UNIVERSITAS ISLAM INDONESIA

Laboratorium Pemodelan Arsitektur dan Perkotaan

DESIGN OF

SPORT FACILITY IN SEMARANG

IN APPLICATION OF ADAPTIVE ARCHITECTURE APPROACH

Nabilla Yananggita Putri
1852054

SUPERVISOR
Ir. Wiryono Raharjo, M.Arch, Ph.D

DEPARTMENT of ARCHITECTURE

KAAB 한국건축학교육인증원 Korea Architectural Accrediting Board

CANBERRA ACCORD

STARS

AKREDITASI UNGGUL

FINAL PROJECT REPORT

Final Architecture Design Studio
Department of Architecture
2021/2022

DESIGN OF SPORT FACILITY IN SEMARANG IN APPLICATION OF ADAPTIVE ARCHITECTURE APPROACH

Nabilla Yananggita Putri
18512054

SUPERVISOR
Wiryono Raharjo, Ir.,M.Arch., Ph.D.

DEPARTMENT of ARCHITECTURE

AUTHENTICATION SHEET

Final Architectural Design Studio entitled :
Design of Sport Facility in Semarang in Application of Adaptive Architecture Approach

Student's Full Name	: Nabilla Yananggita Putri
Student's Identity Number	: 18512054
Has been evaluated and agreed on	: Yogyakarta, 29th July 2022

Supervisor	**1st Jury**	**2nd Jury**
Wiryono Raharjo, Ir.,M.Arch., Ph.D.	Ilya Fadjar Maharika, Dr.-Ing., Ar., Ir.,MA., IAI	Revianto Budi Santosa, Dr., Ir., M.Arch. IAI

Acknowledge by
Head of Architecture Undergraduate Program

Yulianto Purwono Prihatmaji, Dr., Ar., IPM., IAI

STATEMENT OF AUTHENTICATION

By sighning this form, me :

Name	: Nabilla Yananggita Putri
Student Number	: 18512054
Study Program	: Architecture International Program
Faculty	: Faculty of Civil Engineering and Planning (FTSP)
University	: Universitas Islam Indonesia
Tittle	: Design of Sport Facility in Semarang in Application of Adaptive Architecture Approach

I thus swear that the design work I have produced is entirely original to myself, that no work previously published or submitted for a bachelor's degree at a university has been included in it, with the exception of writings cited in this book and included in the list of references.

Yogyakarta, 4 August 2022
Author

Nabilla Yananggita Putri
18512054

FOREWORD

Praise and gratitude to Allah SWT for His mercy and grace so that the author can complete design and writing entitled “DESIGN OF SPORT FACILITY IN SEMARANG IN APPLICATION OF ADAPTIVE ARCHITECTURE APPROACH". This design work was written to fulfill part of the requirements to obtain a Bachelor of Architecture degree at the Faculty of Civil Engineering and Planning Universitas Islam Indonesia. This design work is expected to be useful for the development of architecture and community especially in the Old Town City Semarang and the surrounding. The writing of this design work would not have been possible without the help of many people. Therefore, the authors would like to thank to:

1. Allah SWT for all His mercy and Grace, the process of writing this Bachelor’s Final Project was given ease and blessing.
2. Parents who provide support, prayers, enthusiasm and motivation.
3. Ir. Wiryono Raharjo, M.Arch., Ph.D as the Supervisor for this FADS for his provided guidance, knowledge and advice in the preparation until finishing of this work.
4. Ilya Fadjar Maharika. MA.,Dr-Ing.,IAI and Revianto B. Santosa Dr.,M. Arch as the Jury Lecturer for provided knowledge,
5. FADS Committee, head, staff, lecturers and employees of the Architecture Department, Universitas Islam process.
6. Assistant lecturers, seniors and juniors in Architecture Department, Universitas Islam Indonesia for sharing insight suggestions and helped evaluated the work to have better result.
7. Friends of the FADS guidance group, as well as all IP Architecture 2018 friends who provided support in completing the Final Architecture Design Studio

The author realizes that there are still many shortcomings in the writing of this writing and is open to criticism and suggestions that are useful in developing this writing. And hopefully this final project can help increase knowledge and experience for readers, become a reference and also learning materials and correction can improve for the better in the future.

Yogyakarta, 4 August 2022
Author

Nabilla Yananggita Putri
18512054

TABLE *of* CONTENT

00. Authentication Sheet
Statement of Authentication
Preface
Table of Content
Design Premise

01. Plerimінary
1.1 Background
1.2 Design Theme
1.2.1 Adaptive Architecture to the Future
1.2.2 Sport Center as a Public Space
1.2.3 Sport Center
1.2.4 Semarang = An Athlete City
1.2.5 Social Problem in Old Town City
1.2.6. Principal Safety of Covid-19
1.2.7 Adaptive Architecture that adapt the Inhabitants
1.3 Design Thinking
1.3.1 Problem Thinking
1.3.2 Problem Mapping
1.3.3 Design Framework
1.3.4 Design Method

02. Study Design Problem
2.1 Typology and Precedent
2.1.1 Typology
2.1.2 Precedent
2.2 Site Analysis
2.2.1 Distribution of the Old City
2.2.2 Macro Analysis
2.3 Design Concept and Analysis
2.3.1 Architectural Concept
2.3.2 Accessibility
2.3.3 Activity Analysis
2.3.4 Space Requirement
2.3.5 Space Arrangement
2.3.6 Analysis Room Programming

03. Schematic Design
3.1 Design Exploration
3.1.1 Design Problem Solving
3.1.2 Site Planning
3.1.3 Mass Exploration
3.1.4 Zoning Exploration
3.1.5 Mass Orientation
3.1.6 Floor Plan
3.1.7 Schematic Axonometry
3.1.8 Facade Concept
3.1.9 Structure Building
3.1.10 Interior Analysis
3.1.11 Exterior Analysis
3.2 Pre-Model Design

TABLE *of* CONTENT

04. Final Design

4.1 Final Design Description
- 4.1.1 Property Size
- 4.1.2 Zoning
- 4.1.3 Users Analysis

4.2 Landscape Design
- 4.2.1 Site and Landscape Design
- 4.2.2 Building Facade

4.3 Adaptive Component
- 4.3.1 Adaptive Architecture Adapting the Environment
- 4.3.2 Adaptive Architecture Adapting the Inhabitants
- 4.3.3 Adaptive Architecture Adapting the Element of Adaptation

4.4 Building Detail
- 4.4.1 Sport Center
- 4.4.2 Café and Coworking
- 4.4.3 Park
- 4.4.4 Food Court
- 4.4.5 Jogging Area
- 4.4.6 Parking

4.5 Structure and Material of Building
- 4.5.1 Structure
- 4.5.2 Material

05. Design Evaluation

5.1 Schematic Drawing
- 5.1.1 Spatial Arrangement
- 5.1.2 Schematic Drawing

06. Design Reflection

6.1 Design Reflection

6.2 Attachment

CHAPTER 01.

Design Premise

Due to the presence of COVID-19, operations in a number of Indonesian cities started at the beginning of March 2020. It turns out that many individuals are visiting city parks during this outbreak not only to enjoy the outdoors but also to exercise. Sports are regarded as a kind of recreation to relieve tension when one must stay at home, and this incident occurred as the community's demand for exercise intensified when the Covid-19 pandemic entered Indonesia. The lack of infrastructure and public places in a city that is often far away plus the government's encouragement of social distancing or preserving distance during community activities mean that those people won't go well. Government advice to the community as a whole that results in a decline in public engagement. In order to redesign public spaces in accordance with the Covid-19 protocol, this study intends to investigate the tendency of changes in the characteristics, the meaning, and the function of public spaces during the Covid-19 pandemic. The idea of public space must be revised both during and after the Covid-19 Pandemic; through this research, the new definition will be throughly addressed. The findings of this study generally describe a new definition of public space as a place where people connect with one another or with other people in the community in a way that promotes the enhancement of people's health and well-being.

1.1 Background

PANDEMIC ISSUES & PEOPLE BEHAVIOR

After the Covid-19 outbreak spread throughout Indonesia, individuals realized how crucial it was to keep their health. As a result, society's need for sports is growing. However, the lack of sports facilities in Indonesia or the fact that some of them do not follow health regulations and some are frequently closed confuses the general audience. As a result, many people use certain public spaces for sports. As a result of this, social behavior in public settings is altering during a pandemic, and people are coming up with inventive ways to stay connected and fight isolation (James, 2020). As the Semarang City government has done, it invites people to use physical distance to close a number of roadways in the city, one of which is the road along the Simpang Lima corridor which was carried out on 29 March 2020.

In relation to public spaces and this epidemic, some people may not feel comfortable even when they are exercising since they must wear a mask to follow with regulations and to keep a safe distance from one another. This makes it challenging for people to interact with one another. During this pandemic, group integration is less likely to be created, which is difficult for the community as a whole if you wish to go for a walk outside.

***Figure 1.1 :** Outdoor Social Activities during pandemic*

***Figure 1.2 :** People with outdoor excersize during pandemic*

***Figure 1.3 :** People with outdoor exercise*

Figure 1.1 : Outdoor Social Activities during pandemic
source : https://www.liputan6.com/lifestyle/read/4386325/4-aktivitas-yang-bisa-dilakukan-di-taman-di-jakarta-saat-psbb-transisi
Figure 1.2 : People with outdoor excersize during pandemic
source https://wolipop.detik.com/health-and-diet/d-5857314/aktivitas-olahraga-yang-jadi-tren-selama-pandemi-di-2021
Figure 1.3 : people with outdoor exercize
Source : https://worldlandscapearchitect.com/yangpu-riverfront-south-section-phase-ii-da-landscape-original-design-studio/

CONTEXT OF SEMARANG CITY

Semarang, one of Java's major cities, serves as the primary hub for travel between Jakarta-Surabaya and also the cities in the island's southern center (Surakarta and Yogyakarta). Semarang's elevation varies from 2 meters under ocean level to 340 meters above this one, with a slope of 0% to 45%. Semarang is a city with a distinctive topographic configuration that consists of a narrow lowland section and a mountainous area that runs from of the city's west to its east side. Semarang City's lowland region is quite constrained.

Another want that the City of Semarang needs satisfy in order to be designated as an athlete city is proper sporting accomplishments. Achievements athletics have as many high-level victories as they can aim for. This suggests that a number of parties must work together to synergize the essential elements that affect sports achievement (Kristiyanto, 2012). Naturally, Semarang City's accomplishments must be excellent in condition for that to be named a City of Athletes. The athletes from Semarang City have earned their reputation 3 times as PORPROV Central Java's as a whole champions, taking home 156 golds and 128 silvers in 2009, 150 golds, 88 silvers, and 87 bronzes in 2009, and 87 olympic gold, 87 silvers, and 87 bronzes in 2013.

Figure 1.4 : *Old Town Semarang Area. Source : Antaranews.com*

FLOOD & SLUMNESS AREA

The city of Semarang, one of metropolitan regions with a 13 km long coastline in the north, is undoubtedly greatly impacted by sea level rise. People in the neighborhood view the Old City Polder system in North Semarang District as a means of preventing flooding. The historic city polder, which today serves as a flood control system, was established in Semarang, particularly in the District of North Semarang. The Old Town Polder system is not very effective at preventing flooding, as evidenced by its modest retention pond capacity and inadequate maintenance. views of the resettlement environment's circumstances.

And this affects the area of the Old City on it's own, where so many locations face bad dreams like the area turning into slum areas and the infrastructure it should exist being separated simply because the area is frequently flooded even if it is not high. This area is completely still a part of the Old City area of Semarang, which has now turned into the city's most recognizable landmark.

Figure 1.5 : *Flood in Semarang polder Tawang area. Source : Kompas.com*

1.2 Design Theme

Figure 1.6 : Semarang Polder in Tawang area. Source : Skygrapher

1.2.1 Adaptive Architecture to the Future

Adaptive architecture can simultaneously serve several functions. Alternately or consecutively, elements and constructions can change to fit their environment (Preiser et al., 2017). Additionally, as indicated by Preiser et al., Brown (2016) asserts that technology and demands has to be adaptable and prepared to achieve a variety of spatial configuration for a variety of jobs across time (2018). The adaptive portion of the Sport Center Facility focuses on using changeable building components, such as alterations to materials properties and modifications on wall placement, floor heights, and removable architectural components in response to shifting conditions of the environment. The building's floor area can be flexible enough to accommodate changing space needs and technological advancements without having to expand it in the future.

All architecture is flexible in some way since structures may always be altered "manually" in some fashion. Writer Brand describes the various degrees of adaptability that may be anticipated as well as how they relate to various time periods in his book "How Buildings Learn" (Brand, 1994). Because of this, the term "Adaptive Architecture" must be recognized. Adaptable architecture differs from adaptive architecture with in following methods: Adaptive architecture refers to structures that are designed to change (to their surroundings, to the people living in them, to the things they contain), either manually or with the help of humans.

So on this occasion the concept of adaptive architecture can overcome the problem of the slum environment caused by flooding and the unorganized area around Old City Semarang and also does not reduce the effectiveness of the building during the pandemic and after the pandemic.

Figure 1.7 : Public Area in Pandemic Era

People in Indonesia have started to worry more with their own personal health when the Covid-19 outbreak struck the country in March 2020. Many individuals utilize public spaces as a place to exercise outside because the space is open and safer when evaluated from a health protocol perspective. On the other hand, many people also get bored if they are continuously indoors. As a result, not many people regularly undertake light exercise at home. enforced in Indonesian, requiring residents to maintain their personal space.

But since we all know, many public spaces in Indonesia never really had exercise capabilities before all this pandemic arrived. As a result, most public spaces now serve different purposes. Due to this pandemic, we as architects should be able to design a space where different learning activities can take place by implementing the concept of adaptive architecture, which denotes that both humans and buildings can become more adaptable or other features that encourage interrelations between buildings and contextual community (Robert Schimdt, 2009).

Adaptive architecture can also be used as an alternative design concept to create social cohesion, which means that after Covid, the building can still create a comfortable atmosphere for users and the needs of all users are met properly. Adaptive architecture can also address how slum areas can still be modified properly

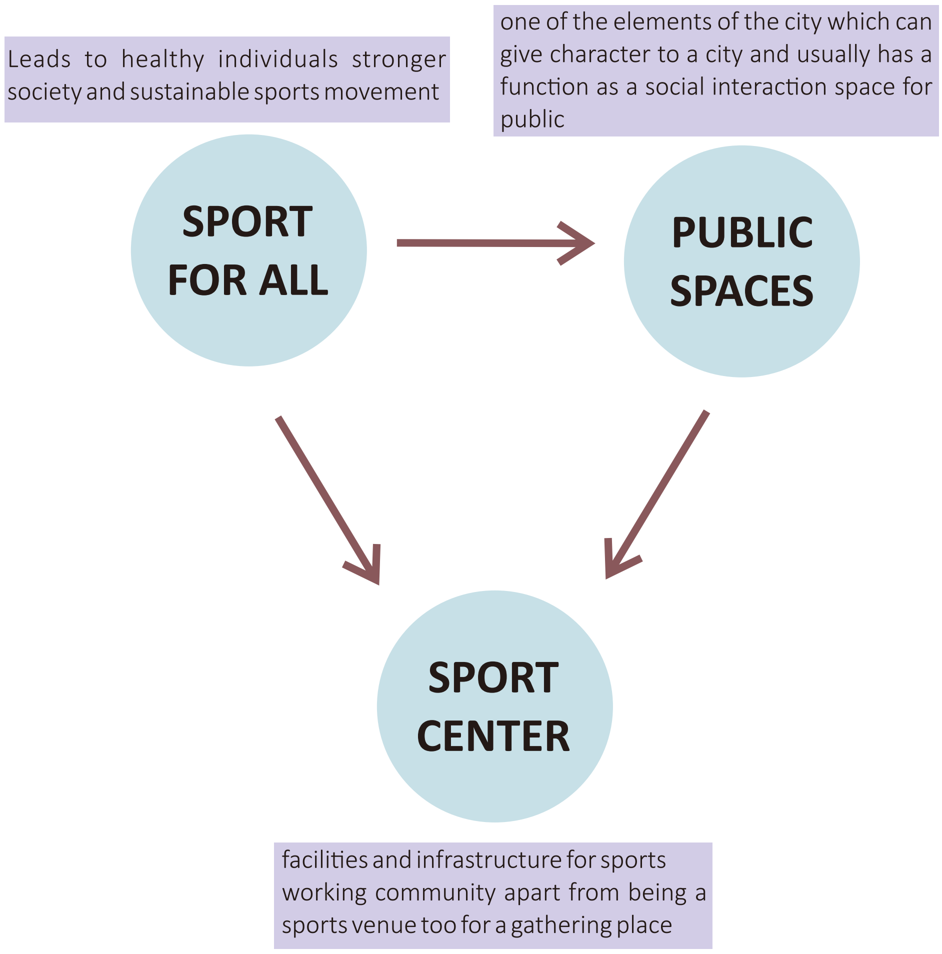
Figure 1.6 : Public Area in Pandemic Era
source : https://www.republika.co.id/berita/qe2w3l380/dibahas-protokol-kesehatan-olahraga-di-ruang-publik

A garden city's public open space ought to be useable and serve the public in a more suitable manner. In times of the Covid-19 epidemic, city parks can serve as a location for public activity if the infrastructures and facilities are there to accommodate it. The truth is that a lot of people today go to the city park to workout as well as to enjoy nature.

This is because the Covid-19 pandemic has reached Indonesia and the interests of the community have increased the significance of exercise. Studies on adults have shown that sedentary lifestyles, inadequate sleep, habitual nighttime snacking, and a lack of self-control when eating are all risk factors for weight gain. The body responds to stress and lack of exercise by craving unhealthy foods. The benefits of aerobic exercise include an increase in heart rate and an improvement in the ability of exercising muscles to use blood oxygen. Due to the decreased risk of cardiovascular and metabolic diseases and the resulting decreased COVID19 severity, this is crucial during the Covid-19 pandemic. Regular physical activity helps to enhance sleep quality at age middle and old adults, protect the body fight Covid-19 by increasing certain immunity.

When you have to stay at home, sports are also seen as a form of recreation. But due to a shortage of services and equipment, this did not go well. Sports facilities including restrooms, pedestrian facilities, vegetation, sports facilities, and infrastructure are some of the aspects that must be present. The purpose of this study is to determine what are the functions and tools of the infrastructure required if the city park serves as both an exercise facility for people and an iconic representation of the city.

1.2.2 Sport center as a public space

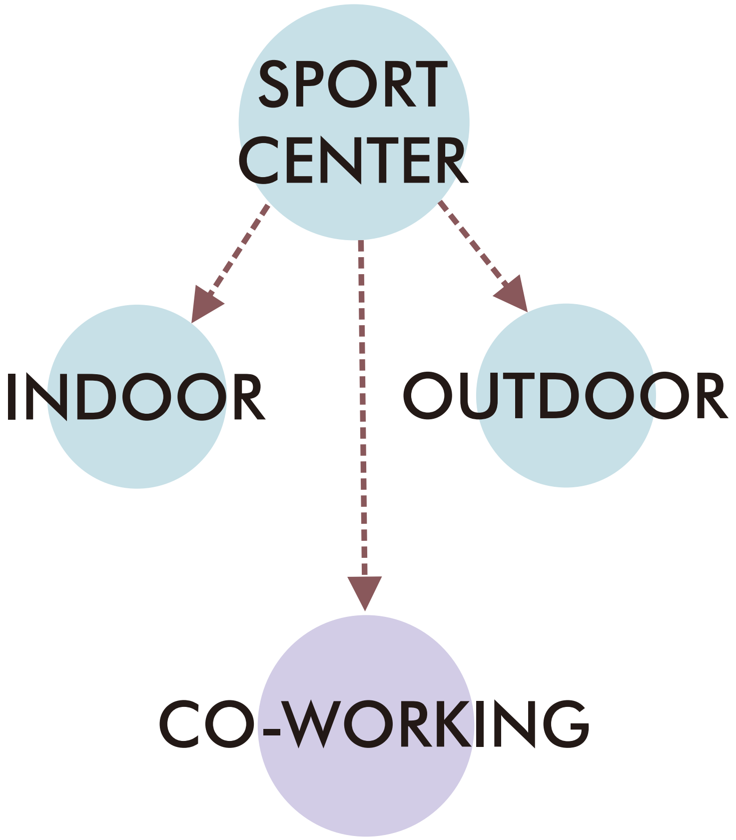


FINAL ARCHITECTURE DESIGN STUDIO | *DESIGN THEME*

1.2.3 Sport center

The Sport Center's primary purpose is to provide a venue for both indoor and outdoor sporting events for the community. In contrast, this design serves as an idea for recreational and sports facilities, that also means that in addition to offering sports facilities, sport facilities for recreational types are typically outfitted with ancillary amenities like shops, cafes, playgrounds, restaurants, gathering areas, jogging trails, and so on. The majority of attendees at this kind of sport center event are families and groups of young people with friends who are looking to have a good time, unwind, and socialize.

A research published in the British Journal of Sports Medicine found that exercising five or more days per week reduced the risk of catching a cold or respiratory virus by 46%. Even healthy individuals can still contract the Covid-19 virus, but somehow the symptoms they experience are not severe and they can recover more quickly. The amount of exercise you get It is advised that you perform it three to five times each day for a few weeks, with such a moderate activity and time commitment of 30 to 45 minutes.



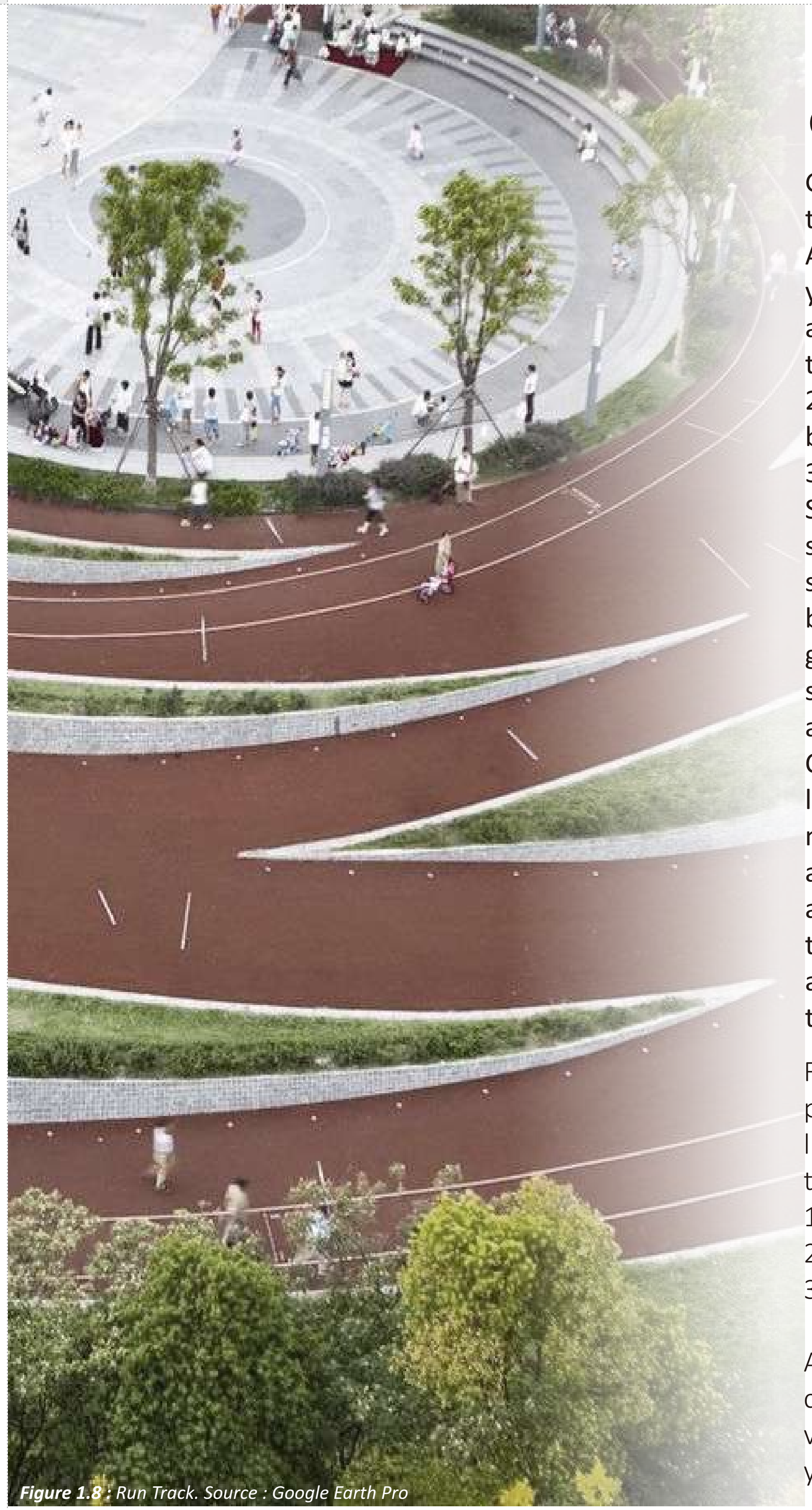


Figure 1.8 : Run Track. Source : Google Earth Pro

source : https://www.archdaily.com/524427/zhangmiao-exercise-park-archi-union-architects/53b761d1c07a8005ce000237-zhangmiao-exercise-park-archi-union-architects-image?next_project=no

1.2.4 Semarang = An Athlete City

Good sports accomplishment is one of the requirements that the City of Semarang must meet in order to become a Athlete City. Making as many high-level achievements as you can is the goal of achievement sports. This implies that a variety of parties must collaborate in order to maximize the key elements that affect sports success (Kristiyanto, 2012). Naturally, Semarang City's accomplishments must be excellent in order to become known as a City of Athletes. 3 times as overall winners of PORPROV Central Java, Semarang City's athletes have proven their worth in the sporting world by winning 156 gold medals in 2009, 128 silver medals in 2010, and 150 golds, 88 silvers, and 87 bronzes in 2009 and 2013. 2018 saw the winning of 115 gold, 94 silver, and 100 bronze medals. It goes without saying that Semarang's very best athletes' accomplishments can help the city realize its potential as a City of Athletes, and this excellent success is inextricably linked to Semarang's status as such. Naturally, Semarang's manifestation as a City of Athletes can be facilitated by the accomplishments of its athletes who are very good. The awareness of many parties, including DISPORA, KONI, and the Main Organization of the Sports Branch, which has an achievement development program, is obviously essential to this outstanding success.

From some article that on the social media already published, Government already opened a sport class that on limited spaces, that's mean this kind of the sport already has their athlete, the sport are :

1. Wushu
2. Silat
3. Table Tenis
4. Volley
5. Futsal
6. Gymnastics

As for the co-working itself, later in this building there will be co-working spaces to provide four gatherings for other visitors who don't want to exercise and just enjoy the yawang polder while waiting for the train to arrive.

Figure 1.9 : *Old Town Semarang, Central Java. Source : Google Earth Pro*

1.2.5 Social problem in old town city semarang

A long-ago environmental problem is an example of flooding in the Old City area. Topography The North Semarang area is rather low due to its proximity to the sea, with a slope of 0–2 percent and the majority of the territory being virtually at sea level. The ground in the Northern Semarang area is also known to sink or decrease at a pace of roughly 5–10 cm each year Tawang Station area and 10-15 cm each year in Bandarharjo Village. Flooding has become a problem in the metropolitan area since the days of the colonies. The Dutch built two flood canals, the western canals flood and also the eastern canals flood, in an effort to prevent flooding. The Semarang River's silting has caused floods in the Old Town area, which is difficult to resolve, and the city's growth has led to a dearth of green open space.This flood has left many regions desolate, and the ancient city area itself is where this perception is, which raises the level of crime already present. There is enough crime in the Old Town Area. Due to the area's vulnerability to social crimes, even the Old Town Area and its surroundings have a negative reputation. With little justification, abandoned buildings, the existence of criminal groups, and low activity levels, especially at night, this region is becoming more and more dangerous and should be avoided.

Figure 1.10 : *Area of North Old City Semarang. Source : Authors*

1.2.5 Social problem in old town city semarang

The restoration initiative also creates a brand-new issue, notably the growing socioeconomic divide. It is evident from the activity of tourists who congregate there while the rest of the Old Town neighborhood is still peaceful. As a result, a lot of service options are concentrated in one busy area, which leads to economic imbalance between cafés in busy and quiet areas in terms of the number of customers they receive. The abandoned land in the Kota Lama area serves as a temporary home for the homeless due to the uneven distribution of activity there. Roadsides, kamling posts, sidewalks, storefronts, and other places that permit sleeping are where they spend the night. Additionally, some people construct cardboard homes around Road Kepondang, road Merpati, and road Cendrawasih are among the streets where people dare take occupy historic structures that are unoccupied or abandoned by its owner.

One of these is now in the Marabunta section of the Old City. Due to the lack of street lamps, that area along Road Cendrawasih is really quite completely dark. This is akin to "inviting" crime to that location.

Figure 1.11 : Area of Old Town Semarang, Central Java. Source : Authors

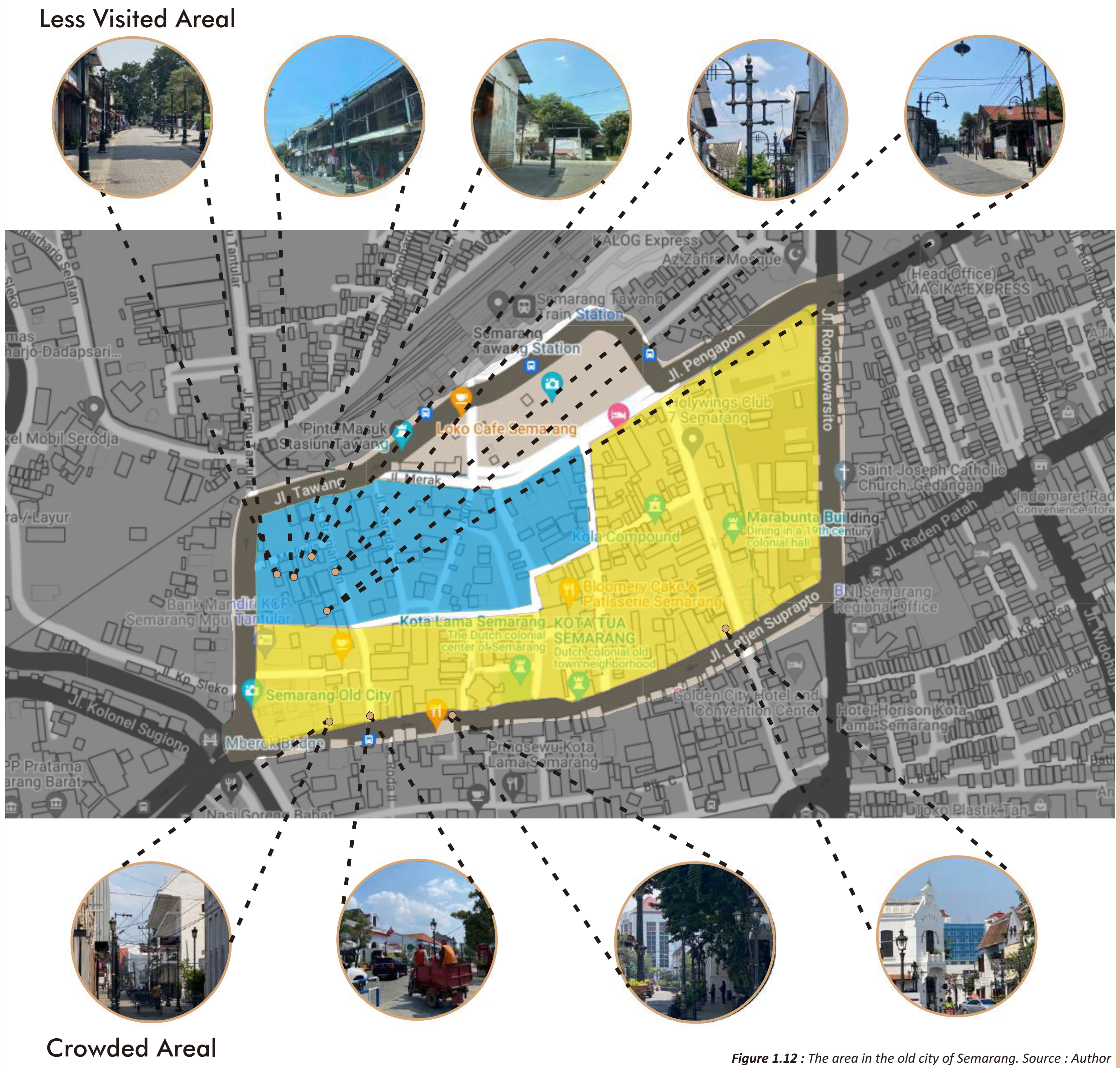


Figure 1.12 : The area in the old city of Semarang. Source : Author

1.2.6 Principal Safety of Covid-19

Idealized management of COVID-19 from the perspective of human safety and health:

1. Physical distance When you are outside the house, keep your boundaries from one another to prevent the virus from spreading.

2. hygienic conditions and access to clean water. After touching other items, wash your hands often with soap, and also be sure to often spritz your home with sanitizer.

3.Utilize a mask. When leaving the house, always wear a mask.

4. Racism and social stigma In order to ensure that COVID-19 ends swiftly, the society is similarly completely responsible like a plural nation. This can be avoided by not discrimination against different persons.

5. No one is left alone. Priority must be given to the older, women, kids, and disabled people.

6. The need for strong social safety nets. Strong government entities that include everyone are only need to turn the tide against COVID-19; strong inter-human cooperation is the solution to stop it.

Figure 1.13 : *Covid-19 quotes. Source : unfoundation.org*

1.2.7 Adaptive Architecture that adapt the Inhabitants

In this instance, architects can concentrate their design efforts on the specific tenants of an adapted structure. The building's layout can then be changed manually by the user, or actions can be taken automatically by the structure. However, there are multiple people residing in the majority of buildings. On the other hand, designing adaptively for individual groups might be quite difficult. Once more, architects may concentrate on enabling manual customization. These are then discussed among the locals.

ADAPTIVE ARCHITECTURE
adapt the inhabitants → Means → Designing for adaptiveness for groups or individual

how to adapt? → probably knowing about the behavior of the people around there and also the social problem.

behavior

problem

Semarang = An Athlete City

Because one of the wishes of the Semarang city government itself as an athlete city, then automatically many people from this Semarang city who have the habit of exercising, especially since Covid-19 are even more aware of physical health, so we need accommodating facilities such as a sports center

Unevenness of crowded area

one of the social problems that exist in the old city itself is the uneven function of the building or the center of the crowd in the old city itself, especially in the northern part

So, due to existing social problems such as the uneven distribution of crowd centers in the old city of Semarang, one way to invite people to come and change the atmosphere in the area is to provide the needs of the community itself, which here is the need to exercise, so a sports center such as jogging is given. track to facilitate people's habits and needs

1.3 Design Thinking

1.3.1 PROBLEM THINKING

Issues	**Sport Center** in Semarang	**Covid-19** Pandemic	**unevenness** of an area
Context Issues	Inadequate place for sports Not many places that facilitate to exercise	Changes in the function of public areas during the pandemic	Reduced social cohesion that occurs in the surrounding community, especially for millennials
Analysis	Provide sports station facilitation as a place for recreation and exercise using concept adaptive architecture		Provide a public facility to strengthen the social cohesion with a bringing together local community activities and sports
Hypothese	The design aims to formulate a strategy on how design can change the function and definition of public spaces during the pandemic era and will remain useful after the pandemic era especially in sport center. And they will still be able to apply health protocols even though activities in the sport center will continue and the sport center will not be neglected. This sport center development plan will combine existing public spaces and several accommodating facilities such as a park and an outdoor jogging area.		

1.3.2 PROBLEM MAPPING

NON ARCHITECTURAL PROBLEM

1. the social problem that occurs in the surrounding community.
2. Pandemic COVID-19 has started people starting to aware about health problem and started to doing exercise.
3. Unevenness area in the north of Old town City Semarang

ARCHITECTURAL PROBLEM

1. Not many places that facilitate to exercise
2. Pandemic COVID-19 make Changes in the function of public areas.
3. Some places for exercise not apply the health protocol, it will be abandoned.
4. Some public spaces are abandoned due to inadequate places.
5. Lack of the Social Cohesion in public space due to covid-19

GENERAL PROBLEM

How to combine the design of sports center and public spaces to build the attractiveness of people to come and a sense of belonging from the community with adaptive architecture conceptual

SPECIFIC PROBLEM

1. How to design a sport facility by adapting the characteristics of existing buildings in the old city of Semarang?
2. how to design a sport facility to meet the needs of exercise, recreation and empower the surrounding community?
3. How the building create a safety environment for the users?

GOALS AND OBJECTIVES

The design aims to formulate a strategy on how design can change the function and definition of public spaces during the pandemic era and will remain useful after the pandemic era especially in sport center. And they will still be able to apply health protocols even though activities in the sport center will continue and the sport center will not be neglected. This sport center development plan will combine existing public spaces and several accommodating facilities such as a park and an outdoor jogging area.

1.3.3 DESIGN FRAMEWORK

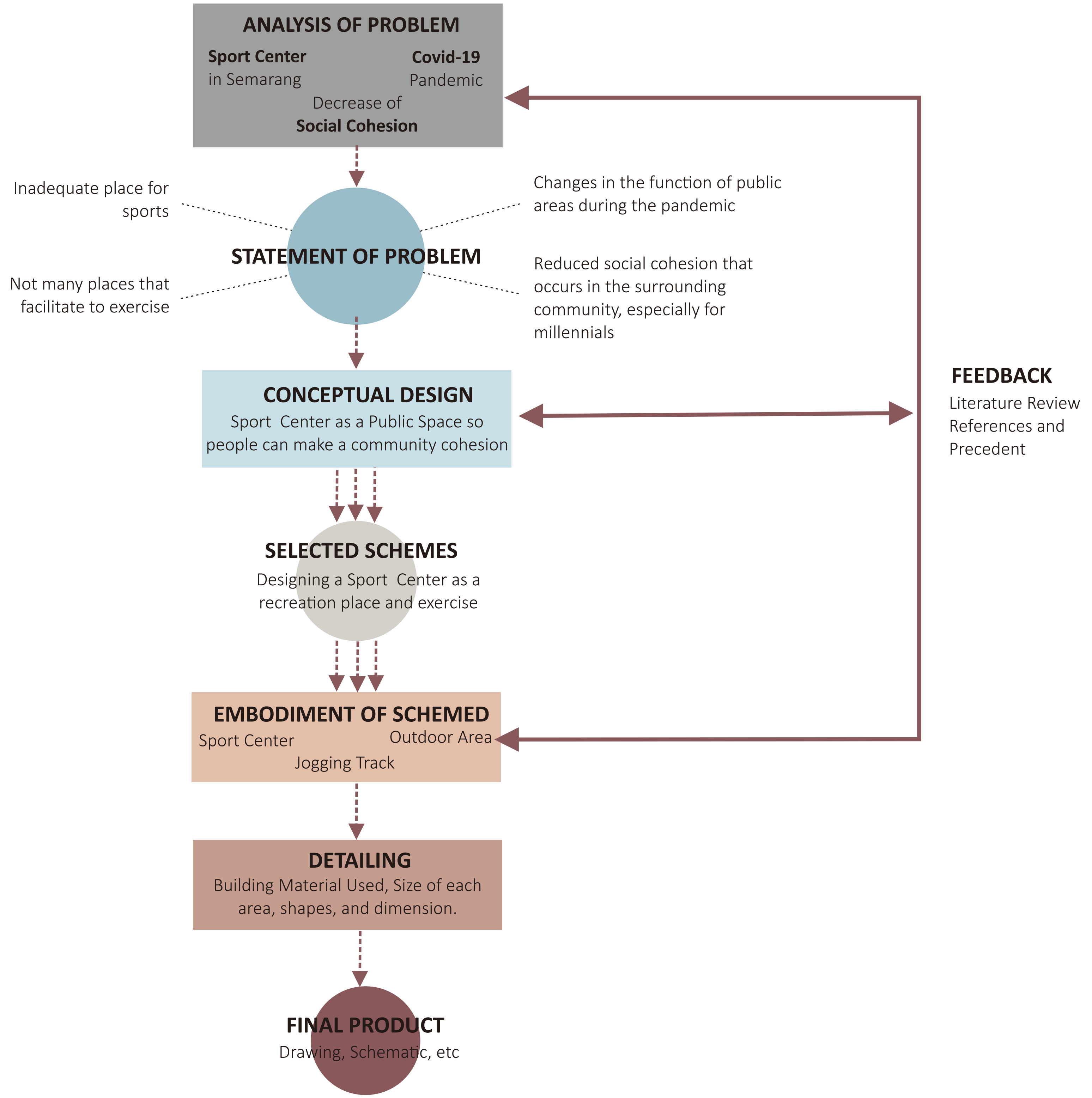
OBJECT	**SPORT CENTER** with adaptive architecture to attract human			
ISSUES	**Sport Center** in Semarang	**Covid-19** Pandemic	**unevenness** of an area	
CONTEXT ISSUES	Inadequate place for sports	Not many places that facilitate to exercise	Changes in the function of public areas during the pandemic	Reduced social problems that occurs in the surrounding community, especially for millennials
GENERAL PROBLEM	How to combine the design of sports center and public spaces to build the attractiveness of people to come and a sense of belonging from the community with adaptive architecture conceptual			
SPECIFIC PROBLEM	1.How to design a sport facility by adapting the characteristics of existing buildings in the old city of Semarang? 2.How to design a sport facility to meet the needs of exercise, recreation and empower the surrounding community? 3. How the building create a safety environment for the users?			
LITERATURE STUDIES	Social Problem	Sport center	Adaptive Architecture	

1.3.4 DESIGN METHODS

Since then, the development of design processes can be viewed as a series of pessimistic and hopeful moments. The dangerous nature of the activity done from the Industrial Revolution to the middle of the twentieth century was noticed when compared to the complexity of contemporary things created after the 1950s. There was a pervasive belief in the 1960s that a fundamental design structure, which abstracted the uniqueness of design challenges, could ensure access to an ideal solution. Due to a lack of useful results in earlier years, the main authors were unsatisfied with this viewpoint in the 1970s. The building of objective functions was no longer the aim of the new procedures that the design approach created in the 1980s, which were based on current paradigm. but to better comprehend how consumers interact with products in their daily lives. Design studies investigated additional methods, such as the Herman Kahn and Alvin Toffler-initiated scenarios method.

SYSTEMATIC METHOD BY FRENCH

In reaction to criticism and as a result of outside influences like Kuhn, Popper, and Feyerabend's theories, a new paradigm in design process arises in the late 1970s. Through his Studies in Architecture, Jones distinguished himself once more. In this essay, Jones takes aim at reductionist methods, highlighting the significance of emergence and intuitive in the creativity and research process. The rationalism and structural functionalism paradigms began to lose their luster, and studies on specialized tools started to proliferate. As a result, the methodology trend of presenting a comprehensive presentation of the design phase changed. Additionally, integration with several non-design domains led to an expansion of the designer's repertory. New techniques like mind mapping, scenario tactics, usability testing, and cooperative/participatory learning design came into sharper focus. However, utilizing a diagram to represent the design process continues to pique the curiosity of academics and design teams. Finding, defining, creating, and disseminating are the four stages that the Design Council of the UK devised to represent the design process. The form is referred known as Double Diamond. This figure shows the divergence and convergence processes as two crucial stages of the design process. While the phases that describe and promote are converging, the stages of exploration and design relate to convergent processes. To supplement and extend this model, the elements arranged inside the diagram imply focused and exploratory efforts on the left diamond, and prototype, testing, and refining cycles on the right diamond.



Excellency, Originality & Novelty

The design for a sports center that follows uses a novel approach to show that the work which will be created as part of this proposal is original or has never really been performed before.

No.	NAME	TITTLE	APPROACH	TYPOLOGI	LOCATION	YEAR	DIFFERENCE
1	Prianindyarto Widyatmoko	SPORT CENTER DI PANTAI MARINA SEMARANG	the design of a Sport Center as a sports facility located on Marina Beach	Sport Center	Marina Beach, Semarang	2003	Different approach and location
2	Muhammad Arief Maulana Akbar	SPORT CENTER DESIGN OF TASIKMALAYA WITH METAPHOR ARCHITECTURE OF TASIKMALAYA CULTURE	Metaphor Architecture Approach	Football Stadium Renovation and Architectural Metaphor approach	Tasikmalaya, West Java	2019	Different approach and location
3	Aries Risdhianto	Sports Center di Semarang High Tech sebagai Tampilan Pembentuk Citra Bangunan	High Tech building as a Building Image Shaper Display	Building Image Shaper Display	Sultan Agung 9 street, Gombel. Semarang	2005	Different approach and location
4	Bagus Yoga Pratama	Perancangan Sport Center Di Kota Wates Kabupaten Kulon Progo Dengan Pendekatan Culture Connection	Culture Connection	Culture Connection	Kulon Progo, Yogyakarta	2019	Different approach and location
5	Previari Umi Pramesti	KAJIAN RUANG DAN AKTIVITAS PASAR MINGGU TAMAN SETIABUDI BANYUMANIK TERHADAP TERBENTUKNYA KOHESI SOSIAL MASYARAKAT	sosial cohesion	sosial cohesion	Pasar Minggu Taman Setiabudi	2019	Different building type and location
6	Winarna	REDEFINISI RUANG PUBLIK DI MASA PANDEMI COVID-19 Studi Kasus Di Kota Yogyakarta	Redefinition of Public Space	Redefinition of Public Space	Yogyakarta	2021	Different building type and location

CHAPTER 02.

Study Design Problem

2.1 Typology and Presedent

Figure 2.1 : Site Location Trace. Source : Google Earth Pro and Authors

2.1.1 TOPOLOGY

ADAPTIVE BUILDING

In order to move the discussion away from the extremely detailed and fine-grained categories introduced, it is important to describe a few broad techniques that are employed in the design for adaptability. Despite being abstracted, strategies are based on the aforementioned categories. They are intended to outline the main components of the design options available to designers. All of these topics will be investigated, including mobility, prescription levels, reusability and standardization, automation and design for human interaction, and fostering independence.

Architects have long thought of mobility as a design idea that would enable buildings to respond to environmental changes more quickly. The vast majority of architectural creations are site-specific. In order to construct structures that adapt to the needs of their occupants, adaptive architecture frequently takes design cues from related movable infrastructure, such as caravans, trailers, boats, and even space ship design. This results in architecture that is actually mobile in addition to being transportable.

Buildings can also be created with variable spatial topologies. This describes plans where a building's occupants can alter how certain architectural units (such modules or rooms) relate to one another. This can be done by physical reconfigurations. Among the main driving forces in this field is Price's revolutionary Generator Project. It is technically challenging to obtain the aforementioned, particularly when exterior surfaces are involved. On physically adapted topologies, however, there have been a number of important initiatives in the interior space. By enclosing a number of rooms on wheel bases within a larger open-plan volume of a residential building, Shigeru Ban's Naked House explores this idea.

Topological flexibility is also enhanced by communication technology. In these hybrid spatial topologies, audio and video are used to connect many physical venues, frequently located far apart from one another. Other places appear to be nearby and to be a part of the same architectural arrangement because to these technological links, particularly when they are consistent. The inside/outside link configuration is a very notable adaptable part of building construction. All occupied buildings have doors and windows, but certain projects demonstrate particularly intriguing potential in this area. Particularly early modernists seemed to be intrigued by this kind of adaptation.

SPORT CENTER

A sports center is a building that may host a range of sports in open or enclosed spaces to help people reach their physical and spiritual potential through competitions or just for fun (filling spare time with sports). Along with the sports facility, the Sport Facility's infrastructure also consists of commerce (retail) amenities, leisure, and dining options.

PUBLIC SPACE

Through social interactions that are permitted in the public space, the community's need for a way to carry out activities with a diversity of activities together is addressed, allowing for ongoing learning between people, one community with another, until there is a shared understanding. According to (Sunaryo et al.), the community must live with and accept the heterogeneity that exists inside a city as a need. As a result, public space is transformed into a place where members of the community can express their individuality visually and physically. The term "public" is defined in public studies due to the public sphere's broad reach, natural production through individual contact, and aggregation of public groupings.

It is common for public space to be contested. Claims to ownership of public space in the realm of praxis lead to countless conflicts that not only have the potential to break down but also degrade fundamental human values. In society, Sudiarja(2008:63) argues that groups compete in a way that deprives people who are not affiliated with organizations that share certain ideals of attention. Since each person is fundamentally a private citizen who enters the public area because the nature of the argument involves public interest, all citizens can visit such a place. Garanties of freedom of assembly and expression are necessary in this case. Because it is accessible to everyone, public space is characterized as such.

2.1.2 PRESEDEN

Reims University Headquarters

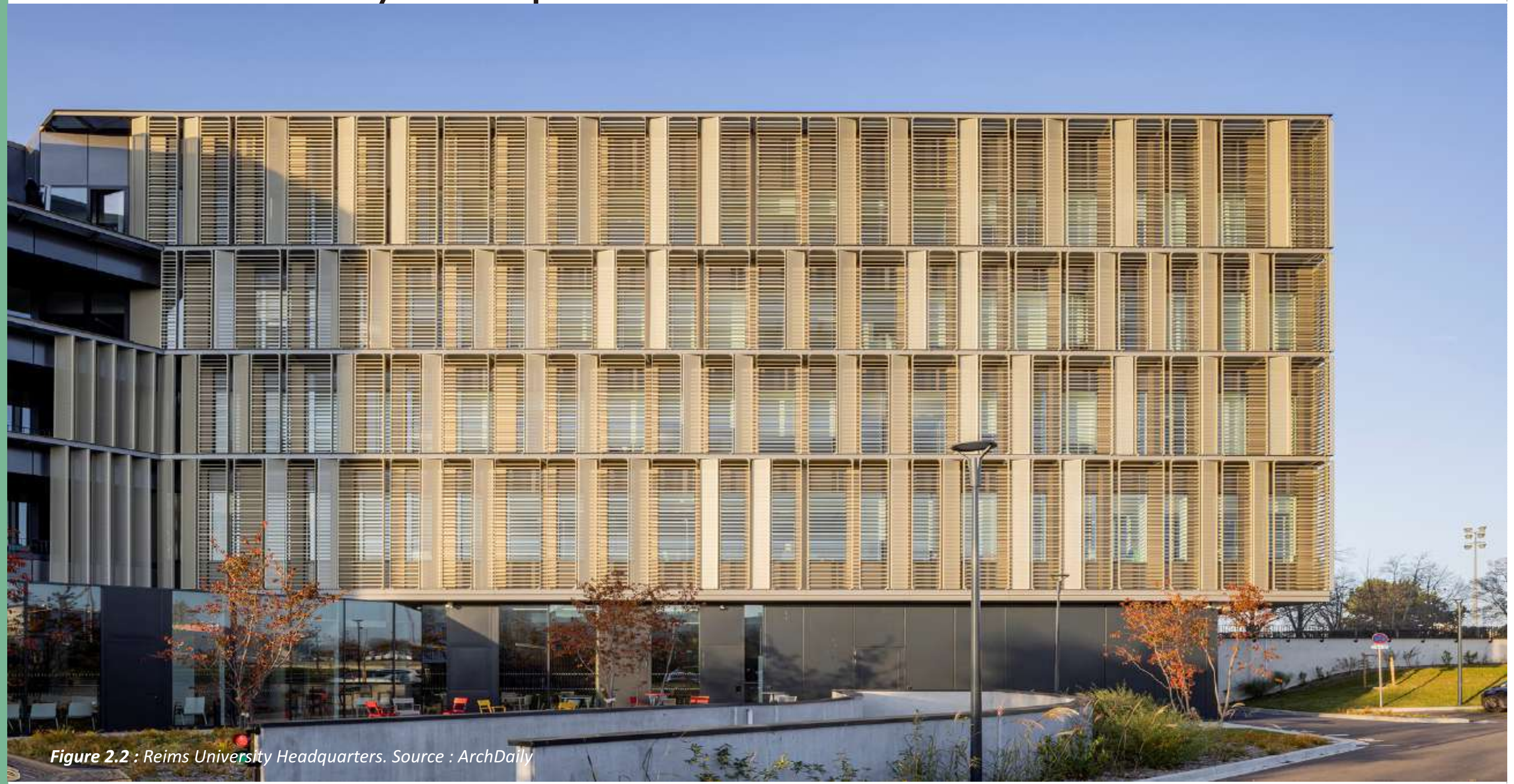


Figure 2.2 : *Reims University Headquarters. Source : ArchDaily*

In a city where one in six residents are students, the building, which is at the center of URCA's Campus 3.0 initiative to renovate and reinvigorate its facilities, reflects the institution it represents through a strong and dynamic architectural signal. The offices of this huge public university are also situated in a sensitive region, which acts as a potent allusion to the possibility of greatness for everyone.

The new University office, which are southwest of Reims' historic center in the Croix-Rouge neighborhood, act as a structural link in the city's urban renewal. A racetrack is surrounded by large communal housing complexes and activity buildings, which make up the majority of this diverse and sparse community. The project, which is situated at the intersection of two streets, connects existing and potential firms and acts as a crucial accelerator for the development of the industry.

The entrance to the headquarters is boldly marked by the building's massive glass windows. It was set back from the street thanks to its treatment, which comprised a gradual ramp and a small setback from the main front. The restaurant, boardroom, and hall on the ground level all have broad, sunny patios that face south into the garden. The foundation rotates across the four office floors on the upper levels. They are designed to be entirely modular and expandable to accommodate departmental demands and synergies.

Figure 2.3 : *Reims University Headquarters Plan. Source : ArchDaily*

Lesson Learn

how to arrange a building using adaptive architectural concepts by renovating parts of the building to keep its old functions connected, such as the use of interior materials or the use of facades using glass in order to meet the needs and synergies between departments. such as the concept that will be carried out using the concept of adaptive building, this can be a way of connecting needs between fellow humans and has something to do with social cohesion

FINAL ARCHITECTURE DESIGN STUDIO | TYPOLOGY AND PRECEDENT

2.1.2 PRESEDEN

Tanatap Ring Garden Coffee Shop / RAD+ar (Research Artistic Design + architecture) JAKARTA, INDONESIA

***Figure 2.4 :** Tanatap Ring Garden. Source : ArchDaily*

Tanatap, a small-scale prototype of the Ring Garden Café's multi-leveled green area, features dynamic platforms that rise and fall to form a walkable roofscape. The building will be joined together to form a network of floating amphitheaters with tropical outdoor recreation in the center, surrounded by greenery. A pedestrian bridge that joins two existing trees surrounds guests as they enter the Ring Garden, blurring the lines between interior and outdoor environment. They were teased by what appeared to be a cut skylight and individuals in the garden above as soon as they entered the premises. Concentric space with a coffee bar in the center divides into two places behind a hidden door that gradually become less personal and more permeable with natural light.. Both spaces are leading to the main spacious multi-leveled garden area as the ending and indirectly persuading visitors to enjoy more of what a tropical garden could be.

The entire ring garden can be viewed from the higher level as a place where the city and the landscape meet. From a distance, the sculpture punctures what appears to be a city skyline, yet as soon as people enter the area, the color and light entice them sensually into the Ring Garden's natural setting.

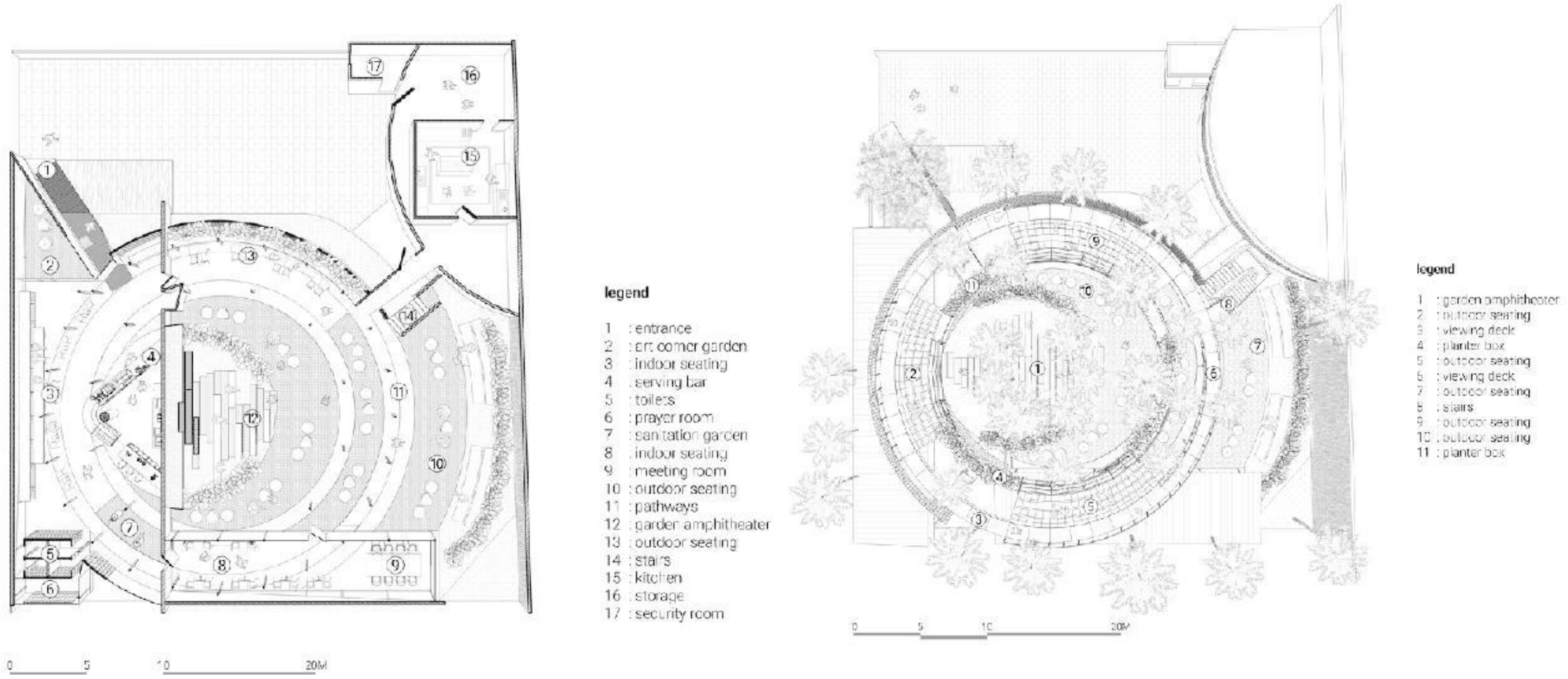


***Figure 2.5 :** Tanatap Ring Garden Plan. Source : ArchDaily*

Lesson Learn

The design of small prototype of a multi-leveled green space with dynamic platforms that rise and fall to create a walkable roof scape it will great with the concept of social cohesion to make the connection between the surrounding. And for the In the upper level, the whole ring garden can be seen as a transitional space between the city and the landscape. Looking at the sculpture from further away, it punctures a skyline-like image of a city on the horizon, but when entering the square, the color and light, invite the visitors in a sensual way into the natural landscape of the Ring Garden.

2.1.2 PRESEDEN

Sport Center ETH Honggerberg / Dietrich (Switzerland)

Figure 2.8 : *Sport Center ETH Honggerberg. Source : ArchDaily*

The new ETH Sport Center's urban planning concept honors the location as it crosses from the campus development to the open recreational space. The flat building is embedded deeply into the gently sloping environment and forms the boundary of a slightly depressed area, creating a natural transition from the surroundings to the green roof. The building has a wide façade that faces the school and has pronounced, slanted edges on the top and the sides. As a result, the building appears lower and blends timidly into its surroundings. It communicates the unique functions of the structure while preserving the site's quality.

The auditorium and foyer share the same ceiling that is above the hall. It combines a topography of various heights and uses under its roof: a large-scale development that facilitates celebratory occasions in addition to sporting venues. The gym, cardio, and wellness area on the south side of the building are vertically aligned to the space and on top enclosed by a slanted roof in addition to such expansive space layouts. According to individual interpretation, its exterior, interior, and zoning make a contrast of corresponding and superimposing features that offer excitement, surprise, and architectural delight.

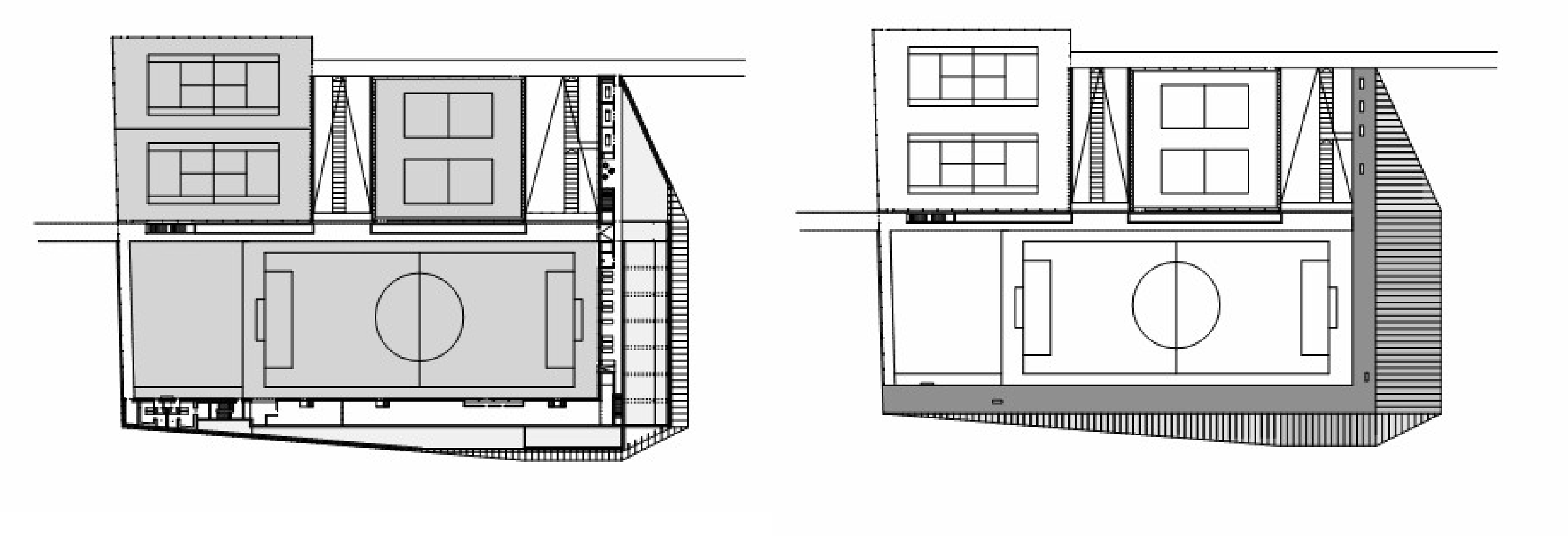


Figure 2.9 : *Sport Center ETH Honggerberg Plan. Source : ArchDaily*

Lesson Learn

The new ETH Sport Center's urban-planning concept pays homage to the location as it transitions from campus expansion to open recreational space. The flat structure has been placed deeply into the softly sloping environment, establishing a natural progression between the surroundings and the green roof. The construction has a broad façade that faces the school, with conspicuous, slanted edges on the top and sides. As a result, the structure appears lower and adapts slowly to its surroundings. It maintains the site's qualities while expressing the building's distinct functions.

2.1.2 PRESEDEN

Urban Valley Commercial District / TROP : terrains + open space (SHANGHAI, CHINA)

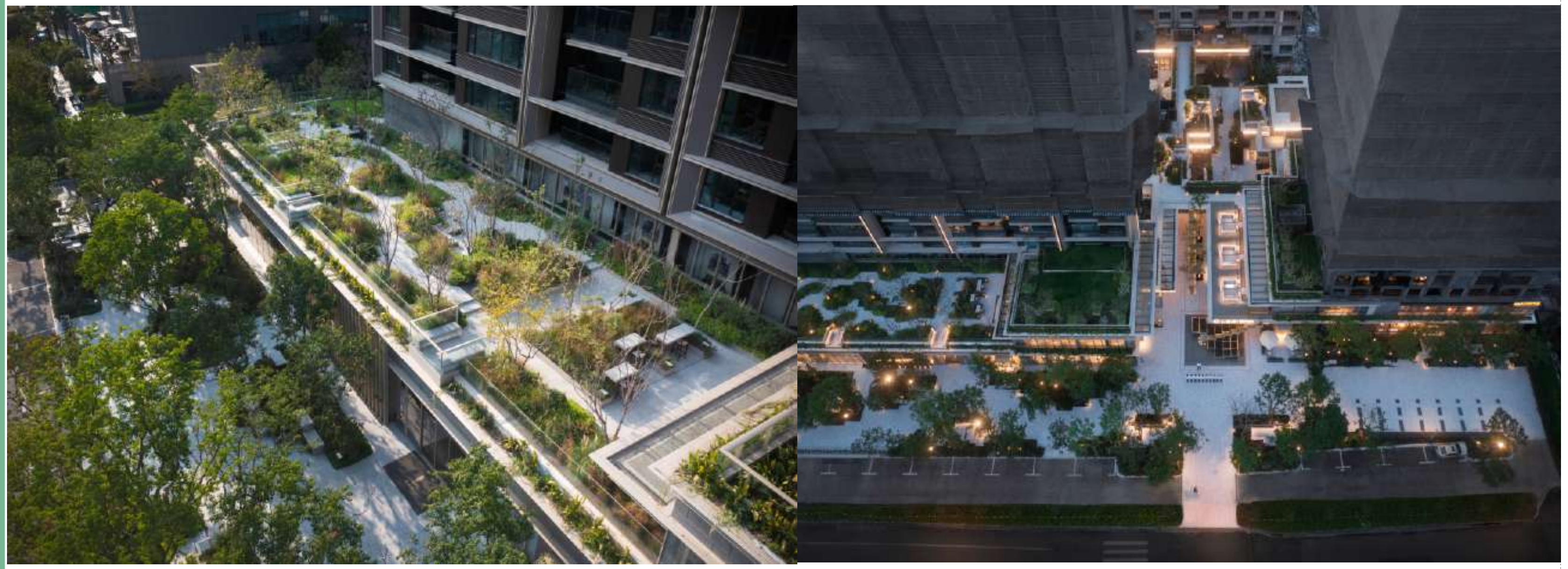


Figure 2.6 : *TROP : terrains + open space. Source : ArchDaily*

The proposal comprises of a water bar along the street and an exhibition center. The architectural design itself includes a wide range of energetic spaces, but because of the complexity of functional requirements, this project has focused on how the landscape should combine the staggered spaces together in line with all functional requirements. Based on that, scaling and gradient adjustments are made to the landscape design to create a connection between the inside and outside, as well as a spatial layout with the square outside and the courtyard inside. By enhancing and modernizing natural spaces, such as woodlands, mountain streams, and valleys, an immersive commercial space experience that is both distinctive and natural is achieved.

The main flow line view is modeled after a tropical rainforest. The flow of people is directed to the right. Visitors can experience traversing the mountain by using the stepping stones that float on the water's surface of the tropical rainforest. The mountain has limited space.

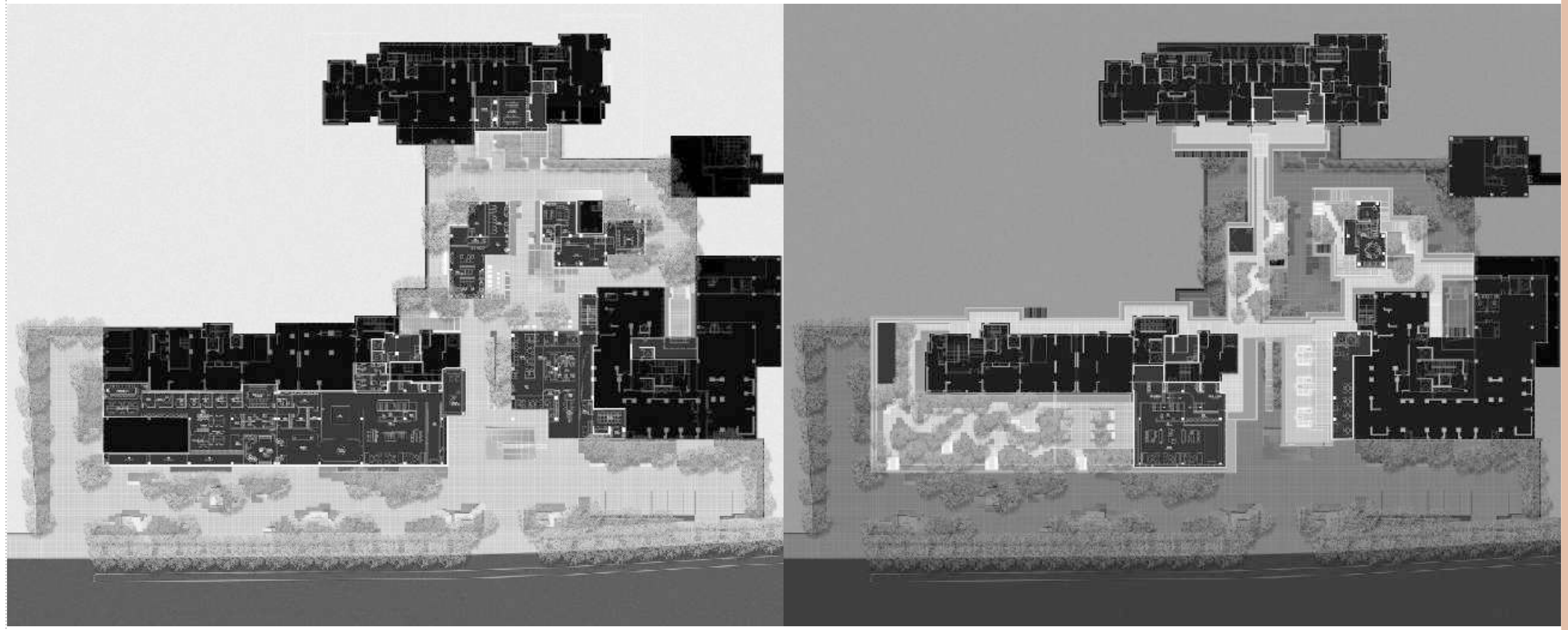


Figure 2.7 : *TROP : terrains + open space Plan. Source : ArchDaily*

Lesson Learn

What we can learn from this structure is how the placement of the rooftop area on the long, elongated building may create a social space, and if we can use this idea to create a public space for the sports facility as well. Based on that, scaling and gradient adjustments are made to the landscape design to create a connection between the inside and outside, as well as a spatial layout with the square outside and the courtyard inside. By enhancing and modernizing natural spaces, such as woodlands, mountain streams, and valleys, an immersive commercial space experience that is both distinctive and natural is achieved.

FINAL ARCHITECTURE DESIGN STUDIO | TYPOLOGY AND PRECEDENT

2.1.2 PRESEDEN

Sports Center Stopiče / Jereb in Budja arhitekti (Yemen)

Figure 2.10 : *Sports Center Stopiče . Source : ArchDaily*

The structure, orientation, and materials used in the architecture adapt to the "archetypal" setting (countryside cottages, a church tower, and green hills of the Dolenjska region). A circular ring that adjusts to the slope of the ground contains the service program for the sports center and linkages to the existing school building. The main hall volume rises in the middle like a substantial wooden outbuilding, and this ring both corrects and conceals its size. The main hall is surrounded by rooms, and the hallways, entrances, and vistas are designed to provide for the greatest amount of air permeability. The visitor may observe over the center's many sections thanks to the windows separating them.. The main entrance and the service entrance are the two entrances. There are 220 seats available in the large hall.

Next to the great hall is a tiny warm-up room that is usually used for handball practice.The structure blends in well with the surrounding landscape thanks to its liberal use of wood, exposed concrete, and tin roof. Aluminum is used for the windows and glazing, while the facade is made of high-quality laminated larch carriers. Terazzo is used for the majority of the floors. The parquet sports floor in the gym is already there.

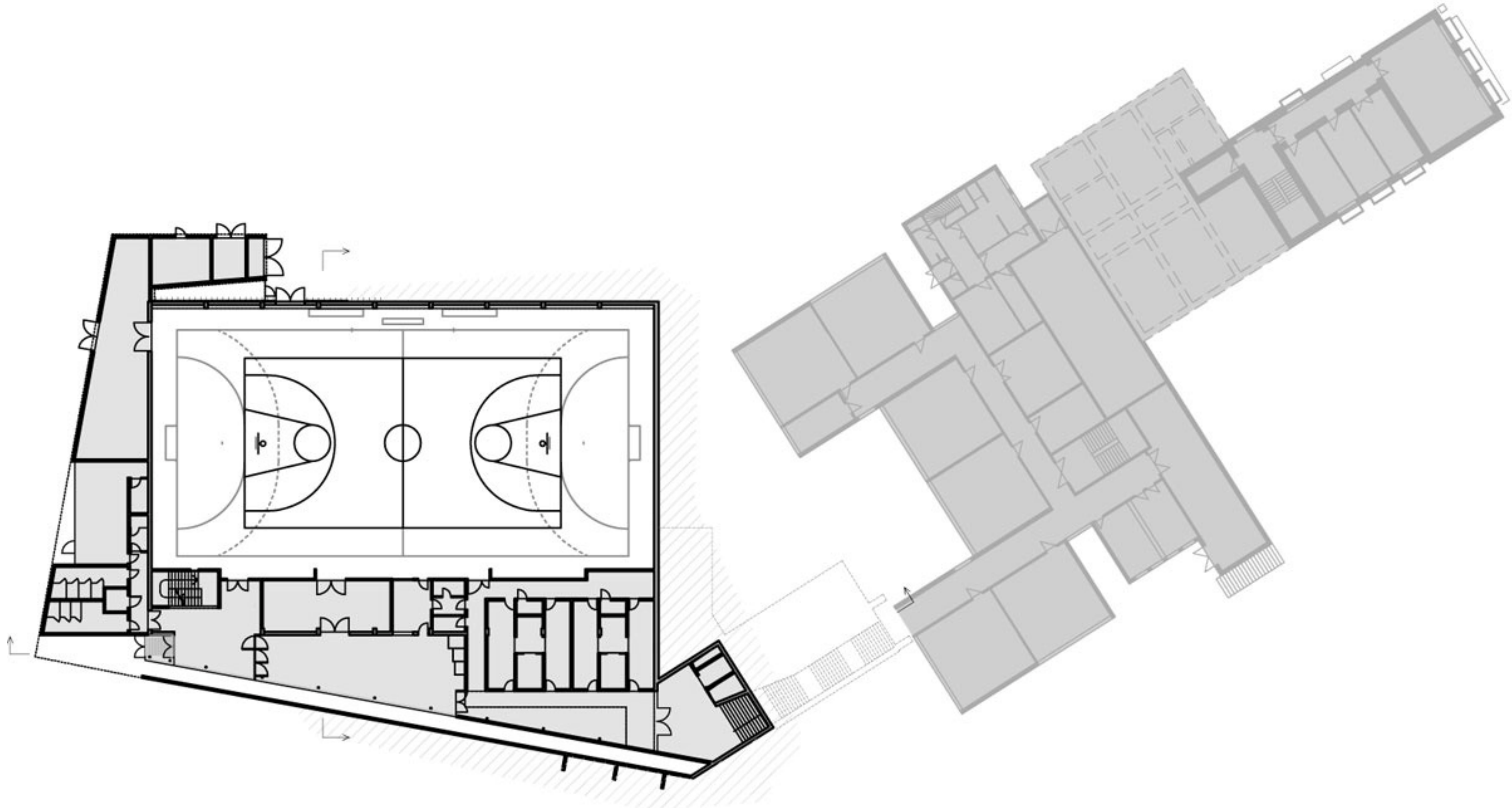


Figure 2.11 : *Sports Center Stopiče Plan. Source : ArchDaily*

Lesson Learn

The "archetypal" position is taken into consideration in the construction, orientation, and material selection of the building mass (countryside cottages, a church tower, and green hills of the Dolenjska region). A circular ring that adapts to the terrain's slope contains the service program for the sports center and connections to the existing school building. This ring corrects and conceals the main hall volume's scale, which rises in the middle like a big wooden outbuilding. Inside, the main hall is surrounded by rooms that have been constructed with tunnels, entrances, and views that maximize the space's ability to be permeable. The windows that link the different parts of the center allow visitors to look outside.

2.2
Site Analysis

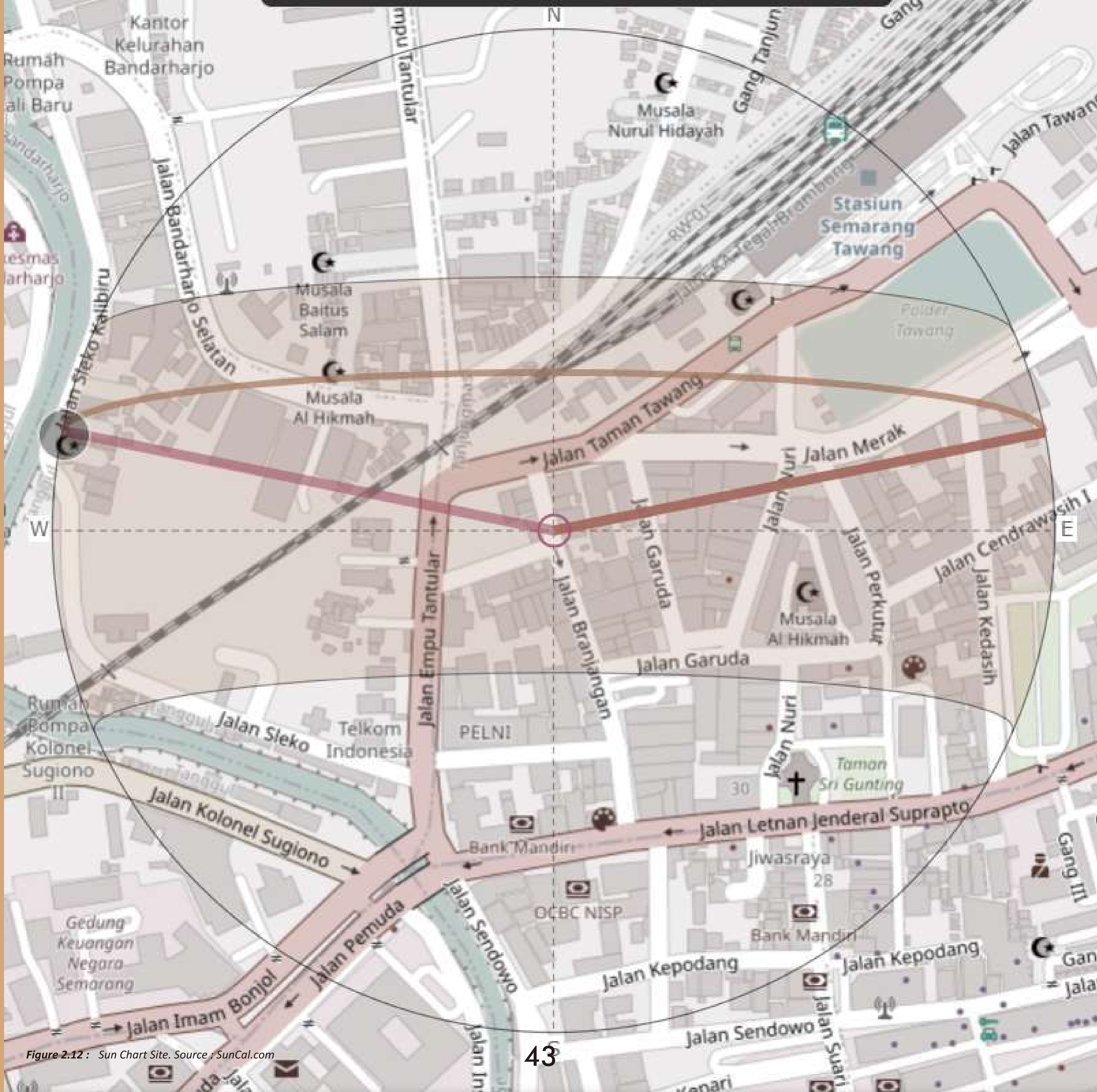


Figure 2.12 : Sun Chart Site. Source : SunCal.com

2.2.1 DISTRIBUTION OF THE OLD CITY

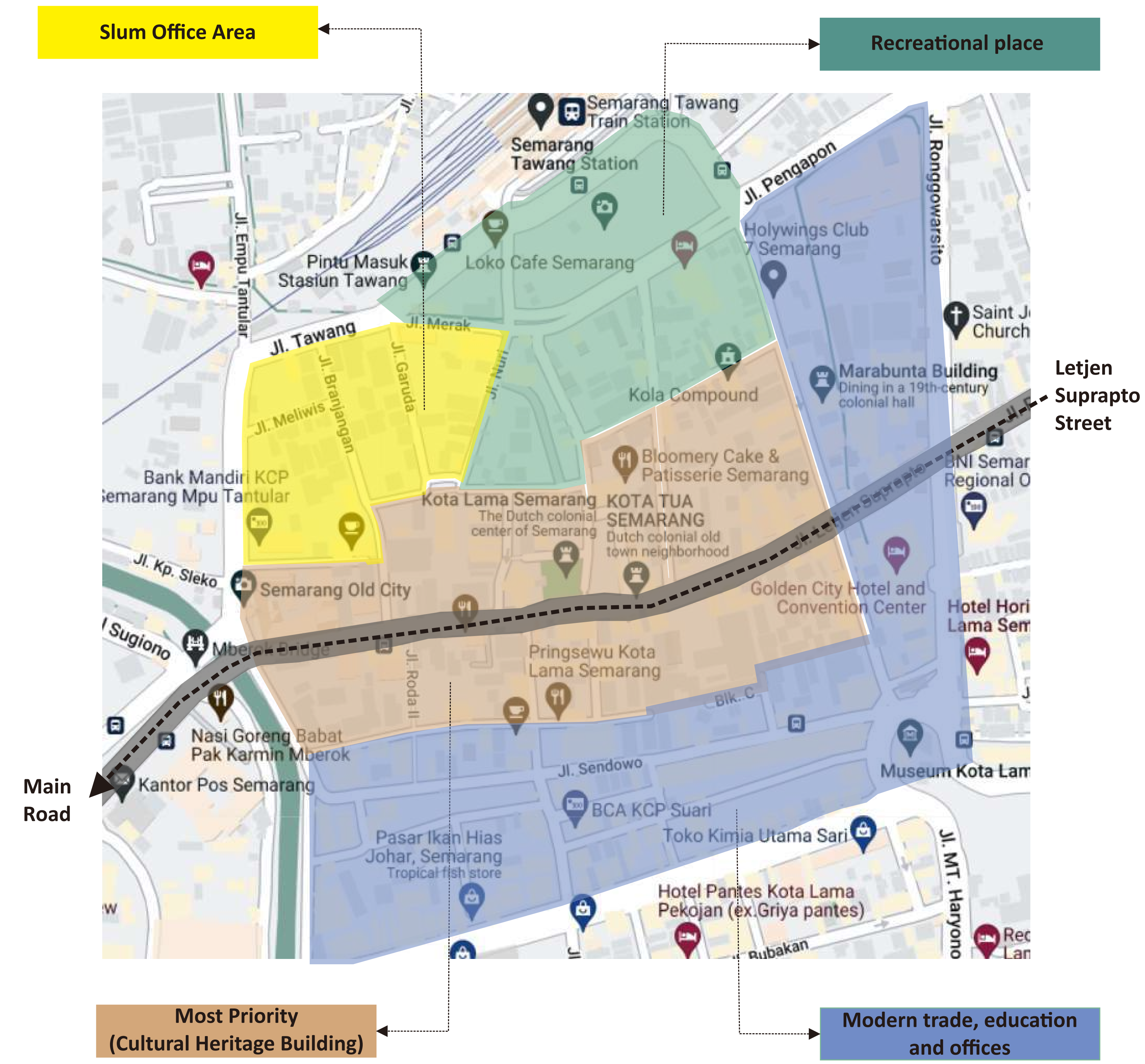


Figure 2.13 : MAP OF THE DISTRIBUTION OF THE OLD CITY OF SEMARANG. Source : Authors

C. SISTEM RUANG TERBUKA DAN TATA HIJAU

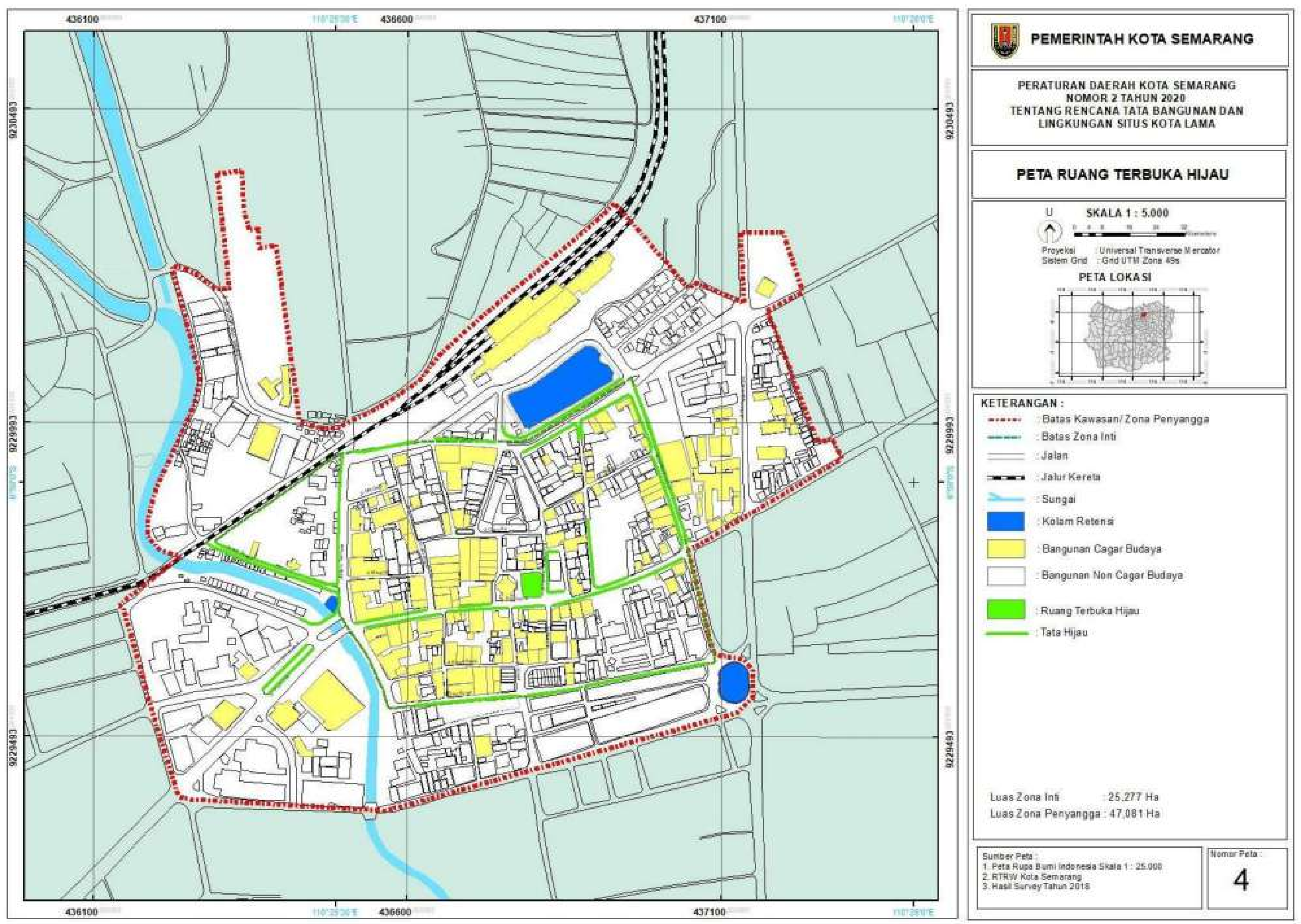


***Figure 2.14 :** SISTEM RUANG TERBUKA DAN TATA HIJAU KOTA LAMA SEMARANG. Source : Perda Kota Semarang*

The first location to see a redevelopment phase, which was finished by the end of 2019, was Old Town CIty. The revitalization's second phase is expected to be finished in December 2020. Fortunately, I was able to explore these four parts of Old Semarang early. My arrival at Semarang Tawang Station (1864), which is a component of Semarang's Old City, is the starting point for my journey. The 31-hectare section of Semarang's Old City is known as Oudestad, or Little Netherlands. A total of 105 structures from the colonial era are dispersed over several zones. The cultural zone is home to some of its most recognizable structures, such as De Spiegel (1895), which is now a restaurant and café, and GPIB Immanuel Semarang (1753), also known as Blenduk Church which is the oldest Christian church in Central Java, Marba Building (XIX century), to the NILLMIJ Building (1916).) alias Jiwasraya Building which has the first elevator in Indonesia.

Before the Semarang Old City underwent reconstruction, the Semarang City Government had already identified which structures were part of the city's cultural heritage. This implies that we can only opt to convert or renovate land that is not considered a cultural heritage.

FINAL ARCHITECTURE DESIGN STUDIO | *SITE ANALYSIS*

Figure 2.15 : Site Location. Source : Google Earth and Author

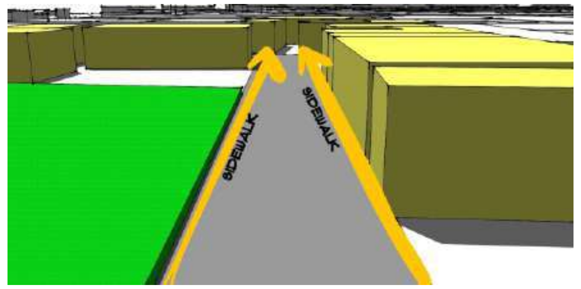


Figure 2.16 : Detail. Source : Author

LOCATION
Old Town Semarang, Jl. Letjen Suprapto No.31, Tj. Mas, Kec. Semarang Utara, Semarang, Central Java

SITE AREA
Building : 1,494.91 m²
Outdoor : 1,640.12 m²

BUILDING CODES AND REGULATION
Based on the regulation from government in commercial area in the city :
Building Coverage Ratio (KDB) : 50%
Building Floor Area Ration (KLB) : 2.6
Building Height (KB) : 1-7 floor
Green Coeficient (KDH) : 10%
Building Correspondence Lines (GSB) : 23 meters

2.2.2 MACRO ANALYSIS

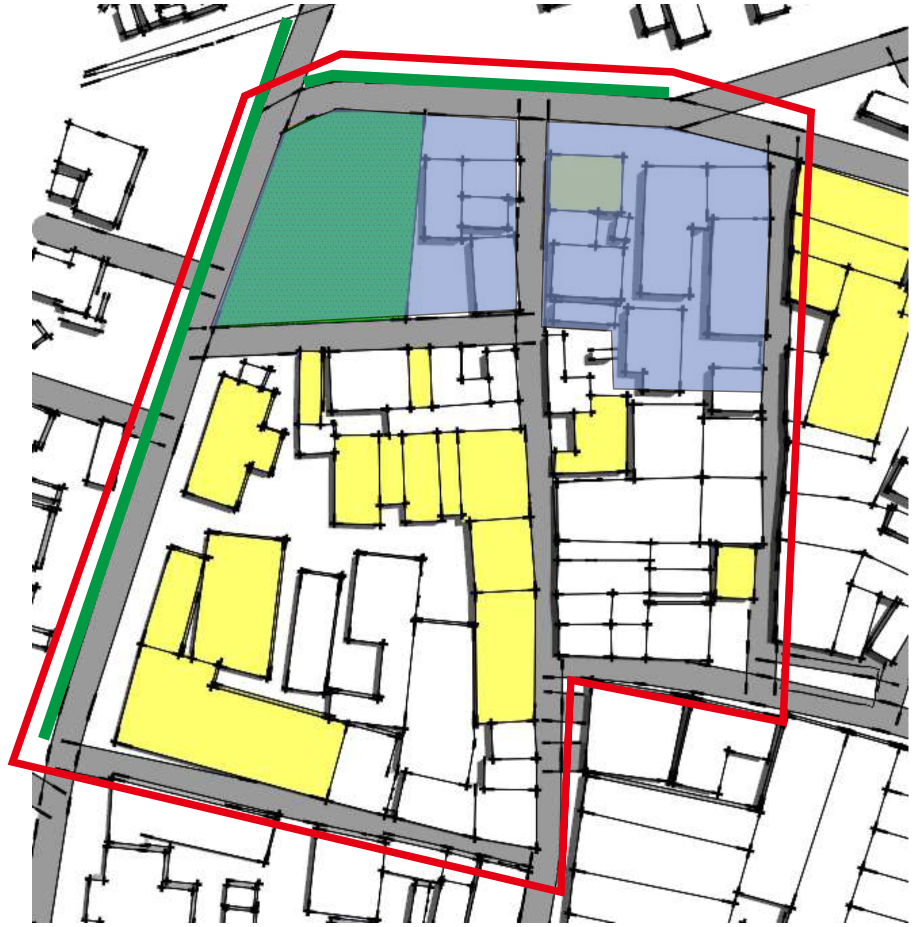


Figure 2.17 : Macro Site. Source : Author

: Heritage Building
: Green Area
: Site Choosen

The selected area is the old northern city area which is still quiet or slum where there is abandoned vacant land that will be used as a park and also very damaged and abandoned houses will be used as a sports center, and around roads that are quiet or rarely accessed by tourist visitors will be made like jogging track for runners because this place actually crossed by people who want to jogging in the weekdays

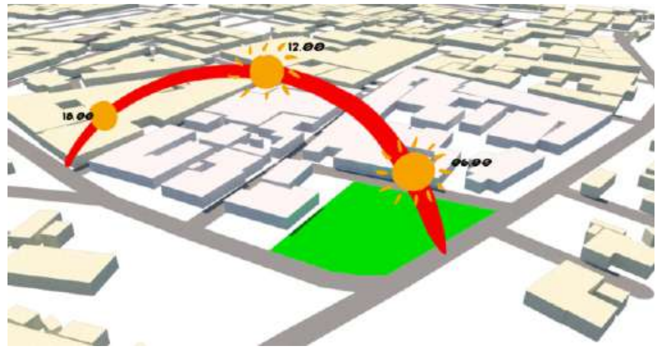


Figure 2.18 : Sun Direction. Source : Author

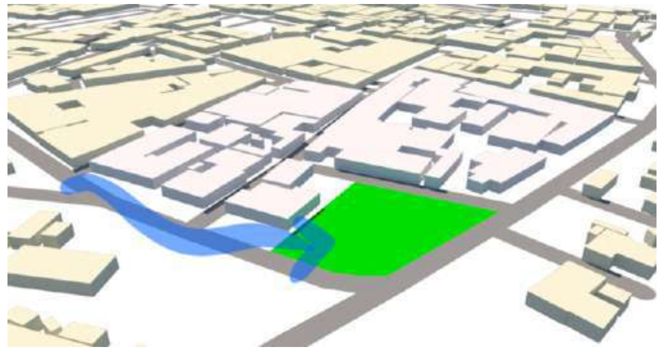


Figure 2.19 : Wind Direction. Source : Author

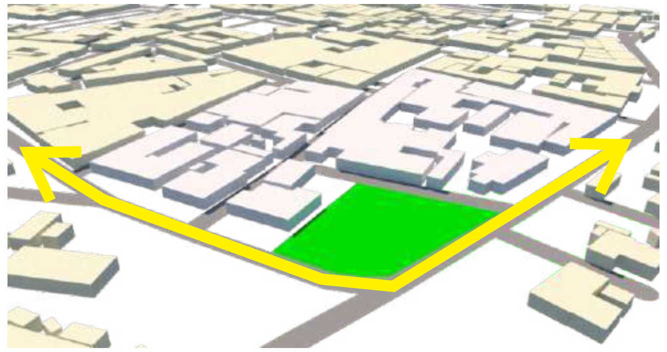


Figure 2.20 : Access to Site. Source : Author


Figure 2.21 : Noise. Source : Author

2.3
Design Concept and Analysis

Figure 2.22 : Site Plan. Source : Google earth and Authors

2.3.1 ARCHITECTURAL CONCEPT

Adaptive Architecture

In response to what is Architecture designed to be adaptive?

Environment

Adaptive elements are also intended to adapt to the interior environment, for example, to make sure that temperatures inside are comfortable for occupants and to control how much energy is consumed to do so.

Inhabitants

However, there isn't a single individual living in the majority of buildings. On the other side, adaptive design for groups of people could be really challenging. An architect might concentrate on providing yet another manual adaptation option. The locals will make the decision. The ability to automatically adjust to groups of people requires some understanding of their behavior, which can be acquired through time and utilized to build the appropriate profile.

Elements of Adaptation

Each adaptive building has a number of changeable features. The importance of adaptable components is emphasized by adaptive architecture. The elements of adaptations—surfaces, components and modules, spatial features, and technical systems—are described in the steps that follow.

Result

Surfaces both in and out of could be adjusted. The most prevalent exterior adaptable surfaces are facades, and the second practical choice for altering surface elements is lighting and display technology. The heat direction at the site and the noise are followed by the facade form.

Even though the project's site location is fixed, changing the orientation of a building that has been modified can result in some major changes. In addition to rotation, a number of design projects explore the adaption of architectural forms. Shape changes can also be made by scaling down or scaling up buildings.

Interiors are frequently changed to achieve a variety of goals, such as adding ornamental elements to change the ambiance of a space.

Create a public area that draws more attention as a location for pictures and healing since the social issue at this location is the uneven distribution of crowded spaces.

2.3.2 ACCESIBILITY

Human Access

A. Park

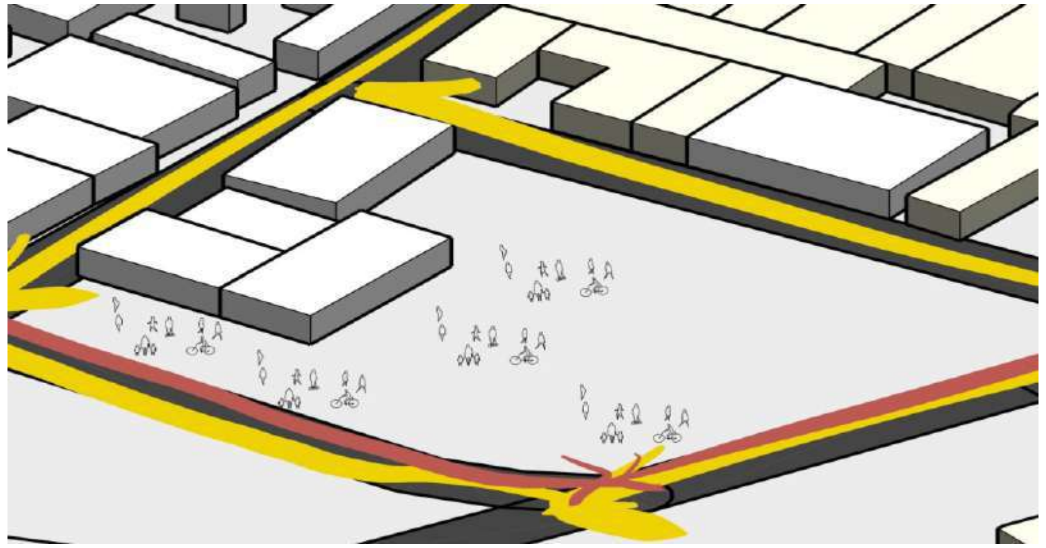


Figure 2.23 : Park Activity . Source : Author

Previously, this land was an empty land that was bordered by a fence when it faced the main road, therefore previously this land was also used as a parking lot for trucks to choose local residents and enter through a small road to the alley. But if as humans we want to make this a garden, then we don't need a fence so that it can be accessed from anywhere. and the site later can be accesses to anyone who want to go here not only for people who need to exercise.

B. Building

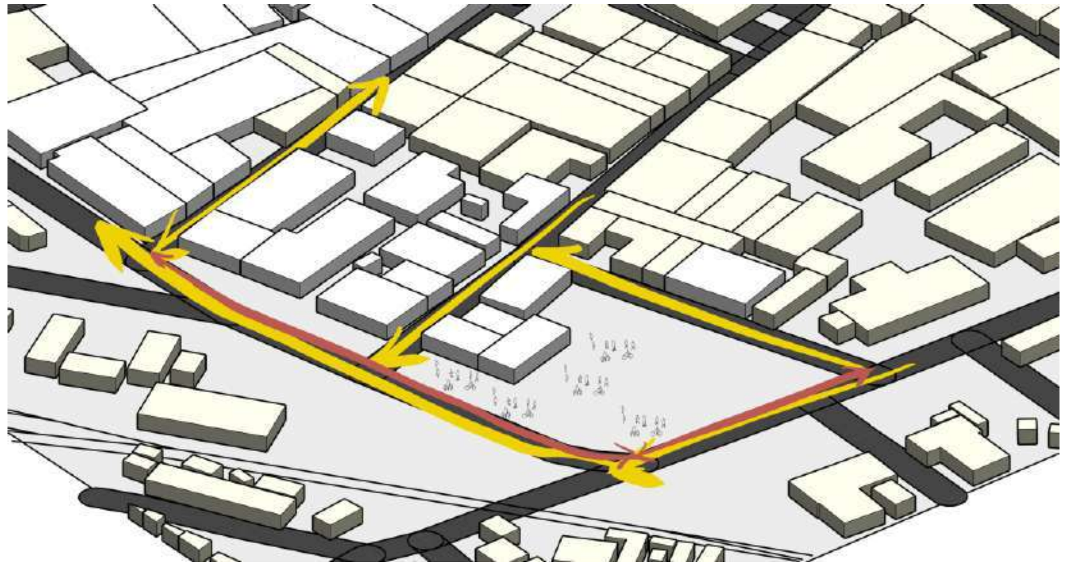


Figure 2.24 : Building Activity . Source : Author

to the side of the road this building is a dead road that cannot be accessed through the front of the building, so users can access this building from the side if passing behind the building. Therefore, it is recommended that the entrance and exit of this building are in front and beside the building so that users can pass through the main road or the small road

Vehicle Access

Figure 2.25 : Vehicle Direction. Source : Author

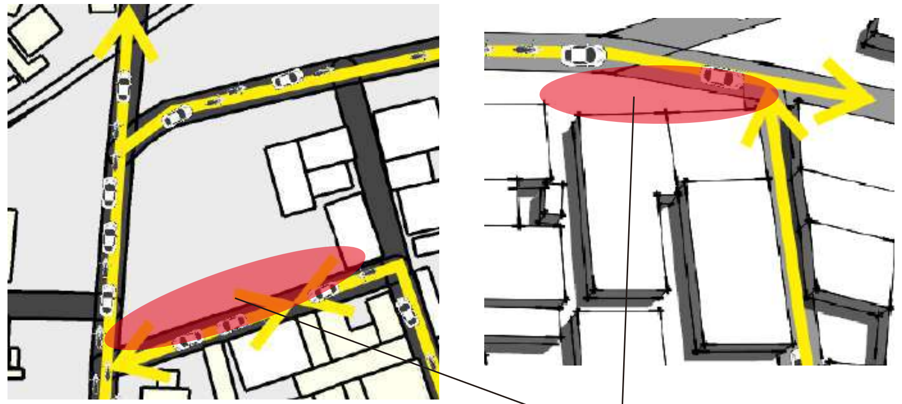


Figure 2.26 : Detailing Site. Source : Author

because this site is adjacent to an intersection, it is clear that vehicle access in the park itself only comes from one direction, namely the north, while the entrance can also pass through the southern part of the park where previously there was parking space there, so visitors can park there. while the sports center building can be accessed through the front or back, but if you go through the back there is only one direction, namely from the south.

Jogging Track Access

Figure 2.27 : Jogging Track Direction. Source : Author

For the jogging path itself is in a place that is rarely passed by the surrounding community so as not to disturb the two, this can be seen as shown above. The picture above describes the access that we can use as a jogging track base. This path also connects the sports center itself and the park. because in the sports center and in the park itself there is a jogging track. if the user wants to use it indoor or when it rains, the user can jog inside the building, but it can also be accessed through the outdoor which is also all the way from the sports center building to the park. there are several advantages and disadvantages when choosing this route, therefore there are several alternatives that I have made along with an explanation of the advantages and disadvantages.

Alternative 1

The first alternative has a very small route because this road is considered the quietest and there are rarely visitors through this road. this is the best route to be used as a jogging track but has a very short route so it will be very inconvenient for users. this at the same time can help liven up the atmosphere of this lonely street.

Figure 2.28 : Jogging Track Direction Alternative 1. Source : Author

Alternative 2

the second alternative is to add a route at the front of the antique market to the sport center itself which can be traversed by 2 roads. this adds to the user's route being further and a little more flexible than the first route, but the problem is when the user passes the route that is in front of the antique market, this can make it difficult for users to move because in front of the antique market the street is quite crowded with visitors to the antique market itself and at the same time when going to the antique market the streets are crowded with vehicles.

Figure 2.29 : Jogging Track Direction Alternative 2. Source : Author

Alternative 3

the last alternative or the third by expanding the jogging route. That is by passing through one of the most crowded street points in this old city. This has both positive and negative sides. On the positive side, this street will be more organized by uniting the jogging users themselves as well as the tourist visitors, for the jogging users they can also feel the jogging in the old city area with ease. **but the negative side is, this road is too crowded if the users also use this route, as a result it is not possible for the visitors who walk along this route and the users do not have free space.**

Figure 2.30 : Jogging Track Direction Alternative 2. Source : Author

2.3.3 ACTIVITY ANALYSIS

SPORT CENTER

1. **Go in for sport**

so as the name suggests, this building is intended for exercise as provided. users can enjoy the facilities in this building such as a basketball court, boxing ring, and a place for a gym.

2. **Take a Shower**

if people exercise, they will sweat, therefore some people often take a shower or just wash their face on the spot after they finish exercising, therefore a place is also needed to just clean the body

Doing Gym

Playing Futsal

Doing Boxing

Jogging Exercize

Chilling

Eating

IN THE PARK

1. **Go in for sport**

some people do sports in the park especially jogging. this is because if it is in the park, the air that is owned is cool so it is very suitable if you want to

2. **Chilling**

Not a few people also choose parks as a place to heal from life's problems or just enjoy the air around them. The garden is also a suitable place to relax while reading a book

3. **Enjoying Food**

In this design, there will be a boy ring and a food court, this is to help the economy of the surrounding community by providing employment opportunities.

2.3.4 SPACE REQUIREMENT

The table depicts the space requirements for a community center. Differentiate between public, communal, parking lot, and mechanical. From the underground to the rooftop and the park.

	CLASSIFICATION	FUNCTION	GF	FL1	FL2	ROOFT OP	PARK
1	PUBLIC	Lobby		V			
		Information Desk		V			
		Lift	V	V	V	V	
		Rest Room	V	V	V	V	
		Luggage Storage Place		V			
		Parking Lot	V				
2	COMMUNITY USE (Functional)	Futsal Hall		V			
		Gymnasium		V	V		
		Jogging Track			V	V	V
		Boxing Ring			V		
		Garden				V	V
		Public Gathering Place				V	V
3	PARKING AREA	Outdoor Parking	V				
		Indoor Parking	V				
		Security	V				
		Emergency Stairs Room	V	V	V	V	
		Lift Room	V				
4	MECHANICAL & ELECTRICAL SPACE	ME System Oprators room	V				
		HVAC Room	V				
		Central Communication System (CCTV & Soundsystem)	V				
		Genset Room	V				

29%

29%

23%

19%

PUBLIC
1.494.91 m2 x 29% = 433,53 m2

COMMUNITY
1.494,91 m2 x 29% = 433,53 m2

PARKING
1.494,91 m2 x 23% = 343,82 m2

ME
1.494,91 m2 x 19% = 284,03 m2

2.3.5 SPACE ARRANGEMENT

SPORT CENTER

The main activity in this sports center itself is exercising both indoors and outdoors. This can be created by dividing which rooms require indoor and which can be used for outdoor or both.

From the results of the analysis that I got, users need an indoor futsal field, and for the gym itself, many want indoor, this is because when we do an indoor activity, of course, the room environment must be supportive. This is not only because of the ventilation or complete equipment but also the interior design in it. Various kinds of architectural factors such as air quality, color of the walls in the room, and other factors. Choose fresh colors for the fitness room, decorations that motivate exercise activities, and also other elements that make the room feel more fun.

The floor in the fitness room must be designed so that it is not slippery. The choice of floor covering material is very influential on the comfort of its users. Alaskan the room with foam or carpet so that the floor is safer. Similar to the gymnasium, the boxing room must also be indoor and as possible it can be integrated with the gymnasium because on average if you want to practice boxing, boxers must warm up first which generally requires the equipment in the gymnasium. And for the jogging track itself, there are indoor and outdoor ones so that when it rains users can do activities indoors.

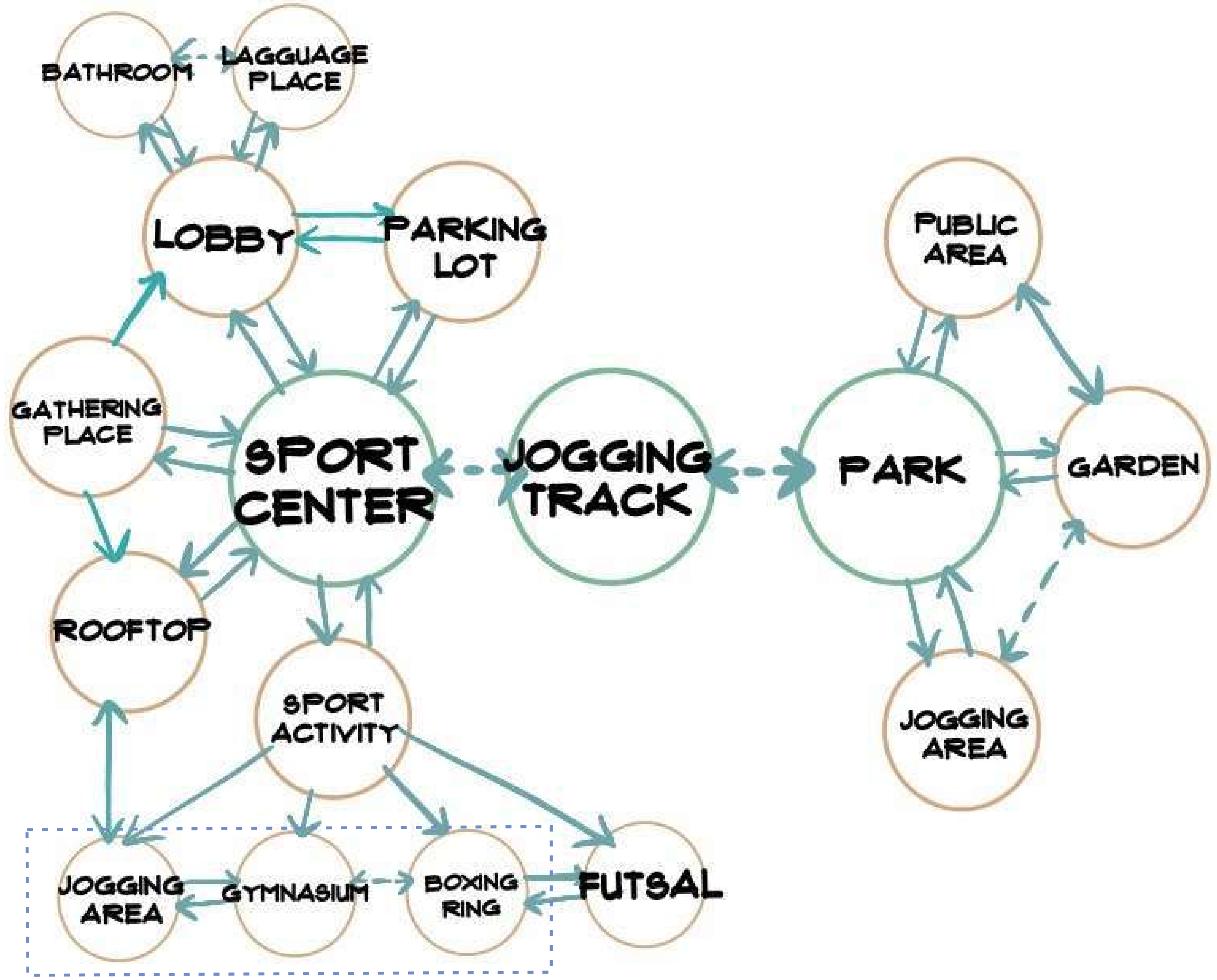
JOGGING TRACK

The design of the jogging track in the pedestrian area is as simple as feasible so that walkers can use the street while runners can enjoy the scenery. The hue of the street limits these two things. Pedestrians continue to walk down the colored streets, while runners utilize orange as a jogging track. Because the pedestrian walkway is too narrow, the jogging track outside the building cannot be very wide. This is so that people can both workout and enjoy the atmosphere of the old city. Aside from that, if runners need to rest, there is a plant-filled bench that also serves as a road divider. Because this running and pedestrian area cannot be controlled by the hour, but rather by the day, an LED light is installed on the road on the side that is in direct contact with the building so that users can see the road.

PARK

The park here is a place for open recreation in a green field which is facilitated by an open park or it could be one of the city parks in the old city of Semarang and also as a jogging path for users of the sports center.

2.3.6 ANALYSIS ROOM PROGRAMMING



can be 2nd floor

CHAPTER 03.

Schematic Design

3.1
Design Exploration

3.1.1 Design Problem Solving

The design of the building follows of how the sun comes and the wind comes, to help add comfort to the site, several plants that have a dome canopy are added.

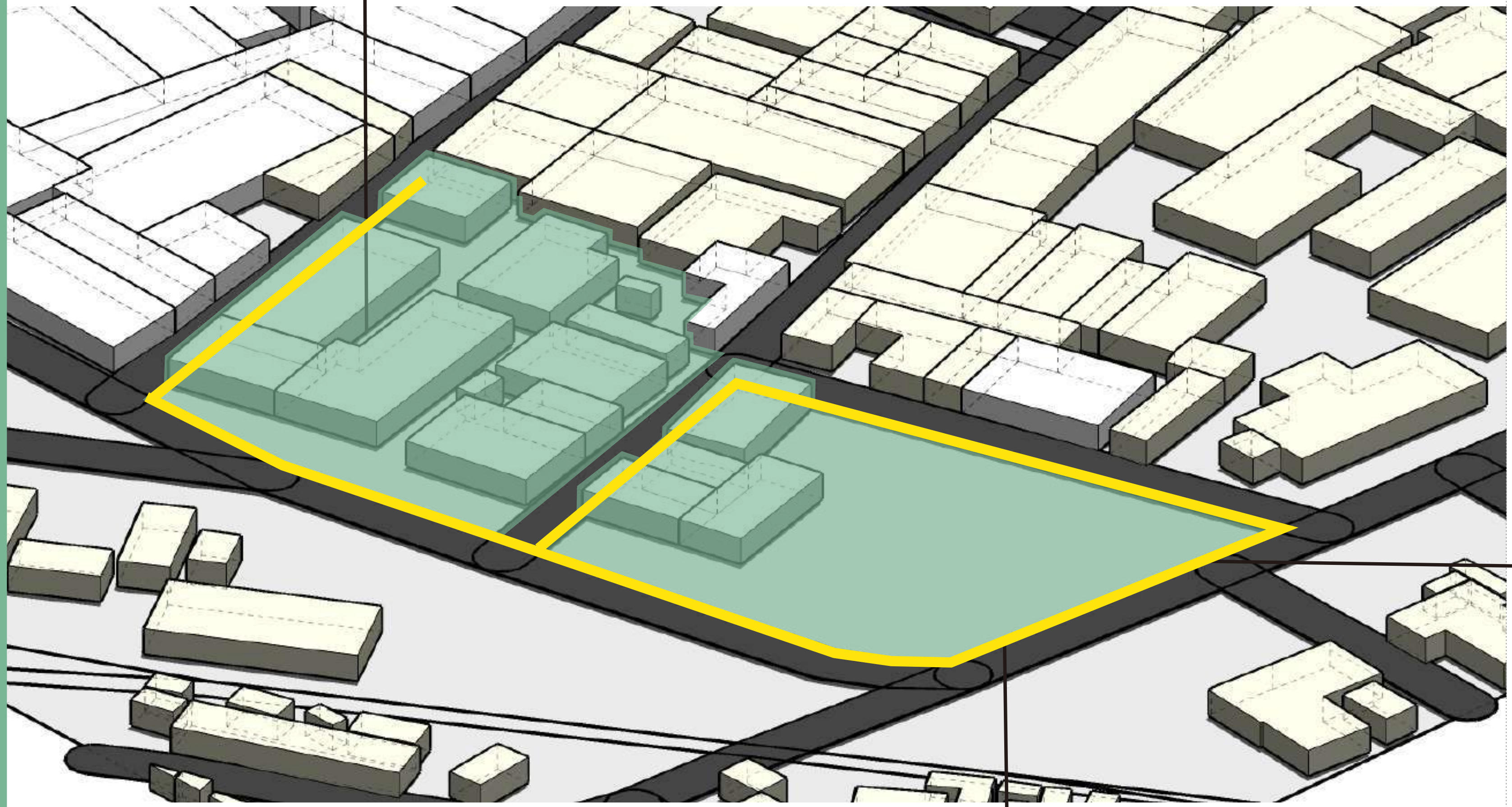


Figure 3.1 : 3D Site Plan . Source : Author

Later, for the facade of the garden faces the crowd which follows the habits of the people who cross the area, because this area is too crowded and seems hot, and for the characteristic of the building facade follows the surrounding characteristic thats mean using Colonial shaped building

JOGGING TRACK

Because the jogging track in this area also follows the habits of pedestrians and residents who pass through this area, a jogging track is made with the same height as pedestrians and is also equipped with lighting along the road when at night people crossing this area can reduce anxiety due to the streets the dark one. And for the jogging beside on the big road, to make passing motorists not interfere with the jogging track users or pedestrians, a slow lane is given using paved roads and a "bumper drive" is also added so that vehicle users remain careful.

Figure 3.2 : 3D Jogging track . Source : Author

PLANTS

Figure 3.3 : Angsana Tree . Source : ciriciripohon.com

Header shape affects deep tree ability lower the temperature and increase relative humidity. Distance from tree inclined affect the decrease in temperature and an increase in RH, that is, the farther distance from tree shade, influence temperature decrease and increase RH is decreasing.

Tree canopy cover affect temperature and humidity, that is, the higher percentage of vegetation cover temperature lower air and more RH tall. Therefore, the selection of plants for buildings and as an aesthetic value for gardens is used, which is suitable for tropical areas and can thrive and thrive without special care. With green leaves that are all beautiful, the Angsana tree is suitable as a shade plant because of its dense dome-like canopy and branches that are close to the ground.

3.1.2 Site Planning

Alternative 1

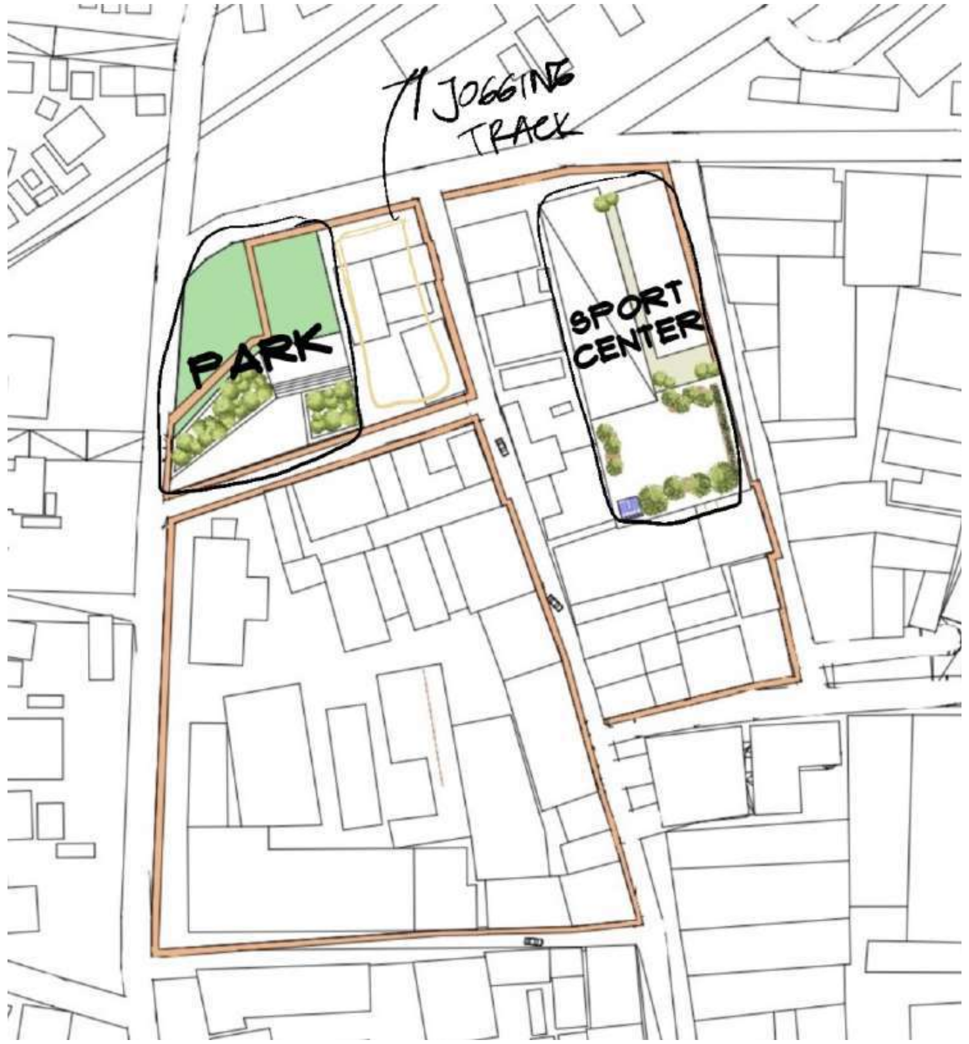


Figure 3.4 : Site Plan Alternatif 1 . Source : Author

for the first alternative the building is only divided into 2, namely sports facilities and parks. where this building will include all types of sports in one place and the garden is located separately from the building. This is done so that later jogging track users can get around to parks or buildings that are located separately.

Alternative 2

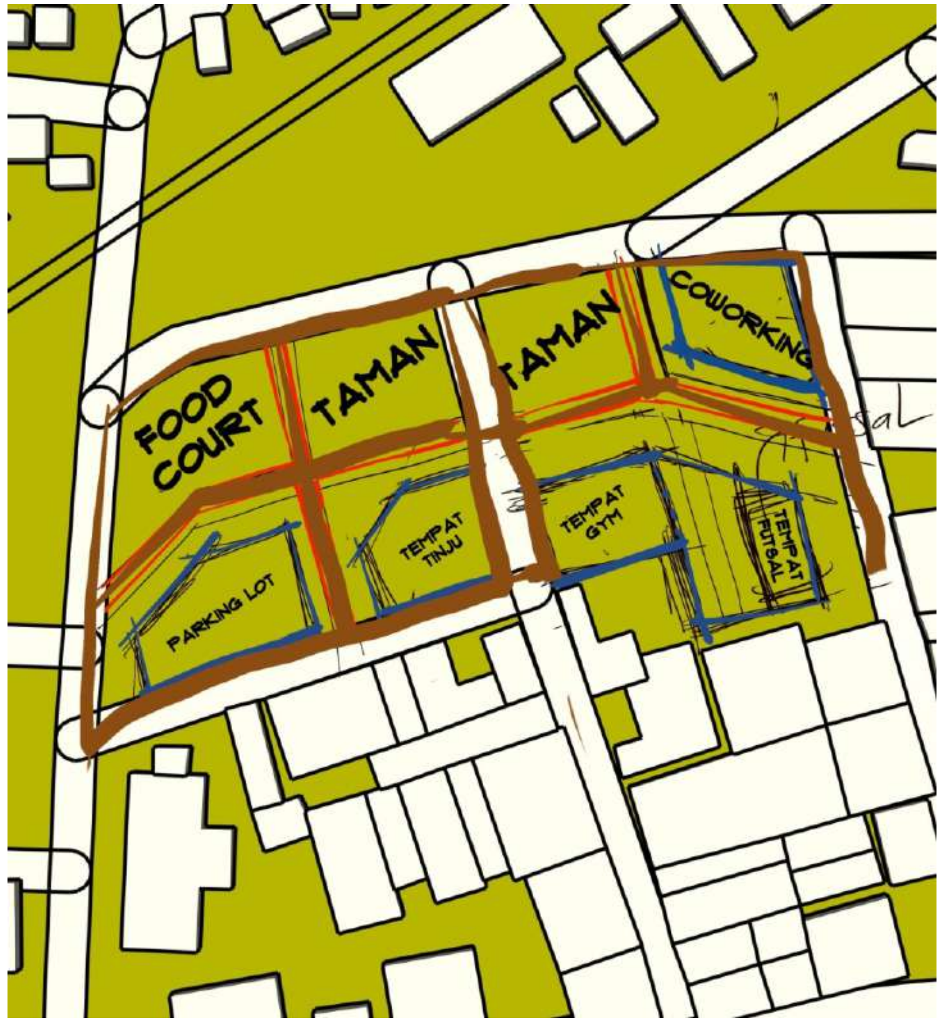


Figure 3.5 : Site Plan Alternatif 2. Source : Author

for the second alternative, the building and park are located in one area which is separated by a jogging track that is in the middle of this area. For the second alternative, it has a larger area because the sports needs can be divided indoors and outdoors

3.1.3.1 Mass Exploration

Sport Center

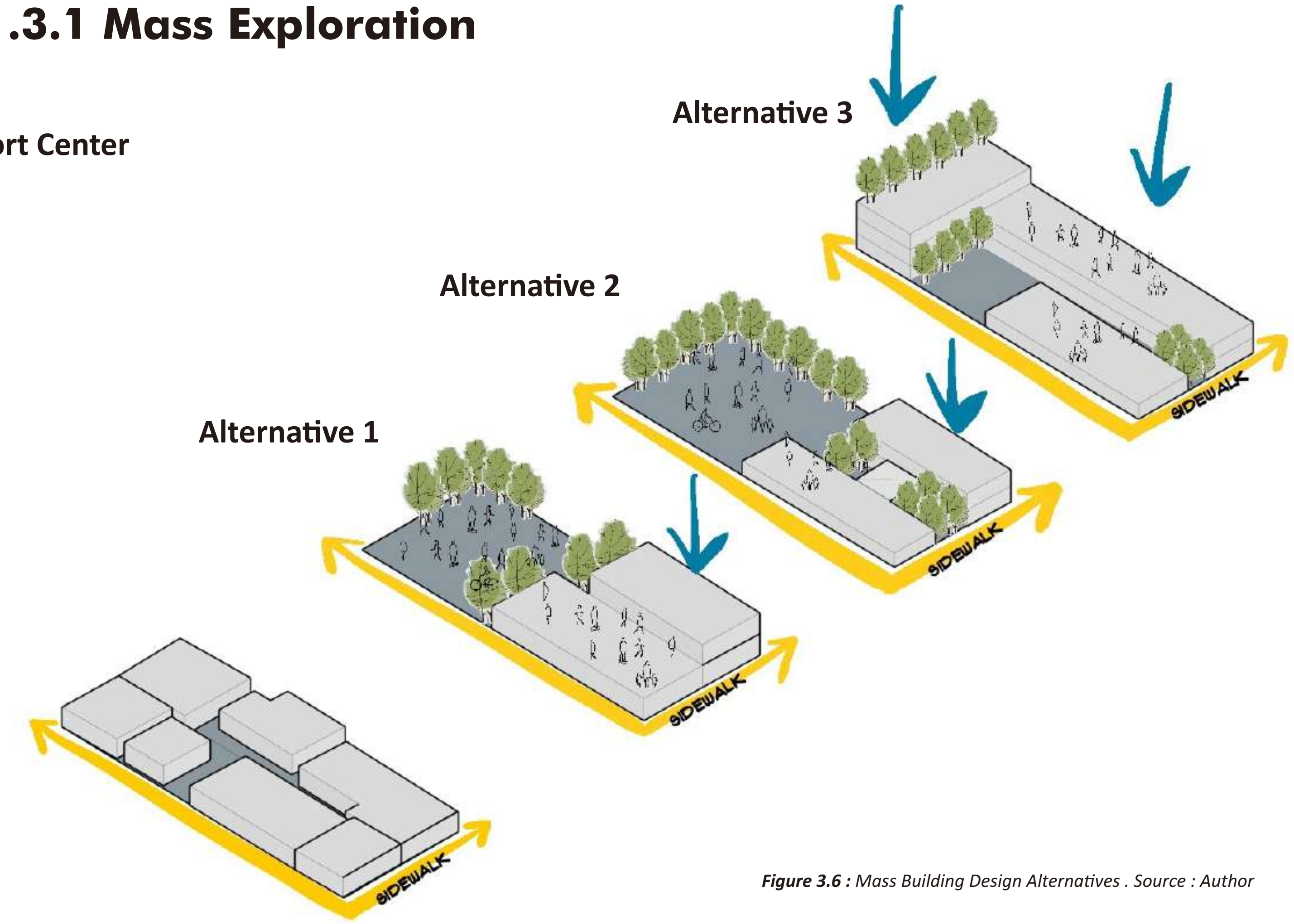


Figure 3.6 : Mass Building Design Alternatives . Source : Author

For the sports center building, I have 3 alternatives. The first alternative is to only use the front building and the rest as an open park as a jogging start or as a gathering place. the second is almost the same as the first alternative, the difference lies in using the front building as well but separately so that the building has a garden in the middle. but later on the 2nd floor has like a connecting bridge between buildings. the 3rd one uses the entire building and makes the 2nd floor of the building a rooftop. Alternative 3 is different from the previous 2 because it does not have an open garden but a rooftop as a garden for visitors.

Park

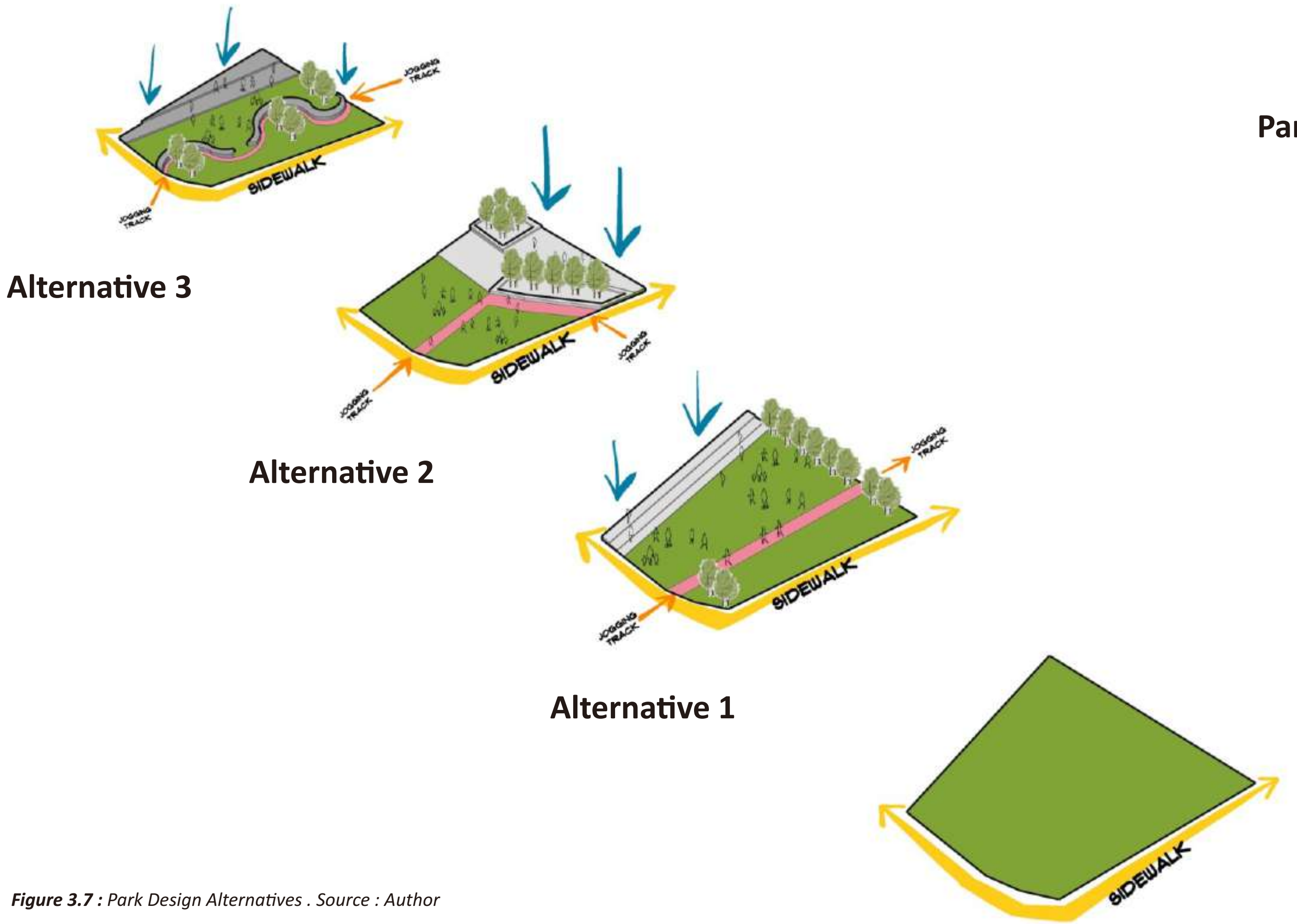


Figure 3.7 : Park Design Alternatives . Source : Author

for the garden design section I also have 3 alternative designs. The first alternative is to add a place to sit as well as to walk. This can also be enjoyed by visitors while looking at the atmosphere of the city of Semarang itself and at the same time there is a jogging track that passes through this park.

The second alternative is to add a park above the park. This park can also be used as entertainment in the middle of the old city. divided into 2 different levels of the park itself which aims to also create seating for visitors.

The third alternative is a combination of alternatives 1 and 2, namely by combining the presence of a garden and seating for visitors, but the park in alternative 3 is simpler than alternative 2.

Each alternative has a different jogging track pattern following the pattern of the park formed.

3.1.3.2 Mass Exploration

Sport Center

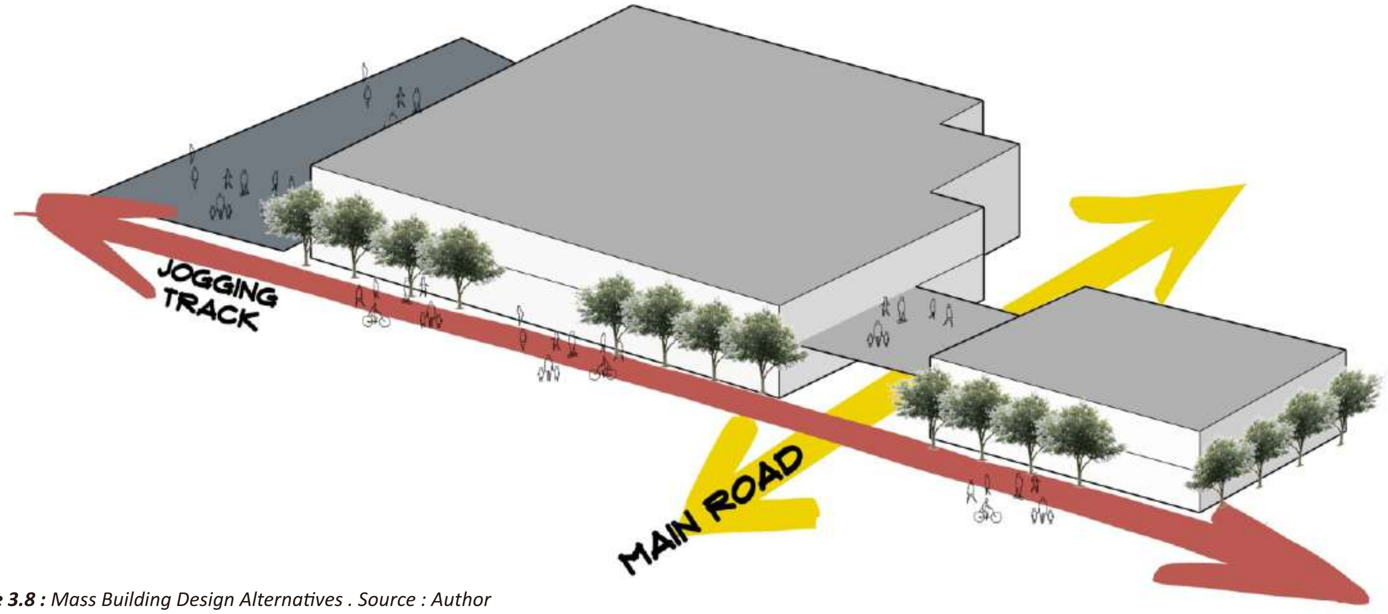


Figure 3.8 : *Mass Building Design Alternatives . Source : Author*

in this alternative the building is divided into 2 buildings and connected by a bridge on the 2nd floor of each of these buildings, which means the building is separated by a main road for users. and also for the sport there is also an outdoor futsal field which is right next to the largest or most spacious building.

Park

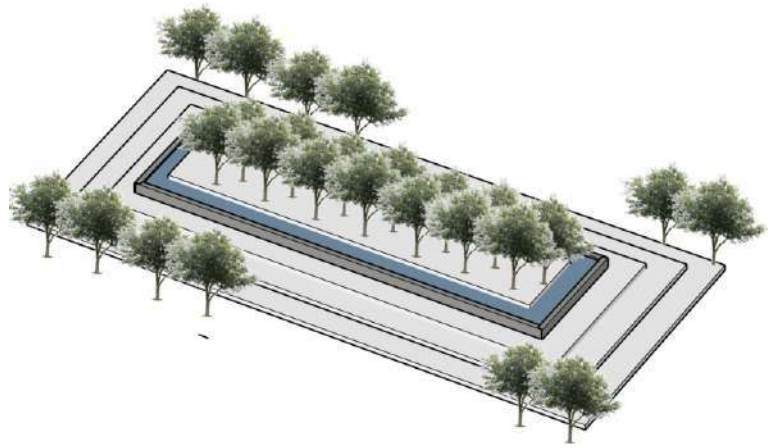


Figure 3.9 : *Mass outdoor space Design Alternatives . Source : Author*

the garden design in this second alternative has a pool in the middle of the park that later it can make people more comfort in garden that located in the middle of the area.

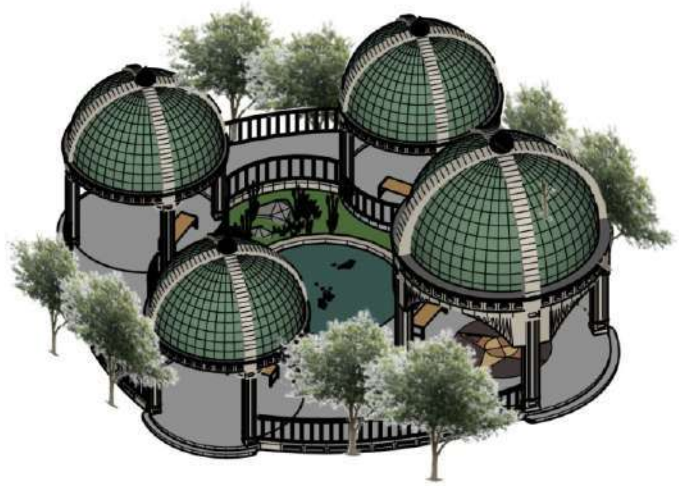


Figure 3.10 : *Mass Dome Park Design Alternatives . Source : Author*

the garden design in this second alternative has a heritage feel which carries the theme of the old city area which still maintains the integrity of the old atmosphere and old buildings.

3.1.4 Zoning Exploration

SPORT CENTER

Alternative 1

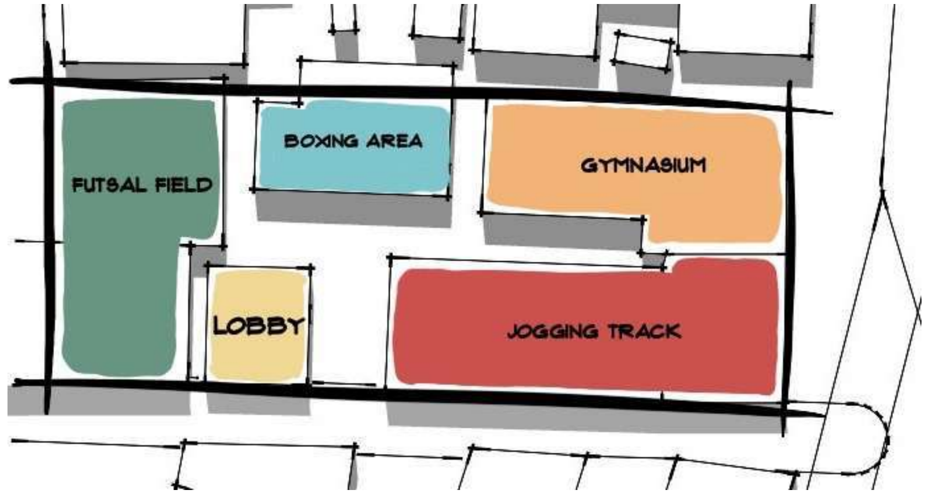


Figure 3.11 : Zoning Alternatives 1 . Source : Author

Alternative 2

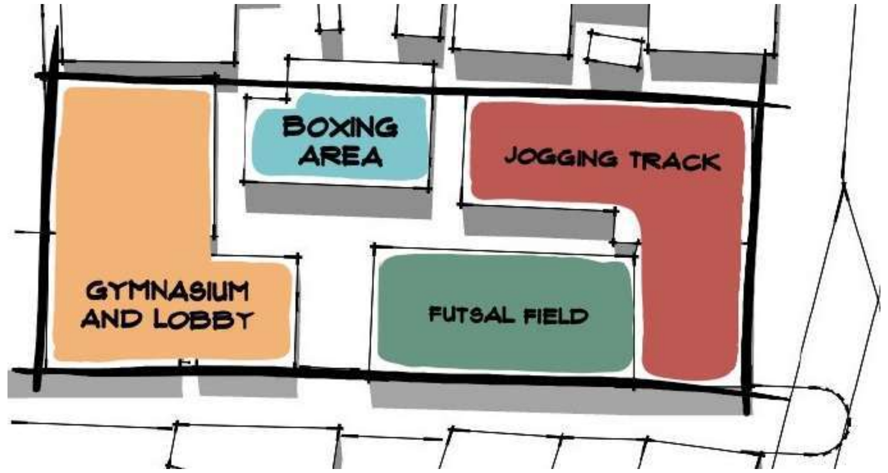


Figure 3.12 : Zoning Alternatives 2 . Source : Author

Like the concept that i use here, namely adaptive architecture, which means buildings can always be adapted 'manually' in some form, so all architecture is adaptable on some level. which Space requirements and technology implementation can be met with adaptability without the need to enlarge the building's floor size in the future. so here I give 2 alternative examples, both of which can use the same layout without changing the floor size at all. Then this building will have a room that can be sized for all sports venues and materials that can be changed.

Alternative 3

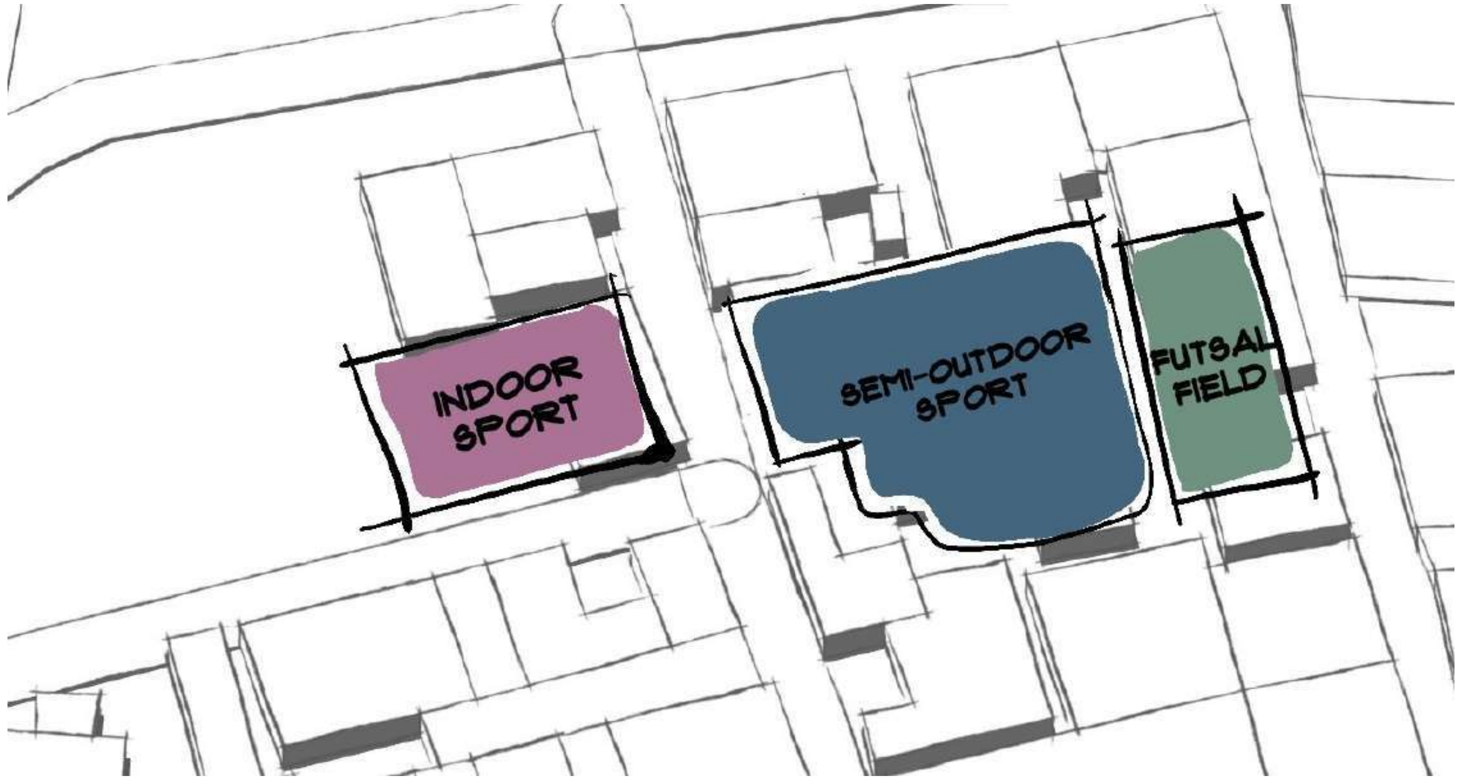


Figure 3.13 : Zoning Alternatives 3 . Source : Author

for the third alternative, the building is divided into 2 building forms. there are small and large buildings, there are also outdoor ones, namely the futsal field section. this is of course to create how the interaction between building users and also the people who are visiting. for indoor buildings can be seen into 2 buildings which are divided based on the type of sport.

3.1.5 MASS ORIENTATION

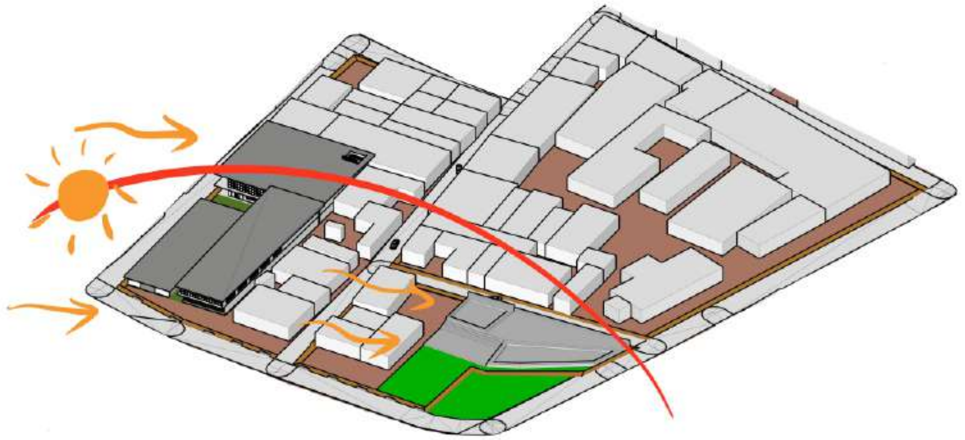


Figure 3.14 : Solar Direction of the Site .
Source : Author

MASS ORIENTATION ON SOLAR DIRECTION

The mass composition adapts to the direction of solar radiation, providing the structure with efficient natural illumination. For the purpose of shade, mass compositions are placed in layers to produce a platform for the designs beneath.

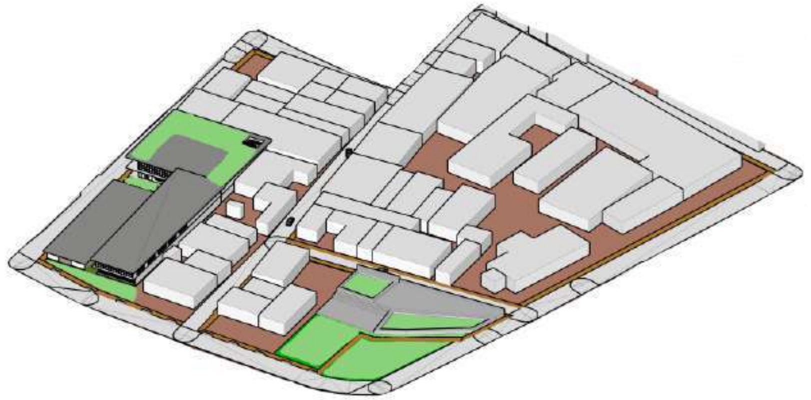


Figure 3.15 : Green Area of the Site .
Source : Author

GREEN AREA

the green area in this area is located which is certainly in the park itself and also some trees beside the road and also in the building itself and on the roof of the building which also takes advantage of where the sun and wind come from

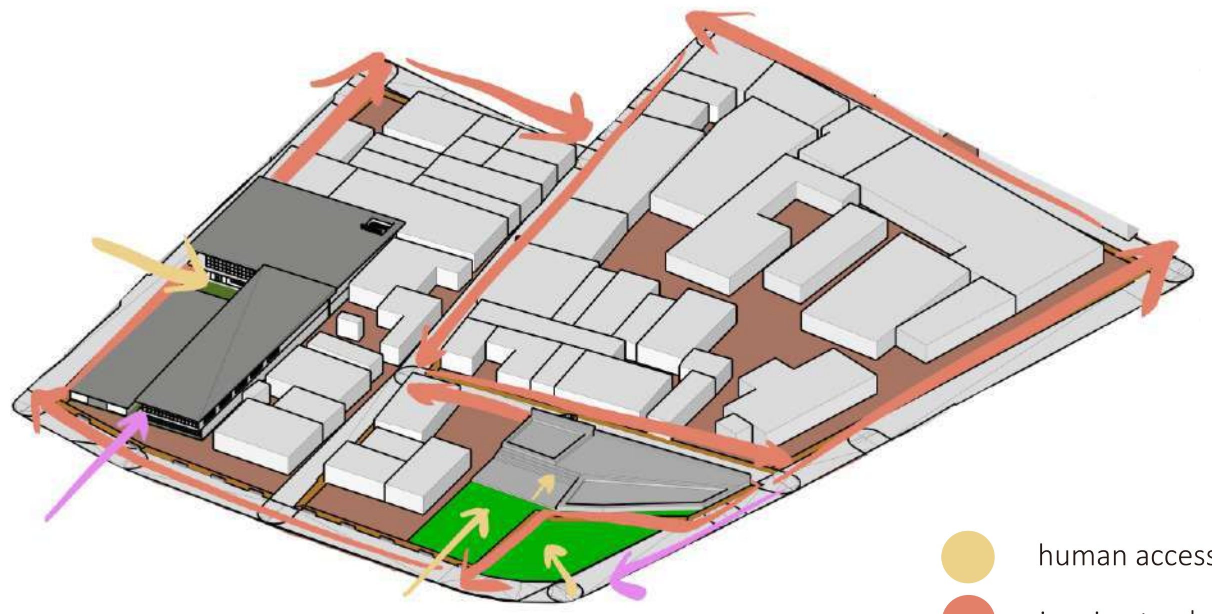


Figure 3.16 : Accessibility of the Site .
Source : Author

ACCESSIBILITY

the main access road for public transportation to get into the building or park is the same through Jl. Tawang. This is because the largest and 2-way access only comes from Jl. cape. In addition, if you want to get out of the park, you just need to go out to Jl. Empu of Tantular.

FINAL ARCHITECTURE DESIGN STUDIO | DESIGN EXLORATION

3.1.6 FLOOR PLAN

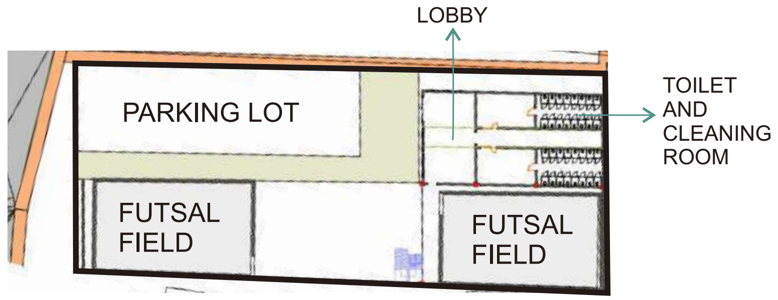


***Figure 3.17 :** Ground Floor . Source : Author*

GROUND FLOOR

with 2 futsal fields on the 1st floor, on the 1st floor it is equipped with a place to wash the body and also a toilet. There is also a lobby for the receptionist to handle visitors

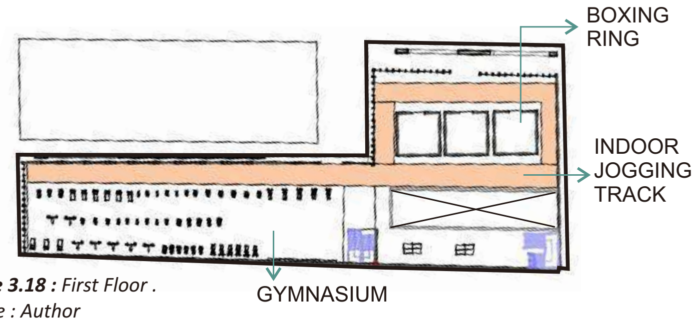


***Figure 3.18 :** First Floor . Source : Author*

1ST FLOOR

the gymnasium and boxing ring are on the 2nd floor which is directly adjacent to the jogging track inside the building surrounding the 2nd floor itself. because on the 2nd floor most of the activities that use the tools in this place, there is also a place to store things near the place for the gymnasium

***Figure 3.19 :** Roof Top Plan . Source : Author*

ROOFTOP

For the rooftop, it is tilted on the side because it is used for a jogging rack. while the non-sloping floor is used for a small garden above the house to make the jogging atmosphere not too hot

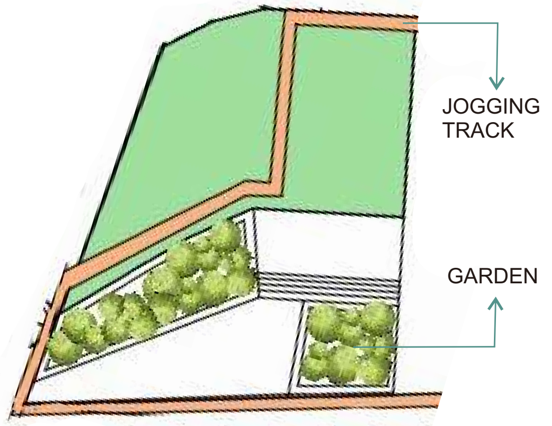


***Figure 3.20 :** Park Plan . Source : Author*

PARK

in this park itself which is located opposite the sports center building itself there is a garden that can be used to relax and enjoy the surrounding atmosphere and also a jogging track that crosses this park

3.1.7 SCHEMATIC AXONOMETRY

ROOFTOP

Outdoor Jogging Track
Garden

1ST FLOOR

Gymnasium
Boxing Ring
Indoor Jogging Track
Table Tennis
Storage Area

GROUND FLOOR

Parking Area
Futsal Field
Toilets
Place to wash body

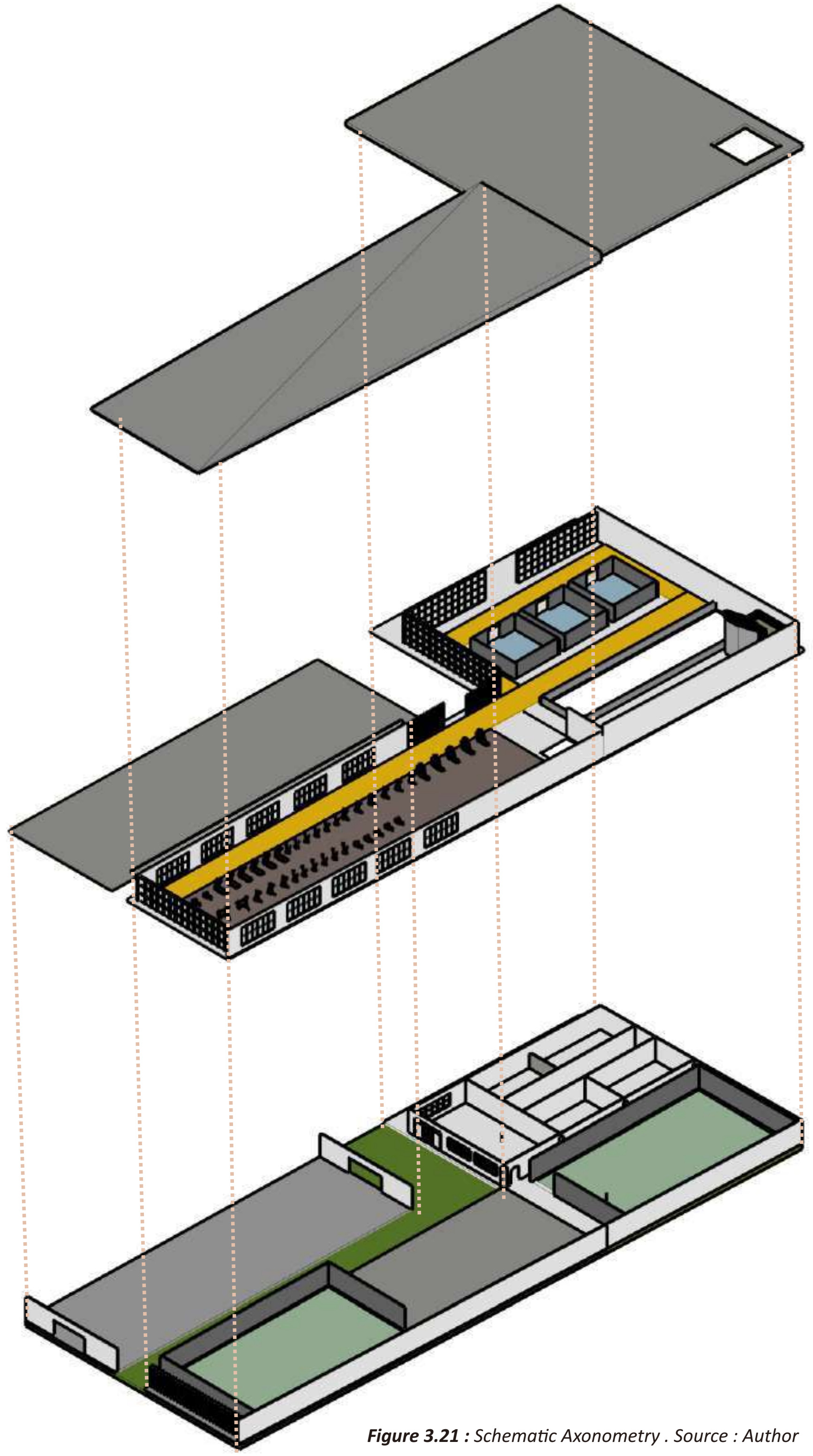


***Figure 3.21 :** Schematic Axonometry . Source : Author*

3.1.8 FACADE CONCEPT

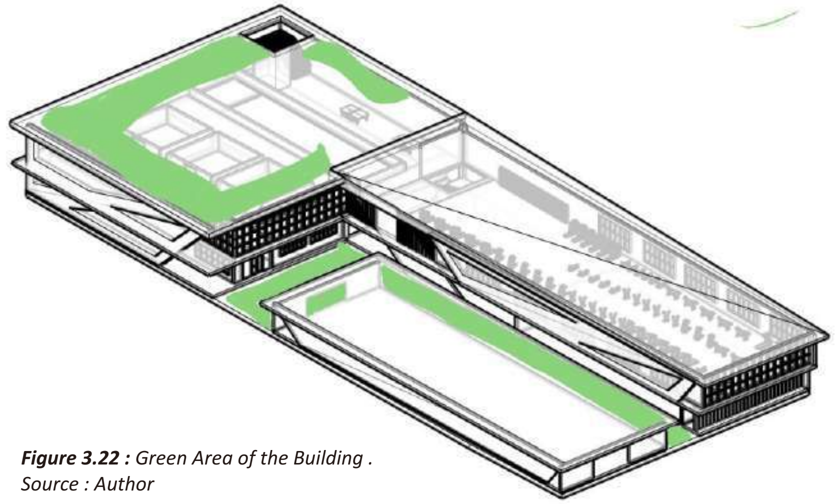


Figure 3.22 : Green Area of the Building .
Source : Author

GREEN AREA

the green area in this building is on the ground floor which is located in the middle of the building and there is also a small garden on the roof which is useful for not only providing shade for the building but also as a shade for the jogging track

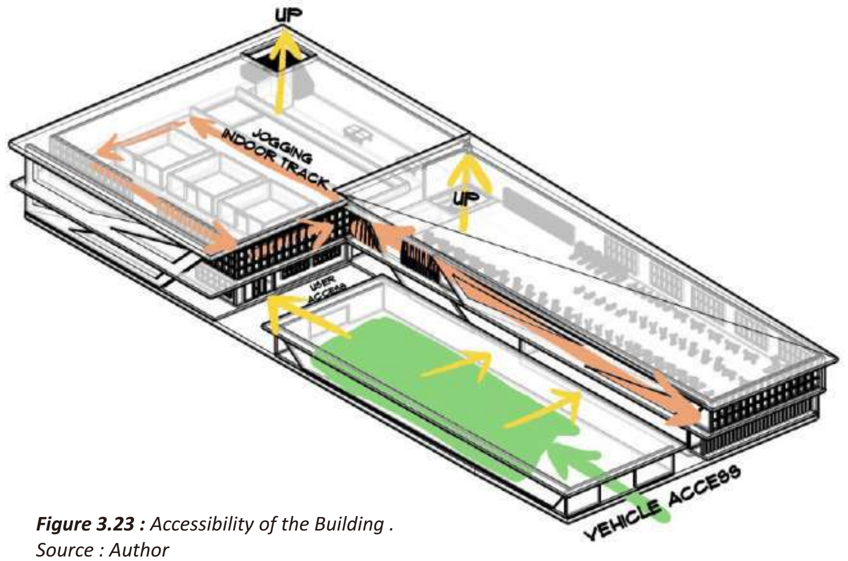


Figure 3.23 : Accessibility of the Building .
Source : Author

ACCESSIBILITY

Public transportation access for visitors is to the north of the building which can only be accessed via that road, therefore the placement of the parking lot is in front of the building. For access, visitors can enter through the lobby behind the parking lot.

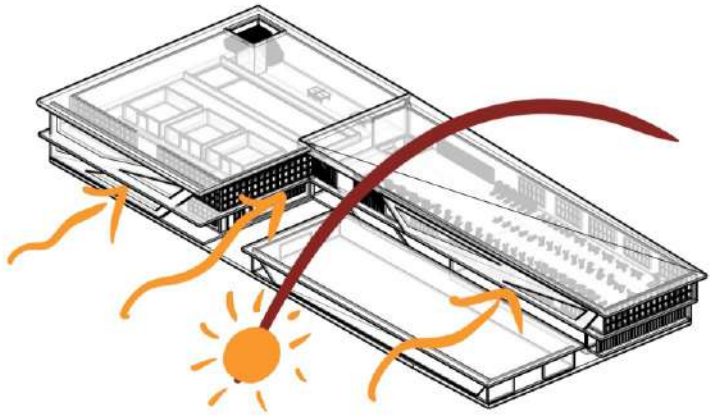


Figure 3.24 : Sun Direction of the Building .
Source : Author

MASS ORIENTATION ON SOLAR DIRECTION

The mass composition adjusts to the direction of solar radiation, providing efficient natural illumination for the structure. Mass compositions are layered to create a platform for the patterns beneath for the purpose of shade.

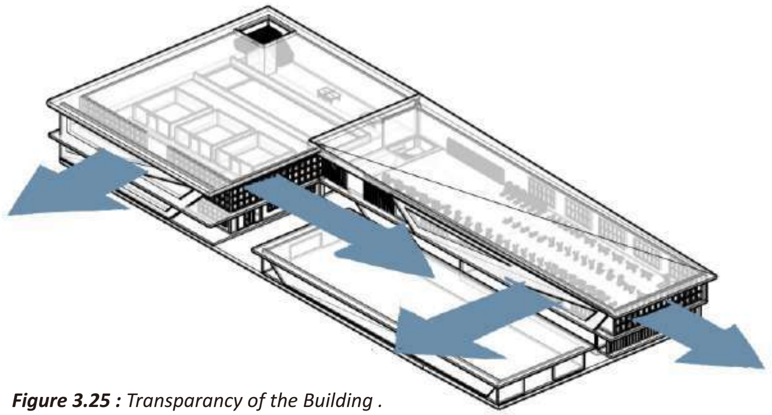


Figure 3.25 : Transparancy of the Building .
Source : Author

TRANSPARANCY OF BUILDING

following the direction of the sun, the side facing north has the widest opening and is also covered with a second skin, therefore natural lighting can still be in this building without fear of overheating

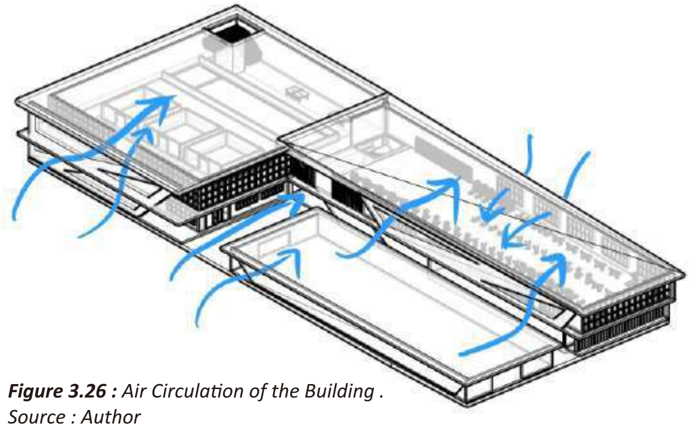


Figure 3.26 : Air Circulation of the Building .
Source : Author

AIR CIRCULATION

following the direction of the wind, the building facing the direction of arrival also has large openings so that the wind can enter the building directly and on the rooftop there are many plants facing this side to take advantage of the wind and the direction of the sun.

3.1.8 FACADE CONCEPT

SPORT CENTER

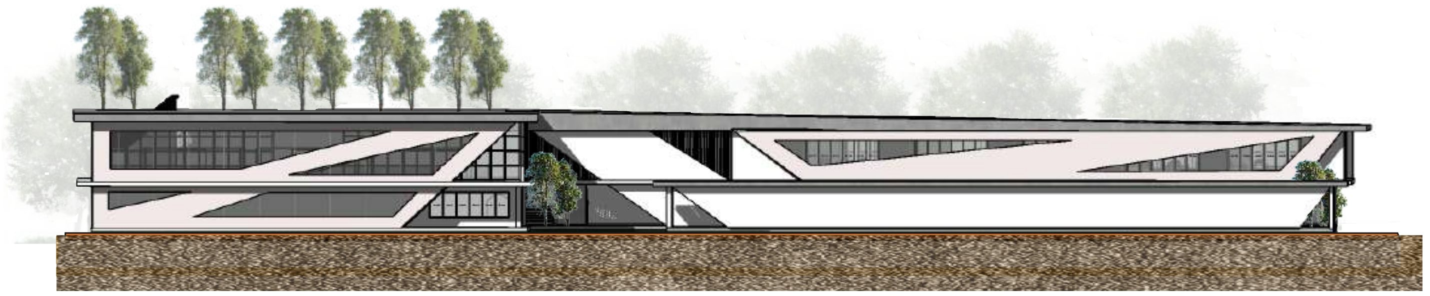
To follow the direction of the sun and also the direction of the wind, namely from the west, buildings that have large openings face west or the side of the building. This building has an energy-friendly concept that can also be changed for the placement of the openings without changing the existing layout. therefore the openings here are glass so that no matter what the layout inside the glass is still in use and why this glass is because so that visitors who are in the building while exercising can still enjoy the outside atmosphere which also has a jogging track in front of this building. For the side of the building that faces west, use a second skin so that the sun's heat can still enter but reduce the incoming heat.

PARK

in the Park section, it faces east because it faces the main road or a busy direction, so when there are tourists who pass in front of this park they will be interested because they can see the contents of this park. The side facing the main road is the jogging track and also the park so that visitors who are also in this park can enjoy the atmosphere outside this park as well.

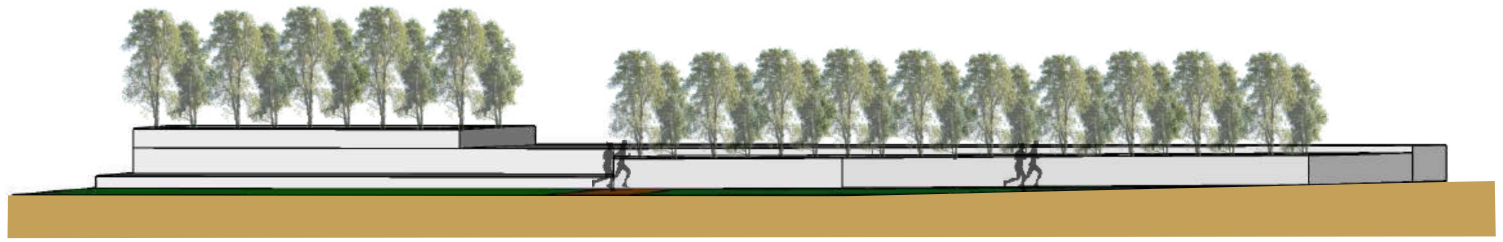
FRONT/NORTH ELEVATION

***Figure 3.27 :** Building North Elevation . Source : Author*



SIDE/WEST ELEVATION

***Figure 3.28 :** Building West Elevation . Source : Author*



PARK FRONT ELEVATION

***Figure 3.29 :** Park Front Elevation . Source : Author*

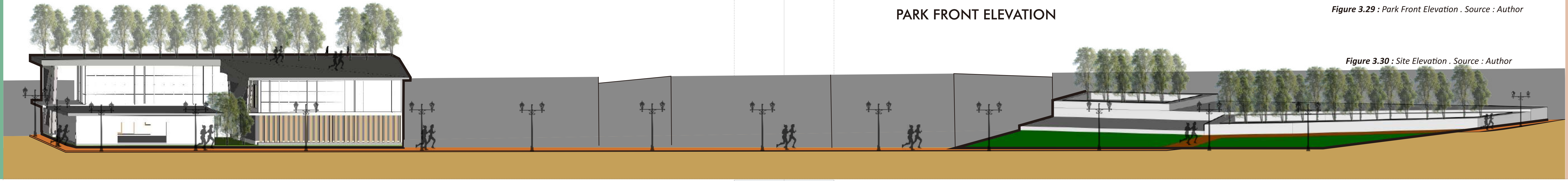


***Figure 3.30 :** Site Elevation . Source : Author*

3.1.9 STRUCTURE BUILDING

A cantilever is a physical structure that is made to protrude from the main structure and has support on just one side. This is the reason why this design is so popular—it gives the impression that the building is floating in space without any support. If there is a building beam on the cantilever (cantilever beam). Thus, the cantilever qualifies as a structural component. and is used to support big weights.

Because this building has a futsal field on the 1st floor, the use of this cantilever structure system is used for those above the futsal field itself so as not to interfere with the existence of the field.

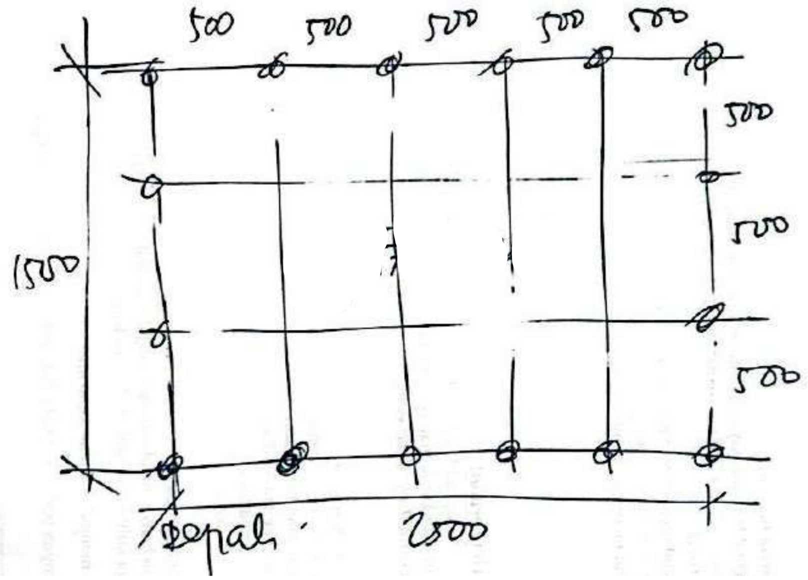


***Figure 3.31 :** Structure on Futsal Field . Source : Author*

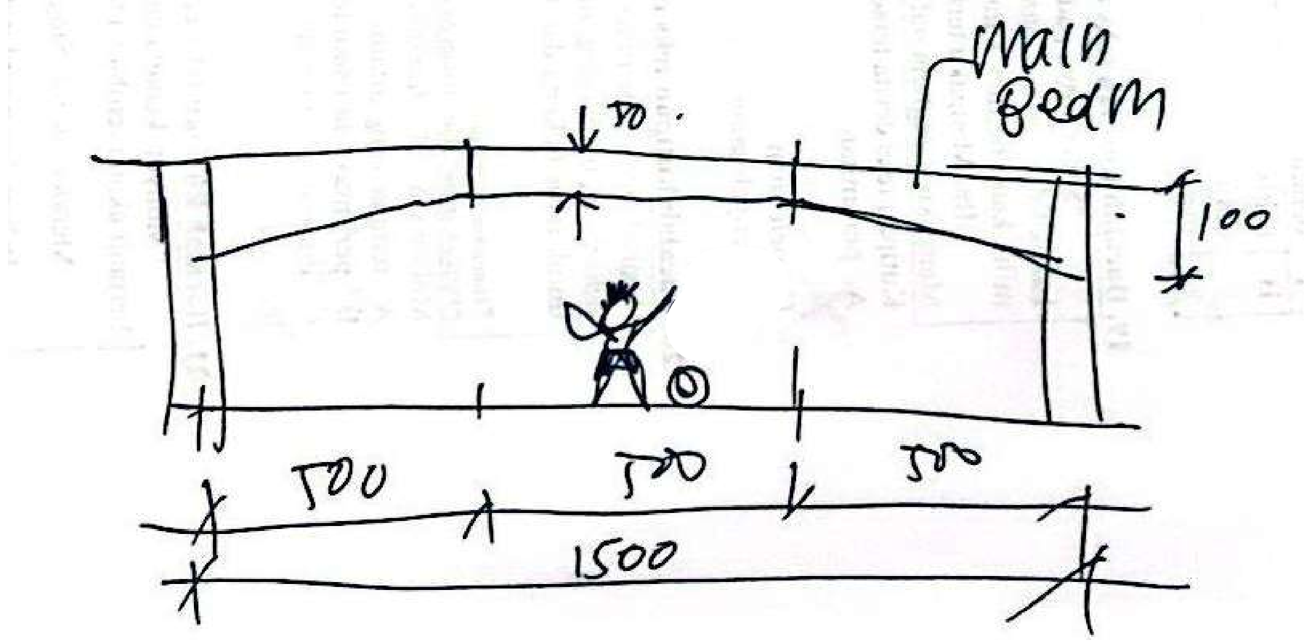


***Figure 3.32 :** Elevation of Structure on Futsal Field . Source : Author*

MATERIAL

A. Roof

There are three different forms of roof on the buildings, which each mixes a six-roof shield or pyramid with flat roofs on terraces and pavilions and roofs that slant around the porch. The material utilized to cover the roof is clay roof tiles. The roof of the structure has a dark reddish brown hue. On any part of the roof, there are no ornaments or decorations. The main feature of the construction is highlighted since the roof is crucial in giving the impression that a building is huge and enormous.

B. Wall

Plaster and red bricks are frequently utilized in wall construction. The exterior walls of the main structure are painted and one tile thick. The exterior brick walls of this structure are plain and unadorned. The exterior wall of the structure has a fine texture. Most outside walls are painted white. The dominance of this white color, which gives the impression that the edifice is monumental, is one of the characteristics of buildings designed in the Indische Empire style.

C. Column

The structure has columns in the Tuscan style. The absence of ornamentation gives a simple column shape the appearance of strength and majesty. This column is one of the prominent embellishments leading to the main entrance and supports the building's flat roof on the front of the structure. Large concrete cast columns make up this column. This column's presence is a hallmark of the Indische Empire style.

3.1.10 INTERIOR ANALYSIS

Figure 3.33 : *Futsal Field . Source : Author*

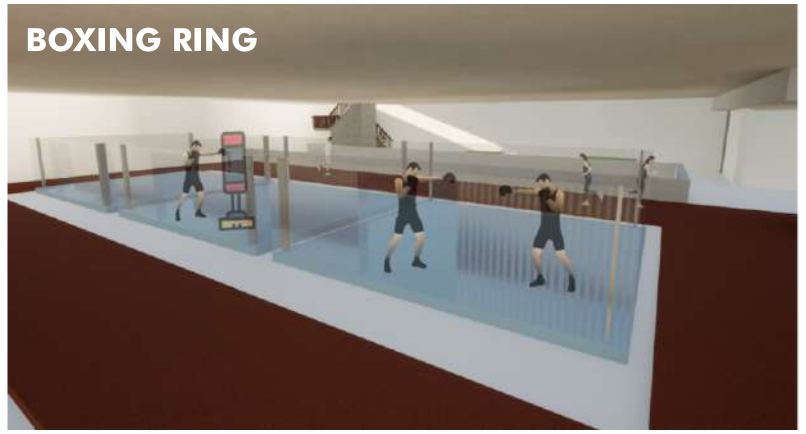


Figure 3.34 : *Boxing Ring . Source : Author*

Figure 3.35 : *Gymnasium . Source : Author*

Figure 3.36 : *TABLE TENNIS . Source : Author*

for the interior of the building there is a futsal field, gymnasium, indoor jogging track, and also a boxing ring. To follow the concept used, namely adaptive architecture, the materials used in the interior are movable materials such as nets for futsal walls and boxing rings. and for the use of tools and materials in the gymnasium, of course these tools and materials can be moved at any time. There are 2 futsal courts available in this place with a size of 15 m x 25 m and the boxing ring in this place has 3 pieces with a national size of 7 m x 7 m.

3.1.11 EXTERIOR ANALYSIS

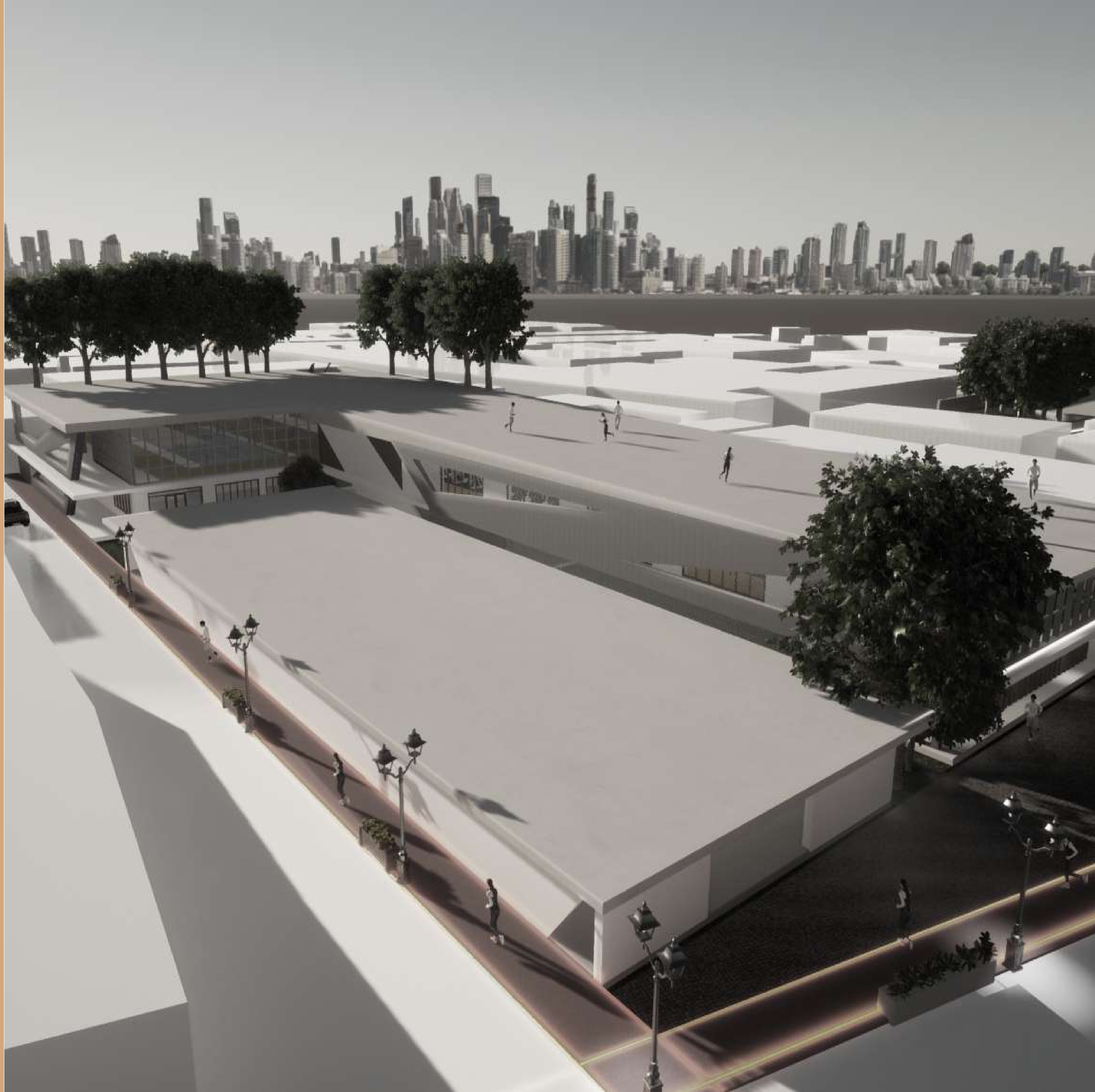
Buildings with huge openings face west or the side of the structure to follow the direction of the sun and also the direction of the wind, which is from the west. This structure features an energy-efficient design that may be tweaked for opening placement without disrupting the present configuration. As a result, the openings here are glass, so no matter what the layout inside, the glass is still in use, and the reason for this glass is so that visitors who are in the building while exercising can still enjoy the outside ambiance, which also includes a running track in front of this structure. Use a second skin on the west-facing side of the building so that the sun's heat can escape. on the west and front of this building there is a jogging track which is This path was designed to connect the Sport Center and the Park because they are both connected by a jogging track. This jogging track path is 2 meters wide and has lighting throughout the route so that if you wish to do it at night, the road will be visible.

Figure 3.37 : *Jogging Track . Source : Author*

Figure 3.38 : *Detailing Building . Source : Author*

Figure 3.39 : *Building Surrounding . Source : Author*

3.2 Pre-Model Design

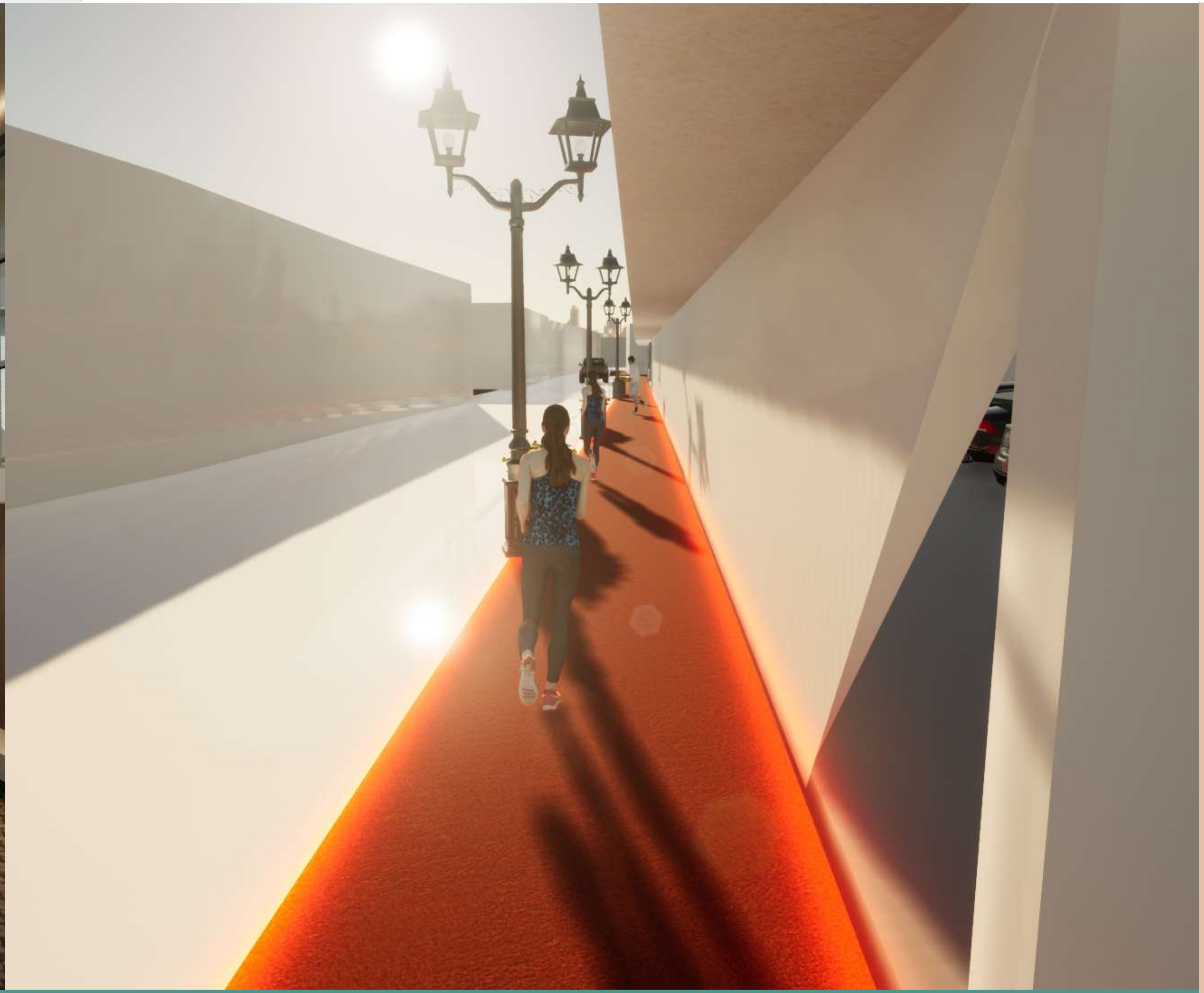


Revised PARK

FINAL ARCHITECTURE DESIGN STUDIO | PRE-MODEL SCHEMATIC

Revised SPORT CENTER

FINAL ARCHITECTURE DESIGN STUDIO | PRE-MODEL SCHEMATIC



Revised JOGGING TRACK

FINAL ARCHITECTURE DESIGN STUDIO | *PRE-MODEL SCHEMATIC*

Revised SITE SITUATION

CHAPTER 04.

Final Design

4.1 Final Design Description

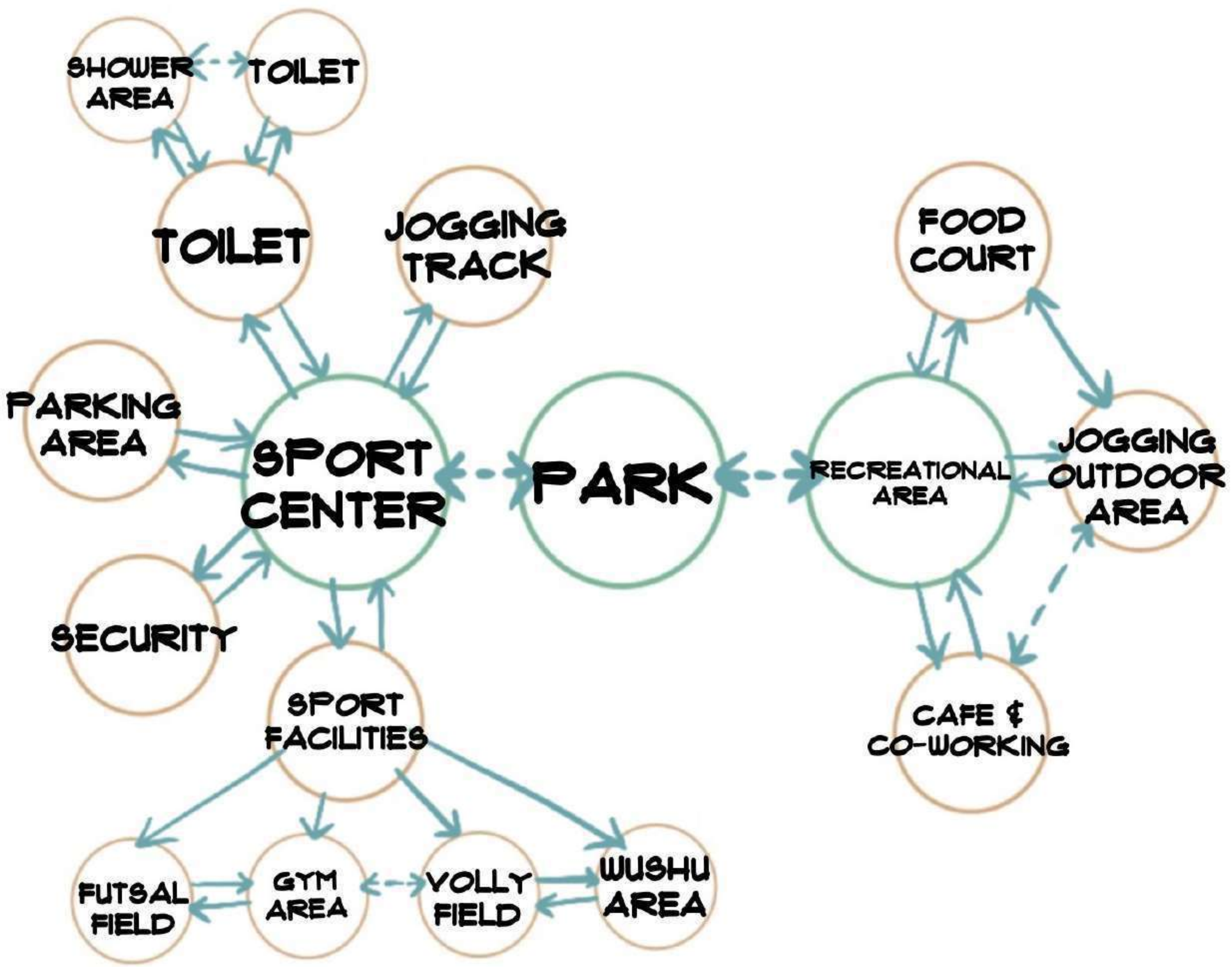
4.1.1 Property Size

Total Area : 8.775,6 m2

BCR : 4.387,8 m2
FAR : 22.816,6 m2
KDH : 877,6 m2

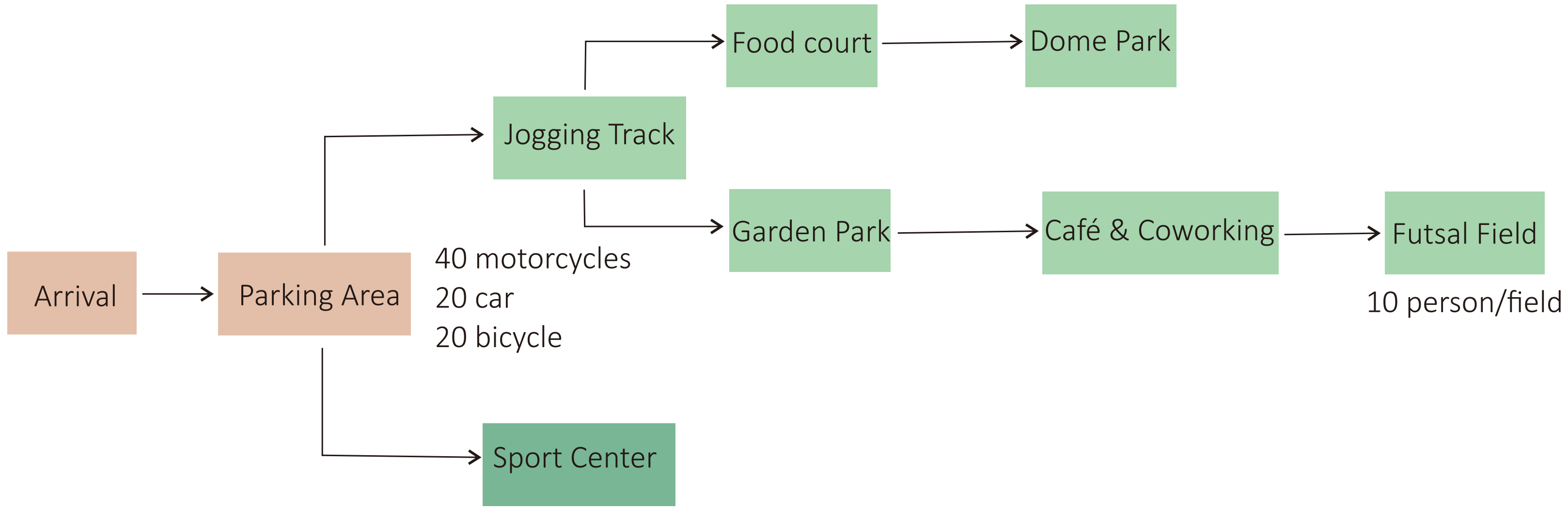
Following the building codes and regulation, the result of site engineering and building calculation is :
a. Total site are 8.775,6 m2
b. Floor Area Ratio from the site engineering is 2.6. Means the building's height should less than 22.816,6 m2.
c. Maximum Building Coverage Ratio from the codes is 50% or 4.387,8 m2 and the building have maximize the use of space which is the building coverage area is 4.377,8 m2.
d. Minimum Green Coverage Ratio is 10% or 877,6 m2.

4.1.2 Zoning

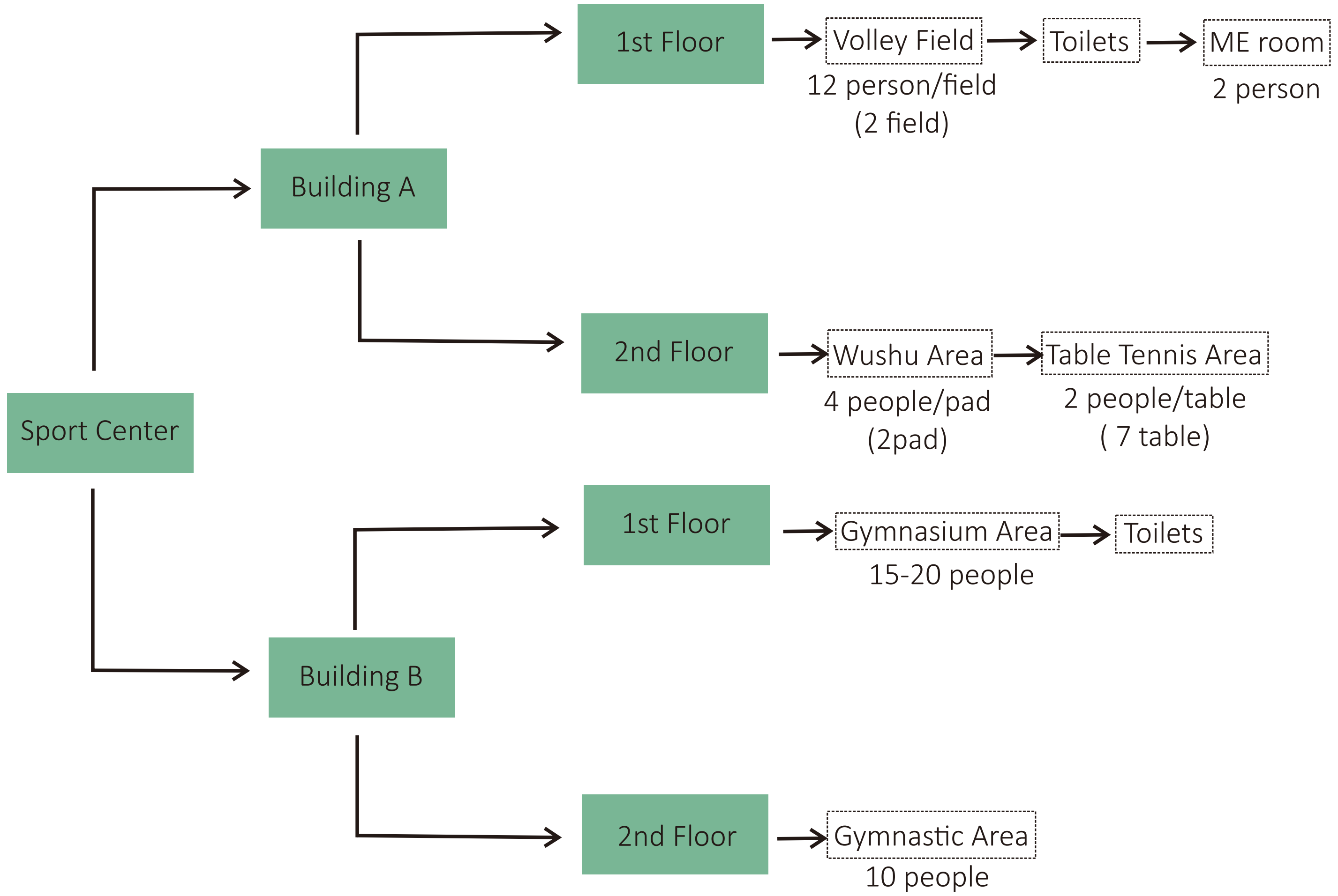


4.1.3 User Analysis

For users of this building, it can actually be used by the public in all buildings because it has a general function, namely exercising, not for matches but more for training. In its use, there are several facilities that can be accessed simultaneously, such as the following:



For facilities that can be accessed directly, namely jogging tracks that can access all buildings because this also includes roads that connect everything and from this jogging track we can also surround all the sites that are in here. Visitors can go to the dome park and also the food court for the first time if they arrive at this place through the main entrance, namely from the parking lot. Then after that you can access to a small sports building because it is next to the parking lot and visitors can go through to the next building via a bridge that is connected to the sports building or by crossing the road but it will still be safe because this road is a quiet road that can only be accessed in one direction . then at the site you can access the café & coworking as well as the open park via the jogging track.



4.2 Landscape Design

4.2.1 Site and Landscape Design

This area is located in the northern part of the old city of Semarang. Located between Jalan Garuda and Jalan Empu Tantulaar where this building also has a bridge over the branjangan road to combine the sports buildings on this site.

The buildings designed in this all adapt the workings and habits of the surrounding population, as well as the characteristics of the existing environment starting from the thermal, the habits of the residents, as well as the shape of the facade of the surrounding buildings.

The main road to enter this site is through the west of the building, namely through the parking area, but this all depends on the user who can also enter in any area.

1 = Sport Facillity A (Bigger Building)
2 = Sport Facility B (Smaller Building)
3 = Café & Co-working
4 = Park (Dome and Open Park)
5 = Food Court
6 = Parking Area
7 = Jogging Track
8 = Futsal Field

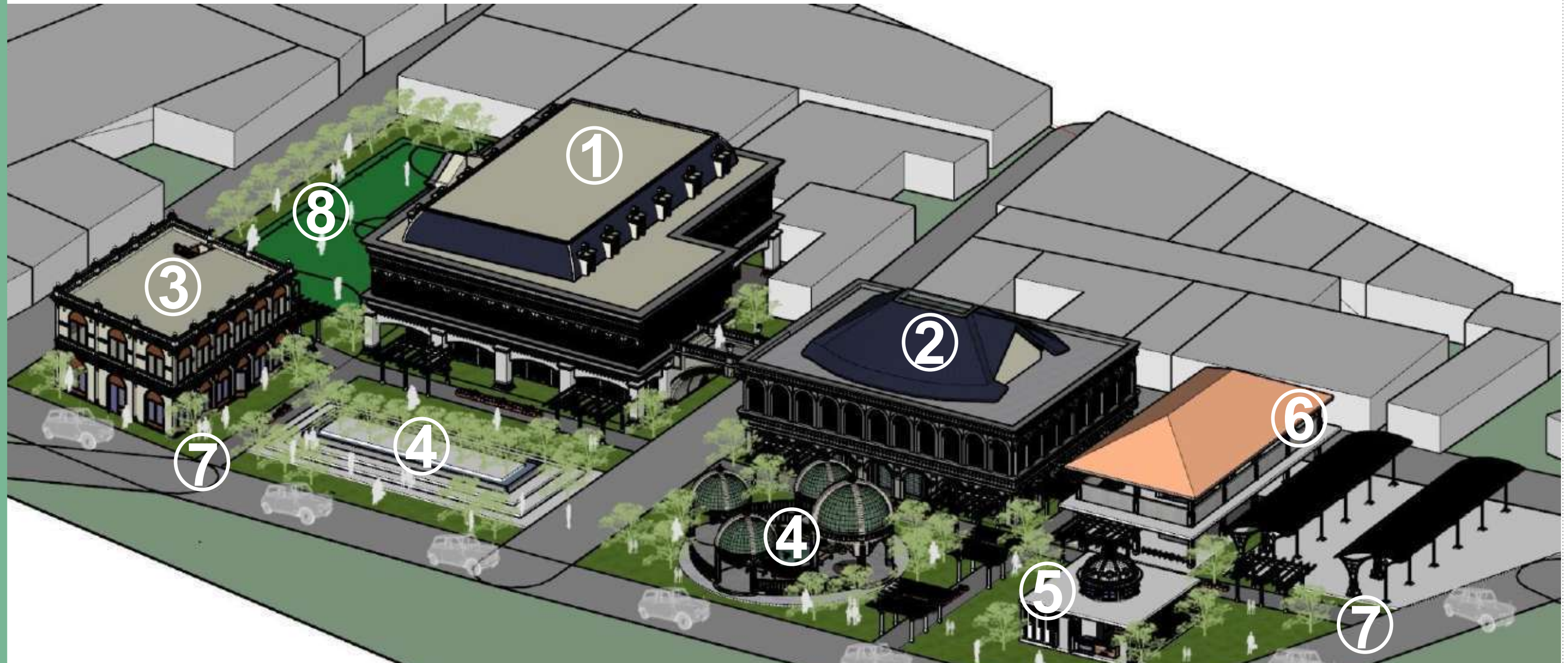


Figure 4.1 : *3D Site Plan . Source : Author*

Figure 4.2 : *Site Plan rendering . Source : Author*

4.2.2 Building Facade

In making the facade itself, adapting the buildings around this site in order to maintain how the old city icon of Semarang was formed. This can be seen from the picture below by looking at the buildings around the site which still carry a heritage theme such as the building right next to this site. What can be adapted here is the choice of material and the shape of the facade which has openings such as wide windows and doors and the many ornaments on the facade itself. A well-known example in this area is the Blenduk Church itself.

Figure 4.3 : *Existing Building Facade in Kota Lama . Source : Author*

Semarang Old Town has a journey long as a historical area that continues to grow in Indonesia. The buildings inside take turns destroyed, overhauled or replaced by buildings new for centuries. Developments that are happening turns out it doesn't change the image of the old city facade Semarang is another area even though it is not built in one era only. The majesty of the facade in this Old Town presents a formal faade structure which naturally formed. The formal structure of the facade can be detected from the skin color of the building (and the hole), the appearance of the opening (and its ornamentation), and the shape of the roof (with environmental visibility response). The composition of the resulting facade of the roof, color skin, and the type of opening in the aspect of contrast, proportion, scale, rhythm give character and unity to the vista on the three main buildings in the Old City of Semarang. This unique character is also strengthened by his position to the entire Old City Area, namely in center or heart of this historic district.

In color typology, office buildings are studied based on the dominant color seen on the facade. There are several types of colors clearly visible on the facade of this surrounding building, which is dominant on the facade of the initial building Semarang colonial office is white color. While the average building there uses a gable roof added with ordinary house tiles or also a dome-shaped roof like the Blenduk church itself and there are also some office areas that still use a shield roof. while for the opening itself, the surrounding buildings use large curved windows, sometimes double or single openings.

Therefore, to help maintain the characteristics of existing buildings in the old city of Semarang, this building was designed by adapting the characteristics of the buildings around it so as to make the design as follows:

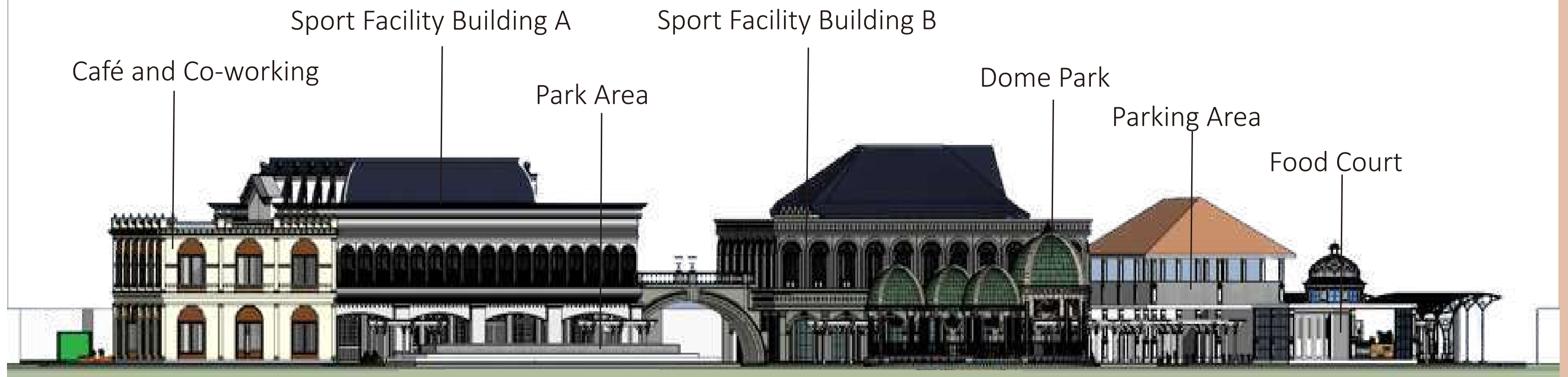


Figure 4.4 : *Site Elevation . Source : Author*

4.3 Adaptive Component

4.3.0 Synchrony Between Inhabitants & Environment

It is clear from the expanding number of adaptive designs and research initiatives that architecture is becoming an increasingly active participant in human activities. The built examples of interactive architecture typically have two major ways to react to occupant behavior, though. Present-day adaptive settings react to either a single occupant or the combined behavior of several inhabitants into a single reaction for everyone..

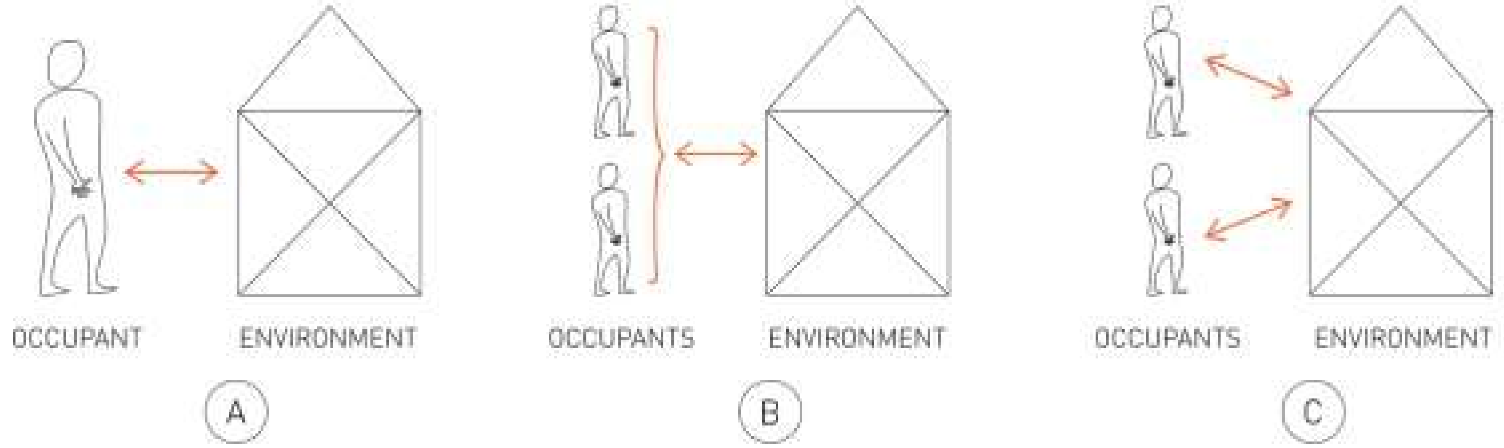


Figure 4.5: *Illustration of response types of Adaptive Architecture. (a) single inhabitant – single response; (b) multi-inhabitant – single response; (c) multi-inhabitant – multiple responses. Orange arrows indicate direction of interaction. Source : https://www.springer.com/gb/book/9783319708744*

In this design, we can describe it by:

1. The circulation layout before this design existed with the design that I made without reducing how the existing circulation created its social correlation.

2. The function of the building can still be used for various other types of sports with the same design and layout

3. The response of the building to the sun and wind direction is included in the construction of the building envelope and how the width of the opening and the height of the building can allow the building to enjoy natural ventilation by looking at the function of the building as a sports building, namely by making the wider and taller the building, the wider the opening. made wider and more numerous. it can also reduce the heat in the room which can make the users of this gym stay comfortable.

4. The facade in the design adapts the facade and the surrounding context by using the form of a heritage building. Where all the buildings follow how the facades of the surrounding buildings are formed such as the shape of the building envelope, the use of materials, and in this case also the design of existing openings.

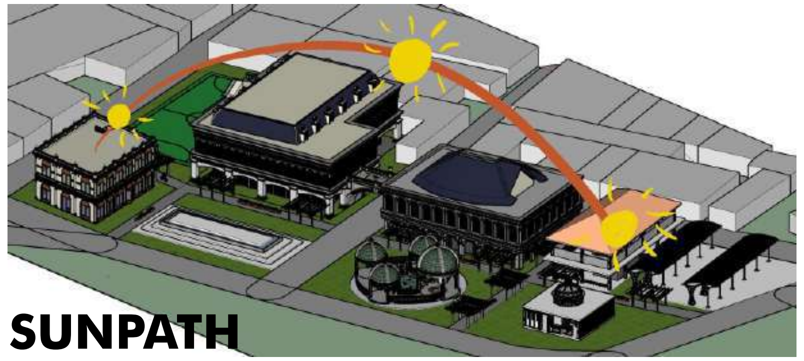
5. Because before this design was made this area was a slum area and there were rarely people who came to this area and it seemed unsafe to visit, so to attract visitors, in this design, many street lights were created on the site or in the jogging and jogging area. also the arrangement of the green layout in the site that can cool the surrounding buildings.

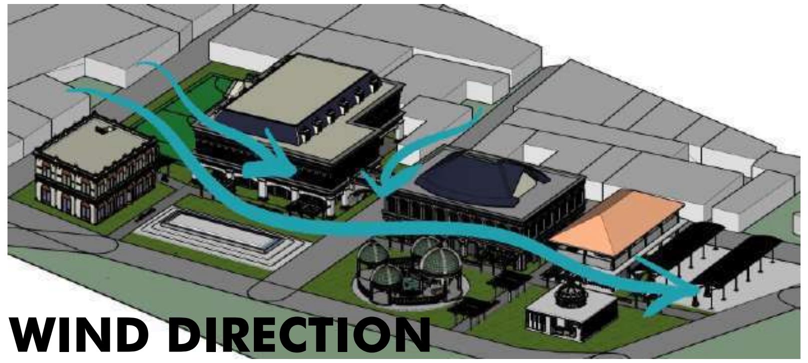
6. To invite the interest of visitors, this sports building is also opened to the public and anyone can use it or just watch the activities in it. and also added a garden to make the site cooler and a cafe and coworking so that other users can still enjoy the surrounding atmosphere other than inside the building.

4.3.1 Adaptive Architecture adapting the Environment

Of course, when we want to design a building, we must pay attention to the site's environment, such as the direction of light and wind. because this building is located in North Semarang which is close to the port, this area has a hot climate that tends to be humid. Therefore, here I design with attention to the surrounding environment as follows :

A. Temperature on the Building

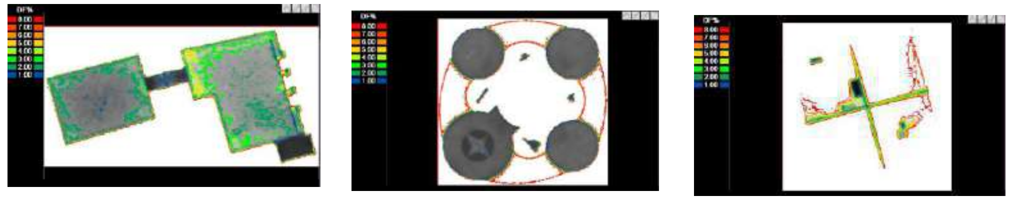


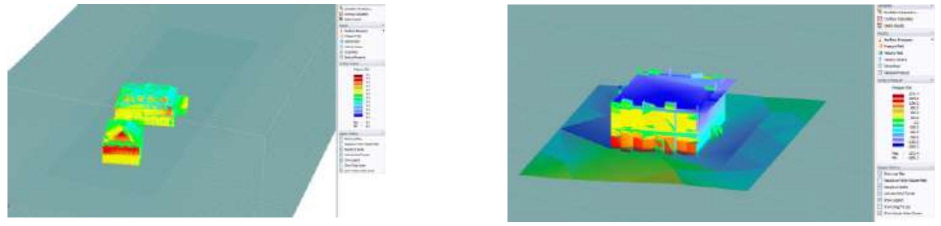


To prove that the building adapts to how the environment in this area is by using how the sun comes and the wind comes. This is sought using existing data from the government as well as several trials such as rwind which can prove which parts of the building are still exposed to a lot of sunlight. In addition to knowing the correct direction of the building in order to minimize direct sunlight and use natural ventilation, considering that this is a sports building, this is also useful for how the building can make its users comfortable. For this building to reduce direct sunlight, namely by arranging the layout of the building where the building faces north and also for buildings that are facing direct sunlight using a second skin on the wall, this is also supported by using large openings in the direction the arrival of the wind so that the wind can be a natural ventilation in the building. Therefore, the building also gets a view of the surroundings.

***Figure 4.5 :** Temperature Building Sketches . Source : Author*

B. Building Simulation





This is the result of a test of building ventilation using velux and rwind for per building. it can be concluded that the layout of the building is correct and the direction of the wind comes from the southeast, so the east side of the building has minimal incoming wind.

***Figure 4.6 :** Temperature Building Simulation . Source : Rwind & Velux Application*

C. Building Facade

***Figure 4.7 :** Building Facade . Source : Author*

as previously mentioned, the use of large openings and a second skin that accommodates this building is needed to neutralize the temperature inside the building.

***Figure 4.7 :** Building Facade . Source : Author*

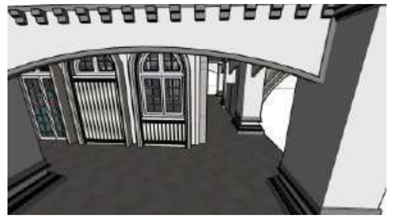


***Figure 4.7 :** Building Facade . Source : Author*

Therefore, by continuing to incorporate the concept of the building according to the context around it, this building was made with a heeritage style by relying on large openings and almost around the building using openings.

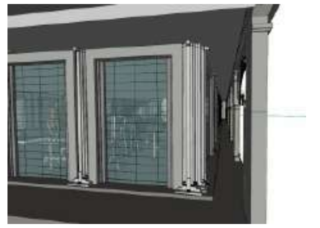


***Figure 4.7 :** Building Facade . Source : Author*

D. Vegetation

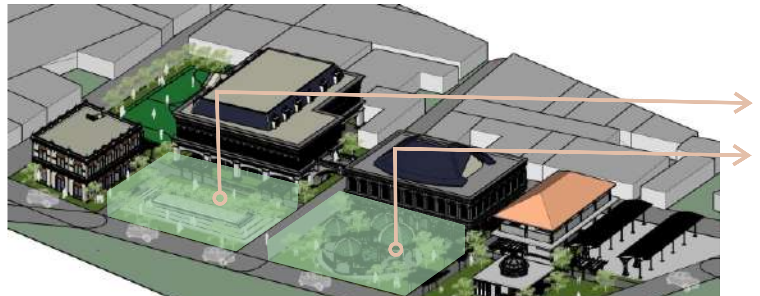
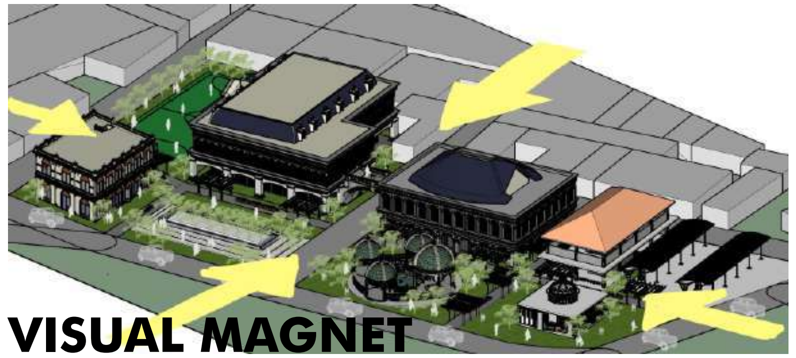


***Figure 4.8 :** Building Vegetation . Source : Author*

To neutralize the area around the building, a park was created which aims to provide a lot of vegetation on this site. This park is located in front of the sports facility building which is planted with many plants which are quite shady for the surrounding buildings and also for people who want to jog in this area. So users of jogging tracks and building users still feel comfortable and don't worry too much about the heat of the city of Semarang.

4.3.2 Adaptive Architecture adapting the Inhabitants

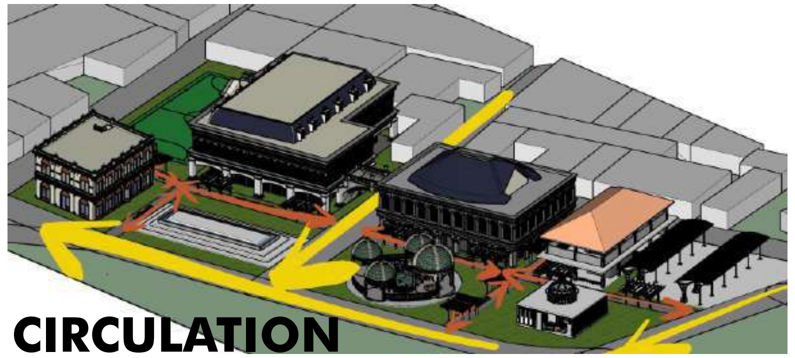
in this concept is how the building can adapt the habits of local residents and the problems that exist around are solved. because this area was once an area that was rarely visited by tourists, the way to revive it was to attract the attention of local residents and tourists. For the needs of local residents, namely Semarang being a city of athletes and some of the existing sports facilities in Semarang are not accommodating, the main function of this area is as a sports facility and also a place of recreation for people who do not want to exercise in this area. This is also supported by the shape of the facade of the building that does not leave the hallmark of the old city of Semarang, namely heritage buildings in the 80s.because this is new, namely the incorporation of an 80's-style facade and also renewable sports facilities, this will attract visitors by only taking pictures in front of the building and in the garden but also inside the building.



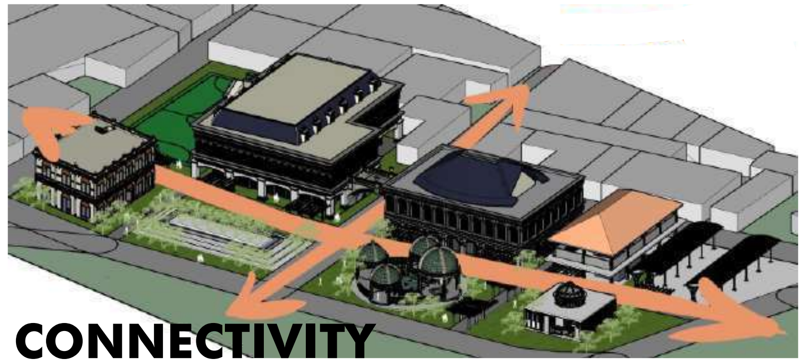
The facade of this building is adapted to the context of the old city of Semarang, namely a heritage building and also faces the main road to attract the attention of residents who pass through the main road. The park from this site also uses an 80s-style concept which still uses a dome, this also aims to create a typical 80s atmosphere in this millennial era so it will be something new for this area.

The meeting point of this area is in the middle of each area. because this area is separated by a major road, this also does not make it difficult for building users to cross the existing bridge and also outside users of the building will still be able to access each other because this road is a dead end where not many vehicles can pass on this road.

Figure 4.9 : *Building that Adapting the Inhabitants .*
Source : Author



To make users able to access all places on this site, circulation from outside and inside the site must be considered. This is supported by the placement of existing parking lots on one-way main roads or beside the site so that users can park their vehicles with easy access. this is also supported because the area for parking was also a public parking area for the old city area.



connectivity between buildings is also connected by the existing jogging track and also the bridge being built. this is also supported by the building's connectivity with the surrounding environment, namely by not reducing the access of surrounding buildings to this building.

To adapt the existing buildings around it, the facade of this building also adapts the characteristics of the buildings around it, namely the colonial concept or theme with a touch of ornaments typical of 90s architecture.

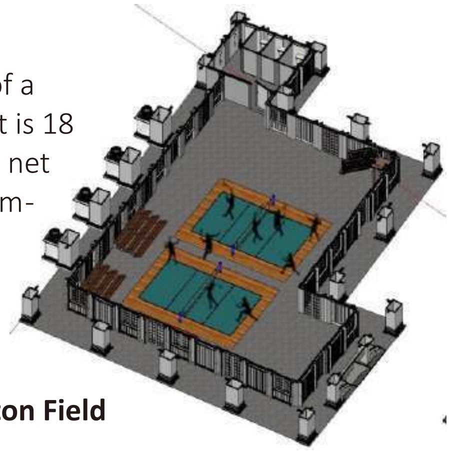
Figure 4.9 : *Building that Adapting the Inhabitants .*
Source : Author

4.3.3 Adaptive Architecture adapting the Element of Adaptation

In this method of adapting the building, it is necessary to pay attention to the function of the building. The function of this building is to provide adequate sports facilities considering the community's need to maintain health has increased since COVID-19. Therefore this building has a field and other facilities with national standard sizes which are not only used for 1 type of sport but can be used for several sports using this building. Namely by using facilities that can be changed or by using facilities that have universal sizes for several types of sports that require the same facilities, for this reason this building is designed as follows:

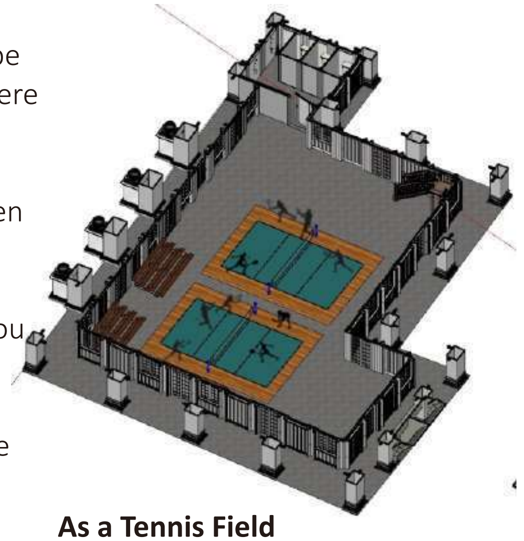
A. Volley field can be = Tennis - Badminton

The national standard size of a volleyball court is 18 m x 9 m with a net height of 2.24 m-2.43 m.

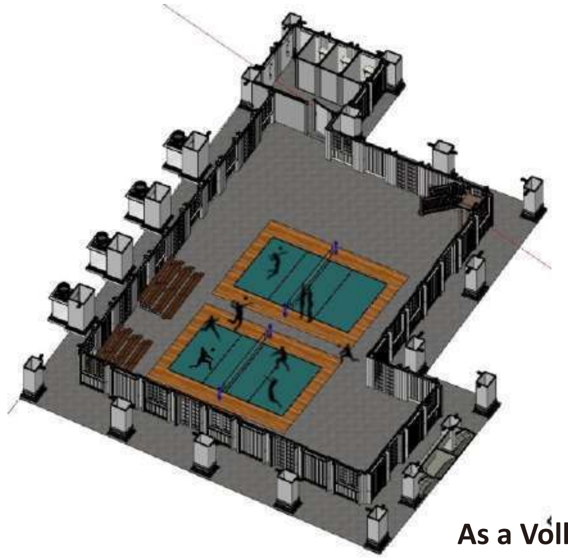


As a Badminton Field

Here it can be seen that there is a portable basketball hoop so when you finish playing basketball you can throw it away to the corner of the building



As a Tennis Field

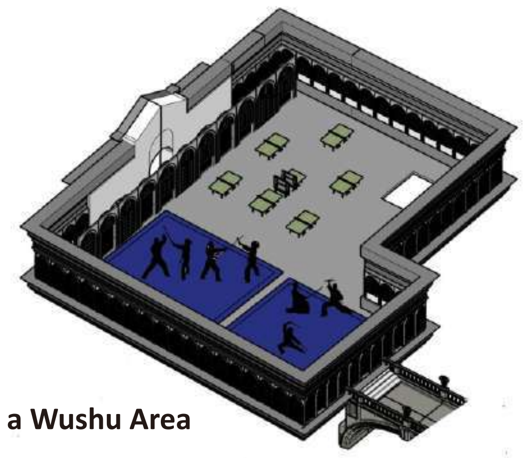


Because this size is larger than other sports, a volleyball court is used so that all other sports can use it.

As a Volley Ball Field

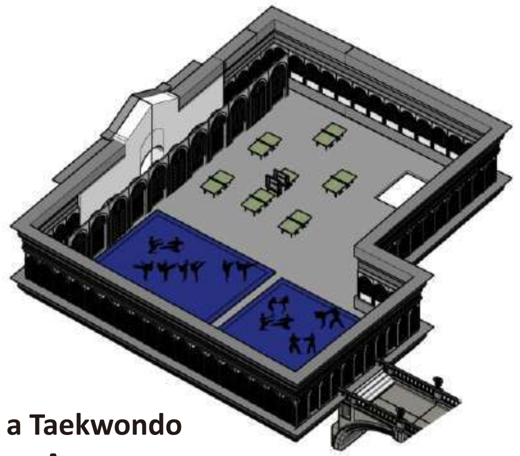
Figure 4.10 : *Volley Field Adaptation . Source : Author*

B. Wushu Area can be = Pencak Silat - Taekwondo



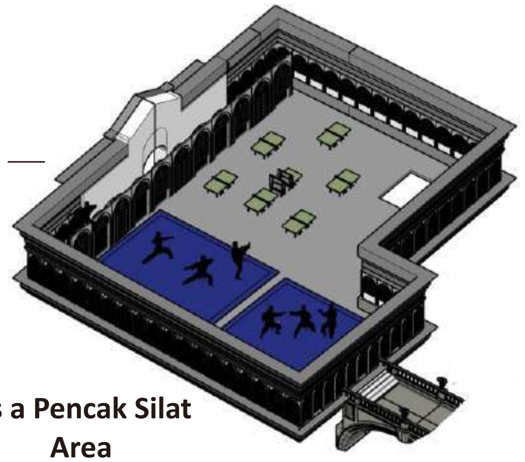
As a Wushu Area

In several sports in the city of Semarang, there are already established athletes, some of which are wushu and Pencak Silat. Because these three sports have fields or arenas that are only slightly apart, namely for wushu 8 m x 14 m, for pencak silat 10 m x 10 m, and for taekwongo 12 m x 12 m, therefore the size of the field in this building is 12 m x 14 m which can be used for all three types of sports that use the same type of mat. The type of mat used is eva sponge which is safe to use for training these three types of sports.



As a Taekwondo Area

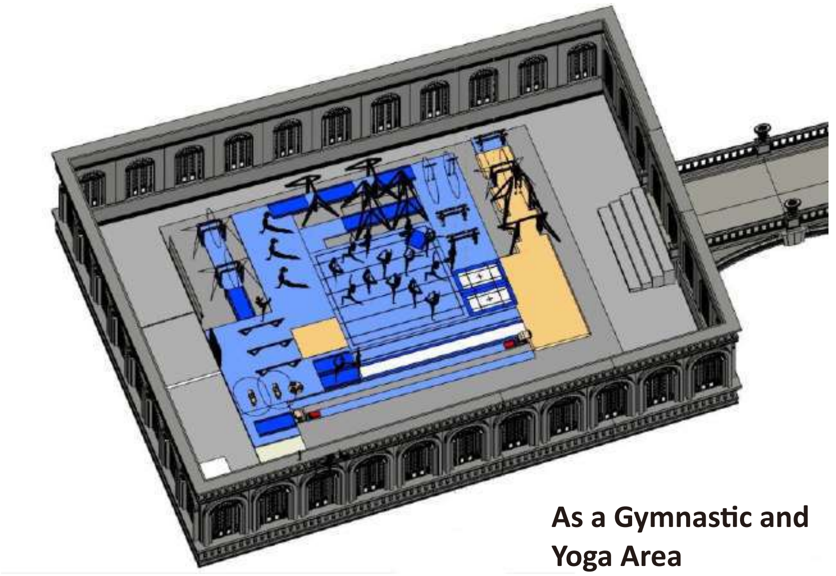
This area is actually divided into an area for table tennis, so there will be a lot of more empty space to be used to increase the width of the mattress because table tennis also has a portable table which means it can be stored folded when not in use. therefore for the 2nd floor area it will actually be more flexible because the size can be increased or decreased



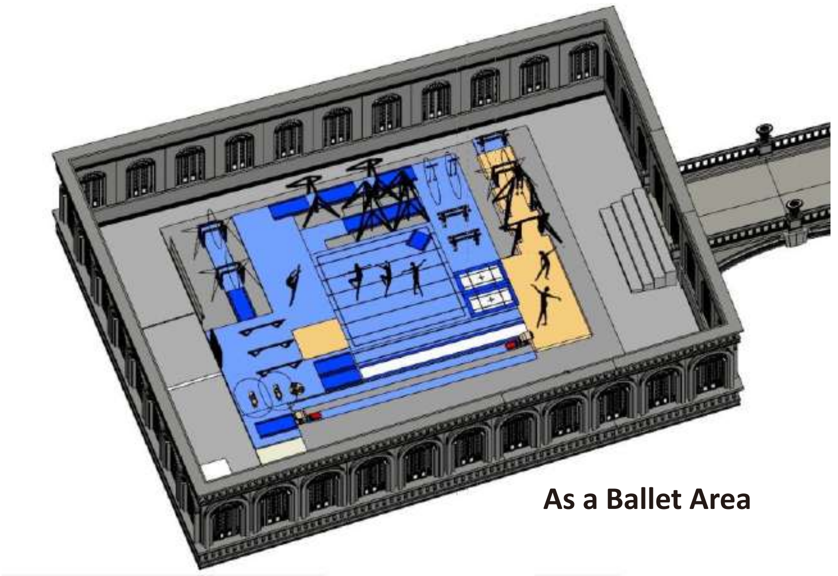
As a Pencak Silat Area

Figure 4.11 : *Wushu Adaptation . Source : Author*

C. Gymnastic can be = Yoga -Ballet



In this area, there are actually several tools and facilities for practicing gymnastics and ballet because these two sports require almost the same equipment. for the size of the arena provided is 15 m x 15 m with the required facilities.



Actually for the ballet arena what is needed is only a studio measuring 16 m x 12 m but in this building the studio size is adequate, but here it aims to train the flexibility of ballet dancers who need the same facilities as gymnasts.

Figure 4.12 : *Gymnastic Adaptation . Source : Author*

D. Futsal Field can be = Outdoor Basket

For the outdoor field, my design here also places a national-sized futsal field, which is 18 m x 40 m. Placed outdoor so that visitors can see futsal matches from outside the room and also usually these futsal users come in groups directly, therefore they are placed outdoors so that users can freely use them and do not disturb other users. And also the goal on this court is very portable because it can be replaced with a portable basketball hoop as well.

In this design, there are 2 types of courts for basketball, namely outdoor and indoor. For indoor courts it is possible only to practice because the indoor one for the national size standard which is very small, while the outdoor one has a size that is as big as an NBA field standard, therefore if you want to do the competition you can do it outdoors.

Figure 4.13 : *Futsal Field Adaptation . Source : Author*

4.4 Building Detail

4.4.1 Sport Center

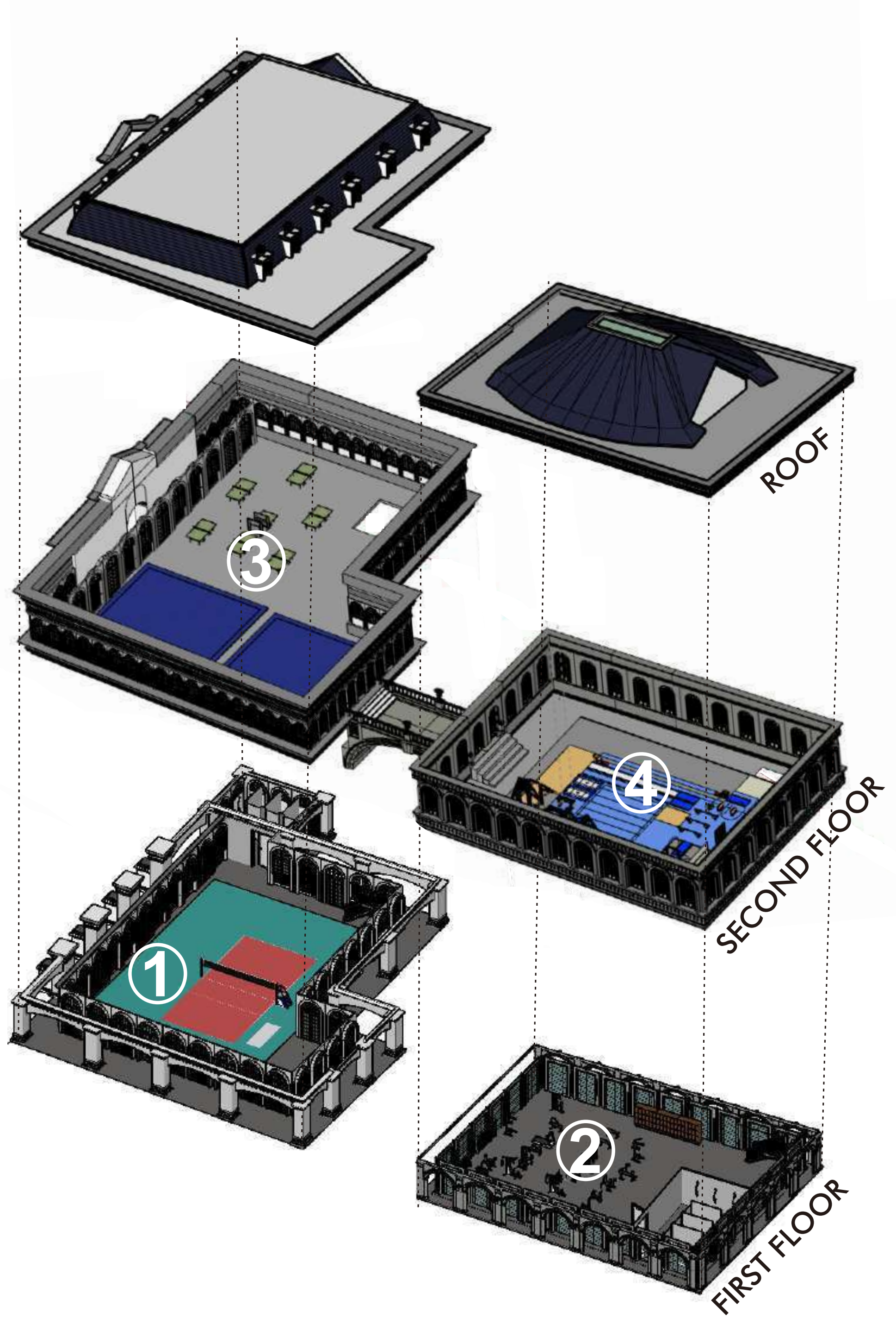


Figure 4.14 : Sport Facility detail . Source : Author

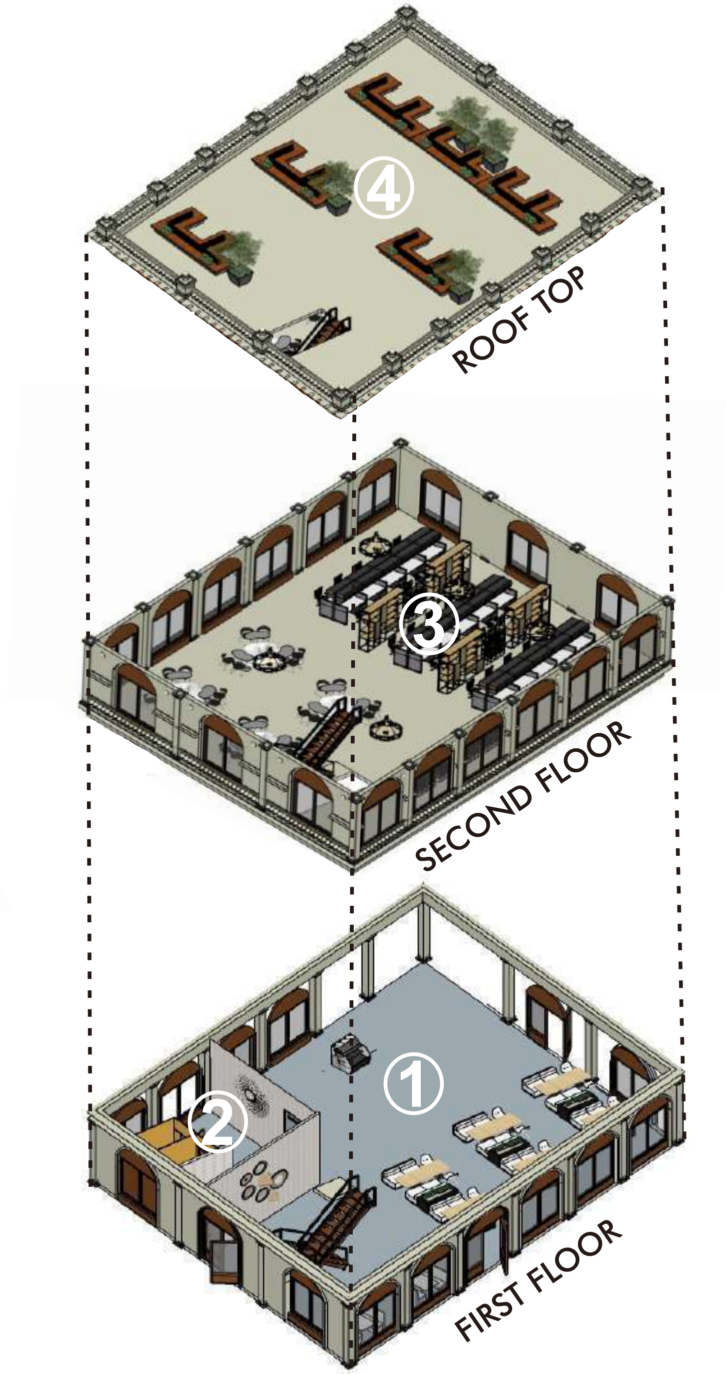
The main function of this building in this design is the sport facility. This is due to the increasing human needs since Covid and also the government's desire to make Semarang a city of athletes. Therefore, in a place that is rarely touched by tourists in the old city of Semarang. This building has several functions, the size of the field can be used for various types of sports, not just one, so this building is designed in such a way that it can be used by all types of sports. for the size of the field made in this building is futsal, volleyball, and also wushu, gymnastics and gym. This building is separated from the road which is joined by a bridge on the 2nd floor of this building. Larger buildings are used for fields that require large space, such as the volleyball court and wushu and table tennis areas for indoor, while the outdoor one has a futsal field. for smaller buildings it is used for types of sport branches such as wushu, gyms, and also gymnastics.

1 = Volley Field
2 = Gym Area
3 = Table Tennis and Wushu Area
4 = Gymnatics and Yoga Area

Figure 4.15 : Sport Facility rendering . Source : Author

This building has 2 separate buildings which are separated into buildings for sports activities that require large or small spaces. This building can also be used for the public, if you don't want to exercise, visitors can still see it by sitting in the building that has provided several places for spectators. With a height of 7 meters, this building has 2 indoor volleyball courts, 2 wushu areas, and an area for table tennis, while for a smaller building there is a place for gym and exercise. Which of these courts can be used for 2 other types of sports that have the same field size. With a facade like this, the openings in this building make it difficult for them to keep using natural ventilation because this building also functions as a sports hall.

4.4.2 Café & Co-Working



1 = Kitchen and sitting area
2 = Toilets
3 = Co-Working Area
4 = Roof Top

The role of cafes and coworking here is like the purpose of creating a public area as a means of recreation, not only for exercising. Therefore, the existence of coworking here other than as a place to work or just a sport center user enjoying the drinks, this cafe is also intended to attract more visitors and even at night the area is still alive. Therefore, visitors other than those who want to exercise can still stop in this area because the location of this co-working is also strategic from the direction of the existing road. this cafe has a facade that is contextual to the existing environment and is the same as the sports building itself, which is a typical old city feel. This is to keep the old city characteristics in this renewable building

Figure 4.16 : *Café & Coworking detail . Source : Author*

Figure 4.17 : *Café & Coworking Rendering . Source : Author*

For this cafe building serves as a place to relax while enjoying the scenery on this site. This Café and Coworking is open to the public, anyone can enter this building whether they want to come to exercise or not.

This building is made with a facade that blends with the sports center so that this building also adapts from other buildings which are the characteristics of buildings that exist throughout the old city of Semarang.

Figure 4.18 : *Café & Coworking section detail . Source : Author*

FINAL ARCHITECTURE DESIGN STUDIO | **BUILDING DETAIL**

4.4.3 Park

Figure 4.19 : Dome Park Rendering . Source : Author

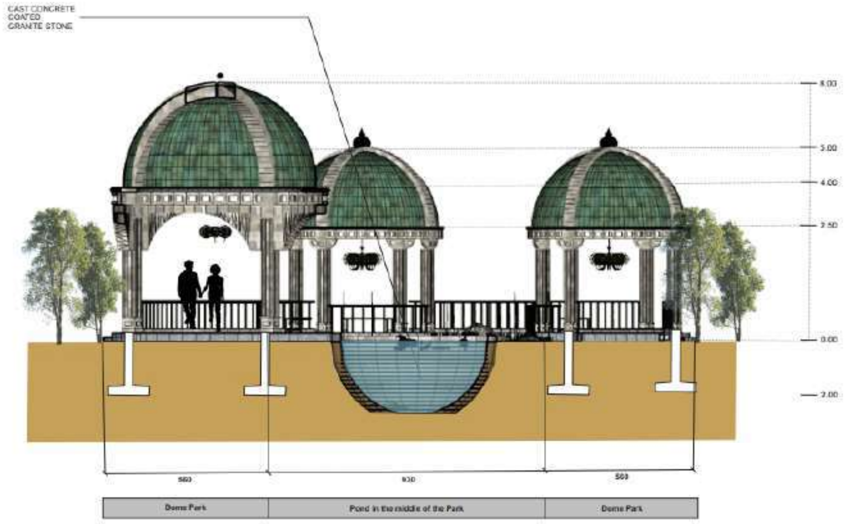


Figure 4.20 : Dome Park Section . Source : Author

This park was created by following the characteristics of the surrounding buildings and creating a new atmosphere for the area there. This park has an atam dome with a European style which has 4 domes surrounding a fish pond in the middle. This park is also surrounded by flowering plants which attract visitors so that it can be used as a place to take pictures or a place to relax because there are chairs and seats in it. To attract visitors to come to this area, this dome park is also used for users of sports facilities such as jogging track users to be able to enjoy a new atmosphere while exercising.

Figure 4.21 : Open Park Rendering . Source : Author

In addition to the dome-shaped garden typical of European architectural styles, in this site there is also an open garden located in front of a large sports facility building and has a fish pond in the middle and also trees. This is intended so that visitors can still feel relaxed in the middle of this site openly and see their surroundings. This park can also be made as a seat for visitors to increase the interest of users in the area, not only users of the sports hall. This park is also open 24 hours because it is an open area which can be accessed anytime and anyone.

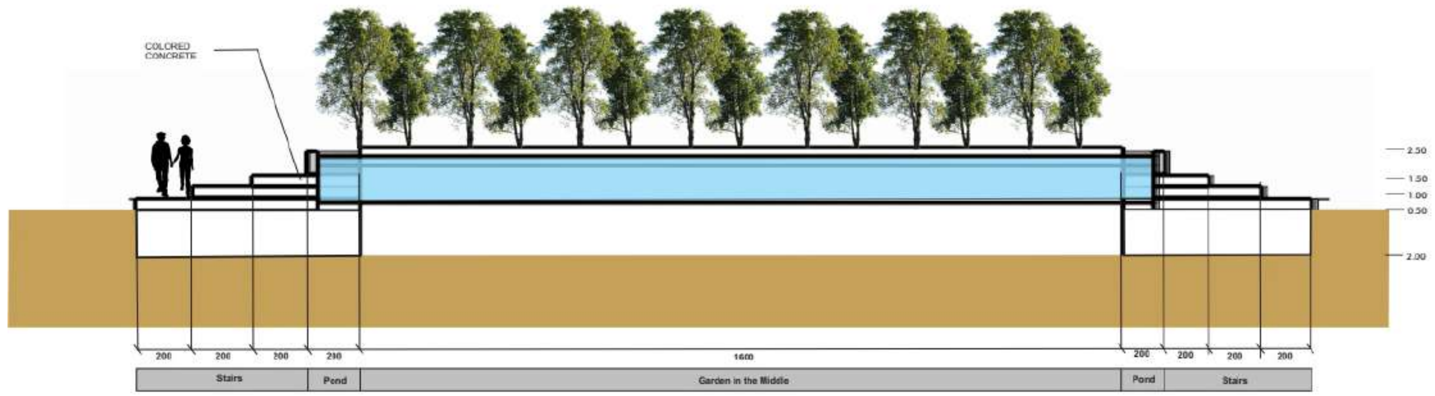


Figure 4.22 : Open Park section detail . Source : Author

FINAL ARCHITECTURE DESIGN STUDIO | BUILDING DETAIL

4.4.4 Food Counter

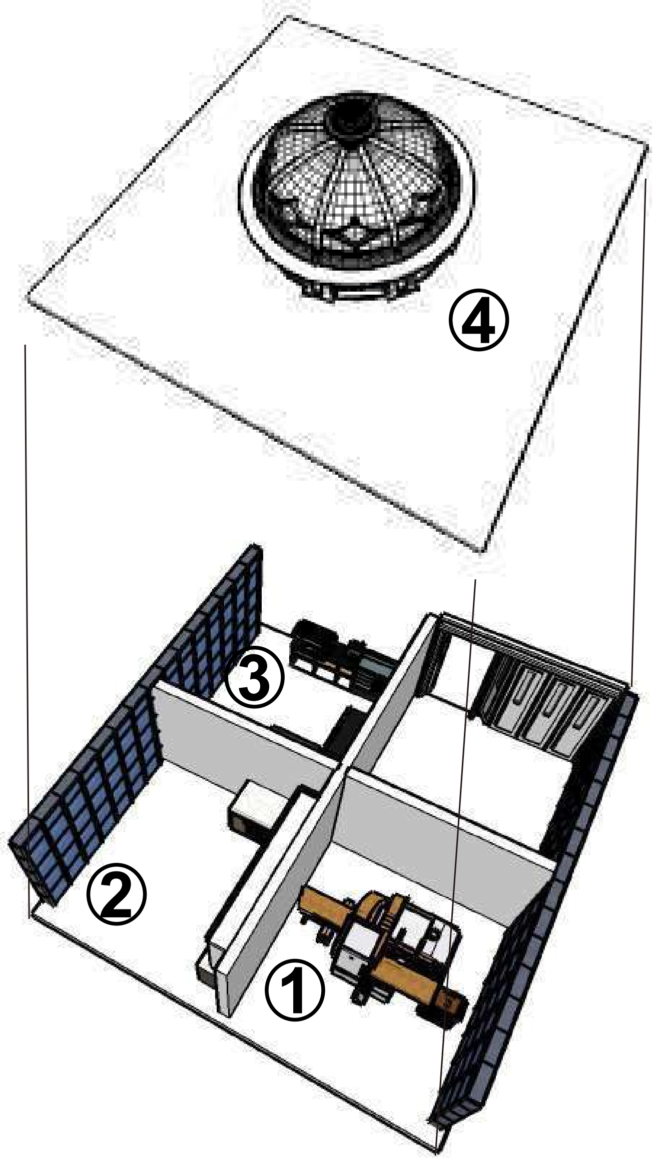


Figure 4.23 :Food Court Detail . Source : Author

So, why was a food court created on this site too? This is intended for users who just want to relax and enjoy the atmosphere around them openly, so they can use this food court because this building only provides ready-to-eat food and users can sit outside the building while watching the runners using the jogging track and the atmosphere around the city of Semarang remains constant. affordable. This is also supported by how the building adapts to the surrounding environment by creating a roof using a dome-shaped bitumen roof.

1 = kitchen 1
2 = kitchen 2
3 = kitchen 3
4 = storage for food and beverages.

Figure 4.24 :*Food Court Rendering . Source : Author*

This building was also created to overcome the economic problems of local residents, namely by creating jobs for the people around, especially those behind this building, where the residents there are arguably still quite slums for the elite area in the old city of Semarang.

Figure 4.25 :*Food Court Interior Rendering . Source : Author*

4.4.5 Jogging Area & Futsal Field

Figure 4.26 : Jogging Track Rendering . Source : Author

The jogging track in this building is also located around the existing area and of course along the outside of the area, the start of this jogging track can be started from the main entrance, namely in the parking lot, therefore the jogging track can be accessed from there or from anywhere if the user does not use motorized vehicle. Inside this jogging track is covered by a shelter every 500 m with a seat in the middle of this jogging track which aims if the jogging track users feel tired, then they can just sit for a while in the middle of this jogging track.

BEFORE **AFTER**

Figure 4.27 : Road side Futsal Field Before and After . Source : Author

In addition to jogging, this site also provides a futsal field as an outdoor sports facility. This futsal field is also equipped with a separate bathroom and toilet at the back of this field so that users can wash their faces and bodies without having to enter the gym. This futsal field is located on the east side of the largest sports building or in the corner of the site so that the audience can access it easily if they want to see the existing matches.

because previously this area was a deserted area that was slum and seemed unkempt which at night the lights along this area went out and this made residents lazy to visit this area because it seemed unsafe, therefore to create a safe atmosphere for its users added some street lighting and outdoor building functions that can invite people to come there to create a crowd and this makes everyone feel safe again.

4.4.6 Parking Area

Figure 4.28 : Parking Area Rendering . Source : Author

This parking area is at the main entrance which is located on the west side of the site or next to a small sports building. This parking lot is divided into 2, namely parking for motorbikes and for cars. For the motorbike itself, there is a parking lot with 2 floors so that more motorbike users and cyclists can park in this place. while the car park area is outside with a cover like a canopy which is only 1 floor and can fit approximately 2 cars between columns. This parking section is placed here because the previous building was also used for car parking because the access is very easy for the west side of the road which is only a one-way bus. Therefore, jogging track users can start jogging from here because the place where users park their vehicles is here.

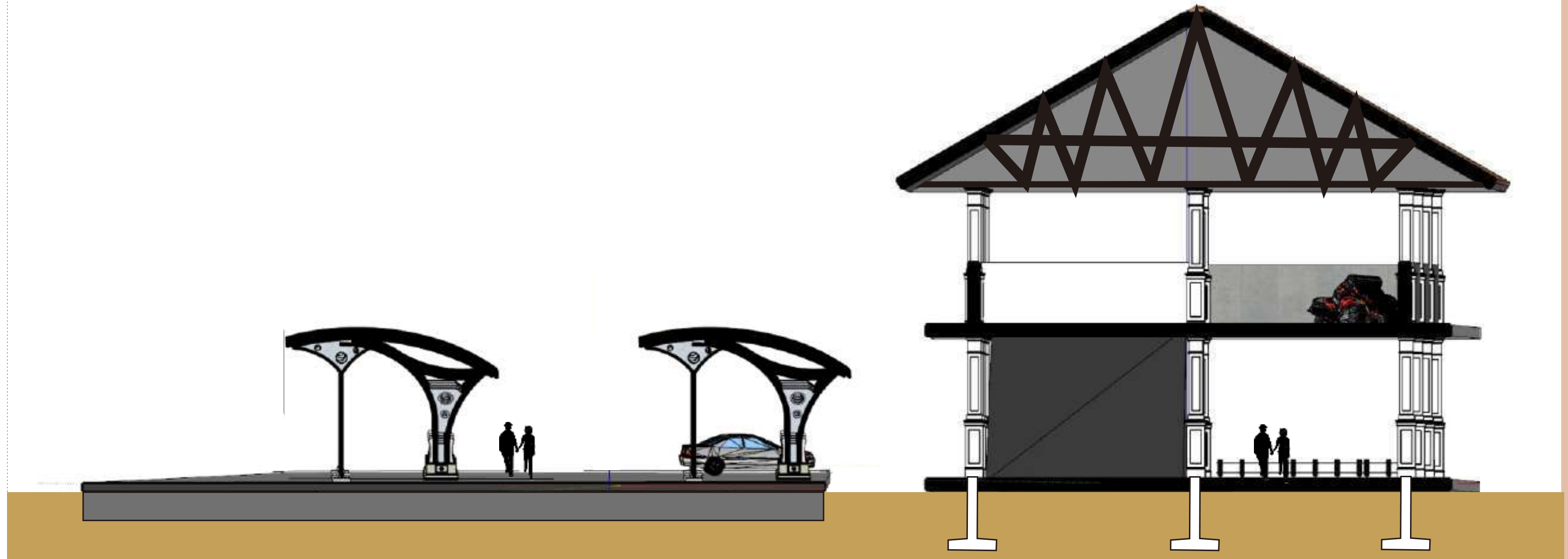


Figure 4.29 : Parking Area section . Source : Author

4.5

Structure & Material

4.5.1 Structure

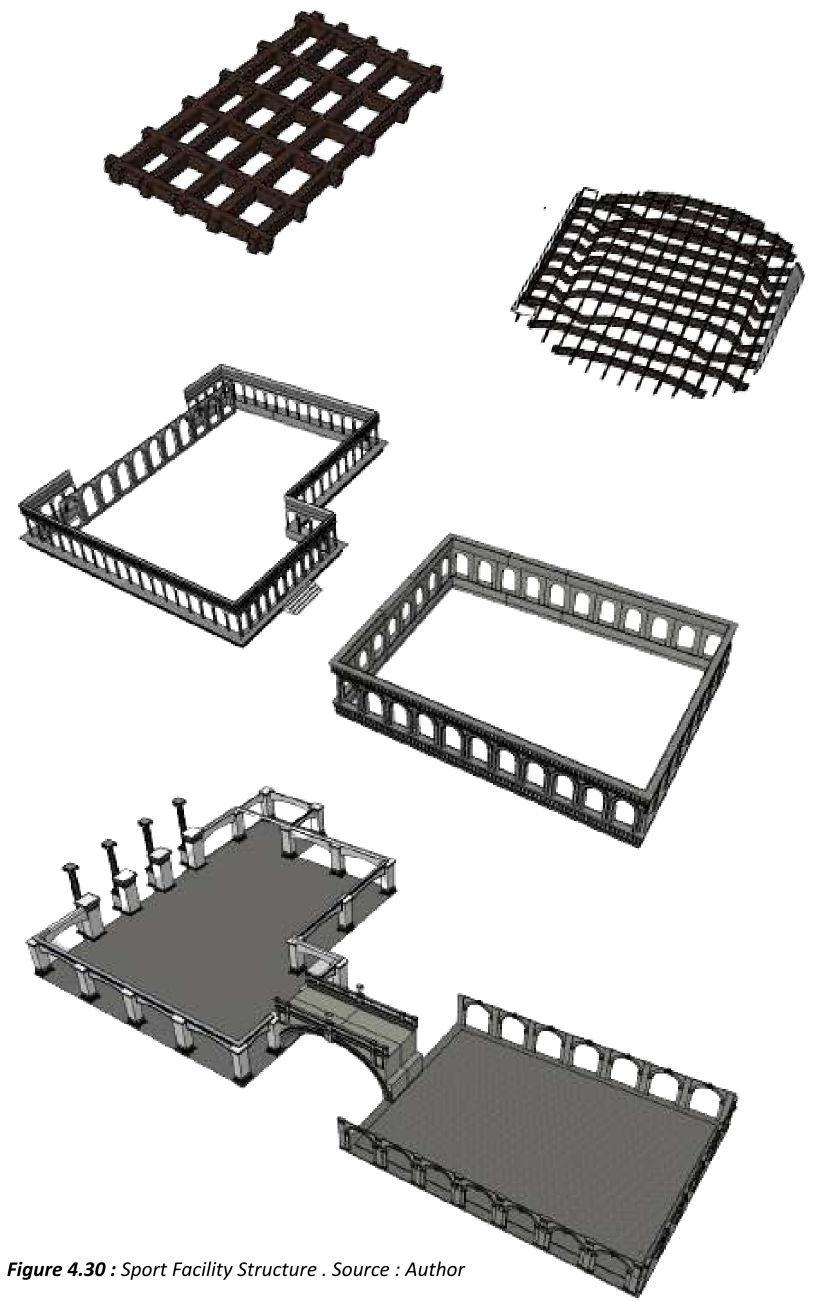


Figure 4.30 : Sport Facility Structure . Source : Author

for this building there is a structure that has large and small column shapes which results in lots of columns for sports facilities buildings and has thin walls. The columns in this building adapt from how the columns lined up in Lawang Sewu Semarang are relatively thick with a ziggurat formation.

The roof uses wood and steel in its structure to give it a natural impression by using bitumen tiles.

4.5.2 Material

A. Roof

For the selection of the roof shape on this site is a dome roof and the type of roof used is a modified gable roof using bitumen material for the tile. Because the café and coworking section has a rooftop, the roof is in the form of a shield roof equipped with a fence in the form of a Balustrade

B. Wall

All the walls of the buildings on this site use plastered bricks with white paint, as is the characteristic of the local area, namely houses with white stucco.

C. Column

There are several types of columns in this building. For the sports building, the facility itself has an entablature which is used for building accessories and ornaments, but it can also be used as a column in this building itself.

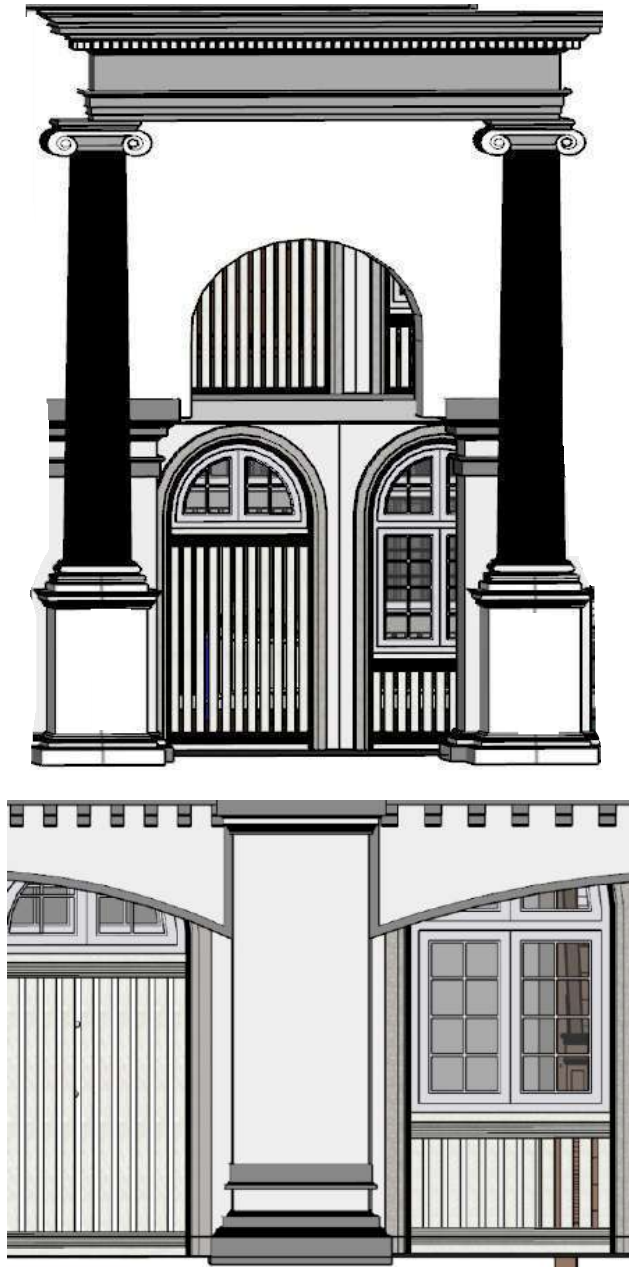


Figure 4.31 : Building Column Detail . Source : Author

4.5.2 Material

D. Door and Window

To strengthen how to create a facade that adapts to the surrounding buildings, the doors and windows in the building on this site are made as closely as possible with the same shape, namely curved with a large width and height. the use of materials from doors and windows on this site also uses wood and concrete. These doors and windows must also be strengthened with distinctive ornaments which are the same as landmark buildings in the old city. The arrangement is also aligned sequentially almost all the buildings are surrounded by these openings and doors themselves. for the height of each door is 500 m with a width of 300 m while for the window itself it has a height of 500 m with a width of 300 m with double openings for café and coworking while for the sport facility itself it has 2 types of openings, double openings for the 2nd floor while the 1st floor is opening. which cannot be opened.

WINDOW ON THE BUILDING

***Figure 4.32 :** Building Window Detail . Source : Author*

DOOR ON THE BUILDING

***Figure 4.33 :** Building Door Detail . Source : Author*

4.5.2 Material

***Figure 4.34 :** Building Rendering Detail . Source : Author*

***Figure 4.34 :** Building Rendering Detail . Source : Author*

CHAPTER 05.
Design Evaluation

5.1 Schematic Drawing

SPATIAL REQUIREMENT

	CLASSIFICATION	FUNCTION	FL1	FL2	ROOFTOP	PARK	FOOD COURT	PARKING	CAFE & COWORKING	TOTAL USER
1	PUBLIC	Rest Room	V						V	
		Storage Place					V			
2	COMMUNITY USE (Functional)	Futsal Field	V							10 PEOPLE/FIELD
		Gymnasium	V							20 PEOPLE/HOURS
		Jogging Track	V			V				10 PEOPLE/HOURS
		Gymnastic		V						11 PEOPLE/HOURS
		Volley Field								24 PEOPLE
		Tennis table								14 PEOPLE
		WUSHU		V						8 PEOPLE/HOURS
		Garden			V	V				
		Public Gathering Place			V	V	V		V	
3	PARKING AREA	Outdoor Parking						V		20 CAR
		Indoor Parking						V		40 MOTORCYCLES 20 BICYCLE
4	MECHANICAL & ELECTRICAL SPACE	ME System Oprators room	V							
		HVAC Room	V							
		Central Communication System (CCTV & Soundsystem)	V							
		Genset Room	V							

TOTAL USERS / HOURS : 97 PEOPLE
TOTAL PARKING AREA : 40 MOTORCYCLES
20 BICYCLE
20 CAR

TOTAL AREA SPORT FACILITY : A = 2600 M2
B = 1240 M2

SITUATION PLAN

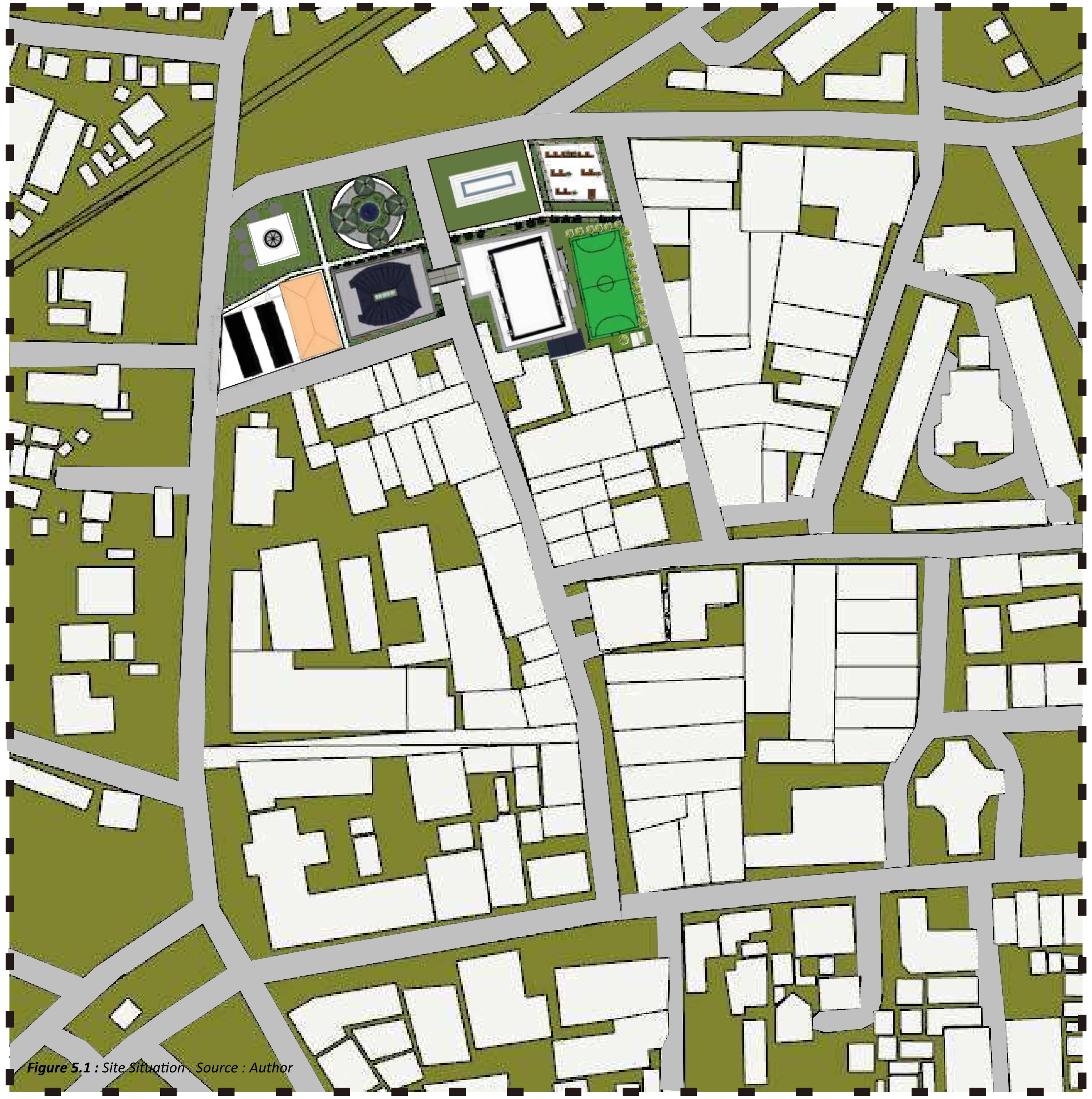


Figure 5.1 : *Site Situation . Source : Author*

SITE PLAN

Figure 5.2 : *Site Plan . Source : Author*

1 = Sport Facillity A (Bigger Building)
2 = Sport Facility B (Smaller Building)
3 = Parking Area
4 = Food Court
5 = Dome park
6 = open spaces
7 = Café & Co-working
8 = Futsal Field
9 = Jogging Track

This site is arranged in such a way as to follow the adaptive architecture concept contained in this book with the aim of attracting visitors' interest.

Elevation site plan

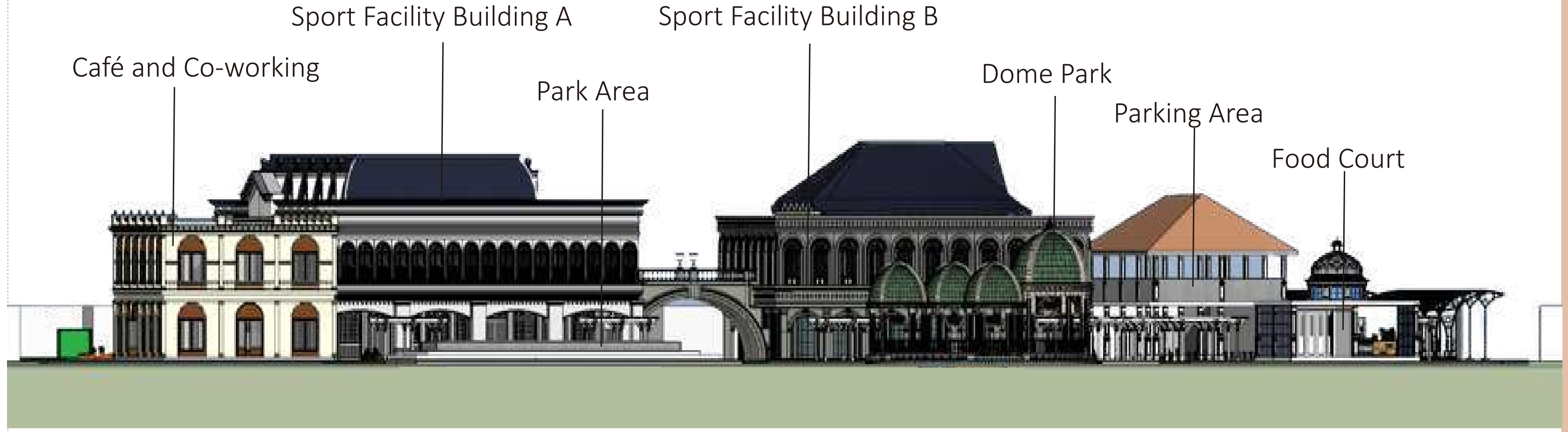
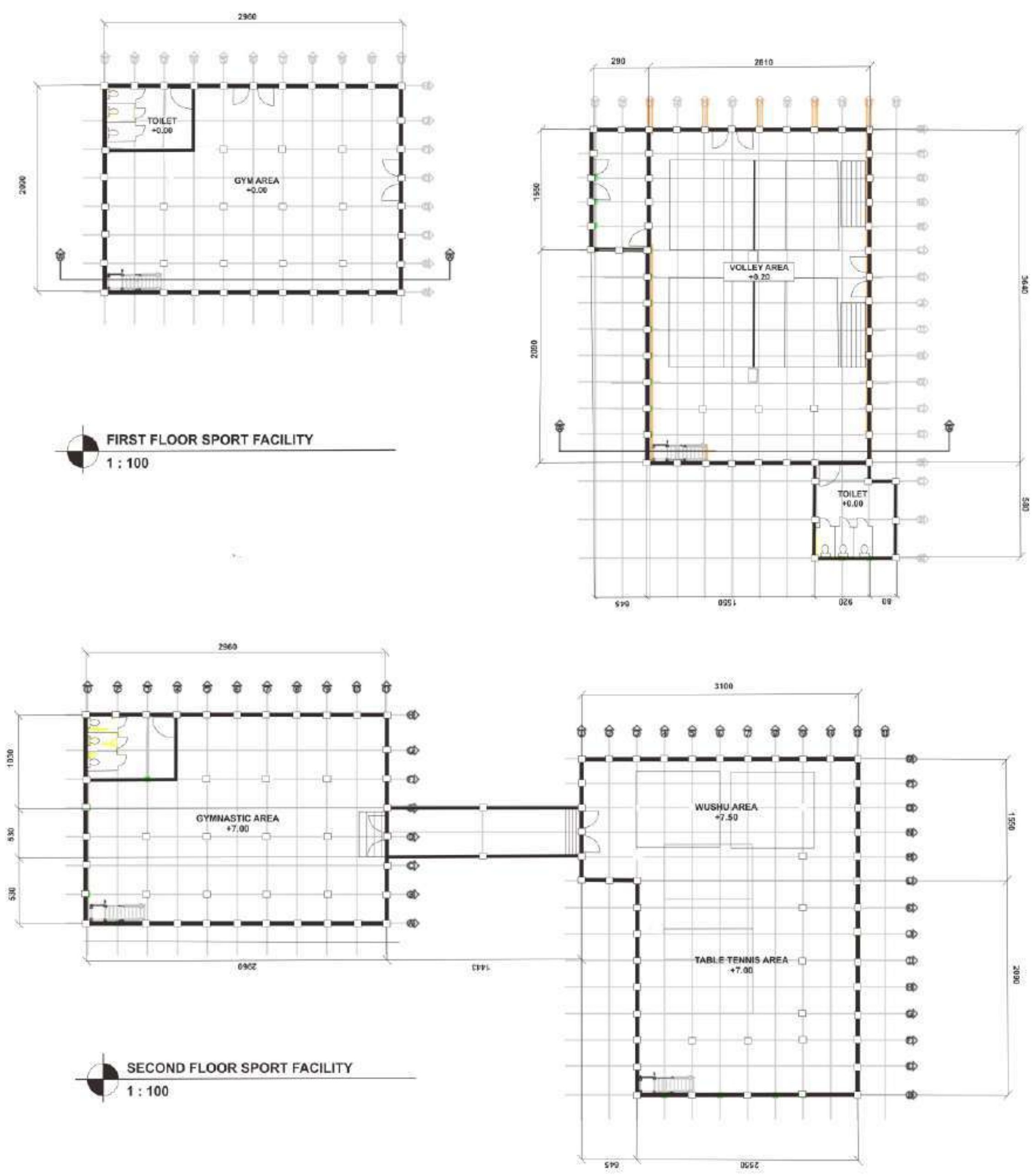


Figure 5.3 : *Site Elevation . Source : Author*

Figure 5.3 : *Site Elevation . Source : Author*

SPORT FACILITY



has 2 floors for every building helps separate between sports need big or small room

Figure 5.4 : *Sport Facility Plan . Source : Author*

Elevation

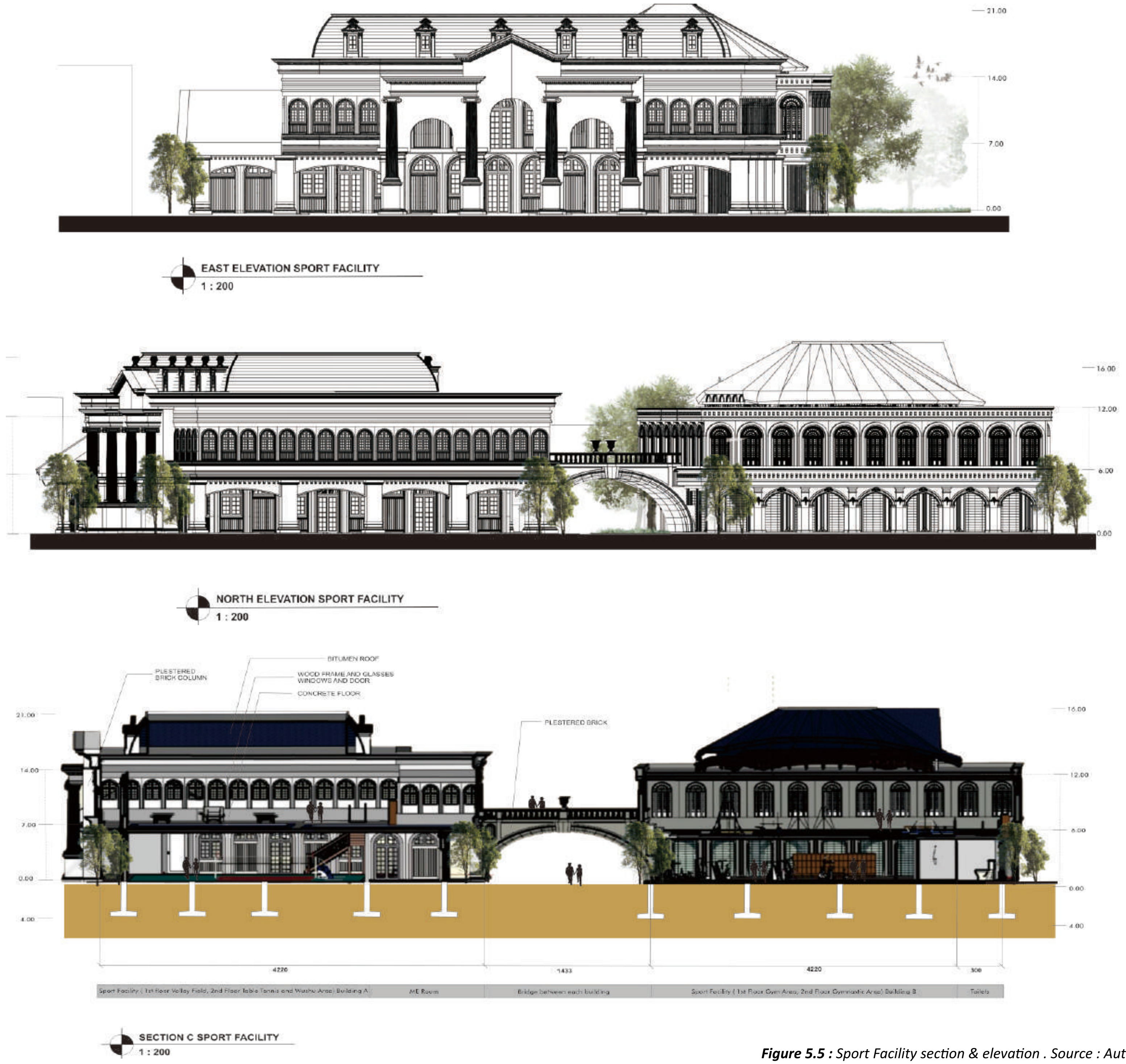
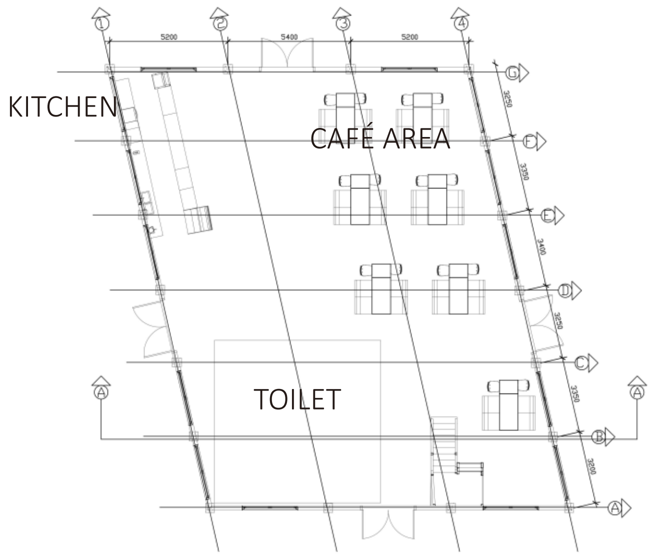
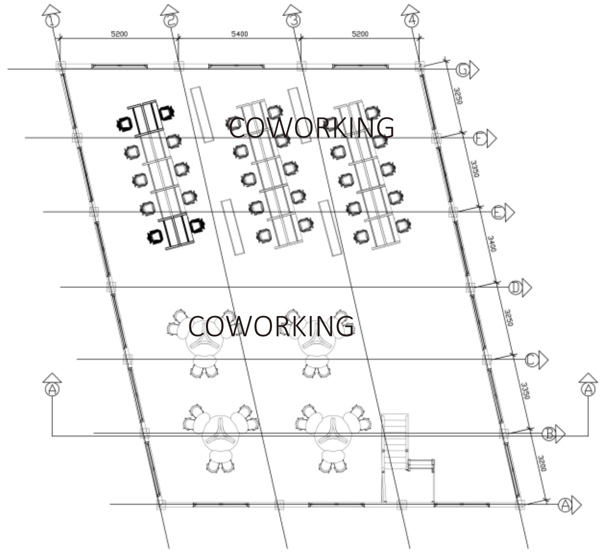
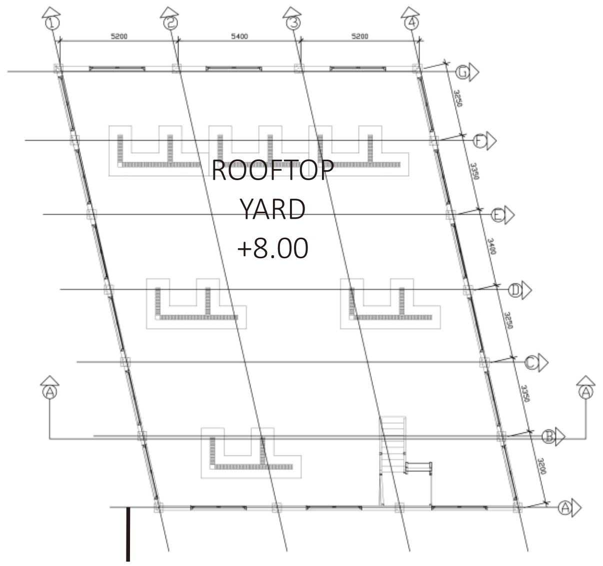


Figure 5.5 : *Sport Facility section & elevation . Source : Author*

CAFÉ & CO-WORKING







This café has a rooftop with an open garden as pictured. has 2 floors with a colonial theme

Figure 5.6 : *Café & Co-working Plan . Source : Author*

Elevation

Figure 5.7 : *Café & Co-working Section . Source : Author*

FINAL ARCHITECTURE DESIGN STUDIO | ***SCHEMATIC DRAWING***

FOOD COURT

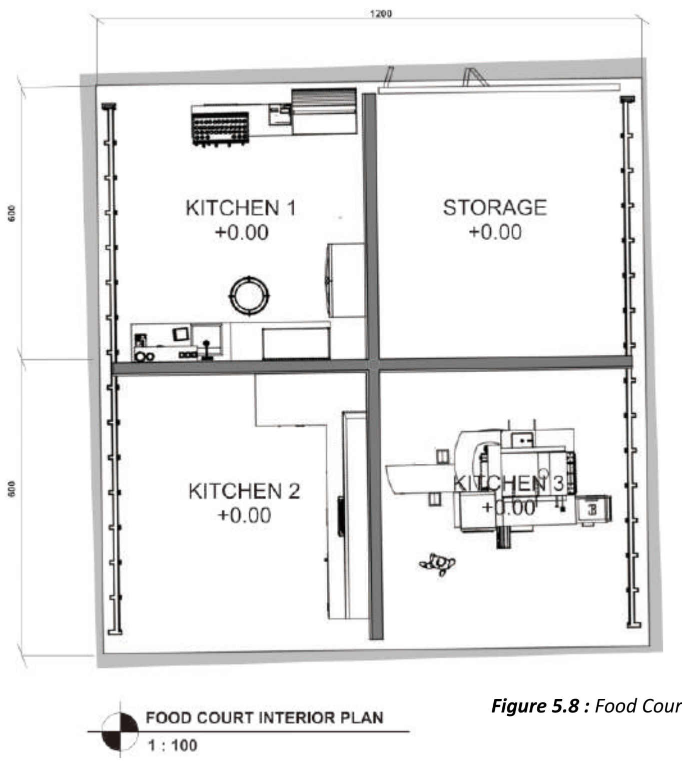


Figure 5.8 : *Food Court Plan . Source : Author*

This foodcourt is divided into 4 different rooms, 3 for the stall itself which contains the kitchen and a place for displaying ready-to-eat food, while the other 1 is for the food warehouse for the foodcourt itself.

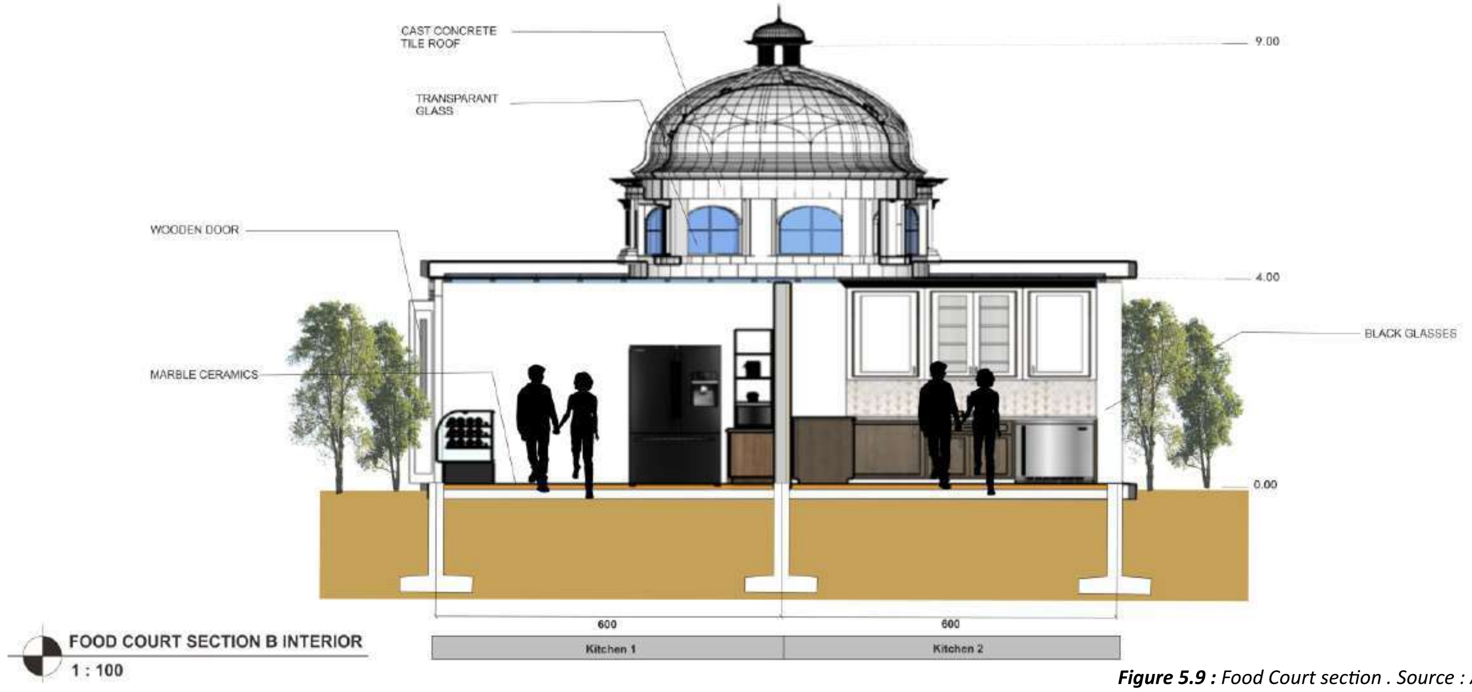


Figure 5.9 : *Food Court section . Source : Author*

PARKING AREA

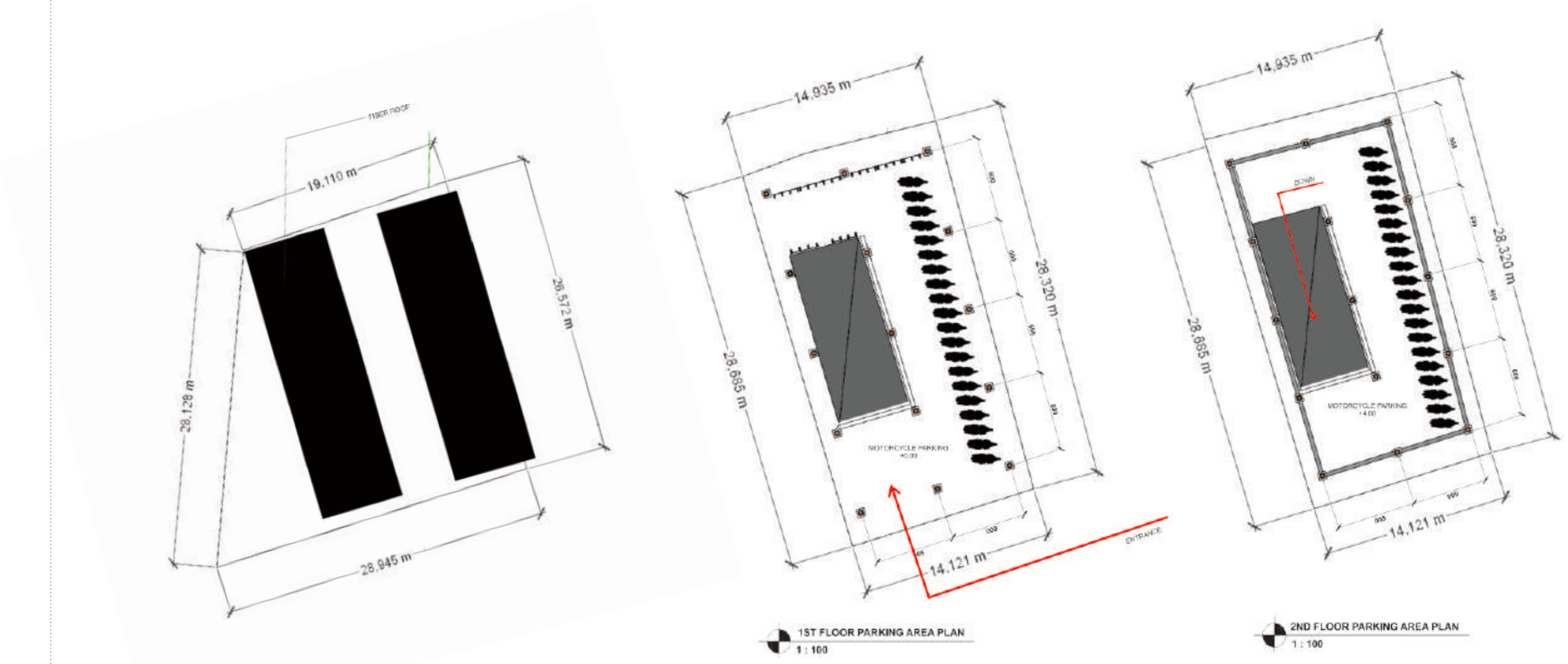


Figure 5.10 : *Parking Area Plan . Source : Author*

The parking lot is divided into 2 buildings which are for motorbikes and cars with one indoor and the other outdoor

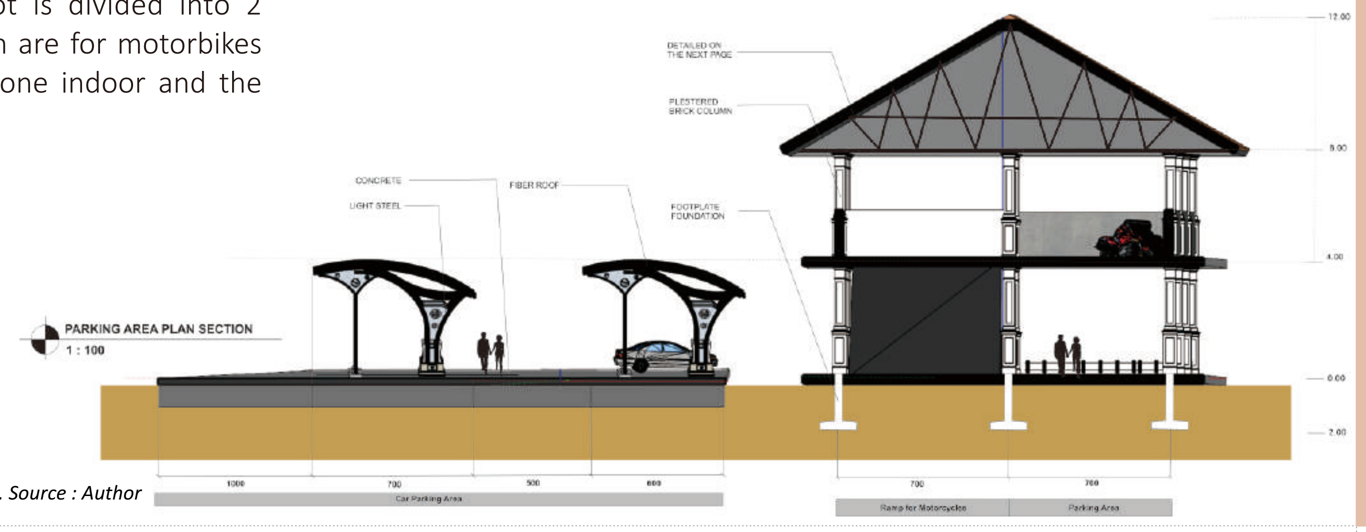
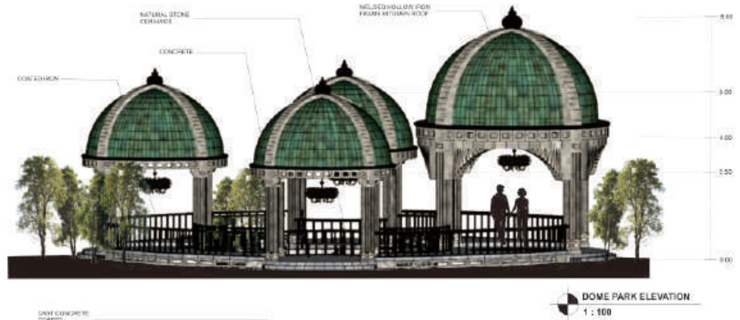


Figure 5.11 : *Parking Area Section . Source : Author*

FINAL ARCHITECTURE DESIGN STUDIO | SCHEMATIC DRAWING

PARK IN THE SITE



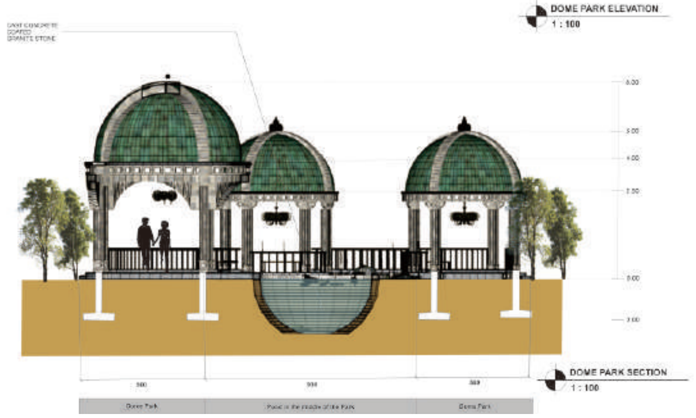
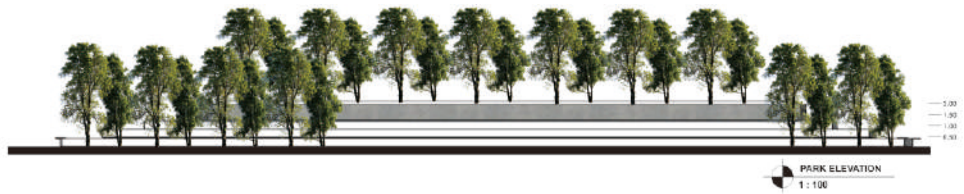


Figure 5.12 : *Dome Park Section & Elevation . Source : Author*



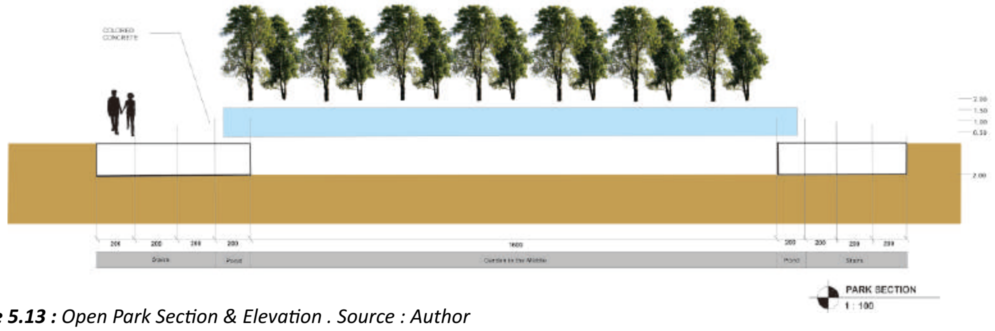


Figure 5.13 : *Open Park Section & Elevation . Source : Author*

both of these parks have the same fish pond which is to increase the interest of visitors by making this a photo spot and also these 2 types of gardens can provide a different atmosphere.

SITE PLAN RENDERING

SITE PLAN ELEVATION RENDERING

SPORT FACILITY ELEVATION RENDERING

SPORT FACILITY INTERIOR RENDERING


JOGGING TRACK RENDERING


PARK RENDERING


CAFÉ & COWORKING FRONT RENDERING

CAFÉ & COWORKING INTERIOR RENDERING

DOME PARK FRONT RENDERING

OPEN PARK FRONT RENDERING

CAFÉ & COWORKING FRONT RENDERING

CAFÉ & COWORKING INTERIOR RENDERING

MAIN ENTRANCE RENDERING

PARKING AREA RENDERING

FUTSAL FIELD AREA RENDERING

FINAL ARCHITECTURE DESIGN STUDIO | SCHEMATIC DRAWING

CHAPTER 06.

Design Reflection

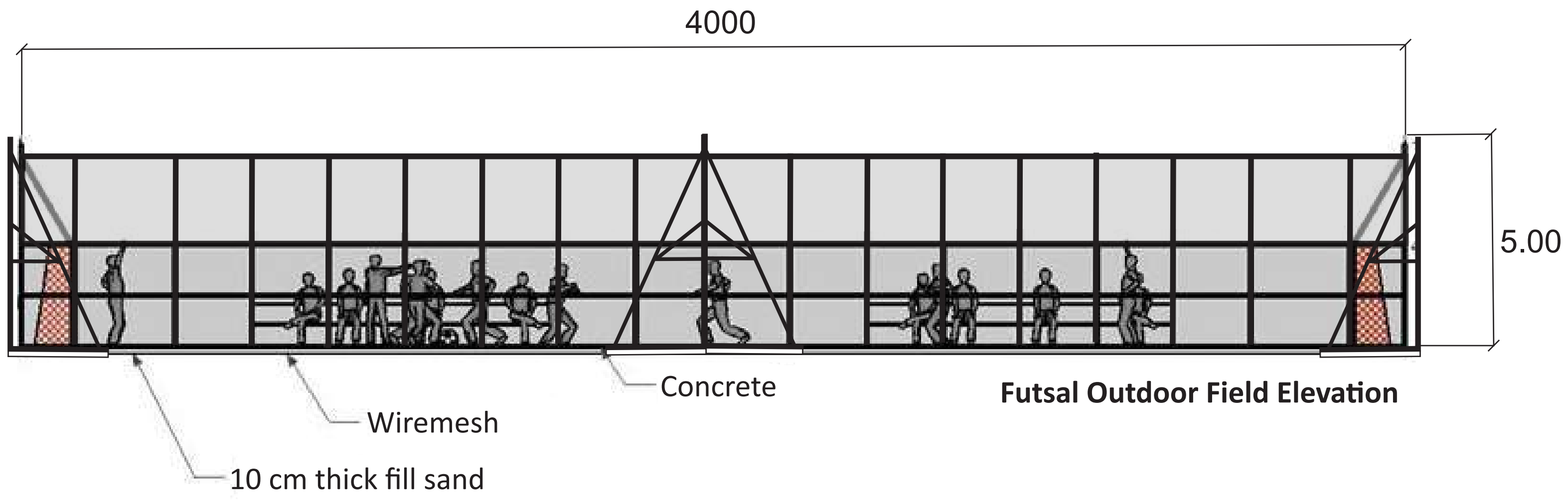
6.1 Design Reflection

Figure 6.1 : Main Entrance. Source : Author

DESIGN REFLECTION

1 As we know that playing futsal requires a large field because playing with a ball requires a lot of people in the game. In this design because the futsal field is outside the building, how to prevent the ball from being thrown far outside the field?

One of the drawbacks of outdoor is the possibility of rain, so people prefer to look for moments where the weather is sunny. But the advantage is that people prefer to play outside the field because the nuances of the sport are more pronounced. Moreover, natural light from outside is more able to increase their energy in playing ball. Likewise, the mood continues to increase when compared to the indoor futsal field. Therefore, to prevent the ball from being thrown out of the field and for the safety of the visitors, a fence with a height of 5 meters is provided around it using wire mesh as a barrier and also prevents the ball from leaving the field.



Futsal Outdoor Field Elevation


Figure 6.2 : *New Futsal Oudoor Field. Source : Author*

DESIGN REFLECTION

2 Because the volleyball court is in the indoor , and extra precision is needed in designing, especially with the height of the building, therefore how to design a good height for indoor volleyball so that the height of reflecting volleyball cannot touch the ceiling of the building.

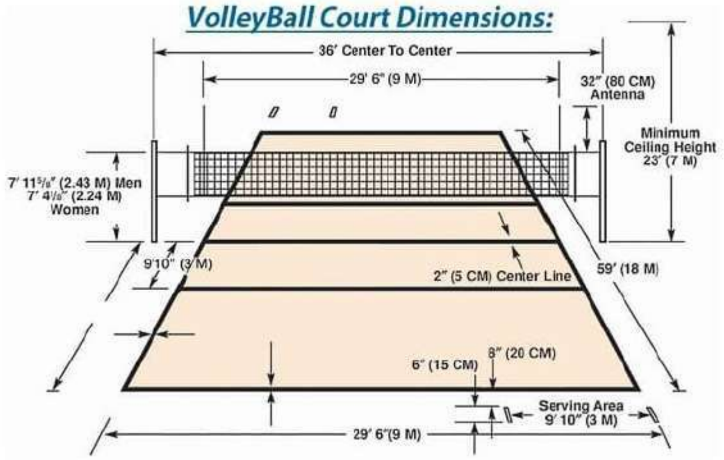
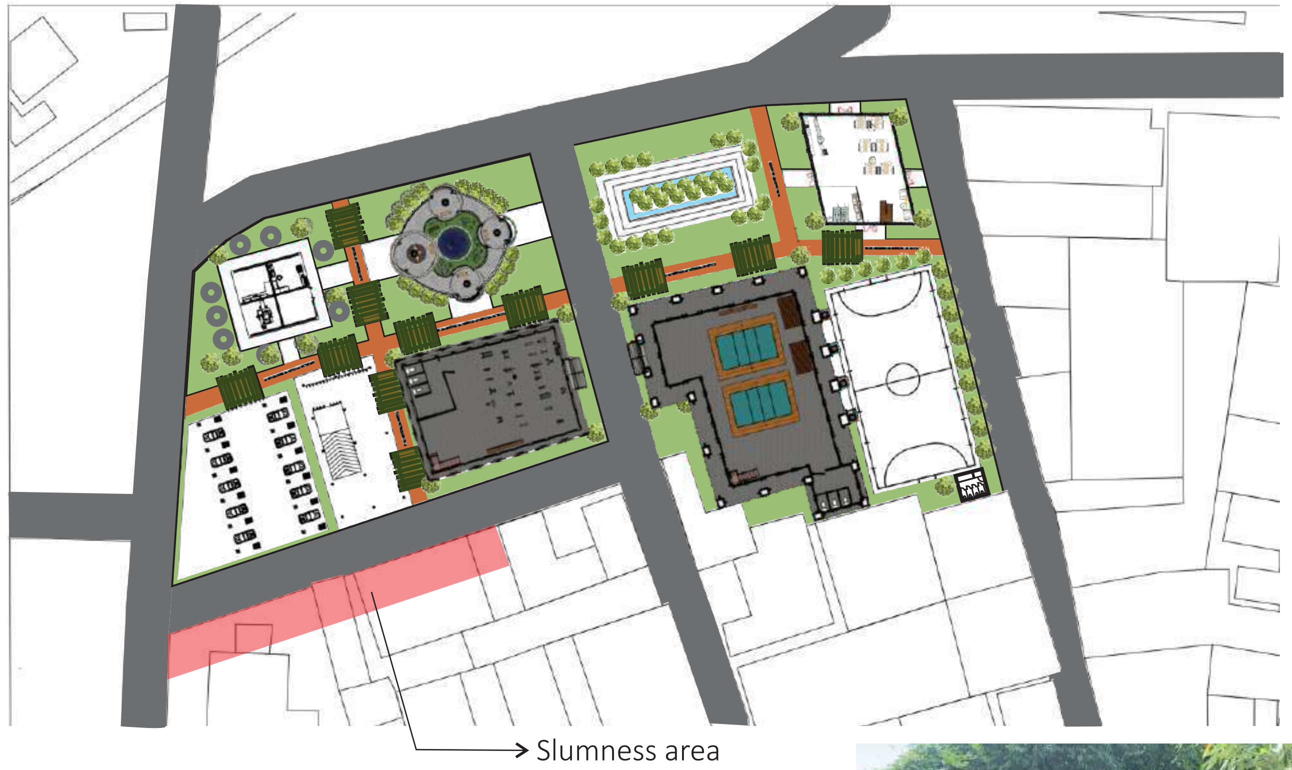


Figure 6.3 : *Volley Ball Dimension. Source : volleyballpositions.net*

when viewed according to the sources listed as shown in the image below, for indoor volleyball courts, that is with a minimum height of 7 meters from the field itself. This is seen only from the size of volleyball for men because the use of volleyball courts for women is shorter than for men. Therefore, to prevent the ball from bouncing back from the ceiling, the height was changed to 9 meters from the volleyball court distance by using the standard height of the volleyball court for men. And to maintain the aesthetics of the building, the 2nd floor also becomes 9 meters the same as the 1st floor height, therefore for building B or larger buildings the total height of the building is 27 meters because the sports inside require a higher height than other buildings.

3 As can be seen because the environment behind the parking lot in this area is an area that can be considered quite slum, so how can the people of the slum area use the sports facilities in this place?



We can see in the picture beside, which part is the slum area around the building, located next to the parking lot. Here, there are lots of residents who live but do not pay attention to the surrounding environment, so it has a slum impression for tourists who come, as before, the parking area used to be used as a place to dry clothes or for garbage dumps by local residents. Therefore in this design the building is converted into a more functional and adequate parking lot. And also for how the facilities of this building are used for free so that anyone can access this building including local residents by adjusting the queuing system to use this building. Therefore, if local residents want to use this building, it can be accessed for free if the field is not in use or if it is empty of visitors without having to queue, this can also be accessed for children of local residents who want to use it and also facilitated by several types of facilities that are in here, for example. This type of ball is also friendly when used with small children. Or it can also be applied with a daily schedule, for example on Saturdays and Sundays this special building for sports facilities can only be accessed by local residents while visitors in general can access except Saturdays and Sundays.

Figure 6.4 : *Real Site Situation. Source : Author*

Figure 6.4 : *After Situation. Source : Author*

REFERENCES

Adji, B. Murtomo(2008) ARSITEKTUR KOLONIAL KOTA LAMA SEMARANG. Diponegoro University Insitutions Repository.

Afriyanto, Bondan.(2020). SPORT CENTER DI BOYOLALI (DENGAN PENDEKATAN ARSITEKTUR KONTEMPORER). UNIVERSITAS MUHAMMADIYAH SURAKARTA

Holger Schnädelbach.(2010). Adaptive Architecture - A Conceptual Framework. ResearchGate

Julio van der Linden.(2011).The evolution of design methods. University of Rio Grande do Sul.

Muthiah, Raisya;Yohannes Firzal dan Pedia Aldy. (2020).SPORT CENTER DI PEKANBARU DENGAN PENDEKATAN ARSITEKTUR HIGH TECH CHARLES JENCKS.Universitas Riau.

Nisa, Afifatun.(2012). PERAN MEDIASI PERSEPSI KOHESI SOSIAL DALAM HUBUNGAN PREDIKTIF PERSEPSI PEMANFAATAN RUANG TERBUKA PUBLIK TERHADAP KESEHATAN JIWA. MAKARA, SOSIAL HUMANIORA, VOL. 16, NO. 2

Putra, Ghoustanjiwani Adi.(2019).KAJIAN RUANG PUBLIK SEBAGAI MODAL SOSIAL PEMBENTUK KOHESI SOSIAL SEBAGAI RESPON ERA INDUSTRI 4.0.Seminar Nasional Infrastruktur Berkelanjutan 2019 Era Revolusi Industri 4.0.

Puteri, Sheila Mahesa (2021). KEHIDUPAN SOSIAL EKONOMI KAWASAN KOTA LAMA SEMARANG TAHUN 2003-2018.Jurusan Pendidikan Sejarah Fakultas Ilmu Sosial dan Hukum Universitas Negeri Surabaya.

Permadi, Riki. (2020). ANALISIS PERAN ORGANISASI KEOLAHRAGAAN KOTA SEMARANG SEBAGAI UPAYA MEWUJUDKAN KOTA SEMARANG SEBAGAI KOTA ATLET. Universitas Negeri Semarang.

Schnadelbach, Holger.(2010). Adaptive Architecture - A Conceptual Framework. University of Nottingham

Supriadi, Yadi.(2017). Relasi Ruang Publik Dan Pers Menurut Habermas. Fakultas Ilmu Komunikasi Universitas Islam Bandung. Volume I Nomor 1.

REFERENCES

http://eprints.umm.ac.id/40771/4/jiptummpp-gdl-muhammadik-51129-4-babiii

https://www.kompasiana.com/bismasampurna/5529357cf17e61f14a8b45c1/memahami-konsep-kohesi-sosial

https://www.archdaily.com/977371/urban-valley-commercial-district-trop-terrains-plus-open-space

https://www.archdaily.com/976333/tanatap-ring-garden-coffee-shop-rad-plus-ar-research-artistic-design-plus-architecture

https://www.archdaily.com/11405/relaxx-sport-and-leisure-center-ak2

https://www.archdaily.com/216962/sport-center-eth-honggerberg-dietrich-untertrifaller-architekten

https://www.archdaily.com/179391/sports-center-stopice-jereb-in-budja-arhitekti

https://halosemarang.id/koni-kota-semarang-berhasil-wujudkan-kelas-khusus-olahraga

FINAL ARCHITECTURE DESIGN STUDIO | *REFERENCES*

6.2 ATTACHMENT

UNIVERSITAS ISLAM INDONESIA

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

SURAT KETERANGAN HASIL CEK PLAGIASI
Nomor: 1867108715/Perpus./10/Dir.Perpus/IV/2022

Bismillaahirrahmaanirrahiim

Assalamualaikum Wr. Wb.

Dengan ini, menerangkan Bahwa:

Nama	: Nabilla Yananggita Putri
Nomor Mahasiswa	: 1852054
Pembimbing	: Ir. Wiryono Raharjo, M.Arch, Ph.D
Fakultas / Prodi	: Teknik Sipil dan Perencanaan/ Arsitektur
Judul Karya Ilmiah	: DESIGN OF SEMARANG SPORT FACILITIES WITH ADAPTIVE ARCHITECTURE TO BUILD PUBLIC INTEREST

Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **2 (Dua) %.**

Demikian Surat Keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Wassalamualaikum Wr. Wb.

Yogyakarta, 7/6/2022
Direktur

UNIVERSITAS ISLAM INDONESIA DIREKTORAT PERPUSTAKAAN YOGYAKARTA

Joko S. Prianto, SIP., M.Hum

1

SPORT FACILITY IN SEMARANG

IN APPLICATION OF ADAPTIVE ARCHITECTURE APPROACH

Due to the presence of COVID-19, operations in a number of Indonesian cities started at the beginning of March 2020. It turns out that many individuals are visiting city parks during this outbreak not only to enjoy the outdoors but also to exercise. Sports are regarded as a kind of recreation to relieve tension when one must stay at home, and this incident occurred as the community's demand for exercise intensified when the Covid-19 pandemic entered Indonesia. The lack of infrastructure and public places in a city that is often far away plus the government's encouragement of social distancing or preserving distance during community activities mean that those people won't go well. Government advice to the community as a whole that results in a decline in public engagement. In order to redesign public spaces in accordance with the Covid-19 protocol, this study intends to investigate the tendency of changes in the characteristics, the meaning, and the function of public spaces during the Covid-19 pandemic. The idea of public space must be revised both during and after the Covid-19 Pandemic; through this research, the new definition will be throughly addressed. The findings of this study generally describe a new definition of public space as a place where people connect with one another or with other people in the community in a way that promotes the enhancement of people's health and well-being.

FINAL DESIGN STUDIO

Nabilla Yananggita Putri
18512054
SUPERVISOR
Ir. Wiryono Raharjo, M.Arch, Ph.D

JURY 1
Dr.-Ing.Ir.IlyaFadjarMaharika,MA. IAI
JURY 2
Ir. Revianto Budi Santosa,M.Arch.IAI

2

BACKGROUND

PANDEMIC ISSUES & PEOPLE BEHAVIOR

After the Covid-19 outbreak spread throughout Indonesia, individuals realized how crucial it was to keep their health. As a result, society's need for sports is growing. However, the lack of sports facilities in Indonesia or the fact that some of them do not follow health regulations and some are frequently closed confuses the general audience. As a result, many people use certain public spaces for sports.

In relation to public spaces and this epidemic, some people may not feel comfortable even when they are exercising since they must wear a mask to follow with regulations and to keep a safe distance from one another.

CONTEXT OF SEMARANG CITY

Another want that the City of Semarang needs satisfy in order to be designated as an athlete city is proper sporting accomplishments. Achievements athletics have as many high-level victories as they can aim for. This suggests that a number of parties must work together to synergize the essential elements that affect sports achievement (Kristiyanto, 2012). Naturally, Semarang City's accomplishments must be excellent in condition for that to be named a City of Athletes. The athletes from Semarang City have earned their reputation 3 times as PORPROV Central Java's as a whole champions, taking home 156 golds and 128 silvers in 2009, 150 golds, 88 silvers, and 87 bronzes in 2009, and 87 olympic gold, 87 silvers, and 87 bronzes in 2013.

FLOOD & SLUMNESS AREA

The city of Semarang, one of metropolitan regions with a 13 km long coastline in the north, is undoubtedly greatly impacted by sea level rise. People in the neighborhood view the Old City Polder system in North Semarang District as a means of preventing flooding. The Old Town Polder system is not very effective at preventing flooding, as evidenced by its modest retention pond capacity and inadequate maintenance. views of the resettlement environment's circumstances.

And this affects the area of the Old City on it's own, where so many locations face bad dreams like the area turning into slum areas and the infrastructure it should exist being separated simply because the area is frequently flooded even if it is not high. This area is completely still a part of the Old City area of Semarang, which has now turned into the city's most recognizable landmark.

Leads to healthy individuals stronger society and sustainable sports movement

one of the elements of the city which can give character to a city and usually has a function as a social interaction space for

SPORT FOR ALL → PUBLIC SPACES

SPORT CENTER

facilities and infrastructure for sports working community apart from being a sports venue too for a gathering place

SPORT CENTER

INDOOR

OUTDOOR

CO-WORKING

The Sport Center's primary purpose is to provide a venue for both indoor and outdoor sporting events for the community. In contrast, this design serves as an idea for recreational and sports facilities, that also means that in addition to offering sports facilities, sport facilities for recreational types are typically outfitted with ancillary amenities like shops, cafes, playgrounds, restaurants, gathering areas, jogging trails, and so on

Adaptive Architecture for & from Surrounding

In this instance, architects can concentrate their design efforts on the specific tenants of an adapted structure. The building's layout can then be changed manually by the user, or actions can be taken automatically by the structure. However, there are multiple people residing in the majority of buildings. On the other hand, designing adaptively for individual groups might be quite difficult. Once more, architects may concentrate on enabling manual customization. These are then discussed among the locals.

ADAPTIVE ARCHITECTURE
adapt the inhabitants $\xrightarrow{\text{Means}}$ Designing for adaptiveness for groups or individual

how to adapt?

→ probably knowing about the behavior of the people around there and also the social problem.

behavior

problem

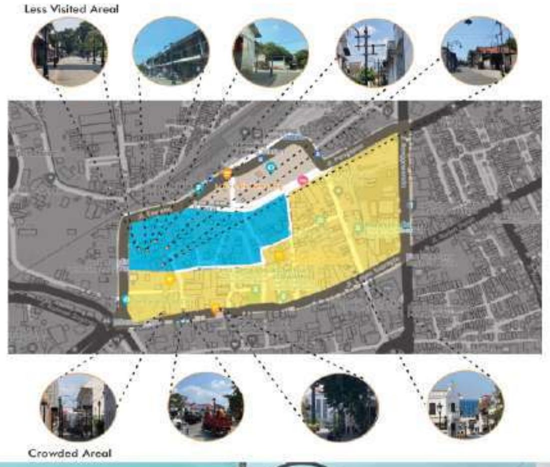
Semarang = An Athlete City

Because one of the wishes of the Semarang city government itself as an athlete city, then automatically many people from this Semarang city who have the habit of exercising, especially since Covid-19 are even more aware of physical health, so we need accommodating facilities such as a sports center.

Unevenness of crowded area

one of the social problems that exist in the old city itself is the uneven function of the building or the center of the crowd in the old city itself, especially in the northern part

So, due to existing social problems such as the uneven distribution of crowd centers in the old city of Semarang, one way to invite people to come and change the atmosphere in the area is to provide the needs of the community itself, which here is the need to exercise, so a sports center such as jogging is given. track to facilitate people's habits and needs



PROBLEM MAPPING

NON ARCHITECTURAL PROBLEM

1. the social problem that occurs in the surrounding community.
2. Pandemic COVID-19 has started people starting to aware about health problem and started to doing exercise.
3. Unevenness area in the north of Old town City Semarang

ARCHITECTURAL PROBLEM

1. Not many places that facilitate to exercise
2. Pandemic COVID-19 make Changes in the function of public areas.
3. Some places for exercise not apply the health protocol, it will be abandoned.
4. Some public spaces are abandoned due to inadequate places.
5. Lack of the Social Cohesion in public space due to covid-19

GENERAL PROBLEM

How to combine the design of sports center and public spaces to build the attractiveness of people to come and a sense of belonging from the community with adaptive architecture conceptual

SPECIFIC PROBLEM

1. How to design a sport facility by adapting the characteristics of existing buildings in the old city of Semarang?
2. how to design a sport facility to meet the needs of exercise, recreation and empower the surrounding community?
3. How the building create a safety environment for the users?

GOALS AND OBJECTIVES

The design aims to formulate a strategy on how design can change the function and definition of public spaces during the pandemic era and will remain useful after the pandemic era especially in sport center. And they will still be able to apply health protocols even though activities in the sport center will continue and the sport center will not be neglected. This sport center development plan will combine existing public spaces and several accommodating facilities such as a park and an outdoor jogging area

FINAL DESIGN STUDIO

Nabila Yananggita Putri
18512054
SUPERVISOR
Ir. Wiryono Raharjo, M.Arch, Ph.D

JURY 1
Dr.-Ing.Ir.IlyaFadjarMaharika,MA. IAI
JURY 2
Ir. Revianto Budi Santosa,M.Arch.IAI

FINAL ARCHITECTURE DESIGN STUDIO | ATTACHMENT

Old Town Semarang, Jl. Letjen Suprapto No.31, Tj. Mas, Kec. Semarang Utara, Semarang, Central Java

Adaptive Architecture

In response to what is architecture designed to be adaptive?

Environment — Adaptive elements are also intended to adapt to the interior environment, for example, to make sure that temperatures inside are comfortable for occupants and to control how much energy is consumed to do so.

Inhabitants — However, there isn't a single individual living in the majority of buildings. On the other side, adaptive design for groups of people could be really challenging. An architect might concentrate on providing yet another manual adaptation option. The locals will make the decision. The ability to automatically adjust to groups of people requires some understanding of their behavior, which can be acquired through time and utilized to build the appropriate profile.

Elements of Adaptation — Each adaptive building has a number of changeable features. The importance of adaptable components is emphasized by adaptive architecture. The elements of adaptations—surfaces, components and modules, spatial features, and technical systems—are described in the steps that follow.

Result

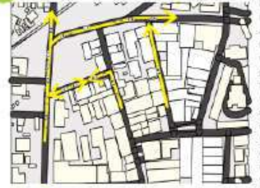
- Surfaces both in and out of could be adjusted. The most prevalent exterior adeptable surfaces are facades, and the second practical choice for altering surface elements is lighting and display technology. The heat directiona t the site and the noise are followed by the facade form.
- Even though the project's site location is fixed, changing the orientation of a building that has been modified can result in some major changes. In addition to rotation, a number of design projects explore the adaption of architectural forms. Shape changes can also be made by scaling down or scaling up buildings.
- Interiors are frequently changed to achieve a variety of goals, such as adding ornamental elements to change the ambience of a space.
- Create a public area that draws more attention as a location for pictures and healing since the social issue at this location is the uneven distribution of crowded spaces.

SITE ANALYSIS

Human Access

to the side of the road this building is a dead road that cannot be accessed through the front of the building, so users can access this building from the side if passing behind the building. Therefore, it is recommended that the entrance and exit of this building are in front and beside the building so that users can pass through the main road or the small road

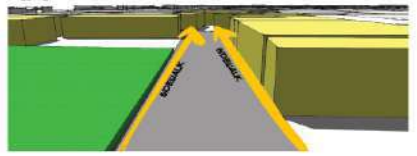
Vehicle Access



because this site is adjacent to an intersection, it is clear that vehicle access in the park itself only comes from one direction, namely the north, while the entrance can also pass through the southern part of the park where previously there was parking space there, so visitors can park there. while the sports center building can be accessed through the front or back, but if you go through the back there is only one direction, namely from the south

existing parking space

Jogging Track Access



ACTIVITY ANALYSIS

SPORT CENTER

1. **Go in for sport**
   so as the name suggests, this building is intended for exercise as provided, users can enjoy the facilities in this building such as a basketball court, boxing ring, and a place for a gym.
2. **Take a Shower**
   if people exercise, they will sweat, therefore some people often take a shower or just wash their face on the spot after they finish exercising, therefore a place is also needed to just clean the body

Doing Gym

Playing Futsal

Doing Wushu

Jogging Exercize

Chilling

Eating

OUTDOOR AREA

1. **Go in for sport**
   some people do sports in the park especially jogging. this is because if it is in the park, the air that is owned is cool so it is very suitable if you want to sweat.
2. **Chilling**
   Not a few people also choose parks as a place to heal from life's problems or just enjoy the air around them. The garden is also a suitable place to relax while reading a book.
3. **Enjoying Food**
   In this design, there will be a boy ring and a food court. this is to help the economy of the surrounding community by providing employment opportunities.

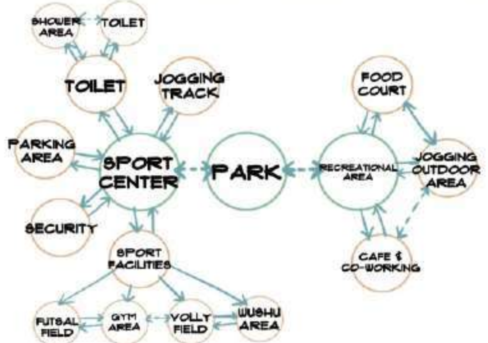
Total Area : 8.775,6 m2
BCR : 4.387,8 m2
FAR : 22.816,6 m2
KDH : 877,6 m2

The design of the building follows of how the sun comes and the wind comes. to help add comfort to the site, several plants that have a dome canopy are added

JOGGING TRACK
Because the jogging track in this area also follows the habits of pedestrians and residents who pass through this area, a jogging track is made with the same height as pedestrians and is also equipped with lighting along the road when at night people crossing this area can reduce anxiety due to the streets the dark one. And for the jogging beside on the big road, to make passing motorists not interfere with the jogging track users or pedestrians, a slow lane is given using paved roads and a "bumper drive" is also added so that vehicle users remain careful.

Later, for the facade of the garden faces the crowd which follows the habits of the people who cross the area, because this area is too crowded and seems hot, and for the characteristic of the building facade follows the surrounding characteristic that mean using Colonial shaped building

PLANTS

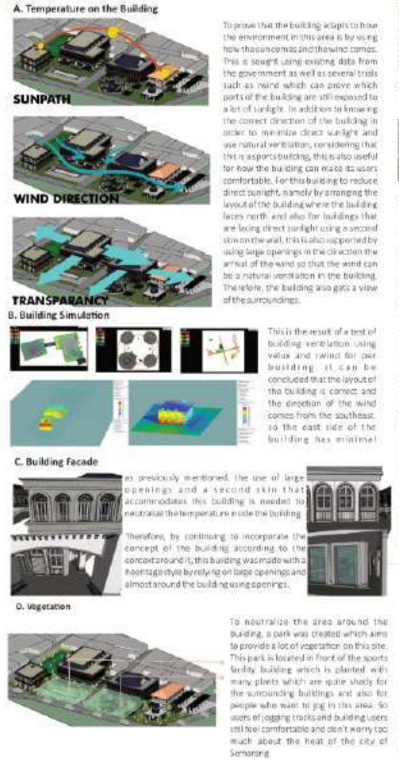


This area is located in the northern part of the old city of Semarang. Located between Jalan Garuda and Jalan Empu Tantulaar where this building also has a bridge over the branjangan road to combine the sports buildings on this site.
The buildings designed in this all adapt the workings and habits of the surrounding population, as well as the characteristics of the existing environment starting from the thermal, the habits of the residents, as well as the shape of the facade of the surrounding buildings. The main road to enter this site is through the west of the building, namely through the parking area, but this all depends on the user who can also enter in any area.

1 = Sport Facillity A (Bigger Building)
2 = Sport Facility B (Smaller Building)
3 = Café & Co-working
4 = Park (Dome and Open Park)
5 = Food Court
6 = Parking Area
7 = Jogging Track

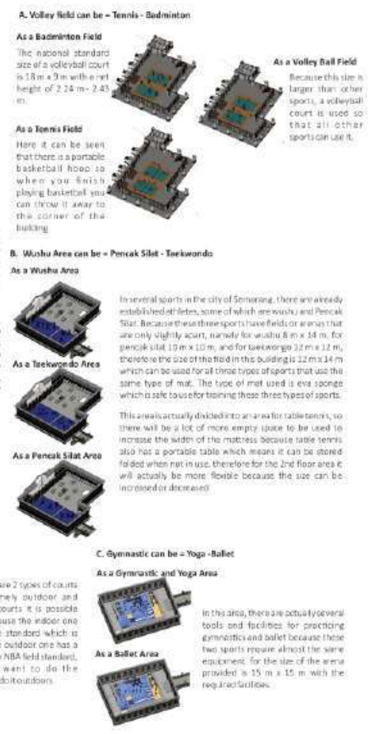
Adaptive Architecture adapting the Environment

A. Temperature on the Building



Adaptive Architecture adapting the Inhabitants

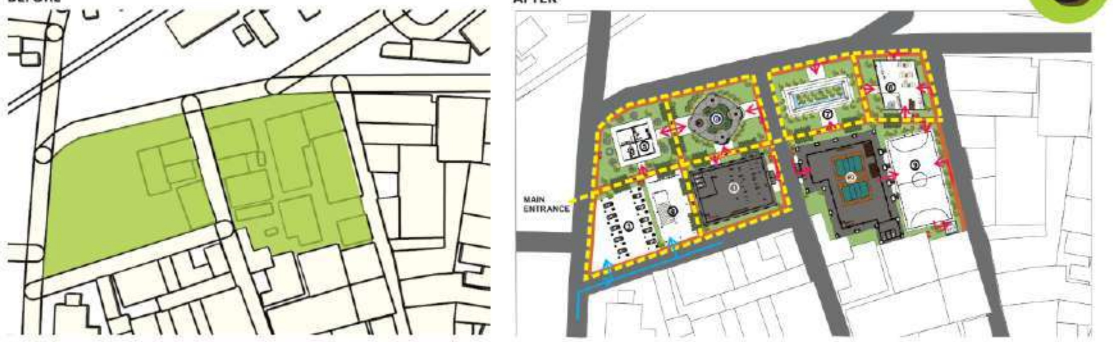
Adaptive Architecture adapting the Element of Adaptation



5

BEFORE

AFTER

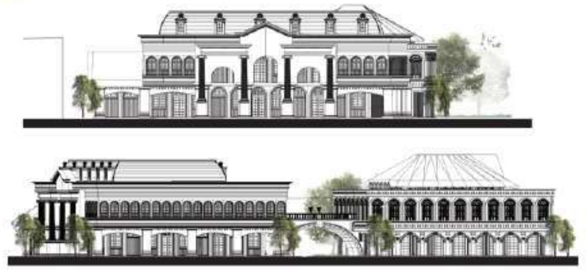


BUILDING PRECEDENT AROUND THE SITE

The composition of the resulting facade of the roof, color skin, and the type of opening in the aspect of contrast, proportion, scale, rhythm give character and unity to the vota on the three main buildings in the Old City of Semarang. This unique character is also strengthened by his position to the entire Old City Area, namely in center or heart of this historic district.

In color typology, office buildings are studied based on the dominant color seen on the facade. There are several types of colors clearly visible on the facade of this surrounding building, which is dominant on the facade of the initial building Semarang colonial office is white color. While the average building there uses a gable roof added with ordinary house tiles or also a dome-shaped roof like the Blenduk church itself and there are also some office areas that still use a shield roof, while for the opening itself, the surrounding buildings use large curved windows, sometimes double or single openings.

BUILDING FACADE



A. Roof

For the selection of the roof shape on this site is a dome roof and the type of roof used is a modified gable roof using bitumen material for the tile. Because the café and coworking section has a rooftop, the roof is in the form of a shield roof equipped with a fence in the form of a Balustrade.

B. Wall

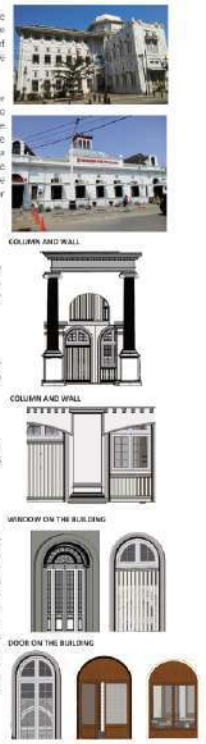
All the walls of the buildings on this site use plastered bricks with white paint, as is the characteristic of the local area, namely houses with white stucco.

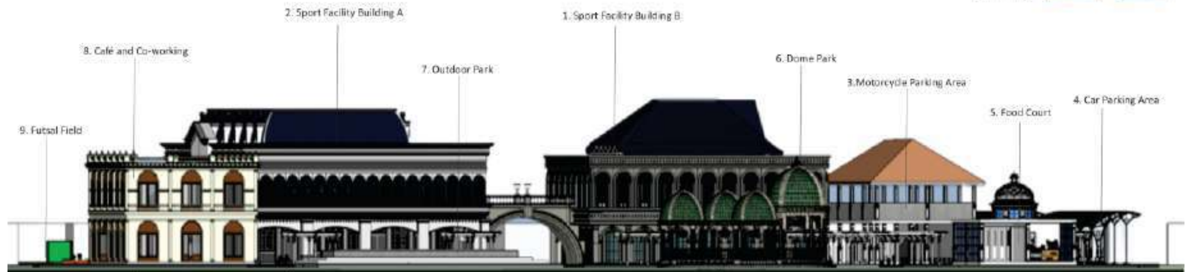
C. Column

There are several types of columns in this building. For the sports building, the facility itself has an entablature which is used for building accessories and ornaments, but it can also be used as a column in this building itself.

D. Door and Window

To strengthen how to create a facade that adapts to the surrounding buildings, the doors and windows in the building on this site are made as closely as possible with the same shape, namely curved with a large width and height. the use of materials from doors and windows on this site also uses wood and concrete. These doors and windows must also be strengthened with distinctive ornaments which are the same as landmark buildings in the old city. The arrangement is also aligned sequentially almost all the buildings are surrounded by these openings and doors themselves. for the height of each door is 500 m with a width of 300 m while for the window itself it has a height of 500 m with a width of 300 m with double openings for café and coworking while for the sport facility itself it has 2 types of openings, double openings for the 2nd floor while the 1st floor is opening, which can not be opened.





6

SPORT CENTER

The main function of this building in this design is the sport facility. This is due to the increasing human needs since Covid and also the government's desire to make Semarang a city of athletes.

CAFÉ AND COWORKING

The role of cafes and coworking here is like the purpose of creating a public area as a means of recreation, not only for exercising.

PARK

This park was created by following the characteristics of the surrounding buildings and creating a new atmosphere for the area there. This park has an atam dome with a European style which has 4 domes surrounding a fish pond in the middle. This park is also surrounded by flowering plants which attract visitors so that it can be used as a place to take pictures or a place to relax because there are chairs and seats in it. in this site there is also an open garden located in front of a large sports facility building and has a fish pond in the middle and also trees. This is intended so that visitors can still feel relaxed in the middle of this site openly and see their surroundings. This park can also be made as a seat for visitors to increase the interest of users in the area, not only users of the sports hall.

FOOD COURT

This building was also created to overcome the economic problems of local residents, namely by creating jobs for the people around, especially those behind this building, where the residents there are arguably still quite slums for the elite area in the old city of Semarang.

SPORT FACILITY INTERIOR

CAFÉ AND COWORKING INTERIOR

BEFORE

AFTER

because previously this area was a deserted area that was slum and seemed unkempt which at night the lights along this area went out and this made residents lazy to visit this area because it seemed unsafe, therefore to create a safe atmosphere for its users added some street lighting and outdoor building functions that can invite people to come there to create a crowd and this makes everyone feel safe again.

DEPARTMENT of ARCHITECTURE

NABILLA YANANGGITA PUTRI
18512054

SPORT FACILITY IN SEMARANG
IN APPLICATION OF ADAPTIVE ARCHITECTURE APPROACH

UNIVERSITAS ISLAM INDONESIA

INTERNATIONAL UNDERGRADUATE PROGRAM IN ARCHITECTURE

KAAB 한국건축학교육인증원 Korea Architectural Accrediting Board

CANBERRA ACCORD

STARS

AKREDITASI UNGGUL