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SEMARANG BUSINESS INCUBATOR AND COMMERCIAL SPACE CENTER WITH SUSTAINABLE ARCHITECTURE DESIGN

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Abstract. Increasingly, Semarang City is experiencing significant MSME business growth. Judging from the economic, social, and environmental problems in this city, everyone is competing in advancing their region. With MSMEs, there are various entities that benefit, such as business owners and other people. These benefits can be in the form of financial benefits that can be a solution to problems in Semarang City, namely poverty and unemployment. The more income- generating entities, the faster economic problems are resolved. Therefore, a forum is needed that can be a place for business people, both old and new business people, to improve their therapy in business. The architectural planning and design program carried by the author is the design of "Semarang *Business Incubator and Commercial Space Center* with *Sustainable Architecture Design Approach"*. *Sustainable Architecture* was chosen because in planning a building must have the concept of sustainability by managing waste and utilizing resources optimally. In addition, the use of environmentally friendly materials can also keep the ecosystem around the building maintained and unpolluted. Therefore, this building is expected to be the spearhead in overcoming three main problems in Semarang City, namely, economic problems, social problems, and environmental problems which if not immediately addressed will become a boomerang for the government and citizens of Semarang City.

Keywords: Business Incubator, MSME, *Sustainable Architecture*

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INTRODUCTION

In the past two years, the Covid-19 pandemic has caused a significant economic decline around the world, including in Indonesia. However, over time, some regions in Indonesia, such as Semarang City in Central Java Province, have begun to recover. According to data from the Central Statistics Agency, the economy of Semarang City grew 5.73% in 2022, higher than the economic growth of Central Java Province which grew by 3.32%.

The main contributors to this recovery are the business sector and Micro, Small and Medium Enterprises (MSMEs) in Semarang City. In 2022, there are 17,603 MSMEs in Semarang City, or around 9.74% of the total MSMEs in Central Java. The MSME sector with the highest growth in Semarang City is the non-agricultural production business, agricultural business, trade business, and services.

With the growth of business in Semarang City, a place is needed to provide direction and experience to new business people. Currently, Semarang City has several business incubation centers, but it still needs more. Business incubators can help new business people design business models and create products that can be sold in commercial centers.

An increase in the number of new businesses can also help overcome the unemployment problem in Semarang City, because more new businesses mean more jobs available. Therefore, it is necessary to build a business incubator and commercial center to support new businesses and improve the economic quality of the people of Semarang City. The concept of a business incubator is a place to develop and improve the quality of business through programs such as mentoring, training, professional networking, and assistance in finding funds.

However, when designing a building, it is important to consider the sustainability aspect of the building. The goal is to prevent the creation of waste or new problems for the surrounding environment. Office-based buildings and trade will produce waste, such as human waste and production waste, which can disrupt the stability of the surrounding ecosystem. Therefore, buildings planned in the future must have a good sewage treatment system.

To overcome this problem, business incubator buildings and commercial centers are very suitable to be built with the concept of sustainable architecture. This concept can be a solution to three different aspects: social, economic, and environmental. Thus, this concept can help create a more sustainable and environmentally friendly environment.

METHODS

The discussion method used in the preparation of this architectural design uses a descriptive discussion method. This method is carried out by explaining, explaining and describing related to the requirements and design provisions in planning Semarang Business Incubator and Commercial Space Center with a Sustainable Architecture Design Approach. From the elaboration of existing terms and conditions, then continued with the collection of data needed in planning and designing, the data used in design can be categorized into 2, namely : 1) Primary Data: Primary data were obtained through observations and interviews at the planning site of Semarang Business Incubator and Commercial Space Center. 2) Seconds Data : Secondary data is obtained through several media, such as books, written sources in the form of scientific articles in journals, and final projects related to the planning of Semarang Business Incubator and Commercial Space Center.

CONCEPTS

Overview of Architectural Concept Emphasis

This review serves as a reference base to emphasize architectural concepts that influence the design of business incubators. Based on the topic of planning and designing programs related to business incubators, the author chose to emphasize the concept of *Sustainable Architecture*. This concept allows the fulfillment of current human needs without draining resources for future generations. This means, an approach that is able to consider future needs in its design.

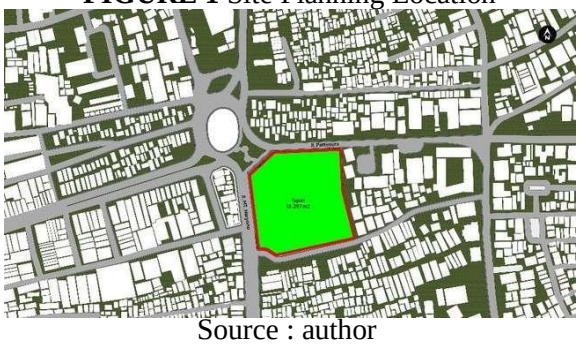
Site Determination Criteria

The determination of the building footprint must take into account the planned functions and activities of the building. Some important aspects of determining a site include :

1. **Utilities and Infrastructure** : The site must have good utilities and infrastructure.
2. **Accessibility** : The site should be easily accessible, whether by four-wheeler, two-wheeler, or on foot.
3. **Environmental Health** : The site should have a healthy environment, free from odor disturbances from landfills.
4. **Public Facilities** : Public facilities provided by the government, such as Bus Rapid Transit (BRT), must be maximized to support activities on site.
5. **Site Area** : The site must be large enough to accommodate all building activities and operations.

Selected Sites

FIGURE 1 Site Planning Location



Source : author

The selected site is located in Kebonagung Village, East Semarang District. This site was chosen because it has the highest score among other sites that refer to the selection criteria of a site.

Location	: Jl. MT. Haryono, Kel. Kebonagung, East Semarang District, Semarang City
Area	: 15.287 m2
BWK	: BWK I (Office, trade and
Road	: Primary Arterial Road
Utara	: Jl. Pattimura
Timur	:Settlements
Selatan	: Kampung Utri
Barat	: Jl. MT. Haryono
KDB	: Maximum 80%
KLB	: 5,0
KDH	: Minimal 15%
GSB	: 8 m

Contextual Aspect Approach

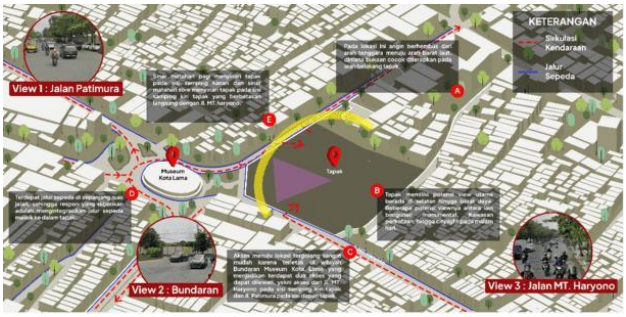


FIGURE 2 Site Analyst
Source : author

1. Wind: At this location the wind blows from the southeast to the northwest, where suitable openings are applied to the back of the site.
2. View: The site has the potential for the main view to be in the south to southwest. Some of the potential views include monumental buildings, urban areas, to citylight at night.
3. Accessibility: Access to the location is very easy because it is located in the Old City Museum Roundabout area which makes there are two accesses that can be passed, namely

access from Jl. MT. Haryono on the left side of the site and Jl. Patimura on the front side of the site.
4. Bike Lanes: There are bike lanes along the road, so the response is to integrate bike lanes into the site.
5. Sunlight: Morning sunlight shines on the site on the right side and afternoon sunlight shines on the site on the left side of the site which is directly adjacent to Jl. MT.haryono.

Architectural Concept Approach

Sustainable architecture is a design approach in architecture that allows in its design to meet current human needs by not spending resources on future needs which will be passed on by the next generation of humans. *Sustainable architecture is* also one of the concepts to maintain natural resources so that they do not run out quickly and can last for a long time, this is associated with the vital potential of natural resources and the human ecological environment, including planetary climate, agricultural systems, industryI, forestry, and architecture (Tutut Isnainiah, 2021).

Sassi (2006) has outlined six main aspects of sustainable architecture :

1. Sustainable Land-Use : Land is a valuable natural resource and should be considered when creating buildings to realize sustainable architecture.
2. Sustainable Energy : Global warming has sparked an environmental movement and sparked the concept of green building.
3. Sustainable Water : Water is an important source of life. Water catchment areas are urgently needed, especially with uncertain climate change.
4. Sustainable Material : Excessive use of natural resources will cause these natural resources to run out. An example is the use of fossil resources.
5. Sustainable Health and Well-Being : Elements in buildings can affect the health of their occupants, this is called Sick Building Syndrome. The solution that can be provided is to design a healthy building.
6. Sustainable Community : This aspect is the most important, because the five aspects of sustainable architecture above require human roles in its realization. One of the efforts that can be done is with the concept of promoting sustainability or promotion of the concept of sustainability to the wider community.

Based on what is adapted in the book Sustainable *Architecture* (Ardiani, 2015) explains that sustainable architecture has nine main principles in it, the following is the description of each principle:

1. Urban Ecology: Protect biotic and abiotic environments, flora and fauna, optimize natural resources, and maintain the balance of natural nutrients.
2. Energy Strategy: Minimize energy use and recycle it into new renewable energy.
3. Water: Conserves water use and optimizes water energy use by treating it for reuse.
4. Waste: Reduce, manage, and recycle waste.
5. Material: Pay attention to the safety and comfort aspects of building occupants, related to the selection and use of materials that can be decomposed and reprocessed.
6. Environmental Community: Directly related to the social field of society and provides benefits in the application of the concept of

sustainability in their respective regions.

7. Economic Strategy: Opening opportunities for small businesses or Small and Medium Enterprises (SMEs) to support the economy of a region.
8. Cultural Preservation: Preserving and preserving culture to the next generation to create the concept of sustainability.
9. Operational Management: Relates to occupant knowledge about system maintenance and technology applied in a building to the area.

(a)

(b)

FIGURE 3 Exterior Perspective (a) (b) Source : author

(a)

(b)

FIGURE 4 Landscape Perspective (a) (b) Source : author

DESIGN RESULTS

FIGURE 5 Siteplan
Source : author

FIGURE 6 Situation
Source : author

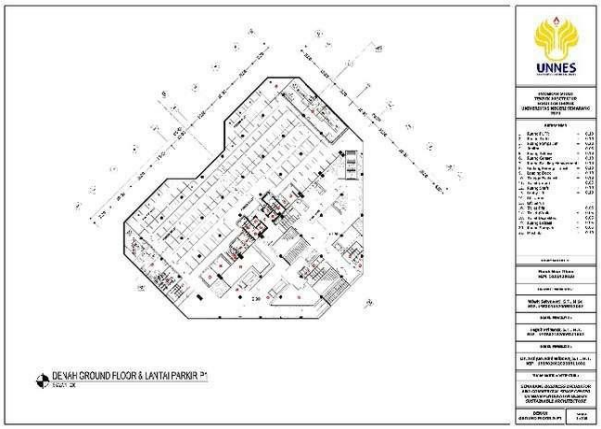


FIGURE 7 Ground Floor Plan
Source : author

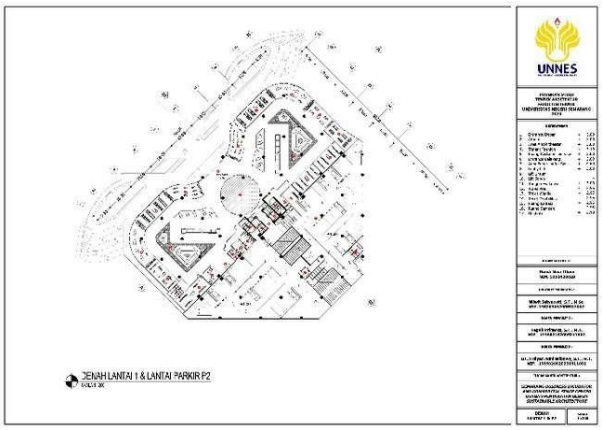


FIGURE 8 1st Floor Plan
Source : author

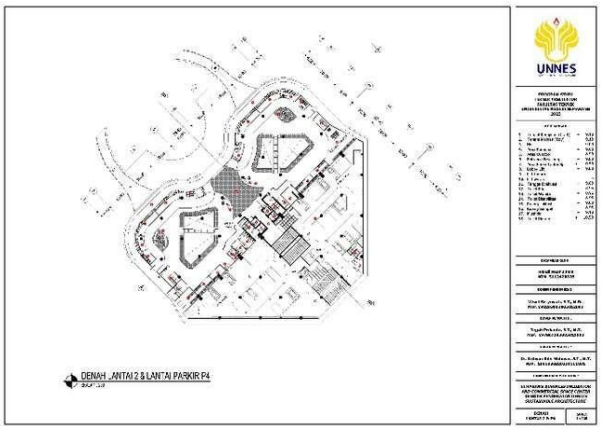


FIGURE 9 2nd Floor Plan
Source : author

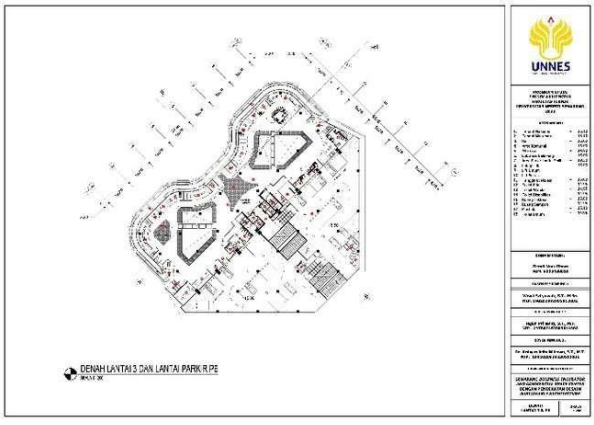


FIGURE 10 3rd Foor Plan
Source : author

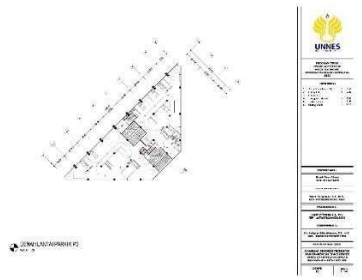


FIGURE 11 P3 Floor Plan
Source : author

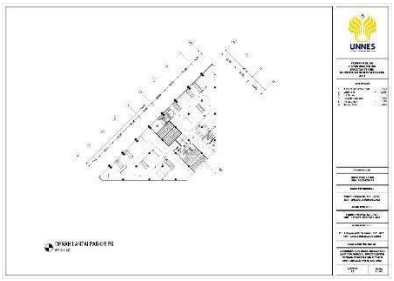


FIGURE 12 P5 Floor Plan
Source : author

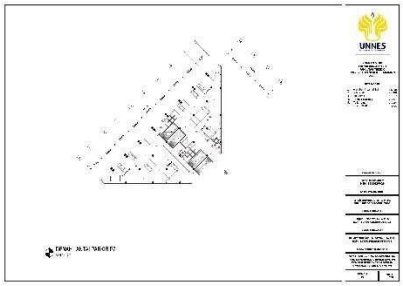


FIGURE 13 P7 Floor Plan
Source : author

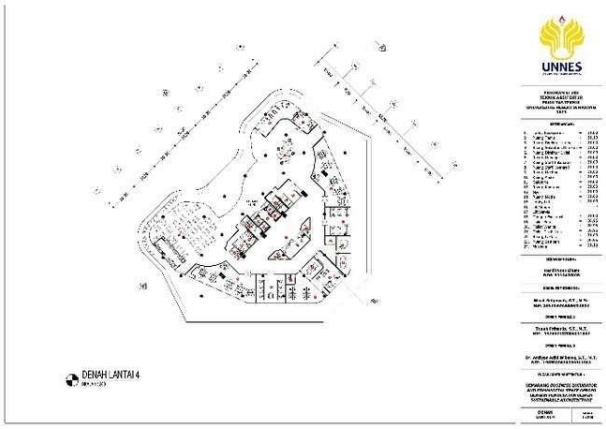


FIGURE 14 4th Floor Plan
Source : author

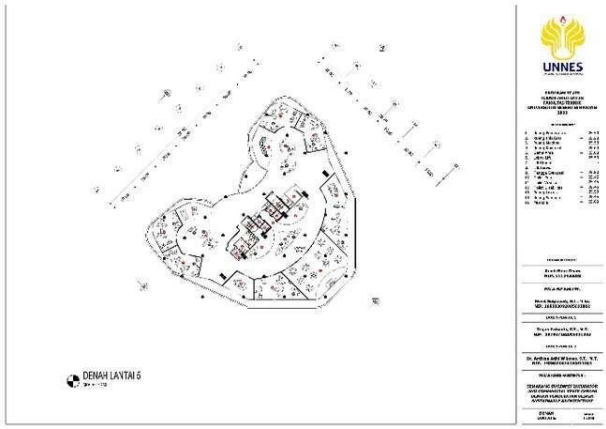


FIGURE 15 5th Floor Plan
Source : author

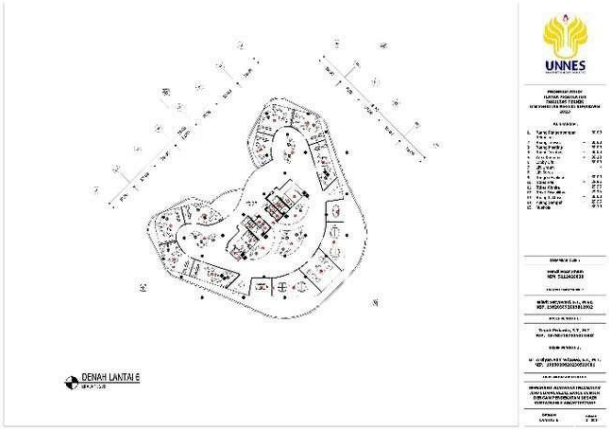


FIGURE 16 6th Floor Plan
Source : author

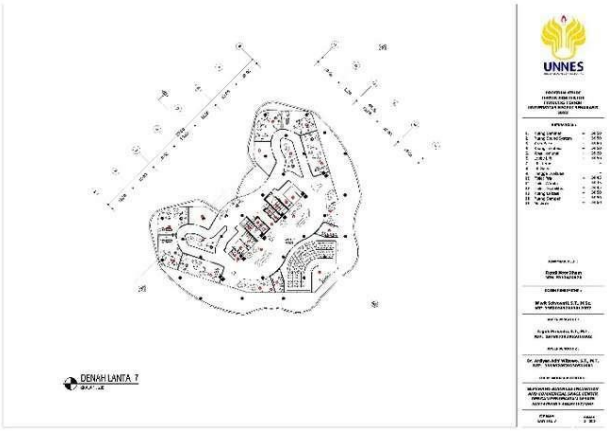


FIGURE 17 7th Floor Plan
Source : author

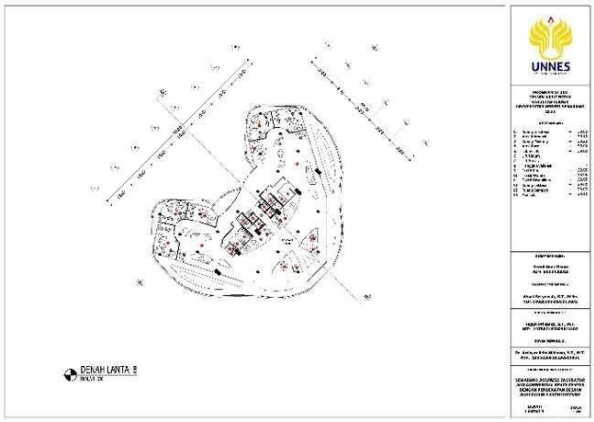


FIGURE 18 8th Floor Plan
Source :
author

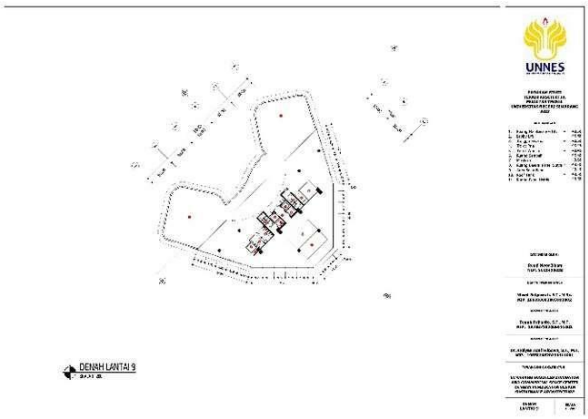


FIGURE 19 9th Floor Plan
Source :
author

FIGURE 20 Front Elevation
Source :
author

FIGURE 21 Right Side Elevation
Source :
author

FIGURE 22 Back Elevation
Source :
author

FIGURE 23 Left Side Elevation
Source :
author

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