Pedestrian Study on Campus University (Case Study: Universitas Tarumanagara at Campus I)

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ABSTRACT
This paper discusses the pedestrian path of the Universitas Tarumanagara (Untar) at Campus I. This is important because the pedestrian path starting from the access S. Parman Road to the west to Buildings L and J entrance are still lacking. It is necessary to increase the circulation path that connects the entire campus to be safe and comfortable. Parking Building with Buildings J terrace has not been contacted with a sky bridge so that learning activities are not obstructed by rain. Pedestrian paths are important in the campus environment as a means of circulation, ecology, aesthetics and interaction space for campus people. The problem of this research is how to realize the pedestrian path of the Untar at the campus I can be a social interaction space for campus users and organize greenery so that the aesthetics of the environment around the campus? Therefore, this study aims to map activities on the pedestrian path as a space for social interaction and increase aesthetic value. This study uses a descriptive qualitative method by dividing the zone from the object's site, identifying each existing element along with the existing activities. The data of these zones were analyzed using landscape theory (research focus on: vegetation, aesthetics, pedestrians and social interactions). From the analysis conducted, the researchers found findings that the Untar at campus I needs to reorganize the pedestrian path with the addition of vegetation in several zones, signage to be informative for every visitor, artificial lighting at night in certain zones and the use of exterior materials.

Keywords: *Campus, pedestrian, material, social interaction, aesthetic*

1. INTRODUCTION

The city of Jakarta is overgrowing and impact the development of education. In general, campus as a place for education is a superblock building complex. As the campus grows, it demands a comprehensive complex between the building and its facilities, outdoor space (landscape) parking area, and other facilities. The Campus, which is a superblock building, cannot be separated from the circulation between blocks. Therefore, pedestrians as a liaison between blocks are very important.
The development of education in Indonesia from year to year is getting better, this makes more and more universities, both public and private, appear. In Jakarta this growth is very pronounced. One of the most famous and oldest private universities in Jakarta is Universitas Tarumanagara.
The rapid development of the city of Jakarta as the capital has an impact on the increase in the number of Universitas Tarumanagara students, hereinafter referred to as Untar, so Untar needs to expand the campus by adding lecture rooms. This makes the number of buildings on campus I Untar continue to grow. The initial construction of Untar (permanent building) was the construction of a 5- floor J building and an 8-floor L building, an 8-floor K building followed by an R building for lectures, an 8-floor M building for the rectorate, foundations, lecturer training and meeting rooms.
The city of Jakarta is growing rapidly and has an impact on the development of education, in general, campus as a place for education is a superblock building complex. As the campus grows, it demands the construction of a comprehensive complex between the building and its facilities, outdoor space (landscape), parking area and other facilities. The campus, which is a superblock building, cannot be separated from the circulation between blocks. Therefore, pedestrians as a liaison between blocks are very important.
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The last campus building development was the construction of the 21st floor Main building for the library, lecture hall, auditorium, rectorate room, Tarumanagara Foundation room and bank branch office. The top floor is used for a ballroom which can be used for student/lecturer meetings and seminars. To cover maintenance costs, this ballroom is rented out for weddings, seminars and business meetings. Due to the insufficient capacity of the campus parking area, at the same time the construction of the main building was also built to accommodate parking for students and visitors.

The current condition of Campus I Untar needs to be evaluated considering the increasingly complex developments and needs. Pedestrian paths are important in the campus environment as an ecological, aesthetic and as a space for interaction between campus people. The current condition of Campus I Untar needs to be evaluated considering the increasingly complex developments and needs.

With the presence of seven building superblocks, the mass composition of the Untar campus I was formed, along with its outer space consisting of landscapes, parking areas and circulation paths, pedestrian paths, building utility areas. Landscapes, pedestrian paths are open spaces that are very important to support the success of teaching and learning activities and increase the aesthetic value of the environment around the campus. Campus I Untar has actually tried to meet these needs, but it is necessary to increase the role and function of the current open space so that it can be used more as a comfortable social interaction space for human beings.

In addition, pedestrians in the campus environment are one of the most important elements of the landscape to be considered. Pedestrians in addition to being a path for human circulation (pedestrians) are also a place for social needs between individuals and other people, as well as a means of open space. A good pedestrian path has requirements so that pedestrians are comfortable, safe and smoothly walking on it.

According to Darmawan, the word pedestrian comes from the Latin pedestres, which means people who walk. The pedestrian path was first known in 6000 BC in Khirokitian, Cyprus. At that time the pedestrian was made of limestone and then the surface was raised to the ground and at certain intervals and a ramp was made to go to the residential group on the side [1]. [1]

According to Kostof, pedestrian is the movement or circulation and movement of people or humans from one place from the point of origin (origin) to another as a destination (destination) on foot [1].

According to Rubenstein, pedestrian paths are pedestrian sections, both integrated and separated from the road, which are intended for pedestrian infrastructure and facilities as well as connecting activity centers and mode change facilities [2]

Shirvani and Linch argue that pedestrians are part of public space, which is an important aspect of urban space, and whether in the form of squares, open spaces or roads (corridors), pedestrian ways at a location form a relationship between [3].

According to Ahmad, Edwards, Untermann, pedestrian paths in the campus area to facilitate circulation and encourage walking activities must have clear, safe, easy-to-find, fun, and support user interactions [4].

According to Burton, 6 variables that become parameters of Urban Design Streets for Life in a study are; familiarity, legibility, distinctiveness, accessibility, comfort, safety, but after being studied and simplified into 3 variables, namely; accessibility, comfort and safety [5].

Circulation includes the movement of both vehicles and pedestrians, is closely related to changes and the series of sensory experiences and environments that are felt along the path. So, it is important to recognize that the circulation design is a sequence of experiences developed in such a way even though the planned path is straight [6].

The relationship between the circulation path and the attainment is very close and the relationship between the circulation path and space consists of three: the path through the space of integrity is very strong, the groove shape is quite flexible, the path intersects space has characteristics that result in movement and still space and the path ends in the space having location characteristics. space, determines the direction and is used in spaces with functional conditions and symbols [7].

Circulation is the movement of vehicles with pedestrians at a location, including the speed and peak load of traffic flows of vehicles and pedestrians around the bus stop, around the location, traffic activities, access to goods trucks and non-smooth movements. Traffic analysis so far is a projection of the future [8].

2. METHOD

This research uses descriptive qualitative research with a focus on pedestrian paths with a focus on safety, comfort and aesthetic research. Methods The study is initiated from the record all the facts and then sharpen the focus of research, making the criteria for special then describe it [9]. The research is conducted by observation and analysis of the cut- zoning-zoning as many as seven zones. This zoning is carried out based on the character and nature of the accompanying activities. Each zone is recorded on the material, elements of the landscape, activities that exist in the zone that, vegetation and lighting.

This study interviewed campus users consisting of: 4 undergraduate students 20 years old, one postgraduate student 24 years old, three undergraduate lecturers 60 years old, two undergraduate lecturers 70 years old, 2 educational employees 30 and 40 years old using whatsapp, 2 campus managers 35 years old with zoom meeting and 1 70 year-old elder and whatsapp phone. In addition, data in the form of master plan drawings and the history of the founding of Untar are also required. After the data was collected, it was

analyzed using landscape theory about the condition of materials, vegetation, atmosphere and activities on the pedestrian campus I Untar, then the findings were obtained.

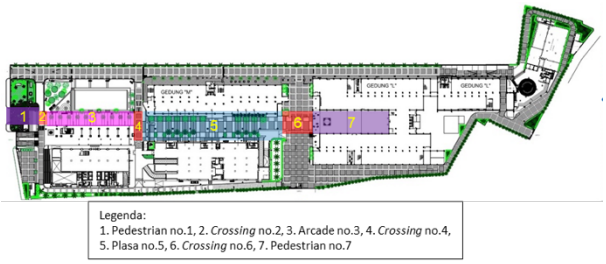
Legenda:
1. Pedestrian no.1, 2. Crossing no.2, 3. Arcade no.3, 4. Crossing no.4,
5. Plasa Untar no.5, 6. Crossing no.6, 7. Pedestrian no.7.

Figure 1 Zona Untar Campus I Lanscape

3. RESULT AND DISCUSSIONS

Pedestrian Path Analysis in Untar Landscape

The pedestrian path for Campus I Untar starts from the S Parman access road: Pedestrian path no. 1, crossing no. 2, arcade no. 3, crossing no. 4, Plasa no. 5, crossing no. 6 and pedestrian path no. 7 ending at L & J Building Elevator (Figure 2).



Legenda:
1. Pedestrian no.1, 2. *Crossing* no.2, 3. Arcade no.3, 4. *Crossing* no.4,
5. Plasa no.5, 6. *Crossing* no.6, 7. Pedestrian no.7

Figure 2 Pedestrian Path Untar Campus I Situation

3.1. Pedestrian Path no.1

No. 1 pedestrian path starting from the access road S Parman up to crossing 1 (figure 3 and figure 4) visible substance floor of paving blocks, seen roof covered pergola framework of steel and covered the glass clear, is provided for shelter at a time when the rain but the heat when bright sun. The paving block floor has a rough surface so that when it rains it is not slippery, it is good enough for pedestrian paths because the installation is quite neat, but the steel pergola with glass cover does not provide shade for users during the day.
The result of pedestrian path analysis no.1.
The surface of the floor path pedestrian made of paving blocks with a surface rough so not slick at a time when the rainy / wet but pergola glass less shade at a time when during the day and most are dak concrete coated aluminum composite panel enough to withstand the rays sun and the outpouring of rain

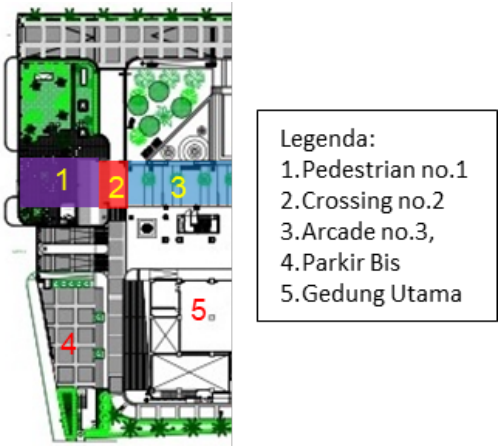


Figure 3 Pedestrian Path Design No. 1 and *Crossing* No. 2

Figure 4 *Pathway* No. 1

3.2. Crossing No. 2

Crossing No. 2, lane pedestrian path between with the vehicle road at the entrance to the courtyard campus I Untar (figure 4) for already give warning with made picture zebra crossing in floor paving blocks, and the frequency of vehicles that pass a little. At No.2 crossing the floor of paving blocks with a surface rough so not slick at a time when the rain, next to the right- supplied pedestrian covered by concrete roofing and the concrete fascia board coated aluminum composite panel, to track pedestrian and shelter at a time when rain, eaves is continuous to the building main.

Crossing analysis result No. 2.
The floor surface of the pedestrian path is made of paving blocks with a rough surface so it is not slippery when it rains, in order to improve pedestrian safety, besides being given a zebra cross image, it is better to add a rubber lane that can vibrate the vehicle so that vehicle drivers are careful and reduce vehicle speed. At the crossing no.2 partially open so the heat in during the day and partly longer covered roof of the canal from the lane pedestrian no.1 which can be used pedestrian leg so no heat in during the day and protect it when rain

Figure 5 *Crossing* No. 2

3.3. Arcade No. 3

Arcade No. 3 from crossing No. 2 followed by Arcade No. 3 because this pedestrian path is on the side of the main building, the arcade floor is made of paving blocks, so it's not slippery when it rains. In some places the condition of the surface of the paving block had not flat (Figure 7).

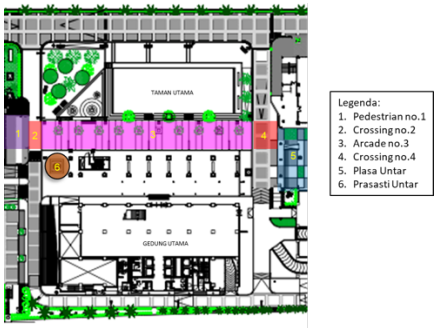


Figure 6 *Arcade Design*

Figure 7 *Arcade no.3*

Next to the left, there are tub plant -shaped boxes. Then, the area serves as a place to sit, central hollow to planted trees shade. More towards the left, there is a field of grass and a pond with a water fountain. Next to the right, there is a canopy of concrete. It was coated aluminium composite panel that adds to the majestic. The canopy is past the crossing no.1 heading to post a security guard, so it can be as a shade and paths pedestrian foot at a time when rain. In front of the right (Figure 6) there is a duplicate of the Tarumanagara Kingdom inscription.
This arcade can accommodate social interaction activities of campus users, rest, study to prepare for exams, discussions and meals, unfortunately the trees are not shady to shade those sitting on park benches.

Arcade analysis results No. 3
The surface of the floor arcade made of paving blocks with a surface rough so not slick at a time when rain and partly longer than stucco smooth coated polyurethane so slippery when wet. Pedestrian is partially covered with a canopy of the building principal made of concrete coated aluminium composite panel so it can protect pedestrians walking too hot daytime day and take shelter at a time when rain. Trees shade less shade so less protect when sitting on the bench pedestrian this. There is no main building signage yet.

3.4. Crossing No. 4

Crossing no.4 is located behind the arcade 3 lane pedestrian intersect with lines of vehicles heading to the building parking lot in crossing 4, in front have seen pargola steel with a roofed glass that protects the pedestrian foot around the building M as an alternative path would soften the rain (Figure 8) Plasa Untar. The floor material for crossing 4 is made of paving blocks, at pedestrian crossings with vehicle lanes the floor is painted with a zebra cross motif as a warning to vehicle drivers to be careful and pay attention to pedestrians.
The results of the analysis of crossing no. 4. The surface of the crossing floor is made of paving blocks with a rough surface so it is not slippery when it rains to improve pedestrian safety. In addition to the image of a zebra cross, rubber lanes should be added that can vibrate the vehicle so that vehicle drivers are more careful and reduce vehicle speed. At the crossing no.4 section open at noon -day heat and soften the rain wet, but there was a skybridge floor 2 which contact the building parking lot to the building principal (figure 9) as the path circulated an alternative in times of rain.

Figure 8 Transparent pergola

Figure 9 Sky bridge

3.5. Plasa Untar

Plasa No. 5 after crossing the Crossing No. 4 and passed pergola glass pedestrian leg up in the Plaza No.5, the floor is made of paving blocks measuring 21 x 21 which combined with stucco pattern of grooves and the coating-wet look, so it is not slippery at a time when wet , adjacent to the left and right are tubs of plants shaped in terms of four high as 40cm filled with tree ornament and tree shade , next to the right there are tubs of plants as tall as 50 cm shaped boxes can be used as a place to sit, filled trees palm, leaves less shady, plaza it also serves as a place of rest, discussion, meal and activity interactions social other (Figure 7) but at noon the day the plaza feeling the heat.
For the aisle building M has provided a ramp to facilitate the distribution of goods needs of the campus and to facilitate the transportation of people with disabilities, the beginning and end of the ramp is given the yellow (figure11) From the plaza toward the hall elevator building

parking available ladder (Figure 12), the ladder is coated granite tile with a smooth surface so smooth if wet. High optrede 21 cm and width antrede 30 cm pretty steep, especially users who are aged above 50 years, the slope of the stairs the tune of 28 ° -36 ° (Francis DK Ching, 1997 image 13).

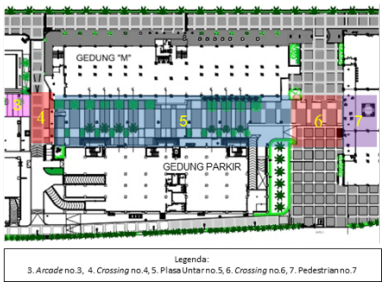


Figure 10 Plasa Untar

Figure 11 M. Buiding

Figure 12 Parking Building

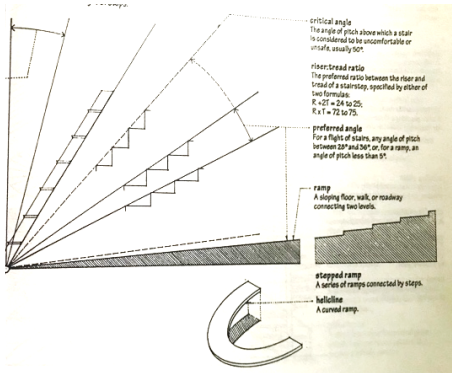


Figure 13 Preferred Angle Stair

Analysis results Plasa no. 5.
Ramp leading to building M slope of less ramps so less comfortable, the stairs from the plaza leading to the hall elevator building parking should be made more ramps 28-36 ° in order to make users who are already aged feel comfortable, child stairs leading into the building parking lining is replaced material with a surface rough so it is not slippery at the time of the rain so it should be reconstructed again. Supplied signage that leads to building M and building parking.

3.6. Crossing No. 6

Crossing No. 6 on the left wing of crossing 6 is used for the vehicle parking area and its circulation path, this parking area provides parking for the disabled and a loading dock, behind which the parking area attached to building L is planted with shade trees. In the background (Figure 14) a steel pergola with a glass cover can be seen that connects the M building and L building for an alternative circulation path and can be used on rainy days, a glass pergola. A continuation of the plaza no.5, the floor is made of paving blocks that are not slippery at a time when the rain, but in the afternoon the day was hot because it is not covered roof or tree protectors and should cross the path of the vehicle and no there is a zebra crossing (Figure 14).

Figure 14 *Crossing* No. 6

Figure 15 The Perspective of Crossing No. 6

The results of the analysis of Crossing No. 6
That the floor surface of the paving block is installed with a checkered pattern, the surface is rough so it is not slippery when it rains, but at this crossing there is no warning sign that the pedestrian path intersects with the vehicle lane so pedestrians must be careful, it should be between lanes vehicles and pedestrian paths are given a different floor surface height or given a rubber groove that will surprise the driver of the vehicle to be careful and reduce the speed of the vehicle when passing through the pedestrian lane. Conditions look arid because pedestrians are not protected by tree shadows so it is hot during the day and wet when it rains. So, cover crops should be propagated. There is no signage to the J building and L building.

3.7. Pedestrian Path No. 7

No.7 Pedestrian Path starting from the porch roof spandek-shaped curved which is a side entrance of the building A and building L, with a floor using stone temple pedestrian foot rise of Crossing 6 using the stairs or ramp. From this terrace, we go down again to the pedestrian path no. 7 with a trap roof ramp with a less gentle slope. No.7 pedestrian path cover with block paving squares size 21 x 21 cm2 combined with mill the pattern of grooves wet look coating that is not slippery at a time when wet (Figure 17), side left and right are equipped with tubs of plants filled with plants shade and shrubs partially equipped with a place to sit the coated ceramic red brick and below the point of sitting is equipped with lights, shade trees is not shady so less to

protect the user against the scorching sun and bush not been arranged properly. Then pedestrian foot until at entrance hall elevator. This terrace has a temple stone floor and is coated with a wet look coating that is not slippery when it rains.

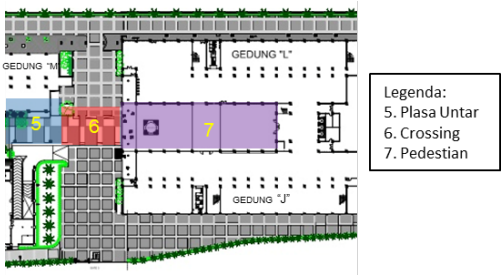


Figure 16 Pedestrian Path No.7 design

Figure 17 The Perspective of Pedestrian Path No. 7

The result of Pedestrian Path analysis No. 7.
To achieve the lane pedestrian no.7 pedestrian foot should rise trap or ramp sadly lacking ramps to the terrace side entrance of the building L and building J, or go down to the track pedestrian no.7, floor terrace covered with stone temples so not slick at a time when rain patio is roofed spandek-curved shape.
Pedestrian path ranging from the terrace side entrance of the building J and L to lobby elevator building A and building L, the floor is made of paving blocks that are not slippery at a time when the rain, in the next to the left and right are like plants shaped in terms of four, partly equipped with benches coated with ceramic-colors brick, under a place to sit by the lamp for illumination at night the day. Trees less shade that has not calmed the campus of the sting light of the sun during the day.

4. CONCLUSION

The pedestrian path of Campus I Untar is straight from west to east, the direction is clear, safe and comfortable, the width is > 12 m adequate for pedestrian paths and the floor is rough so it is not slippery when wet, the protective trees are not shady, the circulation path for the pergola cover and overhang is not wide and transparent. so less protection in the heat and rain. Social interaction spaces are located around the arcade-drop off of the Main Building, Untar Plaza, pedestrians between Buildings L and J.
The city of Jakarta is growing rapidly and has an impact on the development of education, in general, campus as a place for education is a superblock building complex. As the campus grows, it demands the construction of a comprehensive complex between the building and its facilities, outdoor space (landscape), parking area and other facilities. The campus, which is a superblock building, cannot be separated from the circulation between blocks. Therefore, pedestrians as a liaison between blocks are very important.

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