

A Design of walkway to Connection at Taksin Bridge

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Abstract

In the past, water transport was the main transport in Thai society. People have been used this kind of transportation to travel from one place to another place up until now. Even though Thai society is not using water transportation as much as before, but in many areas, water transportation is still the main transport to connect to people living between banks of Chao Phraya River. Taksin Bridge is one of the areas that connect the community that living alongside Chao Phraya River. Taksin Bridge is the connection of much transportation such as Ferry, Sky train, car, and walk. All generations are using this transport such as student and people who live in that area, and numbers of tourists are using transportation at Taksin Bridge. Taksin Bridge transportation is a convenient area for connection of transport and tourism. Nowadays Taksin Bridge transportation is degraded by the passage of time also the environment around is lack of care and developments such as Public Park, the traffic that may confuse the people are using and inconvenient for connection between transportation. The project is to design to connect transportation between two banks of Chao Phraya River at Taksin Bridge area. The purpose of this study is to design and improve the connection of transportations. Besides, Thailand's currently facing air pollution problem, so to design a landscape and increase green space to improve the fresh air to the people in the Taksin Bridge area. The results of this study are to design the most suitable pedestrian and road transportation for human and can be taken as a guide to the development of the design.

Keywords: King Taksin Bridge, Connection, Greenspace, Walkway

1. Introduction

The Taksin Bridge or commonly known as Sathon Bridge is a bridge crossing the Chao Phraya River. Taksin Bridge Connects Sathorn Road (Sathorn District and Bangrak District) with Krung Thonburi Road (Khlong San District) it is a double bridge inbound-outbound and space between the bridges is to create another mass transit system. The current area between the bridges is the Silom BTS Skytrain line and the area in the Phra Nakhon is also located in Saphan Taksin station (Wikipedia, 2020). Varinporn Trisopa (2016) mentions that Taksin Bridge is a space full of potential to be a turning point in the city's careless areas. The correct internal environment is not provided. The path to confusion and boat-car-rails are not well connected (Trisopa, 2016). "Bangkok rarely have in any good example. The footpath should be wider, do not have any obstruction on the footpath. They must be a smooth way, easy to maintain. The footpath should have tree beside. There are facilities for pedestrian and design for disabled people as well. It is considered that the plan does not achieve people needs. Currently, the road is cut, the footpath is smaller, which is a major problem on the footpath size. The government extended a Skytrain; meanwhile, they reduce the sidewalk less than fifty meters. They need people to use transportation. Therefore, the pedestrian is the starting point. If it is inconvenient, it is hard to inspire the people is going to use it. It is a disappointment." (Springnews, 2019). A proposal to support the accessibility and safety, the footpath should be created based on The 8 Principles of the Sidewalk: Building More Active Cities (Santos, 2015).

The 8 Principles of the Sidewalk: Building More Active Cities are (1) Proper footpath size, (2) Quality surface, (3) Efficient drainage, (4) Universal accessibility, (5) Secure connections; since pedestrians often transition to other modes of public transport and need to be able to safely access stations, sidewalks must be connected and integrated within larger transport networks, (6) Attractive spaces, (7) Permanent security, and (8) Clear signage (Santos, 2015).

Besides, the area around Taksin Bridge, there is 20 Rai Public Park or The Royal Forest Garden, in Klong San District, Thonburi. It is under Taksin Bridge on Thonburi side, next to Saphan Taksin Ferry Terminal. Every evening many peoples live around and do the activities together, such as play sports, run,



exercise, or get an aerobic (edtguid, 2009). Because of the deterioration, it resulted in the project of the Forest Park that was renovated under Taksin Bridge from the Khlong San District office and the Department of Rural Roads by rebuilding the area and landscape of the park in the Khlong San for activities of the community, exercise, event, and promoting tourism images of the area (Thairath, 2017). Therefore, it led to the mentioned project to develop and improve the view of the parking area.

Thus, this project is the connection design to navigate two banks of the river at Taksin Bridge, to improve the footpaths are more efficient by led the natural solution that pollution affects walkway.

2. Objectives

1. To design and improve the connection of the foot flow between the two sides of the river at Taksin Bridge.
2. To improve the scenery in the park under the Taksin Bridge.

3. Materials and Methods

For this research study is the application-oriented research with the educational process below.

- 3.1 Study the connection methods to design the pedestrian footpaths that are suitable for pedestrians according to The 8 Principles of the Sidewalk: Building More Active Cities theory
- 3.2 Survey and study the environmental space that affects the design and the behavior of people and influences the design
- 3.3 Analyze the data to solve the problem of pedestrian connections
- 3.4 Design the walking trails according to The 8 Principles of the Sidewalk: Building More Active Cities

4. Results and Discussion

- 4.1 The study area and data collection environments
 - 4.1.1 Connecting walkway overlooking the area



Figure 1 Picture shows the pedestrian traffic

Figure 1 shows the path to the pedestrian. Local transportation for other Republic. The train can be seen that the path is a confusing thoroughfare. Public transport is not connected and not responding to the user.



Figure 2 Picture shows the pedestrian access of users to BTS

From Figure 2, the BTS SkyTrain's users had to use the staircase to connect to the other area, indicating the out of the connection.



Figure 3 Picture show the footpath across the river

Figure 3 (left) shows the walking trails to cross the river where the users had to walk up the stairs and crossed the path. Figure 3 (right) shows a view of the pedestrian that does not allow users to move easily.



Figure 4 Show the view under the Bridge and park area



Figure 4 is the area that has deteriorated. It needs to be improved to proper for the user and can accommodate the increasing number of people in the future.

From the data above, it shows that the connection is not convenient for people because people who come from the BTS have to go downstairs to go to the next area, and for the people who want to cross the river, they have to cross the stairs again. It represents the problem of footpath and why people do not want to use this area.

4.2 A study of the usage of the people.

4.2.1 The people behavior.



Chart 1 The behavior of people divided into two groups of users

Chart 1 shows that the analysis of the users was categorized into four groups: 1) Workers / Students, 2) Tourists, 3) Local people, and 4) Street vender / Busker. The analysis of people’s behavior was also divided into two groups; 1) the slow stroll to enjoy city life or a sunset, Local people children’s zig-zagging, and senior citizens’ determined walk to get fresh air and exercise or do an errand, including Tourists and Street vender and 2) Walking with a purpose, the quick goal-oriented walk from A to B, including Workers / Students.

4.2.2 The behavior of the people in each period

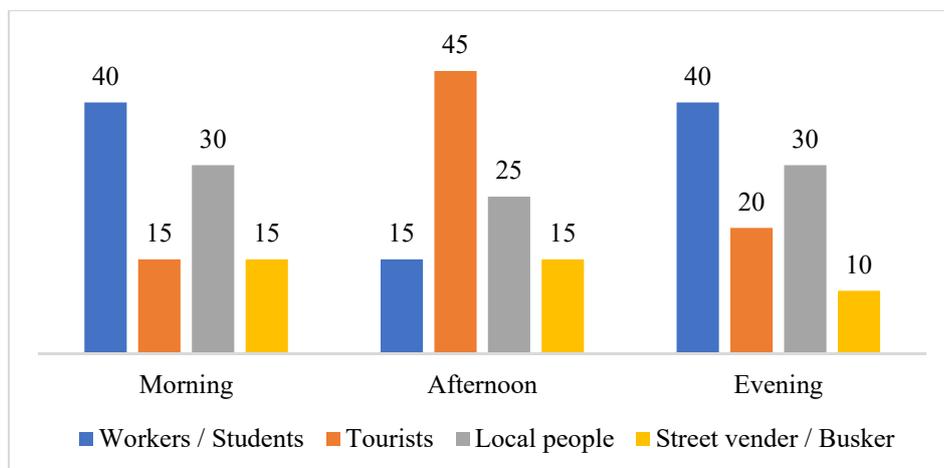


Chart 2 Shows each time a person has been active



Chart 2 shows the usage time of the four user groups to demonstrate during the morning and evening. Most users are office workers and students who are active in the daytime and the tourists who are using public transport around the Taksin bridge.

4.3 The analysis to resolve the connections of pedestrians problem. The pollution solution and improvement of the scenery lead to the design, which is based on the results of the analysis of lighting and connectivity.

4.3.1 Light affects the brightness in this area. The Bridge's opening is considered to bring light into the area under the bridge. This link is located under Taksin Bridge and in the Public Park.

4.3.2 From the survey of the area at Taksin Bridge, there is a complicate for the pedestrian; therefore, it should have more convenient and safe for pedestrians if public transport and crossing are joined together.

4.3.3 The rest area from the displacement connection walkway should consider to most of the people are using for the usage extension in the future plan.

Table 1 The table shows the test result of bridge light, connections, and breakpoints (Node)

Type	Type 1			Type 2			Type 3		
Picture									
Score (5 points)	Light	Connection	Break points	Light	Connection	Break points	Light	Connection	Break points
	0	5	5	5	3	3	4	5	5
Total	3.3			3.6			4.6		

It can be analyzed as follows:

Type 1; Start from the begin to the end of the connection to public transport links and the public displacement transportation, the two main road and secondary road. Concerning the point of staying connected all the way is many roads but the light cannot reach under the bridge and surrounding park areas.

Type 2; From the bridge in Type 1, it was improved and began to consider about the amount of light that was reached under the bridge to the park by reducing the connecting area on the bridge, keep it down, but it is still there. Connect a secondary route periodically, but the results are not enough for the people who come to use it.



Type 3; Bring the lack of the connection of the model was developed using two bridges. All trails in the disperse phase. Both the main and secondary routes are connected together by acquiring a breakpoint with a sufficient number of users in all the rooms and the main routes and secondary routes.

Taksin Bridge is an area that is full of potential to become a turning point of the city's state. It is still the careless areas. The proper internal environment is not provided; the confusing path and public transport are not connected well. This research was led by the connection complete. Applied to the design guidelines. All routes have been considered concerning the convenience of walking, the size of the sidewalks for the disabled, the connection to public transport, and security.

People should be encouraged to use more pedestrian footpath, and the number of private cars should be reduced, resulting in a reduction in pollution as well. Also, adaptation for the usage of the green space corridor should be done along the route, especially at the rest point as people are using stopovers. It is why Type 3 format is the most suitable one and meet the objectives of the connections. Concerning development, the displacement path All main routes and secondary routes are connected together by the acquisition of a sufficient number of users in all the rooms and the main routes and secondary routes.

5. Conclusion

The public area problems at Saphan Taksin is the careless area where the environment and the park are not properly held. The footpath is complicated and not well connected. There are no trees around to attract people and no facilities for the pedestrians. The country is currently facing the problem of air pollution. The lack of green areas in the capital city where there is plenty of smoke, which is not good for people. Therefore, a well-connected flow route design is required by adjusting the scenery and increasing the green area in Taksin Bridge and under Taksin Bridge. Designing a bridge to the traffic corridor of the river near the Saphan Taksin banks will improve the airflow more efficiently. To solve the problem of pollution and improve the view of the park under the bridge, it begins with the study of the environment since there is a problem in areas concerning a confusing flow. These problems led to analyze routes linking usage, with emphasis on the connection point and the light that passes through the bridge to park below. Furthermore, bringing nature can reduce pollution.

The results from the bridge-to-use basis points at most suitable Type3 because they are connections to public transport in many directions and safety measures that are appropriate to use. A breakpoint in the integration of people that supports many activities.

The overall design of the relay route in the Taksin Bridge is to meet the needs of the optical connection. The rooms have been adapted for use with natural route accordingly and modify the height of the thoroughfare. Thoroughfares should have different levels. The thoroughfare located in the Saphan Taksin is limited in height; it would be required at various levels.

The study and design of the model bridge are just the beginning of the study. It must extend the study in detail. In this study, bringing the development of the green spaces and information about the nature of the air filter may still be not enough. The need to further study on the use of innovation or technological nature should be applied in order to continue with the development path more effectively and to apply to other areas where there is a need or a problem in the same way.

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