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CONVENTION HOTEL WITH BIOPHILIC DESIGN APPROACH IN SEMARANG CITY

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Abstract. he development and construction of Semarang City is increasing with many investors putting in capital or shares in various fields. Various approaches are taken to attract investors and tourists to Semarang City, one of which is by organizing MICE events. Semarang City is one of the 16 cities in Indonesia that has become a MICE destination. However, convention hotel accommodation in one region is still not evenly distributed and there is currently no venue that can accommodate 5,000 people. Therefore, planning and designing a convention hotel in Semarang City is a suitable solution to this problem. The biophilic design approach was considered as an answer to the problem of how hotels contribute to the largest energy use. Therefore, it is necessary to plan and design a convention hotel with a biophilic design concept that fulfills technical aspects, environmentally friendly, and positively impacts human health. This approach prioritizes a building concept that presents the connectivity of residents to the natural environment through the arrangement of interior spaces and landscaping. The design of Convention Hotel with biophilic design approach in Semarang City is used data in the form of primary and secondary data which is then analyzed and processed in functional, contextual, technical, performance, and architectural approaches. By analyzing and processing the data, recommendations and design solutions related to the Convention Hotel with a biophilic design approach in Semarang City will be obtained to support MICE events held in Semarang City.

Keyword: *Convention Hotel, MICE, Biophilic Design*

INTRODUCTION

The rapid growth and development of Semarang City has attracted many investors from within and outside the country to invest in various sectors. This data is corroborated by the fact that the average annual influx of capital into Semarang City between 2014 and 2020 increased by 55% each year.[1] A wide variety of approaches have been taken to attract investors and tourists to visit Semarang City. One alternative way to increase the attraction is by organizing small and large-scale MICE events. Semarang City has a vision to develop its city into a

[1] (DPM-PTSP Kota Semarang, 2021).

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MICE city.[2] In addition, Semarang is one of 16 cities in Indonesia listed as a MICE destination.

In general, the hospitality industry and tourism are closely related. The combination of hotel and convention can mutually support each other to increase city revenue in the tourism industry. Based on data from the Semarang City Central Bureau of Statistics (BPS) in 2019, there are 80 inns in Semarang City, ranging from 1-star hotels to 5-star hotels. However, none of them are able to accommodate various events with lodging facilities in one region. Semarang City does not yet have a hotel facility as well as a place to organize MICE activities with a capacity of 3,000-5,000 people and the distribution is not evenly distributed. The planned convention hotel is a 5-star hotel type with a convention capacity of 5,000 people, this is to provide the best facilities and considering that only 4 5-star hotels exist in Semarang City and yet lacks a MICE capacity of 5,000 people.

The hot climate in Semarang City and the contaminated air caused by unhealthy environmental pollution can affect the behavior of residents such as a decrease in productivity levels and a reduction in both physical and non-physical health. Applying the principle of biophilic design can harmonize human life and nature by presenting natural elements both physically and non-physically on the exterior and interior of the building. Convention hotel is expected to create comfort, tranquility and enhance physical and mental health for residents, staff, and visitors.

METHODS

The data used in the Convention Hotel Final Project with a Biophilic Design Approach in Semarang City is categorized into two categories, namely primary data and secondary data. Primary data contains the implementation of observations at the location and site of planning and designing Convention Hotel objects. Meanwhile, secondary data contains literature studies, scientific journals, and other written sources that have relevance to the design object.

CONCEPT

The central theme of this convention hotel design is biophilic design. This concept represents an effort to translate the understanding of human affinity for natural systems and processes, known as biophilia, into the design of the built environment. The convention hotel is designed to be attractive and comfortable, with the objective of attracting visitors and encouraging them to stay overnight or carry out various activities. One of the design approaches is to provide comfort, security, and privacy for visitors. The concept of serenity may also be applied by incorporating elements from nature, such as the placement of plants, the use of natural materials, and the incorporation of dynamic shapes. As a result, the theme of the convention hotel design is biophilic design.

Site Determination Criteria

Some of the aspects that serve as the basis for assessing each location to be selected include the following:

Urban Infrastructure or Utility Network: The proposed location must be equipped with urban infrastructure or utilities to support the function of the building when used later in the future,

Accessibility: The chosen location considers the ease of access and attainability for the entry and exit of the users of the building.

Noise: The Convention Hotel building requires a quiet setting to enhance the comfort of the users in conducting activities within.

Surrounding Environment: The location of the site is in a strategic area supported

[2] Riptek Vol. 5, No. II Tahun 2011.

by other supporting facilities in addition to transportation facilities such as close to hospitals, shopping centers, tourism, and so on.

View: A consideration in determining the planning location is needed as it may provide added value to the attraction and selling price.

Planning Location

Figure 1. Site Planning Location

The planning location for Convention Hotel Biophilic Design is a site located on St. Rm. Hadiesoebeno, Kedungpane Village, Mijen Sub-district, Semarang City, Central Java.

Area	: 79.047 m^2
Functions	: Hotel and Convention
KDB	: 60%
GSB	: 32 m^2
KKOP	: maximum 325,88 m
Land Boundaries	:
- North	: Suyono Street
- South	: Suyono Street
- West	: Rm. Hadiesoebeno Street
- East	: Suyono Street

Contextual Aspect Approach

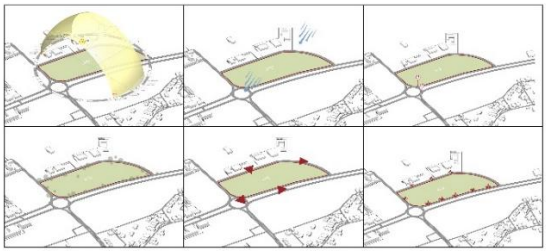

Figure 1. Site Analysis

1. Sun Path: The early morning sun shines on the eastern part of the site, which borders Jalan Suyono. In contrast, the afternoon sun shines on the western part of the site, which borders Rm. Hadisoebeno Street.
2. Wind: The prevailing wind direction at the site is from the southeast to northwest.
3. Accessibility: The site is accessible from and to Rm. Hadisoebeno street, which is the primary access route. Additionally, a BRT passenger boarding and dropping station is situated in front of the site.
4. Vegetation: It is recommended that additional shade trees be planted on the site.
5. View: The site offers promising scenic vistas, including its proximity to Jatibarang Reservoir, BSB Lake, and vistas of Mount Ungaran.
6. Noise: The pattern of building mass arrangement in the center area of the site can keep the building away from the intense noise that gets to the building.

Architectural Concept Approach

To implement the theme in the design of the object, the author uses a biophilic design approach to the character of the main function of the object and the typology of its shape. The design concept in the design of this convention hotel refers to three main concepts including; nature in the space, nature analogues patterns, and nature of the space.

Nature In the Space Patterns	Natural Analogues Patterns	Nature Of The
A1. *Visual connection with nature* (hubungan dengan alam secara langsung)	A8. *Biomorphic forms & patterns* (bentuk dan pola biomorfik)	A11. *Prospect* (prospek dan tem
A2. *Non-visual connection with nature* (hubungan secara tidak langsung dengan alam)	A9. *Material connection with nature* (hubungan bahan dengan alam)	A12. *Mobility* (mobilitas dan jal
A3 *Non-rhythmic sensory stimuli* (stimulus sensor tidak berirama)	A10. *Complexity & order* (kompleksitas dan keteraturan)	A13. *Mystery* (mi
A4. *Thermal and airflow variabillty* (kenyamanan termal & udara)		A14. *Risk/peril* (
A5. *Presence of water* (kehadiran air)		
A6. Dynamic and diffuce light (cahaya dinamis dan menyebar kedalam bangunan)		
A7. *Connection with natural systems* (hubungan dengan sistem alami)		

Figure 2. Biophilic Design Principles
Source: terrapinbrightgreen

The concept of biophilic design is based on the idea of creating a healthy living or working environment that minimizes stress and promotes wellbeing through the integration of natural elements.[3] In the biophilic design approach, there are fourteen patterns that can be applied in the design, namely 14 patterns of biophilic design. Out of the fourteen patterns, 10 patterns will be applied to the design object by considering the needs and suitability between the design aspects and the design pattern.

a. Nature in the Space
   - Visual Connection with Nature
     There is a balcony garden area on a typical hotel floor which is covered by several plants, while the interior of the room has plants and views to the outside of the building which remains naturally preserved.
   - Non-Visual Connection with Nature
     The area of the convention hotel offers the scent of indoor plants, the sound of birds and insects attracted to natural plants.
   - Thermal & Airflow Variability
     On the 1st floor to the 4th floor, a natural ventilation system is used in the lobby area to the outdoor area. In addition, a cool airflow from the water infiltrates both inside and outside the building.
   - Presence of Water
     The abundant water element is implemented into the garden, lobby, corridor, and swimming pool.
   - Dynamic & Diffuse Light
     In the lobby plaza area there is natural light from outside with the open space making a dynamic and diffused lighting aspect for building occupants. In addition, natural light in the room penetrates the curtains in the guest rooms.

b. Nature Analogues
   - Biomorphic Forms & Patterns
     The shape of the podium creates a vertical landscape that resembles a rice field terrace in the countryside. Then, the facade of the convention building uses hexagon patterns similar to honeycombs, which are biomorphic forms patterns commonly found in nature.
   - Material Connection with Nature
     The use of natural materials in the interior areas of the residence, clearly reflects the natural environment to create a natural impression.

c. Nature of the Space
   - Prospect
     Vast unobstructed views over long distances, for surveillance and planning. For example, in this convention hotel building, there is the use of glass material in each hotel room so that visitors can access the view from afar outside the building.
   - Refuge
     Guest rooms with curtains provide privacy protection to guests.
   - Mystery
     The curved bridge design that connects the hotel building with the

[3] Browning, 2014

convention engages curiosity creating the mystery aspect of this area.

- Risk/Peril
  Provide a sensation of danger and risk that can be perceived with a sense of safe protection. For example, the use of building facades with balconies that can be accessed by visitors.

DESIGN RESULT

The roof structure utilized in the design of this convention hotel incorporates a concrete deck roof and shell structure within the convention building, making it necessary to accommodate a wide span. The roof material employed in the convention building is reinforced concrete, with a thickness of 20 centimeters. The building is divided into three sections: the hotel zone, the convention zone, and the outdoor parking area. The drop-off zone is situated at a sufficient distance from the highway to avoid any potential inconvenience to hotel guests. Furthermore, vegetation has been planted around the front, side, and back of the buildings to help reduce noise that may enter the hotel.

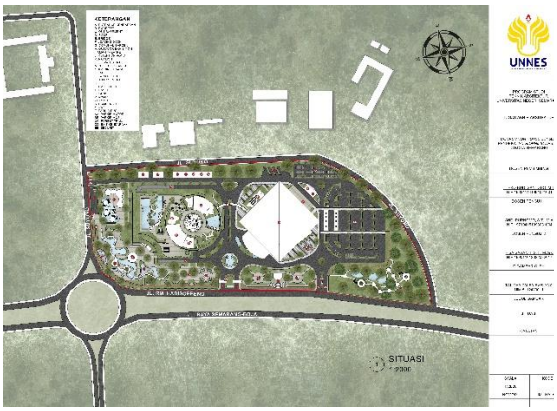

Figure 3. Situation

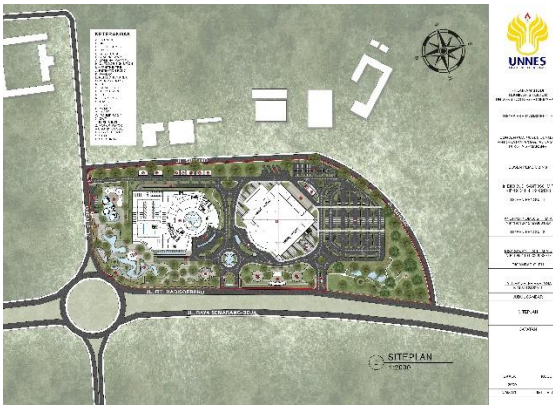

Figure 4. Site Plan

The basement plan of the hotel zone is divided into several distinct functional zones, including the parking zone, service zone, support zone, and manager zone. The first floor of the hotel zone features a lobby, plaza, parking zone, and supporting zones, including restaurants, automated teller machines (ATMs), and meeting rooms. The second floor of the hotel zone contains meeting rooms, restaurants, and parking zones. The third floor of the hotel zone features a gym, a spa, an indoor swimming pool, and other supporting zones. The fourth floor of the hotel zone includes a cinema room, an outdoor restaurant, a swimming pool, and other supporting zones.

The floors of the hotel zone numbered 5, 7, 9, 13, 15, 19, and 21 are designated as typical hotel room floors. Additionally, the hotel zone floors 6, 8, 10, 14, 16, 20, and 22 are also comprised of typical hotel room floors. The hotel zone floors 11, 12, 17, and 18 have been designated as public space areas with green open spaces. The hotel zone floors 23, 24, 25, and 26 are intended to accommodate typical hotel room areas and supporting areas. Finally, the 27th floor of the hotel zone has been designated as a service zone.

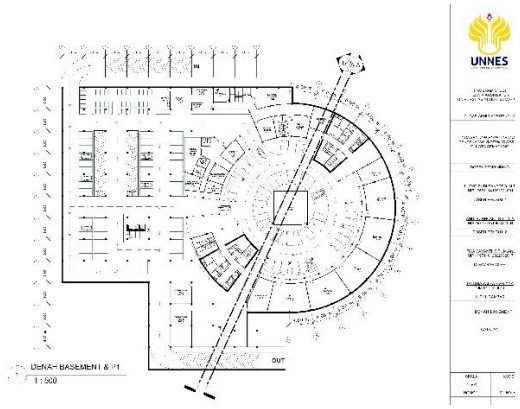

Figure 5. Basement Floor Plan

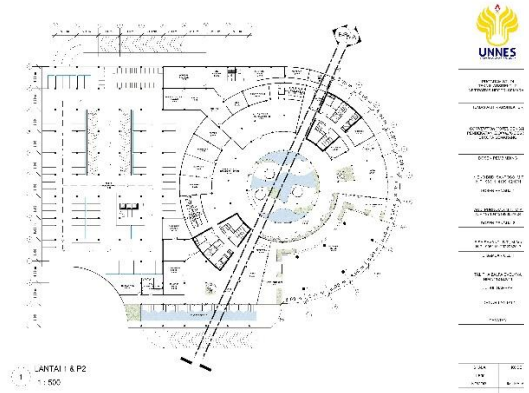

Figure 6. Ist Floor Plan

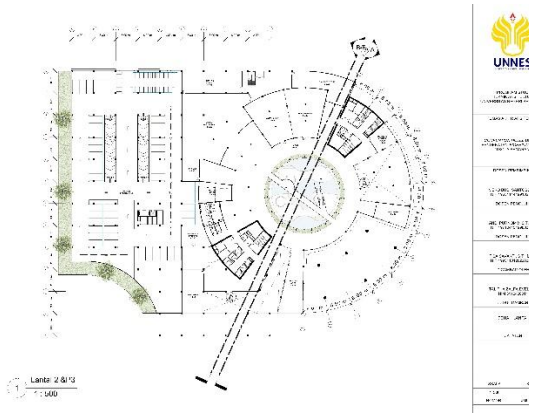

Figure 7. 2nd Floor Plan

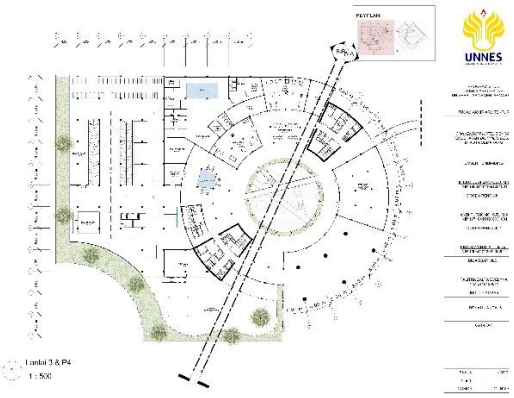

Figure 8. 3rd Floor Plan

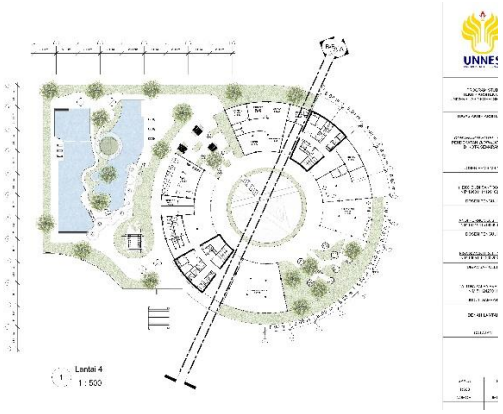

Figure 9. 4th Floor Plan

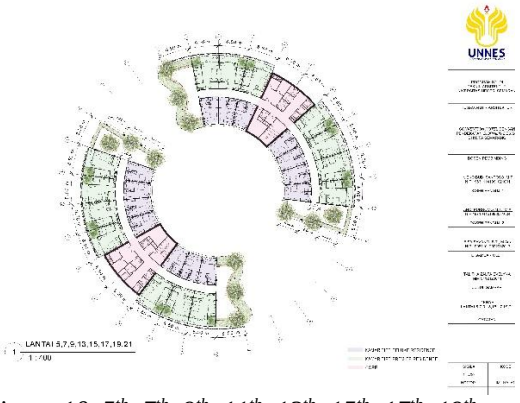

Figure 10. 5th, 7th, 9th, 11th, 13th, 15th, 17th, 19th, 21th Floor Plans

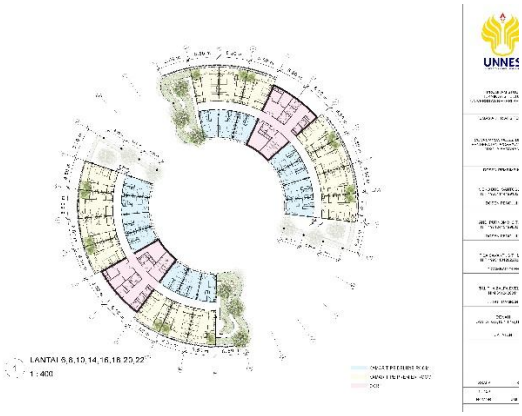

Figure 11. 6th, 8th, 10th, 12th, 14th, 16th, 18th, 20th, 22th Floor Plans

Figure 12. 23th Floor Plan

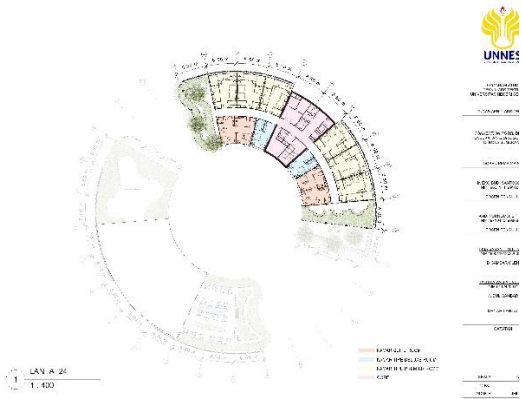

Figure 13. 24th Floor Plan

Figure 14. 25th Floor Plan

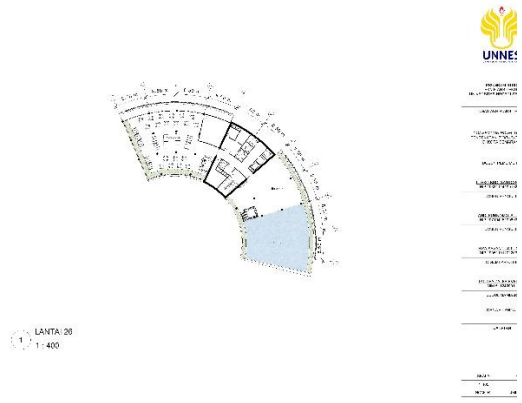

Figure 15. 26th Floor Plan

Figure 16. 27th Floor Plan

The building view is divided into 4 parts, namely front view, back view, right view, and left view.

Figure 17. Front Elevation

Figure 18. Right Elevation

Figure 19. Back Elevation

Figure 20. Left Elevation

Building cutting from 2 sides, namely the horizontal side and the vertical side, the horizontal side of the building shows the elevation of the building from the right end to the left end, while the vertical side of the building shows the left side of the building.

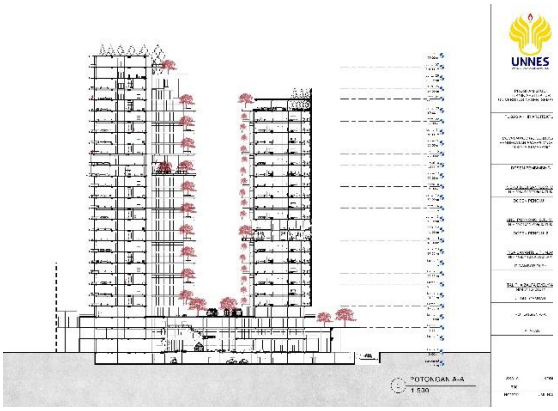

Figure 21. AA Section

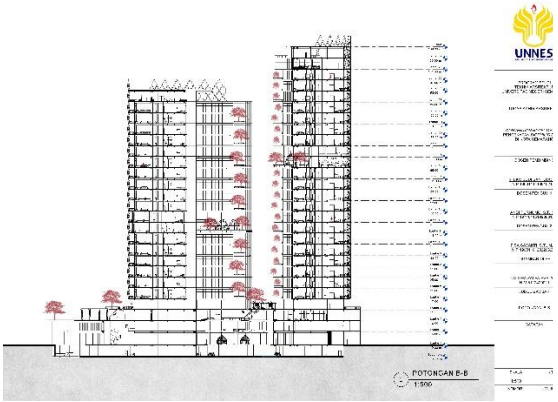

Figure 22. BB Section

The configuration of the building mass allows air circulation to flow smoothly and

makes the building feel more spacious visually. The design incorporates biophilic principles to foster a green, shady environment and mitigate noise pollution through the strategic placement of shade trees.

Figure 23. Aerial View Visualization

Figure 24. Human Eye View

The convention hotel offers a variety of supplementary facilities to serve the needs of its residents and guests, including swimming pools, private rooms, and meeting rooms with varying capacities, with the largest room capable of accommodating up to 5,000 people.

Figure 25. Swimming Pool View

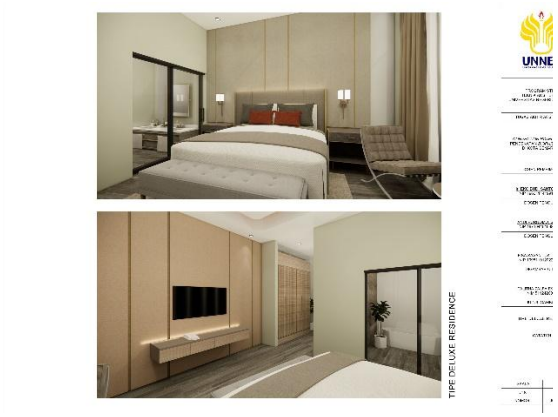

Figure 26. Type Deluxe Residence

CONCLUSION

The planning and design of the Convention Hotel in Semarang City, which incorporates a biophilic design approach, represents a novel approach to the provision of accommodation facilities that can accommodate a diverse range of events, particularly large and small-scale MICE events. The planning and design of the Convention Hotel is motivated by two key considerations: firstly, the uneven distribution of convention hotel accommodation for activities, and secondly, the limited availability of 5-star hotels in Semarang City.

At the present time, the advancement of the tourism industry is not solely concentrated within the central urban area; rather, it is also employing the use of land situated in the suburbs. Nowadays, the advancement of the

tourism industry is not solely concentrated within the central urban area; rather, it is also employing the use of land situated in the suburbs. A Convention Hotel with a Bophilic Design Approach is situated in the BSB City satellite city area, encompassing a land area of 79,047 m² (7.9 Ha). The BSB City area will be the focus of development in the coming years. It is anticipated that a range of business, commercial, and trade activities will be conducted there. The construction of a convention hotel will facilitate the accommodation requirements of tourists visiting the region for leisure or business purposes. This could serve to enhance Semarang City's reputation as one of the business and tourist destination in Indonesia.

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