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Architectural Design Practices in Surabaya: Shopping Mall Design with Biophilic Design Approach

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Abstract: High density and stress levels in Surabaya can support poor quality of life related to health in the community. Two factors can reduce stress levels and support a better quality of life in individuals who are in a relationship with nature (biophilia) and other humans (social life). Shopping Center is a commercial building to accommodate shopping activities and people's life style in Surabaya, which is a community center for purchasing and facilitating socio-economic and recreational activities. The location of this shopping center is located in a strategic area on the Middle East Ring Road Surabaya (MERR). This region has a high enough strategic value where the appearance and structure of buildings in this region must have higher social and economic values, requiring the appearance and design of an order that has current values. The appearance and layout of the building will affect the user's atmosphere, both physically and psychologically. With the theme "Integrating with Nature" it is expected to create a space design that is owned by nature and blend with the potential of the site, and approve Biophilic Design will create a mall space that has a balance between humans and nature. By agreeing to this, the Shopping Center can accommodate spaces that will reduce user "stress" and can increase satisfaction and not improve the health of the user's community.

Keywords: Biophilic Design, Shopping Mall, Nature, Stress

1. Introduction

Surabaya is a metropolitan city, as the capital of East Java, which acts as a business center with economic, financial and government activities. With all its advantages, in the end many investors take part in changing the face of the city so that it encourages the emergence of the Integrated Business District or Central Business District (CBD) as business centers in Surabaya. Global development in sustainable built environment planning systems has relevance to the formation of a new atmosphere that requires new development tools [5]. The development business focus in Surabaya Metropolitas Area it's the development of high rise buildings that's around at Jalan Tunjungan, Basuki Rachmat, Darmo, Mayjend Sungkono, H. R. Muhammad, and Ahmad Yani, while industrial estates include Surabaya Industrial Estate Rungkut (SIER), Karangpilang, and Margomulyo Estate.

The needs of an increasingly diverse urban community led to predictions of how a mall in the future. On the contrary, there is a basic human nature that is increasingly difficult to be accommodated in urban areas, namely the tendency of human nature to relate to nature. On its journey, the city experienced very rapid development due to population dynamics, socio-economic changes, and the occurrence of interaction with other regions [9].

Urban communities are vulnerable to stress and anxiety. Every day urban communities must face limited space, economic pressures, traffic congestion, and exposure to air pollution that has the potential to trigger mental disorders [11]. According to Mc. Grath in Weinberg and [11], stress is defined as "a substantial imbalance between demand (physical and / or psychological) and response capability, under conditions where failure to meet that demand has importance consequences" which means that stress will appear in individuals if there is an imbalance or failure of individuals to meet their needs both physically and spiritually [12].

The advancement of industrial and office activities has developed rapidly, especially in urban areas. With the design of the building which is shifted vertically with an artificial ventilation system [7]. The issue of energy conservation after

the petroleum crisis in the 1970s required low air input from outside the room [1]. Isolation of the room from outdoor air is a new problem because of the low air circulation from outside air into the room causing some of the pollutants in the room can not be diluted or diluted. As many as 1 out of 3 buildings worldwide can be said to be "problematic", 60% of buildings in America have serious air quality problems as much as 20% [2].

The design approach with biophilic methods is expected to reduce stress, improve cognitive function and creativity, improve the welfare of the built environment user and speed healing; because the urban population continues to increase, these environmental qualities will become increasingly important. Given how quickly natural experience can get a restorative response, and the fact that with business growth that continues to increase every year. Loss of productivity due to unplanned built environment will lead to stress-related illnesses, so designs that connect us back to nature -design biophilic - very important to provide opportunities for living and working in healthy places and spaces with less stress and better overall health and well-being.

2. Research Background

Surabaya has turned into a city that is experiencing rapid economic growth and infrastructure development after the development (especially infrastructure) that can be observed in plain view [6]. In the last ten years, the government built a bridge connecting Surabaya and Madura (Suramadu Bridge), accompanied by the repair and expansion of Juanda Airport in Surabaya to open access to the Capital City of East Java Province. This shows that the growth of the city and the development of the City of Surabaya will be used as a trade route and transit area or a meeting of capital owners to invest their capital in Surabaya City [13].

The city of Surabaya as the capital of East Java Province has a strategic role on the national scale as a service center for Eastern Indonesia activities, and on a regional scale as a trade and service city at the national and international transportation nodes (land, air and sea) so as to provide opportunities for the City of Surabaya to enhance its role as the National Activity Center (PKN). The location of the city of Surabaya is very strategic, connecting the city of Surabaya with the surrounding cities, namely cities / regencies in Gerbangkertosusilo, so it strongly supports the acceleration of development in the city of Surabaya. Vice versa, the growth of the City of Surabaya also affects the development of the city / district around it, sectorally and spatial.

Over the past 5 (five) years the economy of Surabaya has been able to grow stable in the range of 6 to 7 percent. The economic growth rate is higher when compared to the average economic growth in East Java and nationally. Although the economic growth of Surabaya City has slowed since 2014 and 2015 which is in the range of 6 percent, but the slowdown in growth was caused by factors of global economic instability.

As a Metropolitan City, Surabaya has many factors that cause psychological distress for its people which will lead to increased stress which has long been increasing. Urban residents, have activities that are very dense and vulnerable to psychological pressures. Shopping centers as centers for gathering people with a fairly large number allow for individual interaction. With the above considerations, the author tries to present a study of the process of designing with a biophilic approach to present a more adaptive atmosphere of communal building and is accepted by society as a more natural and sustainable community center. To present the atmosphere of space which serves to bring people closer to nature and or humans with other humans.

3. Design Approach

This design approach uses Biophilic Design and Proxemics. Multi design approach is an effort towards design optimization by applying several design approaches in a design [9]. Biophilic Design Approach is oriented toward natural and human relations, while Proxemics is oriented towards human relations with humans [15]. Biophilic design can reduce stress, increase creativity and clarity of mind, improve our well-being and accelerate healing; as the world population continues to experience urbanization, these qualities are increasingly important [16].

There are several ways of development using biophilic design that develops several patterns of relationships between humans and nature that have evolved [17].

Biophilic design is one of a number of trending design practices that rely on natural-based systems, engineering principles and design cues to improve environmental quality, health, and efficiency. Integrated biophilic design but does not match the contribution of other nature-based design techniques precisely because it can act as a platform or "interstitial network," providing a liaison / practice / ethos language that can unite different practices in a broader built environment [10]. This paper provides an illustrative compilation of how biophilic design practices can directly support resilience in human health and the environment [8]. Biophilic design has the aim to produce a space that can participate in improving the welfare of human life physically and mentally by fostering a positive relationship between humans and nature [4].

This design approach is decisive in the design process that is developed to not dominate each other but mutually balanced. The equilibrium condition of human-natural and human-human relations in mall design will produce an optimal role to restore the mental health of Mall users.

Shopping Mall that designed is formed by magnets that are connected by the circulation of customers. For this reason, the application of mall identity must start with mapping vertical and horizontal zones according to the site context. After the volume of space is formed, the next step will go hand in hand, namely maintaining macro spatial orientation by regulating circulation patterns between zones through the application of proxemics theory and at the same time applying biophilic design patterns as vista and other senses in these spaces.

This Shopping Mall that are designed using the theme "One

with Nature" are expected that visitors can feel the atmosphere of shopping, playing, as well as having fun and chatting or communicating with the forming environment that takes natural elements. This activity is expected to be integrated with nature so as to create an atmosphere (atmosphere) that is able to restore the health of visitors physically and psychologically [4].

4. Design Review

Shopping malls or malls are now no longer just a place to shop, along with the time the mall doubles the function where it becomes a place to perform various activities starting with commercial activities, social, recreation, relaxation, sports and even activities such as worship where many involve among the community from the age of the child children, teenagers, adults and parents. The study of the reasons mall visitors in recent years have tended to find entertainment and interact with others. Entertaining yourself for a moment of daily fatigue and socializing with close people is indeed an inevitable need for urban communities.

This shopping center is an activity that serves the sale and purchase of goods which are divided into 4 types, namely: 1) Convenience Goods, are daily necessities, 2) Specialty goods, are certain types of goods such as antiques and collections 3) Shopping Goods, is goods needed monthly or seasonal 4) Impulse Goods, are goods that are not really needed or sought by visitors.

The developed shopping area consists of various types of retail which has an area of 20 sd. 300m^2. Anchor tenants at the Beachwalk shopping center are H&M, Topman, and Zara, which have an area of 300m^2 of tenants. Besides that, the main facility is a circulation path that connects each dynamic tenant with a width of between 6-10 meters and natural nuances. The developed shopping center is an integrated mall, which is a closed and open shopping center located on Surabaya's Middle East Ring Road (MERR). Supporting facilities are the park area located on the second floor which is usually used by visitors to rest and in the afternoon can be used to enjoy the surabaya river flow in front of the site.

The location of this shopping center is located in the Kedung Baruk area with a position at the crossroads of the MERR road with Jalan Kedung Baruk. This location has a very strategic position from the MERR road area because it is an area with a designation as a trade and business center in East Surabaya which is currently developing quite rapidly. The location also serves residential areas with the classification of middle-upper settlements which are the business buffer zones in the region.

5. Conclusion

Surabaya society which is the second largest metropolitan city in Indonesia has a high level of stressors. Surabaya as the second metropolitan city in Indonesia has mild mental health disorder sufferers which is increasing every year, so it takes a place to prevent and reduce mild mental health disorders. East Surabaya which is the location of this Shopping Center site that has environmental potentials such as industrial centers, offices, and higher education, where activities therein are a source of several causes of stress in urban communities.

Of the six biophilic design elements, several design illustrations are given at the conclusion of this chapter that illustrate some of these design features. All artificial environmental designs, including the ability to apply a biophilic approach that is done in harmony with nature, reflect what René Dubos calls active "wooing of the earth" [3]. This aim, in other words, produces some level of intentional natural improvement to meet human needs, but in a way that expresses displays with the use of the world and natural atmosphere. Thus, human intervention, if practiced with restraint and respect, can avoid arrogance and environmental degradation. With humility and understanding, an effective biophilic design has the potential condition to enrich humanity and nature character.

Zoning arrangement in the site is divided into 3 namely public zones for areas that can be covered by anyone, private zones for areas that can be covered by only a few occupants and service zones for areas that can be covered by activities that support the operation of the system at the mall. Site zoning is determined based on site orientation on the Kedung Baruk Highway, MERR, and Jagir river. The freedom of access and circulation paths of pedestrians and vehicles is also a consideration of site zoning. The difference in zoning on the site is represented by the difference in color in the following diagram.

Structuring the shape of the building mass that adapts to the shape of the site and the flow of the Jagir river that flows in front of the site location is a source of inspiration for the form of the building mass. so that the chosen form of mass is to arrange the shape of the building mass that extends in the direction of the shape of the site with consideration to maximize the area of land and adjusting to local regulations. The composition of the building mass is also formed based on the bending of the functions of activities and spatial concepts of space. The dominant and round shape of the mass is an attempt to express the design theme by taking forms that are easy to interact with nature and the environment.

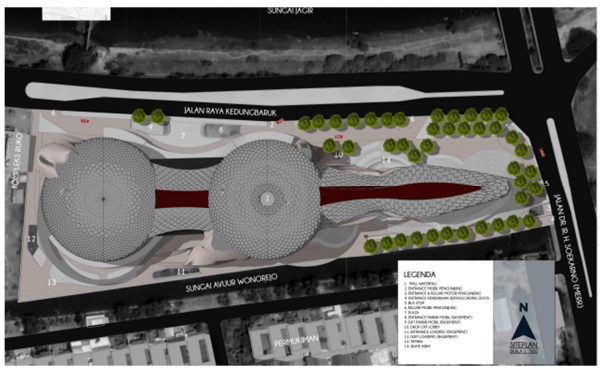

Figure 1. *Blockplan.*

By sector, the elongated mass is divided into three namely the east, center and west sides. The visual opening of the mass

on the top floor is propagated towards the Jagir river to the north and City Garden which is on the ground level. The use of a curved shell shape on the mass is made so that the structure is more efficient and dynamically adjusts the space requirements.

From several applications of changing the shape of the elongated mass in the building can maximize the building area which follows the shape of the site. The composition of the building mass is formed following the program and the concept of spatial volume. The shape of the curvilinear mass is an effort to load efficiency which is analogous to various forms in nature such as air bubbles [17].

The form of mass is the application of the theory of proxemics in the form of inviting space, forming the tendency of visitor behavior to gather towards that one point. The masses are appointed and leave open spaces sheltered as leisure spaces that are open anytime for visitors.

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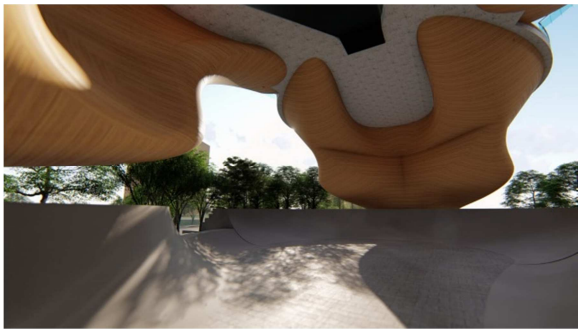

Figure 2. *Building Mass.*

The concept of space in departing from space zoning which is divided into 3 main parts namely:

a) Public zone consisting of atrium, retail, corridor, sky garden.
b) Private zone consisting of management room, office room, staff room.
c) Service zone consisting of ACU room, loading dock, mechanical-electrical, elevator, plumbing, storage, machine room.

Each sequence of visit activities in the Shopping Center has a different volume of space. For magnet malls such as the atrium, plaza and foodcourt have a height of 3 (three) and 4 (four) floors. Indoor Garden, Cinema, and Lobby have a height of 2 floors. Other rooms such as corridors and retail have a height of 1 (one) floor.

This room has a fairly dense vegetation with plant canopy that is wide enough so that the user of the room can feel the comfort of being in that space.

Figure 3. *Atrium and Plaza.*

The exterior appearance of the building uses polished copper-colored panels that are fabricated to the appropriate grid size. Each grid has a different angle so it will produce a dynamic reflection. When the afternoon will be flat forming highlights and shadows that will add depth and an attractive appearance. In the Northern hall of the Shopping Center building there is a public space resilient space that can be used by the community to just sit and enjoy the afternoon after work or college, morning exercise, to the gathering point of the community gathering on weekends. An outdoor space provided for the public which is open 24 hours.

Figure 4. *Open Amphitheater and open space.*

In this design is presented in the space inside and outside, by utilizing waterfalls and plants to increase interaction with the open nature directly or indirectly.

Presenting nature directly and for a moment in a space or place in a building, including the life of plants, water and animals, as well as a gentle breeze, sound, aroma and other natural elements. Common examples include potted plants, flower beds, bird feeders, butterfly gardens, water features, fountains, aquariums, courtyard gardens and green walls or plant roofs. The strongest Nature in the Space experience can be achieved through the creation of direct and meaningful relationships with these natural elements, specifically through diversity, movement and multi-sensory interaction [14].

Figure 5. *Public Space.*

While the use of space application in this building is almost more than 60% of the space used for spaces that are open so that the land used for building mass is only 40% but has a good quality of space.

The outer space directly adjacent to the Kedung Baruk Highway protrudes into 15 meters because it responds to the planned widening of the Kedung Baruk Highway. This public space is equipped with hardscape elements such as pedestrian, artificial lights, fountains that also function as transparent barriers from roads, amphitheater, park benches, children's games, fitness equipment for the public, etc. In addition there is a softscape in the form of native or synthetic garden grass, several shade-titled trees that are equipped with hanging plants, and a row of tropical plants on the side of the seating and pedestrian. Overall the outside space is almost parallel and blends with the mall's ground floor in the hierarchy.

Figure 6. *Common Space.*

Some facilities developed in the design such as amphitheater, skatepark, spaces for children's activities and plazas as a gathering place and interacting with visitors are developed as an area to communicate human-nature or humans to create a positive and comfortable communication atmosphere. By presenting common spaces (communal), presenting natural elements or natural materials greatly supports the formation of a more human and natural atmosphere.

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