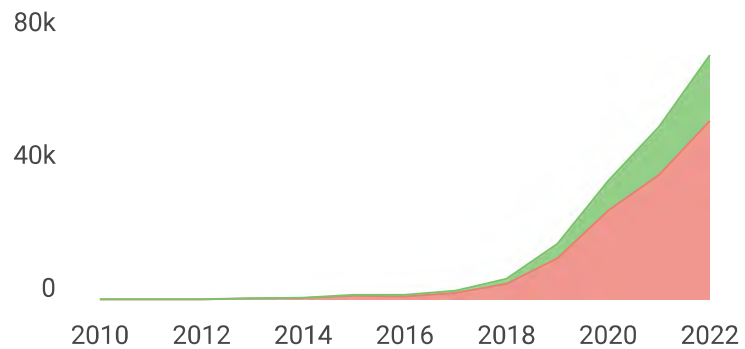


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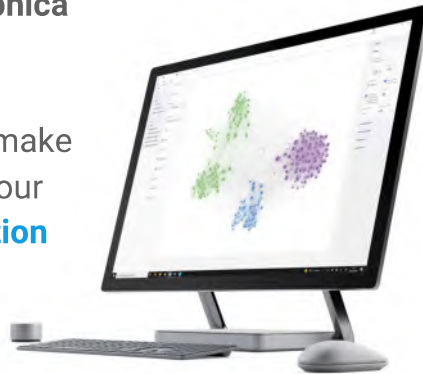
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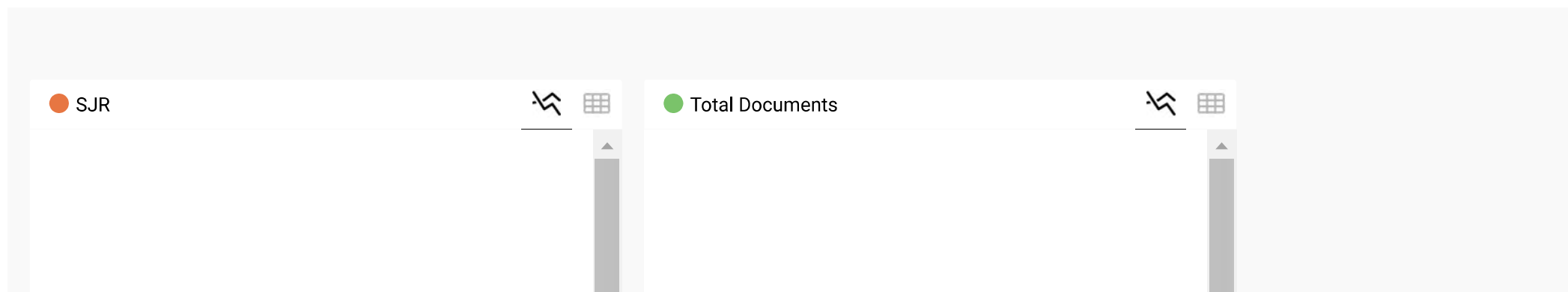
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Pedestrian path landscape design concepts on Kyai Tapa Street, Grogol, West Jakarta, through urban landscape design approach

R Fauzi*, N I Simangunsong, R Fitri and D Danniswari

Department of Landscape Architecture, Faculty of Landscape Architecture and Environmental Technology, Universitas Trisakti, Jakarta, Indonesia 11440

*reza.fauzi@trisakti.ac.id

Abstract. An urban area offers a wide range of indoor and outdoor activities. The pedestrian area on Kyai Tapa Street, Grogol includes a community-used pedestrian path. It can become an open space in the pedestrian area that serves as a means of enhancing and facilitating activities for the community, particularly pedestrians. The phenomenon on the Kyai Tapa Street, Grogol pedestrian path requires a more explicit concept in the design, so the existing pedestrian path cannot improve the visual quality. It cannot be a comfortable place for pedestrians to pass. Therefore, identifying and evaluating the existing pedestrian path design concepts is necessary. This research study aimed to identify and evaluate the concept of pedestrian paths following the existing conditions using primary and secondary data collection methods through observation, surveys, and literature studies. Factors supporting the comfort of pedestrians are related to the suitability of the path's shape, the dimensionally design concept, and the elements built around the pedestrian path. The pedestrian path on Kyai Tapa Street, Grogol becomes a link between several places around the pedestrian path area. Therefore, it is necessary to make a clear design concept for pedestrian paths so that the pedestrian path area can improve visual quality and become a comfortable facility for pedestrians.

1. Introduction

Public transportation infrastructure must be able to serve every user. Pedestrian paths as a part of the transportation infrastructure need to be considered because walking is one part of transportation activities [1]. Walking is an easy mode of transportation to meet the needs of community movement, especially pedestrians. By walking, pedestrians have a great opportunity to interact with the community and the surrounding environment. Walking activities can be done by all groups of people from young, elderly, and disabled people.

A pedestrian path is a form of architecture that has a certain shape and provides benefits as space. According to the regulation by The Ministry of Public Works and Housing [2], the minimum effective width of pedestrian space is 60 cm plus 15 cm to sway without carrying goods, so that the minimum total requirement for two pedestrians is 150 cm. The common problems of pedestrian paths that occur nowadays are that they do not accommodate pedestrian activities and cannot improve the visual quality of the surrounding area [3]. Due to these problems, existing pedestrian paths cannot become the image of the city.

Kyai Tapa Street is a major road located in Grogol, West Jakarta. This road is crossed by various public transportation, including inner city buses, such as Trans Jakarta, and inter-provincial buses from Grogol Bus Terminal. Considering the high traffic and large number of users on this road, having a



comfortable pedestrian path becomes essential. Pedestrian path development is needed to increase the potential and reduce existing problems on the pedestrian path so that the pedestrian path on Kyai Tapa Street can be a comfortable and visually good open space for pedestrians. Planned pedestrian paths are formed from pedestrian paths that have been planned to connect one place to another that is needed by pedestrians [4]. Furthermore, it can be an active interaction space for the community, especially pedestrians. Eventually, the road can be a strong image of the city.

The application of Urban Landscape Design on pedestrian paths can improve the visual quality of pedestrian paths. Urban landscapes are currently considered important for creating a sustainable urban environment. Although landscape is often used to describe the natural environment, it can influence people's culture and lifestyle. Therefore, the urban landscape is not only about green spaces but also consists of various land uses, one of which is pedestrian pathways.

The objective of this research is to identify and to evaluate the existing design of the pedestrian path at Kyai Tapa Street. The evaluation result is used to create an appropriate urban landscape design for the pedestrian path at Kyai Tapa Street.

2. Methods

2.1. Study area

The location of this research is Kyai Tapa Street, Grogol, West Jakarta. Specifically, this research is conducted on two 200-meter-long pedestrian paths of Kyai Tapa Street. The pedestrian paths consist of two sides, which are side A and side B. The study area is shown in Figure 1.



Figure 1. Study area [13]
(Google Earth, 2023)

2.2. Data collection and analysis

Primary data, such as field measurements and photos, are collected through field observation. Secondary data, such as study area map and policies related to the study area, are obtained through Google Maps and literature studies, respectively. The data analysis process consists of study area evaluation by comparing the existing condition of the pedestrian paths and the ideal condition based on literature studies.

The most important thing in an urban design is the arrangement and arrangement of circulation paths so that all components can be accessed properly [5]. A study [6] stated we can increase the quantity of active movement by improving access to public transit. Pedestrian path physically is an architectural form that has a certain shape. From the theory of form, space, and architectural arrangement proposed by [7], form (building architecture) is composed of visual characteristics of its shape which can be described as follows.

- a. Form, which is the result of a certain configuration of the surfaces and sides of a shape, is the main characteristic of constructive form.
- b. Dimensions, regarding width, length, and height, where these dimensions also determine proportions.

c. Color, the intensity and tone of the surface of a shape. Color is the most striking attribute that distinguishes a shape from its environment. Color also affects the visual weight of a shape.

Based on the literature, the evaluated variables are pedestrian path physical condition and pedestrian path users' mobility. The sub variables and the indicators for evaluation are shown in Table 1.

Table 1. Variables for pedestrian path evaluation.

Variable	Sub Variable	Indicator
Pedestrian Path Condition	a. Walkway width	a. Walkway width standards
	b. Walkway pavement elements	b. Walkway floor comfort
	c. Walkway vegetation	c. Function of trees and shrubs
	d. Supporting elements	d. Lights, trash cans, guardrails, planter boxes
Pedestrian Path Users	Pedestrian path user movement	Pedestrian path user activity

3. Results and Discussions

The first section of research results describes and discusses the existing condition of the study area. Meanwhile, the second section proposes the landscape design concept for the study area based on the analysis in the first section.

3.1. Existing conditions of the study area

Figure 2 shows the existing condition of side A based on the observation. Based on the current shape and condition, there are several things that meet and do not meet the standard criteria for pedestrian paths. When evaluating the width of the pedestrian path, the minimum effective width of pedestrian space for two pedestrians is 150 cm [7]. Therefore, the pedestrian path on Kyai Tapa Street has met the standard because it has a width of ± 2.5 m or 250 cm.



Figure 2. Existing condition of the study area.



Figure 3. Existing condition of the study area.

Figure 3 shows the existing condition of the observation location on side B. The pedestrian path on side B is ± 2 m wide, which means it meets the pedestrian path standards. However, side A pedestrian paths do not have complementary elements that meet the standards and side B pedestrian paths have complementary elements but do not function properly. Furthermore, the presence of informal sector in this area greatly interferes with the movement of pedestrians. According to the Guidelines for Building Construction Materials and Civil Engineering, Technical Planning of Pedestrian Facilities, by The Ministry of Public Works and Housing in 2018, pedestrian paths must have complementary or supporting equipment, including shelter, lights, safety fences, protective/shading plants, roadside vegetation, seats, trash bins, bollards, and guideways for users with disability.

To form a good pedestrian path that can function optimally for community activities, we must consider social and ecological aspects. According to [8], some of the environmental and ecological benefits of the urban landscape are as follows.

- a. Urban green spaces can provide flora and fauna with a habitat for supportive living
- b. Creating ecological corridors and supporting the movement of living
- c. Vegetation cover helps to improve the microclimate of urban areas
- d. Vegetation cover increases humidity and reduces heat gain
- e. Vegetation helps reduce carbon emission levels in urban areas
- f. Vegetation cover also filters dust in the air
- g. Green spaces absorb and reduce noise caused by urban activities
- h. Green spaces can prevent flooding in urban areas
- i. Vegetation can also function as a wind breaker

In addition, a good pedestrian path also requires good complementary elements to improve the quality of a good urban environment. Figure 4 shows that the existing complementary elements do not function optimally, and the existing vegetation arrangement does not have a clear design concept so that it cannot improve the quality of the environment, both visually and ecologically. The arrangement of existing pavement materials on the pedestrian path on Kyai Tapa Street is also unclear in concept, finishing and the use of material types that are not well organized which then creates an unpleasant atmosphere for the pedestrian path area.



Figure 4. Existing condition of the study area.

Pedestrian paths could be a physical element that shape the city image if they are organized and have a good design concept. Physical elements of a city have the potential to add value to the city. Therefore, they need to be carefully designed and improved. Increased community activity should be proportional to the availability of public facilities and infrastructure because it influences people's comfort. Areas with varied land uses, especially those that are connected to main roads and public transportation facilities provide greater opportunities for city residents to live, work, play, exercise, shop, and fulfill other needs on foot [9].

The arrangement of plants on the pedestrian path can also add comfort for pedestrians. However, if the arrangement is not good, it will reduce the visual quality of the pedestrian path. The most interesting compositions in a plant arrangement are generally those that sufficiently combine enough variation of plants to create a harmonious unity [10].

3.2. Design recommendation

To maximize the function and aesthetics of pedestrian paths, in addition to meeting standards, pedestrian paths must also have a good landscape arrangement that is in accordance with urban conditions. In today's modern era, pedestrian paths are a very important element in urban planning. Apart from providing dedicated space for pedestrians, pedestrian paths also provide safety and comfort for pedestrians crossing the path. Therefore, pedestrian space plays a major role in creating a humanized environment [11]. The Urban Landscape Design approach needs to be applied in the arrangement of pedestrian paths. A study [12] reveals that urban landscape serves as a picture of the city's socio-cultural environment. Therefore, the arrangement of pedestrian paths needs to go through the Urban Landscape Design approach in order to make the pedestrian path an area that can improve the quality of the urban environment and visuals.

Design adjustments to urban conditions will greatly impact urban conditions. There are aspects that need to be considered in landscaping urban pedestrian paths, which are the following.

- a. Aesthetics: The aesthetics of urban landscapes and people's daily lives are closely intertwined in that they can create imagery for active urban life.
- b. Function: A good landscape arrangement will provide good proportion, accessibility, flexibility, naturalness, and visual aspects to an area.
- c. Identity: The urban landscape can show the lifestyle of the people, their interactions, and their activities. It can also influence the climate, and the economy of the community.

- d. Ecology: From the view of landscape ecology, the city is a set of ecosystems that have structures, functions formed from patches, corridors, and matrix.

Figure 5, 6, and 7 show the design recommendations with considerations of the existing problems and the ideal conditions for pedestrian paths. Considering that the existing bollards placement allow motor vehicles to pass through the path, we recommend a bollard design that prohibits motor vehicles to pass through. We also recommend adding more trees or shelter to give shade to pedestrians. Additionally, using ornamental buffering plants may create a pleasant atmosphere for pedestrians. Adding guiding blocks for people with disabilities is also a must to create an ideal pedestrian path. Other complementary elements, such as benches and trash cans also need to be considered to avoid misusages by people.

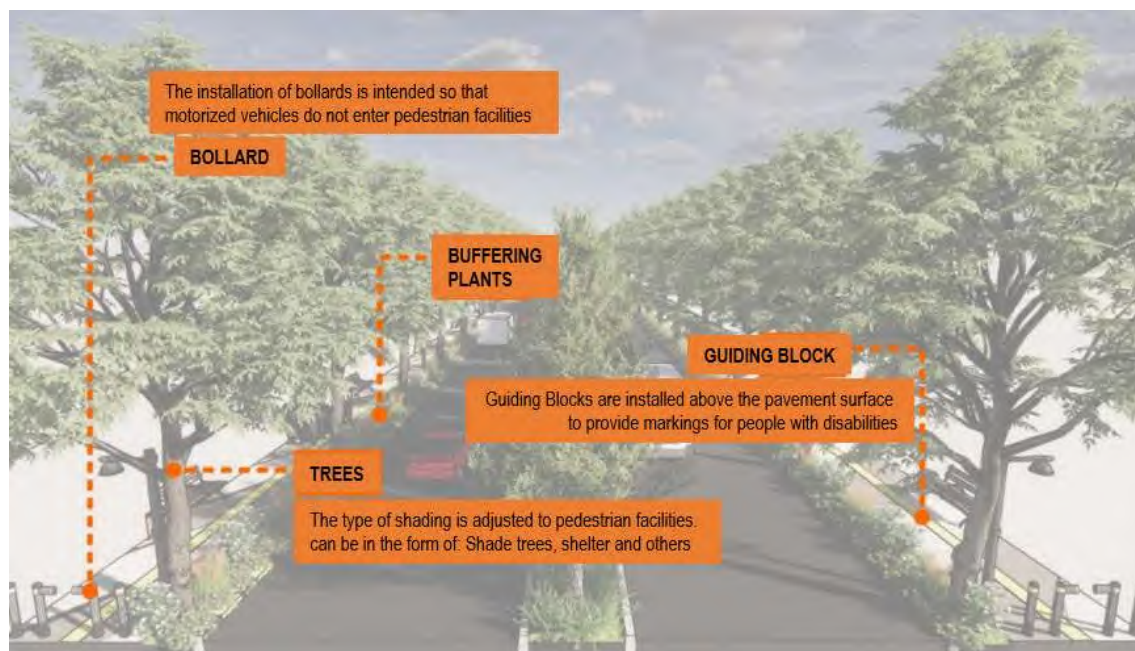


Figure 5. Typical pedestrian path design.

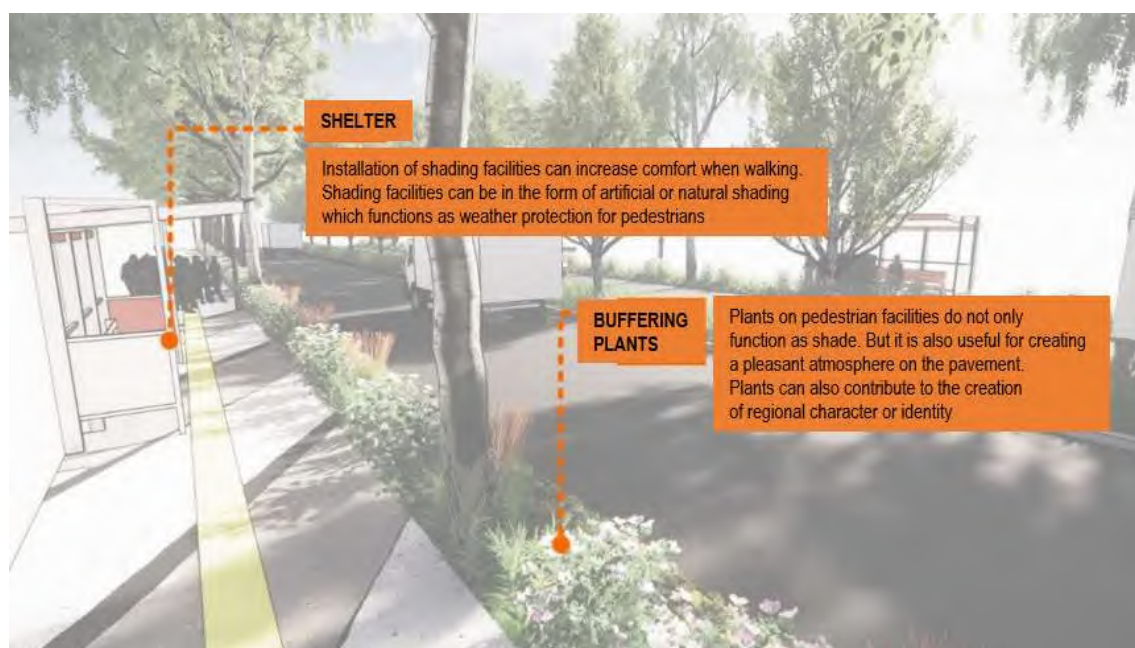


Figure 6. Typical pedestrian path design.



Figure 7. Typical pedestrian path design.

A good pedestrian arrangement will improve the quality of the pedestrian path. The function of the pedestrian path will also be maximized as a good plant arrangement will function as a space divider, direction, ameliorate the microclimate, and improve the visual quality of the area. To make a good pedestrian path that functions optimally for the entire community, complementary elements on the pedestrian path are important factors that must be considered in the arrangement of pedestrian paths, including as benches, guideways, trash cans, lights, bollards, and shelters. With a good arrangement, it will also minimize informal sector activities that take place in the pedestrian path area.

4. Conclusion

According to the results of this study, some aspects of the pedestrian path on Kyai Tapa Street, Grogol, West Jakarta, are still not in accordance with the criteria for an ideal pedestrian path. The existence of several things that do not meet the standards and principles of landscape design makes the pedestrian path not maximized both functionally and visually.

The Urban Landscape Design approach is needed in the arrangement of pedestrian paths in urban areas. Aesthetics, function, identity, and ecology are important factors in the development of pedestrian path arrangements in urban areas. The arrangement of softscape and hardscape on the pedestrian path at Kyai Tapa Street is not maximized and rearrangement of existing elements on the pedestrian path is necessary. Recommended designs of pedestrian paths that are comfortable and have aesthetic value according to the design principles are presented in this study.

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Reza Fauzi^{1*}, Nur Intan Simangunsong¹, Rini Fitri¹, Dibyanti Danniswari¹

¹ Department of Landscape Architecture, Faculty of Landscape Architecture and Environmental Technology, Universitas Trisakti, Jakarta, Indonesia 11440

*Corresponding author: reza.fauzi@trisakti.ac.id

Abstract. An urban area offers a wide range of indoor and outdoor activities. The pedestrian area on Jalan Kyai Tapa Grogol includes a community-used pedestrian path. It can become an open space in the pedestrian area that serves as a means of enhancing and facilitating activities for the community, particularly pedestrians. The phenomenon on the Jalan Kyai Tapa Grogol pedestrian path requires a more explicit concept in the design, so the existing pedestrian path cannot improve the visual quality. It cannot be a comfortable place for pedestrians to pass. Therefore, identifying and evaluating the existing pedestrian path design concepts is necessary. This research study aimed to identify and evaluate the concept of pedestrian paths following the existing conditions using primary and secondary data collection methods through observation, surveys, and literature studies. Factors supporting the comfort of pedestrians are related to the suitability of the path's shape, the dimensionally design concept, and the elements built around the pedestrian path. The pedestrian path on Jalan Kyai Tapa Grogol becomes a link between several places around the pedestrian path area. Therefore, it is necessary to make a clear design concept for pedestrian paths so that the pedestrian path area can improve visual quality and become a comfortable facility for pedestrians.

Keywords: pedestrian path, pedestrians, urban landscape design.

1. Introduction

Public transportation infrastructure must be able to serve every user. Pedestrian paths as a part of the transportation infrastructure need to be considered because walking is one part of transportation activities [1]. Walking is an easy mode of transportation to meet the needs of community movement, especially pedestrians. By walking, pedestrians have a great opportunity to interact with the community and the surrounding environment. Walking activities can be done by all groups of people from young, elderly, and disabled people.

A pedestrian path is a fo¹ of architecture that has a certain shape and provides benefits as space. According to the regulation by The Ministry of Public Works and Housing [2], the minimum effective width of pedestrian space is 60 cm plus 15 cm to sway without carrying goods, so that the minimum total requirement for two pedestrians is 150 cm. The common problems of pedestrian paths that occur nowadays are that they do not accommodate pedestrian activities and cannot improve the visual quality of the surrounding area [3]. Due to these problems, existing pedestrian paths cannot become the image of the city.

Jalan Kyai Tapa is a major road located in Grogol, West Jakarta. This road is crossed by various public transportation, including inner city buses, such as Trans Jakarta, and inter-provincial buses from Grogol Bus Terminal. Considering the high traffic and large number of users on this road, having a comfortable pedestrian path becomes essential. Pedestrian path development is needed to increase the potential and reduce existing problems on the pedestrian path so that the pedestrian path on Jalan Kyai Tapa can be a comfortable and visually good open space for pedestrians. Planned pedestrian paths are formed from pedestrian paths that have been planned to connect one place to another that is needed by pedestrians [4]. Furthermore, it can be an active interaction space for the community, especially pedestrians. Eventually, the road can be a strong image of the city.

The application of Urban Landscape Design on pedestrian paths can improve the visual quality of pedestrian paths. Urban landscapes are currently considered important for creating a sustainable urban environment. Although landscape is often used to describe the natural environment, it can influence people's culture and lifestyle. Therefore, the urban landscape is not only about green spaces but also consists of various land uses, one of which is pedestrian pathways.

The objective of this research is to identify and to evaluate the existing design of the pedestrian path at Jalan Kyai Tapa. The evaluation result is used to create an appropriate urban landscape design for the pedestrian path at Jalan Kyai Tapa.

2. Methods

2.1. Study area

The location of this research is Jalan Kyai Tapa, Grogol, West Jakarta. Specifically, this research is conducted on two 200-meter-long pedestrian paths of Jalan Kyai Tapa. The pedestrian paths consist of two sides, which are side A and side B. The study area is shown in Figure 1.



Figure 1. Study area
(Google Earth, 2023)

2.2. Data collection and analysis

Primary data, such as field measurements and photos, are collected through field observation. Secondary data, such as study area map and policies related to the study area, are obtained through Google Maps and literature studies, respectively. The data analysis process consists of study area evaluation by comparing the existing condition of the pedestrian paths and the ideal condition based on literature studies.

The most important thing in an urban design is the arrangement and arrangement of circulation paths so that all components can be accessed properly [5]. A study [6] stated we can increase the quantity of active movement by improving access to public transit. Pedestrian path physically is an architectural form that has a certain shape. From the theory of form, space, and architectural arrangement proposed by [7], form (building architecture) is composed of visual characteristics of its shape which can be described as follows.

- a. Form, which is the result of a certain configuration of the surfaces and sides of a shape, is the main characteristic of constructive form.
 - b. Dimension, regarding width, length, and height, where these dimensions also determine proportions.
 - c. Color, the intensity and tone of the surface of a shape. Color is the most striking attribute that distinguishes a shape from its environment. Color also affects the visual weight of a shape.
- Based on the literature, the evaluated variables are pedestrian path physical condition and pedestrian path users' mobility. The sub variables and the indicators for evaluation are shown in Table 1.

Table 1. Variables for pedestrian path evaluation

Variable	Sub Variable	Indicator
Pedestrian Path Condition	a. Walkway width	a. Walkway width standards
	b. Walkway pavement elements	b. Walkway floor comfort
	c. Walkway vegetation	c. Function of trees and shrubs
	d. Supporting elements	d. Lights, trash cans, guardrails, planter boxes
Pedestrian Path Users	Pedestrian path user movement	Pedestrian path user activity

3. Results and Discussion

The first section of research results describes and discusses the existing condition of the study area. Meanwhile, the second section proposes the landscape design concept for the study area based on the analysis in the first section.

3.1. Existing conditions of the study area

Figure 2 shows the existing condition of side A based on the observation. Based on the current shape and condition, there are several things that meet and do not meet the standard criteria for pedestrian paths. When evaluating the width of the pedestrian path, the minimum effective width of pedestrian space for two pedestrians is 150 cm [7]. Therefore, the pedestrian path on Jalan Kyai tapa has met the standard because it has a width of ± 2.5 m or 250 cm.



Figure 2. Existing condition of the study area
(Documentation 2022)



Figure 3. Existing condition of the study area
(Documentation 2022)

Figure 3 shows the existing condition of the observation location on side B. The pedestrian path on side B is ± 2 m wide, which means it meets the pedestrian path standards. However, side A pedestrian paths do not have complementary elements that meet the standards and side B pedestrian paths have complementary elements but do not function properly. Furthermore, the presence of informal sector in this area greatly interferes with the movement of pedestrians. According to the Guidelines for Building Construction Materials and Civil Engineering, Technical Planning of Pedestrian Facilities, by The Ministry of Public Works and Housing in 2018, pedestrian paths must have complementary or supporting equipment, including shelter, lights, safety fences, protective/shading plants, roadside vegetation, seats, trash bins, bollards, and guideways for users with disability.

To form a good pedestrian path that can function optimally for community activities, we must consider social and ecological aspects. According to [8], some of the environmental and ecological benefits of the urban landscape are as follows.

- a. Urban green spaces can provide flora and fauna with a habitat for supportive living
- b. Creating ecological corridors and supporting the movement of living
- c. Vegetation cover helps to improve the microclimate of urban areas
- d. Vegetation cover increases humidity and reduces heat gain
- e. Vegetation helps reduce carbon emission levels in urban areas
- f. Vegetation cover also filters dust in the air
- g. Green spaces absorb and reduce noise caused by urban activities
- h. Green spaces can prevent flooding in urban areas
- i. Vegetation can also function as a wind breaker

In addition, a good pedestrian path also requires good complementary elements to improve the quality of a good urban environment. Figure 4 shows that the existing complementary elements do not function optimally, and the existing vegetation arrangement does not have a clear design concept so that it cannot improve the quality of the environment, both visually and ecologically. The arrangement of existing pavement materials on the pedestrian path on Jalan Kyai Tapa is also unclear in concept, finishing and the use of material types that are not well organized which then creates an unpleasant atmosphere for the pedestrian path area.



Figure 4. Existing condition of the study area
(Documentation 2022)

Pedestrian paths could be a physical element that shape the city image if they are organized and have a good design concept. Physical elements of a city have the potential to add value to the city. Therefore, they need to be carefully designed and improved. Increased community activity should be proportional to the availability of public facilities and infrastructure because it influences people's comfort. Areas with varied land uses, especially those that are connected to main roads and public transportation facilities provide greater opportunities for city residents to live, work, play, exercise, shop, and fulfill other needs on foot [9].

The arrangement of plants on the pedestrian path can also add comfort for pedestrians. However, if the arrangement is not good, it will reduce the visual quality of the pedestrian path. The most interesting compositions in a plant arrangement are generally those that sufficiently combine enough variation of plants to create a harmonious unity [10].

3.2. Design recommendation

To maximize the function and aesthetics of pedestrian paths, in addition to meeting standards, pedestrian paths must also have a good landscape arrangement that is in accordance with urban conditions. In today's modern era, pedestrian paths are a very important element in urban planning. Apart from providing dedicated space for pedestrians, pedestrian paths also provide safety and comfort for pedestrians crossing the path. Therefore, pedestrian space plays a major role in creating a humanized environment [11]. The Urban Landscape Design approach needs to be applied in the arrangement of pedestrian paths. A study [12] reveals that urban landscape serves as a picture of the city's socio-cultural environment. Therefore, the arrangement of pedestrian paths needs to go through the Urban Landscape Design approach in order to make the pedestrian path an area that can improve the quality of the urban environment and visuals.

Design adjustments to urban conditions will greatly impact urban conditions. There are aspects that need to be considered in landscaping urban pedestrian paths, which are the following.

- a. Aesthetics: The aesthetics of urban landscapes and people's daily lives are closely intertwined in that they can create imagery for active urban life.
- b. Function: A good landscape arrangement will provide good proportion, accessibility, flexibility, naturalness, and visual aspects to an area.
- c. Identity: The urban landscape can show the lifestyle of the people, their interactions, and their activities. It can also influence the climate, and the economy of the community.

d. Ecology: From the view of landscape ecology, the city is a set of ecosystems that have structures, functions formed from patches, corridors, and matrix.

Figure 5, 6, and 7 show the design recommendations with considerations of the existing problems and the ideal conditions for pedestrian paths. Considering that the existing bollards placement allow motor vehicles to pass through the path, we recommend a bollard design that prohibits motor vehicles to pass through. We also recommend adding more trees or shelter to give shade to pedestrians. Additionally, using ornamental buffering plants may create a pleasant atmosphere for pedestrians. Adding guiding blocks for people with disabilities is also a must to create an ideal pedestrian path. Other complementary elements, such as benches and trash cans also need to be considered to avoid misusages by people.

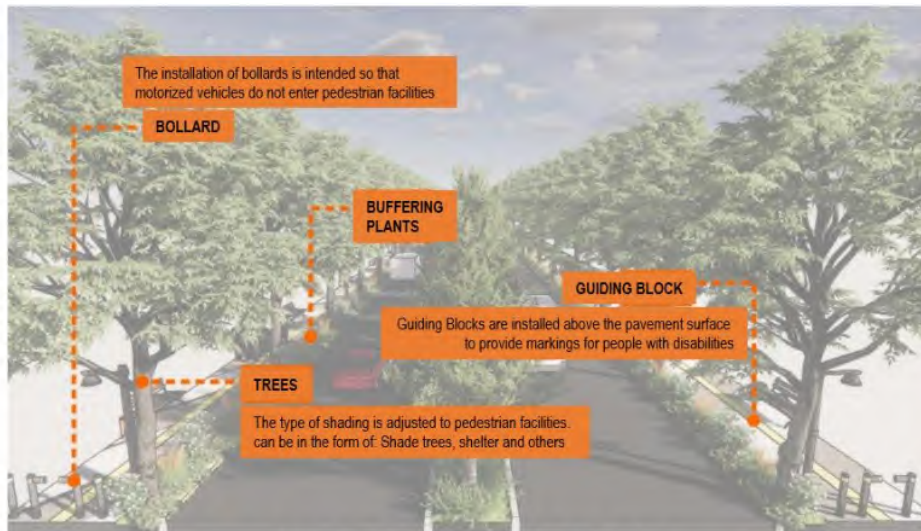


Figure 5. Typical pedestrian path design

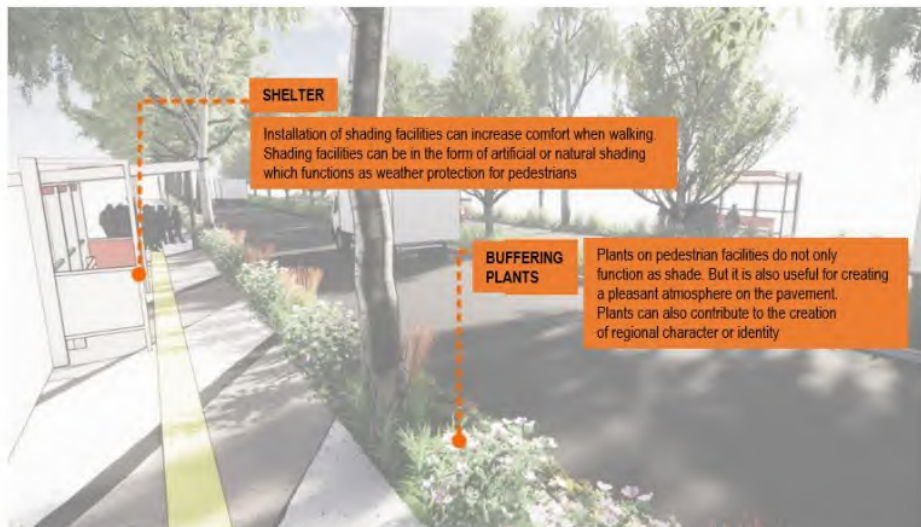


Figure 6. Typical pedestrian path design



Figure 7. Typical pedestrian path design

A good pedestrian arrangement will improve the quality of the pedestrian path. The function of the pedestrian path will also be maximized as a good plant arrangement will function as a space divider, direction, ameliorate the microclimate, and improve the visual quality of the area. To make a good pedestrian path that functions optimally for the entire community, complementary elements on the pedestrian path are important factors that must be considered in the arrangement of pedestrian paths, including as benches, guideways, trash cans, lights, bollards, and shelters. With a good arrangement, it will also minimize informal sector activities that take place in the pedestrian path area.

4. Conclusion

According to the results of this study, some aspects of the pedestrian path on Jalan Kyai Tapa, Grogol, West Jakarta, are still not in accordance with the criteria for an ideal pedestrian path. The existence of several things that do not meet the standards and principles of landscape design makes the pedestrian path not maximized both functionally and visually.

The Urban Landscape Design approach is needed in the arrangement of pedestrian paths in urban areas. Aesthetics, function, identity, and ecology are important factors in the development of pedestrian path arrangements in urban areas. The arrangement of softscape and hardscape on the pedestrian path at Jalan Kyai Tapa is not maximized and rearrangement of existing elements on the pedestrian path is necessary. Recommended designs of pedestrian paths that are comfortable and have aesthetic value according to the design principles are presented in this study.

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