

**VARIATION CONTROL AFFECTING CONSTRUCTION WORKS FOR LEMBAGA  
KEMAJUAN TANAH PERSEKUTUAN(FELDA)**

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A report project submitted in partial fulfilment of the  
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(Construction Management)

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MAY,2007

I declare that this Project Report entitled “*Variation Control Affecting Construction Work For Lembaga Kemajuan Tanah Persekutuan(FELDA)*” is the result of my own research except as cited in the references. This report has not been accepted for any degree and is not concurrently submitted in candidature of any degree.

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Date : .....

## **Specially Dedicated To**

### **My Parents**

My Beloved Mother

“You have done all the best for my live”

### **Beloved Husband**

Ahmad Fairuz B. Dato’ Ahmad Shamli

“Thank you for your love and support”

### **My Children**

“You’re the heart of my life’

## **ACKNOWLEDGEMENT**

With high gratitude to Allah S.W.T. who gave me the ideas and physical strength in preparing this final project. I wish to express my gratitude to the persons and all parties who responded to the survey and also offered their invaluable contributions in carrying out this final project.

First of all, I would like to express my appreciation to my Supervisor for his guidance throughout the preparation of this thesis.

Special thanks to those who agreed to be interviewed, formally and informally, because gave me the benefit of their knowledge, views and experience. I would like also to extend my sincere and deepest gratitude to all my friends who have helped me directly or indirectly.

Finally, I would like to express my deepest love and appreciation to my family especially to my husband for his support. Thank you for all understanding given to me when I really need it. I am hoping this thesis will be a reward for all efforts of every contributing individual. Thank you.

## **ABSTRACT**

Variation means alteration, change or modification of design, quality or quantity of work omission, addition or substitution of the work including the alteration of the kind or standard of any of the materials or goods to be used in the work, and the removal from site of any work, materials or goods which are not in accordance in the contract. The aim is of this study research is to covering the initial planning, while works is in progress and until the completion of works to minimize the need for variation works right from the start . The method of this study involved literature review, interview and based on the case study and the analysis by qualitative method. The process of data collection involved obtaining primary data from the literature review and the secondary data was generated from the case study. From the analysis of this study type and factors influence to variation; problem that influence and the implication to variation; and the strategy action can be taken to minimize the variation were identified. In conclusion, the strategy action that can be taken were identified to minimize or control the variation works during planning stage until construction stage.

## ABSTRAK

Perubahan kerja didefinisikan sebagai ubahsuai, perubahan rekabentuk, pembatalan dari kuantiti atau kualiti kerja, penambahan kerja termasuk perubahan terhadap spesifikasi bahan yang digunakan di dalam sesuatu kerja dan juga pembatalan kerja ditapak termasuk bahan yang tidak mengikut di dalam kontrak. Ianya terdapat di dalam kebanyakan di dalam kerja-kerja bangunan. Tujuan kajian ini adalah merangkumi peringkat awal semasa kerja di dalam kemajuan sehingga siap kerja untuk mengurangkan perubahan kerja bermula peringkat awal kerja lagi. Kaedah yang terlibat di dalam kajian ini adalah merangkumi kajian litaratur, temuduga dan juga kajian kes dan dinalisa melalui kaedah kualitatif. Proses mengumpulkan data diperolehi dari kajian litaratur dan dari kajian kes. Hasil daripada analisis yang dijalankan jenis-jenis perubahan kerja dan faktor-faktor yang mempengaruhi perubahan kerja telah dikenalpasti; masalah-masalah yang mempengaruhi perubahan kerja dan kesannya; dan akhir sekali tindakan yang boleh diambil bagi mengurangkan perubahan kerja juga telah dikenalpasti. Oleh yang demikian, kesimpulan dari kajian ini terdapat strategi tindakan boleh dilakukan bagi mengurangkan perubahan kerja bermula dari peringkat awal perancangan hingga ke peringkat pembinaan.

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## LIST OF ABBREVIATIONS

<b>S.O</b>	-	Superintending Officer
<b>PWD 203 (10/83)</b>	-	Standard Form of Contract to be used where Bills of Quantities Form Part of the Contract (Revised 10/83)
<b>IEM.CE 1/89</b>	-	Standard Form of Contract to be used where Bills of Quantities Form Part of the Contract of Civil Engineering Construction
<b>V.O</b>	-	Variation Order
<b>BQ</b>	-	Bills of Quantities
<b>M &amp; E-</b>		Mechanical and Electrical
<b>TNB</b>	-	Tenaga Nasional Berhad
<b>JBA</b>	-	Jabatan Bekalan Air
<b>JKR</b>	-	Jabatan Kerja Raya

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Today, small projects can be just as important if not more important than the larger projects. When unforeseen situations occur on site, it is important to first understand the situation and come up with suitable solutions and forecasts the probable consequences. One of the occurrences that make projects less profitable is the variation in the original works, leading to re-planning of the ongoing work. As clients are always known for their tall demands, they sometimes change their minds by varying the works while in progress. Changes are usually the major factors causing the delay on projects. The impact due to changes has been described as the adverse effect upon the unchanged work due to changes in the contract.

Even though there are provisions on variation orders in a building contract, the variations works sometimes did not satisfy both of parties who felt disappointed to carry on the works. It will give impact on the cost of the project extend the completion period and it will bring inconveniences to all the parties involved in construction industry, which are client, consultants and also contractor. Besides that it also brings inconvenience for the end user. No matter how much effort to reduce the

variation order in construction industry, it still happens and the final accounts remained unresolved after the building was occupied.

These variations are directly attributable to matters not being as stated or as required in the contract documents. This is because circumstances actually change or because of misinterpreted in the contract documents. Other than that, it also occurs because of client's choice thus will result creating a variation.

For this, some strategies are needed to anticipate starting from the planning stage, so that as the project commences and programmed on site, they will be no variations or at least they can be minimized. Therefore, all parties involved should cooperate to assure that the efficiency of construction and thus will minimize the variation orders in construction industry.

## **1.2 Problem Statement**

Many program for development are being carried out rapidly for Lembaga Kemajuan Tanah(FELDA) to develop FELDA land. Therefore 5 years back many of building and infrastructure works been carried out which awarding the project to the experience and class A contractor but the problem of variation work is still occurring while construction in progress. Varies order from client and authority requirement makes the variations increased easily. Changes in the contract and misinterpreted in document contract will caused of additional cost and the impact of this variation and will impact on the completion of project.

Most of the variation occurs when major changesT in the contract during construction and additional works. Variation can also occur when unexpected

condition such as climate changes which can causes damages project site as example flooded during construction in progress. While unforeseen condition and due to lack of supervision and poor in managing and planning the project can also causes of variation.

### **1.3 Aim and The Objective of Study**

. To achieve the aim, several objectives are defined, they are as follows:-

- 1) To identify the types of variation works commonly occur in construction projects and the factor influencing these.
- 2) To identify the problem that influence to variation and the implication of variation to the construction..
- 3) To identify the strategy action that can be taken to minimize variations starting from planning stage until the construction are being carried out.

### **1.4 The Scope and Limitation of Study**

The scope of this study is focused Research starts from Pre-Contract practice on managing the design development process in construction. Study on the strategy action to be taken starting from planning stage until the Post Contract stage and its effectiveness in minimize the variations. The area of work of the study focused on the building construction works of Lembaga Kemajuan Tanah Persekutuan (FELDA) project and also interviews from professionals who are relevant to the topics.

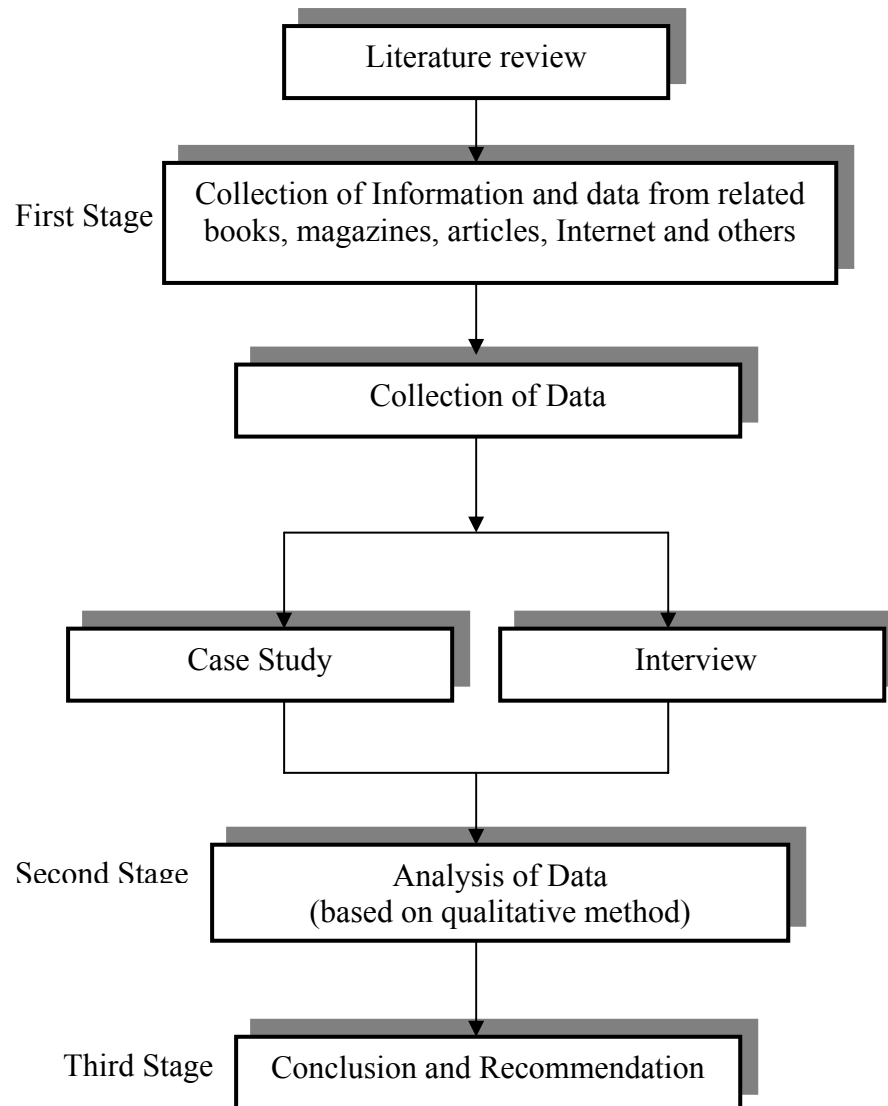


## 1.5 Research Methodology

The methodology is essential to enable the compilation of data and information from various sources. Thus, it involved three main stages starting from collection of data, analysis of data, conclusion and recommendation related to the topic. The study can be broadly divided into three stages.

- (i) The first stage include literature review which based on the primary data collected through reading and searching from related books, magazines, articles, web site and others.
- (ii) The second stage is including interview with relevant professional by face to face interview. Analysis of data by using qualitative methods is done through the collected reading materials and secondary data generated from the case study of FELDA's projects.
- (iii) The final stage of this study is to define the conclusion and recommendation with reference to the objective, subsequent to the analysis from the case study and interviews.

The process of research methodology can be summarized as Figure 1.1 below. This Figure 1.1 shows the process of research methodology starts from the literature review until to the conclusion and recommendation.



**Figure 1.1:** The Methodology Flow Chart

## 1.6 Summary

This study provides some valuable insights in to the relative importance of to minimize or control the variation starts from the planning stage until the construction stage. The study consists of seven chapters. The first chapter is to introduction of the research, which includes the statement problem, the aim and objective of the study, the scope and limitation of the study, and research methodology. The second chapter is on literature review, focus on the identification the types of variation and the factor influence this.; Third chapter continue with the literature review on the problem in variation and its implication to the construction; Fourth chapter focus on the strategy action that can be taken to minimize or to control variation work in the construction. The fifth chapter is the research chapter that discusses the method of research. The data and analysis is discussed in chapter six and lastly the conclusion and recommendation is highlight in chapter seven.

## **CHAPTER 2**

### **TYPES AND FACTORS INFLUENCE VARIATION ORDER**

#### **2.1 Introduction**

This chapter identifies the types and the factors that influence the variation order, establish the definition of variation and classification of variation from the literature review. The factors that influence the variation order to be discussed in which related from the pre contract stage until construction stage.

#### **2.2 Definition**

Variation order means the alteration, change or modification of design, quality or quantity of work omission, addition or substitution of the work. It is also including the alteration of the kind or standard of any of the materials or goods to be used in the work, and the removal from site of any work, materials or goods which are not in accordance in the contract.

In most form of contract used today for building work provision must be made for possible variations. At the same time when tenders are invited the employer and his architect and engineer should have crystallized all their ideas into a set of contract documents.

According Standard Form Of Contract (IEM.CE 1/89, clause 23(a)), state that the term 'variation' means "increase or decrease the quantity of any works include in the contract; omit any such work; change the character or quality or kind of any such work; change the levels line position and dimensions of any part of the works; execute additional works of any kind necessary for the completion of the works.

While according to Standard Form Of Contract (PWD 203 (10/83), clause 24(b)), state that the term of 'variation' means "the alteration or modification of the design, quality or quantity of the works as shown upon the Contract Drawings, Bills of Quantities and/or Specification, and includes the addition, omission or substitution of any work, the alteration of the kind of standard or any of the materials or goods to be used in the works and the removal from the site of any work, materials or good executed or brought thereon by the Contractor for the purpose of the works other than work, materials or goods which are not in accordance with this Contract."

Variation can be classified into two categories, which are active variations and passive variations (Hj. Hashim Sikan, 2003). Active variations come indirectly as a result of the issue of instructions. So much the instruction it become a norm that there is no variation without instruction. Instruction here refers to those instructions issued by the contract administrator for example Superintending Officer's (S.O) instruction in the standard form of contract(PWD Form 203A and IEM.CE 1/89).

Another aspect of variation deals with statutory regulations (clause 11(d) PWD Form 203A, and IEM.CE 1/89) requires the contractor to inform the S.O in writing of any change or amendment in statutory regulation and bye-laws taking effect after the Date of Tender which necessitated any variation to the works and apply for and S.O's instruction before the S.O could issue the instruction.

The passive variation could be accepted as those that do not require the instructions to be issued directly to the contractor. For example re-measurement and valuation of those quantities of the work, which are stated as 'provisional' in the bills of quantity. Other than that the variations also comes in the form of the adjustment of items having Prime Cost or Provisional Sums in the contract.

The variation work of these items shall be prepared and agreed by the contractor and the client in which to facilitate the finalization of accounts in the contract. After the both parties agreed with items and the rates that involve in variation works, then it should be prepared in the final account accordingly to the Variation Order format.

### **2.3 TYPES OF VARIATION**

According to Ir Harbans Singh K.S (2002), generally there are three types of variations. The types of variation can be classified according to their criteria, which are as list as follows:

- (i) The identity of the initiator.
- (ii) The nature of the variation.
- (iii) The consequences or effect of the variation.

### **2.3.1 Identity of the initiator**

Classification per identity of initiator is a change made by any one or more principal parties. This can be described as employer, contractor, nominated sub-contractors, nominated suppliers, and also contract administrator.

Employer is a person on behalf of the users, future occupants, and etc., while the contractor can make change on his own volition or behalf of sub-contractors, suppliers, etc. Nominated sub-contractors/ suppliers are in relation to their respective sub-contract; and contract administrator; on his own volition, on behalf of the employer, the designers, statutory bodies, third parties and etc.

It is an undeniable fact that the bulk of the variations are initiated by the employer. The principal reasons for the employer to initiate variations are changes in the employer's requirements post contract award, for example owing to a rethinking of the needs, change in the nature and use of the anticipated or future utilization of the finished works. Besides that, the changes are also in review or reassessment of the design by the designers due to issues such as safety, build ability, and correction of deficiencies or errors. While the contract administrator with the power is then implemented the provision of the contract unless the employer has retained such powers under the contract.

### **2.3.2 Nature of the variation**

The nature of the variation means changes according to the nature of the work itself. This means it not only changes to the work or matters appertaining to the work in accordance with the provisions of the contract, but also changes in the contract