

**LANDSCAPE DESIGN RECOMMENDATION FOR PASSIVE  
RECREATIONAL ACTIVITIES IN TAMAN REKREASI INDAH**

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**PERPUSTAKAAN  
UNIVERSITI MALAYSIA SABAH**

**DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF BACHELOR OF  
AGRICULTURE SCIENCE WITH HONOURS**

**HORTICULTURE AND LANDSCAPING PROGRAMME  
SCHOOL OF SUSTAINABLE AGRICULTURE  
UNIVERSITI MALAYSIA SABAH**

**2014**



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JUDUL: Landscape Design Recommendation for Passive Recreational Activities  
in Taman Rekreasi IndahIJAZAH: Degree of Bachelor of Agriculture Science with HonoursSAYA: JULIA LIM BEE PHING  
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## **ACKNOWLEDGEMENT**

I would like to express my sincere appreciation and thanks to my supervisor, Miss Shahida Sharif for the constant guidance and advice throughout the whole duration of this final year project. An additional thank you to Mr. Assis Kamu, whose assistance had helped me a lot, especially in constructing the questionnaires. I would also like to extend my gratitude to my friends who had shared valuable knowledge and motivation and make this dissertation writing possible.

## ABSTRACT

In this study, the existing site condition and the preference of users and resident nearby Taman Rekreasi Indah were identified in order to suggest a functional and aesthetic pleasing landscape design for passive recreational activities in Taman Rekreasi Indah. Preferences of users were identified through questionnaires survey. The survey was carried out involving 60 respondents and was selected randomly. The questionnaires consist of four sections which are demographic background, concern of landscape facilities and functionalities in general, contain information the on the perception of respondents toward the park and questions focusing on the respondents' preferences. Primary data collected from questionnaires and site inventory and analyses were used as foundation to design landscape recommendation master plan for passive recreation area of Taman Rekreasi Indah. From the questionnaires finding, many aspect in the park need to be improved as majority of the respondents have negative perceptions towards the park especially on the sense of security such as not visiting the park after sunset (mean value= 4.00), insecure seeing vandalism sign (mean value=4.13) and feel the park is safe had lowest mean value, 2.32. While site inventory and analyzes finding, the park not only lack in aesthetic value but also lack of facilities for passive recreational activities in the park. The important parts of the proposed landscape provide the users feeling of safe and enjoy the beautiful scenery while carried out recreation activities. CPTED was proposed in the Master Plan as it ensures the safety perceptions of users and improve life quality with proper design and use the physical environment effectively. Other negative elements that had previously prevented the people from visiting the park had been replaced with positive elements hoping that more people will visit the park.

## **CADANGAN REKABENTUK LANDSKAP UNTUK KAWASAN PASIF TAMAN INDAH JAYA BERDASARKAN PILIHAN PENGGUNA**

### **ABSTRAK**

Dalam kajian ini, keadaan tapak yang sedia ada dan keutamaan pengguna dan penduduk berdekatan Taman Rekreasi Indah telah dikenal pasti untuk mencadangkan reka bentuk landskap yang berfungsi dan estetika bagi aktiviti pasif di Taman Rekreasi Indah. Citarasa pengguna telah dikenal pasti melalui kajian soal selidik. Kaji selidik ini telah dijalankan dengan melibatkan 60 responden dan dipilih secara rawak. Soal selidik ini terdiri daripada empat bahagian iaitu latar belakang demografi, kemudahan landskap dan fungsi secara umum, mengandungi maklumat mengenai persepsi responden terhadap taman dan soalan memberi tumpuan kepada pilihan responden. Data dikumpul melalui soal selidik dan inventori tapak dan analisis telah digunakan sebagai asas untuk mereka bentuk landskap pelan induk cadangan untuk kawasan rekreasi pasif Taman Indah Jaya. Berdasarkan keputusan soal selidik, banyak aspek di taman itu perlu diperbaiki kerana majoriti responden mempunyai persepsi yang negatif terhadap taman itu terutama aspek keselamatan seperti tidak melawat taman itu selepas matahari terbenam ( $\text{min}=4.00$ ), tidak selamat melihat tanda vandalisme ( $\text{min}=4.13$ ) dan berasa taman itu selamat hanya mempunyai  $\text{min } 2.35$ . Manakala dari inventori tapak dan analisis telah didapati bahawa taman ini bukan sahaja kekurangan dari nilai estetika tetapi juga kekurangan kemudahan untuk aktiviti rekreasi pasif di taman. Bahagian-bahagian penting dalam landskap yang dicadangkan memberikan perasaan selamat kepada pengguna dan dapat menikmati pemandangan yang indah sambil melaksanakan aktiviti rekreasi. CPTED telah dicadangkan dalam Pelan Induk ini kerana ia memastikan persepsi keselamatan pengguna dan meningkatkan kualiti hidup dengan reka bentuk yang betul dan menggunakan persekitaran fizikal berkesan. Unsur-unsur negatif lain yang sebelum ini telah menghalang pengguna daripada melawat ke taman ini telah digantikan dengan unsur-unsur positif supaya orang ramai akan melawat Taman Indah Jaya.

## TABLE OF CONTENT

CONTENT	Page
DECLARATION	ii
Verification	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF TABLE	ix
LIST OF FIGURES	x
LIST OF SYMBOLS, UNITS AND ABBREVIATIONS	xii
 <b>CHAPTER 1 INTRODUCTION</b>	
1.1 Background	1
1.2 Problem Statement	2
1.3 Justification	3
1.4 Objectives	3
 <b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 Introduction	4
2.2 Important of Landscape in Recreation Park	5
2.3 Crime Prevention Through Environmental Design	7
2.3.1 Strategies of CPTED	8
2.3.2 Lighting Strategies	13
2.3.3 Effectiveness of CPTED	14
2.3.4 Perception of Users on Landscape of a Park	15
2.4 Recreation Park	16
2.4.1 Passive Recreation Activities	16
2.5 Conclusion	17
 <b>CHAPTER 3 METHODOLOGY</b>	
3.1 Introduction	18
3.2 Setting	18
3.3 Stages of Methodology	18
3.3.1 Site Study	19
3.3.2 Site Inventory and Analysis	19
3.3.3 Questionnaires Construction	20
3.3.4 Pilot Survey	21
3.3.5 Questionnaires Improvement	21
3.3.6 Data Collection	21
3.3.7 Data Analysis	22
3.3.8 Design Plan	22
 <b>CHAPTER 4 RESULT</b>	
4.1 Demographic Background	24
4.2 Concern on the Landscape Facilities and Functionalities in General	26





4.3	Perception of Respondent towards the Park	27
4.3.1	Positive Item	28
4.3.2	Negative Item	29
4.4	User's Preferences	30
4.5	Site Inventory and Analysis	46
4.6	Proposed Master Plan of Passive Recreation of Taman Rekreasi Indah	51
<b>CHAPTER 5      METHODOLOGY</b>		
5.1	Concept	52
5.2	Landscape Component	53
5.2.1	Entrance	53
5.2.2	Water Feature	54
5.2.3	Gazebo	57
5.2.4	Transforming Spot C to Workout Area	60
5.2.5	Transforming Spot D to Open Space	62
5.2.6	Integrating Natural Fences throughout the Park	64
5.2.7	Pathway, Benches, Dustbin	64
5.3	Limitation of Study	65
<b>CHAPTER 6      CONCLUSION</b>		66
<b>REFERENCES</b>		67
<b>APPENDICES</b>		71



## LIST OF SYMBOLS, UNITS AND ABBREVIATIONS

CPTED	Crime Prevention Through Environmental Design
UN	United Nation
ASLA	American Society of Landscape Architects
EPU	Economy Planning Unit
CDMA	Commissioner and Director of Municipal Administration
APUFIDC	Andhra Pradesh Urban Finance and Infrastructure Development Corporation Limited
BJA	Bureau of Justice Assistance
SPSS	Statistical Package for Social Science
MPS	Majlis Perbandaran Sandakan

## LIST OF FIGURE

Figure		Page
2.1	A park with sign board allows public to acknowledge the existence of the park	9
2.2	Natural Surveillance in recreational park.	10
2.3	Territorial Reinforcement of an area can use evergreen shrub as natural fences	11
2.4	Good maintenance and management a park give a neat look and allow people to see and seen easily	12
2.5	Difference between good lighting and poor lighting in an area.	14
4.1	Mean number of respondents' preferences on types of tree	28
4.2	Mean number of respondents' preferences on types of shrubs	29
4.3	Mean number of respondents' preferences on types of groundcover	30
4.4	Mean number of respondents' preferences on types of focal point	31
4.5	Mean number of respondents' preferences on types of facilities	32
4.6	Mean number of respondents' preferences on types of material use in the park	33
4.7	Mean number of respondents' preferences on types of environment	34
4.8	Mean number of respondents' preferences on the functionality of park	35
4.9	Mean number of respondents' preferences on types of passive activity	36
4.10	Mean number of respondents' preferences on different color	37
4.11	Mean number of respondents' preferences on types of line	38
4.12	Mean number of respondents' preferences on types of geometric	39
4.13	Mean number of respondents' preferences on naturalistic types	40
4.14	Mean number of respondents' preferences on types of plant form	41
4.15	Mean number of respondents' preferences on types of texture	42
4.16	Mean number of respondents' preferences on color scheme	43
4.17	Recommended Master Plan for Passive Recreational Activities, Taman Indah Jaya	49
5.1	Existing site condition in Spot A	54
5.2	Signage and water feature at the entrance	54
5.3	Existing site condition in Spot B	57
5.4	Gazebo and fit trail along the pathway	57
5.5	Existing site condition in Spot C	59
5.6	Workout area in Spot C	59
5.7	Existing site condition in Spot D	61
5.8	Open space in Spot D	61



LIST OF TABLE

Table		Page
4.1	Percentages of respondents' demographic background	25
4.2	2 Percentages of respondents on their behavior of visiting the park.	26
4.3	Purpose percentages of respondents visiting the park	26
4.4	Mean concern on the landscape facilities and functionalities by respondents	27
4.5	Positive items of respondents' perception towards the park	28
4.6	Negative items of respondents' perception towards the park	29

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.0 Background**

Landscape is defined as visible features of an outdoor area which is normally considered in terms of their aesthetic appeal (Lorzing, 2001). Landscape can be seen in places such as garden, building, hospital and even park. Major aim of landscape in recreational area is to attract and encourage people to visit the park (Communittee of Ministers, 2008).

This project focused on the passive recreational area in Taman Rekreasi Indah. Passive recreational activities allow people to interact with each other and the environment. This is because passive recreation requires less intensive development than active recreation which minimizes the impact and disturbance of natural resources (Baird and Wetmore, 2006). For examples, passive activities in park are picnicking, walking, cycling, and even practicing Tai Chi. Facilities of passive recreation include picnic areas, pathways, benches and open spaces.

Taman Rekreasi Indah is lacking in aesthetic value and looks almost abandoned. According to McCormick (2007), public area without maintenance will invite criminal behavior. There is a need to proposed landscape design recommendation for landscape of Taman Rekreasi Indah so that the residents of Sandakan will visit the park more frequently. It is also crucial that every recreational park requires a well designed landscape. This is because a park is built to provide recreational use for human being that allows users to find relaxation and have a break from the hustle and bustle of big cities.



A recreational park is not only a venue for people to carry out physical activities but it also carries different meaning to each individual (Koelling, 2010) such as a place to release stress and relaxation, to spend their time with loved ones or a place to hang out with friends. For instance, New York, a city that is surrounded with skyscrapers, has a recreational park in the center of Manhattan. Known as New York Central Park, it is the most visited park by the people of the United States of America, allows not only the citizens to get away from daily stress but also as a place for tourism (The Trust for Public Land, 2011).

## **1.2 Problem Statement**

In this study, few problems have been identified such as its deserted look and lack in artistic features. Major problems occur in the park are lacking in artistic features to cater the needs of legitimate users and lack of facilities to cater for recreational activities. Moreover, the surrounding environment is full of overgrown bushes that may lead to an increase in crimes and illegitimate users. Nearby resident may know the existence of the park but non-nearby residents might not know because there is neither proper signboards to the park nor proper entrance gate due to the poor maintenance of the park. Besides, basic facilities such as lightings or walking pathway in Taman Rekreasi Indah are not well maintained and the park is overgrown with bushes which may cause the users to feel unsafe and uncomfortable. As a result, visitors may not use this park due to the unattractive landscape and unsafe environment. Currently, the residents still utilize this recreation park as they need to cross the park to the nearby areas such as a primary school, a mosque, Indah club and neighboring housing flats. Landscape of Taman Rekreasi Indah needs to be aesthetically pleasing to cater the needs of users and provide great experience for them. Hence, the recreational park needs a new design landscape with appropriate landscape components in order to make the park not only high in aesthetic value and natural-looking, but also to maintain the safety of the people who use the park.

## **1.3 Justification**

The landscape of Taman Rekreasi Indah, located in Mile 4 is chosen to proposed a landscape design recommended because the vast spaces offer many opportunities for recreational activities. Unfortunately, this recreational park is unattended and lack of

facilities plus not well maintained which will create a false perception to the people that the park is not safe to be used due to the overgrown bushes and the lack of lighting. Hence the concept of CPTED was applied in Taman Rekreasi Indah as it can increase both aesthetic value and security level in the park. CPTED concept provides a safer environment and will prevent or reduce crime rates. This concept is successfully used in other countries and can also be used widely in Malaysia's landscape, not only in recreational park but also housing areas and institution areas (Ministry of Housing and Local Government, 2010), because studies showed that the rate of crime can be decreased by combining the site design, psychology and security equipment (Gardner, 1995). Therefore, by designing the landscape of Taman Rekreasi Indah in mile 4 based on Crime Prevention through Environmental Design concept, it will provide a safer and comfortable environment for the users in the park. Proposed landscape design of Taman Rekreasi Indah is recommended in a way that the park will be based on user's preferences to improve the current condition of the park as each users have their own interest, opinion and vision toward the park landscape. Among them is passive recreational activities can benefited by all group of people.

#### **1.4 Research Question**

There are two research questions in this study. They are:

- i. What are the perceptions of site users toward the current condition of the park?
- ii. What are the site users preferences on the park landscape?

#### **1.5 Objectives**

There are several objectives for these studies:

- i. To identify the site exiting condition in Taman Rekreasi Indah
- ii. To identify users' preferences on landscape condition and passive recreational activities in Taman Rekreasi Indah.
- iii. To propose a landscape design development focusing on passive recreational



## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The purpose of this study is to propose a landscape design recommendation for Taman Rekreasi Indah through CPTED to attract visitors to the park. This chapter will review on landscape in recreation park and crime prevention through environmental design. In the paper, landscape of passive recreational area in Taman Rekreasi Indah was proposed with a landscape design recommendation. From Oxford English Dictionary (Simpson and Weiner, 2002), landscape is defined as visible features of an outdoor area which normally considered in terms of their aesthetics appeal. The visible features consist of softscape and hardscape. Examples of softscape include grasses, shrubs, flowers and trees while hardscape includes fountain, benches, pavement, sculptures and drainage. Summarizing the above definition, landscape can be explained as the beautification or modification of a physical environment by human for their own daily needs. Urbanization leads to various problems such as increased daily stressful life or poor social network because people are busy working hard to pursue their own dreams (Municipal Park Report, 2011). As a result, people start to be aware of the importance of green space for them to relax and improve their social network. Hamel (2013) stated that generally most people prefer beautiful things and design because motor cerebellum in the brain is triggered when a person sees attractive things (Matter, 2013). Moreover, according to a research done by Lichtenfeld *et al.* (2011) shows that human creativity and motivation are increased after staring at green shades. Hence, it is important that every park and recreational area is designed properly in order to draw legitimate users and enable them to feel more relax and enjoy the beautiful scenery. An area of land with great landscape has various prospective.



One of the pros is that it beautifies the scenery of an area and as a result, it attracts many people. Besides, the value of a landscape is not only based on its beautiful scenery but also the interaction between human and nature (ASLA, 2013). There are various researches on crime prevention through environmental design, where this concept is created not only for the purpose to reduce crime rate in an area but also to create a safe feelings among the users in that area. Besides, applying CPTED in recreational park is still a new concept in Malaysia (Ministry of Housing and Local Government, 2010). By applying CPTED concept in Taman Rekreasi Indah, this will be a good opportunity to introduce the concept to the public in Sandakan.

## **2.2 Importance of Landscape in Recreation Park**

Landscape is defined as the “an area, as perceived by people, whose character is the result of the action and interaction of natural or human factors” (Committee of Ministers, 2008). Landscape can be applied in various places such as housing areas, garden, institutional buildings or even parks. Landscape in a recreational park is very important to human beings for various reasons. Its beauty, attractiveness of wildlife, natural scenery have been attracting and encouraging people to perform physical activities. Physical activities such as jogging, cycling, brisk walking, or aerobics is vital for human health as these activities are not only able to boost human energy, but also to recover human’s physical and mental stress that resulted from daily busy lives. As a result, landscape is said to improve the health of human being. As the saying goes, “health is wealth”. Moreover, a recreational park with well-designed landscape not only will increase the social network between peoples but also provide opportunity for people to interact with the environment and expose to wildlife (Committee of Ministers, 2008). Designing a landscape has the potential to boost a country’s economy because a well-designed landscape is capable to attract tourists that come from far and near. Moreover, there are many researchers state that recreational park with beautiful landscape is able to give a positive effect on nearby buildings by causing an increase in the property value of nearby buildings. This will increase the chance of a building to be purchased (Farahwaheeda, *et al.*, 2008 and Ayeni, 2012), as compare to those housing without beautiful recreational park. This is because in these days, most people especially working adults prefer to spend their time in the park to release their stress or relax their mind. Therefore, neighborhood nearby Taman Rekreasi Indah has the



potential to have an increment in property value when the landscape of this park is improved.

In a research studies by Ayeni (2012), Ayeni investigated the landscape element of two residential housing estates in Akure, Nigeria. The focus of the studies was on the landscape element in recreational park and the benefits of landscape to park and recreation areas. In the paper, it was found that landscaping is indispensable in most areas and lack of maintenance in estates with existing landscape and landscape consists of various benefits. According to Mount Annan Botanic Garden (2003), elements of landscape such as the hard landscape and the soft landscape are important as they function to differentiate area within the site or known as territorial reinforcement which contributes to visitor understand the pattern of the site's circulation and scale. Then by proposed a landscape design recommendation Taman Rekreasi Indah, the aesthetic appearance of the surrounding environment can be enhanced by planting shrubs and ornamentals to satisfy the user needs. Most of the countries have well-design landscape park and the most famous park is New York City Central Park which is located in the middle of Manhattan (The Trust for Public Land, 2011). This park is suitable for the urbanization in New York City where the citizens can escape from city noises and traffic (Todd and Olmsted, 1982). Another well known park is Lincoln Park, consists of various facilities including gardens, zoo, golf course which are important to the city life in Chicago (Morgan, 1979). An area of land with great landscape has various advantages. A stunning landscape is able to attract inward investment and support the tourism industries (Scottish Natural Heritage, 2012) in a country which in return, the economy will boom. Hence, if landscape of Taman Rekreasi Indah is upgraded, this will open an opportunity to enhance the economy of Sandakan.

There are various researches state that by providing a good quality of environment where man activities are carried out through landscape contributed a healthy environment for man and a productive life (Ayeni, 2012). Example of good quality of environmental feature that give the environment a high standard look is by including hard landscape (Akingbohunge, 2006). The strategic position of Taman Rekreasi Indah which is surrounded by a primary school, Indah club and neighborhood area, has the potential to become one of the most visited recreational park in Sandakan. Currently, the landscape of Taman Rekreasi Indah is unorganized and lack



of landscape element due to the poor maintenance of the recreational park. Landscape in recreational park provides various benefits. A well designed landscape of a park will encourage and raise the spirits of individuals that visit the park and carry out recreational activities because the users can feel more comfortable and able to enjoy the beautiful scenery while carrying out their recreational activities. As a result, a healthier community is formed.

### **2.3 Crime Prevention through Environmental Design**

Crime Prevention through Environmental Design (CPTED) is the design of environment for crime prevention strategy by increasing the level of security with aesthetical design (Gardner, 1995). The interest of CPTED is due to the increased world population and rapid urbanization that may result in social problems and crimes. Over the past few years, the rate of urbanization in Malaysia has been increased from 63% in 2005 (EPU, 2006) to 72% in 2011 (EPU, 2012) and is expected to rise by the year 2020. Recently there has been a growing interest in CPTED in Malaysia where Safe Cities Programme was first launched in 2004 with the main objective to create cities free from crime and violence (Malaysia Permanent Mission to the United Nations, 2012). However, the concept of CPTED is still a new concept in Malaysia and the locals are still not well versed with the importance of environmental design that will also able to influence crime prevention besides its attractiveness (Ministry of Housing and Local Government, 2010). Therefore by introducing the concept of CPTED in Taman Rekreasi Indah, this will increase the awareness of CPTED among the local people. This initiative will create awareness among the public that it is able to provide a delicate, safer and comfortable environment for them. Hence by designing Taman Rekreasi Indah based on CPTED concept, it is a worth doing as this concept will not only increase the aesthetic value of the recreation park to attract Sandakan residents, but also able to boost up the security level that will reduce crime rate.

Crimes happen based on three elements. These are the criminal itself, the victims and most importantly the environment that gives opportunity for criminal to commit crime (Kruger *et. al.*, 2006). Deserted area of Taman Rekreasi Indah has a high opportunity for a crime to occur. Previous research shows that CPTED is effective in reducing crime rates. Even though the crime rate is not high in Taman Rekreasi Indah, users have been having perceptions that the park is not safe for usage and their fears are enough to prevent public from utilizing the park (Smith and Bise, 1998).

Hence by designing Taman Rekreasi Indah based on CPTED concept, it is a worth doing as this concept not only increase the aesthetic value of the recreation park to attract Sandakan resident but also boost up the security level that will prevent crime scene and provide a safer feeling for the park users (McCormick, 2007). Various countries have started to implementing the concept of CPTED in recreation parks. In Berlin, the capital of Germany, most of the public parks have begun to apply the concept of CPTED (ICA, 2011). Nauener Park, a park which is situated in a low income area, in the middle of Berlin, has applied CPTED to the park (ICA, 2011). This shows that Berlin's public parks not only enhance its built environment through CPTED in well-known parks but the concept also applies to smaller parks.

### **2.3.1 Strategies of CPTED**

CPTED is a concept aims to improve the built environment such as changing its form, design and management of the environment in order to prevent and reduce crime. Crime Prevention through Environmental Design (CPTED) is the design of environment for crime prevention strategy or increasing the level of security with aesthetical design (Gardner, 1995). Various strategies of CPTED exist over the past 40 year. "Eye on the street" or natural surveillance was the first idea for security issue guideline by Jacobs (1961). CPTED was evolved from that idea by Jeffery in 1971 and he published a book "CPTED" in that year. However, Jeffery's concept of CPTED for landscape did not get a warm reception by the public. Later in 1980, Newman stated the importance of 'communities of interest' and strategies human territorial functioning which was founded by Taylor in 1988. Today, in this era, different types of CPTED strategies are used to design out the built environment (Anonymous, 2005). There are four main principles that always apply to built environment, which are natural surveillance, territorial reinforcement, natural access control and maintenance. City of Saskatoon guidelines on CPTED has stated few suitable strategies of CPTED to be applied in recreational park.

The first strategy in the guideline is natural access control which refers to the availability of proper entrance which creates a sense of welcoming. It is also important to have signboards that indicate directions of different area in the park. Each of the sign board has to be clear, large at the entranceways to the recreational park and clear from trees and shrubs obstruction. This guideline also stated that signage is not a



trivial issue and should be taken into account during design stage. It is also suggested that by naming a recreational park based on the name of the local neighborhood nearby could improve the ownership. Therefore, by building a sign board and by naming a recreational park based on a neighborhood name will establish an identity and increase the responsibilities of community towards the recreational park. As a result public will acknowledge the existence of the park and this will also attract public to the park for recreational activities and other types of activities.



Figure 2.1 A park with sign board allows public to acknowledge the existence of the park

Source: Temecula, California City Park, 2010

Natural surveillance is one of the CPTED strategies that focus on the ability of user's visibility to a particular space. Landscape materials play a vital role in aesthetic value for attracting visitors to the recreational park. However, landscape elements require to be placed carefully so that they do not give opportunity for people with bad intentions to hide, easy to be maintained and serve the intended purpose for the area. For instance, trees are generally planted near benches that serve as place for relaxation or picnic to provide shades for the park users so that they are able to feel more comfortable and sheltered from the heat. Hence, this strategy allows the



landscape to be more organized. This also means that a person is visible and able to observe the others within the given space. As a result, people with bad intention have no opportunity to peek on others because they are exposed and no hiding place available. Built environment with overgrown bushes and trees which are not well maintained is fit enough to be transformed based on this CPTED strategy.



Figure 2.2 Natural Surveillance in recreational park. Every person is visible and able to observe the others in the given space

Source : Prince William County Police Department

Next strategies of CPTED stated by Safer City guideline (2010) is territorial reinforcement. Good natural access control is important as it will indicate clearly the route and guide users to certain areas in the recreational park. This guideline suggests that fences including hedges used as barriers or reinforcement in a low form to ensure clear sight line. Usually a park is not fenced because they are open to the public. However, some areas may require territorial reinforcement to divide an area with another area to clearly define a space such as to prevent the children from running off street





Figure 2.3 Territorial Reinforcement of an area can use evergreen shrub as natural fences

Source: Changing Planet, 2013

Next strategy of CPTED is the image of the park. Good image of a recreational park is mostly related to the maintenance and management of the recreational park. Hence a well-maintained and good management of a recreation park will result in a pleasant image for the city. Maintenance and management of a recreational park play important roles in attracting legitimate users and maximize the usage of the park. It is suggested that litters, vandalism and damaged property of a recreational park such as pavement, benches, playground or resting area is required to be repaired and fixed immediately because poor maintenance of the recreational park will result in more vulnerable damage and graffiti vandalism (Safer City Guideline, 2010). As a result, none of the users will visit to the recreational park for recreation activities because unmaintained recreational park will consequence in abandoned look and the implement negative perception among users that the recreational park is not safe to be used. Image of the park is not only important during the day but also at night as less people visiting the park after the sun set. Hence, sufficient lighting level is required and the area must be bright enough to be highly visible by others. Outdoor lighting should be checked regularly to ensure the lights are well lit. Therefore, spoilt lights require to be repaired immediately as dim or spoilt lights would be dangerous for the users that are passing by the recreational park during late evening hours.



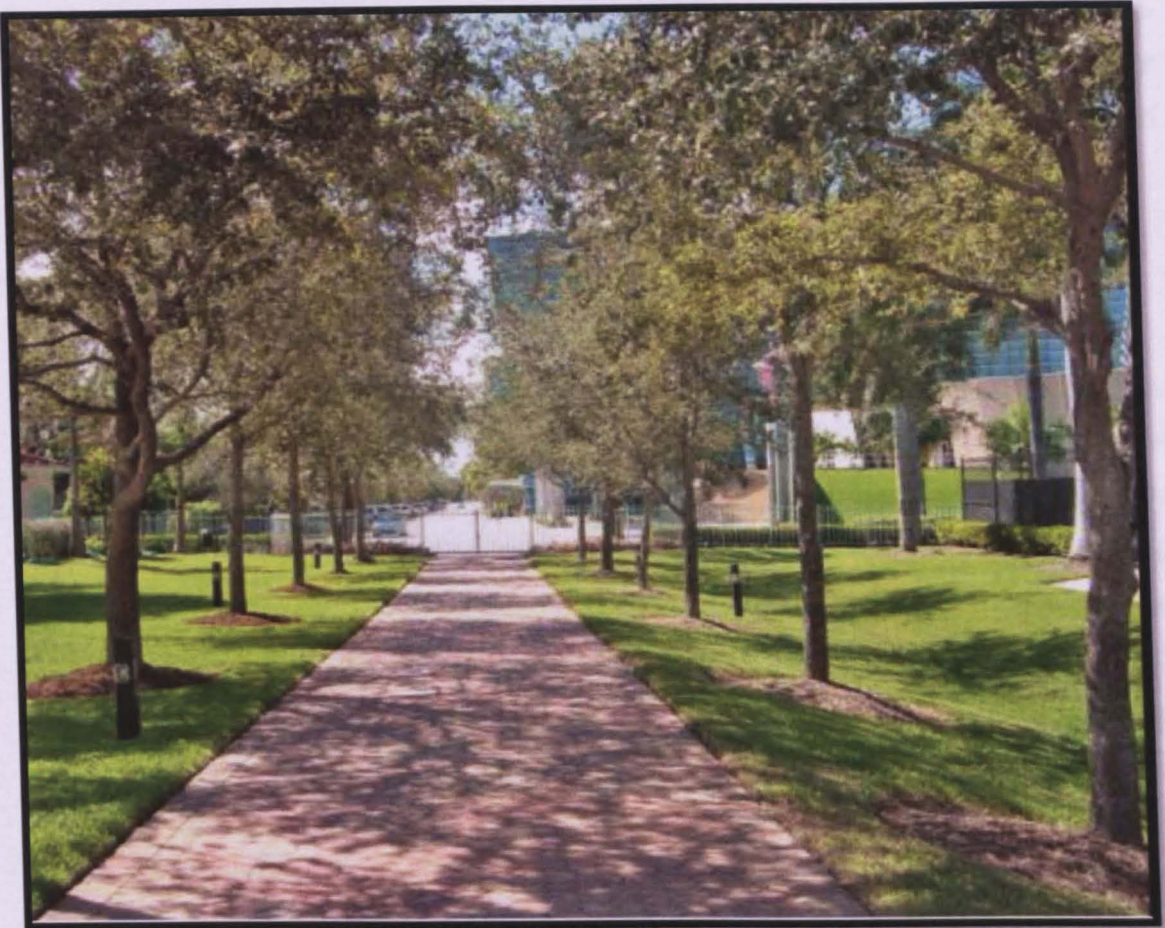


Figure 2.4 Good maintenance and management a park give a neat look and allow people to see and seen easily

Source: O'Leary Richards Design Associates, Inc., 2013

Another strategy of CPTED as stated in Safer City Guideline (2010) for recreational park is designing environment with activity support. The purpose of this strategy is to solve the problem of isolated area by transforming the dead area into a more lively area. One of the activity supports is by providing telephone booths and emergency devices around the recreational park. Examples of the devices are intercoms and alarm. These emergency devices allow one to connect directly to security and emergency security. However the existence of telephone and emergency devices are not common in most of the recreational parks. Another way to turn a dead area into a vibrant place is by providing benches or gazebo for resting at locations that are highly visible to others or facing other ongoing activities such as in front of a playground so that this will allow parents observe their children closely while resting. Hence, activity support is important in terms of one activity provide surveillance for another activity. "Park and playground are the heart of a neighborhood. They must combine active and passive area in a safe and pleasing manner if they are to attract



## REFERENCES

- Abdullah Sani , A., Jamil, A. B. And Fawazul, K. I. 2006. Investigation On The Elements Of Malay Landscape Design. *Fakulti Alam Bina* **74226**
- Akingbohunge, D. O. 2006. Site Planning and Design for Contemporary Housing in Nigeria. *International World Journal of Science and Technology* **3(2)**: 156-161
- Anonymous, 2005. Introduction to Crime Prevention through Environmental Design (CPTED). [http://www.cpted.co.za/cpted\\_summary.pdf](http://www.cpted.co.za/cpted_summary.pdf). Access on 22 December 2013
- ASLA. 2010. Interview With Francesco Bandarin, Director, Unesco World Heritage. <http://dirt.asla.org/2010/03/10/interview-with-francesco-bandarin-unesco-world-heritage-on-cultural-landscapes>. Access on 26 March 2013
- Ayeni, D. A. 2012. Emphasizing Landscape Elements as Important Components of a Sustainable Built Environment in Nigeria. *Developing Country Studies* **2(8)**: 33-42
- Baird, A. R. T. and Wetmore, D. G. 2006. *Riparian Buffers Modification & Mitigation Guidance Manual*. Virginia: Virginia Department of Conservation And Recreation
- Bateman, I. J., & R. T. Carson, Hanemann, M., Hanley, N., Hett, T., M. Jones-Lee, G. Loomes, Mourato, S., Pearce, D. W., Sugden, R. and Swanson, J. 2002. *Economic valuation with stated preference techniques: A manual*. United Kingdom: Edward Elgar, Cheltenham
- BJA. 2013. What Have We Learned From Evaluations of Crime Prevention Through Environmental Design Strategies? <https://www.bja.gov/evaluation/program-crime-prevention/cpted2.htm>. Access on 22 March 2013
- Burmil, S., Daniel, T. C. and Hetherington, J. D. 1999. Human Values and Perceptions of Water in Aric Landscapes. *Landscape and Urban Planning* **44**: 99-109
- Casteel, C. and Peek-Asa, C. 2000. Effectiveness of Crime Prevention Through Environmental Design (CPTED) in Reducing Robberies. *American Journal of Preventive* **18(4S)**: 99-115
- Commissioner and Director of Municipal Administration. 2011. Municipal Park Report. *APUFIDC*. India
- Committee of Ministers. 2008. Recommendation of the Committee of Ministers to member states on the guidelines for the implementation of the European Landscape Convention. <https://wcd.coe.int/ViewDoc.jsp?id=1246005>. Access on 10 March 2013
- Creative Publishing International, 1999. The Complete Guide to Patios and Walkways. <http://www.qbookshopuk.co.uk/products/158944/9781589234819/Black-Decker-The-Complete-Guide-to-Patios-Walkways.html?related=true>. Access on 1 December 2013



- Delahunty, M. and Batchelor, P. (2011) *Sense of Place: Urban Design Principles for the Metropolitan Strategy*. Melbourne, AU: Planning Melbourne for the 21<sup>st</sup> Century. [http://www.dpcd.vic.gov.au/\\_\\_data/assets/pdf\\_file/0019/42814/Technical\\_Report12\\_sense.pdf](http://www.dpcd.vic.gov.au/__data/assets/pdf_file/0019/42814/Technical_Report12_sense.pdf) Access on 20 December 2013
- Devine Outdoor Fitness Equipment, 2013. Fitness Equipment Solution. <http://outdoorfitnessequipment.co.nz/outdoor-fitness-equipment.html>. Access on 4 December 2013
- Domosh, M. and Seager, J. 2001. *Putting Women in Place: Feminist Geographers Make Sense of the World*. New York : Guilford Press
- EPU. 2006. The Malaysian Economy in Figures 2006. EPU
- EPU. 2012. The Malaysian Economy in Figures 2012. EPU
- Farahwaheeda, S., Noriah, O. and Abdul Hadi, N. 2008. The Impact of Park on Residential Property Values. *Build Environment Journal* **5(2)**: 32-41
- Gardner, R. A. 1995. Crime Prevention through Environmental Design. *Security Management Magazine*. April
- Hopper, L. J. 2007. Landscape Architectural Graphic Standards. *Student Edition*. Wiley: New York.
- ICA. 2011. International CPTED Association Newsletter. ICA
- Illustrated CPTED Guidelines, 2003. *Sarkissian Associates Planners*. Australia: La Rocca, S. and Sarkissian.
- Koelling, L. Vice Mayor of Foster City, San Francisco June 2, 2010. **The Importance of Parks and Recreation, a Better life.**
- Kruger, T., Landman, K. and Liebermann, S. 2006. *A CPTED (Crime Prevention Through Environmental Design) Strategy for the North West Province*. Pretoria: CSIR Built Environment
- Lancasters Community Safety Coalition, 2008. Territorial Reinforcement. [http://www.lancastercsc.org/CPTED/Territorial\\_Reinforcement.html](http://www.lancastercsc.org/CPTED/Territorial_Reinforcement.html). Access on 5 December 2013
- Lichtenfeld, S., Andrew, J., Elliot, A. E., Maier, M. A. and Pekrun, R. 2011. Fertile Green: Green Facilitates Creative Performance. *Personality and Social Psychology Bulletin* **38(6)**: 784-797
- Lorzing, H. 2001. *The Nature of Landscape: A Personal Quest*. Netherlands: 010 Publishers
- Matter, G. 2013. Why We Love Beautiful Things. *The New York Times*, 17 February, SR12

- McCormick, J. 2007. Better Park Design can Prevent Crime. <http://www.americantrails.org/resources/safety/designcrime.html>. Access 19th March 2013
- Ministry of Housing and Local Government. 2010. Towards Greater Cities and Better Living: Environmental Design for Crime Prevention. In: *Proceeding of the Crime Prevention through Environmental Design (CPTED) Seminar*. 30 September 2010. Petaling Jaya, Malaysia
- Morgan, B. 1979. *Enjoying Seattle's Parks*. United State: Greenwood Publications
- Mount Annan Botanic Garden, 2003. Hard Landscape Design Elements- Royal Botanic Gardens. [www.rbgsyd.nsw.gov.au/\\_\\_data/.../SiteDevPlanp24-25Eleme.pdf](http://www.rbgsyd.nsw.gov.au/__data/.../SiteDevPlanp24-25Eleme.pdf). Access on 30 March 2013
- National Recreation and Park Association. 2008. Parks and Recreation in Underserved Areas. *A Public Health Perspective*. United State
- Oakland Police Department. 2012. Crime Prevention Through Environmental Design (CPTED). *Security Handbook*. Oakland.
- Plant Information Specialist. 2013. <http://www.nybg.org/plants/>. Access on 12 March 2013
- President's Council on Physical Fitness and Sports. 2008. The potential of Parks and Recreation in Addressing Physical Activity and Fitness. *Research Digest*. United State
- Safer City City of Saskatoon. 2010. Safe Growth and Crime Prevention Through Environmental Design (CPTED). *Crime Prevention Through Environmental Design Guideline*. Saskatchewan.
- Salkind, N. J. 2000. Exploring Research. United States of America: PageWise Inc
- Scottish Natural Heritage. 2012. Landscape, Health and the Economy. *Landscape Policy and Guidance*. United Kingdom
- Simpson, J. A. and Weiner, E. S. C. 2002. *The Oxford English Dictionary*. 2<sup>nd</sup> edition. Watson St. Oxford: Clarendon Press
- Smith, D. and Bise, J. 1998. A Walk in the Park with CPTED- Case Studies: Recreation Centers; Undeveloped Areas; Trails. In proceedings of 3<sup>rd</sup> International CPTED conference. 31 December 1998. Washington, DC, United State
- Stollard, P. 1991. *Crime Prevention Through Housing Design*. London: E & FN Spon
- The Trust for Public Land. 2011. *2011 City Park Facts*. Washington: The Trust for Public Land
- Todd, J. E. and Olmsted, F. L. 1982. *Twayne's World Leader Series*. Boston: Twayne Publishers

- Wolf, K. L., 2008. City Trees, Nature and Physical Activity: A Research Review. [www.naturewithin.info](http://www.naturewithin.info). Access on 24 December 2013
- Virginia Beach Crime Prevention Through Environmental Design Committee. 2000. *Crime Prevention Through Environmental Design: General Guidelines for Designing Safer Communities*. Virginia: City of Virginia Beach
- Yunos, M. & Md Saring, Z. 2012. *Perception of Urban Residential Landscapes: Role of Plants in Enhancing Outdoor Thermal Comfort*. Malaysia: University Putra Malaysia