



Commercial value assessment and revitalizing the dead spaces under flyover

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In recent years, there has been a growth in the population and migration of people from rural areas to urban settings. This phenomenon serves as a contributing factor to the increase number of flyovers. Even though the growth of urban flyovers has optimized the urban transport system and improved the spatial structure of the city, the utilization of space under overpasses has many problems, and they can be dark, short, hostile, and abandoned spaces which are full of girders and include ill-shaped areas in some parts. A huge number of idle and forgotten spaces under the flyovers have been bred. Presently, dark and neglected, that is, the kind of derelict space that lurks below most highways and elevated roadways. Since the number of flyovers has been increasing nowadays, the idea of utilizing spaces under flyovers has become a moot point. The increase number of flyovers also resulted in many leftover spaces available under flyover. These unplanned spaces, if utilized properly, offer an abundance of opportunities. Hence, this study focuses on exploring possible construction and adaptive use of “grey space” under flyover. The case study will be in three main cities which is Penang, Kuala Lumpur and Johor Bahru. This research will be conducted through a combination of site observations, interview and questionnaire surveys. The main objective of this research is to propose three suitable designs for adaptive use of “grey space” under flyover that comply with rules and regulations. As for the conclusion, the size and the location of flyover will determine what can be developed. Hence, without performing any large construction, we will be able to utilize the leftover space under flyover.

Keywords: flyover, overpasses, grey space, leftover spaces, adaptive reuse, dark area

1. Introduction

The increase number of flyovers has resulted in many vacant spaces available underneath the flyover. In Malaysia, most people who use negative spaces under flyovers usually do so illegally and those who construct under flyover usually do so without the permission of local authorities and the owner of the land [1]. Grey space is the space that nobody wants to deal with and no rules to be followed by. These leftover spaces under flyover bring a lot of negativity to the surrounding area such as illegal parking, accident, drug addicts spot and also dengue problem [2]. The objectives of this research are to determine the type of current activity under the flyover, to survey demand of utilizing the vacant spaces under flyover and to propose three suitable designs for adaptive use of grey space under flyover [3].

2. Literature review

Nowadays there are a lot of flyovers been built in the city to decrease the traffic congestion on the road. The increase number of populations in urban areas has increase the traffic flow on the road due to tremendous uses of vehicles every day [4]. Flyovers is been built not just to decrease traffic congestion but also to improve safety and mobility of at-grade traffic [5]. However, the tremendous number of flyovers built also brings negative impact. The leftover spaces underneath the flyover are not being utilized by anyone. People used the space for immoral activities such as drug spot. Squatters usually end up sleeping underneath the flyover because they said that sleeping underneath the flyovers is safer.

The spaces under elevated highways affect how we encounter the city. The leftover space underneath it is in irregular form as they follow the overhead structure [6]. A huge number of idle and forgotten spaces under the flyovers have been bred. Presently, dark and neglected, that is, the kind of derelict space that lurks below most highways and elevated roadways [7]. Usually, these spaces are temporally used as green areas, and less and less areas within them are people-oriented designed by considering the human behavior and demand [8].

3. Methodology

This research is focused on the existing activities underneath the flyover in Penang, Johor Bahru and Kuala Lumpur. The total flyovers will be 11 as been summarized in Table 1. The flyovers are chosen based on the current activities and the surrounding area observations. Observation of activities in each flyover will recorded in form of table and photographs. Furthermore, an interview session with JKR and LLM also had been done to get a clear vision about construction under flyover. Questionnaire surveys also had been distributed in 2km to 5km radius of the flyover. The data analysis was carried out using the data collected at the site.

Table 1. List of chosen flyovers in each state

Site	Penang	Kuala Lumpur	Johor Bahru
Site 1	Gelugor Highway – in front of Masjid Jamek Gelugor	SBE Flyover	Jalan Sempena
Site 2	Gelugor Highway – in front of Terminal Bas Sg.Nibong	LKSA Flyover	Jalan Tun Abdul Razak
Site 3	Flyover BKE	Lingkaran Tengah 2	Jalan Wadi Hana
Site 4	Butterworth Outer Ring Road (BORR)	-	Persiaran Desa Tebrau

4. Results and discussion

Table 2 shows the data collection conducted in Penang. Most of the spaces under flyovers are use as parking spaces. The location of each flyover is near to the housing area and everyone in the area acknowledges the activities under the flyover. There is no action taken by any local authority even though the spaces illegal to be used.

Table 2. Data Collection of Flyovers in Penang

Site	Activity	Time	Site Characteristic	Adaptation	Status
Gelugor Highway – In front Masjid Jamek Gelugor	Car parking and motorcycle park	Daytime usually in Friday's Prayer	Located at center of road. Unobstructed	Temporary and no parking lot markings	Illegal but no action taken
Gelugor Highway – In front Terminal Bus	Bus and car parking	Daytime and night. Usually during PESTA Penang	Located at center of road. Pedestrian crossing area.	Unpaved. No parking lot markings. No proper entry	Illegal but no action taken
Flyover BKE	Food stall, <i>pasar malam</i> , illegal parking	Morning until late evening	Secluded, open space and not enough lighting	Some of the road is paved, permanent food stall	Illegal but no action taken
Butterworth Outer Ring Road (BORR)	Homeless sleeping area	Daytime and night	Big spaces, unobstructed	Have permanent sitting area	Illegal

Next, in Kuala Lumpur, the chosen flyovers also mostly are use as parking spaces as been shown in Table 3. It is also illegal. The size of leftover spaces under flyover in Kuala Lumpur is much wider than in Penang and Johor.

Table 3. Data Collection of Flyovers in Kuala Lumpur

Site	Activity	Time	Site Characteristic	Adaptation	Status
SBE Flyover (Jln. Pandan Indah 7)	Car parking and garbage area	Daytime and night	Big area for parking spaces, shaded & seclude	Paved road, mostly as car parking	Illegal
LKSA Flyover (Jln. Persiaran Selangor)	No activity,	Daytime and night	Open area	Only have vegetation	Illegal
Jln. Lingkaran Tengah 2 (Jalan Kanan 1)	Car and lorry parking	Daytime and night	Big open area and not connected to main road	Unpaved road	Illegal

In Johor Bahru, most of the flyover is use as food stall as per shown in Table 4. The operation hours are from morning till late night. It is also illegal but because of the location flyover is not interrupting the traffic so there is no action taken by any local authority.

Table 4. Data Collection of Flyovers in Johor Bahru

Site	Activity	Time	Site Characteristic	Adaptation	Status
Lingkaran Dalam Flyover (Jalan Sempena)	Food stall and parking	Daytime and night	Big area, proper parking spaces, shady & secluded	Got staircase and cemented area	Illegal
Jalan Tun Abdul Razak	Pedestrian walkway	Daytime and night	Open area, underneath two flyovers	Permanent paved pedestrian walkway	Legal
Lingkaran Dalam Flyover (Jln. Wadi Hana Taman Tasek)	Food stall, carwash	Daytime and night	Big and secluded area, underneath three flyovers	Permanent stall and structure	Illegal but no action taken
Jalan Persiaran Desa Tebrau (near Aeon)	Parking & pedestrian	Daytime and night	In the middle of the road, no proper parking area	Vegetation	Illegal but no action taken

Random sampling method was utilized. There are about 20 questionnaires has been distributed in each site and there are about 220 questionnaires been analyzed. The main focus of this study is people who are located within a 500m radius from the negative space under the flyover, people who are using the negative space, and people who live and work around the negative space. This is because most people who are within a 500m radius from the space under the flyover are more familiar with the condition and the demands surrounding the flyover. Based on the question answered by respondent, the majority are choosing to develop a sport activity in Penang, a restaurant and café in Johor and parking spaces in Kuala Lumpur. The preferences are summarized in Table 5.

Table 5. Preferences of activities in each flyover

SITE	PREFERENCE		
	1 st	2 nd	3 rd
Gelugor Highway – In front Masjid Jamek Gelugor	Parking Spaces	Space for prayer	Jogging Track
Gelugor Highway – In front Terminal Bus	Parking Spaces	Shop lots	Restaurant & Cafe
Flyover BKE	Sports Activity	Restaurant & Cafe	Parking Spaces
Butterworth Outer Ring Road (BORR)	Sports Activity	Road Barrier	Shop lots
Lingkar Dalam Flyover (Jalan Sempena)	Futsal Arena	Restaurant & Cafe	Parking Spaces
Jalan Tun Abdul Razak	Jogging Track	Skateboard Park	Restaurant & Cafe
Lingkar Dalam Flyover (Jalan Wadi Hana Taman Tasek)	Restaurant & Cafe	Sports Activity	Parking Spaces
Jalan Persiaran Desa Tebrau(near Aeon)	Parking Spaces	Road Barrier	Sports Activity
SBE Flyover (Jalan Pandan Indah 7)	Parking Spaces	Shop lots	Road Barrier
LKSA Flyover (Jalan Persiaran Selangor)	Parking Spaces	Jogging Track	Restaurant & Cafe
Jalan Lingkar Tengah 2 (Jalan Kanan 1)	Parking Spaces	Road Barrier	Public Artwork Center

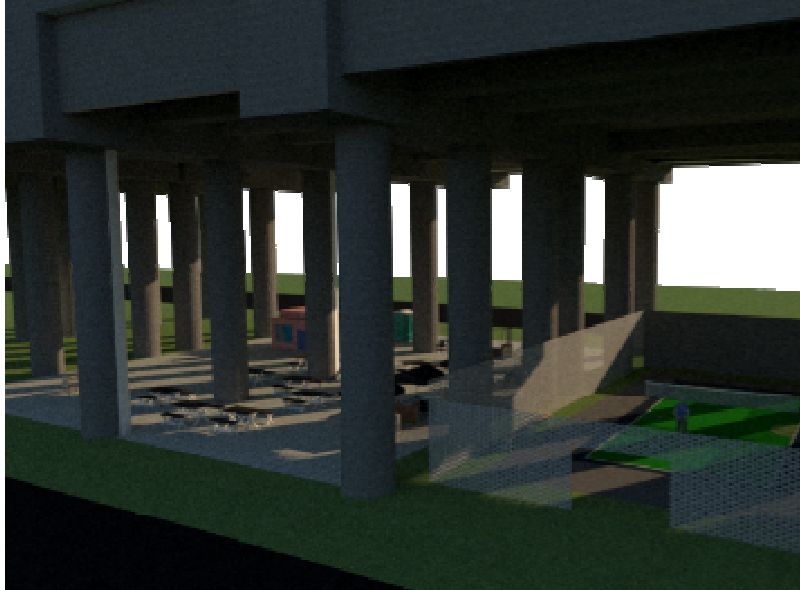


Figure 1. Proposed design in Penang



Figure 2. Proposed design in Johor

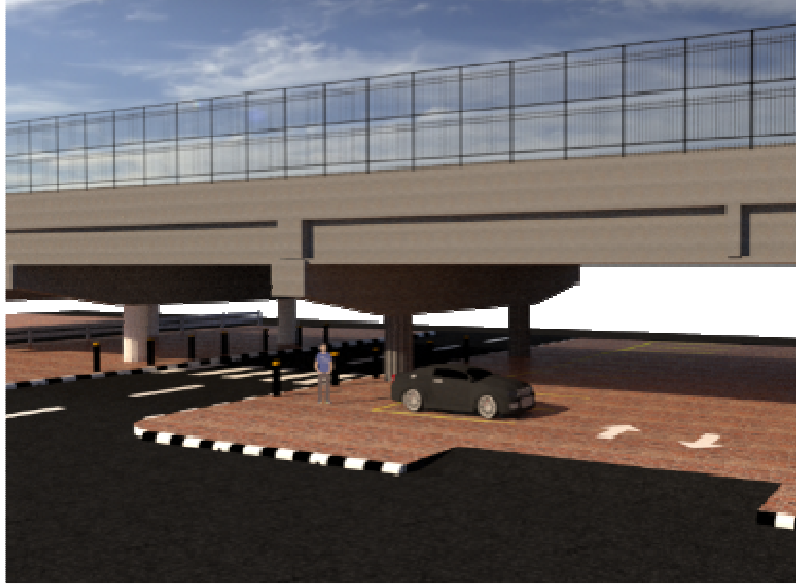


Figure 3. Proposed design in K. Lumpur

Based on questionnaire distributed in Penang, a sports activity is chosen to be developed at BKE Flyover after considerations of the size and location of spaces (Figure 1). In Johor Bahru, a restaurant and café has been chosen to be developed at Lingkaran Dalam Flyover (Jalan Wadi Hana). The location is suitable because it already has parking spaces and not connected to the main road (Figure 2). As for Kuala Lumpur, most of the flyovers are already used as parking spaces. So, we are choosing SBE Flyover (Jalan Pandan Indah 7) to be developed into proper parking spaces that follow rules and regulations (Figure 3).

4. Conclusion

For this research we can conclude that grey space underneath the flyover can create something beneficial to the public. The size and the location of the flyover will determine what can be created under the flyover. With a proper planning and study, we will be able to develop the leftover spaces underneath flyover without performing any large construction. The communities near the flyover will be the end users for every space created under flyover. However, a more complex study about the surrounding area should be conducted to fulfill the need of surrounding people in that area.

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