



Business Hotel and Shopping Mall in Science & Technopark Universitas Sumatera Utara Kwala Bekala

Karina Febrin Azhari^{1}, Achmad Delianur Nasution¹*

¹*Department of Architecture, Faculty of Engineering, Universitas Sumatera Utara, Medan Indonesia*

Abstract. Business Hotel and Shopping Mall are buildings that used as a place to stay, especially for those who in a business trip and grocery facility for guests in the hotel and people around. The exists of hotel and mall in an area usually can attract people to visit that area and used as a place to rest and to gather, this is the main reason on choosing Hotel and Mall to be one of the facilities in supporting area of Science and Technopark in campus USU Kwala Bekala. Based on the USU Kwala Bekala masterplan, the site with 1,6 Ha area is located in the entrance zone, which is the gateway area of USU Kwala Bekala, so that the concept of the mass was building as a gate. This building is expected to be one of the areas that can integrate users with all of the facilities in Science & Techno Park of Campus USU Kwala Bekala. From the analysis that has done, the final design was the buildings are separated into two mass and connected with a sky bridge with the implementation of green architecture. The application of this concept seen in the use of windows, skylight, and the inner court as natural lighting and ventilation, roof garden to recycle rainwater, and secondary skin as a sunlight buffer. These applications are expected to help in reducing the use of water and electricity.

Keyword: architecture, green, hotel, mall, technopark

1. Introduction

Business hotels and shopping malls are building that used as a place to stay, especially for those who were on a business trip and shopping facilities for hotel guests or people around it. Campus Kwala Bekala USU is developing Science and Technopark area in the academic zone. In this area, business hotels and shopping malls designed as buildings that integrate users with the use of The Technopark area. Hotel and mall that build on 16.000 m² area, with KDB 30%, KLB 7 floors, were designed using green architecture concept following the theme that used in Campus Kwala Bekala USU.

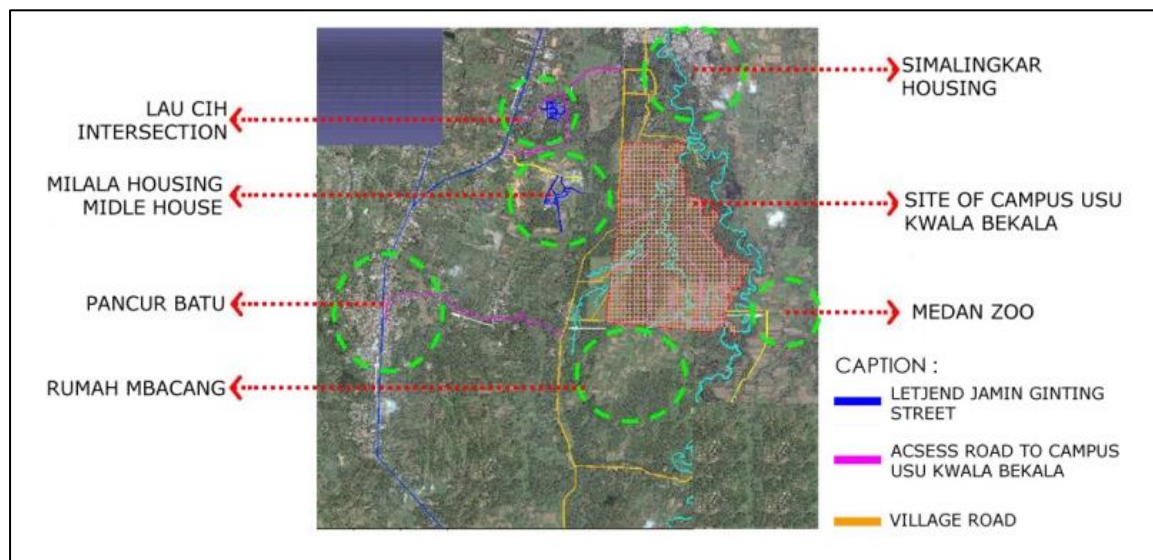
2. Literature Review

Science and Techno Park is an area that has the purpose to increase economic growth and strengthen the role of science in it by promoting culture and innovation and the competitiveness

*Corresponding author at: Department of Architecture, Faculty of Engineering, Universitas Sumatera Utara, Jalan Perpustakaan Gedung J07, Medan 20155, Indonesia

E-mail address: karinafa1996@gmail.com

of related businesses, as well as knowledge-based institutions [1]. In Science Techno Park, there is an area that combines industry, universities, research and training centers, entrepreneurship, banking, central and regional governments in a location that enables the flow of information and technology more efficiently and quickly. One of the facilities needed in this area is Business Hotels and Shopping Mall. A business hotel is a hotel designed to accommodate guests who have business purposes. The location of a business hotel is relatively close to an office area or trading area [2], a shopping mall is a recreation room and shopping center consisting of shopping complexes where there are activities of buying and selling goods and services [3]. From some of the principles explained by Brenda and Robert Vale in his book entitled Green Architecture: Design for a Sustainable Future (1991) on the standard of green architecture in broad terms, several principles that applied are the basic concepts of design, namely energy-saving and conditions and natural energy sources [4]. Campus USU Kwala Bekala is accessible from Perumnas Simalingkar, Jalan Jamin Ginting, and Medan Zoo. The North area is next to Simalingkar Housing; the East area is next to Medan Johor district and Medan Zoo, the South area is next to Rumah Mbacang, and the West area is next to Pancur Batu, Milala Housing, and



Lau Chi intersection (Figure 1) [5] :

Figure 1. Map of Site border of Campus USU Kwala Bekala.
(Source: Masterplan of USU Kwala Bekala)

3. Methodology

The methods used in this design include problem identification, data collection, literature studies, comparative studies, analysis, drafting, and compilation of work drawings. After analyzing the site, buildings are designed considering the problems that can reduce user comfort by using a green architecture theme.

4. Result and Discussion

The Business Hotel and Shopping Mall is located in the Science and Technopark area of USU in an academic zone that integrates with other STP areas using green architecture concept. Hotel and mall in this area are located in the middle of other supporting buildings so that all the buildings that connect in the STP area using it as a public zone (Figure 2).

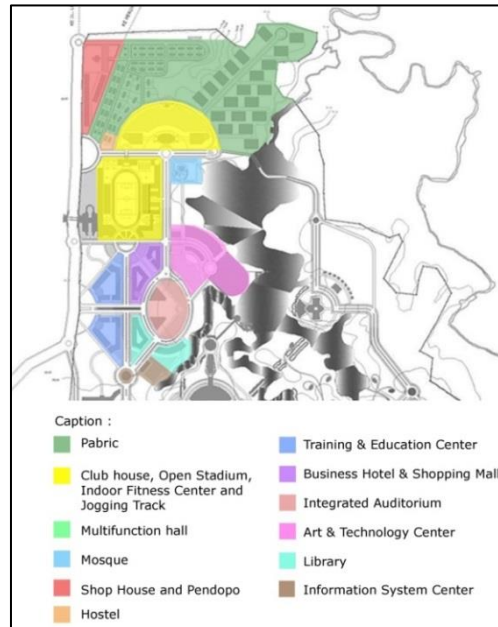


Figure 2. Zoning of Science and Technopark USU Kwala Bekala
(Source: Masterplan of USU Kwala Bekala)

4.1. The Green Architecture Theme Approach

All buildings on the USU Kwala Bekala campus apply the green architectural theme to the design considering the current climate conditions are getting hotter due to global warming.

Inner Court

Both buildings are designed to maximize lighting and natural ventilation as the most efficient way to reduce the energy used in buildings. Both buildings have the inner court by adding green space to the building so that fresh air and sunlight can enter the building through existing apertures easily (Figure 3).



Figure 3. Inner Court Scene

Cross Ventilation System

The use of the inner court allows the building to have openings on two sides with higher light intensity. Cross ventilation system is used to apply cross circulation in the indoor space so that the air can change well and minimize the use of air conditioning (Figure 4).

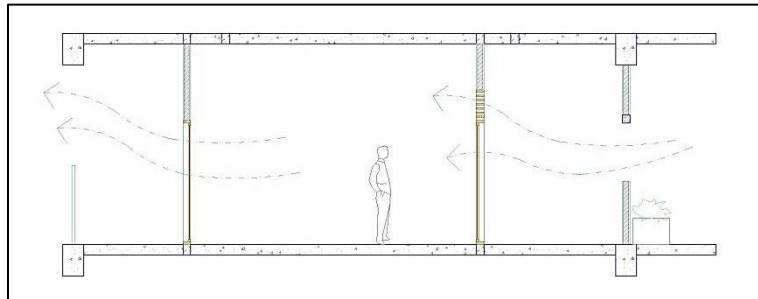


Figure 4. Cross Ventilation System in buildings

Skylight

The building uses skylights as a natural lighting source that can reduce the use of lights during the day, besides it can also add an aesthetic value (Figure 5).

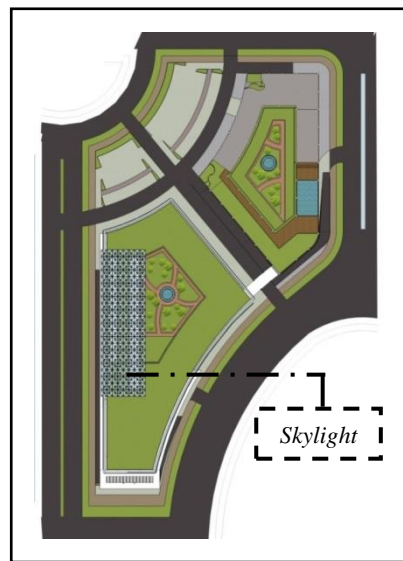


Figure 5. Skylight on building

Roof Garden

To save the usage of water, garden irrigation, and urinal /closet in this building are using water from the rainwater recycling system. Respond to this; the building was designed using a roof garden that can capture and filter rainwater at the same time (Figure 6).

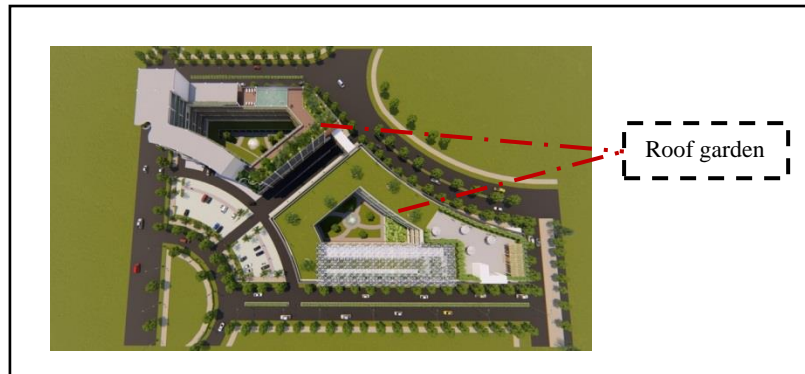


Figure 6. Roof Garden on hotel and mall

Sunlight Buffer

The buildings using a double-glazed system on the windows to hold the sun's heat, so that the heat from the sun is isolated in the space between the glass, but can still transfer light. On the western part of the building used secondary skin made from metal as a buffer of sunlight to avoid space from glare and heat (Figure 7).



Figure 7. Metal secondary skin as a buffer

4.2. Outdoor and Indoor Spatial Planning

Outdoor Spatial Planning

Outdoor spatial planning consists of four main areas; there are building area, green area, parking area, and pedestrian (Figure 8).

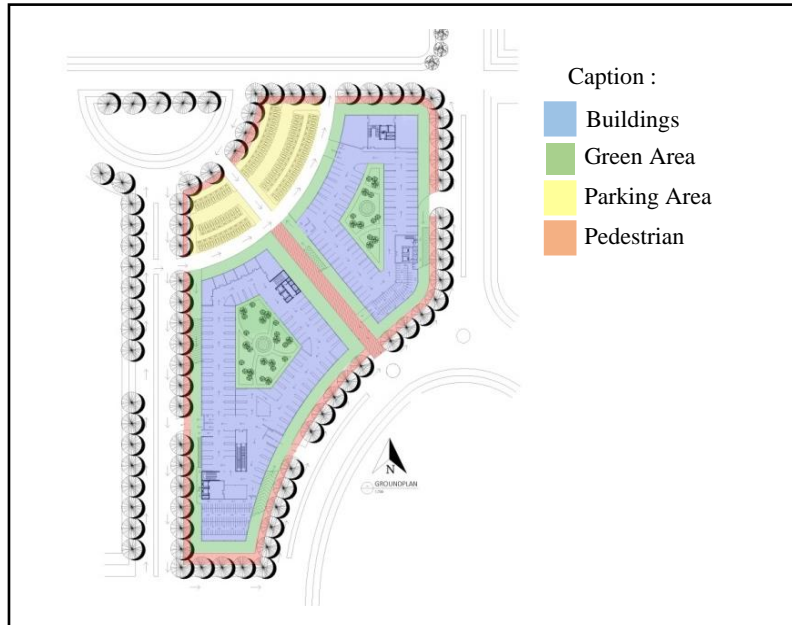


Figure 8. Outdoor Spatial Planning

Indoor Spatial Planning

The parking lot for both buildings is located on the ground floor are due to site limitations. The service rooms of buildings are placed in this zone to facilitate the channel from its utility (Figure 9).

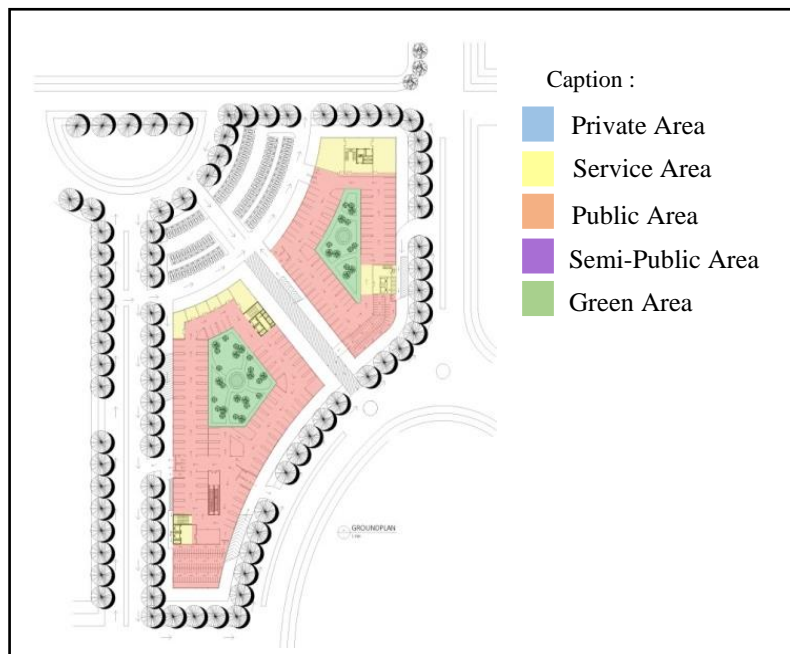


Figure 9. Ground Floor Zoning

On the 1st floor of the public zone, the hotel has a reception, lobby, coffee shop, and lounge. In the private area, there is a management office, standard hotel rooms, and deluxe hotel rooms. The mall's public zones have a lobby, retail, and information center (Figure 10).

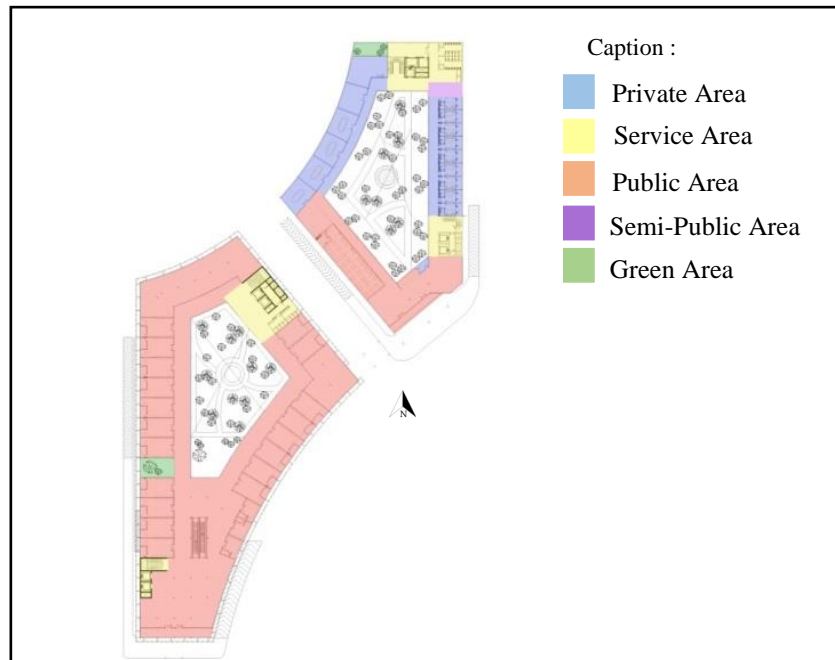


Figure 10. First-Floor Zoning

On the 2nd floor, the hotel's public zone has a lounge near the sky bridge connecting to the shopping mall. In the private zones, there are standard and deluxe hotel rooms. The mall's public zone has retail and department stores. Skybridge is located in a semi-public area because those who can access only hotel visitors (Figure 11).

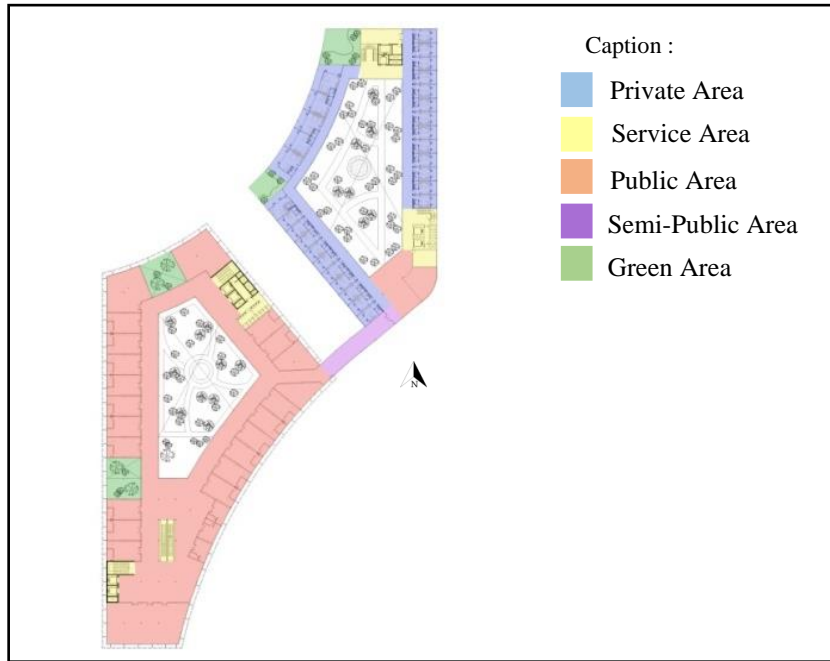


Figure 11. Second-Floor Zoning

On the 3rd floor, the hotel's public zone has a multifunction hall and preparation room. Private zones have standard and deluxe hotel rooms. In the mall's public area, there are food courts, department stores, and retails (Figure 12).

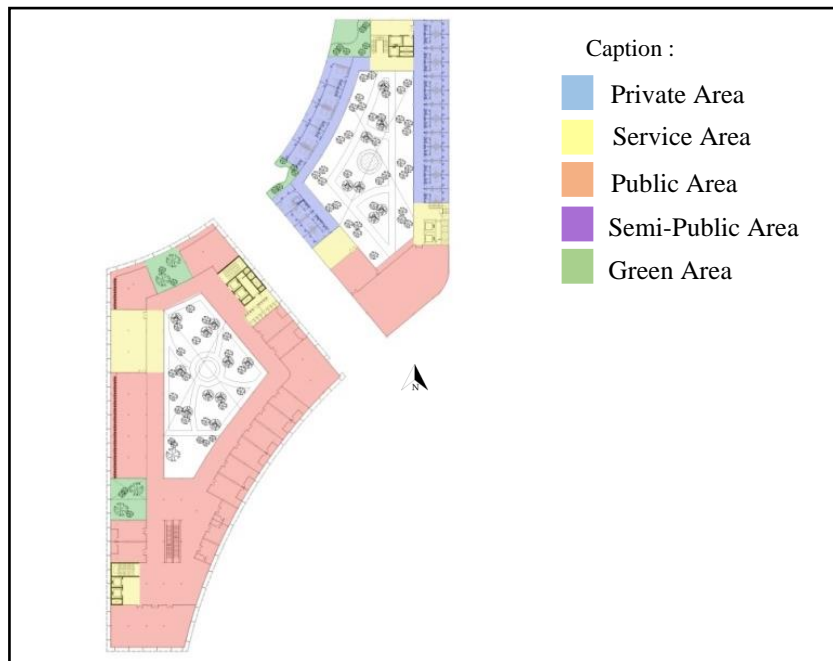


Figure 12. Third-Floor Zoning

On the 4th floor, the hotel’s public zone has a fitness center, bar, swimming pool, and roof garden. Private zones have deluxe type hotel rooms (Figure 13).

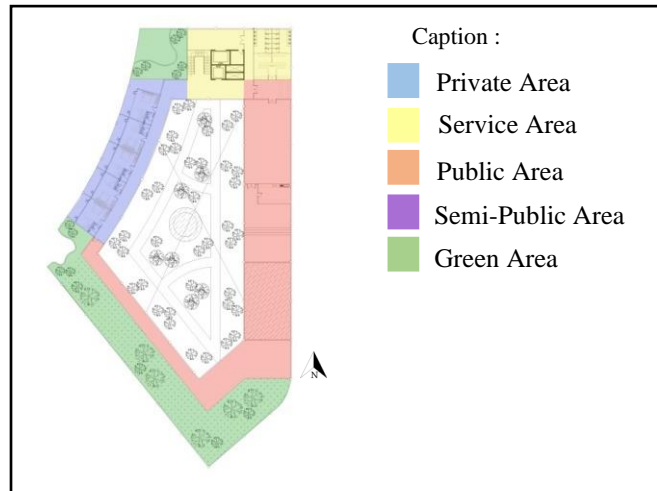


Figure 13. Fourth-Floor Zoning

On the 5th and 6th floors, there is only a private area that consists of deluxe type and suite types of hotel rooms (Figure 14).

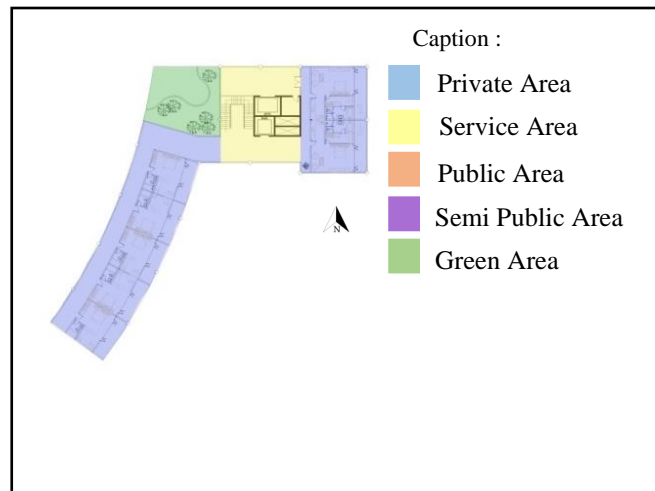


Figure 14. Fifth and Sixth Floor Zoning

Every floor has a service zone that includes a bathroom, emergency stairs, elevators, and green zones as solar buffers, noise buffers, and also help natural air inside the building.

5. Result and Discussion

Business Hotels and Shopping Malls in the USU Kwala Bekala STP area are using as facilities that integrate users with the entire STP area. With this building, it is expected to facilitate and facilitate activities in the surrounding buildings and also to reduce the impact of global warming by applying green architecture to its design. Overall, the total area of the building is 16,000 m², which is divided into two masses and connected to the sky bridge. The hotel is a 3-star hotel with 78 rooms, 48 standard rooms (7x4m), 26 deluxe rooms (7x6m), and four suite rooms (8x8m). Other additional facilities are based on standard 3-star hotel room requirements, namely swimming pool, restaurant, function room, fitness room, and coffee shop. The Shopping Mall consist of 46 retail (6x10), which is flexible according to the needs of tenant space, six large retail, one department store, one supermarket, and one food court. Each building has an inner court, uses air-conditioned hallways, has many openings, uses secondary skin metal as a solar buffer and uses glass with a double-glazed glass wall system.

Acknowledgment

This article is written by researchers who are partly funded by *Universitas Sumatera Utara* and was given out as a donation to the government to preserve and improve the value of design, local wisdom, arts and ethnic.

REFERENCES

- [1] *International Association of Science Parks and Areas of Innovation (IASP)*.
- [2] Endy Marlina, *Panduan Perancangan Bangunan Komersil*. Yogyakarta: Andi Publisher, 2008.
- [3] Barry Maitland, *Shopping Malls: Planning and Design*. New York: Nichols, 1985.
- [4] Brenda Vale and Robert Vale, *Green Architecture for a Sustainable Future*. London: Thames & Hudson Ltd, 1991.
- [5] Universitas Sumatera Utara, *Buku Rencana Tata Bangunan dan Lingkungan USU Kwala Bekala*. Medan, 2006.
- [6] Bustami Syam and Runtung Sitepu, *The Development of Kwala Bekala Technobiz park (KBTP) University of Sumatera Utara*. Medan, 2017.