



Designing Pocket Park at Dense Building Area with Micro Climate Approach

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Abstract: Pocket parks can create new public spaces without needing large-scale redevelopment, usually smaller than one hectare and created in densely developed urban areas. This research aims to improve the community's standard of living, creating a more comfortable environment for humans and the environment. This research focuses on the design of pocket parks in dense building areas with the concept of microclimate. Data is collected from field observations. The design results are expected to provide an understanding of the role of pocket parks in dense neighborhoods and guide future park planning and management.

Keywords: Pocket Park, Dense Building, Microclimate.

Introduction

The development of Medan City has grown significantly, from the construction of real estate and improving the physical buildings of the city to the high-rise buildings in the middle of the town. However, with rapid development, the city's problems are increasingly complex. The city is the center of all human endeavors; the quality of the city environment is decreasing daily, including the lack of micro-climate due to the lack of green open space in urban areas and the increasing population growth that will affect the comfort of humans living there. In the middle of a dense city with towering buildings, there are some areas where the heat and the hustle and bustle of vehicle density are stifling. (Voogt, 2002; Wisdianti et al., 2023). The atmosphere here differs from other regions because of the heat and congestion in dense buildings (Humaida et al., 2016; Tjasyono, 1987; Trancik, 1986).

Urban communities with dense routine activities every day will experience boredom (Bagiounk, 2024; Dong, 2024; Y. Wang, 2024). Hence, they need a place different from the work environment as a form of refreshing outside their daily routines (Geng, 2024; Plaku, 2024; Sun, 2024). In Medan City, several parks and pedestrians are expected to play a role as public spaces. Still, they cannot play a maximum role due to the lack of facilities or the inconvenience of doing activities in these public spaces (Rosso, 2024; X. Wang, 2024; Xu, 2024). Public spaces in a city aim to provide locations that urban communities can use to carry out social activities comfortably (Kustianingrum, 2013).

In densely built urban areas, pocket parks are small green open spaces often built within dense urban areas (Blake, 2005; Deming & Swaffield, 2013; Faraci, 1967). The main challenge in designing pocket parks is to create a comfortable and sustainable environment for city residents (Fitri et al., 2023; Junior & North, 1969; Lidy, 2006). One approach that can be taken is to utilize the concept of microclimate in the design of pocket parks (Dong, 2023; Peng, 2023). This concept refers to creating an optimal microenvironment within a limited area, such as a pocket park, including air temperature, humidity, and air quality (Ghamsary, 2023; Ma, 2023; Yang, 2023). Despite their small size, pocket parks have great potential to improve the quality of life of urban residents. They can be green oases amid urban buildings, where residents can relax and establish social connections. They can also enhance the visual beauty of the city, reduce air pollution, and provide habitat for wildlife.

The main challenge in designing pocket parks is to create a comfortable and sustainable environment for city residents. One approach that can be taken is to utilize the concept of microclimate. This concept includes creating an optimal microenvironment, including air temperature, humidity, and air quality.

The micro-climate concept in pocket parks aims to create a cooler and more comfortable environment amid hot and dense urban areas. By creating optimal microclimate conditions, pocket parks can be an attractive place for outdoor activities for city residents and provide ecological benefits such as increased biodiversity and carbon dioxide absorption. However, in a densely built-up area, designing a pocket park with the concept of microclimate requires an integrated approach. Factors such as orientation, material use, vegetation layout, and air circulation arrangements must be considered to achieve optimal micro conditions in the pocket park.

In this context, research on designing pocket parks with the concept of microclimate is important to identify effective strategies for creating a comfortable and sustainable microenvironment amid densely built urban areas. With a better understanding of the factors that influence microclimate and how they can be utilized in design, it is hoped that pocket parks can be developed to provide maximum benefits to city residents and the environment. The main objective of this research is to create a more comfortable environment for humans or a more optimal environment for plant growth and development in densely built-up areas.

Methodology

This research uses observation and discourse analysis methods (Deming & Swaffield, 2013). The object of this research is in a densely built-up area, making the basis of this research to get a concept solution in terms of landscape architecture that can improve the quality of life in the area.

The research process begins with data collection. Observations at the research site focused on the potential of buildings that can be freed and capture wind and sunlight. Mapping to determine the type of land use on the site can show the survey results effectively (Humaida, Prasetyo, & Rushayati, 2016).

Data from related scientific research becomes material for the analysis stage. Discourse analysis is a research method in landscape architecture that analyzes through speech or writing, such as scientific publications on related topics (Deming & Swaffield, 2013). The approach to this research was carried out by sorting references regarding research that only focused on the principles of pocket parks.

On the other hand, an evaluation criteria process performs an elimination method using survey maps as material for analysis (Lidy, 2006). Observation data during the survey becomes material for analyzing location criteria suitable for application as a pocket park. Elimination means prioritizing and analyzing data, which is the primary material in this research focus.

In the design of research activities, the expected results of the analysis process are the benefits of the proposed placement of pocket parks in this area. The second result is the location map of the proposed pocket park.

The research was conducted for over a month, from March 22 to April 30, 2024, by taking the location between Jalan Semarang-Jalan Surabaya-Jalan Selat Panjang Medan Kota, Medan City, North Sumatra. This location was chosen because it is one of the blocks in Medan City, which is a dense area of buildings and many activities at that location.

Result and Discussion

A. Recommended Location Points



Figure 1. Plan of the Recommended Location Point
Source: Personal documentation

After conducting a location survey of the field, several recommendation points were found to be the most likely for pocket park design. Apart from being flanked by two tall buildings, it contributes to the most air pollution. The arrow in the picture above shows the direction of the wind, which is the area that can capture the most wind. The design that will be designed for these 2 points is typical. Where the design needs of points 1 and 2 are the same, the placement is different.

1. Location Point 1

The first location point is between Porsea Street and Surabaya Street. This shopping area consists of three floors, no resting area, no parking area, and no parking at all within a radius of 1000 m². By freeing up three buildings in front of the intersection of Jalan Padang Sidempuan, Jalan Porsea can be penetrated as a pocket park design area. This area was chosen because Padang Sideman Road is a path that can capture the wind channeled into the pocket park area.



Figure 2. Recommended Location Point 1
Source: Personal documentation

2. Location Point 2

The second location point is between Jalan Selat Panjang and Jalan Cirebon. Jalan Selat Panjang is a road that functions as a restaurant or street vendor. With narrow road conditions and tall buildings flanking, the air becomes uncomfortable because of the restaurant's kitchen. There is no waiting area for takeaway buyers and no parking area. Therefore, the author proposes freeing some buildings that are not heritage to function as pocket park areas.



Figure 3. Recommended Location Point 2

Source: Personal documentation

B. Design

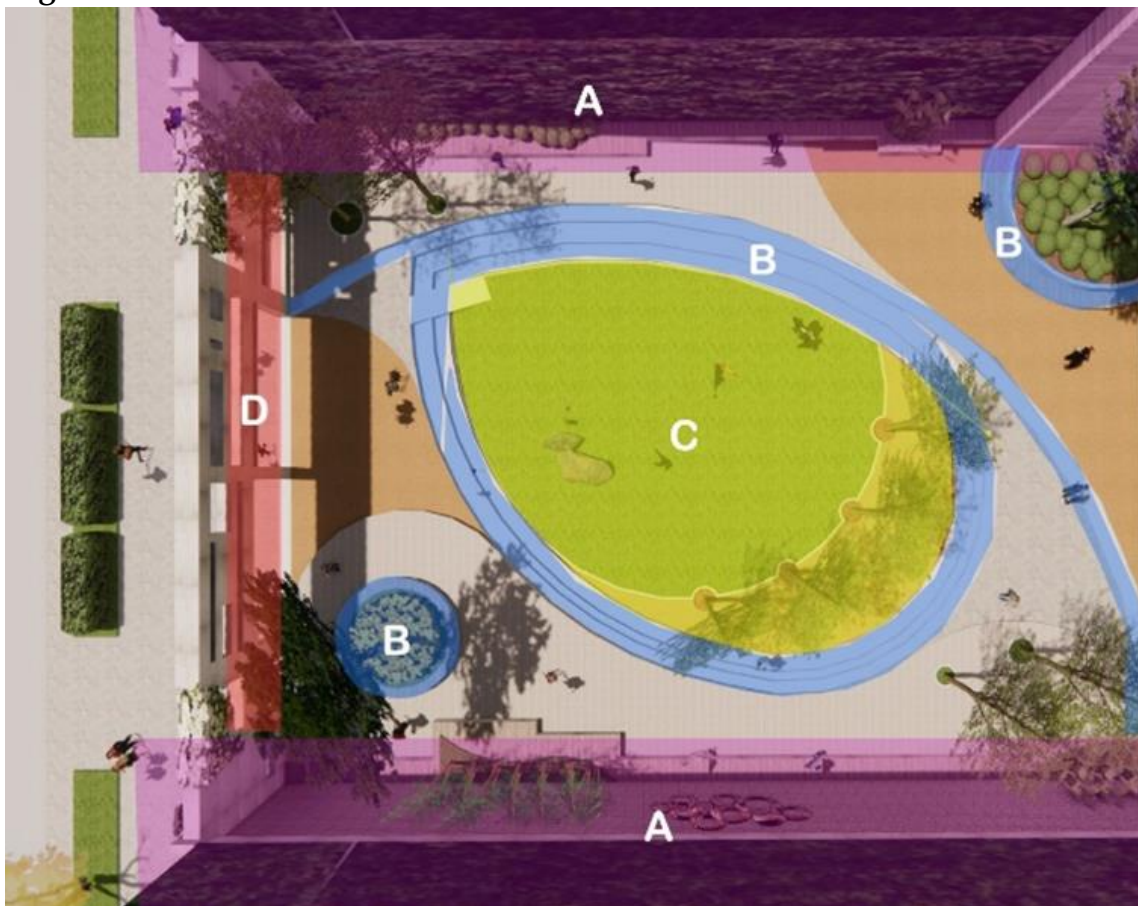


Figure 4. Site Plan

Source: Personal documentation

Description:

A: Vertical Garden Area

B: Sitting Area

C: Sports Area

D: Park lights on the roadside and lights inside the park follow the circumference of the oval in the sports section.

1. Vertical garden

On the side where there is a building, it is designed by adding a vertical garden; in addition to reducing air pollution, the vertical garden also withstands direct sunlight exposure to the building and soundproofing.



Figure 5. Vertical Garden

Source: Personal documentation

2. Seating area

There are seating areas in several corners of the park. This area is made to socialize with the surrounding community and visitors or workers just taking a lunch break or reading a book in the park. Several types of trees and shrubs are used as shade, reduce air pollution, and increase oxygen supply.



Figure 6. Sitting Area

Source: Personal documentation

3. Sports area

To maximize the design, the perimeter of the garden area, which functions as a seat, is deliberately made wider so that it can also function as a sports area, even if it is just running around the people sitting in the middle or on the side of the road.

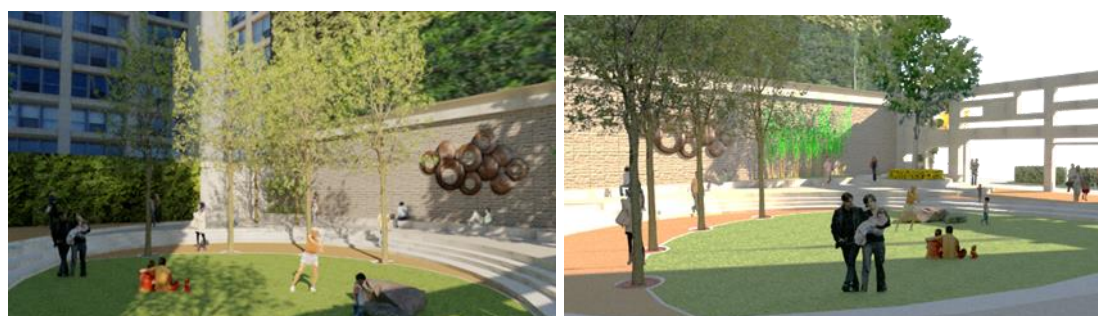


Figure 7. Sports Area
Source: Personal Documentation

4. Garden lights

Garden lights that function as lighting. Since the location of the recommendation point is a place to eat or street vendors where some traders do not have dine-in facilities, buyers can eat in the park during the day or night.



Figure 8. Garden Lights
Source: Personal documentation

Conclusion

Based on the analysis and discussion that has been done, it can be concluded that this city is responsible for creating comfort amid the dense city that we have made. Pocket Park is a social place that offers the impact of maintaining the ecosystem of life in urban areas. Pocket Park is a mini green open space that is used as a place to meet or socialize, a place where people can stop and rest.

Based on the above conclusions, here are suggestions that can be used as attention for future improvements. The author hopes that the pocket park design can be considered and realized as a micro park in the middle of a dense building by considering locations that do not disturb the environment or hinder public transportation.

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