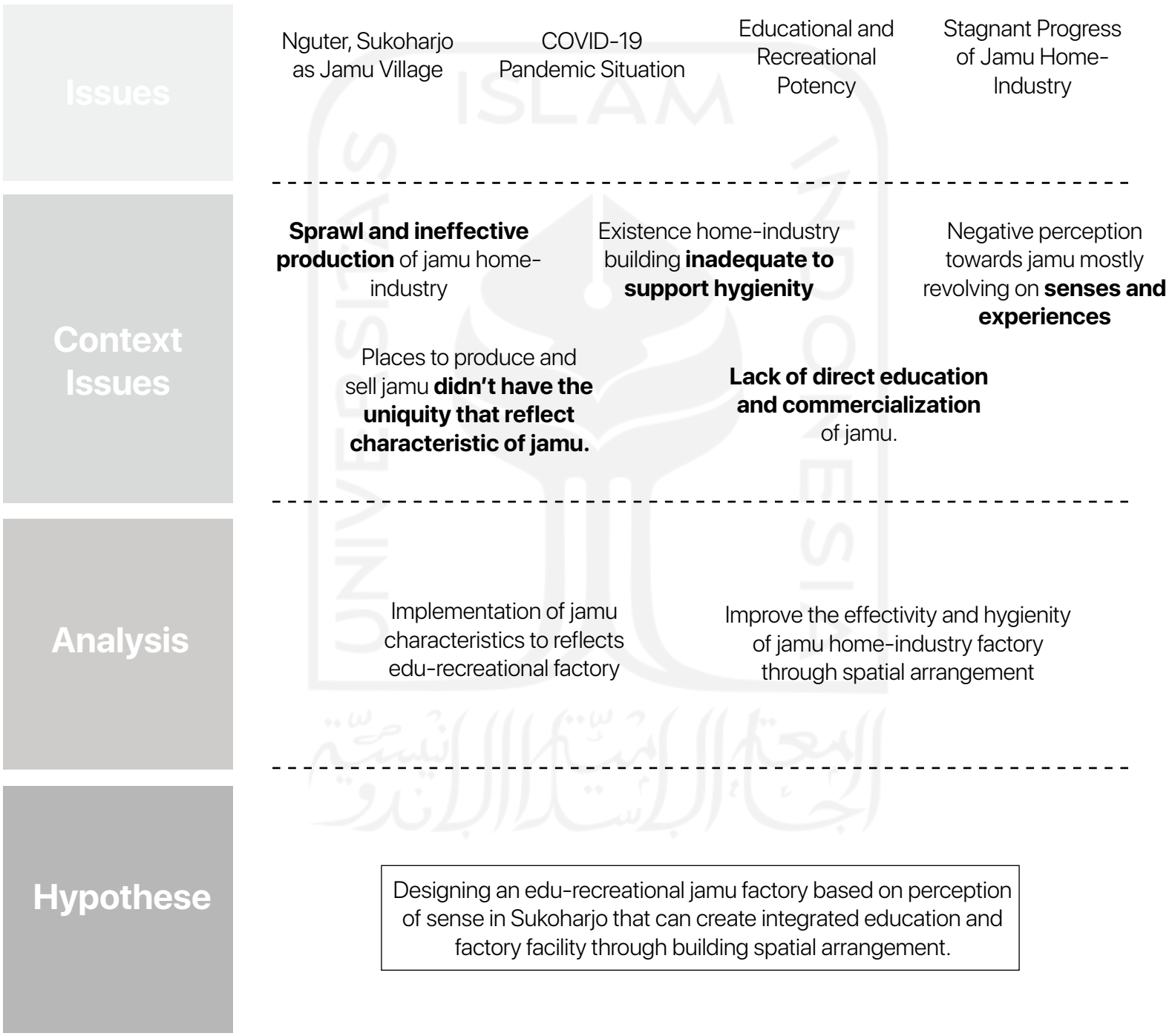
W-T Strategy

Integrate a communal connectivity spaces that facilitates education and commercialization of jamu within senses principle.

In deciding problem formulations, aims, and design goals required in-depth analysis of strength, weakness, opportunity, and threats from outside and inside factors. SWOT formulation helps to discover design strategy towards specific problems.

Table 1. SWOT Formulation of Nguter Jamu Village, Sukoharjo.
Source: Author, 2021.

Problem Thinking



Problem Mapping

Non-Architectural Issues

1. Pandemic COVID-19 has started people starting to aware and seek for the benefit of traditional herb (jamu).
2. Public knowledge about jamu simply limited only to where to buy them (distribution).
3. There is lack of tangible effort beside establishing Nguter as Jamu Village to facilitate education and recreational potency of jamu.
4. Usage competition and perception issues with generic drugs feared traditional medicine like jamu only to used as last option.

Architectural Issues

1. Existence jamu home-industry building restricted to production and did not functionally adequate to support education and recreation potency.
2. Places to produce and sell jamu didn't have the uniquity that reflect characteristic of jamu.
3. Economic limitations force existing home-industry to merge production room into private space (kitchen), leading to ineffective production.

General Problem

How to design edu-recreational jamu factory based on perception of sense in Sukoharjo that can create integrated education and factory facility through building spatial arrangement ?

Specific Problem

1. Integrating and arranging interpretive center spaces that can induces and heightened certain senses at the specific process of jamu factory to bring memorable particular
2. experiences for user to comeback.
   Designing a communal connectivity spaces that bridging and facilitating between education and commercialization with senses principle.
3. Arranging public and private zoning and its circulation that facilitating different needs of jamu factory and interpretive center.

Problem Formulation

General Problem Issue

How to design edu-recreational jamu factory based on perception of sense in Sukoharjo that can create integrated education and factory facility through building spatial arrangement ?

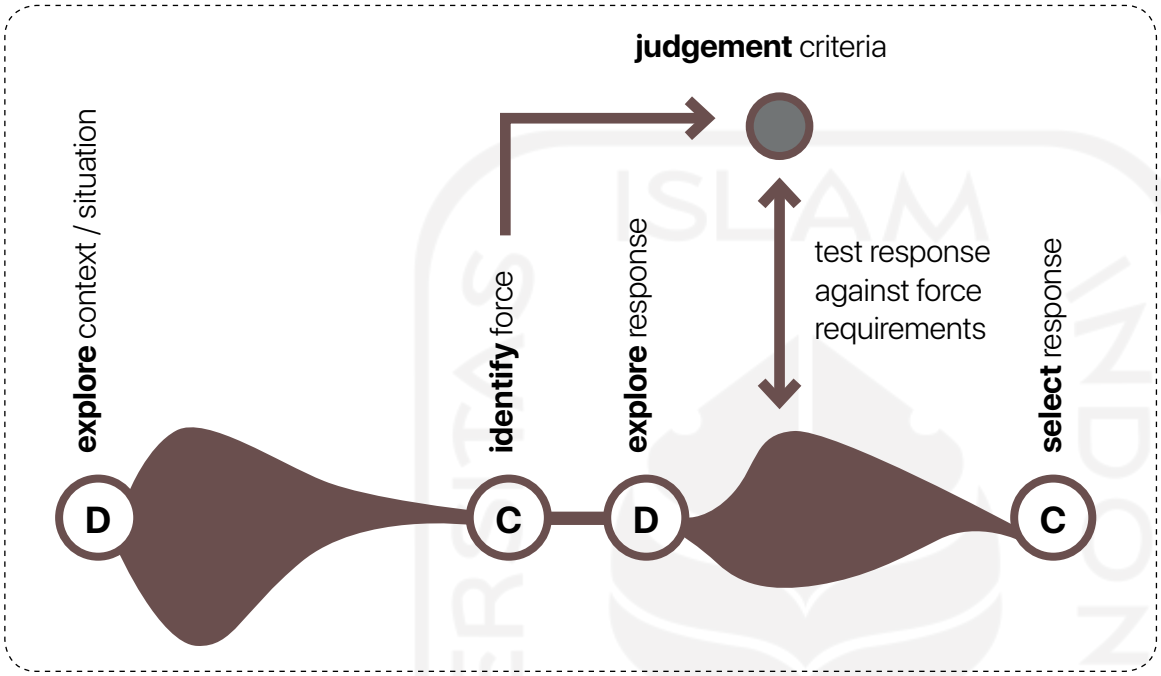
Specific Problem Issue

1. How to integrate and arrange interpretive center spaces that can induces and heightened certain senses at the specific process of jamu factory
2. How to create social connectivity spaces between education and commercialization with senses principle.
3. How to arrange between public and private zoning and its circulation regarding the different needs of jamu factory and interpretive center.

Design Goals

1. Integrating and arranging interpretive center spaces that can induces and heightened certain senses at the specific process of jamu factory to bring memorable particular experiences for user to comeback.
2. Designing a communal connectivity spaces that bridging and facilitating between education and commercialization with senses principle.
3. Arranging public and private zoning and its circulation that facilitating different needs of jamu factory and interpretive center.

Design Method Theory



Force-Based Framework

Design method is a stage that carried out in the design process. Plowright (2014) argues that all architectural design methods are based on a set of varied thought processes that are structured by the type and source of information used to emphasis the design process, resulting in frameworks.

Adopting from Plowright, from three major approaches namingly pattern, force, and design based framework; with some constraints and variables in this project (the enigmatic process of translating senses into architecture), the force approach that prioritize studying human-to-environment (senses to jamu context) then environment-to-form (jamu context to architecture) interactions could be suitable that allows decisions to be made. Diagram below explaining general conception of how the force-based framework works.

Figure 23. Force-Based Design Framework
Source: Author, 2021.

Source: Plowright, Philip. 2014. Revealing Architectural Design: Methods, Frameworks & Tools. 10.4324/9781315852454.

Data Collection and Analysis

Data Collection Methods

1 Primary Data Collection

Primary data collection method obtains data directly from the source by direct observation of the design location. Observations were made by visiting the Pasar Jamu Nguter and conducting interviews with sources regarding site condition, activity data and the current condition of the jamu industry.

2 Secondary Data Collection

Secondary data collection methods are carried out by searching for sources and theories that are relevant to the typology of the jamu industry building, the interpretive center typology, and the senses approach that supports the design.

Data Analysis & Design Stage

1 Building Typology Analysis

This process is carried out related to analyzing the spatial requirements needed in both jamu factory and interpretive center. The spatial requirements that need to analyzed:

1. Building Layout
2. Space Requirements
3. Public and Private Zoning Arrangement
4. Space Connectivity

2 Site Analysis

Site analysis is carried out by observing the condition of the local area of Nguter Sukoharjo on the site. The data analyzed were in the form of:

1. Building Codes and Regulation Analysis
2. Site Analysis
3. Regional Climate Data Analysis

3 Design Development and Evaluation

The stages of the design process answer the analysis of problems, data and programs. The development adapts to the building typology and the senses approach as a strategy in determining the schematic design. Design evaluation will be conducted with the performance of the perception test on the related user

Design Framework

Object

NGUTER JAMU FACTORY
Perception of Senses Toward Spatial Arrangement

Issues

- Nguter, Sukoharjo as Jamu Village
- Educational and Recreational Potency
- COVID-19 Pandemic Situation
- Stagnant Progress of Jamu Home-Industry

Context Issues

- **Sprawl and ineffective production** of jamu home-industry
- Places to produce and sell jamu **didn't have the uniquity that reflect characteristic of jamu.**
- Existence home-industry building **inadequate to support hygienity**
- **Lack of direct education and commercialization** of jamu.
- Negative perception towards jamu mostly revolving on **senses and experiences**

General Problem

How to design edu-recreational jamu factory based on perception of sense in Sukoharjo that can create integrated education and factory facility through building spatial arrangement ?

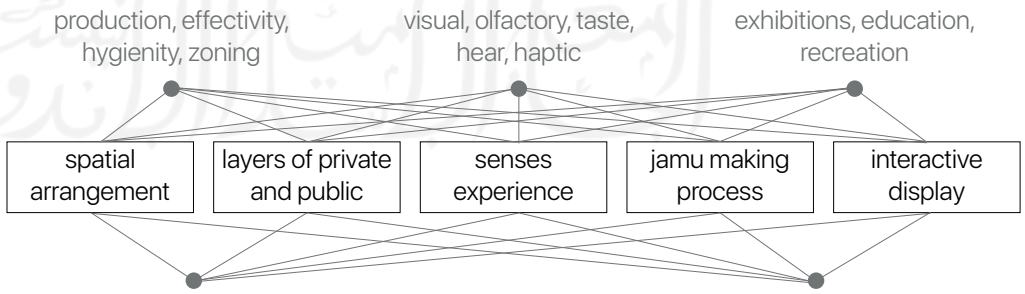
Specific Problem

- How to integrate and arrange interpretive center spaces that can induces and heightened certain senses at the specific process of jamu factory
- How to arrange between public and private zoning and its circulation regarding the different needs of jamu factory and interpretive center.

Literature Studies

- **home-industry scale jamu factory**
- **human senses**
- **interpretive center**

Synthesis



Arrangement of public and private zoning to meet spatial requirements

Interpretive center design that provides learning and recreational values through senses experience by process of making jamu

02

Senses as Approach

Preliminary description for particular human sensory approach.

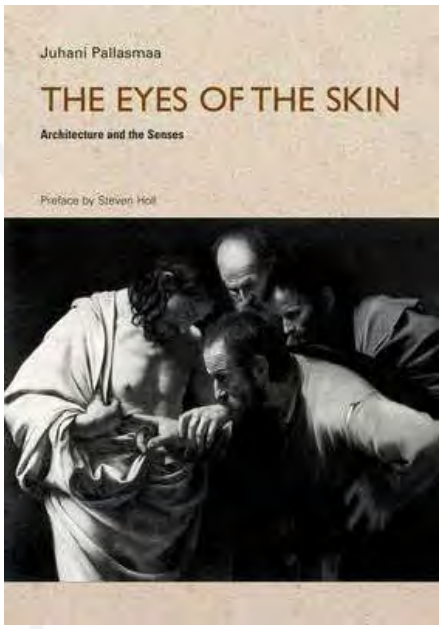
Phenomenology Architecture Design for Each Senses

The rhythm of architecture can be felt by the occupants as a result of the architect's composition or the arrangement of all the sensory qualities of space. By arranging spatial sensory features, the architect can guide the occupants through the functional and esthetic rhythms of the place. Architectural building for all senses can serve to move occupants by enhancing their experience (Spence 2009).

In this occation, architect should act like a composer who orchestrates spaces as a integration of strength, function, and beauty *(firmitas utilitas venustas)* within the senses while understanding how human engange those spaces. As user or human body reacts with moves, touches, sees, hears, smells, and tastes, the spaces and the architecture itself come alive. Within the process of designing spaces and experiences that harmoniously heightened more senses, architect should be able to make a positive difference while creates more interactive, engaging, and eventually memorable multi sensory experiences.

Juhani Uolevi Pallasmaa in his book *Eye of the Skin* (2005) notes the significance of multi-sensory approach measured by the eye, ear, nose, skin, tongue, skeleton, and muscle that are relevant in spatial perception of humans. However in Western culture, sight has been dominant over the other senses, and the biased practice of sight representation made the eye as the center concept of the sense. This happens not only in architecture but in general world of art. Pallasmaa argued the inhumanity of contemporary architecture regarded as the consequence of imbalance sensory stimulation, due to obsessive in vision. With this in mind, it is hard to have certain memories of places that one has visited, as the architectural experience occur when imagination interacts with our body and surrounding environment. The memories and experiences of places will be expanded if there is multi-sensory elements that stimulates certain or even all of the senses.

In the end, it is hoped that, as consciousness of the multi-sensory nature of human perception continues to grow beyond and restimulates the neglected sensory awareness through certain spatial arrangements and architectural elements.



Spence, C. Senses of place: architectural design for the multisensory mind. Cogn. Research 5, 46 (2020). https://doi.org/10.1186/s41235-020-00243-4

Pallasmaa, J. (2005). The eyes of the skin: Architecture and the senses. Chichester: Wiley-Academy.

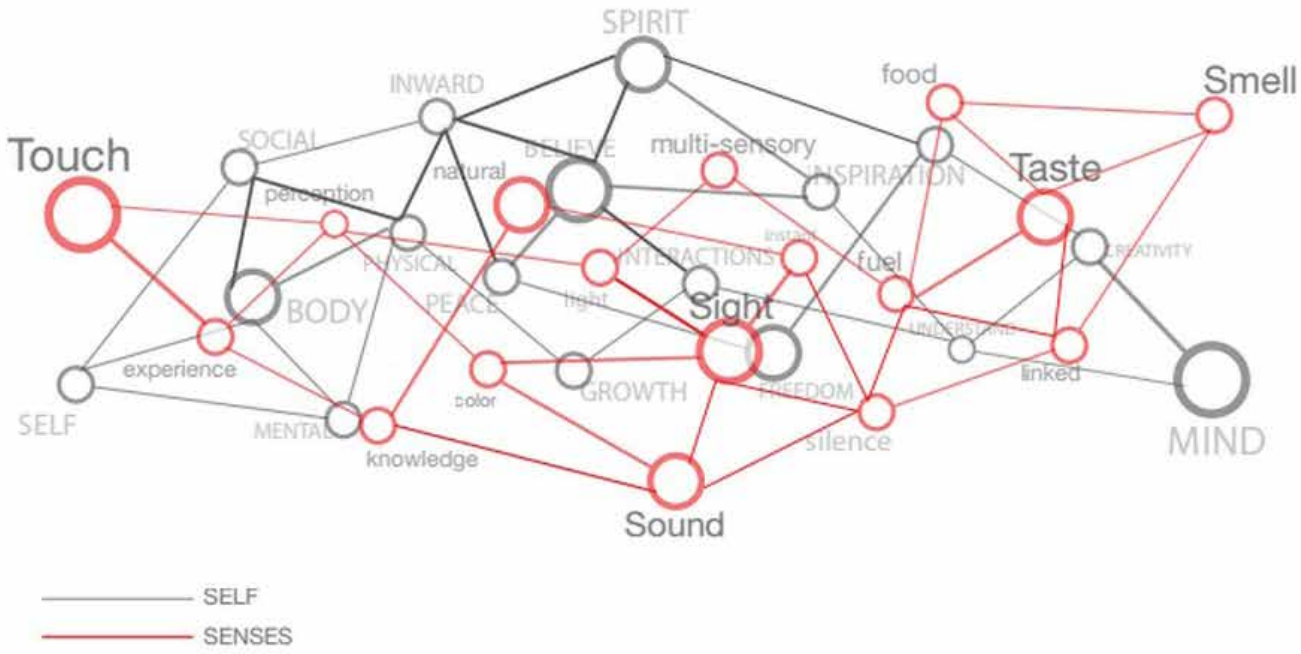


Figure 24. The Network of Multi-Sensory Design
Source: https://www.re-thinkingthefuture.com/wp-content/uploads/2020/06/A1048-Multi-Sensory-Architecture-Less-Vision-More-Senses-Image-1.jpg

Body and Memory

Architectural experiences are the dialogue of our mind, body, and surrounding environment. Our human bodies accept all the senses to be tied up not limited only to sight. Even in certain condition where emotional states and deep thought rised, our ocular vision usually repressed. Thus our bodies as in the centre experienced surrounding environment through the extended of our senses, the close and intimate senses of touch and smell with the far and distant senses of sight and hear.

Pallasmaa in his book gave examples of the bodies experiences multi-sensory imagery stimulates by everyday situation of tea ceremony from *The Book of Tea* by Kakuzo Okakura, "Quiet reigns with nothing to break the silence save the note of the boiling water in the iron kettle. The kettle sings well, for pieces of ironare so arranged in the bottom as to produce a peculiar melody in which one may hear the echoes of a cataract mufed by clouds, of a distant sea breaking among the rocks, a rainstorm sweeping through a bamboo forest, or of the soughing of pines on some faraway hill."

This situation can be replaced with our context of drinking traditional jamu where the *mbok-mbok* jamu mashing and boiled the herbs evoking a strong smells, eventually stimulated our memories of drinking traditional jamu; or maybe "*dicekoki*" when we are child.
In the same way, architecture can creates a complex layer of those impressions.

Theoretical Precedent

Frank Lloyd Wright's Fallingwater tied the surrounding forest, the smell of forest, the colours and textures of the house, and ultimately the sounds and sight of the river into a bundle of unique senses experience.

The house itself intended by Wright as a compliment and also a highlight of the water falls and the sound of water falling. The alleys and passageways circulation are dark and narrow, again it was intended to experience the feeling of compression while playing with shadow for people to appreciate the bright outdoor.

Project Detail
Fallingwater House
Architect
Frank Lloyd Wright
Location
Mill Run, Pennsylvania
Completed Year
1939

Figure 25. Fallingwater Exterior
Source: franklloydwright.org (accessed 8 March 2021)

Figure 26. Fallingwater from Different Angles
Source: https://en.wikiarquitectura.com/wp-content/uploads/2017/01/Fallingwater-Frank-Lloyd-Wright_09.vjpg(accessed 8 March 2021)

Project Detail
Therme Vals
Architect
Peter Zumthor
Location
Graubünden, Switzerland
Completed Year
1996

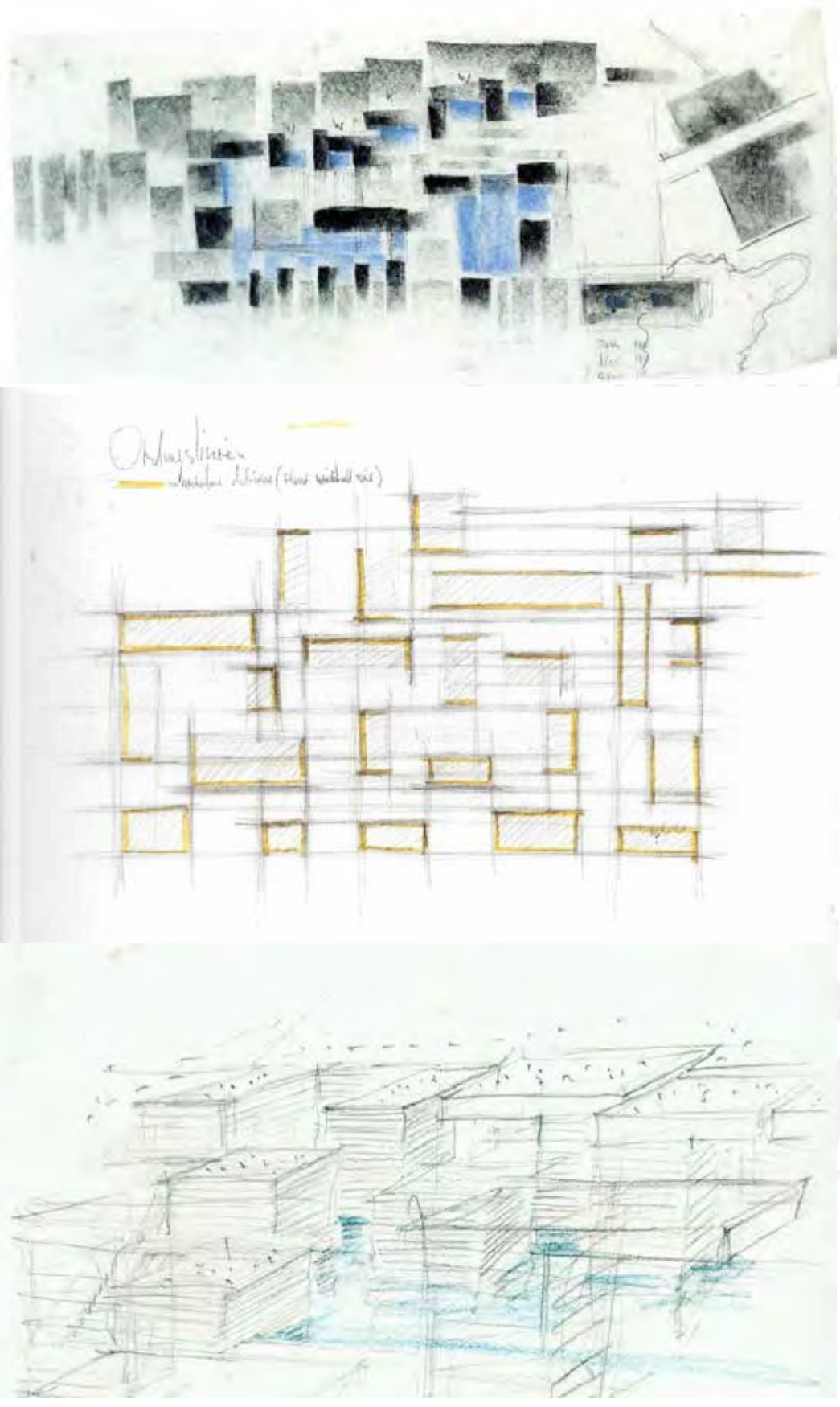
Figure 27. Sinking Therme Vals Inside the Slope.
Source: https://images.adsttc.com/media/images/5fc1/4155/63c0/17d6/2c00/1226/slideshow/09102014-ACP_Therme_Vals_2014.10_8593.jpg?1606500680

Theoretical Precedent

"Mountain, stone, water – building in the stone, building with the stone, into the mountain, building out of the mountain, being inside the mountain – how can the implications and the sensuality of the association of these words be interpreted, architecturally?" **Peter Zumthor**

Peter Zumthor the Therme Vals is completely packed with multi-sensory stimuli that combine materiality and therapeutic experience. Inspired by the cave and quarry structure, Therme Vals combine different elements to create a corresponding relationship between water, stone, light, shadow, and its reflection. Careful placement of sunlight and artificial light are uniquely brought subtly into the bath interior.

Zumthor developed subtle yet some are diverge material to different sensation, ranging from monolith Quarzite slabs, red mahogany shower room, and brass fixed furniture. From the outside, square-shaped openings framed the landscape of the surrounding hills that substantially enrich spatial experience as well.



Block Studies:
Sense Composisition

Zumthor in his design research drew a lots of block studies to compose playful form which sometimes spontaneous. The idea is concerning about hollowing the mass, a large in-between space that interconnected by flowing water then collected in crevices as bath as represented by sketches at Figure 1.

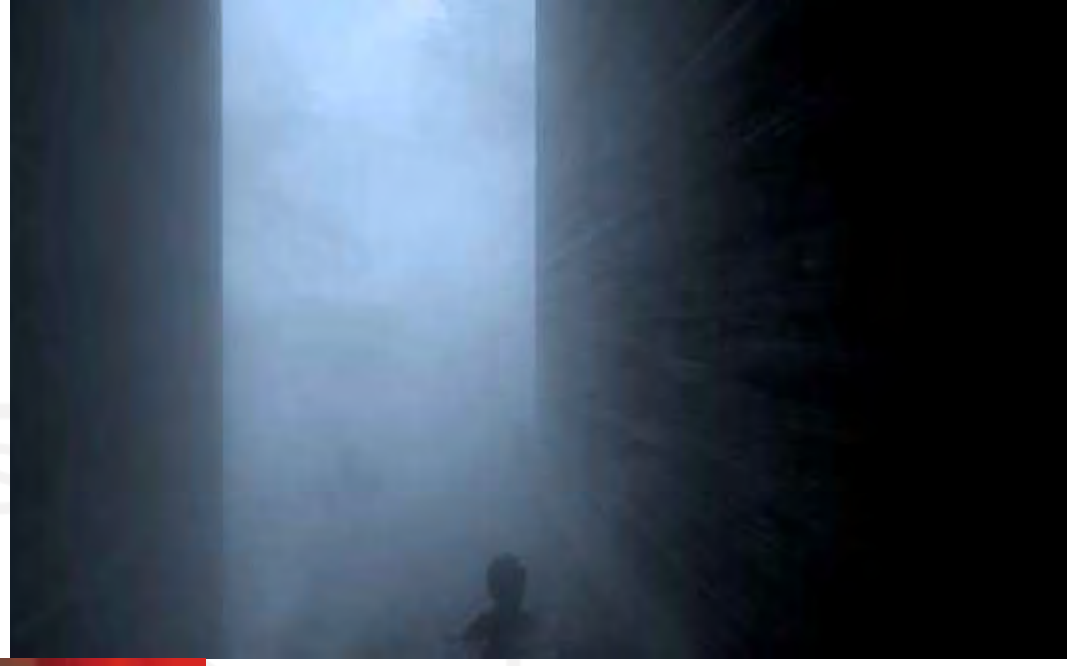
Lighting composition played huge role in order for daylight to penetrate the joints between the roof slabs. At certain times the daylight at different angles washes the wall from joints opening wall marked in yellow at Figure 1.

From viewed perspectives, the building retain the concept of reminiscent quarries or cavern. A lego like blocks that looks grown and interlocked into the mountain.

Figure 28. Block Studies Sketches
Source: Hauser, S. Peter Zumthor Therme Vals. 2007. Verlag Scheidegger and Spiess

Flower Bath **Blütenbad: Olfactory**

Flower Bath is tried to mimic petals and pleasant aroma that common in the middle ages. It incorporated floating marigold petals, rosemary, chamomile, and rose blossoms were infused and added to the water. The fragrance itself did not come from the water, yet the air filter secreting vaporize lavender oil. This bath really evoked and stimulated our olfactory senses with therapeutic experience.

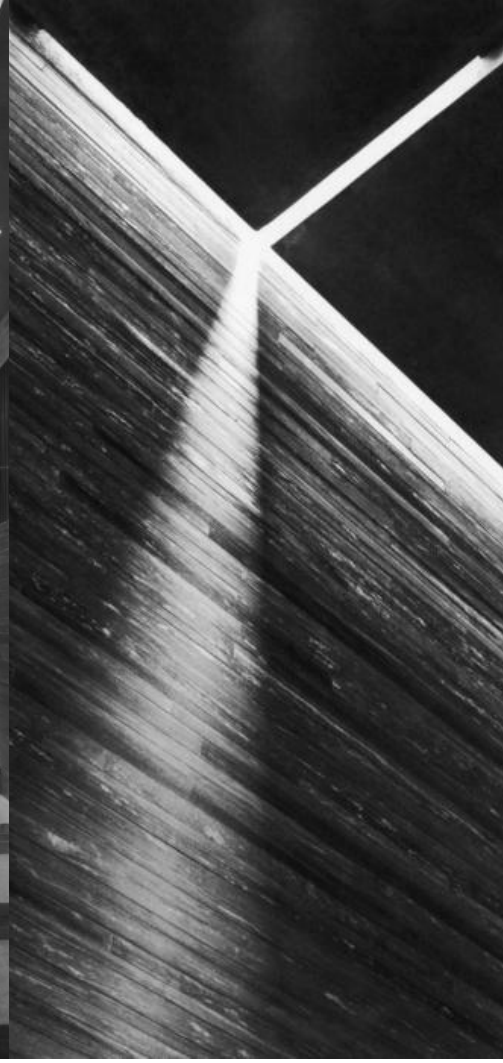


Fire Bath **Feuerbad: Thermal**

The name gives itself away to the outside, the concrete wall color is red with water temperature 42°C accompanied by glowing red illumination. The perception of hot bath really intensified by the visual of red color amplified the higher temperature for touching sensory.

Sound Bath **Klangbad: Hear**

Particular volume of narrow room with six-meter ceiling caused sounds to carried and reflected into different angles. Close to resonance chamber, this bath could makes particular ambient sounds one octave lower, or even amplified to produce a fuller sound. Such unique experience really heightened our hearing senses although to comprehend it needs directly feels the bath.

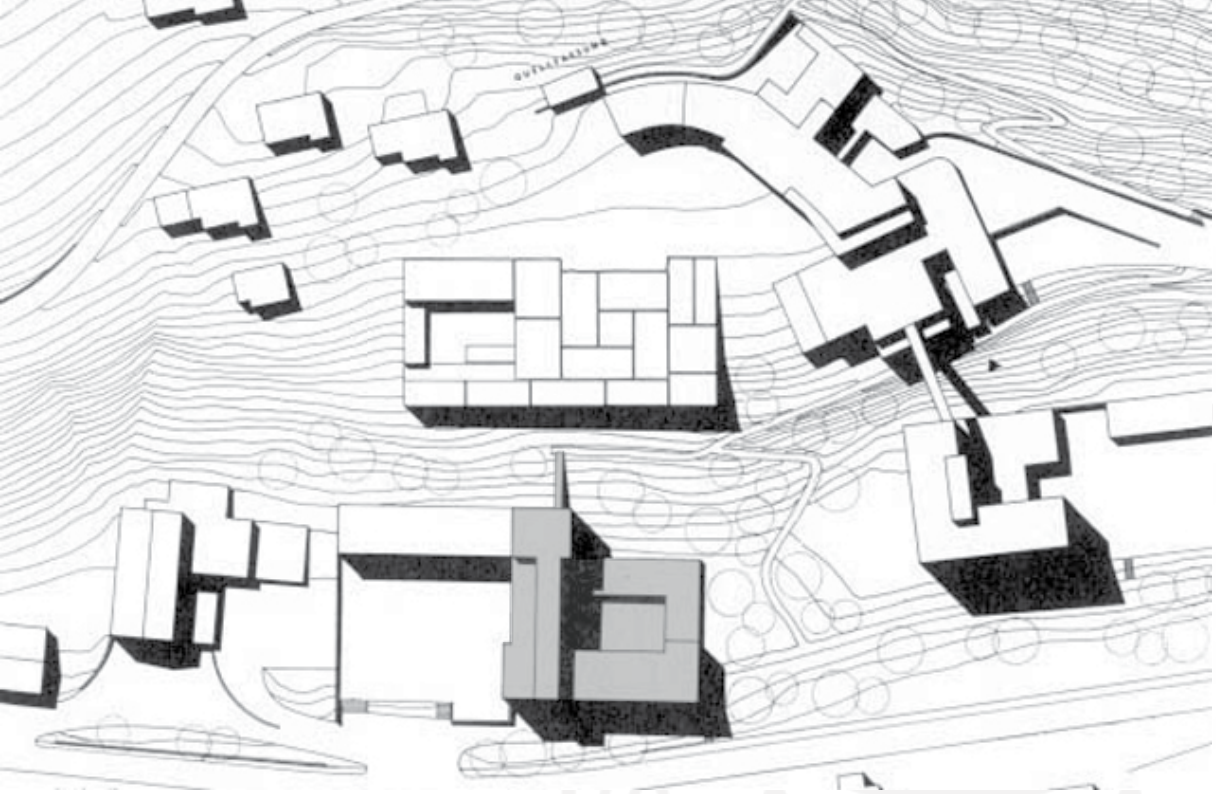


Drinking Stone **Trinkstein: Taste**

Drinkable water falls straight to brass cups from the warm spring and unfiltered. Though this particular room not as extravagant the others with quartz wall and plaque that gives analysis of the calcium sulfate, hydrogen carbonate water.

Figure 29. Various Therme Vals Bath Interior
Source: Hauser,S. Peter Zumthor Therme Vals. 2007. Verlag Scheidegger and Spiess

https://images.adsttc.com/media/images/580f/b450/e58e/cefd/6700/0091/slideshow/34.jpg?1477424193



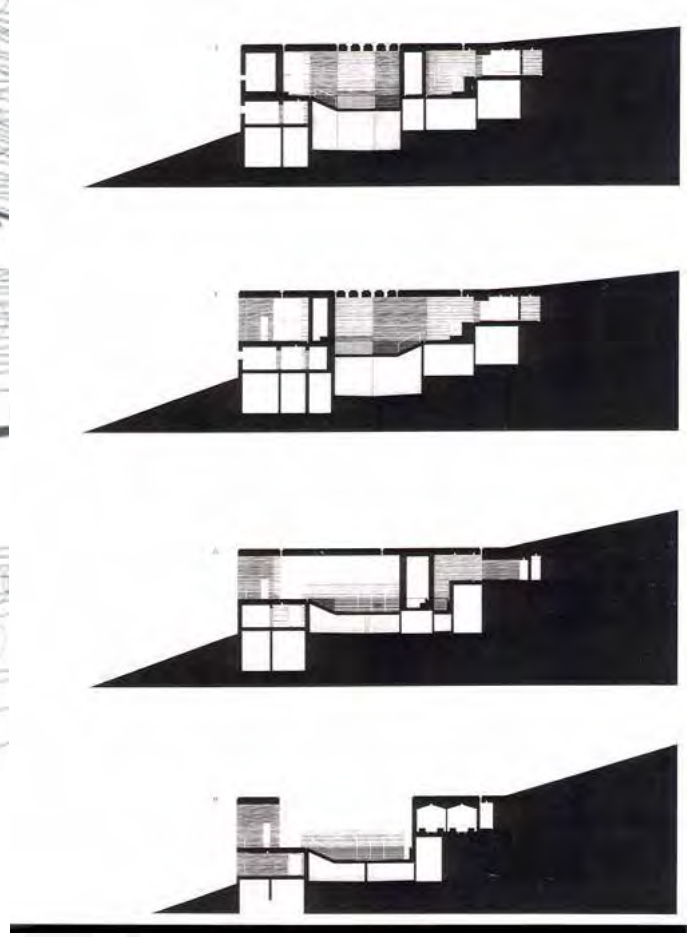


Figure 30. Site Plan, Floor Plan, and Cross Section Drawings of Therme Vals

Source: Hauser, S. Peter Zumthor Therme Vals. 2007. Verlag Scheidegger and Spiess

Ryan Raymund. Primal Therapy. Architectural Review 201 (2015): 42. Print.

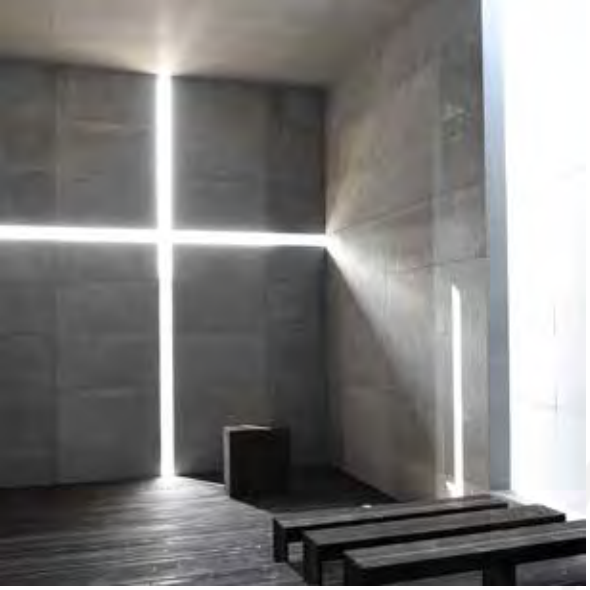


Figure 31. Church of Light
Source: https://images.adsttc.com/media/images/5037/f3e0/28ba/0d59/9b00/064f/slideshow/stringio.jpg?1414206113

Sight and Shadow

Although there is certain dominance from visual sense, still sight is an important aspect for us to experiencing the surrounding environment. Sight itself are often associated with distance and separation. "The eyes surveys, controls and investigates, whereas touch approaches and caresses" (Pallasmaa, 2005). Often in emotional experiences we tend to close our eyes, such as listening music or dreaming. Thus shadows and darkness are important as it made us appreciate the vision and heightened other senses fantasy. Pallasmaa argued "In great architetural spaces, there is constant, deep breathing of shadow and light; shadow inhales and illumination exhales light." In this particular case interiority and exteriority are significant to balance between lights and shadows. With traditional jamu home-industry often associated inside private dark and dull home, will be significant to shift those negative paradigm without over exposing it into flood of sight.

Theoretical Precedent

Tadao Ando in his project Church of Light shows with extreme the significance of lights and shadows and also the way they create perception of spaces. Light and shadow in its extreme create exchange perception of dark into light, and light into spaces.

This emptiness in other hand create sacred and powerful space that really highlighting cross shaped light.

Project Detail
Church of Light
Architect
Tadao Ando
Location
Ibaraki, Osaka
Completed Year
1989

Echoes of Sound

Pallasmaa said that "Every building or space has its characteristic sound of intimacy or monumentality, invitation or rejection, hospitality or hostility. A space is understood and appreciated through its echo as much as through its visual shape."

"Within architecture, the physical form of the environment adds to the auditory experience. In open spaces or enclosed volumes the presence of wind, the moisture of the air and even the background sounds we are mostly unaware of, fill the space and modify the impact and intensity of the character of that place as a soundscape. Consequently, the structure of the architectural environment, its enclosed- or openness the properties of the materials and whether it is absorbing or resonating, play an important role." (Karruseit, 2009).

In the process of making traditional jamu there are several steps that involve the echoes of sound, particularly when grinding and mashing the herbs with pestle. These characteristic sound could enhance the atmosphere of traditional jamu factory.

Theoretical Precedent

Temporary pavilion for World Expo 2000, it is a labyrnth of wood walls that permeable for light, wind, and rain allowing building to has changing atmosphere. For some times there are added scent of forest along with different music exhibition that literally turn the pavilion into like huge sound box instrument. Light and shadows also had their role here, with semi-outdoor lights cast shadows and bring detail to the roughness of wood, adding intimacy and serenity.

Project Detail
Swiss Sound Pavilion
Architect
Peter Zumthor
Location
Hanover
Completed Year
2000

Figure 32. Pavilion Entrance
Source: https://en.wikiarquitectura.com/wp-content/uploads/2017/01/Swiss_Sound_Pavilion-Peter_Zumthor_08.jpg

Figure 33. Smelling Station
Source: https://www.metalocus.es/sites/default/files/files/winebecamemodern05.png

Theoretical Precedent

This wine exhibition particulary emphasize modernism style while introducing the exploration of transformations from the visual into material cultures of wine. It exhibit the various kinds of wine's raw material as grape until the results of became wine. Although the exhibit wine are not to consume, the scent that it produce evoke certain feeling. This similarity can be applied to jamu as herbal drinking with strong scent and taste.

Project Detail
How Wine Became Modern:
Design + Wine, 1976 to Now
Architect
Diller Scofidio
Location
San Francisco, California
Completed Year
2010

Scent of Places

Smell does not directly give us certain visual arrangement or distances, however the smell of something can evokes and restores certain emotion and memories. Certain smell are placed in our inconcious memories, and certain trigger from smell intensity can define specific places.

"Nose can remember better than eyes and understands the space deeper and sharper and realizes the difference. A particular smell makes us unknowingly re-enter a space completely forgotten by the retinal memory; the nostrils awaken a forgotten image, and we are enticed to enter a vivid daydream. The nose makes the eyes remember." (Pallasmaa, 2005). Elaborating our olfactory senses give us the opportunity in lifting the design into certain level. Scent also helps enganging other senses in creating multi-sensory experience.

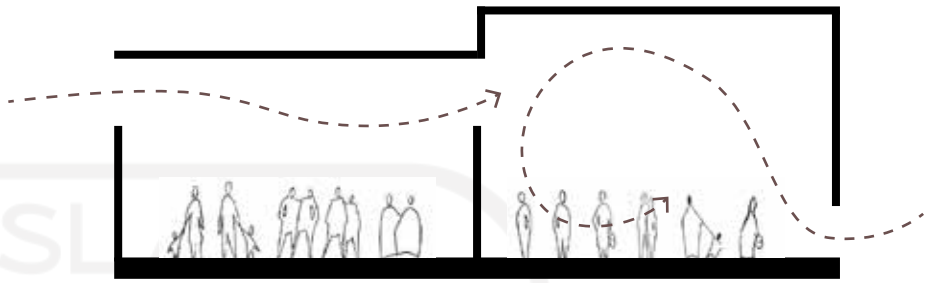
Jamu and the herbs that been used itself has certain aroma that can be distinguishable and give different perception. While conducting survey at Pasar Jamu Nguter the first senses that actively seek for jamu are our smell. Various kinds of herbs and type of jamu that being selled gave floods of smell that different in any other regular market.

Visualising Olfactory Space

In a room, smell is an invisible element, but it has a direct effect on the nervous system or human sensors, which causes reactions, be it physical, movement, or psychological. Thinking of smells and things that seem ordinary can help frame considerations about connections between people and places.

Kapur (2019) conduct a study to find out how odors move and shape the room and what factors influence this movement in the room. From studies conducted by researchers, there are factors that influence odor transfer, namely:

1. Roof height
2. Openings (wind and sunlight)
3. Space limiting material
   Fabric: absorping (reduces strong odor)
   Wood: blocks odors, Creating new smell that mix with the wood (natural)
   Concrete: blocks odors, creating new smell



The smell spreads in the closed room with the factors of material and the difference in room height.

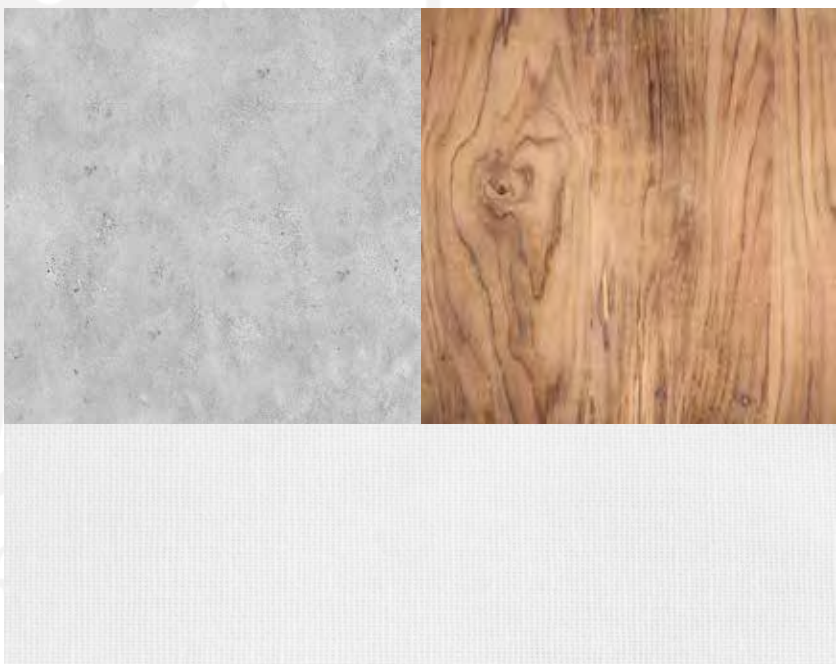
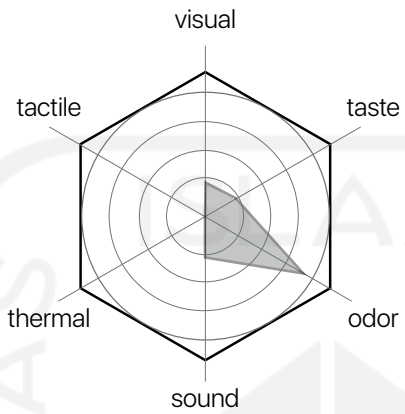


Figure 34. Different Partition Material Give Different Smell Characteristics
Source: https://image.freepik.com/free-photo/white-cotton-fabric-texture-background_38607-812.jpg

Odor of Jamu Ingredients



'*Rimpang* ' or rhizomes as the main ingredients of jamu in general has similar odor that characteristics with aromatic and earthy smell which sometimes secrete those strong odor.

1 Ginger

When describing ginger aroma descriptors like 'citrus' or 'spicy' pop up, but woody and floral notes also tend to determine the aroma of ginger.

2 Galangal

Galangal smell gingery or peppery; like an earthy and woody with warm tropical flowers and fruits.

3 Lempuyang

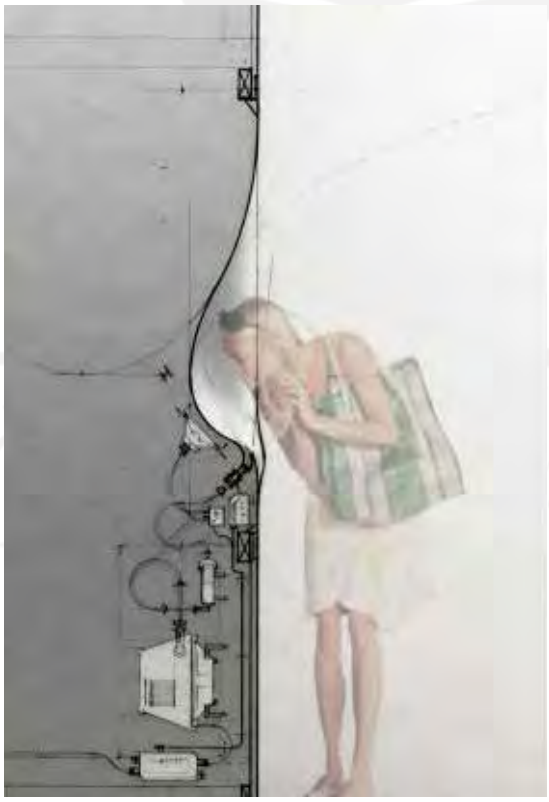
Lempuyang has aromatic smell with earthy, nutty odor and spicy taste.

4 Turmeric

Turmeric is mildly aromatic and has scents of orange or ginger. It has a pungent and bitter flavor.

Figure 35. Various Rhizome as Ingredients of Jamu
Source: http://blog-assets.foodpairing.com/2015/04/ginger_flavor-analysis_v2.png

Project Detail
The Art of Scent
Architect
Diller Scofidio + Renfro
Location
Museum Arts And Design, New York
Completed Year
2012

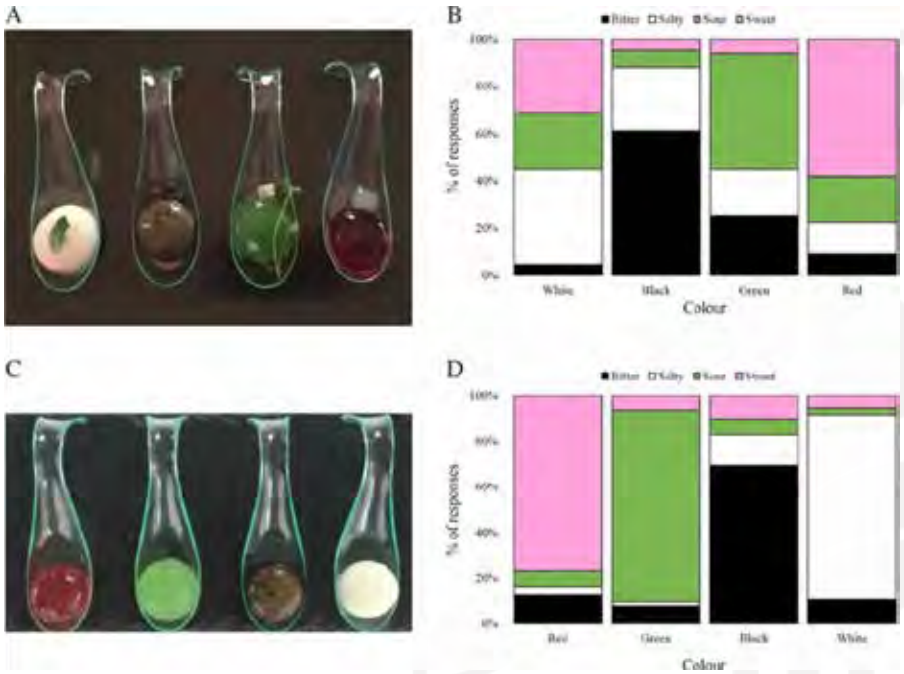


Theoretical Precedent

The Art of Scent is a museum exhibitions that focus on the olfactory arts. To achieve heightened smell stimulation, the design strips off all visual references that associated with perfumes. In the appearances of seemingly empty white gallery, visitors invited to lean into the wall booth and smell the automated triggered scented air. In addition visual and sound assists by text projection to help visitors recognize and learn about those olfactory experiences.

Visualising Taste Through Colours

"Colour clearly conveys to the brain what taste is to be expected."



Source: Spence, C., Wan, X., Woods, A. et al. On tasty colours and colourful tastes? Assessing, explaining, and utilizing crossmodal correspondences between colours and basic tastes. Flavour 4, 23 (2015). https://doi.org/10.1186/s13411-015-0033-1

Figure 36. Slight Change on Color Hue Saturation and Garnish Could Strengthen Taste Perception.
Source: https://media.springernature.com/full/springer-static/image/art%3A10.1186%2Fs13411-015-0033-1/MediaObjects/13411_2015_33_Fig5_HTML.gif?as=webp

The concept of mapping color onto five four or five tastes; bitter, sweet, salty, sour, and maybe umami to the wider audience has been revolving around modern time. Uniquely, the basic tastes are not specifically associated with the color of a particular food. Red for instances associated with sweetness, yet there is exist red meat and red chili which is not sweet at all.

Based on this concept, the perception between tastes and colors do not always associated with properties of the same object, but comparing between dimension of experience that cannot simply explained just by pointing common source. Spence (2015) have researched that the majority of people choose the taste of bitter with with brown, black and purple; sweet with red and pink; salty with white and blue; sour with green and yellow. These results can help to either strengthening or ease certain flavour of jamu. From the background that the reason 57.7% of correspondents did not drink jamu is because the bitter taste, thus spatial design with particular colour in theory could reduce if not ease the bitterness of jamu.

Color for Human Appetite

Color plays an important influence in visual perception, emotion, and human behavior, even in the food and hospitality business. The majority of people are unaware of how much color may influence our reactions and appetites.

Strong Appetite Stimulants

Red, especially brilliant reds, usually denotes high-energy, high-sugar fruits and vegetables. Orange and yellow, on the other hand, are hunger enhancers. Happiness is related with the color yellow, which is often associated with a full stomach.

Mild Appetite Stimulants

Green and torquise both have a slight stimulating effect. Green denotes plants that are edible, non-toxic, and non-poisonous. However, unlike berries which deliver a rush of energy, these plants are essentially fibrous. Green is also a color that conjures up images of nutritious foods.

Appetite Surpressants

Finally, the colors black, brown, purple, and blue reduce hunger. The colors blue, black, and purple also indicated anything bad or toxic, which our forefathers learnt to avoid by sight.

Jamu Color Palette

Figure 37. Hue and Color Palette taking from Various Jamu Flavour, From Slight Sweet at Orangish to Bitter at Brown and Black Color.
Source: https://www.metalocus.es/sites/default/files/files/winebecamemodern05.png

Theoretical Precedent

Aesop wine showroom is inspired by contextual surrounding of 18th century brick building combine with modern elements. Pale red gradient color clay plaster in the interior used besides matching exterior brick color, is to represent and strengthening the taste of the wine itself - cherry and raspberry as sweet balanced by acidity tannins.

Project Detail
Aesop Duke of York Winery
Architect
Snøhetta
Location
Chelsea, London
Completed Year
2017

Figure 38. Aesop Tasting Room
Source: https://images.adsttc.com/media/images/5a1d/5ea4/b22e/383b/0400/0200/slideshow/2017085_OS_N23.jpg?1511874208

Interpretive Center

According to Brody (2014), Visitor center or in British English referred as interpretive center are an informal education and recreational venue at a site-specific place of interest such as state park, wildlife preserve, or historical site that provides general public an interpretation of the place and opportunity to learn and understand the natural or cultural heritage that acommodate in the site.

Often it utilizes variety of approaches as learning and recreating functions including media such as video displays, exhibitions of those tangible or intangible heritage value, instructional kiosks, interactive computer simulations, gift shops, refreshment rooms, or even movie theaters.

"In the modern context of interpretive centers as informal science learning environments, recent efforts have been made to better understand the nature of learning activities that occur there to better inform design, delivery, assessment, and evaluation of interpretive programs." (Brody, 2014). With main focus on delivering learning value, the way approaches to achieve are immense, while the focus in this design study will be incorporating human senses to create a journey of jamu perception towards spatial arrangament.

Figure 39. Bamboo Craft Village Interpretive Center
Source: https://images.adsttc.com/media/images/5b05/36a5/f197/cc14/a200/0331/slideshow/%E5%9B%BE6.jpg?1527068283

Brody M. (2014) Interpretive Centers. In: Gunstone R. (eds) Encyclopedia of Science Education. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-6165-0_298-4

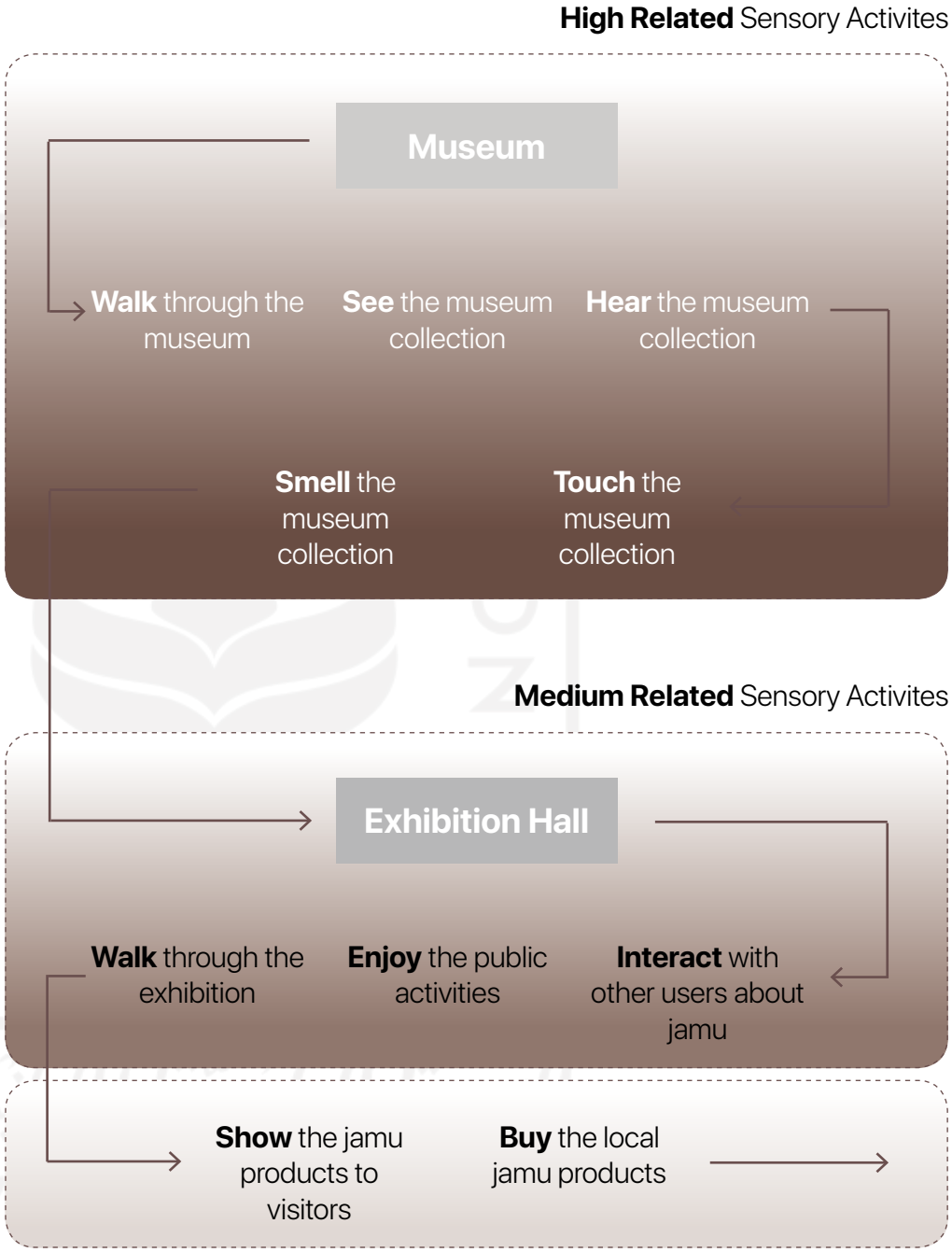
User Activity
Interpretive Center

Museum

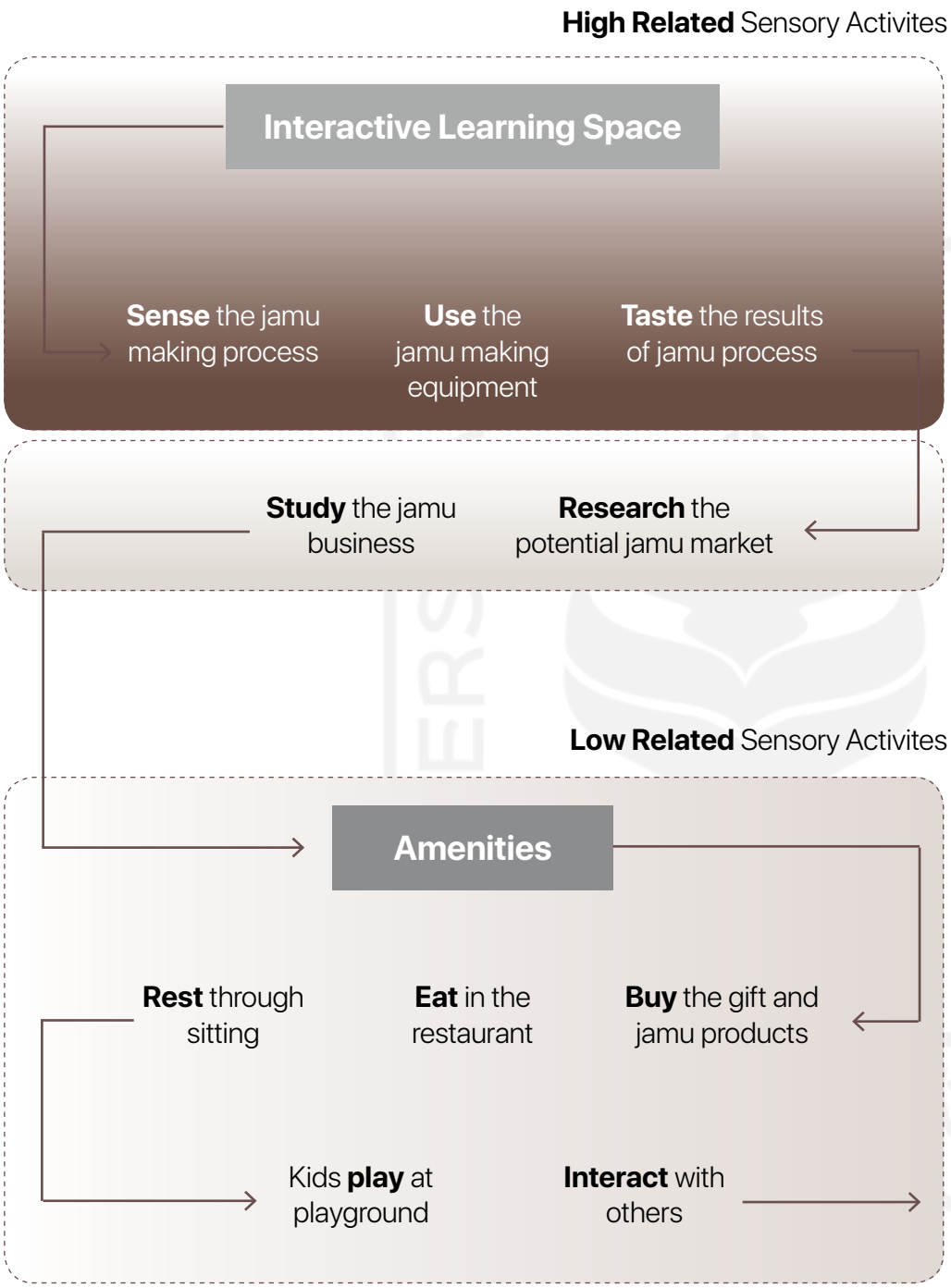
The existence of museum inside interpretive center are crucial because it has the responsibility and function to preserve and educate the culture of jamu in the community. Through messages delivered with displays and exhibition spaces, the museum serves as a means of communication and a bridge that can trigger awareness and knowledge for the community. Visitors can learn the history and display of the jamu making process.

Exhibition Hall

The exhibition hall functions to present and show various activities to the public related to jamu (jamu showrooms, jamu festivals, etc.). It also helps herbal medicine production houses around Nguter to promote their products to visitors.



Low Related **Medium Related** **High Related**



Interactive Learning Space

With jamu as tangible culture that can learned by its process, the interactive learning space hosts activites related to courses and program of making jamu. It could also attract and helps through Koperasi Jamu Indonesia (KOJAI) Sukoharjo for people who are interested in the jamu industry business. They can learn the basic knowledge and market research for jamu products.

Amenities

Amenities held the place for activities that support the interpretive center activities and mostly can be accessed for public including restaurant, shop, rest area point, public chair, playground for kids, mini library, ATM, etc.

Project Detail
Bamboo Craft Village
Architect
Archi-Union Architects
Location
Chengdu, China
Completed Year
2018

Figure 40. Aerial View of Bamboo Craft Village
Source: https://images.adsttc.com /media/images/5b05/3620/f197 /cc14/a200/032e/slideshow/

Typological Precedent

The Bamboo Craft Village attempts to representing local livil environments as bamboo craftmanship to create a rural space integrated with ecology, industry, culture, and lifestyle of the village.

The village are well known for the bamboo "weaving" craft, and the visitor center tried to displayed and taught the bamboo weaving, processing, and consumption. Ecological agriculture that integrated with landscape and consideration of sensitivity to the local culture are carefully taken to preserve the countryside landscape.

Although the place and concept relating to rural areas, the form and construction are using modern pre-fabrication, allowing the architects to create unique spiraling and serpentine roof.

The project itself has already prove to succesfully convey their concept to the public with attracting more of bamboo artists who are willing to return to the countryside for artistic creation of bamboo arts.

Bamboo Weaving Exhibition Hall

The building plays a crucial roles to the complex as the village entrance at the mountain foot, is at the first sight of coming tourists. . Visitors can enjoy the production, teaching and display of the bamboo weaving proces both indoor or outdoor.

Interiority Flow of Exhibition Hall

The building are consists of two houses that integrated and unified with spiraling roof into a streamlined building space. Under the linear roof, a display space, semi-outdoor tea room, and mezzanine are offering visitors a place to learn and relax within the bamboo village concepts.

Project Detail
Tofu Factory
Architect
DnA Architect
Location
Lishui, China
Completed Year
2018

Figure 41. Tofu Factory Interior
Source: https://images.adsttc.com/media/images/5f06/e6a9/b357/655d/4600/0340/slideshow/7.jpg?1594287775

Typological Precedent

Caizhai Village in Lishui, China is a traditional mountain village that has always been known for its best tofu production in the county region. But the products from the traditional family workshops could not fit into current food certificate standards to be able to sell in supermarket.

To tackle this fundamental problem, a new factory is planned as a village collective economic entity on both on soybean supply and a villager union on tofu products, to upgrade the traditional tofu production. In this way, the villagers are the immediate beneficiary and many farmers join the unions as well.

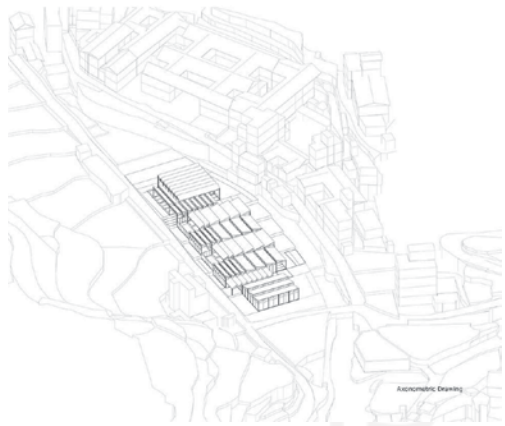
The factory is both production and exhibition space of traditional heritage for Caizhai village, and has already welcomed groups of primary school students to experience traditional tofu making.

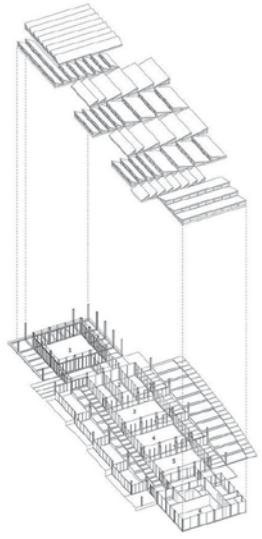
Lesson Learnt:

1 Strategies to separate building volume by 6 different tofu productions stage: tofu preparation room, grinding compartment, boiling compartment, deep-frying compartment room, drying compartment, and tasting hall.

2 Clear differentiation of building volume by linear sequence with different elevation.

Figure 42. Preparation Room of Tofu Factory
Source: https://images.adsttc.com/media/images/5b05/36a5/f197/cc14/a200/0331/slideshow/%E5%9B%BE6.jpg?1527068283





Project Detail
Rumah Atsiri
Architect
Timtiga
Location
Plumbon, Tawangmangu
Completed Year
2018

Figure 43. Marigold Plaza
Source: https://images.adsttc.com/media/images/5f06/e6a9/b357/655d/4600/0340/slideshow/7.jpg?1594287775

Typological Precedent

Located on a cold plateau in Plumbon Village, Tawangmangu, Rumah Atsiri is an integrated edu-recreation area with the theme of essential oils, basic ingredients for fragrances and oils that are quite known by the general public. Built on 2.3 hectares of land, Rumah Atsiri was originally an essential oil factory called Citronella, which was built in 1963.

Rumah Atsiri shows how this place tries to maintain the building from its heritory side. Its existence also seeks to always work together and synergize with the village community.

As edu-recreational facility, Rumah Atsiri offers range of activity where visitors can learn everything about essential oils. The spatial arrangement of Rumah Atsiri shows an adaptive-reuse factory (now a museum) as the center of attraction and connecting to other facilities such as learning hubs, restaurant, and gift shops.

Lesson Learnt:

1 Flowing spatial arrangement that placed museum as center of attraction while connecting it to others facilities.


1


4


5


Patchouli
Clove
Nutmeg
Turpentine
Pepper
Ginger
Bengkulu
Nilam
Terpentin
Jahe
Patchouli
Terpentin
Ginger
Yogyakarta
Kayu Putih
Terpentin
Cajuput
Turpentine
Jawa Timur
Nilam
Cengkih
Terpentin
Serai Wangi
Jahe
Kenanga
Kayu Putih
Adas
Jeruk Purut
Patchouli
Clove
Turpentine
Citronella
Ginger
Cananga
Cajuput
Fennel
Kaffir Lime
Agarwood
Lajagoa
Ylang Ylang
Turpentine
Lemongrass
Gaiyajar Balsam
Citronella
Patchouli
Agarwood
Turpentine
Cinnamon
Nutmeg
Terpentin
Serai Wa
Jahe
Lajagoa
Serai Da
Kenanga
Kayu Pu
Adas
Akar Wa
2

3

Lesson Learnt

1

Smell Exhibition Museum

To introduce the ingredients used to make essential oils, there is a smelling booth that uses a sponge as a medium for the smell regardless of its original shape.

2

Split Level Circulation Museum

Split level is used to create a dynamic exhibition space that can be seen from various points of view. By playing with ramp and split level this can ward off the monotonous impression.

3

Activities Flow Gift Shop

The existence of a gift shop in Rumah Atsiri plays an important role as an opening of circulation by being placed close to the lobby and as a closing of a museum tour connected with the elevated pathway.

4

Center Void Learning Hubs

Void gives an impression of openness in the learning hubs where passing visitors can see learning activities about essential oils inside the glass booths.

5

Flexible Space Amphitheater

An outdoor-style amphitheater that can be used for events and performing arts.

Figure 44. Rumah Atsiri Museum, Restaurant, and Distillary Room
Source: https://rumahatsiri.com/static/img/distilasi/1.jpg

Typology Functions:
With the main purpose of rejuvenating and familiarizing visitors with atsiri essential oils, Rumah Atsiri featured several different functions:

1 Collection garden
2 Museum
3 Learning hubs
4 Restaurant
5 Merchandise shop
6 Outdoor amphitheatre

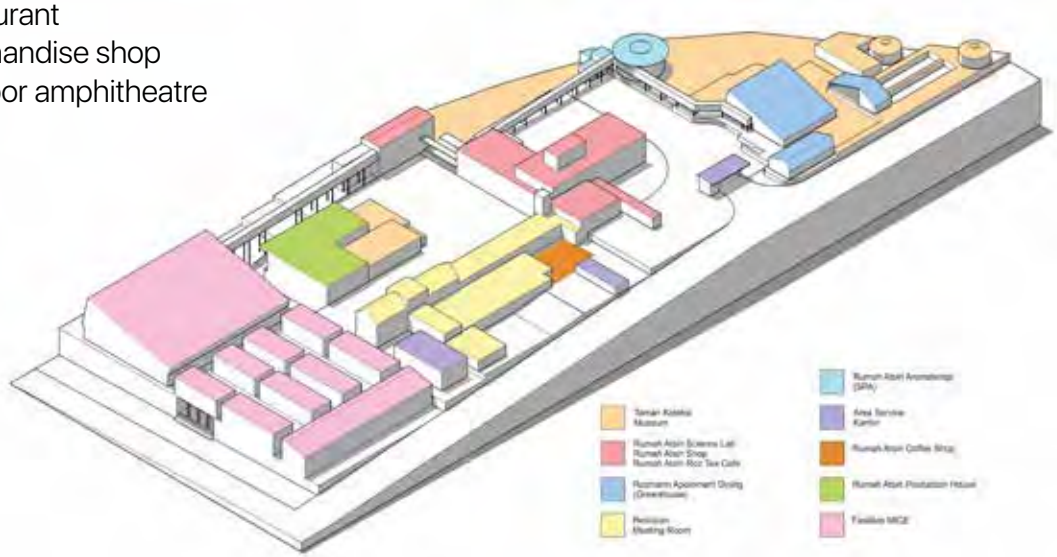


Figure 45. Building Axonometry
Source: https://www.constructionplusasia.com/wp-content/uploads/2019/07/7-RUMAH-ATSIRI.jpg

Originality & Novelty

Title Description	Concept	Difference
Design of Sunan Kudus History Museum with Educational and Interactive Design (Musa Ilham Ardiansyah, 2020)	Museum as a medium for education with interactive concept that is applied in a way of presenting the collection by using human sensory stimuli, to interact with the object of the collection.	Different building typology and the non-architecture medium to stimulate human sensory.
Design of Eco-Cultural Center in Kedung Semurup Tourism Village with Ecological Architecture Approach (Nadia Salsabila, 2020)	Utilizes the potential of 'Denggung river' in landscape for edu-recreational design as well as the main activities in eco-cultural center.	Different approaches and design methods that used.
Design of Magelang Arts and Cultural Center with Critical Regionalism "Culture Versus Nature" Approach (Astrid Dea Octavanya, 2020)	Arts and cultural center with approach in critical regionalism to utilize elements of heritage to symbolize the local value from the region.	Different building typology and design methods that used.
Revitalization of Dondongan Housing Kotagede (Mutia Amelia Febriana, 2019)	Housig with the application of principles vernacular and olfactory sense as a revitalization guide.	Different building typology and solely focused on olfactory sense.

Table 3. Originality and Novelty
Source: Author, 2021.

03

Nguter Sukoharjo

Preliminary overview of analytical data and regulation.


1
2
3

Macro-Micro Map

Dusun II, Nguter, Sukoharjo Regency, Central Java, Indonesia.

Figure 46. Macro-Micro Map of Nguter, Sukoharjo
Source: Author, 2021.

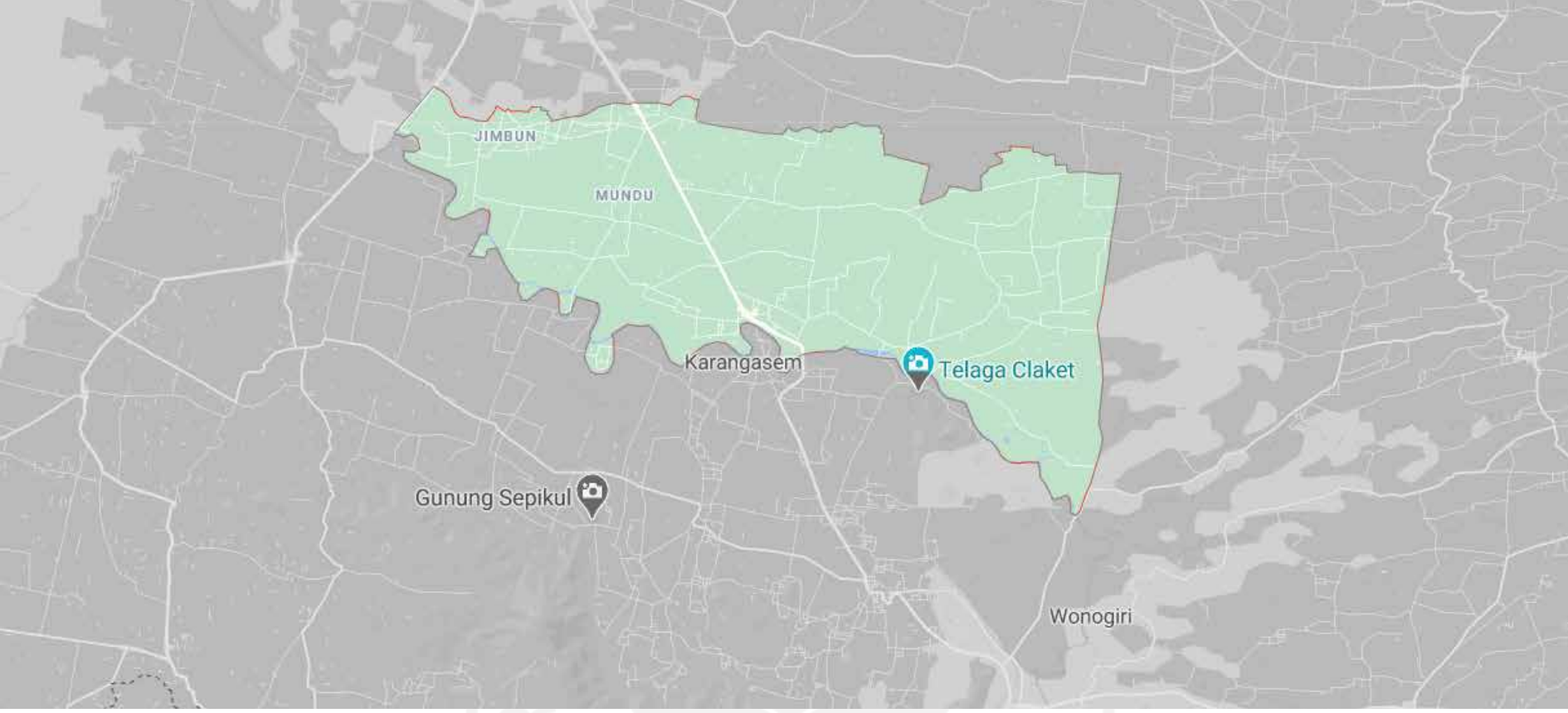
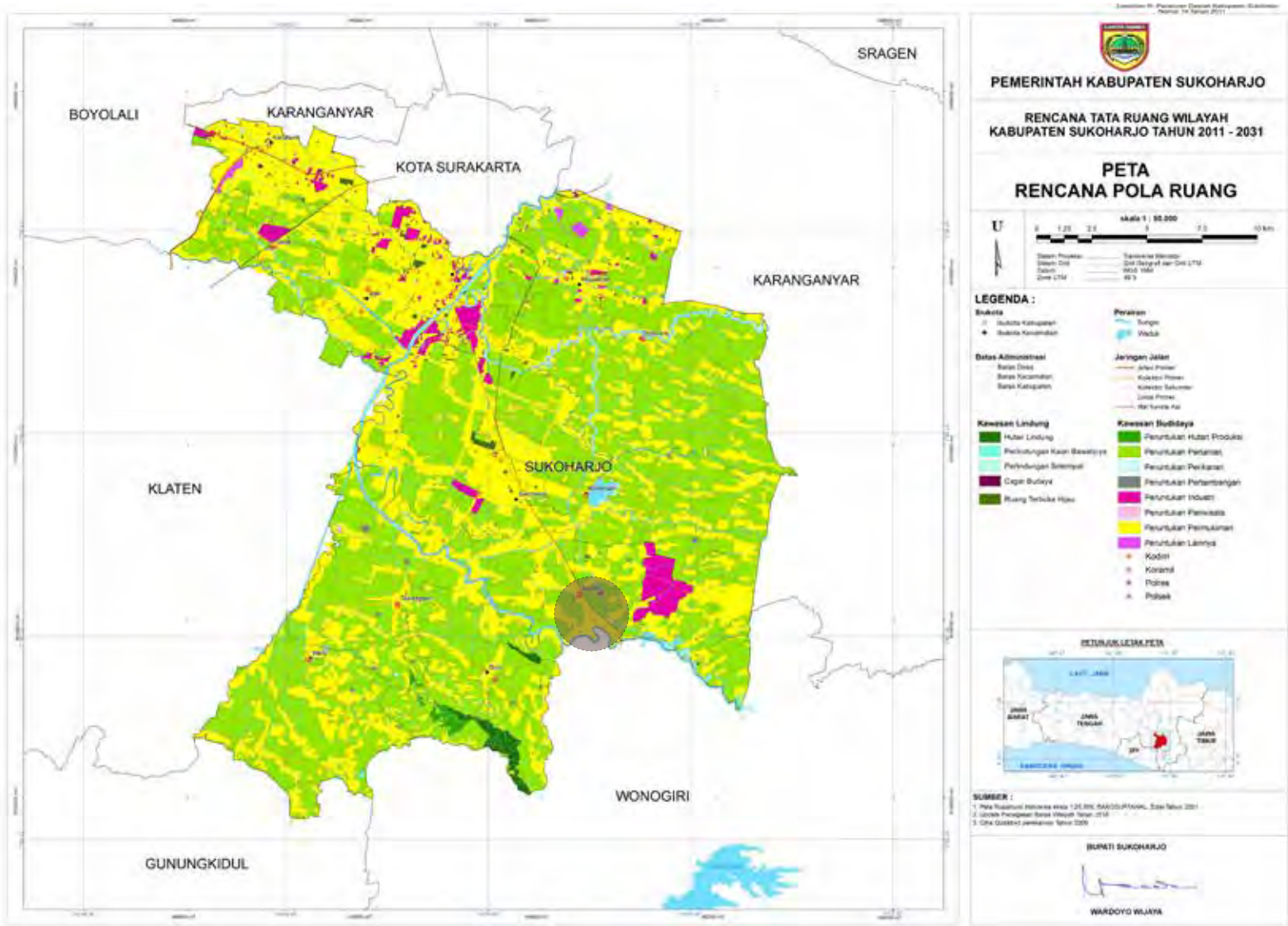


Figure 47. Nguter Village, Sukoharjo Boundary Map
Source: Google Earth (accessed 26 February 2021).

Macro Condition
Sukoharjo Regency

Sukoharjo is a district in Central Java Province. Sukoharjo is famous for its agricultural products, handicrafts, and herbal medicine production. The center of government is in Sukoharjo, about 10 km south of Surakarta City. This district is bordered by Surakarta City in the north, Karanganyar Regency in the east, Wonogiri Regency and Gunungkidul Regency (Yogyakarta Special Region) in the south, as well as Klaten Regency and Boyolali Regency in the west. Sukoharjo has a total area of 466.66 km2 with a population of 891,912 people.

Sukoharjo has a slogan, namely Sukoharjo MAKMUR which also has the meaning or stands for Maju Aman Konstitusional Mantap Unggul Rapi.



Sukoharjo Long-Term Development

From Rencana Tata Ruang Wilayah (RTRW) Sukoharjo 2011-2031 most of the land use in the Nguter area is still used for housing and agriculture. However, it does not close out the possibilities of development by the government to make the Nguter area the allotment for jamu tourism and industries.

Figure 48. RTRW Map of Nguter, Sukoharjo
Source: Peraturan Daerah 14 Tahun 2011 RTRW Kabupaten Sukoharjo.


PASARNGUTER STATION
NGUTER JAMU VILLAGE
NGUTER JAMU MARKET
RADIUS 200 METER
SITE LOCATION
WONOGIRI SUKOHARJO STREET

KOJAI Proposed Location

Dusun II, Nguter, Sukoharjo Regency,
Central Java, Indonesia.
± 14.870 m ^{2} Areas Development

Proposed site location are located with Pasar Jamu Nguter and the Nguter jamu village are approximately within 200 meter of radius. Proposed site chose to be near Pasar Jamu Nguter as walking distance.

Besides arterial road of Wonogiri-Sukoharjo Street that connects Pasar Jamu Nguter and proposed site location, there is Pasarnguter

Train Station that supports public transportation with only one train stops at this station, namely the Batara Kresna railbus.

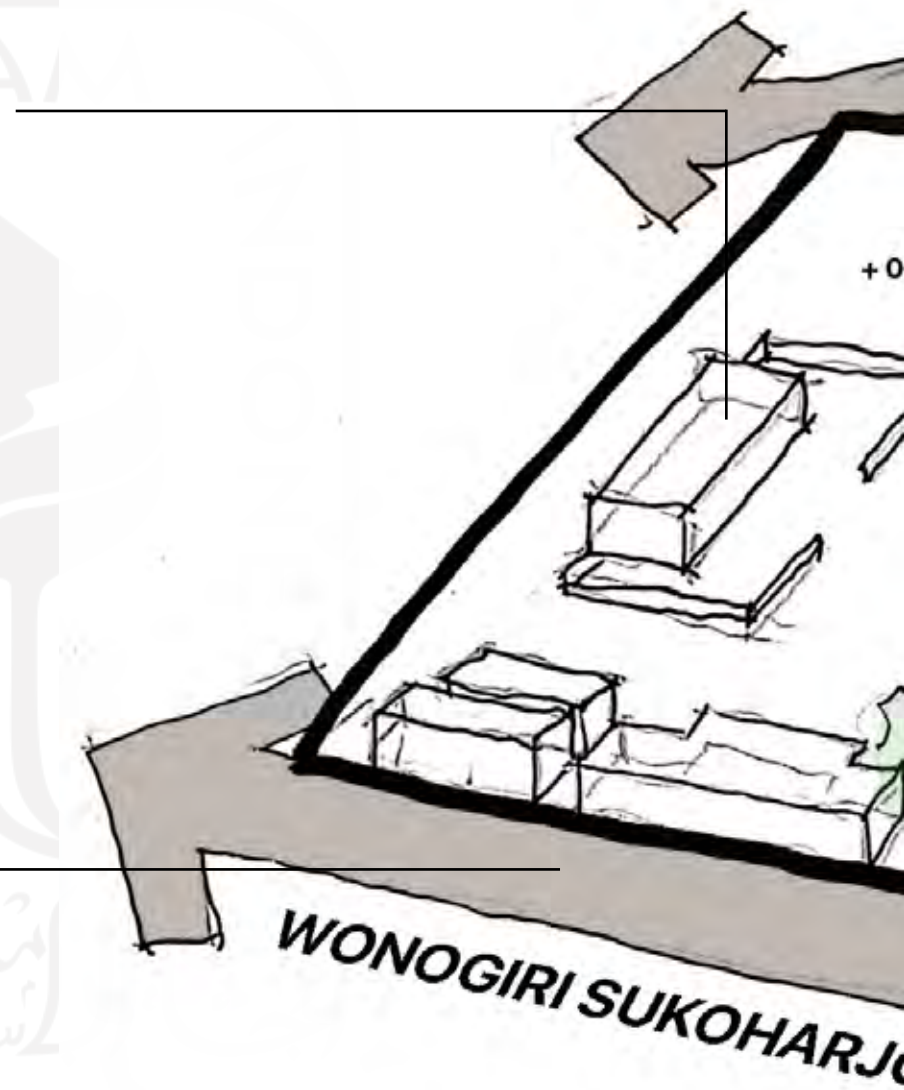
Based from the information of KOJAI Sukoharjo and Kantor Kelurahan Nguter, this development site are owned by sub-district Nguter that projected to be build for jamu educational facilities.

Figure 49. Aerial View of Proposed Site Location
Source: Google Earth (accessed 4 March 2021).

Existing Site Condition
Site Analysis

Existing Site Context

Inside in the middle of site, there are existing abandoned building, most likely a warehouse for the local sub-district storage.



1

Main Street Access

The proposed site location has the main access from Wonogiri-Sukoharjo Street with 8 meter-wide street. Furthermore, the main entrance are blocked by abandoned shophouse that should be removed.

2 Secondary Street Access

The second entrace for site could be accessed from Dusun II Alley at the north part with 4 meter-wide street, only enough for 1 passing car. This street access also directly towards nearby Nguter Jamu Village.

3 Existing Small River

At the east site border is sloping and curving along the existing small river that connect to Bengawan Solo River with lush vegetation at the edge of the river.

Figure 50. Graphical Site Analysis of Exsisting Site Condition
Source: Author, 2021.

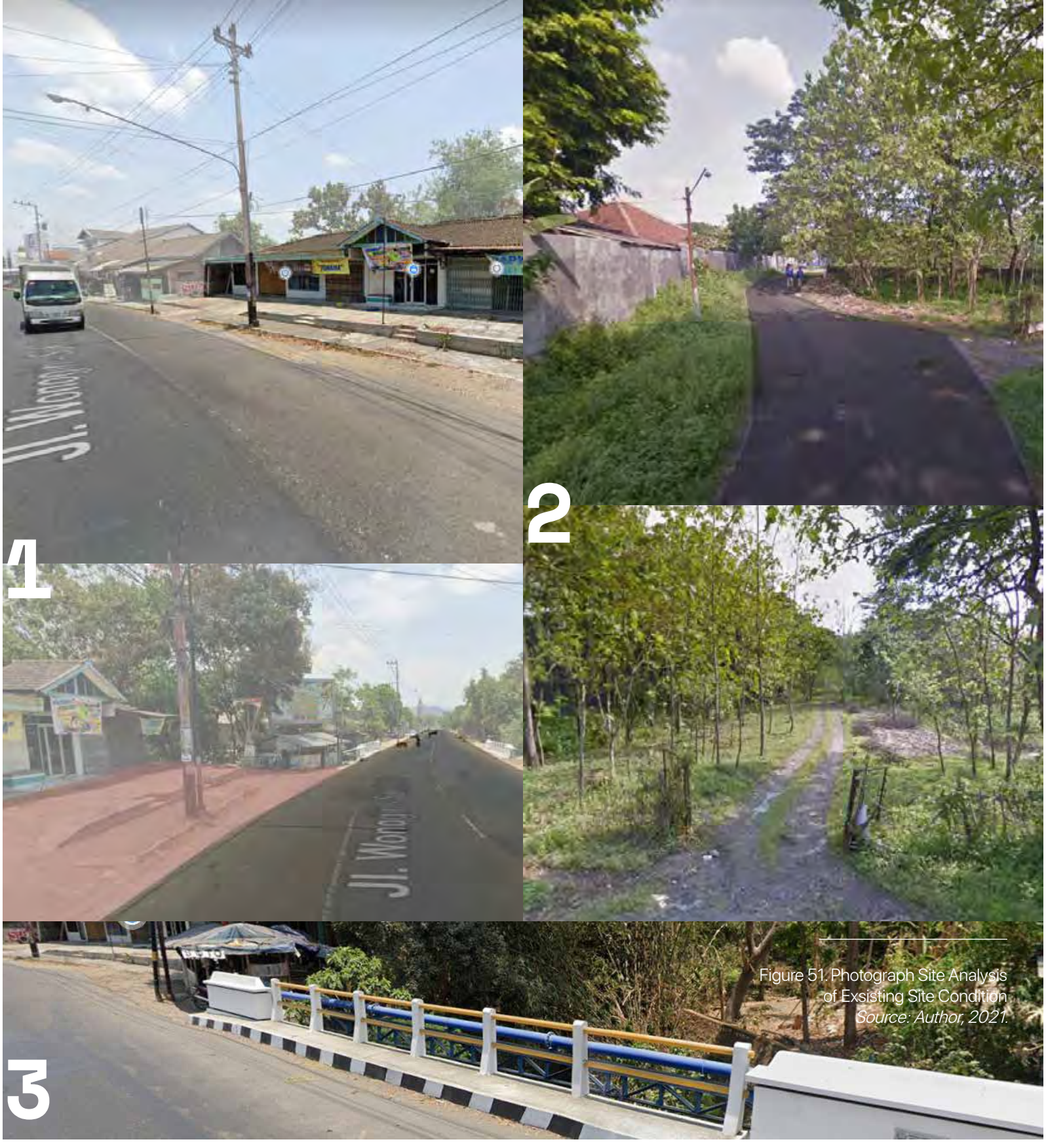


Figure 51. Photograph Site Analysis of Exsisting Site Condition
Source: Author, 2021.

Connecting Jamu Village
Site Analysis

Corridor Connection

The corridor connection intent to visually bridging the jamu village with framing them from the site. The corridor are flanked by rised garden limiting the visual range while focusing to the jamu village.

Connection Space

To further enhance the jamu experiences and incorporating with Nguter Jamu Village the visitors could further exploring and visits those village through the connection space. This space linking symbolically and visually between the site and the jamu village.

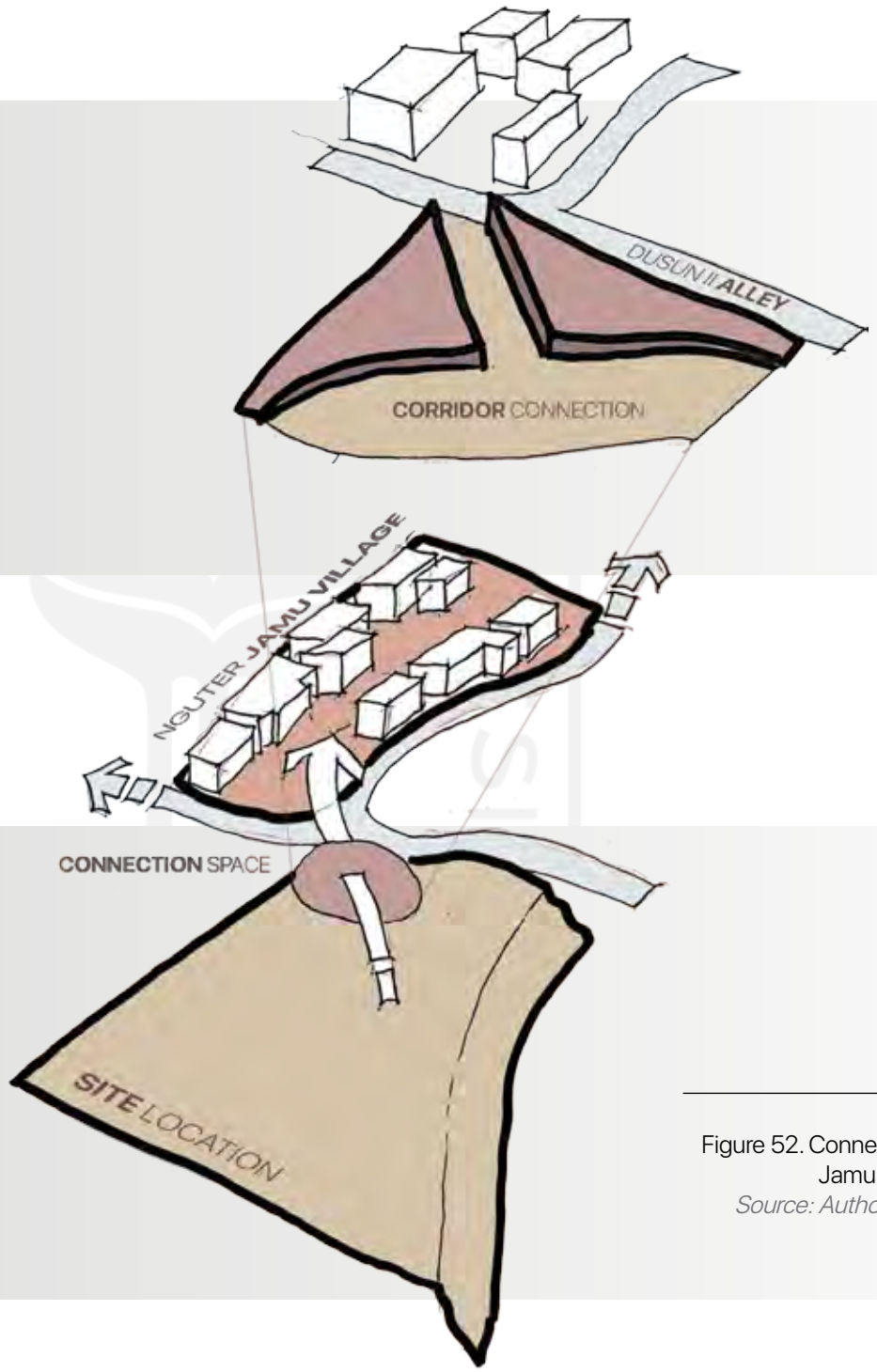
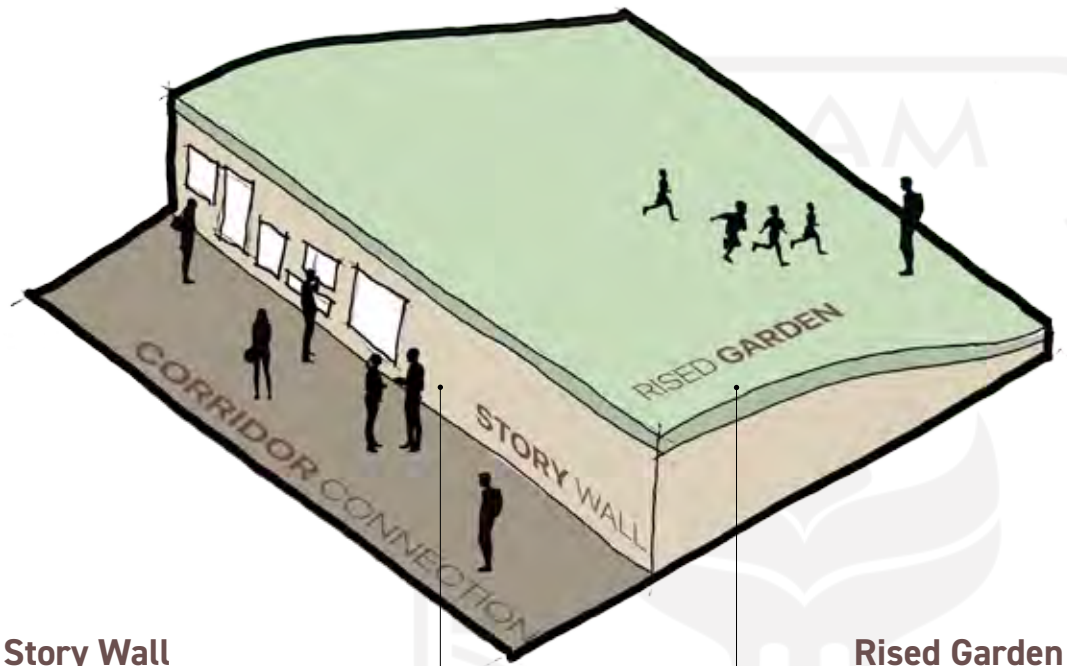


Figure 52. Connecting to Jamu Village.
Source: Author, 2021.

Connecting Jamu Village
Corridor Detail



Story Wall

While walking towards the Jamu Village, visitors could read and see the stories of the village.

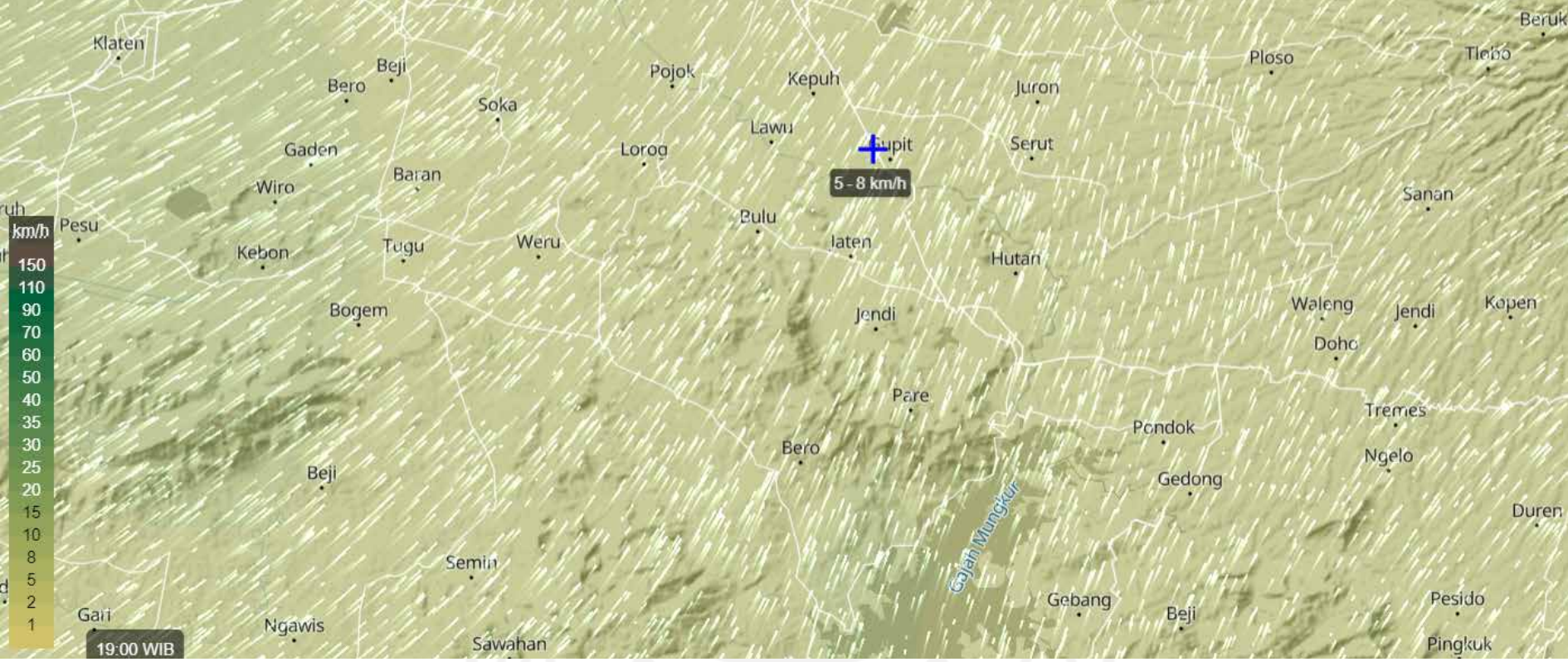
Rised Garden

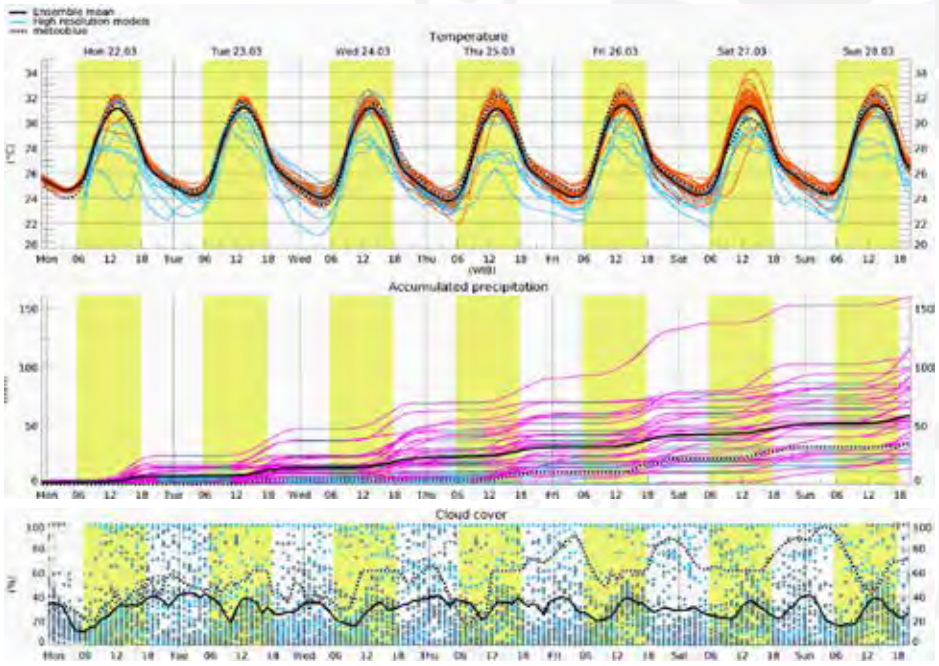
Besides helps to framing the Jamu Village, the rised garden might be climbed and used for user activities.

Linking While Telling

While not only integrating between the site and Nguter Jamu Village, the corridor connection could tell the village stories and the information to the visitors while they walk towards the village through a series of story wall. This features could helps visitors more to sense the jamu experiences not only in the place, but also in their journey.

Figure 53. Corridor Detail of Connecting to Jamu Village.
Source: Author, 2021.





Climate Condition

Sukoharjo with a tropical condition experience in average 5-8 km/h wind speed from south direction. As smell can spread with the help of wind, it could be factor to for the development of the design. While the temperature ranging from average of 24 °C to 26 °C until maximum temperature of 30 °C to 32 °C.

Figure 54. Nguter Climate Condition
Source: meteoblue.com (accessed 26 February 2021).

Building Codes Regulation

Building Setback

Letak garis sempadan pagar dan garis sempadan bangunan terhadap jalan, apabila tidak ditentukan lain adalah sebagai berikut :

a. garis sempadan pagar terhadap jalan kolektor sekunder adalah 10,5 m (sepuluh koma lima meter) dari as jalan, sedang letak garis sempadan bangunannya adalah 21 m (dua puluh satu meter) dari as jalan;
b. untuk sungai bertanggul di dalam kawasan perkotaan, garis sempadan pagar sebesar 3 m (tiga meter) dan garis sempadan bangunannya sebesar 8 m (delapan meter) diukur dari sebelah luar sepanjang kaki tanggul;

Green Coverage Ratio

KDH yang belum diatur dalam RTRW/ RDTRK/RTBL sebagaimana dimaksud pada ayat (2), untuk bangunan publik ditentukan paling sedikit 20% (dua puluh persen), sedangkan untuk bangunan privat ditentukan paling sedikit 15 % (lima belas persen).

Building & Floor Coverage Ratio

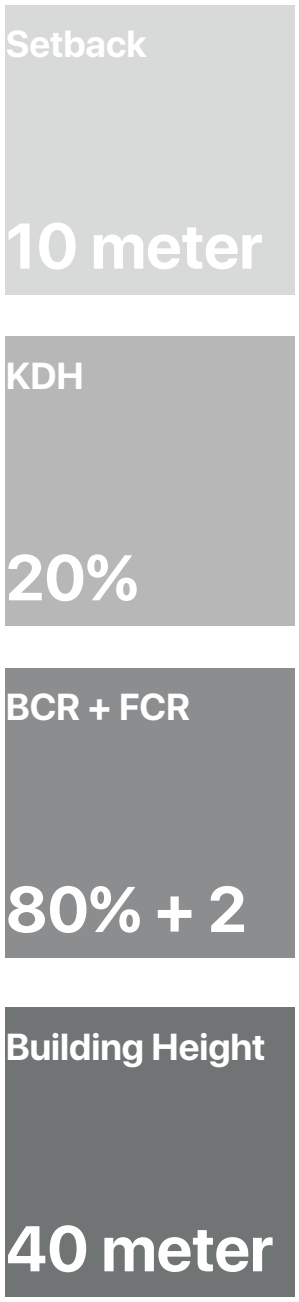
Kepadatan bangunan diatur dengan penetapan Koefisien Dasar Bangunan (KDB) dan Koefisien Lantai Bangunan (KLB) sebagai berikut:

a. kawasan permukiman memiliki kepadatan rendah sampai sedang yaitu KDB = 40%, KLB = 1 sampai dengan KDB = 60%, KLB = 1,5
b. kawasan perdagangan memiliki kepadatan tinggi yaitu KDB = 80%, KLB = 2;
c. kawasan campuran memiliki kepadatan rendah sampai tinggi yaitu KDB = 40%, KLB=I sampai dengan KDB = 80%, KLB = 2

Building Height

Ketinggian bangunan gedung di tiap-tiap Bagian Wilayah Kota (BWK) pengaturan adalah sebagai berikut:
a. kawasan pemukiman dengan maksimal ketinggian 3 lantai atau 18 meter;
b. kawasan komersial dengan ketinggian maksimal 8 lantai atau 40 meter sesuai dengan batas maksimal keselamatan penerbangan;
c. kawasan campuran dengan ketinggian maksimal 3 lantai atau 18 meter.

Source: Peraturan Daerah Kabupaten Sukoharjo Nomor 9 Tahun 2010.



SWOT Analysis
Proposed Site

Strength

1. Site location are close to Pasar Jamu Nguter and in walking distance with Nguter Jamu Village.
2. Transportation connection are supported by Wonogiri-Sukoharjo arterial road and Pasarnguter Station.

Weakness

1. the condition of the site is not maintained with lots of lush trees and abandoned buildings.

Opportunity

1. Site could be link and integrate with nearby Pasar Jamu Nguter.
2. The location could be involving with water feature from small river besides the site.

Threat

1. The potency of vehicle buildup causing congestion with visitors coming to design project and commerce activity at Pasar Jamu Nguter.

04

Design Analysis

Preliminary concept of building design

Design Response
Initial Idea

Interpre-tive Center

Interpretive Center

The interpretive center has the main functions to be informal education and recreational venue through the process of making jamu that utilizes the approaches of multi-sensory experiences.

Build image branding that promotes jamu as cultural heritage in Nguter

Multi-Sensory Experiences

Multi-Sensory Experiences

Sight

Balance the interiority and exteriority of light and shadow to shift dark home-industry perception.

Distinguish private and public zoning through visual barrier.

Sound

Create characteristics soundscape that enhance atmosphere of traditional jamu factory.

Select materials that relates to the audiory characters.

Olfactory

Incorporating the potential of scent to the design.

Consider the building volume relating to air circulation and flow of the scent.

Taste

Visualize while enhance or reduce the taste with the helps of color in the design.

Jamu Factory

Sequences of Jamu Factory

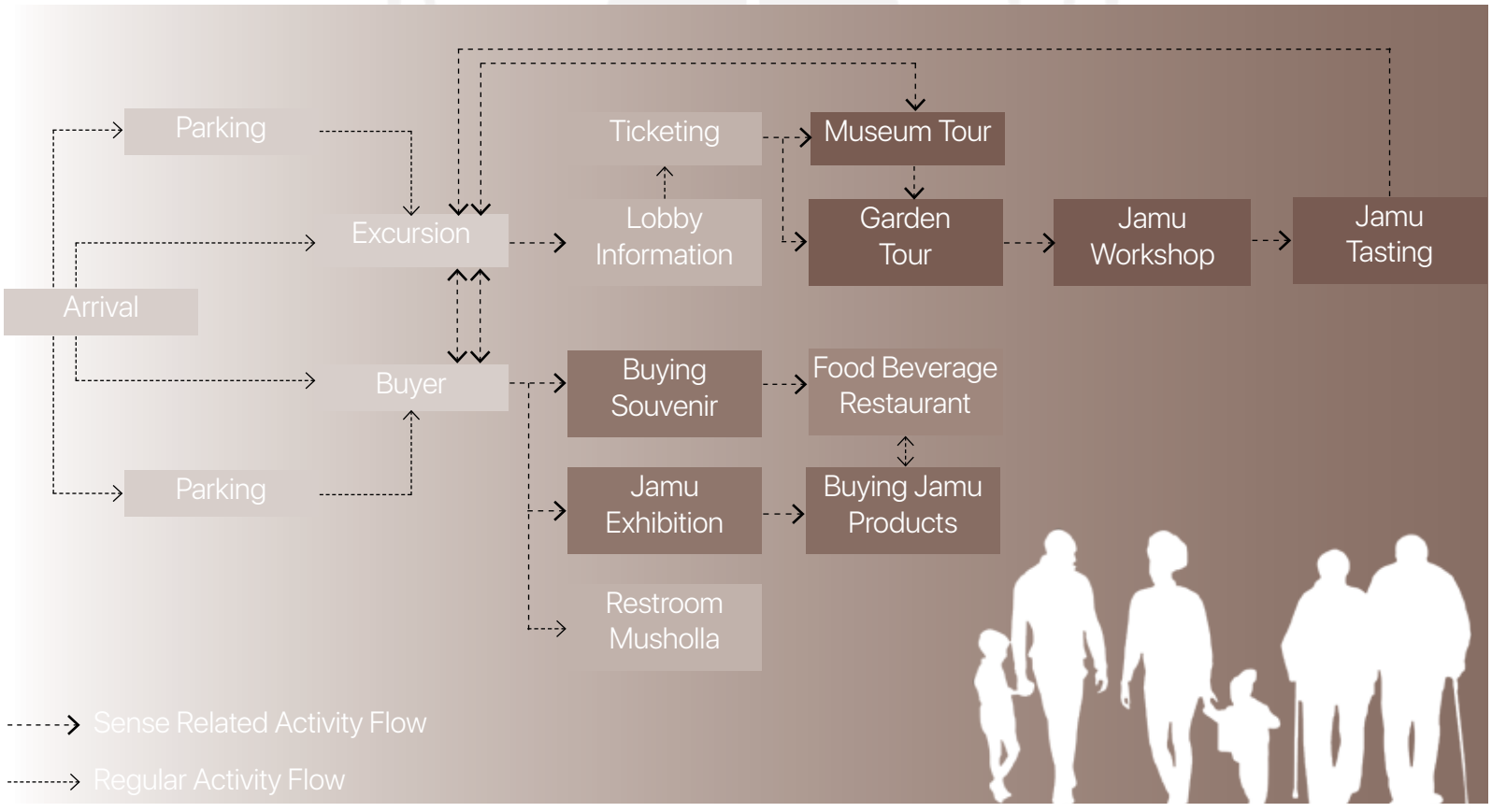
The production flow and sequences of jamu making process affect which part of the jamu making process that evoke certain senses to the user.

User Activity
Flow Analysis

With the main consideration of arranging spatial that stimulate multi-sensory experiences, users should perceive this early as starting from they enter the designed space. The sense stimulation could gradually heighten as they do more jamu-related specific activity. The user activity flow analysis are done based on three groups consists of public visitors, management, and the jamu craftsman.

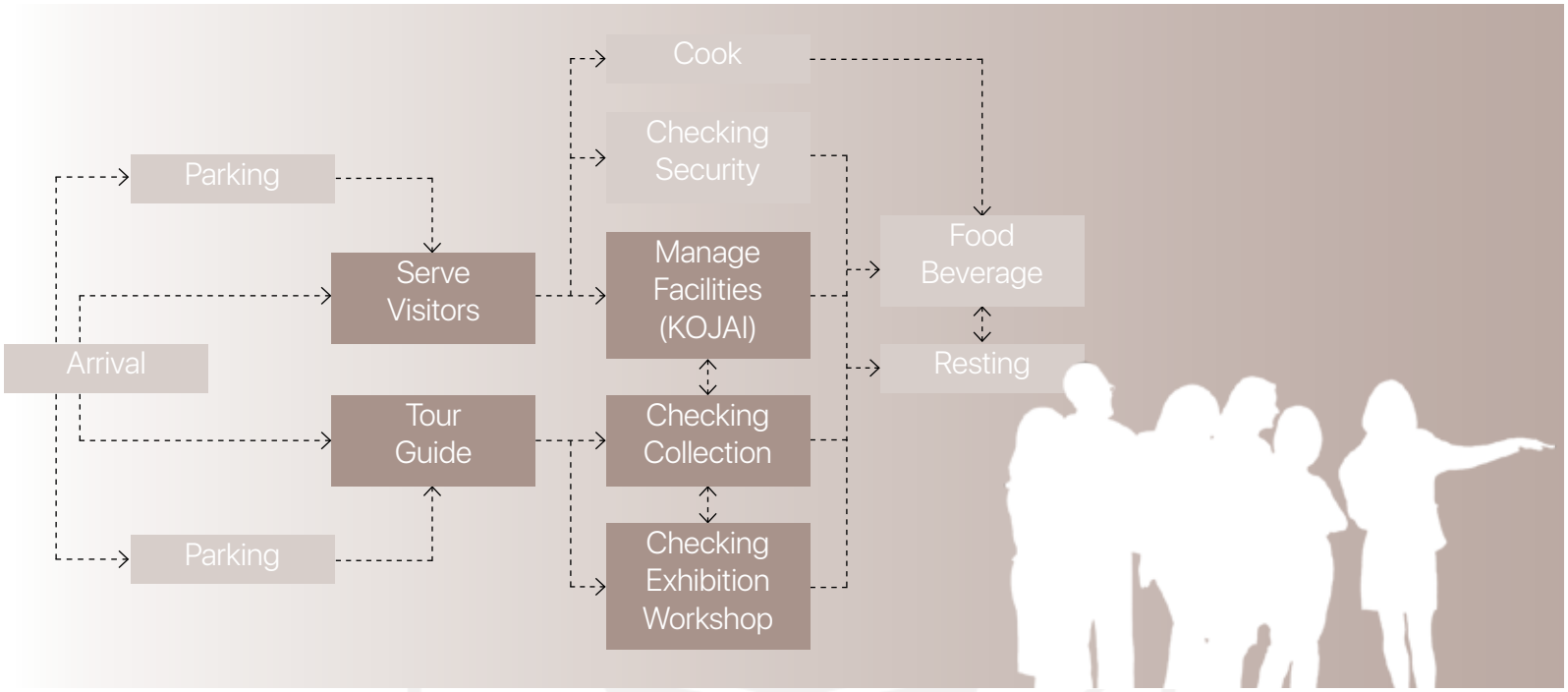
Figure 55. Flow Analysis of Public Visitors, Management, and Jamu Craftsman Activity.
Source: Author, 2021.

Public Visitors

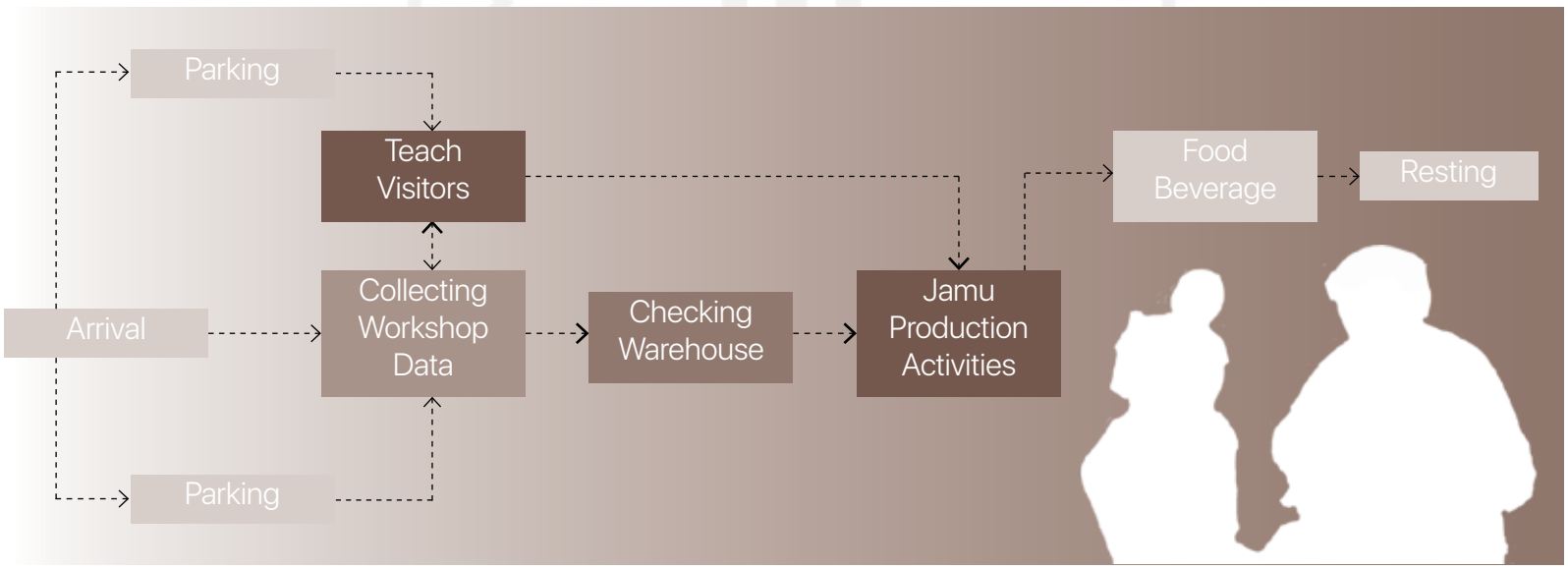


Low Related **Medium Related** **High Related**

Management



Jamu Craftsman



Low Related **Medium Related** **High Related**

Spatial Programming
Sense-Related Zoning Concept

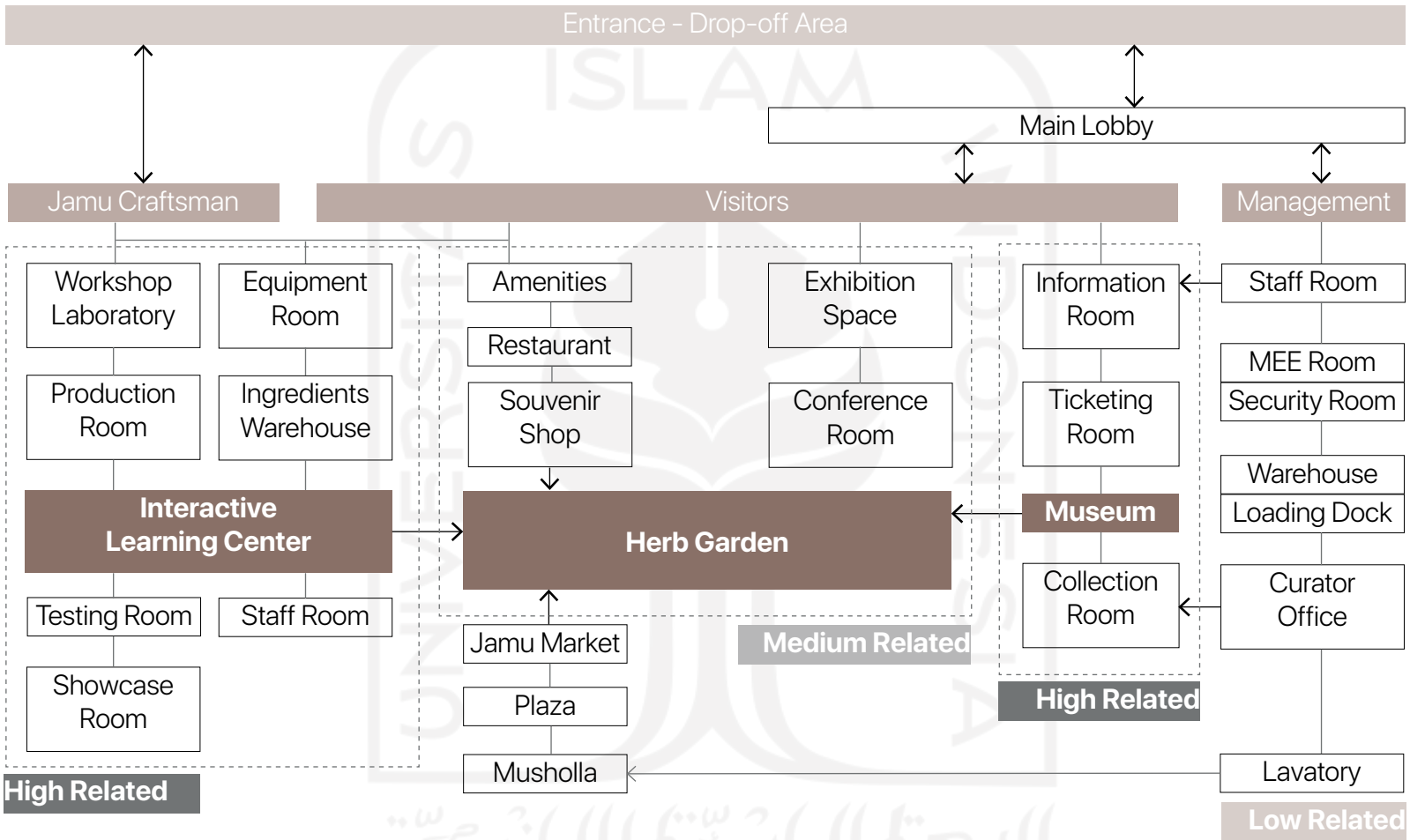
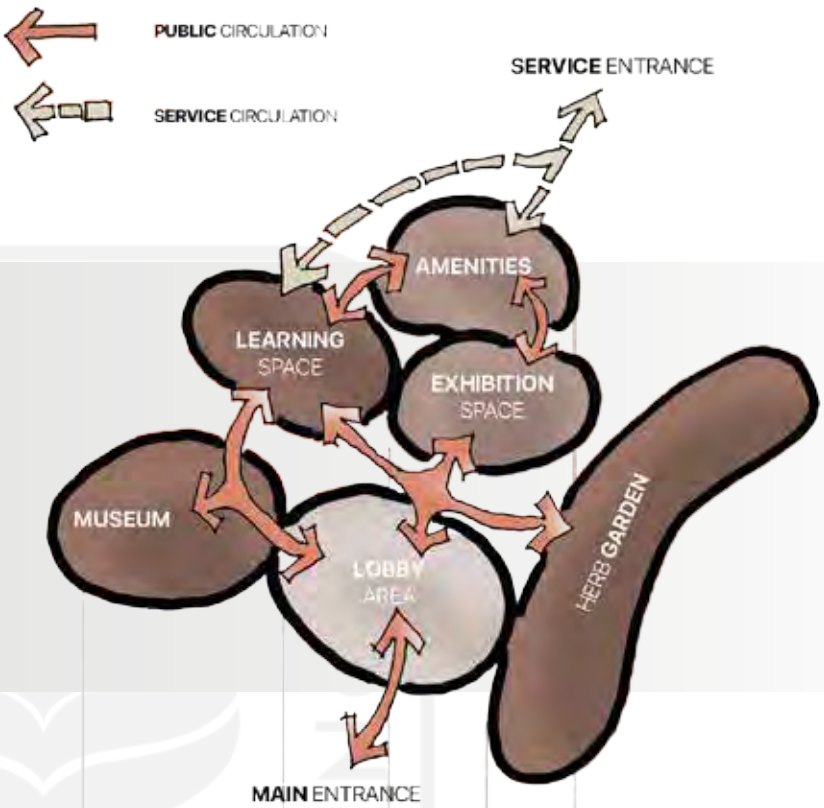


Table 5. Diagram of Spatial Programming Concept
Source: Author, 2021.

Based on user activity that has been analyzed towards each users, then a proposed space program is obtained that will be used as a reference in the development of a vertical zoning program and a design plan. Each zones are adapt to the demands of the circulation flow of each user activity (public, semi-public, and private) and the degree of sense activities and stimulation that occurs.

Spatial Programming
Integration to Site



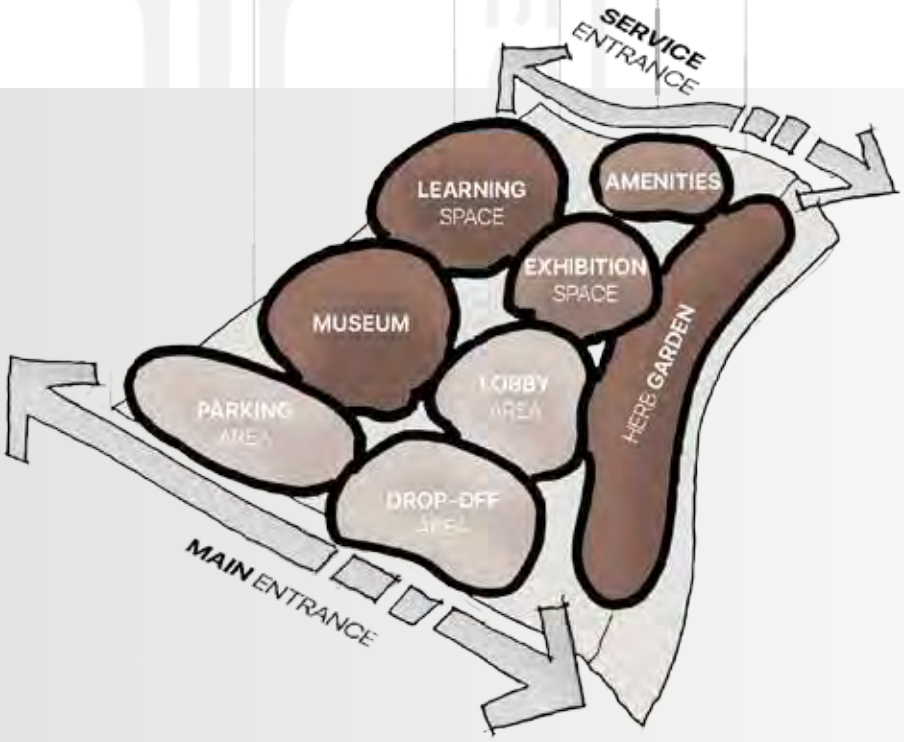
Spatial Connection

With access from main entrance, public circulation through lobby area should connect between museum, learning space, and herb garden as the main attraction. To minimize cross circulation service entrance are placed in the back with ease access to amenities, and learning space.

Zoning and Spatial Programming Concept

In the concept of zoning and spatial programming the placement of the bubble mass diagram based on the analysis pattern of user activity and the level of sensory stimulation.

To represent the education and learning facility of jamu, from KOJAI Sukoharjo advised to bring herbs garden the first what visitors see. It also should directly connect with production space and interactive learning space.



Spatial Quality
Multi-Sensory Quality

To separate activities based on the nature of space, zone grouping is divided into public, semi-public, and private zones. The spatial quality in the design is determined by multi-sensory parameter strategy.

Table 6. Table of Multi-Sensory Quality Requirements.
Source: Author, 2021.

Function	Zone	Room Requirements	Multi-Sensory Quality				
			Access	Sight	Sound	Olfactory	Taste
Museum Space	Public	Lobby Area	✓				
		Information Room	✓				
	Semi-Public	Ticketing Room	✓				
		Collection Room		✓	✓	✓	✓
	Private	Curator Office Room					
		Staff Office Room					
		Warehouse					
Exhibition Space	Semi-Public	Exhibition Hall	✓		✓		
		Conference Room			✓		
Interactive Learning Space	Semi-Public	Workshop Laboratory	✓				
		Production Room		✓	✓	✓	
		Testing Room		✓		✓	✓
		Final Product Showcase		✓		✓	
	Private	Equipment Room	✓				
		Ingredient Warehouse					
		Staff Office Room					
Amenities	Public	Restaurant	✓	✓		✓	✓
		Souvenir Shop	✓	✓		✓	
		Jamu Market	✓	✓	✓	✓	✓
		Plaza	✓	✓	✓		
		Parking Space	✓				
		Mushalla			✓		
		Lavatory					
	Private	Loading Dock	✓				
		MEE Room					
		Security Room					

Sensory Voyage
Multi-Sensory Journey

Connecting the ideas of multi-sensory experiences through a sensory voyage starting from the entrance and museum, then orientation deck connect between the museum and jamu factory, and ended in learning space.

The visitors then have their choices to visit the amenities and restaurant or through promenade going to jamu village. If they already visited before, promenade can bring the visitors directly through the amenities area.

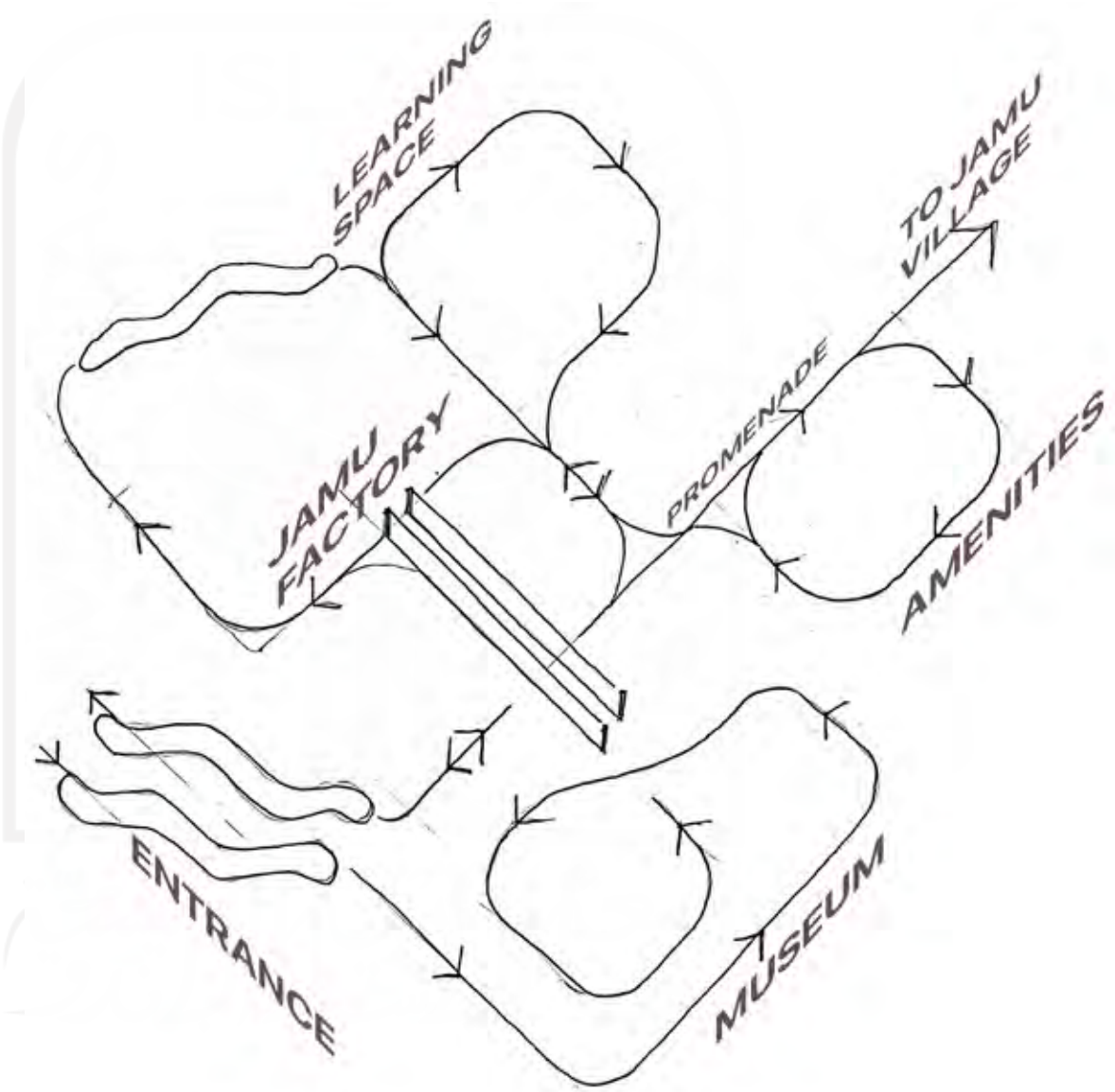
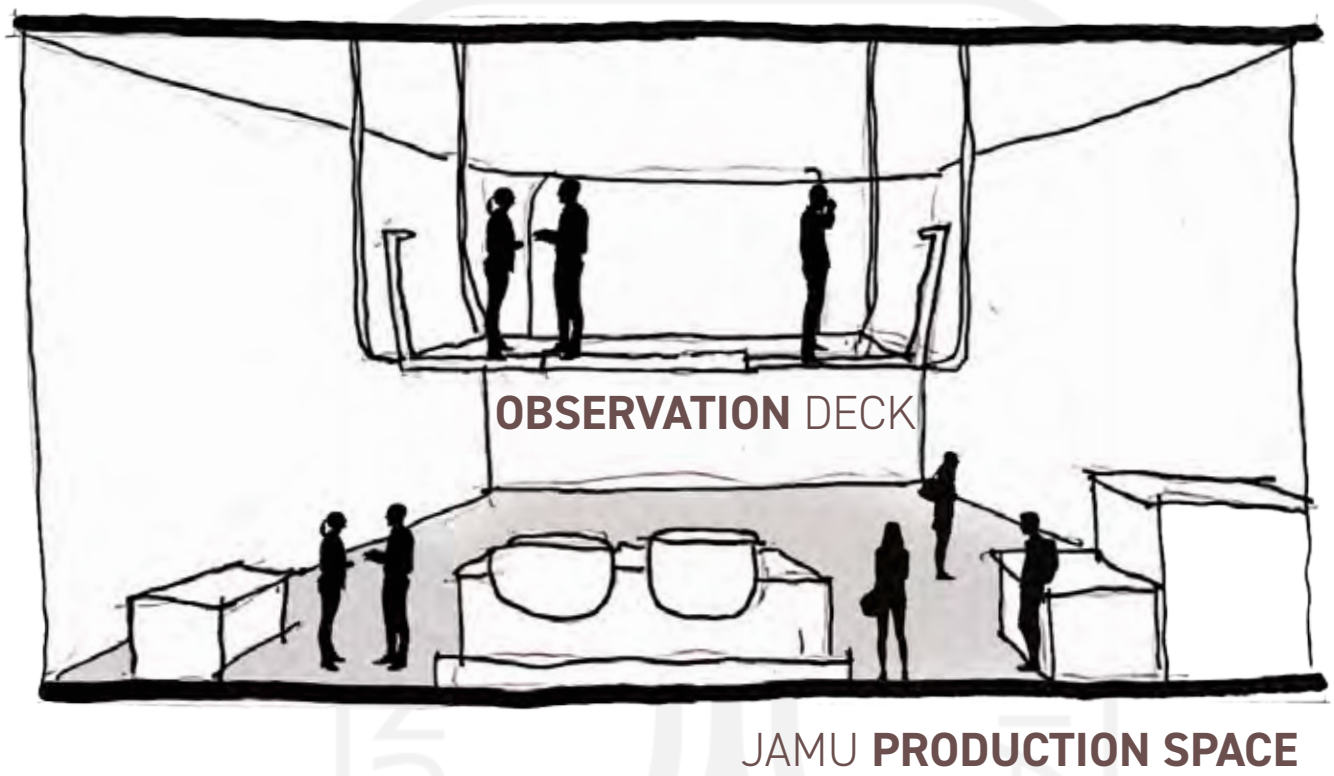


Figure 56. Initial Idea of Sensory Voyage Inside the Facilities.
Source: Author, 2021.

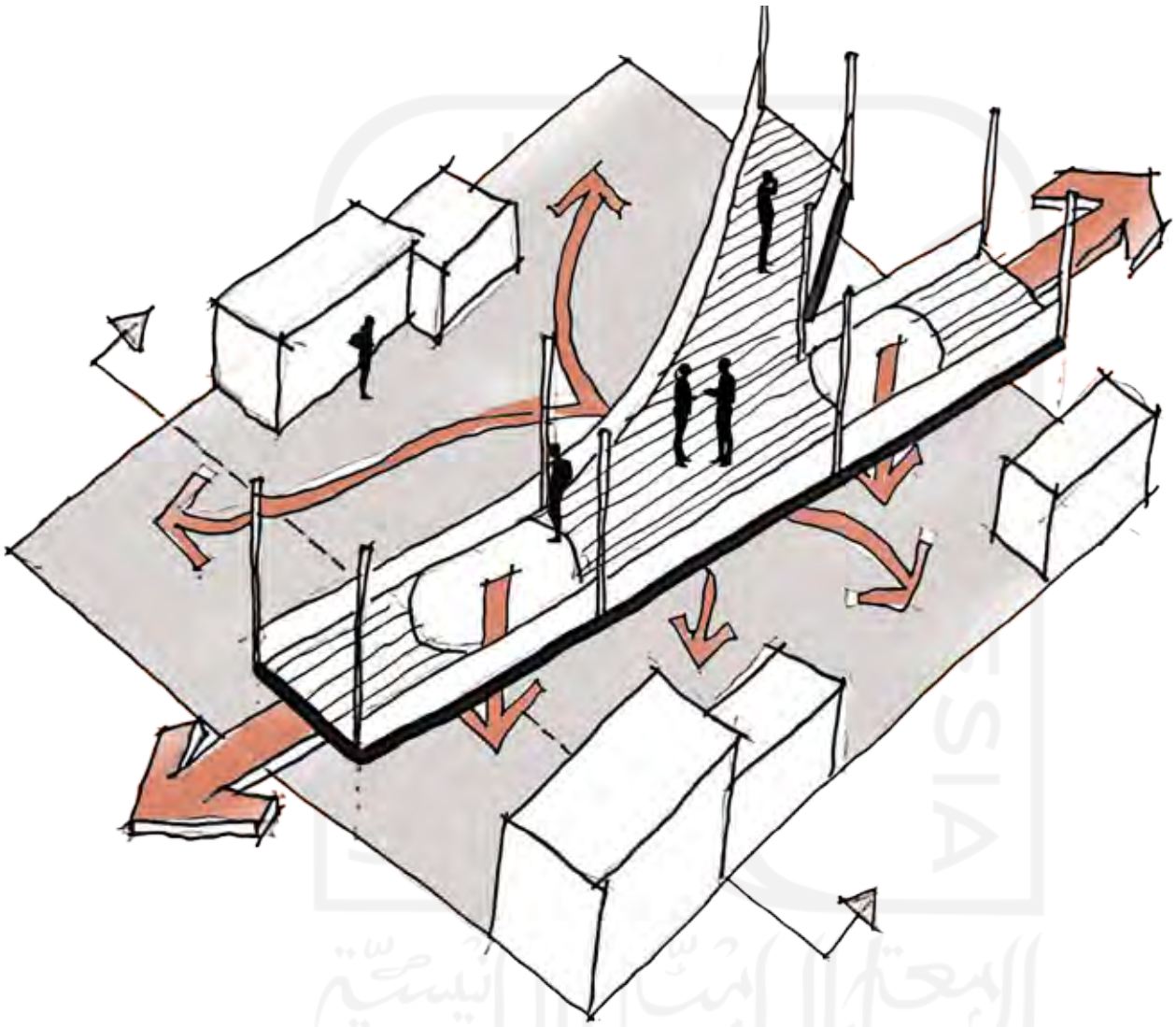
Visual Integration Sense
Observation Deck



With the concern of public and private spatial arrangement, the observation deck with glass railing has advantages of a unobstructed wide view to the production space without need to compromising to the safety and certain private production space as the public circulation are elevated above the production space. Visitors can look, smell, and hear in all directions from above the traditional jamu making and processing.

Figure 57. Visual Integration Concept Inside the Observation Deck
Source: Author, 2021.

Specific Architectural Design
Observation Deck

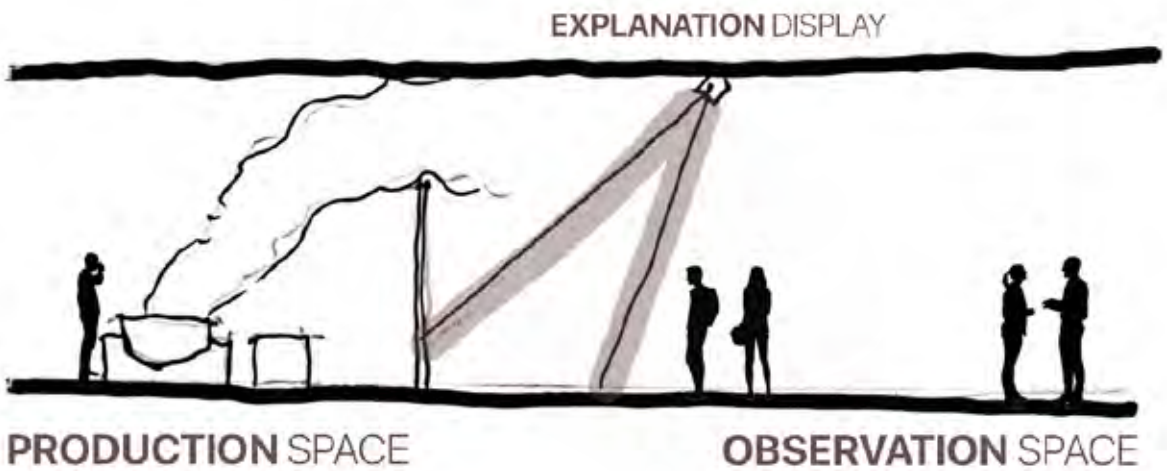


See-Through Observation Deck

To further accommodate the sense of safety with minimum compromising with multi-sensory experience, the observation deck featured with see-through floor for visitors to be able to see the view of jamu making and processing from the new perspectives.

Figure 58. Specific Concept of Observation Deck.
Source: Author, 2021.

Smell Integration Sense
Opening



As smell can be travelled through air, an opening could further induce the smell sense into the production space and museum tour with bringing the smell and the steam through the observation space. To further explain about the process and smell it could use the help of explanation display that projected through the wall or floor.

Figure 59. Smell Integration Sense Between Production and Observation Space
Source: Author, 2021.

Smell Integration Sense

Material

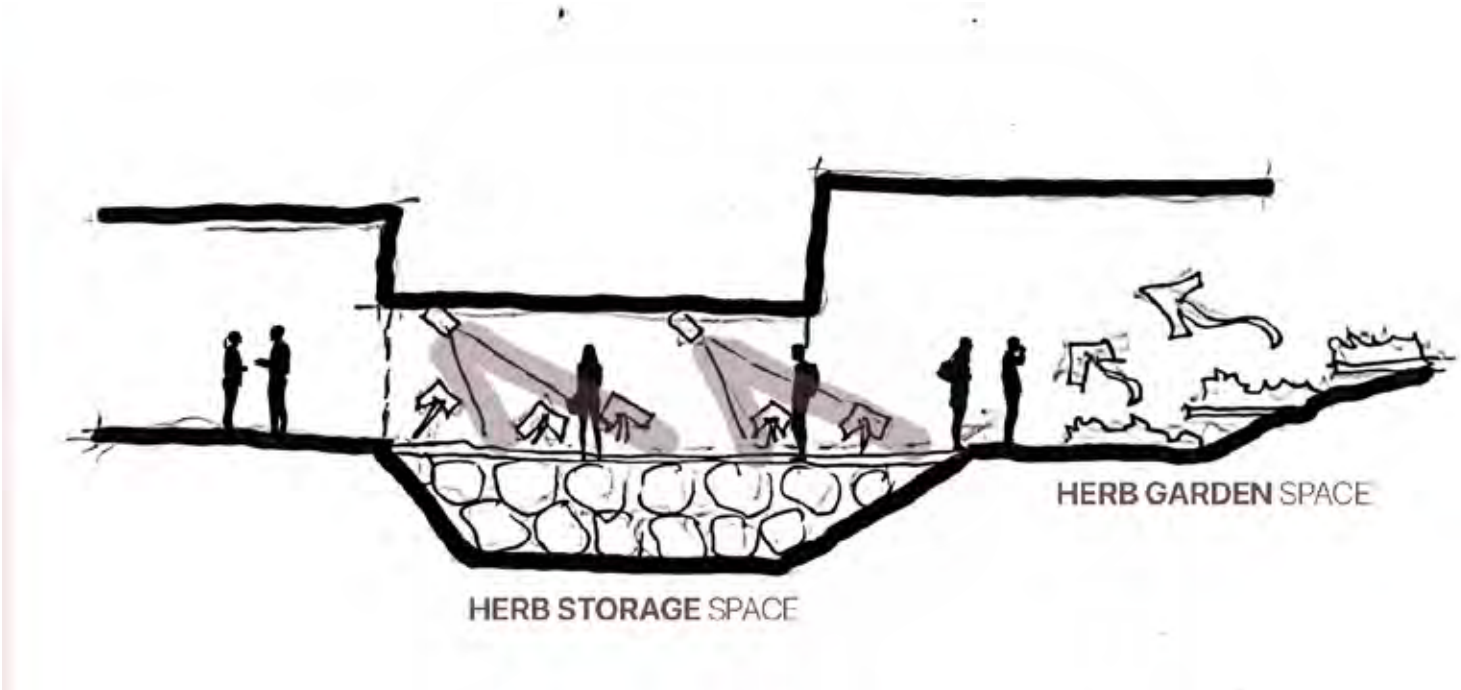


Figure 60. Smell Integration Sense from Material Concept.
Source: Author, 2021.

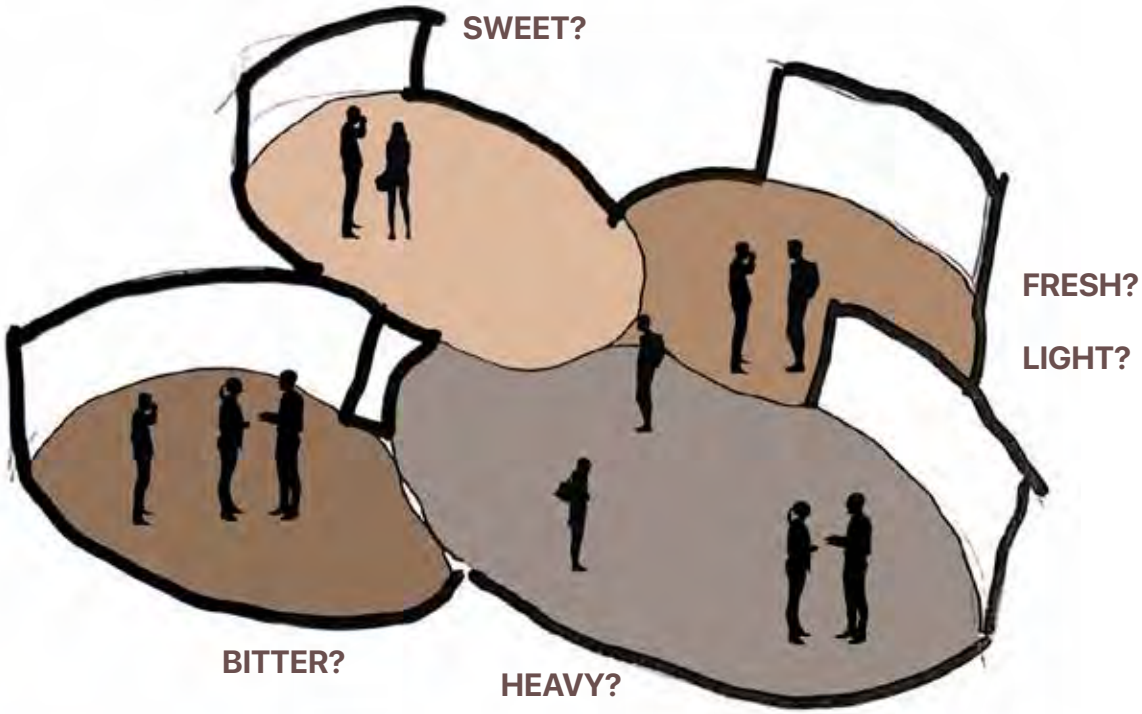
Playing with spatial arrangement and material further heightening the smell sense through the building, especially the museum and learning space. The floor could induce the herb smelling sensation that creep through certain opening with the jamu herb storage below the visitors. They can also see and provide with explanation through glass floor. Another way could be induced directly with the herb garden space where visitors could smell the original herb plantation there.

Smell Integration Sense
Transition of Smell

Transition of the smell from herbs could helps visitors differentiate from the stored, dried, and grate-proccessed herbs to learn the jamu making process. The enclosed space are deliberately made to focus on certain type of smell with partition and controlled air circulation.

Figure 61. Smell Integration Sense on Transition of Smell.
Source: Author, 2021.

Taste Integration Sense
Jamu Pods



To create the reminiscent of jamu experience through taste sense, the tasting space could be arrange based on the real taste of jamu as it is sweet, fresh, or bitter. Based on that taste there will be a jamu pods with matching colour and atmosphere that could enhance or reduce the taste feeling. The pods also could be change the colour and the atmosphere in order to match the featured jamu.

Figure 62. Taste Integration Sense inside Jamu Pods.
Source: Author, 2021.

Specific Architectural Design
Jamu Pods

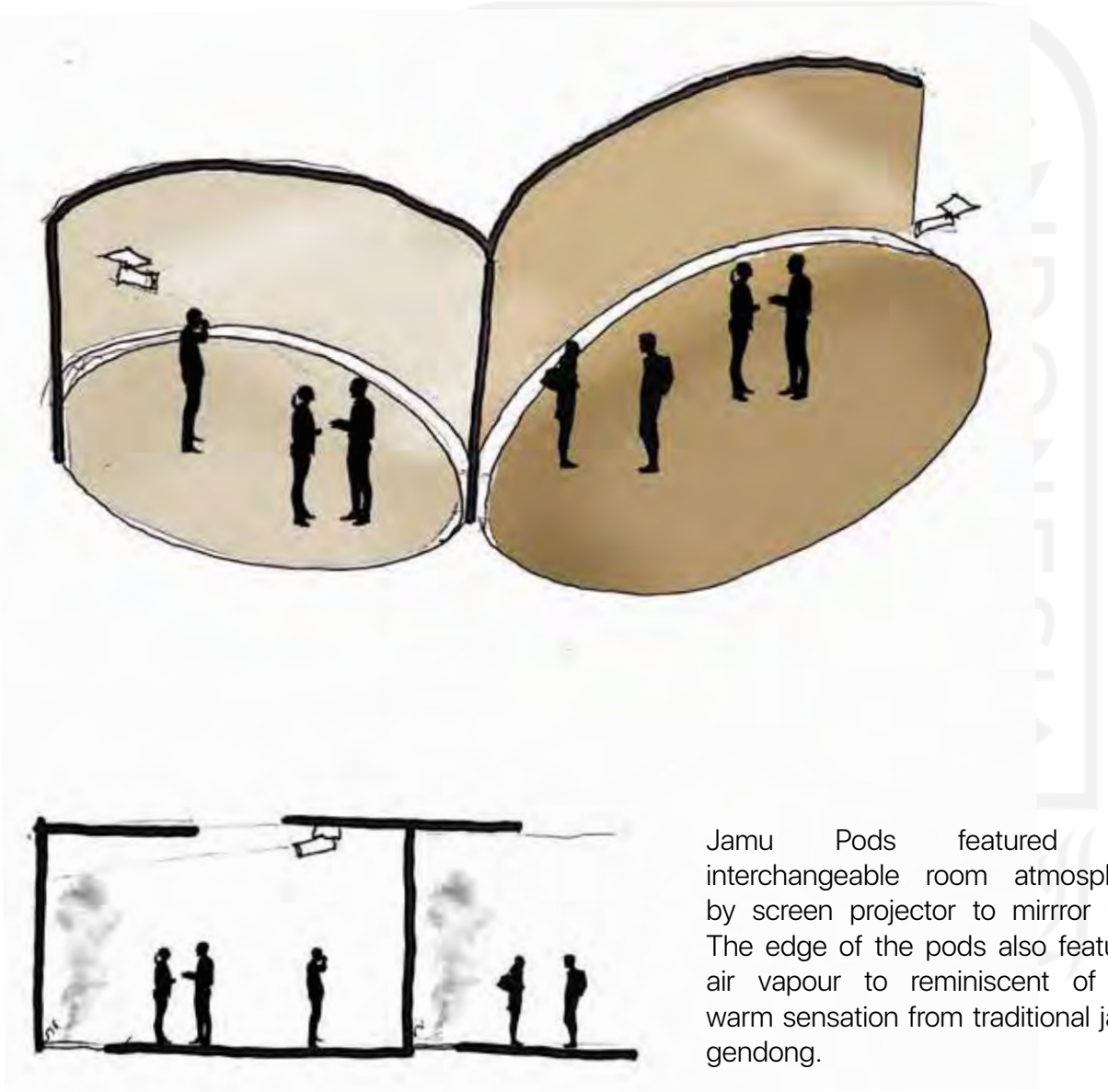


Figure 63. Specific Architectural Concept to Induce Taste Sense Inside Jamu Pods
Source: Author, 2021.

Jamu Pods featured the interchangeable room atmosphere by screen projector to mirrror wall. The edge of the pods also featured air vapour to reminiscent of the warm sensation from traditional jamu gendong.

Haptic Herb Garden
Stepped Plot

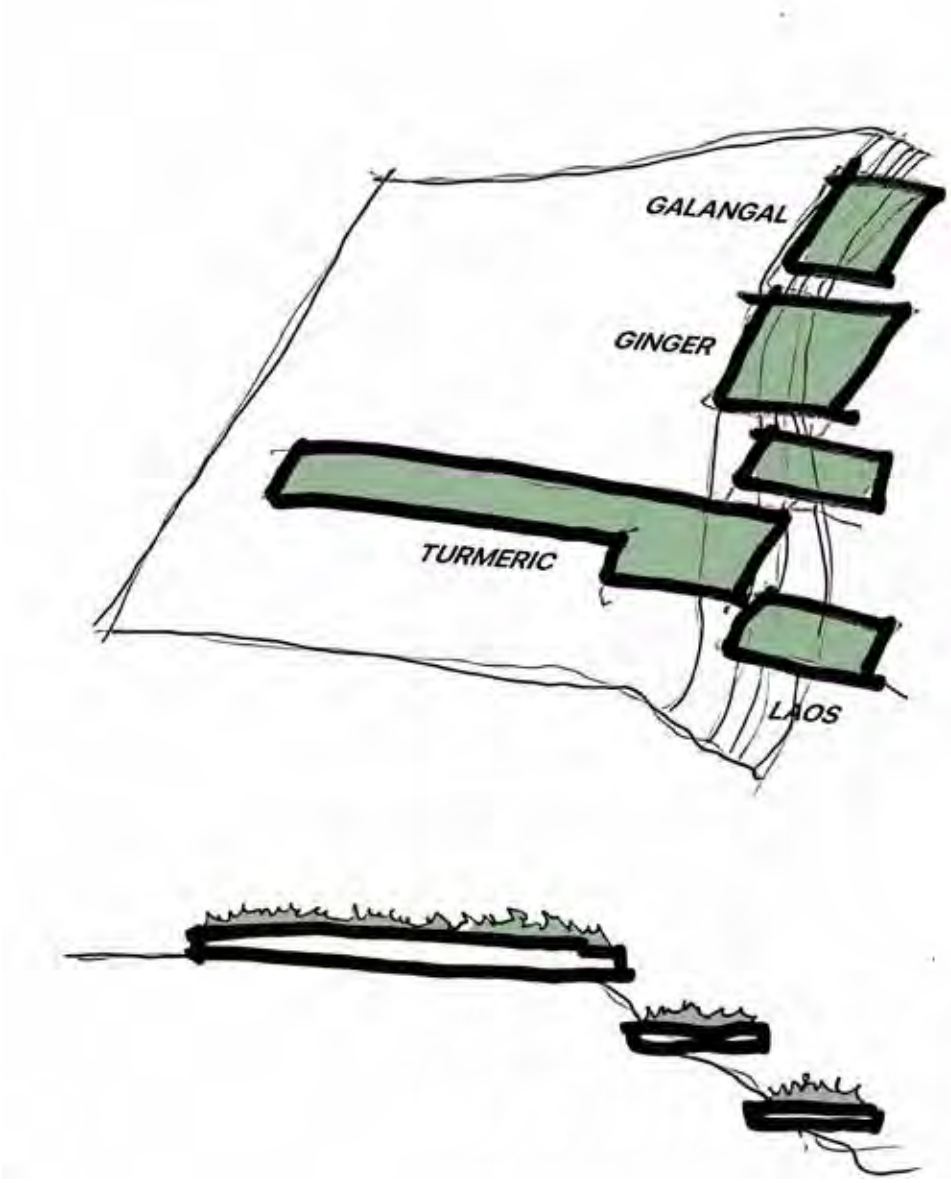


Figure 64. Haptic Herb Garden Concept.
Source: Author, 2021.

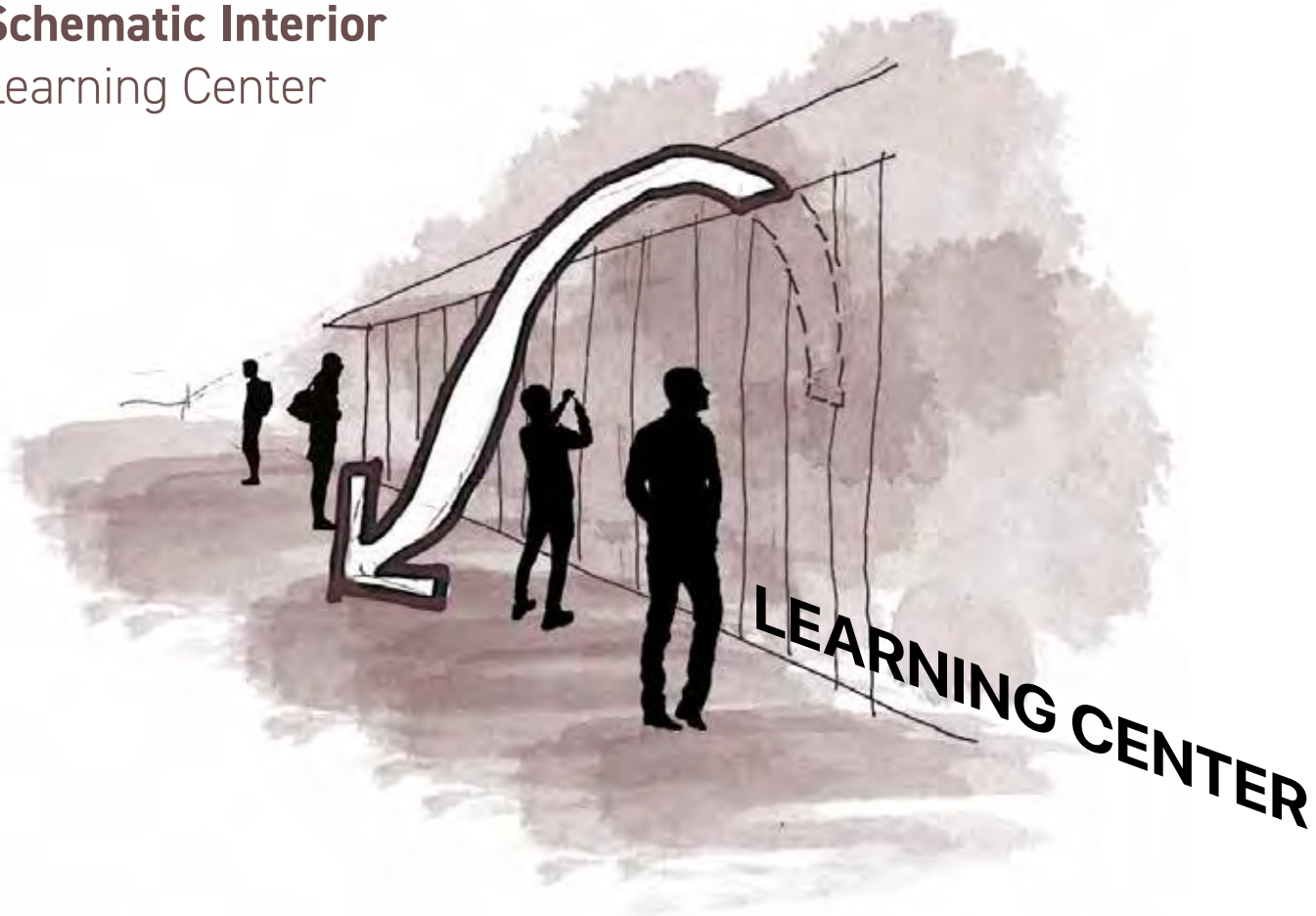
Pixel Garden

The blocks of garden arranged based on specific herbs that will be planted to make visitors more easier to understand and learn the garden, as its not cluttered.

Terraced Haptic Sense

Using the sloping edge of the river, the herb garden could be as stepped terracering with different kind of herbs. The herbs itself are separated to ease for visitors to identify and learn those.

Schematic Interior
Learning Center



Traditional Jamu Factory
Multi-Sensory Experience

Implementing multi-sensory to the design project affect the user to create and evoke memorable experiences of jamu. To achieve those, design project should notice to the influencing factors like materials, building volume, air circulation, and color selection.

Figure 65. Schematic Interior of Learning Center and Observation Space.
Source: Author, 2021.

Schematic Interior
Tasting Room

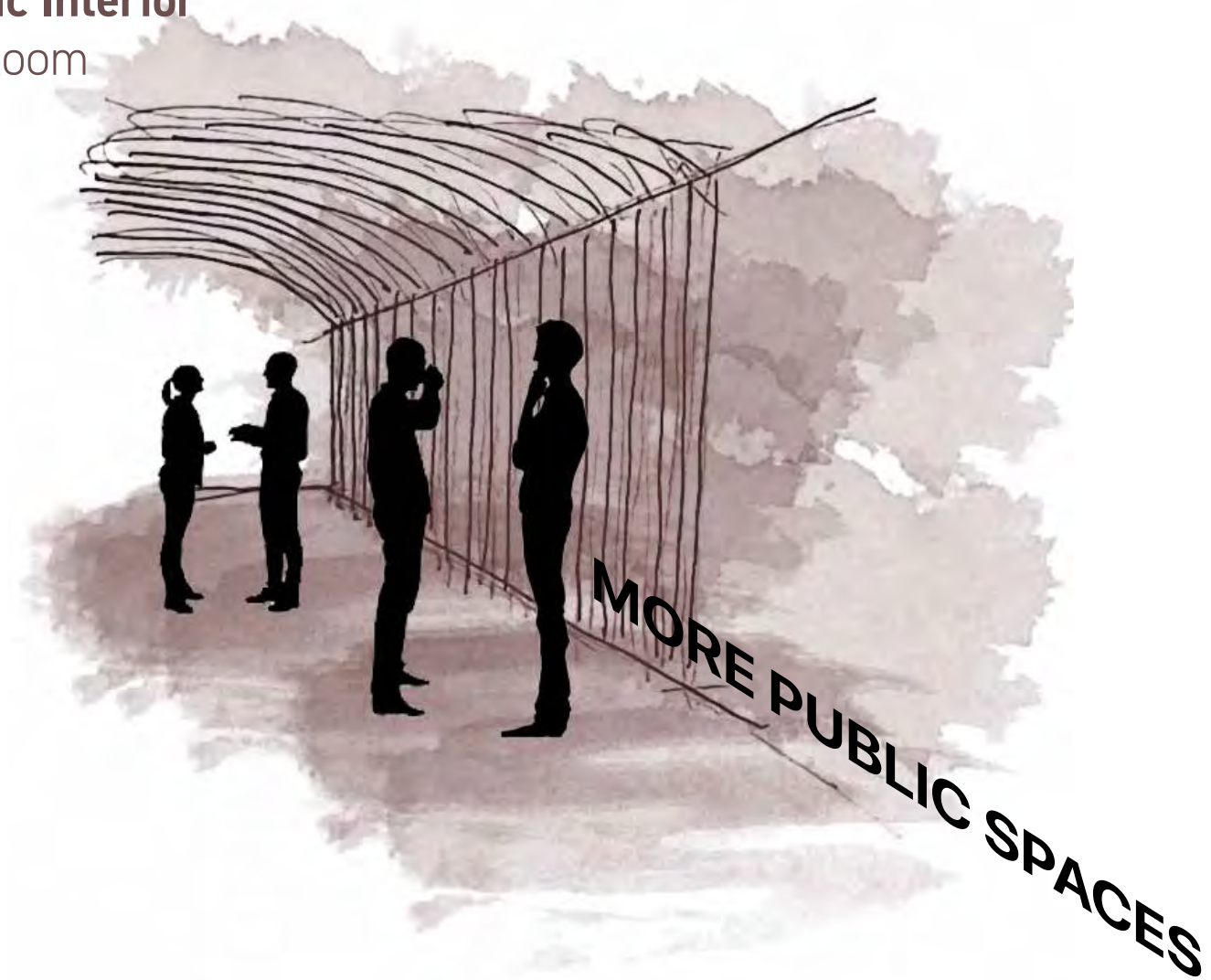
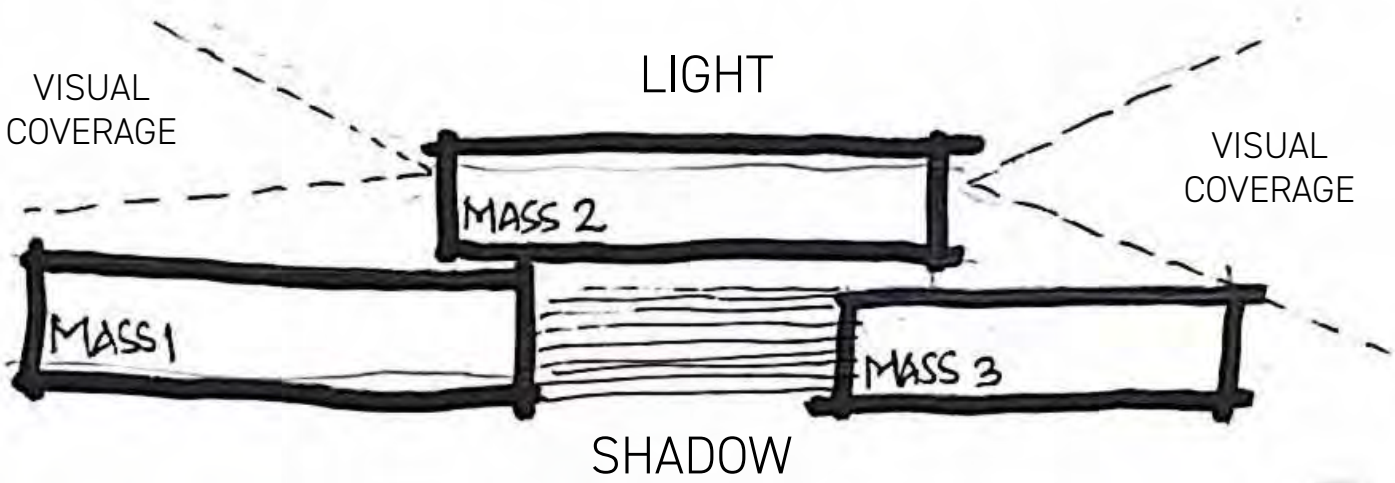


Figure 66. Schematic Interior of Tasting Room.
Source: Author, 2021.

Interpretive Center
Prominent Public Spaces

Besides as informal learning venue of jamu, the design project will be prominent on non-collective public spaces such as lounge or restaurant to invite wide variety of visitors even to the non-jamu drinkers.

Mass Arrangement
Mass Concept Exploration



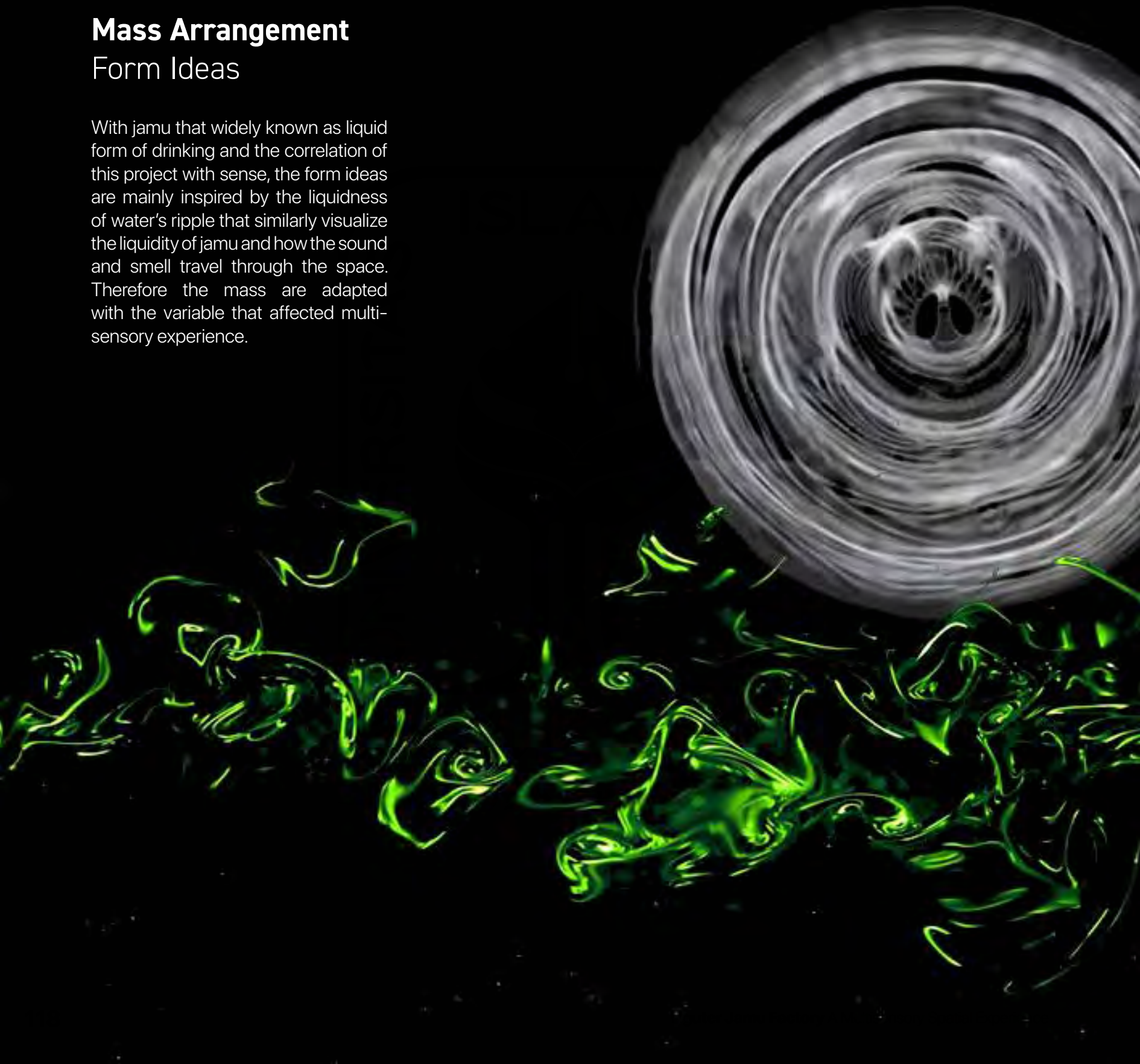
Spatial Arrangement
Public and Private Zoning

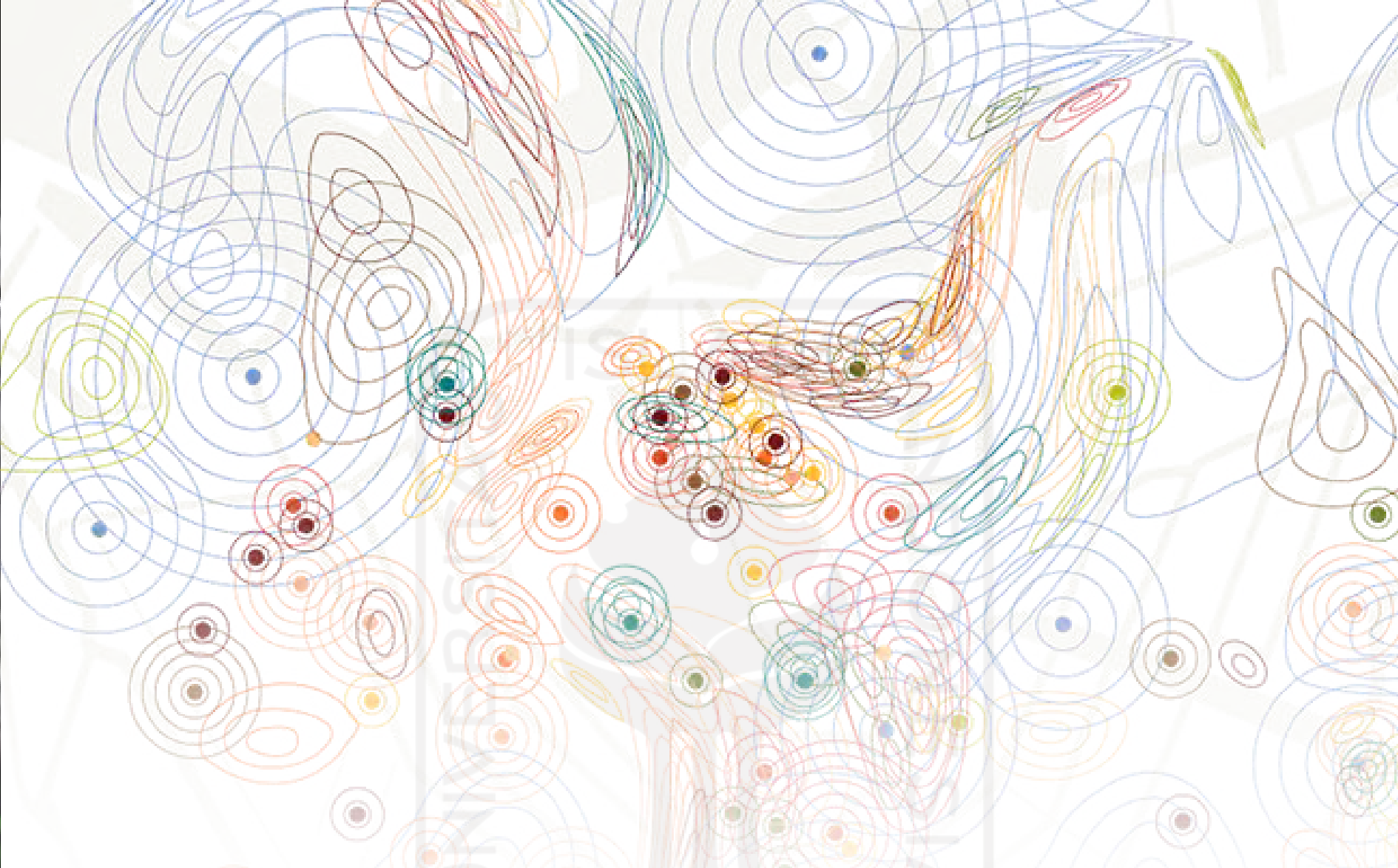
To arrange between public and private zoning and its circulation regarding the different needs of jamu factory and interpretive center, besides physically separates the building mass, another strategies could be playing with **building elevation**. Public area are **elevated** to enhance visual coverage towards the site and area that demand more controlled and private environment (warehouse, etc.) could be **sunken** below underground within the shadow.

Figure 67. Mass Concept Exploration of Spatial Arrangement.
Source: Author, 2021.

Mass Arrangement
Form Ideas

With jamu that widely known as liquid form of drinking and the correlation of this project with sense, the form ideas are mainly inspired by the liquidness of water's ripple that similarly visualize the liquidity of jamu and how the sound and smell travel through the space. Therefore the mass are adapted with the variable that affected multi-sensory experience.





Mass Arrangement

Transforming the Visualization

From the flowing curvilinear forms of smell, hear, and liquid visualization the ideas then transformed and distilled into a series of two-dimensional visual representation sensory diagram where it could representated the mapping of multi-sensory experiences inside the design project. Furthermore, the abstract visual representation reminisced about the similarities with pattern of graduated terracing landscape that resembling steps which could also be connected with herb garden idea.

Figure 68. Two-Dimensional Abstract Visual Representation of Sensory Diagram.

Mass Arrangement

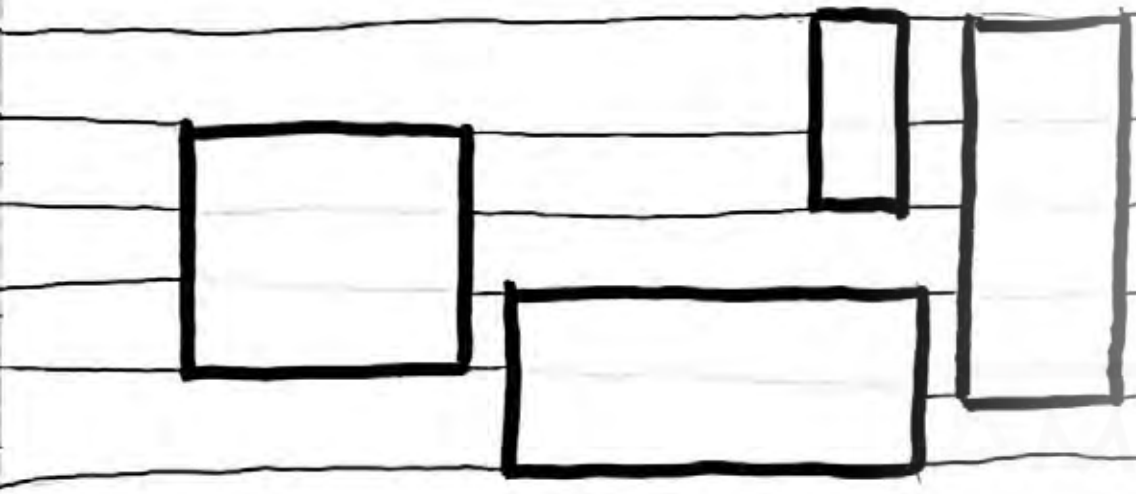
Contour and Volume

Linear

Starting from the linear contour it resembles the uniformity and sort of creating a path headed somewhere. The linear contour could be used indirectly direct the visitors to the building facilities.

Curvilinear contour has the characteristics of flowing and as if twisting. This could be use for inside circulation to trigger the curiosity of visitors as it does not reveal the end directly.

Curvilinear



Rectangle

Series of linear contour create a rigid rectangle shape with the define point and side. Although the rectangle feeled less eccentricity to trigger the curiosity of visitors. Furthermore the shape did not quite respond to the curve geometry of the site.

Circle

Oval

The circular circle and oval shape are more suitable to be implemented in the design as it still bring the characters of curvilinear form.

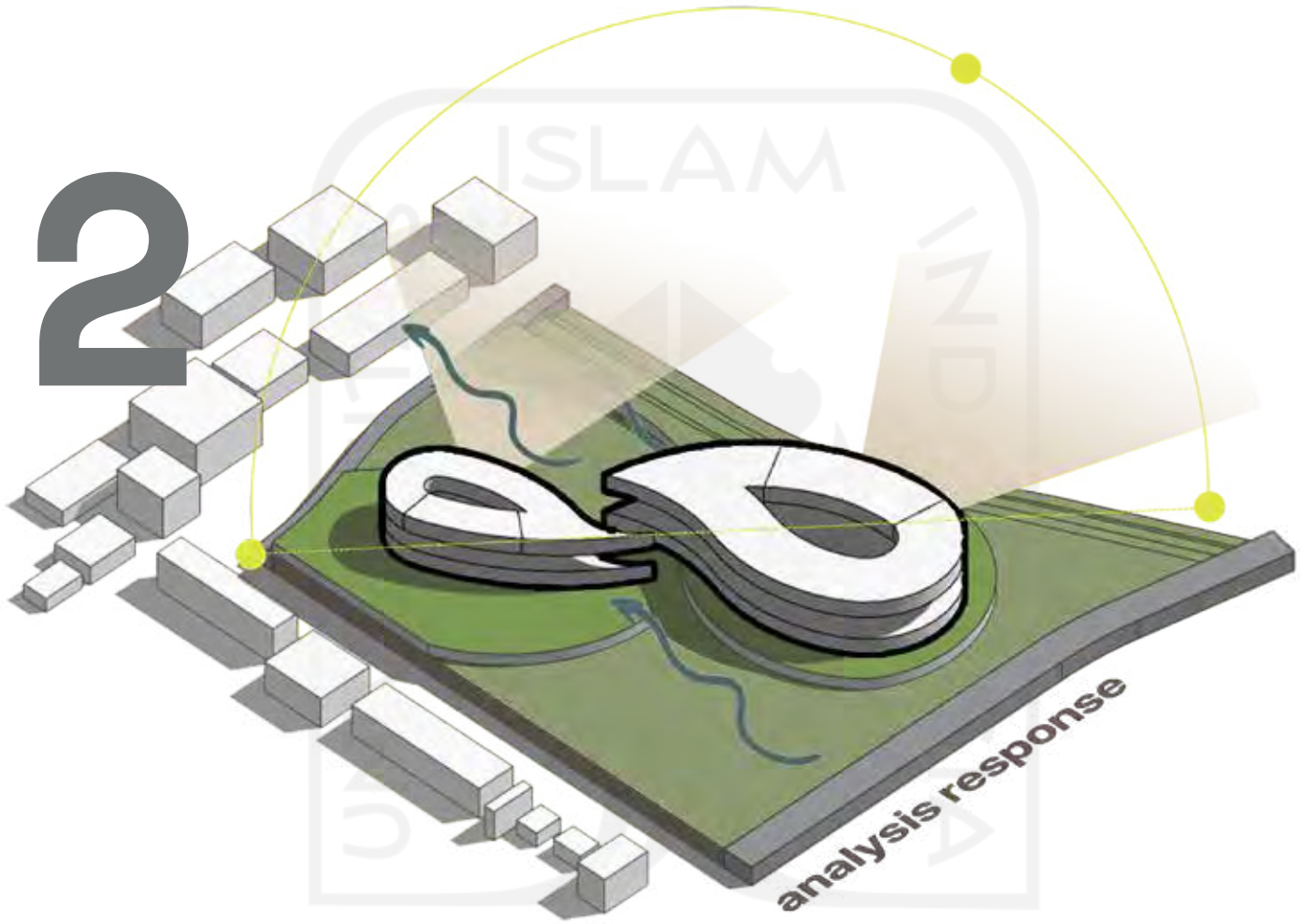
Figure 69. Mass Arrangement Idea: Contour and Volume.
Source: Author, 2021.

Mass Transformation
Elevating the Site

The designed edu-recreational jamu facilities should incorporate and introduce the origin of kampung jamu in Nguter while presenting jamu interpretation to the facilities. Therefore the site are oriented toward the kampung jamu as part of the journey. To make an impression of a connecting promenade and further accentuate the building, site contour are created with different elevation. As a result it forming a flowing circulation for the pedestrian.

Figure 70. Diagram of Mass Transformation
Source: Author, 2021.

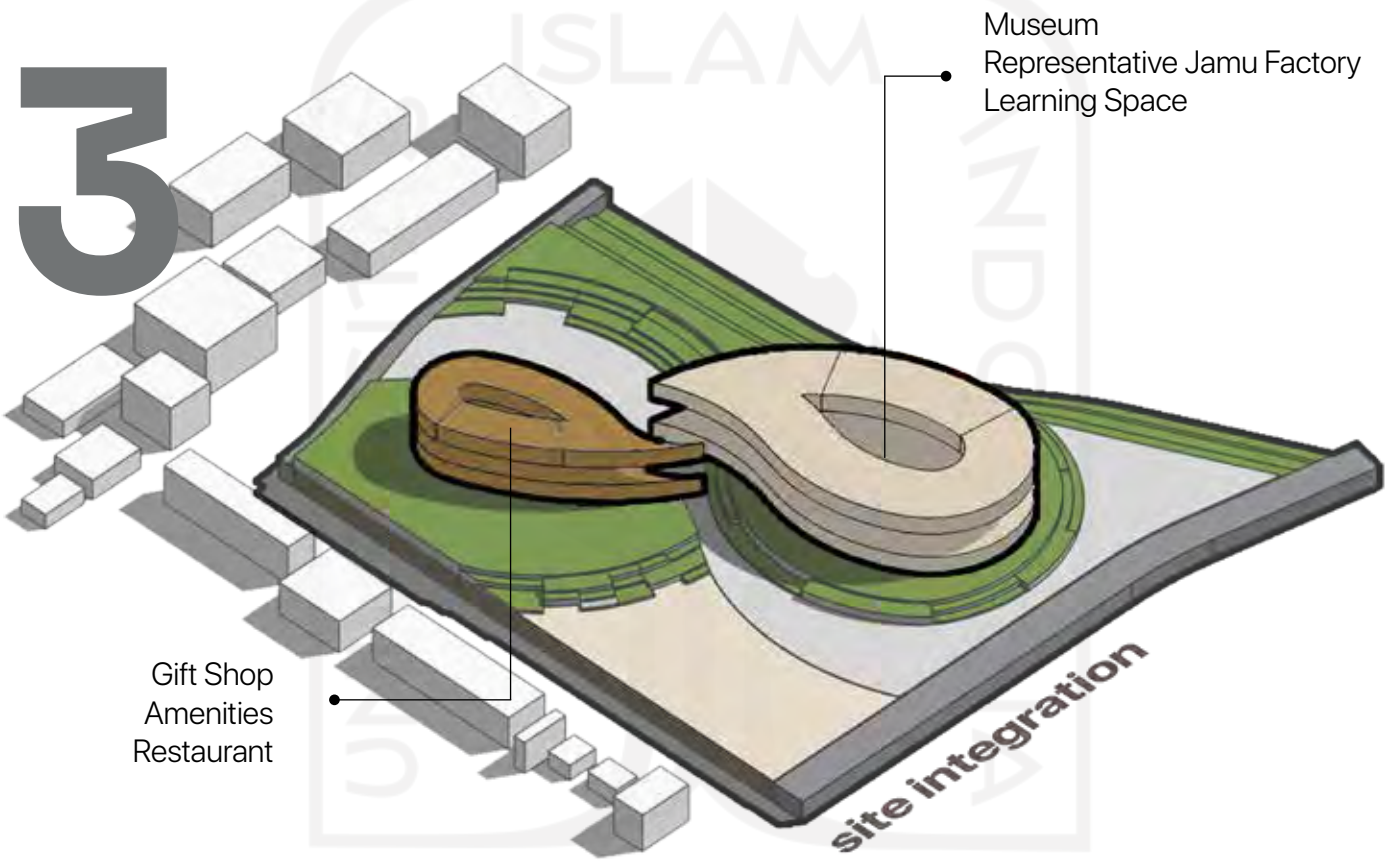
Mass Transformation
Analysis Response



With focusing on senses particularly smell and taste the weather factors also take place in consideration on the formation of curvilinear building mass. The geometry of landscape and the building allow the wind to circulate with ease to increase the air exchange as the interior are mostly packed with jamu's aroma. Sun path also carefully considered for the building to not catch their shadows to the herb garden. Furthermore view to the small river also reviewed for the mass to not blocking each others.

Figure 71. Diagram of Mass Transformation
Source: Author, 2021.

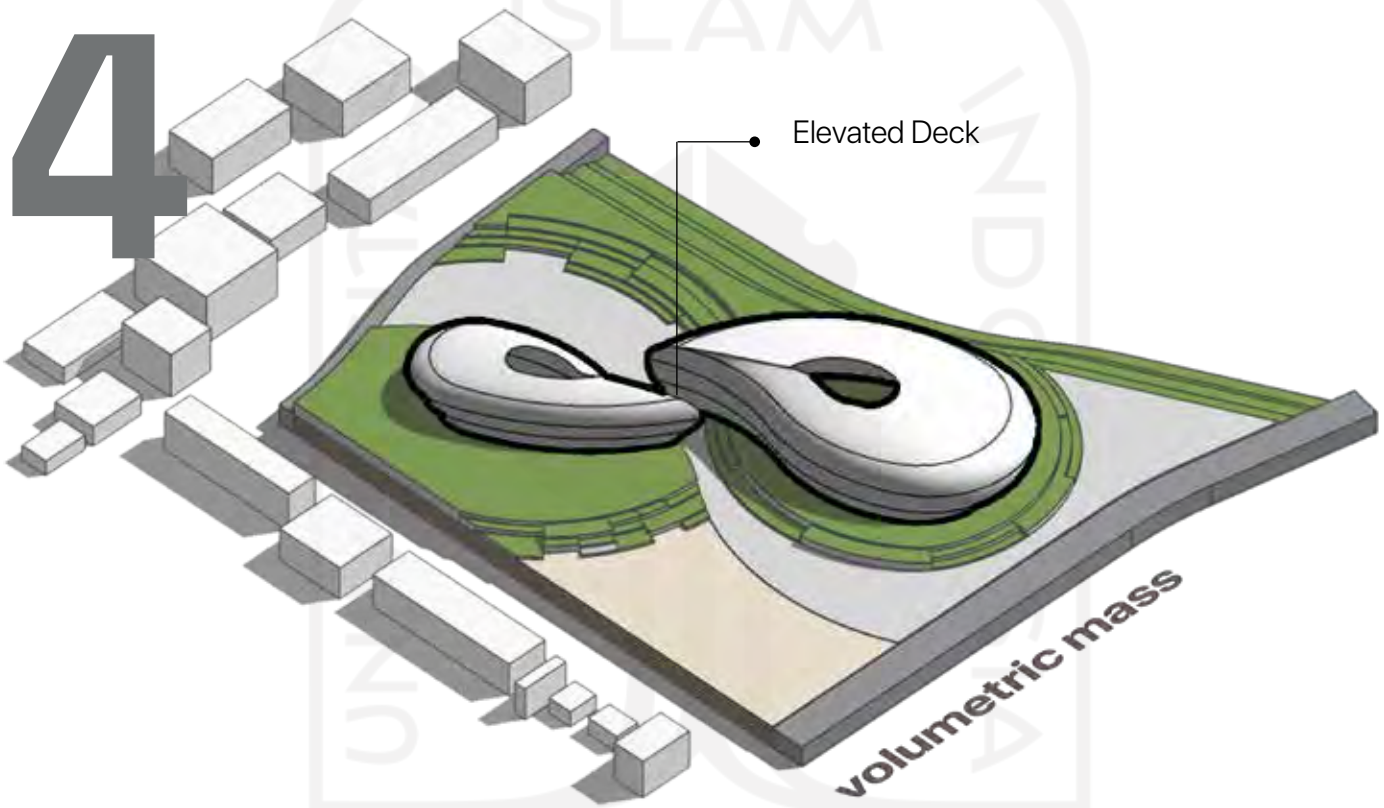
Mass Transformation
Mass and Landscape



Site integration involving mass and landscape to complete each others, starting for the entrance garden that guide visitors to enter the building. While the continuous curvilinear shape beside representing the fluidity of jamu and its senses also to easier for visitors to understand the inside continuous one-way journey starting from the museum, representative jamu factory, learning space, and end with amenities space.

Figure 72. Diagram of Mass Transformation
Source: Author, 2021.

Mass Transformation
Volumetric Mass

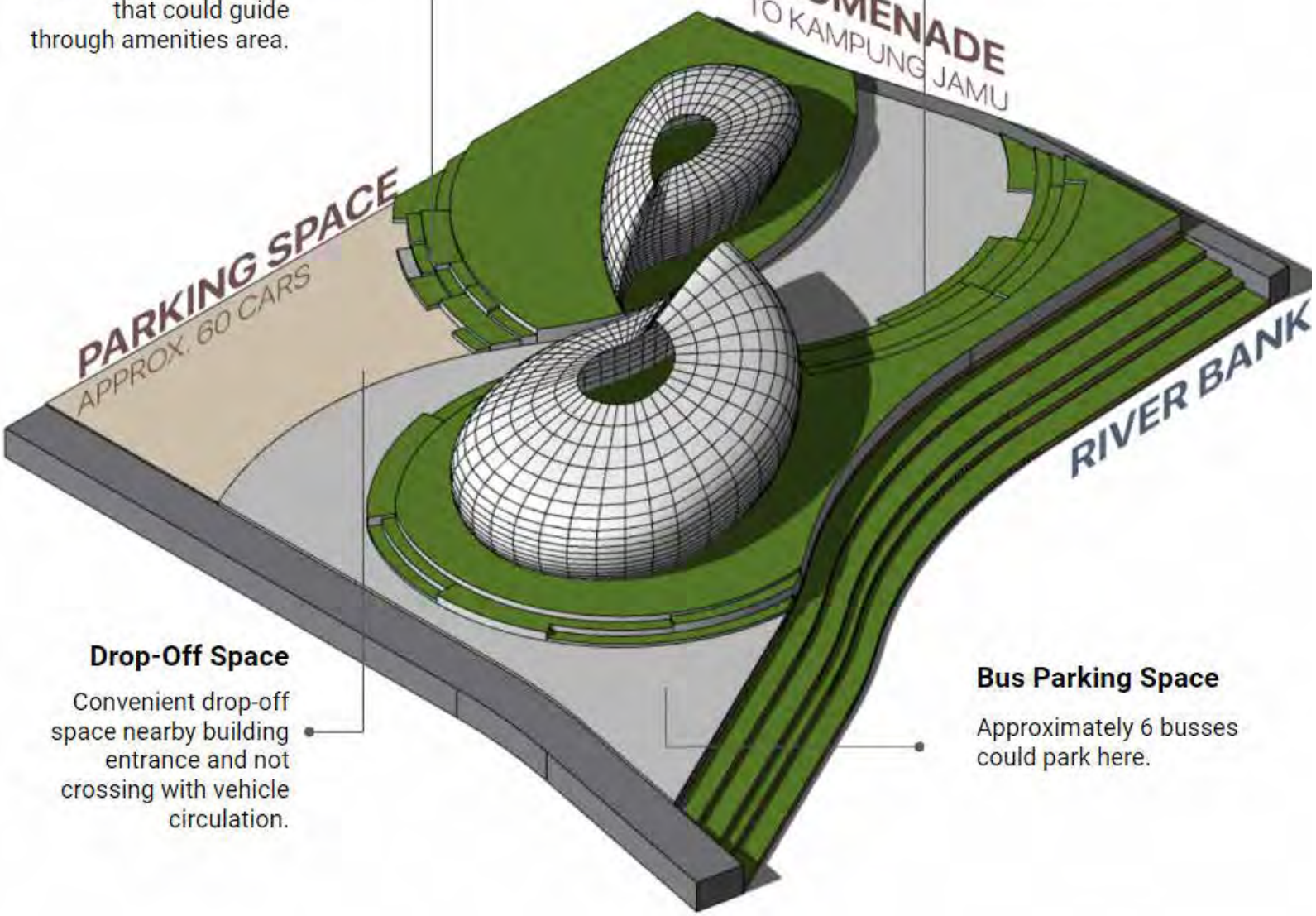


The final volumetric mass is the development from continuous curvilinear form that emphasize the landscape accent while create series of connection not only on the site towards the jamu village, but further inside the building interior with elevated deck. Egg-shaped envelope with grand void try to reduce the monumentalilty scale and stick to the essence of jamu, a modest herbal drink for everyone.

Figure 73. Diagram of Mass Transformation
Source: Author, 2021.

Landscape Alternative

Mirrored



Main Haptic Garden

The main elevated herb garden are integrated with semi-outdoor public space.

Entrance Garden

The building entrance are welcomed by the terraced of herb garden that could guide through amenities area.

Drop-Off Space

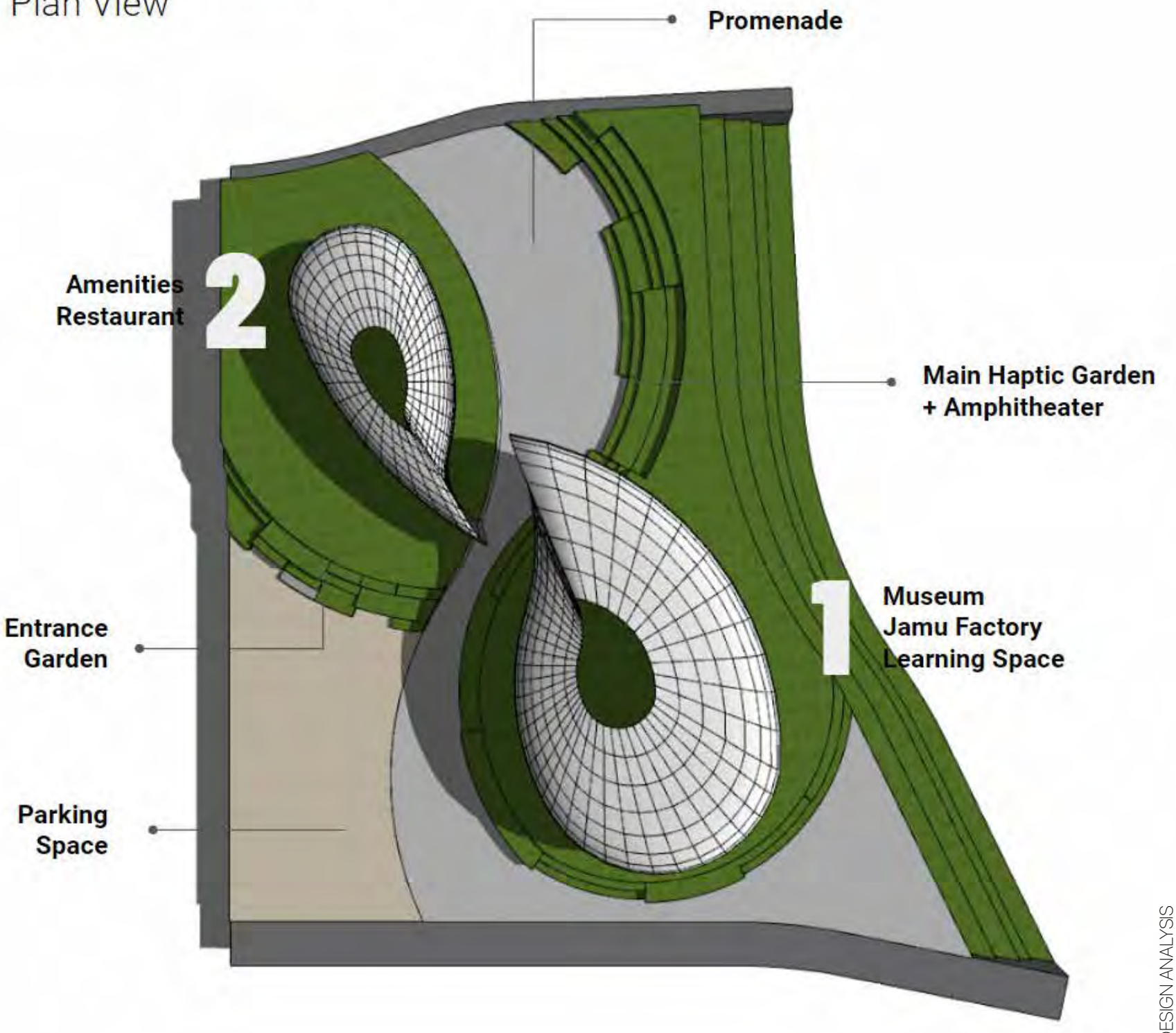
Convenient drop-off space nearby building entrance and not crossing with vehicle circulation.

Bus Parking Space

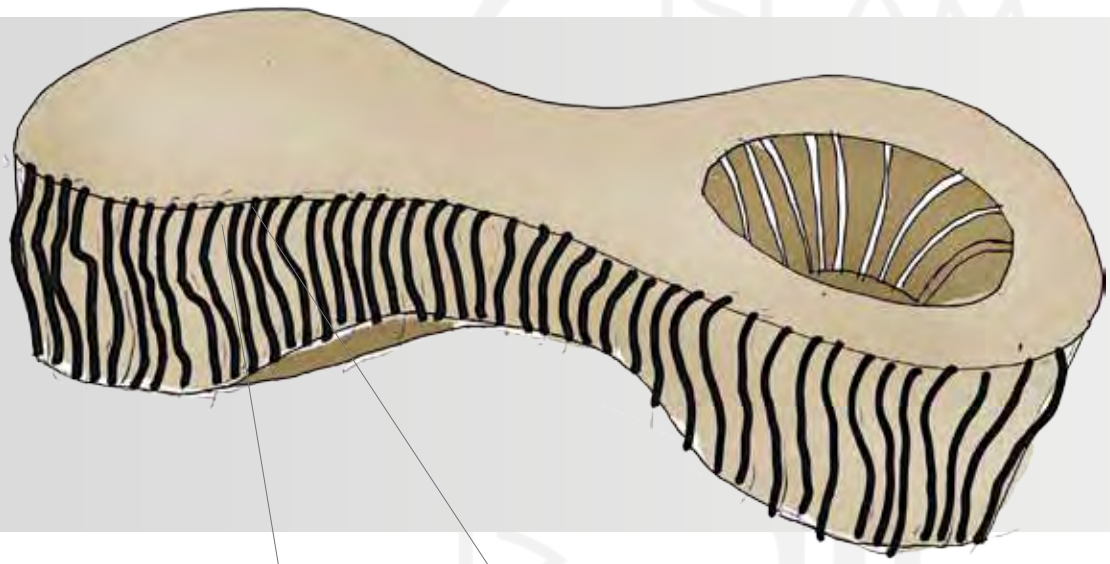
Approximately 6 busses could park here.

Landscape Alternative

Plan View

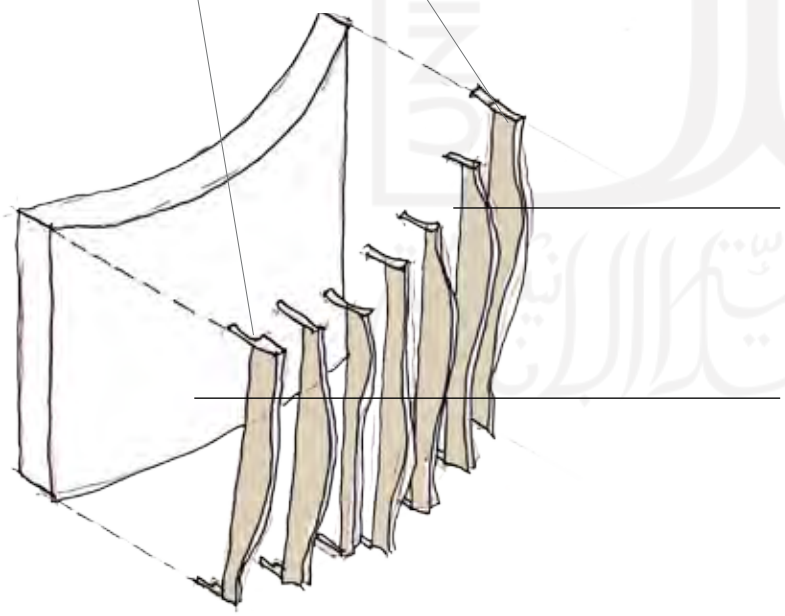


Building Envelope
Earthy Interpretation



Museum and Learning Center Envelope

As the building that first to seen from the main entrance, this mass should easily and clearly interprete jamu and sense. Wavy-style facade are chosen to strengthening the liquid transformation and as lattice for natural ventilation.



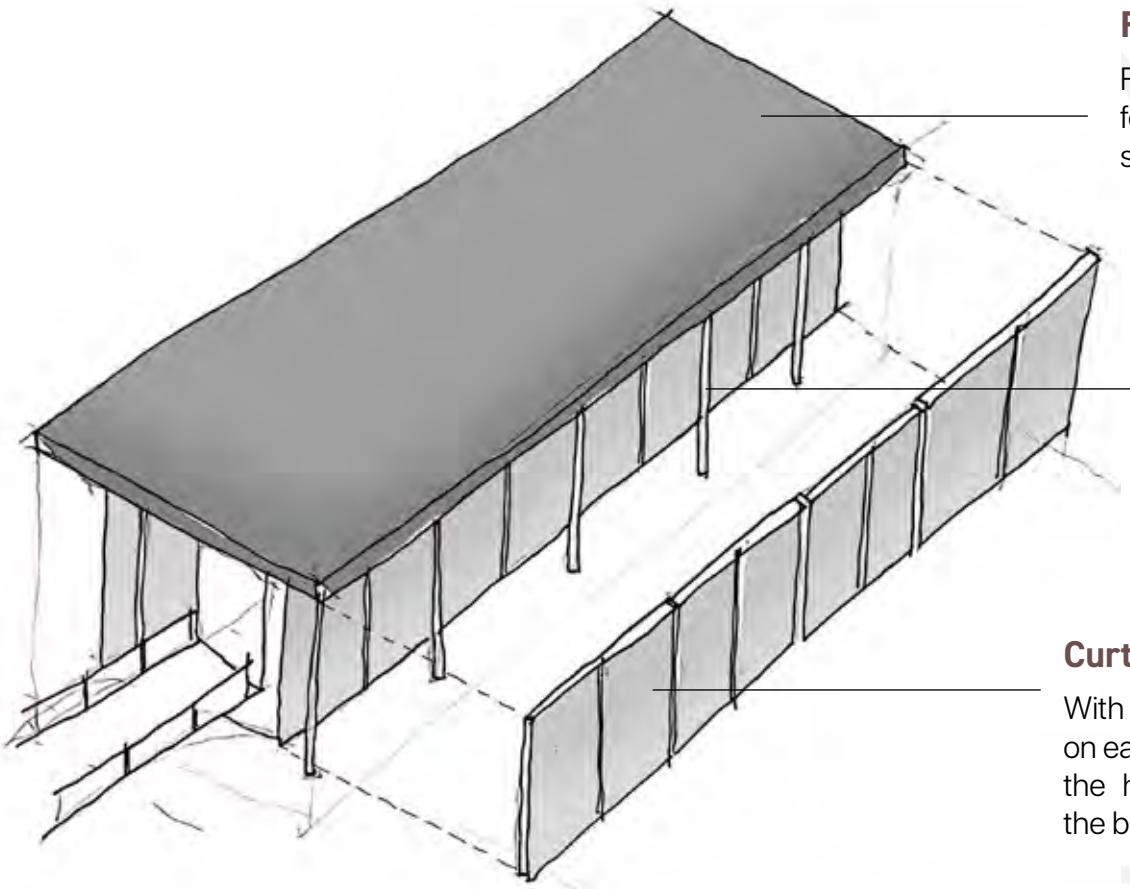
Wave GRC Cladding

Strengthening the identity of liquidness, as a lattice for natural ventilation to learning center and to eye-catch the visitors.

Curtain Wall

Curtain Wall for users to be able to see the surrounding vista at learning center.

Building Envelope
Luminous Jamu Processing



Flat Deck Roof

Flat deck are used as placed for elevated observation deck structure to hold on.

Piloti Column

To further allow natural daylight enter the building without large obstruction.

Curtain Wall

With the curtain wall opening on east orientation, it minimize the heating sunray to enter the building.

Jamu Factory Envelope

With traditional jamu home-industry often associated inside private dark and dull home, will be significant to shift those negative paradigm without over exposing it into flood of sight.

Figure 74. Building Envelope Concept Exploration.
Source: Author, 2021.

05

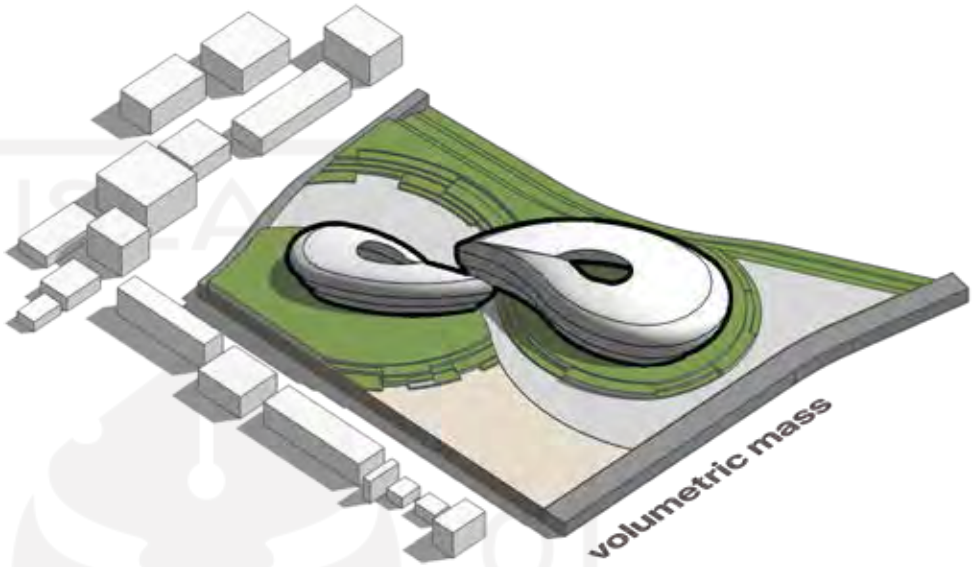
Design Results

Final description of building design

Property Size
BCR FCR

Building Coverage Ratio (BCR)

The maximum building coverage ratio is 80% of the site around 11.896 m2 while the total designed building area is 3.345 m2 and not violating the maximum building coverage by building codes.



Floor Coefficient Ratio (FCR)

The maximum floor coefficient ratio is 2 with 23.792 m2 as maximum floor size. While the total designed building floor area is 6.690 m2 and still below the maximum limit.

Green Coverage Ratio (KDH)

The green coverage ratio that need to be fulfilled is 20% of the site or 2.974 m2. In the designed space, the green coverage ratio including herb garden is 4.966 m2.

Setback 10 meter	BCR + FCR 80% + 2
KDH 20%	Building Height 40 meter

Spatial Requirements
Room Standards

Calculation of building area provisions based on maximum number regional regulations:
BCR = 80% x 14.870 m2 = 11.896 m2
FCR = 2 x 11.896 m2 =23.792 m2

Table 7. Spatial Requirements of Room Standards.
Source: Author, 2021.

Museum Space	Public	Lobby Area	4 m2/person	30-40 person	160 m2	192 m2
		Information Room	4 m2/person	20 person	80 m2	96 m2
	Semi-Public	Ticketing Room	4 m2/person	20 person	80 m2	96 m2
		Collection Room	4 m2/person	50 person	200 m2	240 m2
	Private	Curator Office Room	4 m2/person	2-3 person	12 m2	14.4 m2
		Staff Office Room	4 m2/person	5-10 person	28 m2	33.6 m2
		Warehouse	6 m2/person	5-10 person	42 m2	50.4 m2
Exhibition Space	Semi-Public	Exhibition Hall	4 m2/person	100 person	400 m2	480 m2
		Conference Room	3 m2/person	50 person	150 m2	180 m2
Interactive Learning Space	Semi-Public	Workshop Laboratory	4 m2/person	20 person	80 m2	96 m2
		Production Room	4 m2/person	50 person	200 m2	240 m2
		Testing Room	4 m2/person	20 person	80 m2	96 m2
		Final Product Showcase	4 m2/person	20 person	80 m2	96 m2
	Private	Equipment Room	6 m2/ equipment	10 equipment	60 m2	72 m2
		Ingredient Warehouse	6 m2/person	5-10 person	60 m2	72 m2
		Staff Office Room	4 m2/person	5-10 person	40 m2	48 m2
Amenities	Public	Restaurant	4 m2/person	50 person	200 m2	240 m2
		Souvenir Shop	4 m2/person	20 person	80 m2	96 m2
		Jamu Market	4 m2/person	20 person	80 m2	96 m2
		Plaza	3 m2/person	50 person	150 m2	180 m2
		Parking Space				
		Mushalla	2 m2/person	10 person	20 m2	24 m2
		Lavatory	3 m2/person	5-10 person	30 m2	36 m2
	Private	Loading Dock				
		MEE Room	3 m2/person	2 person	40 m2	48 m2
		Security Room	3 m2/person	2 person	6 m2	7.2 m2

Siteplan

On the siteplan the feature elements that first seen from the users are the herb garden. It represents Nguter as a well-known jamu village craftsman. The site also create a cut-through the building for promenade to the Nguter jamu village.

Figure 75. Siteplan.
Source: Author, 2021.

Legend

1. Car Parking Area
2. Bus Parking Area
3. Main Entrance
4. Lobby
5. Museum
6. Core Utilities
7. Representative Factory
8. Multifunction Hall
9. Jamu Market
10 Restaurant
11. Promenade
12. Jamu Herb Garden
13. Loading Dock

Plan Ground Floor

On the Ground Floor the Building are splitted into two masses with the left one for amenities area and right one as the museum and representative jamu factory area. The building entrance are located at the intersection of two masses.

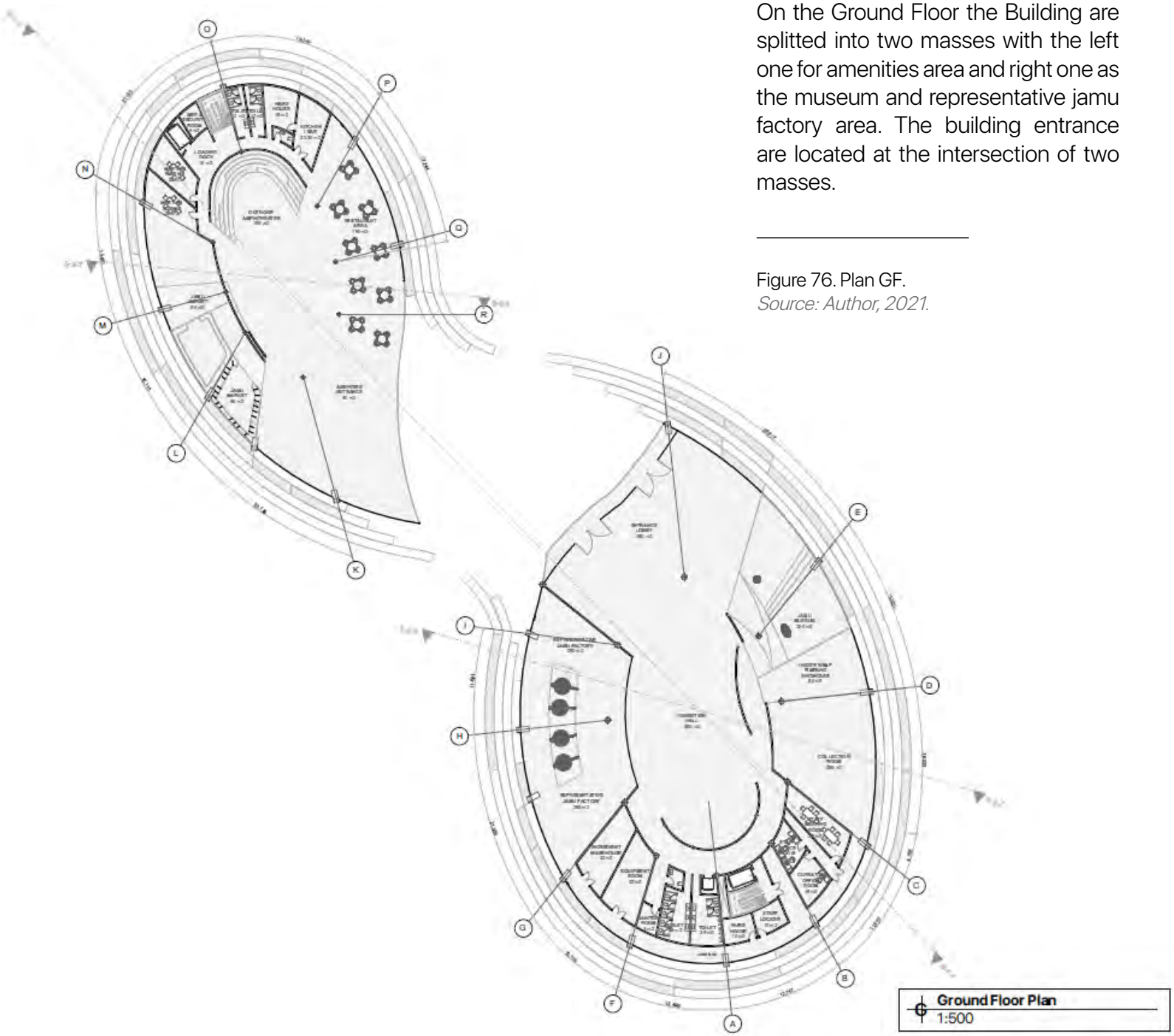


Figure 76. Plan GF.
Source: Author, 2021.

Plan 1st Floor

On the siteplan the feature elements that first seen from the users are the herb garden. It represents Nguter as a well-known jamu village craftsman. The site also create a cut-through the building for promenade to the Nguter jamu village.

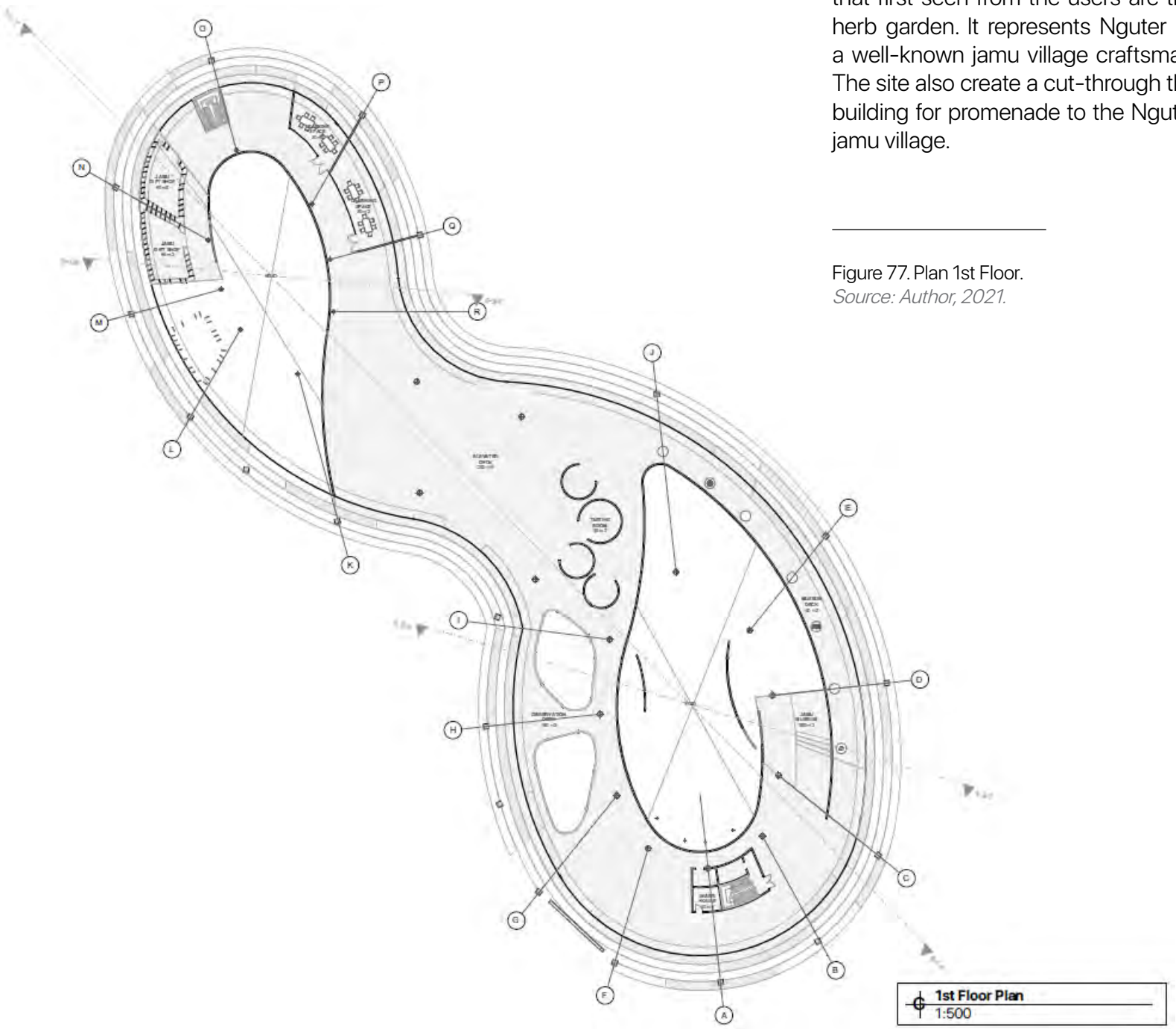
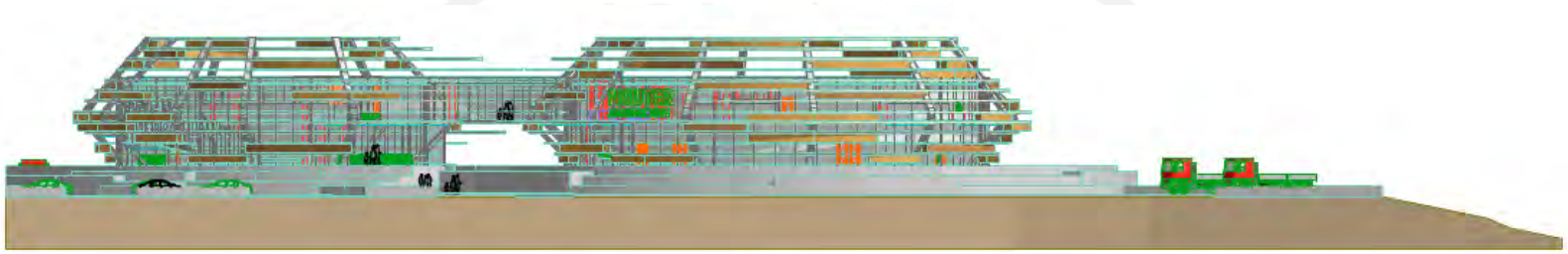
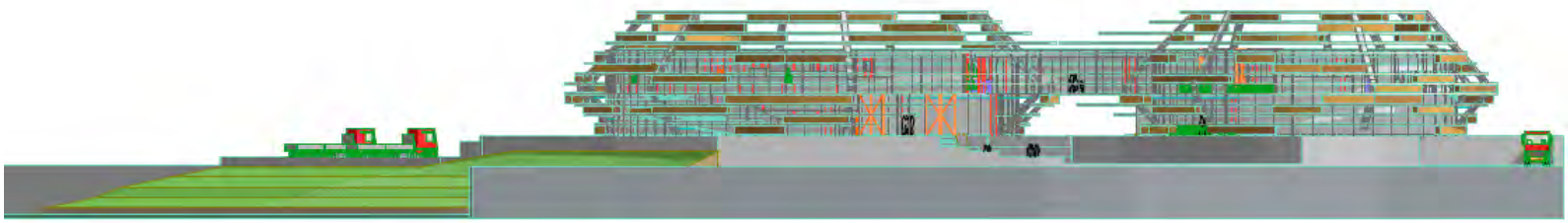


Figure 77. Plan 1st Floor.
Source: Author, 2021.

Elevation
Curvilinear Transformation



North Elevation



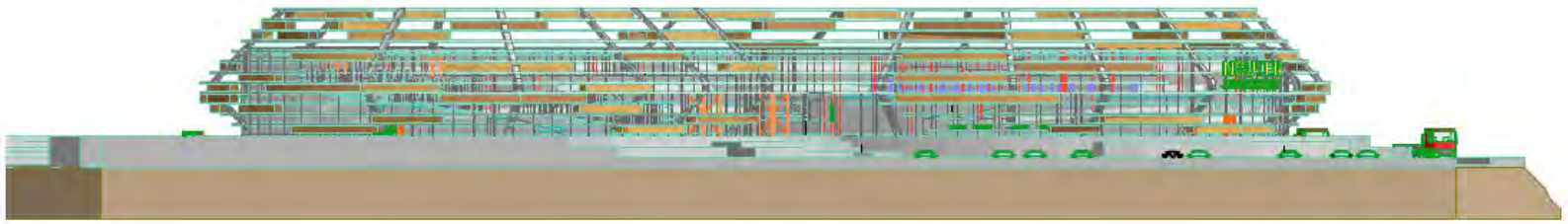
South Elevation

With the concept of representing and connecting the Nguter Jamu Village, in a way the building silhoutte are a symbolization of entrance gate or *gapura* to the jamu village.

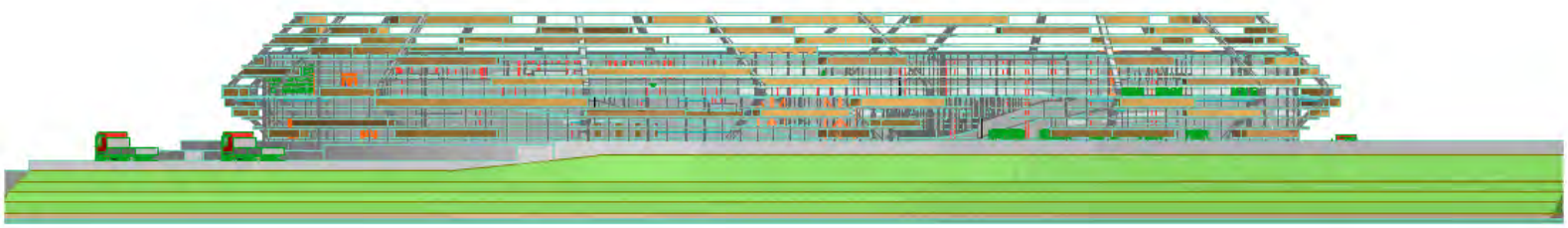
Figure 78. North and South Building Elevation.
Source: Author, 2021.

Elevation

Curvilinear Transformation



West Elevation



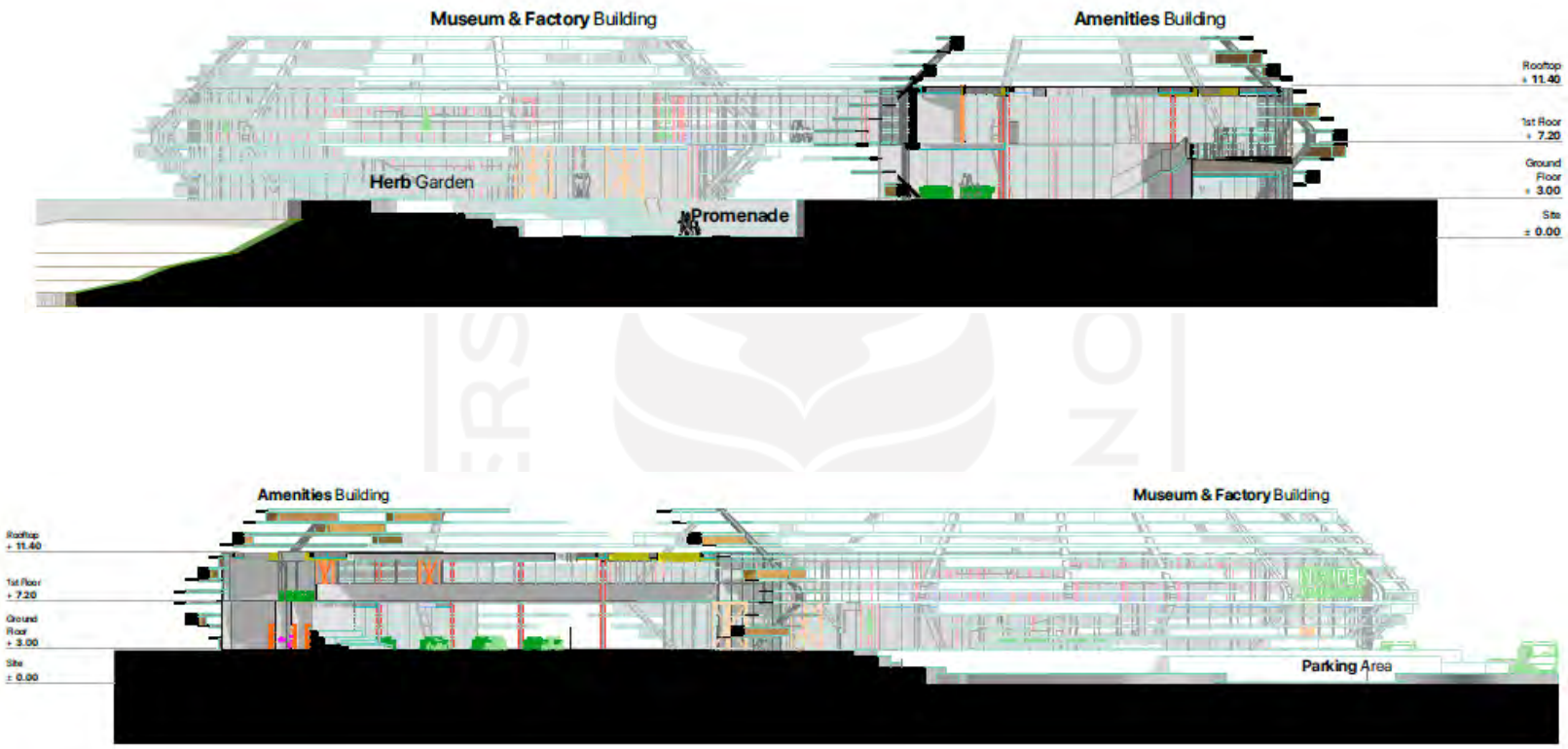
East Elevation

With the concept of representing and connecting the Nguter Jamu Village, in a way the building silhoutte are a symbolization of entrance gate or *gapura* to the jamu village.

Figure 79. West and East Building Elevation.
Source: Author, 2021.

Site Section

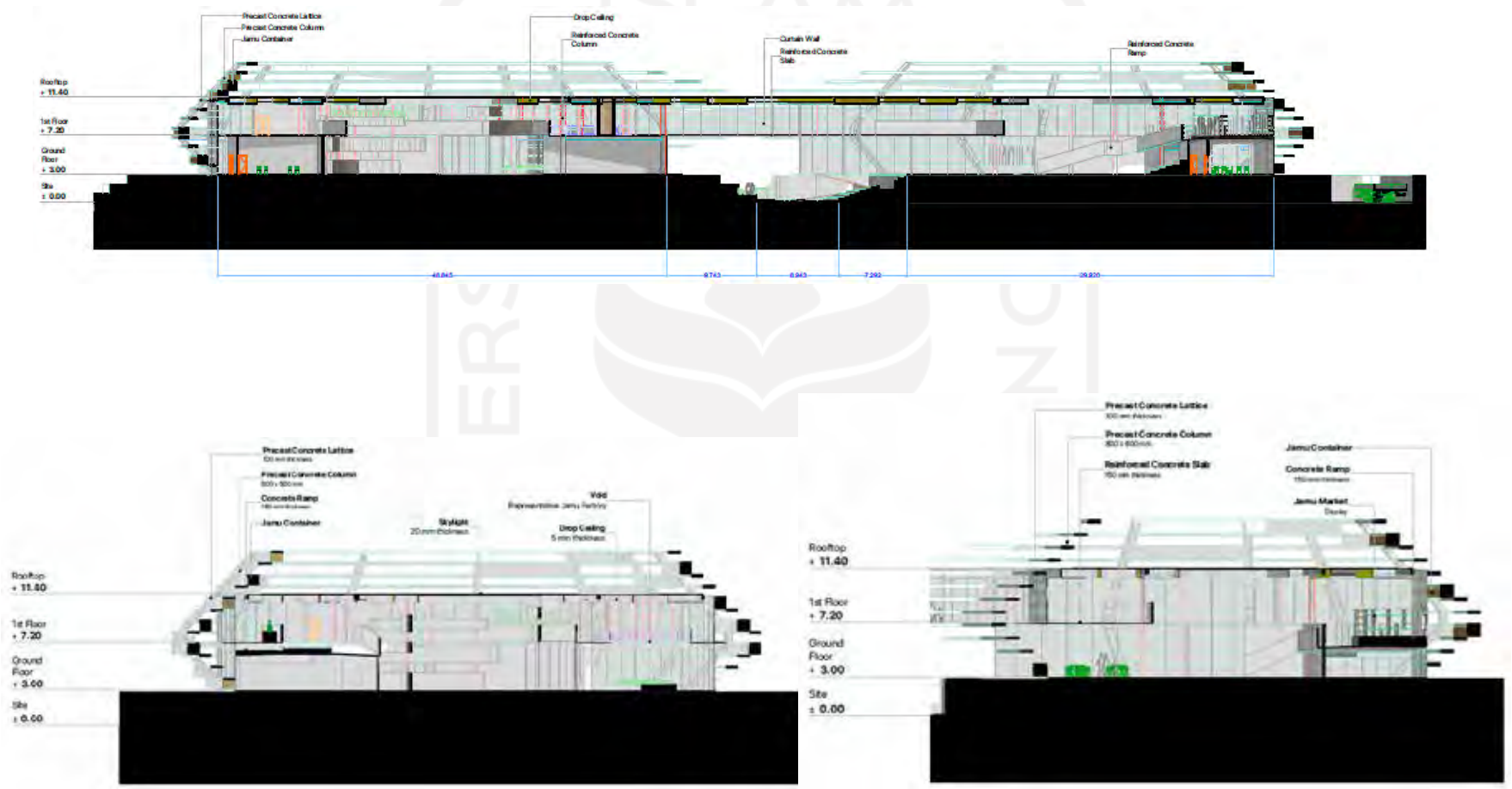
Behind the Detail



The site section reveal the integration between two masses towards the surrounding landscape. Section above shows the view from amenities building towards herb garden, small river, and promenade.

Figure 80. Site Section.
Source: Author, 2021.

Building Section
Behind the Detail



Building section shows the general detail from building facade material and each specifications.

Figure 81. Building Section.
Source: Author, 2021.

Interior Perspective
Continuous Flow

Regarding the concept of flowing and fluidity are applied through the spatial arrangement of the building. Through the entrance visitors and the one who already visited before could choose and start their own journey, whether to starts from museum, straight to the amenities, gather at the stepped herb garden, or visit the Nguter Jamu Village.

1 Main Entrance
2 Grand Void
3 Management
4 Jamu Factory
5 Museum
6 Learning Space
7 Experiential Deck
8 Gift Shop
9 Restaurant
10 Elevated Deck
11 Herb Garden

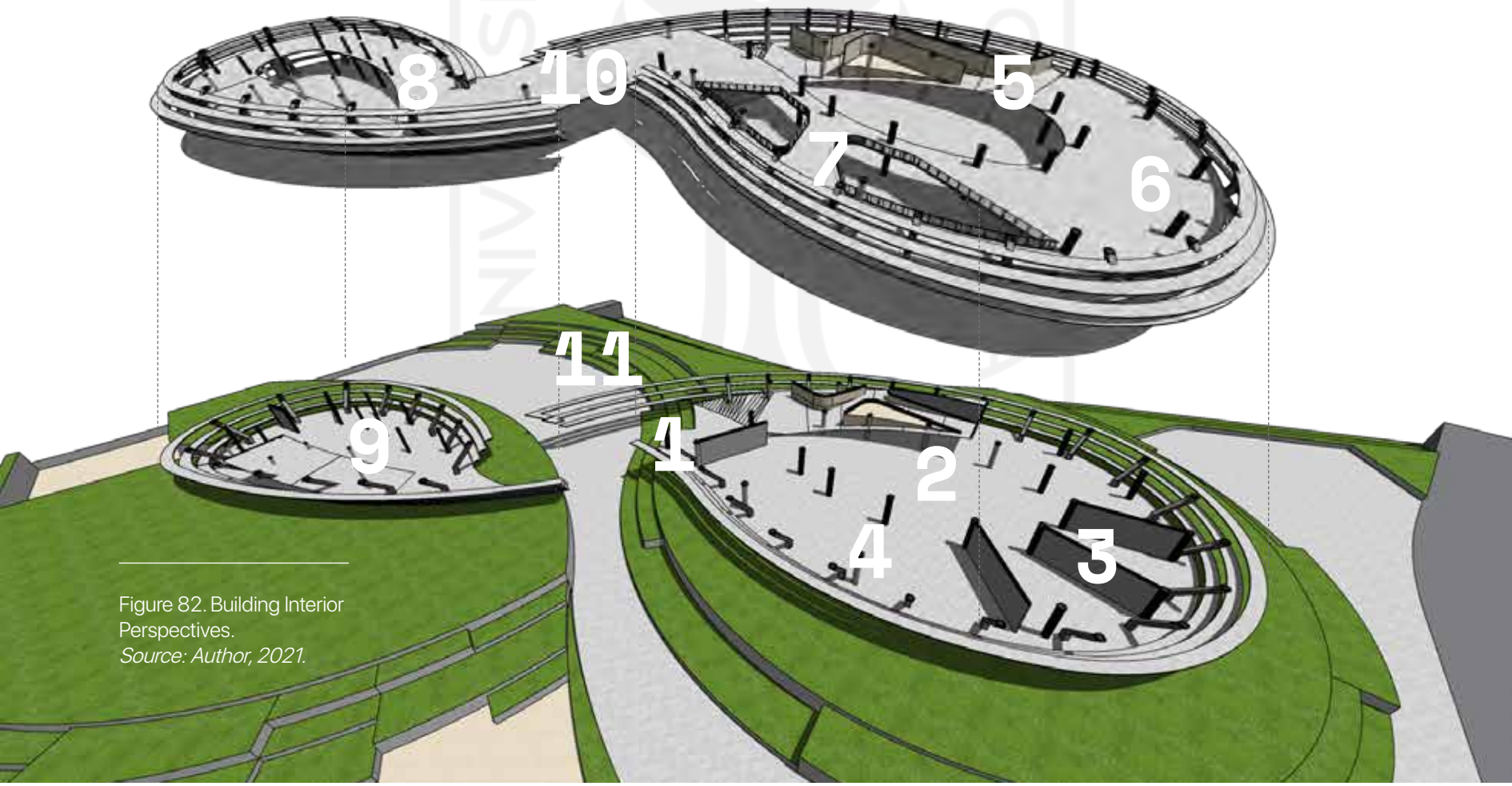


Figure 82. Building Interior Perspectives.
Source: Author, 2021.

Haptic Herb Garden
Cultivation Zone

Herb garden cultivation zone separated into two main zone with the difference of the duration of harvest time, the color of the plants, and its height relative to the haptic sense inducement.

Main Garden Cultivation Zone

Ginger

Galangal

Floor Area : 6000 m^2
1 Plant : 0.4 m^2 = 2.400 Plant
Harvest 4 times/month : 112.5 kg x 4 = 450 kg

Entrance Garden Cultivation Zone

Turmeric

Lempuyang

Floor Area : 2000 m^2
1 Plant : 0.4 m^2 =1.600 Plant
Harvest once/3 month : 400 kg

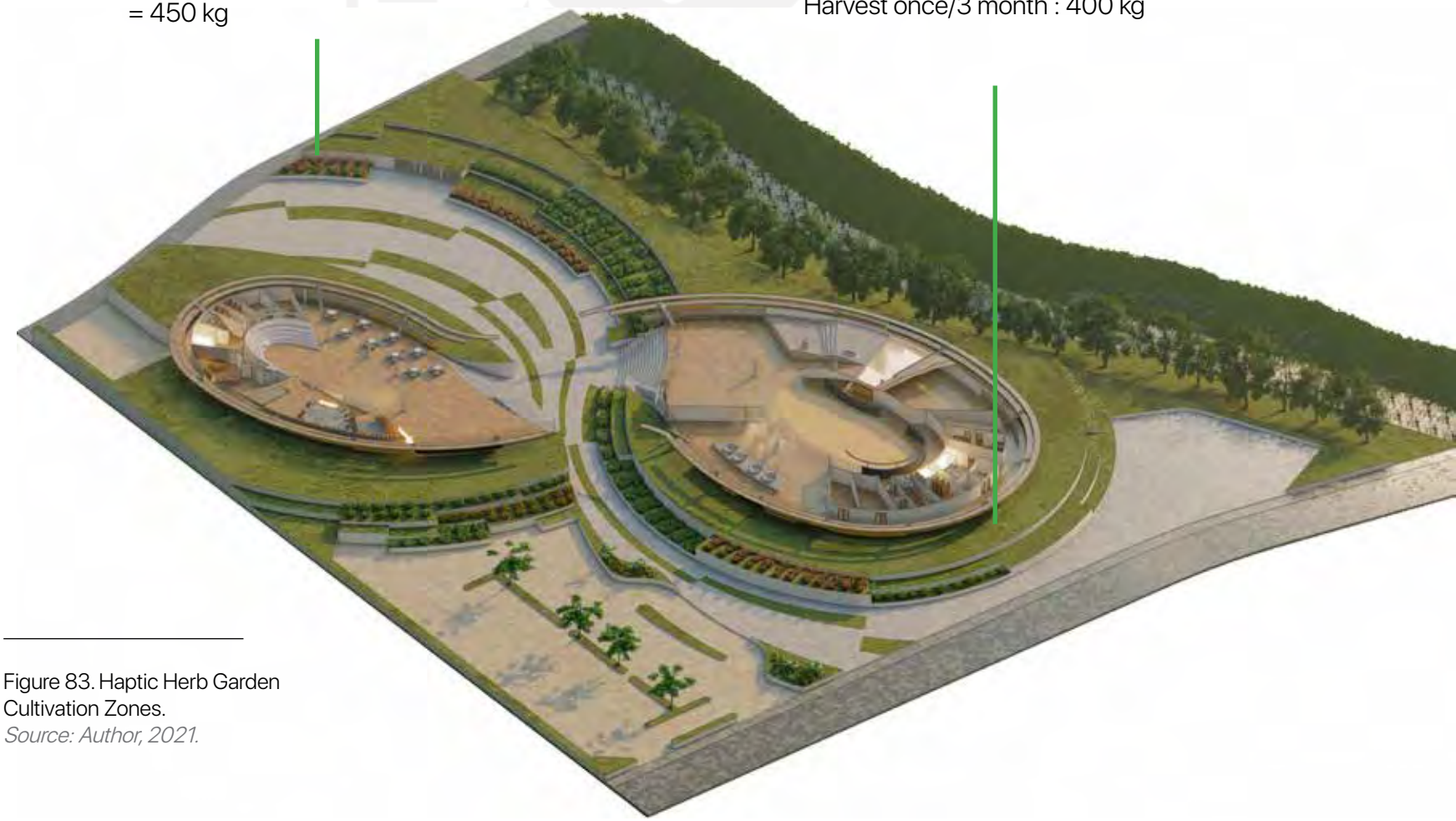


Figure 83. Haptic Herb Garden Cultivation Zones.
Source: Author, 2021.

Haptic Herb Garden
Irrigation System

The irrigation system for irrigating the herb garden mostly uses the nearby water body of a small river which is treated first using natural filtration using water lily and duckweed plants. Then irrigation residue and water from drainage treated with the same method and flows back into the river.

Figure 84. Haptic Herb Garden Irrigation System.
Source: Author, 2021.

1

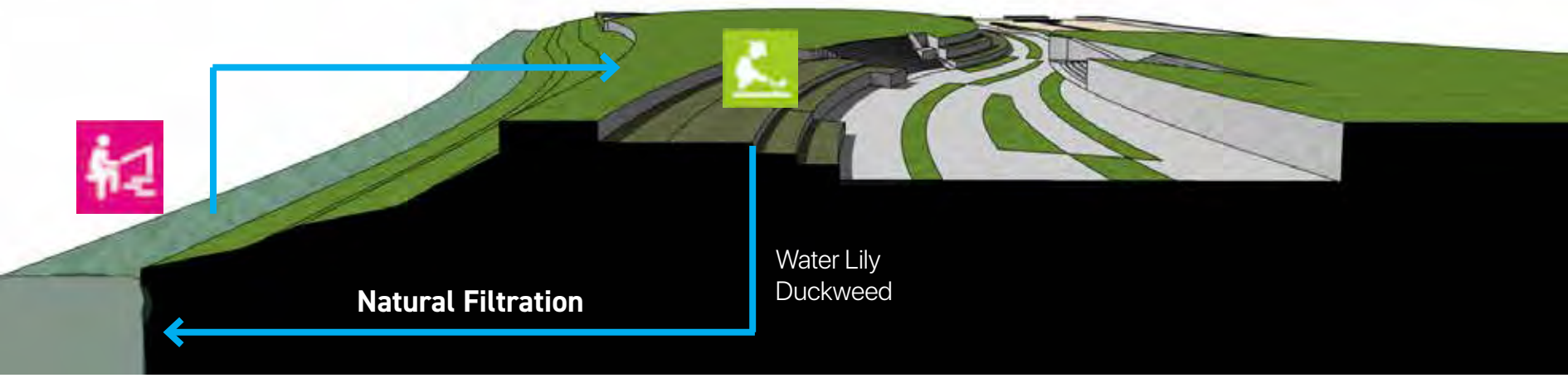
Flows In

Water from the river is pumped and flowed to the land for irrigation using a sprinkler system

2

Flows Out

Water from drainage and irrigation residue flows back into rivers and is treated by filter plants.



Museum
Introduction of Aroma

With the purpose of educating the users the knowledge about jamu, in museum it introduce it through the different kind of degree sensation starting from raw to dried herbs for users be able to atleast distinguish between them.

1

Stored Herb

Light smell from stored herb can only be optimally induced with the individual booth

2

Dried Herb

Special dried herb showcase located below the transparent ramp to induce different smell variation.

3

Grated Herb

Same with stored one, the grated as it possess strong smell for not overpowering the other need to be displayed with individual booth.

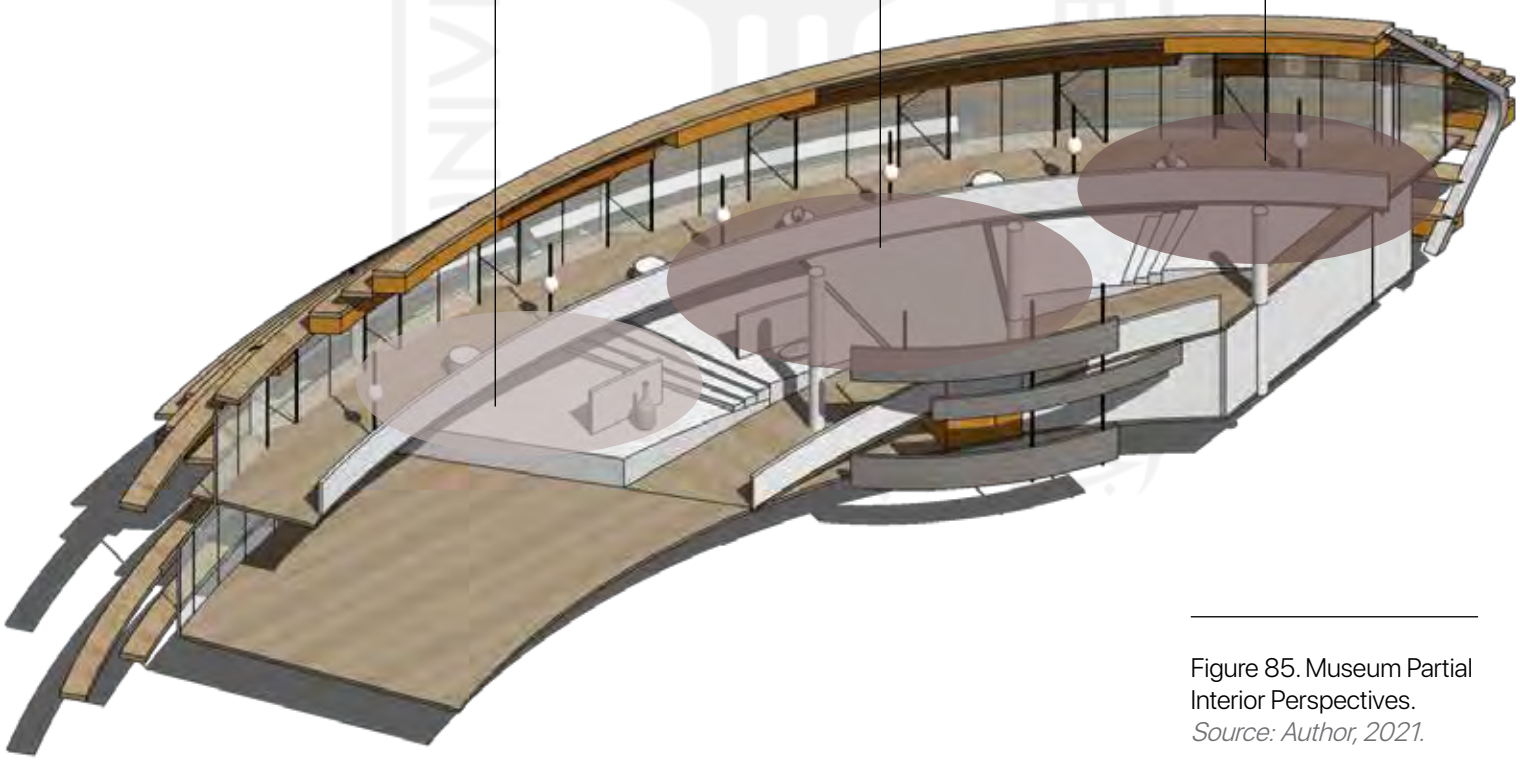


Figure 85. Museum Partial Interior Perspectives.
Source: Author, 2021.

Museum
Aroma Booth

Standing individual smell booth placed in to the museum for users to easily distinguish the different kind of aroma that the herbs had.

1 **Individual Smell Booth**

2 **Jamu Container**

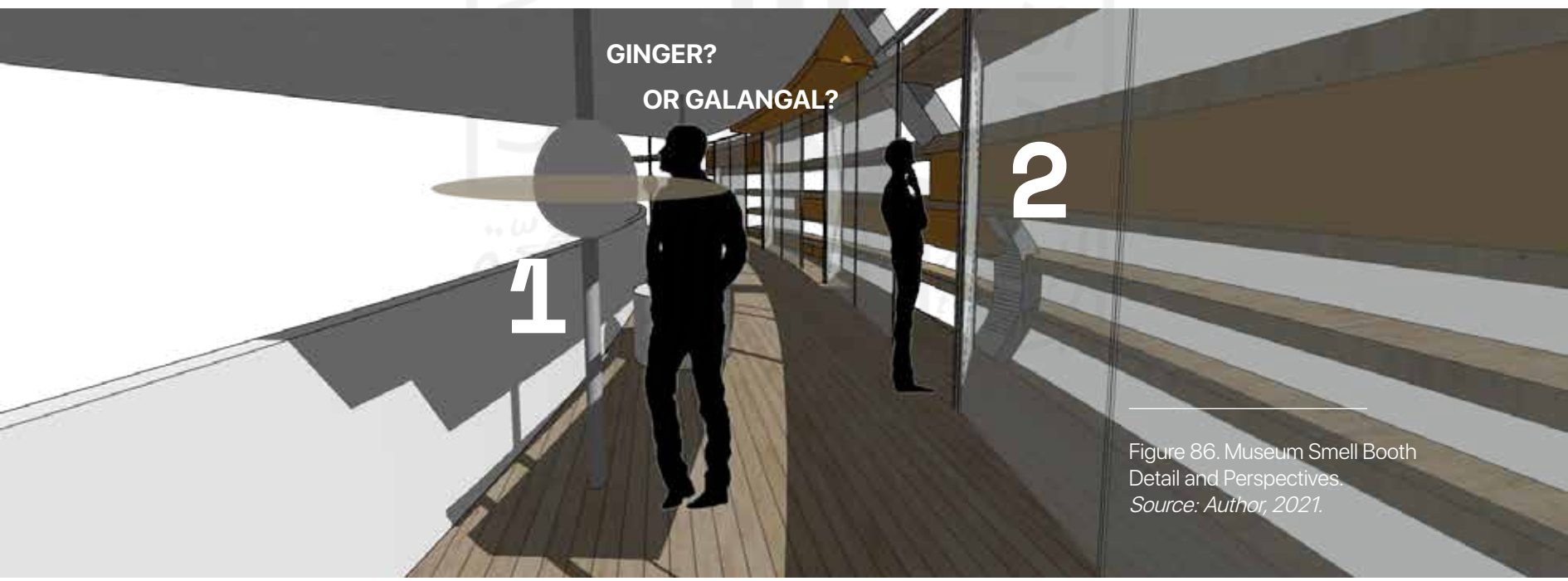


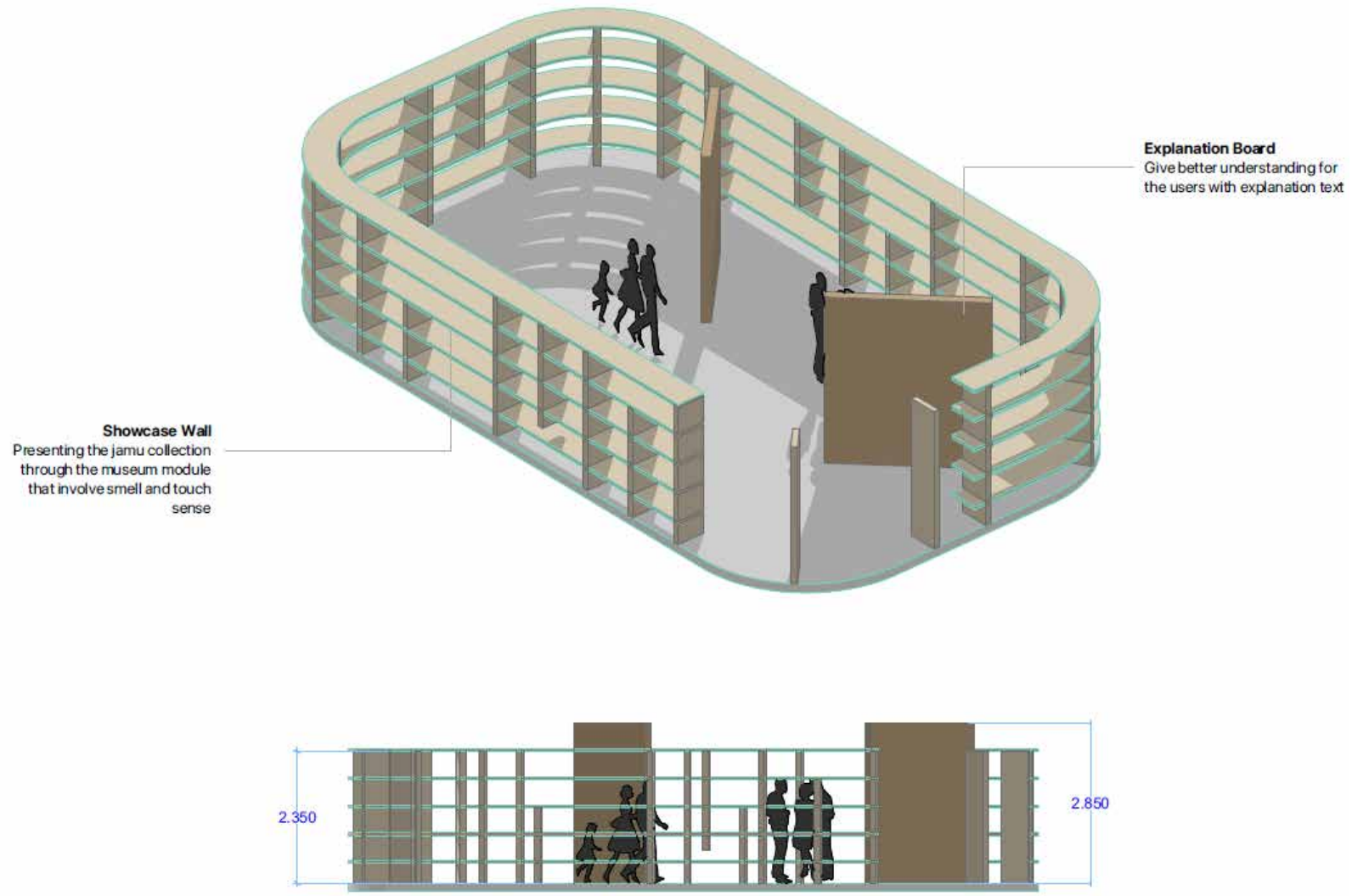
Figure 86. Museum Smell Booth Detail and Perspectives.
Source: Author, 2021.

Museum Ramp Detail

Jamu's Time Capsule

The museum are separated into several module as it placed at the ramp. Each module represent different timeline, history, and the process of jamu.

Figure 87. Jamu Museum Modules.
Source: Author, 2021.



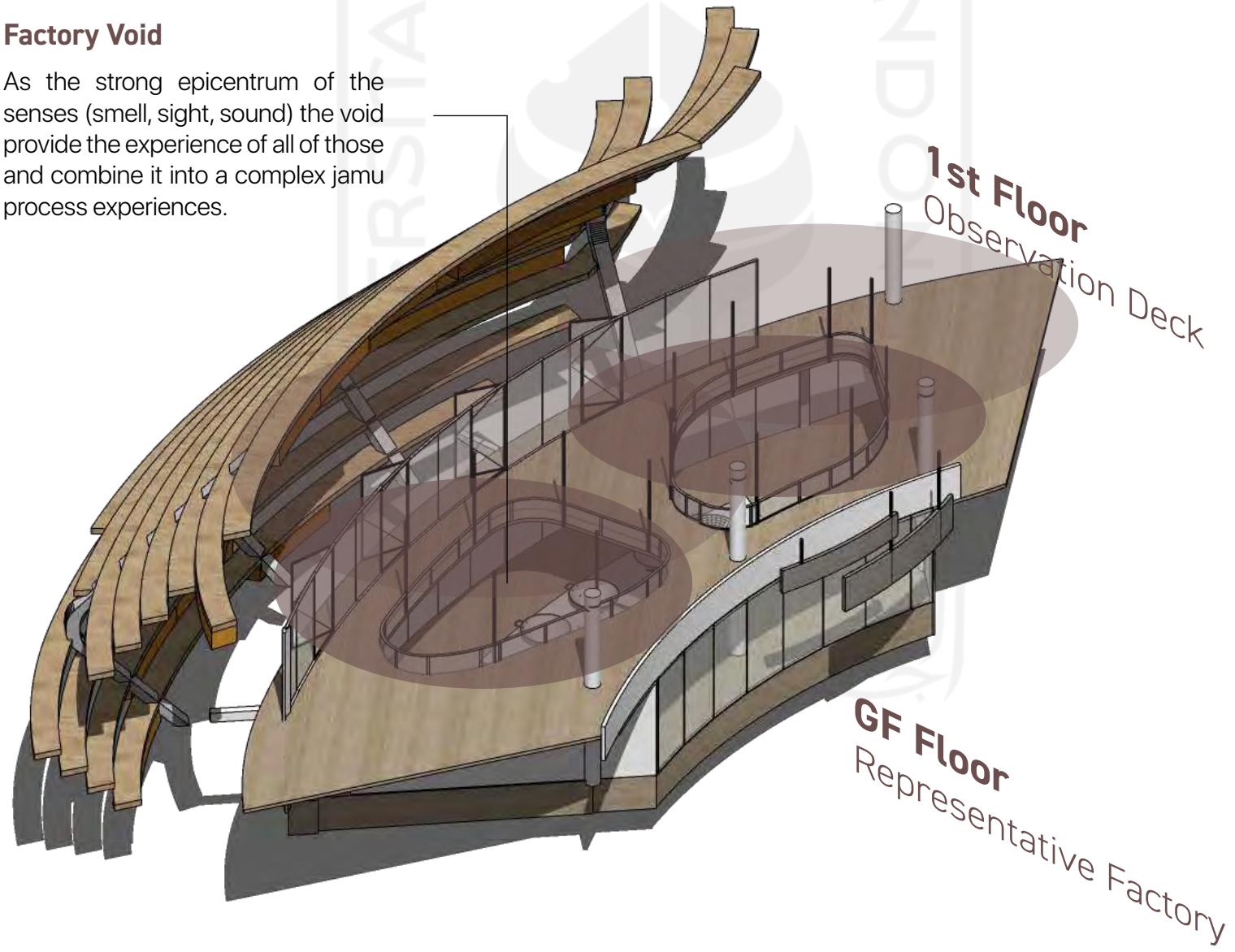
Representative Factory
Learning the Process

After the users being able to distinguish the difference in color, shape, and aroma; then its heading to representative factory where all the ingredients before will be process into jamu products. However to compromise the factory and display each requirements, the strategies will be separating it within the elevation.

Figure 88. Representative Factory Partial Interior Perspectives.
Source: Author, 2021.

Factory Void

As the strong epicentrum of the senses (smell, sight, sound) the void provide the experience of all of those and combine it into a complex jamu process experiences.



Representative Factory
Observation Deck

From those hectic complex jamu process, jamu container help the users to understand through series of explanation. Also the opennable sliding window helps to reduce the intense aroma created from the process.

1 **Observation Deck**

2 **Sliding Window**

3 **Jamu Container**

Figure 89. Representative Factory Observation Deck Detail.
Source: Author, 2021.

Jamu Pods
Tasting with Technologies

In this stage users are being able to distinguish the smell and know the jamu process, then they continue to use the final sense; which is taste. But understanding not all person will enjoy the taste of their (maybe) first jamu, to elevate the feeling the Virtual and Augmented Reality (VR and AR) concepts are implemented in the jamu pods. Virtual backgrounds and color will continue to change according to the based taste and desired atmosphere.

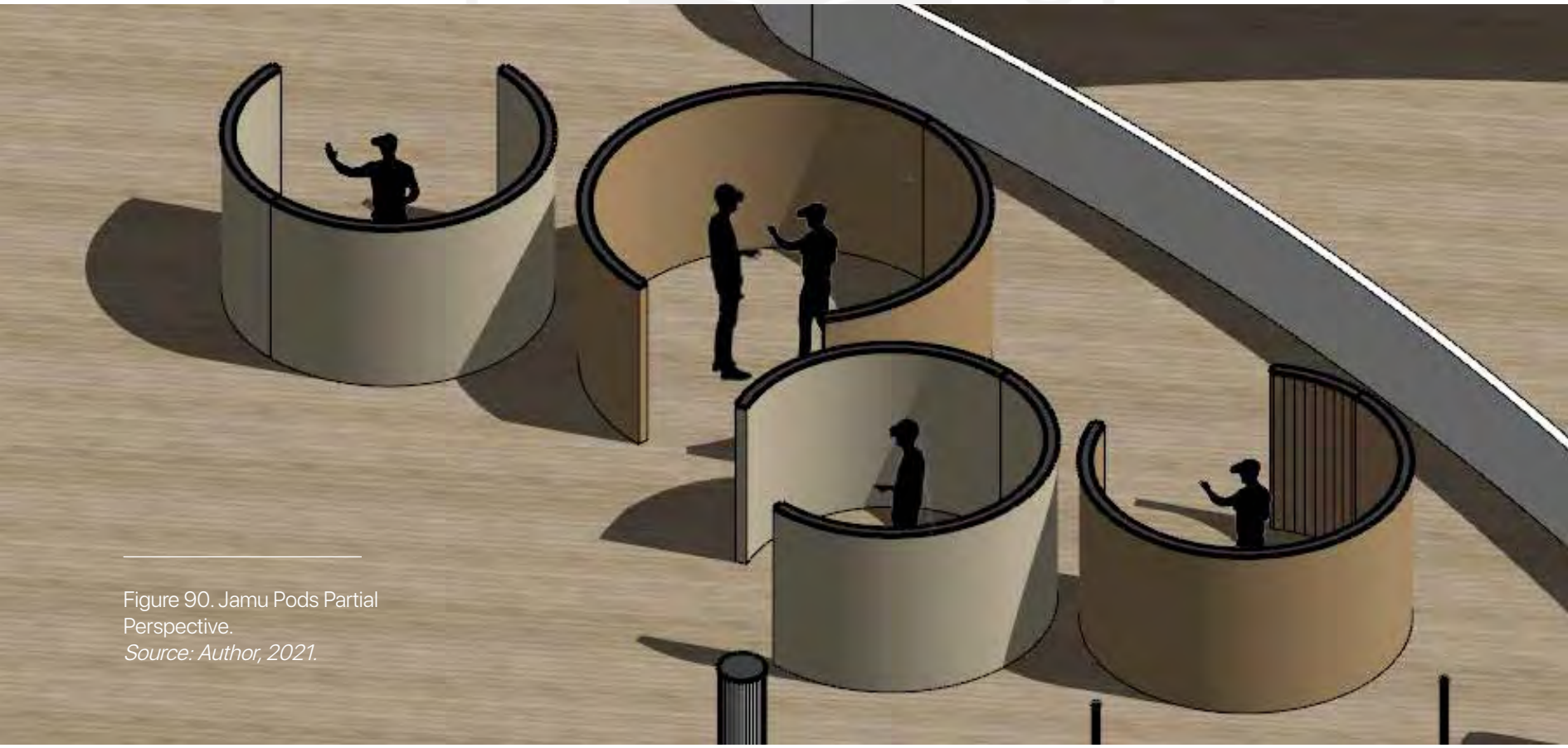
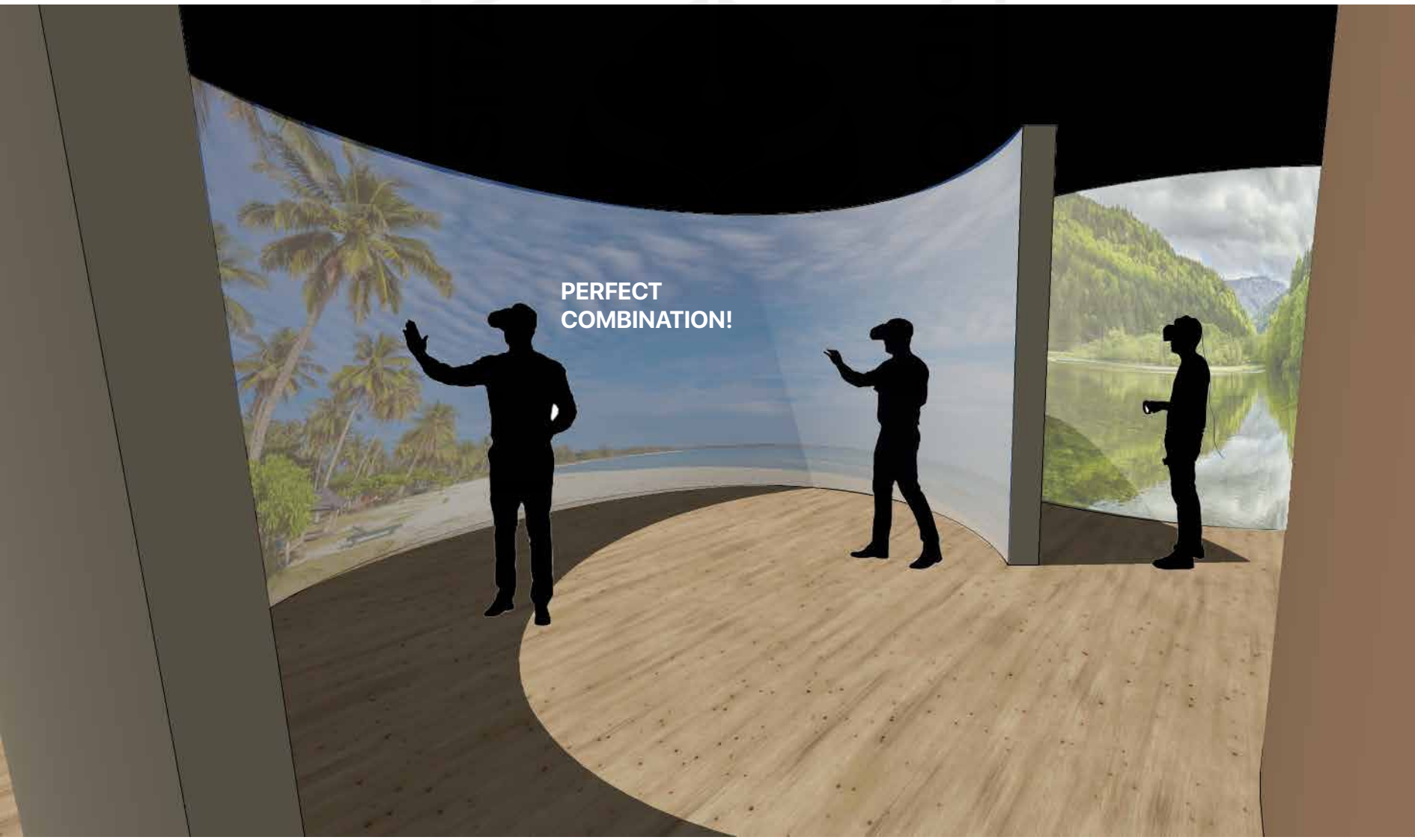


Figure 90. Jamu Pods Partial Perspective.
Source: Author, 2021.

Jamu Pods
Tasting with Technologies

VR and AR create for users a new and hopefully memorable experiences of drinking and enjoying jamu. They can choose their own desire background atmosphere that suitable for the jamu taste.

Figure 91. Jamu Pods Interior Perspective.
Source: Author, 2021.



Jamu Market
Array of Products

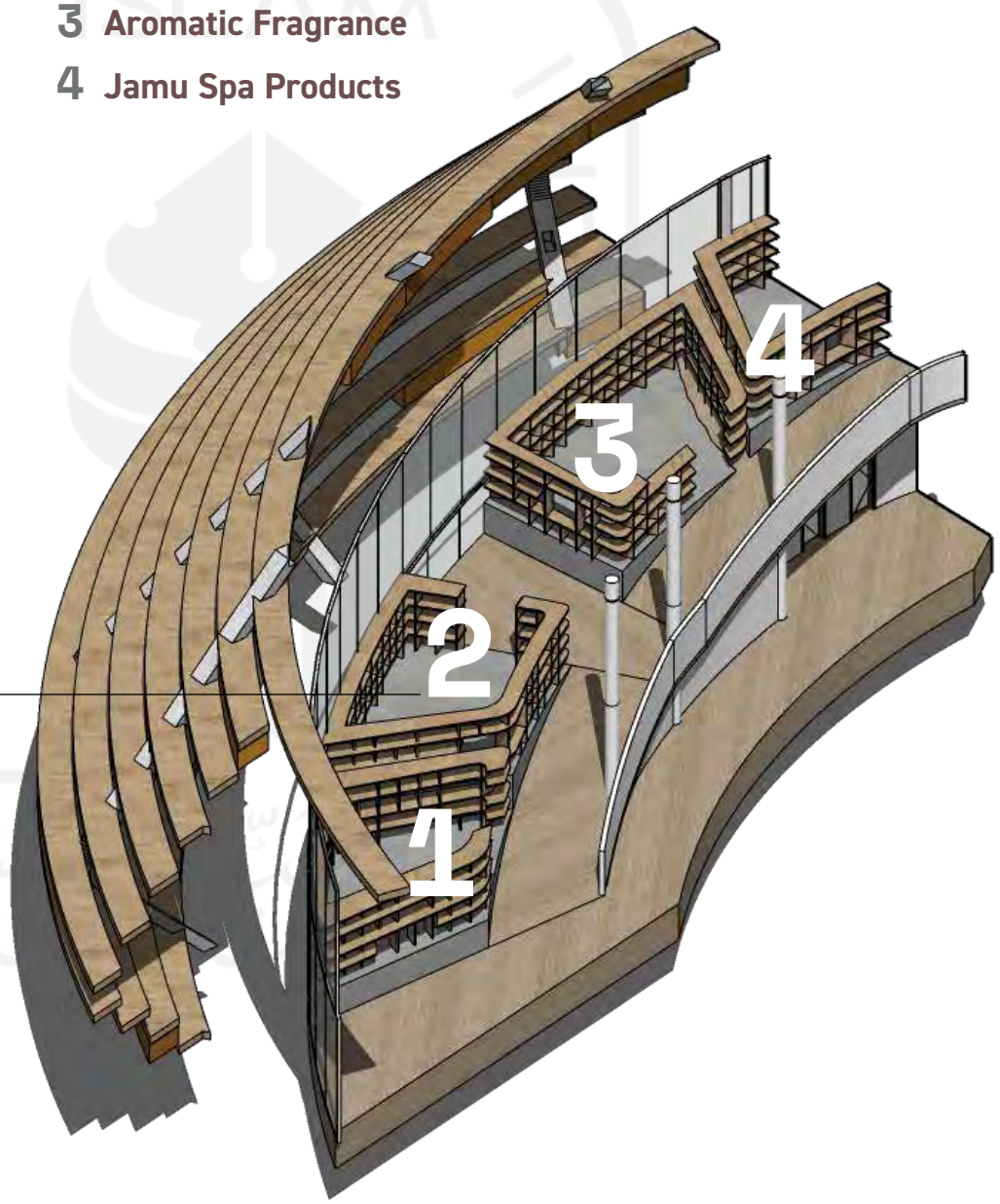
The jamu voyage ended with the collection of jamu products starting from jamu drinks, aromatic, scrub, and various spa products from the results of jamu process. It also display and promoting the local jamu products from Nguter jamu village for users to buy as souvenir or consume it in place.

1 **Nguter Jamu Products**

2 **Jamu Based Snack**

3 **Aromatic Fragrance**

4 **Jamu Spa Products**



Array of Showcase

To further ease the users to choose and select their desire one along with numerous different kind of jamu products, the showcase are separated based on its functions.

Figure 92. Jamu Market Partial Perspective.
Source: Author, 2021.

Jamu Market
Array of Products

With open showcase means that not only people inside the showcase display area that can see and choose, further people at distant can also see and the users when circulate at ramp can also quickly pick the products.

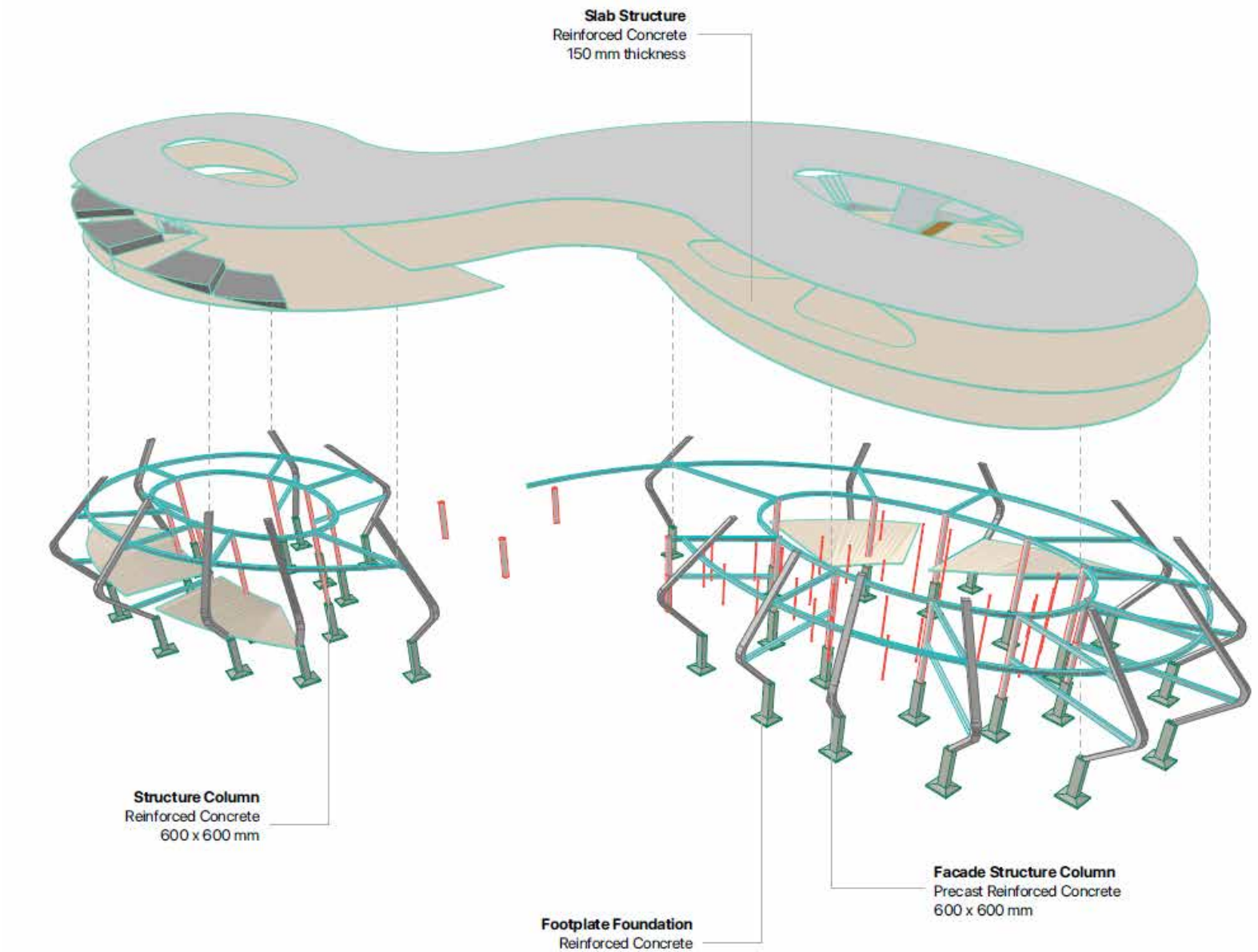
Figure 93. Jamu Market Interior Perspective.
Source: Author, 2021.

Axonometric Structure

Adapting the Form

Curvilinear plan with bubbling shape facade needs a particular pre-cast concrete column as the outer structure that also hold lattice of facade.

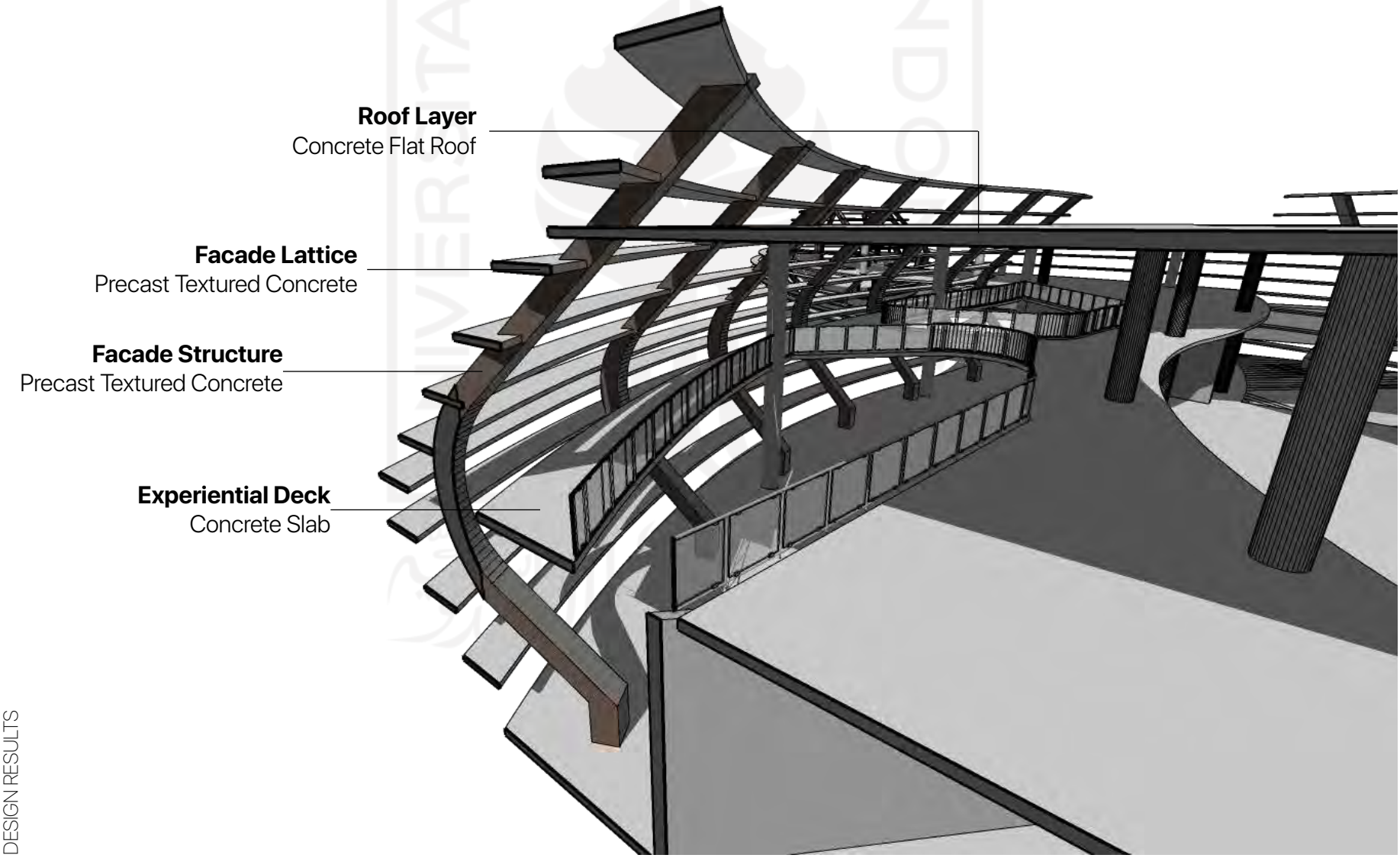
Figure 94. Axonometric Structure Detail.
Source: Author, 2021.



Building Envelope
Panel of Rimpang

With flowing curvilinear circulation means visitors walks mostly near the building perimeter. Thus integration with building envelope specially facade reconsidered based on the interior functions. Area that requires more enclosure such as museum will be closed while amenities space and jamu factory could be integrated with Panel of Rimpang.

Figure 95. Building Envelope from Panel of Rimpang.
Source: Author, 2021.

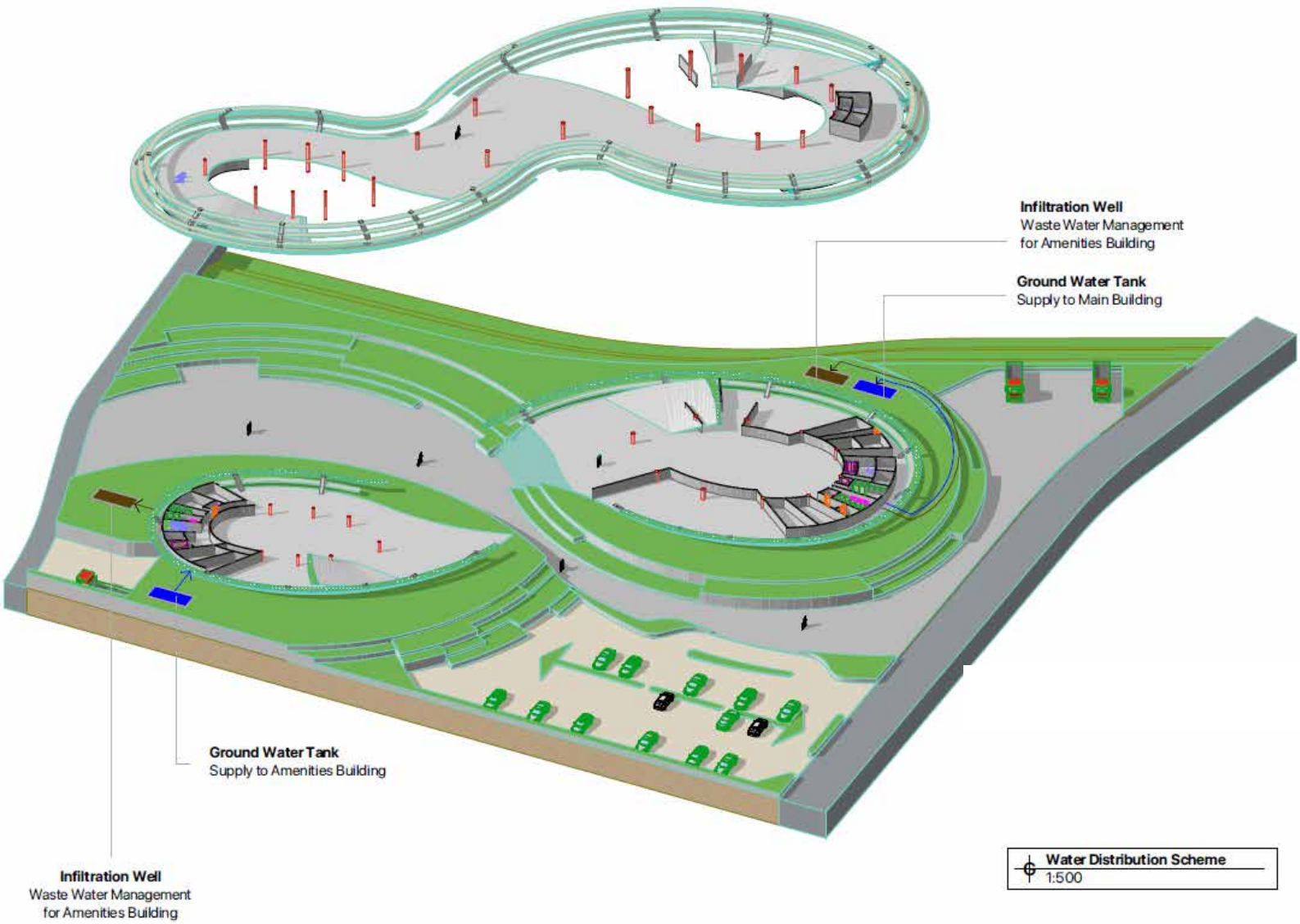


Water Distribution Scheme

Clean-Waste Water

With two separated building mass to effectively supply the water for each two GWT and infiltration well are provided for each mass. For the water source coming from PDAM.

Figure 96. Water Distribution Scheme.
Source: Author, 2021.

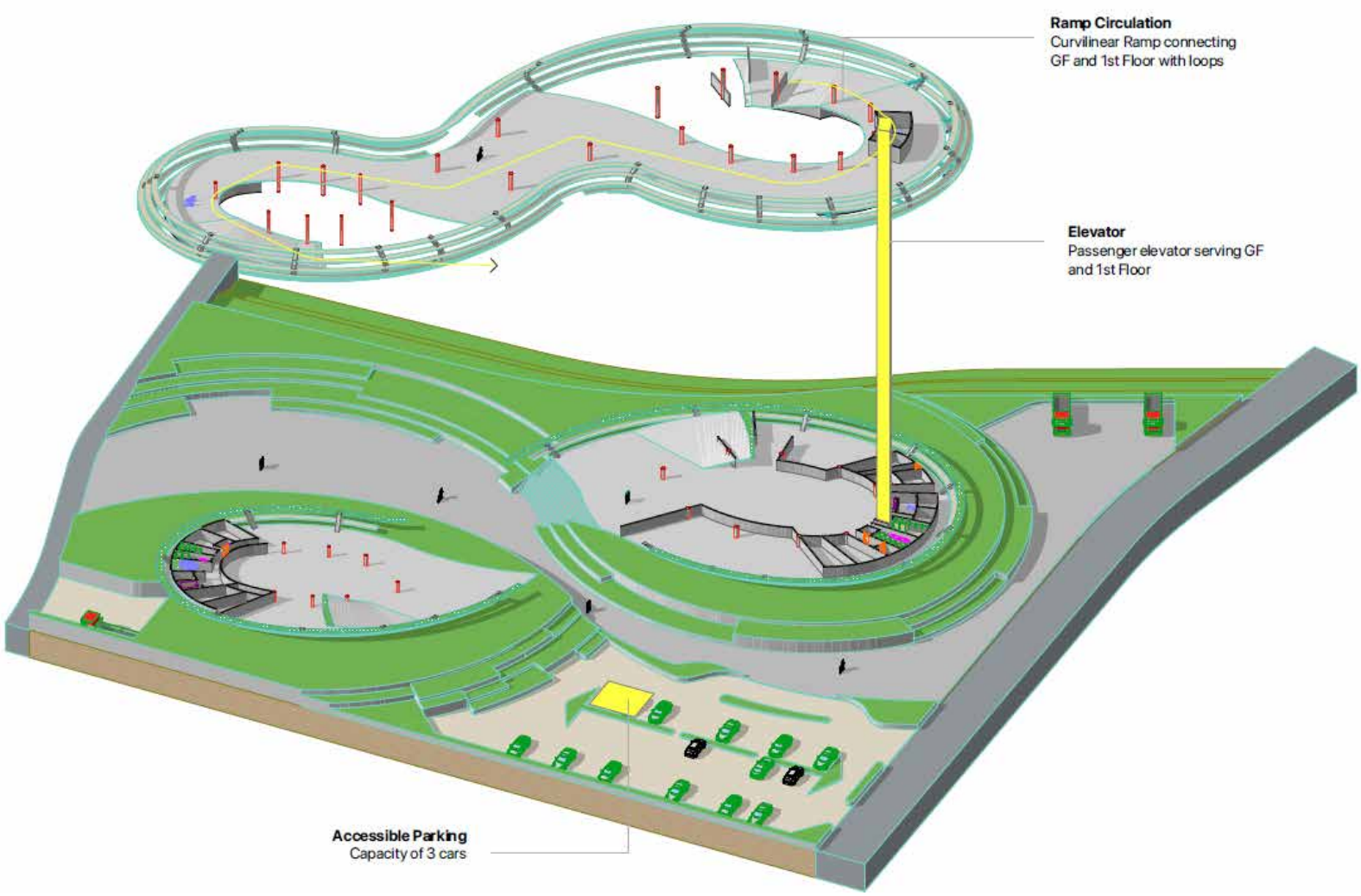


Barrier Free Design Scheme

Continuous Circulation

Barrier free access are carefully considered started with accessible parking and ramp as main vertical circulation for the building with help of passenger elevator.

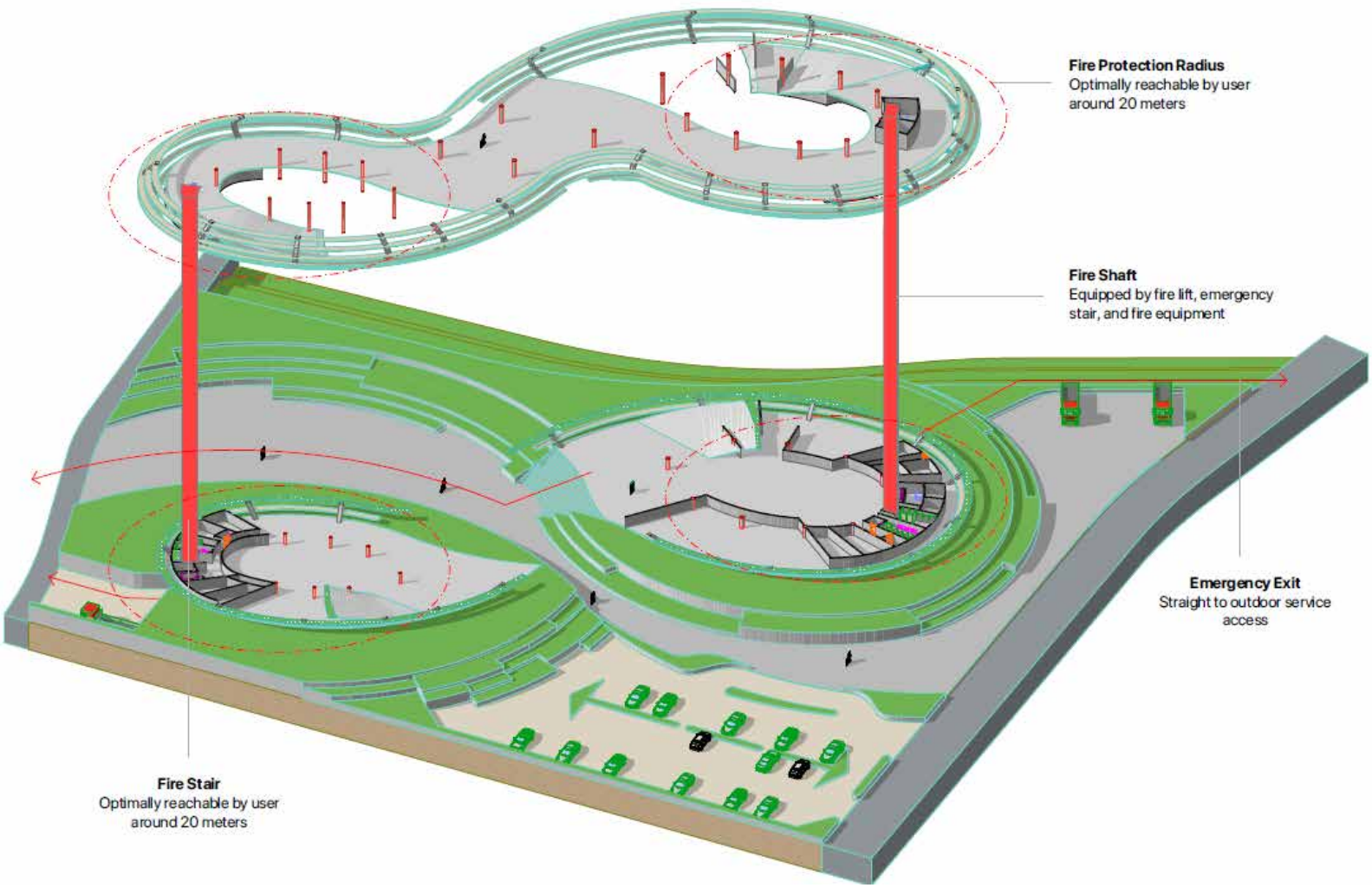
Figure 97. Barrier Free Design Scheme.
Source: Author, 2021.



Fire Protection Scheme
Fire Shaft

Two fire shaft with emergency stair and one equipped with fire lift for further and faster emergency exit response.

Figure 98. Fire Protection Scheme.
Source: Author, 2021.



Encircling Entrance Garden
Guide through the building entrance and amenities area.

Main Herb Garden
Walkway through Nguter Jamu Village.

Intersection as Entrance
Blending in the jamu related activities.

Herb Garden Arrangement
Haptic sense inducement

Mosaic of Herb
Mosaic showcase packed of simplitia aroma.

Close yet Luminous
Integration of museum display panel and panel of rimpang.

Induced from All Direction
From top to side tingling senses from jamu making process.

Observation Deck
Complex jamu process experiences.

Close yet Luminous
Integration of museum display panel and panel of rimpang.

Attractive Visual
LED Panel promoting the local jamu products from Nguter through modern way.

Tasting with Technologies
VR and AR create a new and memorable experiences of drinking and enjoying jamu.

Openness
Unobstructed view from amphitheater to jamu herb garden, at restaurant table.

06

Design Evaluation

Conclusion of
the supervisor's
evaluative review

Design Evaluation
Conclusion Review

Based on the results of the evaluation, there are several parts that are responded to by the examiner and supervisor. The response aims to make the design better and find a design that is more optimal. Here are some descriptions that need to be added:

Comments:

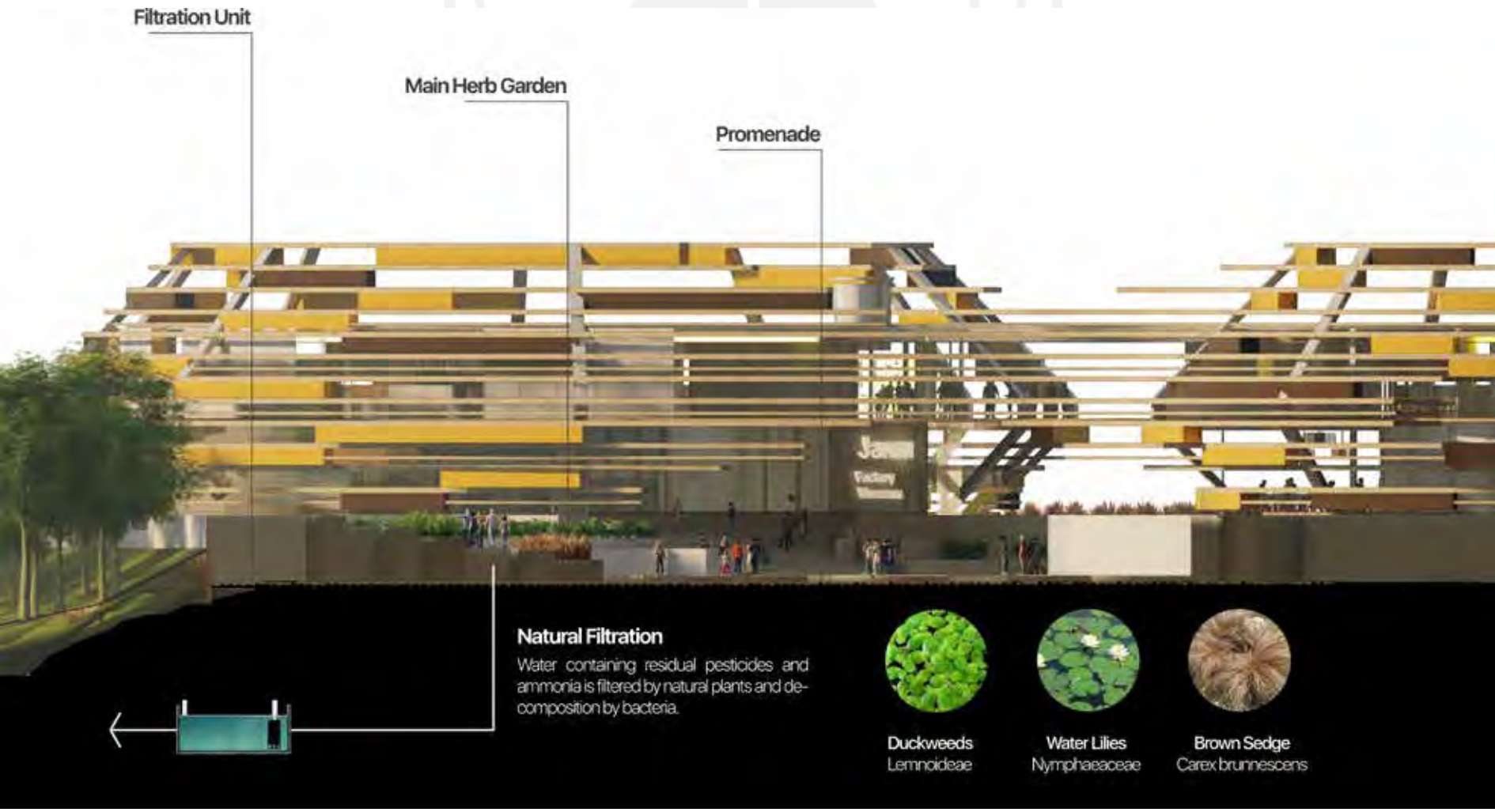
1. The herb garden infrastructure system
2. Building response towards directing air circulation and its system.
3. Museum transparency strategies and facade on protecting the collection from sun radiation.

Figure 99. Building Perspectives from Jury Comments.
Source: Author, 2021.

Herb Garden
Infrastructure System

With the herb garden designed to be placed besides the small river, the watering system using the combination of natural plants and bacteria to decompose and filter it from flows in and goes out back to river.

Garden service area serves the utility functions from plants nursery, water pump, and filtration control tub.



Air Circulation
Passive and Active System

To achieve air circulation control through bouyancy ventilation, two exhaust fan are placed above the factory to further reducing the intense aroma from jamu making process.

While as hot air, when funneled, will naturally rise through vents. Thus from another opening of sliding window at second floor will helps reduce excess heat and aroma.

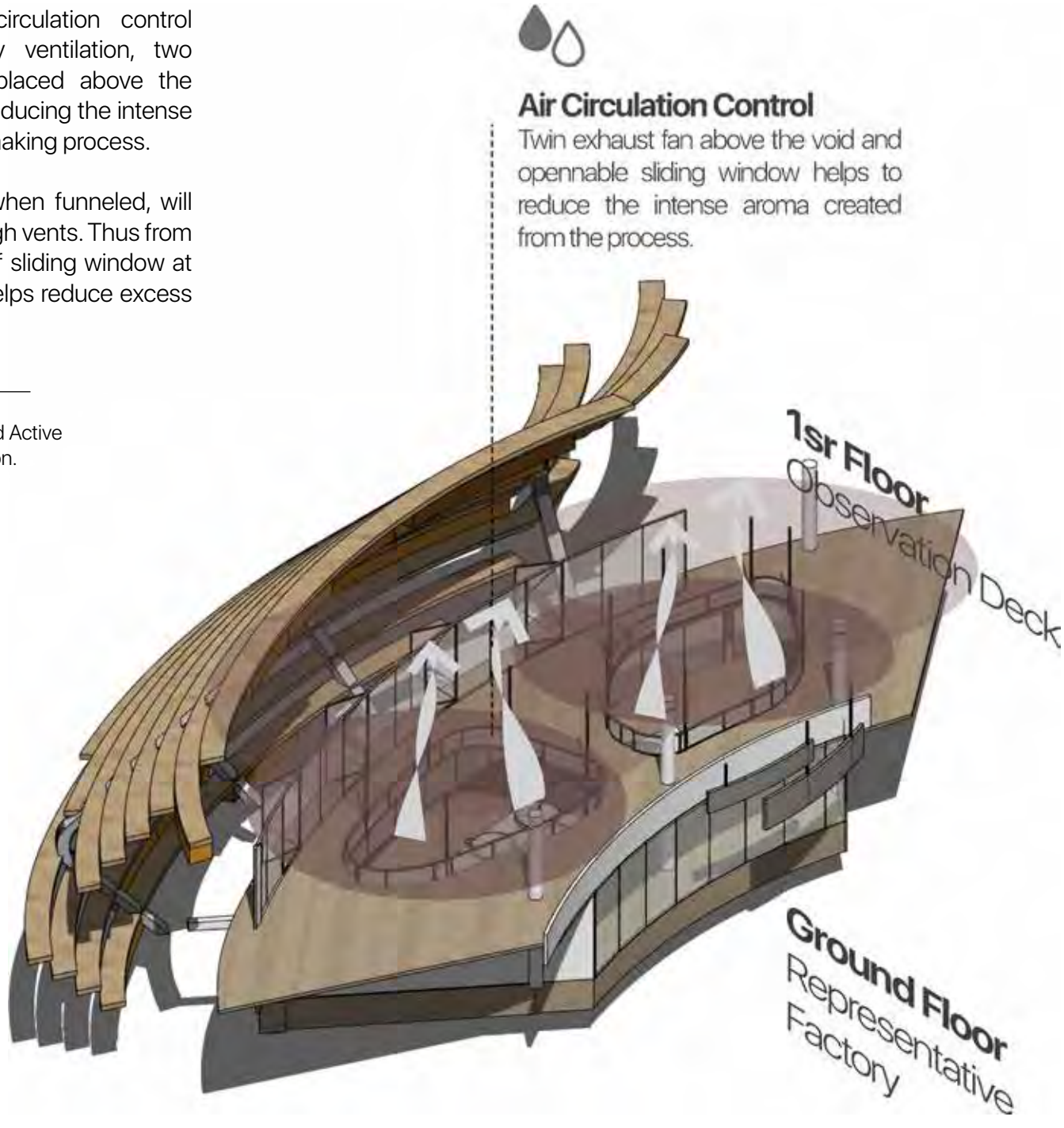


Figure 100. Passive and Active System of Air Circulation.
Source: Author, 2021.

Air Circulation
Passive and Active System

Sliding Window

Besides for helping flowing out the heat air it also as access for jamu container at panel of rimpang facade.

Exhaust Fan

Bouyancy ventilation as hot air filled with excess aroma will be flowing out through the roof.

Figure 101. Section Passive and Active System of Air Circulation.
Source: Author, 2021.

Transparency Strategies
Museum Collection

In the design before evaluation there are critising points regarding to the preserving museum collection as most of museum facade could be penetrate through sun radiation. From the jury comments the updated museum layout will be integrating mosaic of herb and museum display panel at the facade to optimize museum layout while reducing the direct sunlight opening.

Figure 102. Placement of Herb Mosaic and Display Panel Inside Museum.
Source: Author, 2021.


Before
Evaluation


Display Panel
After
Evaluation

Transparency Strategies
Adding the Lattice

Besides adding panel at the museum for other area such as jamu market the strategies will be adding more lattice to reduce the gap in-between for more sun radiation protection.

Facade Lattice Gap

To further minimize excess sun radiation and protection to heavy rain the gap from facade lattice has reduced to be more tighten from 75 to 50 centimeter gap.

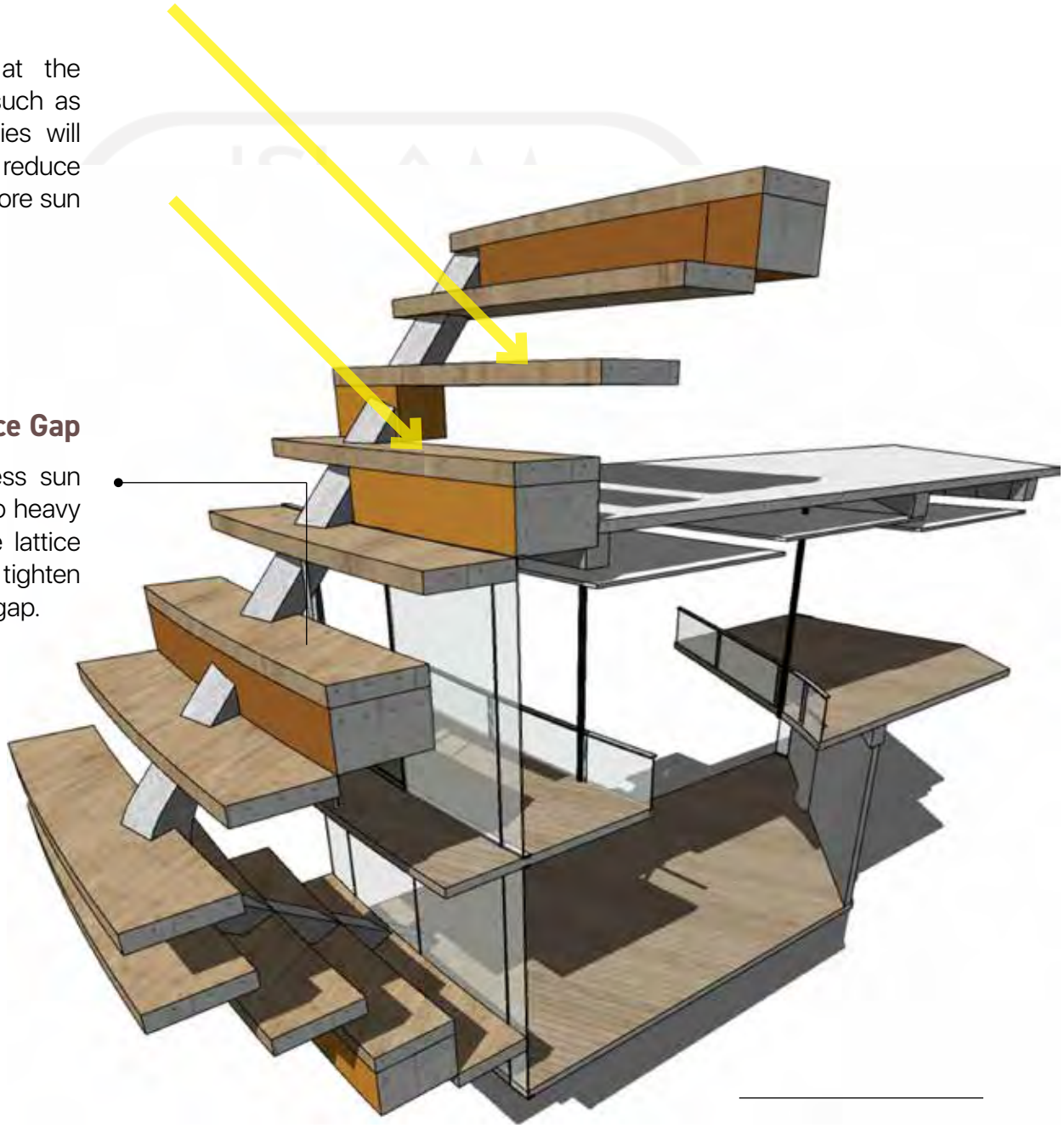


Figure 103. Lattice Addition to Reduce the Facade Gap.
Source: Author, 2021.

References

Ilham Hardiansyah, M. 2020. Design of Sunan Kudus History Museum with Educational and Interactive Design. http://dspace.uii.ac.id/123456789/23946'

Salsabila, N. 2020. Design of Eco-Cultural Center in Kedung Semurup Tourism Village with Ecological Architecture Approach. http://dspace.uii.ac.id/123456789/23934

Dea Octavanya, A. 2020. Design of Magelang Arts and Cultural Center with Critical Regionalism "Culture Versus Nature" Approach.

Spence, C. Senses of place: architectural design for the multisensory mind. Cogn. Research 5, 46 (2020). https://doi.org/10.1186/s41235-020-00243-4

https://www.viva.co.id/indepth/sorot/945708-sejarah-industri-jamu

https://www.archdaily.com/943412/tofu-factory-dna

https://www.constructionplusasia.com/id/rumah-atsiri-indonesia

https://nationalgeographic.grid.id/read/132077942/renungan-hidup-dari-jamu-dan-perdebatan-persepsinya-di-masyarakat?page=all
https://www.meteoblue.com/en/weather/forecast/multimodelensemble/nguter_indonesia_1935855

Rizka Hutami, I. 2014. Upaya Penerapan Cara Pembuatan Obat Tradisional Yang Baik (Cpotb) Oleh Usaha Kecil Obat Tradisional Di Desa Nguter Kabupaten Sukoharjo. http://etd.repository.ugm.ac.id/penelitian/detail/71372

Laporan Tahunan. Balai Besar Pengawasan Obat dan Makanan. 2008

Charles Saerang, "Jamu, antara Realitas dan Tantangan Masa Depan". www.alumni-ipb.or.id, 7 January 2009.

Kajian Potensi Pengembangan Pasar Jamu. Puslitbang Perdagangan Dalam Negeri Departemen Perdagangan RI. 2009

http://www.koransolo.co/2019/03/19/sukoharjo-menuju-destinasi-wisata-jamu/, (accessed 21 April 2021).

Brody M. (2014) Interpretive Centers. In: Gunstone R. (eds) Encyclopedia of Science Education. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-6165-0_298-4

Adhi Wicaksono, B. 2018. Persepsi Pelaku Industri terhadap Program Pengembangan Sentra Industri Jamu di Desa Nguter Kabupaten Sukoharjo.

Plowright, Philip. 2014. Revealing Architectural Design: Methods, Frameworks & Tools. 10.4324/9781315852454.

Pallasmaa, J. (2005). The eyes of the skin: Architecture and the senses. Chichester: Wiley-Academy.

Hauser,S. Peter Zumthor Therme Vals. 2007. Verlag Scheidegger and Spiess

Spence, C., Wan, X., Woods, A. et al. On tasty colours and colourful tastes? Assessing, explaining, and utilizing crossmodal correspondences between colours and basic tastes. Flavour 4, 23 (2015). https://doi.org/10.1186/s13411-015-0033-1

https://rumahatsiri.com/ (accesssed 21 April 2021).

Amelia Febriana, M. 2019. Revitalization of Dondongan Housing Kotagede.

Peraturan Daerah Kabupaten Sukoharjo Nomor 9 Tahun 2010. http://www.jdih.sukoharjokab.go.id/upload/dokumen/Bangunan_Gedung_Di_Kabupaten_Sukoharjo-2010.pdf

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Bismillaahirrahmaanirrahiim

Assalamualaikum Wr. Wb.

Dengan ini, menerangkan Bahwa:

Nama	: Muhammad Naufal Rizqita
Nomor Mahasiswa	: 17512036
Pembimbing	: Putu Ayu Pramanasari Agustiananda, S.T, M.A.Dr-Ing
Fakultas / Prodi	: Teknik Sipil Dan Perencanaan/ Arsitektur
Judul Karya Ilmiah	: Nguter Jamu Factory Perception of Senses Toward Spatial Arrangement

Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **1 (Satu) %.**

Demikian Surat Keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Wassalamualaikum Wr. Wb.

Yogyakarta, 24 Juni 2021
Direktur

UNIVERSITAS ISLAM INDONESIA
DIREKTORAT PERPUSTAKAAN
YOGYAKARTA

Joko S. Prianto, SIP., M.Hum

PLAGIASM CHECK

NGUTER JAMU FACTORY
A Multisensory Spatial Experience

The current pandemic situation has taught us something that we usually forget. Before pandemic occur maintain a healthy body sometimes is a matter of trivial or unimportant for us. Now the industry of herbal and pharmaceutical drug is on the rise and people starting to aware and seek for the benefit of traditional herb (jamu).

In the heart of jamu industry, Nguter Village at Sukoharjo in 2019 established as a tourist destination for traditional herb. However the effort to introduces jamu in Nguter Village limited only to production at home-factory and distribution at nearby market, without significant effort to education or tourism.

The proposal will be designing integrated edu-recreational jamu factory which it incorporate villager union to engage as stakeholder. To encourage visitor curiosity the spatial arrangement is consider to bringing particular human senses with jamu as receptor stimulation. The building could be a beneficial catalyst for neighbourhood jamu production in Nguter, Sukoharjo, and as a educational and recreational facility to introduce jamu towards wider community.

FINAL ARCHITECTURAL DESIGN STUDIO
Nguter Jamu Factory:
A Multisensory Spatial Experience

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1

Perception of Jamu

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Missing Jamu Linkage

guter itself as has potency to develop into a successful tourism jamu industry, however they missing the key to connect between these elements. They have Pasar Jamu Ngutter as the supplier of jamu ingredients and the home-industry village as the actors of the jamu industry. But they did not have the proper marketing place to introduce and educate jamu to wider public.

Actors of Traditional Jamu

The flow of jamu activity in Ngutter starts from jamu production from the scale of small home-industry'. With most of the selling activity centralized at Pasar Jamu Ngutter, this market is a manifestation of jamu dynamic activities in Ngutter. However Jamu products at market take some competition with the sales of raw ingredients and Traditional "mbok" jamu products only has the market of surrounding neighbourhoods.

Design Framework

With the concern of designing edu-recreational jamu factory based on percaption of sense in Sukoharjo that can create integrated education and factory facility the main problem wil be how to integrate and arrange interpretive center spaces that can induces and heightened certain senses at the specific process of jamu factory

Site Location

Proposed site location are located with Pasar Jamu Ngutter and the Ngutter jamu village are approximately within 200 meter of radius. Proposed site chose to be near Pasar Jamu Ngutter as walking distance.

Besides arterial road of Wonogiri-Sukoharjo Street that connects Pasar Jamu Ngutter and proposed site location, there is Pasarnguter Train Station that supports public transportation with only one train stops at this station, the Batara Kresna railbus.

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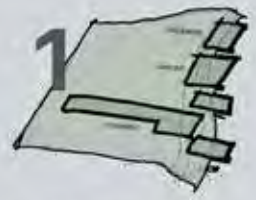
Site Analysis

The proposed site location has the main access from Wonogiri-Sukoharjo Street with 8 meter-wide street. Furthermore, the main entrance are blocked by abandoned shophouse that should be removed. At the east site border is sloping and curving along the existing small river that connect to Bengawan Solo River with lush vegetation at the edge of the river.

Site location are close to Pasar Jamu Ngutter and in walking distance with Ngutter Jamu Village. Transportation connection are supported by Wonogiri-Sukoharjo arterial road and Pasarngutter Station. Site could be link and integrate with nearby Pasar Jamu Ngutter and the location could be involving with water feature from small river besides the site. However the condition of the site is not maintained with lots of lush trees and abandoned buildings.

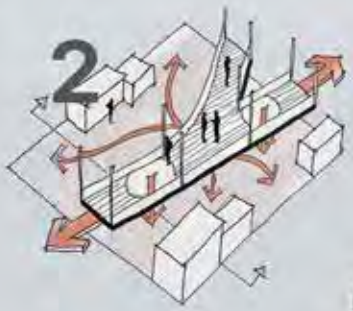
Sensory Voyage

Connecting the idea of multi-sensory experiences through a sensory voyage starting from the entrance and museum, then orientation deck connect between the museum and jamu factory, and ended in learning space. The visitors then have their choices to visit the amenities and restaurant or through promenade going to jamu village. If they already visited before, promenade can bring the visitors directly through the amenities area.



Terraced Haptic Sense

The blocks of garden arranged based on specific herbs that will be planted to make visitors more easier to understand and learn the garden, as its not cluttered. Using the sloping edge of the river, the herb garden could be as stepped terracering with different kind of herbs. The herbs itself are separated to ease for visitors to identify and learn those.



Sensory Observation Deck

To further accommodate the sense of safety with minimum compromising with multi-sensory experience, the observation deck featured with see-through floor for visitors to be able to see the view of jamu making and processing from the new perspectives.

Jamu Tasting Pods

To create the reminiscent of jamu experience through taste senses, the tasting space could be arrange based on the dual taste of jamu as it is sweet, fresh, or bitter. Based on that taste there will be jamu pods with matching colour and atmosphere that could enhance or reduce the taste feeling. The pods also could be change the colour and the atmosphere.

Senses-Through Deck

With the concern of public and private spatial arrangement, the observation deck with glass railing has advantages of a unobstructed wide view to the production space without need to compromising to the safety and certain private production space as the public circulation are elevated above the production space. Visitors can look, smell, and hear in all direction from above the traditional jamu making and processing.

Spatial Programming

In the concept of zoning and spatial programming, the placement of the bubble mass diagram is based on the analysis pattern of user activity and the level of sensory stimulation. To represent the education and learning facility of jamu, from KDJAI Sukoharjo advised to bring herbs garden the first what visitors see. It also should directly connect with production space and interactive learning space.

User Activities

With the main consideration of arranging spatial that stimulate multi-sensory experiences, users should perceive this early as starting from they enter the designed space. The sense stimulation could gradually heighten as they do more jamu-related specific activity.

Mass Transformation

Elevating the Site

The designed edu-recreational jamu facilities should incorporate and introduce the origin of kampoung jamu in Ngutar while preserving jamu interpretation in the facilities. Therefore the site are oriented toward the kampung jamu as part of the journey. To make an impression of a connecting promenade and further accentuate the building, site contour are created with different elevation. As a result it forming a flowing circulation for the pedestrian.

Analysis Response

With focusing on senses particularly smell and taste the weather factors also take place in consideration on the formation of curvilinear building mass. The geometry of landscape and the building allow the wind to circulate with ease to increase the air exchange as the interior are mostly packed with jamu/jaromu. Sun path also carefully considered for the building to not catch their shadows to the herb garden. Furthermore view to the small river also reviewed to the mass to not blocking each others.

Mass and Landscape

Site integration involving mass and landscape to complete each others, starting for the entrance garden that guide visitors to enter the building. While the continuous curvilinear shape beside representing the fluidity of jamu and its aromas also to easier for visitors to understand the inside continuous one-way journey starting from the museum, representative jamu factory, learning spaces, and end with amenities space.

Volumetric Mass

The final volumetric mass is the development from continuous curvilinear form that emphasize the landscape accent while create series of connection not only on the site towards the jamu village, but further inside the building interior with elevated deck. Egg-shaped envelope with grand void try to reduce the monumentality scale and stick to the essence of jamu, a modest herbal drink for everyone.

Exploded Axonometric

Regarding the concept of flowing and fluidity are applied through the spatial arrangement of the building. Through the entrance visitors and the one who already visited before could choose and start their own journey, whether to starts from museum, straight to the amenities, games at the stepped herb garden, or rest the Ngutar Jamu Village.

Legend

1. Main Entrance
2. Grand Void
3. Management
4. Jamu Factory
5. Museum
6. Learning Space
7. Experiential Deck
8. Gift Shop
9. Restaurant
10. Elevated Deck
11. Herb Garden

Panel of Rimpang

With flowing curvilinear circulation means visitors walks mostly near the building perimeter. Thus integration with building envelope, specially facade reconsidered based on the internal functions.

Area that require more enclosure (e.g. museum) will be closed, while amenities space and jamu factory could be integrated with Panel of Rimpang.

Detail

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Haptic Herb Garden

Herb garden cultivation zone separated into two main zone with the difference of the duration of harvest time, the color of the plants, and its height relative to the haptic sense inducement.

Irrigation System

The irrigation system for irrigating the herb garden mostly uses the nearby water body of a small river which is treated first using natural filtration using water lily and duckweed plants. Then irrigation residue and water from drainage treated with the same method and flows back into the river.

1 Flows In
Water from the river is pumped and flowed to the land for irrigation using a sprinkler system

2 Flows Out
Water from drainage and irrigation residue flows back into rivers and is treated by filter plants.

Main Herb Garden

Ginger
Zingiber officinale

Galangal
Acharma galanga

Floor Area : 6000 m²
1 Plant : 0.4 m² = 2.400 Plant
Harvest 4 times/month : 112.5 kg x 4 = 450 kg

Entrance Garden

Turmeric
Curcuma longa

Lempuyang
Zingiber zerumbet

Floor Area: 2000 m²
1 Plant : 0.4 m² = 1.600 Plant
Harvest once/3 month : 400 kg

Natural Filtration

Water containing residual pesticides and ammonia is filtered by natural plants and decomposition by bacteria.

Duckweeds
Lemnoideae

Water Lilies
Nymphaeaceae

Brown Sedge
Carex brunnescens

Main Garden

The main elevated herb garden are integrated with semi-outdoor space public promenade space that goes along the small river. Visitors could climb and walk into the garden while see and touch the displayed herb plants.

Entrance Garden

The building entrance are welcomed by the terraced of herb garden- that could guide through the building entrance and amenities area.

Garden Service Area

The herb garden are supported by camouflaged service area that functions for plants nursery, water pump, and the filtration control tub.

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Mosaic of Herb
The mosaic showcase including with smell board introducing to the visitors huge variety of aroma along with explanatory text and knowledge.

Close yet Luminous
With integration to panel of stamping some of sliding window in museum could be open to reach it while others is closed for museum display panel.

Stored Herb
Light smell from stored herb can only be optimally induced with the individual booth.

Dried Herb
Special dried herb showcase located below the transparent ramp to induce different smell variation.

Grated Herb
Similar with stored one, the grated as it possess strong smell for not overpowering the other need to be displayed with individual booth.

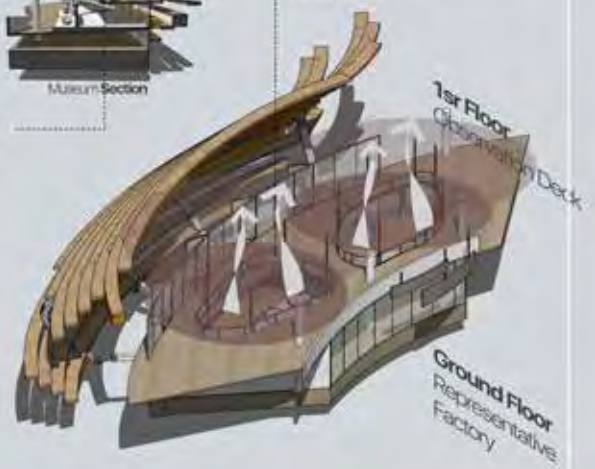
1 Museum: Introduction of Aroma

With the purpose of educating the users the knowledge about jamu in museum, it introduce it through the different kind of degree sensation starting from raw to dried herbs for users be able to atleast distinguish between them.

Museum Section

Air Circulation Control
Twin exhaust fan above the void and openable sliding window helps to reduce the intense aroma created from the process.

Individual Smell Booth
Standing individual smell booth placed in to the museum for users to easily distinguish the different kind of aroma that the herbs had.



2 Representative Factory: Learning Process

After the users being able to distinguish the difference in color, shape, and aroma, then its heading to representative factory where all the ingredients before will be process into jamu products. However to compromise the factory and display each requirements, the strategies will be separating it within the elevation.

Observation Deck
The observation deck [illegible] the experience of all of the sound component into a complex [illegible] experiences.

Induced from All Direction
[illegible] sliding window from jamu making process [illegible] through perforated screen fabrication.

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Tasting Jamu at Mountain?
VR and AR create for users a new and hopefully memorable experience of drinking and enjoying jamu.

Openness
Being a joint area, unrestricted views to main function and theater and around it.

Jamu Tasting Pods **Axonometric**

3 Pods and Resto: Tasting with Technologies

In this stage users are being able to distinguish the smell and know the jamu process, then they continue to use the final sense, which is taste. But understanding not all person will enjoy the taste of their (maybe) first jamu, to elevate the feeling the Virtual and Augmented Reality (VR and AR) concepts are implemented in the jamu pods. Virtual backgrounds and color will continue to change according to the beard taste and desired atmosphere.

4 Jamu Market: Array of Products

The jamu voyage ended with the collection of jamu products starting from jamu drinks, aromatic, scrub and various spa products from the results of jamu process. It also display and promoting the local jamu products from Nguter jamu village for users to buy as souvenir or consume it in place.

Products Guide:

1. Nguter Jamu Products
2. Jamu Based Snack
3. Aromatic Fragrance
4. Jamu Spa Products

Jamu Market **Section**

Pick What You Like!
To further ease the users to choose and select their desire one along with numerous different kind of jamu products, the showcase are separated based on its functions with helpe of explanation from LED panel.

Attractive Visual
Efficient and moving the visual jamu products from Nguter through modern way. The can be seen even from 1970's advertisement.

Open Showcase
While walking from Gateway, spa and souvenir products following it flow or consumed in place.

Situation
1:500

G Site Plan
1:500

Legend

1. Car Parking Area
2. Bus Parking Area
3. Main Entrance
4. Lobby
5. Museum
6. Core Utilities
7. Representative Factory
8. Multifunction Hall
9. Jamu Market
10 Restaurant
11. Promenade
12. Jamu Herb Garden
13. Loading Dock

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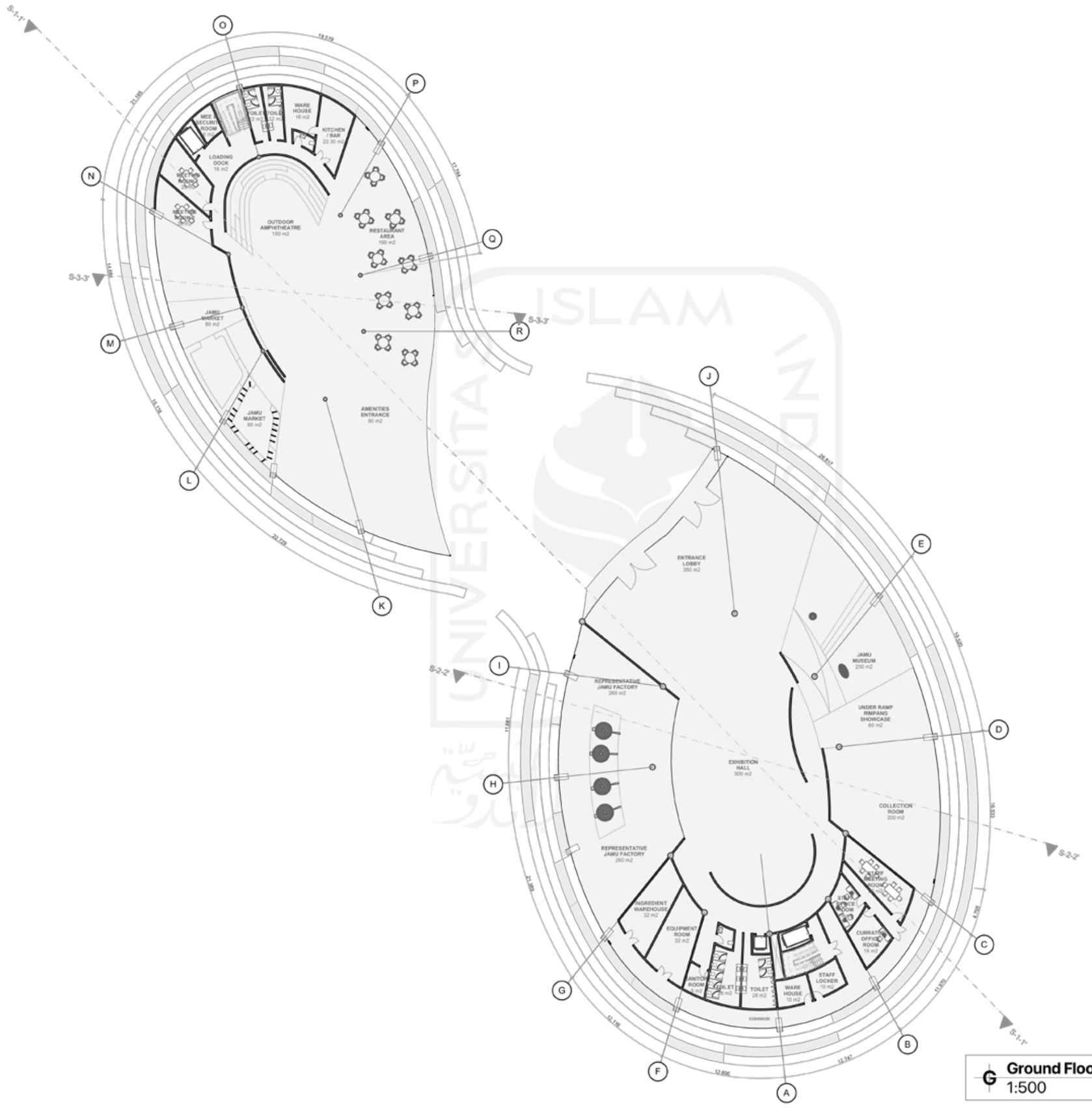

G Ground Floor Plan
1:500

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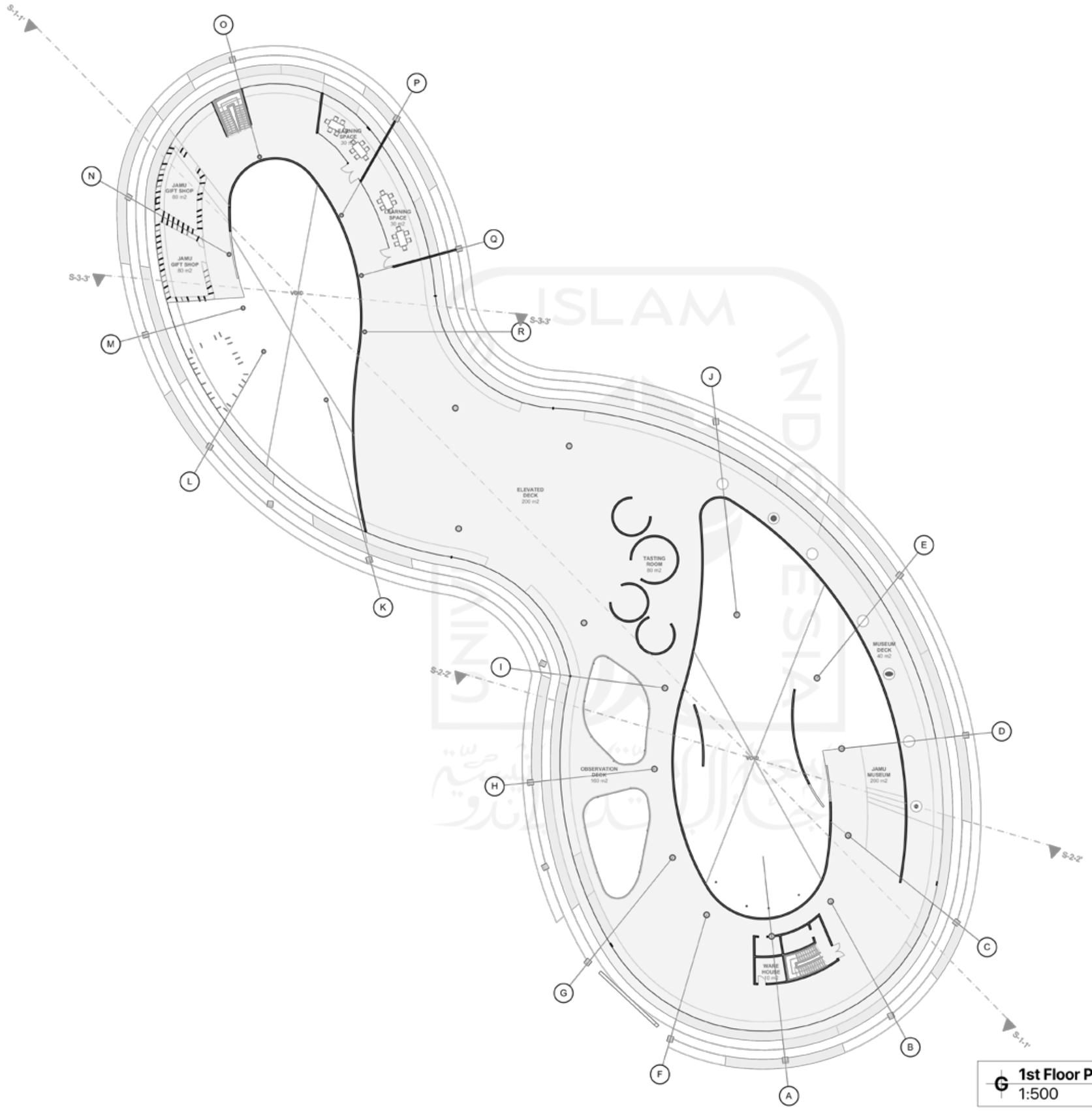

G 1st Floor Plan
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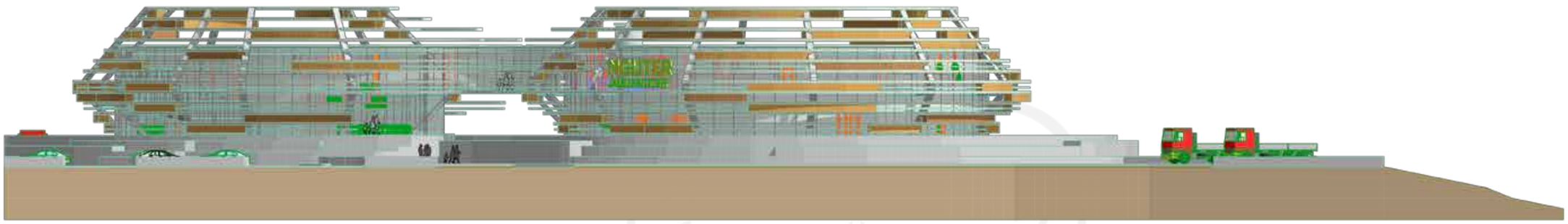

G North Elevation
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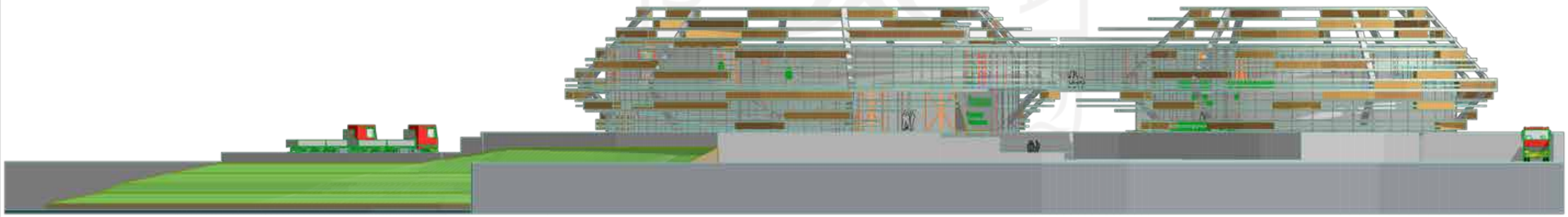

G South Elevation
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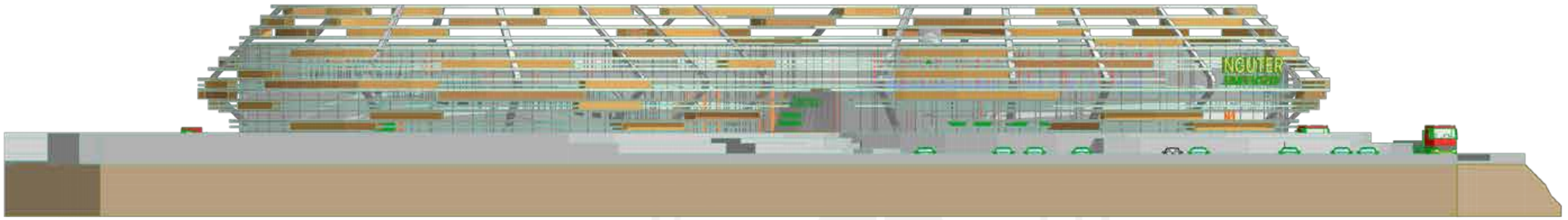

West Elevation
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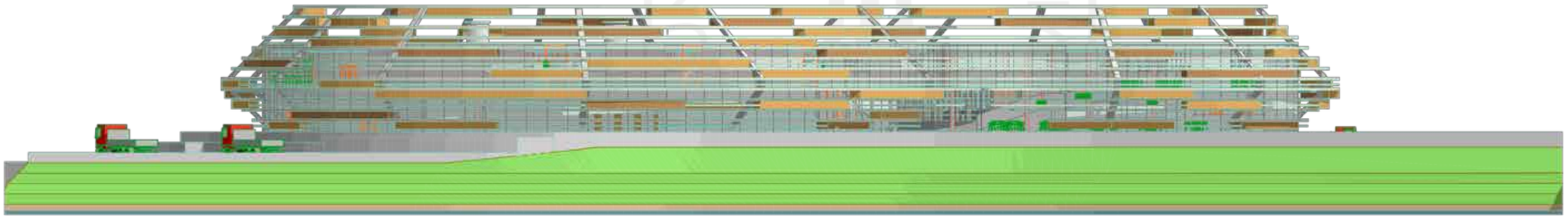

East Elevation
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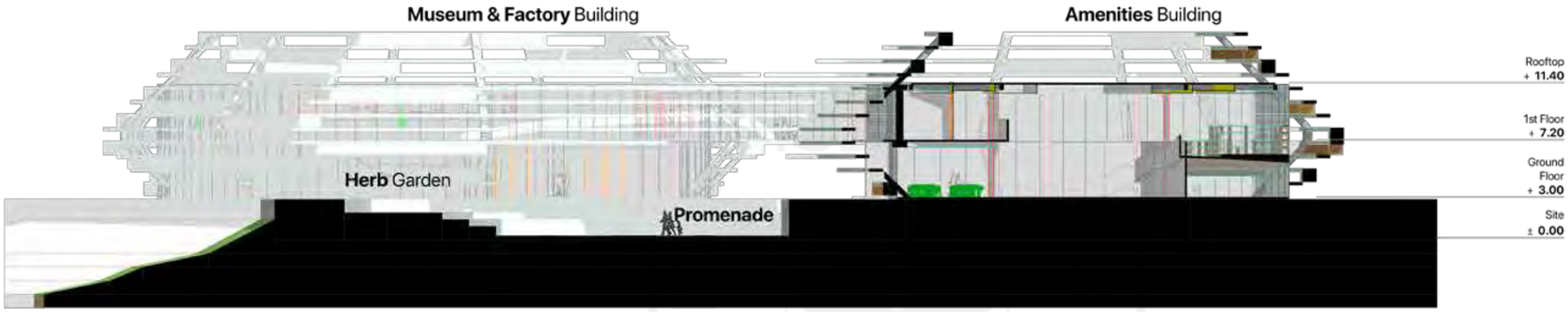
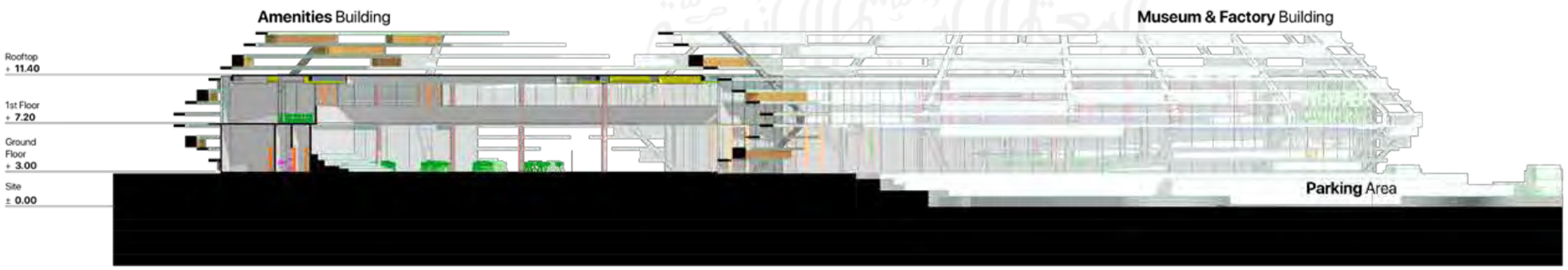


G S A-A' Site Section
1:250



G S B-B' Site Section
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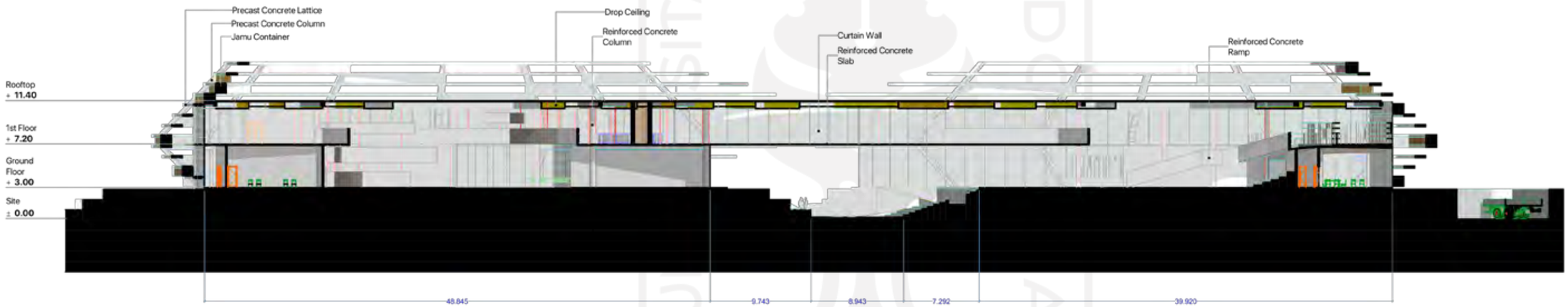

G **S 1-1' Building Section**
1:500

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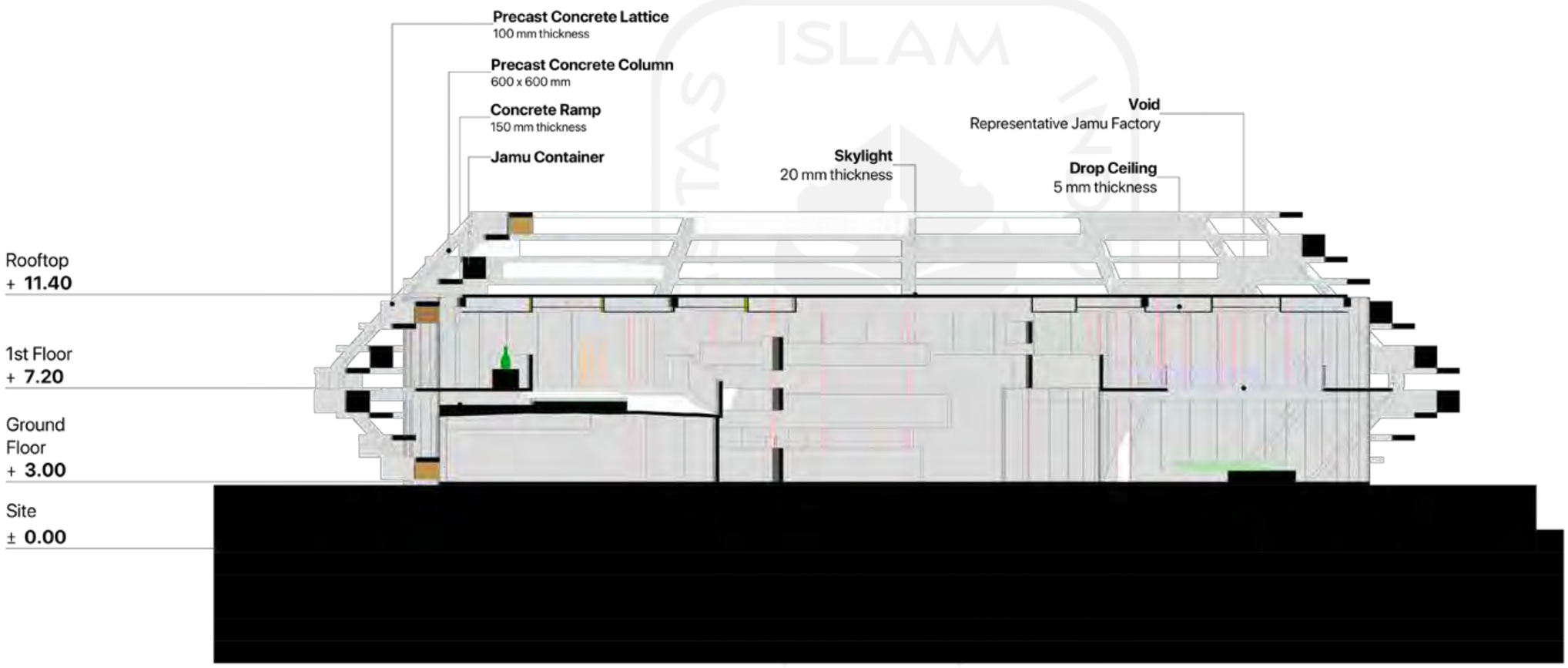

G **S 2-2' Museum Factory Building**
1:100

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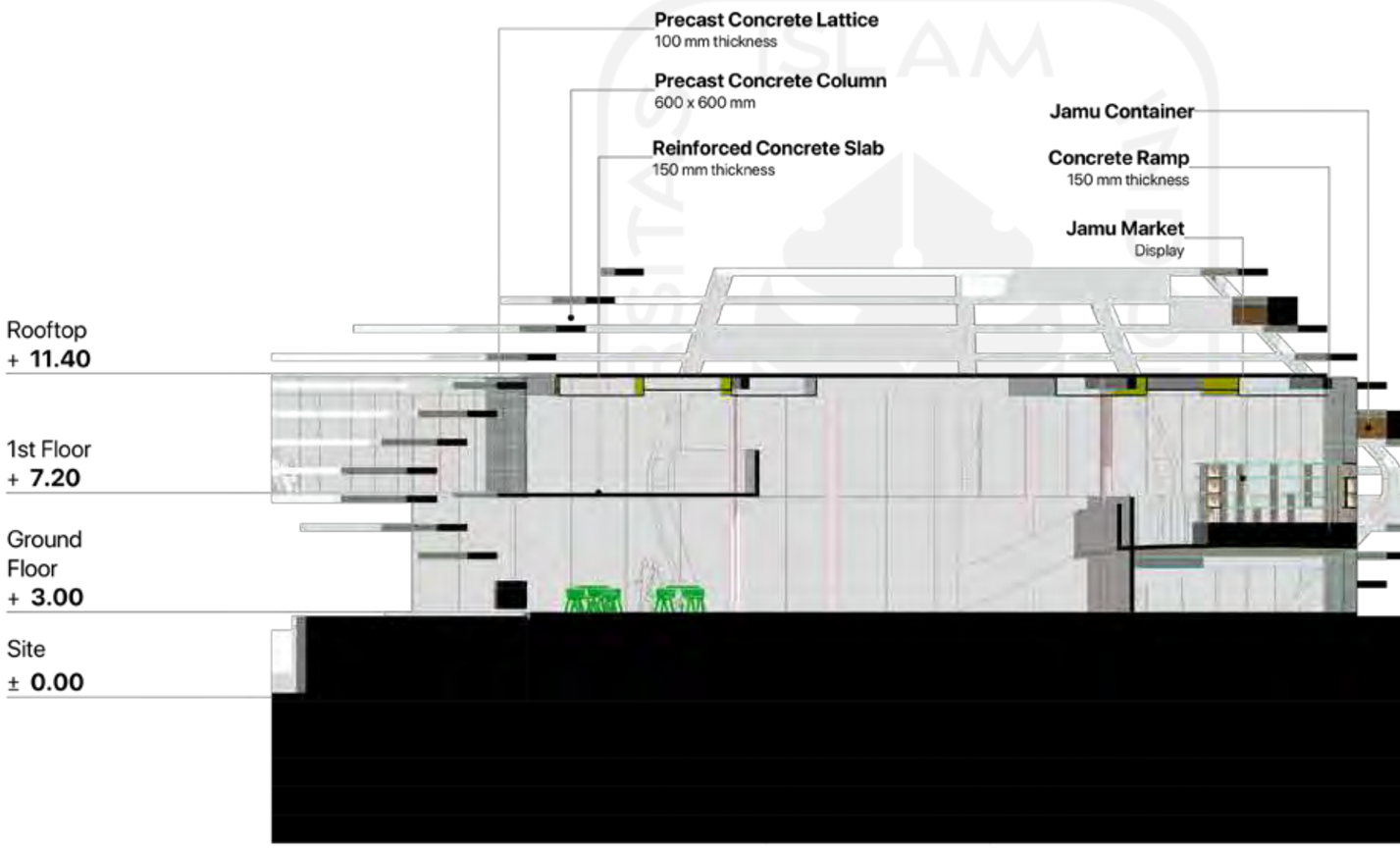

G **S 3-3' Amenities Building**
1:100

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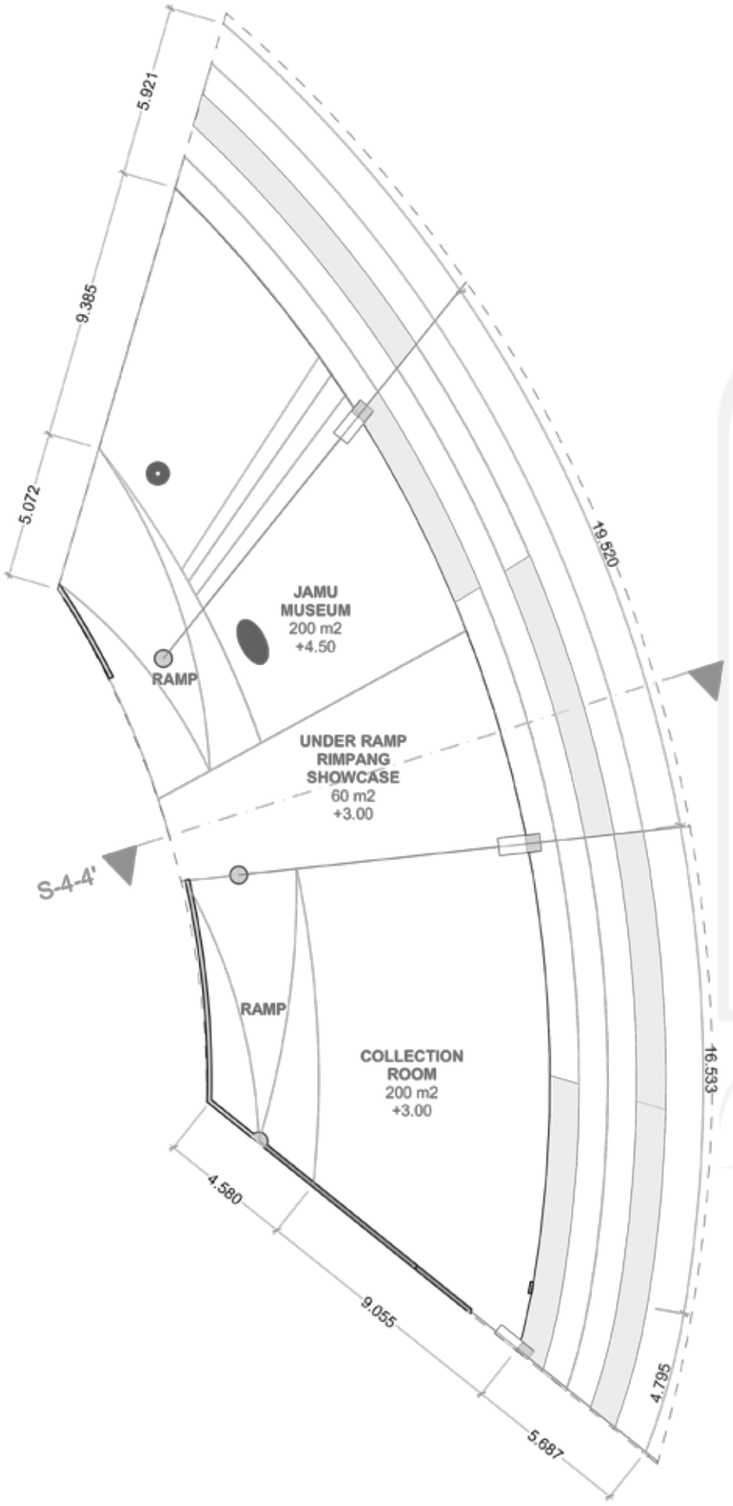

G **Museum Partial Plan**
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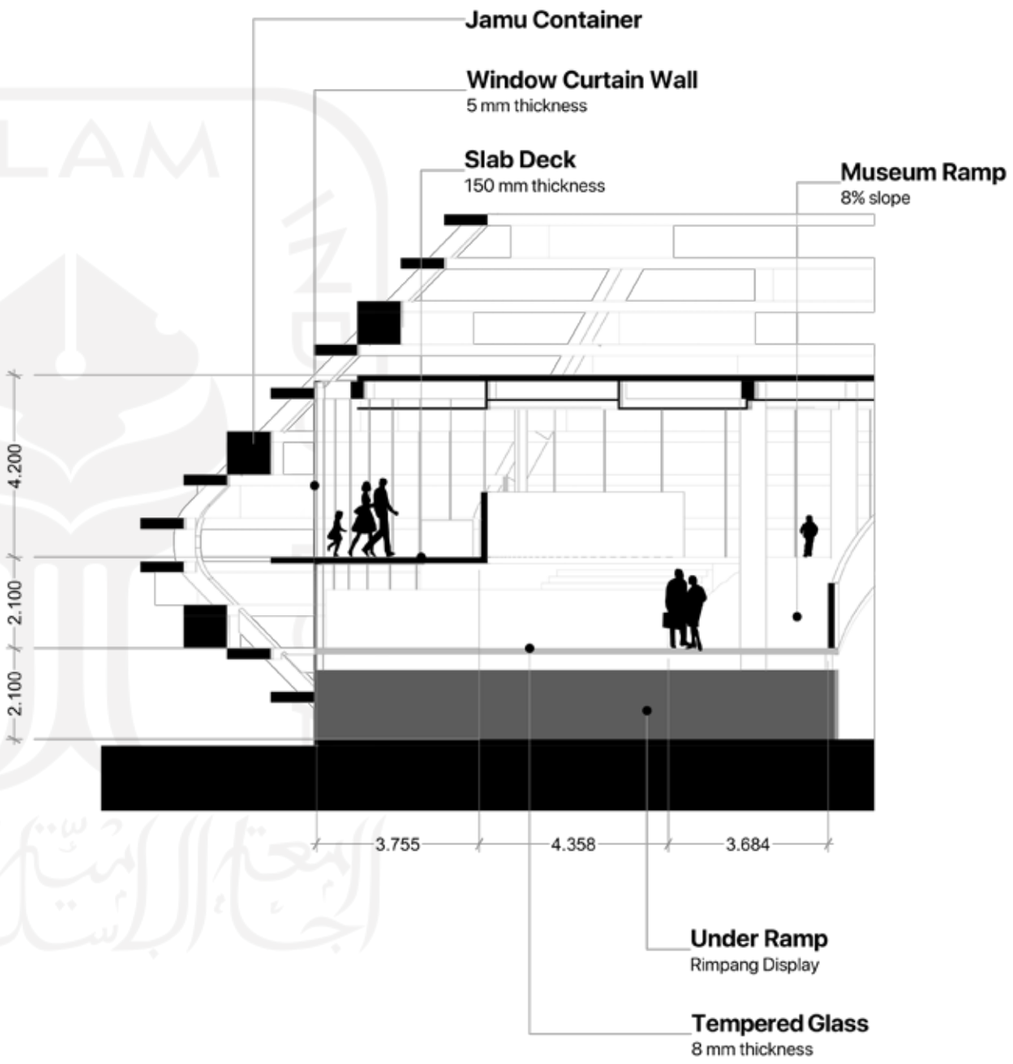

G **Museum Partial Section**
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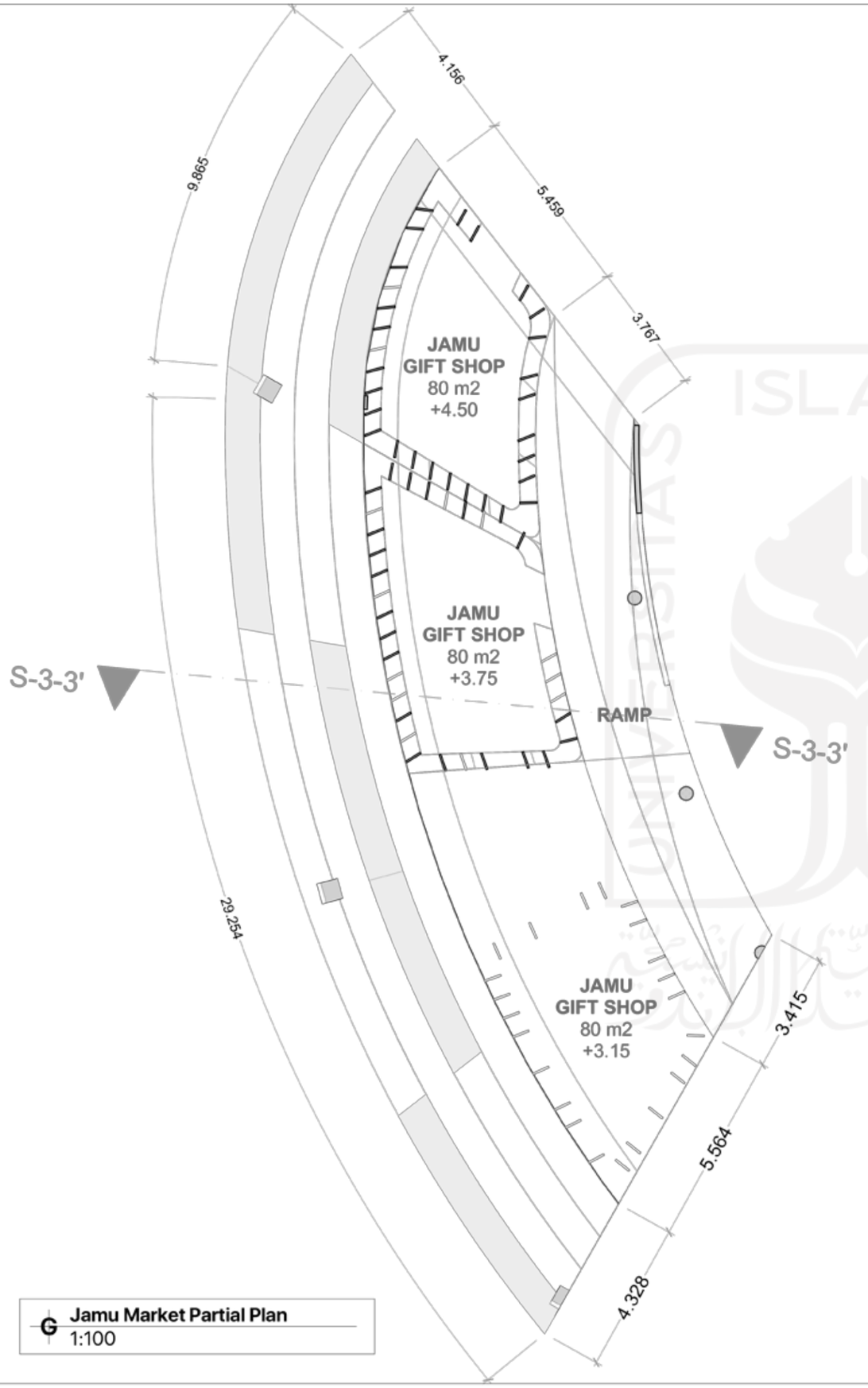

G Jamu Market Partial Plan
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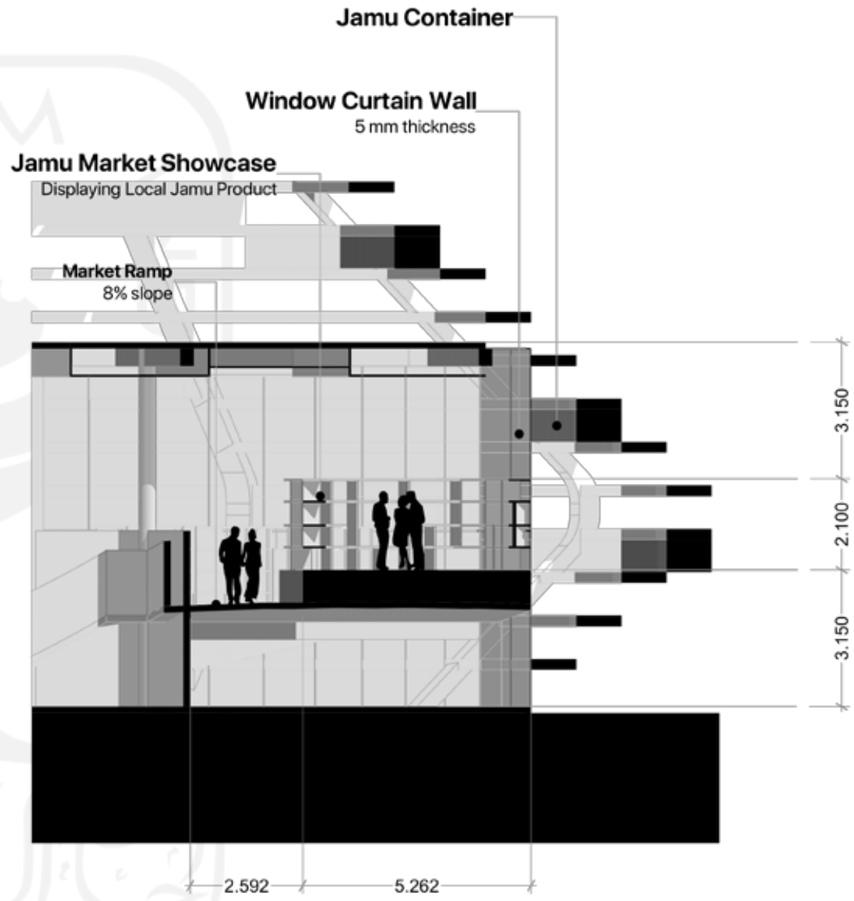

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M Naufal Rizqita | 17512036

Lecturer
Dr-Ing Putu Ayu Pramanasari Agustiananda, S.T, M.A.

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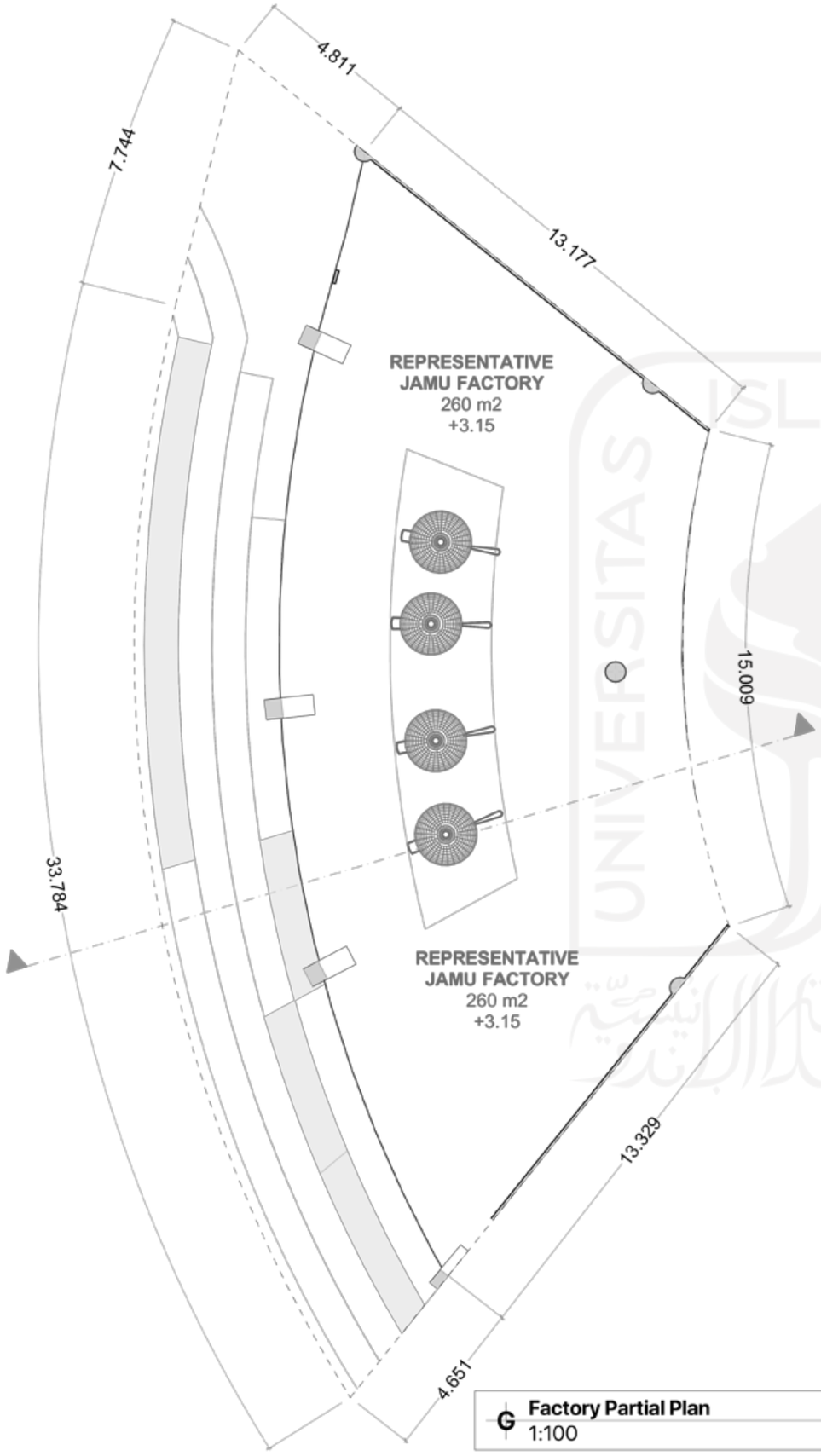
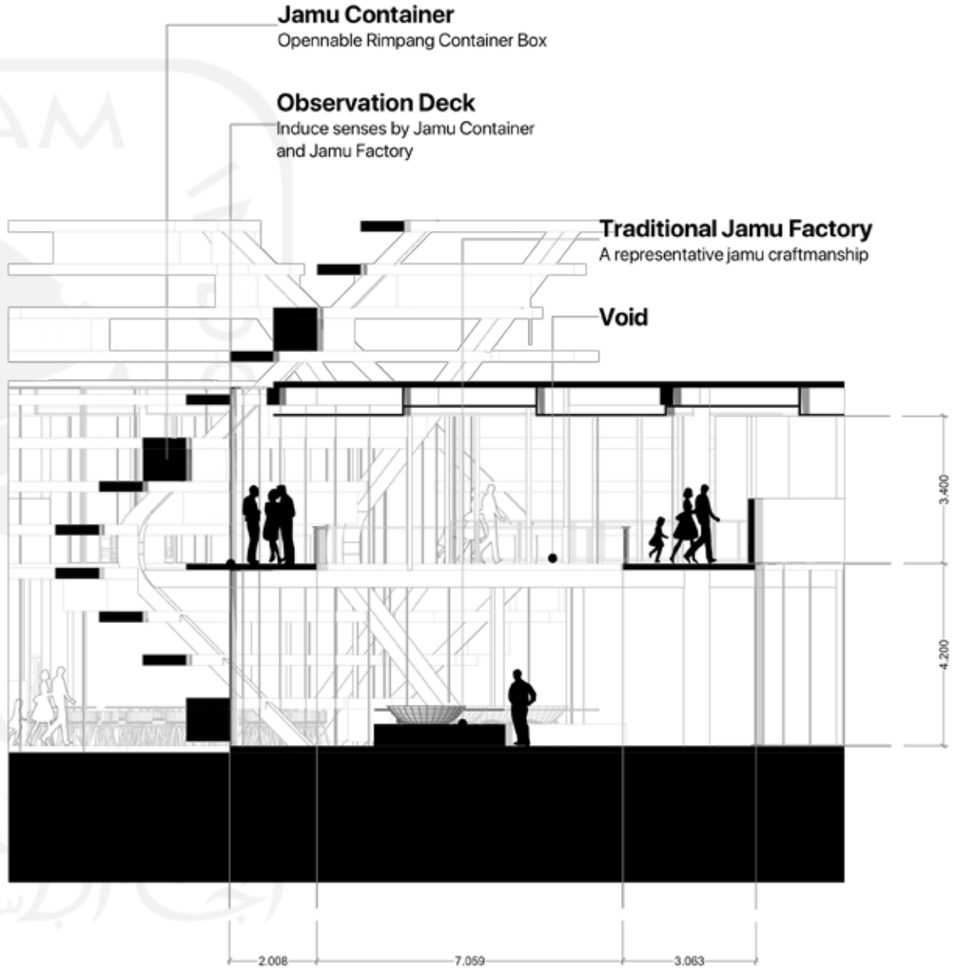


G **Factory Partial Plan**
1:100



G **Factory Partial Section**
1:100

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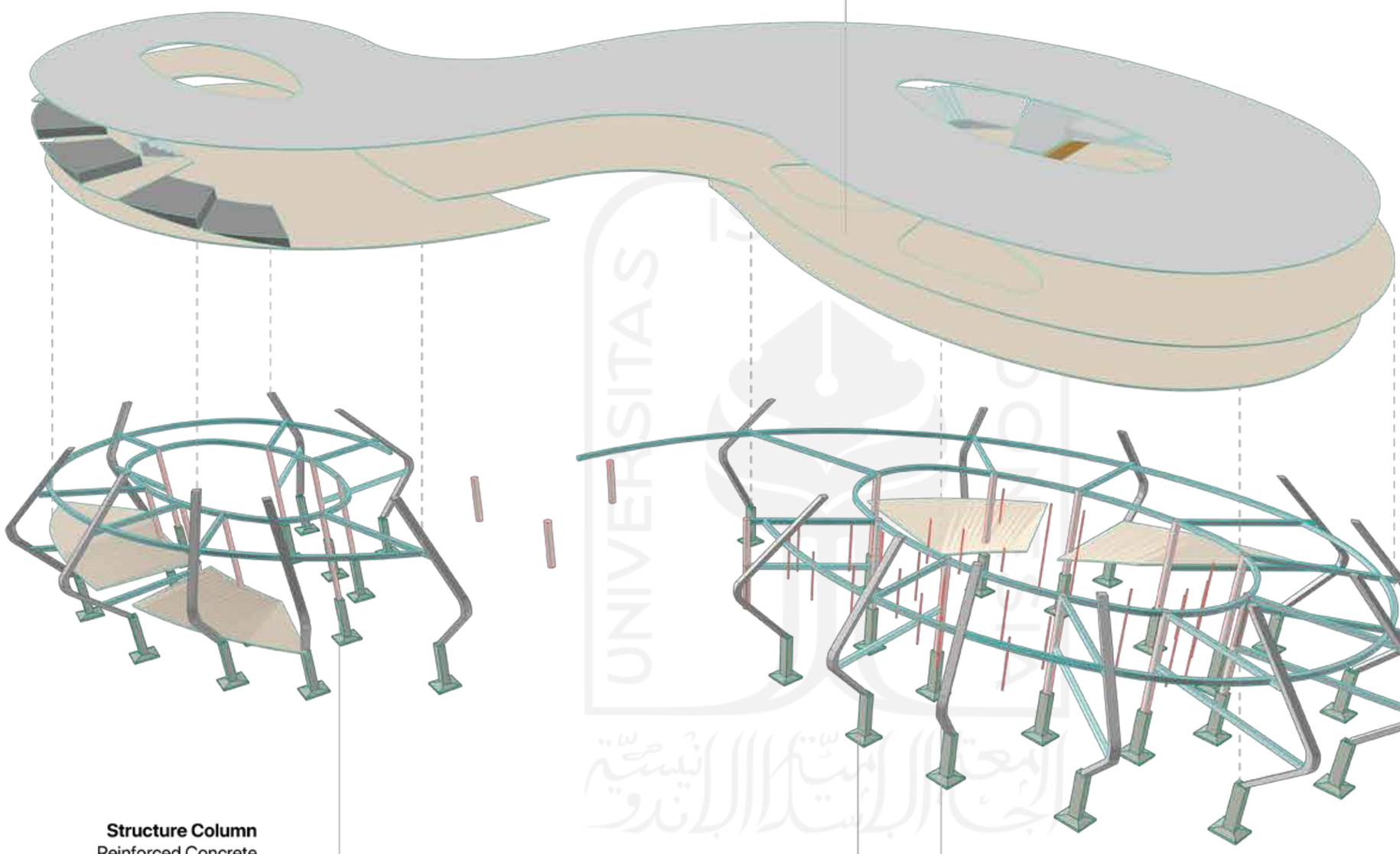
Slab Structure
Reinforced Concrete
150 mm thickness



Structure Column
Reinforced Concrete
600 x 600 mm

Footplate Foundation
Reinforced Concrete

Facade Structure Column
Precast Reinforced Concrete
600 x 600 mm

G **Axonometric Structure**
1:500

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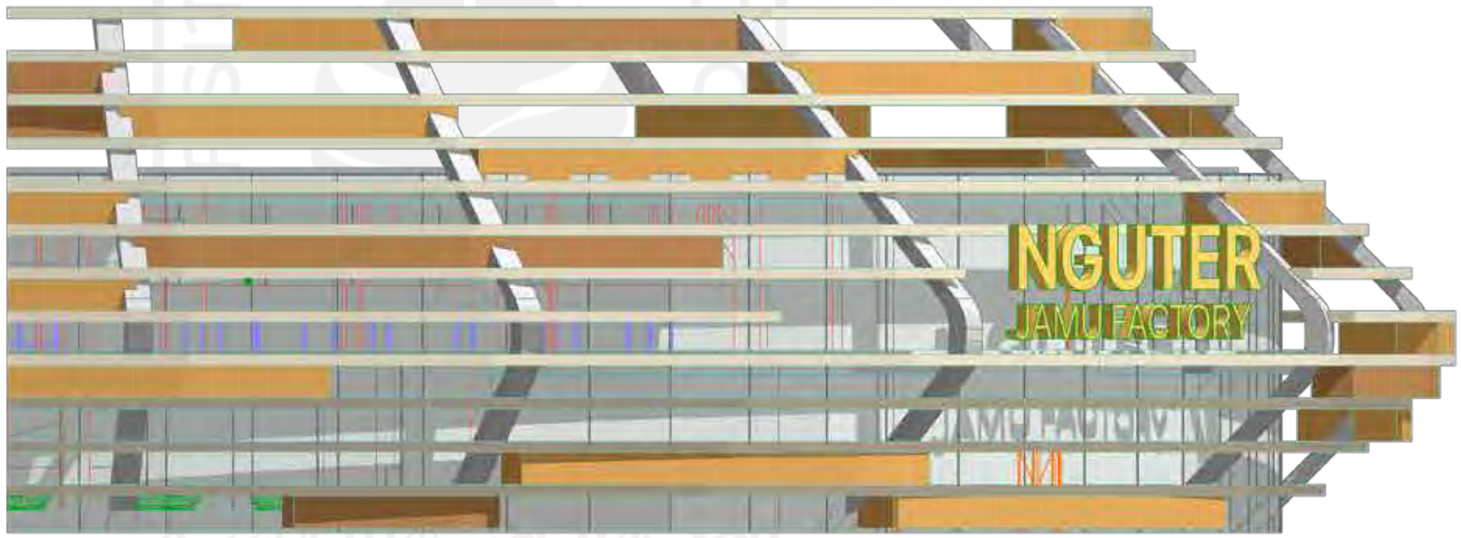
Precast Texture Concrete Column
600 x 600 mm

Glass Curtain Wall Window
5 mm thickness

Jamu Container Glass
500 mm x 500 mm

Precast Texture Concrete Lattice
150 mm thickness



G **Facade Detail**
1:100

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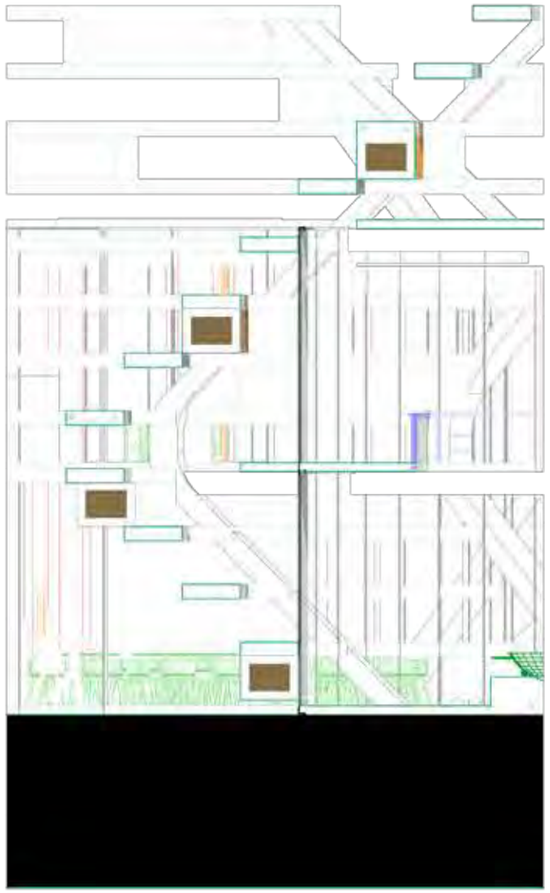

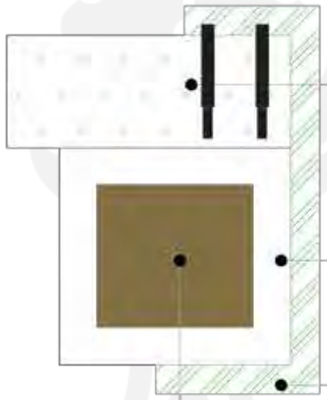

Slab Deck
150 mm thickness

Tempered Glass Container
5 mm thickness

Screwed Alumunium Buffer
5 mm thickness

Jamu Rimpang
Ingredients

G **Jamu Container Detail**
1:100

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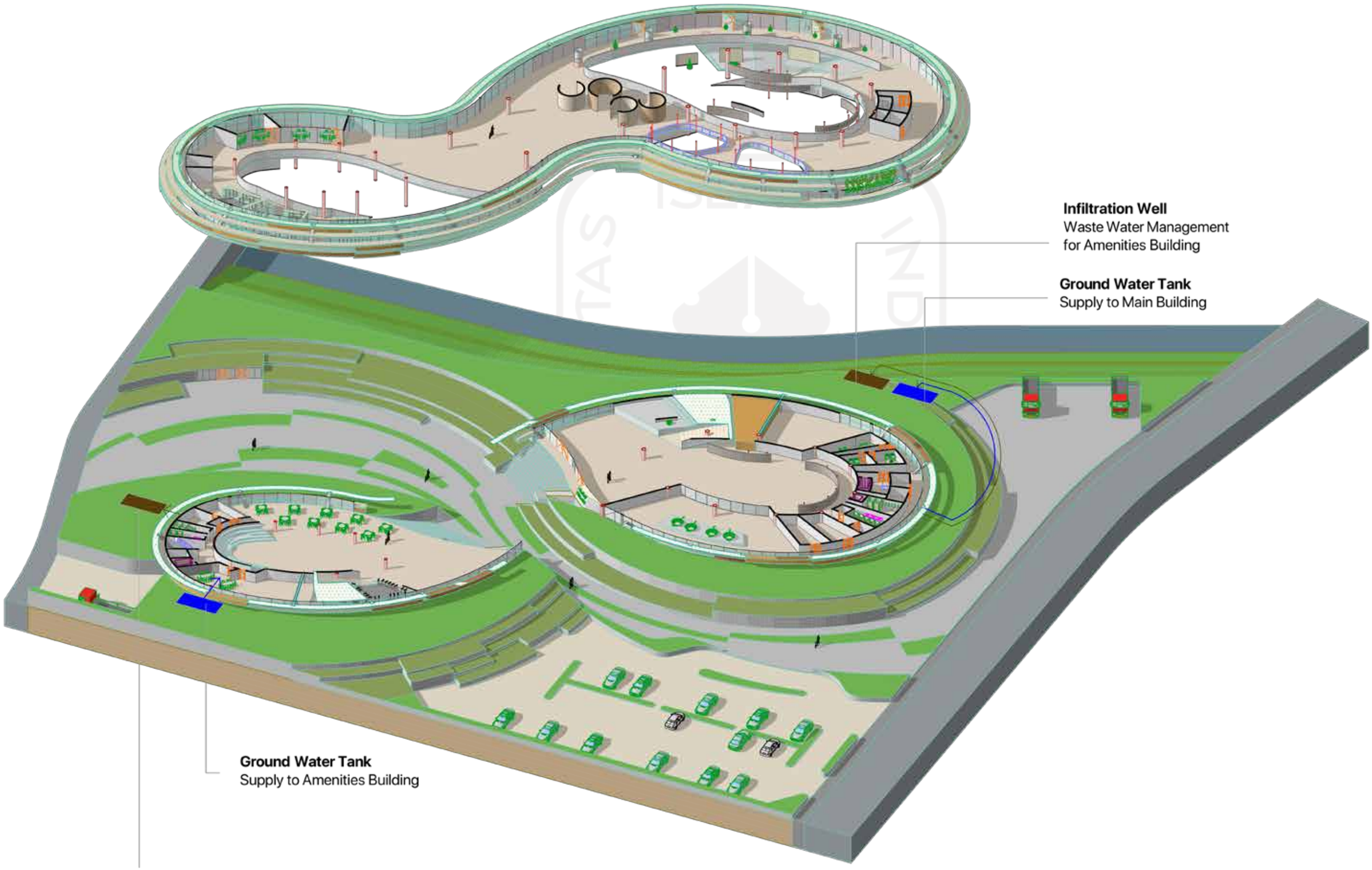

G Water Distribution Scheme
1:500

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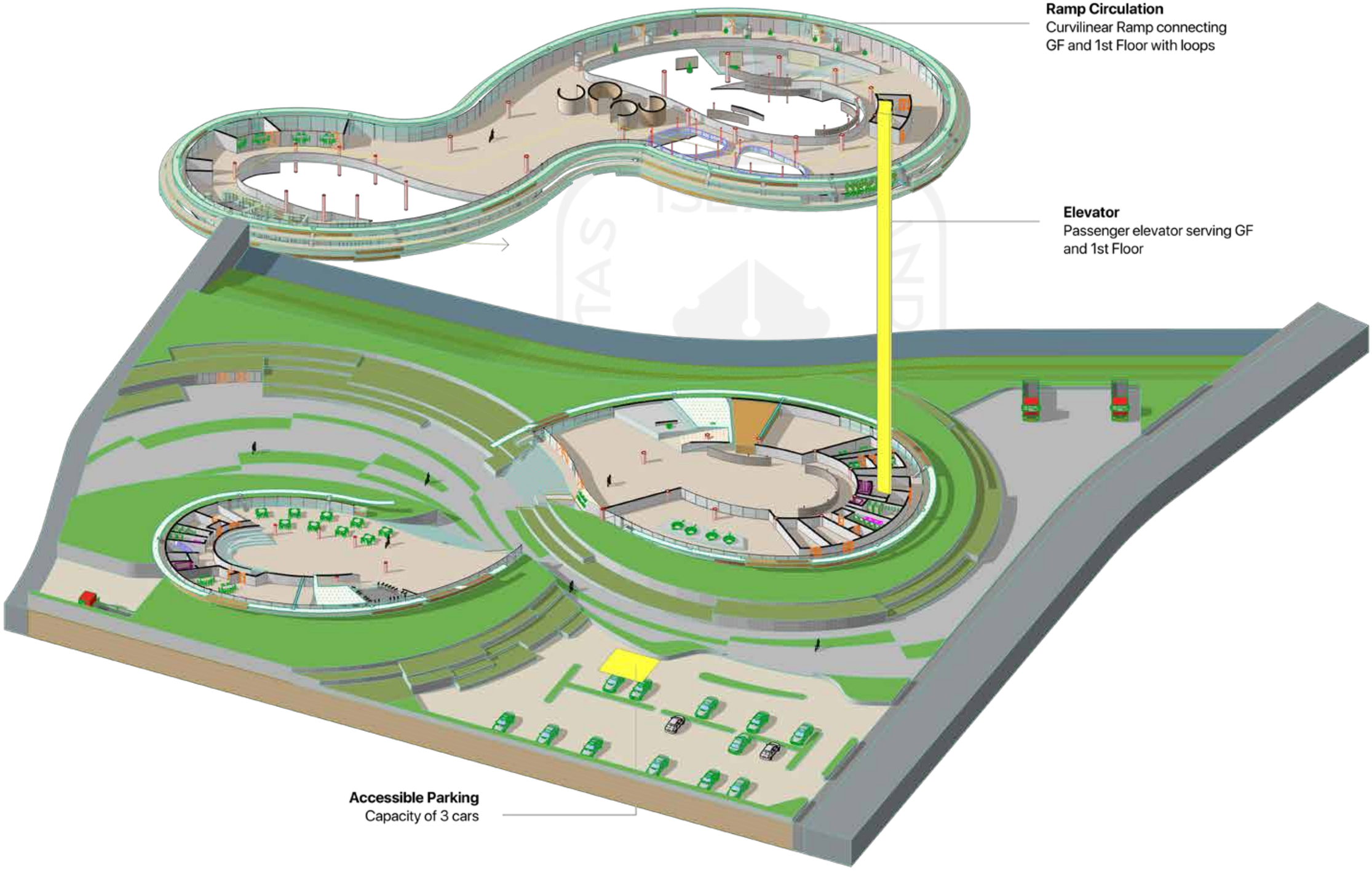

G Barrier Free Design Scheme
1:500

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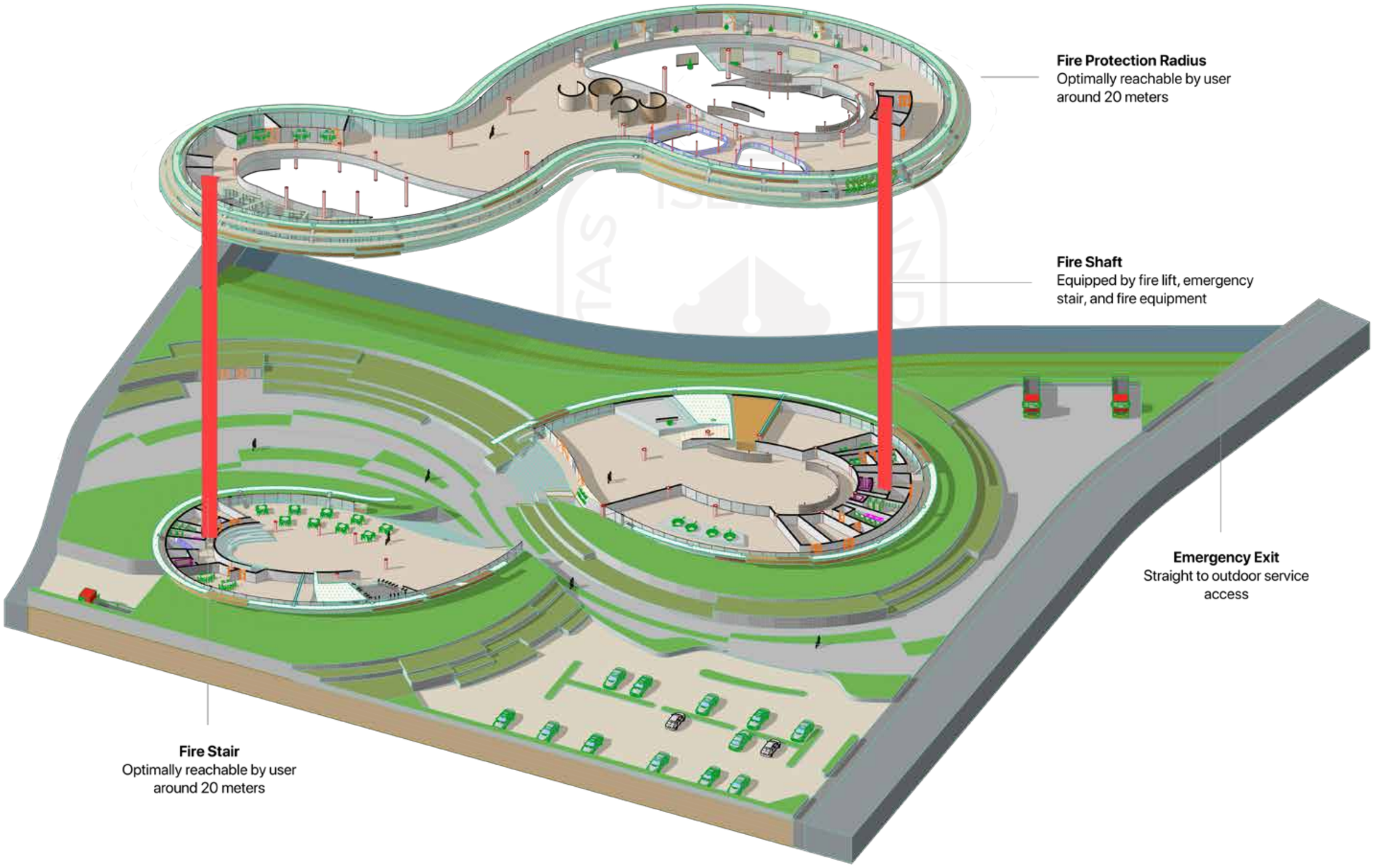

G Fire Evacuation Scheme
1:500

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ABOUT ME

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Design Skills
3D Modelling Skecthup, Archicad
Rendering V-Ray, Lumion
Graphic Design Adobe Photoshop, Adobe Illustrator, Adobe InDesign
Digital Fabrication Laser Cutting, 3D Printing

Personal Skills
Language Bahasa (Native), English (TOEFL CEPT 673)
Physical Sketch, Photography, Graphic Design

Seminar Workshop
November 2017
Observer, Architectural Education in Asia (RECHARTING THE KNOWLEDGE OF ARCHITECTURE)

January 2018
Paper Submission, Sakapari 2018 (SUSTAINABILITY IN ARCHITECTURE), Architectural Seminar & Exhibition
Paper entilled "The Study on European and Javanese Architecture Influence on Surakarta Sultanate Complex"

August 2019
Photography and Videography at Passage To Asean Program (P2A) 2019
Field Study Between National University Singapore, Vietnam National University, Phranakhon Rajabhat University

February 2020
Visitor, Indonesia Architecture Conference & Exhibition (ARCH:ID 2020)

Competition
August 2020
Asia Young Designer Award Indonesia, National Competition Entry

December 2020
Quechua Competition, Cuichoa Lookout, International Competition Entry

INTERNATIONAL UNDERGRADUATE PROGRAM IN ARCHITECTURE

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