

Quality of Walkability in Peunayong, Banda Aceh

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Abstract— Walking is an essential element of accessibility because it can increase the livability of a city. Peunayong, as a trade and service center and a heritage area, have very diverse activities with high intensity. The density of activities in Peunayong causes high vehicle accessibility which causes congestion in the area, parking on-site, which narrows the space for pedestrians and vehicles. In addition, pedestrian facilities in Peunayong still do not facilitate pedestrians because of the mixing of various activities in one lane, such as circulation, parking, and trading. In creating a pedestrian-friendly, it is necessary to plan and design good pedestrian facilities by paying attention to the characteristics of pedestrians and their district. Walkability is one of the concepts for a walkable area. The approach in this study is by adopting the walkability theory as a reference. The focus of this research is to determine the quality of Walkability in Peunayong. The method of analysis uses descriptive analysis. Those that formed walkability which will become parameters in this study are Connected, Convenient, Comfort, Convivial, Conspicuous through pedestrian paths and crossings, circulation activity, block size, spatial enclosure and human scale, open space and vegetation, street furniture, and signage

Keywords— Walkability, Pedestrian, Walkable, Peunayong

I. INTRODUCTION

Walking is a physical activity and the primary mode of public transportation (Ackerson, 2005). Walking can connect people from one place to another (Lantang, 2012). Walking is an environmentally friendly activity and does not cost money. Walking is an essential element of accessibility because it can increase the livability of a city. Urban Mobility for Indonesia surveyed that 12% of Indonesians prefer to walk when traveling rather than using bicycles and traditional environmental transportation as non-vehicles transportation. Walking can avoid traffic jams and reduce air pollution generated by vehicle transportation (Forsyth, 2015; Forsyth & Southworth, 2008).

Pedestrian paths and complementary road facilities are supporting walking activities. Pedestrian paths are the main driving force for people to walk from one place to another (Musriati, 2014), including people with disabilities. Pedestrians must walk on the pedestrian path and cross on the crossing provided to protect it from traffic (Ahmad & Soeparyanto, 2013).

The RTRW of Banda Aceh City in 2009-2029 states that the Peunayong is a center for trade and services and a heritage area. As a trade and service center area, the activities that occur in the Peunayong are very diverse with high intensity. The density of activities in Peunayong causes high vehicle accessibility which causes congestion in the area, parking on-site, which narrows the space for pedestrians and vehicles. In addition, pedestrian facilities in the Peunayong area still do

not facilitate pedestrians because of the mixing of various activities in one lane, such as circulation, parking, or trading. Pedestrian paths with good conditions and connectivity will create unique spaces for pedestrians and people with disabilities that are humane, safe, and comfortable to walk through. (Handayani et al., 2018)

In creating a pedestrian-friendly area, it is necessary to plan and design good pedestrian facilities, namely by paying attention to the characteristics of pedestrians and their location. Walkability is one of the concepts for a walkable area, and the concept of walkability makes a place a friendly environment for pedestrians

II. LITERATURE REVIEW

Walkability according to Land Transport New Zealand. (2007) pedestrian planning and design guide is a state that explains the extent to which an environment can be friendly to pedestrians. Based on (City of Fort Collins, 2011), walkability can interpret as a measure of the quality of hospitality of an environment to pedestrians in an area. Walkability is the foundation for a sustainable city.

Walkable definitions based on the journal of urban design are:

- Walkable = close: walkable environments have proximity to the destination.
- Walkable = barrier-free: walkable environments can be traversed without obstacles. This includes the elderly, children, disabled, or those wearing heels.
- Walkable = safe: a walkable environment is a safe, safe environment against crime and traffic.
- Walkable = is full of pedestrian infrastructure and destination: a walkable environment is an environment that features comprehensive pedestrian infrastructure such as sidewalks or separate lanes, crossovers, street furniture, and shade trees.

There are four things to look out for to create a walkable environment (The vision of the Walk WA: A Walking Strategy for Western Australia):

- Accessibility:
Open spaces and facilities within the area must be accessible because they are accessible to pedestrians, the elderly, and people with disabilities. In addition, the path has sufficient width and is equipped with good signage. Other factors to be aware of are the location of vehicle parking and bus stops.
- Aesthetics:
Landscape arrangement can create an environment that is beautifully viewed and accompanied by a good waste system so that the domain is not polluted with odor and

visual pollution

- Safety and security:
It is creating a safe environment from criminal acts using design principles that can prevent such actions. It also considers the safety factors of pedestrians with bollards and non-slippery and damaged materials in pedestrian lanes.
- Comfort/ Comfort:
Provide facilities that can support the comfort of pedestrians, such as benches for rest areas, shelters, and water facilities for drinking, as well as sinks for the prevention of covid-19.

Several factors must be considered to create a walking environment, such as integration between communities with housing, shops, offices, schools, parks, and access to public transportation that is interconnected with pedestrian paths. Five elements can create a walkable environment, namely (Austroads, 2009):

- Connected: Is the road network well connected and able to reach the facilities in the area?
- Comfortable: Do pedestrian lane facilities meet design standards that can facilitate the needs of the disabled?
- Convenient: Can pedestrians easily walk and cross safely without hindrance.
- Convivial: Are routes attractively designed, clean and free from crime?
- Conspicuous: Is the route visible through signage?

The purpose of walkability is to create a pedestrian-friendly environment with road access to a well-connected destination, comfortable and safe to pass to reach the destination no longer depends on motor vehicles.

Based on Benjamin Grant in Getting to Great Places mentions seven components of design for walkability, namely:

- Make accession in an area shorter by making blocks smaller or providing access within blocks through alleys, lanes, or lanes.
- The land function is directed to support activities, vitality, security, and identity of roads and spaces.
- Place parking in a place that does not interfere with the pedestrian space. Parking should be provided on a multilevel structure because once the parking is done, each driver becomes a pedestrian to enliven public spaces.
- Create humanist spaces with proportion and scale settings that adjust the human scale can be done with elements of façade, lighting, signage, and other supporting facilities.
- The pedestrian is wide and includes elements of trees, lamps, street furniture, and public art. Pedestrians must also be well connected and form continuity connected with safe deployment.
- Road Space can accommodate various modes of transportation and serve as a public facility, commercial space, and green space.

III. RESEARCH METHOD

This research uses the qualitative deductive method by

identifying parameter points, variables, and indicators in the research area that correspond to the conditions in the field, then processing the resulting data and analyzing it based on walkability theories.

The approach of this research was made by theory of walkability as a reference. The focus of this research is to look at walkability in the Peunayong area. Walkability is a condition that describes the extent to which an environment can be friendly to pedestrians. Those that formed walkability will be variable in this study: Connected, Convenient, Comfort and Safety, Convivial, Conspicuous.

The analytical method of this research uses descriptive analysis. The analytical technique used in this research is a descriptive analysis technique to determine the quality of walkability in the Peunayong area.

Data collected through observation method, observation is held in the region based on the indicators compiled, then mapping area based on the indicators. Observations are taken periodically in the morning, afternoon, and evening. The location of the observation is in Peunayong area.

This research is located in Aceh Province, precisely in Kuta Alam District, Banda Aceh City. The object and location of the study are roads or road corridors that formed Peunayong, namely Jl. Jend. Ahmad Yani, Jl. Kartini, Jl. WR Supratman, Jl. TWK Daudsyah, Jl. Khairil Anwar, Jl. Sri Ratu Safiatuddin, and Jl. T. Panglima Polem

TABLE I. Variable Reseach

Variable	Indicator
Connected	<ul style="list-style-type: none"> • Pedestrian path • Crossing • Vehicle Circulation
Convenient	<ul style="list-style-type: none"> • Activities • Block Size
Comfort	<ul style="list-style-type: none"> • Humanscale • Enclosure • Open Space
Convivial	<ul style="list-style-type: none"> • Shaded tree • Street Lamp
Conspicuous	<ul style="list-style-type: none"> • Street Furniture • Signage

IV. RESULT AND DISCUSSIONS

The quality of walkability will be discussing the data analysis obtained from the observation area based on theory. It includes discussions about Connected (pedestrian path, crossings, and vehicle circulation), Convenient (activities support and block sizes), comfort (enclosure, human scale, open space), Convivial (shaded tree and street lamp), and Conspicuous (street furniture and signage).

A. Pedestrian Path

The pedestrian path on Jl. Jend. Ahmad Yani is green, meaning a pedestrian path on this road used for walking. On Jl. WR Supratman is dominated by yellow color, which means the pedestrian path is not operating properly because it is used for display or trade. Then the section of Jl. Kartini identified with three colors, the northern part no pedestrian path on the right, the middle part of the pedestrian path is used for trading/sell fruit, and the southern part of the line is operating

as it should be.



Figure 1. Pedestrian Path Connectivity.

On Jl. TWK Daudsyah dominated by red color means that the road does not have a pedestrian path, and pedestrians are forced to walk on the road's shoulder. The disconnection of a pedestrian path on this road makes Pedestrian paths in the Peunayong disconnected. Jl. Khairil Anwar has a variety of colors but is dominated by red, so this road is not comfortable for pedestrians because the pedestrian path is not connected in the middle part. On Jl. Sri Ratu Safiatuddin is dominated by green. However, at the end of the road, there are red and yellow colors, causes the connectivity of the pedestrian interrupted. And the last one on Jl. T Panglima Polem is dominated by green color, on this road, there are pedestrian lanes on both sides of the road.



Figure 2. Pedestrian Path Width.

The width of the pedestrian path is one of the elements that form comfort of walking in the area. The author categorized

the width of the lanes in the Peunayong area into 4 categories, namely the width of the 1-meter path is marked with brown color, the width of the path is 1.2 - 1.5 meters green, 2 - 3 meters yellow and red color has no pedestrian path.

Overall the width of the pedestrian path in the Peunayong s dominated by brown color that is 1 meter, then green color 1.2 meters - 1.5 meters. Based on comfort standards, pedestrians must have a comfortable width with a minimum of 1.5 meters with a non-slippery surface. According to the Pedestrian Facilities Guidebook, the average space required for two pedestrians who can walk side by side or pass through each other (in the opposite direction) is 1.4 m. When viewed again and compared to the standard of comfort, that pedestrian path of Peunayong area has not met the standards of walking comfort.

B. Crossing



Figure 3. Crossing.

On the crossing map, the availability of crossings is very minimum in the Peunayong area. When viewed from the road, only the sections Jl. T Panglima Polem and WR Supratman that has crossing. At least the intersection makes it difficult for pedestrians to cross. The type of crossing in the Peunayong area is zebra cross, and there is no pedestrian bridge and tunnel.

C. Vehicle Circulation

Circulation in the Peunayong area is divided into 2, namely one-way circulation and two-way circulation. Two-way circulation only occurs on the outside of the area, such as along the Jl. Sri Ratu Safiatuddin and Jl. T Panglima Polem. While the one-way circulation dominates the inside of the Peunayong area, namely on the Jl. Jend Ahmad Yani, Jl, WR Supratman, Jl. Kartini, Jl. TWK Daudsyah, and Jl. Khairil Anwar.

The most severe congestion occurs at the T-junction of Jl. Jend Ahmad yani and Jl. WR Supratman. It happens because parking on the street consumes road bodies, and the division of the road's median is not appropriate. Peunayong bypassed by public transportation through Jl. Sri Ratu Safiatuddin, Jl.

Jend. Ahmad Yani, then to Jl. WR Supratman, and heading outside the area to Jl. T Panglima Polem. Although bypass through many roads but the availability of bus stop is only on Jl. Jend. Ahmad Yani. In addition to the lack of bus stops, there are no differences in lanes between modes of transportation; there are only parking markers available.



Figure 4. Vehicle Circulation.

D. Activities Support

a. Morning activities

Peunayong, as a heritage area and trade-in services, has various activities. The activities seen are activities that occur in the outer space of the Peunayong area. Observations were made in the morning at 09.00 – 11.00 AM, with the busiest activity being economic activity on Jl. Kartini is the Peunayong fruit and vegetable market. Market activity penetrated the eastern alley of Jl. Kartini.

In addition to economic activities, activities in the alley are also social activities where residents gather and interact with each other, which is supported by economic activities such as angkringan. Social activities occur in several passages, which are included in the public space category of space between buildings.

Activities are waiting for transport, namely buses, precisely on the Jl. Jend. Ahmad Yani. There is already parking activity in the morning, although it is not evenly distributed, parking activities that occur outside the Peunayong area such as the Jl. Sri Ratu Safiatuddin and Jl. Panglima Polem has not happened much because the shops are not fully open. While on the inside of the area, especially the Jl. WR Supratman, filled with parking activities for visitors who want to go to Peunayong market. The density of economic activities and parking is inversely proportional to tourist activities, and there are no tourist activities that occur in the morning in Peunayong

b. Daytime activities

Daytime activities were observed at 14.00 – 16.00 PM. Economic activity in the form of street vendors began to

spread around the area, especially on Jl. Jend. Ahmad Yani, Jl. Sri Ratu Safiatuddin, and Jl. Khairil Anwar. The economic activity of Peunayong market is still running and busy as well as social activities in the alleys of the area.

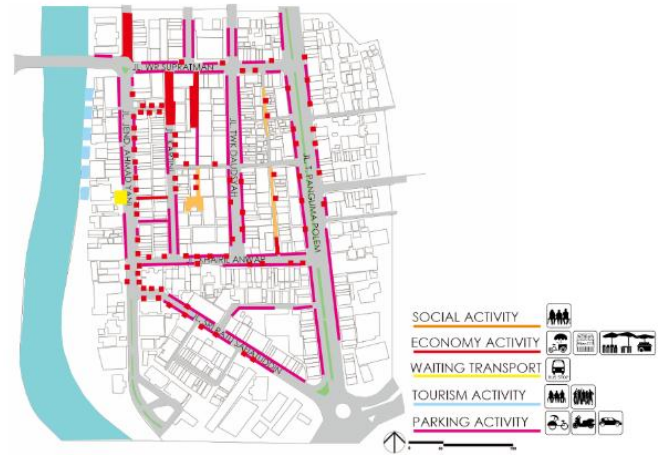


Figure 5. Daytime Activities.

Activities waiting for transport are still running, and tourist activities appear on the west of Jl. Jend Ahmad Yani, to be exact, at Culinary Riverwalk. Along with opening shops in the Peunayong area, parking on street activities is increasingly dense and evenly distributed on every road segment in the Peunayong area.

c. Night activities

Observations of night activity were made at 19.00-21.00 PM. Social and waiting for transport activities have started to disappear. Tourist activities are still running on the Culinary Riverwalk, supported by economic activities as food court.

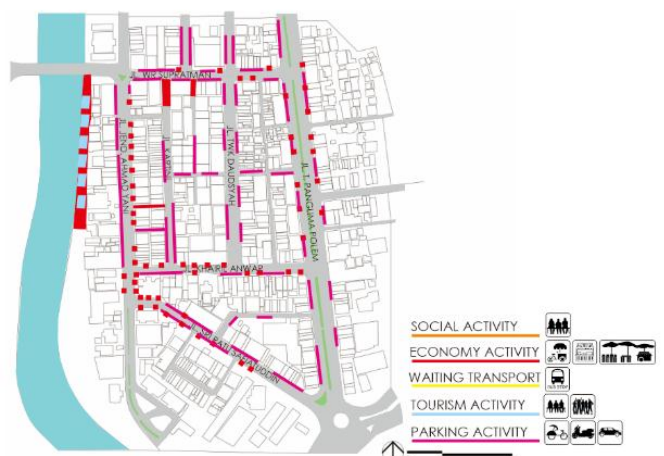


Figure 6. Night Activities.

The intensity of the economic activity of street vendors at night is getting denser, especially on Jl. Jend Ahmad Yani, and the Rex Peunayong area. Economic activity in the Peunayong market area is still running at night with less intensity than daytime. At night parking activity has begun to decrease because many shops have closed on several roads, namely Jl.

Sri Ratu Safiatuddin, Jl. T Panglima Polem, Jl. TWK Daudsyah. Especially on Jl. TWK Daudsyah, because economic activities do not support it as street vendors, the road looks deserted and uninhabited at night.

E. Block Size

The dense and frequent pedestrian routes are fundamental to walkability, shortening both the actual and perceived distances. This can be achieved by making the city block smaller or providing access within the block through alleys, lanes, or paseos coupled with crosses.

Based on the theory of Jacobs (1993) in Ewing (1999), the width of the block maximum 90 - 150 m, blocks that have a width more than 150 m should have a translucent pedestrian path, and another theory by Hendy et al. (2003) in Dill (2004) about the maximum block size is 3 - 5 ha.

There are 22 blocks in the Peunayong area. Of the 22 blocks in Peunayong, no block pass 5 ha, which means the block is still walkable. But if seen from the length and width of the block area, then block 5, block 7, block 15, block 17, block 18, and block 19 passes the maximum width of the block area of 150 m, meaning that the blocks can still be scaled down or shortened by providing access that can divide the blocks.

The distribution block map shows the blocks that exceed the maximum width are the blocks on section Jl. Sri Ratu Safiatuddin, Jl. Jend Ahmad Yani, Jl. Khairil Anwar, and Jl. T Panglima Polem.



Figure 7. Block Size

F. Spatial Enclosure and Human Scale

The proportions and scale of space can be analyzed and viewed through the spatial enclosure. The scoping of space or spatial enclosure is a process to get to know space. It refers to the observer’s perception and the psychological effects. Related to this, Spreiregen (1965) stated that the range and quality of detailed views of the mass of buildings/cities could be seen with the principle of spatial enclosure and townscape that will be described in the table below:

TABLE II. Spatial Enclosure

Proportion	Enclosure Hierarchy
$d/h < 1$	Oppressive enclosure
$d/h = 1$	Full enclosure
$d/h = 2$	Threshold of enclosure
$d/h = 3$	Minimum enclosure
$d/h = 4$	Loss of enclosure

The table above shows four categories of the spatial enclosure, namely full enclosure, the threshold of the enclosure, minimum enclosure, and loss of enclosure. For less than 1 assessment, the author adds the category of oppressive enclosure that gives the impression of space pressure. Here is the identification of spatial enclosure of the Peunayong:

a. Oppressive enclosure

Space feels oppressive or oppressive enclosure is the result of calculation of spatial enclosure below 1. Southern Jl. Kartini and Gang Timur Kartini have a value of 0.9 and 0.8, so people’s perception of walking feels narrow and pressured.

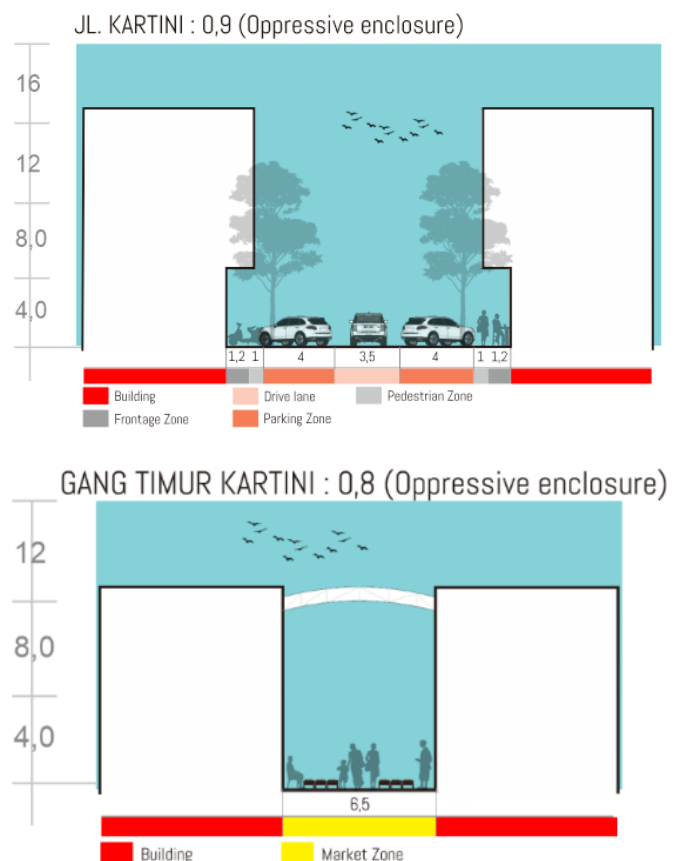


Figure 8. Oppressive Enclosure

b. Full enclosure

A very enclosed space or full enclosure is results from calculation of spatial enclosure with a value of 1. Full enclosure is dominant space in Peunayong. Four roads have a full enclosure scale that is Jl. Kartini northern part with a value of 1, Jl. WR Supratman with a value of 1.4, Jl. TWK Daudsyah with a value of 1.6, and Jl. Khairil Anwar with a value of 1.1. The road that has a full enclosure can better see the details of the building than the building as a whole.

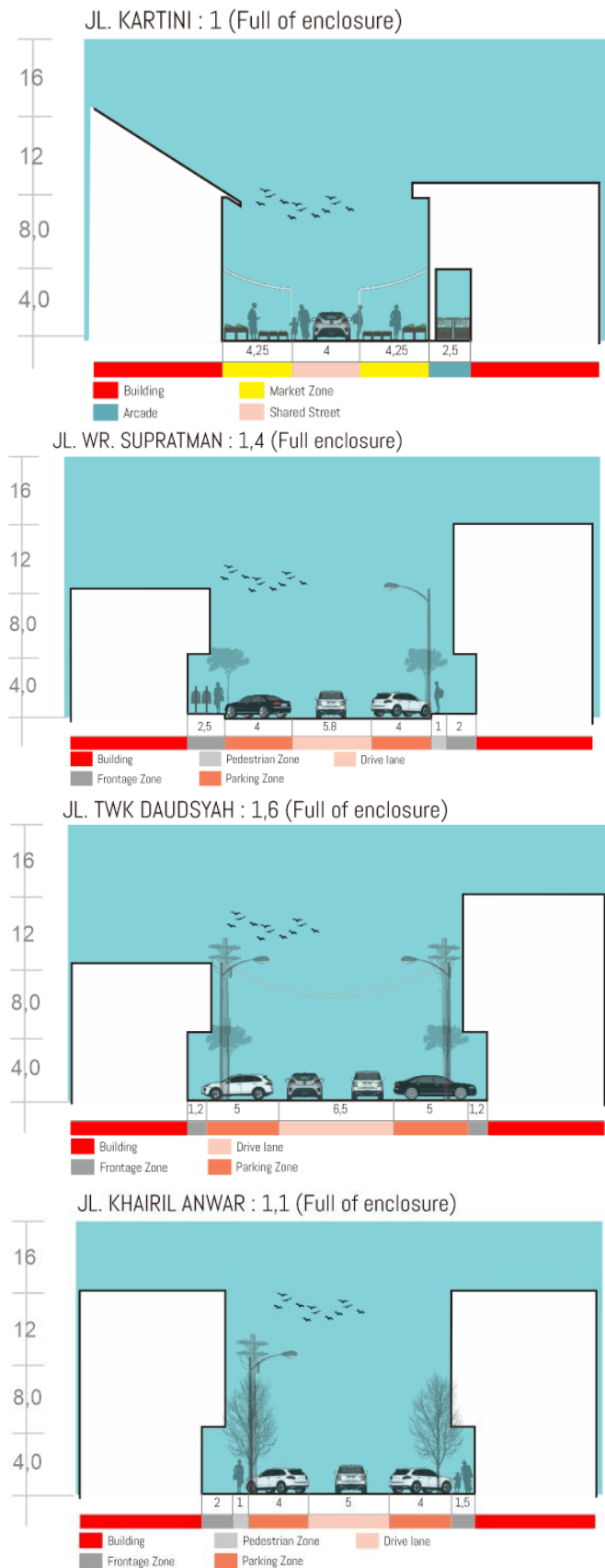


Figure 9. Full Enclosure

c. Threshold of enclosure

The threshold of enclosure is a result of spatial enclosure calculation with a value of 2. The threshold of enclosure is the lowest limit to give the impression of enclosed space, and it can see the building as an overall composition, along with the details. There is only one road section that falls into that category, namely Jl. Jend. Ahmad Yani with a value of 2.6

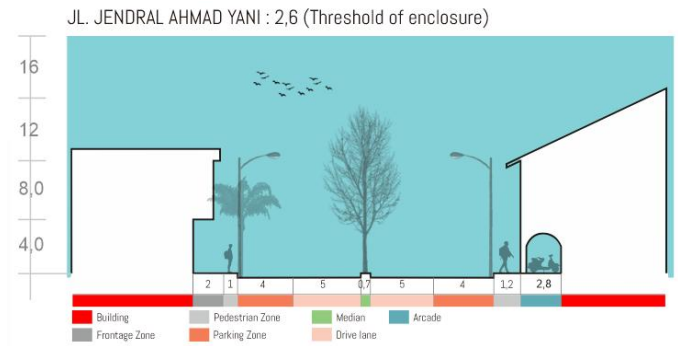


Figure 10. Threshold of Enclosure

d. Minimum enclosure

The minimum enclosure is the result of spatial enclosure calculation with a value of 3. When the scale of the space has touched the number 3, then space begins to lose its lid and can only see the building with its surroundings. 2 roads fall into this category, namely Jl. Sri Ratu Safiatuddin and Jl. T Panglima Polem with a value of 3 and 3.2.

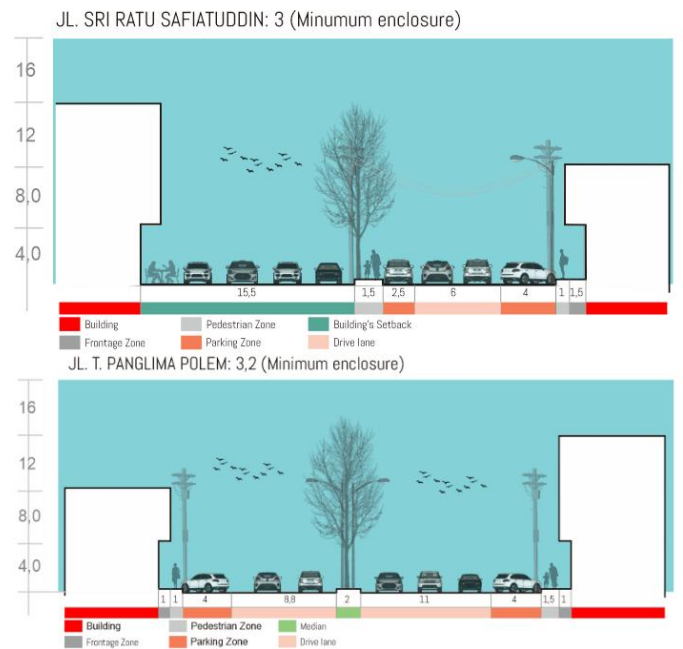


Figure 11. Minimum Enclosure

G. Open Space and Shaded Tree

a. Public Open Space and Green Open Space

Open space is one of the essential elements in the form of a city. Public spaces are needed in a city where citizens interact, seek entertainment or recreation. The places that can be categorized as public spaces in the city are local parks, plazas,

pedestrians, and spaces between buildings. Here is a map of the open space distribution:



Figure 12. Public Open Space and Green Open Space

There are 5 public open spaces in the Peunayong, first Culinary Riverwalk is a river border space that is used for economic and social activities, where visitors can enjoy a variety of culinary available and socialize while enjoying the river Aceh scenery. The second public space is kuta alam roastery which is a café that utilizes space between buildings as an outdoor café. Next is the peunayong fruit market, this market is located in the street space on Jl. Kartini, although it has physical buildings, traders do not occupy the building and prefer to sell in the street space. The following public space is the social space formed from space between buildings; this space is operating as a place to gather and play for people of Peunayong. The last public space is Culinary Rex Peunayong, an open space to enjoy typical Acehnese snacks at night.

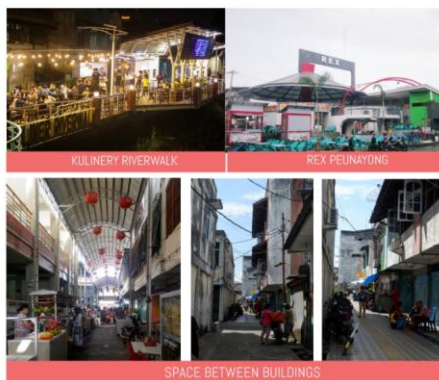


Figure 13. Public Open Space in Peunayong

Green open space is an area with a certain area dominated by vegetation and intended for the public interest. According to Law No. 26 of 2007 on Spatial Planning, the proportion of green open space states that each province, district, and city is required to have a proportion of green open space of 30%, or

for the city area of at least 20%. While the Peunayong area only has a green open space of 8.2%.

TABLE III. Green Open Space

Name	Area
Land Area	21 Ha
Green Open Space Area	1,7 Ha
Percentage Green Open Space Area	8.2 %

Green open space in Peunayong, which has two functions, namely inner court and field of Kodam Iskandar Muda, is a pity that both cannot be enjoyed by the public to be used as recreation or exercise because it is private. Therefore the Peunayong area does not have green open space that can be used by public.

b. Shaded Tree

The greenery (vegetation) has a variety of benefits for urban areas. Various benefits of green plants can be categorized into four main functions, namely: (1) ecological functions, (2) aesthetic and architectural functions, (3) economic functions, and (4) social functions. Here is the distribution of vegetation in the Peunayong area:



Figure 14. Shaded Tree in Peunayong

The shaded tree's map shows that the distribution of vegetation has not been evenly distributed on the section of Jl. Jend. Ahmad Yani, there is vegetation along the road, but the tree species is not a shade tree type, and the density is less so that pedestrians still feel overheated. On Jl. WR Supratman and Jl. Khairil Anwar has a small distribution of vegetation and does not serve as shade. On Jl. TWK Daudsyah, there is no vegetation on the road, so it feels dry and arid.

The spread of vegetation is evenly distributed. Other than that, it has a sufficient density with the type of shade trees such as Ketapang kencana found on the southern section of Jl. Kartini, walking in the corridor is very comfortable because it is avoided from direct sunlight. For Jl. Sri Ratu Safiatuddin has shade vegetation, but only on the left side of the road; there is no shade vegetation on the right. On Jl. T Panglima Polem there is no shade vegetation on the pedestrian path, but vegetation is in the road's median.

H. Street Furniture

Street furniture is one of the supporting elements of activities in a public space in the form of a road that will strengthen the character of a larger design block (Permen PU no. 6 of 2007). Street furniture can create spaces for rest, sitting, dining, and social activities. The existence of street furniture is significant for a city. The availability of street furniture on each street in the Peunayong area is as follows:

TABLE IV. Availability of Street Furniture

Street	a	b	c	d	e	f
Jl. Jendral Ahmad Yani	✓	x	✓	x	✓	✓
Jl. Kartini	✓	x	✓	x	✓	✓
Jl. TWK Daudsyah	✓	x	✓	x	x	✓
Jl. Khairil Anwar	✓	x	✓	x	x	✓
Jl. Sri R. Safiatuddin	✓	x	✓	x	✓	✓
Jl. T. Panglima Polem	✓	x	✓	x	✓	✓

a: Streetlamp c. Trash bin e. Sink
 b. Benches d. Bollard f. Signage

In the table above, it shows that there is street furniture in the Peunayong area. Still, only four of the 6 street furniture are available, namely street lamps, trash cans, sink, and signage. In contrast, two other street furniture such as seating and bollards are not yet available in the Peunayong area. For more details can be seen the map of the distribution of street furniture below:



Figure 15. Street Furniture in Peunayong

a. Street Lamp

The map of street furniture shows a difference in the intensity of street lamps on each section of the street. On Jl. Jend Ahmad Yani, the distribution of street lamps evenly with a distance of 30 m between lamps shows that the area is quite bright and comfortable to walk. While Jl. T Panglima Polem has street lamps even on the left and right of the road, but on other routes, the distribution of street lamps is uneven and tended to be a little, such as Jl. WR Supratman only has 1 street lamp, Jl. TWK Daudsyah only has 4 street lamps at a

considerable distance, so walking in this area is unsafe and comfortable for pedestrians. Similarly, on Jl. Kartini only has 5 street lamps, and 4 street lamps are on the left side of the road. The lighting in the area relies on lights from buildings or street vendors. In addition to Jl. Kartini, Jl. Sri Ratu Safiatuddin and Jl. Khairil Anwar also depends only on lights from shops for lighting at night.

b. Trash bin

From the map of street furniture, the distribution of trash bins is evenly on every road in the Peunayong area. The store provides the trash bin with various models, and the location of the trash can is on the shoulder of the road adjacent to the pedestrian path.

c. Sink

Covid-19 is changing the lifestyle of urban communities, which impacts people to wear masks and wash their hands. The existence of a place to wash hands becomes a mandatory necessity that must be present in public spaces. In the Peunayong area can be seen that the distribution of sink only exists on two roads, namely on Jl. Sri Ratu Safiatuddin and Jl. T Panglima Polem, it is certainly not enough considering the activity that occurs in the Peunayong area is very dense.

d. Signage

The distribution of signage in the Peunayong area is distributed evenly with high density. The area is a service trade area with a row of shops, and it requires signage/billboards as an identifying function. The average sign used in Peunayong is the freestanding sign and suspended sign. The freestanding sign is widely used as a directional indicator, while the suspended sign is used as a store id. Here is the placement of signage on each road in Peunayong:

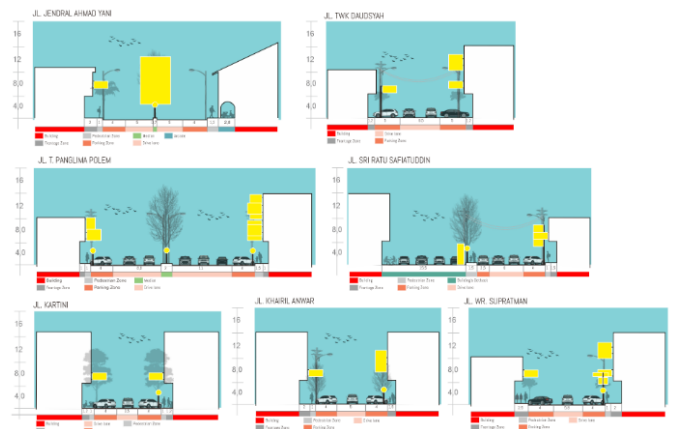


Figure 16. Signage in Peunayong

V. CONCLUSION

Based on the analysis, it can be concluded that Peunayong cannot be said as a walkable area because there are some aspects of walkability standards that have not been met. In terms of connected pedestrians, Peunayong area is still not connected between one place and another. From the convenient side, Peunayong area has a small block. The attainment of facilities or amenities closer, from the comfort side of Peunayong, does not have even shade trees and narrow pedestrian width and parking on the street makes walking

activities in Peunayong not comfortable. In terms of safety, the area is still unable to make pedestrians feel safe because of the absence of protection from traffic vehicles such as bollards. So is the lack of street lamps that make Peunayong area unsafe when walking at night. The convivial side of Peunayong has a good spatial enclosure and scale that makes pedestrians don't feel oppressed when walking. But for disability is very unfriendly due to the absence of guiding blocks in the eunayong, and from conspicuous side of Peunayong area has clear signage for regional recognition. However, Peunayong can become a walkable area that is a pedestrian-friendly area, mainly because this is a heritage and trade of services with historical value for tourism activities with a row of shops oriented to public spaces. In addition, the walkability elements have the potential to be developed because Peunayong road has a wide vehicle path, so it can still be created without damaging existing buildings.

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