



Pedestrian Arrangement On Wr Soepratman Street Bengkulu City as an Educational Area

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ARTICLE INFO

Keywords: Pedestrian, Area, Education, Corridor

Received : 25 May

Revised : 26 June

Accepted: 28 July

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ABSTRACT

Urban development is one of the forms of progress of a city, which shows that the economy of an area is running well, especially in the education area. The education area is an area that has a level of density at a certain time span and provides facilities for pedestrian space. A good educational area is to provide ease of movement for pedestrians. However, this is rarely found in the education area. Education areas are more dominated by the economy in the form of trade and services, so the need for pedestrian ways is often forgotten and considered unimportant. This can be seen on Jalan WR Soepratman (the gate of Bengkulu University (UNIB) up to Elementary School 69 Bengkulu City. Every day, Jalan WR Soepratman is high in motorized vehicle and pedestrian activity, both from students and from the community. The high level of activity in the area along WR Soepratman is due to the large number of Bengkulu University students and students from 69 Bengkulu City elementary schools. On the WR Soepratman road that connects Bengkulu University (UNIB) with Elementary School 69 Bengkulu City, there are no pedestrian facilities. On the shoulder of the road is used for selling activities for street vendors. Based on this, research is needed so that the end of this research can be a design solution in planning pedestrian paths on WR Soepratman road. The research method used is literature study, observation study and descriptive analysis.

INTRODUCTION

Not only does a city need to be comfortable, it also needs to be beautiful. The elements must not only function but must also reveal their beauty. Walking by humans is actually the first mode of transportation known to humans, where the first time humans want to go somewhere, walking is done. Then it developed using the help of animal power, until finally various vehicles appeared like now, then actually Pedestrians (Pedestrian) should have equal rights with motorized vehicle users, respected and also applied sanctions if the rights are violated (Sari.D.R, 2019). The community's need for public facilities that support convenience and comfort in carrying out activities is increasing. Equality of rights for users of public facilities continues to be fought for. This is intended so as not to limit the ability for all people to be able to utilize public facilities and infrastructure available (Desetyaningrum.I,Ratih.S.A,2021).

Pedestrian paths as one of the supporting facilities for traffic implementation have been spread in various corners of the region, especially in city centers with various designs. One of them is a sidewalk which is usually in the form of gray paving blocks and the same size arranged in such a way on the sides of the highway (Nazala D.F & Tri.N.F, 2020).

One of the indicators that a city is livable is its walkability. Even pedestrian paths are one of the most influential important elements in urban spatial planning. How friendly pedestrian paths, suitability of size and function, safety, and ease of access are important points for the city, as well as a sign of sustainability (archinesia.com). Especially in educational areas that should be pedestrian-friendly.

However, in reality, this is not realized, the education area is more likely to develop towards the growth of the trade and service sector, so it does not pay attention to the benefits of pedestrians, it is influenced by culture, that a crowded area such as an education area will be crowded with consumers or buyers. As a development goal, one of the SDGs targets as a derivative of its goals is to provide universal access to safe, inclusive and accessible public spaces, and green, especially for women and children, seniors and people with disabilities. Associated with this target, the role of open spaces in the city including pedestrian paths is crucial in achieving the SDGs (Putri.R.F, 2023).

Therefore, education and culture are intertwined, and the quality of education can serve as a measure of a nation's cultural development. Meanwhile, trade and services are carried out by educated individuals. It is possible for both sectors to intersect within a cultural framework. Without changing the function that has been formed by maximizing the combination of both land functions and blurring the existing image gap (Safitri.J.R, Sari.R & Fatoma, 2023). Pedestrian paths and green lanes are important elements for the comfort and beauty of the city. The utilization will be more optimal if the pedestrian and green lane are in conditions that meet the requirements and are maintained (A.Susetyaningsih,I.Farida&A.Zhafirah,2019)

This has an impact on the shoulder of the road which should be used for pedestrian development, but it is used as an irregular vehicle parking. The case

can be seen on the WR Soepratman road, especially the entrance gate of Bengkulu University behind to the elementary school 69 Bengkulu.

The atmosphere of WR Soepratman street is very lively because along the road there are shops, sweet stalls, eating places, cafes and street vendors and others that are almost adjacent to the road, and the road is not too wide. This road is an education and trade area, so there are a lot of students and school children using this road. The road remains busy from morning to night, with the most crowded in the morning, afternoon and evening.

The importance of the safety and comfort aspects of pedestrian spaces in big cities in Indonesia is often not given enough attention (Hari.S.K & Mawarti.A, 2023). It can be seen on WR Soepratman road that there is no safety and comfort for pedestrians because the road shoulder is used for parking lots, so there is no space for pedestrians to use it. Street vendors are increasing and there is no pedestrian for pedestrians. Based on this, it is necessary to plan and design pedestrians on the WR Soepratman road that are safe, comfortable so that facilities and infrastructure are facilitated for pedestrian users, so that their walkability can be achieved as an educational area.

LITERATURE REVIEW

Pedestrians are intended for all pedestrians, but are also expected to function for those who can not walk or people with disabilities (different abilities), so that pedestrians are not just for pedestrians in general, but the availability of accessibility paths for people with disabilities (Dharmawan.D, 2004). Pedestrian paths have an important role in connecting and supporting the performance of urban space. So that the pedestrian path becomes an accessibility role that can provide comfort by meeting the needs and abilities of people with intellectual and cognitive disabilities, as well as people with physical and visual disabilities, as well as the needs and abilities of the elderly, pregnant women, infants, and young children (Putri.R.F, 2024).

linkages in urban design, the need for comprehensive pedestrian planning that is interrelated with other urban elements. Thus, the availability of pedestrian paths that can facilitate various types of needs for its users (Sakinah.R, E.Kusuma.H, C.Tampubolon.A & Prakarso.B, 2018).

ased on Regional Regulation Number 4 of 2021 concerning the Bengkulu City Spatial Plan 2021-2041 market 45 states that an area of approximately 284 hectares covering Muara Bangkahulu District, Sungai Serut District, Teluk Segara District, Ratu Samban District, Ratu Agung District, Gading Cempaka District, Singaran Pati District, Selebar District, Kampung Melayu District, as an education area. Meanwhile, WR Soepratman road is located in Muara Bangkahulu sub-district.

Pedestrian regulations have been outlined in the Environmental and Safety Guidelines by the Ministry of Public Works and Public Housing Number 7/P/BM/2023 on Technical Planning of Pedestrian Facilities, that a humane urban environment is pedestrian-friendly. The more pedestrian-friendly a city is, the more livable it will be. One of the efforts that can be made in that

direction is through the provision of pedestrian facilities in the Rumija that are adequate for user groups.

In Chapter 11 paragraph 4 letter b of Law Number 2 of 2022 concerning the Second Amendment to Law Number 38 of 2004 concerning Roads, it is stated that the Road Benefit Space consists of two (2) wheeled motorized vehicle lanes, pedestrians, cyclists, and bicycles. Road Benefits consist of 2 (two) wheel motor vehicle lanes, pedestrians, cyclists, and or persons with disabilities. Based on these legal provisions, road operators have an obligation to ensure that the provision of pedestrian facilities meets the elements of inclusiveness for residents of vulnerable groups, people with disabilities, the elderly, children, and women. Therefore, there is a need for Pedestrian Facilities Technical Planning Guidelines that contains and regulates the provision of inclusive on-street pedestrian facilities. By referring to these Guidelines, it is expected that the pedestrian facilities on the right-of-way provided will be accessible to all groups for safe and secure mobility.

In the Guidelines for Environmental and Occupational Safety by the Ministry of Public Works Public Housing number 7/P/BM/2023 concerning Technical Planning of Pedestrian Facilities, there are pedestrian facilities, which are:

1. Main Facility

The main facilities consist of sidewalks and crosswalks (both at-grade and at-grade) that accommodate the needs of pedestrians with special needs. The facility requirements for pedestrians with special needs include people walking with strollers and/or using assistive devices such as wheelchairs, canes, crutches, etc., thus requiring barrier-free pedestrian facility design. The minimum pedestrian space adjusts for the average special needs of width, maneuverability, and dynamic requirements including those of assistive devices used by pedestrians with special needs.

2. Pedestrian facilities at Temporary Work Areas

Temporary pedestrian facilities due to construction work, especially in urban and suburban areas. Some points to consider in relation to pedestrian safety issues include:

- a. The need to separate pedestrians from conflicts with vehicles at the work site, equipment, and work execution;
- b. Provide safe, secure, accessible pedestrian facilities, equipped with signs and other warning signs that are accessible to pedestrians with special needs with walking lanes that are as convenient and close as possible; and
- c. The type of facilities provided are sidewalks or paths including continuous facilities for pedestrians with special needs.

3. Pedestrian support facility

Pedestrian supporting facilities include:

- a. Signage and markings

The placement of road signs and markings must be efficiently calculated to ensure the safety of road users.

- 1) Road markings are intended as a reminder to drivers to exercise caution and stop at appropriate locations to allow pedestrians to use the facility safely. Pavement markings should strive to provide protection to more vulnerable road users, such as pedestrians and cyclists.
- 2) Signs are placed on facility paths, at points of social interaction, on paths with heavy flow of people, with the size as needed, and the materials used are made of materials that have high durability, and do not cause glare effects and are accessible to pedestrians with special needs.
 - b. Speed control
speed limiters are facilities that force drivers to reduce their vehicle speed when approaching a crossing facility or a specific location. With this speed reduction, pedestrians are expected to cross more safely.
 - c. Waiting stalls
Waiting stalls are facilities for pedestrians to temporarily stop while crossing. Road crossers can stop temporarily while waiting for the opportunity to make the next crossing. The facility is placed in the road median and at the mode change, i.e. from pedestrian to public transport mode. These facilities should also be equipped with guideways, ramps, and other accessible facilities that facilitate and ensure pedestrian safety and security.
 - d. Lighting of pedestrian facilities
Pedestrian facility lighting is a facility to provide good lighting so that the pedestrian facility area can be safer and more comfortable. Lighting is placed on the path of the facility.
 - e. Security fence
Guardrails are placed at specific locations that are dangerous and require protection. Their placement still takes into account the planning principles of pedestrian facilities, including the ease with which pedestrians can directly access destinations.
 - f. Shielding or shading
Guardrails are placed at specific locations that are dangerous and require protection. Their placement still takes into account the planning principles of pedestrian facilities, including the ease with which pedestrians can directly access destinations.
 - g. Green belt
Greenways located at key pedestrian facilities, placed on facility paths
 - h. Seating
The placement of seating at pedestrian facilities is intended to increase pedestrian comfort. Seating is placed in the path of the facility and should not interfere with pedestrian movement.
 - i. Dustbin
Trash bins are placed on the path of the facility with height settings and easy access to the bins for pedestrians with special needs. The placement of waste bins at pedestrian facilities is only to accommodate waste generated by pedestrians and not to accommodate household waste around pedestrian facilities.

- j. Bus stops or shelters
Bus stops or shelters placed on sidewalks should not reduce the effective width of the pedestrian path.
- k. Bollard
Bollards are placed at conflict hotspots between pedestrians and motorized vehicles, e.g. at the access of a parcel driveway, crossing ramps bollards are placed at points prone to conflict between pedestrians and motor vehicles, e.g. at the access road to the parcel, crossing ramps, so as to minimize the risk received by pedestrians in the conflict space between motor vehicles and pedestrians. The installation of bollards takes into account the ease with which pedestrians, including wheelchair users, can pass through them.
- l. Bicycle parking
Bicycle parking can be placed on sidewalks adjacent to access points of transportation nodes, office centers, shopping centers, tourist areas, and recreation. The placement of bicycle parking should not reduce the effective width of pedestrian facilities and interfere with pedestrian activities.
- m. Surveillance camera
Closed Circuit Television (CCTV) or surveillance cameras can be installed for surveillance in areas that require monitoring, as well as connected to the complaint service. Surveillance cameras are prioritized at locations such as:
 - 1) Non-transectional pedestrian crossing
 - 2) Locations that require special monitoring such as schools, inclusion services, and crime-prone locations.
- n. Emergency box
The system consists of communication media that aims to be used during emergencies in the form of panic buttons or telephones integrated with security services.
- o. Signage
It can be a stand-alone board or added to other pedestrian facilities (bus stops, lamp posts). Installations are placed in strategic locations such as bus stops, stations, public open spaces and commercial areas. The information system should have a high level of legibility and be accessible to all pedestrians.

Pedestrian path (sidewalk)

Sidewalks of a certain height aim to provide safety for pedestrians from vehicular traffic. Sidewalk heights are divided into 4 (four) categories based on the following conditions:

Table 1 - Sidewalk heights

No	Sidewalk Height	Implementation Condition
1	0 - 6 cm	Applied to urban areas with sidewalk segments that have protection in the form of fences, continuous plant/tree barriers and/or roads that are only dedicated to pedestrians, cyclists,

		and public transportation with vehicle speed restrictions. Illustration can be seen in Figure 1.
2	6 - 15 cm	Applied to urban areas with land segments that have parking lot edges. The area and slope requirements follow the requirements of the access road in and out of a parcel. An illustration of an example application can be seen in Figure 2.
3	15 - 20 cm	Applied to arterial and collector roads or other roads that have heavy traffic and high vehicle speeds.
4	20 - 25 cm	Applied to roads with arterial functions that are regularly traveled by heavy vehicles.



Figure 1 - Illustration of a sidewalk with the same height as the roadway



Figure 2 - Illustration of a sidewalk along a lot with parking edges
 The effective width of the pedestrian lane based on the needs of two wheelchair users passing each other or two adults with goods passing each other is at least is 185 cm.

If additional facilities are to be installed on the sidewalk, the sidewalk dimensions that should be provided can be found in the table below.

Table 2 determining sidewalk dimensions based on location and maximum pedestrian flow

location	Maximum pedestrian current	Zona				Total dimensions
		kereb	Facility pathway	Eff ecti	Front of the	

					ve wid th	building	(roundi ng)
Arterial Roads	City center (Central Business District/CBD) Along parks, schools, and other major pedestrian generating centers	80 pedestrian/ minute	0,15 m	1,2 m	2,75 - 3,75 m	0,75 m	5 - 6 m
Road Collector	City center (Central Business District (CBD) Throughout parks, schools, and other major pedestrian generating centers	60 pedestrian/ minute	0,15 m	0,9 m	2 - 2,75 m	0,35 m	3,5 - 4 m
Local Roads	Inclusion service	50 pedestrian/ minute	0,15 m	0,75	3 m	0,15 m	4 m
	Region housing	35 pedestrian/ minute	0,15 m	0,6 m	1,5 m	0,15 m	2,5 m
	others	50 pedestrian/ minute	0,15 m	0,75 m	1,9 m	0,15 m	3 m

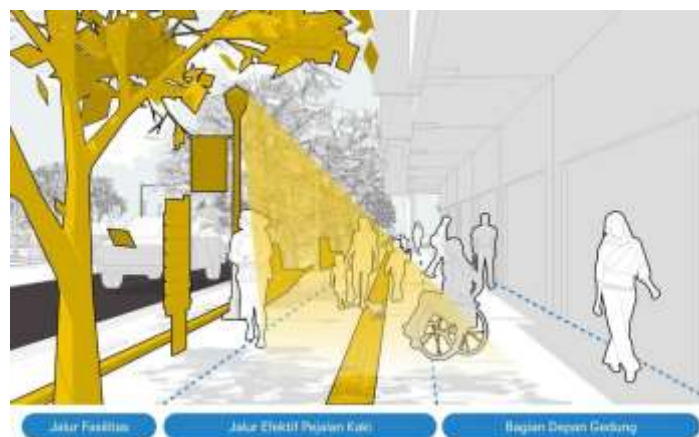


Figure 3 - An example of the division of zones on the sidewalk can be seen in

METHODOLOGY

The research method used in this research is using descriptive method. This method is used to obtain influential factors based on field studies, observations to obtain supporting factors for designing pedestrians. Data collection in the form of, literature study, observation study, data analysis and formulating design concepts. The research location is on WR Soepratman road (the entrance gate of Bengkulu University back to Elementary School 69 Bengkulu city).



figure 4 of the research location



figure 5 of the research location

RESEARCH RESULT

The observed area is an education, trade and service area where there is a university campus and an elementary school. So that the surrounding activities are diverse, especially for pedestrians. Based on the survey results, and field observations, it was found that:

- a. Road size 8 meters
- b. No sidewalks
- c. Lack of vegetation
- d. Pedestrian path is used as a parking lot
- e. Road shoulder becomes a vehicle parking lot
- f. The road shoulder is used for selling street vendors (PKL)
- g. Road shoulder condition is very chaotic

h. there is no drainage



Figure 6 Existing Daytime Activities



Figure 7 Existing nighttime activities

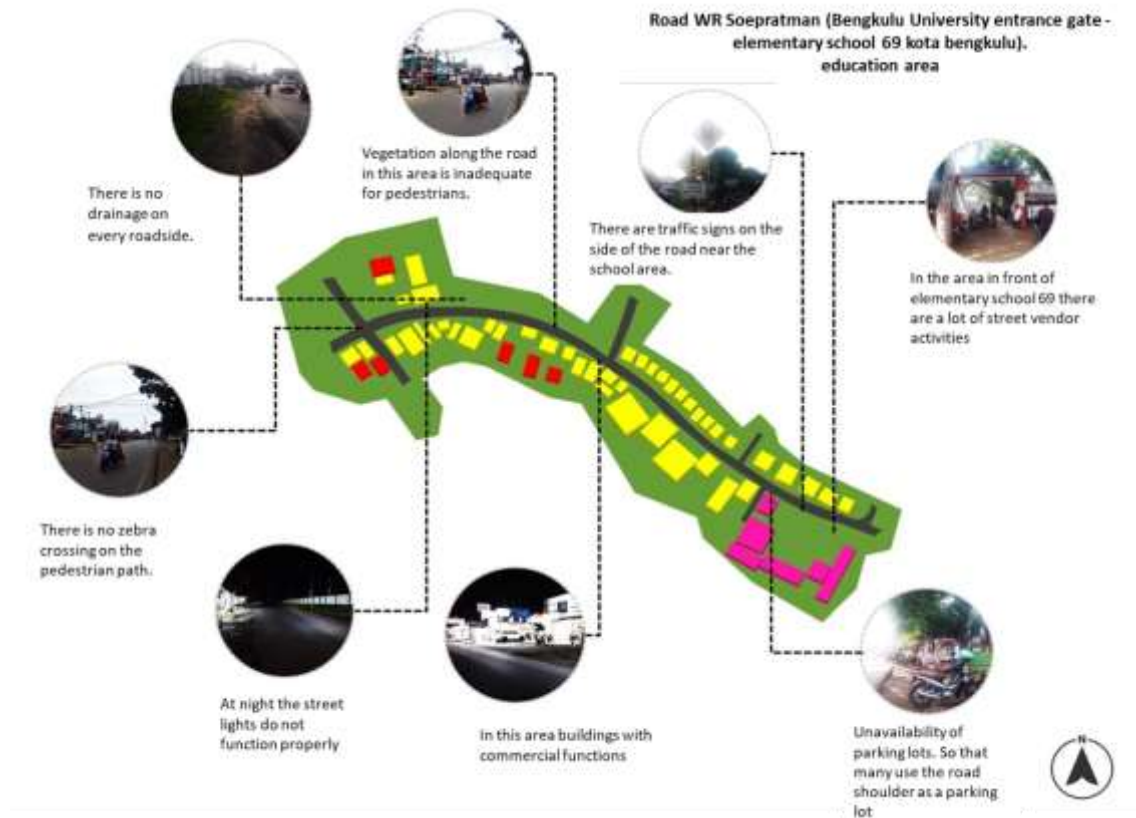


Figure 8 Existing Activity

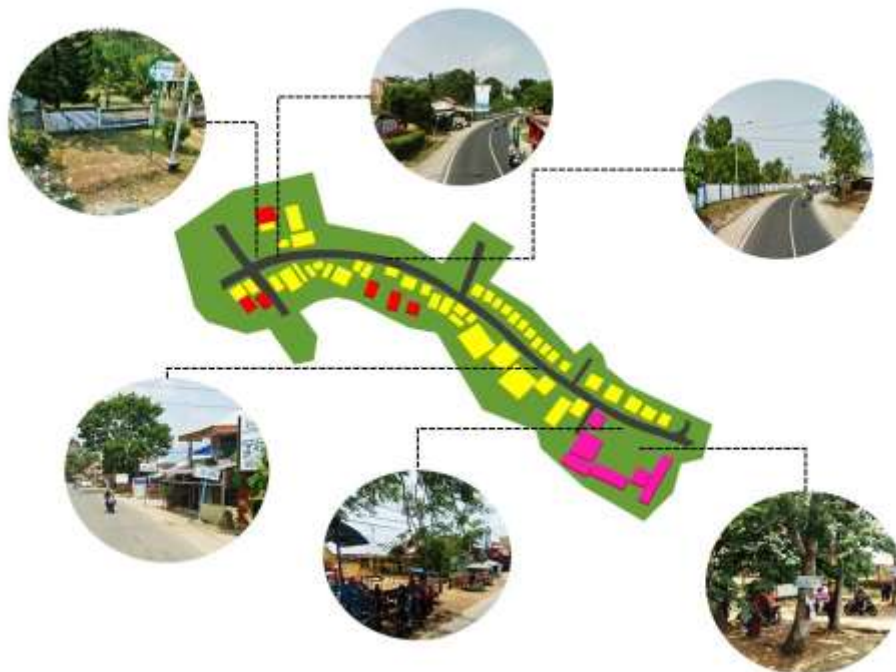


Figure 9 Existing Open Space Land

In addition, some places for pedestrians in the area both for walking and shopping and recreation purposes (food stalls, mini markets, and stationery

stores). And in the open space along the pedestrian area for street vendor activities using strollers selling food and drinks.

DISCUSSION

a. Sidewalk pedestrian space

The condition of the education area on WR Soepratman road does not have pedestrians. There is no space for pedestrians on the side of the road (Sidewalk). Whereas the pedestrian space on the side of the road (sidewalk) is part of the pedestrian path system from the edge of the highway to the outer edge of the building's property. but field conditions show that the shop building is built to the edge or on the shoulder of the road body.

b. Drainage

Drainage is located adjacent to or below the pedestrian space. Drainage functions as a container and water flow path in the pedestrian space. The presence of drainage will prevent flooding and stagnant water when it rains. The minimum dimensions are 50 centimeters wide and 50 centimeters high. For the drainage system that can be used based on the limited space, it will be designed with a drainage system below the pedestrian space.

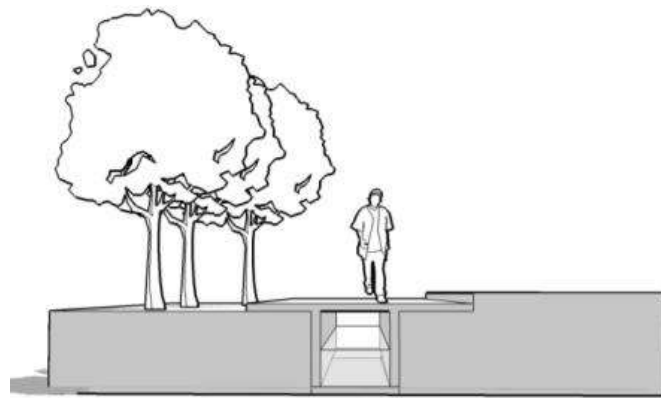


Figure 10 Drainage

c. Green zone

On some sides of this area there are obstacles with the close distance between the road and the building. So it requires a design with a security system for pedestrians that can be poured in the form of a green zone, and can also be used as a place to place furniture and complementary elements for activity support on the pedestrian.



Figure 11 design approach

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of analysis and discussion, the design solution is to provide special space for pedestrians in addition, pedestrians who are friendly to people with disabilities or pedestrians with special needs.

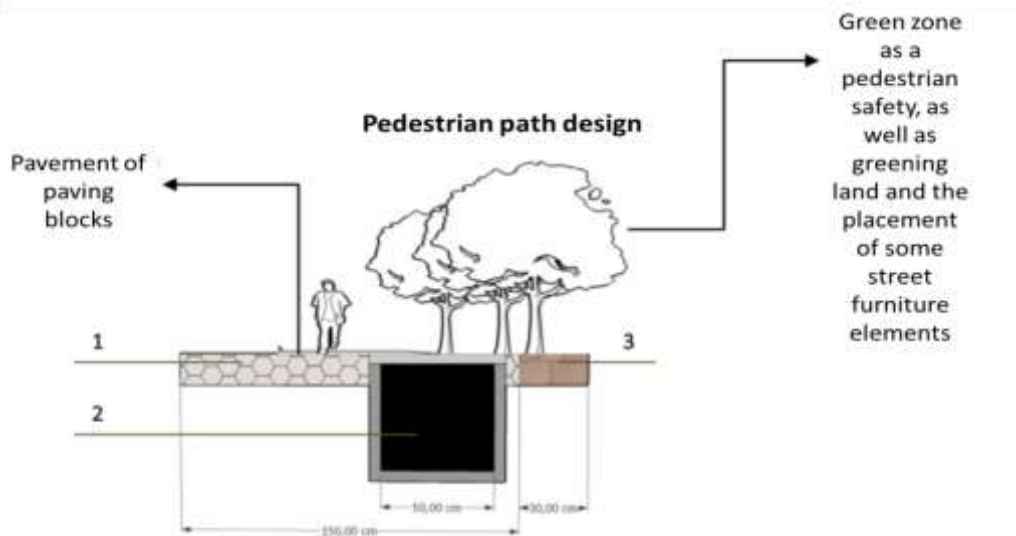


Figure 12 pedestrian pathway design

Description :

1. Pedestrian Area with Vaving Block size 20x20cm
2. Drainage under the Pedestrian path as an effort to overcome the lack of sewerage and narrow land.
3. Cement pots to protect pedestrians from unexpected hazards.

In addition to the Main Functions, and additional Drainage channels in the application of design WR Soepatman road pedestrian design. Also designed with the existence of Guiding blocks as a guideway for the blind.

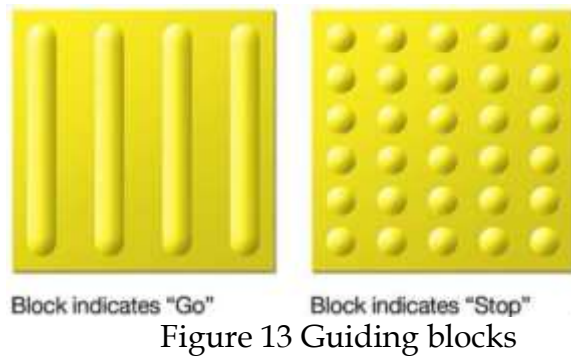


Figure 14 pedestrian design

ADVANCED RESEARCH

The sustainability of this research is expected to emphasize the design of activity support, open space, signage systems, shelters with an inclusive design approach that is friendly to disabled or special users on the WR Soepratman road corridor as a form of providing space for pedestrians and supporting educational areas, as a form of sustainable design.

ACKNOWLEDGMENT

We would like to thank Universitas Muhammadiyah Bengkulu and the Architecture Study Program of the Faculty of Engineering, Universitas Muhammadiyah Bengkulu for the support provided to enrich the characterization data in this research as well as the architecture students involved in this research.

REFERENCES

- A.Susetyaningsih,I.Farida&A.Zhafirah," Optimization of utilization pedestrian trails and green lines in the city." *Journal of Physics : Conference Series*" Vol 1402, Issue 2 , pp. 1-5. 2019. <https://iopscience.iop.org/article/10.1088/1742-6596/1402/2/022015/meta>
- Desetyaningrum.I,Ratih.S.A," Optimalisasi Jalur Pedestrian Bagi Pengguna Disabilitas di Jalan Imam Bonjol Semarang." *Jurnal Arsitektur ZONASI*" Vol 4, No 3, pp 378-387.2021. <https://doi.org/10.17509/jaz.v4i3.37986>
- Dharmawan.D, "Mengamati Peran Pedestrian Dalam Kehidupan Sosial Ekonomi Masyarakat Studi Kasus: Daerah Sudirman-Thamrin Jakarta." *NALARs'* Vol.3, No 1, pp.76-95. 2004. <https://library.gunadarma.ac.id/journal/mengamati-peran-pedestrian-dalam-kehidupan-sosial-ekonomi-masyarakat-studi-kasus-daerah-sudirman-thamrin-jakarta>
- Ersina.S,Rahayu.I &Yuliana," Jalur Pedestrian Sebagai Salah Satu Fasilitas Perkotaan Di Jalan Prof. Abdurahman Basalamah, Makassar." *Jurnal NATURE (Nation Academic Journal of Architecture*" Vol 4, No 1, pp 57-65. 2017. <https://doi.org/10.24252/nature.v4i1a7>
- Hari.S.K&Mawarti.A," Evaluasi Kualitas Ruang Pedestrian di Kawasan Ciputat Timur dengan Parameter Walkability." *Jurnal Arsitektur (LAKAR)*" Vol 6, No 1. Pp.74 - 91.2023. <http://dx.doi.org/10.30998/lja.v6i1.16541>
- Nazala D.F & Tri.N.F, " Kualitas dan Kenyamanan Jalur Pedestrian di Penggal Jalan Slamet Riyadi Surakarta." *Jurnal Arsitektur Sinektika*" Vol.17, No 2, pp. 162 - 170. 2020. <https://journals.ums.ac.id/index.php/sinektika/article/view/11627>
- Safitri.J.R, Sari.R & Fatoma, "Structuring the WR Soepratman Street Corridor in the Context of Locality." *IJARSS*" Vol 1, No 1, pp. .2023. <https://doi.org/10.59890/ijarss.v2i1.1294>
- Sari.D.R," artikel Membenahi Pelayanan dan Penghargaan hak Pejalan Kaki (Pedestrians)" *Ombudsman.go.id* , 2019. <https://www.ombudsman.go.id/artikel/r/artikel--membenahi-pelayanan-dan-penghargaan-hak-pejalan-kaki-pedestrians>
- Sakinah.R,E.Kusuma.H,C.Tampubolon.A &Prakarso," Kriteria Jalur Pedestrian di Indonesia." *Jurnal Lingkungan Binaan Indonesia (JLBI)*" Vol. 7 No 2, pp. 81-85. 2018. <https://doi.org/10.32315/jlbi.7.2.81>
- Peraturan Daerah No 4 Tahun 2021 tentang RTRW Kota Bengkulu Tahun 2021-

2041. <https://peraturan.bpk.go.id/Details/188182/perda-kota-bengkulu-no-4-tahun-2021>
- Pedoman Bidang Lingkungan dan Keselamatan Kerja oleh Kementerian PUPR No.7/P/BM/2023 Tentang Perencanaan Teknis Fasilitas Pejalan Kaki. <https://keselamatanjalan.wordpress.com/wp-content/uploads/2024/06/se-djbm-07-2023-pedoman-perencanaan-teknis-fasilitas-pejalan-kaki.pdf>
- Putri.R.F," Fasilitas Pejalan Kaki Untuk Difabel Pada Jalur Pedestrian Jalan Slamet Riyadi Surakarta Sisi Selatan." *Journal of Architecture, Cultural, and Tourism Studies*" Vol II, Issue I, pp.80-89. 2024. https://www.researchgate.net/publication/382619173_FASILITAS_PEJALAN_KAKI_UNTUK_DIFABEL_PADA_JALUR_PEDESTRIAN_JALAN_SLAMET_RIYADI_SURAKARTA_SISI_SELATAN
- Putri.R.F,"Pedestrian Jalan Slamet Riyadi Surakarta Sebagai Pendukung Sustainable Development Goals." *Jurnal Arsitektur TERRACOTTA*" Vol 5, No 1, pp. 1-12.2023. [10.26760/terracotta.v5i1.8841](https://doi.org/10.26760/terracotta.v5i1.8841)
- Undang-Undang Nomor 2 Tahun 2022 tentang Perubahan Kedua Atas Undang-Undang Nomor 38 Tahun 2004 tentang Jalan. UU No. 2 Tahun 2022 (bpk.go.id) <https://archinesia.com/pedestrian-untuk-kota-layak-huni/>