P.Issn : 2808-859X
E.Issn : 2809-0853

DESIGN OF A PAINTING ARTS MUSEUM IN MEDAN USING A GREEN ARCHITECTURE CONCEPT APPROACH

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Keywords:
Green Architecture, Museums, Painting

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Abstract: Exhibition activities for works of art, one of which is painting, are generally held in open spaces with certain events that make it uncomfortable for visitors to enjoy existing works of art. Variations in methods and places for exhibitions need to be accommodated to avoid inconvenience to visitors. This painting art museum was built with the aim of providing a new forum for the general public to enjoy famous works of painting and to become a new tourist attraction in the city of Medan. The design method applied is through an appointment process starting from existing problem factors to utilize the space as a tourist activity for works of painting. This painting art museum design idea is proposed to answer these initial problems.

The concept of green architecture is promoted as an initial step towards realizing sustainable living and the environment. Sustainability is an effort to maintain its existence on earth by minimizing damage to nature and the environment. The metaphorical theme of the metamorphosis process in butterflies is that they become eggs, then become caterpillars and then become pupae and then become beautiful butterflies. It is the same as the process of creating painting which has an initial stage of a basic idea which is developed in a sketch and then outlined with several drawing techniques until a beautiful painting is created. The transformation of the metavorous process of butterflies into a painting art museum in the city of Medan is shown through the image or impression of beauty in butterflies and in paintings that support it as a place for painting exhibitions and storage of famous works of painting. It is hoped that this design can become a forum for artists and art lovers as well as for the general public to restore their love for works of art from the work of the younger generation and can become a new tourist attraction in the city of Medan.

INTRODUCTION

An Art Museum is a building that is used as a place to display works of art, generally works of fine art. Art museums can be public or private, the difference is the ownership of the works in the collection itself. Painting is a form of two-dimensional art work which has characteristics in the form of patterns, materials and techniques in the process of painting through emotions and expressions expressed by painters. The art of painting has been known in Indonesia since pre-independence times, now from time to time the art of painting has developed from the pioneering era of modern painting, the era of modernization, the era of contemporary painting, to now in the era of digital painting and technology. There are many works of painting that have been created by the hands of artists which can become national assets and of course become a unique value for a nation's work over time.

Preserve a work of painting that is of national cultural value, by creating an art museum building intended for the public. An art museum which functions to collect, care for, maintain and present and preserve works of art as tourism, exhibitions, study purposes and insights into the art of painting (Aulia, 2021). Indonesia itself has many art museums, but for painting museums there are only six painting museums. Medan is the capital of North Sumatra Province which is the third largest city in Indonesia. Medan itself has eight museums consisting of 4 special objects museums, 3 history museums and 1 military museum. There are no art museums or painting museums in the city of Medan to accommodate the works of painters. So far, works of art have been displayed through events organized by the Medan city government at the North Sumatra state museum and exhibition stands to encourage young artists. However, in the city of Medan there are seven fine art galleries, namely: Mila Accessories, LH Collection, Irjie Calligraphy, and Shady Umbrella Gallery.

LITERATURE REVIEW

Green building is defined as “The practice of creating structures and using environmentally responsible and resource efficient processes throughout the life cycle of a building from siting to design, construction, operations, maintenance, renovation, and deconstruction.” This practice extends and complements classical building design's concerns with economy, utility, durability, and comfort. Green buildings are also known

as “sustainable or 'high performance' buildings”. The components of green buildings according to the EPA are (1) sustainable site development and responsible land use, (2) conservation of materials and resources, (3) energy conservation and atmospheric quality, (4) efficiency, conservation and water management, and (5) indoor environmental air quality (Purwaningsih et al., 2018). Green in the environmental context is also synonymous with sustainability consistently maintained by its users or human occupants (Nuraini & Suprayetno, 2021; Nuraini, 2023)

Terms of Reference(TOR) in the design of this painting museum is to promote the concept of sustainable green architecture. The definition of green architecture is an architectural design concept that focuses on environmentally friendly design with minimal consumption of natural resources and minimal negative impacts on the environment (Erdiono, 2009). Green architecture is an architect's step towards realizing sustainable human life.

The standard for measuring green architecture itself is measured by a certain reference to measure the level of greenness of an area and building design. As for green building standards implemented in Indonesia is the Green Building Council Indonesia (GBCI) which is called Greenship.

Green Building Council Indonesia developed Greenship standard assessment criteria which are classified into six categories. There are two types of criteria, the first is criteria that are classified as prerequisite criteria and the second is included as assessment criteria. Prerequisite criteria exist in each category and must be met before continuing with the evaluation. The assessment criteria are the criteria that exist in each category and the fulfillment of these criteria must be adjusted to the building's capabilities (Damayanti et al., 1985). 7 Criteria consist of one or more than one indicator and the indicator scores are different from each other. The number of assessment factors, or categories, criteria and indicators for green buildings is given in Table 1.

Table 1. Categories in Building Measurements
GBCI Environmentally Friendly

Category	Number of Criteria		Number of indicators	
	Precondition	Evaluation	Indicators	Mark
Site Development/ ASD	2	7	18	16
Energy Efficiency and Conservation/EEC	2	7	15	36
Water Conservation/WAC	0	9	11	20
Material Resources and Cycles/MRC	3	5	9	12
Indoor Health and Comfort/IHC	1	7	14	20
Building Environmental Management/BEM	1	5	9	13
total	9	40	76	117

Source: (Purwaningsih et al., 2018)

METHODS

The research method applied is a qualitative and exploratory approach, where this research uses research that tends to use analysis and theoretical basis or aspects regarding the Green Architecture concept approach in research which aims at implementing the design according to the type of building to be designed.

Implementation is carried out in several stages in order to maximize success in planning the design of this Museu Space as follows: (1). Collect site data by conducting direct surveys at the site location, in order to obtain important information at the location. Data in the form of land area, climate, utilities, vegetation, conditions around the site, and so on. (2). After the data is collected, data analysis is carried out which aims to apply the initial concept idea by making improvements to the site. (3). The next step is to prepare a space program by: adjusting the required space requirements. (4). Starting to determine the concept of space formation using the green architecture concept approach, up to the drawing stage. (5). Evaluation, implementing several design proposals to compare against the desired program development criteria. (5). Action, is a result of the final design with the output of working drawings from the final design (Nuraini & Sudrajat, 2010).

RESULT AND DISCUSSION

Design Location

The design of the Painting Arts Museum in the city of Medan is located on Ring Road, Medan Sunggal District, Medan City. The location on the main road makes it a strategic place for users to access and exit the museum. The site location is in a high density residential area (R-1). Where High Density Housing KDB is 80% with a

maximum KLB of 3.2, a minimum KDH of 15%, a maximum building height of 4 floors/18 M. For row buildings, the height of a 4-story building is only permitted at the back or a maximum of half the length of the building (City Regional Government Medan, 2015).

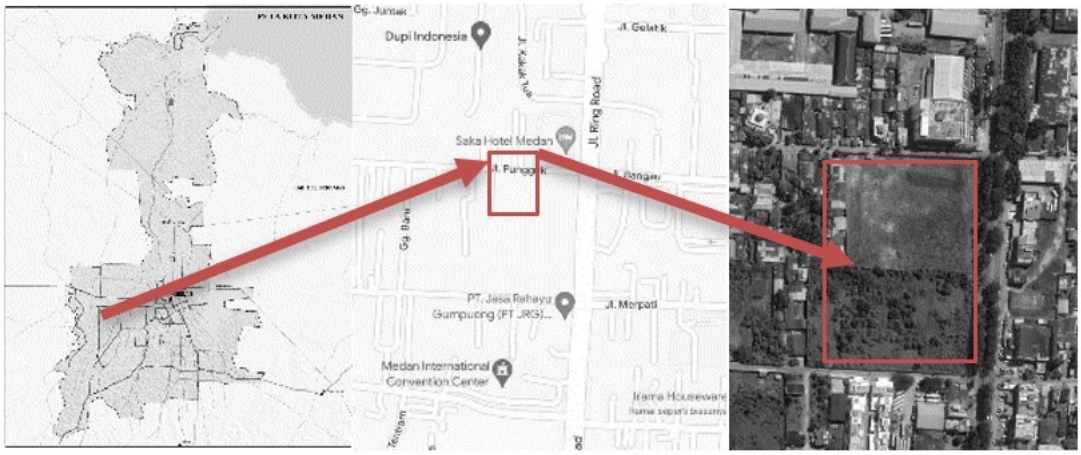

Figure 1. Design location
(Source: Processed by the author based on Google Maps)

The aim of this design is to provide storage facilities for beautiful works of written art and will become a forum for an exhibition of popular works of written art. The design of the Painting Museum can be more than an exhibition function, it can also be an educational insight into works of art for every group because everyone can create.

Primary function is the dominant function which consists of recreational function and commercial function. The recreation function is the main function of designing the Culinary Tourism Center on the banks of the Kapuas River, Pontianak City, which will provide facilities and tourist needs for various culinary delights. Tourists can eat food while enjoying the view on the river bank. This recreational function also takes advantage of the natural atmosphere on the banks of the Kapuas river by creating public spaces and green open spaces that tourists can enjoy to relax.

The commercial function is a function that supports buying and selling interactions between traders and tourists. The commercial function is to provide a platform for local communities (street vendors), provide space for restaurant owners on a rental basis and provide space for typical Pontianak City food. The commercial function is not only culinary based, but also provides souvenir shop space for tourists to shop.

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a, Secondary Functions

Secondary functions are functions that arise as a result of activities from primary functions that are used to support main activities. Secondary functions consist of educational functions, management functions and worship functions. The educational function in design is available to support activities that take place in the building. The educational function can be a function that provides the benefit of teaching about local culture related to culinary, both visually, practically and theoretically. The management function is an institution that manages the ongoing activities in designing culinary tourism centers in terms of accommodation, administration and building maintenance. The worship function is a function that provides a place of worship in the form of a prayer room for tourists to worship.

Conceptual Foundations

The conceptual basis in this design is the basis or explanation of the source of the design concept which includes analysis such as function, form, structure, utility and circulation. In the initial stage, the analysis carried out was to identify the function of the painting museum. The design plan has 4 main functions, namely as an exhibition of works of art, storage and maintenance of works of art, learning facilities, and educational tourism. When this function targets all groups, including the general public, artists and students in education. Another function of the painting museum is a commercial function which is accommodated by showing exhibitions of famous painting galleries.

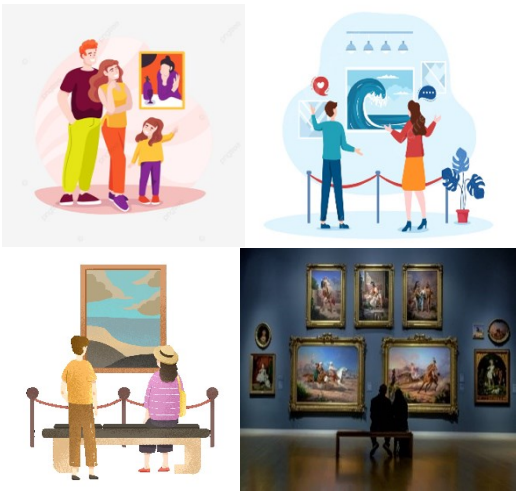

Figure 2. Concept of activities in a painting museum
(Source: id.pngtree.com)

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The conceptual basis for the museum's form comes from the chosen theme approach, namely Metaphor with the theme "Beauty". The application of metaphors in architectural design is one way to embody architectural creativity, by making it possible to see an architectural work from different points of view, to be able to influence the emergence of various interpretations that influence something in the design, and to produce more expressive architecture (Jeppis Maulana, 2020). The choice of this theme is related to the title of the design object, namely museum, painting. The theme chosen was originally adopted from the nature and shape of the butterfly itself. Butterflies are depicted as a form of beauty from the colorful courtship of their bodies. To achieve its beauty, butterflies go through a process of changing shape called metáfora, which starts from a caterpillar to a chrysalis and then to a butterfly. Likewise, it is associated with the beauty of a painting, which starts from a sketch, then touches with color and ends up creating a beautiful painting. So the building concept was designed to be inspired by the shape of a butterfly. A butterfly consists of pairs of membrane wings covered in small scales that overlap like a shingle roof.

The concept of vegetation and pedestrian paths was formed from the butterfly philosophy where butterflies can fly freely without any obstacles. So the pedestrian path is formed without a pattern but is very comfortable as if visitors can explore widely. Apart from wings, butterflies also have antennas that are close to their eyes. These antennas are the basic idea for forming a fountain right at the front of the building. The butterfly's active flight movements appear full of enthusiasm, easily changing flight directions up, down, to the right, to the left or even sideways. When applied to the design of outdoor spaces and vegetation, the designer wants to display a facade that has a shape that is not rigid, abstract and does not have a clear shape, such as the direction of movement of a butterfly that does not have a clear or free direction.

Figure 3. Shape transformation process

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Design of the Museum of Painting

The painting museum which functions as an exhibition center for works of painting was built in the city center of the educational area with a land area of 2.83 ha. The museum is designed to follow the contours of the land, where this design is intended to maintain its main function as an educational area.

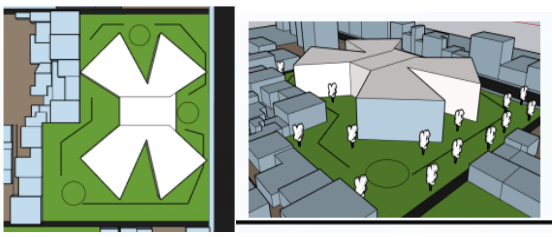

Figure 4. Site Plan of The Museum

Regarding the existing circulation and utilities of the site, the museum design planning location is surrounded by the main circulation and pedestrians on each side of the site. Sewage drainage channels on each side of the site with access routes on each side of the site area also maintain the existing site as a good and proper utility route arrangement, as can be shown in Figure 5.

Figure 5. Circulation and existing

The painting museum is designed to accommodate learning activities, art exhibitions and socializing so that the space is designed to be open. Art theater functions as an art performance and other events as a means of ceremonies, a medium of expression, entertainment and an educational medium. In the form of traditional dances, singing traditional songs, etc., which will be held on big days. It can also be a place for art competitions held from universities to school level.

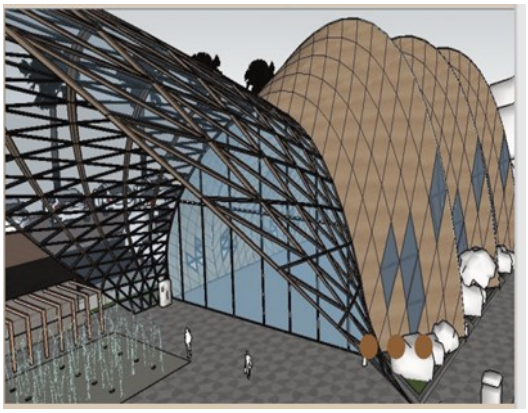

Figure 6. Theater Floor Plan

Access for users to get to each room according to the user's needs can be done via pedestrians, but for access to the museum, a ramp or inclined plane is provided as a substitute for stairs to make it easier for disabled users. Exhibition stands on the side of the road are also made to attract the interest of road users passing by, as objects of interest to onlookers. Drop Off is a supporting facility for car users who drop off passengers, where currently many people are using online vehicles. The toilets/WCs are located outside the main building to maintain comfort in the museum and theater rooms shown in pictures 7 and 8.

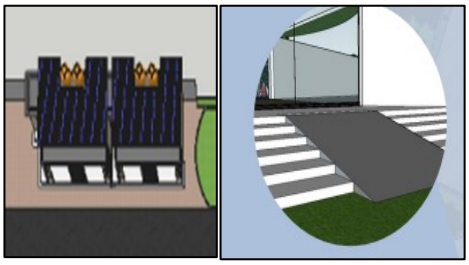

Figure 7. Toilet & Ram

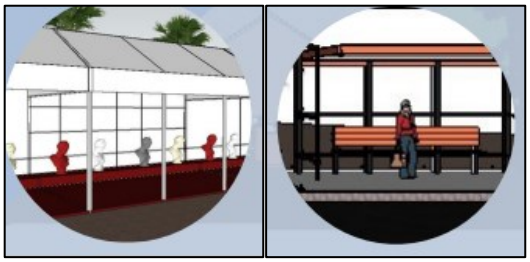

Figure 8. Exhibition Stand & Drop Off

The main structure of the arts theater is dominated by steel structures. The roof frame construction uses steel pipes with a combination of acrylic and tent covering materials. The barriers and safeguards for the sides of the theater use tempered glass. This structure was chosen because it has better form flexibility and strong structural resistance, resulting in a museum building that looks more modern and is acceptable to millennials. The supporting structure itself uses a space frame structure, as shown in figure 9. The

roof of this arts theater terrace is made of light steel with a slightly curved model and uses glass as a roof.

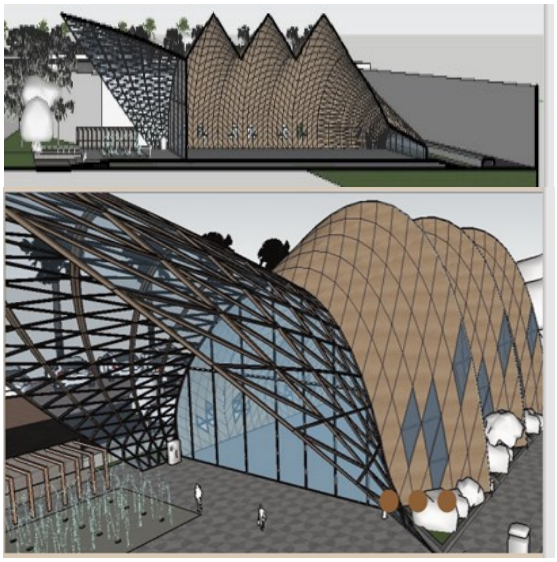

Figure 9. Theater Roof Plan

The supporting facilities are in the form of seating which can be used as a place to rest and sit and relax temporarily, which uses a tent membrane which functions as a wide-spanning shade. The tent membrane material is supported by a cable frame structure and support poles. The design using modular materials and local materials is an application of source categories and material cycles which can be seen in Figure 10.

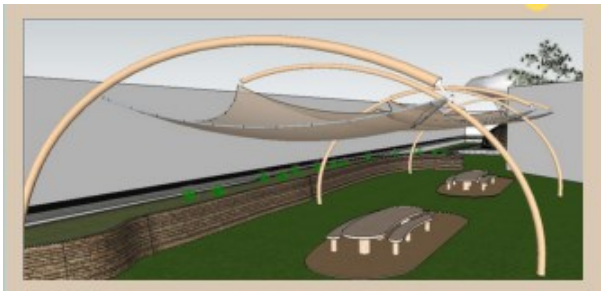

Figure 10. Use of tent membrane and cable frame structure

Saving energy sources can be done by minimizing the use of artificial energy in buildings and making the building utilize the surrounding natural resources which include, minimizing direct solar radiation, avoiding the building facing the sun directly, maximizing air circulation in the building, utilizing sunlight that is not exposed to

buildings. as lighting, the exterior design of the building, the use of color and texture on the outside of the building, and using the land as a parking area can be seen in the section and view of the building in Figure 11.

Figure 11. View and interior of the building

CONCLUSION

The design of the Painting Arts Museum with a green architecture theme is realized in the form of this metaphorical design which is transformed from the shape of a butterfly. The shape transformation that occurs is based on the metamorphosis process that occurs in the butterfly in the space which represents the structural design as a whole (as a whole) in the shape design and roof design. The overall structural design is realized in the form of the physical appearance of the building which metaphorically symbolizes the beauty and process of painting to create a beautiful painting. The design in the screening symbolizes an egg, then the garden symbolizes the development of the egg into a caterpillar and a support pillar shows the process of becoming a cocoon, then the butterfly-shaped building is the final stage of the metavorous process.

The design of this painting museum is planned to cover art activities in the form of art theater, art exhibitions, storage of works of art, and an educational place as a means of learning, relaxing and socializing. Apart from that, this facility can become a new variation of art tourism destination for the general public in the city of Medan. This painting museum also has a commercial function so it can become a new source of income for the management. The addition of new functions in public spaces could become the new face of the city of Medan.

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