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: 

Name of Supervisor : PROF.DR.MUHD ZAIMI ABDUL MAJID

Date : 24 NOVEMBER 2008

CONSTRUCTION SITE SECURITY MANAGEMENT AND CONTROL

YULIA SETIANI

A project report submitted in partial fulfillment of the
requirements for the award of the degree of
Master of Science (Construction Management)

Faculty of Civil Engineering
Universiti Teknologi Malaysia

NOVEMBER, 2008

DECLARATION

I declare that this project report entitled “Construction Site Security Management and Control” is the result of my own research except as cited in the references. The project report has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.



Signature :

Name : YULIA SETIANI

Date : 24 NOVEMBER 2008

Dedicated to

To my beloved husband Muhardi, my son Muhammad Ramzy Muliawan, my daughter Zahra Noor Maghfirani, mama, papa and my sister for their never ending care and support, thank you for everything.

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ABSTRACT

Construction sites are often targets of theft such as materials, tools, and equipment. This problem has caused loss of time, money, and productivity. The literature review revealed that these losses have been identified in previous studies in United Kingdom and United States. Due to this problem, it is important to conduct a proper management and control for construction site security. This study presents the results of investigation of security problems at selected construction site. The objectives of this study are: to identify the components of construction site security; to identify the causes of losses at construction site; and to identify the level of implementation of site security based on standard practices. The methodology for conducting the study involved literature review, data collection and analysis of results using the Average Index Method. The process of data collection involved obtaining primary data from the respondents by conducting questionnaire surveys at the selected cases study. From this study, it is established that the most important component of construction site security is physical security follow by personnel, awareness, information, and investigation security. The respondents agreed that poor site storage and poor check out/in system for tools and materials obtained the highest score for the causes of losses at project site. The results show that the level of implementation of site security based on standard practices by contractor is good. It is hoped that this study will provide some useful insight on the important aspects of construction site security management and control, and to provide the awareness about the importance of security in the construction industry.

ABSTRAK

Tapak bina kerap kali menjadi sasaran bagi kecurian seperti bahan binaan, peralatan dan jentera pembinaan. Masalah ini telah menyebabkan kerugian masa, kewangan, dan produktiviti. Melalui kajian literature menunjukkan bahawa kerugian tersebut telah dikenalpasti pada kajian sebelumnya, seperti di United Kingdom dan Amerika Syarikat. Disebabkan oleh masalah itu, adalah penting untuk mengendalikan pengurusan dan pengawalan dengan benar untuk keselamatan tapak pembinaan. Kajian ini menyampaikan hasil daripada penyelidikan masalah keselamatan pada tapak binaan yang terpilih. Objektif kajian ini dijalankan adalah: untuk mengenalpasti komponen daripada keselamatan tapak pembinaan; untuk mengenalpasti penyebab penyebab kerugian pada tapak binaan; dan untuk mengenalpasti tingkat atau tahap pelaksanaan keselamatan tapak berdasarkan petunjuk standar. Metodologi yang digunakan dalam kajian ini ialah kajian literatur, pengumpulan data dan analisis data menggunakan Kaedah Indeks Purata. Proses pengumpulan data merangkumi pengumpulan data primer daripada responden dengan menjalankan soal selidik di tapak lokasi kajian kes bangunan yang terpilih. Melalui kajian ini, didapati bahawa komponen paling penting daripada keselamatan tapak pembinaan adalah keselamatan fizikal, menyusul keselamatan kakitangan, kesedaran akan keselamatan, maklumat keselamatan dan penyiasatan keselamatan. Responden bersetuju bahawa tempat penyimpanan tapak bina yang tidak diurus dengan baik dan sistem penyemakan keluar dan masuk perkakas dan bahan yang juga tidak diurus dengan baik memperolehi skor paling tinggi untuk persoalan keselamatan di tapak bina. Keputusan menunjukkan tingkat pelaksanaan keselamatan tapak berdasarkan petunjuk standar oleh kontraktor binaan adalah baik. Diharapkan kajian ini dapat memberikan panduan yang bermanfaat tentang aspek-aspek penting dalam pengurusan dan pengawalan keselamatan tapak bina, serta membekalkan kesedaran tentang pentingnya keselamatan dalam industri pembinaan.

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LIST OF ABBREVIATIONS

CCTV	-	Closed Circuit Television
CICP	-	The Construction Industry Crime Prevention Program of Northern California
CONSEC	-	Construction Security Advisory Service
CPP	-	Crime Prevention Program of Southern California
DAR	-	Daily Activity Report
ID	-	Identity
IR	-	Incident Report
IRMI	-	International Risk Management Institute
ISO	-	Insurance Services Offices Inc
NER	-	The National Equipment Register
OAI	-	Owner Applied ID
OAN	-	Owner Applied Number
PERI	-	Public Entity Risk Institute
PIN	-	Product Identification Number
UK	-	United Kingdom
US	-	United States

CHAPTER 1

INTRODUCTION

Overall, this study is focused on the implementation of construction site security management and control that influences the whole of construction project phase. Besides that, this study is also intended to identify the components of construction site security. In this chapter, the overview summary of the study is presented. Basically, this chapter covers the background, problem statement, aims and objectives, and scope of the study. The research methodology involved in conducting this study is also briefly explained. Lastly, a summary of all the chapters in this study are presented.

1.1 Background

The construction site requires a special solution to accommodate their on-site requirements. Control and management is difficult particularly on large construction sites, where workers are often casual laborers and not easy to keep track of, and where large amounts of equipment, tools and building materials are difficult to

monitor. In addition, construction site managers face particular challenges to ensure the safety of the construction workers in terms of the labor laws applicable.

Regarding to the problems, the important resources to be manage and control are materials and equipments. The cost of construction materials can be in the range of between 20% - 40% of total construction cost, and also machineries or equipments too. Millions of dollars are spent every year in higher insurance costs as a result of losses due to theft at construction sites. Many construction sites owners must absorb the expensive cost out-of-pocket or face the cost of ever increasing insurance payments.

Besides the monetary losses resulting from loss, associated indirect costs should also be considered. Costly job delays, downtime for operators, higher insurance premiums, and the possible cancellation of an insurance policy, with the accompanying risk of jeopardizing bonding and borrowing power, make jobsite security practices crucial for commercial construction firms. Because of this, theft and vandalism can be major cost components of a construction project. The cost is potentially sufficient to make the difference between making a profit or incurring a loss on a project (Middleton, 1999).

The theft of construction equipment has been estimated to cost in the United Kingdom between £600 million and £1 billion per year. The problem was thought to be getting worse, but little data existed to confirm or disprove this (Smith and Walmsley, 1999). That research set out to ascertain the nature and scale of such theft in 1997. In the United States, the construction industry lost nearly \$ 1 billion in 2001 because of equipment and tools, according to the National Insurance Crime Bureau (Mc-Dowall, 2002). In spite of the scale of the problem, very few construction sites, especially small ones, have been able to do anything to significantly reduce thefts. Losses from construction site theft come to billions of dollars every year and cut

across multiple sectors such as home building, commercial construction and public works programs.

Security is defined as the protection of people and things such as buildings and sites from harm, theft, or sabotage and encompasses several components such as physical, personnel, investigations, awareness and information security (Arata, 2006). People need to feel safe coming to work and feel that they are protected from problems such as physical threats, harm, robbery, thefts while at the job site. This is not an easy task since these problems are just outside the perimeter fence that separates the job site from the outside world.

1.2 Problem Statement

Due to the magnitude of the problem and referring to the data gathered from United Kingdom and United States, it is very important to the management of the project, it means contractor and also owner, to maintain a good management and controlling for security. Threat assessment and risk analysis are both important to the process in design and implementation construction site security. Knowledge of the process in planning is the key to success in designed and implementation of construction site security, and hence extensively decreased the loss of money.

Besides that, security related to safety and construction process. The large potential of loss can obviously have severe negative impacts on the success of a construction project. This study will describes and determine how the construction company that still doing their project especially in building, managing and controlling their construction site security, to achieve project objectives.

1.3 Aim and Objectives

The aim of this study is to investigate the implementation of construction site security management and control at sites, particularly at building construction sites. In achieving this aim, three objectives have been outlined:

1. To identify the construction site security components
2. To identify the causes of losses at construction site.
3. To identify the level of implementation of site security base on standard practices

1.4 Scope of Study

This study focused on security management and control on construction sites in Padang, West Sumatera Province, Indonesia. The discussion will be focus on aspects of construction site security management and control not include of financial aspect because of theft, loss and other problems. The construction sites that have been considered in this research are the building construction project that still doing construction phase.

Methods that have been used in data collection are questionnaire and open unstructured interviews. The target respondent in this study are persons who are very well verse about the work in progress at sites such as security officers , project managers, site supervisors, site engineers, logistic officer, and administration staff . The contractor for the case study are the class A contractors. The feedback from the questionnaires will be analysed through the computer program, Microsoft Excel.

1.5 Research Significance

There are several valuable benefits expected by implementing this study. One of it is to increase awareness among the project participant to deliver a project responsibly by also focusing into construction site security program. This can be achieved by applying theoretical concepts that have been discussed in many literatures into practice in real projects. It can ensure good practice of project management in an effort to avoid common loss or theft that is related to site security. Also always maintain a good control to the security program that has been implemented. Applying construction site security planning, programs and controlling at construction site can reduce the potential of loss, theft or other problems beside it can improve the performance and productivity of the project.

After reviewing the previous research from others countries, it can conclude that security is an important factor in construction project. So, researcher wants to know condition of construction site security in developing country, particularly in Padang West Sumatera Indonesia. To obtain some opinion or point of view, from the experts in the construction project such as engineer, project manager, logistic staff, security staff, office clerk, supervisor , etc), about security in construction site. Also, to get some information base on their experience, what is/are the main problems in security that often occur at construction site. By recognizing the potential problem and after looking the implementation of security management and control at selected projects, researcher can make discussion and get some conclusion. Also give solutions and recommendation to the problems

1.6 Research Methodology

For the purpose of this study, the research methodology is use in order to collect data, analysis data and report on findings and results. For data collection, the methods used are literature reviews, followed by open unstructured interviews and distributing questionnaire surveys to the respondents at the site.

For data analysis purposes in this study, methods used are analyzing using Microsoft Excel program, reporting, elaboration, and discussions. Figures 1.1 shows the research methodology flow chart as used for this study.

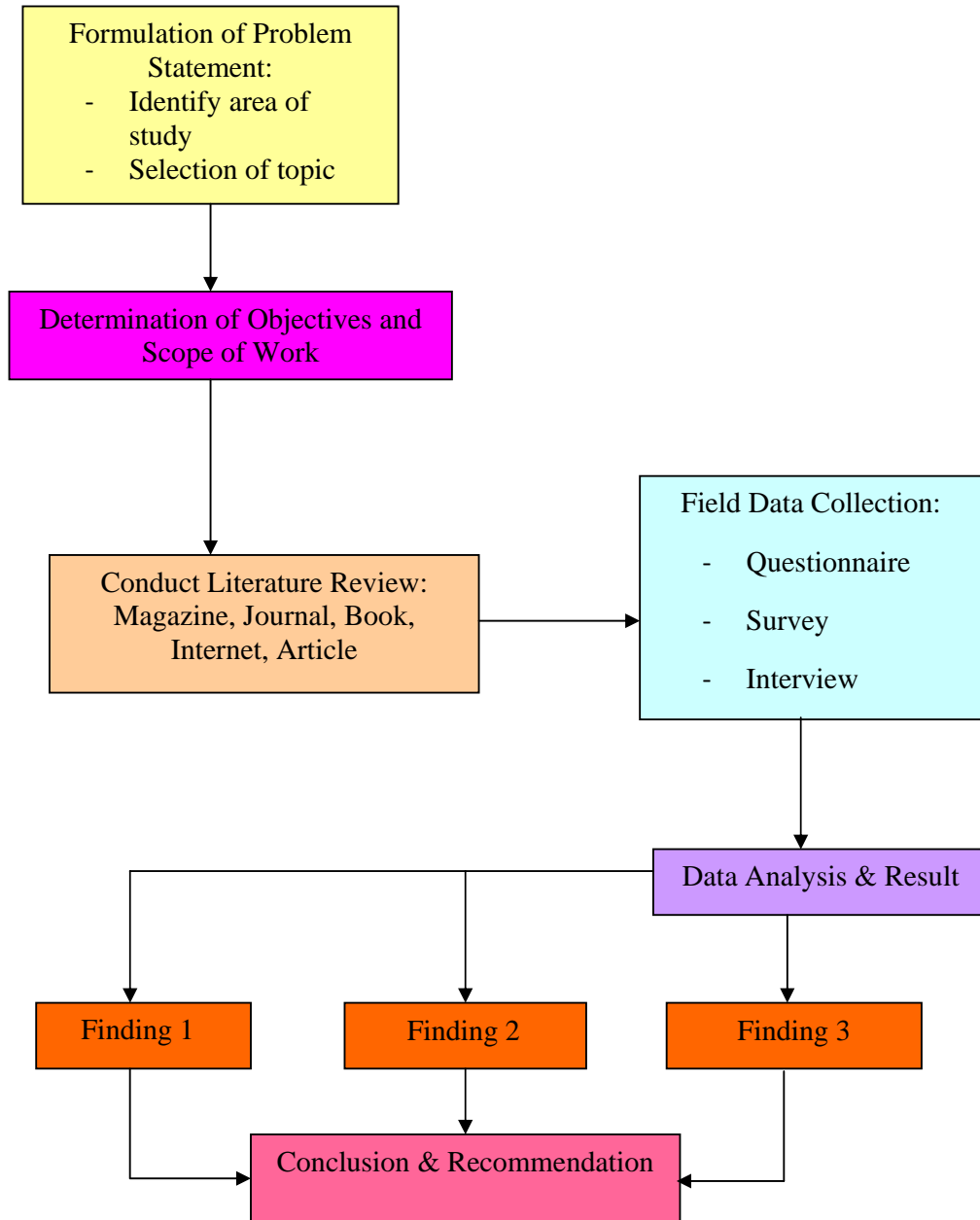


Figure 1.1. Research Methodology Flow Chart

1.7. Summary of Chapter

The followings are the summary of each chapter on this research project paper. This project paper contains six (6) chapters as follows:

1. Chapter 1 : Introduction

The first chapter of this research project report is on background of the study and it comprises of introduction, background, problem statements, aim and objectives, scope of study, research significance, research methodology and the chapters organisation.

2. Chapter 2 : Literature Review

This chapter is base on literature reviews on the related topic for this study. Mainly the literature reviews are from books, journals, articles, magazines, and internet. The topics in this chapter include definition of security and construction site security, components of construction site security, management and control for construction site security include planning, programming and monitoring

3. Chapter 3 : Research Methodology

This chapter concentrate on the methodologies used to carry out this study. The subheadings are literature review, open-unstructured interview, cases studies, develop questionnaire, data collection, and analysis data that are in frequency analysis and average index analysis.

4. Chapter 4 : Data Collections and Preliminary Analysis

This chapter is on the data that have been collected and the preliminary analysis on several data.

5. Chapter 5 : Findings and Discussions

This chapter focuses on discussing the result and get the findings. Various suitable techniques and methodologies are used in analysing the data gathered appropriate with the information needed and the types of data collected. Analysis and discussion in this chapter is carried out with regards to fulfilling the objectives of the research.

6. Chapter 6 : Conclusion and Recommendations

Lastly, this chapter highlights the conclusions made from the study and the recommendations for further studies.