

ทัศนคติประเด็นเกี่ยวกับเหตุการณ์ไม่พึงประสงค์ซึ่งก่อให้เกิดความขัดแย้ง
และความพึงพอใจต่อภาระความรับผิดชอบตามสัญญา
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วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิศวกรรมศาสตรดุษฎีบัณฑิต

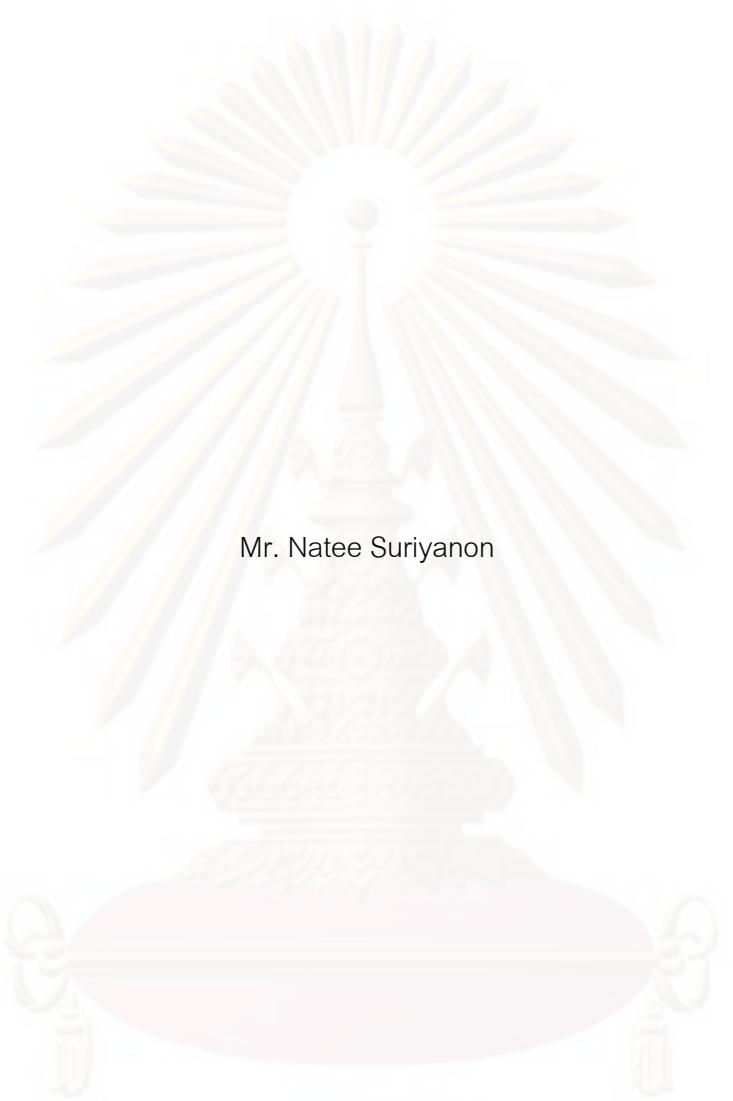
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ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

ATTITUDE ON CONFLICT-INITIATING ISSUES RELATED TO UNDESIRABLE EVENTS
AND CONTRACTUAL RESPONSIBILITY PREFERENCE
BY CHOICE-BASED CONJOINT ANALYSIS



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for the Degree of Doctor of Philosophy Program in Civil Engineering

Department of Civil Engineering

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Chulalongkorn University

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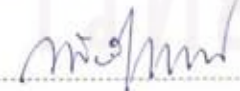

นที สุริยานนท์ : ทัศนคติต่อประเด็นเกี่ยวกับเหตุการณ์ไม่พึงประสงค์ซึ่งก่อให้เกิดความขัดแย้งและความพึงพอใจต่อภาระความรับผิดชอบตามสัญญาโดย ช้อย เบส คอนจอย อานาไลซิส (ATTITUDE ON CONFLICT-INITIATING ISSUES RELATED TO UNDESIRABLE EVENTS AND CONTRACTUAL RESPONSIBILITY PREFERENCE BY CHOICE-BASED CONJOINT ANALYSIS)

อ. ที่ปรึกษาวิทยานิพนธ์หลัก : รศ.ดร.วิสุทธิ ช่อวิเชียร, 429 หน้า.

วิทยานิพนธ์นี้มีวัตถุประสงค์ที่จะมุ่งสร้างองค์ความรู้อันจำเป็นสำหรับการวิเคราะห์ข้อสัญญาเกี่ยวกับเหตุการณ์ซึ่งไม่พึงประสงค์และสำหรับการพิจารณาจัดสรรความรับผิดชอบ ผลกระทบอันเนื่องมาจากเหตุการณ์เหล่านั้น รวมถึงดำเนินการวิเคราะห์สัญญาแบบทำยาระเบียบสำนักนายกรัฐมนตรีเป็นกรณีศึกษา

วิทยานิพนธ์นี้ทำการสังเคราะห์ข้อมูลรายการประเด็นเกี่ยวกับเหตุการณ์ซึ่งไม่พึงประสงค์ที่มีแนวโน้มจะก่อให้เกิดความขัดแย้งระหว่างคู่สัญญาจำนวน 223 ประเด็นจากการศึกษาเอกสารที่เกี่ยวข้อง และทำการรวบรวมข้อมูลทัศนคติของประชากรในภาคอุตสาหกรรมก่อสร้างไทยต่อประเด็นเหล่านั้น เพื่อประเมินค่าแนวโน้มที่แต่ละประเด็นจะก่อให้เกิดความขัดแย้งระหว่างคู่สัญญาอันเป็นดัชนีบ่งชี้ระดับความสำคัญของแต่ละประเด็นที่ศึกษา นอกจากนี้ยังได้ดำเนินการประเมินสัดส่วนประชากรในภาคอุตสาหกรรมก่อสร้างซึ่งพึงพอใจในแต่ละทางเลือกที่ระบุในแบบสอบถาม เพื่อบ่งชี้แนวทางการเขียนข้อสัญญาที่เหมาะสมสำหรับแต่ละประเด็นที่ศึกษา

วิทยานิพนธ์นี้ยังได้ทำการสังเคราะห์ข้อมูลที่จำเป็นสำหรับการพิจารณาจัดสรรความรับผิดชอบผลกระทบอันเนื่องมาจากเหตุการณ์ไม่พึงประสงค์ระหว่างคู่สัญญา ได้แก่ ทัศนคติของผู้รับเหมาและเจ้าของงานต่อการถูกกำหนดให้เป็นผู้รับผิดชอบผลกระทบแต่ละประเภท และค่าอัตราความเสี่ยงที่ผู้รับเหมาต้องการและอัตราความเสี่ยงที่เจ้าของงานยินดีชำระหากมีการจำกัดสิทธิของผู้รับเหมาในการเรียกร้องการชดเชยผลกระทบแต่ละประเภท ข้อมูลเหล่านี้ได้รับการประยุกต์นำช้อย เบส คอนจอย อานาไลซิส ซึ่งเป็นเครื่องมือทางการตลาด มาใช้ในการสังเคราะห์ข้อมูล กระบวนการประยุกต์ใช้ช้อย เบส คอนจอย อานาไลซิส ที่ได้ดำเนินการในงานวิจัยนี้นับเป็นนวัตกรรมรูปแบบใหม่ของกระบวนการสังเคราะห์ข้อมูลที่จำเป็นสำหรับการพิจารณาจัดสรรความรับผิดชอบระหว่างคู่สัญญา

ภาควิชา.....วิศวกรรมโยธา.....ลายมือชื่อนิติ.....
สาขาวิชา.....วิศวกรรมโยธา.....ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก.....
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NATEE SURIYANON: ATTITUDE ON CONFLICT-INITIATING ISSUES RELATED TO UNDESIRABLE EVENTS AND CONTRACTUAL RESPONSIBILITY PREFERENCE BY CHOICE-BASED CONJOINT ANALYSIS. THESIS ADVISOR : ASSOC.PROF.VISUTH CHOVIKIEN, PH.D., 429 pp.

The objectives of this study are to develop knowledge for the analysis of contract clauses related to undesirable events and also for decisions on the allocation of responsibilities to contracting parties. To demonstrate that the knowledge gained from this study can be applied to analyze contract clauses, the standard contract of Thai government was analyzed.

A list of 223 issues related to undesirable events that may initiate conflict was synthesized from document studies. The level of importance of each issue was determined from the probability of conflict arising from each issue, which was, in turn, calculated from the data from a survey on the attitudes of the construction industry towards that issue. The proportion of people in the construction industry who preferred each alternative in the questionnaire was also calculated. An appropriate approach for writing contract clauses was determined from the alternative that the majority of the population in the industry preferred.

The data necessary for making decision on the allocation of responsibilities for each effect of undesirable events to the contracting parties was also synthesized in this study. These data are the attitude of contracting parties towards the assignment of responsibilities for each effect of undesirable events and the risk premium that the contractor would like to request and the extra cost that the employer is willing to pay for if the contractor is assigned as being responsible for the effect. Choice-based conjoint analysis, which is the combination of statistical techniques and methods originally designed for marketing research, is creatively applied in synthesizing these data. The application of choice-based conjoint analysis as performed in this study is a new innovation in the process of synthesizing the data necessary for the consideration of responsibility allocation.

Department:..... Civil Engineering Student's signature Natee Suriyanon

Field of study:..... Civil Engineering Advisor's signature Visuth Chovikien

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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

CHAPTER I

INTRODUCTION

1.1 Introduction

A contract is the agreement between two contracting parties that defines the rights, obligations and responsibilities of each contracting party. Since many parties are normally involved in a construction project, for example: contractor, employer, architect, engineer, construction manager, subcontractor, and supplier, in each project there will be various contracts between parties. Some examples of these contracts are construction service contract between employer and contractor, design service contract between employer and architect/engineer, construction supervision service contract between employer and construction manager, construction service contract between contractor and subcontractor, and construction material purchasing contract between contractor and supplier.

Construction contract or construction service contract between employer and contractor defines the rights, obligations and responsibilities of employer and contractor (sometimes it also defines the rights and obligations of other parties that work for the employer such as an engineer and also of the parties that work for the contractor such as a subcontractor). Construction contract is one of the most important factors that have influence on the success of the project. If there is any defect in a construction contract, such as the contract not expressing the rights, obligations and responsibilities of each contracting party clearly, or not being accepted by either contracting party, there is a high tendency that the construction operation could not be performed smoothly. This is because conflict between employer and contractor tends to occur during the construction.

Construction industry has experience with construction contracts and many contracts have been used by the industry for a very long time. Unfortunately, research works in the past indicated that construction contracts used in the construction industry still have defects (Pleanbangyang, 1995; Hughes, 1996; Bunsrangserm, 2000; Tochaiwat, 2001). Beside, both contractors and employers were of the same opinion that several contract clauses in construction contracts need to be revised (Ibbs et al., 1986; Ibbs and Ashley, 1987).

Clauses related to undesirable events that may occur during the construction period are among the most important clauses in the contract. Undesirable events are those events that have an effect on construction operations and/or project cost, for example force majeure, the employer's ineffective performance, the employer's interference actions, different site conditions, and change in the scope of work. The events that can be regarded as undesirable are those often cited as the reasons in claims for compensation (Diekmann and Nelson, 1985; Kumaraswamy 1997; Kumaraswamy 1998a; Kumaraswamy 1998b; Yogeswaran et al., 1998; Zanelidin, 2005). It can be inferred that undesirable events happen quite often during the construction period. Several studies in the past also revealed that undesirable events are very often initiated disputes between contracting parties (Diekmann and Nelson, 1985; Semple et al. 1994, and Kumaraswamy 1997). This implies that clauses related to undesirable events in standard construction contracts in general use within the construction industry are still defective and need to be revised; the knowledge that exists at present is not sufficient for use in the development of complete and appropriate clauses in such contracts.

Besides, the study of various standard contract forms has revealed variations in the allocation of responsibilities for the effects of undesirable events to each contracting party. This implies that within the construction industry there is no consensus of opinion about the allocation of responsibility to each contracting party. The inappropriate assignment of responsibility to a contractor for the effect of an undesirable event can cause a problem, for example, the inability to manage the project budget efficiently (Ashley et al, 1989). The employer who draws up the contract provisions in such a way that all responsibility for the effects resulting from the undesirable events is transferred to the contractor may end up paying more than necessary for the construction project. This is because the contractor adds a responsibility premium to cover the risk for which they do not agree to be responsible but are assigned to bear by the contract (Jergeas and Hartman, 1996; Ward et al., 1991).

Because of the importance of construction contract and the importance of clauses related to undesirable events as mentioned above, this dissertation focuses on the problems of contract clauses related to undesirable events.

1.2 Problem statement

The following are the problems of writing clauses in the construction contract related to undesirable events:

- No available data for proper analysis of clauses related to undesirable events in the construction contract

A contract is one of the best tools that can be used to prevent conflict or dispute between contracting parties. Each contracting party does not want to have conflict with the opposite party as their relationship is normally strained when they do so. In addition, if their conflict worsens into a dispute, then both parties will end up with losses as they have to pay for not only the direct costs of the dispute resolution process but also the indirect costs. Examples of direct costs are the fees and expenses paid to lawyers, accountants, claim consultants and other experts. Examples of the indirect costs are salaries and the associated overheads of in-house lawyers, company managers and other employees who assemble facts, serve as witnesses and process the dispute. Moreover, they also have to pay for the hidden costs of the dispute. Such examples are inefficiencies, delays, loss of quality due to disputes and the costs of strained business relations between the contracting parties (Yates, 1998; Fullerton 2005; Gibson and Gebken, 2005; Gebken, 2006).

In drawing up a construction contract, therefore, it is crucial that the contract covers issues that may initiate conflict between contracting parties. With the provision of a list of conflict-initiating issues, the person who is responsible for drafting the contract will know what issues need to be covered by the contract with no issue being neglected. The person who drafts the contract also needs to know the level of importance of each issue. With this knowledge, the contract writer can determine how necessary it is to specify each conflict-initiating issue in the contract and can then decide which issues are to be covered by the contract.

Inappropriate writing of contract clauses may affect the relationship between contracting parties. For example, in case the majority of professionals in the construction industry agrees that the contractor has the right to claim for the increase in construction duration due to—different site conditions, the contractor will have the feeling that the employer is taking advantage of them if their right to ask for the claim is restricted by the contract. This can be eased by drafting a contract clause related to each issue in an

appropriate manner or in such a way that deemed acceptable by most of those in the industry. Being aware of the attitude of the majority of construction industry professionals towards each issue, the individual responsible for writing the contract will be able to write the contract clause related to that issue as appropriate.

As mentioned above, a list of conflict-initiating issues that should be covered in the contract, the data on the level of importance of each issue and the data on an appropriate approach for writing contract clauses related to conflict-initiating issues (the attitude of the majority of professionals in the construction industry towards each issue) are required for the analysis of each contract clause. With knowledge of these data, one will be able to better analyze contract clauses related to undesirable events. Unfortunately, these kinds of data are not available for people to use in the construction industry.

- No available data for judgment on the appropriate allocation of responsibility

Judgment on the allocation of responsibility to each contracting party is an important process of drafting the contract, especially the allocation of responsibility for the effects of undesirable events. Since undesirable events usually occur during the construction period (Yogeswaran et al., 1998; Diekmann and Nelson, 1985; Semple et al., 1994; Kumaraswamy, 1997) and affect the construction costs, the responsibility for these effects can have an effect on the price of the project. If the responsibility for the effects is assigned inappropriately, the employer may be charged by the contractor at an unacceptably high risk premium (Ashley et al., 1989; Jergeas and Hartman, 1996; Akintoye and Macliod, 1997). Moreover, the contractor may have the feeling that the employer is taking advantage of them and the relationship between contracting parties can turn sour if there is an inappropriate assignment of the responsibility.

To decide which contracting party should be assigned the responsibility for each type of effect, the individual who makes the decision should have data on (1) the attitude of the contractor towards the assignment of their responsibility for each effect of undesirable events, (2) the attitude of the employer towards the assignment of their responsibility for each effect, (3) the risk premium that the contractor would like to request if they are assigned to be responsible for an effect, and (4) the extra cost that the employer is willing to pay for assigning the responsibility for each type of effect to the contractor. Based on the first two groups of data, the types of effects that each contracting party is willing to take

responsibility for can be identified. The last two groups of data could be compared for specifying the party to which the responsibility should be assigned when no party wants to be responsible for the effects. Unfortunately, these kinds of data are lacking. Judgment on the allocation of responsibility can not be processed quantitatively.

1.3 Research objectives

The objectives of this research are:

- To develop knowledge for the analysis of contract clauses related to undesirable events; specifically to identify and list conflict-initiating issues related to undesirable events, to assess the level of importance of each conflict-initiating issue, and to find an appropriate approach for writing contract clauses related to conflict-initiating issues. Being in possession of these kinds of data, contract clauses related to undesirable events can be analyzed in a more appropriate manner.
- To develop the knowledge for making decisions on the allocation of responsibility to contracting parties; specifically to identify (1) the attitude of the contractor towards the assignment of their responsibility for each effect of undesirable events, (2) the attitude of the employer towards the assignment of their responsibility for each effect, (3) the risk premium that the contractor would like to request if they are assigned to be responsible for an effect, and (4) the extra cost that the employer is willing to pay for assigning the responsibility for each type of effect to the contractor.

1.4 Scope of the study

This study was carried out within the following specified scopes.

- The study was carried out within the environment of the Thai construction industry. Only individuals working for Thai government organizations, the biggest employer of the Thai construction industry, were selected as representative samples of the Thai employer. This is because the data from this study would be used for the analysis of the standard contract of Thai government, namely “the sample contract annexed to the procurement regulation of the Prime Minister's Office”, that most projects owned by Thai government organizations and state enterprises have to use.

- This study was focus on the following five types of undesirable events which frequently initiate conflict between contracting parties in the Thai construction industry as follows:
 - Force majeure;
 - Ineffectiveness of the performance of the employer;
 - Different site conditions;
 - Interference action by the employer; and
 - Employer's order to change the scope of work.

1.5 Research methodology

This study was divided broadly into two parts following the two objectives of the study. Each part consists of several phases. The phases for each part are shown in Fig 1.5.1

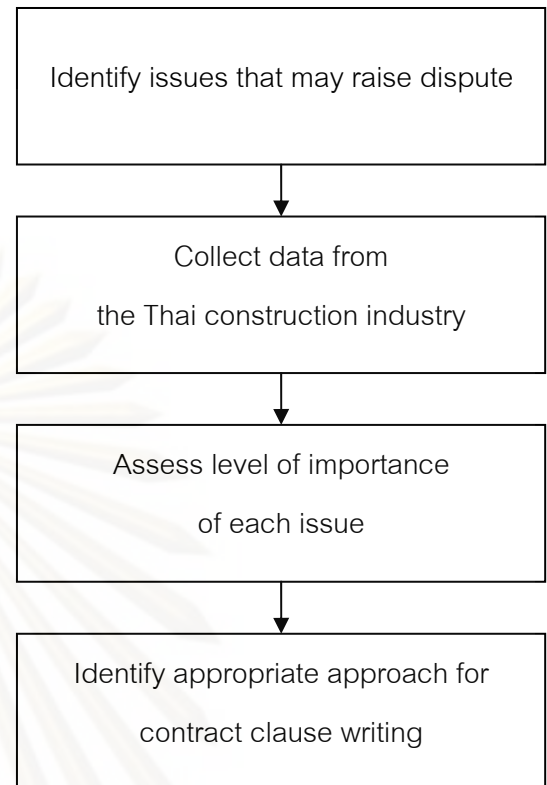
- The development of the knowledge necessary for the analysis (development) of contract clauses related to undesirable events

This part of the study consists of 4 phases as follows.

Phase 1. Identify the issues related to undesirable events that may raise dispute.

The objective of this phase of the study is to identify and list the issues related to undesirable events that may raise dispute between contracting parties, in case that the contract does not mention them. To gather a complete list of issues related to undesirable events that may initiate conflict, four sources of documents were studied: (1) documents related to disputes between contracting parties of construction projects in the past, (2) documents of consultation from contracting parties related to the legal issues of the contract , (3) standard contract forms, and (4) research and articles related to undesirable events.

The development of the knowledge necessary for the analysis of contract clauses



The development of the knowledge necessary for making decisions on the allocation of responsibility

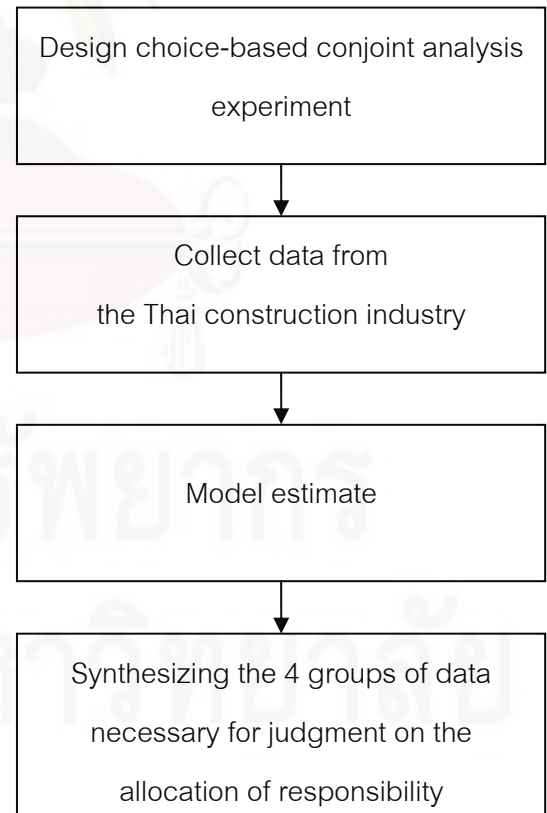


Fig. 1.5.1 Research methodology

Phase 2. Collect data on the attitude of the industry towards each conflict-initiating issue.

In this study, data on the attitude of the industry towards each conflict-initiating issue were collected. This data would be used to assess the level of importance of each issue and also to identify an appropriate approach in writing contract clauses related to conflict-initiating issues. The samples for this study were selected from those who represented Thai contractors and who represented Thai government organizations, which is the biggest employer in Thai construction industry. Individuals who worked for an engineering consultant company and were hired by Thai government organization were also included in the Thai government organization study group.

Phase 3. Assess the level of importance of each conflict-initiating issue.

In this phase, the probability that each issue will initiate conflict was assessed to indicate the level of importance of each issue. The data used to assess the probability of conflict is the data on the attitude of the industry towards each issue collected from phase 2. The probability of conflict was assessed by applying the five equations developed in this study.

Phase 4. Identify appropriate approach for contract clause writing.

Data on the attitude of the industry towards each conflict-initiating issue collected from phase 3 was also used to identify an appropriate approach to contract clause writing. An appropriate approach was the one that yielded the highest percentage of acceptability to the industry.

- To develop the knowledge for judgment on the allocation of responsibility to contracting parties.

This part consists of four phases as follows.

Phase 1. Design of choice-based conjoint analysis experiment

In this phase, the attributes and factors to be used in choice-based conjoint analysis were specified. Research papers, technical articles, and text books related to choice-based

conjoint analysis and undesirable events were reviewed to list the attributes and level of each attribute related to the responsibility of contracting parties for the effects of undesirable events. Hypothetical proposals and choice sets were then developed for the choice-based conjoint analysis experiment.

Phase 2. Collecting data from the construction industry

In this phase, each respondent was asked to assess the choice sets of hypothetical proposals to identify their most preferred proposal of each choice set. The response rate of each sampled group to each choice would be used to develop the multinomial logic model in phase 3.

Phase 3. Model estimate

In this phase, multinomial logic models were developed from each sample group. All related utility parameters were assessed. SAS ver. 9.0 was applied for the model development.

Phase 4. Synthesizing the data necessary for judgment on the allocation of responsibility to contracting parties.

In this phase, the willingness of contracting parties to accept the assignment of responsibility, the risk premium that the contractor required, and the extra costs that the employer is willing to pay for assigning the responsibility to the contractor were assessed from the utility parameter obtained from phase 3. An appropriate approach for allocating the responsibility for each type of effect was also identified based on those available data.

1.6 Benefits of research and research contributions.

This research provides various contributions for the construction industry as follows:

- Provide the knowledge needed for the analysis of clauses related to undesirable events. A list of conflict-initiating issues, the level of importance of each issue and an appropriate approach for writing contract clauses related to conflict-initiating issues provided from this research are the data needed for the analysis of clauses related

to undesirable events. Contract clauses related to undesirable events can be drafted (or analyzed) more appropriately if these groups of data are available.

- Provide the knowledge needed for judgment on the allocation of responsibility to contracting parties. The preferences of each contracting party regarding the assignment of their responsibility for each effect of undesirable events, the risk premium that the contractor would like to request, and the extra cost that the employer is willing to pay if the responsibility is assigned to the contractor are the data needed for judgment on the allocation of responsibility to contracting parties. The responsibility for the effects of undesirable events can be allocated properly if these groups of data are available.
- Provide knowledge about the defects of clauses in the standard contract of Thai government. In this research, the standard contract of Thai government was used to demonstrate the application of knowledge gained from this study to analyze a standard contract. As a result, the defects of clauses in the standard contract of Thai government were revealed. This data is useful for the revision/modification of the standard contract of Thai government.
- Provide other useful data which are by-products of the study, such as a list of legal cases related to undesirable events, the proportion of employers/contractors with a specific attitude towards each conflict-initiating issue, and the probability that each issue will initiate conflict.
- Provide methodologies for developing knowledge for the analysis of contract clauses and judgment on responsibility allocation that can be used in practice. These methodologies are as follows:
 - Methodology of identifying conflict-initiating issues
 - Methodology of determining the level of importance of each conflict-initiating issue
 - Methodology of determining an appropriate approach for writing contract clauses
 - Methodology to synthesize the data needed for judgment on the allocation of responsibility to contracting parties.

1.7 Organization of the dissertation

This section provides an overview of how this dissertation is organized.

In the next chapter, the literature review is presented. Previous research and articles on five related topics are briefly described in this chapter to reveal the knowledge gap filled by this research.

Chapters 3 to 5 are related to the study to develop the knowledge necessary for the analysis of contract clauses related to undesirable events. The topics covered by these chapters are as follows.

Chapter 3 presents the process and the results of identifying conflict-initiating issues related to undesirable events.

Chapter 4 proposes a concept of using the probability that each issue will initiate the conflict between contracting parties as an indicator for the assessment of the level of importance of the issues to be specified in the contract. It also explains the process of collecting data on the attitude of the construction industry towards the conflict-initiating issues and provides the number of organizations and their personnel to which or to whom the questionnaire were distributed and the number of respondents. The result of the assessment of the level of importance of each issue is also presented in this chapter. Moreover, the last section of this chapter presents the results of the study on the comparison of the list with the contract clauses related to undesirable events in the standard contract of Thai government to reveal the completeness of the contract. Discussion on the importance of missing issues is also presented.

Chapter 5 proposes a conceptual process of identifying an appropriate approach to contract clause writing, based on the data on the attitude of the majority of people in the construction industry. An appropriate approach to write contract clause towards each conflict-initiating issue is also presented in this chapter. The last section of the chapter reports the results of the analysis of the appropriateness of contract clauses in the standard contract of Thai government based on the knowledge that was developed.

Chapters 6 to 8 are related to the study to develop the knowledge necessary for making decisions on the allocation of responsibility to contracting parties. The topics covered by these chapters are as follows.

Chapter 6 briefly describes choice-based conjoint analysis (CBC). It also presents a concept for applying choice-based conjoint analysis for allocating responsibility to contracting parties.

Chapter 7 describes the details and the results of the study on developing the knowledge necessary for judgment on the allocation of responsibility to contracting parties. In this chapter, the details of the process of designing a choice based conjoint experiment and the determination of the number of samples collected from Thai construction industry are presented. The multinomial logit models and their related utility parameters obtained from the study are reported. Data on the willingness of contracting parties to accept the assignment of responsibility, the risk premium that the contractor required, and the extra cost that the employer is willing to pay for assigning the responsibility to the contractor, were interpreted from the utility parameters from Multinomial logit models.

Chapter 8 is related to the application of data synthesizing from choice-based conjoint analysis. The appropriate approach in allocating responsibilities to contracting parties identified from these valuable data is reported. Also, the allocation of responsibility for the effects of undesirable events in the standard contract of Thai government is analyzed based on the knowledge gained from the choice-based conjoint experiment.

In chapter 9, the last chapter, a summary of the study is presented. The main conclusion from this research study, limitations of the study and recommendations for further study are also provided in this chapter.

CHAPTER II

LITERATURE REVIEW

Previous research and articles on five related topics are briefly described in this chapter to reveal the gap in knowledge that will be filled by the data from this research. The first and second topics are related to the study on the development of knowledge needed for the analysis (or development) of contract clauses related to undesirable events. The last three topics are related to the study on the development of the knowledge needed for judgment about the allocation of responsibility between contracting parties. The five topics to be covered in this chapter are (1) analysis of construction contract conditions, (2) surveys on the attitude of people in the construction industry towards contract issues, (3) analysis of responsibility allocation, (4) risk premium and 5) choice-based conjoint analysis. The last section of this chapter is the conclusion from the literature review.

2.1 Analysis of construction contract conditions

The literature review addresses some articles and previous research that studied, analyzed and discussed contract conditions. These papers provide useful information that can be applied to analyzing and developing contract conditions.

A large number of the papers did not focus on one single issue of the contract; they studied several issues and, in some cases, the whole contract. Examples include the papers of Pleanbangyang (1995), Hughes, (1996), Grove (1998), Charoenngam and Yeh (1999), Bunsrangserm (2000), Tochaiwat (2001), Noble (2001), and Barfield (2008).

Pleanbangyang (1995) performed a study to assess the suitability of contract clauses in the standard contract of Thai government, namely “example of contract annexed to the procurement regulation of the Prime Minister's Office.” In this study, the effects of existing clauses in the standard contract on the ability of the employer and contractor to manage the contract were identified as well. The opinions of 49 agents in the Thai government organization group and of 53 Thai contractors regarding each contract clause were collected by questionnaire survey and were used as an input in the analysis.

Hughes (1996) conducted a study to assess the suitability of FIDIC in some selected aspects such as the risk allocation between contracting parties, payment, the contractor's right to claim, and the engineer's powers, etc. In this study, a questionnaire survey was used to gather the opinions of respondents from construction industries around the world regarding the FIDIC contract.

Grove (1998) reviewed the general conditions of the contract and related documents for the government of the Hong Kong special administrative region. This study aimed to provide recommendations on the contract provisions towards the management and allocation of risks such as ground condition (clause 13) and payment to subcontractors (clause 69). The results from this study indicated that some provisions should be added to the contract such as the right of government to terminate the work for convenience and the right of government to accelerate the work. Some other provisions should also be modified such as clause 30 that allocates the risk of changes in law to the contractor. The author claimed that all the recommendations he gave were synthesized from the study of well known standard forms of contract and from his own experience.

Charoenngam and Yeh (1999) conducted a study on construction risk allocation. The comparison between the Taiwanese government and the FIDIC condition of contract is a part of their study. The three groups of conditions that were compared and discussed in this study were construction delay, changes in the work, and the subsurface conditions of geology. Comments on unfair risk allocation found in both contracts were also given.

Bunsrangserm (2000) identified the defects of the standard contract of Thai government, namely "example of contract annexed to the procurement regulation of the Prime Minister's Office." In her study, the data from cases between 1992-1999 of three government agencies were gathered and analyzed to identify the defects of the contract. The three government agencies participating in this study were (1) the Office of the Permanent Secretary in the Prime Minister's Office (the Bureau of Legal Affairs and General Regulations) (2) the Office of the Attorney General, and (3) the Council of State of Thailand.

Tochaiwat (2001) identified four groups of problems regarding the FIDIC, namely quality-related, cost-related, time-related and right-and-duty-related problems. These problems may limit the application of FIDIC in the Thai construction industry. In this study, the modified Delphi technique was also used to derive common opinions about the

problems of the FIDIC from 82 respondents from the three parties – employers, engineers and contractors – involved in the contract administration process.

Noble (2001) reviewed and discussed the four standard forms of contracts between the design-builder and the A/E, namely (1) AIA Document B901, (2) AGC Document No. 420, (3) DBIA Document No. 540, and (4) EJCDC Document Nos. 1910-41. The results of the study revealed that the AIA and EJCDC forms seem to be naïve when compared with the ACG and DBIA forms; The AIA form has some inappropriate simplicity while the EJCDC form has some inappropriate complexity.

Barfield (2008) compared and discussed the American Institute of Architects A201 General condition (A201) with the ConsensusDOCS 200 Combinations Owner-Contractor Agreement and General Conditions (Consensus200). The issues that were covered in this paper include dispute resolution, indemnity, consequential damages, additional insured coverage, subcontractor benefits, owner financing information, delay, change, claims, digital document exchange, owner takeover of work, termination, suspension, architects' roles, trust obligations, and warranty. The results of the study revealed that the A201 and Consensus 200 were the same for most issues. However, for some issues it was found that they differed.

Among the clauses in the construction contract, the clauses related to risk allocation are the clauses that have received the most attention from the industry. They have been studied, analyzed and discussed in several studies/articles, for example in the papers of Hartman and Snelgrove (1996), Hartman et al. (1997), Hartman et al. (1998), Ndekugri and McDonnell (1999), Wang et al. (1999), Usta, (2005), and Zhang et al. (2006).

Hartman and his colleagues studied risk allocation in a lump-sum contract. They, first, asked each respondent, via a questionnaire, to evaluate selected contract clauses from the Canadian Construction Documents Committee Lump Sum Standard Form Construction Contract (CCDC2-1982), and also their revised versions of these clauses. The respondent was then asked to rate the degree of the responsibility of the contractor and of the employer for each contract clause. Each respondent was also asked to specify the level of risk allocation between contracting parties that they thought appropriate. A total of 31 responses from consultants, contractors and employers were received. Researchers then compared

the average rating of each group of respondents to those of the other groups. The ratings of CCDC2 clauses, revised clauses, and the rate preferred by the respondent, were then compared. The suitability of each revised clause was also analyzed (Hartman and Snelgrove, 1996; Hartman et al., 1997; Hartman et al., 1998).

Ndekugri and McDonnell (1999) compared and discussed the contract conditions related to the risk of differing site conditions in FIDIC with those in NEC. The study focused on equity and clarity in risk allocation, adequacy of contractual procedures for encountering unexpected conditions, effectiveness of contractual machinery for dispute resolution, and compliance with reported developments in successful contractual practices in underground construction. The study's findings revealed the advantageous feature of the NEC, namely its emphasis on how to solve problems. It also revealed the commendable feature of the FIDIC conditions that mention the employer's obligation to provide the information about the site condition to the contractor.

Wang et al. (1999) quantified the adequacy of key contract clauses in Laibin B's concession agreement relating to the political and force majeure risks in China in view of professionals. A questionnaire survey was used as a tool to gather information from foreign developers, lawyers and lenders. The respondents were asked to assess the adequacy of each clause in five rating scores: applicable, inadequate, fairly adequate, adequate, very adequate and fully adequate.

Usta (2005) investigated conditions related to risk allocation in the two standard forms of contract most widely used in Turkey – FIDIC, and GSPW. The results of the study revealed the difference between the two contracts based on interviews of professionals. Some pitfalls of the GSPW, such as the lack of any mention of any rights of the contractor when they can not collect the payment, are also mentioned in the paper.

Zhang et al. (2006) examined and compared two standard construction contracts, namely FIDIC and China's Standard construction contract forms, from the perspective of risk allocation. This study focused on the allocation of natural risks, political and social risks, and behavior risks. In the discussion of the contract, Abrahamson principles were referred to. The difference between the two contract forms and the issues related to risk allocation about which the language used in the contract form is vague, were identified.

The other clauses that were studied are those related to the role of contract administrators (Ndekugri et al., 2007; Carroll and Jones, 2007), rights of each contracting party (Wang et al., 1999; Seppala, 2005; Palles-Clark, 2006), variation (Xavier, 2002; Onishi et al., 2003), dispute resolution (Hughes and Ndekugri, 1992), payment (Nielsen, 2004; Oles, 1996), and force majeure (Wright, 2003).

Xavier (2002) examined the law governing selected aspects of variation. In this paper, the results of the comparison of provisions related to the variation in three standard forms of contract widely used in Malaysia and Singapore, namely, the PAM 1998, PWD form 103/203A, and SIA, was reported. The issues covered in this study were the definition of variations, the contractor's obligation to comply with directions, the power of the contract administrator to issue a variation order, and the procedure for the issue of a variation order. Existing legal cases related to variation were also presented to provide a clearer understanding of the concepts.

Onishi et al. (2003) performed a comparative study on the provision related to variation procedures on the standard forms of contract in Malaysia and Japan, specifically the PWD 203 (Rev.10/83) form and GCW form. This paper highlighted the difference of these two forms in variation procedures, the authority to determine variation, the limitations of the Superintending Officer's (S.O.) absolute power, and the rule of changing the contract sum. In this paper, the law and legal cases related to variation were also presented and discussed.

Ndekugri et al. (2007) conducted a study on the role of the engineer under FIDIC's conditions of contract for construction. In their paper, the changes from the old version were reported. The roles of engineers were also discussed with reference to the data from the study of legal cases, expert commentaries and feedback from two multidisciplinary workshops with international participation.

Carroll and Jones (2007) reviewed past legal cases to identify criteria that could be used to classify whether the contract administrator perform any role as the employer representative or as an independent decision maker. Moreover, in this paper they also reviewed and discussed the conditions related to the roles of the contract administrator in 6 standard forms of contract based on their findings from the study of the legal cases.

Oles (1996) discussed well-known protections and remedies for use in situations where a contractor fails to receive timely payment. This paper also examined the available remedies for non-payment in four standard construction contracts, namely the AIA document A191-1985 edition and A 201-1987 edition, Model Form International Contract for Process Plant Construction (1992 edition), Conditions of Contract for Works of Civil Engineering Construction (4th edition-1987) of FIDIC and Conditions of Contract (6th edition - 1991) of ICE.

Nielsen (2004) compared and discussed the payment process and the rights of the project participants related to payment as mentioned in AIA A201-1997, AGC Document No. 200, and EJCDC C 700. In the last section of this paper, the author also proposed alternatives to the existing standard form payment provision.

Wright (2003) discussed the concept of "Force majeure" and discussed the related provisions in four standard forms of contracts, namely, AIA, AGC, EJCDC, and FIDIC. The UNIDROIT principles of international commercial contracts related to force majeure were also reviewed. Several legal cases were presented to support the discussion.

Seppala (2005) examined and identified the range of claims which contractors may bring under the revised FIDIC standard form contracts. Discussion and comments on the claim procedure that the contractor is required to follow to assert a claim and to get paid are also presented. In this paper, related provisions of the new version are compared with those of the old version to emphasize the changes in the provisions.

Palles-Clark (2006) pointed out one of the issues in the JCT SBC05 contract about which contracting parties may have different opinions, namely the terminal float. In this paper, the author also presented terminal float issues in legal cases to reveal how the court has interpreted the contract. Related conditions in the NEC3 contract which are much clearer than those in the JCT SBC 05 are also presented for comparison.

Hughes and Ndekugri (1992) conducted a survey to investigate feedback on JCT arbitration rules from the respondents' view and based on the respondent's experience regarding the rules. The results of the survey indicated that 84% of the respondents answered the questions by assessing the rules as being satisfactory or better. Moreover, the respondent's comments on the misgivings about the rules and about aspects which could be improved were also presented in the paper.

Regarding the research and articles on construction contracts, an intensive literature review showed that there has been no relevant research that focuses on clauses related to “undesirable events”. Indeed, it can be said that the construction industry overlooks the importance of clauses related to “undesirable events”. The necessary knowledge for the analysis and development of contract clauses related to “undesirable events” is still lacking.

As for the approaches to the study and analysis of clauses in the contract, the research and articles can be classified into three groups as follows.

(1) Discussion about clauses in the studied contract is based on principles or knowledge developed from the study of existing legal cases and from the experience of researchers or authors (Grove, 1998; Charoenngam and Yeh, 1999; Bunsrangserm, 2000; Wright, 2003; Seppala, 2005; Zhang et al., 2006; Palles-Clark, 2006; and Carroll and Jones, 2007).

(2) Comparison of clauses in the studied contract with clauses in other contracts to reveal the difference or to identify any clause defects (Oles, 1996; Grove, 1998; Charoenngam and Yeh, 1999; Ndekugri and McDonnell, 1999; Bunsrangserm, 2000; Noble, 2001; Xavier, 2002; Onishi et al., 2003; Wright, 2003; Nielsen, 2004; Usta, 2005; Zhang et al., 2006; and Barfield, 2008).

(3) The discussion of clauses in the studied contract based on the data from the survey of the attitudes of people in the construction industry (Hughes and Ndekugri, 1992; Pleanbangyang, 1995; Hughes, 1996; Hartman et al., 1997; Wang et al., 1999; Tochaiwat, 2001; and Ndekugri et al., 2007).

Even though the studies using these three approaches can generate useful knowledge for the improvement of the studied contract, the appropriateness of applying these approaches to the analysis of the clauses in a standard form of contract may be questionable. Some useful knowledge may be lacking because of their limitations. For example, even though the application of the first and second approaches can reveal a list of missing issues that should be specified in the contract, it is doubtful that the list of the missing issues is complete. The completeness of the list revealed by the first approach depends on the experience of the researchers or experts who perform or participate in the

study and on the collection of legal cases. The completeness of the list revealed by the second approach depends on the completeness of the reference contracts that are selected for comparison. Moreover, both approaches cannot reveal the importance of each missing issue quantitatively. They also cannot reveal how to write conditions related to the missing issues that are acceptable to the industry sector.

The third approach to the analysis of clauses in a standard contract also has limitations. Even though this approach can reveal the attitudes of the industry sector towards the clauses in the studied contract, it does not show how to amend the clauses that are found to be inappropriate. Moreover, the analysis of the clauses in the contract by this approach can not identify the important issues that are not covered in the contract.

2.2 Surveys on the attitude of people in the construction industry toward contracting issues

In this study, it is proposed that the level of importance of each contract initiating issue be assessed as well as an approach to writing appropriate contract clauses be specified by applying the data on the attitude of those within the construction industry. Previous research on the survey to investigate such attitudes towards contracting issues is therefore reviewed and presented in this section.

An intensive literature review has revealed that most, if not all, of the studies on the attitudes of various parties towards contracting issues were from a single group of investigators (Scott et al). Their research presented the different viewpoints of each party on several issues such as the concurrent delay when the contractor's delay is followed by the employer's delay, the contractor's and employer's delay affecting a single critical activity, the contractor's and employer's delay affecting parallel critical activities and the employer's delay affecting early completion plan (Scott, 1993; Scott, 1997; Harris and Scott, 2000; Harris and Scott, 2001; Scott et al, 2004; Scott and Harris, 2004).

Even though research studies by Scott and his colleagues have provided useful knowledge for the analysis of contract clauses related to delay claims, the construction industry still needs knowledge for the analysis of contract clauses related to other issues, especially the "undesirable event" which very often initiates conflict between contracting parties. Moreover, a focus on the analysis part of these previous studies show that Scott et al. finished their research by only showing the different opinions of various parties. They did

not make full use of the data on the attitudes of the industry from their survey; the data were not used to identify the level of importance of each issue (by calculating the probability that each issue will initiate conflict), and were also not used to identify an appropriate approach for writing contract clauses.

2.3 Analysis of responsibility allocation

Various allocation principles have been proposed in several articles. Some of the principles proposed in these papers have been found to agree with the famous Abrahamson's principles; such as the consideration of a party's ability to control the chance or occurrence of an undesirable event (Barnes, 1983; ACEC and AGC, 2005), and the ability of the contracting parties to manage the effect of the undesirable event (ACEC and AGC, 2005; Lam et al., 2006; Downs and Kettle, 2008). Aside from these principles, other factors were likewise raised by other authors such as the ability of contracting parties to bear the effect of an undesirable event (Barnes, 1983; ACEC and AGC, 2005; Lam et al., 2006), and the willingness of contracting parties to take on risks (Ward et al., 1991). The following are brief descriptions of these studies.

Abrahamson (1973) proposed principles for considering risk allocation in construction projects, whereby the party should be responsible for the risk if:

- it is in their control, i.e. if it comes about due to willful misconduct or lack of reasonable efficiency or care,
- they can cover a risk through insurance and allow for the premium in settling their charges, and it is most convenient and practicable for the risk to be dealt with in this way,
- the preponderant economic benefit of running the risk accrues to them,
- it is in the interests of efficiency to place the risk on them,
- the loss happens to fall on them in the first instance, and there is no reason under any of the above headings to transfer the loss to another, or it is impracticable to do so when the risk eventuates.

Barnes (1983) discussed two principles of risk allocation, i.e. "the total risk that might be carried by a contractor can be dominated by whichever are the largest individual

risks” and “externally arising risks should not be allocated to the contractor as they he would charge too much to carry them.” A risk allocation algorithm was also proposed in this paper.

Ward et al. (1991) discussed Abrahamson’s principles and concluded that these risk allocation principles cannot provide a complete solution. They, then, proposed a concept of allocating the risk based on the willingness of parties to take on a risk. This paper also mentioned the situations in which the concept of allocating the risk based on the willingness is suitable or unsuitable for use.

ACEC and AGC (2005) studied each type of project risk, the role of the employer in allocating risk, and the effective allocation of risk in construction specifications. They then proposed their version of the basic principles of risk allocation: “a given risk should be assigned to the party to the contract best able to evaluate, control, manage, and assume that risk”. They also gave examples of risk allocation decisions.

Lam et al. (2006) developed seven principles on risk allocation based on the previous works of risk allocation and through discussion with the team members. The researchers then developed a fuzzy model that can transform these seven linguistic principles and experiential expert knowledge to identify which risk should be allocated to which contracting party. The risk allocation criteria that were developed are as follows:

- Whether the parties are able to foresee the risk.
- Whether the parties are able to assess the possible magnitude of the consequence of the risk.
- Whether the parties are able to manage the risk.
- Whether the parties are able to sustain the consequences if the risk occurs.
- Whether the parties will benefit from bearing the risk.
- Whether the premium charged by the risk receiving party is considered reasonable and acceptable to the owner.

Downs and Kettle (2008) explained their version of the effective risk allocation framework for infrastructure projects. Various topics were covered in this paper such as risk identification, risk assessment, pricing of risk, and risk allocation. A list of common project risks is also provided in this paper. As for risk allocation, the principle to be applied is: “risk should be allocated to the party that is the most able to manage the risk at the least cost”.

Aside from the theoretical part, there has been some research that tries to identify how to allocate specific risks between contracting parties appropriately. However, the majority of research identifies the responsible party based on the perception of the sample group towards responsibility allocation, not on the allocation principles. These include the research studies by Hartman and Snelgrove, 1996; Hartman et al., 1997; Hartman et al., 1998; Wang et al. (1999), Rahman and Kumaraswamy, 2002; Bing et al., 2004; ANDI, 2006; El-Sayegh, 2008. The following present brief description of Rahman and Kumaraswamy (2002), Bing et al. (2004), ANDI (2006) and El-Sayegh, 2008. (Brief descriptions of the work of Hartman and Snelgrove (1996), Hartman et al (1997), Hartman et al (1998) and Wang et al. (1999) has already been presented in section 2.1)

Rahman and Kumaraswamy (2002) surveyed the perception of the construction industry towards the present and preferred risk allocation. In this research, the respondent was asked to give their opinions regarding 42 risks in terms of their perceptions of conventional construction contracts, i.e. what percentage of a particular risk presently lies with the contractor. Besides, they were requested to mention how the risk should be allocated to contracting parties (allocated to the contractor, allocated to the employer, jointly managed). The respondents were also requested to mention the forms of standard contract conditions on which their perceptions were based. The authors then identified the types of risk most suitable for joint risk management as those that more than 20% of respondents recommended be jointly managed. On the other hand, the types of risk that are least suitable for joint risk management are the risk items that less than 10% of respondents recommended be jointly managed.

Bing et al. (2004) explored the construction industry's attitude to risk allocation in the Public and Private Partnership (PPP) Procurement project in UK. In their study, a questionnaire survey was conducted to ask respondents to specify which parties should be responsible for each type of project risk; whether the contractor, employer, or both parties should share responsibility. Results from the study indicated which category of risk allocation that each type of risk falls in. These four risk allocation categories are (1) risk should be allocated to the public sector, (2) risk should be allocated to the private sector, (3) risk should be shared between the public and private sectors, and (4) risk allocation strongly depends on individual project circumstances. The principle of analysis is based on

the level of majority opinion. If none of the frequencies is over 50%, the risk factor is regarded as strongly depending on its detailed information.

ANDI (2006) surveyed the perception of expected risk allocation of the employer and contractor in the Indonesian construction industry. This study used a questionnaire survey to gather such required data. The respondents were asked to specify which parties should be responsible for each type of project risk; whether the contractor, employer, or both parties should share responsibility. The employers' and contractors' perceptions of who is expected to bare the risk for each particular category were made based on two conditions: (1) there should be at least a 55% response rate in that category, and (2) the difference in response rates between the three categories should be statistically significant.

El-Sayegh (2008) surveyed the perception of the UAE construction industry towards issues of expected risk allocation. In this study, the perceptions of the respondents were gathered by a questionnaire survey. The recommended allocation is for the party that gets more than 50% of the votes for each risk.

However, there are also some articles and studies that apply risk allocation principles to decide on the allocation of specific risks. Examples of these are the works of Grove (1998), ACEC and AGC (2005) and Lam et al (2006). However, when considering these articles and studies in detail, it is worth noting that the result of the study on the allocation is highly dependent on the judgment of the person who considers risk allocation. For example, considering whether the risk is controllable or whether the effects from risk are acceptable to the contractor are highly dependent on personal judgment. The accuracy and appropriateness of the result of these articles and studies are therefore questionable.

According to the literature review, it can be said that the construction industry still lacks the knowledge needed for considering risk (responsibility) allocation, including risk (responsibility) towards the unfavorable effects of undesirable events. The methods applied to allocate risk in previous research and articles is highly dependent on the attitude or perception of the people who make the decision on the responsibility allocation. Quantitative data that can be used for considering risk (responsibility) allocation is still required.

2.4 Risk premium

This study proposes a comparison of the contractor's required risk premium with the employer's expected risk premium in order to determine which party should be responsible for each unfavorable effect of an undesirable event. Therefore, a review of previous research on risk premium was done and a brief description of them is presented in this section.

A literature review of construction engineering and management areas revealed that there has rarely been any research focusing on the employer's preferred rate of risk premium and there has been little research studying the contractor's preferred rate of risk premium. Research studies on these issues include those carried out by Ashley et al. (1989), Akintoye and Maclioid (1997), Khan (1998).

Ashley et al. (1989) carried out a study to determine the rates of risk premium that contractors required and that employers expected. Three hypothetical contract clauses related to each of the four selected topics were implemented individually. These three hypothetical contract clauses were the contractor's favored clause, the employer's favored clause, and the intermediate clause. The four topics that were selected for study were indemnification, consequential damages, differing conditions and delay. In this research, the respondents were asked, via a questionnaire, to assess the premium rate according to a three-rating scale: high, low and no additional premium.

Akintoye and Macleod (1997) conducted a study to reveal the premium rate that the contractor and project management practice added for each type of project risk. The samples of general contractors and project management practices were asked, via questionnaire, to indicate the extent of premium that their organization applied to each type of risk source. The types or sources of risk that were studied were environment, politics, contractual agreement, finance, construction, market, company, development of IT and project. In this research, the respondents were asked to assess the premium rate in a five-rating scale: high, fairly high, low, fairly low and indifferent.

Khan (1998) studied the costs of the impact of five selected exculpatory clauses, i.e. no damage for delay, examination of work, examination of engineering work, liquidated damages and indemnification. In this research, the respondents were asked to fill in an

amount of risk premium in dollars for a hypothetical 10 million dollar project, when each exculpatory clause is being added in individually.

Among these studies on the contractor's risk premium, the study by Ashley et al. (1989) and Akintoye and Macleod (1997) which used a discrete rating scale could not give us an exact figure of risk premium that the contractor wanted. Even though the approach used in Khan's study (1998) could provide us with the risk premium required by the contractor, it did not vary the degree of contractor responsibility in each topic. It also did not focus on the issue of "undesirable events". Moreover, in his study, the respondents were asked to assess the risk premium for each added contract clause. This did not conform to the real situation in which the contractors assess risk premium for responsibility assigned in a contract as a whole.

2.5 Choice-based conjoint analysis.

This study proposed the use of choice-based conjoint analysis to assess the risk premium that contractors require and that employers expect. Therefore, a review of previous research that applied choice-based conjoint analysis as a tool of study was done.

A choice-based conjoint analysis, which is sometimes referred to as a discrete choice analysis, is used in various areas of research. Two main research areas that have widely applied choice-based conjoint analysis are marketing and transportation.

Examples of research in the area of marketing that applied choice-based conjoint analysis are as follows: Hersch and McDougal (1993) applied choice-based conjoint analysis to study the sensitivity of corporate jet purchasing decisions on product attributes. Tanabe et al. (2002) applied choice-based conjoint analysis to determine the monetary evaluation of five snow removal attributes, namely, frequency of the operation, road width, sight distance, frozen road surface, and bumps on the road. Carlsson et al. (2004) applied choice-based conjoint analysis to determine whether there are public good qualities associated with genetically modified food. Sammer and Wustenhagen (2006) applied choice-based conjoint analysis to study the influence of eco-labeling on consumer behavior. Banerjee et al. (2006) applied choice-based conjoint analysis to examine the preferences of agricultural producers for four choice attributes of cottonseed: price, yield, variety, and fiber quality. Henning-Thurau et al. (2007) applied choice-based conjoint analysis to study the

decision of consumers to view the movie through movie distribution channels, namely, Movie Theater, DVD purchase, DVD rental, or legal internet download.

Some examples of research in the area of transportation that applied choice-based conjoint analysis are as follows: Lee and Hsieh (2003) applied choice-based conjoint analysis to analyze the demand characteristics of Taiwan high-speed rail and its access/egress services. Phanikumar et al. (2004) applied choice-based conjoint analysis to determine how people value the different attributes of travel, namely, in-vehicle travel time, travel cost, service headway, and comfort level. Wen and Tsai (2005) applied choice-based conjoint analysis to examine potential travel behavioral changes in response to the implementation of electronic tolls by distance traveled and time of day. Phanikumar et al. (2006) applied choice-based conjoint analysis to assess the marginal willingness to pay for various qualitative and quantitative attributes of travel with reference to the bus transportation system, namely, travel speed, waiting time, travel (dis)comfort, noise level, appearance, and travel cost. Washbrook et al. (2006) applied choice-based conjoint analysis to assess impact of road pricing and parking charges on commuter mode choice. Patterson et al. (2007) applied choice-based conjoint analysis to evaluate shipper preferences for the carriage of intercity consignments, and for their preferences for carriers that contract the services of rail companies to carry these shipments via rail.

Even though choice-based conjoint analysis has been widely utilized in marketing and transportation research, the analysis has only been applied in the field of construction and management by Sturts and Griffin (2005). The following is a brief description of their research.

Sturts and Griffin (2005) proposed a model for calculating the probability of winning a bid based on multiple factors. Their model combined the theoretical probability of winning from conjoint analysis with the probability of competitor profile existence. They proposed the use of choice-based conjoint analysis in investigating clients' perceptions of engineering services, and then estimating the probability that each bidder with specific characteristics will win the bid.

Finding that choice-based conjoint analysis was applied in only one research in the area of construction and management, it can be said that researchers in this area have

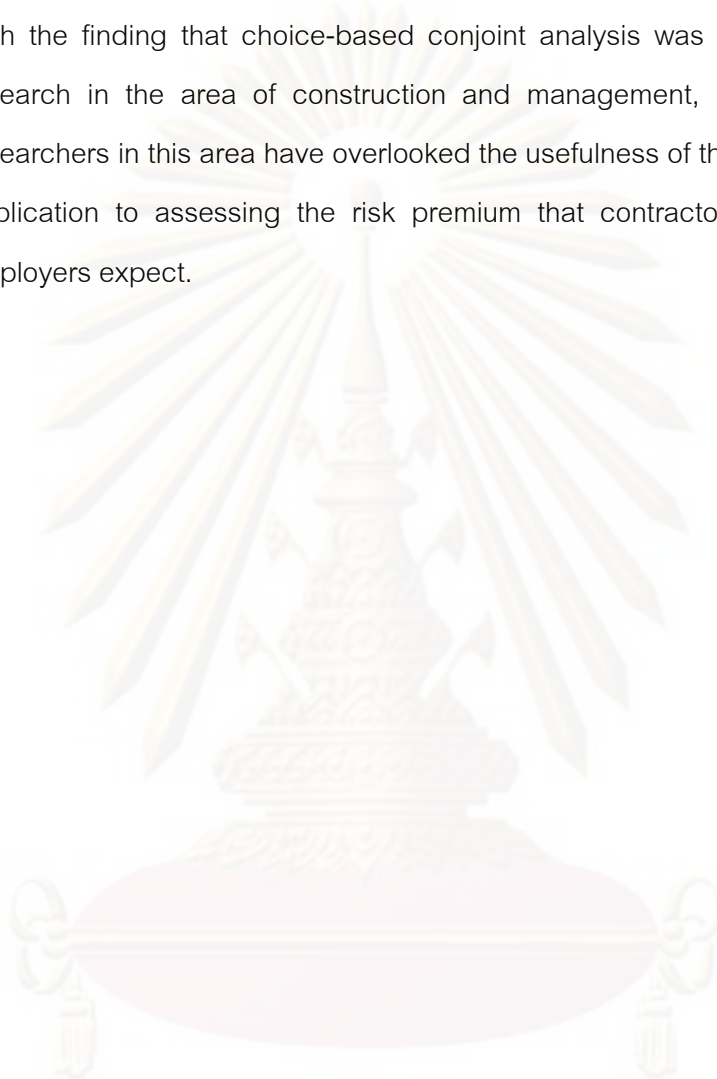
overlooked the usefulness of this tool, especially its application to assessing the risk premium that contractors require and that employers expect.

2.6 Summary

The following is a summary of the study of previous research and articles in this chapter.

- (1) The construction industry still lacks the knowledge necessary for analysis (or development) of contract clauses related to “undesirable events”. There have been few studies and articles that studied, analyzed or evaluated contract clauses related to “undesirable events.” Moreover, the scope of these existing studies is very limited. The completeness of the results of such research is also questionable because of the limitations of the approaches they used to study the contract clauses.
- (2) There is a lack of study on the attitude of those in the construction industry towards contracting issues. An intensive literature review has revealed that most, if not all, of the studies on the attitudes of various parties on contracting issues were from a single group of investigators. Their research has presented the differing viewpoints of each party on several issues. However, they did not study any issues related to “undesirable events”. Moreover, when focusing on the analysis part of these previous studies, it can be seen that they did not make full use of the data on the attitude of the industry from their survey; the data were not used to identify the level of importance of each issue (by calculating the probability that each issue will initiate conflict), and were not used to identify an appropriate approach for writing contract clauses.
- (3) The construction industry also lacks the knowledge necessary for making a decision about the allocation of responsibility between contracting parties. The methods applied to allocating risk in previous research and articles have been highly dependent on the attitude or perception of those who make decisions on responsibility allocation. The accuracy and appropriateness of the result of these articles and studies are therefore questionable. Quantitative data that can be used for considering risk (responsibility) allocation is still required.

- (4) The study of risk premium that contractors require and that employers expect in the construction engineering and management areas is rather limited. Moreover, these few works of research did not focus on the risk premium related to the effects of “undesirable events”.
- (5) With the finding that choice-based conjoint analysis was applied in only one research in the area of construction and management, it can be said that researchers in this area have overlooked the usefulness of this tool, especially its application to assessing the risk premium that contractors require and that employers expect.



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CHAPTER III

IDENTIFICATION OF CONFLICT-INITIATING ISSUES RELATED TO UNDESIRABLE EVENTS

In the first section of this chapter, the reason supporting the necessity for identifying conflict-initiating issues is presented. Then, in the second section, the process of identifying conflict-initiating issues that are applied in this research is described in detail. Sections 3 to 11 present the results of the analysis of related documents performed in this study. A list of conflict-initiating issues that has been developed based on the synthesizing of the data from this study is presented in section 12. Finally, a summary of this chapter is presented in the last section.

3.1 Necessity for identifying conflict-initiating issues

Employers and contractors may have different attitudes towards some issues in the contract because of their different backgrounds or positions. For example, the contractor may think they have the right to claim for time loss due to force majeure but the employer may not think so. As a result, when the contractor submits their claim to employer, the employer will probably reject their claim. This most likely initiate conflict between contracting parties.

Conflict between contracting parties is initiated because of the different attitudes of contracting parties towards their responsibilities. One of the most effective methods to prevent a conflict, therefore, is to make them have the same attitudes towards the issues that may initiate the conflict at the very beginning of the project. This can be accomplished by having and using clear and complete contract conditions.

As already mentioned, it is crucial to write a construction contract clearly and have the contract cover all issues that contracting parties may have difference in attitude towards and which may initiate conflict between them. It is therefore necessary to know and identify all issues that have a tendency to initiate conflict and dispute between contracting parties.

3.2 Process to identify the conflict-initiating issues

To gather a complete list of the issues related to undesirable events that may initiate conflict, four types of documents were studied as follows:

- The documents related to disputes between contracting parties of construction projects in the past

By studying documents related to construction projects in the past, researchers will know which issues can initiate dispute between contracting parties because of their difference in opinion. In this research, the rulings of the Thai Supreme Court between 1957-2001 were studied. The documented information about the rulings for this study was taken from the Thai Supreme Court ruling database in the computer centre of the Ministry of Justice. 28 cases related to undesirable events were found from the ruling.

- Documents of consultation from contracting parties related to the legal issues of the contract

By studying this type of document, researchers will know which issues in the contract were legally not clear to the contracting parties and they may have different opinions about the issues. Conflict between contracting parties certainly may be initiated from the issues that contracting parties have different attitudes towards. In this research, the decisions of the Office of the Attorney General between 1957 -2001 and the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office (RAPR) were studied. The documented information about the decision of the Office of the Attorney General for this study was taken from the book compiling the decisions of the Office of the Attorney General on Law and Contract: Volumes 1 to 7 by the Department of Legal Counsel, a department of the Office of the Attorney General. The documented information about the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office was from (1) the database of the data center of the Office of Permanent Secretary to the Prime Minister and (2) the book compiling the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office 2521 by Welfare of the Office of Permanent Secretary to the Prime Minister. 39 cases related to undesirable event were found from the decision of the Office of the Attorney General and respectively. 46 cases related to undesirable event were found from the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office (RAPR).

- Standard forms of contract

By studying these types of documents, researchers will know which issues each standard form of contract focuses on. The main purpose of creating standard forms of contract is to prevent or reduce the conflict between contracting parties by clarifying the duties and responsibilities of contracting parties. Therefore, we can assume that the issues that they focus on are the issues that may lead to conflict and need to be clarified. The seven standard forms of contract that were studied in this research are as follows:

- International Federation of Consulting Engineers (FIDIC), Conditions of Contract for Construction, First Edition. (1999)
- Institute of Civil Engineers, Association of Consulting Engineers, and Federation of Civil Engineering Contractors, The ICE Conditions of Contract, Seventh Edition. (1999)
- The Joint Contracts Tribunal LTD, Standard Building Contract With Quantities. (2005)
- The Institution of Civil Engineers, The Engineering and Construction Contract, Third Edition. (2005)
- Engineers Joint Contract Document Committee, Standard General Conditions of the Construction Contract. (2002)
- American Institute of Architects, AIA Document A201, General Conditions of Contract for Construction. (1997)
- Standard contract of Thai government, "example of contract annexed to the procurement regulation of the Prime Minister's Office.

- Research and articles related to undesirable events

Studying these documents will reveal the issues that are considered by experts (or other researchers) to be important. The issues in which the perceptions of contracting parties are different and the issues that may initiate conflict between contracting parties can therefore be identified from the study of these documents. The research and articles on undesirable events for this study were searched and accessed from EBSCOhost Web, ScienceDirect, ProQuest Databases, Westlaw, and LexisNexis. Based on reviewing of research works and document from reference databases, 52 papers related to undesirable events were identified.

The results of studying documents from these four groups of documents are presented in detail in the following sections according to the issues of concern, namely (1) issues related to force majeure, (2) issues related to the ineffectiveness of the performance of the employer, (3) issues related to differing site conditions, (4) issues related to the interference action by the employer, (5) issues related to the employer's order to change the scope of work, (6) issues related to the notification of the event and claim submission, (7) issues related to the assessment of the effect of undesirable events on project completion date, (8) issues related to the assessment of compensation for direct cost increase, and (9) issues related to the assessment of compensation for overhead cost increase and for profit loss. A list of conflict-initiating issues developed based on the synthesizing of the data from this study is presented in the last section.

3.3 Issues related to force majeure

3.3.1 *Results of the study of the rulings of the Thai Supreme Court*

From the document study of the rulings of the Thai Supreme Court, four legal cases were found to have issues related to force majeure events (Table G.3.3.1 in Appendix G). All the disputed issues in these legal cases were related to the compensation to contractor for the unfavorable effects of a force majeure event, namely (1) the extension of construction time (or the reduction of the fine for the delay in completion of the work), and (2) the compensation for extra-expense due to force majeure.

3.3.2 *Results of the study of the decisions of the Office of the Attorney General and the decisions of RAPR*

From the document study of the decisions of the Office of the Attorney General, 17 cases were found to have issues related to force majeure. 18 cases related to force majeure were found from the study of the decisions of RAPR. (A list of these cases is presented in Table G.3.3.2 in Appendix G). The issues that initiated conflict or caused confusion to the contracting parties in these cases were related to:

- **Definition of force majeure.** Nine cases of the decisions of the Office of the Attorney General and seven cases of the decisions of RAPR were related to the request for the clarification of the definition of force majeure, including

judgments on whether an event is considered to be force majeure, such as severe weather conditions, natural catastrophe, lack of resources, change in law, underground obstruction, economic crisis and loss of transportation access.

- **Compensation to contractor for unfavorable effect of force majeure.** 17 cases of the decisions of the Office of the Attorney General and 18 cases of the decisions of RAPR were related to the right of the contractor to claim for compensation for the unfavorable effects of force majeure events, such as extension of construction time (or reduction of the fine for delay in completion of the work), compensation for extra expense due to force majeure, and the contractor's right to claim for compensation for the unfavorable effects of force majeure events that occur after the stipulated project completion date.
- **Notification of a force majeure event.** The decision in one case from RAPR was found to be related to the notification of a force majeure event. A Thai government organization, as an employer, asked whether it can ignore the contract condition stating that the contractor can claim for compensation only if they notify the government organization of the event within the specified timeframe. In other words, whether the organization can waive or reduce the fine just by looking directly at the facts of the occurrence of the event without considering whether the contractor notifies the event to the organization.

3.3.3 Results of the study of standard forms of contract

Of all seven standard contract forms that were studied, the importance of force majeure was recognized. The rights and duties or responsibilities of contracting parties for the unfavorable effects of the event were specified in all standard contract forms. FIDIC, JCT and SCTG used the specific phrase “force majeure” when specifying the rights and duties or responsibilities of contracting parties for the unfavorable effects of the event. In regard to NEC, EJCDC and AIA, instead of using the specific phrase “force majeure”, they used other words that have a similar meaning when specifying the rights and duties or responsibilities of contracting parties for the unfavorable effects of the event. As regards ICE, it does not mention force majeure and does not use any other word or phrase with the same meaning when specifying the rights and duties or responsibilities of contracting

parties for the unfavorable effects of an event. However, the specific event that was mentioned in ICE is actually a force majeure event.

Issues related to force majeure that are considered important and therefore included in the standard contract forms are as follows:

- **Definition of force majeure and a list of some events that can be classified as force majeure.** Besides the definition of force majeure, a list of some events that can be classified as force majeure such as natural catastrophes, war, and the consequence of third party action are provided in FIDIC. Included in FIDIC, JCT, NEC, EJCDC, and AIA are conditions related to the rights and duties or responsibilities of contracting parties for the unfavorable effects of a force majeure event. In addition, in these standard contract forms, there are other specific conditions specifying the rights and duties or responsibilities of contracting parties for the unfavorable effects of individual events that can be classified as force majeure, such as severe weather conditions, lack of resources and change in general law. These specific conditions for individual events are added to the contract to reduce the conflict between contracting parties due to their different opinions in regarding an event as a force majeure.
- **Compensation to contractor for unfavorable effects of force majeure.** In all seven standard contract forms, there are clauses granting the contractor's right to claim for an extension of time in case there is a force majeure event. However, the conditions related to the rights to claim for extra expense due to a force majeure event in these standard forms of contract vary. The conditions in FIDIC and ICE specify that the contractor's right to claim for extra expense due to force majeure is granted. This is contrary to the conditions in EJCDC and SCTC which specify that the contractor's right to claim for extra expenses due to a force majeure is restricted.

It is worth mentioning that only the right to claim for an increase in costs due to force majeure, including an increase in direct costs and an increase in overhead costs is mentioned in FIDIC and ICE. In these contracts, there is no mention of the adjustment of profit in case there is a force majeure event.

- **Notification of a force majeure event.** FIDIC clause 19.2 mentions that it is the duty of each contracting party to notify another contracting party of the occurrence of a force majeure event within 14 days after it has become aware of the occurrence of such event.

SCTG clause 22 specifies that the contractor has to notify the employer of a force majeure event within 15 days after the end of the event if they would like to claim for an extension of time to compensate for the time loss due to the event. Moreover, it specifies that failure to notify the employer of the event within this specific timeframe means the contractor renounces their right to claim for the extension of time.

3.3.4 Results of the review of research and articles on undesirable events

According to the review of research and articles on force majeure, the issues that are considered by the researchers to be important are as follows:

- **Assessment of the length of time of construction affected by the event.** Witte (2007) presented a legal case in which the contracting parties had a dispute concerning the length of time to be compensated for time loss due to severe weather conditions and differing site conditions.

3.4 Issues related to the ineffectiveness of the performance of the employer

3.4.1 Results of the study of the rulings of the Thai Supreme Court

From the study of the rulings of the Thai Supreme Court, two legal cases were related to the ineffectiveness of the performance of the employer (Table G.3.4.1 in Appendix G). The issues of dispute in these cases were related to:

- **Employer's obligation.** The employer's obligation is the issue in dispute in both legal cases. In the first case, the contracting parties entered into a dispute about the employer's obligation to give the right of access to, and possession of the site, to the contractor. In the second case, the contracting parties disputed the timeframe for the employer to provide a reference point to the contractor.
- **Compensation to contractor for the unfavorable effects of the ineffectiveness of the performance of the employer.** The Thai Supreme Court Ruling No.

4957/2536 was related to the dispute between contracting parties as to whether the employer should compensate the contractor for the extra expense due to the employer's delay in providing a reference point to the contractor.

3.4.2 Results of the study of the decisions of the Office of the Attorney General and the decisions of RAPR

From the study of the decisions of the Office of the Attorney General, two cases were related to the ineffective performance of the employer. The other 13 cases related to the ineffectiveness of the performance of the employer were found from the study of the decisions of RAPR. (A list of these cases is presented in Table G.3.4.2 in Appendix G). The issues that initiated conflict or caused confusion to the contracting parties in these cases were related to:

- **The obligations of the employer and the timeframe for the employer to do their duty.** From the study of the decisions of RAPR, two cases were related to conflict between contracting parties as concerned the obligations of the employer. In both cases, the contractor argued that the employer had to give them the complete right of access to and possession of the site. The other case concerned the timeframe within which the employer had to do their duty. In this case, the issue of conflict between the contracting parties was whether the employer's approval of the submittal was a delay-approval that affected the construction operations.
- **Compensation to the contractor for the unfavorable effects of the ineffective performance of the employer.** Seven cases from the decisions of RAPR were related to the compensation to the contractor for the unfavorable effects of the ineffective performance of the employer. The only issue of conflict or confusion in these cases was the extension of construction time (or reduction of the fine for delay in completion of the work) to compensate for the unfavorable effect of the ineffective performance of the employer. The ineffective performances of employers in these cases were: (1) a delay in providing the right of access to, and possession of the site to the contractor, (2) delay in the approval of

construction material, (3) delay in the approval of information from specified testing, and (4) delay in submitting the request for permission from the regulator.

- **Notification of the ineffective performance of the employer and claim submission.** Two cases from the decisions of the Office of the Attorney General and three cases from the decisions of RAPR were related to the notification of the ineffective performance of the employer and claim submission. The issues of conflict in these cases were (1) the contractor's right to claim for compensation in case of the contractor's failure to notify the employer of the event within the timeframe specified in the contract, and (2) the contractor's right to submit their claim after the project handover/final payment.
- **Assessment of the effect of the ineffective performance of the employer as concerns construction duration.** In one case from the decisions of RAPR (No.1305/6929), the conflict between the employer and the contractor was about the length of time of construction which was affected by the ineffective performance of the employer. In another RAPR case (No. 1305/1231), the conflict was about the appropriate approach for the assessment of the effects of the event. In this case, questions revolved around the start date from which the effect of the ineffective performance of the employer should be counted – the date the contractor notified the employer of the event, or the start date of the event?

3.4.3 Results of the study of standard forms of contract

The study of clauses in seven standard contract forms reveals that these contracts have a contract clause mentioning the right and obligation of contracting parties as well as other issues related to any ineffective performance of employers. Or they have a clause mentioning the right and obligation of the contracting parties related to a specific type of ineffective performance of the employer such as (1) delay in providing the right of access to, and possession of the site to the contractor, (2) delay in providing construction material, and (3) providing a reference point to the contractor incorrectly.

Important issues related to ineffectiveness of the performance of the employer that were included in the standard contract forms are as follows:

- **The timeframe for the employer to complete their obligations.** In FIDIC, ICE, JCT and NEC, there are contract conditions that specify the timeframe for the employer to complete their obligations, such as (1) providing the right of access to, and possession of the site to the contractor, (2) approving the schedule of construction, and (3) approving the method of construction.
- **The contractor's duty to request inspection.** Clause 7.3 of FIDIC specifies the contractor's duty to submit a request for inspection to the employer before covering up. However, this clause does not specify the exact timeframe for the submission of the request for inspection.
- **The contractor's duty to remind the employer beforehand of the employer's obligation to provide drawings or instructions to the contractor.** Clause 1.9 of FIDIC states that the contractor has to notify the employer of their requirement for any necessary drawings or instructions as well as specify the date they want to receive these documents from the employer beforehand. This clause requires the contractor to remind the employer as soon as they feel there might be an employer's delay in providing the documents and the delay might cause the contractor problems.
- **Compensation to the contractor for the unfavorable effects of the ineffective performance of the employer.** All standard contracts that were studied, except SCTG, have clauses mentioning the extension of the project's duration and compensation for the contractor's extra expense due to the ineffective performance of the employer or due to any specific type of ineffective performance of the employer such as (1) delay in providing the right of access to, and possession of the site to the contractor, (2) delay in providing construction material to the contractor, and (3) providing a reference point to the contractor incorrectly. It is also worth mentioning that FIDIC grants the contractor the right to claim for an increase in profit in addition to an increase in cost.

On the other hand, SCTG only mentions the contractor's right to claim for an extension of construction duration. It does not mention compensation for the contractor's increased expenses.

- **Notification of the ineffective performances of the employer.** SCTG clause 22 specifies that the contractor's failure to notify the employer of the ineffective performances of the employer within the timeframe of 15 days means the contractor renounces their right to claim a time extension.

3.4.4 Results of the study of research and articles on undesirable events

According to the literature review, important issues related to the ineffective performance of the employer reported in the articles are as follows:

- **Compensation to the contractor for the unfavorable effects of the ineffective performance of the employer.** Loulakis and Santiago (2000) presented a court ruling related to the dispute between contracting parties on the issues of the contractor's right to claim for extra expense due to ineffective performance of the employer. In this case, the contractor requested compensation for their expenses due to the employer's delay in providing them possession of the site.
- **Notification of the ineffective performances of the employer.** Sweet (1963) presented and discusses a ruling of the California Supreme Court related to a dispute between the contracting parties on the issues of the contractor's right to claim for an extension of project duration. In the presented case, the contractor failed to notify the employer of the ineffective performances of the employer within the timeframe specified in the contract.

3.5 Issues related to differing site conditions

3.5.1 Results of the study of the rulings of the Thai Supreme Court

From the study of the rulings of the Thai Supreme Court, five legal cases were found to concern differing site conditions (Table G.3.5.1 in Appendix G). The issues of dispute in these cases were related to:

- **The contractor's response to differing site conditions.** One ruling by the Thai Supreme Court (Ruling No. 1601/2527) involved a dispute between the contracting parties as concerned the contractor's response to differing site conditions. In this case, the contracting parties entered into dispute over the issue of which person had the authority to make the decision on how to solve the problem due to differing site conditions.

- **Compensation to the contractor for unfavorable effects due to differing site conditions.** From the study of the Thai Supreme Court rulings related to differing site conditions, disputes over compensation to the contractor were found in five legal cases. Issues of conflict or confusion in these cases are (1) the right to claim for compensation for extra expense due to the contractors having difficulty in doing the work (the actual physical condition is different from that described by the employer), and (2) compensation for the unfavorable effects on the contractor during the time of waiting for the employer to make a decision on how to solve the problem.

3.5.2 Results of the study of the decisions of the Office of the Attorney General and the decisions of RAPR

From the study of the decisions of the Office of the Attorney General, 11 cases were related to differing site conditions. Eight cases related to differing site conditions were also found from the study of the decisions of RAPR. (A list of these cases is presented in Table G.3.5.2 in Appendix G). The issues that initiated conflict or caused confusion to the contracting parties in these cases were related to:

- **The contractor's response to differing site conditions.** One decision of the Office of the Attorney General and one decision of RAPR were related to the contractor's response to differing site conditions. In the case of the decision of the Office of the Attorney General (No. 68/2537), the dispute between the contracting parties was about the contractor's right to stop construction while waiting for a decision from the employer. In the case of the decision of RAPR (No. 1304/375), the dispute between the contracting parties concerned the duty of the contractor to inform the employer about experiencing differing site conditions.
- **Compensation to the contractor for the unfavorable effects due to differing site conditions.** 10 decisions by the Attorney General and eight cases by RAPR were related to the issue of compensation to the contractor for the unfavorable effects of differing site conditions. In these cases, the effects of differing site conditions could be that the contractors have difficulty in doing the work or have to make

adjustments to the work. The issues of conflict or confusion in these cases are as follows: (1) the extension of construction time (or reduction of the fine for delay in completion of the work), (2) compensation for extra expense due to changes in the work because the work can not be performed in accordance with the contract and due to work difficulty (the actual physical condition is different from that described by the employer), (3) reduction of the price of the project in case the contractor benefits from the difference in the actual physical condition from that described by the employer, and (4) compensation for the effect of waiting for the employer to make a decision on how to manage the problem.

- **Notification of the event.** The study of RAPR Decision No. 1304/375 revealed a dispute between contracting parties concerning the necessity of the notification of differing site conditions to the employer. In this case the employer insisted on rejecting the contractor's claim because the contractor failed to notify the employer of the differing site conditions within the timeframe of 15 days as specified in the contract. One of the contractor's arguments against the employer's reasoning for rejecting their claim was that there was good evidence that the employer had already witnessed the event themselves.

3.5.3 Results of the study of standard contract forms

The study of clauses in seven standard contract forms revealed that five of them (i.e. FIDIC, NEC, ICE, EJCDC, and AIA) have clauses related to differing site conditions. The clauses related to differing site conditions in these contracts cover the obligation of contracting parties and the right to claim compensation for any unfavorable effects of differing site conditions.

Important issues related to differing site conditions included in the standard contract forms are as follows:

- **The contractor's response to the effects of differing site conditions.** In FIDIC, ICE, EJCDC, and AIA, there are conditions specifying the contractor's duty to notify the employer when they experience differing site conditions. Moreover, FIDIC, ICE and EJCDC specify that the employer has the right to give

instructions to the contractor in dealing with the problem of differing site conditions.

It is worth mentioning that clause 4.12 of FIDIC requires that after notifying the employer of the event, the contractor still has to continue construction operations and using such proper and reasonable measures as are appropriate for the physical conditions after informing the employer. On the contrary, EJCDC prohibits the contractor from performing construction operations until receiving instructions from the employer.

- **Compensation to the contractor for unfavorable effects due to differing site conditions.** In FIDIC, ICE, NEC, EJCDC and AIA, there are contract conditions mentioning the extension of project duration and compensation for extra costs due to differing site conditions. EJCDC and AIA mention clearly and in detail conditions for granting/restricting the contractor's right to claim for compensation for the effects of differing site conditions. Examples of conditions whereby the contractor's right to claim is granted include: (1) the contractor has received incorrect information from the employer, and (2) the contractor has not received any information from the employer; the physical conditions are different from what the contractor expected. Examples of conditions whereby the contractor's right to claim is restricted include: (1) the contractor knows about the incorrectness of the information received from the employer before bidding, and (2) the existing conditions is explicit and the contractor should be able to detect the incorrectness of the information received from the employer. Moreover, it is worth mentioning that FIDIC, EJCDC, and AIA mention the adjustment of construction time and project price in case the differing site conditions are beneficial to the contractor.

In regard to the coverage of compensation for the contractor's extra expense due to differing site conditions, FIDIC only mentions compensation for an increase in cost, including direct costs and indirect costs. On the other hand, ICE allows the contractor to claim not only an increase in costs but also a reasonable profit.

3.5.4 Results of the review of research and articles on undesirable events

According to the review of research and articles on differing site conditions, the issues that were considered by researchers to be important are as follows:

- **Compensation to the contractor for unfavorable effects due to differing site conditions.** Casner (1988) focused on the principle of claiming for compensation in cases where the existing physical condition of the site differs from that indicated in the contract by the employer and, as a result, the work cannot be performed in accordance with the contract.

Civil engineering (2003), Army Lawyer (2002) and Loulakis (2007B) presented legal cases in which contracting parties disputed the compensation to the contractor for the effects of differing site conditions. In these cases, the contractors claimed for the expense of the removal of contaminated soil, the removal of underground obstructions and additional expense because of the differences of the existing physical condition of the site from that indicated in the contract by the employer.

Clark (2005) mentioned that the standard contract forms used by the United States Federal Government has conditions granting the right to claim for compensation to contractors in two cases of differing site conditions, namely, (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the contract document, and (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in the construction activities of the character provided for in the contract document.

Ndekugri and McDonnell (1999) presented the principle of claiming for compensation in the case of differing site conditions. They also presented several related legal cases covering various conditions related to differing site conditions namely, (1) the employer did not have information about the physical condition and did not provide any information to the contractor, (2) the information that the employer had and provided to the contractor is not correct, and (3) the employer intentionally provided incorrect information to the contractor.

Army Lawyer (2002) presented the court ruling of a legal case related to differing site conditions in which the contractor should have been able to detect the incorrectness of the information given by the employer during the site visit.

Loulakis (2007A) presented the court ruling of a legal case in which the contracting parties disputed the contract clause that requires the contractor to evaluate the underground condition by themselves.

- **Assessment of the effect of differing site conditions on project completion date.**

Witte (2007) presented the ruling of a legal case in which the contracting parties disputed the length of time of construction that the contractor should be compensated for due to severe weather conditions and differing site conditions.

3.6 Issues related to the interference action by the employer

3.6.1 Results of the study of the rulings of the Thai Supreme Court

From the study of the rulings of the Thai Supreme Court, three legal cases were found to have issues related to an interference action by the employer (Table G.3.6.1 in Appendix G). The issues of dispute in these legal cases were related to:

- **Right and duty of contracting parties.** The dispute between contracting parties in one Thai Supreme Court case (Ruling No 1601/2527) concerned the duty of the contractor to ask for permission from the employer to hire a subcontractor. The conflict between the contracting parties in two Supreme Court cases (Ruling Nos. 948/2525 and 5542/2534) centered on the employer's right to give an order for the temporary suspension of construction.
- **Compensation to the contractor for unfavorable effects due to an interference action by the employer.** In two rulings by the Thai Supreme Court (Ruling Nos. 948/2525, and 5542/2534), the dispute between the contracting parties concerned compensation to the contractor for unfavorable effects due to an interference action by the employer. The issues of dispute in both cases were related to the compensation for extra expense due to the employer's order for the temporary suspension of construction.

3.6.2 Results of the study of the decisions of the Office of the Attorney General and the decisions of RAPR

From the study of the decisions of the Office of the Attorney General, three cases were related to interference actions by employers. Six cases related to interference actions by employers were also found from the decisions of RAPR. (A list of these cases is presented in Table G.3.6.2 in Appendix G). The issues that initiated conflict or caused confusion to the contracting parties in these cases were related to:

- **The rights and duties of the contracting parties.** The dispute between contracting parties in one case of the Office of the Attorney General (No. 92/2538) centered on the rights and duties of the contracting parties. In this case, the issue of conflict concerned the contractor's duty to ask for permission from the employer to hire a subcontractor.
- **Compensation to the contractor for unfavorable effects due to interference actions by the employer.** Two cases of the Attorney General and six of RAPR related to compensation to the contractor for unfavorable effects due to interference actions by the employer. The issues of dispute in all of these cases concerned the contractor's right to claim for an extension of construction time (or reduction of fine for delay in completion of work) due to the interference actions by employers, such as (1) specifying the type of materials to be used, (2) specifying the construction method, (3) giving an order for temporary construction suspension, and (4) occupying an area of the site while the construction is still going on.

3.6.3 Results of the study of standard contract forms

The study of seven standard contract forms reveals that all of them have clauses related to the employer's right to perform interference actions and the contractor's right to claim compensation for unfavorable effects due to an interference action by the employer. Some examples of the interference actions of the employer that are mentioned are (1) giving an order to suspend the construction, (2) occupying an area of the site while its construction is still going on, (3) specifying the construction method, and (4) performing other construction work within the site.

Important issues related to the interference actions by the employer that were included in the standard contract forms are as follows:

- **The rights and duties of contracting parties.** In all seven standard contract forms, there are conditions related to the rights and duties of contracting parties that give the authority to the employer to perform actions that may interfere with the contractor in two forms: (1) granting to the employer the right to perform some actions that interfere with the contractor such as giving an order to suspend the construction, occupying an area of the site while its construction is still going on, specifying the construction method and performing other construction work within the site; (2) assigning to the contractor the duty to ask for permission or approval from the employer such as the permission to hire a subcontractor, and the approval of work during holidays and/or beyond normal working time.

Moreover, the limits of the rights of the employer to interfere with the contractor operation are also specified in these standard contract forms. For example, NEC limits the employer's right to reject the request of the contractor to hire a subcontractor to only certain cases as specified in the contract.

- **Compensation to the contractor for unfavorable effects due to an interference action by the employer.** In FIDIC, JCT, NEC, EJCDC, and AIA, there are conditions mentioning the contractor's right to claim for the adjustment of the project completion date and compensation for expense due to an interference action by the employer in general. There are also clauses mentioning the compensation for the effect of specific interference actions, such as giving an order to suspend the construction, occupying an area of the site while its construction is still going on, specifying the construction method, and performing other construction work within the site. In contrast, only the contractor's right to claim for the adjustment of the project completion date is mentioned in SCTG. This standard form does not mention compensation for expense due to an interference action by the employer at all.

It is important to note that FIDIC and ICE allow the contractor to claim for not only the contractor's expense due to the employer's interference action, but also for reasonable profit.

- **Notification of the interference action by the employer.** SCTG clause 22 specifies that the contractor's failure to notify the employer of the employer's interference action within the timeframe of 15 days means the contractor renounces their right to claim for the extension of time.

3.7 Issues related to the employer's order to change the scope of work.

3.7.1 Results of the study of the rulings of the Thai Supreme Court

From the study of the rulings of the Thai Supreme Court, 11 legal cases were found to have issues related to the employer's order to change the scope of work (Table G.3.7.1 in Appendix G). The issues under dispute in these legal cases were related to:

- **The implementation of the employer's order to change the scope of work.** Eight cases were related to disputes about the implementation of the employer's order to change the scope of work. The disputes in five cases concerned the issue of whether an employer's representative has the authority to give an order to change the scope of work. In the other two cases (Ruling Nos. 2326/2544, 97/2546), the dispute stemmed from the issue of whether a verbal order to change the scope of work is effective. In the last case (Ruling No. 948/2546), the dispute was about whether the contractor should stop working after receiving a verbal order and while waiting for a written order to change the scope of work from the employer.
- **Assessment of the effect of the employer's order to change the scope of work on the project completion date.** Three cases of the Thai Supreme Court rulings (Ruling Nos. 962/2537, 4833/2539, and 948/2546) were related to the effect of the employer's order to change the scope of work on the project completion date. The issue of conflict between the contracting parties in these cases was about the adjustment of the construction time or the change in project completion date due to the employer's order to increase the scope or the amount of work.

- **Adjustment of project price due to the employer's order to change the scope of work.** Three rulings were related to the dispute about the adjustment of the project price due to the employer's order to change the scope of work. The dispute about the adjustment of project price was due to an order to increase the scope of work in one case (Ruling No. 4833/2539) and due to an order to decrease the scope of work in two cases (Ruling Nos. 5034-5035/2533).

3.7.2 Results of the study of the decisions of the Office of the Attorney General and the decisions of RAPR

From the study of decisions of the Office of the Attorney General, two cases were related to the employer's order for a change in the scope of work and 13 were found from the decisions of RAPR. (A list of these cases is presented in Table G.3.7.2 in Appendix G). The issues that initiated conflict or caused confusion to the contracting parties in these cases were related to:

- **The employer's right to give an order to change the scope of work.** The conflict between contracting parties in one case of the Office of the Attorney General (No. 12/2535) concerned the employer's right to give an order to change the scope of work. In this case, the issue of conflict was whether the employer has the right to give the order to change the scope of work.
- **The implementation of the employer's order to change the scope of work.** Two cases of the Attorney General and three cases of RAPR related to the implementation of the employer's order to change the scope of work. The disputed issues in these cases are: (1) who has the authority to give an order to change the scope of work? and (2) the validity of the verbal order to change the scope of work.
- **Compensation to the contractor for the effects of the employer's order to change the scope of work.** One case of the Attorney General and five cases of RAPR were related to the compensation to the contractor for the effects of the employer's order to change the scope of work. The issues of conflict or confusion in these cases were related to the contractor's right to claim for: (1) extension of construction time (or reduction of the fine for delay in completion of

the work), (2) adjustment of the project completion date due to the employer's order to change the scope of work, and (3) compensation for the contractor's expense due to the employer's order to change the scope of work, specifically compensation for overhead costs during the extended construction time.

- **Assessment of the effect of the employer's order to change the scope of work on the project completion date.** Two cases of RAPR (Nos. 1305/10989 and 1305/10996) were related to the effect of the employer's order to change the scope of work on the project completion date. The issues of conflict in these cases were about the adjustment of construction time or the change in the project completion date due to the employer's order to cancel a part of the work.
- **Adjustment of project price due to the employer's order to change the scope of work.** Two cases of the Attorney General (Nos. 32/2538, 109/2540) and one case of RAPR (No. 1407/1022) related to the adjustment of project price due to the employer's order to change the scope of work. The issue of conflict in these three cases concerned the adjustment of project price due to the employer's order to cancel or reduce the amount of the work.
- **Adjustment of fine rate.** One case of the Attorney General (No. 9/2538) related to conflict between contracting parties about the adjustment or reduction of fine rate due to the employer's order to cancel a part of the work.

3.7.3 Results of the study of standard forms of contract

The study of clauses in the standard contract forms reveals three important issues related to the employer's order to change the scope of work. They are as follows:

- **The employer's right to give an order to change the scope of work.** In all seven standard contract forms, there are contract conditions granting the employer's right to give an order to change the scope of work. In some of them, there are also other contract conditions that empower the employer to change some specific scope of work, such as requesting an additional test, and giving an order to uncover the work.

However, in these forms, there are also conditions limiting the employer's right to give an order to change the scope of work. For example, FIDIC allows

the contractor to reject the employer's order to change the scope of work in case the contractor cannot find or cannot get the material required for the change. ICE allows the contractor to refuse the order to change construction material if they have a good reason to do so. According to AIA, the employer can order changes only in the work within the general scope of the contract.

- **The implementation of the employer's order to change the scope of work.** ICE and AIA require that the order to change the scope of work has to be only in a written format. In FIDIC and JCT, there are conditions clarifying the issue of the implementation of the employer's informal order. The guidelines for the contractor's action after receiving a verbal order and while waiting for the written order are also mentioned in these two standard contract forms.

In case the employer and contractor cannot agree on the compensation for the order to change the scope of work, EJCDC and AIA give the authority to the employer to give an order for the change. FIDIC states that the contractor is obliged to follow the employer's order to change the scope of work right away even if the employer and contractor have not agreed on the compensation yet. However, these three forms allow the contractor to claim compensation for the payment for work related to the employer's order later on.

- **Compensation to the contractor for effects due to the employer's order to change the scope of work.** In all seven standard contract forms, there are clauses stating that the contractor has the right to claim for the adjustment of construction time or the change in the project completion date and for expense due to the employer's order to change the scope of work. Some standard contract forms also mention compensation for the effects of the employer's specific order such as requesting an additional test, and giving an order to uncover the work.

3.7.4 Results of the review of research and articles on undesirable events

According to the review of research and articles on undesirable events, the issues related to change in the scope of work considered important by the authors of the articles are as follows:

- **The employer's right to order project suspension.** Xavier (2002) mentioned that PAM, a standard contract form used in Malaysia, has a condition specifying the maximum proportion of the total amount of work that the employer can give an order for change.

Richey and Walulik (2001), Miller and Cohen (2002), Silberman (2002), and Silberman (2005) mentioned the legal right of the contractor to claim compensation in case the employer gives an order for a cardinal change.

Dorter (1991) and Xavier (2002) mentioned the limitation of the employer's right to cancel the work in order to hire other contractors to perform that work.

- **The implementation of the employer's order to change the scope of work.** Dorter (1991) considered the issue of conflict due to the contractor's claim for payment of the work that was done due to the verbal order of the employer. In this article, Dorter also presented a legal case in which the contracting parties disputed this issue.

Caplicki III (2005) also presented a legal case related to the contractor's right to claim for payment of the work that was ordered by the employer verbally.

- **Compensation to the contractor for effects due to the employer's order to change the scope of work.** Jervis and Levin (1988) stated that, in the US, there were a number of cases under dispute between the contracting parties concerning the contractor's right to claim the cost and profit of additional work and the court usually ruled that the contractor should be paid.

Sarvi (1992) focused on the issues of the adjustment of overhead costs and profit when there is an employer's order to cancel the work.

- **Payment for the cost of additional work due to the employer's order to change the scope of work.** McCally (1997) specified the employer as having the duty to pay the contractor for the additional work right away to prevent the contractor

encountering any negative effects resulting from the employer's order to change the scope of work.

3.8 Issues related to notification and claim submission

3.8.1 Results of the study of standard contract forms

In all of the standard contract forms, except JCT, there is a condition specifying the contractor's duty to notify the employer of an undesirable event and submit the claim for compensation within a timeframe limit. The three important issues related to notification and claim submission included in these standard contract forms are as follows:

- **The contractor's duty to notify the employer of an undesirable event and the timeframe for the notification.** All the standard contract forms mention the duty of the contractor to notify the employer of any undesirable event that they would like to make a claim for compensation from the employer within a specific timeframe. FIDIC, EJCDC, NEC and SCTG require the contractor to notify the employer of the event within 28 days, 30 days, 8 weeks and 15 days respectively.
- **The timeframe for submitting the claim.** FIDIC, AIA, and EJCDC require the contractor to submit the claim for compensation within 42 days, 21 days, and 60 days respectively. ICE requires the contractor to submit the claim for extension of construction time and additional expense within 28 days.
- **Consequence of the failure to notify the employer of the event and submit the claim within a specified timeframe.** In FIDIC, NEC, and SCTG, there is a contract condition stating that failure to notify the employer within the timeframe of the event or failure to submit the claim within the timeframe specified in the contract means the contractor giving up their right to claim for compensation. In contrast, the ICE contract states that the contractor still has the right to claim if their failure to notify the employer of the event or failure to submit the claim within the specified timeframe has no effect on the collection of evidence by the employer.

3.9 Issues related to the assessment of the effect of an undesirable event on the project completion date

3.9.1 Results of the study of standard forms of contract

Among the standard contract forms that were studied, NEC is the only standard contract form which has conditions mentioning the assumptions used for the assessment of the effect of an undesirable event on the project completion date. Two important issues related to such assessments included in these standard contract forms are as follows:

- **The adjustment of the actual time of construction.** NEC states that the effect of the event on the project completion date should be assessed under the assumption that the contractor responds to the event immediately and competently. This implies that if the contractor does not respond to the event immediately and competently, the actual construction time that they use should be adjusted.
- **The projection of the length of time for operations.** NEC mentions that any additional time to cover the contractor's risk should be permitted to the contractor.

3.9.2 Results of the review of research and articles on undesirable events

According to the review of research and articles on undesirable events, issues related to the assessment of the effect of undesirable events on project completion considered important by the authors of the articles are as follows:

- **Approach to assess the effect of undesirable events on a construction activity.** Lee et al (2005) proposed an approach to assess the time loss due to decrease in productivity.
- **Approach to assess the effect of undesirable events on the completion date of the project.** Bordoli and Baldwin (1998) mentioned the methods of approach to assess the effect of undesirable events on the completion date of the project, namely (1) basic method: the effect of the event is assessed by letting the contracting parties negotiate with each other and reach agreement on the responsibility of each party for the effect of the event, and (2) critical path

analysis method: the effect of the event is assessed by applying the CPM concept.

Loulakis (2005) presented a case of dispute between contracting parties in which the Board of Contract Appeals required the contractor to prove that the employer's delay in approving the working drawing had an effect on the completion date of the project by applying the CPM concept.

- **The type of schedule program to be used as reference for the assessment of the effect of the event on the project completion.** In the assessment of the effect of the event on the project completion, the type of schedule program to be used as reference has to be specified. The types of schedule commonly used as reference are (1) original construction plan, and (2) updated construction plan (Pinnell, 1992; Lyden, 1993; Alkass et al., 1996; Zafar, 1996; Bubshait and Cunningham, 1998; Bubshait and Cunningham, 1998; Al-Saffaf, 1998; Veendaal, 1998; Kartam, 1999; Finke, 1999; Yogenswaran and Kumaraswanmy, 1999; Townend, 2001; Hegazy and Zhang, 2005; Kim et al, 2005).
- **Assessment of the effect on the completion date of the project.** Loulakis and Santiago (2000) reported a case of a dispute between contracting parties related to the assessment of the effect from the employer's delay in allowing the contractor to occupy the site. In this case, the delay due to the employer caused a problem to the contractor; the contractor could not finish the work before the deadline since their subcontractor had a commitment to work on another project.

Ibbs and Nguyen (2007) presented a variation of the influence of a delay on the project completion date when limitations in the contractor's access to resources are taken into consideration.

3.10 Issues related to the assessment of compensation for direct cost increase

3.10.1 Results of the study of standard forms of contract

The assessments of compensation for direct cost increase specified in standard contract forms studied are different in detail. The study of clauses in these contract forms reveals five important issues related to such assessment as follows:

- **Definition of direct costs.** Clause 10.01 of EJCDC clearly defines the phrase “cost of the work” (direct costs). It also provides a list of expenses that are classified (or not classified) as direct costs.
- **Approach to assess the effect of the event on direct costs.** The approaches to assess the effect of the event on direct costs that are mentioned in these standard contract forms are (1) the assessment based on the quantity of the work, and (2) the assessment based on the contractor’s actual expenses.
- **The adjustment of actual expense for construction.** NEC states that the effect of the event on the project completion date should be assessed under the assumption that the contractor responds to the event immediately and competently. This implies that if the contractor does not act in such a fashion, the actual expense they spent on the construction should be adjusted.
- **Declaring actual expense.** FIDIC clause 13.6 states that when the variation is executed on a daywork basis, the contractor shall deliver each day to the employer (engineer) accurate statements which shall include the details of the resources used in executing the previous day’s work, namely (a) the names, occupations and time of the contractor’s personnel, (b) the identification, type and time of the contractor’s equipment and temporary works, and (c) the quantities and types of plant and materials used. If the employer (engineer) agrees with the information provided by the contractor, they should sign a statement. The contractor can then submit a priced statement of these resources to the employer (engineer).
- **Approach for assessing the cost of work.** In FIDIC, ICE and JCT, the standard method of the measurement of the quantity of work is specified explicitly. With regard to the unit price/rate, there is a contract condition in FIDIC, ICE, JCT, EJCDC, AIA and SCTG stating an approach to determine the appropriate rate for each item of the work in each specific situation, such as (1) when there is an enormous change in the quantity of work due to the order to change the scope of work, and (2) when the work to be performed by the employer’s order is not of the same character or is not executed under the same conditions as proposed in the contract with a specified unit price/rate.

3.10.2 Results of the review of research and articles on undesirable events

According to the review of research and articles on undesirable events performed in this study, important issues related to the assessment of compensation for direct cost increase are as follows:

- **Approach to assess the compensation for direct cost increase for each item of work.** Two approaches to assess the effect on direct costs to perform each item of work are as follows: (1) comparing the total actual cost with the cost proposed in the contract (the Total Cost approach and the Modified Total Cost approach), and (2) identify the extra cost that was spent as a consequence of the event (Delta estimate) (Long, 1988).
- **Approach to assess the cost of work.** Rycroft and Ndekugri (2002) address the issues of determining the unit price/rate of each item of work that is of the same character and is executed under the same conditions as proposed in the contract with a specified unit price/rate. This article also mentioned the issues of determining the unit rate of each item of work when there is actually an enormous change in the quantity of work from that specified in the contract.

3.11 Issues related to the assessment of compensation for overhead cost increase and profit loss

3.11.1 Results of the study of standard contract forms

The study of contract conditions in standard contract forms reveals that the rate of overhead costs and profit is an important issue. In EJCDC, it is stated that the rate of the contractor's fee (including overheads and profit) has to be agreed upon or accepted by both contracting parties. However, if both parties do not make an agreement on the fee rate, the rate that was specified in the contract should be applied.

3.11.2 Results of the study of research and articles on undesirable events

According to the review of research and articles on undesirable events performed in this study, the important issues related to the assessment of compensation for overhead cost increase and profit loss are as follows:

- **Approach to assess the compensation for overhead costs** McCally (1997) and Smith and Gray (2001) mentioned the difference between two types of project overhead cost, namely volume sensitive overhead and duration sensitive overhead.

Revay (2003) pointed out the issue of whether the overhead costs that are provided based on an additional amount of work is enough for compensation for the expenses due to the increase in project duration.

Smith and Gray (2001) mentioned alternative approaches to assess the compensation for overhead costs when the undesirable event affects both duration and cost of construction.

The Army Lawyer (2004) reported a court ruling on a dispute between contracting parties about the contractor's right to claim compensation for overhead costs. In this case, the contractor made a claim for the expenses of the head office occurring during the project extension.

Just and Grdgon (1992), Zack (2001), Woodhull and Peters (2002) Taam and Singh (2003) and Ottesen and Dignum (2003) proposed and explained alternative approaches to assess the compensation for the overhead costs of the head office when the undesirable event affects the construction duration.

- **Rate of overhead cost and profit.** Sarvi (1992) reported various methods that the contractor used to determine the rate of overhead costs and profit for bidding.

Sarvi (1992) and Saunders (1996) reported on the different overhead and profit rates and different approaches used by various government organizations in the USA to assess these rates.

Fayek and Nkuah (2002) determined the amount of markup related to labor costs allowed for compensation to the contractor by the contract. They also compared this amount of markup with the contractor's actual expense related to the labor costs.

3.12 List of conflict-initiating issues

Based on synthesizing the data from the study of documents presented in this chapter, 223 conflict-initiating issues were identified. These issues can be categorized into

eight groups as presented in Table 3.12.1. The list of issues in each group is presented in Tables 3.12.2 to 3.12.9. Details about sources of document that each conflict-initiating issue is listed (or synthesized) from are presented in Tables H.3.12.2 to H.3.12.9 in Appendix H.

Table 3.12.1 List of conflict-initiating issues categorized into eight groups

No.	Categories	Number of issues
1.	Force majeure	35
2.	Ineffective performance of the employer	35
3.	Differing site conditions	37
4.	Interference action by the employer	34
5.	Employer's order to change the scope of work	38
6.	The assessment of the effects of undesirable events on the project completion date	11
7.	The assessment of compensation for direct cost increase	27
8.	The assessment of compensation for overhead cost increase and for profit loss	6
Total		223

Table 3.12.2 Conflict-initiating issues related to force majeure

The definition of force majeure		Compensation to the contractor	
No	Issues	No	Issues
1.	Characteristics of force majeure	1.	Compensation to the contractor for unfavorable effects due to force majeure
1.1	Unpredictable	1.1	Extension of construction time
1.2	Not preventable and/or uncontrollable	1.2	Compensation for direct cost increase
1.3	Natural phenomenon	1.3	Compensation for overhead cost increase
1.4	Not the risk in doing business	1.4	Compensation for profit loss
2.	List of some events that can be classified as force majeure	2.	Granting or restricting the contractor's right to claim for compensation in case force majeure occurs after the stipulated completion date of the project
2.1	Normal weather conditions	2.1	Force majeure event occurs after the stipulated completion date of the project
2.2	Severe weather conditions	3.	Types of time loss that can be claimed for
2.3	Natural catastrophes	3.1	Duration of the force majeure event
2.4	War/coup	3.2	Time for fixing the damaged resource or time to seek its replacement
2.5	Unfavorable effects of the action of a third party	3.3	Time for fixing the damage to the work and for clearing site
2.6	Unfavorable effects of the action of the contractor's personnel	3.4	Time loss due to decrease in productivity
2.7	Lack of resources		
2.8	Change in general law		
2.9	Change in law related to construction		
2.10	Loss of access to transportation		
3.	Criteria to define severe weather conditions		
3.1	Frequency of the event		

Table 3.12.2 (continued) Conflict-initiating issues related to force majeure

Compensation to contractor (continued)		Notification and claim submission	
No	Issues	No	Issues
4.	Types of direct cost increase that can be claimed for	1.	Notification of force majeure event
4.1	Cost of fixing the damaged resource or cost of its replacement	1.1	Duty of contractor to notify employer of force majeure event
4.2	Cost of fixing the damage to the work and cost of clearing the site	1.2	Timeframe for notification of the event
4.3	Costs during project suspension	1.3	Necessity of notification of the event when the employer has already witnessed the event
4.4	Increase in costs due to decrease in productivity	1.4	Meaning of failure to notify employer of the event
4.5	Increase in costs due to material price increase	2.	Claim submission
5.	Compensation for damage to the work	2.1	Timeframe for claim submission
5.1	Work that has not been inspected/certified and/or not paid yet		

Table 3.12.3 Conflict-initiating issues related to the ineffective performance of the employer

The duties of contracting parties

No	Issues
1.	Timeframe to give contractor the right of access to the site
1.1	Timeframe to give the contractor the right of access to and occupancy of the site
2.	Timeframe for approval of submittal
2.1	Construction schedule
2.2	Construction method
2.3	Shop/working drawing
2.4	Construction material
2.5	Data from specified testing
3.	Duty to remind of timely approval
3.1	Duty of contractor to remind employer of approval within timeframe
3.2	Timeframe for giving reminder
4.	Request for inspection
4.1	Duty of the contractor to request inspection from employer before cover-up
4.2	Timeframe for notification to the employer in advance of the inspection

Compensation to contractor

No	Issues
1.	Compensation to contractor in case there is an approval delay
1.1	Extension of construction time
1.2	Compensation for direct cost increase
1.3	Compensation for overhead cost increase
1.4	Compensation for profit loss
2.	Type of time loss that can be claimed for in case there is an approval delay
2.1	Time waiting for employer to approve submittal
2.2	Time of preparation for construction operations after receiving the employer's approval
2.3	Time loss due to decrease in productivity
3	Type of direct cost increase that can be claimed for in case there is an approval delay
3.1	Costs during project suspension
3.2	Increase in costs due to material price increase
3.3	Increase in costs due to decrease in productivity

Table 3.12.3 (continued) Conflict-initiating issues related to ineffective performance of the employer

Compensation to contractor (continued)

No	Issues
4.	Compensation to contractor in case there is an employer's mistake such as providing incorrect reference point
4.1	Extension of construction time
4.2	Compensation for direct cost increase
4.3	Compensation for overhead cost increase
4.4	Compensation for profit loss
5.	Type of time loss due to a mistake in an employer's action that can be claimed for
5.1	Time of preparation for correction/rework
5.2	Time spent for correction/rework
5.3	Time loss due to decrease in productivity
6.	Type of direct cost increase that can be claimed for in case there is a mistake in an employer's action
6.1	Additional expense for work correction
6.2	Additional expense due to work difficulty
6.3	Additional expense due to decrease in productivity

Notification and claim submission

No	Issues
1.	Notification of the ineffective performance of the employer
1.1	Duty of contractor to notify employer of the ineffectiveness of the performance of the employer
1.2	Timeframe for notification of the event
1.3	Necessity of notification to employer of an event when they have already witnessed the event
1.4	Meaning of failure to notify employer of the event
2.	Claim submission
2.1	Timeframe for claim submission

Table 3.12.4 Conflict-initiating issues related to differing site conditions

The response of the contractor when confronted with differing site conditions

No	Issues
1	Contractor's response when confronted with differing site conditions
1.1	Work can be done in accordance with the contract but the differing site conditions have negative effects on the contractor; for example, the contractor has to spend more time and pay more expense when the ground condition specified in the contract is clay but the actual ground condition is lime
1.2	Work cannot be done in accordance with the contract due to the actual conditions being different from that described by the employer; for example, the contractor cannot construct the building in accordance with the contract when the area of the site is actually smaller than that specified in the contract

The response of the contractor when confronted with differing site conditions

No	Issues
1.3	Work cannot be done in accordance with the contract because of the topography of the site; for example, the pile cannot be driven to the required length due to the existence of a rock layer

Table 3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to the contractor

No	Issues
1.	Compensation to the contractor in case the work can be done in accordance with the contract and the differing site conditions have negative effects on the contractor
1.1	Extension of construction time
1.2	Compensation for direct cost increase
1.3	Compensation for overhead cost increase
1.4	Compensation for profit loss
2.	The adjustment of duration and cost in case the work can be done in accordance with the contract and the differing site conditions are beneficial to the contractor
2.1	Reduction of construction time
2.2	Reduction of direct costs
2.3	Reduction of overhead costs
2.4	Reduction of profit
3	Granting or restricting the contractor's right to claim compensation in specific cases

Compensation to the contractor
(continued)

No	Issues
3.1	The contractor does not receive any information from the employer, and the physical conditions are different from what they expected.
3.2	The contract states that it is the responsibility of the contractor to evaluate and interpret the given information by themselves
3.3	The contractor should realize the incorrectness of the given data before bidding
4.	Compensation to the contractor in case the contractor gets a negative effect from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those described by the employer
4.1	Extension of construction time
4.2	Compensation for direct cost increase
4.3	Compensation for overhead cost increase
4.4	Compensation for profit loss

Table 3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to the contractor

(continued)

No	Issues
5.	Adjustment of duration and cost in case contractor gets benefit from the employer's order when the work cannot be done in accordance with the contract because the actual condition is different from that described by the employer
5.1	Reduction of construction time
5.2	Reduction of direct costs
5.3	Reduction of overhead costs
5.4	Reduction of profit
6.	Compensation to the contractor in case the contractor gets negative effect from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site
6.1	Extension of construction time
6.2	Compensation for direct cost increase
6.3	Compensation for overhead cost increase
6.4	Compensation for profit loss

Compensation to contractor (continued)

No	Issues
7.	Adjustment of duration and cost in case contractor benefits from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site
7.1	Reduction of construction time
7.2	Reduction of direct costs
7.3	Reduction of overhead costs
7.4	Reduction of profit
8.	Types of time loss that can be claimed for
8.1	Time waiting for the employer to make decision
8.2	Time of preparation for construction operations after receiving the order from the employer
8.3	Increase in working time due to work difficulty
9.	Types of direct cost increase that can be claimed
9.1	Expenses during the time waiting for the employer to make a decision
9.2	Additional expense due to work difficulty
9.3	Additional cost due to material price increase

Table 3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Submission of claim

No	Issues
1.	Claim submission
1.1	Timeframe for claim submission



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Table 3.12.5 Conflict-initiating issues related to an interference action by the employer

Rights and duties of contracting parties

No	Issues
1.	Duties of the contractor to ask for approval/permission from the employer
1.1	Approval of construction material
1.2	Approval of subcontractor
1.3	Permission to work during holidays and/or beyond normal working time
1.4	Approval of construction method
2.	Definition of normal working time
2.1	Normal working day
2.2	Normal daily working hours
3.	Binding of the decision of the employer to the request
3.1	The employer's consideration on the contractor's request for approval/permission is final

Rights and duties of contracting parties
(Continued)

No	Issues
4.	The employer's right to perform an interference action
4.1	Suspend the construction
4.2	Do other construction work within the site
4.3	Occupy an area of the site while its construction is still going on
5.	The limitation of the employer's right to suspend the construction
5.1	The length of time that the employer can give an order for work suspension
5.2	Number of times that the employer can give an order for work suspension

Table 3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Compensation to contractor

No	Issues
1.	Compensation to contractor in case employer refuses the contractor's request for approval/permission without a sound reason
1.1	Extension of construction time
1.2	Compensation for direct cost increase
1.3	Compensation for overhead cost increase
1.4	Compensation for profit loss
2.	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission
2.1	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission
3.	Compensation to the contractor in case there is an interference action by the employer
3.1	Extension of construction time
3.2	Compensation for direct cost increase

Compensation to contractor (continued)

No	Issues
3.3	Compensation for overhead cost increase
3.4	Compensation for profit loss
4.	Compensation to the contractor in case the contract allows the employer to perform an interference action
4.1	Compensation to the contractor in case the contract allows the employer to perform an interference action
5.	Types of time loss that can be claimed in case the contractor's operations are interfered with by some action of the employer
5.1	Time loss during suspension /stop period
5.2	Time for preparation of construction operations
5.3	Time loss due to decrease in productivity
6.	Types of direct cost increase that can be claimed in case the contractor's operations are interfered with by some action of employer
6.1	Expense during the suspension/stop period

Table 3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Compensation to the contractor

(Continued)

No	Issues
6.2	Expenses that cannot be refunded from the supplier/subcontractor
6.3	Additional costs due to material price increase
6.4	Additional cost due to decrease in productivity

Notification and claim submission

No	Issues
1.	Notification of an interference action by the employer
1.1	Duty of the contractor to notify the employer of an interference action by the employer
1.2	Timeframe for notification of the event
1.3	Necessity of notification of the event when the employer has already witnessed the event
1.4	Meaning of failure to notify the employer of the event
2.	Claim submission
2.1	Timeframe for claim submission

Table 3.12.6 Conflict-initiating issues related to the employer's order to change the scope of work

Employer's right to give an order to change the scope of work

No	Issues
1.	Employer's right to give an order to change the scope of work
1.1	Employer's right to give an order to change the scope of work
1.2	The right to give an order for additional work which is beyond the scope of the work specified in the contract
1.3	The right to give an order to change the quantity of work items dramatically in case the employer has the right to change the scope of work
1.4	The maximum total amount of work that the employer can give an order to add
1.5	The maximum total amount of work that the employer can give an order to cancel
1.6	The cancellation of the work in order to hire other contractors to perform that work

Implementation of the employer's order to change the scope of work

No	Issues
1.	Person who has the authority to give an order to change the scope of work
1.1	Employer's representative
1.2	Chief of project consultant/inspector
1.3	Project consultant/inspector
2.	Verbal order to change the scope of work
2.1	The validity of a verbal order to change the scope of work
3.	Response of the contractor when they receive an order to change the scope of work
3.1	Response of the contractor when they receive a verbal order to change the scope of work
3.2	Response of the contractor when they know that the employer will give an order to change the scope of work
3.3	Contractor's duty to perform the work even though the agreement on the compensation has not been finalized yet

Table 3.12.6 (continued) Conflict-initiating issues related to the employer's order to change the scope of work

Compensation to the contractor

No	Issues
1.	Compensation to the contractor in case the employer gives an order to do additional work
1.1	Extension of construction time
1.2	Compensation for direct cost increase
1.3	Compensation for overhead cost increase
1.4	Compensation for profit loss
2.	Adjustment of project duration and costs in case employer gives an order to cancel some part of the work
2.1	Reduction of construction time
2.2	Reduction of direct costs
2.3	Reduction of overhead costs
2.4	Reduction of profit
3	Compensation to the contractor in case the contract allows the employer to give an order to change the scope of work
3.1	Compensation to contractor in case the contract allows the employer to give an order to change the scope of work

Compensation to contractor (continued)

No	Issues
4.	Types of time loss that can be claimed
4.1	Time waiting for the details of work modification
4.2	Time for preparation of construction operations
4.3	Additional time due to additional work or modification of the work
4.4	Time loss due to decrease in productivity
5.	Types of direct cost increase that can be claimed
5.1	Expenses during the suspension period
5.2	Expenses that cannot be refunded from the supplier/subcontractor
5.3	Expenses due to additional work or modification of the work
5.4	Additional costs due to material price increase
5.5	Additional expenses due to decrease in productivity

Table 3.12.6 (continued) Conflict-initiating issues related to employer's order to change the scope of work

Claim submission

No	Issues
1.	Claim submission
1.1	Timeframe for claim submission

The adjustment of the price of designated phases of the work

No	Issues
1.	Adjustment of the price of designated phases of the work in case the modified work was listed in a phase of the work
1.1	Additional work
1.2	Deducted work
2.	Adjustment of the price of the designated phases of the work in case the modified work was not listed in any phase of the work
2.1	Additional work
2.2	Deducted work

The adjustment of fine rate

No	Issues
1.	Adjustment of the daily rate of fine for the delay of the work
1.1	Additional work
1.2	Deducted work

Table 3.12.7 Conflict-initiating issues related to the assessment of the effect of undesirable events on the project completion date

Approach to assess the effect of undesirable events on a construction activity

No	Issues
1.	Approach to assess the effect on a construction activity
1.1	Length of time for repairing of work damage
1.2	Length of time for preparation of construction operations after it has been stopped or suspended
1.3	Time loss due to decrease in productivity
1.4	Time loss due to differing site conditions
1.5	Time loss due to employer's order to change the scope of work

The adjustment of actual construction time

No	Issues
1.	Adjustment of actual construction time
1.1	The contractor does not operate the construction effectively

The projection of the length of time for the operations

No	Issues
1.	Projection of the length of time for the operations
1.1	Additional time to cover the contractor's risk
1.2	Additional time to cover the increase in operation time due to the limitations of the resources of the contractor

The assessment of effect on the completion date of the project

No	Issues
1.	Type of schedule program to be used as reference for the assessment of the effect
1.1	The schedule program to be used as reference for the assessment of the effect
2.	Assessment of the effect on the completion date of the project
2.1	Considering the limitations of the resources of the contractor available for construction operations
2.2	Approach to assess the effect on the completion date of the project

Table 3.12.8 Conflict-initiating issues related to the assessment of compensation for direct cost increase

Definition of direct costs

No	Issues
1.	Expenses included in direct costs
1.1	Payroll of contractor's employees on site
1.2	Specialized consultant's fee
1.3	Rental of the site office/worker's camp
1.4	Contractor's HO expense
1.5	Contractor's all risk insurance costs
1.6	Contractor's capital expense
2.	Definition of labor cost
2.1	Including related expenses such as fringe benefits
3.	Definition of material cost and equipment cost
3.1	Including related expenses such as transportation/mobilization costs

Approach to assess the effect on direct costs to perform each item of work

No	Issues
1.	Approach to assess the effect on direct costs
1.1	Additional expense for repairing the work damage
1.2	Additional expense due to the employer's request for a specified product
1.3	Additional expense during the stop or suspension period
1.4	Additional expense due to material price increase
1.5	Additional expense due to decrease in productivity
1.6	Additional expense due to differing site conditions
1.7	Additional expense due to change in the scope of work

Table 3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

The adjustment of actual expense of construction

No	Issues
1.	The adjustment of actual expense of construction
1.1	The adjustment in case the contractor does not operate the construction effectively

Declaring actual expenses

No	Issues
1.	Declaring actual expenses
1.1	Contractor's duty to declare actual expenses
1.2	Meaning of accepting the declaration without any argument
1.3	Timeframe for the employer to make argument against the expenses declared by the contractor

Approach for assessing the cost of work

No	Issues
1.	Adjustment of the quantity and unit cost to cover the cost of material loss
1.1	Adding the quantity of work to cover the expected cost of the material loss
1.2	Adding unit cost to cover the expected cost of material loss
2.	Approach to determine the unit rate in case its rate cost is specified in BOQ
2.1	Approach to determine the unit rate in case its rate cost is specified in BOQ
2.2	Adjustment of unit cost when the quantity of work is changed dramatically
2.3	Adjustment of unit cost when the employer gives an order to perform the work beyond the stipulated completion date of the project
3.	Approach to determine the unit rate in case there is no cost rate specified in BOQ
3.1	Approach to determine unit rate in case there is no cost rate specified in BOQ

Table 3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

The assessment of the cost of canceled/deducted work

No	Issues
1.	Approach to assess the cost of canceled/deducted work
1.1	The quantity specified in BOQ is less than actual quantity
1.2	The quantity specified in BOQ is more than actual quantity

Table 3.12.9 Conflict-initiating issues related to the assessment of compensation for overhead cost increase and for profit loss

Assessment of compensation for overhead cost increase and profit loss

No	Issues
1.	Approach to assess the compensation for overhead cost increase
1.1	The undesirable events affect only the construction duration
1.2	The undesirable events affect only the construction cost
1.3	The undesirable events affect both the duration and cost of construction
2	Approach to assess the compensation for profit loss
2.1	The undesirable events affect only the construction duration
2.2	The undesirable events affect only the construction cost
2.3	The undesirable events affect both the duration and cost of construction

3.13 Summary

A list of conflict-initiating issues is required for the analysis of the completeness of the contract. Having a list of conflict-initiating issues, the person who analyzes the contract will know what issues need to be covered by the contract. The issues that are neglected, then, can be identified. In this study, a list of conflict-initiating issues is developed from the study of five groups of documents, namely, (1) the rulings of the Thai Supreme Court between 1957-2001, (2) the decisions of the Office of the Attorney General between 1957-2001, (3) the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office (RAPR), (4) standard forms of contract, and (5) research and articles on undesirable events. From the study of these documents, 223 conflict-initiating issues were identified; 35 of them are related to force majeure, another 35 related to the ineffective performance of the employer, 37 related to differing site conditions, 34 related to an interference action by the employer, 39 related to the employer's order to make a change in the scope of work, 11 related to the assessment of the effect of undesirable events on the project completion date, 26 related to the assessment of compensation for direct cost increase, 6 related to the assessment of compensation for overhead cost increase and for profit loss.

CHAPTER IV

PROBABILITY OF CONFLICT

AND THE LEVEL OF IMPORTANCE OF EACH CONFLICT-INITIATING ISSUE

The first section of this chapter presents the reasons to support the necessity of determining the level of importance of each conflict-initiating issue and the concept of using the probability that each issue will initiate conflict to indicate the level of importance of the issue. In the second section, an approach to determine the probability of conflict and the level of importance of each conflict-initiating issue is presented. The third section briefly describes the process that was applied in this study to gather data about the attitude of contracting parties and also the response rate to the questionnaire. In sections 4 to 11, the results of the determination of the probability of conflict and level of importance of each conflict-initiating issue are reported. Section 12 summarizes the level of importance of all the issues that were studied. Finally in section 13, the knowledge gained from the studies reported in chapter 3 and from this chapter are applied to criticize the standard contract of Thai government regarding its completeness.

4.1 Necessity for determining the level of importance of each conflict-initiating issue and the probability of conflict between contracting parties

In analyzing contract conditions, one should know how important each conflict-initiating issue is. All conflict-initiating issues that were identified are important, however, each issue does not have the same level of importance. The level of importance is an indicator very helpful in prioritizing the issues to be covered in the contract, especially when the length of the contract is limited. Moreover, it can also be used to reflect roughly the degree of severity of the effect of each issue when it is neglected or not covered by the contract.

Since an importance consideration of drafting a contract is to prevent conflict between contracting parties during the construction, a good indicator that should be used to indicate the level of importance of each issue is the probability that the issue will initiate conflict between the contracting parties. Having controlled for the effects of other external

factors, an issue that has higher tendency to initiate the conflict would certainly be more important than an issue that has a lower tendency to initiate the conflict.

4.2 Determination of the probability of conflict and level of importance of each conflict-initiating issue

In this section the concept of the development of the equations for calculating the probability of conflict is presented. The criteria for classifying the level of importance of each conflict-initiating issue based on the probability of conflict are also proposed.

4.2.1 Calculation of the probability of conflict between contracting parties

The probability that the issue will initiate conflict is different from the probability that the contracting parties may have different attitudes. Even though conflict is initiated by the difference in attitude of the contracting parties, the attitude difference does not always end in conflict. For example, there will be no conflict between contracting parties if the contractor thinks they have no right to claim for compensation, yet apparently the employer thinks that the contractor does. Conflict will not happen because in actuality the contractor does not make a claim. On the other hand, conflicts are more likely to happen if an action of one contracting party has an undesirable effect on the other, such as a case in which the contractor claims for compensation because they think they have the right to do so whereas the employer refuses the claim because they think otherwise.

Based on the information on the opinions of the contracting parties, the process of calculating the probability of conflict consists of three steps: (1) identification of scenarios that initiate conflict between contracting parties when the attitudes of employers and contractors are in conflict, (2) calculating the probability of the occurrence of each scenario, and (3) summing up the probability of the occurrence of all scenarios that initiate conflict. Based on these three steps, four equations for calculating the probability of conflict between contracting parties in each specific situation were developed.

In case a yes/no question is used to study the attitude of employers and contractors, equations (4.2.1) and (4.2.2) will be used to calculate the probability of conflict. An example of a yes/no question is "Do you think the contractor has the right to claim for an extension of time?" Equation (4.2.1) will be used to calculate the probability of conflict if the conflict

occurs when the employer does not agree with the question whereas the contractor does agree. Equation (4.2.2) will be used to calculate the probability of conflict if the conflict happens when the contractor does not agree with the question whereas the employer does.

$$P = P_{en} * P_{cy} \quad (4.2.1)$$

$$P = P_{ey} * P_{cn} \quad (4.2.2)$$

where

- P = probability of conflict between contracting parties
- P_{ey} = proportion of employers who agree with the question
- P_{en} = proportion of employers who do not agree with the question
- P_{cy} = proportion of contractors who agree with the question
- P_{cn} = proportion of contractors who do not agree with the question

In case the quantitative question is used to study the attitude of employers and contractors, equations (4.2.3) and (4.2.4) will be used to calculate the probability of conflict. An example of a quantitative question is "What is a suitable timeframe for the contractor to claim compensation?" Equation (4.2.3) will be used to calculate the probability of conflict if the conflict occurs when the quantity number in the employer's response is lower than that of the contractor. Equation (4.2.4) will be used to calculate the probability of conflict if the conflict occurs when the quantity number in the employer's response is higher than that of the contractor.

$$P = \sum_{j=1}^n (P_{cj} * \sum_{i<j} P_{ei}) \quad (4.2.3)$$

$$P = \sum_{i=1}^n (P_{ei} * \sum_{j<i} P_{cj}) \quad (4.2.4)$$

where

- P = probability of conflict between contracting parties
- P_{ei} = proportion of employers who prefer choice i
- P_{ej} = proportion of employers who prefer choice j
- P_{ci} = proportion of contractors who prefer choice i
- P_{cj} = proportion of contractors who prefer choice j

In case a nominal question is used to study the attitude of employers and contractors, equation (4.2.5) will be used to calculate the probability of conflict. An example of a nominal question is “What does the contractor have to do when they find that the information they have received from the employer is not correct?”

$$P = 1 - \sum_{i=1}^n (P_{ei} * P_{ci}) \quad (4.2.5)$$

where

P = probability of conflict between contracting parties

P_{ei} = proportion of employers who prefer choice i

P_{ci} = proportion of contractors who prefer choice i

4.2.2 Categorizing the level of importance of each conflict-initiating issue

Conflict-initiating issues can be categorized into groups according to the level of importance. This categorization will help people decide which issue they should pay more attention to. Issues that are in the group of higher level of importance will certainly be more important than the issues that are in the group of lower level of importance and should receive more attention.

In this study, the criteria for categorizing conflict-initiating issues is based on the level of importance of each issue (Table 4.2.1)

Table 4.2.1 Criteria for categorizing the level of importance

Level of importance	Probability of conflict between contracting parties
Low	Less than 5%
Medium	5%to 25%
High	25% -50%
Very high	Higher than 50%

4.3 Data collection process

This section presents the details of the process applied in this study to gather data on the Thai construction industry’s perception of the issues related to undesirable events. These data on the Thai construction industry’s perception are necessary for determining the probability of conflict and also for identifying an approach to writing an appropriate contract

condition (details will be presented in chapter 5). The numbers of organizations and their personnel to whom the questionnaire were distributed and the numbers of respondents are also shown in this section.

Questionnaire development

There are as many as 223 conflict-initiating issues towards which the attitudes of the study samples of the Thai construction industry need to be collected. The study samples in this study were from two groups of people. First was a group of people who were members of or represented Thai contractors. Second was a group of people who were members of or represented Thai government organizations. Because the data to be collected is enormous and it has to be divided according to the type of organizations that respondents work for, six separate sets of unique questionnaires were developed and used in this research. Questionnaires O11, O12 and O13 would be used in gathering data on the attitudes of people who work for or represent the Thai government organizations. Questionnaires C11, C12 and C13 would be used in gathering data on the attitude of people who work for or represent the Thai contractors. A brief explanation of all sets of questionnaires is presented as follows:

- **Questionnaire O11 and C11.** These 10-page questionnaires consist of four parts. In the first part, each respondent was asked to give general information about their organization and their construction experience. The data were collected not only for presenting the general profile of the respondent but also for screening out unqualified respondents. In the second, third, and fourth parts of the questionnaire, the respondent was asked to express their attitudes towards each conflict-initiating issue related to specific topics or events. The topics or events that were covered in the second, third and fourth parts of the questionnaire are force majeure, the ineffective performance of the employer and differing site conditions respectively.

Table 4.3.1 Details of Questionnaires O11 and C11

Part	Topics	Sub topics	Number of questions (issues)
1	Details of respondents	a. General information about the respondent's organization	5
		b. General information about the respondent	3
2	Force majeure	a. Definition of force majeure	3 (15)
		b. Compensation to the contractor	5 (15)
		c. Notification and claim submission	5 (5)
3	Ineffectiveness of the performance of the employer	a. Duties of contracting parties	6 (10)
		b. Compensation to contractor	6 (20)
		c. Notification and claim submission	5 (5)
4	Differing site conditions	a. Response of contractor	3 (3)
		b. Compensation to contractor	11 (33)
		c. Submission of claim	1 (1)

- **Questionnaires O12 and C12.** These 9-page questionnaires consist of three parts. In the first part, each respondent was asked to give general information about their organization and their construction experience. In the second and third parts of the questionnaire, the respondent was asked to express their attitudes towards each conflict-initiating issue related to specific topics or events. The topics or events that were covered in the second and third parts of the questionnaire are interference actions by the employer, and the employer's order to change the scope of work respectively.

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Table 4.3.2 Details of Questionnaires O12 and C12

Part	Topics	Subtopics	Number of questions (issues)
1	Details of respondents	a. General information about the respondent's organization	5
		b. General information about the respondent	3
2	Interference actions by the employer	a. Rights and duties of contracting parties	7 (12)
		b. Compensation to the contractor	6 (17)
		c. Notification and claim submission	5 (5)
3	The employer's order to change the scope of work	a. The employer's right to give an order to change the scope of work	6 (6)
		b. Implementation of an employer's order to change the scope of work	5 (7)
		c. Compensation to contractor	5 (18)
		d. Claim submission	1 (1)
		e. Adjustment of the price of designated phases of the work	4 (4)
		f. Adjustment of fine rate	2 (2)

- **Questionnaires O13 and C13.** These 9-page questionnaires consist of four parts. In the first part, each respondent was asked to give general information about their organization and their construction experience. In the other three parts of the questionnaires, the respondent was asked to express their attitudes towards each conflict-initiating issue related to specific topics. Those topics were (1) assessment of the effect on the project completion date, (2) assessment of compensation for direct cost increase, and (3) assessment of compensation for overhead cost increase and profit loss.

Table 4.3.3 Details of Questionnaires O13 and C13

Part	Topics	Subtopics	Number of questions (issues)
1	Details of respondents	a. General information about the respondent's organization	5
		b. General information about the respondent	7
2	Assessment of an effect on the project completion date	a. Approach to assess the effect of an event on a construction activity	5 (5)
		b. Adjustment of actual construction time	1 (1)
		c. Projection of the length of time for the operations	2 (2)
		d. Assessment of the effect of an event on the completion date of the project	3 (3)
3	Assessment of compensation for direct cost increase	a. Definition of direct costs	3 (8)
		b. Approach to assess the effect of an event on the direct costs to perform each item of work	7 (7)
		c. Adjustment of actual expense of construction	1 (1)
		d. Declaring actual expense	3 (3)
		e. Approach to assess the cost of work	6 (6)
		f. Assessment of the cost of deducted work	2 (2)
4	Assessment of compensation for overhead cost increase and profit loss	a. Approach to assess compensation for overhead cost increase	3(3)
		b. Approach to assess compensation for overhead cost increase for profit loss	3(3)

Sampling the organizations that the questionnaires would be distributed to

The first step of sampling is to develop a list of related organizations that the questionnaires would be distributed to. The following is the process of the development of a list of Thai government organizations and Thai contractors for this study.

- Government organizations.** Firstly, four groups of the government organizations were selected to represent the whole government organizations. These four groups of organizations count for 80% of the annual construction expenses of Thai government. These four organizations consist of (1) public universities, (2) the Division of Highway Department, (3) the Division of Irrigation Department, and (4) local administration units. Moreover, since Thai government organizations sometimes hire consultants to manage and supervise their construction projects, the companies registered as construction consultants of Thai government organizations were also added to the list.

Table 4.3.4 Number of organizations representing Thai government organizations categorized by the type of organization

No.	Type of organization	No. of organizations
1	Public universities	92
2	Division of Highway Department	221
3	Division of Irrigation Department	40
4	Local administration units	261
5	Construction consulting companies	161
	Total	775

- Construction contractor.** A list of construction companies was acquired from the list of those that are members of the Thai Contractors Association.

Table 4.3.5 Number of construction companies representing Thai contractors categorized by type of the company

No.	Type of company	No. of companies
1	Limited partnership	131
2	Company limited	218
3	Public company	17
	Total	370

In the second step, all organizations listed as Thai government organizations were randomly assigned to one of the four groups. One group was used for the choice-based conjoint analysis experiment (presented in chapter 7) and the other three groups were assigned to respond to questionnaires O11 to O13 (one questionnaire for one group). The same process was applied in assigning the construction companies to respond to one of the questionnaires C11 to C13.

Delivery of the questionnaire

During Jan 2008 - August 2008, the questionnaires with return envelopes were mailed to the selected organizations/companies. The number of copies of questionnaires that were mailed to each organization/company varied with the size of the company/organization. Each company/organization was asked to deliver the questionnaires to its employees who worked as construction supervisors or in higher positions to answer the questionnaire.



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Table 4.3.6 The numbers of organizations/companies and their personnel to whom the questionnaire were distributed and the numbers of respondents

Questionnaire O11-O13

No.	Type of organization	Questionnaire O11				Questionnaire O12				Questionnaire O13			
		Org. Deliver	Personnel			Org. Deliver	Personnel			Org. Deliver	Personnel		
			Deliver	Return	Usable		Deliver	Return	Usable		Deliver	Return	Usable
1	Public university	23	60	29	29	23	60	32	32	23	60	26	26
2	Division of highway department	54	253	140	137	54	253	140	137	54	253	135	129
3	Division of irrigation department	10	40	26	26	10	40	19	19	10	40	22	22
4	Local administration unit	64	198	133	130	64	198	94	92	64	198	99	91
5	Construction consulting company	40	123	49	49	40	123	47	44	40	123	29	28
	Total	191	674	377	371	191	674	332	324	191	674	311	297

Questionnaire C11 – C13

No.	Type of company	Questionnaire C11				Questionnaire C12				Questionnaire C13			
		Co. Deliver	Personnel			Co. Deliver	Personnel			Co. Deliver	Personnel		
			Deliver	Return	Usable		Deliver	Return	Usable		Deliver	Return	Usable
1	Limited partnership	32	70	37	20	32	70	20	18	32	70	15	15
2	Company limited	52	365	58	48	52	365	42	37	52	365	48	39
3	Public company	4	40	22	21	4	40	19	19	4	40	10	10
	Total	88	475	117	89	88	475	81	74	88	475	73	64

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4.4 Probability of conflict arising from issues related to force majeure and the level of importance of the issues

Data about the probability that each issue related to force majeure will initiate conflict and the level of importance of the issue is presented in Tables I.4.4.1. to I.4.4.3 in Appendix H.

According to the data in Table I.4.4.1, the probabilities of conflict due to the issues related to “the definition of force majeure” were mostly in the medium level (probability of conflict between 5% to 25%). Only four issues had the tendency to initiate conflict in the high level (probability of conflict between 25% and 50%). These issues were (1) defining force majeure as related to the natural phenomenon, (2) considering the unfavorable effects of the action of a third party as force majeure, (3) considering the loss of access to transportation as force majeure, and (4) the criteria to define severe weather conditions.

According to the data in Table I.4.4.2, four issues related to “compensation to the contractor for unfavorable effects of force majeure” had the tendency to initiate conflict in the medium level (probability of conflict between 5% and 25%). The other 16 issues had the tendency to initiate conflict in the high level (probability of conflict between 25% and 50%). The issue that had the highest tendency to initiate conflict was the compensation for the effect on work that was not inspected/certified and/or not paid for yet. The probability that this issue would initiate conflict was 43%.

Three out of five issues related to “notification of a force majeure event and claim submission” had high tendency to initiate conflict between the contracting parties (Table I.4.4.3). The three issues were (1) timeframe for notification of the event, (2) meaning of failure to notify employer of the event, and (3) timeframe for claim submission. On the other hand, issues on the duty of the contractor to notify the employer of a force majeure event and the necessity of the notification of the event when the employer has already witnessed the event have low and medium tendencies to initiate conflict respectively.

4.5 Probability of conflict due to issues related to ineffective performance of the employer and the level of importance of the issues

Data about the probability that each issue related to the ineffective performance of the employer will initiate conflict and the level of importance of each issue is presented in Tables I.4.5.1. to I.4.5.3 in Appendix H.

According to the data in Table I.4.5.1, six issues related to “the duties of contracting parties” had the tendency to initiate conflict between the contracting parties in the medium level. On the other hand, the other four issues had the tendency to initiate conflict in the high level. These four issues were (1) timeframe for approval of shop/working drawing, (2) timeframe for approval of construction material, (3) timeframe for approval of data from specified testing, and (4) timeframe for notification to employer in advance of the inspection.

Data in Table I.4.5.2 reveals that issues related to “compensation to the contractor in case there is an approval delay” had lower tendency to initiate conflict compared with the issues related to “compensation to the contractor in case of the employer’s mistake (other than approval delay)”. Of the 10 issues related to compensation for the approval delay that were studied, four issues and six issues had medium and high tendency to initiate conflict between contracting parties respectively. On the other hand, of the 10 issues related to compensation for the employer’s mistake that were studied, two issues and eight issues had medium and high tendency to initiate the conflict between contracting parties respectively. It is worth noting that the tendency to initiate conflict due to the issues of extension of construction duration in case of approval delay was much lower than those in case of the employer’s mistake (12% and 26%).

Results in Table I.4.5.3 were similar to those in Table I.4.4.3. The issues related to “timeframe for notification of the event”, “timeframe for claim submission” and “meaning of failure to notify employer of the event” had high tendency to initiate conflict between contracting parties. On the other hand, the issues related to the “duty of the contractor to notify the employer of the employer’s ineffective performance” and “necessity of notification of the event when the employer has already witnessed the event” had low and medium tendency to initiate conflict respectively.

4.6 Probability of conflict due to issues related to differing site conditions and the level of importance of the issues

Data about the probability that each issue related to differing site conditions will initiate conflict and the level of importance of each issue is presented in Tables I.4.6.1. to I.4.6.3 in Appendix H.

According to the data in Table I.4.6.1, all issues related to “the response of the contractor when confronted with differing site conditions” had high tendency to initiate conflict between contracting parties. The probability of conflict due to the contractor’s response to differing site conditions was highest in the situation that the differing site conditions had negative effects on the contractor but the work still could be done in accordance with the contract (i.e.51%).

Data in Table I.4.6.2 reveals that issues related to compensation for profit loss in all three situations had low tendency to initiate conflict between contracting parties. On the other hand, all issues related to compensation for direct cost increase, overhead cost increase and time loss had high or very high tendency to initiate conflict. Moreover, in the situation that differing site conditions had negative effects on the contractor, the probability of conflict due to issues related to compensation for direct cost increase, overhead cost increase, profit loss, and time loss were relatively higher than those in the situation that differing site conditions had positive effects on the contractor.

Data in Table I.4.6.2 also reveals that the issues of whether to grant or restrict the contractor’s right to claim for compensation in all three situations specified had high tendency to initiate the conflict. The probability of conflict due to the issue of whether to grant or restrict the contractor’s right to claim for compensation in cases that (1) the contractor has not received any information from the employer and the physical conditions are different from what they expected, (2) the contract specifies that it is the responsibility of the contractor to evaluate and interpret the given data or information by themselves, and (3) the contractor should have realized the incorrectness of the given information before bidding were 38%, 46% and 41% respectively.

Regarding the issues related to the type of time loss and direct cost increase that should be compensated, Table I.4.6.2 reveals that all three types of time loss and direct

cost increase related to differing site conditions had high tendency to initiate conflict (probability of conflict ranged from 26% to 43%).

Lastly, based on the data in Table I.4.6.3, the probability of conflict between contracting parties due to the issue related to the reasonable timeframe for claim submission was 39%.

4.7 Probability of conflict due to issues related to the interference action by the employer and the level of importance of the issues

Data about the probability that each issue related to the interference action by the employer will initiate conflict and the level of importance of each issue is presented in Tables I.4.7.1. to I.4.7.3 in Appendix H.

According to the data in Table I.4.7.1, issues related to the duty of the contractor to ask for approval/permission from the employer of construction material, employment of subcontractor, working during holidays and/or beyond normal working time, and construction method had medium or high tendency to initiate conflict between contracting parties. The difference of attitude of contracting parties towards two issues related to the definition of normal working time had very high tendency to initiate conflict. Lastly, the probability of conflict of the issue on whether the employer's consideration on the contractor's request for approval is final was 31%.

With regard to the issues related to "the employer's right to perform an interference action", Table I.4.7.1 reveals that the issue of employer's right to do other construction work within the site had the highest tendency to initiate conflict between contracting parties (i.e. 27%). The issue of the employer's right to suspend the construction and the employer's right to occupy an area of the site while its construction is still going on had 13% and 16% tendency to initiate conflict respectively. Besides, as revealed in Table I.4.7.1, the issues related to the length of time and the number of times that the employer can give an order for work suspension had high tendency to initiate conflict between contracting parties (40% and 41% respectively).

In case the employer denies the contractor's request for approval without a sound reason or in case the employer performs an interference action, most issues related to the types of compensation that the contractor should be able to claim for had high or very high

tendency to initiate conflict between contracting parties (Table I.4.7.2). Only three issues had medium tendency to initiate conflict, namely (1) compensation for profit loss due to the refusal of the contractor's request for approval, (2) extension of project duration to compensate for time loss due to the employer's interference action, and (3) compensation for profit loss due to the employer's interference action. Moreover, in case the contract allows the employer to refuse the contractor's request for approval and allows the employer to perform an interference action, the probability of conflict arising from the issues related to the contractor's right to claim for compensation were 33% and 24% respectively.

Most issues related to the types of time loss and direct cost increase that the contractor can claim had high tendency to initiate conflict between contracting parties (Table I.4.7.2). Only two issues had medium tendency to initiate conflict, namely (1) time loss during the suspension/stop period, and (2) the direct cost increase due to material price increase.

Data in Table I.4.7.3 show that the issues of timeframe for the notification of the event and of the timeframe for claim submission had high tendency to initiate conflict between contracting parties. On the other hand, the issues of the meaning of failure to notify the employer of the event and of the necessity of notification of the event when the employer has already witnessed the event had medium tendency to initiate the conflict. Lastly, the issues of the duty of the contractor to notify the employer of the employer's interference action had no tendency to initiate conflict.

4.8 Probability of conflict due to issues related to the employer's order to change the scope of work and the level of importance of the issues

Data about the probability that each issue related to the employer's order to change the scope of work will initiate conflict and the level of importance of each issue is presented in Tables I.4.8.1. to I.4.8.6 in Appendix H.

Table I.4.8.1 shows data about the tendency to initiate conflict due to six issues related to the employer's right to give an order to change the scope of work. According to the data in this table, four issues related to the employer's right to give an order to change the scope of work had medium tendency to initiate conflict. These four issues were (1) the employer's right to give an order to change the scope of work, (2) the employer's right to

give an order for additional work which is beyond the scope of work specified in the contract, (3) the employer's right to give an order for making an enormous change to the quantity of work items, and (4) the maximum total amount of work that the employer can give an order for adding. On the other hand, issues about the maximum total amount of work that the employer can give an order to cancel and the cancellation of the work in order to hire another contractor to do that work had high tendency to initiate conflict between contracting parties.

Table I.4.8.2 reveals that the issues related to the authority to give an order for changing the scope of work had medium tendency to initiate conflict (11%-20%). The issue about the validity of the verbal order to change the scope of work had only a 4% tendency. However, three issues related to the response of the contractor after receiving an order to change the scope of work had high or very high tendency to initiate conflict (28%-62%).

It is worth noting that the issue about the adjustment of project duration due to the employer's order to add more work had medium tendency to initiate conflict, but the issue about adjustment of the project duration due to the employer's order to cancel some part of the work had high tendency to initiate conflict. With regards to the issues of adjustment of direct costs, indirect costs, and profit, the probability of conflict due to the employer's order for additional work was high but the probability of conflict due to the employer's order to cancel some part of the work was medium (Table I.4.8.3). Moreover, Table I.4.8.3 also reveals that the issue of compensation to the contractor in case the contract allows the employer to give an order for changing the scope of work had medium tendency to initiate conflict.

With regards the issues related to the types of time loss and direct cost increase that the contractor can claim for, most of them had high tendency to initiate conflict. Only three issues had medium tendency to initiate conflict. These three issues were (1) time waiting for the details of work modification, (2) additional time due to additional work or modification of the work, and (3) expense due to additional work or modification of the work (Table I.4.8.3).

Table I.4.8.4 reveals that the issue of timeframe for claim submission in case of change in the scope of work had high tendency to initiate conflict.

Table I.4.8.5 indicates that three of the four issues related to "the adjustment of the price of designated phases of the work" had high tendency to initiate conflict between

contracting parties. Only the issue of adjustment of the price of designated phases of the work in case the employer gives an order for adding and modifying a part of the work had medium tendency to initiate conflict.

Table I.4.8.6 reveals that the issues on the adjustment of the daily rate of fine for the delay of the work in case the employer gives an order for adding and cancellation of a part of the work had 30% and 24% tendency to initiate conflict respectively.

4.9 Probability of conflict due to issues related to the assessment of the effects of undesirable events on the project completion date and the level of importance of the issues

Data on the probability that each issue related to the assessment of the effect of undesirable events on the project completion date will initiate conflict and the level of importance of each issue is presented in Tables I.4.9.1. to I.4.9.4 in Appendix H.

Table I.4.9.1 reveals that the issues related to the “approach to assess the effect of undesirable events on a construction activity” had high or very high tendency to initiate conflict between contracting parties. The issue that had the highest tendency to initiate conflict was the approach to assess time loss due to the employer’s order to change the scope of work (68%).

In case the contracting parties agree that the effect of undesirable events on operation time should be assessed by comparing actual time with planned time, Table I.4.9.2 reveals that the issue of whether to adjust actual construction time to be used for assessing the effects of undesirable events on a construction activity when the contractor does not operate the construction effectively had high tendency to initiate conflict between contracting parties (32%).

In case the contracting parties agree that the effect of undesirable events on a construction activity should be assessed from projecting the length of time for operation work, Table I.4.9.3 reveals that the issue of whether to provide additional time to cover the expected increase in operation time due to risks assigned to the contractor and due to limitations in the resources of the contractor had 19% and 42% tendency to initiate conflict respectively.

Table I.4.9.4 reveals the tendency that issues related to “the assessment of the effect of undesirable events on the completion date of the project” will initiate conflict. According to the data in this table, the issue of the schedule program to be used as reference for the assessment of the effect had very high tendency to initiate the conflict. The issue of considering the limitations of the resources of the contractor available for construction operations and the issue of an approach to assess the effect of undesirable events on the completion date of the project had high tendency to initiate conflict.

4.10 Probability of conflict due to issues related to the assessment of compensation for direct cost increase and the level of importance of the issues

Data about the probability that each issue related to the assessment of compensation for direct cost increase will initiate conflict and the level of importance of each issue is presented in Tables I.4.10.1. to I.4.10.6 in Appendix H.

Data in Table I.4.10.1 reveals that all issues related to “definition of direct costs” had medium tendency to initiate conflict between contracting parties. These issues were (1) whether direct costs includes expenses due to the payroll of contractor’s employees on site, specialized consultant’s fees, and rental of the site office/worker camp, (2) definition of labor cost, and (3) definition of material cost and equipment cost.

Data in Table I.4.10.2 reveals that issues related to “approach to assess the effect of the undesirable events on the direct costs of performing each item of work” had high or very high tendency to initiate conflict. The issues that deserve much attention are the issues of “additional expense due to the employer’s request for specified product” and “additional expense due to differing site conditions” which had 81% and 80% tendency to initiate conflict respectively.

In case the contracting parties agree that the effect on the direct costs to perform each item of work should be assessed by comparing actual cost with base cost, Table I.4.10.3, reveals that the issue of “whether the actual contractor’s expenses to be used for assessing the compensation be adjusted when the contractor does not operate the construction effectively” had high tendency to initiate conflict between contracting parties (32%). In regard to the issue of “the contractor’s duty to declare actual expenses” and the issue of a “timeframe for the employer to argue against the expenses declared by the

contractor”, the tendencies to initiate conflict were also high (Table I.4.10.4). The issue of “the meaning of accepting the declaration without any argument” was the only issue in this group that had medium tendency to initiate conflict (20%).

In regard to the issues of the approach to assess the cost of work, almost all issues such as the issues of “an adjustment of the quantity and unit cost to cover the cost of material loss”, “approach for determining unit rate in case its cost rate is specified in BOQ”, and “approach for determining unit rate in case there is no cost rate specified in BOQ” had high tendency to initiate conflict. Only the issue of “adding the quantity of work to cover the cost of the material loss” had medium tendency to initiate conflict (Table I.4.10.5).

Data in Table I.4.10.6 reveals that two issues related to “the assessment of the cost of deducted work” had high tendency to initiate conflict between contracting parties. The two issues were (1) assessment of the cost of deducted work in case the quantity specified in BOQ is less than the actual quantity, and (2) assessment of the cost of deducted work in case the quantity specified in BOQ is more than the actual quantity.

4.11 Probability of conflict due to issues related to the assessment of compensation for overhead cost increase and for profit loss and the level of importance of the issues

Data about the probability that each issue related to the assessment of compensation for overhead cost increase and for profit loss will initiate conflict and the level of importance of each issue is presented in Table I.4.11.1 in Appendix H.

Data in Table I.4.11.1 reveals that all six issues related to “approach to assess the compensation for overhead cost increase” and “approach to assess the compensation for profit loss” had high or very high tendency to initiate conflict between contracting parties.

4.12 Level of importance of the issues that were studied

According to results from the analysis presented in this chapter, the issues that were studied can be categorized according to their level of importance into four groups as follows: (1) 4 issues were in the group with a low level of importance or with a low probability of conflict, (2) 82 issues were in the group with a medium level of importance or with a medium probability of conflict, (3) 117 issues were in the group with a high level of importance or with a high probability of conflict, and (4) 20 issues were in the group with a

very high level of importance or with a very high probability of conflict. The details of the number of studied issues classified by type and the level of importance of each issue are presented in Table 4.12.1

Table 4.12.1 Number of the studied issues classified by type and the level of importance of each issue

No.	Type of issue	Level of importance(Probability of conflict)			
		Low (0.00-0.05)	Medium (0.05-0.25)	High (0.25-0.50)	Very high (>0.50)
1.	Force majeure	1	17	17	0
2.	Ineffective performance of the employer	1	13	21	0
3.	Differing site conditions	0	12	22	3
4.	Interference action by the employer	1	12	18	3
5.	Employer's order to change the scope of work	1	16	20	1
6.	The assessment of the effect of undesirable events on the project completion date	0	1	6	4
7.	The assessment of compensation for direct cost increase	0	10	10	7
8.	The assessment of compensation for overhead cost increase and profit loss	0	0	4	2
Total		4	81	118	20

According to the results of the study, the following were the five issues that had the highest probability of initiating conflict: (1) approach to assess additional expenses due to the employer's request for a specified product (81%), (2) approach to assess additional expenses due to differing site conditions (80%), (3) approach to assess additional expenses due to material price increase (74%), (4) approach to assess overhead cost increase in case the events affect both duration and cost of construction (74%), and (5) approach to assess overhead cost increase in case the events affect only the construction duration (74%).

4.13 The analysis of the completeness of the standard contract of Thai government

Seven conditions in the standard contract of Thai government relate to undesirable events. These conditions are clause 4: payment, clause 7: completion date and employer's rights to terminate the contract, clause 9: subcontracting, clause 11: responsibility of the contractor, clause 15: work control by the employer, clause 16: extra work and defective work and clause 22: the extension of the construction time. These conditions mainly cover issues related to two types of events, namely, force majeure and change in the scope of work. The issues in the three types of events are barely mentioned in these clauses.

These seven clauses have covered 30 conflict-initiating issues. Moreover, there are eight issues that don't need to be covered by the contract. (For example, in case the contract restricts the contractor's right to claim for direct cost increase, it is not necessary for the contract to cover the issue of the type of direct cost increase that should be compensated). Therefore, there are 185 issues that the contract should cover but does not. Of these 185 issues, 1, 67, 98, and 19 issues have low, medium, high and very high tendency to initiate conflicts respectively. Details of the number of issues that are covered/implied/not covered by the standard contract classified by type and the level of importance of each issue are presented in Table 4.13.1.

Table 4.13.1 Number of issues that are covered/implied/not covered by the standard contract classified by type and the level of importance of each issue

No.	Type of issue	Level of importance (probability of conflict)			
		Low (0.00-0.05)	Medium (0.05-0.25)	High (0.25-0.50)	Very high (>0.50)
1.	Force majeure	1/0/0	2/1/13	4/4/10	0/0/0
2.	Ineffective performance of the employer	1/0/0	2/0/11	2/0/19	0/0/0
3.	Differing site conditions	0/0/0	0/0/12	0/0/22	0/0/3
4.	Interference action by the employer	1/0/0	3/0/9	3/1/14	0/0/3
5.	The employer's order to change the scope of work	0/0/1	6/1/10	2/1/16	0/0/1
6.	The assessment of the effect of undesirable events on the project completion date	0/0/0	0/0/1	0/0/6	0/0/4
7.	The assessment of compensation for direct cost increase	0/0/0	0/0/10	2/0/8	1/0/6
8.	The assessment of compensation for overhead cost increase and profit loss	0/0/0	0/0/0	0/0/4	0/0/2
Total		3/0/1	13/2/66	13/6/99	1/0/19

Sections 4.13.1 to 4.13.8 present the results of the analysis of the completeness of the standard contract form of the Thai government. Each section covers each type of issue that was studied separately.

4.13.1 *Force majeure*

Clauses 11 and 22 of the contract cover several issues related to force majeure. However, these two clauses do not cover the issues of “definition of force majeure.” Table 4.4.1 reveals that various issues related to the definition of force majeure, such as characteristics of force majeure, list of events classified as force majeure, and definition of severe weather conditions, had high tendency to initiate conflict between contracting parties.

Clauses 11 and 22 of the contract cover the issues of compensation to the contractor. Clause 11 states that the contractor has to be responsible for any costs from a force majeure which implies that they can not claim for additional direct costs, additional overhead costs and profit loss. On the other hand, clause 22 allows the contractor to claim for an extension of time due to force majeure. Since the contractor’s right to claim for direct costs is restricted, the contract does not have to mention the types of direct cost increase that can (or cannot) be claimed. However, by providing the contractor’s right to claim for additional time, the contract should mention the types of time loss that can (or cannot) be claimed. Data in Table I.4.4.2 reveal that three out of four types of time loss that were studied had high tendency to initiate conflict. The other two issues related to force majeure that are also not covered by the contract are the compensation to the contractor in case a force majeure event occurs after the stipulated completion date of the project and the compensation for damage on work that has not been inspected/certified and/or not paid for yet. These two issues had 33% and 43% tendency to initiate conflict between contracting parties respectively.

Clause 22 of the contract also covers almost all issues of “notification and claim submission”. The only issue not covered by the contract is the timeframe for claim submission which had 46% tendency to initiate conflict.

4.13.2 *Ineffective performance of the employer*

The only clause in the contract that mentions the ineffective performance of the employer is clause 22. This clause, however, does not cover any of the 10 issues of “the duties of contracting parties”, which had medium or high tendency to initiate conflict (Table I.4.5.1). In regard to the issues of “compensation to the contractor”, clause 22 covers only

the issues of the contractor's right to claim for an extension of time due to the ineffective performance of the employer. Even though the issues related to the contractor's right to claim for direct cost increase, indirect cost increase, profit loss, and the type of time loss and direct cost that can be claimed have medium or high tendency to initiate conflict (Table I.4.5.2), it is not mentioned in this contract.

Lastly, as for force majeure, clause 22 of the contract also covers almost all issues of "notification and claim submission". The only issue not covered by the contract is the timeframe for claim submission, which had 39% tendency to initiate conflict.

4.13.3 Differing site conditions

There is no clause in the contract that covers issues related to differing site conditions. According to this study, contracting parties tend to have conflict due to the issues of differing site conditions (Tables I.4.6.1 to I.4.6.3). Of the 37 issues studied, 12, 22, and 3 issues had medium, high and very high tendency to initiate conflict between contracting parties respectively.

It is worth noting that clause 22 of the contract mentions the contractor's right to claim for extension of time due to the effects of three types of events. However, these do not include differing site conditions.

4.13.4 Interference action by the employer

Clauses 7 and 9 of the contract mention the contractor's duty to submit the construction method and request permission for using a subcontractor from the employer. However, this contract does not mention clearly the employer's rights to reject the construction method submitted by the contractor. It also does not mention the contractor's duty to ask for approval of construction material, working during holidays and/or beyond the normal working time. Moreover, this standard contract does not mention the issues of the employer's right to suspend the construction, to perform other construction work within the site, and to occupy an area of the site while construction is still going on. These neglected issues have medium to high tendency to initiate conflict (Table I.4.7.1). The silence of the contract on the issues of the definition of normal working time, the binding of the decision of

the employer to the request, and the limitation of the employer's right to suspend construction also tend to initiate conflict (Table I.4.7.1).

Regarding the issue of "compensation to the contractor due to the unfavorable effects of an interference action by the employer", clause 20 covers the issue of the contractor's right to claim for an extension of time. However, no clause in the contract covers issues related to the contractor's right to claim for direct cost increase, indirect cost increase, profit loss, and type of time loss and direct costs that can be claimed. All these issues have medium or high tendency to initiate conflict (Table I.4.7.2). It is worth noting that since this contract does not provide the employer's right to reject the contractor's request or to perform any other interference action without mentioning compensation, these issues therefore should not be considered in the analysis.

As for force majeure and the ineffective performance of the employer, clause 22 of the contract covers almost all issues about "notification and claim submission". The only issue not covered by the contract is the timeframe for claim submission which had 38% tendency to initiate conflict.

4.13.5 The employer's order to change the scope of work

Clause 16 of the contract mentions the employer's right to give an order to change the scope of work including the right to give an order for work beyond the scope specified in the contract. However, the contract does not cover the other two issues related to "the employer's right to give an order to change the scope of work", which has relatively high tendency to initiate conflict between contracting parties. These two issues are related to the right to give orders for dramatically changing the quantity of work items and for cancellation of the work in order to hire other contractor to perform that work. These issues had 22% and 36% tendency to initiate conflict respectively. In addition, since the contract do not restrict the contractor's right to give an order to make an enormous change to the quantity of work items, it is not necessary to specify the issue of the maximum total amount of work that the employer can give an order to add or cancel in the contract.

Clauses 15 and 16 of the contract cover the issues of "implementation of the employer's order to change the scope of work." Clause 15 authorizes the employer's representative, and authorized project consultant to give an order for changing the scope of

work, while clause 16 outlines the contractor's duty to perform the work even though the agreement on the compensation has not been finalized yet. However, the contract does not cover other important issues related to the implementation of the employer's order to change the scope of work. No clause in the contract mentions the authority of a project inspector to give an order to change the scope of work. The contract also does not mention the validity of the verbal order to change the scope of work and the response of the contractor when they receive a verbal order to change the scope of work and when they know that the employer will give an order to change the scope of work.

Regarding "compensation to the contractor due to the effect of the employer's order to change the scope of work", only clause 16 covers these issues. This clause mentions the adjustment of direct costs in case there is an order for additional work or for cancellation of the work. It also covers the contractor's right to claim for an extension of time due to the order for changing the scope of work. However, this clause does not cover the issues of compensation for indirect cost increase, compensation for profit loss, and the adjustment of construction time due to work reduction. Moreover, no part of the contract addresses the types of time loss and increased direct costs that can (or cannot) be claimed.

Regarding "timeframe for claim submission" in case there is an order to change the scope of work, no clause in the contract covers these issues.

It is worth noting that this contract does not cover any issues concerning "the adjustment of the price of the designated phases of the work" and "the adjustment of the fine rate." The tendency that issues related to the adjustment of the price of designated phases of the work and related to the adjustment of the fine rate will initiate conflict ranges from 24% to 31% (Tables I.4.8.5 and H.4.8.6).

4.13.6 *The assessment of the effects of undesirable events on the project completion date*

Even though clause 22 of the contract addresses the contractor's right to claim for an extension of the construction time, no clause in the contract covers the issues of "approach to assess the effect of undesirable events on a construction activity". All issues related to the approach to assess the length of time for repairing the work damage, the length of time of preparation for construction operations after it has been stopped or

suspended, time loss due to decrease in productivity, time loss due to differing site conditions, and time loss due to the employer's order to change the scope of work had the tendency to initiate conflict between contracting parties of more than 45% (Table I.4.9.1).

Besides, this contract also does not cover the issues of "the adjustment of actual construction time", "the assessment of effects on the completion date of the project", and "the projection of the length of time for the operations". According to the data in Tables I.4.9.2 to I.4.9.4, these issues had high or very high tendency to initiate conflict between contracting parties.

4.13.7 The assessment of compensation for direct cost increase

No clause in the standard contract of Thai government covers the issues of "definition of direct costs", which had the tendency to initiate conflict ranging from 13% to 20% (Table I.4.10.1). Regarding the issues of "approach to assess the effects of undesirable events on direct costs to perform each item of work", only the approach to assess the additional expense due to change in the scope of work is covered in the contract. The other six issues related to the assessment of the effect of undesirable events on direct costs, which had the tendency to initiate conflict more than 50%, are not covered in the contract.

Moreover, no contract condition covers the issue of "the adjustment of the actual expenses of construction" and "declaring actual expense". Three out of four issues in these two topics had high tendency to initiate conflict (Tables I.4.10.2 and H.4.10.3)

Regarding the issues of "approach to assess the cost of work", clause 16 of the contract covers the issue of approach to determine unit rate when its cost rate is specified in BOQ and clauses 4.1 to 4.3 cover the issue of adjustment of unit cost when the quantity of work is changed dramatically (in case the unit price contract is used). Other issues in this topic including adding the quantity of work to cover the cost of the material loss, adding unit cost to cover the cost of material loss, adjustment of unit cost when employer gives an order to perform the work beyond the stipulated completion date of the project and approach to determine unit rate when there is no cost rate specified in BOQ are not covered by the contract. All these issues had the tendency to initiate conflict between contracting parties at more than 23% (Table I.4.10.5)

Lastly, no condition in the contract covers any issues related to “the assessment of the cost of deducted work.” The two issues in this topic had high tendency to initiate conflict (Table I.4.10.6)

4.13.8 The assessment of compensation for overhead cost increase and profit loss

Although data from the study reveals that issues related to “approach to assess the compensation for overhead cost” and “approach to assess the compensation for profit loss” had high or very high tendency to initiate conflict, no clause in the contract covers these conflict-initiating issues.

4.14 Summary

In this research, the probability that each issue will initiate conflict between contracting parties is used as an indicator to indicate the level of importance of the issue. Five equations were developed for assessing the probability that each issue will initiate conflict. Conflict-initiating issues were classified into four groups based on their tendency to initiate conflict. Of the 223 conflict-initiating issues, 4 issues have the tendency to initiate conflict at a low level, 81 issues at a medium level, 118 issues at a high level, and 20 issues at a very high level. The five issues that had the highest probability of initiating conflict were as follows: (1) approach to assess additional expense due to the employer’s request for a specified product (81%), (2) approach to assess additional expense due to decrease in productivity (80%), (3) approach to assess additional expense due to material price increase (74%), (4) approach to assess overhead cost increase in case the events affect both the duration and cost of construction (74%), and (5) approach to assess overhead cost increase in case the events affect only the construction duration (74%).

As regards the analysis of the completeness of the contract, seven contract conditions related to undesirable events in the standard contract of Thai government are identified. These seven clauses cover 30 conflict-initiating issues. Moreover, eight issues also don’t need to be covered by the contract (For example, in case the contract restricts the contractor’s right to claim for direct cost increase, it is not necessary for the contract to cover the issue of the type of direct cost increase that should be compensated). Therefore, there are 185 issues that the contract should cover but does not. Of these 185 issues, 1, 67,

98, and 19 issues have low, medium, high and very high tendency to initiate conflicts respectively.



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CHAPTER V

IDENTIFICATION OF AN APPROPRIATE APPROACH FOR WRITING CONTRACT CLAUSES

This chapter consists of 11 sections. In the first section, there is discussion about how the attitude of the majority of people in the construction industry can be related to an appropriate approach for writing contract clauses. In the second section, a process to identify an appropriate approach for writing the contract and the equations used for assessing the attitude of the industry is presented. In sections 3 to 10, the attitude of the industry towards each conflict-initiating issue and an appropriate approach for writing contract clauses to cover each issue are presented. Lastly in section 11, the knowledge gained from this chapter was applied in evaluating the appropriateness of each clause related to undesirable events in the standard contract of Thai government.

5.1 Attitude of the target group and an appropriate approach for writing contract clauses

Contract clauses that are written inappropriately, or that are different from the attitude of the contracting parties, may jeopardize the relationship between them. For example, if the contracting parties agree that the contractor has the right to claim for an extension of construction duration due to the effect from differing site conditions, but this right is restricted by the contract, the contractor may have the feeling that the employer is taking advantage at their expense. In addition, the employer who is willing to absorb risk from differing site conditions themselves may also have to pay more than necessary because the contractor charges them the premium to cover this type of risk.

In an analysis to determine how to write a contract clause appropriately or whether an existing contract clause is appropriate or not, it must be clearly stated that the analysis is to determine the appropriateness for use for which group of people? Or, in other words, which target group? A contract that is appropriate for use by one group of people may not be appropriate for use by another. The target group of each form of contract may be different. Some contracts are designed for use by people in the construction industry as a whole, but others may be designed for use only by a specific group of people. Moreover,

the contract can also be tested for use by any specific group, such as those within the Thai construction industry.

If the target group of the contract is the construction industry and we agree that an appropriate contract clause is a clause that is acceptable to the majority of the target group, the analysis of the appropriateness of the clause can be performed by comparing the clause with the attitude of the employers and contractors in the industry.

5.2 Process to investigate attitude of the industry and identify an appropriate approach for writing the contract

There is no doubt that the clause is appropriate if the attitude of the majority of employers and the attitude of the majority of contractors follow the same direction, and the content of the clause is consistent with them. On the other hand, the clause is not appropriate if it is not consistent with the attitude of the majority of employers and contractors. However, it may not be easy to make a conclusion on the appropriateness of the clause if the attitudes of the majority of employers and the attitude of the majority of contractors are different. One may need to set up criteria or a method for determining the attitude of those in the construction industry as a whole. In this research, the proportion of people in the construction industry who prefer each alternative in the questionnaire was determined by averaging the proportion of employers and the proportion of contractors who prefer that alternative.

Based on the criteria just mentioned, a process to identify an appropriate approach for writing contract clauses to cover every conflict-initiating issue consists of three steps as follows: (1) determine the proportion of employers as well as the proportion of contractors who prefer each alternative in the questionnaire, (2) determine the proportion of those in the construction industry who prefer each alternative in the questionnaire by averaging the proportion of employers and the proportion of contractors who prefer that alternative, and (3) identify an appropriate approach for writing a contract clause from an alternative that the majority of the population in the industry prefer.

Three types of questions were used in this survey study by questionnaire, namely, (1) the yes/no question, (2) the quantitative question, and (3) the nominal question. In the case of the yes/no question and the nominal question, the proportions of employers and of

contractors who prefer each alternative in the questionnaire can be determined directly from the proportion of study samples in each group who agree to select each alternative, since in these types of questions each alternative is independent from the other alternatives. However, in case the quantitative question is used, the proportions of employers and of contractors who prefer each alternative cannot be assessed from these proportions. This is because each alternative of the quantitative question is quantitatively comparable. To assess the proportions of employers and of contractors who prefer each alternative if the quantitative question is applied, equations (5.2.1) and (5.2.2) have been developed. Equation (5.2.1) will be used to calculate the proportion of employers or of contractors who prefer each alternative if the higher the quantity makes them happier. On the other hand, equation (5.2.2) will be used to calculate the proportion of employers or of contractors who prefer each alternative if the lower the quantity makes them happier.

$$W_i = \sum_{j \leq i} P_j \quad (5.2.1)$$

$$W_i = \sum_{j \geq i} P_j \quad (5.2.2)$$

where

W_i = proportion of study samples who prefer choice i

P_j = proportion of study samples who choose choice j

In sections 5.3 to 5.10, the attitudes of the Thai construction industry towards conflict-initiating issues are presented. These data were calculated based on the data from the survey presented in chapter 4.

5.3 Attitude of industry towards issues related to force majeure and an appropriate approach for writing contract clauses covering these issues.

Data on the attitude of the industry towards issues related to force majeure and an appropriate approach for writing contract clauses covering these issues are presented in Tables J.5.3.1 to J.5.3.3 in Appendix J.

The data in Table J.5.3.1 reveals the attitudes of the industry sector, that force majeure must have three characteristics, namely (1) be unpredictable, (2) not be preventable and/or uncontrollable, and (3) be a natural phenomenon. In addition, the

industry does not think force majeure must not be the risk of the contractor in doing business. In the opinion of the industry sector, severe weather conditions, natural catastrophes, war/coup, and loss of transportation access are force majeure. But normal weather condition, consequence of the action of a third party, consequence of the action of the contractor's personnel, lack of resources, change in general law, and change in law related to construction are not force majeure. Besides, severe weather conditions should occurs less often than once every five years.

In regard to the issues of “compensation to the contractor for the unfavorable effects of force majeure”, the industry agrees on the extension of construction time but not on the compensation for direct cost increase, for indirect cost increase and for profit loss (Table J.5.3.2). The industry also does not agree on the compensation to the contractor in case a force majeure event occurs after the stipulated completion date of the project.

As concerns the issue of compensation for time loss, the duration of the force majeure event is the only one out of four types of time loss that the construction industry thinks the contractor can claim for. However, as for the issue of compensation for direct cost increase, the industry agrees on the compensation for three out of six types of direct cost increase that were studied, namely, the costs for fixing damaged work and for clearing the site and the increase in costs due to material price increase. Moreover, the industry also agrees on the compensation for the damage of work that has not been inspected/certified and/or not paid for yet. (Table J.5.3.2)

Lastly, concerning the issues of “notification of a force majeure event and claim submission”, the data in Table J.5.3.3 reflects the attitude of the industry as follows: (1) the contractor has the duty to notify the employer of a force majeure event, (2) the contractor should notify the employer of the event within seven days after the occurrence of force majeure, (3) the contractor still has to notify the employer of the event even though the employer has already witnessed the event, (4) failure to notify the employer of force majeure within the timeframe specified in the contract (reasonable timeframe) means the contractor gives up their right to claim for compensation, and 5) the contractor should submit the claim within 15 days after the end of the event.

5.4 Attitude of the industry towards issues related to the ineffective performance of the employer and an appropriate approach for writing contract clauses covering these issues.

Data on the attitude of the industry towards issues related to the ineffective performance of the employer and an appropriate approach for writing contract clauses covering these issues are presented in Table J.5.4.1 to J.5.4.3 in Appendix J.

The data in Table J.5.4.1 reveals one attitude of the industry to be that an employer should give the contractor the right of access to and occupancy of the site within one month from the bid submitting date. On the other hand, as regards the timeframe for approval of submittal, the industry thinks the employer should approve the construction schedule, construction method, construction material and data from specified testing within one week. The only submittal that the industry thinks two weeks is a reasonable length of time for approval is the shop/working drawing. Data from the survey of the attitude of the industry also reveals their thinking to be that the contractor has the duty to remind the employer of timely approval at least one week before the deadline for approval and has to request the employer for inspection before cover-up at least one day beforehand.

In case of an approval delay, the industry agrees on the extension of the construction duration but not on compensation for direct cost increase, or indirect cost increase and for profit loss. However, in the case of other mistakes by the employer, the industry not only agrees on the extension of the construction duration but also on the compensation for direct cost increase. The only type of time loss that the industry thinks the contractor can claim for in case of approval delay is the waiting time for the employer to approve submittal. As for other employer mistakes, the industry thinks that the contractor can claim for the time of preparation for correction/rework and the time spent on correction/rework. It is worth noting that the industry does not think the contractor is able to claim for time loss due to decrease in productivity in both cases (Table J.5.4.2).

The data in Table J.5.4.2 also indicates that, in the case of an approval delay, the contractor can claim for costs during project suspension and the increase in costs due to material price increase. In case of other mistakes of employer, the contractor can claim additional expense for work correction and additional expense due to work difficulties.

However, the contractor can not claim for an increase in costs due to decrease in productivity in both cases.

Regarding the issues of “notification of the ineffective performance of the employer and claim submission”, the data in Table J.5.4.3 reflects the attitude of the industry sector as follows: (1) the contractor has the duty to notify the employer of the employer's ineffective performance, (2) the contractor should notify the employer of the employer's ineffective performance within seven days after the deadline for approving submittals or after becoming aware of the employer's mistake, (3) the contractor still has to notify the employer of the event even though the employer is already aware of the event, (4) failure to notify the employer of the employer's ineffective performance within the timeframe specified in the contract (reasonable timeframe) means the contractor gives up their right to claim compensation, and (5) the contractor should submit the claim within 15 days after receiving the late approval or after correcting the mistake.

5.5 Attitude of the industry towards issues related to differing site conditions and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to differing site conditions and an appropriate approach for writing contract clauses covering these issues are presented in Tables J.5.5.1 to J.5.5.3 in Appendix J.

According to the data from Table J.5.5.1, the industry thinks that the contractor should inform the employer and continue operations in case the differing site conditions have a negative effect on the contractor but the work can still be done in accordance with the contract. However, in the case the work cannot be done in accordance with the contract because of the differences in the actual conditions from the data given by the employer or because of the topography of the site, the industry thinks the contractor should cease operations, inform the employer and wait for instructions from the employer.

The data in Table J.5.5.2 reveals that in all three cases of differing site conditions, the industry agrees on the extension of the construction duration and on the compensation for direct cost increase but not on the compensation for indirect cost increase and for profit loss. In contrast, if the differing site conditions are beneficial to the contractor, the industry thinks there should be no adjustment of construction duration, indirect costs and profit.

Regarding the adjustment of direct costs when the differing site conditions are beneficial to the contractor, the industry agrees that the direct costs be adjusted only in the case the work cannot be done in accordance with the contract because the actual conditions are different from those described by the employer.

The data in this table also reveals the attitude of the industry in thinking that the contractor has the right to claim for compensation if they have not received any information about the site's condition from the employer and the physical conditions of the site are different from what they expected. Besides this, the industry also thinks that the contractor can claim for compensation if there is a contract condition stating clearly that it is the responsibility of the contractor to evaluate and interpret the given data by themselves, and in the case that the contractor has realized the incorrectness of the given data before bidding.

Regarding the issues of time loss that the contractor can claim, the data in Table J.5.5.2 reveals the industry to be of the opinion that the contractor can claim for the time waiting for the employer to make a decision, the preparation time for construction operations after receiving the order from the employer, and the increase in working time due to work difficulties. As for the compensation for direct cost increase, the contractor can claim expenses during the time waiting for the employer to make a decision, additional expenses due to work difficulties, and additional costs due to material price increase.

Regarding the issue of "the submission of claim for unfavorable effects due to differing site conditions", the industry thinks 15 days after solving all the problems related to the differing site conditions is the reasonable timeframe for claim submission (Table J.5.5.3).

5.6 Attitude of the industry towards issues related to the interference action by the employer and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to the interference action by the employer and an appropriate approach for writing contract clauses covering these issues are presented in Tables J.5.6.1 to J.5.6.3 in Appendix J.

The data in Table J.5.6.1 reveals the opinion of the industry to be that the contractor has the duty to request the employer for approval/permission of construction material, using

a subcontractor, working during holidays and/or beyond normal working time, and the construction method. The industry also thinks that the employer's consideration of the contractor's request for approval/permission is not final. Regarding the issues of normal working time, the industry considers normal working days to be Monday – Friday and normal working hours from 8.00 – 17.00. As for the issues of the employer's right to perform an interference action, the industry does not think that employer has the right to suspend construction, to perform other construction work within the site, and to occupy an area of the site while its construction is still going on. On the other hand, if the contract grants the employer's right to suspend the work, the industry sector thinks the contractor can give an order to suspend the work as many times as they want and each time the duration of suspension should be no more than 2 weeks.

In the case the employer denies the contractor's request for approval without a sound reason, the industry agrees on the extension of construction duration and on compensation for direct cost increase but not on compensation for indirect cost increase and for profit loss. However, in the case of other interference actions by the employer, the industry sector thinks the contractor should be able to claim an extension of the construction duration. The industry also agrees that the contractor has the right to claim compensation if the contract allows the employer to refuse the contractor's request for approval/permission or allows the employer to perform an interference action (Table J.5.6.2).

Regarding the issues of time loss that the contractor can claim, the data in Table J.5.6.2 reveals the opinion of the industry sector to be that the contractor can claim for time loss during suspension/stop period, and the time of preparation for construction operations but not for time loss due to decrease in productivity. As for the issue of compensation for direct cost increase, the contractor can claim for the expenses that cannot be refunded from the supplier/subcontractor and also for additional costs due to material price increase but not for expenses during the suspension/stop period and additional costs due to decrease in productivity.

As concerns the issues of "notification of an interference action by the employer and claim submission", the data in Table J.5.6.3 reveals the attitude of the industry sector as follows: (1) the contractor has the duty to notify the employer of the employer's interference action, (2) the contractor should notify the employer of the employer's ineffective

performance within seven days after becoming aware of the employer's action, (3) the contractor still has to notify the employer of the event even though the employer is already of the event, (4) failure to notify the employer of the employer's interference action within the timeframe specified in the contract (reasonable timeframe) means the contractor gives up their right to claim compensation, and (5) the contractor should submit the claim within 15 days after the end of the event.

5.7 Attitude of the industry towards issues related to the employer's order to change the scope of work and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to the employer's order to change the scope of work and an appropriate approach for writing contract clauses covering these issues are presented in Tables J.5.7.1 to J.5.7.6 in Appendix J.

According to Table J.5.7.1, the industry agrees that the employer has the right to give an order for changing the scope of work and for additional work which is beyond the scope of contract. However, the industry does not agree that the employer can give an order to cancel some part of the work in order to hire another contractor to perform that work or to dramatically change the quantity of work items. The maximum amount of work that the employer can give an order to add or to cancel is 10% of the amount of the whole project.

The data in Table J.5.7.2 shows the industry sector's attitude to be that other than the employer themselves, only the employer's representative has the authority to give an order to change the scope of work. The authorized project consultant and project inspector do not have the authority to do so. As for the issue of a verbal order, the industry agrees that a verbal order to change the scope of work is valid; after receiving such a verbal or informal order, the contractor should request a written or formal order from the employer, cease operations while waiting for the formal or written order. Lastly, if the contractor knows that the employer will give an order to change the scope of some part of the work, it is the industry sector's opinion that the contractor should cease operations related to that part of the work.

The data in Table J.5.7.3 reveals that in the case the employer gives an order to the contractor to do additional work, the industry sector thinks the contractor should be able to

claim for an extension of construction duration and compensation for direct cost increase but not for indirect cost increase or for profit loss. In contrast, if the employer gives an order to cancel some part of the work, only construction duration should be adjusted. The data in Table J.5.7.3 also reveals that, in the opinion of the industry, the contractor still should be able to claim for compensation if the contract allows the employer to give an order to change the scope of work without mentioning the right to claim for compensation.

As regards the issues of types of time loss that the contractor can make claims for, the data in Table J.5.7.3 reveals the industry sector think that the contractor can claim for the time waiting for the details of work modification and additional time due to additional work or modification of the work but they can not claim for the time of preparation for construction operations and time loss due to decrease in productivity. As for the claim for direct cost increase, the contractor can claim for expenses that cannot be refunded from the supplier/subcontractor, expenses due to additional work or modification of the work, and additional costs due to material price increase, but they cannot claim for additional expenses due to decrease in productivity.

Concerning the issues of "claim submission", the industry thinks the contractor should submit the claim for compensation within 30 days after receiving the order for changing the scope of work (Table J.5.7.4). As for the issues of adjustment of the price of designated phases of the work, the industry thinks, if the modified work was listed in a phase of the work, the price of that phase should be adjusted in accordance with the change in the amount of work. On the other hand, if the modified work was not listed in any phase of the work, the price of a closely related phase should be adjusted (Table J.5.7.5). Lastly, regarding the issues of the adjustment of fine rate, the industry agrees on the adjustment of the daily rate of fine for the delay in the work in accordance with the change in the amount of work due to the employer's order for changing the scope of work.

5.8 Attitude of the industry towards issues related to the assessment of the effects of undesirable events on the project completion date and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to the assessment of the effects of undesirable events on the project completion date and an appropriate approach

for writing contract clauses covering these issues are presented in Tables J.5.8.1 to J.5.8.4 in Appendix J.

Data in Table J.5.8.1 reveals that the industry would like to use different approaches to assess different types of the effects of undesirable events on a construction activity. The industry agrees that the length of time for repairing the work damage and time loss due to decrease in productivity should be assessed by comparing actual time with planned time. On the other hand, the industry agrees the length of time of preparation for construction operations after being stopped or suspended and the additional time due to differing site conditions should be assessed by specifying the length of time that the contractor was affected. Finally, the industry agrees that time loss due to the employer's order to change the scope of work be estimated from the quantity of work that was to be modified by the employer's order.

If the contracting parties agree to assess the effects on a construction activity based on the comparison of actual time with planned time, according to Table J.5.8.2, the industry thinks that the actual construction time that will be used in the assessment should be adjusted if the contractor does not operate the construction effectively. Besides, in cases that the contracting parties agree to assess the effect on a construction activity by projection based on the amount of work to be done, the industry thinks extra time should be added to cover the increase in operation time due to the risks and limitations of the resources of the contractor (Table J.5.8.3).

Lastly, in regard to the issue of "the type of schedule program to be used as reference for the assessment of the effects of undesirable events", the industry thinks that the master plan that was updated to reflect the status before the event occurred should be used. As for the issue of the assessment of the effects on the completion date of the project, the industry thinks that the contracting parties should consider the limitations of the contractor's resources available for construction operations and should apply the critical path method to assess this effect (Table J.5.8.4).

5.9 Attitude of the industry towards issues related to the assessment of compensation for direct cost increase and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to the assessment of compensation for direct cost increase and an appropriate approach for writing contract clauses covering these issues are presented in Tables J.5.9.1 to J.5.9.6 in Appendix J.

With regards to the issues of “the definition of direct costs”, the data in Table J.5.9.1 reveals that the industry does not consider the payroll of the contractor’s employees on site, the specialized consultant’s fee, rental of the site office/worker camp, the contractor’s HO expense, the contractor’s all risk insurance cost and the contractor’s capital expense to be part of direct costs. However, the industry agrees that labor cost includes related expenses such as fringe benefits and that material costs and equipment costs include related expenses such as transportation or mobilization costs.

The data in Table J.5.9.2 reveals that the industry would like to use different approaches to assess different types of effects of undesirable events on direct costs. The industry agrees that additional expenses for repairing work damage and additional expenses arising from the employer’s request for a specified product should be assessed by comparing actual expense with the cost expected to be spent. Concerning additional expense during the stop or suspension period, the industry thinks it should be assessed from the amount of resources to be used per day and the suspension duration. Besides, the industry agrees that additional expense due to change in the scope of work should be assessed from the quantity of work to be modified by the employer’s order. On the other hand, the industry agrees that additional expense due to material price increase and additional expense due to decrease in productivity should be assessed by comparing actual unit cost rate before and after the occurrence of the affecting event. Lastly, the industry agrees that additional expense due to differing site conditions should be assessed by specifying a list of actual expense incurred due to differing site conditions.

In a case where the contracting parties agree that the effect of an undesirable event on the direct costs of performing each item of work should be assessed by comparing actual cost with base cost, according to Table J.5.9.3, the industry thinks the actual expense of the contractor to be used for assessing the compensation should be adjusted if

the contractor does not operate the construction effectively. As for the issue of declaring actual expense, the industry agrees that the contractor has the duty to declare actual expense and the employer's acceptance of the declaration without any argument (within reasonable timeframe) means the employer accepts that the declared items are correct. Lastly, the industry agrees that the reasonable timeframe that the employer can make any argument about the expenses declared by contractor is 15 days. (Table J.5.9.4)

If the contracting parties agree that the affected direct costs should be assessed from the quantity of related work, the industry thinks the quantity and the unit price of the work should be adjusted to cover the expected cost of material loss. As for the issue of the approach for determining unit rate if its cost rate has been specified in BOQ, the industry agrees that the unit rate specified in BOQ should be used to assess the related direct costs. However, if the quantity of work is changed dramatically or the contractor is given an order to perform the work beyond the stipulated completion date of the project, there should be adjustment of this unit cost. Lastly, if the cost rate is not specified in BOQ, the industry prefers to determine the unit price by averaging the available market rates (Table J.5.9.5).

As for the issues of "the approach to assess the cost of deducted work", the industry thinks that the cost of deducted work should be calculated from the quantity of the work and the proposed unit price in both cases (i.e. quantity specified in BOQ is less than or more than actual quantity) (Table J.5.9.6).

5.10 Attitude of the industry towards issues related to the assessment of compensation for overhead cost increase and for profit loss and an appropriate approach for writing contract clauses covering these issues

Data on the attitude of the industry towards issues related to the assessment of compensation for overhead cost increase and for profit loss and an appropriate approach for writing contract clauses covering these issues are presented in Table J.5.10.1 in Appendix J.

Table J.5.10.1 presents the attitude of the industry towards the issues of "compensation for overhead cost increase and for profit loss". If the undesirable events affect only the construction cost, the industry agrees that the contractor should be compensated for overhead cost increase and for profit loss based on the increase in the

project duration. On the other hand, if the undesirable events affect only the construction cost, the contractor should be compensated for overhead cost increase and for profit loss based on the increase in the project cost. Lastly, if the undesirable events affect both the construction duration and construction cost, the contractor should be compensated for the specific actual overhead cost that can be shown to have been caused by the affecting event and the profit loss should be compensated based on the increase in the project price.

5.11 Level of acceptability of the approach for writing contract clauses related to each conflict-initiating issue

The level of acceptability of the approach for writing contract conditions related to each conflict-initiating issue is classified into three levels based on the percentage of individuals in the industry who accept the approach, namely low acceptability (percentage of acceptability less than 50%), medium acceptability (percentage of acceptability between 50 and 75%) and high acceptability (percentage of acceptability above 75%). Of the 223 issues that were studied, 12 issues were in the group with a low level of acceptability, 130 in the group with a medium level of acceptability and 81 in the group with a high level of acceptability. The number of the studied issues classified by the type and percentage acceptability and the categories is shown in detail in Table 5.11.1.

Table 5.11.1 Number of the studied issues classified by type and percentage of acceptability

No.	Type of issue	Percentage of acceptability		
		Low (<0.50)	Medium (0.50-0.75)	High (>0.75)
1.	Force majeure	0	16	19
2.	Ineffective performance of the employer	0	19	16
3.	Differing site conditions	0	29	8
4.	Interference action by the employer	0	23	11

Table 5.11.1 (continued) Number of the studied issues classified by type and percentage of acceptability

No.	Type of issue	Percentage of acceptability		
		Low (<0.50)	Medium (0.50-0.75)	High (>0.75)
5.	Employer's order to change the scope of work	1	22	16
6.	The assessment of the effect of undesirable events on the project completion date	3	7	1
7.	The assessment of compensation for direct cost increase	5	11	10
8.	The assessment of compensation for overhead cost increase and for profit loss	3	3	0
Total		12	130	81

In addition, according to the results of this study, the appropriate approach for the following five issues have the lowest acceptability rate: (1) the approach to assess additional expense due to the employer's request for a specified product (24%), (2) the approach to assess additional expense due to differing site conditions (26%), (3) the approach to assess additional expense due to material price increase (30%), (4) the approach to assess additional expense due to change in the scope of work (32%), and (5) the approach to assess overhead cost increase in case the events affect both construction duration and cost (32%).

5.12 Analysis of the appropriateness of clauses related to undesirable events in the standard contract of Thai government

The contents of the seven contract clauses related to "undesirable events" in the standard contract of Thai government cover 30 of the 223 conflict-initiating issues that were studied. The results from comparing the content in these contract clauses with the attitude

of the Thai construction industry reveal that 22 issues were covered appropriately while the other 8 issues were not. The following sections present the results of the analysis of the appropriateness of each clause.

5.12.1 Clause 4: Payment

Clause 4 (a) covers the issue of the adjustment of unit price in case the quantity of work is changed dramatically (in case the unit price contract is used). This clause specifies how the unit price of the work be adjusted if the quantity of the work is increased or decreased by more than 25% from that specified in the BOQ. The allowing for adjustment of the unit price in this clause is consistent with the attitude of the Thai construction industry (Table J.5.9.5 No.2.2).

5.12.2 Clause 7: Completion date and the employer's right to terminate the contract

Clause 7 (a) covers the issue of the duty of the contractor to request approval of the construction method. This clause requires the contractor to submit the construction method to the employer. This requirement is consistent with the attitude of the Thai construction industry (Table J.5.6.1 No.1.4).

5.12.3 Clause 9: Subcontracting

Clause 9 covers the issue of the duty of the contractor to request permission to use a subcontractor. This clause restricts the contractor's right to subcontract the whole or part of the work without approval from the employer. This clause is consistent with the attitude of the Thai construction industry (Table J.5.6.1 No.1.2).

5.12.4 Clause 11: Responsibility of contractor

Clause 11 covers the issues of compensation to the contractor for the unfavorable effects of force majeure. The contract states that the contractor has to be fully responsible for all costs incurred due to force majeure which means the contractor cannot claim for a direct cost increase, an overhead cost increase and the profit loss. This restriction of the contractor's right to claim for compensation is consistent with the attitude of the Thai construction industry (Table J.5.3.2 Nos.1.2 to 1.4).

5.12.5 Clause 15: Work control by employer

Clause 15 covers the issues concerning the person who has the authority to give an order to change the scope of work. This clause allows the employer's representative and authorized project consultant to give such an order. Giving the authority to the employer's representative is consistent with the attitude of the Thai construction industry (Table 5.7.2 No.1.1). However, giving such authority to the authorized project consultant is inconsistent with the attitude of the Thai construction industry (Table J.5.7.2 No.1.2) and is therefore not appropriate.

5.12.6 Clause 16: Extra work and defective work

Clause 16 covers as many as eight conflict-initiating issues that were studied. Two of the issues were related to the employer's right to give an order to change the scope of work. This clause allows the employer to give an order to cancel, and modify the work. It also allows the employer to give an order for additional work but this work has to be within the original scope specified in the contract. Allowing the employer to give an order to change the scope of work is consistent with the attitude of the Thai construction industry (Table J.5.7.1 No.1.1). On the other hand, the restriction of the employer's right to give an order for additional work within the original scope only is inconsistent with the attitude of the Thai construction industry (Table J.5.7.1 No.1.2), and is therefore not appropriate.

Clause 16 covers the issue of "implementation of the employer's order to change the scope of work". This clause requires the contractor to perform the work according to the employer's order even though the agreement on the compensation has not yet been finalized. Such a requirement is consistent with the attitude of the Thai construction industry (Table J.5.7.2 No.3.3).

The three issues of compensation to the contractor in case of the employer's order to change the scope of work are also covered by clause 16. This clause allows contracting parties to adjust direct costs if the employer gives an order to cancel some part of the work and gives an order to add extra work. It also allows the contracting parties to negotiate the extension of the project duration due to the change in the scope of work. These contract

conditions are consistent with the attitude of the Thai construction industry (Table J.5.7.3, Nos.1.2, 2.2 and 1.1).

Lastly, the issues related to the approach to assess the cost of the additional and deducted work are also covered by clause 16. This clause requiring the contracting parties to calculate the cost of additional/deducted work from the quantity of work to be modified by the employer's order is consistent with the attitude of the Thai construction industry (Table J.5.9.2 No.1.7). Clause 16 also requires the contracting parties to use the unit rate that is specified in BOQ to assess related direct costs if the modified work has the unit price specified in the BOQ. This condition too is consistent with the attitude of the Thai construction industry (Table J.5.9.5 No.2.1).

5.12.7 Clause 22: Extension of construction time.

Clause 22 of the contract states that if the contractor wants to claim for an extension of construction time due to the effects of force majeure, the ineffective performance of the employer and the interference action by the employer, they have to notify the employer within 15 days after the event ends. This implies that the contractor has the right to claim an extension of construction time due to the effect of these three types of undesirable event. This condition is consistent with the attitude of the Thai construction industry (Table J.5.2.1 No.1.1, Table J.5.4.2 No.1.1, Table J.5.6.2 No.1.1). The contract's requirement that the contractor has to notify the employer of the event is also consistent with the attitude of the Thai construction industry (Table J.5.3.3 No.1.1, Table J.5.4.3 No.1.1, and Table J.5.6.3, No.1.1.).

Clause 22 of the contract also states that if the contractor does not notify the employer of these undesirable events within 15 days after the event ends, this means that the contractor gives up their right to claim for an extension of time. This condition is consistent with the attitude of the Thai construction industry (Table J.5.3.3 No.1.3, Table J.5.4.3 No.1.3, and Table J.5.6.3 No.1.3).

According to clause 22, the contractor does not have to notify the employer of these undesirable events if the employer has already witnessed the event. (It is worth noting here that this clause does not mention the claim for additional costs and profit.) Besides, the contract condition also states that failure to notify the employer of the undesirable events

within the specified timeframe means giving up the right to claim an extension of time. The requirement that the notification of the event has to be made within 15 days after the undesirable event ends seems to be inconsistent with the attitude of the Thai construction industry whose preference is to have the contractor notify the employer within 15 days after becoming aware of the event (Table J.5.3.3 No.1.2, Table J.5.4.3 No.1.2, and Table J.5.6.3 No.1.2). Moreover, the condition that the contractor does not have to notify the employer of these undesirable events when the employer has already witnessed (or become aware of) the event is also inappropriate. It does not conform to the attitude of the industry sector, suggesting that the contractor still has to notify the employer of the event no matter whether employer has already witnessed it or not (Table J.5.3.3 No.1.4, Table J.5.4.3 No.1.4, and Table J.5.6.3 No.1.4).

5.13 Summary

In this study, the data on the industry's attitude towards conflict-initiating issues is also applied to identifying an appropriate approach for writing contract clauses related to the conflict-initiating issues. The levels of acceptability of each approach for writing contract conditions are compared to identify the appropriate approach. The proportions of contractors and of employers that are satisfied with each alternative are given equal weight in assessing the proportion of the population in the industry. The level of acceptability of the appropriate approach for writing contract conditions related to each conflict-initiating issue are classified into three levels based on the percentage of people in the industry who accept the approach, namely low acceptability (percentage of acceptability less than 50%), medium acceptability (percentage of acceptability between 50 and 75%) and high acceptability (percentage of acceptability above 75%). Of the 223 issues that were studied, 12 issues were in the group with a low level of acceptability, 130 in the group with a medium level of acceptability and 81 in the group with a high level of acceptability. According to the results of this study, the appropriate approaches for the following five issues have the lowest acceptability rate: (1) the approach to assess direct cost increase in case employer requires a specified product (24%), (2) the approach to assess direct cost increase in case the contractor has received incorrect information from the employer (26%), (3) the approach to assess direct cost increase in case the material price inflates during the suspension period

(30%), (4) the approach to assess direct cost increase in case the employer gives an order for addition/reduction of the work (32%), and (5) the approach to assess overhead cost increase in case the events affect both construction duration and cost (32%).

The analysis of the appropriateness of the contract clauses of the standard contract of Thai government organizations is done by comparing the statement about the studied issues in these contract clauses with the attitude of the Thai construction industry towards each issue. The study reveals that of the 30 issues covered by the 7 contract clauses, 22 issues were covered appropriately and the other 8 were not. The eight issues that were not covered appropriately are as follows: (1) the provision of the authority to give an order to change the scope of work to the authorized project consultant, (2) the restriction of the employer's right to give an order for additional work only for the work within the original scope of the contract, (3) the requirement that the notification of the event has to be within 15 days after the end of the force majeure, (4) the requirement that the notification of the event has to be within 15 days after the end of the ineffective performance of the employer, (5) the requirement that the notification of the event has to be within 15 days after the end of the employer's interference action, (6) no requirement to notify the employer of force majeure when the employer has already witnessed the event, (7) no requirement to notify the employer of the ineffective performance of the employer when the employer is already aware of the event, and (8) no requirement to notify the employer in case the employer has already become aware of the interference action.

CHAPTER VI

AN APPROACH TO APPLY CHOICE-BASED CONJOINT ANALYSIS (CBC) FOR ALLOCATING RESPONSIBILITY

In the first section of this chapter, the principle of responsibility allocation and the types of data required for making a decision on responsibility allocation are presented. Choice-based conjoint analysis (CBC) is then described in the second section. In the third section, the process of designing a choice-based conjoint analysis experiment is presented. In the last section, the application of choice-based conjoint analysis for allocating the responsibility for unfavorable effects of undesirable events to the contracting parties is discussed.

6.1 Principle of responsibility allocation and the types of data required for making a decision on responsibility allocation

Several principles of the allocation of responsibility to each contracting party were proposed or applied in the literature review. Since each of them has both advantages and disadvantages, there is no single principle that has been accepted unanimously by the construction industry sector. The data required for making a decision on responsibility allocation varies with the principles to be applied. Before gathering the data, it is necessary to know which principle will be applied in responsibility allocation. Since the conditions related to the responsibility for the effects of an undesirable event are parts of the contract and the contract is an agreement between the two parties, conditions related to the allocation of responsibility for such effects should be written to the satisfaction of both contracting parties (i.e. the employer and the contractor). This research, therefore, focuses on the allocation of responsibility between contracting parties based on the willingness of contracting parties to take responsibility for the effects of undesirable events.

Based on the willingness principle, the guideline for deciding which party should be responsible for each effect of the event is proposed as follows: (1) the responsibility for any effect of the event should be assigned to the party who is willing to be responsible for that effect, and (2) if no party is willing to be responsible for any effect, the party that will be assigned as responsible for that effect would be determined by comparing the amount of

risk premium that the contractor requires (RP_{con}) and the amount of extra cost that the employer is willing to pay to the contractor (WTP_{emp}). If RP_{con} is more than WTP_{emp} , the employer should be assigned as responsible for the effect. This is because assigning the responsibility to the contractor will cost the employer more than an amount that they can accept. On the other hand, if RP_{con} is less than WTP_{emp} , the contractor should be assigned as responsible for the effect. Assigning the responsibility to the contractor will cost the employer less than the amount that they expect.

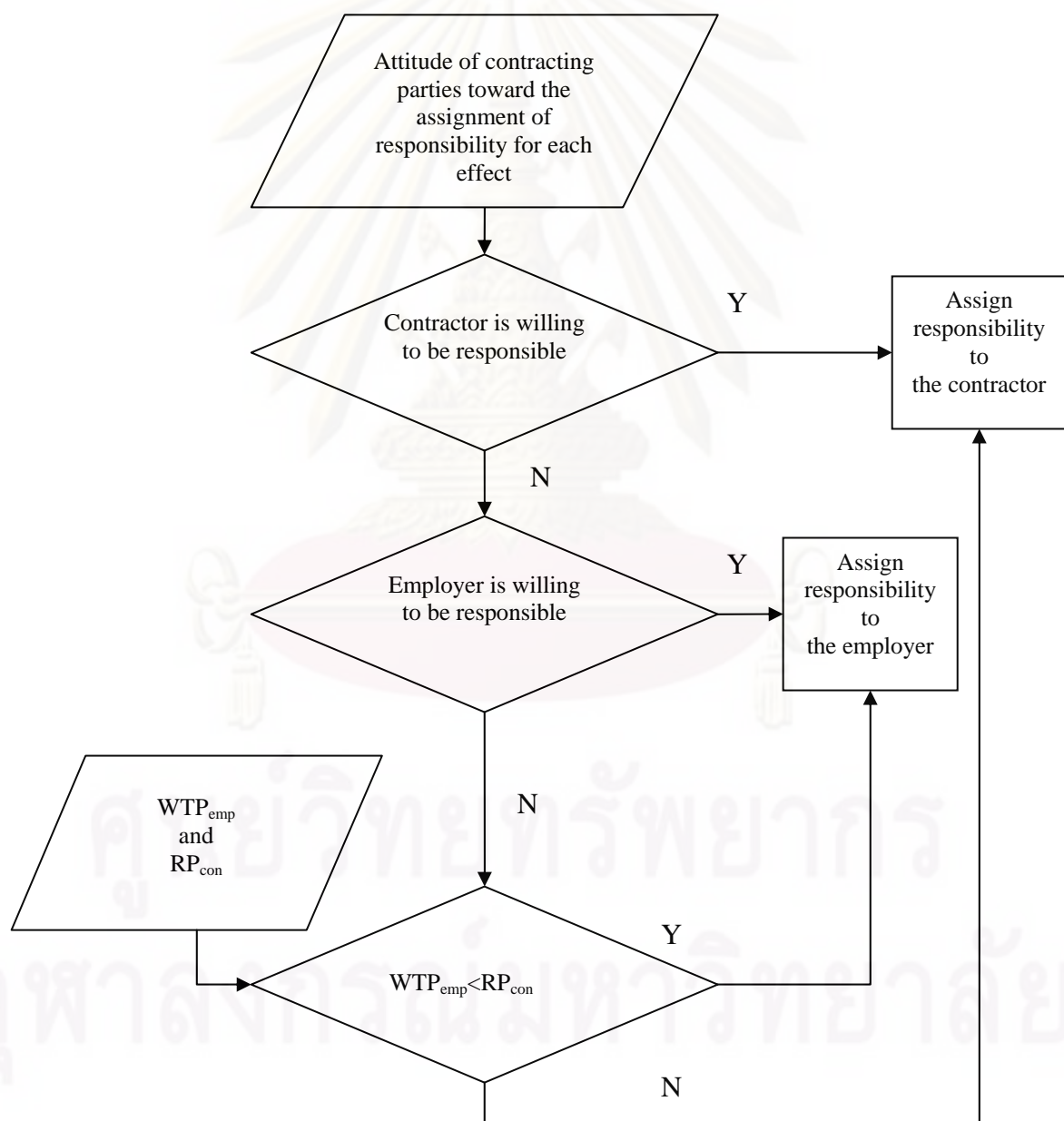


Fig 6.1.1 Framework for allocating responsibility between contracting parties

Based on the proposed guideline above, four types of data are required for considering which contracting party should be responsible for the effect of undesirable events, namely (1) the attitude of the contractor towards the assignment of their responsibility for each effect of an undesirable event, (2) the attitude of the employer towards the assignment of their responsibility for each effect, (3) the risk premium that the contractor would like to request if they are assigned the responsibility for the effect that they are unwilling to be responsible for, and (4) the extra cost that the employer is willing to pay for assigning the responsibility for each type of effects to the contractor. Fig 6.1.1 presents a framework for allocating responsibility between contracting parties based on the proposed guideline.

6.2 Direct Survey Versus Choice Based Conjoint Analysis

Research works in the past on the attitude of contracting parties towards the restriction of the right to claim for compensation (risk allocation) and towards the related risk premium applied direct survey to gather data from the study group. In the first group of research works, the contractors and employers who participated in the study were asked which contracting party, contractor or employer or both, should be responsible for consequence from each type of undesirable event (Kartam and Kartam, 2001; Rahman and Kumaraswamy, 2002; Bing et al., 2004; ANDI, 2006; El-Sayegh, 2007; and Loosemore and McCarthy, 2008). In the second group of research, the study participants were asked about the allowance that they, as a contractor, would charge the employer for the restriction of each type of the right to claim for compensation (Ashley et al., 1989; Akintoye and Macleod, 1997; Khan, 1998).

Even though direct survey can be used as a tool to gather the required data from the study participants, the results of the study, especially the data on the risk premium, is questionable. This is because the situation that the contractors were asked to assess the risk premium for restriction of the contractor's right to claim in those studies in the past do not conform to real situation in which contractors assessed the allowance to cover all the responsibility assigned in the contract as a whole based on the intuition (Tah et al., 1994; Moselhi, 1997; Bello and Odushmi, 2008).

Choice based conjoint analysis experiment is another method that has potential to provide the required data. Process of gathering data by choice base conjoint analysis experiment is different from that of the direct survey. If choice based conjoint analysis experiment is applied as an instrument for synthesizing data on the attitude of contracting parties towards the restriction of the right to claim for compensation and towards the related risk premium, each respondent will first be asked to evaluate pairs of proposals. Each of these proposals consists of conditions related to the restriction of each type of contractor's right to claim for compensation and a condition related to the risk premium. They are then asked to express their preferences by choosing the most preferred proposal out of each pair of the proposal presented. The situation on this experiment is closer to the real situation than that of the direct survey.

6.3 Choice-based conjoint analysis

A choice-based conjoint analysis, which is sometimes referred to as a discrete choice analysis, is a statistical tool that is used in several kinds of research (Hartmann and Sattler, 2002; Sawtoothsoftware, 2007). It is used not only in marketing research, but also in other fields of research such as transportation and environmental valuation (Lusk and Hudson, 2004). As for the research in civil engineering, choice-based conjoint analysis is widely utilized in transportation research. However, in the area of construction and management, choice-based conjoint analysis has only been applied by Sturts and Griffin (2005) in proposing a method of calculating the probability of winning on a bid based on multiple factors.

Choice-based conjoint analysis is one of the statistical techniques and methods designed to analyze the utility of each characteristic of each specific attribute of a product. The unique feature of choice-based conjoint analysis is that it does not require respondents to identify the degree of importance of each possible level of each specific attribute of the product. Instead, the respondents are asked to express their preferences by choosing the most preferred product (service) – one choice out of a specified choice set. Then the multinomial logit model, which is developed based on random utility theory, is used to investigate all the utility data.

6.4 Designing a choice-based conjoint experiment

The process of designing a choice-based conjoint experiment consists of four steps, namely (1) the identification of product attributes and their characteristics, (2) questionnaire design, (3) data collection, and (4) model estimate and interpretation. The details of each step are presented in the following paragraphs.

Identification of product attributes and the characteristics of each product attribute

In this step, a list of important product attributes that have major influence on the decision of the target groups to buy a product is developed. Then, the characteristics/levels of each critical attribute are listed. For example, brand, flywheel horsepower, bucket capacity, and price are factors that have influence on the decision of the target group to buy a backhoe loader. These four factors are, therefore, the four attributes of the backhoe loader products. Since there are two size of the bucket of a backhoe loader, namely 0.80 m^3 and 1.10 m^3 , these two sizes of the bucket are the two levels of the attribute bucket capacity.

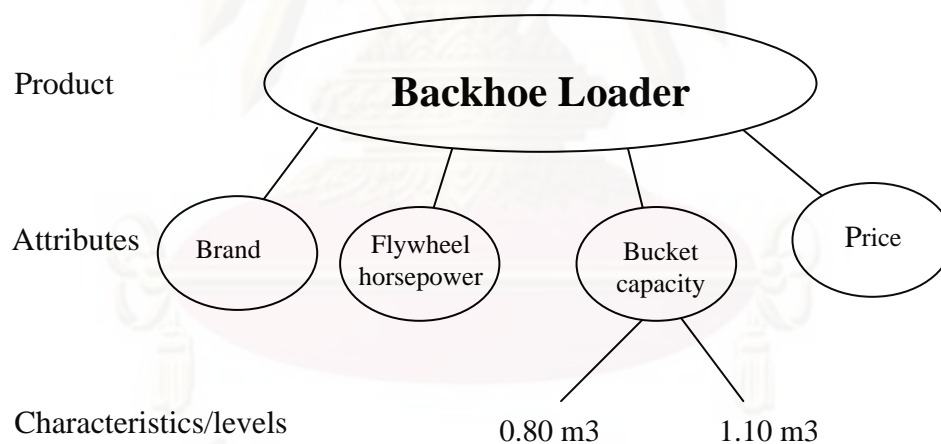


Fig 6.4.1 Four attributes of a backhoe loader and two levels of the bucket capacity attribute

Questionnaire design

In this step, hypothetical products are generated by altering the characteristics /levels of the attributes. Since the number of hypothetical products varies with the number of product attributes and their characteristics/levels, if the studied product has many attributes and each attribute has many characteristics/levels, it might be necessary to reduce the

number of hypothetical products by applying the fractional factorial design concept in this situation.

Hypothetical products, then, are grouped into choice sets that will be presented to the respondent in the data collection step. In choosing the number of choice sets and the number of hypothetical products in each choice set, it is necessary that the number of equations developed from the probability of the selection of each choice has to be no less than the total number of utility parameters.

Data collection

In this step, each respondent is presented with a choice set of hypothetical products one by one. They are, then, asked to express their preference by choosing the most preferred product out of each choice set. It is important that the total number of respondents participating in the research be more than the required minimum number. According to Rich Johnson (Orme, 1998), the required minimum number of respondents can be calculated from the equation (6.4.1).

$$\frac{nta}{c} \geq 500 \quad (6.4.1)$$

where

- n is the minimum number of respondents
- t is the number of choice sets
- a is the number of choices in each choice set
- c is the number of levels (characteristics) of each attribute

Model estimate and interpretation

The independent variable that will be used in developing the multinomial logit model is the total observable utility of each choice. This is the summation of the utility of each attribute of each choice, which can be expressed as shown in equation (6.4.2).

$$V_i = \beta_{1i}(X_{1i}) + \beta_{2i}(X_{2i}) + \beta_{3i}(X_{3i}) + \dots + \beta_{ki}(X_{ki}) \quad (6.4.2)$$

where

- V_i is the observable utility for choice i
- k is the number of the attributes of the product/service
- X_{ni} is the value of the attribute n of the choice i

β_{ni} is the utility of the attribute n of the choice i

The multinomial logit model will be developed based on the probability of selecting each choice. The probability of an individual choosing choice i out of the choice set is equal to the ratio of the (exponential of the) utility of choice i to the sum of the (exponential of) utility of all choices in the choice set. The mathematical model of the probability of selecting each choice is presented in equation (6.3.3).

$$P_n(i | C) = \frac{\exp(V(i))}{\sum_{j=1}^J \exp(V(j))} \quad (6.4.3)$$

where

$P_n(i | C)$ is the probability of an individual choosing choice i out of the choice set

$V(i)$ is the utility of choice i

J is the number of choices in the choice set

C is the choice set that the respondent is asked to evaluate

Providing the utility of each specific attribute of product/service from the model, the attitude of the respondent toward each characteristic of each attribute can be assessed. The plus or minus sign of the utility parameter reflects the attitude of the respondent. The plus sign of the parameter reflects the respondent's preference for that type of attribute characteristic. The minus sign reflects the respondent's lack of preference for that type of attribute characteristic.

Moreover, if one of the attributes is a monetary variable, the marginal rate of substitution between different attributes can also be calculated. The willingness of the respondent to pay for each specific attribute of the product /service can be calculated from equation (6.3.4).

$$WTP_n = \frac{-\beta_n}{\beta_{PRI}} \quad (6.4.4)$$

WTP_n is the monetary value that an individual is willing to pay for a unit change of attribute n

β_n is the utility of attribute n

β_{PRI} is the utility of monetary attributes

6.5 Applying choice-based conjoint analysis in synthesizing the necessary data for making a decision on the allocation of responsibility for the effects of undesirable events

Choice-based conjoint analysis is a statistical technique that can provide the utility of each characteristic of the product to the respondent. It can be applied to assess the willingness of the contracting parties to accept the assignment of responsibility for each effect of an undesirable event as presented in the following paragraphs.

The responsibility for each unfavorable effect of an undesirable event is usually assigned to each contracting party via granting or restricting the contractor's right to claim compensation. Therefore, the proposal related to the restriction of the right to claim compensation and the premium can be assumed to be the product. The attributes/conditions of the proposal can be assumed to be the product attributes and the characteristics of each specific attribute/condition of the proposal can be assumed to be the characteristics of a specific product attribute.

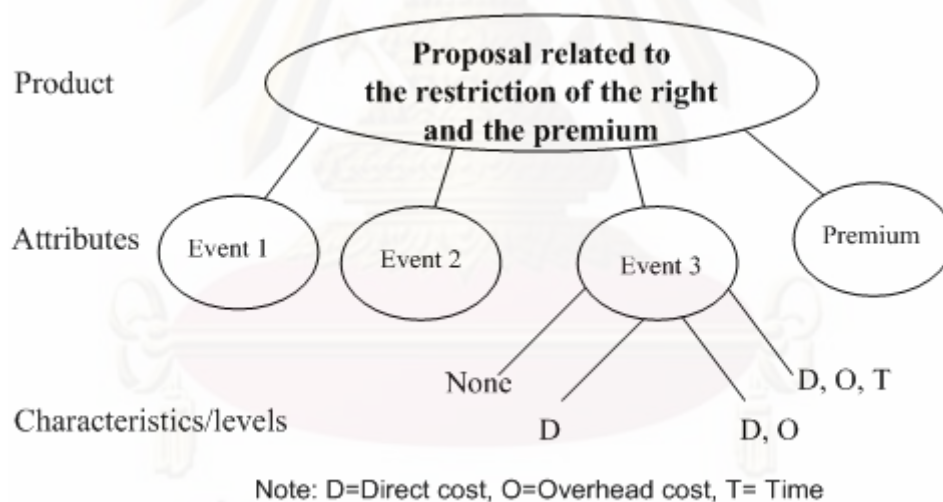


Fig 6.5.1 The proposal related to the restriction of the right and the premium

The attitude of contracting parties towards the restriction of the contractor's right to claim for compensation can be identified directly by looking at the sign of the utility value of each restriction of the claiming right. This data can be used for interpreting the attitude of contracting parties towards the assignment of responsibility for each effect of an undesirable event. If the contractor does not want their right to claim for an effect to be restricted, it certainly means that they are unwilling to be responsible for this type of the

effect. On the other hand, if the employer wants to restrict such right, it certainly means that the employer themselves do not want to be responsible for this type of the effect. They want to assign the responsibility for this type of effect to the contractor.

If the premium rate is added as one of the attributes of the proposal, the data from the choice-based conjoint analysis experiment can be used to assess the risk premium that the contractor would like to request for the assignment of their responsibility for an effect (RP_{con}). The RP_{con} can be assessed by comparing the contractor's utility of the restriction of the related right with the utility of receiving the premium. Data from the choice-based conjoint analysis experiment can also be used to assess any extra cost that employers are willing to pay for assigning the responsibility toward each type of effects to the contractors (WTP_{emp}). The WTP_{emp} can be assessed by comparing the employer's utility of restriction of the related right with the utility of paying the premium.

As mentioned above, choice-based conjoint analysis can be applied to provide all four types of data that are necessary for the decision on the allocation of responsibility. It is, therefore, an appropriate tool with the potential to be used for the synthesis of the fundamental data needed for considering which contracting party should be responsible for the effect of undesirable events.

Once the four types of required data are obtained, the responsibility allocation between contracting parties can be assigned based on the proposed guideline for considering responsibility allocation according to the willingness of each contracting party to take the responsibility, i.e. (1) assign the responsibility for an effect of an undesirable event to the party that is willing to be responsible for it, and (2) if no party wants to be responsible for the effect, determine the responsible party by comparing RP_{con} and WTP_{emp} .

6.6 Summary

The four groups of data necessary for making a decision on the allocation of responsibility toward an unfavorable effect from undesirable events to contracting parties are (1) the attitude of the contractor towards the assignment of their responsibility for each effect of a undesirable event, (2) the attitude of the employer towards the assignment of their responsibility for each effect of a undesirable event, (3) the risk premium that the contractor would like to request if they are assigned the responsibility for the effect that they are

unwilling to be responsible for, and (4) the extra cost that the employer is willing to pay for assigning the responsibility for each type of effects to the contractor. Choice-based conjoint analysis is a statistical technique that can provide the utility of each characteristic of the product to the respondent. It can be applied in synthesizing the four groups of required data. To apply a choice-based conjoint experiment in synthesizing the required data, the proposal related to the restriction of the right to claim for compensation and the premium should be assumed to be the product. The attributes/conditions of the proposal should be assumed to be the product attributes and the characteristics of each specific attribute/condition of the proposal can be assumed to be the characteristics of a specific product attribute. The attitude of contracting parties towards the restriction of the contractor's right to claim compensation can be identified directly by looking at the sign of the utility value of each restriction of the claiming right. The risk premium that the contractor would like to request and the extra cost that the employer is willing to pay can be assessed by comparing the utility of the restriction of the related right with the utility of receiving (or paying) the premium.

CHAPTER VII

SYNTHESIS OF THE DATA NECESSARY FOR MAKING DECISIONS ON THE ALLOCATION OF RESPONSIBILITY FOR THE EFFECTS OF UNDESIRABLE EVENTS

In this chapter, the application of the choice-based conjoint analysis experiment in synthesizing the data required for allocating responsibility for unfavorable effects from undesirable events is presented. This chapter is divided into 11 sections as follows: (1) the design of the choice-based conjoint experiment, (2) sampling and data collection, (3) the response rate of Thai government organizations and Thai contractors to each choice, (4) the multinomial logit model, (5) the attitude of Thai contractors towards the restriction of the right to claim compensation, (6) the risk premium that Thai contractors would request, (7) the attitude of Thai government organizations towards the restriction of the contractor's right to claim compensation, (8) the extra cost that Thai government organizations are willing to pay, and (9) the summary of this chapter.

7.1 The design of the choice-based conjoint experiment

There are two steps in designing the choice-based conjoint experiment to synthesize the data required for making decisions on allocating the responsibility for the unfavorable effects of undesirable events, namely (1) identify the proposal attributes and their characteristics, and (2) design the questionnaire. The details of each step are presented in the following paragraphs of this section.

Identify the proposal attributes and their characteristics

This research studied the responsibilities of the contracting parties for the effects of five types of undesirable events, namely (1) force majeure such as a hurricane, a flood, etc., (2) the ineffective performance of the employer such as a delay in the approval of submittal, (3) interference of the work by the employer's action such as giving an order to suspend the project, and occupying the construction area within the site, (4) differing site conditions such as experiencing an existing underground foundation in the construction area, and (5) change in the scope of work such as the employer giving an order to increase the quantity of the work. Therefore, the proposal to be studied in this study consisted of six attributes.

The first five attributes are conditions related to the restriction of the contractor's right to claim compensation for the consequences of these five events, and the last attribute is a condition related to the premium rate that the contractor receives if each of their claiming rights is restricted.

This research focuses on three types of restrictions. The characteristics of the restrictions are as follows: (1) the restriction of the contractor's right to claim for an increase in direct costs, (2) the restriction of the contractor's right to claim for an increase in overhead cost, and (3) the restriction of the contractor's right to claim for an extension of construction duration. The four levels of the restriction of the right to claim for the consequences of each undesirable event were derived from the approaches widely used in the Thai construction industry. The details of the combination of these three characteristics of restriction with the four levels of restriction is presented in Table 7.1.1. In this study, the premium rate was also categorized into four levels, ranging from 0.25% to 1.00% of the project direct cost. The full list of the premium rate and the characteristics of the premium rates are presented in Table 7.1.1.

Table 7.1.1 List of the proposal attributes and the characteristics of each attribute

	List of the attributes of the proposal	Parameter representing the restriction/premium
First attribute:	Restriction of the contractor's right to claim compensation for the consequences of force majeure	
First level:	No restriction of the contractor's claiming right	-
Second level:	Restriction of the contractor's right to claim for an increase in direct costs	FORD
Third level:	Restriction of the contractor's right to claim for an increase in direct costs and an increase in overhead costs	FORD, FORO
Fourth level:	Restriction of the contractor's right to claim for an increase in direct costs, an increase in overhead costs and an extension of construction duration	FORD, FORO, FORT

Table 7.1.1(continued) List of the proposal attributes and the characteristics of each attribute

	List of the attributes of the proposal	Parameter representing the restriction/premium
Second attribute:	Restriction of the contractor's right to claim compensation for the consequences of the ineffective performance of the employer	
First level:	No restriction of the contractor's claiming right	-
Second level:	Restriction of the contractor's right to claim for an increase in direct costs	IEFD
Third level:	Restriction of the contractor's right to claim for an increase in direct costs and an increase in overhead costs	IEFD, IEFO
Fourth level:	Restriction of the contractor's right to claim for an increase in direct costs, an increase in overhead costs and an extension of construction duration	IEFD, IEFO, IEFT
Third attribute:	Restriction of the contractor's right to claim compensation for the consequences of the interference of the work by the employer's action	
First level:	No restriction of the contractor's claiming right	-
Second level:	Restriction of the contractor's right to claim for an increase in overhead cost	OBSO
Third level:	Restriction of the contractor's right to claim for an increase in direct costs and an increase in overhead costs	OBSD, OBSO
Fourth level:	Restriction of the contractor's right to claim for an increase in direct costs, an increase in overhead costs and an extension of construction duration	OBSD, OBSO, OBST
Fourth attribute:	Restriction of the contractor's right to claim compensation for the consequences of differing site conditions	
First level:	No restriction of the contractor's claiming right	-
Second level:	Restriction of the contractor's right to claim for an increase in overhead costs	DIFO
Third level:	Restriction of the contractor's right to claim for an increase in direct costs and an increase in overhead costs	DIFD, DIFO
Fourth level:	Restriction of contractor's right to claim for an increase in direct costs, an increase in overhead costs and an extension of construction duration	DIFD, DIFO, DIFT

Table 7.1.1(continued) List of the proposal attributes and the characteristics of each attribute

	List of the attributes of the proposal	Parameter representing the restriction/premium
Fifth attribute:	Restriction of the contractor's right to claim compensation for the consequences of change in the scope of work	
First level:	No restriction of the contractor's claiming right	-
Second level:	Restriction of the contractor's right to claim for an increase in overhead costs	CHAO
Third level:	Restriction of the contractor's right to claim for an extension of construction duration	CHAT
Fourth level:	Restriction of the contractor's right to claim for an increase in overhead costs and an extension of construction duration	CHAO, CHAT
Sixth attribute:	Premium rate that has to be paid to the contractor/to be received from the employer	PRE
First level:	1.00 % of total project direct cost	
Second level:	0.75 % of total project direct cost	
Third level:	0.50 % of total project direct cost	
Fourth level:	0.25 % of total project direct cost	

Questionnaire design

The questionnaire was divided into two parts. In the first part, each respondent was asked to give general information about themselves, such as years of experience, level of education, etc. In the second part, they were asked to evaluate the hypothetical proposals related to the restriction of the contractor's claiming right and the amount of premium received (or to be paid) as compensation for the restriction, and to choose their most preferred choice of each choice set.

The development of the second part of the questionnaire began with determining the number of proposals to be considered. Since there are four levels of conditions for each proposal attribute, a total of $4^6 = 4,096$ proposals can be developed. It is seemingly impossible to ask respondents to evaluate all these proposals; therefore, a fractional factorial design was used to reduce the number of hypothetical proposals to be evaluated by respondents. To make sure that 100% D-efficiency would be acquired, SAS ver. 9.0 was used to develop and determine the number of proposals. The results from running macro mktrun of SAS software revealed that the appropriate number of proposals is 48. All 48 proposals were then generated by macro mktex of SAS software.

To develop the multinomial logit model, it is necessary that the number of available equations be more than the number of parameters. In this research, there were 15 ($3 \times 4 + 2 + 1$) utility parameters. Therefore, all of the 48 proposals were paired up in 24 choice sets. This provided 24 equations which is more than the 15 utility parameters. However, it was taken into account that the respondents might feel uninterested and become inattentive when asked to evaluate a large number of choice sets (Hensher et al., 2005). To avoid such an effect in their responses, this research divided the 24 choice sets into two groups. Each group consisted of 12 choice sets; each respondent was asked to respond to only one group of the 12 choice sets. An example of a choice set presented to the respondents in identifying the most preferred proposal is presented in Fig 7.1.1. The first group of the 12 choice sets was included in the questionnaires C21 and O21 and the second group of the the 12 choice sets was included in the questionnaires C22 and O22. Questionnaires C21 and C22 would be completed by Thai contractors and Questionnaires O21 and O22 by Thai government organizations. The details of each group of 12 choice sets included in each questionnaire can be found in Appendices D and E.

Choice set 1

Conditions related to the restriction of the contractor's right to claim compensation for the consequences of each event		First proposal	Second proposal
Force majeure such as a hurricane, a flood, etc.	An increase in direct cost	Restriction	Restriction
	An increase in overhead cost	Restriction	No restriction
	An extension of construction duration	No restriction	No restriction
Ineffective performances of the employer such as delay in approval of submittal	An increase in direct cost	Restriction	No restriction
	An increase in overhead cost	Restriction	No restriction
	An extension of construction duration	No restriction	No restriction
Interference with the work by the employer's actions such as project suspension order	An increase in direct cost	Restriction	No restriction
	An increase in overhead cost	Restriction	No restriction
	An extension of construction duration	Restriction	No restriction
Differing site conditions such as experiencing an existing underground foundation	An increase in direct cost	Restriction	No restriction
	An increase in overhead cost	Restriction	No restriction
	An extension of construction duration	No restriction	No restriction
Change in the scope of work such as ordering additional work	An increase in direct cost	No restriction	No restriction
	An increase in overhead cost	Restriction	No restriction
	An extension of construction duration	No restriction	Restriction
Premium rate that has to be paid to the contractor		0.25%	0.75%
Please identify your most preferred proposal of the two by marking X in the block		First proposal <input type="checkbox"/>	Second proposal <input type="checkbox"/>

Fig 7.1.1 Example of a choice set presented to the respondents

7.2 Sampling and data collection

Sampling and data collection process

The process of sampling and data collection is described in chapter 4. This part of the research study was carried out during June-August 2008. The questionnaires together with return envelopes were sent to each organization/company that was selected. The number of questionnaires that were sent varied with the size of the organization/company. Each organization/company was asked to deliver the questionnaires to its employees who worked in the position of construction supervisor or higher to answer the questionnaire.

Rate of response

Information about the organizations/companies, and the number of their personnel to whom the questionnaires were distributed, and the number of respondents are presented in Table 7.2.1.

Table 7.2.1 The number of organizations/companies and their personnel to whom the questionnaires were distributed and the numbers of respondents

No	Type of organization /company	No. of org./co.		No. of personnel		No. of questionnaires that met the inclusion criteria
		to whom questionnaires were distributed	responding to the questionnaire	to whom questionnaires were distributed	responding to the questionnaire	
1	Thai government organizations					
1.1	Public universities	23	17	60	32	32
1.2	Division of Highway Department	54	50	253	144	137
1.3	Division of Irrigation Department	10	9	40	23	23
1.3	Local administration units	64	53	198	98	97
1.5	Construction consulting companies	40	15	123	30	28
	Total	191	144	674	327	317
2.	Thai contractors					
2.1	Limited partnership	32	8	70	19	17
2.2	Company limited	52	21	365	68	62
2.3	Public company	4	3	40	15	15
	Total	88	32	475	102	94

The total number of returned questionnaires from the personnel of Thai government organizations and from the personnel of contractors that met the inclusion criteria in this research were 317 and 94 respectively. The number of samples from each group was more than the minimum number of respondents required for the study. According to equation (6.4.1), the minimum number of respondents required is 84.

7.3 The response rate of Thai government organizations and Thai contractors to each choice

The response rates of Thai government organizations and of Thai contractors to each choice of the choice sets in questionnaires O21 and C21 are presented in Table 7.3.1. Table 7.3.2 shows the response rate of respondents to each choice of the choice sets in questionnaires O22 and C22.

Table 7.3.1 The response rate of Thai government organizations and Thai contractors to questionnaires O21 and C21

No.	Thai gov. organizations		Thai contractors	
	Proposal1	Proposal 2	Proposal1	Proposal 2
1	109	41	13	18
2	88	59	7	24
3	97	48	12	19
4	85	59	15	16
5	107	39	15	16
6	100	46	16	15
7	106	37	18	13
8	85	57	11	20
9	81	63	11	20
10	99	46	18	13
11	102	43	21	10
12	101	43	21	10

Table 7.3.2 The response rate of Thai government organizations and Thai contractors to questionnaires O22 and C22

No.	Thai gov. organizations		Contractors	
	Proposal1	Proposal 2	Proposal1	Proposal 2
1	122	42	10	21
2	83	79	18	13
3	71	90	7	56
4	75	86	6	57
5	65	97	5	58
6	105	57	9	54
7	83	78	8	55
8	114	47	13	50
9	113	49	10	51
10	87	75	23	38
11	86	75	19	44
12	96	65	14	49

7.4 Multinomial logit model

The independent variable that will be used in developing the multinomial logit model is the total observable utility of each proposal. This is the summation of the utility of each attribute of each choice. In this case, as presented in equations (7.4), there are a total of 15 utility parameters in the equation that needed to be evaluated. These parameters consisted of 14 utility parameters related to the restriction of the contractor's right to claim compensation and the other parameter related to premium rate.

$$\begin{aligned}
 V(i) = & \beta_{\text{FORD}} (\text{FORD}) + \beta_{\text{FORO}} (\text{FORO}) + \beta_{\text{FORT}} (\text{FORT}) + \\
 & \beta_{\text{IEFD}} (\text{IEFD}) + \beta_{\text{IEFO}} (\text{IEFO}) + \beta_{\text{IEFT}} (\text{IEFT}) + \\
 & \beta_{\text{DIFD}} (\text{DIFD}) + \beta_{\text{DIFO}} (\text{DIFO}) + \beta_{\text{DIFT}} (\text{DIFT}) + \\
 & \beta_{\text{INTD}} (\text{INTD}) + \beta_{\text{INTO}} (\text{INTO}) + \beta_{\text{INTT}} (\text{INTT}) + \\
 & \beta_{\text{CHAO}} (\text{CHAO}) + \beta_{\text{CHAT}} (\text{CHAT}) + \beta_{\text{PRE}} (\text{PRE})
 \end{aligned} \tag{7.4}$$

Based on the response rate of Thai government organizations and Thai contractors to each choice and equation (6.4.3), a total of 24 equations of probability to select each choice can be developed. Equations of the Thai contractors are equation (7.4.1) to equation (7.4.24).

$$\frac{13}{13+18} = \frac{e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*0.25}}{e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*0.25} + e^{\beta_{\text{FORD}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.75}} \quad (7.4.1)$$

$$\frac{7}{7+24} = \frac{e^{\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{IEFT}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.25}}{e^{\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{IEFT}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.25} + e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{INTO}}+\beta_{\text{PRE}}*1.00}} \quad (7.4.2)$$

$$\frac{12}{12+19} = \frac{e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{FORT}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{IEFT}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{PRE}}*0.50}}{e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{FORT}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{IEFT}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{PRE}}*0.50} + e^{\beta_{\text{IEFD}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{INTO}}+\beta_{\text{CHAO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*1.00}} \quad (7.4.3)$$

$$\frac{15}{15+16} = \frac{e^{\beta_{\text{FORD}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{PRE}}*0.75}}{e^{\beta_{\text{FORD}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{PRE}}*0.75} + e^{\beta_{\text{IEFD}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*1.00}} \quad (7.4.4)$$

$$\frac{15}{15+16} = \frac{e^{\beta_{\text{FORD}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{CHAO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.50}}{e^{\beta_{\text{FORD}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{CHAO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.50} + e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{FORT}}+\beta_{\text{IEFD}}+\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*0.75}} \quad (7.4.5)$$

$$\frac{16}{16+15} = \frac{e^{\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.50}}{e^{\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{DIFT}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*0.50} + e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{FORT}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{DIFO}}+\beta_{\text{INTO}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*1.00}} \quad (7.4.6)$$

$$\frac{18}{18+13} = \frac{e^{\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*0.50}}{e^{\beta_{\text{DIFD}}+\beta_{\text{DIFO}}+\beta_{\text{INTD}}+\beta_{\text{INTO}}+\beta_{\text{INTT}}+\beta_{\text{CHAO}}+\beta_{\text{PRE}}*0.50} + e^{\beta_{\text{FORD}}+\beta_{\text{FORO}}+\beta_{\text{FORT}}+\beta_{\text{IEFD}}+\beta_{\text{IEFO}}+\beta_{\text{CHAT}}+\beta_{\text{PRE}}*1.00}} \quad (7.4.7)$$

$$(7.4.8)$$

Equations of the Thai government organizations are equation (7.4.25) to equation (7.4.48).

$$\frac{109}{109 + 41} = \frac{e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 0.25}}{e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 0.25} + e^{\beta_{\text{FORD}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.75}} \quad (7.4.25)$$

$$\frac{88}{88 + 59} = \frac{e^{\beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{IEFT}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.25}}{e^{\beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{IEFT}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.25} + e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{INTO}} + \beta_{\text{PRE}} * 1.00}} \quad (7.4.26)$$

$$\frac{97}{97 + 48} = \frac{e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{FORT}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{IEFT}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{PRE}} * 0.50}}{e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{FORT}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{IEFT}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{PRE}} * 0.50} + e^{\beta_{\text{IEFD}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{INTO}} + \beta_{\text{CHAO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 1.00}} \quad (7.4.27)$$

$$\frac{85}{85 + 59} = \frac{e^{\beta_{\text{FORD}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{PRE}} * 0.75}}{e^{\beta_{\text{FORD}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{PRE}} * 0.75} + e^{\beta_{\text{IEFD}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 1.00}} \quad (7.4.28)$$

$$\frac{107}{107 + 39} = \frac{e^{\beta_{\text{FORD}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{CHAO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.50}}{e^{\beta_{\text{FORD}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{CHAO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.50} + e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{FORT}} + \beta_{\text{IEFD}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 0.75}} \quad (7.4.29)$$

$$\frac{100}{100 + 46} = \frac{e^{\beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.50}}{e^{\beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{DIFT}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.50} + e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{FORT}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{DIFO}} + \beta_{\text{INTO}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 1.00}} \quad (7.4.30)$$

$$\frac{106}{106 + 37} = \frac{e^{\beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 0.50}}{e^{\beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{PRE}} * 0.50} + e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{FORT}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 1.00}} \quad (7.4.31)$$

$$\frac{85}{85 + 57} = \frac{e^{\beta_{\text{FORD}} + \beta_{\text{IEFD}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.25}}{e^{\beta_{\text{FORD}} + \beta_{\text{IEFD}} + \beta_{\text{INTD}} + \beta_{\text{INTO}} + \beta_{\text{INTT}} + \beta_{\text{CHAO}} + \beta_{\text{CHAT}} + \beta_{\text{PRE}} * 0.25} + e^{\beta_{\text{FORD}} + \beta_{\text{FORO}} + \beta_{\text{IEFD}} + \beta_{\text{IEFO}} + \beta_{\text{IEFT}} + \beta_{\text{DIFD}} + \beta_{\text{DIFO}} + \beta_{\text{PRE}} * 0.75}} \quad (7.4.32)$$

$$\frac{65}{65 + 97} = \frac{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{CHAO} + \beta_{PRE} * 0.25}}{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{CHAO} + \beta_{PRE} * 0.25} + e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{INTO} + \beta_{PRE} * 0.50}} \quad (7.4.41)$$

$$\frac{105}{105 + 57} = \frac{e^{\beta_{FORD} + \beta_{FORO} + \beta_{IEFD} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{INTD} + \beta_{INTO} + \beta_{INTT} + \beta_{PRE} * 0.50}}{e^{\beta_{FORD} + \beta_{FORO} + \beta_{IEFD} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{INTD} + \beta_{INTO} + \beta_{INTT} + \beta_{PRE} * 0.50} + e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{DIFO} + \beta_{CHAO} + \beta_{CHAT} + \beta_{PRE} * 1.00}} \quad (7.4.42)$$

$$\frac{83}{83 + 78} = \frac{e^{\beta_{FORD} + \beta_{FORO} + \beta_{FORT} + \beta_{INTD} + \beta_{INTO} + \beta_{CHAO} + \beta_{PRE} * 0.25}}{e^{\beta_{FORD} + \beta_{FORO} + \beta_{FORT} + \beta_{INTD} + \beta_{INTO} + \beta_{CHAO} + \beta_{PRE} * 0.25} + e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{DIFD} + \beta_{DIFO} + \beta_{INTO} + \beta_{CHAT} + \beta_{PRE} * 0.75}} \quad (7.4.43)$$

$$\frac{114}{114 + 47} = \frac{e^{\beta_{FORD} + \beta_{FORO} + \beta_{IEFD} + \beta_{DIFO} + \beta_{INTO} + \beta_{CHAO} + \beta_{PRE} * 0.50}}{e^{\beta_{FORD} + \beta_{FORO} + \beta_{IEFD} + \beta_{DIFO} + \beta_{INTO} + \beta_{CHAO} + \beta_{PRE} * 0.50} + e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{INTD} + \beta_{INTO} + \beta_{INTT} + \beta_{CHAO} + \beta_{CHAT} + \beta_{PRE} * 0.75}} \quad (7.4.44)$$

$$\frac{113}{113 + 49} = \frac{e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{CHAO} + \beta_{PRE} * 0.50}}{e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{CHAO} + \beta_{PRE} * 0.50} + e^{\beta_{FORD} + \beta_{FORO} + \beta_{FORT} + \beta_{IEFD} + \beta_{DIFD} + \beta_{DIFO} + \beta_{INTD} + \beta_{INTO} + \beta_{CHAO} + \beta_{CHAT} + \beta_{PRE} * 0.75}} \quad (7.4.45)$$

$$\frac{87}{87 + 75} = \frac{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{INTO} + \beta_{PRE} * 0.25}}{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{INTO} + \beta_{PRE} * 0.25} + e^{\beta_{FORD} + \beta_{FORO} + \beta_{DIFO} + \beta_{INTD} + \beta_{INTO} + \beta_{INTT} + \beta_{CH}} \quad (7.4.46)$$

$$\frac{86}{86 + 75} = \frac{e^{\beta_{FORD} + \beta_{FORO} + \beta_{FORT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{PRE} * 0.25}}{e^{\beta_{FORD} + \beta_{FORO} + \beta_{FORT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{PRE} * 0.25} + e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{DIFT} + \beta_{INTD} + \beta_{INTO} + \beta_{CHAT} + \beta_{PRE} * 1.00}} \quad (7.4.47)$$

$$\frac{96}{96 + 65} = \frac{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{DIFO} + \beta_{INTD} + \beta_{INTO} + \beta_{PRE} * 0.75}}{e^{\beta_{IEFD} + \beta_{IEFO} + \beta_{DIFO} + \beta_{INTD} + \beta_{INTO} + \beta_{PRE} * 0.75} + e^{\beta_{FORD} + \beta_{IEFD} + \beta_{IEFO} + \beta_{IEFT} + \beta_{DIFD} + \beta_{DIFO} + \beta_{INTD} + \beta_{INTO} + \beta_{INTT} + \beta_{CHAO} + \beta_{PRE} * 1.00}} \quad (7.4.48)$$

The value of each of the 15 utility parameters was developed based on equations of probability to select each choice of Thai government organizations and Thai contractors by apply SAS Ver.9. The value of each of the 15 utility parameters of Thai government organizations and Thai contractors are presented in Table 7.4.1

Table 7.4.1 Value of each utility parameter related to the restriction of the contractor's claiming right and premium rate

Parameter	Description of parameter	Contractor	Gov. organization
β_{FORD}	Utility of the restriction of the right to claim for an increase in direct costs due to force majeure	-0.118 (0.6538)	0.224* (8.2772)
β_{FORO}	Utility of the restriction of the right to claim for an increase in overhead costs due to force majeure	0.098 (0.4475)	0.176* (5.9716)
β_{FORT}	Utility of the restriction of the right to claim for an extension of construction duration due to force majeure	-0.855* (27.3107)	-0.713* (82.9454)
β_{IEFD}	Utility of the restriction of the right to claim for an increase in direct costs due to the employer's ineffective performance	-0.253*** (2.9887)	-0.005 (0.0041)
β_{IEFO}	Utility of the restriction of the right to claim for an increase in overhead costs due to the employer's ineffective performance	-0.081 (0.4223)	0.096 (2.0937)
β_{IEFT}	Utility of the restriction of the right to claim for an extension of construction duration due to the employer's ineffective performance	-0.084 (0.3323)	-0.105 (2.1137)
β_{INTD}	Utility of the restriction of the right to claim for an increase in direct costs due to the employer's interference action	0.003 (0.0005)	0.093 (1.6984)
β_{INTO}	Utility of the restriction of the right to claim for an increase in overhead costs due to the employer's interference action	-0.059 (0.1581)	0.141*** (3.4713)
β_{INTT}	Utility of the restriction of the right to claim for an extension of construction duration due to the employer's interference action	0.150 (0.9945)	-0.118 (2.4383)

Ward Chi-Square in parentheses

*Significant at the 0.01 level, **Significant at the 0.05 level, ***Significant at the 0.10 level

Table 7.4.1 (continued) Value of each utility parameter related to the restriction of the contractor's claiming right and the premium rate

Parameter	Description of parameter	Contractor	Gov. organization
β_{DIFD}	Utility of the restriction of the right to claim for an increase in direct costs because of differing site conditions	0.081 (0.3201)	-0.159** (4.4816)
β_{DIFO}	Utility of the restriction of the right to claim for an increase in overhead costs due to differing site conditions	-0.041 (0.0940)	0.213* (10.5642)
β_{DIFT}	Utility of the restriction of the right to claim for an extension of construction duration due to differing site conditions	-0.925* (54.2874)	-0.022 (0.1129)
β_{CHAO}	Utility of the restriction of the right to claim for an increase in overhead costs due to change in the scope of work	-0.196** (3.6970)	-0.087*** (3.1500)
β_{CHAT}	Utility of restriction of the right to claim for an extension of construction duration due to change in the scope of work	-0.103 (1.1893)	-0.041 (0.8290)
β_{PRE}	Utility of paying premium rate in proportion to the total project direct cost.	1.603* (81.5022)	-1.070* (157.8844)

Ward Chi-Square in parentheses

*Significant at the 0.01 level, **Significant at the 0.05 level, ***Significant at the 0.10 level

7.5 Attitude of Thai contractors towards the restriction of the right to claim compensation

The attitude of Thai contractors towards the restriction of each claiming right can be interpreted from the sign of each utility parameter. The values of utility parameters related to 10 types of restrictions of the right to claim for the effects of 5 types of undesirable events had a minus sign (Table 7.4.1). This means that Thai contractors who participated in this study were not satisfied with the restriction of these types of their rights to claim compensation. In other words, they did not want to be responsible for these types of effects.

The values of the utility parameter of the remaining rights had a plus sign. This means that Thai contractors who participated in this study agreed that these types of claiming right should be restricted. In other words, they did not mind being responsible for these types of effects.

The data in Table 7.4.1 revealed that, in the case of force majeure, Thai contractors who participated in this study did not want their rights to claim for an increase in direct cost, and for an extension of construction duration to be restricted. However, they did not mind the restriction of their right to claim for an increase in overhead costs due to force majeure.

In the case of the employer's ineffective performance, Thai contractors did not want all three types of their related claiming rights to be restricted.

In the case of the employer's interference action, Thai contractors did not want their right to claim for an increase in overhead costs to be restricted. However, Thai contractors did not mind the restriction of their rights to claim for an increase in direct costs and for an extension of construction duration due to the employer's interference action.

In the case of differing site conditions, Thai contractors did not want their rights to claim for an increase in overhead cost, and for an extension of construction duration to be restricted. However, they did not mind the restriction of their right to claim for an increase in direct costs due to differing site conditions.

Finally, in the case of the employer's order to change the scope of work, Thai contractors did not want their rights to claim for an increase in overhead costs and for an extension of construction duration to be restricted.

The results of the analysis revealed that Thai contractors were not really concerned about the effects of the employer's interference action. The results revealed that Thai contractors did not mind the restriction of their rights to claim for an increase in direct costs and for an extension of construction duration due to the employer's interference action (β_{INTD} and β_{INTT} are more than 0). Besides, their desire to have the right to claim for an increase in direct costs was not high (β_{INTO} is less than 0 but it is very close to 0). It is possible that Thai contractors held this optimistic attitude towards the responsibility for effects due to the employer's interference action because Thai government organizations rarely interfere with

the construction operations of the contractors. Thai contractors, therefore, consider the risk related to the employer's interference action to be very low and acceptable.

According to the data from the study on the attitudes of Thai contractors, it can be said that Thai contractors are very concerned about their right to claim for an extension of construction time due to undesirable events. Thai contractors did not want their right to claim for an extension of the construction duration due to all types of undesirable events (except the employer's interference action) to be restricted. It is possible that Thai contractors were concerned about these because they would have to pay a very high fine rate if they could not finish their work on time. The daily fine rate of a Thai government construction project normally ranges from 0.01% to 0.1% of the contract price.

As for the issue of the rights to claim for an increase in direct costs and for an increase in overhead costs due to undesirable events, it can be seen that Thai contractors did not mind the restriction of their right to claim for an increase in direct costs due to differing site conditions and their right to claim for an increase in overhead costs due to force majeure. This may be because Thai contractors realized that it was difficult to assess the effect of differing site conditions on direct costs quantitatively. Besides, the responsibility for an increase in direct costs due to differing site conditions is usually assigned to contractors. Thai contractors therefore included the risk of an increase in direct costs due to differing site conditions in the direct costs of the project. As for the attitude towards an increase in overhead costs due to force majeure, it is possible that Thai contractors held an optimistic attitude because they thought the effects of force majeure on overhead costs are minimal.

Ranking of the importance of each type of right to claim compensation

The level of preference of the respondents for each characteristic of product attributes can be assessed from the value of the utility parameter related to them and comparing the value of the related parameter. A low value of utility parameter (high minus values) indicates that Thai contractors did not want this type of right to be restricted; in other words this type of claiming right was very important to them.

The types of right to claim that the Thai contractors did not want to be restricted can be ranked according to the level of the contractor's dissatisfaction with the restriction of the right as presented in Table 7.5.1.

Table 7.5.1 Ranking of the claiming right by the level of the contractor's dissatisfaction with the restriction of the right

Ranking	Description
1	The right to claim for an extension of construction duration due to differing site conditions
2	The right to claim for an extension of construction duration due to force majeure
3	The right to claim for an increase in direct costs due to the employer's ineffective performance
4	The right to claim for an increase in overhead costs due to change in the scope of work
5	The right to claim for an increase in direct costs due to force majeure
6	The right to claim for an extension of construction duration due to change in the scope of work
7	The right to claim for an extension of construction duration due to the employer's ineffective performance
8	The right to claim for an increase in overhead costs due to the employer's ineffective performance
9	The right to claim for an increase in overhead costs due to the employer's interference action
10	The right to claim for an increase in overhead costs due to differing site conditions

Comparison of the attitudes of Thai contractors revealed by the choice-based conjoint analysis with those revealed by the direct survey

The results from the comparison of attitudes of Thai contractors revealed by the choice-based conjoint analysis with those revealed by the direct survey are as follows:

The attitude of Thai contractors towards the allocation of responsibility for an increase in overhead costs and for an increase in construction duration due to force majeure revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. The data from the analysis indicated that Thai contractors did not mind being responsible for the increase in overhead costs while the data from the survey revealed that Thai contractors thought they should not be able to claim for this type of effect (Table I.4.4.2 No.1.3). Besides, the analysis data indicated that Thai contractors did not want to be responsible for an increase in construction duration while the survey data revealed that Thai contractors thought they should be able to claim for this type of effect (Table I.4.4.2 No.1.1). The results of the studies on the attitudes towards the responsibility for an increase in direct costs by these two methods, however, were not consistent. The data from the choice-based conjoint analysis indicated that Thai contractors did not want to be responsible for this type of effect. On the other hand, the data from the direct survey revealed that Thai contractors thought they should not be able to claim for an increase in direct costs due to force majeure (Table I.4.4.2 No.1.2). From these data, it can be interpreted that Thai contractors expected and accepted the assignment of the responsibility for an increase in overhead costs due to force majeure. On the other hand, they did not expect to be responsible for an increase in construction duration and they would charge the responsibility premium to the Thai government organization if assigned the responsibility. As for the responsibility for an increase in direct costs due to force majeure, Thai contractors expected that they would be unable to claim for the increase in direct costs from Thai government organizations. Therefore, they would include the extra cost to cover this type of risk in the project direct cost.

The attitude of Thai contractors towards the allocation of responsibility for the three types of effects due to the employer's ineffective performance revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. The data from the analysis indicated that Thai contractors did not want to be responsible for all three types of effects while the survey data revealed that Thai contractors thought they should be able to claim for these types of effects (Table I.4.5.2 Nos.4.1-4.3). It can be interpreted from these data that Thai contractors did not expect to be responsible for these types of effect and they

would charge the responsibility premium to the Thai government organizations if they were assigned to be responsible for these types of effect.

The attitude of Thai contractors towards the allocation of responsibility for an increase in overhead costs due to the employer's interference actions revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. The data from the analysis indicated that Thai contractors did not want to be responsible for the increase in overhead costs while the data from the survey revealed that Thai contractors thought they should be able to claim for it (Table I.4.7.2 No. 3.3). However, the results of the studies on the attitudes towards the responsibility for an increase in direct costs and for an increase in construction duration by the two methods were not consistent. The data from the choice-based conjoint analysis indicated that Thai contractors did not mind being responsible for the increase in direct costs and the increase in construction time but the data from the direct survey revealed that the Thai contractors thought the Thai government organizations should be responsible for these effects (Table I.4.7.2 Nos. 3.1, 3.2). From these data, it can be interpreted that Thai contractors did not expect to be responsible for an increase in overhead costs due to the employer's interference actions and they would charge the responsibility premium to Thai government organizations if they were assigned to be responsible for the increase in direct cost. As for the responsibility for an increase in direct costs and for an increase in construction duration, Thai contractors thought the responsibility for these types of effect should be assigned to Thai government organizations. However, since they thought the risk related to these types of effect is minimal, the contractors did not mind being assigned responsibility for them.

The attitudes of Thai contractors towards the allocation of responsibility for an increase in overhead costs and for an increase in construction duration due to differing site conditions revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. The data from the analysis indicated that Thai contractors did not want to be responsible for the increase in overhead costs and for the increase in construction duration while the data from the survey revealed that Thai contractors thought they should be able to claim for these effects (Table I.4.6.2 Nos.1.1, 1.3). However, the results from the studies on the attitudes towards the responsibility for an increase in direct costs by the two methods were not consistent. The data from the analysis indicated that Thai

contractors did not mind being responsible for the increase in direct costs whereas the data from the survey revealed that Thai contractors thought Thai government organizations should be responsible this type of the effect (Table I.4.6.2 No.1.2). It can be interpreted from these data that Thai contractors did not expect to be responsible for an increase in overhead costs and for an increase in construction duration due to differing site conditions and they would charge the responsibility premium to Thai government organizations if assigned to be responsible for these effects. As for the responsibility for an increase in direct cost, Thai contractors thought the responsibility for this type of effect should be assigned to Thai government organizations. However, the Thai contractors were aware that this type of responsibility is usually assigned to contractors and they therefore included this type of risk in the direct costs of the project.

The attitudes of Thai contractors towards the allocation of responsibilities for an increase in overhead costs and for an increase in construction duration due to the employer's order to change the scope of the work revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. The data from the analysis indicated that Thai contractors did not want to be responsible for these two types of effect while the data from the survey revealed that Thai contractors thought they should be able to claim for these types of effect (Table I.4.8.3 Nos.1.1,1.3). From these data, it can be interpreted that Thai contractors did not expect to be responsible for these types of effect and they would charge the responsibility premium to the Thai government organizations if they were assigned to be responsible for these types of effect.

7.6 The risk premium that Thai contractors would request

The utility value of receiving a risk premium from the employer (β_{PRE}), as shown in Table 7.4.1, is more than zero (1.603). This indicates that the satisfaction of the contractors varies directly with the rate of the premium received from employers. This information conforms to the fact that contractors prefer to receive more risk premium from employers.

The risk premium that Thai contractors would request for the restriction of each of the 10 rights to claim that they thought should not be restricted could be assessed by applying the concept of willingness to pay from the choice-based conjoint analysis as presented in equation (6.4.4). The calculation of amount of the risk premium that the Thai

contractors would request for the restriction of the right to claim for an increase in direct costs due to force majeure, in terms of percentages of the total project direct cost, is provided in this section as an example.

According to Table 10.4, the value of β_{FORD} is -0.118, the value of β_{PRE} is 1.603. The equation (6.4.4) was applied to assess the amount of the premium as follows.

$$RP_{FORD} = \frac{-\beta_{FORD}}{\beta_{PRE}}$$

There fore,

$$RP_{FORD} = \frac{-(-0.118)}{1.603}$$

$$RP_{FORD} = 0.073$$

The amount of the amount of the risk premium that the Thai contractors would request for the restriction of the right to claim for an increase in direct costs due to force majeure is 0.073 % of the total project direct cost.

Table 7.6.1 presents the risk premium that Thai contractors would request for the restriction of each of the 10 rights to claim that they thought should not be restricted, in terms of percentages of the total project direct cost. The risk premium that the contractors would request for the restriction of each type of their right ranged between 0.025-0.577% of the total project direct cost.

Table 7.6.1 The risk premium that Thai contractors would request for the restriction of each type of their claiming right

Description	Risk Premium
Restriction of the right to claim for an increase in direct costs due to force majeure	0.073
Restriction of the right to claim for an extension of construction duration due to force majeure	0.534
Restriction of the right to claim for an increase in direct costs due to the employer's ineffective performance	0.158
Restriction of the right to claim for an increase in overhead costs due to the employer's ineffective performance	0.051
Restriction of the right to claim for an extension of construction duration due to the employer's ineffective performance	0.053
Restriction of the right to claim for an increase in overhead costs due to the employer's interference action	0.037
Restriction of the right to claim for an increase in overhead costs due to differing site conditions	0.025
Restriction of the right to claim for an extension of construction duration due to differing site conditions	0.577
Restriction of the right to claim for an increase in overhead costs due to change in the scope of work	0.122
Restriction of the right to claim for an extension of construction duration due to change in the scope of work	0.064

7.7 Attitude of Thai government organizations towards the restriction of the contractor's right to claim compensation

The attitude of Thai government organizations can in the same way be interpreted from the sign of each utility parameter. The values of utility parameters related to six types of restriction of the right to claim for the effects of five types of undesirable events had plus signs (Table 7.4.1). This means that the Thai government organizations which participated in this study were satisfied with the restriction of the contractor's rights to claim for

compensation. In other words, Thai government organizations want to assign the responsibility for these types of effects to the contractor. The values of the utility parameter of the remaining eight types of the claiming right had minus signs. This means that the Thai government organizations who participated in this study did not want these rights to claim to be restricted. In other words, the Thai government organizations who participated in this study were willing to be responsible for these types of effects themselves.

The data in Table 7.4.1 revealed that, in the case of force majeure, Thai government organizations wanted to restrict the contractor's right to claim for an increase in direct costs and for an increase in overhead costs. However, they did not want to restrict the contractor's right to claim for an extension of construction duration due to force majeure.

In case of the employer's ineffective performance, Thai government organizations wanted to restrict the contractor's right to claim for an increase in overhead cost. However, they did not want to restrict the contractor's right to claim for an increase in direct costs and for an extension of construction duration due to the employer's ineffective performance.

In the case of the employer's interference action, the Thai government organizations wanted to restrict the contractor's right to claim for an increase in direct costs and for an increase in overhead costs. However, they did not want to restrict the contractor's right to claim for an extension of construction duration due to the employer's interference action.

In the case of differing site conditions, the Thai government organizations wanted to restrict the contractor's right to claim for an increase in overhead cost. However, they did not want to restrict the contractors' right to claim for an increase in direct costs and for an extension of construction duration due to differing site conditions.

Lastly, in the case of the employer's order to change the scope of work, the Thai government organizations did not want to restrict the contractor's right to claim for an increase in overhead costs and for an extension of construction duration.

Based on data from the analysis, it appears that Thai government organizations were less concerned about the extension of the construction duration. The results of the study revealed that the organizations did not mind granting the contractor's right to claim for the extension of construction duration in all five cases. This could be because the government organizations have more flexibility and probably less "urgency" as to their

“commencement of use” of the project than private organizations. On the other hand, Thai government organizations tend to pay much more attention to the extra costs. Based on the data from the analysis, the Thai government organizations agreed to pay only an increase in direct costs due to the employer’s ineffective performance, an increase in direct costs due to differing site conditions, and an increase in direct costs due to change in the scope of work. These study results reflect the willingness of the representatives of government organizations to follow the Thai government regulation that encourages them to manage the project within the budget limit and prohibits them from requesting extra budget. They also reflect the intention of the organizations to avoid dispute with the contractor that might occur during the assessment of the actual expense due to the event.

Ranking the preference of Thai government organizations for the restriction of each type of the contractor’s rights.

The level of preference of the respondents for each characteristic of product attributes can be assessed from the value of the utility parameter related to them. The ranking of the preference of Thai government organizations for the restriction of each type of the contractor’s claiming right can then be performed by comparing the value of the related parameter. High values of utility parameter reveal that Thai government organizations are eager to restrict that type of the contractor’s right to claim compensation.

The types of the contractor’s claiming right, which Thai government organizations would like to restrict, can be ranked according to the level of the desire of the Thai government organizations to restrict them as presented in Table 7.7.1.

Table 7.7.1 Ranking of the claiming rights by the level of desire of Thai government organizations to restrict them

Ranking	Description
1	The right to claim for an increase in direct costs due to force majeure
2	The right to claim for an increase in overhead costs due to differing site conditions
3	The right to claim for an increase in overhead costs due to force majeure
4	The right to claim for an increase in overhead costs due to the employer's interference action
5	The right to claim for an increase in direct costs due to the employer's interference action
6	The right to claim for an increase in overhead costs due to the employer's ineffective performance

Comparison of the attitudes of the Thai government organizations revealed by choice-based conjoint analysis with those revealed by direct survey

The results of the comparison of the attitudes of the Thai government organizations revealed by the choice-based conjoint analysis with those revealed by the direct survey are as follows:

The attitudes of the Thai government organizations towards the allocation of responsibility for all three types of effect due to force majeure revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. As for the issue of an increase in direct costs and overhead costs, the analysis data indicated that the Thai government organizations did not want to be responsible for these types of effect while the survey data revealed that the Thai government organizations thought the contractors should not be able to claim for this type of effect (Table I.4.4.2 Nos.1.2,1.3). The data from the analysis indicated that the Thai government organizations were willing to be responsible for the effect of force majeure on construction duration themselves while the data from the survey revealed that the Thai government organizations thought the contractors should be able to claim for this type of effect (Table I.4.4.2 No.1.1). It can be interpreted from these data that the Thai government organizations thought the contractors should be the party to

be responsible for an increase in direct costs and overhead costs due to force majeure. They were also willing to pay a premium for assigning the responsibility for these types of effect to the contractors. On the other hand, the Thai government organizations thought the contractors should not be the party responsible for an increase in construction duration due to force majeure and they were not willing to pay a premium to the contractor for the assignment of the responsibility to contractors.

The attitude of the Thai government organizations towards the allocation of responsibility for an increase in direct costs due to the employer's ineffective performance revealed by the choice-based conjoint analysis were not consistent with those revealed by the direct survey. The data from the analysis indicated that the Thai government organizations were willing to be responsible for this type of effect themselves while the data revealed by the survey revealed that the Thai government organizations thought the contractors should not be able to claim for this type of effect (Table I.4.5.2 No.1.2). However, the results of the studies on the attitudes towards the responsibility for an increase in overhead costs and for an increase in construction duration by the two methods were consistent. The analysis data indicated that the Thai government organizations did not want to be responsible for an increase in overhead costs while the data from the direct survey revealed that the Thai government organizations thought the contractors should not be able to claim for this type of effect (Table I.4.5.2 No.1.3). On the other hand, the data from the analysis indicated that the Thai government organizations were willing to be responsible for an increase in construction duration themselves while the data from the survey revealed the Thai government organizations thought the contractors should be able to claim for this type of effect (Table I.4.5.2 No.1.1). From these data, it can be interpreted that the Thai government organizations thought contractors should be the party to be responsible for an increase in direct costs due to the employer's ineffective performance. However, if they had to pay the premium to the contractor for assigning the responsibility for an increase in direct costs to the contractors, they preferred to bare the responsibility for this type of effect themselves. The Thai government organizations, however, thought the contractors should be the party to be responsible for an increase in overhead costs due to the employer's ineffective performance. They were also willing to pay a premium for assigning the responsibility for this type of effect to contractors. Lastly, as for the effect of the employer's

ineffective performance on construction duration, the Thai government organizations thought the contractors should not be the party responsible for this type of effect and they were not willing to pay a premium to the contractor for the assignment of this type of responsibility to the contractors.

The attitude of the Thai government organizations towards the allocation of responsibility for all three types of effect due to the employer's interference action revealed by the choice-based conjoint analysis were consistent with those revealed by the direct survey. As for the issue of an increase in direct costs and overhead costs, the data from the analysis indicated that the Thai government organizations did not want to be responsible for these types of effect while the data from the direct survey revealed that the Thai government organizations thought the contractors should not be able to claim for these types of effect (Table I.4.7.2 Nos.3.2, 3.3). Analysis data indicated that the Thai government organizations were willing to be responsible for an increase in construction duration by themselves while the survey data revealed that the Thai government organizations thought the contractors should be able to claim for this type of effect (Table I.4.7.2 No.3.1). It can be interpreted from these data that the Thai government organizations thought the contractors should be the party to be responsible for an increase in direct costs and an increase in overhead costs due to the employer's interference action. They were also willing to pay a premium for assigning the responsibility for these types of effect to the contractors. On the other hand, the Thai government organizations thought the contractors should not be the party responsible for the effect of the employer's interference action on construction duration and they were not willing to pay a premium to the contractors for the assignment of the responsibility to the contractors.

The attitudes of the Thai government organizations towards the allocation of responsibility for an increase in direct costs due to differing site conditions revealed by choice-based conjoint analysis were not consistent with those revealed by the direct survey. The data from the analysis indicated that the Thai government organizations were willing to be responsible for an increase in direct costs due to differing site conditions by themselves while the data from the survey revealed that they thought the contractors should not be able to claim for this type of effect (Table I.4.6.2 No.1.2). However, the results of the studies on the attitudes towards the responsibility for an increase in overhead costs and an increase in

construction duration by the two methods are consistent. The analysis data indicated that Thai government organizations did not want to be responsible for an increase in overhead costs while the survey data revealed that the Thai government organizations thought the contractors should not be able to claim for this type of effect (Table I.4.6.2 No.1.3). On the other hand, the data from the analysis indicated that the Thai government organizations were willing to be responsible for an increase in construction duration by themselves while the data from the survey revealed that the Thai government organizations thought the contractors should be able to claim for this type of effect (Table I.4.6.2 No.1.1). From these data, it can be interpreted that the Thai government organizations thought the contractors should be the party to be responsible for an increase in direct costs due to differing site conditions. However, if they had to pay the premium to the contractor for assigning the responsibility for an increase in direct costs to the contractors, they preferred to bare the responsibility for this type of effect by themselves. The Thai government organizations, however, thought the contractors should be the party to be responsible for an increase in overhead costs due to differing site conditions. They were also willing to pay a premium for assigning the responsibility for this type of effect to the contractors. Lastly, as for the issue of the effect of differing site conditions on construction duration, the Thai government organizations thought the contractors should not be the party responsible for this type of effect and they were not willing to pay a premium to the contractor for the assignment of this type of responsibility to the contractors.

The attitudes of the Thai government organizations towards the allocation of responsibility for an increase in overhead costs due to the employer's order to change the scope of work revealed by the choice-based conjoint analysis were not consistent with those revealed by the direct survey. The data from the analysis indicated that the Thai government organizations were willing to be responsible for this type of effect themselves while the data from the survey revealed that the Thai government organizations thought the contractors should not be able to claim for this type of effect (Table I.4.8.3 No.1.3). However, the results of the studies on the attitudes towards the responsibility for an increase in construction duration by the two methods were consistent. The analysis data indicated that the Thai government organizations were willing to be responsible for this type of effect by themselves while the direct survey data revealed that the Thai government organizations

thought the contractors should be able to claim for this type of effect (Table I.4.8.3 No.1.1). From these data, it can be interpreted that the Thai government organizations thought the contractors should be the party to be responsible for an increase in direct costs due to the employer's order to change the scope of work. However, if they had to pay the premium to the contractor for assigning the responsibility for an increase in direct costs to the contractors, they preferred to bare the responsibility for this type of effect by themselves. On the other hand, concerning the issue of the effect on construction duration, the Thai government organizations thought the contractors should not be the party responsible for this type of effect and they were not willing to pay a premium to the contractor for the assignment of this type of responsibility to the contractors.

7.8 Extra costs that Thai government organizations are willing to pay

The utility value of paying the contractor's premium (β_{PRE}), as shown in Table 7.4.1, was less than zero (-1.070). This indicates that the increasing of the contractor's premium will make the organization unhappy. This information conforms to the fact that employers prefer not to pay a high premium to the contractor.

The extra cost that the Thai government organizations are willing to pay for the restriction of six types of the contractor's right to claim compensation (WTP) that the organizations would like to restrict could be assessed by applying the concept of willingness to pay from the choice-based conjoint analysis as presented in equation (6.4.4). The calculation of amount of the extra cost that the Thai government organizations are willing to pay for the restriction of the right to claim for an increase in direct costs due to force majeure, in terms of percentages of the total project direct cost, is provided in this section as an example.

According to Table 10.4, the value of β_{FORD} is 0.224, the value of β_{PRE} is -1.070. The equation (6.4.4) was applied to assess the amount of the premium as follows.

$$WTP_{FORD} = \frac{-\beta_{FORD}}{\beta_{PRE}}$$

There fore,

$$WTP_{FORD} = \frac{-(0.224)}{(-1.070)}$$

$$WTP_{FORD} = 0.210$$

The amount of the amount of the risk premium that the Thai government organizations are willing to pay for the restriction of the restriction of the right to claim for an increase in direct costs due to force majeure is 0.210 % of the total project direct cost.

Table 7.8.1 presents the data on the extra cost that the Thai government organizations are willing to pay for the restriction of six types of the contractor's right to claim compensation (WTP) that the organizations would like to restrict, in terms of percentages of the total project direct cost. The WTP values in Table 7.8.1 revealed that the organizations were willing to pay between 0.087-0.210% of the total project direct cost to restrict each type of the contractor's right. The total extra cost that the organizations were willing to pay to compensate for the restriction of all the six types of the contractor's right to claim was 0.882%.

Table 7.8.1 The willingness of the Thai government organizations to pay for the restriction of each type of the contractor's right to claim compensation.

Description	WTP
Restriction of the right to claim for an increase in direct costs due to force majeure	0.210
Restriction of the right to claim for an increase in overhead costs due to force majeure	0.164
Restriction of the right to claim for an increase in overhead costs due to the employer's ineffective performance	0.090
Restriction of the right to claim for an increase in direct costs due to the employer's interference actions	0.087
Restriction of the right to claim for an increase in overhead costs due to the employer's interference actions	0.132
Restriction of the right to claim for an increase in overhead costs due to differing site conditions	0.199

7.9 Summary

The results of the choice-based conjoint analysis revealed that the contractors thought they should be able to claim compensation for 10 types of effects of undesirable events. These effects were (1) an increase in direct costs due to force majeure, (2) an extension of construction duration due to force majeure, (3) an increase in direct costs due to the employer's ineffective performance, (4) an increase in overhead costs due to the employer's ineffective performance, (5) an extension of construction duration due to the employer's ineffective performance, (6) an increase in overhead costs due to the employer's interference action, (7) an increase in overhead costs due to differing site conditions, (8) an extension of construction duration due to differing site conditions, (9) an increase in direct costs due to change in the scope of work, and (10) an extension of construction duration due to change in the scope of work. Besides, the premium that the Thai contractors would like to request (RP_{con}) if their right to claim compensation of each of the 10 types of effects was restricted, ranged between 0.025-0.577% of the project direct cost.

The results of the choice-based conjoint analysis also revealed that the Thai government organizations wanted to assign the responsibility for six types of effects of undesirable events to the contractors. These effects were (1) an increase in direct costs due to force majeure, (2) an increase in overhead costs due to force majeure, (3) an increase in overhead costs due to the employer's ineffective performance, (4) an increase in direct costs due to the employer's interference action, (5) an increase in overhead costs due to the employer's interference action, and (6) an increase in overhead costs due to differing site conditions. Besides, the premium rate that the Thai government organizations were willing to pay (WTP_{gov}) for restricting each of the six effects ranged between 0.087-0.210% of the project direct cost.

CHAPTER VIII

FRAMEWORK FOR THE ALLOCATION OF RESPONSIBILITY BETWEEN CONTRACTING PARTIES AND THE ANALYSIS OF RELATED CONDITIONS ON THE STANDARD CONTRACT OF THAI GOVERNMENT

This chapter is about the application of the data synthesized from the choice-based conjoint analysis. The appropriate approach to the allocation of responsibilities between contracting parties identified from the synthesis of these valuable data is presented in the first section of this chapter. The allocation of responsibility for the effects of undesirable events in the standard contract of Thai government are also analyzed based on the knowledge gained from the choice-based conjoint experiment in the second section. The summary of this chapter is presented in the last section.

8.1 Suggested framework for allocation of responsibility between Thai contractors and Thai government organizations

In this section, the data from the choice-based conjoint analysis (Chapter 7) are synthesized for making decisions on the assignment of responsibility related to the effects of undesirable events to Thai contractors and Thai government organizations. The details of the synthesis of the data are as follows:

As for the issue of the responsibility for an increase in direct costs due to force majeure, both Thai contractors and Thai government organizations did not want to be responsible this type of effect. The decision should then be made based on the comparison of the contractor's required responsibility premium (RP_{con}) and the Thai government organization's willingness to pay (WTP_{gov}). Since the WTP_{gov} is more than the RP_{con} ($0.210 > 0.073$), therefore, the responsibility for an increase in direct costs due to force majeure should be assigned to the contractor. For the other two types of effect from force majeure, the responsibility for an increase in overhead costs should be assigned to the contractor, while the responsibility for an increase in construction duration should be assigned to the Thai government organization. This is because the Thai contractors did not mind being responsible for an increase in overhead costs due to force majeure ($\beta_{con} > 0$) and

the Thai government organizations did not want to assign the responsibility for an increase in construction duration to the contractor ($\beta_{gov} < 0$).

Regarding the issue of the responsibility for the effects of the employer's ineffective performance, the responsibilities for an increase in direct costs and for an increase in construction duration should be assigned to the Thai government organization, but the responsibility for an increase in overhead costs should be assigned to the contractor. This is because the Thai government organizations did not want to assign the responsibilities for an increase in direct costs and for an increase in construction duration due to the employer's ineffective performance to the contractors ($\beta_{gov} < 0$). Because both contracting parties did not want to be responsible for an increase in overhead cost and the Thai government organizations' willingness to pay (WTP_{gov}) was more than contractors' required responsibility premium (RP_{con}) ($0.090 > 0.051$), the responsibility should be assigned to the contractors.

The responsibility for an increase in direct costs due to the employer's interference action should be assigned to the contractors. This is because the data from the studies on the attitude of the Thai contractors revealed that the Thai contractors did not mind being responsible for an increase in direct costs due to the employer's interference action ($\beta_{con} > 0$). The responsibility for an increase in overhead costs due to the employer's interference action, which both contracting parties did not want to be responsible for, should also be assigned to the contractors. This is because the Thai government organizations' willingness to pay (WTP_{gov}) was more than contractors' required responsibility premium (RP_{con}) ($0.132 > 0.037$). As for an increase in construction duration due to the employer's interference action, this type of effect may be assigned to either the contractors or the government organizations. This is because the data from the studies on the attitudes of the Thai contractors and of the Thai government organizations revealed that the Thai contractors did not mind being responsible for this type of effect ($\beta_{con} > 0$) and the Thai government organizations did not want to assign the responsibility for this type of effect to the contractors ($\beta_{gov} < 0$).

The responsibility for an increase in direct costs because of differing site conditions may also be assigned to either the Thai contractors or the Thai government organizations. This is because the data from the studies on the attitudes of the Thai contractors and of the Thai government organizations also revealed that the contractors did not mind being

responsible for this type of effect ($\beta_{con} > 0$) and the government organizations did not want to assign the responsibility for this type of effect to the contractors ($\beta_{gov} < 0$). The responsibility for an increase in overhead costs due to differing site conditions, which both contracting parties did not want to be responsible for, should be assigned to the contractors. This is because in this case the Thai government organizations' willingness to pay (WTP_{gov}) was more than the contractors' required responsibility premium (RP_{con}) ($0.199 > 0.025$). The responsibility for an increase in construction duration due to differing site conditions, however, should be assigned to the Thai government organizations. According to the results from the study by choice-based conjoint analysis, the Thai government organizations did not want to assign the responsibility for this type of effect to the contractors ($\beta_{gov} < 0$).

Finally, as for the two types of effect due to the employer's order to change the scope of work, the Thai government organizations should be assigned the responsibility for these types of effect. This is because the results from the study by choice-based conjoint analysis revealed that Thai government organizations did not want to assign the responsibility for these types of effect to the contractors ($\beta_{gov} < 0$).

In summary, according to the results of the data synthesis, the Thai contractors should be responsible for 6 out of 14 types of the effects that were studied. These effects were (1) an increase in direct costs due to force majeure, (2) an increase in overhead costs due to force majeure, (3) an increase in overhead costs due to the employer's ineffective performance, (4) an increase in direct costs due to the employer's interference action, (5) an increase in overhead costs due to the employer's interference action, and (6) an increase in overhead costs due to differing site conditions.

On the other hand, Thai government organizations, as the employers, should also be responsible for the other six types of effects, namely (1) an increase in construction duration due to force majeure, (2) an increase in direct costs due to the employer's ineffective performance, (3) an increase in construction duration due to the employer's ineffective performance, (4) an increase in construction duration due to differing site conditions, (5) an increase in overhead costs due to change in the scope of work, and (6) an increase in construction duration due to change in the scope of work.

Lastly, there are two types of effects that can be assigned to either the contractor or the organization since β_{con} is more than 0 and β_{gov} is less than 0. These two types of effects are an increase in construction duration due to the employer's interference action and an increase in direct costs because of differing site conditions.

Table 8.1.1 Suggested framework for allocation of responsibility between the contractors and the Thai government organizations

Issue	Responsible Party	Remark
An increase in direct costs due to force majeure	Contractor	$WTP_{gov} > RP_{con}$
An increase in overhead costs due to force majeure	Contractor	$\beta_{con} > 0$
An increase in construction duration due to force majeure	Government	$\beta_{gov} < 0$
An increase in direct costs due to the employer's ineffective performance	Government	$\beta_{gov} < 0$
An increase in overhead costs due to the employer's ineffective performance	Contractor	$WTP_{gov} > RP_{con}$
An increase in construction duration due to the employer's ineffective performance	Government	$\beta_{gov} < 0$
An increase in direct costs due to the employer's interference action	Contractor	$\beta_{con} > 0$
An increase in overhead costs due to the employer's interference action	Contractor	$WTP_{gov} > RP_{con}$
An increase in construction duration due to the employer's interference action	Contractor /Government	$\beta_{con} > 0$ $\beta_{gov} < 0$

Table 8.1.1 (continued) Suggested framework for the allocation of responsibility between contractors and Thai government organizations

Issue	Responsible Party	Remark
An increase in direct costs because of differing site conditions	Contractor /Government	$\beta_{con} > 0$ $\beta_{gov} < 0$
An increase in overhead costs due to differing site conditions	Contractor	$WTP_{gov} > RP_{con}$
An increase in construction duration due to differing site conditions	Government	$\beta_{gov} < 0$
An increase in overhead costs due to change in the scope of work	Government	$\beta_{gov} < 0$
An increase in construction duration due to change in the scope of work	Government	$\beta_{gov} < 0$

Comparison of an appropriate approach to allocate responsibility by choice-based conjoint analysis with an approach synthesized from the attitude of respondents by direct survey

The results of the study on the appropriate allocation of responsibility for the effects of undesirable events to contracting parties that were obtained from choice-based conjoint analysis were very similar to those obtained from the survey study on the attitudes of the contractors and the employers toward their responsibility for the effect of the event as presented in chapter 5.

The results of the studies by both methodologies were different only on the issue of an increase in overhead costs due to change in the scope of work. The finding from the choice-based conjoint analysis indicated that the contractors should be responsible for this type of effect but that from the survey study indicated that the government organizations should be responsible for it. However, after considering the data from both studies, it can be said that the responsibility for an increase in overhead costs due to change in the scope of work should not be assigned to the contractors, even though the majority of those in the construction industry thought the contractors should be responsible this type of effect. This

is because the Thai contractors were not willing to be responsible for this type of effect and expected to charge Thai government organizations 0.122% of project direct cost (Table 7.6.1) if they were assigned the responsibility for this type of effect; however, the Thai government organizations preferred to be responsible for this type of effect themselves rather than pay an extra cost to the contractors ($\beta_{\text{CHAO}} = -0.087$ which is less than 0, Table 7.4.1).

8.2 Analysis of conditions related to the allocation of responsibility for the unfavorable effects of undesirable events of the standard contract of the Thai government.

In this section, the conditions related to the allocation of responsibility for the unfavorable effects of undesirable events in the standard contract of the Thai government were analyzed based on the knowledge gained from the choice-based conjoint analysis experiment. This contract form is used in most projects owned by Thai government organizations and state enterprises.

Conditions related to the allocation of responsibility for the unfavorable effects of undesirable events

Of the 14 types of effect of undesirable events, the standard contract of Thai government mentions only 7. Clause 11 of the contract restricts the contractor's right to claim for an increase in direct costs and an increase in overhead costs due to force majeure. Clause 16 of the contract allows the contractor to claim for an extension of construction duration and an increase in overhead costs due to change in the scope of work. Clause 22 of the contract allows the contractor to claim for an extension of construction duration due to force majeure, an extension of construction duration due to the employer's ineffective performance and an extension of construction duration due to the employer's interference actions. Regarding the other 7 types of effect not mentioned in the contract, it can be assumed that the responsibilities for these types of effect are allocated to the contractor by the contract. This assumption is based on the fact that, by nature, the representatives of Thai government organizations will not allow the contractor to claim compensation if there is no clear clause in the contract granting such. In addition, Thai constructors tend to avoid litigation processes against the Thai government because they

do not want to be blacklisted by the government which could as a consequence bar them from participating in all Thai government projects.

Expected risk premium when the standard contract of Thai government is applied

Based on the data on the attitude of contracting parties towards the restriction of the contractor's right to claim compensation, there are six types of effects of undesirable events which the contractors thought the Thai government organizations as employers should be responsible for, but the contractor's right to claim for compensation for these types of effect are restricted by the standard contract of Thai government. These effects are (1) an increase in direct costs due to force majeure, (2) an increase in direct costs due to the employer's ineffective performance, (3) an increase in overhead costs due to the employer's ineffective performance, (4) an increase in overhead costs due to the employer's interference action, (5) an increase in overhead costs due to differing site conditions, and (6) an increase in construction duration due to differing site conditions. Because of these restrictions, it can be expected that the contractors will add the risk premium to cover these types of risk. Based on the data on risk premium in Table 7.6.1, the amount of risk premium which the Thai government organizations are expected to be charged by the contractors if the standard contract of Thai government is applied, is 0.921% (0.073% +0.158% +0.051% +0.037% +0.025%+0.577%) of the project direct cost.

In contrast, applying the standard contract of Thai government, Thai government organizations as employers can avoid paying some risk premium to contractors. There are four types of effects of undesirable events which the contractors thought the Thai government organizations as employers should be responsible for, and it is indicated in the standard contract that the responsibility for these effects is allocated to the employers. These effects are (1) an increase in construction duration due to force majeure, (2) an increase in construction duration due to the employer's ineffective performance, (3) an increase in overhead costs due to change in the scope of work, and (4) an increase in in construction duration due to change in the scope of work. Since the contractors are not asked to be responsible for these types of effect, they will not add the risk premium to cover these types of risk. Based on the data in Table 7.6.1, the amount of risk premium that Thai

government organizations can avoid paying to the contractors is 0.773% (0.534% +0.053% +0.122%+0.064%) of the project direct cost.

The appropriateness of the conditions related to the allocation of responsibility for the unfavorable effects of undesirable events in the standard contract of Thai government

The contracting party that should be responsible for each type of the effects of undesirable events as determined by choice-based conjoint analysis is compared with that specified by the contract in Table 7.10.1.

The study results from choice-based conjoint analysis indicated that the responsibility for an increase in direct costs and for an increase in overhead costs due to force majeure should be assigned to the contractor while the responsibility for an increase in construction duration should be assigned to the Thai government organization. The allocation of responsibility for these effects as specified in the standard contract of Thai government are consistent with these study results. Based on these, it can be concluded that the allocation of responsibility for all three types of effect due to force majeure in the contract is appropriate.

The allocation of responsibility for an increase in direct costs due to the employer's ineffective performance, however, is not appropriate. The study results from the choice-based conjoint analysis indicated that the responsibility for this type of effect should be assigned to the government but in the standard contract it is assigned to the contractor. According to the data from the analysis of the attitude of Thai government organizations (section 7.7), they preferred to bare this type of risk themselves rather than to pay a risk premium to contractors. Since the contractors did not think they should be responsible for this type of effect (section 7.5), this inappropriate assignment would cost the government an unnecessary extra cost. According to the data on the contractor's required risk premium (Table 7.6.1), this would cost the government 0.158% of the project direct cost. The allocation for responsibilities for the other two types of effect due to the employer's ineffective performance is appropriate. The study results from choice-based conjoint analysis indicated that the responsibility for an increase in overhead costs should be assigned to the contractor while the responsibility for an increase in construction duration should be assigned to the Thai government organizations. The allocation of responsibility for

these effects as specified in the standard contract of Thai government are consistent with the results from the choice-based conjoint analysis.

The allocation of responsibility for all three types of effect due to the employer's interference action as specified in the standard contract of Thai government is appropriate. The study results from the choice-based conjoint analysis indicated that the responsibility for an increase in direct costs and for an increase in overhead costs due to the employer's interference action should be assigned to the contractor while the responsibility for an increase in construction duration should be assigned to either the Thai government organizations or to the contractors. In the standard contract of Thai government, the responsibility for an increase in direct costs and an increase in overhead costs are assigned to the contractors, while the responsibility for the effect on construction duration is assigned to the Thai government organizations.

The allocation of responsibility for an increase in direct costs and for an increase in overhead costs due to differing site conditions as specified in the standard contract of Thai government is appropriate. The study results from the choice-based conjoint analysis indicated that the responsibility for an increase in direct costs should be assigned to either the Thai government organizations or the contractors while the responsibility for an increase in overhead costs should be assigned to the contractors. In the standard contract of Thai government, the responsibility for an increase in direct costs and for an increase in overhead costs is assigned to the contractors. However, the allocation of responsibility for the effect on construction duration to contractors as specified in the standard contract of Thai government is not appropriate. The study results from the choice-based conjoint analysis indicated that the responsibility for this type of effect should be assigned to the government but in the standard contract it is assigned to the contractor. According to data from the analysis of the attitude of Thai government organizations (section 7.7), the organizations preferred to bare this type of risk themselves rather than pay a risk premium to the contractors. Since the contractors did not think they should be responsible for this type of effect (section 7.5), this inappropriate assignment would cost the government an unnecessary extra cost. According to the data on the contractors' required risk premium (Table 7.6.1), it would cost the government 0.577% of the project direct cost.

The allocation of responsibility for an increase in overhead costs and for the effect on construction duration due to the employer's order to change the scope of work as specified in the standard contract is also appropriate. The study results from the choice-based conjoint analysis indicated that the responsibility for these types of effect should be assigned to the Thai government organizations. In the standard contract of Thai government the responsibility for these effects is allocated to the Thai government organizations.

In summary, the analysis revealed the inappropriateness of the allocation of responsibility toward two types of effect of undesirable events. These effects are (1) an increase in direct cost due to the employer's ineffective performance and (2) an increase in construction duration due to differing site conditions. The allocation of responsibility for these effects by the contract to the contractors instead of the Thai government organizations as indicated by the choice-based conjoint analysis will cost the organizations an unnecessary extra cost at 0.735% (0.158%+0.577%) of the project direct cost.

Table 8.2.1 The contracting parties who are specified in the standard contract of Thai government and who are determined by choice-based conjoint analysis to be responsible for each effect of an undesirable event

Issue	Responsible party	
	Determined by CBC	Specified in the contract
An increase in direct costs due to force majeure	Contractor	Contractor (Clause 7)
An increase in overhead costs due to force majeure	Contractor	Contractor (Clause 7)
An increase in construction duration due to force majeure	Government	Government (Clause 22)

Table 8.2.1 (continued) The contracting parties who are specified in the standard contract of Thai government and who are determined by choice-based conjoint analysis to be responsible for each effect of an undesirable event

Issue	Responsible party	
	Determined by CBC	Specified in the contract
An increase in direct costs due to the employer's ineffective performance	Government	Contractor (N/A)
An increase in overhead costs due to the employer's ineffective performance	Contractor	Contractor (N/A)
An increase in construction duration due to the employer's ineffective performance	Government	Government (Clause 22)
An increase in direct costs due to the employer's interference action	Contractor	Contractor (N/A)
An increase in overhead costs due to the employer's interference action	Contractor	Contractor (N/A)
An increase in construction duration due to the employer's interference action	Contractor /Government	Government (Clause 22)
An increase in direct costs because of differing site conditions	Contractor /Government	Contractor (N/A)
An increase in overhead costs due to differing site conditions	Contractor	Contractor (N/A)
An increase in construction duration due to differing site conditions	Government	Contractor (N/A)
An increase in overhead costs due to change in the scope of work	Government	Government (Clause 16)
An increase in construction duration due to change in the scope of work	Government	Government (Clause 16)

8.4 Summary

Based on the data from the choice-based conjoint analysis, Thai contractors should be responsible for 6 out of 14 types of effect of undesirable events. These effects are (1) an increase in direct costs due to force majeure, (2) an increase in overhead costs due to force majeure, (3) an increase in overhead costs due to the employer's ineffective performance, (4) an increase in direct costs due to the employer's interference action, (5) an increase in overhead costs due to the employer's interference action, and (6) an increase in overhead costs due to differing site conditions. On the other hand, Thai government organizations, as the employers, should also be responsible for 6 types of effects. These types of effects are (1) an increase in construction duration due to force majeure, (2) an increase in direct costs due to the employer's ineffective performance, (3) an increase in construction duration due to the employer's ineffective performance, (4) an increase in construction duration due to differing site conditions, (5) an increase in overhead costs due to change in the scope of work, and (6) an increase in construction duration due to change in the scope of work. Lastly, there are two types of effects that can be assigned to either the contractor or the organization since β_{con} is more than 0 and β_{gov} is less than 0. These two types of effects are an increase in construction duration due to the employer's interference action and an increase in direct costs because of differing site conditions.

The analysis of the conditions of the standard contract of Thai government related to the allocation of responsibility for the unfavorable effects of undesirable events indicated that if the standard contract of Thai government organizations is used, the organizations will be charged a risk premium at 0.921% of the project direct cost by the contractors. The analysis also revealed the inappropriateness of the allocation of responsibility towards two types of effect. These effects are (1) an increase in direct cost due to the employer's ineffective performance and (2) an increase in construction duration due to differing site conditions. The allocation of responsibility for these effects by the contract to the contractors instead of the Thai government organizations as indicated by the choice-based conjoint analysis will cost the organizations an unnecessary extra cost at 0.735% (0.158%+0.577%) of the project direct cost.

CHAPTER IX

CONCLUSIONS AND RECOMMENDATIONS

In the first section of this chapter, the summary of this study is presented. Conclusions of the study and the recommendations for future research are presented in the second section of this chapter.

9.1 Summary of the study

The objectives of this study were to develop the knowledge for the analysis (development) of contract clauses related to undesirable events and also to develop the knowledge for decisions on the allocation of responsibility to contracting parties. Problems of incomplete and inappropriate contract conditions related to undesirable events in the Thai construction industry can be minimized if we have the first group of knowledge. With such knowledge, one should be able to draft (analyze) the related contract clause in a more appropriate and effective manner. Similarly, the problem about the uneconomical allocation of responsibility for the effects of undesirable events, i.e. paying an unnecessary high risk premium, can be prevented if we have the second group of knowledge. With the quantitative data obtained from this study, one will be able to know how to allocate the responsibility between contracting parties in a fair and worthy manner.

Besides, in this study, the standard contract of Thai government was also analyzed in order to demonstrate that the knowledge gained from this study can be applied to analyze contract clauses. This standard contract is used by most projects owned by Thai government organizations and state enterprises. Through this analysis study, the defects of clauses in the standard contract of Thai government were revealed. The knowledge from this study can be used for the revision/modification of the standard contract form of the Thai government.

Apart from the direct results of the study, it also provided the methodologies of developing the knowledge for the analysis of contract clauses, namely, the methodology of identifying issues that may initiate conflict between contracting parties, the methodology of determining the level of importance of each issue, and the methodology of determining an appropriate approach for writing contract clauses. These systematic methodologies are very

useful to the industry and can be applied to the development of the necessary data for the analysis of other contract clauses in addition to the development of the necessary data for the analysis of contract clauses related to undesirable events as performed in this study. Moreover, this study also provided the methodology of synthesizing the data needed for judgment about the allocation of responsibility to contracting parties. The methodology of developing the quantitative data necessary for judgment about the allocation of responsibility for the effects of undesirable events by choice-based conjoint analysis applied in this study can also be applied to develop the data necessary for judgment about the allocation of other types of responsibility to contracting parties. With the quantitative data synthesized in this study by choice-based conjoint analysis, the decision on the allocation of responsibility can be made in a fair and worthy manner.

The summary of the methodology of developing the necessary knowledge for the analysis (development) of contract clauses related to undesirable events and the results of the study are presented in section 9.1.1. The summary of the methodology of developing the knowledge necessary for making decisions on the allocation of responsibility for the unfavorable effects of undesirable events to contracting parties and the results of the study are presented in section 9.1.2.

9.1.1 The development of the knowledge necessary for the analysis (development) of contract clauses related to undesirable events.

In this part of the study, two groups of data are gathered: (1) a complete list of issues related to undesirable events that may initiate conflict, and (2) the attitude of the construction industry sector towards the issues. The first group of data was collected from a document study. The second group of data was collected from a survey study by questionnaire. These data were then synthesized to assess the probability that each issue will initiate conflict between contracting parties and the proportion of those in the construction industry who prefer each alternative.

A list of conflict-initiating issues is required for the analysis of the completeness of the contract. With a list of conflict-initiating issues, the person who analyzes the contract will know what issues need to be covered by the contract. The issues that are neglected, then, can be identified. In this study, a list of conflict-initiating issues is developed from the study

of five groups of documents, namely, (1) the rulings of the Thai Supreme Court between 1957 -2001, (2) the decisions of the Office of the Attorney General between 1957 -2001, (3) the decisions of the Regulatory Authorities on the Procurement Regulations of the Prime Minister's Office (RAPR), (4) standard forms of contract, and (5) research and articles on undesirable events. From the study of these documents, 223 conflict-initiating issues were identified; 35 of them related to force majeure, another 35 to the ineffectiveness of the performance of the employer, 37 to the differing site conditions, 34 to the interference action of the employer, 39 to the employer's order to change in the scope of work, 11 to the assessment of the effect of undesirable events on the project completion date, 26 to the assessment of compensation for direct cost increase, and 6 to the assessment of compensation for overhead cost increase and for profit loss.

The results of the analysis of the completeness of the contract will be complete and more valuable if the level of importance of the issues that are neglected is known. In this research, the probability that each issue will initiate conflict between contracting parties is used as an indicator to indicate the level of importance of the issue. Five equations were developed for assessing the probability that each issue will initiate conflict. The industry's attitudes towards the 223 conflict-initiating issues were gathered for the assessment via questionnaire surveys. 3,447 copies of questionnaires were distributed. 1,291 of them were returned. 1,219 copies of questionnaires that were returned met the criteria and were included in the analysis. Of the 1,219 copies of questionnaires, 992 were from respondents working for Thai government organizations (the largest group of employers of the Thai construction industry) and 227 were from respondents working for contractors. In this study, conflict-initiating issues were classified into four groups based on their tendency to initiate conflict. Of the 223 conflict-initiating issues, 4 have the tendency to initiate conflict at a low level, 81 at a medium level, 118 at a high level, and 20 at a very high level. The five issues that had the highest probability to initiate conflict were as follows: (1) the approach to assess additional expense due to the employer's request for specified product (81%), (2) the approach to assess additional expense due to decrease in productivity (80%), (3) the approach to assess additional expense due to material price increase (74%), (4) the approach to assess overhead cost increase in case the events affect both the duration and

cost of construction (74%), and (5) the approach to assess overhead cost increase in case the events affect only the construction duration (74%).

Moreover, data on the industry's attitude towards conflict-initiating issues was also applied to identify an appropriate approach for writing contract clause related to the conflict-initiating issues. The levels of acceptability of each approach for writing contract conditions were compared to identify the appropriate approach. The proportions of contractors and of employers who are satisfied with each alternative were given equal weight to assess the proportion of the population in the industry. The level of acceptability of the appropriate approach for writing contract conditions related to each conflict-initiating issue were also classified into three levels based on the percentage of individuals in the industry who accept the approach, namely low acceptability (percentage of acceptability less than 50%), medium acceptability (percentage of acceptability between 50 and 75%) and high acceptability (percentage of acceptability above 75%). Of the 223 issues that were studied, 12 were in the group with a low level of acceptability, 130 in the group with a medium level of acceptability and 81 in the group with a high level of acceptability. According to the results of this study, the appropriate approaches for the following five issues have the lowest acceptability rates: (1) the approach to assess direct cost increase in case the employer requires a specified product (24%), (2) the approach to assess direct cost increase in case the contractor has received incorrect information from the employer (26%), (3) the approach to assess direct cost increase in case the material price inflates during the suspension period (30%), (4) the approach to assess direct cost increase in case the employer gives an order for the addition/reduction of work (32%), and (5) the approach to assess overhead cost increase in case the events affect both construction duration and cost (32%).

Contract conditions related to undesirable events in the standard contract of the Thai government, namely "example of contract annexed to the procurement regulation of the Prime Minister's Office", were also analyzed as the examples of the application of knowledge gained from this study in order to analyze the completeness and appropriateness of the conditions. Most of the construction projects under the employment of Thai government organizations and state enterprises have to use this contract form as their construction contract. In regard to the analysis of the completeness of the contract,

seven contract conditions related to undesirable events in the standard contract of Thai government were identified. These 7 clauses cover 30 conflict-initiating issues. Moreover, 8 issues also do not need to be covered by the contract (For example, in case the contract restricts the contractor's right to claim for direct cost increase, it is not necessary for the contract to cover the issue of the type of direct cost increase that should be compensated). Therefore, there are 185 issues that the contract should cover but fails to do so. Of these 185 issues, 1, 67, 98, and 19 issues have low, medium, high and very high tendency to initiate conflicts respectively. The analysis of the appropriateness of contract clauses was done by comparing the statements about the studied issues in these contract clauses with the attitudes of the Thai construction industry toward that issue. The study revealed that of the 30 issues covered by the 7 contract clauses, 22 issues were covered appropriately and the other 8 issues were not. These 8 are as follows: (1) the providing of the authority to give an order to change the scope of work to the authorized project consultant, (2) the restriction of the employer's right to give an order for additional work only for the work within the original scope of the contract, (3) the requirement that the notification of the event be within 15 days after the end of the force majeure, (4) the requirement that the notification of the event have to be within 15 days after the end of the employer's ineffective performance, (5) the requirement that the notification of the event be within 15 days after the end of the employer's interference action, (6) no requirement to notify the employer of force majeure when the employer has already witnessed the event, (7) no requirement to notify the employer of the ineffective performance of the employer when the employer is already aware of the event, and (8) no requirement to notify the employer if the employer is already aware of the interference action.

9.1.2 The development of the knowledge necessary for making decisions on the allocation of responsibility towards the unfavorable effects of undesirable events to contracting parties

In this research, four groups of data necessary for making decision on the allocation of responsibility toward unfavorable effect from undesirable events to contracting parties were synthesized based on their responsibility preference. These four groups of data are (1) the attitude of contractor towards the assignment of their responsibility for each effect of

undesirable event, (2) the attitude of the employer towards the assignment of their responsibility for each effect of undesirable event, (3) the risk premium that the contractor would like to request if they are assigned the responsibility for the effect that they are unwilling to be responsible, and (4) the extra cost that the employer is willing to pay for assigning the responsibility for each type of effects to contractor. Choice-based conjoint analysis was applied in synthesizing these data.

This study focuses on 14 unfavorable effects arising from 5 types of undesirable events. A choice-based conjoint experiment was first performed to gather the data on the attitudes of Thai government organizations and Thai contractors towards the restriction of the right to claim compensation for unfavorable effects from undesirable events. A total of 1,149 copies of questionnaires were distributed to the contractors and the employers. 429 of them were answered and returned to the researcher. 411 copies of questionnaires that were returned met the criteria and were included in the analysis. Of these 411 copies of questionnaires, 317 were from respondents working for Thai government organizations, the largest group of employers of the Thai construction industry, and the other 94 were from respondents working for contractors. The results from the choice-based conjoint analysis revealed that the contractors thought they should be able to claim compensation for 10 types of effects of undesirable events and the Thai government organizations wanted to assign the responsibility for 6 types of effects of undesirable events to the contractors. The premium that Thai contractors would like to request (RP_{con}) if their right to claim for compensation of each of the 10 effects is restricted ranges between 0.025-0.577% of the project direct cost. On the other hand, the premium rate the Thai government organizations were willing to pay (WTP_{gov}) for restricting each of the 6 effects ranges between 0.087-0.210%.

According to the results of the analysis, the Thai contractors should be responsible for 6 out of 14 types of the effects of undesirable events that were studied. These effects are (1) an increase in direct costs due to force majeure, (2) an increase in overhead costs due to force majeure, (3) an increase in overhead costs due to the employer's ineffective performance, (4) an increase in direct costs due to the employer's interference action, (5) an increase in overhead costs due to the employer's interference action, and (6) an increase in overhead costs due to differing site conditions. On the other hand, Thai government

organizations, as the employers, should also be responsible for 6 types of effects. These are (1) an increase in construction duration due to force majeure, (2) an increase in direct costs due to the employer's ineffective performance, (3) an increase in construction duration due to the employer's ineffective performance, (4) an increase in construction duration due to differing site conditions, (5) an increase in overhead costs due to change in the scope of work, and (6) an increase in construction duration due to change in the scope of work. Lastly, there are two types of effects that can be assigned to either the contractor or the organization since β_{con} is more than 0 and β_{gov} is less than 0. These two types of effects are an increase in construction duration due to the employer's interference action and an increase in direct costs because of differing site conditions.

The analysis of the conditions of the standard contract of the Thai government related to the allocation of responsibility for the unfavorable effects of undesirable events was also performed. The analysis indicated that, if the standard contract of Thai government organizations is used, the organizations will be charged a risk premium at 0.921% of the project direct cost by the contractors. The analysis also revealed the inappropriateness of the allocation of responsibility for the following two types of effects of undesirable events. These effects are (1) an increase in direct cost due to the employer's ineffective performance and (2) an increase in construction duration due to differing site conditions. The allocation of the responsibility for these effects by the contract to the contractors instead of the Thai government organizations as indicated by the choice-based conjoint analysis will cost the organizations an unnecessary extra cost at 0.735% of the project direct cost.

9.2 Conclusions of the study

In this study, the importance of contract conditions related to undesirable events was revealed. From the document study, it was found that several issues related to undesirable events very often initiate conflict between contracting parties. Data on the tendency to initiate conflict between contracting parties revealed that several issues related to undesirable events had high or very high tendency to initiate conflict. However, the analysis of the completeness of the contract conditions in the standard contract of Thai government, as generally used in the Thai construction industry, revealed that those conditions related to undesirable events are still not complete. Several issues which had high or very high

tendency to initiate conflict between contracting parties are neglected by the contract. To prevent conflict between contracting parties due to undesirable events, the contract needs to be revised. As many issues related to undesirable events that may initiate conflict should be covered by the contract as possible.

This study also revealed that it is possible to write contract conditions that are acceptable to the majority of the population of the Thai construction industry in almost all issues related to undesirable events. The analysis of the contract conditions of the standard contract of Thai government, however, revealed that various conditions in the contract were not appropriately written. They did not conform to the alternative that the major proportion of the industry people participating in this study preferred. To gain much greater acceptance by the industry, the existing contract conditions should be modified.

Moreover, this study also presented an appropriate approach to allocate the responsibility for the effects of undesirable events between contracting parties in a fairer and more worthy manner based on the data from the choice-based conjoint experiment. The data from the analysis of the contract conditions of the standard contract of the Thai government related to the allocation of responsibility for the unfavorable effects of undesirable events revealed the inappropriate allocation of responsibility for two types of effects of undesirable events. This indicated that the Thai construction industry probably should reassign the responsibility between contracting parties.

9.3 Limitations of the study

The groups of employers in this study are individuals who work for the Thai government organizations, which is the biggest group of employers in the Thai construction industry. Those who work for private organizations (employers) are not included in this study. It is therefore appropriate to apply the data from this research to analyze the construction contract of projects which are owned by the government organizations. One has to be careful in applying data from this study to analyze the contract of projects owned by private organizations.

In this research, the representative samples of the study population were asked to express freely their attitudes towards conflict initiating issues or choosing the preferred proposal (in choice-based conjoint analysis experiment). No specific situations were

presented to the study group for consideration before answering the questions. The results of this study, therefore, reveal the overall attitude of the study groups. Other factors that may have influence on their attitudes are not taken into account. So it is appropriate to apply the data from this study to analyze the contract of the construction projects which are performed under normal situation. One has to be careful in applying data from this study to analyze the contract of the projects which are performed under some special situations, such as the project which has very short construction duration, or the project which has very high project value.

9.4 Recommendations for future research

Regarding the development of the knowledge necessary for the analysis (development) of the contract, this research focuses only on the clauses related to undesirable events. The knowledge necessary for the analysis of other important contract clauses has not been developed by this study and is still lacking. Some examples of the other important clauses that researchers have to pay attention to are those related to defects liability, payment, insurance, dispute and dispute resolution. The groups of employers in this study are individuals who work for the Thai government organizations, which is the biggest group of employers in the Thai construction industry. A survey on the attitude of those who work for private organizations (employers) would be interesting. The similarities and the differences of attitude of these two groups of employers can be identified if there is data on the attitude of private employers.

Regarding the development of the knowledge necessary for making decisions on the allocation of responsibility to contracting parties, this research focuses only on the responsibility for 14 unfavorable effects arising from 5 types of undesirable events. Research to develop the data for judgment on the responsibility allocation for the effects from other types of undesirable events would be valuable for the industry.

Lastly, choice-based conjoint analysis is a potential tool that can be applied in quantifying the influence of specific factors on the respondents' decisions. The construction industry may apply this tool in many research studies such as in a study of the influence of various factors on the decision to buy a house, or in a study of the influence of various factors on the decision to use specific dispute resolution methods.

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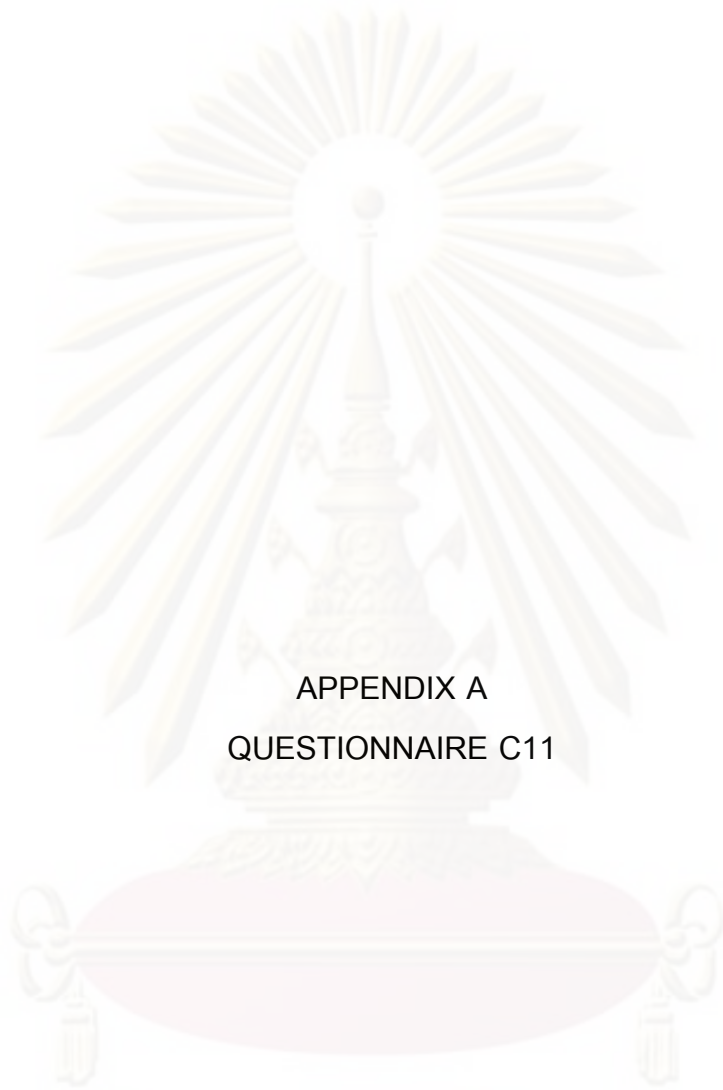


ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



APPENDICES

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



APPENDIX A
QUESTIONNAIRE C11

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



จุฬาลงกรณ์มหาวิทยาลัย

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เรียน ท่านผู้ตอบแบบสอบถาม

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

สิ่งที่ส่งมาด้วย 1) แบบสอบถาม จำนวน 1 ชุด

2) ของไปรษณีย์ติดแสตมป์สำหรับส่งคืนแบบสอบถาม จำนวน 1 ของ

ด้วย กระผม นาย นที สุริยานนท์ นิสิตในหลักสูตรวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา กำลังทำงานวิจัยเพื่อประเมินแนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและเสนอแนะแนวทางที่ความเหมาะสมในการเขียนข้อสัญญาเกี่ยวกับเหตุการณ์ซึ่งส่งผลกระทบต่อการค้าดำเนินการของผู้รับเหมา

กระผมมีความจำเป็นที่จะต้องรวบรวมข้อมูลจากกลุ่มตัวอย่างซึ่งเป็นตัวแทนบุคลากรฝ่ายเจ้าของงาน และฝ่ายบริษัทรับเหมาก่อสร้างให้ได้จำนวนไม่ต่ำกว่า 600 ตัวอย่าง เพื่อนำมาใช้ในการประเมินแนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและวิเคราะห์ความเหมาะสมของข้อสัญญาเกี่ยวกับเหตุสุดวิสัย ความล่าช้าและความบกพร่องของเจ้าของงาน และสภาพแวดล้อมที่เป็นอุปสรรคต่อการทำงาน ซึ่งเป็นเนื้อหาส่วนสำคัญส่วนหนึ่งของงานวิจัยของกระผม

กระผมจึงใคร่ขอความกรุณาจากท่านในการตอบแบบสอบถามซึ่งกระผมได้ส่งมาพร้อมจดหมายฉบับนี้ การได้รับความอนุเคราะห์จากท่านจะมีผลอย่างมากต่อความสำเร็จของงานวิจัยของกระผม กระผมหวังเป็นอย่างยิ่งที่จะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์

ขอแสดงความนับถืออย่างสูง

(นาย นที สุริยานนท์)

นิสิตจุฬาลงกรณ์มหาวิทยาลัย

ศูนย์วิทยุโทรคมนาคม
จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม

เรื่อง ทัศนคติของเจ้าของงาน

ต่อ

เหตุการณ์ซึ่งส่งผลกระทบต่อการทำงานของผู้รับเหมา

รหัสแบบสอบถาม C11-_____

แนวคิดและวัตถุประสงค์ของงานวิจัย : เหตุการณ์ซึ่งส่งผลกระทบต่อการทำงานของผู้รับเหมา ได้แก่ เหตุสุดวิสัย ความล่าช้าและความบกพร่องของเจ้าของงาน และสภาพแวดล้อมที่เป็นอุปสรรคต่อการทำงาน เป็นสาเหตุที่ทำให้เกิดความขัดแย้งระหว่างเจ้าของงานและผู้รับเหมาอยู่บ่อยครั้ง ความขัดแย้งระหว่างคู่สัญญาเกิดขึ้นเมื่อคู่สัญญาที่มีทัศนคติที่ต่างกักันและสัญญาว่าจ้างมีเนื้อหาไม่ครอบคลุมและ/หรือไม่ชัดเจน หากทราบข้อมูลทัศนคติของฝ่ายเจ้าของงานและฝ่ายผู้รับเหมา ผู้ร่างสัญญาก็ย่อมสามารถร่างเนื้อหาสัญญาให้มีความครอบคลุมและชัดเจนได้ดียิ่งขึ้น

แบบสอบถามชุดนี้ทำขึ้น โดยมีวัตถุประสงค์เพื่อศึกษาทัศนคติของฝ่ายผู้รับเหมาต่อประเด็นต่างๆเกี่ยวกับเหตุสุดวิสัย ความล่าช้าและความบกพร่องของเจ้าของงาน และสภาพแวดล้อมที่เป็นอุปสรรคในการทำงาน อาทิเช่น สิทธิของผู้รับเหมาในการเรียกร้องการชดเชย และการตอบสนองเมื่อทราบเหตุการณ์ เป็นต้น ข้อมูลที่ได้จากแบบสอบถามนี้ถือเป็นความลับซึ่งใช้เฉพาะในการศึกษานี้เท่านั้น ขอความกรุณาท่านโปรดตอบตามความเป็นจริง คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งในการพัฒนาข้อสัญญาให้มีความเหมาะสม ยุติธรรม และชัดเจนยิ่งขึ้น ซึ่งย่อมส่งผลดีต่อเจ้าของงาน วิศวกรที่ปรึกษา และผู้รับเหมา รวมถึงบุคคลผู้ซึ่งเกี่ยวข้องกับการจ้างงานก่อสร้างฝ่ายอื่นๆในที่สุด

ผู้ตอบแบบสอบถาม : บุคลากรของผู้รับเหมาซึ่งมีประสบการณ์เกี่ยวกับเสนอราคางาน การพิจารณาเงื่อนไขการว่าจ้าง การบริหารการก่อสร้าง และการควบคุมการก่อสร้าง อาทิเช่น ผู้รับผิดชอบการประมาณราคาและเสนอราคางาน นิติกรหรือที่ปรึกษากฎหมาย ผู้จัดการโครงการ วิศวกรโครงการ วิศวกร และ โฟร์แมน เป็นต้น

รายละเอียดของแบบสอบถาม: แบบสอบถามฉบับนี้ได้ถูกจำแนกเป็น 4 ตอน โปรดตอบคำถามทุกข้อ คำตอบของท่านทุกทำตอบมีความจำเป็นต่อการวิจัยเป็นอย่างมาก ผู้วิจัยคาดการณ์ว่าท่านจะอาจต้องใช้เวลาในการตอบแบบสอบถามฉบับนี้ประมาณ 20-30 นาที

หากท่านต้องการข้อมูลเพิ่มเติม สอบถาม หรือให้คำแนะนำ ท่านสามารถติดต่อผู้วิจัยได้ทางโทรศัพท์ และสุดท้ายนี้ ผู้วิจัยขอกราบขอบพระคุณในความร่วมมือของท่าน

นที สุริยานนท์

นิติระดับปริญญาเอกสาขาบริหารการก่อสร้าง

จุฬาลงกรณ์มหาวิทยาลัย

โทร. 081-847-4882

อีเมล: nsuriyan@hotmail.com**หมายเหตุ :**

1. ขอความกรุณาท่านช่วยตอบแบบสอบถามชุดนี้และส่งคืนมายังผู้วิจัยโดยเร็ว
2. เมื่อท่านทำแบบสอบถามชุดนี้เสร็จเรียบร้อยแล้ว กรุณาพับแบบสอบถามใส่ลงในซองไปรษณีย์ซึ่งส่งมาพร้อมแบบสอบถามฉบับนี้ และโปรดส่งซองไปรษณีย์ดังกล่าวถึงผู้วิจัย ทั้งนี้ท่านไม่ต้องเสียค่าใช้จ่ายในการส่งไปรษณีย์ถึงผู้วิจัยแต่ประการใด

ตอนที่ 1

ข้อมูลเกี่ยวกับหน่วยงานและผู้ตอบแบบสอบถาม

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) ข้อมูลเกี่ยวกับหน่วยงานของผู้ตอบแบบสอบถาม

1.1) โปรดระบุประเภทของบริษัทที่ท่านสังกัด

ผู้รับเหมาหลัก ผู้รับเหมาช่วง ผู้รับเหมาค่าแรง อื่นๆ (โปรดระบุ) _____

1.2) โปรดระบุจำนวนโครงการโดยประมาณที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ โครงการต่อปี

1.3) โปรดระบุมูลค่าโดยประมาณของโครงการสูงสุดที่บริษัทของท่านเคยรับดำเนินการก่อสร้าง

_____ ล้านบาท

1.4) โปรดมูลค่ารวมโดยประมาณของโครงการที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ ล้านบาทต่อปี

1.5) โปรดระบุประเภทโครงการซึ่งบริษัทของท่านรับดำเนินการก่อสร้าง

- งานสาธารณูปโภค (อาทิเช่น ถนน สะพาน เขื่อน อุโมงค์ และระบบระบายน้ำ)
- งานอาคารของหน่วยงานภาครัฐ (อาทิเช่น โรงพยาบาล โรงเรียน สำนักงาน และอาคารพักอาศัย)
- งานอาคารของหน่วยงานภาคเอกชน (อาทิเช่น โรงแรม ศูนย์การค้า และอาคารสำนักงาน)
- งานโรงงานอุตสาหกรรม (อาทิเช่น โรงงาน และ โกดังเก็บสินค้า)
- งานบ้านพักอาศัยภาคเอกชน
- อื่นๆ (โปรดระบุ) _____

2) ข้อมูลเกี่ยวกับผู้ตอบแบบสอบถาม

2.1) โปรดระบุประเภทพื้นฐานการศึกษาของท่าน

- สายช่าง อาทิเช่น สถาปัตยกรรม ก่อสร้าง โยธา ตำรวจ ไฟฟ้า เครื่องกล
- สายบริหาร อาทิเช่น บริหารธุรกิจ บัญชี การเงิน นิติศาสตร์ รัฐศาสตร์
- อื่นๆ (โปรดระบุ) _____

2.2) โปรดระบุระยะเวลาประสบการณ์การทำงานของท่าน _____ ปี

2.3) โปรดระบุตำแหน่งปัจจุบัน/ตำแหน่งล่าสุดของท่านที่เกี่ยวข้องกับโครงการก่อสร้าง

- วิศวกรหรือโพรแมน วิศวกร โครงการ ผู้จัดการโครงการ
- นิติกรหรือที่ปรึกษากฎหมาย ผู้บริหารระดับสูงกว่าผู้จัดการโครงการ
- อื่นๆ (โปรดระบุ) _____

ตอนที่ 2

เหตุสุดวิสัย

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) นิยามของเหตุสุดวิสัย

1.1) ในความคิดเห็นของท่าน อะไรคือคุณลักษณะที่จำเป็นของ “เหตุสุดวิสัย” (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|--|--|
| <input type="checkbox"/> คาดการณ์ล่วงหน้าไม่ได้ | <input type="checkbox"/> ป้องกันไม่ได้และ/หรือควบคุมไม่ได้ |
| <input type="checkbox"/> เป็นปรากฏการณ์ทางธรรมชาติ | <input type="checkbox"/> ไม่จัดเป็นความเสี่ยงโดยทั่วไปของการประกอบธุรกิจ |
| <input type="checkbox"/> อื่นๆ โปรดระบุ _____ | |

1.2) ในความเห็นของท่าน เหตุการณ์ใดต่อไปนี่ที่เข้าข่ายเป็น “เหตุสุดวิสัย” (เลือกได้มากกว่าหนึ่งข้อ)

- สภาพภูมิอากาศปกติที่เป็นอุปสรรคต่อการทำงาน อาทิเช่น ฝนตกในฤดูฝน
- สภาพภูมิอากาศผิดปกติ อาทิเช่น ฝนตกนอกฤดูกาล น้ำท่วมสูงเป็นเวลานาน
- ภัยธรรมชาติ อาทิเช่น แผ่นดินไหว ไฟป่า
- สงคราม และการปฏิวัติรัฐประหาร
- การกระทำของบุคคลภายนอก อาทิเช่น การจลาจล
- การกระทำของบุคคลากรของผู้รับเหมา อาทิเช่น การจลาจลโดยคนงาน ไฟไหม้จากความประมาทของคนงาน
- การขาดแคลนทรัพยากร อาทิเช่น แรงงาน วัสดุก่อสร้าง และเครื่องจักร
- การเปลี่ยนแปลงกฎหมายทั่วไป อาทิเช่น การลดค่าเงินบาท และการปรับอัตราค่าแรงขั้นต่ำ
- การเปลี่ยนแปลงกฎหมายเกี่ยวกับการก่อสร้าง อาทิเช่น กฎหมายความปลอดภัยในงานก่อสร้าง
- การที่เส้นทางคมนาคมถูกตัดขาดส่งผลให้ลำเลียงทรัพยากรเข้าโครงการไม่ได้

1.3) ในความเห็นของท่าน “สภาพภูมิอากาศผิดปกติ” หมายถึงสภาพภูมิอากาศซึ่งมีความถี่ของการเกิดเหตุการณ์น้อยกว่า 1 ครั้งในรอบระยะเวลาที่ปี

- 1 ปี 5 ปี 10 ปี อื่นๆ โปรดระบุ _____

2) การชดเชยผลกระทบต่อผู้รับเหมา

2.1) ในความเห็นของท่าน ผู้รับเหมา มีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากเหตุการณ์ เหตุสุดวิสัย อาทิเช่น โครงการถูกน้ำท่วมเป็นระยะเวลา 2 สัปดาห์ (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|---|---|
| <input type="checkbox"/> ไม่มีสิทธิเรียกร้องการชดเชยใดๆ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน |
| <input type="checkbox"/> มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ |
| <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มกำไร | <input type="checkbox"/> มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____ |

2.2) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมา มีสิทธิในการเรียกร้องการชดเชยจากเจ้าของงานอันเนื่องจากเหตุสุดวิสัยที่เกิดขึ้นหรือไม่ หากเหตุสุดวิสัยเกิดขึ้นภายหลังกำหนดการส่งมอบงาน (ผู้รับเหมาดำเนินการก่อสร้างล่าช้าส่งผลให้ไม่สามารถส่งมอบงานได้ตามกำหนดเวลาที่สัญญาระบุ)

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

- 2.3) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ปรับขยายระยะเวลาการส่งมอบงานให้แก่ผู้รับเหมาเพื่อชดเชยผลกระทบจากเหตุการณ์ เหตุสุดวิสัย (เลือกได้มากกว่า 1 คำตอบ)
- ระยะเวลาที่เกิดเหตุการณ์ อาทิเช่น ระยะเวลาที่นำท่วมโครงการ
 - ระยะเวลาจัดหา/ซ่อมแซมทรัพยากรที่เสียหาย อาทิเช่น เครื่องจักร
 - ระยะเวลาซ่อมแซมงานที่เสียหายและปรับสภาพหน้างาน
 - ระยะเวลาที่ล่าช้าจากการสูญเสียประสิทธิภาพการทำงานของแรงงานเพราะแรงงานไม่ได้ทำงานอย่างต่อเนื่อง
 - อื่นๆ โปรดระบุ _____
- 2.4) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ชดเชยภาระค่าใช้จ่ายทางตรงที่ผู้รับเหมาได้รับผลกระทบจากเหตุการณ์ เหตุสุดวิสัย (เลือกได้มากกว่า 1 คำตอบ)
- ค่าใช้จ่ายในการจัดหา/ซ่อมแซมทรัพยากรที่เสียหาย อาทิเช่น เครื่องจักร
 - ค่าใช้จ่ายในการซ่อมแซมงานที่เสียหายและปรับสภาพหน้างาน
 - ต้นทุนค่าแรงระหว่างการหยุดงาน
 - ต้นทุนการสูญเสียประสิทธิภาพการทำงานของแรงงานเพราะแรงงานไม่ได้ทำงานอย่างต่อเนื่อง
 - ต้นทุนค่าใช้จ่ายที่ปรับราคาค่าจ้างระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุ
 - อื่นๆ โปรดระบุ _____
- 2.5) ท่านเห็นด้วยหรือไม่ว่า การกำหนดให้ผู้รับเหมาได้รับการชดเชยระยะเวลาและ/หรือค่าใช้จ่ายในการซ่อมแซมงานที่ได้รับ ความเสียหาย หมายความว่ารวมถึงการซ่อมแซมงานซึ่งยังไม่ได้รับการตรวจสอบและ/หรืออนุมัติจ่ายค่าจ้างด้วย
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3) การแจ้งเหตุและการเรียกร้องการชดเชย

- 3.1) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีหน้าที่แจ้งการประสบเหตุการณ์ เหตุสุดวิสัย ต่อเจ้าของงาน
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 3.2) ในความเห็นของท่าน ผู้รับเหมาควรแจ้งเหตุต่อเจ้าของงานภายในระยะเวลาเท่าใดนับแต่วันที่ทราบเหตุ หากสัญญาว่าจ้าง กำหนดให้ผู้รับเหมามีหน้าที่ต้องแจ้งเหตุการณ์ เหตุสุดวิสัย ต่อเจ้าของงาน
- 1 วัน 7 วัน 15 วัน อื่นๆ โปรดระบุ _____
- 3.3) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมายังคงจำเป็นต้องแจ้งเหตุการณ์ เหตุสุดวิสัย ต่อเจ้าของงานอย่างเป็นทางการ แม้ว่าจะปรากฏโดยชัดเจนว่าเจ้าของงานรับทราบถึงเหตุการณ์ที่เกิดขึ้นโดยพฤตินัยแล้ว
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 3.4) ท่านเห็นด้วยหรือไม่ว่า การที่ผู้รับเหมาไม่แจ้งเหตุการณ์ เหตุสุดวิสัย ต่อเจ้าของงานตามที่สัญญากำหนด หมายความว่าผู้รับเหมา ได้ละซึ่งสิทธิในการเรียกร้องการชดเชยจากเหตุดังกล่าว
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 3.5) ในความเห็นของท่าน ผู้รับเหมาพึงใช้สิทธิเรียกร้องการชดเชยอันเนื่องมาจากเหตุสุดวิสัยภายในกำหนดระยะเวลาเท่าใด
- 15 วัน นับแต่วันที่ทราบเหตุ 30 วัน นับแต่วันที่ทราบเหตุ
- ก่อนสิ้นสุดโครงการ ไม่มีกำหนด
- อื่นๆ โปรดระบุ _____

ตอนที่ 3

ความล่าช้าและความบกพร่องของเจ้าของงาน

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) กรอบระยะเวลาในการปฏิบัติหน้าที่ของเจ้าของงานและหน้าที่ของผู้รับเหมา

1.1) ในความเห็นของท่าน เจ้าของงานควรส่งมอบพื้นที่ให้แก่ผู้รับเหมาภายในระยะเวลาเท่าใดนับจากวันที่ผู้รับเหมาเสนอราคา

- 1 เดือน 3 เดือน 6 เดือน อื่นๆ โปรดระบุ _____

1.2) ในความเห็นของท่าน เจ้าของงานควรพิจารณาอนุมัติสิ่งที่ระบุให้แล้วเสร็จภายในระยะเวลาเท่าใด นับจากวันที่ผู้รับเหมาเสนอเรื่องพิจารณา

แผนงานก่อสร้าง

- 1 สัปดาห์ 2 สัปดาห์ 1 เดือน อื่นๆ โปรดระบุ _____

ขั้นตอน/วิธีการดำเนินการ

- 1 สัปดาห์ 2 สัปดาห์ 1 เดือน อื่นๆ โปรดระบุ _____

แบบรูป

- 1 สัปดาห์ 2 สัปดาห์ 1 เดือน อื่นๆ โปรดระบุ _____

วัสดุก่อสร้าง

- 1 สัปดาห์ 2 สัปดาห์ 1 เดือน อื่นๆ โปรดระบุ _____

ผลทดสอบทางวิศวกรรม อาทิเช่น ผลการเจาะสำรวจและวิเคราะห์ชั้นดิน

- 1 สัปดาห์ 2 สัปดาห์ 1 เดือน อื่นๆ โปรดระบุ _____

1.3) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาที่มีหน้าที่ต้องแจ้งต่อเจ้าของงานถึงความจำเป็นของการพิจารณาอนุมัติสิ่งที่ผู้รับเหมาเสนอให้แล้วเสร็จภายในกำหนดเวลา

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

1.4) ในความเห็นของท่าน ผู้รับเหมาควรแจ้งต่อเจ้าของงานล่วงหน้าเพียงใด หากสัญญาว่าจ้างกำหนดให้ผู้รับเหมาที่มีหน้าที่ต้องแจ้งถึงความจำเป็นของการพิจารณาอนุมัติสิ่งที่ผู้รับเหมาเสนอให้แล้วเสร็จภายในกำหนดเวลา

- 3 วัน 1 สัปดาห์ 2 สัปดาห์ อื่นๆ โปรดระบุ _____

1.5) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาที่มีหน้าที่ต้องแจ้งต่อเจ้าของงานล่วงหน้าเมื่อมีความประสงค์จะให้เจ้าของงานเข้าทำการตรวจสอบงาน อาทิเช่น การตรวจสอบความถูกต้องก่อนการเทคอนกรีต

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

1.6) ในความเห็นของท่าน ผู้รับเหมาควรแจ้งต่อเจ้าของงานล่วงหน้าเพียงใด หากสัญญาว่าจ้างกำหนดให้ผู้รับเหมาที่มีหน้าที่ต้องแจ้งร้องขอการตรวจสอบงานต่อเจ้าของงานล่วงหน้า

- 1/2 วัน 1 วัน 3 วัน อื่นๆ โปรดระบุ _____

จุฬาลงกรณ์มหาวิทยาลัย

2) การชดเชยผลกระทบต่อผู้รับเหมา

2.1) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการปฏิบัติหน้าที่ล่าช้าของเจ้าของงาน อาทิเช่น การส่งมอบสถานที่ล่าช้า หรือ การอนุมัติแบบก่อสร้างล่าช้า (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|---|---|
| <input type="checkbox"/> ไม่มีสิทธิเรียกร้องการชดเชยใดๆ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน |
| <input type="checkbox"/> มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ |
| <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มกำไร | <input type="checkbox"/> มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____ |

2.2) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ปรับขยายระยะเวลาการส่งมอบงานให้แก่ผู้รับเหมาเพื่อชดเชยผลกระทบจากการปฏิบัติหน้าที่ล่าช้าของเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ระยะเวลาที่เจ้าของงานล่าช้า
- ระยะเวลาเตรียมการภายหลังจากเจ้าของงานดำเนินการแล้วเสร็จ
- ระยะเวลาที่ล่าช้าจากการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

2.3) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ชดเชยภาระค่าใช้จ่ายตรงที่ผู้รับเหมาได้รับผลกระทบจากการปฏิบัติหน้าที่ล่าช้าของเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ต้นทุนค่าใช้จ่ายระหว่างการหยุดงาน อาทิเช่น ค่าจ้างแรงงาน
- ต้นทุนค่าใช้จ่ายที่ปรับราคาขึ้นระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุ
- ต้นทุนการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

2.4) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการปฏิบัติหน้าที่บกพร่องของเจ้าของงาน อาทิเช่น การกำหนดจุดอ้างอิงให้กับผู้รับเหมาคลาดเคลื่อน อันส่งผลให้จำเป็นต้องมีการรื้อถอนและก่อสร้างใหม่บางส่วน (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|---|---|
| <input type="checkbox"/> ไม่มีสิทธิเรียกร้องการชดเชยใดๆ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน |
| <input type="checkbox"/> มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ |
| <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มกำไร | <input type="checkbox"/> มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____ |

2.5) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ปรับขยายระยะเวลาการส่งมอบงานให้แก่ผู้รับเหมาเพื่อชดเชยผลกระทบจากการปฏิบัติหน้าที่บกพร่องของเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ระยะเวลาเตรียมการแก้ไขงาน
- ระยะเวลาแก้ไขงาน
- ระยะเวลาที่ล่าช้าจากการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

2.6) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ชดเชยภาระค่าใช้จ่ายทางตรงที่ผู้รับเหมาได้รับผลกระทบจากการปฏิบัติหน้าที่บกพร่องของเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ค่าใช้จ่ายในการแก้ไขงาน
- ต้นทุนค่าใช้จ่ายที่ปรับราคาขึ้นระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุ
- ต้นทุนการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

3) การแจ้งเหตุและการเรียกร้องการชดเชย

3.1) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีหน้าที่แจ้งต่อเจ้าของงานเมื่อทราบถึงเหตุการณ์ การปฏิบัติหน้าที่ล่าช้า/บกพร่องของเจ้าของงาน

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.2) ในความเห็นของท่าน ผู้รับเหมาควรแจ้งเหตุต่อเจ้าของงานภายในระยะเวลาเท่าใดนับแต่วันที่ทราบเหตุ หากสัญญาว่าจ้างกำหนดให้ผู้รับเหมามีหน้าที่ต้องแจ้งเหตุการณ์ การปฏิบัติหน้าที่ล่าช้า/บกพร่องของเจ้าของงาน

- 1 วัน 7 วัน 15 วัน อื่นๆ โปรดระบุ _____

3.3) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมายังคงจำเป็นต้องแจ้งเหตุการณ์การปฏิบัติหน้าที่ล่าช้า/บกพร่องของเจ้าของงานต่อเจ้าของงานอย่างเป็นทางการ แม้ว่าจะปรากฏโดยชัดเจนว่าเจ้าของงานรับทราบถึงเหตุการณ์ที่เกิดขึ้นโดยพฤตินัยแล้ว

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.4) ท่านเห็นด้วยหรือไม่ว่า การที่ผู้รับเหมาไม่แจ้งเหตุการณ์การปฏิบัติหน้าที่ล่าช้า/บกพร่องของเจ้าของงานตามที่สัญญากำหนด หมายถึงผู้รับเหมาได้ละซึ่งสิทธิในการเรียกร้องการชดเชยจากเหตุดังกล่าว

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.5) ในความเห็นของท่าน ผู้รับเหมาต้องใช้สิทธิเรียกร้องการชดเชยอันเนื่องมาจากการปฏิบัติหน้าที่ความล่าช้า/บกพร่องของเจ้าของงานภายในกำหนดเวลาเท่าใด

- 15 วัน นับแต่วันที่ทราบเหตุ 30 วัน นับแต่วันที่ทราบเหตุ
- ก่อนสิ้นสุดโครงการ ไม่มีกำหนด
- อื่นๆ โปรดระบุ _____

ตอนที่ 4

สภาพแวดล้อมเป็นอุปสรรคต่อการทำงาน

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (✓) ในบริเวณที่กำหนด

1) การดำเนินการของผู้รับเหมาเมื่อพบว่าสภาพแวดล้อมเป็นอุปสรรคต่อการทำงาน

1.1) ในความเห็นของท่าน ผู้รับเหมาต้องปฏิบัติตนเช่นไร เมื่อพบว่าข้อมูลที่เจ้าของงานแจ้งมีความคลาดเคลื่อนอันส่งผลให้จำเป็นต้องใช้ระยะเวลาดำเนินการเพิ่มขึ้นและ/หรือมีภาระค่าใช้จ่ายมากขึ้น อาทิเช่น เจ้าของงานแจ้งว่าสภาพพื้นดินในบริเวณสถานที่ก่อสร้างเป็นดินเหนียว แต่แท้จริงแล้วเป็นหินแข็ง

- หยุดดำเนินการ แจ้งเจ้าของงานและรอลำสั่งจากเจ้าของงาน
- แจ้งเจ้าของงาน และดำเนินการต่อไปตามความเหมาะสม
- ดำเนินการต่อไปตามความเหมาะสม โดยไม่จำเป็นต้องแจ้งเจ้าของงาน
- อื่นๆ โปรดระบุ _____

1.2) ในความเห็นของท่าน ผู้รับเหมาต้องปฏิบัติตนเช่นไร เมื่อดำเนินการตามที่สัญญากำหนดไม่ได้เนื่องจากข้อมูลที่เจ้าของงานแจ้งมีความคลาดเคลื่อน อาทิเช่น แนวเส้นทางท่อระบายน้ำตามที่แบบระบุลุ่มน้ำเข้าไปในพื้นที่บุคคลอื่น

- หยุดดำเนินการ แจ้งเจ้าของงานและรอลำสั่งจากเจ้าของงาน
- แจ้งเจ้าของงาน และดำเนินการต่อไปตามความเหมาะสม
- ดำเนินการต่อไปตามความเหมาะสม โดยไม่จำเป็นต้องแจ้งเจ้าของงาน
- อื่นๆ โปรดระบุ _____

1.3) ในความเห็นของท่าน ผู้รับเหมาต้องปฏิบัติตนเช่นไร เมื่อดำเนินการตามที่สัญญากำหนดไม่ได้เนื่องจากสภาพภูมิประเทศไม่เอื้ออำนวย อาทิเช่น สัญญาระบุให้ผู้รับเหมาตอกเสาเข็มความยาว 18 เมตร โดยจะต้องได้จำนวนครั้งการตอกเสาเข็มต่อฟุต (Blow count) ตามที่กำหนด แต่เมื่อผู้รับเหมาตอกเสาเข็มไปจนครบความยาวแล้ว ปรากฏว่ายังไม่ได้จำนวนครั้งการตอกเสาเข็มตามที่กำหนดไว้

- แจ้งเจ้าของงาน หยุดดำเนินการ และรอลำสั่งจากเจ้าของงาน
- แจ้งเจ้าของงาน และดำเนินการต่อไปตามความเหมาะสม
- ดำเนินการต่อไปตามความเหมาะสม โดยไม่จำเป็นต้องแจ้งเจ้าของงาน
- อื่นๆ โปรดระบุ _____

2) การชดเชยผลกระทบต่อผู้รับเหมา

2.1) ในความเห็นของท่าน ผู้รับเหมาจะมีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการได้รับแจ้งข้อมูลจากเจ้าของงานคลาดเคลื่อน อาทิเช่น ผู้รับเหมาได้รับแจ้งว่าสภาพพื้นดินในบริเวณสถานที่ก่อสร้างเป็นดินเหนียว แต่แท้จริงแล้วเป็นหินแข็ง ส่งผลทำให้จำเป็นต้องใช้ระยะเวลาดำเนินการเพิ่มขึ้นและมีภาระค่าใช้จ่ายมากขึ้น (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|---|---|
| <input type="checkbox"/> ไม่มีสิทธิเรียกร้องการชดเชยใดๆ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน |
| <input type="checkbox"/> มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ |
| <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มกำไร | <input type="checkbox"/> มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____ |

- 2.2) ในความเห็นของท่าน ควรมีการพิจารณาปรับกำหนดการส่งมอบงานและ/หรือค่าจ้างหรือไม่ อย่างไร หากการแจ้งข้อมูลที่คลาดเคลื่อนของเจ้าของงานส่งผลให้ผู้รับเหมาเสนอราคาและระยะเวลาดำเนินการสูงมากเกินไป อาทิเช่น เจ้าของงานแจ้งว่าสภาพพื้นดินในบริเวณสถานที่ก่อสร้างเป็นดินแข็ง แต่แท้จริงเป็นดินเหนียว (ตอบได้มากกว่า 1 คำตอบ)
- ไม่ควรปรับทั้งกำหนดการส่งมอบงานและค่าจ้าง ควรปรับลดกำหนดการส่งมอบงาน
- ควรปรับลดค่าแรงงานและค่าวัสดุ ควรปรับลดค่าดำเนินการ
- ควรปรับลดค่าใด ควรดำเนินการอื่นๆ โปรดระบุ _____
- 2.3) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีสิทธิได้รับการชดเชยจากเจ้าของงาน หากสภาพภูมิประเทศบริเวณสถานที่ก่อสร้างมีสภาพแตกต่างไปจากสภาพซึ่งบุคคลทั่วไปพึงคาดการณ์ อาทิเช่น สภาพพื้นดินในกรุงเทพมหานครเป็นดินแข็งทั้งที่โดยปกติจะเป็นดินเหนียว
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 2.4) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีสิทธิได้รับการชดเชยจากเจ้าของงาน หากข้อมูลที่ได้รับแจ้งมีความคลาดเคลื่อนแม้ว่าแบบ/เอกสารสำหรับการประเมินราคาจะมีการระบุว่าผู้รับเหมาต้องใช้วิจารณญาณของตนในการพิจารณาข้อมูลที่ได้รับแจ้งจากเจ้าของงาน
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 2.5) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีสิทธิได้รับการชดเชยจากเจ้าของงาน แม้ว่าผู้รับเหมาจะพึงสังเกตเห็นว่าข้อมูลซึ่งได้รับแจ้งมีความคลาดเคลื่อน อาทิเช่น เจ้าของงานระบุว่าสภาพพื้นดินเป็นดินเหนียว แต่ผู้รับเหมาพึงสังเกตเห็นได้ในขณะดูสถานที่ก่อสร้างว่าแท้จริงแล้วสภาพพื้นดินเป็นดินแข็ง
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 2.6) ในความเห็นของท่าน ผู้รับเหมามีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบอันเนื่องมาจากการที่เจ้าของงานมีคำสั่งใดๆ เมื่อพบว่าการดำเนินการตามที่สัญญากำหนดเป็นไปไม่ได้เพราะข้อมูลที่เจ้าของงานแจ้งไว้แต่แรกมีความคลาดเคลื่อน อาทิเช่น เจ้าของงานสั่งปรับเปลี่ยนเส้นทางท่อระบายน้ำ เมื่อพบว่าแนวท่อระบายน้ำตามที่แบบระบุลึกลงไปในพื้นที่บุคคลอื่น (ตอบได้มากกว่า 1 คำตอบ)
- ไม่มีสิทธิเรียกร้องการชดเชยใดๆ มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน
- มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ
- มีสิทธิเรียกร้องการปรับเพิ่มค่าใด มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____
- 2.7) ในความเห็นของท่าน ควรมีการพิจารณาปรับกำหนดการส่งมอบงานและ/หรือค่าจ้างหรือไม่ อย่างไร หากเจ้าของงานมีคำสั่งใดๆอันทำให้ผู้รับเหมาใช้เวลาดำเนินการลดลงและ/หรือมีค่าใช้จ่ายลดลงเมื่อพบว่าการปฏิบัติงานตามที่สัญญากำหนดไว้เป็นไปไม่ได้เพราะข้อมูลที่เจ้าของงานแจ้งไว้แต่แรกมีความคลาดเคลื่อน อาทิเช่น เจ้าของงานสั่งยกเลิกงานท่อระบายน้ำเมื่อพบว่าแนวท่อระบายน้ำตามที่แบบระบุลึกลงไปในพื้นที่บุคคลอื่น (ตอบได้มากกว่า 1 คำตอบ)
- ไม่ควรปรับทั้งกำหนดการส่งมอบงานและค่าจ้าง ควรปรับลดกำหนดการส่งมอบงาน
- ควรปรับลดค่าแรงงานและค่าวัสดุ ควรปรับลดค่าดำเนินการ
- ควรปรับลดค่าใด ควรดำเนินการอื่นๆ โปรดระบุ _____

2.8) ในความเห็นของท่าน ผู้รับเหมามีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการที่เจ้าของงานมีคำสั่งใดๆเมื่อพบว่าการปฏิบัติงานตามที่สัญญากำหนดไว้เป็นไปได้เพราะสภาพภูมิประเทศไม่เอื้ออำนวย อาทิเช่น เจ้าของงานสั่งให้ต่อเสาเข็ม เมื่อพบว่าจำนวนครั้งการตอกเสาเข็มตาม (Blow Count) ยังไม่ครบตามจำนวนที่ต้องการ แม้จะตอกเสาเข็มไปจนครบความยาวตามที่กำหนดแล้ว (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|---|---|
| <input type="checkbox"/> ไม่มีสิทธิเรียกร้องการชดเชยใดๆ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน |
| <input type="checkbox"/> มีสิทธิเรียกร้องการชดเชยค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มค่าดำเนินการ |
| <input type="checkbox"/> มีสิทธิเรียกร้องการปรับเพิ่มกำไร | <input type="checkbox"/> มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____ |

2.9) ในความเห็นของท่าน ควรมีการพิจารณาปรับกำหนดการส่งมอบงานและ/หรือค่าจ้างหรือไม่ อย่างไร หากเจ้าของงานมีคำสั่งใดๆอันทำให้ผู้รับเหมาใช้เวลาดำเนินการลดลงและ/หรือมีค่าใช้จ่ายลดลงเมื่อพบว่าการปฏิบัติงานตามที่สัญญากำหนดไว้เป็นไปได้เพราะสภาพภูมิประเทศไม่เอื้ออำนวย อาทิเช่น เจ้าของงานสั่งให้ลดความยาวของเสาเข็มเมื่อพบว่า การตอกเสาเข็มจนครบความยาวตามที่สัญญากำหนดไว้ อาจทำให้เสาเข็มหัก (ตอบได้มากกว่า 1 คำตอบ)

- | | |
|--|---|
| <input type="checkbox"/> ไม่ควรปรับทั้งกำหนดการส่งมอบงานและค่าจ้าง | <input type="checkbox"/> ควรปรับลดกำหนดการส่งมอบงาน |
| <input type="checkbox"/> ควรปรับลดค่าแรงงานและค่าวัสดุ | <input type="checkbox"/> ควรปรับลดค่าดำเนินการ |
| <input type="checkbox"/> ควรปรับลดกำไร | <input type="checkbox"/> ควรดำเนินการอื่นๆ โปรดระบุ _____ |

2.10) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ปรับขยายกำหนดส่งมอบงานเพื่อชดเชยผลกระทบกรณีข้อมูลที่เจ้าของงานแจ้งมีความคลาดเคลื่อน หรือกรณีเจ้าของงานมีคำสั่งใดๆเมื่อพบว่าการดำเนินการตามที่สัญญากำหนดไว้เป็นไปได้ (เลือกได้มากกว่า 1 คำตอบ)

- ระยะเวลาที่หยุดรอการตัดสินใจจากเจ้าของงาน
- ระยะเวลาที่ผู้รับเหมาต้องใช้ในการเตรียมการภายหลังจากได้รับคำสั่งจากเจ้าของงาน
- ระยะเวลาในการปฏิบัติงานซึ่งเพิ่มมากขึ้น
- อื่นๆ โปรดระบุ _____

2.11) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ชดเชยภาวะค่าใช้จ่ายทางตรงแก่ผู้รับเหมากรณีข้อมูลที่เจ้าของงานแจ้งมีความคลาดเคลื่อน หรือกรณีเจ้าของงานมีคำสั่งใดๆเมื่อพบว่า การดำเนินการตามที่สัญญากำหนดไว้เป็นไปได้ (เลือกได้มากกว่า 1 คำตอบ)

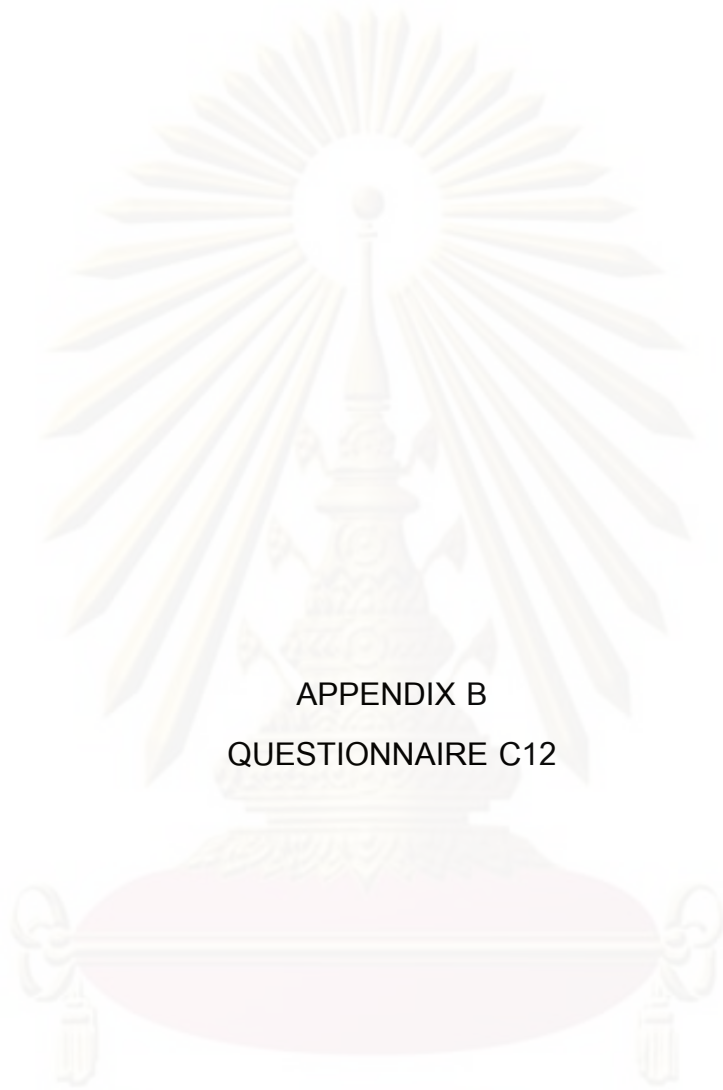
- ต้นทุนค่าใช้จ่ายระหว่างการหยุดงานรอการตัดสินใจ อาทิเช่น ค่าจ้างแรงงาน
- ต้นทุนค่าใช้จ่ายในการปฏิบัติงานซึ่งเกิดเพิ่มขึ้น
- ต้นทุนค่าใช้จ่ายที่ปรับราคาขึ้นระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุ
- อื่นๆ โปรดระบุ _____

3) การเรียกร้องการชดเชย

3.1) ในความเห็นของท่าน ผู้รับเหมาต้องใช้สิทธิเรียกร้องการชดเชย เนื่องจากสภาพแวดล้อมเป็นอุปสรรคต่อการทำงานภายในกำหนดเวลาเท่าใด

- | | |
|--|--|
| <input type="checkbox"/> 15 วัน นับแต่วันที่ทราบเหตุ | <input type="checkbox"/> 30 วัน นับแต่วันที่ทราบเหตุ |
| <input type="checkbox"/> ก่อนสิ้นสุดโครงการ | <input type="checkbox"/> ไม่มีกำหนด |
| <input type="checkbox"/> อื่นๆ โปรดระบุ _____ | |

*****จบบแบบสอบถาม ขอกราบขอบพระคุณที่ท่านให้ความอนุเคราะห์ข้อมูล*****



APPENDIX B
QUESTIONNAIRE C12

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

ภาควิชาวิศวกรรมโยธา คณะวิศวกรรมศาสตร์ ถนนพญาไท ปทุมวัน กรุงเทพฯ 10330

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Phayathai Rd., Pathumwan, Bangkok 10330 Tel : (662) 218-6460 to 62, Fax : (662) 251-7304

วันที่ 20 เมษายน 2551

เรียน ท่านผู้ตอบแบบสอบถาม

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

สิ่งที่ส่งมาด้วย 1) แบบสอบถาม จำนวน 1 ชุด

2) ของไปรษณีย์ติดแสตมป์สำหรับส่งคืนแบบสอบถาม จำนวน 1 ของ

ด้วย กระผม นาย นที สุริยานนท์ นิสิตในหลักสูตรวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา กำลังทำงานวิจัยเพื่อประเมินแนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและเสนอแนะแนวทางที่ความเหมาะสมในการเขียนข้อสัญญาเกี่ยวกับเหตุการณ์ซึ่งส่งผลกระทบต่อการค้าดำเนินการของผู้รับเหมา

กระผมมีความจำเป็นที่จะต้องรวบรวมข้อมูลจากกลุ่มตัวอย่างซึ่งเป็นตัวแทนบุคลากรฝ่ายบริษัทรับเหมา ก่อสร้างและฝ่ายเจ้าของงานให้ได้จำนวนไม่ต่ำกว่า 600 ตัวอย่าง เพื่อนำมาใช้ในการประเมินแนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและวิเคราะห์ความเหมาะสมของข้อสัญญาเกี่ยวกับสิทธิในการปฏิเสธการขออนุญาต การแทรกแซงการค้าดำเนินการ และการตั้งเปลี่ยนแปลงงาน โดยเจ้าของงาน ซึ่งเป็นเนื้อหาส่วนสำคัญส่วนหนึ่งของงานวิจัยของกระผม

กระผมจึงใคร่ขอความกรุณาจากท่านในการตอบแบบสอบถามซึ่งกระผมได้ส่งมาพร้อมจดหมายฉบับนี้ การได้รับความอนุเคราะห์จากท่านจะมีผลอย่างมากต่อความสำเร็จของงานวิจัยของกระผม กระผมหวังเป็นอย่างยิ่งที่จะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์

ขอแสดงความนับถืออย่างสูง

(นาย นที สุริยานนท์)

นิสิตจุฬาลงกรณ์มหาวิทยาลัย

ศูนย์วิทยุโทรคมนาคม
จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม

เรื่อง ทักษะคติของผู้รับเหมา

ต่อ

การปฏิบัติตนของเจ้าของงานซึ่งส่งผลกระทบต่อการดำเนินการของผู้รับเหมา

รหัสแบบสอบถาม C12-_____

แนวคิดและวัตถุประสงค์ของงานวิจัย : การปฏิบัติตนของเจ้าของงานซึ่งส่งผลกระทบต่อการดำเนินการของผู้รับเหมา ได้แก่ การปฏิเสธการขออนุญาตและการแทรกแซงการดำเนินการ และการสั่งเปลี่ยนแปลงงาน เป็นสาเหตุที่ทำให้เกิดความขัดแย้งระหว่างผู้รับเหมาและเจ้าของงานอยู่บ่อยครั้ง ความขัดแย้งระหว่างคู่สัญญาเกิดขึ้นเมื่อคู่สัญญามีทัศนคติที่แตกต่างกันและสัญญาว่าจ้างมีเนื้อหาไม่ครอบคลุมและ/หรือไม่ชัดเจน หากทราบข้อมูลทัศนคติของฝ่ายผู้รับเหมาและฝ่ายเจ้าของงาน ผู้ร่างสัญญาก็ย่อมสามารถร่างเนื้อหาสัญญาให้มีความครอบคลุมและชัดเจนได้ดียิ่งขึ้น

แบบสอบถามชุดนี้ทำขึ้นโดยมีวัตถุประสงค์เพื่อศึกษาทัศนคติของฝ่ายผู้รับเหมาต่อประเด็นต่างๆเกี่ยวกับการปฏิเสธการให้อนุญาต การแทรกแซงการดำเนินการ และการสั่งเปลี่ยนแปลงงาน โดยเจ้าของงาน อาทิเช่น สิทธิของผู้รับเหมาในการเรียกร้องการชดเชย และการตอบสนองเมื่อเกิดเหตุการณ์ เป็นต้น ข้อมูลที่ได้จากแบบสอบถามนี้ถือเป็นความลับซึ่งใช้เฉพาะในการศึกษานี้เท่านั้น ขอความกรุณาท่านโปรดตอบตามความเป็นจริง คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งในการพัฒนาข้อสัญญาให้มีความเหมาะสม ยุติธรรม และชัดเจนยิ่งขึ้น ซึ่งย่อมส่งผลดีต่อผู้รับเหมา เจ้าของงาน วิศวกรที่ปรึกษา และ รวมถึงบุคคลผู้ซึ่งเกี่ยวข้องกับการจ้างงานก่อสร้างฝ่ายอื่นๆในที่สุด

ผู้ตอบแบบสอบถาม : บุคลากรของผู้รับเหมาซึ่งมีประสบการณ์เกี่ยวกับเสนอราคางาน การพิจารณาเงื่อนไขการว่าจ้าง การบริหารการก่อสร้าง และการควบคุมการก่อสร้าง อาทิเช่น ผู้รับผิดชอบการประมาณราคาและเสนอราคางาน นิติกรหรือที่ปรึกษากฎหมาย ผู้จัดการโครงการ วิศวกรโครงการ วิศวกร และ โฟร์แมน เป็นต้น

รายละเอียดของแบบสอบถาม : แบบสอบถามฉบับนี้ได้ถูกจำแนกเป็น 3 ตอน โปรดตอบคำถามทุกข้อ คำตอบของท่านทุกคำตอบมีความจำเป็นต่อการวิจัยนี้เป็นอย่างมาก ผู้วิจัยคาดการณ์ว่าท่านจะอาจต้องใช้เวลาในการตอบแบบสอบถามฉบับนี้ประมาณ 20-30 นาที

หากท่านต้องการข้อมูลเพิ่มเติม สอบถาม หรือให้คำแนะนำ ท่านสามารถติดต่อผู้วิจัยได้ทางโทรศัพท์ และสุดท้ายนี้ ผู้วิจัยขอกราบขอบพระคุณในความร่วมมือของท่าน

นที สุริยานนท์

นิติระดับปริญญาเอกสาขาบริหารการก่อสร้าง

จุฬาลงกรณ์มหาวิทยาลัย

โทร. 081-847-4882

อีเมล: nsuriyan@hotmail.com

หมายเหตุ :

1. ขอความกรุณาท่านช่วยตอบแบบสอบถามชุดนี้และส่งคืนมายังผู้วิจัยโดยเร็ว
2. เมื่อท่านทำแบบสอบถามชุดนี้เสร็จเรียบร้อยแล้ว กรุณาพับแบบสอบถามใส่ลงในซองไปรษณีย์ซึ่งส่งมาพร้อมแบบสอบถามฉบับนี้ และโปรดส่งซองไปรษณีย์ดังกล่าวถึงผู้วิจัย ทั้งนี้ท่านไม่ต้องเสียค่าใช้จ่ายในการส่งไปรษณีย์ถึงผู้วิจัยแต่ประการใด

ตอนที่ 1

ข้อมูลเกี่ยวกับหน่วยงานและผู้ตอบแบบสอบถาม

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) ข้อมูลเกี่ยวกับหน่วยงานของผู้ตอบแบบสอบถาม

1.1) โปรดระบุประเภทของบริษัทที่ท่านสังกัด

ผู้รับเหมาหลัก ผู้รับเหมาช่วง ผู้รับเหมาค่าแรง อื่นๆ (โปรดระบุ) _____

1.2) โปรดระบุจำนวนโครงการโดยประมาณที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ โครงการต่อปี

1.3) โปรดระบุมูลค่าโดยประมาณของโครงการสูงสุดที่บริษัทของท่านเคยรับดำเนินการก่อสร้าง

_____ ล้านบาท

1.4) โปรดมูลค่ารวมโดยประมาณของโครงการที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ ล้านบาทต่อปี

1.5) โปรดระบุประเภทโครงการซึ่งบริษัทของท่านรับดำเนินการก่อสร้าง

- งานสาธารณูปโภค (อาทิเช่น ถนน สะพาน เขื่อน อุโมงค์ และระบบระบายน้ำ)
- งานอาคารของหน่วยงานภาครัฐ (อาทิเช่น โรงพยาบาล โรงเรียน สำนักงาน และอาคารพักอาศัย)
- งานอาคารของหน่วยงานภาคเอกชน (อาทิเช่น โรงแรม ศูนย์การค้า และอาคารสำนักงาน)
- งานโรงงานอุตสาหกรรม (อาทิเช่น โรงงาน และ โกดังเก็บสินค้า)
- งานบ้านพักอาศัยภาคเอกชน
- อื่นๆ (โปรดระบุ) _____

2) ข้อมูลเกี่ยวกับผู้ตอบแบบสอบถาม

2.1) โปรดระบุประเภทพื้นฐานการศึกษาของท่าน

- สายช่าง อาทิเช่น สถาปัตยกรรม ก่อสร้าง โยธา ตำรวจ ไฟฟ้า เครื่องกล
- สายบริหาร อาทิเช่น บริหารธุรกิจ บัญชี การเงิน นิติศาสตร์ รัฐศาสตร์
- อื่นๆ (โปรดระบุ) _____

2.2) โปรดระบุระยะเวลาประสบการณ์การทำงานของท่าน _____ ปี

2.3) โปรดระบุตำแหน่งปัจจุบัน/ตำแหน่งล่าสุดของท่านที่เกี่ยวข้องกับโครงการก่อสร้าง

- วิศวกรหรือโพรแมน วิศวกรโครงการ ผู้จัดการโครงการ
- นิติกรหรือที่ปรึกษากฎหมาย ผู้บริหารระดับสูงกว่าผู้จัดการโครงการ
- อื่นๆ (โปรดระบุ) _____

ตอนที่ 2

การปฏิเสธการขออนุญาตและการแทรกแซงการดำเนินการโดยเจ้าของงาน

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) อำนาจของเจ้าของงานในการแทรกแซงการดำเนินการ

1.1) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมามีหน้าที่ต้องขออนุญาตต่อเจ้าของงานในเรื่องต่างๆดังต่อไปนี้

การเลือกใช้วัสดุก่อสร้าง

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

การใช้งานผู้รับเหมาช่วง

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

การปฏิบัติงานในวันหยุดและ/หรือนอกเวลาทำงานปกติ

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

การกำหนดขั้นตอนการดำเนินการก่อสร้าง

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

1.2) ในความเห็นของท่าน “วันทำงานปกติ” หมายถึงวันใดในสัปดาห์

วันจันทร์ถึงวันศุกร์ วันจันทร์ถึงวันเสาร์ ทุกวัน อื่นๆ โปรดระบุ _____

1.3) ในความเห็นของท่าน “เวลาทำงานปกติ” หมายถึงช่วงเวลาใด

8.30 – 16.30 น. 8.00 – 17.00 น. 8.00 – 18.00 น. อื่นๆ โปรดระบุ _____

1.4) ท่านเห็นด้วยหรือไม่ว่า การกำหนดให้ผู้รับเหมามีหน้าที่ต้องขออนุญาตต่อเจ้าของงานในเรื่องใดๆหมายความว่าเจ้าของงานมีสิทธิเด็ดขาดในการพิจารณาอนุญาตการร้องขอของผู้รับเหมา อาทิเช่น หากเจ้าของงานไม่ต้องการให้ใช้วัสดุหรือที่ผู้รับเหมาเสนอที่ย่อมสามารถปฏิเสธการอนุญาตได้แม้ว่าวัสดุหรือที่ดังกล่าวจะมีคุณสมบัติตรงตามที่สัญญาระบุอย่างครบถ้วน

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

1.5) ท่านเห็นด้วยหรือไม่ว่า เจ้าของงานทรงสิทธิที่จะดำเนินการดังต่อไปนี้

การสั่งให้ผู้รับเหมาหยุดงานเป็นการชั่วคราวโดยที่ผู้รับเหมามีได้กระทำการบกพร่อง

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

การเข้าดำเนินการก่อสร้างในพื้นที่ก่อสร้างด้วยตนเองหรือโดยผู้รับเหมาอื่น

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

การเข้าใช้งานสิ่งปลูกสร้างที่ผู้รับเหมาดำเนินการแล้วเสร็จก่อนการรับมอบงานทั้งหมด

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

1.6) ในความเห็นของท่าน เจ้าของงานมีขอบเขตอำนาจในการสั่งหยุดงานเป็นการชั่วคราวแต่ละครั้งเป็นระยะเวลายาวนานเพียงใด หากสัญญาว่าจ้างมิได้ระบุถึงขอบเขตอำนาจการสั่งหยุดงาน

ไม่เกิน 2 สัปดาห์ ไม่เกิน 1 เดือน ไม่จำกัดระยะเวลา อื่นๆ โปรดระบุ _____

1.7) ในความเห็นของท่าน เจ้าของงานมีขอบเขตอำนาจในการสั่งหยุดงานได้จำนวนกี่ครั้ง หากสัญญาว่าจ้างมิได้ระบุถึงขอบเขตอำนาจการสั่งหยุดงาน

1 ครั้ง ไม่เกิน 5 ครั้ง ไม่จำกัดจำนวน อื่นๆ โปรดระบุ _____

2) การชดเชยผลกระทบต่อผู้รับเหมา

2.1) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการถูกปฏิเสธจากเจ้าของงาน โดยไม่มีเหตุผลอันควร อาทิเช่น การถูกปฏิเสธไม่ให้ใช้วัสดุที่เสนอทั้งที่วัสดุดังกล่าวมีคุณสมบัติครบถ้วน (ตอบได้มากกว่า 1 คำตอบ)

- ไม่มีสิทธิเรียกร้องการชดเชยใดๆ มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน
- มีสิทธิเรียกร้องการปรับเพิ่มค่าแรงงานและ/หรือค่าวัสดุ มีสิทธิเรียกร้องการปรับเพิ่มค่าอำนวยความสะดวก
- มีสิทธิเรียกร้องการปรับเพิ่มกำไร มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____

2.2) ท่านเห็นด้วยหรือไม่ว่า แม้จะมีข้อสัญญากำหนดให้ผู้รับเหมาที่มีหน้าที่เสนอสิ่งใดต่อเจ้าของงานเพื่อพิจารณาอนุญาต ผู้รับเหมายังคงมีสิทธิในการเรียกร้องการชดเชยจากเจ้าของงานเมื่อได้รับผลกระทบจากการถูกปฏิเสธจากเจ้าของงาน โดยไม่มีเหตุผลอันควร อาทิเช่น เจ้าของงานไม่อนุญาตให้ผู้รับเหมาใช้วัสดุยี่ห้อที่เสนอ แต่เสนอแนะให้ใช้วัสดุยี่ห้อหนึ่งซึ่งราคาสูงกว่า ทั้งที่วัสดุทั้งสองยี่ห้อคุณสมบัติเหมือนกัน

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

2.3) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากผู้รับเหมาได้รับผลกระทบจากการถูกแทรกแซงการดำเนินการโดยเจ้าของงาน อาทิเช่น การถูกสั่งหยุดงานโดยมิได้เกิดจากความผิดของผู้รับเหมา เจ้าของงานเข้าดำเนินการตกแต่งภายในระหว่างผู้รับเหมากำลังดำเนินการก่อสร้างอาคาร (ตอบได้มากกว่า 1 คำตอบ)

- ไม่มีสิทธิเรียกร้องการชดเชยใดๆ มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน
- มีสิทธิเรียกร้องการปรับเพิ่มค่าแรงงานและ/หรือค่าวัสดุ มีสิทธิเรียกร้องการปรับเพิ่มค่าอำนวยความสะดวก
- มีสิทธิเรียกร้องการปรับเพิ่มกำไร มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____

2.4) ท่านเห็นด้วยหรือไม่ว่า การที่สัญญาว่าจ้างระบุถึงแต่เพียงสิทธิของเจ้าของงานในการแทรกแซงการดำเนินการ โดยไม่ได้ระบุจำกัดสิทธิของผู้รับเหมาในการได้รับการชดเชยผลกระทบ หมายความว่า ผู้รับเหมาที่มีสิทธิในการเรียกร้องการชดเชยจากเจ้าของงานหากได้รับผลกระทบจากการแทรกแซงโดยเจ้าของงาน

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

2.5) ในความเห็นของท่าน ผู้รับเหมาที่มีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ผู้รับเหมาที่มีสิทธิได้รับการปรับขยายกำหนดส่งมอบงานเพื่อชดเชยผลกระทบจากการถูกปฏิเสธการอนุญาตและการถูกแทรกแซงการดำเนินการโดยเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ระยะเวลาที่ต้องหยุดงานจากเหตุดังกล่าว อาทิเช่น การหยุดงานระหว่างจัดหาวัสดุใหม่เพื่อเสนอพิจารณา การหยุดงานระหว่างได้รับคำสั่งให้หยุดงาน หรือ การหยุดงานระหว่างที่ผู้รับเหมารายอื่นดำเนินการ เป็นต้น
- ระยะเวลาที่ใช้ในการเตรียมการดำเนินการเพื่อเข้าเริ่มดำเนินการ/เข้าดำเนินการต่อ
- ระยะเวลาที่ล่าช้าจากการสูญเสียประสิทธิภาพการทำงาน
- อื่นๆ โปรดระบุ _____

จุฬาลงกรณ์มหาวิทยาลัย

2.6) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ผู้รับเหมามีสิทธิได้รับการชดเชยภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่รับผลกระทบจากการถูกปฏิเสธการให้อนุญาตและการถูกแทรกแซงการดำเนินการโดยเจ้าของงาน (เลือกได้มากกว่า 1 คำตอบ)

- ค่าใช้จ่ายระหว่างการหยุดงาน อาทิเช่น ค่าจ้างแรงงานช่วงที่หยุดงาน
- ค่าใช้จ่ายที่ได้ใช้จ่ายไปแล้วและไม่ได้รับคืนอันเนื่องมาจากการถูกปฏิเสธ หรือการแทรกแซงการดำเนินการ อาทิเช่น ค่าจอง/มัดจำวัสดุ หรือ เงินล่วงหน้าผู้รับเหมาช่วง
- ค่าใช้จ่ายในส่วนต้นทุนการก่อสร้างที่ปรับเปลี่ยนระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุประเภทต่างๆที่มีราคาสูงขึ้น
- ค่าใช้จ่ายที่เพิ่มขึ้นจากการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

3) การแจ้งเหตุและการเรียกร้องการชดเชย

3.6) ท่านเห็นด้วยหรือไม่ว่า เมื่อผู้รับเหมาเห็นว่าตนได้รับผลกระทบจากถูกปฏิเสธการอนุญาตโดยไม่มีเหตุผลอันควรหรือถูกเจ้าของงานแทรกแซงการดำเนินการ ผู้รับเหมามีหน้าที่แจ้งเหตุการณ์ดังกล่าวให้เจ้าของงานทราบ

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.7) ในความเห็นของท่าน ผู้รับเหมาควรแจ้งเหตุต่อเจ้าของงานภายในระยะเวลาเท่าใดนับแต่วันที่ทราบเหตุ หากสัญญาว่าจ้างกำหนดให้เมื่อผู้รับเหมามีหน้าที่ต้องแจ้งต่อเจ้าของงานเมื่อถูกปฏิเสธการอนุญาตโดยไม่มีเหตุผลอันควรหรือถูกแทรกแซงการดำเนินการ และผู้รับเหมาต้องการเรียกร้องการชดเชยจากเหตุการณ์ดังกล่าว

- 1 วัน 7 วัน 15 วัน อื่นๆ โปรดระบุ _____

3.8) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมายังคงจำเป็นต้องแจ้งต่อเจ้าของงานอย่างเป็นทางการ แม้ว่าจะปรากฏโดยชัดเจนว่าเจ้าของงานทราบถึงเหตุการณ์ที่เกิดขึ้นโดยพลตินัยแล้ว

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.9) ท่านเห็นด้วยหรือไม่ว่า การที่ผู้รับเหมาไม่แจ้งต่อเจ้าของงาน เมื่อถูกปฏิเสธการอนุญาตโดยไม่มีเหตุผลอันควรหรือเมื่อถูกเจ้าของงานแทรกแซงการดำเนินการตามที่สัญญากำหนด หมายถึงผู้รับเหมาได้สละซึ่งสิทธิในการเรียกร้องการชดเชยจากเหตุดังกล่าวแล้ว

- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.10) ในความเห็นของท่าน ผู้รับเหมาต้องใช้สิทธิเรียกร้องการชดเชยอันเนื่องมาจากการถูกปฏิเสธการอนุญาตโดยไม่มีเหตุผลอันควรและการถูกเจ้าของงานแทรกแซงการดำเนินการ ภายในกำหนดเวลาเท่าใด

- 15 วัน นับแต่วันที่ทราบเหตุ 30 วัน นับแต่วันที่ทราบเหตุ
- ก่อนสิ้นสุดโครงการ ไม่มีกำหนด
- อื่นๆ โปรดระบุ _____

ตอนที่ 3

การเปลี่ยนแปลงงานโดยเจ้าของงาน

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) สิทธิของเจ้าของงานในการเปลี่ยนแปลงงาน

- 1.1) ท่านเห็นด้วยหรือไม่ว่า เจ้าของงานมีสิทธิในการเปลี่ยนแปลงงานตามสัญญา
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 1.2) ท่านเห็นด้วยหรือไม่ว่า การให้สิทธิแก่เจ้าของงานในการเปลี่ยนแปลงงาน หมายความว่าเจ้าของงานสามารถสั่งงานเพิ่มในส่วนของการงานซึ่งอยู่นอกเหนือขอบเขตงานตามสัญญาเดิมได้
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 1.3) ท่านเห็นด้วยหรือไม่ว่า การให้สิทธิแก่เจ้าของงานในการเปลี่ยนแปลงงาน หมายความว่าเจ้าของงานสามารถสั่งปรับเพิ่ม/หรือลดงานอย่างมากได้
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 1.4) ในความเห็นของท่าน เจ้าของงานสามารถสั่งงานเพิ่มเป็นมูลค่ารวมไม่เกินร้อยละเท่าใดเมื่อเทียบกับมูลค่างานตามสัญญา
- ร้อยละ 10 ร้อยละ 20 ร้อยละ 50 ไม่มีขีดจำกัด
- 1.5) ในความเห็นของท่าน เจ้าของงานสามารถสั่งยกเลิกงานเป็นมูลค่ารวมไม่เกินร้อยละเท่าใดเมื่อเทียบกับมูลค่างานตามสัญญา
- ร้อยละ 10 ร้อยละ 20 ร้อยละ 50 ไม่มีขีดจำกัด
- 1.6) ท่านเห็นด้วยหรือไม่ว่า การให้สิทธิแก่เจ้าของงานในการเปลี่ยนแปลงงาน หมายความว่าเจ้าของงานสามารถสั่งยกเลิกงานเพื่อว่าจ้างให้ผู้รับเหมารายอื่นเข้ามาเป็นผู้ดำเนินการแทนได้
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

2) กระบวนการเปลี่ยนแปลงงาน

- 2.1) ในความเห็นของท่าน บุคคลากรของเจ้าของงานผู้ใดบ้างที่สามารถใช้อำนาจสั่งเปลี่ยนแปลงงานได้ (เลือกได้มากกว่า 1 คำตอบ)
- กรรมการตรวจการจ้าง หรือ ผู้พิจารณาตรวจรับงานซึ่งได้รับการแต่งตั้งอย่างเป็นทางการ
- กรรมการควบคุมงาน หรือ ผู้ควบคุมงานซึ่งได้รับการแต่งตั้งอย่างเป็นทางการ
- ผู้ควบคุมงาน
- อื่นๆ โปรดระบุ _____
- 2.2) ท่านเห็นด้วยหรือไม่ว่า การเปลี่ยนแปลงงานโดยผู้มีอำนาจจะต้องกระทำการอย่างเป็นทางการคือการมีหนังสือสั่งการเป็นลายลักษณ์อักษรเท่านั้น (การสั่งเปลี่ยนแปลงด้วยวาจาไม่มีผลบังคับใช้)
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

2.3) ในความเห็นของท่าน ผู้รับเหมาควรดำเนินการเช่นใด หากได้รับคำสั่งเปลี่ยนแปลงงานจากเจ้าของงานอย่างไม่เป็นทางการ

- แจ้งเจ้าของงานให้มีคำสั่งอย่างเป็นทางการ และหยุดดำเนินการรอคำสั่งอย่างเป็นทางการ
- แจ้งเจ้าของงานให้มีคำสั่งอย่างเป็นทางการ และดำเนินการต่อไปเสมือนไม่ได้รับคำสั่งเปลี่ยนแปลงงาน
- แจ้งเจ้าของงานให้มีคำสั่งอย่างเป็นทางการ และดำเนินการตามคำสั่งเปลี่ยนแปลงงาน
- ดำเนินการตามคำสั่งเปลี่ยนแปลงงาน โดยไม่จำเป็นต้องแจ้งขอคำสั่งอย่างเป็นทางการจากเจ้าของงาน
- ดำเนินการก่อสร้างตามปกติ เสมือนว่าไม่ได้รับคำสั่งเปลี่ยนแปลงงาน
- อื่นๆ โปรดระบุ _____

2.4) ในความเห็นของท่าน ผู้รับเหมาควรดำเนินการเช่นไร หากทราบในทางพฤตินัยว่ากำลังจะได้รับคำสั่งเปลี่ยนแปลงงาน อาทิ เช่น เจ้าของงานกำลังพิจารณากำหนดรายละเอียด หรือเจ้าของงานและผู้รับเหมากำลังดำเนินการเจรจาเพื่อตกลงมูลค่างานลด/เพิ่มและการปรับกำหนดการส่งมอบงาน

- ดำเนินการก่อสร้างตามปกติ เนื่องจากยังไม่ได้รับคำสั่งอย่างเป็นทางการ
- หยุดงานในส่วนที่จะถูกเปลี่ยนแปลง เพื่อรอคำสั่งเปลี่ยนแปลงอย่างเป็นทางการ
- อื่นๆ โปรดระบุ _____

2.5) ท่านเห็นด้วยหรือไม่ว่า หากเจ้าของงานใช้สิทธิในการสั่งเปลี่ยนแปลงงาน ผู้รับเหมาขอมมีหน้าที่ต้องปฏิบัติตามคำสั่งเปลี่ยนแปลงงานโดยทันทีแม้ว่า ณ ขณะดังกล่าวเจ้าของงานและผู้รับเหมายังไม่สามารถบรรลุข้อตกลงเรื่องมูลค่างานลด/เพิ่มและการปรับกำหนดการส่งมอบงาน

- เห็นด้วย
- ไม่เห็นด้วย
- อื่นๆ โปรดระบุ _____

3) การชดเชยผลกระทบต่อผู้รับเหมา

3.1) ในความเห็นของท่าน ผู้รับเหมาจะมีสิทธิเรียกร้องการชดเชยจากเจ้าของงานหรือไม่ อย่างไร หากคำสั่งเปลี่ยนแปลงงานของเจ้าของงานส่งผลให้ผู้รับเหมา มีภาระงานที่จะต้องดำเนินการเพิ่ม (ตอบได้มากกว่า 1 คำตอบ)

- ไม่มีสิทธิเรียกร้องการชดเชยใดๆ
- มีสิทธิเรียกร้องการปรับขยายกำหนดการส่งมอบงาน
- มีสิทธิเรียกร้องการปรับเพิ่มค่าแรงงานและ/หรือค่าวัสดุ
- มีสิทธิเรียกร้องการปรับเพิ่มค่าอำนาจการ
- มีสิทธิเรียกร้องการปรับเพิ่มกำไร
- มีสิทธิเรียกร้องอื่นๆ โปรดระบุ _____

3.2) ในความเห็นของท่าน ควรมีการพิจารณาปรับกำหนดการส่งมอบงานและ/หรือค่าจ้างหรือไม่ อย่างไร หากคำสั่งเปลี่ยนแปลงงานโดยเจ้าของงานส่งผลให้ผู้รับเหมา มีภาระงานที่จะต้องดำเนินการลดลง (ตอบได้มากกว่า 1 คำตอบ)

- ไม่ควรปรับทั้งกำหนดการส่งมอบงานและค่าจ้าง
- ควรปรับลดกำหนดการส่งมอบงาน
- ควรปรับลดค่าแรงและ/หรือค่าวัสดุ
- ควรปรับลดค่าอำนาจการ
- ควรปรับลดกำไร
- ควรดำเนินการอื่นๆ โปรดระบุ _____

3.3) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาซึ่งยังมีสิทธิได้รับการชดเชยผลกระทบจากการสั่งเปลี่ยนแปลงงานโดยเจ้าของงาน หากสัญญาระบุถึงสิทธิของเจ้าของงานในการมีคำสั่งเปลี่ยนแปลงงานโดยไม่ได้ระบุถึงสิทธิของผู้รับเหมาในการได้รับการชดเชยจากการใช้สิทธิของเจ้าของงาน

- เห็นด้วย
- ไม่เห็นด้วย
- อื่นๆ โปรดระบุ _____

3.4) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยช่วงระยะเวลาใดบ้าง หากสัญญากำหนดให้ผู้รับเหมามีสิทธิได้รับการปรับขยายกำหนดส่งมอบงานเพื่อชดเชยผลกระทบจากการเปลี่ยนแปลงงาน (เลือกได้มากกว่า 1 คำตอบ)

- ระยะเวลาที่หยุดรอเจ้าของงานกำหนดรายละเอียดของการเปลี่ยนแปลงงาน
- ระยะเวลาที่เตรียมการภายหลังจากรับคำสั่งเปลี่ยนแปลงงานจากเจ้าของงาน
- ระยะเวลาที่ต้องใช้ในการดำเนินการเพิ่มขึ้นเนื่องจากปริมาณงานเพิ่มขึ้น/มีการแก้ไขงาน
- ระยะเวลาที่ล่าช้าจากการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

3.5) ในความเห็นของท่าน ผู้รับเหมามีสิทธิได้รับการชดเชยค่าใช้จ่ายในส่วนใดบ้าง หากสัญญากำหนดให้ผู้รับเหมามีสิทธิได้รับการชดเชยภาระค่าใช้จ่ายทางตรง (ค่าแรงและค่าวัสดุ) ที่ได้รับผลกระทบจากสิ่งเปลี่ยนแปลงงาน (เลือกได้มากกว่า 1 คำตอบ)

- ค่าใช้จ่ายระหว่างการหยุดงานรอรายละเอียดของการเปลี่ยนแปลงงาน อาทิเช่น ค่าจ้างแรงงาน
- ค่าใช้จ่ายที่ได้ใช้จ่ายไปแล้วและไม่ได้รับคืน อาทิเช่น ค่าจอง/มัดจำวัสดุที่ถูกสั่งยกเลิก
- ค่าใช้จ่ายทางตรงที่เพิ่มขึ้นเนื่องจากการมีปริมาณงานเพิ่มขึ้น/แก้ไขงาน
- ค่าใช้จ่ายในส่วนต้นทุนการก่อสร้างที่ปรับเพิ่มขึ้นระหว่างที่งานล่าช้า อาทิเช่น ค่าวัสดุประเภทต่างๆที่มีราคาสูงขึ้น
- ค่าใช้จ่ายที่เพิ่มขึ้นจากการสูญเสียประสิทธิภาพการทำงานของแรงงานซึ่งไม่สามารถทำงานอย่างต่อเนื่อง
- อื่นๆ โปรดระบุ _____

4) การเรียกร้องการชดเชย

4.1) ในความเห็นของท่าน ผู้รับเหมาต้องใช้สิทธิเรียกร้องการชดเชยอันเนื่องมาจากการได้รับคำสั่งเปลี่ยนแปลงงานภายในกำหนดเวลาเท่าใดนับแต่วันที่ทราบเหตุ

- 7 วัน
- 15 วัน
- 30 วัน
- ก่อนสิ้นสุดโครงการ
- อื่นๆ โปรดระบุ _____

5) กำหนดการชำระเงิน (กรณีว่าจ้างแบบเหมารวม)

5.1) ในความเห็นของท่าน ควรมีการปรับมูลค่าของแต่ละงวดงานอย่างไร หากเจ้าของงานสั่งเพิ่มงานใดๆซึ่งมีรายการงานระบุในงวดงานไว้อย่างชัดเจน อาทิเช่น การสั่งเพิ่มงานปูกระเบื้องพื้นชั้น 2 ซึ่งเอกสารงวดงานระบุว่าอยู่ในงวดงานที่ 4

- ปรับเพิ่มมูลค่างวดงานซึ่งมีรายการงานระบุให้สอดคล้องกับการสั่งเพิ่มงาน
- คงมูลค่างวดงานซึ่งมีรายการงานระบุไว้ตามเดิม แต่ให้ปรับเพิ่มมูลค่างานงวดสุดท้ายให้สอดคล้องกับการสั่งเพิ่มงาน
- อื่นๆ โปรดระบุ _____

5.2) ในความเห็นของท่าน ควรมีการปรับมูลค่าของแต่ละงวดงานอย่างไร หากเจ้าของงานสั่งยกเลิกงานใดๆซึ่งมีรายการงานระบุในงวดงานไว้อย่างชัดเจน อาทิเช่น การสั่งยกเลิกงานปูกระเบื้องพื้นชั้น 2 ซึ่งเอกสารงวดงานระบุว่าอยู่ในงวดงานที่ 4

- ปรับลดมูลค่างวดงานซึ่งมีรายการงานระบุให้สอดคล้องกับการสั่งยกเลิกงาน
- คงมูลค่างวดงานซึ่งมีรายการงานระบุไว้ตามเดิม แต่ให้ปรับลดมูลค่างานงวดสุดท้ายให้สอดคล้องกับการสั่งยกเลิกงาน
- อื่นๆ โปรดระบุ _____

5.3) ในความเห็นของท่าน ควรมีการชำระค่าจ้างในส่วนหางานซึ่งถูกสั่งเพิ่มเติมอย่างไร หากเจ้าหางานสั่งเพิ่มงานใดๆ ซึ่งไม่มีรายการงานระบุไว้ในงวดงาน อาทิเช่น การสั่งให้เพิ่มงานปูกระเบื้องพื้นชั้น 2 ซึ่งเอกสารงวดงานไม่ได้ระบุกำหนดงวดงานของงานดังกล่าวไว้

ชำระเมื่อผู้รับเหมาดำเนินการงานดังกล่าวแล้วเสร็จ

ชำระเมื่อผู้รับเหมาส่งงานงวดสุดท้าย

อื่นๆ โปรดระบุ _____

5.4) ในความเห็นของท่าน ควรมีการปรับลดค่าจ้างในส่วนหางานซึ่งถูกสั่งลดอย่างไร หากเจ้าหางานสั่งลดงานใดๆ ซึ่งไม่มีรายการงานระบุไว้ในงวดงาน อาทิเช่น การสั่งยกเลิกงานปูกระเบื้องพื้นชั้น 2 ซึ่งซึ่งเอกสารงวดงานไม่ได้ระบุกำหนดงวดงานของงานดังกล่าวไว้

ปรับลดมูลค่างวดงานซึ่งครอบคลุมกิจกรรมการก่อสร้างซึ่งมีลำดับขั้นตอนการทำงานใกล้เคียงกัน

ปรับลดมูลค่างวดงานสุดท้าย

อื่นๆ โปรดระบุ _____

6) การปรับอัตราค่าปรับให้สอดคล้องกับมูลค่างานที่เปลี่ยนแปลง

6.1) ท่านเห็นด้วยหรือไม่ว่า ควรมีการเพิ่มปรับอัตราค่าปรับสำหรับการส่งมอบงานล่าช้าในสัดส่วนเดียวกับมูลค่างานที่เพิ่มขึ้น หากการสั่งเปลี่ยนแปลงงานทำให้มูลค่างานที่จ้างสูงเพิ่มมากขึ้น

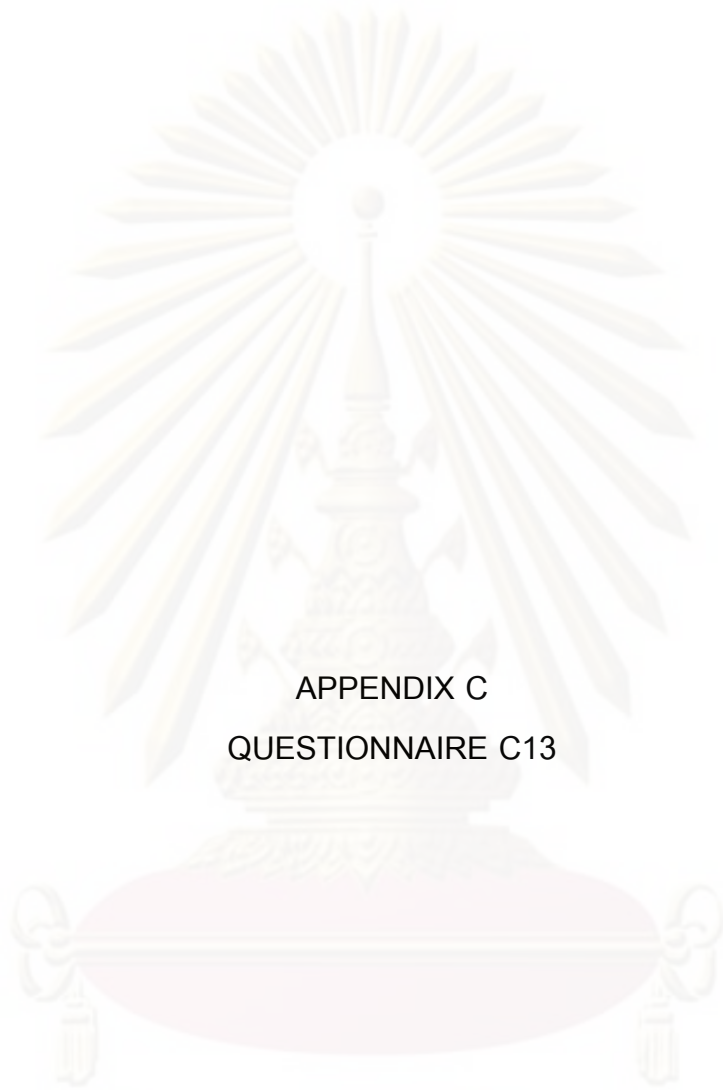
เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

6.2) ท่านเห็นด้วยหรือไม่ว่า ควรมีการปรับลดอัตราค่าปรับสำหรับการส่งมอบงานล่าช้าในสัดส่วนเดียวกับมูลค่างานที่ลดลง หากการสั่งเปลี่ยนแปลงงานทำให้มูลค่างานที่จ้างลดลง

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

*****จบแบบสอบถาม ขอกราบขอบพระคุณที่ท่านให้ความอนุเคราะห์ข้อมูล*****

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



APPENDIX C
QUESTIONNAIRE C13

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

ภาควิชาวิศวกรรมโยธา คณะวิศวกรรมศาสตร์ ถนนพญาไท ปทุมวัน กรุงเทพฯ 10330

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Phayathai Rd., Pathumwan, Bangkok 10330 Tel : (662) 218-6460 to 62, Fax : (662) 251-7304

วันที่ 5 พฤษภาคม 2551

เรียน ท่านผู้ตอบแบบสอบถาม

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

สิ่งที่ส่งมาด้วย 1) แบบสอบถาม จำนวน 1 ชุด

2) ของไปรษณีย์ติดแสตมป์สำหรับส่งคืนแบบสอบถาม จำนวน 1 ของ

ด้วย กระผม นาย นที สุริยานนท์ นิสิตในหลักสูตรวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา กำลังทำงานวิจัยเพื่อประเมินแนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและเสนอแนะแนวทางที่ความเหมาะสมในการเขียนข้อสัญญาเกี่ยวกับเหตุการณ์ซึ่งส่งผลกระทบต่อการค้าดำเนินการของผู้รับเหมา

กระผมมีความจำเป็นที่จะต้องรวบรวมข้อมูลจากกลุ่มตัวอย่างซึ่งเป็นตัวแทนบุคลากรฝ่ายบริษัทรับเหมา ก่อสร้างและฝ่ายเจ้าของงานให้ได้จำนวนไม่ต่ำกว่า 600 ตัวอย่าง เพื่อนำมาใช้ในการคาดการณ์แนวโน้มการเกิดความขัดแย้งระหว่างคู่สัญญาและวิเคราะห์ความเหมาะสมของข้อสัญญาเกี่ยวกับแนวทางการประเมินผลกระทบที่ผู้รับเหมาได้รับจากเหตุการณ์ที่เกิดขึ้น ซึ่งเป็นเนื้อหาส่วนสำคัญส่วนหนึ่งของงานวิจัยของกระผม

กระผมจึงใคร่ขอความกรุณาจากท่านในการตอบแบบสอบถามซึ่งกระผมได้ส่งมาพร้อมจดหมายฉบับนี้ การได้รับความอนุเคราะห์จากท่านจะมีผลอย่างมากต่อความสำเร็จของงานวิจัยของกระผม กระผมหวังเป็นอย่างยิ่งที่จะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์

ขอแสดงความนับถืออย่างสูง

(นาย นที สุริยานนท์)

นิสิตจุฬาลงกรณ์มหาวิทยาลัย

ศูนย์วิทยุโทรคมนาคม
จุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม

เรื่อง ทักษะของผู้รับเหมา ต่อ

แนวทางการประเมินผลกระทบที่ผู้รับเหมาได้รับจากเหตุการณ์ที่เกิดขึ้น

รหัสแบบสอบถาม C13-

แนวคิดและวัตถุประสงค์ของงานวิจัย : ในระหว่างการดำเนินการก่อสร้างมักเกิดเหตุการณ์ใดๆซึ่งส่งผลกระทบต่อขั้นตอนการทำงาน ระยะเวลาดำเนินการ และต้นทุนการก่อสร้างของผู้รับเหมา อาทิเช่น เหตุการณ์น้ำท่วมหน่วยงานก่อสร้างโดยมิได้คาดหมาย เจ้าของงานอนุมัติวัสดุ/แบบล่าช้า เจ้าของงานสั่งหยุดงาน สั่งเพิ่มงาน ลดงาน หรือยกเลิกงาน และสภาพดินจริงที่มีความแตกต่างไปจากข้อมูลที่ได้รับแจ้ง การประเมินผลกระทบที่ผู้รับเหมาได้รับจากเหตุการณ์เหล่านี้มักก่อให้เกิดความขัดแย้งระหว่างผู้รับเหมาและเจ้าของงานอยู่บ่อยครั้ง ความขัดแย้งระหว่างคู่สัญญาเกิดขึ้นเมื่อคู่สัญญามีทัศนคติที่ต่างกันและสัญญาว่าจ้างมีเนื้อหาไม่ครอบคลุมและ/หรือไม่ชัดเจน หากทราบข้อมูลทัศนคติของฝ่ายเจ้าของงานและฝ่ายผู้รับเหมา ผู้ร่างสัญญาจะสามารถร่างเนื้อหาสัญญาให้มีความครอบคลุมและชัดเจนได้ดียิ่งขึ้น

แบบสอบถามชุดนี้ทำขึ้นโดยมีวัตถุประสงค์เพื่อทำการวิจัยทัศนคติของฝ่ายผู้รับเหมาต่อหลักการประเมินผลกระทบที่ผู้รับเหมาได้รับจากเหตุการณ์ใดๆที่เกิดขึ้น ข้อมูลที่ได้จากแบบสอบถามนี้ถือเป็นความลับซึ่งใช้เฉพาะในการศึกษานี้เท่านั้น ขอความกรุณาท่านโปรดตอบตามความเป็นจริง คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งในการพัฒนาข้อสัญญาให้มีความเหมาะสม ยุติธรรม และชัดเจนยิ่งขึ้น ซึ่งย่อมส่งผลดีต่อเจ้าของงาน วิศวกรที่ปรึกษา และผู้รับเหมา รวมถึงบุคคลผู้ซึ่งเกี่ยวข้องกับการจ้างงานก่อสร้างฝ่ายอื่นๆในที่สุด

ผู้ตอบแบบสอบถาม : บุคลากรของผู้รับเหมาซึ่งมีประสบการณ์เกี่ยวกับเสนอราคางาน การพิจารณาเงื่อนไขการว่าจ้าง การบริหารการก่อสร้าง และการควบคุมการก่อสร้าง อาทิเช่น ผู้รับผิดชอบการประมาณราคาและเสนอราคางาน นิติกรหรือที่ปรึกษากฎหมาย ผู้จัดการโครงการ วิศวกรโครงการ วิศวกร และไฟร์แมน เป็นต้น

รายละเอียดของแบบสอบถาม : แบบสอบถามฉบับนี้ได้ถูกจำแนกเป็น 6 ตอน โปรดตอบคำถามทุกข้อ คำตอบของท่านทุกคำตอบมีความจำเป็นต่อการวิจัยนี้เป็นอย่างมาก ผู้วิจัยคาดการณ์ว่าท่านจะอาจต้องใช้เวลาในการตอบแบบสอบถามฉบับนี้ประมาณ 20-30 นาที

หากท่านต้องการข้อมูลเพิ่มเติม สอบถาม หรือให้คำแนะนำ ท่านสามารถติดต่อผู้วิจัยได้ทางโทรศัพท์ และสุดท้ายนี้ ผู้วิจัยขอกราบขอบพระคุณในความร่วมมือของท่าน

นที สุริยานนท์

นิติระดับปริญญาเอกสาขาบริหารการก่อสร้าง

จุฬาลงกรณ์มหาวิทยาลัย

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หมายเหตุ :

1. ขอความกรุณาท่านช่วยตอบแบบสอบถามชุดนี้และส่งคืนมายังผู้วิจัยโดยเร็ว
2. เมื่อท่านทำแบบสอบถามชุดนี้เสร็จเรียบร้อยแล้ว กรุณาพับแบบสอบถามใส่ลงในซองไปรษณีย์ซึ่งส่งมาพร้อมแบบสอบถามฉบับนี้ และโปรดส่งซองไปรษณีย์ดังกล่าวถึงผู้วิจัย ทั้งนี้ท่านไม่ต้องเสียค่าใช้จ่ายในการส่งไปรษณีย์ถึงผู้วิจัยแต่ประการใด

ตอนที่ 1

ข้อมูลเกี่ยวกับหน่วยงานและผู้ตอบแบบสอบถาม

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) ข้อมูลเกี่ยวกับหน่วยงานของผู้ตอบแบบสอบถาม

1.1) โปรดระบุประเภทของบริษัทที่ท่านสังกัด

ผู้รับเหมาหลัก ผู้รับเหมาช่วง ผู้รับเหมาค่าแรง อื่นๆ (โปรดระบุ) _____

1.2) โปรดระบุจำนวนโครงการ โดยประมาณที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ โครงการต่อปี

1.3) โปรดระบุมูลค่าโดยประมาณของโครงการสูงสุดที่บริษัทของท่านเคยรับดำเนินการก่อสร้าง

_____ ล้านบาท

1.4) โปรดมูลค่ารวมโดยประมาณของโครงการที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ ล้านบาทต่อปี

1.5) โปรดระบุประเภทโครงการซึ่งบริษัทของท่านรับดำเนินการก่อสร้าง

- งานสาธารณูปโภค (อาทิเช่น ถนน สะพาน เขื่อน อุโมงค์ และระบบระบายน้ำ)
- งานอาคารของหน่วยงานภาครัฐ (อาทิเช่น โรงพยาบาล โรงเรียน สำนักงาน และอาคารพักอาศัย)
- งานอาคารของหน่วยงานภาคเอกชน (อาทิเช่น โรงแรม ศูนย์การค้า และอาคารสำนักงาน)
- งานโรงงานอุตสาหกรรม (อาทิเช่น โรงงาน และ โกดังเก็บสินค้า)
- งานบ้านพักอาศัยภาคเอกชน
- อื่นๆ (โปรดระบุ) _____

2) ข้อมูลเกี่ยวกับผู้ตอบแบบสอบถาม

2.1) โปรดระบุประเภทพื้นฐานการศึกษาของท่าน

- สายช่าง อาทิเช่น สถาปัตยกรรม ก่อสร้าง โยธาสำรวจ ไฟฟ้า เครื่องกล
- สายบริหาร อาทิเช่น บริหารธุรกิจ บัญชี การเงิน นิติศาสตร์ รัฐศาสตร์
- อื่นๆ (โปรดระบุ) _____

2.2) โปรดระบุระยะเวลาประสบการณ์การทำงานของท่าน _____ ปี

2.3) โปรดระบุตำแหน่งปัจจุบัน/ตำแหน่งล่าสุดของท่านที่เกี่ยวข้องกับโครงการก่อสร้าง

- วิศวกรหรือโพรแมน วิศวกรโครงการ ผู้จัดการโครงการ
- นิติกรหรือที่ปรึกษากฎหมาย ผู้บริหารระดับสูงกว่าผู้จัดการโครงการ
- อื่นๆ (โปรดระบุ) _____

ตอนที่ 2

การพิจารณาปรับกำหนดการส่งมอบงาน

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) การประเมินผลกระทบของเหตุการณ์ที่เกิดขึ้นที่มีต่อระยะเวลาในการดำเนินงานใดๆ

1.1) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินระยะเวลาสำหรับการซ่อมแซมความเสียหายของงานซึ่งได้รับความเสียหายจากการเกิดเหตุการณ์ใดๆ อาทิเช่น การซ่อมแซมความเสียหายของงาน โครงสร้างซึ่งถูกเพลิงไหม้

- การเปรียบเทียบระยะเวลาที่ผู้รับเหมาใช้ในการดำเนินการจริง(รวมการซ่อมแซมงาน)กับระยะเวลาตามแผน
- การบ่งชี้ช่วงระยะเวลาจริงซึ่งผู้รับเหมาใช้ในการซ่อมแซมงาน
- การคาดการณ์จากปริมาณงานซ่อมแซมซึ่งผู้รับเหมาต้องดำเนินการ
- อื่นๆ โปรดระบุ _____

1.2) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินระยะเวลาสำหรับการเตรียมการเพื่อตอบสนองเหตุการณ์ใดๆที่เกิดขึ้น อาทิเช่น การเตรียมตัวเริ่มดำเนินการภายหลังระดับน้ำที่ท่วม โครงการลดลง หรือ การจัดหาวัสดุก่อสร้างตามที่เจ้าของงานระบุ

- การบ่งชี้ช่วงระยะเวลาจริงที่ผู้รับเหมาใช้ในการเตรียมการ
- การคาดการณ์จากมาตรฐานระยะเวลาเตรียมการโดยทั่วไป
- อื่นๆ โปรดระบุ _____

1.3) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินระยะเวลาที่ผู้รับเหมาได้รับผลกระทบจากการสูญเสียประสิทธิภาพในการทำงานอันเนื่องมาจากการเกิดเหตุการณ์ใดๆ อาทิเช่น การสูญเสียประสิทธิภาพในการทำงานเพราะถูกเจ้าของงานสั่งหยุดงานจึงไม่สามารถทำงานอย่างต่อเนื่อง เป็นต้น

- การเปรียบเทียบระยะเวลาที่ผู้รับเหมาใช้ในการดำเนินการจริงกับระยะเวลาตามแผน
- การเปรียบเทียบอัตราการทำงานก่อนการเกิดเหตุการณ์และหลังการเกิดเหตุการณ์
- อื่นๆ โปรดระบุ _____

1.4) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินระยะเวลาที่ผู้รับเหมาได้รับผลกระทบจากการได้รับแจ้งข้อมูลคลาดเคลื่อนอันทำให้คาดการณ์ระยะเวลาดำเนินการผิดพลาด อาทิเช่น เจ้าของงานระบุว่าดินในบริเวณสถานที่ก่อสร้างเป็นดินเหนียวแต่สภาพหน้างานจริงเป็นหินแข็ง เป็นต้น

- การเปรียบเทียบระยะเวลาที่ผู้รับเหมาใช้ในการดำเนินการจริงกับระยะเวลาตามแผน
- การเปรียบเทียบค่าคาดการณ์ระยะเวลาการดำเนินการภายใต้สภาพแวดล้อมจริงกับระยะเวลาตามแผน
- อื่นๆ โปรดระบุ _____

1.5) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินระยะเวลาที่ผู้รับเหมาได้รับผลกระทบจากการถูกเจ้าของงานสั่งเปลี่ยนแปลงขอบเขตงาน

- การเปรียบเทียบระยะเวลาที่ผู้รับเหมาใช้ในการปฏิบัติงานจริงกับระยะเวลาตามแผน
- การบ่งชี้ช่วงระยะเวลาที่ใช้ในการดำเนินการจริงซึ่งผู้รับเหมาเห็นว่าตนได้รับผลกระทบ
- การประเมินจากปริมาณงานที่ถูกสั่งเปลี่ยนแปลง
- อื่นๆ โปรดระบุ _____

2) การวิเคราะห์ระยะเวลาดำเนินการที่ผู้รับเหมาใช้จริง

2.1) ท่านเห็นว่าด้วยหรือไม่ว่าควรมีการปรับ(ลด)จำนวนระยะเวลาที่ผู้รับเหมาใช้ในการดำเนินการงานจริงก่อนที่จะนำไปใช้ในการวิเคราะห์ผลกระทบต่อกำหนดการส่งมอบงาน หากปรากฏข้อเท็จจริงว่าการดำเนินการของผู้รับเหมา มีความบกพร่องหรือไม่มีประสิทธิภาพ

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3) การคาดการณ์ระยะเวลาที่ต้องใช้ในการดำเนินการ

3.1) ท่านเห็นด้วยหรือไม่ว่า ในการคาดการณ์ระยะเวลาในการดำเนินการงานใดๆ จำเป็นต้องคำนึงถึงแนวโน้มการเกิดเหตุการณ์ ซึ่งเป็นความเสี่ยงของผู้รับเหมา และต้องมีการเผื่อระยะเวลาสำหรับเหตุการณ์ดังกล่าว

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

3.2) ท่านเห็นด้วยหรือไม่ว่า ในการประเมินระยะเวลาการดำเนินการงานใดๆ ต้องคำนึงถึงข้อจำกัดของผู้รับเหมาในการดำเนินการ อาทิเช่น จำนวนแรงงานที่มีอยู่ของผู้รับเหมา เป็นต้น

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

4) แผนงานที่ใช้ในการเปรียบเทียบประเมินผลกระทบ

4.1) ในความเห็นของท่าน คู่สัญญาควรใช้แผนงานก่อสร้างฉบับใดเป็นฐานสำหรับการเปรียบเทียบประเมินผลกระทบของเหตุการณ์ใดๆ ที่เกิดขึ้นที่มีต่อกำหนดการส่งมอบงานตามสัญญา อาทิเช่น การประเมินผลกระทบจากเหตุการณ์น้ำท่วม การสั่งหยุดงาน หรือการสั่งเพิ่ม/ลดงาน เป็นต้น

แผนงานที่จัดส่งตอนเริ่ม โครงการ แผนงานที่ทำการปรับปรุงล่าสุด
 แผนงานที่ทำการปรับปรุงเพื่อสะท้อนสถานะ ณ ขณะก่อนเกิดเหตุการณ์ซึ่งส่งผลกระทบ
 แผนงานอื่นๆ โปรดระบุ _____

5) การประเมินผลกระทบต่อกำหนดส่งมอบงาน

5.1) ท่านเห็นด้วยหรือไม่ว่า ในการกำหนดเวลาเริ่มต้นดำเนินการงานใดๆ จำเป็นต้องคำนึงถึงข้อจำกัดของผู้รับเหมาในการดำเนินการ อาทิเช่น จำนวนแรงงานที่ผู้รับเหมา มี และความพร้อมของผู้รับเหมาช่วง เป็นต้น

เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

5.2) ในความเห็นของท่าน คู่สัญญาควรใช้แนวทางใดในการประเมินผลกระทบของเหตุการณ์ใดๆ ที่เกิดขึ้นซึ่งมีต่อกำหนดการส่งมอบงาน

การเจรจาต่อรอง การวิเคราะห์ตามหลักการสายงานวิกฤต(CPM) อื่นๆ โปรดระบุ _____

จุฬาลงกรณ์มหาวิทยาลัย

ตอนที่ 3

การพิจารณาปรับค่าใช้จ่ายทางตรง (ค่าแรงและค่าวัสดุ)

คำชี้แจง : โปรดกรณกรอกข้อมูลหรือทำเครื่องหมาย (✓) ในบริเวณที่กำหนด

1) นิยามค่าใช้จ่ายทางตรง

- 1.1) โปรดระบุรายการค่าใช้จ่ายซึ่งท่านเห็นว่าได้ถูกคิดรวมไว้เป็นส่วนหนึ่งของอัตราราคาค่อหน่วย(ค่าแรงและค่าวัสดุ)ที่ผู้รับเหมาได้เสนอราคาแล้ว (ตอบได้มากกว่า 1 ข้อ)
- | | |
|--|--|
| <input type="checkbox"/> ค่าจ้างพนักงานประจำหน่วยงาน อาทิเช่น วิศวกร
โพรแกรม พนักงานสโตร์และบุคคล | <input type="checkbox"/> ค่าจ้างที่ปรึกษาเฉพาะทาง อาทิเช่น ค่าจ้างวิศวกร
สำหรับออกแบบโครงสร้างอาคาร |
| <input type="checkbox"/> ค่าเช่าสำนักงานชั่วคราว/ที่พักคนงาน | <input type="checkbox"/> ค่าใช้จ่ายในส่วนของสำนักงานใหญ่ อาทิเช่น ค่าจ้าง
ผู้บริหาร ค่าจ้างพนักงานประจำสำนักงานใหญ่ |
| <input type="checkbox"/> ค่าประกันภัย อาทิเช่น ประกันภัยโครงการ
ประกันบุคคลที่สาม | <input type="checkbox"/> ต้นทุนค่าใช้จ่ายทางการเงินของผู้รับเหมา อาทิ
เช่น ค่าดอกเบี้ย |
- 1.2) ท่านเห็นด้วยหรือไม่ว่า ค่าจ้างแรงงาน/พนักงาน หมายความว่ารวมถึงค่าใช้จ่ายอื่นๆที่เกี่ยวข้องกับแรงงาน/พนักงาน อาทิเช่น ค่าเดินทาง ค่าที่พัก ค่าประกันสังคม และเงิน โบนัส
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____
- 1.3) ท่านเห็นด้วยหรือไม่ว่า ค่าวัสดุก่อสร้าง ค่าเครื่องมือ และค่าเครื่องจักรหมายความว่ารวมถึงค่าใช้จ่ายอื่นๆที่เกี่ยวข้องกับวัสดุ เครื่องมือ และเครื่องจักร อาทิเช่น ค่าขนส่ง และเก็บรักษา
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ _____

2) การประเมินมูลค่างานค่าใช้จ่ายทางตรง

- 2.1) ท่านพึงพอใจเลือกใช้แนวทางใดในการประเมินการค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ในการซ่อมแซมงานซึ่งได้รับความเสียหายจากการเกิดเหตุการณ์ใดๆ อาทิเช่น การซ่อมแซมความเสียหายของงานโครงสร้างซึ่งถูกเพลิงไหม้
- การเปรียบเทียบค่าใช้จ่ายที่ผู้รับเหมาใช้จริง(รวมการซ่อมแซมงาน)กับราคาที่ผู้รับเสนอ
- การเปรียบเทียบค่าใช้จ่ายที่ผู้รับเหมาใช้จริง(รวมการซ่อมแซมงาน)กับต้นทุนที่พึงจะเป็นของผู้รับเหมา
- การบ่งชี้รายการค่าใช้จ่ายจริงซึ่งเกี่ยวข้องกับการซ่อมแซมงาน
- การคาดการณ์จากปริมาณงานซ่อมแซมซึ่งผู้รับเหมาต้องดำเนินการ
- อื่นๆ โปรดระบุ _____
- 2.2) ท่านพึงพอใจเลือกใช้แนวทางใดในการประเมินการค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ของผู้รับเหมาเมื่อถูกกำหนดให้ใช้วัสดุก่อสร้างตามที่เจ้าของงานระบุ
- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จริงกับราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จริงกับต้นทุนที่พึงจะเป็นของผู้รับเหมา
- การบ่งชี้รายการค่าใช้จ่ายจริงซึ่งผู้รับเหมาเห็นว่าตนได้รับผลกระทบ
- การคาดการณ์จากการเปรียบเทียบราคาวัสดุในท้องตลาดกับราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบราคาวัสดุในท้องตลาดกับต้นทุนที่พึงจะเป็นของผู้รับเหมา
- อื่นๆ โปรดระบุ _____

2.3) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ระหว่างการหยุดงาน

- การบ่งชี้รายการค่าใช้จ่ายซึ่งผู้รับเหมาใช้จ่ายในช่วงหยุดงาน
- การคาดการณ์จากปริมาณทรัพยากรต่อวันและระยะเวลาที่หยุดงาน
- อื่นๆ โปรดระบุ _____

2.4) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ) ที่ปรับราคาขึ้นระหว่างการหยุดงาน

- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จ่ายจริงกับราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จ่ายจริงกับต้นทุนที่พึงจะเป็นของผู้รับเหมา
- การเปรียบเทียบอัตราต้นทุนต่อหน่วยจริงหลังการเกิดเหตุการณ์กับอัตราต้นทุนต่อหน่วยที่ผู้รับเหมาเสนอ
- การเปรียบเทียบอัตราต้นทุนต่อหน่วยจริงก่อนการเกิดเหตุการณ์และหลังการเกิดเหตุการณ์
- อื่นๆ โปรดระบุ _____

2.5) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ของผู้รับเหมาในส่วนของ การสูญเสียประสิทธิภาพในการทำงานอันเนื่องมาจากการเกิดเหตุการณ์ใดๆ อาทิเช่น การสูญเสียประสิทธิภาพในการทำงาน เพราะถูกเจ้าของงานสั่งหยุดงานจึงไม่สามารถทำงานอย่างต่อเนื่อง เป็นต้น

- การเปรียบเทียบค่าใช้จ่ายที่ใช้จ่ายจริงภายหลังการเกิดเหตุการณ์กับราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบอัตราต้นทุนต่อหน่วยจริงก่อนการเกิดเหตุการณ์และหลังการเกิดเหตุการณ์
- อื่นๆ โปรดระบุ _____

2.6) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่ผู้รับเหมาได้รับผลกระทบจากการได้รับข้อมูลจากเจ้าของงานคลาดเคลื่อน อาทิเช่น เจ้าของงานระบุว่าดินในบริเวณสถานที่ก่อสร้างเป็นดินเหนียว แต่สภาพหน้างานจริงเป็นหินแข็ง เป็นต้น

- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จ่ายจริงกับราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบค่าใช้จ่ายรวมที่ผู้รับเหมาใช้จ่ายจริงกับต้นทุนที่พึงจะเป็นของผู้รับเหมา
- การบ่งชี้รายการค่าใช้จ่ายที่ถูกใช้จ่ายในการดำเนินการจริงซึ่งผู้รับเหมาเห็นว่าตนได้รับผลกระทบ
- การเปรียบเทียบค่าคาดการณ์ค่าใช้จ่ายในการดำเนินการภายใต้สภาพแวดล้อมจริง และราคาที่ผู้รับเหมาเสนอ
- การเปรียบเทียบค่าคาดการณ์ค่าใช้จ่ายในการดำเนินการภายใต้สภาพแวดล้อมจริง และต้นทุนที่พึงจะเป็นของผู้รับเหมา
- อื่นๆ โปรดระบุ _____

2.7) ท่านพึงพอใจเลือกใช้นโยบายใดในการประเมินภาระค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่ผู้รับเหมาได้รับผลกระทบจากการถูกสั่งเปลี่ยนแปลงขอบเขตงาน

- การเปรียบเทียบค่าใช้จ่ายที่ผู้รับเหมาใช้จ่ายจริงกับราคางานตามขอบเขตงานเดิมที่ผู้รับเหมาเสนอ
- การเปรียบเทียบค่าใช้จ่ายที่ผู้รับเหมาใช้จ่ายจริงกับต้นทุนที่พึงจะเป็นตามขอบเขตงานเดิม
- การบ่งชี้รายการค่าใช้จ่ายที่ถูกใช้จ่ายในการดำเนินการจริงซึ่งผู้รับเหมาเห็นว่าตนได้รับผลกระทบ
- การประเมินจากปริมาณงานที่เปลี่ยนแปลง
- อื่นๆ โปรดระบุ _____

3) การวิเคราะห์ค่าใช้จ่ายทางตรงที่ผู้รับเหมาใช้จ่ายจริง

- 3.1) ท่านเห็นด้วยหรือไม่กับการการปรับ(ลด)ค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่ผู้รับเหมาใช้จ่ายจริงก่อนนำไปใช้ในการวิเคราะห์ผลกระทบต่อกำหนดการส่งมอบงาน หากปรากฏข้อเท็จจริงว่าการดำเนินการของผู้รับเหมามีความบกพร่องหรือไม่ได้ถูกดำเนินการอย่างมีประสิทธิภาพ
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____

4) การแสดงรายการค่าใช้จ่ายทางตรง

- 4.1) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาทำหน้าที่ต้องแสดงรายการค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่เกิดขึ้นจริงโดยละเอียดต่อเจ้าของงาน เมื่อทำการประเมินภาระค่าใช้จ่ายทางตรงของผู้รับเหมาจากการวิเคราะห์ค่าใช้จ่ายซึ่งถูกใช้จ่ายจริง
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 4.2) ท่านเห็นด้วยหรือไม่ว่า หากเจ้าของไม่ทำการโต้แย้งข้อมูลค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ที่ผู้รับเหมาเสนอโดยทันทีหรือภายในระยะเวลาที่เหมาะสม หมายความว่าเจ้าของงานยอมรับความถูกต้องของข้อมูลดังกล่าวแล้ว
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 4.3) ในความเห็นของท่าน เจ้าของงานต้องใช้สิทธิในการโต้แย้งความถูกต้องของรายการค่าใช้จ่ายทางตรง(ค่าแรงและค่าวัสดุ)ภายในระยะเวลาเท่าใดนับจากวันที่ได้รับการแจ้งข้อมูลค่าใช้จ่ายจากผู้รับเหมา
- 1 สัปดาห์ 2 สัปดาห์ ไม่จำกัด อื่นๆ โปรดระบุ_____

5) การประเมินราคางาน

- 5.1) ท่านเห็นด้วยหรือไม่ว่า ในการประมาณปริมาณงานต้องมีการบวกเพิ่มปริมาณงานเพื่อชดเชยเศษวัสดุ
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 5.2) ท่านเห็นด้วยหรือไม่ว่า ในการกำหนดราคาต่อหน่วยต้องมีการบวกเพิ่มราคาต่อหน่วยเพื่อชดเชยเศษวัสดุ
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 5.3) ท่านเห็นด้วยหรือไม่ว่า คู่สัญญาควรกำหนดราคาต่อหน่วยของงานซึ่งถูกสั่งเปลี่ยนแปลงปริมาณงาน โดยใช้ราคาต่อหน่วยเดิมที่ผู้รับเหมาเสนอ หากงานดังกล่าวมีลักษณะเช่นเดียวกับงานที่ผู้รับเหมาได้เคยเสนอราคาไว้แล้ว
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 5.4) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาพึงได้รับการปรับราคาต่อหน่วยเมื่อถูกสั่งเพิ่ม/หรือลด ปริมาณงานจำนวนมาก
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 5.5) ท่านเห็นด้วยหรือไม่ว่า ผู้รับเหมาควรได้รับการปรับเพิ่มอัตราราคาต่อหน่วยสำหรับปริมาณงานส่วนที่ถูกสั่งเปลี่ยนแปลง หากเจ้าของงานสั่งงานเพิ่มหรือแก้ไขงานอันเป็นเหตุให้ผู้รับเหมาต้องดำเนินการในช่วงระยะเวลาที่ล่วงเลยกำหนดการส่งมอบงานตามสัญญาที่ได้เคยตกลงกันไว้แต่แรก
- เห็นด้วย ไม่เห็นด้วย อื่นๆ โปรดระบุ_____
- 5.6) แนวทางใดเป็นแนวทางที่ท่านพึงพอใจสำหรับใช้ในการกำหนดอัตราราคาต่อหน่วยของงานซึ่งผู้รับเหมายังไม่เคยเสนอราคา
- กำหนดโดยอ้างอิงจากราคาเฉลี่ยในท้องตลาด
- กำหนดโดยอ้างอิงจากราคาค้นทุนจริงของผู้รับเหมา
- อื่นๆ โปรดระบุ_____

6) การประเมินมูลค่างานลด (กรณีงานจ้างเหมารวม)

6.1) ท่านจะประเมินมูลค่างานลดอย่างไร เมื่อพบว่าปริมาณงานซึ่งถูกยกเลิกที่ถูกระบุใน BOQ มีจำนวนน้อยกว่าปริมาณงานจริง

- ประเมินจากราคารวมที่ผู้รับเหมาเสนอ
- ประเมินจากปริมาณงานจริง และราคาต่อหน่วยที่ผู้รับเหมาเสนอ
- เกณฑ์อื่น โปรดระบุ _____

6.2) ท่านจะประเมินมูลค่างานลดอย่างไร เมื่อพบว่าปริมาณงานซึ่งถูกยกเลิกที่ถูกระบุใน BOQ มีจำนวนมากกว่าปริมาณงานจริง

- ประเมินจากราคารวมที่ผู้รับเหมาเสนอ
- ประเมินจากปริมาณงานจริง และราคาต่อหน่วยที่ผู้รับเหมาเสนอ
- เกณฑ์อื่น โปรดระบุ _____

ตอนที่ 4

การพิจารณาปรับค่าอำนาจการ

คำชี้แจง : โปรดกรณกรออกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) การชดเชยผลกระทบต่อค่าอำนาจการและแนวทางการประเมินมูลค่าการชดเชย

1.1) ในความเห็นของท่าน ควรมีการพิจารณาปรับเพิ่ม/ชดเชยค่าอำนาจการให้แก่ผู้รับเหมาหรือไม่ อย่างไร หากการเหตุการณ์ใดๆที่เกิดขึ้นส่งผลกระทบต่อกำหนดการส่งมอบงาน แต่ไม่ส่งผลกระทบต่อมูลค่าค่าใช้จ่ายทางตรง อาทิเช่น เจ้าของงานอนุมัติแบบก่อสร้างล่าช้า ส่งผลให้ผู้รับเหมาไม่สามารถเริ่มดำเนินการตามแผนงาน

- พิจารณาปรับเพิ่มตามอัตราส่วนระยะเวลาปฏิบัติงานที่ยาวนานขึ้น
- ไม่พิจารณาการปรับเพิ่ม เนื่องจากผู้รับเหมาสามารถใช้จ่ายทางตรงในความรับผิดชอบเท่าเดิม
- พิจารณาชดเชยจากรายการค่าอำนาจการซึ่งผู้รับเหมาได้ใช้จ่ายจริงและสามารถบ่งชี้ได้ว่าเป็นค่าใช้จ่ายสืบเนื่องจากเหตุการณ์ที่เกิดขึ้น
- พิจารณาชดเชยจากรายการประมาณการค่าอำนาจการซึ่งผู้รับเหมาสามารถบ่งชี้ได้ว่าตนจำเป็นต้องใช้จ่ายสืบเนื่องจากเหตุการณ์ที่เกิดขึ้น
- อื่นๆ โปรดระบุ _____

1.2) ในความเห็นของท่าน ควรมีการพิจารณาปรับเพิ่ม/ชดเชยค่าอำนาจการให้แก่ผู้รับเหมาหรือไม่ อย่างไร หากการเหตุการณ์ใดๆที่เกิดขึ้นส่งผลกระทบต่อทำให้ผู้รับเหมามีการค่าใช้จ่ายทางตรงเพิ่มขึ้น แต่ไม่ส่งผลกระทบต่อกำหนดการส่งมอบงาน อาทิเช่น เจ้าของงานสั่งให้ผู้รับเหมาเปลี่ยนชนิดของสีทาผนัง

- ไม่พิจารณาการปรับเพิ่ม เนื่องจากผู้รับเหมาใช้เวลาคำนึงการเท่าเดิม
- พิจารณาปรับเพิ่มตามอัตราส่วนของมูลค่าค่าใช้จ่ายทางตรงที่เปลี่ยนแปลงเพิ่มขึ้น
- พิจารณาชดเชยจากรายการค่าอำนาจการซึ่งผู้รับเหมาใช้จ่ายจริงและสามารถบ่งชี้ได้ว่าเป็นค่าใช้จ่ายสืบเนื่องจากเหตุการณ์ที่เกิดขึ้น
- พิจารณาชดเชยจากรายการประมาณการค่าอำนาจการซึ่งผู้รับเหมาสามารถบ่งชี้ได้ว่าตนจำเป็นต้องใช้จ่ายสืบเนื่องจากเหตุการณ์ที่เกิดขึ้น
- อื่นๆ โปรดระบุ _____

- 1.3) ในความเห็นของท่านเห็น ควรมีการพิจารณา ปรับเพิ่ม/ลดเซชค่าอำนาจการให้แก่ผู้รับเหมาหรือไม่ อย่างไร หาก เหตุการณ์ใดๆที่เกิดขึ้นส่งผลกระทบต่อทั้งกำหนดการส่งมอบงานและค่าใช้จ่ายทางตรงของผู้รับเหมา อาทิเช่น เจ้าของงาน สั่งขยายขนาดของอาคาร
- พิจารณาปรับเพิ่มตามอัตราส่วนระยะเวลาปฏิบัติงานที่ยาวนานขึ้น
 - พิจารณาปรับเพิ่มตามอัตราส่วนของมูลค่าค่าใช้จ่ายทางตรงที่เปลี่ยนแปลงเพิ่มขึ้น
 - พิจารณาลดเซชจากรายการค่าอำนาจการซึ่งผู้รับเหมาได้ใช้จ่ายจริงและสามารถบ่งชี้ได้ว่าเป็นค่าใช้จ่ายสืบเนื่องจาก เหตุการณ์ที่เกิดขึ้น
 - พิจารณาลดเซชจากรายการประมาณการค่าอำนาจการซึ่งผู้รับเหมาสามารถบ่งชี้ได้ว่าตนพึงต้องใช้จ่ายสืบเนื่องจาก เหตุการณ์ที่เกิดขึ้น
 - อื่นๆ โปรดระบุ _____

ตอนที่ 5

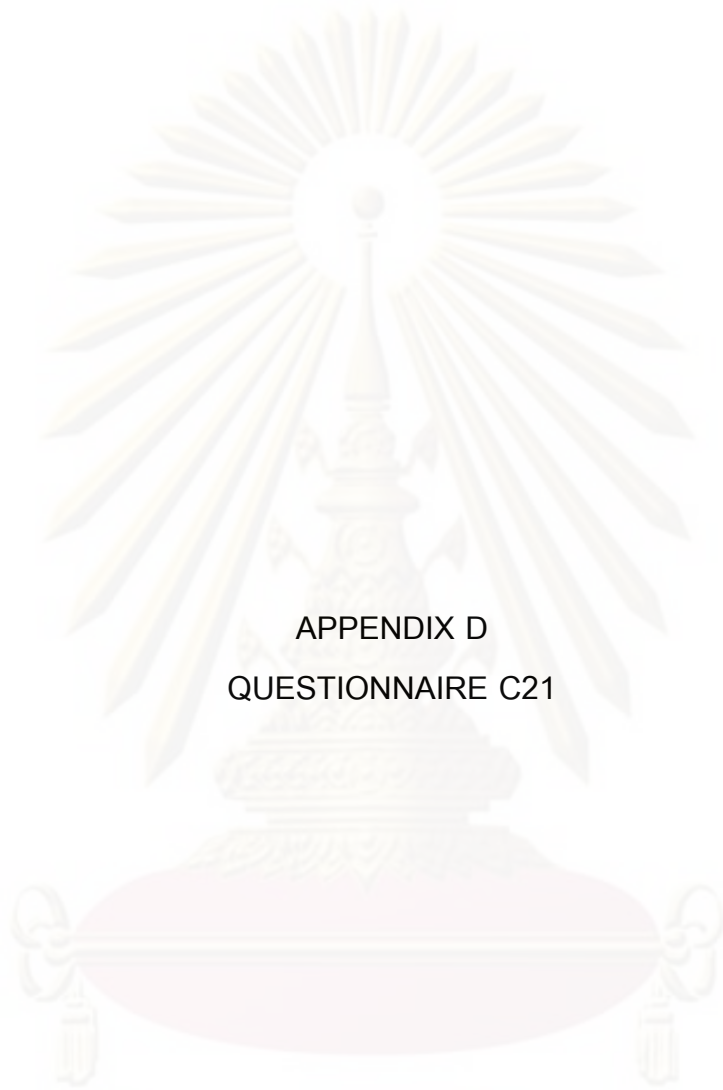
การพิจารณาปรับมูลค่าผลกำไร

คำชี้แจง : โปรดกรอกรอกข้อมูลหรือทำเครื่องหมาย (✓) ในบริเวณที่กำหนด

1) หลักการการพิจารณาปรับมูลค่าผลกำไร

- 1.1) ในความเห็นของท่านเห็น ควรมีการพิจารณาปรับมูลค่ากำไรให้แก่ผู้รับเหมาหรือไม่ อย่างไร หากเหตุการณ์ที่เกิดขึ้นส่งผลกระทบต่อกำหนดการส่งมอบงานแต่ไม่ส่งผลกระทบต่อมูลค่าค่าใช้จ่ายทางตรง อาทิเช่น เจ้าของงานอนุมัติแบบก่อสร้างล่าช้า ส่งผลให้ผู้รับเหมาไม่สามารถเริ่มดำเนินการตามแผนงาน
- พิจารณาปรับตามอัตราส่วนระยะเวลาปฏิบัติงานที่ยาวนานขึ้น
 - ไม่พิจารณาปรับ เนื่องจากผู้รับเหมามีมูลค่างานในความรับผิดชอบเท่าเดิม
 - อื่น โปรดระบุ _____
- 1.2) ในความเห็นของท่านเห็น ควรมีการพิจารณาปรับมูลค่ากำไรให้แก่ผู้รับเหมาหรือไม่ อย่างไร หากเหตุการณ์ที่เกิดขึ้นส่งผลกระทบต่อทำให้ผู้รับเหมามีการค่าใช้จ่ายทางตรงเพิ่มขึ้นแต่ไม่ส่งผลกระทบต่อกำหนดการส่งมอบงาน อาทิเช่น เจ้าของงานสั่งให้ผู้รับเหมาเปลี่ยนชนิดของสีทาผนัง
- ไม่พิจารณาปรับ เนื่องจากผู้รับเหมาใช้เวลาคำนึงการเท่าเดิม
 - พิจารณาปรับตามอัตราส่วนมูลค่างานที่เพิ่มมากขึ้น
 - อื่น โปรดระบุ _____
- 1.3) ในความเห็นของท่าน ควรมีการพิจารณาปรับมูลค่ากำไรให้แก่ผู้รับเหมาหรือไม่ อย่างไร หากเหตุการณ์ที่เกิดขึ้นส่งผลกระทบต่อทั้งกำหนดการส่งมอบงานและค่าใช้จ่ายทางตรงของผู้รับเหมา อาทิเช่น เจ้าของงานสั่งขยายขนาดของอาคาร
- พิจารณาปรับตามอัตราส่วนระยะเวลาปฏิบัติงานที่ยาวนานขึ้น
 - พิจารณาปรับตามอัตราส่วนมูลค่างานที่เพิ่มมากขึ้น
 - อื่น โปรดระบุ _____

จบแบบสอบถาม ขอกราบขอบพระคุณที่ท่านให้ความอนุเคราะห์ข้อมูล



APPENDIX D

QUESTIONNAIRE C21

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

ภาควิชาวิศวกรรมโยธา คณะวิศวกรรมศาสตร์ ถนนพญาไท ปทุมวัน กรุงเทพฯ 10330

Department of Civil Engineering, Faculty of Engineering

Phayathai Rd., Pathumwan, Bangkok 10330 Tel : (662) 218-6460 to 62, Fax : (662) 251-7304

วันที่ 23 มิถุนายน 2551

เรียน ท่านผู้ตอบแบบสอบถาม

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

สิ่งที่ส่งมาด้วย 1) แบบสอบถาม จำนวน 1 ชุด

2) ของไปรษณีย์ติดแสตมป์สำหรับส่งคืนแบบสอบถาม จำนวน 1 ของ

ด้วย กระผม นาย นที สุริยานนท์ นิสิตในหลักสูตรวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา กำลังทำงานวิจัยเพื่อทำการวิเคราะห์ความเหมาะสมของข้อสัญญากำหนดความรับผิดชอบของผู้รับเหมากรณีเกิดเหตุการณ์ซึ่งส่งผลกระทบต่อระยะเวลาดำเนินการและต้นทุนการก่อสร้างของผู้รับเหมา ได้แก่ เหตุการณ์ เหตุสุดวิสัย เจ้าของงานกระทำการบกพร่อง เจ้าของงานกระทำการเป็นอุปสรรคต่อการปฏิบัติงาน สภาพทางกายภาพเป็นอุปสรรคต่อการปฏิบัติงาน และการเปลี่ยนแปลงงานโดยเจ้าของงาน

กระผมมีความจำเป็นที่จะต้องรวบรวมข้อมูลจากกลุ่มตัวอย่างซึ่งเป็นตัวแทนบุคลากรฝ่ายผู้รับเหมาให้ได้จำนวนไม่ต่ำกว่า 300 ตัวอย่าง เพื่อนำมาใช้ในการประเมินทัศนคติของผู้รับเหมาที่มีต่อการถูกกำหนดให้รับผิดชอบผลกระทบต่ออันเนื่องมาจากเหตุการณ์ต่างๆและอัตราค่าตอบแทนที่ได้รับชำระจากเจ้าของงาน ซึ่งเรื่องดังกล่าวเป็นเนื้อหาส่วนสำคัญส่วนหนึ่งของงานวิจัยของกระผม

กระผมจึงใคร่ขอความกรุณาจากท่านในการตอบแบบสอบถามซึ่งกระผมได้ส่งมาพร้อมจดหมายฉบับนี้ การได้รับความอนุเคราะห์จากท่านจะมีผลอย่างมากต่อความสำเร็จของงานวิจัยของกระผม กระผมหวังเป็นอย่างยิ่งที่จะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์

ขอแสดงความนับถืออย่างสูง

(นาย นที สุริยานนท์)

นิสิตจุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม
เรื่อง ทักษะของผู้รับเหมา
ต่อ
ระดับความพึงพอใจและอัตราค่าตอบแทนที่ได้รับจากเจ้าของงาน

แนวคิดและวัตถุประสงค์ของงานวิจัย : เมื่อพิจารณากำหนดระดับความพึงพอใจของคู่สัญญาแต่ละฝ่ายต่อเหตุการณ์ซึ่งส่งผลกระทบต่อระยะเวลาดำเนินการและต้นทุนการก่อสร้าง ความพึงพอใจของคู่สัญญาทั้งสองฝ่ายเป็นปัจจัยสำคัญซึ่งผู้รับเหมาจำเป็นต้องคำนึง การทราบว่าผู้รับเหมาที่มีทัศนคติอย่างไรต่อการถูกกำหนดให้รับพึงพอใจผลกระทบต่ออันเนื่องมาจากเหตุการณ์ต่างๆในแต่ละระดับรวมถึงทัศนคติต่อระดับอัตราค่าตอบแทนที่จะได้รับชำระจากเจ้าของงานจะเอื้อให้ผู้รับเหมาสามารถเขียนข้อกำหนดจัดสรรภาวะความพึงพอใจระหว่างคู่สัญญาได้เหมาะสมยิ่งขึ้น

แบบสอบถามชุดนี้ทำขึ้นโดยมีวัตถุประสงค์เพื่อทำการประเมินทัศนคติของผู้รับเหมาต่อระดับความพึงพอใจและอัตราค่าตอบแทนที่ได้รับชำระจากเจ้าของงานเมื่อถูกกำหนดให้รับพึงพอใจผลกระทบต่ออันเนื่องมาจากเหตุการณ์ใดๆที่อาจเกิดขึ้นในระหว่างการก่อสร้าง ข้อมูลที่ได้จากแบบสอบถามนี้ถือเป็นความลับซึ่งใช้เฉพาะในการศึกษานี้เท่านั้น ขอความกรุณาท่านโปรดตอบตามความเป็นจริง คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งในการพัฒนาข้อสัญญาให้มีความเหมาะสมและยุติธรรมยิ่งขึ้น ซึ่งย่อมส่งผลดีต่อผู้รับเหมา เจ้าของงาน วิศวกรที่ปรึกษา รวมถึงบุคคลผู้ซึ่งเกี่ยวข้องกับการจ้างงานก่อสร้างฝ่ายอื่นๆในที่สุด

ผู้ตอบแบบสอบถาม : บุคลากรของผู้รับเหมาซึ่งมีประสบการณ์เกี่ยวกับเสนอราคางาน การพิจารณาเงื่อนไขการว่าจ้าง การบริหารการก่อสร้าง และการควบคุมการก่อสร้าง อาทิเช่น ผู้รับพึงพอใจการประมาณราคาและเสนอราคางาน นิติกรหรือที่ปรึกษากฎหมาย ผู้จัดการโครงการ วิศวกรโครงการ วิศวกร และไฟร์แมน เป็นต้น

รายละเอียดของแบบสอบถาม : แบบสอบถามฉบับนี้ได้ถูกจำแนกเป็น 2 ตอน โปรดตอบคำถามทุกข้อ คำตอบของท่านทุกคำตอบมีความจำเป็นต่อการวิจัยนี้เป็นอย่างมาก ผู้วิจัยคาดการณ์ว่าท่านจะอาจต้องใช้เวลาในการตอบแบบสอบถามฉบับนี้ประมาณ 15-20 นาที

หากท่านต้องการข้อมูลเพิ่มเติม สอบถาม หรือให้คำแนะนำ ท่านสามารถติดต่อผู้วิจัยได้ทางโทรศัพท์ และสุดท้ายนี้ ผู้วิจัยขอกราบขอบพระคุณในความร่วมมือของท่าน

นที สุริยานนท์
นิติระดับปริญญาเอกสาขาบริหารการก่อสร้าง
จุฬาลงกรณ์มหาวิทยาลัย
โทร. 081-847-4882
อีเมล: nsuriyan@hotmail.com

หมายเหตุ :

1. ขอความกรุณาท่านช่วยตอบแบบสอบถามชุดนี้และส่งคืนมายังผู้วิจัยโดยเร็ว
2. เมื่อท่านทำแบบสอบถามชุดนี้เสร็จเรียบร้อยแล้ว กรุณาพับแบบสอบถามใส่ลงในซองไปรษณีย์ซึ่งส่งมาพร้อมแบบสอบถามฉบับนี้ และโปรดส่งซองไปรษณีย์ดังกล่าวถึงผู้วิจัย ทั้งนี้ท่านไม่ต้องเสียค่าใช้จ่ายในการส่งไปรษณีย์ถึงผู้วิจัยแต่ประการใด

ตอนที่ 1

ข้อมูลเกี่ยวกับหน่วยงานและผู้ตอบแบบสอบถาม

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) ข้อมูลเกี่ยวกับหน่วยงานของผู้ตอบแบบสอบถาม

1.1) โปรดระบุประเภทของบริษัทที่ท่านสังกัด

ผู้รับเหมาหลัก ผู้รับเหมาช่วง ผู้รับเหมาค่าแรง อื่นๆ (โปรดระบุ) _____

1.2) โปรดระบุจำนวนโครงการโดยประมาณที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ โครงการต่อปี

1.3) โปรดระบุมูลค่าโดยประมาณของโครงการสูงสุดที่บริษัทของท่านเคยรับดำเนินการก่อสร้าง

_____ ล้านบาท

1.4) โปรดระบุค่ารวมโดยประมาณของโครงการที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ ล้านบาทต่อปี

1.5) โปรดระบุประเภทโครงการซึ่งบริษัทของท่านรับดำเนินการก่อสร้าง

- งานสาธารณูปโภค (อาทิเช่น ถนน สะพาน เขื่อน อุโมงค์ และระบบระบายน้ำ)
- งานอาคารของหน่วยงานภาครัฐ (อาทิเช่น โรงพยาบาล โรงเรียน สำนักงาน และอาคารพักอาศัย)
- งานอาคารของหน่วยงานภาคเอกชน (อาทิเช่น โรงแรม ศูนย์การค้า และอาคารสำนักงาน)
- งานโรงงานอุตสาหกรรม (อาทิเช่น โรงงาน และ โกดังเก็บสินค้า)
- งานบ้านพักอาศัยภาคเอกชน
- อื่นๆ (โปรดระบุ) _____

2) ข้อมูลเกี่ยวกับผู้ตอบแบบสอบถาม

2.1) โปรดระบุประเภทพื้นฐานการศึกษาของท่าน

- สายช่าง อาทิเช่น สถาปัตยกรรม ก่อสร้าง โยธา ตำรวจ ไฟฟ้า เครื่องกล
- สายบริหาร อาทิเช่น บริหารธุรกิจ บัญชี การเงิน นิติศาสตร์ รัฐศาสตร์
- อื่นๆ (โปรดระบุ) _____

2.2) โปรดระบุระยะเวลาประสบการณ์การทำงานของท่าน _____ ปี

2.3) โปรดระบุตำแหน่งปัจจุบัน/ตำแหน่งล่าสุดของท่านที่เกี่ยวข้องกับโครงการก่อสร้าง

- วิศวกรหรือโพรแมน วิศวกรโครงการ ผู้จัดการโครงการ
- นิติกรหรือที่ปรึกษากฎหมาย ผู้บริหารระดับสูงกว่าผู้จัดการโครงการ
- อื่นๆ (โปรดระบุ) _____

ตอนที่ 2

การเปรียบเทียบเงื่อนไขความรับผิดชอบและอัตราค่าตอบแทนที่ได้รับ

คำชี้แจง : โปรดพิจารณาเปรียบเทียบข้อเสนอเกี่ยวกับเงื่อนไขความรับผิดชอบและอัตราค่าตอบแทนที่ได้รับสำหรับการถูกกำหนดให้ต้องรับผิดชอบตามเงื่อนไข และระบุว่าท่านพึงพอใจในข้อเสนอดังกล่าว โดยทำเครื่องหมาย (/) ในบริเวณที่กำหนด

เงื่อนไขความรับผิดชอบที่พิจารณาจะครอบคลุมเหตุการณ์ซึ่งหากเกิดขึ้นในระหว่างการก่อสร้างจะส่งผลกระทบต่อระยะเวลาดำเนินการหรือต้นทุนการก่อสร้างจำนวน 5 เหตุการณ์ ได้แก่ 1) เหตุสุดวิสัย อาทิเช่น น้ำท่วมโครงการ 2) เจ้าของงานกระทำการบกพร่อง อาทิเช่น การอนุมัติวัสดุล่าช้า 3) เจ้าของงานกระทำการเป็นอุปสรรคต่อการปฏิบัติงาน อาทิเช่น การสั่งหยุดงาน หรือการเข้าใช้พื้นที่สถานที่ก่อสร้าง 4) สภาพทางกายภาพเป็นอุปสรรคต่อการปฏิบัติงาน อาทิเช่น การขุดพบฐานรากเดิมในบริเวณสถานที่ก่อสร้าง และ 5) การสั่งเปลี่ยนแปลงงานโดยเจ้าของงาน อาทิเช่น การสั่งเพิ่มปริมาณงาน

แต่ละข้อเสนอจะมีการระบุเงื่อนไขความรับผิดชอบของผู้รับเหมาต่อเหตุการณ์ต่างๆ โดยระบุว่าผู้รับเหมาถูกจำกัดสิทธิในการปรับขยายระยะเวลาดำเนินการ ปรับเพิ่มค่าวัสดุและค่าแรง และปรับเพิ่มค่าอำนวยการ เพื่อชดเชยผลกระทบที่ได้รับจากเหตุการณ์ดังกล่าวหรือไม่ ในขณะที่อัตราค่าตอบแทนที่จะได้รับการชำระจากเจ้าของงานสำหรับตอบแทนภาระความรับผิดชอบตามเงื่อนไขจะแสดงเป็นอัตราส่วนเทียบกับมูลค่าค่าใช้จ่ายทางตรง (ค่าแรงและค่าวัสดุ) ของโครงการ

จำนวนข้อเสนอก่อนที่ขอความกรุณาท่าน โปรดพิจารณาที่มีจำนวนทั้งสิ้น 14 คู่ และผู้วิจัยได้ใช้ตัวอักษรเข้มเน้นเงื่อนไขความรับผิดชอบที่แตกต่างกันของข้อเสนอดังกล่าวเพื่อความสะดวกในการพิจารณาเปรียบเทียบของท่านไว้แล้ว

ตัวอย่าง: การพิจารณาข้อเสนอกู้ที่ A

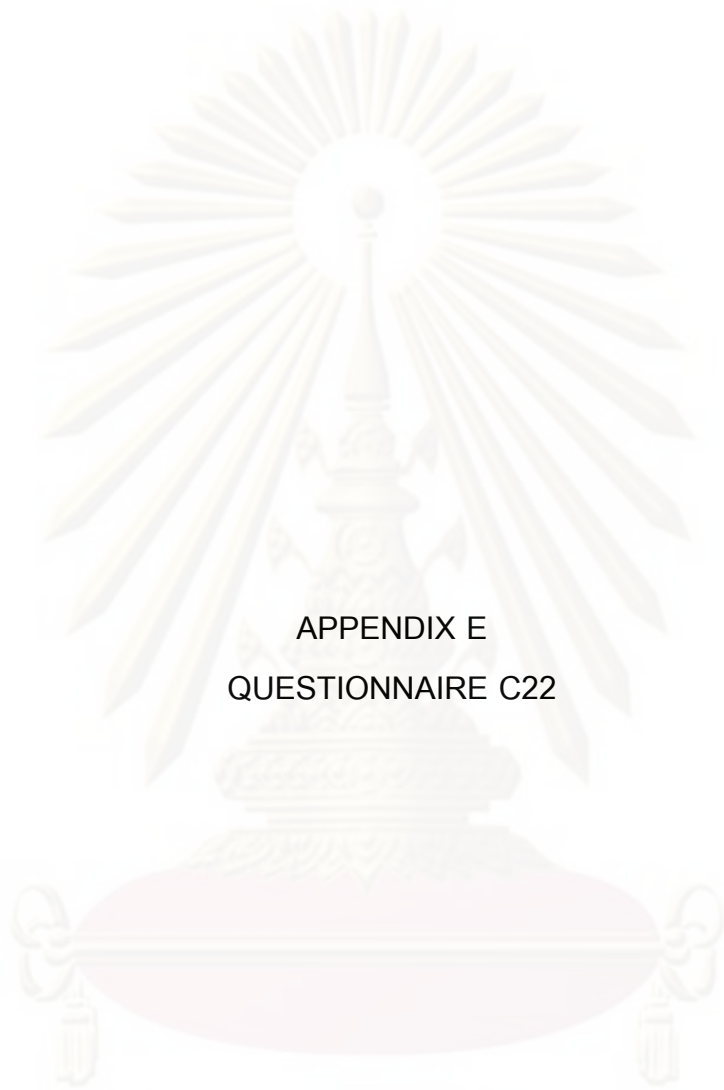
ข้อเสนอกู้ที่ A

เงื่อนไขภาระความรับผิดชอบของผู้รับเหมาต่อเหตุการณ์ที่ระบุ		ข้อเสนอกู้ที่ 1	ข้อเสนอกู้ที่ 2
เหตุสุดวิสัย อาทิเช่น น้ำท่วมโครงการ	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
เจ้าของงานบกพร่อง อาทิเช่น การอนุมัติวัสดุล่าช้า	ระยะเวลาดำเนินการ	ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
เจ้าของงานเป็นอุปสรรคต่อการดำเนินการ อาทิเช่น การสั่งหยุดงาน	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
สภาพทางกายภาพเป็นอุปสรรค อาทิเช่น การขุดพบฐานรากเดิม	ระยะเวลาดำเนินการ	ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
เจ้าของงานเปลี่ยนแปลงงาน อาทิเช่น การสั่งเพิ่มปริมาณงาน	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
อัตราค่าตอบแทนที่ต้องชำระให้ผู้รับเหมา		0.50%	0.75%

โปรดทำเครื่องหมายในกล่องที่ท่านเห็นว่าเป็นข้อเสนอกู้ที่ท่านมีความพึงพอใจสูงสุด



คำอธิบาย ผู้ตอบแบบสอบถามท่านนี้เลือกข้อเสนอกู้ที่ 2 เพราะเห็นว่าข้อเสนอกู้ที่ 2 ให้ค่าตอบแทนมากกว่าข้อเสนอกู้ที่ 1 เป็นจำนวน 0.25 % อีกทั้งยังไม่จำกัดสิทธิในการเรียกร้องการชดเชยผลกระทบอันเนื่องมาจากเหตุการณ์ต่างๆ เหมือนข้อเสนอกู้ที่



APPENDIX E
QUESTIONNAIRE C22

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



จุฬาลงกรณ์มหาวิทยาลัย

CHULALONGKORN UNIVERSITY

ภาควิชาวิศวกรรมโยธา คณะวิศวกรรมศาสตร์ ถนนพญาไท ปทุมวัน กรุงเทพฯ 10330

Department of Civil Engineering, Faculty of Engineering

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วันที่ 23 มิถุนายน 2551

เรียน ท่านผู้ตอบแบบสอบถาม

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

สิ่งที่ส่งมาด้วย 1) แบบสอบถาม จำนวน 1 ชุด

2) ของไปรษณีย์ติดแสตมป์สำหรับส่งคืนแบบสอบถาม จำนวน 1 ของ

ด้วย กระผม นาย นที สุริยานนท์ นิสิตในหลักสูตรวิศวกรรมศาสตรบัณฑิต สาขาวิศวกรรมโยธา กำลังทำงานวิจัยเพื่อทำการวิเคราะห์ความเหมาะสมของข้อสัญญากำหนดความรับผิดชอบของผู้รับเหมากรณีเกิดเหตุการณ์ซึ่งส่งผลกระทบต่อระยะเวลาดำเนินการและต้นทุนการก่อสร้างของผู้รับเหมา ได้แก่ เหตุการณ์ เหตุสุดวิสัย เจ้าของงานกระทำการบกพร่อง เจ้าของงานกระทำการเป็นอุปสรรคต่อการปฏิบัติงาน สภาพทางกายภาพเป็นอุปสรรคต่อการปฏิบัติงาน และการเปลี่ยนแปลงงานโดยเจ้าของงาน

กระผมมีความจำเป็นที่จะต้องรวบรวมข้อมูลจากกลุ่มตัวอย่างซึ่งเป็นตัวแทนบุคลากรฝ่ายผู้รับเหมาให้ได้จำนวนไม่ต่ำกว่า 300 ตัวอย่าง เพื่อนำมาใช้ในการประเมินทัศนคติของผู้รับเหมาที่มีต่อการถูกกำหนดให้รับผิดชอบผลกระทบต่ออันเนื่องมาจากเหตุการณ์ต่างๆและอัตราค่าตอบแทนที่ได้รับชำระจากเจ้าของงาน ซึ่งเรื่องดังกล่าวเป็นเนื้อหาส่วนสำคัญส่วนหนึ่งของงานวิจัยของกระผม

กระผมจึงใคร่ขอความกรุณาจากท่านในการตอบแบบสอบถามซึ่งกระผมได้ส่งมาพร้อมจดหมายฉบับนี้ การได้รับความอนุเคราะห์จากท่านจะมีผลอย่างมากต่อความสำเร็จของงานวิจัยของกระผม กระผมหวังเป็นอย่างยิ่งที่จะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณล่วงหน้ามา ณ โอกาสนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์

ขอแสดงความนับถืออย่างสูง

(นาย นที สุริยานนท์)

นิสิตจุฬาลงกรณ์มหาวิทยาลัย

แบบสอบถาม
เรื่อง ทักษะของผู้รับเหมา
ต่อ
ระดับความพึงพอใจและอัตราค่าตอบแทนที่ได้รับจากเจ้าของงาน

แนวคิดและวัตถุประสงค์ของงานวิจัย : เมื่อพิจารณากำหนดระดับความพึงพอใจของผู้สัญญาแต่ละฝ่ายต่อเหตุการณ์ซึ่งส่งผลกระทบต่อระยะเวลาดำเนินการและต้นทุนการก่อสร้าง ความพึงพอใจของผู้สัญญาทั้งสองฝ่ายเป็นปัจจัยสำคัญซึ่งผู้รับสัญญาจำเป็นต้องคำนึง การทราบว่าผู้รับเหมามีทัศนคติอย่างไรต่อการถูกกำหนดให้รับพึงพอใจผลกระทบต่ออันเนื่องมาจากเหตุการณ์ต่างๆในแต่ละระดับรวมถึงทัศนคติต่อระดับอัตราค่าตอบแทนที่จะได้รับชำระจากเจ้าของงานจะเอื้อให้ผู้รับสัญญาสามารถเขียนข้อกำหนดจัดสรรภาวะความพึงพอใจระหว่างผู้สัญญาได้เหมาะสมยิ่งขึ้น

แบบสอบถามชุดนี้ทำขึ้นโดยมีวัตถุประสงค์เพื่อทำการประเมินทัศนคติของผู้รับเหมาต่อระดับความพึงพอใจและอัตราค่าตอบแทนที่ได้รับชำระจากเจ้าของงานเมื่อถูกกำหนดให้รับพึงพอใจผลกระทบต่ออันเนื่องมาจากเหตุการณ์ใดๆที่อาจเกิดขึ้นในระหว่างการก่อสร้าง ข้อมูลที่ได้จากแบบสอบถามนี้ถือเป็นความลับซึ่งใช้เฉพาะในการศึกษานี้เท่านั้น ขอความกรุณาท่านโปรดตอบตามความเป็นจริง คำตอบของท่านจะเป็นประโยชน์อย่างยิ่งในการพัฒนาข้อสัญญาให้มีความเหมาะสมและยุติธรรมยิ่งขึ้น ซึ่งย่อมส่งผลดีต่อผู้รับเหมา เจ้าของงาน วิศวกรที่ปรึกษา รวมถึงบุคคลผู้ซึ่งเกี่ยวข้องกับการจ้างงานก่อสร้างฝ่ายอื่นๆในที่สุด

ผู้ตอบแบบสอบถาม : บุคลากรของผู้รับเหมาซึ่งมีประสบการณ์เกี่ยวกับเสนอราคางาน การพิจารณาเงื่อนไขการว่าจ้าง การบริหารการก่อสร้าง และการควบคุมการก่อสร้าง อาทิเช่น ผู้รับพึงพอใจการประมาณราคาและเสนอราคางาน นิติกรหรือที่ปรึกษากฎหมาย ผู้จัดการโครงการ วิศวกรโครงการ วิศวกร และไฟร์แมน เป็นต้น

รายละเอียดของแบบสอบถาม : แบบสอบถามฉบับนี้ได้ถูกจำแนกเป็น 2 ตอน โปรดตอบคำถามทุกข้อ คำตอบของท่านทุกคำตอบมีความจำเป็นต่อการวิจัยนี้เป็นอย่างมาก ผู้วิจัยคาดการณ์ว่าท่านจะอาจต้องใช้เวลาในการตอบแบบสอบถามฉบับนี้ประมาณ 15-20 นาที

หากท่านต้องการข้อมูลเพิ่มเติม สอบถาม หรือให้คำแนะนำ ท่านสามารถติดต่อผู้วิจัยได้ทางโทรศัพท์ และสุดท้ายนี้ ผู้วิจัยขอกราบขอบพระคุณในความร่วมมือของท่าน

นที สุริยานนท์
นิติระดับปริญญาเอกสาขาบริหารการก่อสร้าง
จุฬาลงกรณ์มหาวิทยาลัย
โทร. 081-847-4882
อีเมล: nsuriyan@hotmail.com

หมายเหตุ :

1. ขอความกรุณาท่านช่วยตอบแบบสอบถามชุดนี้และส่งคืนมายังผู้วิจัยโดยเร็ว
2. เมื่อท่านทำแบบสอบถามชุดนี้เสร็จเรียบร้อยแล้ว กรุณาพับแบบสอบถามใส่ลงในซองไปรษณีย์ซึ่งส่งมาพร้อมแบบสอบถามฉบับนี้ และโปรดส่งซองไปรษณีย์ดังกล่าวถึงผู้วิจัย ทั้งนี้ท่านไม่ต้องเสียค่าใช้จ่ายในการส่งไปรษณีย์ถึงผู้วิจัยแต่ประการใด

ตอนที่ 1

ข้อมูลเกี่ยวกับหน่วยงานและผู้ตอบแบบสอบถาม

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

คำชี้แจง : กรุณากรอกข้อมูลหรือทำเครื่องหมาย (/) ในบริเวณที่กำหนด

1) ข้อมูลเกี่ยวกับหน่วยงานของผู้ตอบแบบสอบถาม

1.1) โปรดระบุประเภทของบริษัทที่ท่านสังกัด

ผู้รับเหมาหลัก ผู้รับเหมาช่วง ผู้รับเหมาค่าแรง อื่นๆ (โปรดระบุ) _____

1.2) โปรดระบุจำนวนโครงการโดยประมาณที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ โครงการต่อปี

1.3) โปรดระบุมูลค่าโดยประมาณของโครงการสูงสุดที่บริษัทของท่านเคยรับดำเนินการก่อสร้าง

_____ ล้านบาท

1.4) โปรดมูลค่ารวมโดยประมาณของโครงการที่บริษัทของท่านรับเป็นผู้ดำเนินการก่อสร้างในแต่ละปี

_____ ล้านบาทต่อปี

1.5) โปรดระบุประเภทโครงการซึ่งบริษัทของท่านรับดำเนินการก่อสร้าง

- งานสาธารณูปโภค (อาทิเช่น ถนน สะพาน เขื่อน อุโมงค์ และระบบระบายน้ำ)
- งานอาคารของหน่วยงานภาครัฐ (อาทิเช่น โรงพยาบาล โรงเรียน สำนักงาน และอาคารพักอาศัย)
- งานอาคารของหน่วยงานภาคเอกชน (อาทิเช่น โรงแรม ศูนย์การค้า และอาคารสำนักงาน)
- งานโรงงานอุตสาหกรรม (อาทิเช่น โรงงาน และ โกดังเก็บสินค้า)
- งานบ้านพักอาศัยภาคเอกชน
- อื่นๆ (โปรดระบุ) _____

2) ข้อมูลเกี่ยวกับผู้ตอบแบบสอบถาม

2.1) โปรดระบุประเภทพื้นฐานการศึกษาของท่าน

- สายช่าง อาทิเช่น สถาปัตยกรรม ก่อสร้าง โยธาสำรวจ ไฟฟ้า เครื่องกล
- สายบริหาร อาทิเช่น บริหารธุรกิจ บัญชี การเงิน นิติศาสตร์ รัฐศาสตร์
- อื่นๆ (โปรดระบุ) _____

2.2) โปรดระบุระยะเวลาประสบการณ์การทำงานของท่าน _____ ปี

2.3) โปรดระบุตำแหน่งปัจจุบัน/ตำแหน่งล่าสุดของท่านที่เกี่ยวข้องกับโครงการก่อสร้าง

- วิศวกรหรือโพรแมน วิศวกรโครงการ ผู้จัดการโครงการ
- นิติกรหรือที่ปรึกษากฎหมาย ผู้บริหารระดับสูงกว่าผู้จัดการโครงการ
- อื่นๆ (โปรดระบุ) _____

ตอนที่ 2

การเปรียบเทียบเงื่อนไขความรับผิดชอบและอัตราค่าตอบแทนที่ได้รับ

คำชี้แจง : โปรดพิจารณาเปรียบเทียบข้อเสนอเกี่ยวกับเงื่อนไขความรับผิดชอบและอัตราค่าตอบแทนที่ได้รับสำหรับการถูกกำหนดให้ต้องรับผิดชอบตามเงื่อนไข และระบุว่าท่านพึงพอใจในข้อเสนอดังกล่าว โดยทำเครื่องหมาย (/) ในบริเวณที่กำหนด

เงื่อนไขความรับผิดชอบที่พิจารณาจะครอบคลุมเหตุการณ์ซึ่งหากเกิดขึ้นในระหว่างการก่อสร้างจะส่งผลกระทบต่อระยะเวลาดำเนินการหรือต้นทุนการก่อสร้างจำนวน 5 เหตุการณ์ ได้แก่ 1) เหตุสุดวิสัย อาทิเช่น น้ำท่วมโครงการ 2) เจ้าของงานกระทำการบกพร่อง อาทิเช่น การอนุมัติวัสดุล่าช้า 3) เจ้าของงานกระทำการเป็นอุปสรรคต่อการปฏิบัติงาน อาทิเช่น การสั่งหยุดงาน หรือการเข้าใช้พื้นที่สถานที่ก่อสร้าง 4) สภาพทางกายภาพเป็นอุปสรรคต่อการปฏิบัติงาน อาทิเช่น การขุดพบฐานรากเดิมในบริเวณสถานที่ก่อสร้าง และ 5) การเปลี่ยนแปลงงานโดยเจ้าของงาน อาทิเช่น การสั่งเพิ่มปริมาณงาน

แต่ละข้อเสนอจะมีการระบุเงื่อนไขความรับผิดชอบของผู้รับเหมาต่อเหตุการณ์ต่างๆ โดยระบุว่าผู้รับเหมาถูกจำกัดสิทธิในการปรับขยายระยะเวลาดำเนินการ ปรับเพิ่มค่าวัสดุและค่าแรง และปรับเพิ่มค่าอำนวยการ เพื่อชดเชยผลกระทบที่ได้รับจากเหตุการณ์ดังกล่าวหรือไม่ ในขณะที่อัตราค่าตอบแทนที่จะได้รับการชำระจากเจ้าของงานสำหรับตอบแทนภาระความรับผิดชอบตามเงื่อนไขจะแสดงเป็นอัตราส่วนเทียบกับมูลค่าค่าใช้จ่ายทางตรง (ค่าแรงและค่าวัสดุ) ของโครงการ

จำนวนข้อเสนอที่ขอความกรุณาท่าน โปรดพิจารณาที่มีจำนวนทั้งสิ้น 14 คู่ และผู้วิจัยได้ใช้ตัวอักษรเข้มเน้นเงื่อนไขความรับผิดชอบที่แตกต่างกันของข้อเสนอทั้งสองเพื่อความสะดวกในการพิจารณาเปรียบเทียบของท่านไว้แล้ว

ตัวอย่าง: การพิจารณาข้อเสนอคู่ที่ A

ข้อเสนอคู่ที่ A

เงื่อนไขภาระความรับผิดชอบของผู้รับเหมาต่อเหตุการณ์ที่ระบุ		ข้อเสนอที่ 1	ข้อเสนอที่ 2
เหตุสุดวิสัย อาทิเช่น น้ำท่วมโครงการ	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
เจ้าของงานบกพร่อง อาทิเช่น การอนุมัติวัสดุล่าช้า	ระยะเวลาดำเนินการ	ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
เจ้าของงานเป็นอุปสรรคต่อการดำเนินการ อาทิเช่น การสั่งหยุดงาน	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
สภาพทางกายภาพเป็นอุปสรรค อาทิเช่น การขุดพบฐานรากเดิม	ระยะเวลาดำเนินการ	ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
เจ้าของงานเปลี่ยนแปลงงาน อาทิเช่น การสั่งเพิ่มปริมาณงาน	ระยะเวลาดำเนินการ	ไม่ได้รับการปรับขยาย	ได้รับการปรับขยาย
	ค่าวัสดุและค่าแรง	ได้รับการปรับเพิ่ม	ได้รับการปรับเพิ่ม
	ค่าอำนวยการ	ไม่ได้รับการปรับเพิ่ม	ไม่ได้รับการปรับเพิ่ม
อัตราค่าตอบแทนที่ต้องชำระให้ผู้รับเหมา		0.50%	0.75%

โปรดทำเครื่องหมายในกล่องที่ท่านเห็นว่าเป็นข้อเสนอที่ท่านมีความพึงพอใจสูงสุด



คำอธิบาย ผู้ตอบแบบสอบถามท่านนี้เลือกข้อเสนอที่ 2 เพราะเห็นว่าข้อเสนอที่ 2 ให้ค่าตอบแทนมากกว่าข้อเสนอที่ 1 เป็นจำนวน 0.25 % อีกทั้งยังไม่จำกัดสิทธิในการเรียกร้องการชดเชยผลกระทบอันเนื่องมาจากเหตุการณ์ต่างๆเหมือนข้อเสนอที่



APPENDIX F
STANDARD CONTRACT OF THAI GOVERNMENT

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

ตัวอย่างแบบสัญญาจ้าง

สัญญาเลขที่

สัญญาฉบับนี้ทำขึ้น ณ

ตำบล/แขวงอำเภอ/เขต

จังหวัด เมื่อวันที่ เดือน พ.ศ.

ระหว่าง โดย

ซึ่งต่อไปในสัญญานี้เรียกว่า "ผู้ว่าจ้าง" ฝ่ายหนึ่ง กับซึ่ง

จดทะเบียนเป็นนิติบุคคล ณ มีสำนักงานใหญ่

อยู่เลขที่ ถนน ตำบล/แขวง

อำเภอ/เขต จังหวัด

โดย ผู้มีอำนาจลงนามผูกพันนิติบุคคล

ปรากฏตามหนังสือรับรองของสำนักงานทะเบียนหุ้นส่วนบริษัท

ลงวันที่ (และหนังสือมอบอำนาจลงวันที่)*

แนบท้ายสัญญานี้ (ในกรณีที่ผู้รับจ้างเป็นบุคคลธรรมดาให้ใช้ข้อความว่า กับ

..... อยู่บ้านเลขที่ ถนน

ตำบล/แขวง อำเภอ/เขต

จังหวัด) * ซึ่งต่อไปในสัญญานี้เรียกว่า "ผู้รับจ้าง" อีกฝ่ายหนึ่ง

คู่สัญญาได้ตกลงกันมีข้อความดังต่อไปนี้

ข้อ 1. ข้อตกลงว่าจ้าง

ผู้ว่าจ้างตกลงจ้างและผู้รับจ้างตกลงรับจ้างทำงาน

ณ ตำบล/แขวง อำเภอ/

เขต จังหวัด..... ตามข้อกำหนดและเงื่อนไขแห่ง

สัญญานี้รวมทั้งเอกสารแนบท้ายสัญญา

ผู้รับจ้างตกลงที่จะจัดหาแรงงานและวัสดุ เครื่องมือเครื่องใช้ ตลอดจนอุปกรณ์ต่างๆ ชนิดที่
เพื่อใช้ในงานจ้างตามสัญญานี้**ข้อ 2. เอกสารอันเป็นส่วนหนึ่งของสัญญา**

เอกสารแนบท้ายสัญญาดังต่อไปนี้ให้ถือเป็นส่วนหนึ่งของสัญญานี้

2.1 ผนวก 1..... (แบบรูป)..... จำนวน..... หน้า

2.2 ผนวก 2.....(รายการละเอียด).....จำนวน..... หน้า

* ตัดออกหรือใส่ไว้ตามความเหมาะสม

2.3 ผนวก 3.....(ใบแจ้งปริมาณงานและราคา).....จำนวน..... หน้า

2.4 ผนวก 4..... (ใบเสนอราคา).....จำนวน..... หน้า

2.5 ฯลฯ

ความใดในเอกสารแนบท้ายสัญญาที่ขัดแย้งกับข้อความในสัญญานี้ ให้ใช้ข้อความในสัญญานี้ บังคับ และในกรณีที่เอกสารแนบท้ายสัญญาขัดแย้งกันเอง ผู้รับจ้างจะต้องปฏิบัติตามคำวินิจฉัยของผู้ว่าจ้าง

ข้อ 3. หลักประกันการปฏิบัติตามสัญญา

ในขณะที่ทำสัญญานี้ ผู้รับจ้างได้นำหลักประกันเป็น เป็นจำนวนเงิน..... บาท (.....) มามอบให้ แก่ผู้ว่าจ้างเพื่อเป็นหลักประกันการปฏิบัติตามสัญญานี้

หลักประกันที่ผู้รับจ้างนำมามอบไว้ตามวรรคหนึ่ง ผู้ว่าจ้างจะคืนให้เมื่อผู้รับจ้างพ้นจากข้อผูกพันตามสัญญานี้แล้ว

ข้อ 4. ก. ค่าจ้างและการจ่ายเงิน

(สำหรับสัญญาที่เป็นราคาต่อหน่วย)

ผู้ว่าจ้างตกลงจ่าย และผู้รับจ้างตกลงรับเงินค่าจ้างเป็นจำนวนเงิน..... บาท (.....) ซึ่งได้รวมภาษีมูลค่าเพิ่มจำนวน..... บาท ตลอดจนภาษีอากรอื่นๆ และค่าใช้จ่ายที่ป่วงด้วยแล้ว โดยถือราคาต่อหน่วยเป็นเกณฑ์ตามรายการแต่ละประเภทดังที่ได้กำหนดไว้ในใบแจ้งปริมาณงานและราคา

คู่สัญญาทั้งสองฝ่ายต่างตกลงว่าจำนวนปริมาณงานที่กำหนดไว้ในบัญชีรายการก่อสร้างหรือใบแจ้งปริมาณงานและราคานี้เป็นจำนวนโดยประมาณเท่านั้น จำนวนปริมาณงานที่แท้จริงอาจจะมากหรือน้อยกว่านี้ได้ ซึ่งผู้ว่าจ้างจะจ่ายเงินค่าจ้างให้แก่ผู้รับจ้างตามราคาต่อหน่วยของงานแต่ละรายการที่ได้ทำเสร็จจริง คู่สัญญาทั้งสองฝ่ายต่างตกลงที่จะไม่เปลี่ยนแปลงราคาต่อหน่วยหรือเรียกเรื่องค่าสินไหมทดแทนอันเกิดจากการที่จำนวนปริมาณงานในแต่ละรายการได้แตกต่างไปจากที่กำหนดไว้ในสัญญา ทั้งนี้ นอกจากในกรณีต่อไปนี้*

4.1 เมื่อปริมาณงานที่ทำเสร็จจริงในส่วนที่เกินกว่าร้อยละ 125 (หนึ่งร้อยยี่สิบห้า) แต่ไม่เกิน ร้อยละ 150 (หนึ่งร้อยห้าสิบ) ของปริมาณงานที่กำหนดไว้ในสัญญาหรือใบแจ้งปริมาณงานและราคา จะจ่ายให้ ในอัตราร้อยละ 90 (เก้าสิบ) ของราคาต่อหน่วยตามสัญญา

4.2 เมื่อปริมาณงานที่ทำเสร็จจริงในส่วนที่เกินกว่าร้อยละ 150 (หนึ่งร้อยห้าสิบ) ของปริมาณงานที่กำหนดไว้ในสัญญาหรือใบแจ้งปริมาณงานและราคา จะจ่ายให้ในอัตราร้อยละ 83 (แปดสิบสาม) ของราคาต่อหน่วยตามสัญญา

4.3 เมื่อปริมาณงานที่ทำเสร็จจริงน้อยกว่าร้อยละ 75 (เจ็ดสิบห้า) ของปริมาณงานที่กำหนดไว้ในสัญญาหรือใบแจ้งปริมาณงานและราคา จะจ่ายให้ตามราคาต่อหน่วยในสัญญา และจะจ่ายเพิ่มชดเชยเป็นค่า overhead และ mobilization สำหรับงานรายการนั้นในอัตราร้อยละ 17 (สิบเจ็ด) ของผลต่างระหว่างปริมาณงาน

* อัตราร้อยละที่ระบุไว้ต่อไปนี้ อาจพิจารณาแก้ไขได้ตามความเหมาะสม

ทั้งหมดของงานรายการนั้นตามสัญญาโดยประมาณ กับปริมาณงานที่ทำเสร็จจริงคูณด้วยราคาต่อหน่วยตามสัญญา

4.4 ผู้ว่าจ้างจะจ่ายเงินที่เพิ่มขึ้น หรือหักลดเงินในแต่ละกรณีดังกล่าวข้างต้นในงวดสุดท้ายของการจ่ายเงิน หรือก่อนงวดสุดท้ายของการจ่ายเงินตามที่ผู้ว่าจ้างจะพิจารณาเห็นสมควร

ผู้ว่าจ้างตกลงที่จะจ่ายเงินค่าจ้างให้แก่ผู้รับจ้างเป็นรายเดือนตามเงื่อนไขงานที่ทำเสร็จจริงเมื่อผู้ว่าจ้างหรือเจ้าหน้าที่ของผู้ว่าจ้างได้ทำการตรวจสอบผลงานที่ทำเสร็จแล้วและปรากฏว่าเป็นที่พอใจตรงตามข้อกำหนดแห่งสัญญานี้ทุกประการ ผู้ว่าจ้างจะออกหนังสือรับรองการรับมอบงานนั้นไว้แก่ผู้รับจ้าง การจ่ายเงินงวดสุดท้ายจะจ่ายให้เมื่องานทั้งหมดตามสัญญาได้เสร็จทุกประการ รวมทั้งการทำสถานที่ก่อสร้างให้สะอาดเรียบร้อยตามที่กำหนดไว้ในข้อ 20

การจ่ายเงินตามเงื่อนไขแห่งสัญญานี้ ผู้ว่าจ้างจะโอนเงินเข้าบัญชีเงินฝากธนาคารของผู้รับจ้าง ชื่อธนาคาร.....สาขา.....

ชื่อบัญชี.....เลขที่บัญชี.....ทั้งนี้ ผู้รับจ้างตกลงเป็นผู้รับภาระเงินค่าธรรมเนียมหรือค่าบริการอื่นใดเกี่ยวกับการโอนที่ธนาคารเรียกเก็บ และยินยอมให้มีการหักเงินดังกล่าวจากจำนวนเงินโอนในงวดนั้นๆ

ข้อ 4. ข. ค่าจ้างและการจ่ายเงิน

(สำหรับสัญญาที่เป็นราคาเหมารวม)

ผู้ว่าจ้างตกลงจ่ายและผู้รับจ้างตกลงรับเงินค่าจ้างจำนวนเงิน.....
..... บาท (.....) ซึ่งได้รวมภาษีมูลค่าเพิ่ม
จำนวน..... บาท ตลอดจนภาษีอากรอื่นๆและค่าใช้จ่ายที่ปวงด้วยแล้ว โดยถือราคาเหมารวมเป็นเกณฑ์และกำหนดการจ่ายเงินเป็นงวดๆ ดังนี้

งวดที่ 1 เป็นจำนวนเงิน..... บาท (.....) เมื่อผู้รับจ้างได้ปฏิบัติงาน..... ให้แล้วเสร็จภายใน.....

งวดที่ 2 เป็นจำนวนเงิน..... บาท (.....) เมื่อผู้รับจ้างได้ปฏิบัติงาน..... ให้แล้วเสร็จภายใน.....

..... ฯลฯ

งวดสุดท้าย เป็นจำนวนเงิน บาท (.....)

เมื่อผู้จ้างได้ปฏิบัติงานทั้งหมดให้แล้วเสร็จเรียบร้อยตามสัญญา รวมทั้งทำสถานที่ก่อสร้างให้สะอาดเรียบร้อยตามที่กำหนดไว้ในข้อ 20

การจ่ายเงินตามเงื่อนไขแห่งสัญญานี้ ผู้ว่าจ้างจะโอนเงินเข้าบัญชีเงินฝากธนาคารของผู้รับจ้าง ชื่อธนาคาร..... สาขา.....

ชื่อบัญชี..... เลขที่บัญชีทั้งนี้ ผู้รับจ้างตกลงเป็นผู้รับภาระเงินค่าธรรมเนียมหรือค่าบริการอื่นใดเกี่ยวกับการโอนที่ธนาคารเรียกเก็บ และยินยอมให้มีการหักเงินดังกล่าวจากจำนวนเงินโอนในงวดนั้นๆ

* ข้อ 5. เงินค่าจ้างล่วงหน้า

ผู้ว่าจ้างตกลงจ่ายเงินค่าจ้างล่วงหน้าให้แก่ผู้รับจ้างเป็นจำนวนเงิน.....
..... บาท (.....) ซึ่งเท่ากับร้อยละ ของราคาค่าจ้างตาม
สัญญาที่ระบุไว้ในข้อ 4

เงินจำนวนดังกล่าวจะจ่ายให้ภายหลังจากที่ผู้รับจ้างได้วางหลักประกันการรับเงินค่าจ้าง
ล่วงหน้าเต็มตามจำนวนเงินค่าจ้างล่วงหน้าให้แก่ผู้ว่าจ้าง ผู้รับจ้างจะต้องออกไปเสร็จรับเงินค่าจ้างล่วงหน้า
ตามแบบที่ผู้ว่าจ้างกำหนดให้ และผู้รับจ้างตกลงที่จะกระทำตามเงื่อนไขอันเกี่ยวกับการใช้จ่ายและการใช้คืนเงิน
ค่าจ้างล่วงหน้าดังต่อไปนี้

5.1 ผู้รับจ้างจะใช้เงินค่าจ้างล่วงหน้าเพื่อเป็นค่าใช้จ่ายในการปฏิบัติงานตามสัญญาเท่านั้น
หากผู้รับจ้างใช้จ่ายเงินค่าจ้างล่วงหน้า หรือส่วนใดส่วนหนึ่งของเงินค่าจ้างล่วงหน้าในทางอื่น ผู้ว่าจ้าง
อาจจะเรียกเงินค่าจ้างล่วงหน้าคืนจากผู้รับจ้างหรือบังคับแก่หลักประกันการปฏิบัติตามสัญญาได้ทันที

5.2 เมื่อผู้ว่าจ้างเรียกร้อง ผู้รับจ้างต้องแสดงหลักฐานการใช้จ่ายเงินค่าจ้างล่วงหน้า เพื่อพิสูจน์
ว่าได้เป็นไปตามข้อ 5.1 ภายในกำหนด 15 วัน นับถัดจากวันได้รับแจ้งจากผู้ว่าจ้าง หากผู้รับจ้างไม่อาจแสดง
หลักฐานดังกล่าวภายในกำหนด 15 วัน ผู้ว่าจ้างอาจเรียกเงินค่าจ้างล่วงหน้าคืนจากผู้รับจ้าง หรือบังคับแก่
หลักประกันการรับเงินค่าจ้างล่วงหน้าได้ทันที

* 5.3 (สำหรับสัญญาที่เป็นราคาต่อหน่วย)

ในการจ่ายเงินค่าจ้างให้แก่ผู้รับจ้างตามข้อ 4 ก. ผู้ว่าจ้างจะหักเงินค่าจ้างในแต่ละเดือน
ไว้จำนวนทั้งหมด ** ทั้งนี้เกินกว่าจำนวนเงินที่หักไว้จะครบตามจำนวนเงินค่าจ้างล่วงหน้าของผู้รับจ้างได้รับไป
แล้ว

5.4 เงินจำนวนใดๆ ก็ตามที่ผู้รับจ้างจะต้องจ่ายให้แก่ผู้ว่าจ้างเพื่อชำระหนี้หรือเพื่อชดใช้ความ
รับผิดชอบต่างๆตามสัญญา ผู้ว่าจ้างจะหักเอาจากเงินค่าจ้างงวดที่จะจ่ายให้แก่ผู้รับจ้าง ก่อนที่จะหักชดใช้คืนเงิน
ค่าจ้างล่วงหน้า

5.5 ในกรณีที่มีการบอกเลิกสัญญา หากเงินค่าจ้างล่วงหน้าที่เหลือเกินกว่าจำนวนเงินที่ผู้
รับจ้างจะได้รับหลังจากหักชดใช้ในกรณีอื่นแล้ว ผู้รับจ้างจะต้องจ่ายคืนเงินจำนวนที่เหลือนั้นให้แก่ผู้ว่าจ้าง
ภายใน 7 วัน นับถัดจากวันได้รับแจ้งเป็นหนังสือจากผู้ว่าจ้าง

5.5 ก. (สำหรับสัญญาที่เป็นราคาต่อหน่วย)

ผู้ว่าจ้างจะคืนหลักประกันเงินล่วงหน้าให้แก่ผู้รับจ้าง ต่อเมื่อผู้ว่าจ้างได้หักเงินค่าจ้าง
ไว้ครบจำนวนเงินล่วงหน้าตาม 5.3

5.5 ข. (สำหรับสัญญาที่เป็นราคาเหมารวม)

* ตัดออกหรือใส่ไว้ตามความเหมาะสม

* ตัดออกหรือใส่ไว้ตามความเหมาะสม

** ในกรณีที่หน่วยงานผู้ว่าจ้างพิจารณาเห็นเป็นการจำเป็นและสมควรจะหักค่าจ้างในแต่ละเดือนไว้เพียงบางส่วนก็ได้โดยแก้ไข
จำนวนเงินที่จะหักเป็นจำนวนร้อยละ ของค่าจ้างในแต่ละเดือนตามความเหมาะสมก็ได้

ผู้ว่าจ้างจะคืนหลักประกันเงินล่วงหน้าให้แก่ผู้รับจ้าง

*1

*ข้อ 6. การหักเงินประกันผลงาน

ในการจ่ายเงินให้แก่ผู้รับจ้างแต่ละงวด ผู้ว่าจ้างจะหักเงินจำนวนร้อยละ 10 ของเงินที่ต้องจ่ายในงวดนั้นเพื่อเป็นประกันผลงาน ในกรณีที่เงินประกันผลงานจะต้องถูกหักไว้ทั้งสิ้นไม่ต่ำกว่า 6 เดือน (สำหรับสัญญาที่เป็นราคาต่อหน่วย) หรือจำนวน บาท (สำหรับสัญญาที่เป็นราคาเหมารวม) ผู้รับจ้างมีสิทธิที่จะขอเงินประกันผลงานคืน โดยผู้รับจ้างจะต้องวางหนังสือค้ำประกันของธนาคารซึ่งออกโดยธนาคารภายในประเทศ มาวางไว้ต่อผู้ว่าจ้างเพื่อเป็นหลักประกันแทนก็ได้

ผู้ว่าจ้างจะคืนเงินประกันผลงาน และ/หรือหนังสือค้ำประกันของธนาคารดังกล่าว ตามวรรคหนึ่ง ให้แก่ผู้รับจ้างพร้อมกับการจ่ายเงินงวดสุดท้าย

ข้อ 7 ก. กำหนดเวลาแล้วเสร็จและสิทธิของผู้ว่าจ้างในการบอกเลิกสัญญา

ภายในกำหนด..... วัน นับถัดจากวันลงนามในสัญญา ผู้รับจ้างจะต้องเสนอแผนงานให้เป็นที่พอใจแก่ผู้ว่าจ้าง โดยแสดงถึงขั้นตอนของการทำงานและกำหนดเวลาที่ต้องใช้ในการทำงานหลักต่างๆ ให้แล้วเสร็จ**

ผู้รับจ้างต้องเริ่มทำงานที่รับจ้างภายในกำหนด..... วัน นับถัดจากวันได้รับหนังสือแจ้งให้เริ่มงาน และจะต้องทำงานให้แล้วเสร็จภายในกำหนด..... วัน นับถัดจากวันที่ได้รับหนังสือแจ้งดังกล่าวนั้น

ถ้ามิได้เสนอแผนงาน หรือไม่สามารถทำงานให้แล้วเสร็จตามกำหนดเวลา หรือจะแล้วเสร็จล่าช้าเกินกว่ากำหนดเวลา หรือผู้รับจ้างทำผิดสัญญาข้อใดข้อหนึ่ง หรือตกเป็นผู้ล้มละลาย หรือเพิกเฉย ไม่ปฏิบัติตามคำสั่งของคณะกรรมการตรวจการจ้าง หรือผู้ควบคุมงานหรือบริษัทที่ปรึกษา ซึ่งได้รับมอบอำนาจจากผู้ว่าจ้าง ผู้ว่าจ้างมีสิทธิที่จะบอกเลิกสัญญานี้ได้ และมีสิทธิที่จะบอกเลิกสัญญานี้ได้ และมีสิทธิจ้างผู้รับจ้างรายใหม่เข้าทำงานของผู้รับจ้างให้ลุล่วงไปได้ด้วย

การที่ผู้ว่าจ้างไม่ใช่สิทธิเลิกสัญญาดังกล่าวข้างต้นนั้น ไม่เป็นเหตุให้ผู้รับจ้างพ้นจากความรับผิดชอบตามสัญญา

ข้อ 7 ข. กำหนดเวลาแล้วเสร็จ และสิทธิของผู้ว่าจ้างในการบอกเลิกสัญญา

ผู้รับจ้างต้องเริ่มทำงานที่รับจ้างภายในวันที่.....เดือน.....พ.ศ..... และจะต้องทำงานให้แล้วเสร็จบริบูรณ์ภายในวันที่..... เดือน..... พ.ศ..... ถ้าผู้รับจ้างมิได้ลงมือทำงานภายในกำหนดเวลา หรือไม่สามารถทำงานให้แล้วเสร็จตามกำหนดเวลา หรือมีเหตุให้เชื่อได้ว่าผู้รับจ้างไม่สามารถทำงานให้แล้วเสร็จภายในกำหนดเวลา หรือจะแล้วเสร็จล่าช้าเกินกว่ากำหนดเวลาหรือผู้รับจ้างทำผิด

¹ หากการจ่ายเงินค่าจ้างงวดที่ 2 เป็นการจ่ายตามผลงานของผู้รับจ้างในส่วนที่ปฏิบัติงานเกินกว่าจำนวนเงินล่วงหน้าให้ผู้ว่าจ้างคืนหลักประกันเงินล่วงหน้าพร้อมกับการจ่ายเงินค่าจ้างงวดที่ 2 แต่ถ้าการจ่ายค่าจ้างงวดที่ 2 เป็นการจ่ายตามผลงานของผู้รับจ้างโดยเฉลี่ยหักเงินล่วงหน้าออกตามส่วนของค่าจ้างในแต่ละงวด ให้ผู้ว่าจ้างคืนหลักประกันเงินล่วงหน้าพร้อมกับการจ่ายเงินค่าจ้างงวดสุดท้าย

สัญญาข้อใดข้อหนึ่งหรือตกเป็นผู้ล้มละลาย หรือเพิกเฉยไม่ปฏิบัติตามคำสั่งของคณะกรรมการตรวจการจ้าง หรือผู้ควบคุมงานหรือบริษัทที่ปรึกษา ซึ่งได้รับมอบอำนาจจากผู้ว่าจ้าง ผู้ว่าจ้างมีสิทธิที่จะบอกเลิกสัญญานี้ได้ และมีสิทธิจ้างผู้รับจ้างรายใหม่เข้าทำงานของผู้รับจ้างให้ลุล่วงไปได้ด้วย

การที่ผู้ว่าจ้างไม่ใช่สิทธิเลิกสัญญาดังกล่าวข้างต้น ไม่เป็นเหตุให้ผู้รับจ้างพ้นจากความรับผิดชอบตามสัญญา

ข้อ 8 ความรับผิดชอบในความชำรุดบกพร่องของงานจ้าง

เมื่องานแล้วเสร็จบริบูรณ์ และผู้ว่าจ้างได้รับมอบงานจากผู้รับจ้างหรือจากผู้รับจ้างรายใหม่ ในกรณีที่มีการบอกเลิกสัญญาตามข้อ 7 หากมีเหตุชำรุดบกพร่องหรือเสียหายเกิดขึ้นจากงานจ้างนี้ ภายในกำหนด *ปี..... เดือน นับถัดจากวันที่ได้รับมอบงานดังกล่าว ซึ่งความชำรุดบกพร่องหรือเสียหายนั้นเกิดจากความบกพร่องของผู้รับจ้างอันเกิดจากการใช้วัสดุที่ไม่ถูกต้อง หรือทำไว้ไม่เรียบร้อยหรือทำไม่ถูกต้องตามมาตรฐานแห่งหลักวิชา ผู้รับจ้างจะต้องรีบทำการแก้ไขให้เป็นที่ยอมรับโดยไม่ชักช้า โดยผู้ว่าจ้างไม่ต้องออกเงินใดๆ ในการนี้ทั้งสิ้น หากผู้รับจ้างบิดพลิ้วไม่กระทำการดังกล่าวภายในกำหนด..... วัน นับแต่วันที่ ได้รับแจ้งเป็นหนังสือจากผู้ว่าจ้างหรือไม่ทำการแก้ไขให้ถูกต้องเรียบร้อยภายในเวลาที่ผู้ว่าจ้างกำหนดให้ผู้ว่าจ้างมีสิทธิที่จะทำการนั้นเองหรือจ้างผู้อื่นให้ทำงานนั้น โดยผู้รับจ้างต้องเป็นผู้ออกค่าใช้จ่าย

ข้อ 9 การจ้างช่วง

ผู้รับจ้างจะต้องไม่เอางานทั้งหมดหรือบางส่วนแห่งสัญญานี้ไปจ้างช่วงอีกต่อหนึ่ง โดยไม่ได้รับความยินยอมเป็นหนังสือจากผู้ว่าจ้างก่อน ทั้งนี้ นอกจากในกรณีที่สัญญานี้จะได้ระบุไว้เป็นอย่างอื่น ความยินยอมดังกล่าวนั้น ไม่เป็นเหตุให้ผู้รับจ้างหลุดพ้นจากความรับผิดชอบหรือพันธะหน้าที่ตามสัญญานี้และผู้รับจ้างจะยังคงต้องรับผิดชอบในความผิดและความประมาทเลินเล่อของผู้รับจ้างช่วงหรือของตัวแทนหรือลูกจ้างของผู้รับจ้างช่วงนั้นทุกประการ

ข้อ 10 การควบคุมงานของผู้รับจ้าง

ผู้รับจ้างจะต้องควบคุมงานที่รับจ้างอย่างเอาใจใส่ด้วยประสิทธิภาพและความชำนาญและในระหว่างการทำงานที่รับจ้างจะต้องจัดให้มีผู้แทนซึ่งทำงานเต็มเวลาเป็นผู้ควบคุมงาน ผู้ควบคุมงานดังกล่าวจะต้องเป็นผู้แทนที่ได้รับมอบอำนาจจากผู้รับจ้าง คำสั่งหรือคำแนะนำต่างๆ ที่ได้แจ้งแก่ผู้แทนผู้ได้รับมอบอำนาจนั้นให้ถือว่าเป็นคำสั่งหรือคำแนะนำที่ได้แจ้งแก่ผู้รับจ้าง การแต่งตั้งผู้ควบคุมนั้นจะต้องทำเป็นหนังสือและต้องได้รับความเห็นชอบจากผู้ว่าจ้าง การเปลี่ยนตัวหรือแต่งตั้งผู้ควบคุมงานใหม่จะทำได้หากไม่ได้รับความเห็นชอบจากผู้ว่าจ้างก่อน

ผู้ว่าจ้างมีสิทธิที่จะขอเปลี่ยนตัวผู้แทนที่ได้รับมอบอำนาจนั้น โดยแจ้งเป็นหนังสือไปยังผู้รับจ้าง และผู้รับจ้างจะต้องทำการเปลี่ยนตัวโดยพลัน โดยไม่คิดราคาเพิ่ม หรืออ้างเหตุเพื่อยุติสัญญาอันเนื่องมาจากเหตุนี้

* กำหนดเวลาที่ผู้รับจ้างจะรับผิดชอบในความชำรุดบกพร่อง โดยปกติจะเป็นเวลา 1 ปี แต่ในกรณีงานจ้าง ผู้ว่าจ้างควรจะรับผิดชอบมากกว่า 1 ปี ตามลักษณะงานหรือด้วยเหตุใดก็ตาม ก็ให้กำหนดระยะเวลาดังกล่าวตามที่ผู้จ้างเห็นว่าเหมาะสม

ข้อ 11 ความรับผิดชอบของผู้รับจ้าง

ผู้รับจ้างจะต้องรับผิดชอบต่ออุบัติเหตุ ความเสียหาย หรือภัยอันตรายใดๆ อันเกิดจากการปฏิบัติงานของผู้รับจ้าง และจะต้องรับผิดชอบต่อความเสียหายจากการกระทำของลูกจ้างของผู้รับจ้าง

ความเสียหายใดๆ อันเกิดแก่งานที่ผู้รับจ้างได้ทำขึ้น แม้จะเกิดขึ้นเพราะเหตุสุดวิสัยนอกจากกรณีอันเกิดจากความผิดของผู้ว่าจ้าง ผู้รับจ้างจะต้องรับผิดชอบโดยซ่อมแซมให้คืนดีหรือเปลี่ยนให้ใหม่โดยค่าใช้จ่ายของผู้รับจ้างเอง ความรับผิดชอบของผู้รับจ้างดังกล่าวในข้อนี้จะสิ้นสุดลงเมื่อผู้ว่าจ้างได้รับมอบงานครั้งสุดท้าย ซึ่งหลังจากนั้นผู้รับจ้างจะต้องรับผิดชอบเพียงในกรณีชำรุดบกพร่อง หรือความเสียหายดังกล่าว ในข้อ 8 เท่านั้น

ข้อ 12 การจ่ายเงินแก่ลูกจ้าง

ผู้รับจ้างจะต้องจ่ายเงินแก่ลูกจ้างที่ผู้รับจ้างได้จ้างมาในอัตรา และตามกำหนดเวลาที่ผู้รับจ้างได้ตกลงหรือทำสัญญาไว้ต่อลูกจ้างดังกล่าว

ถ้าผู้รับจ้างไม่จ่ายเงินค่าจ้างหรือค่าทดแทนอื่นใดแก่ลูกจ้างดังกล่าวในวาระแรก ผู้ว่าจ้างมีสิทธิที่จะเอาเงินค่าจ้างที่จะต้องจ่ายแก่ผู้รับจ้างมาจ่ายให้แก่ลูกจ้างของผู้รับจ้างดังกล่าว และให้ถือว่าผู้ว่าจ้างได้จ่ายเงินจำนวนนั้นเป็นค่าจ้างให้แก่ผู้รับจ้างตามสัญญาแล้ว

ผู้รับจ้างจะต้องจัดให้มีการประกันภัยสำหรับลูกจ้างทุกคนที่จ้างมาทำงาน โดยให้ครอบคลุมถึงความรับผิดชอบทั้งปวงของผู้รับจ้าง รวมทั้งผู้รับจ้างช่วงอันหากจะพึงมีในกรณีความเสียหายที่คิดค่าสินไหมทดแทนได้ตามกฎหมายซึ่งเกิดจากอุบัติเหตุหรือภัยอันตรายใดๆ ต่อลูกจ้างหรือนบุคคลอื่นที่ผู้รับจ้างหรือผู้รับจ้างช่วงจ้างมาทำงาน ผู้รับจ้างจะต้องส่งมอบกรมธรรม์ประกันภัยดังกล่าว พร้อมทั้งหลักฐานการชำระเบี้ยประกันให้แก่ผู้ว่าจ้าง เมื่อผู้ว่าจ้างเรียกร้อง

ข้อ 13 การตรวจงานจ้าง

ถ้าผู้ว่าจ้างแต่งตั้งกรรมการตรวจการจ้าง ผู้ควบคุมงานหรือบริษัทที่ปรึกษา เพื่อควบคุมการทำงานของผู้รับจ้าง กรรมการตรวจการจ้างหรือผู้ควบคุมหรือบริษัทที่ปรึกษานั้นมีอำนาจเข้าไปตรวจการงานในโรงงานและสถานที่ที่กำลังก่อสร้างได้ตลอดเวลา และผู้รับจ้างจะต้องอำนวยความสะดวกและให้ความช่วยเหลือในการนั้นตามสมควร

การที่มีกรรมการตรวจการจ้าง ผู้ควบคุมงานหรือบริษัทที่ปรึกษาทำให้ผู้รับจ้างพ้นความรับผิดชอบตามสัญญานี้ข้อหนึ่งข้อใดไม่

ข้อ 14 แบบรูปและรายการละเอียดตลาดเคลื่อน

ผู้รับจ้างจะต้องรับรองว่าได้ตรวจสอบและทำความเข้าใจในแบบรูปรายการละเอียดโดยถี่ถ้วนแล้ว หากปรากฏว่าแบบรูปและรายการละเอียดนั้นผิดพลาดหรือคลาดเคลื่อนไปจากหลักการทางวิศวกรรมหรือทางเทคนิค ผู้รับจ้างตกลงที่จะปฏิบัติตามคำวินิจฉัยของกรรมการตรวจการจ้างหรือผู้ควบคุมงานหรือบริษัทที่ปรึกษาที่ผู้ว่าจ้างแต่งตั้งเพื่อให้งานแล้วเสร็จบริบูรณ์โดยจะคิดค่าใช้จ่ายใดๆ เพิ่มขึ้นจากผู้ว่าจ้างไม่ได้

ข้อ 15 การควบคุมงานโดยผู้ว่าจ้าง

ผู้รับจ้างตกลงว่ากรรมการตรวจการจ้าง ผู้ควบคุมงานหรือบริษัทที่ปรึกษาที่ผู้ว่าจ้างแต่งตั้งมีอำนาจที่จะตรวจสอบและควบคุมงานเพื่อให้เป็นไปตามเอกสารสัญญาและมีอำนาจที่จะสั่งให้แก้ไข เปลี่ยนแปลง เพิ่มเติม หรือตัดทอนซึ่งงานตามสัญญาฯ หากผู้รับจ้างขัดขืนไม่ปฏิบัติตาม กรรมการตรวจการจ้าง ผู้ควบคุมงาน หรือบริษัทที่ปรึกษามีอำนาจที่จะสั่งให้หยุดกิจการนั้นชั่วคราวได้ ความล่าช้าในกรณีเช่นนี้ผู้รับจ้างจะถือเป็นเหตุขอขยายวันทำการออกไปมิได้

ข้อ 16 งานพิเศษและการแก้ไขงาน

ผู้ว่าจ้างมีสิทธิที่จะสั่งให้ผู้รับจ้างทำงานพิเศษซึ่งไม่ได้แสดงไว้ หรือรวมอยู่ในเอกสารสัญญา หากงานพิเศษนั้นๆ อยู่ในขอบข่ายทั่วไปแห่งวัตถุประสงค์ของสัญญาฯ นอกจากนี้ผู้ว่าจ้างยังมีสิทธิสั่งให้เปลี่ยนแปลงหรือแก้ไขแบบรูป และข้อกำหนดต่างๆ ในเอกสารสัญญาฯ นี้ด้วย โดยไม่ทำให้สัญญาเป็นโมฆะแต่อย่างใด

อัตรากำลังหรือราคาที่กำหนดไว้ในสัญญาฯ นี้ให้กำหนดสำหรับงานพิเศษหรืองานที่เพิ่มเติมขึ้น หรือตัดทอนลงทั้งปวงตามคำสั่งของผู้ว่าจ้าง หากในสัญญาฯ ไม่ได้กำหนดไว้ถึงอัตรากำลังหรือราคาใดๆ ที่จะนำมาใช้สำหรับงานพิเศษหรืองานที่เพิ่มขึ้นดังกล่าว ผู้ว่าจ้างและผู้รับจ้างจะตกลงกันที่จะกำหนดอัตราหรือราคา รวมทั้งการขยายระยะเวลา (ถ้ามี) กันใหม่เพื่อความเหมาะสมในกรณีที่เกิดตกลงกันไม่ได้ ผู้ว่าจ้างจะกำหนดอัตรากำลังหรือราคาตายตัวตามแต่ผู้ว่าจ้างจะเห็นว่าเหมาะสมและถูกต้องซึ่งผู้รับจ้างจะต้องปฏิบัติตามคำสั่งของผู้ว่าจ้าง แต่อาจสงวนสิทธิที่จะดำเนินการตามข้อ 21 ต่อไปได้

ข้อ 17 ค่าปรับ

หากผู้รับจ้างไม่สามารถทำงานให้แล้วเสร็จตามเวลาที่กำหนดไว้ในสัญญาฯ และผู้ว่าจ้างยังมิได้บอกเลิกสัญญา ผู้รับจ้างจะต้องชำระค่าปรับให้แก่ผู้ว่าจ้างเป็นจำนวนเงินวันละ..... บาท และจะต้องชำระค่าใช้จ่ายในการควบคุมงานในเมื่อผู้ว่าจ้างต้องจ้างผู้ควบคุมงานอีกต่อหนึ่งเป็นจำนวนเงินวันละ..... บาท นับถัดจากวันที่กำหนดแล้วเสร็จตามสัญญาหรือวันที่ผู้ว่าจ้างได้ขยายให้จนถึงวันที่ทำงานแล้วเสร็จจริง นอกจากนี้ผู้รับจ้างยอมให้ผู้ว่าจ้างเรียกค่าเสียหายอันเกิดขึ้นจากการที่ผู้รับจ้างทำงานล่าช้าเฉพาะส่วนที่เกินกว่าจำนวนค่าปรับและค่าใช้จ่ายดังกล่าวได้อีกด้วย

ในระหว่างที่ผู้ว่าจ้างยังมิได้บอกเลิกสัญญานั้น หากผู้ว่าจ้างเห็นว่าผู้รับจ้างจะไม่สามารถปฏิบัติตามสัญญาต่อไปได้ ผู้ว่าจ้างจะใช้สิทธิบอกเลิกสัญญาและใช้สิทธิตามข้อ 18 ก็ได้ และถ้าผู้ว่าจ้างได้แจ้งข้อเรียกร้องไปยังผู้รับจ้างเมื่อครบกำหนดแล้วเสร็จของงานขอให้ชำระค่าปรับแล้ว ผู้ว่าจ้างมีสิทธิที่จะปรับผู้รับจ้างจนถึงวันบอกเลิกสัญญาได้อีกด้วย

ข้อ 18 สิทธิของผู้ว่าจ้างภายหลังบอกเลิกสัญญา

ในกรณีที่ผู้ว่าจ้างบอกเลิกสัญญา ผู้ว่าจ้างอาจทำงานนั้นเองหรือว่าจ้างผู้อื่นให้ทำงานนั้นต่อจนแล้วเสร็จได้ ผู้ว่าจ้างหรือผู้ที่รับจ้างทำงานนั้นต่อมีสิทธิใช้เครื่องมือใช้ในการก่อสร้างสิ่งที่สร้างขึ้นชั่วคราวสำหรับงานก่อสร้างและวัสดุต่างๆ ซึ่งเห็นว่าจะต้องสงวนเอาไว้เพื่อการปฏิบัติงานตามสัญญาตามที่เห็นสมควร

ในกรณีดังกล่าว ผู้ว่าจ้างมีสิทธิริบหลักประกันการปฏิบัติตามสัญญาทั้งหมดหรือบางส่วนตามแต่จะเห็นสมควร นอกจากนี้ผู้รับจ้างจะต้องรับผิดชอบในค่าเสียหาย ซึ่งเป็นจำนวนเกินกว่าหลักประกันการปฏิบัติงาน และค่าเสียหายต่างๆที่เกิดขึ้น รวมทั้งค่าใช้จ่ายที่เพิ่มขึ้นในการทำงานนั้นต่อไปแล้วเสร็จตามสัญญา และค่าใช้จ่ายในการควบคุมงานเพิ่ม (ถ้ามี) ซึ่งผู้ว่าจ้างจะหักเอาเงินจากเงินประกันผลงานหรือจำนวนเงินใดๆที่จะจ่ายให้แก่ผู้รับจ้างก็ได้

ข้อ 19 การกำหนดค่าเสียหาย

ค่าปรับหรือค่าเสียหายซึ่งเกิดขึ้นจากผู้รับจ้างตามสัญญานี้ ผู้ว่าจ้างมีสิทธิที่จะหักเอาจากจำนวนเงินค่าจ้างที่ค้างจ่ายหรือจากเงินประกันผลงานของผู้รับจ้างหรือบังคับจากหลักประกันการปฏิบัติตามสัญญาก็ได้

หากมีเงินค่าจ้างตามสัญญาที่หักไว้จ่ายเป็นค่าปรับ และค่าเสียหายแล้วยังเหลืออยู่อีกเท่าใด ผู้ว่าจ้างจะคืนให้แก่ผู้รับจ้างทั้งหมด

ข้อ 20 การทำบริเวณก่อสร้างให้เรียบร้อย

ผู้รับจ้างจะต้องรักษาบริเวณสถานที่ปฏิบัติงานตามสัญญานี้ รวมทั้งโรงงานหรือสิ่งอำนวยความสะดวกในการทำงานของผู้รับจ้าง ลูกจ้าง ตัวแทน หรือของผู้รับจ้างช่วง ให้อยู่ในความปลอดภัยตลอดภัยและมีประสิทธิภาพในการใช้งานตลอดระยะเวลาการจ้าง และเมื่อทำงานเสร็จแล้วจะต้องขนย้ายบรรดาเครื่องใช้ในการทำงานจ้างรวมทั้งวัสดุ ขยะมูลฝอย และสิ่งก่อสร้างชั่วคราวต่างๆ (ถ้ามี) ที่จะต้องกลบเกลี่ยพื้นดินให้เรียบร้อย เพื่อให้บริเวณทั้งหมดอยู่ในสภาพที่สะอาด และใช้งานได้ทันที

*ข้อ 21 กรณีพิพาทและอนุญาโตตุลาการ

21.1 ในกรณีที่มีข้อโต้แย้งเกิดขึ้นระหว่างคู่สัญญาเกี่ยวกับข้อกำหนดแห่งสัญญานี้หรือเกี่ยวกับการปฏิบัติสัญญานี้ และคู่สัญญาไม่สามารถตกลงกันได้ ให้เสนอข้อโต้แย้งหรือข้อพิพาทนั้นต่ออนุญาโตตุลาการเพื่อพิจารณาชี้ขาด

21.2 เว้นแต่คู่สัญญาทั้งสองฝ่ายจะเห็นพ้องกันให้อนุญาโตตุลาการ คนเดียวเป็นผู้ชี้ขาด การระงับข้อพิพาทให้กระทำโดยอนุญาโตตุลาการ 2 คน โดยคู่สัญญาฝ่ายหนึ่งจะทำหนังสือแสดงเจตนาจะให้มีอนุญาโตตุลาการระงับข้อพิพาทและระบุชื่ออนุญาโตตุลาการคนที่ตนแต่งตั้งส่งไปยังคู่สัญญาอีกฝ่ายหนึ่งจากนั้นภายในระยะเวลา 30 วัน นับถัดจากวันที่ได้รับแจ้งดังกล่าว คู่สัญญาฝ่ายที่ได้รับแจ้งจะต้องแต่งตั้งอนุญาโตตุลาการคนที่สอง ถ้าอนุญาโตตุลาการทั้งสองคนดังกล่าวไม่สามารถประนีประนอมระงับข้อพิพาทนั้นได้ ให้อนุญาโตตุลาการทั้งสองคนร่วมกันแต่งตั้งอนุญาโตตุลาการผู้ชี้ขาดภายในกำหนดเวลา 30 วัน นับถัดจากวันที่ไม่สามารถตกลงกัน ผู้ชี้ขาดดังกล่าวจะพิจารณาระงับข้อพิพาทต่อไป กระบวนการพิจารณาของอนุญาโตตุลาการให้ถือตามข้อบังคับอนุญาโตตุลาการของสถาบันอนุญาโตตุลาการกระทรวงยุติธรรมคดยอนุโลม หรือตามข้อบังคับอื่นที่คู่สัญญาทั้งสองฝ่ายเห็นชอบ และให้กระทำในกรุงเทพมหานคร โดยใช้ภาษาไทยหรือภาษาอังกฤษเป็นภาษาในการดำเนินกระบวนการพิจารณา

21.3 ในกรณีที่คู่สัญญาฝ่ายใดฝ่ายหนึ่งไม่แต่งตั้งอนุญาโตตุลาการฝ่ายตนหรือในกรณีที่อนุญาโตตุลาการทั้งสองคนไม่สามารถตกลงกันแต่งตั้งอนุญาโตตุลาการผู้ชี้ขาดได้ คู่สัญญาแต่ละฝ่ายต่างมีสิทธิร้องขอต่อศาลแพ่งเพื่อแต่งตั้งอนุญาโตตุลาการหรืออนุญาโตตุลาการผู้ชี้ขาดได้แล้วแต่กรณี

21.4 คำชี้ขาดของอนุญาโตตุลาการหรือของอนุญาโตตุลาการผู้ชี้ขาดแล้วแต่กรณีให้ถือเป็นเด็ดขาดและถึงที่สุดผูกพันคู่สัญญา

21.5 คู่สัญญาแต่ละฝ่ายเป็นผู้รับภาระค่าธรรมเนียมอนุญาโตตุลาการฝ่ายตนและออกค่าใช้จ่ายอื่นๆในการดำเนินกระบวนการพิจารณาฝ่ายละครั้ง ในกรณีที่มีการแต่งตั้งอนุญาโตตุลาการคนเดียวหรือมีการแต่งตั้งอนุญาโตตุลาการผู้ชี้ขาด ให้อนุญาโตตุลาการหรืออนุญาโตตุลาการผู้ชี้ขาดเป็นผู้กำหนดภาระค่าธรรมเนียมอนุญาโตตุลาการคนเดียวหรือภาระค่าธรรมเนียมอนุญาโตตุลาการผู้ชี้ขาดคนเดียวแล้วแต่กรณี

ข้อ 22 การขยายเวลาปฏิบัติงานตามสัญญา

ในกรณีที่มีเหตุสุดวิสัย หรือเหตุใดๆอันเนื่องมาจากความผิดหรือความบกพร่องของฝ่ายผู้ว่าจ้าง หรือพฤติการณ์อันหนึ่งอันใดที่ผู้รับจ้างไม่ต้องรับผิดชอบตามกฎหมาย ทำให้ผู้รับจ้างไม่สามารถทำงานให้แล้วเสร็จตามเงื่อนไขและกำหนดเวลาแห่งสัญญานี้ได้ ผู้รับจ้างจะต้องแจ้งเหตุหรือพฤติการณ์ดังกล่าวพร้อมหลักฐานเป็นหนังสือให้ผู้ว่าจ้างทราบ เพื่อขอขยายเวลาทำงานออกไปภายใน 15 วัน นับถัดจากวันที่เหตุนั้นสิ้นสุดลง

ถ้าผู้รับจ้างไม่ปฏิบัติให้เป็นไปตามความในวรรคหนึ่ง ให้ถือว่าผู้รับจ้างได้ละสิทธิเรียกร้องในการที่จะขอขยายเวลาทำงานออกไปไม่มีเงื่อนไขใดๆทั้งสิ้น เว้นแต่กรณีเหตุเกิดจากความผิดหรือความบกพร่องของฝ่ายผู้ว่าจ้างซึ่งมีหลักฐานชัดเจน หรือผู้ว่าจ้างทราบคืออยู่แล้วตั้งแต่ต้น

การขยายกำหนดเวลาทำงานตามวรรคหนึ่ง อยู่ในดุลพินิจของผู้ว่าจ้างที่จะพิจารณาตามที่เห็นสมควร

* ข้อ 23 การใช้เรือไทย

ในการปฏิบัติตามสัญญานี้ หากผู้รับจ้างจะต้องสั่งหรือนำของเข้ามาจากต่างประเทศรวมทั้งเครื่องมือและอุปกรณ์ที่ต้องนำเข้ามาเพื่อปฏิบัติงานตามสัญญา ไม่ว่าจะผู้รับจ้างจะเป็นผู้นำของเข้ามาเองหรือนำเข้ามาโดยผ่านตัวแทนหรือบุคคลอื่นใด ถ้าสิ่งของนั้นต้องนำเข้ามาโดยทางเรือในเส้นทางเดินเรือที่มีเรือไทยเดินอยู่ และสามารถให้บริการรับขนได้ตามที่รัฐมนตรีว่าการกระทรวงคมนาคมประกาศกำหนดผู้รับจ้างต้องจัดการให้สิ่งของดังกล่าวบรรทุกโดยเรือไทยหรือเรือที่มีสิทธิเช่นเดียวกับเรือไทยจากต่างประเทศมายังประเทศไทย เว้นแต่จะได้รับอนุญาตจากสำนักงานคณะกรรมการส่งเสริมการพาณิชย์มาก่อนบรรทุกของนั้นลงเรืออื่นที่มีใช้เรือไทยหรือเป็นของที่รัฐมนตรีว่าการกระทรวงคมนาคมประกาศยกเว้นให้บรรทุกโดยเรืออื่นได้ ทั้งนี้ไม่ว่าการสั่งหรือสั่งซื้อสิ่งของดังกล่าวจากต่างประเทศจะเป็นแบบ เอฟโอบี ซีเอฟอาร์ ซีไอเอฟ หรือแบบอื่นใด

* ตัดออกหรือใส่ไว้ตามความเหมาะสม

ในการส่งมอบงานตามสัญญาให้แก่ผู้ว่าจ้าง ถ้างานนั้นมีสิ่งของตามวรรคแรกผู้รับจ้าง จะต้องส่งมอบใบตราส่ง (Bill of Lading) หรือสำเนาใบตราส่งสำหรับของนั้น ซึ่งแสดงว่าได้บรรทุกมาโดยเรือไทยหรือเรือที่มีสิทธิเช่นเดียวกับเรือไทยให้แก่ผู้ว่าจ้างพร้อมกับการส่งมอบงานด้วย

ในกรณีที่สิ่งของดังกล่าวไม่ได้บรรทุกจากต่างประเทศมายังประเทศไทย โดยเรือไทยหรือเรือที่มีสิทธิเช่นเดียวกับเรือไทย ผู้รับจ้างต้องส่งมอบหลักฐานซึ่งแสดงว่าได้รับอนุญาตจากสำนักงานคณะกรรมการส่งเสริมการพาณิชย์นาวิให้บรรทุกของโดยเรืออื่นได้ หรือหลักฐานซึ่งแสดงว่าได้ชำระค่าธรรมเนียมพิเศษเนื่องจากการไม่บรรทุกของโดยเรือไทยตาม กฎหมายว่าด้วยการส่งเสริมการพาณิชย์นาวิแล้ว อย่างไรก็ดีอย่างหนึ่งแก่ผู้ว่าจ้างด้วย

ในกรณีที่ผู้ว่าจ้างไม่ส่งมอบหลักฐานอย่างใดอย่างหนึ่งดังกล่าวในสองวรรคข้างต้นให้แก่ผู้ว่าจ้าง แต่จะขอส่งมอบงานดังกล่าวให้ผู้ว่าจ้างก่อน โดยยังไม่รับชำระเงินค่าจ้างผู้ว่าจ้างมีสิทธิรับงานดังกล่าวไว้ก่อน และชำระเงินค่าจ้างเมื่อผู้รับจ้างได้ปฏิบัติถูกต้องครบถ้วนดังกล่าวแล้วได้

ข้อ 24 มาตรฐานฝีมือช่าง

ผู้รับจ้างตกลงเป็นเงื่อนไขสำคัญว่า ผู้รับจ้างจะต้องมีและใช้ผู้ผ่านการทดสอบมาตรฐานฝีมือช่าง จาก.....หรือผู้มีวุฒิบัณฑิตระดับ ปวช. ปวส. และ ปวท. หรือเทียบเท่าจากสถาบันการศึกษาที่ ก.พ. รับรองให้เข้ารับราชการได้ ในอัตราไม่ต่ำกว่าร้อยละ.....ของแต่ละสาขาช่าง แต่จะต้องมีช่างจำนวนอย่างน้อย 1 คน ในแต่ละสาขาช่าง ดังต่อไปนี้

24.1

24.2

.....๗๓๑.....

ผู้รับจ้างจะต้องจัดทำบัญชีแสดงจำนวนช่างทั้งหมดโดยจำแนกตามแต่ละสาขาช่างและระดับช่าง พร้อมกับระบุรายชื่อช่างผู้ผ่านการทดสอบมาตรฐานฝีมือช่างหรือผู้มีวุฒิบัณฑิตดังกล่าวในวรรคแรก นำมาแสดงพร้อมหลักฐานต่างๆ ต่อคณะกรรมการตรวจการจ้างหรือผู้ควบคุมงาน ก่อนเริ่มทำงานและพร้อมที่จะให้ผู้ว่าจ้างหรือเจ้าหน้าที่ของผู้ว่าจ้างตรวจสอบดูได้ตลอดเวลาการทำงานตามสัญญานี้ของผู้รับจ้าง

ศูนย์วิทยุทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

สัญญาที่เพิ่มขึ้นเป็นสองฉบับ มีข้อความถูกต้องตรงกัน คู่สัญญาได้อ่านและเข้าใจข้อความ
โดยละเอียดตลอดแล้ว จึงได้ลงลายมือชื่อ พร้อมทั้งประทับตรา (ถ้ามี) ไว้เป็นสำคัญ ต่อหน้าพยานและคู่สัญญา
ต่างยึดถือไว้ฝ่ายละหนึ่งฉบับ

ลงชื่อ.....ผู้ว่าจ้าง
(.....)

ลงชื่อ.....ผู้รับจ้าง
(.....)

ลงชื่อ.....พยาน
(.....)

ลงชื่อ.....พยาน
(.....)



ศูนย์วิทยุทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



APPENDIX G
LIST OF
THE RULINGS OF THE THAI SUPREME COURT, THE DECISIONS OF THE OFFICE OF THE
ATTORNEY GENERAL, AND THE DECISIONS OF RAPR
RELATED TO UNDESIRABLE EVENTS



ศูนย์วิจัยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table G.3.3.1 List of the rulings of the Thai Supreme Court related to force majeure

No.	Dispute issues	Thai Supreme Court Ruling No.
1.	Compensation to the contractor for the unfavorable effects of a force majeure event	
1.1	Extension of construction time (or reduction of the fine for delay in completion of the work)	
	- lack of resources	2829/2522, 7721/2540
	- change in law	3634/2541
	- interfering action by the contractor's personnel	2829/2522
1.2	Compensation for extra expense due to force majeure	
	- natural catastrophe	2198/2534

Table G.3.3.2 List of the decisions of the Office of the Attorney General and the decisions of RAPR related to force majeure

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
1.	Definition of force majeure		
1.1	Definition of force majeure	116/2528	-
1.2	Events considered to be force majeure		
	- severe weather conditions	77/2528	มท. 1002/12870
	- natural catastrophe	134/2527, 77/2528, 116/2528, 10/2534, 66/2538	มท. 1002/8323, 1305/494, 1305/3733, 1305/7990
	- lack of resources	-	มท. 1002/11710, มท. 1002/12524, มท. 1002/12870
	- change in law	47/2528	-
	- underground obstruction	99/2528	-
	- economic crisis	88/2540	-
	- loss of transportation access	106/2539	-

Table G.3.3.2 (continued) List of the decisions of the Office of the Attorney General and the decisions of RAPR related to force majeure

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
2.	Compensation to the contractor for unfavorable effects of force majeure		
2.1	Extension of construction time (or reduction of the fine for delay in completion of the work)		
	- severe weather conditions	-	1407/1459
	- natural catastrophe	84/2527, 164/2530, 76/2538	รท. 1002/8324, 1305/2460, 1305/10575
	- consequence of third party's action	112/2533, 163/2533	-
	- lack of resources	-	-
	- change in law	-	รท. 1002/10457
	- economic crisis	-	1305/10575
	- work delay by subordinate contractor	-	รท. 1002/10713, 1305/4956
	- consequence of action of the contractor's personnel	-	รท. 1002/9441
	- loss of access to transportation system	-	รท. 1002/6678
2.2	Compensation for extra expense due to force majeure.		
	- natural catastrophe	148/2531	-
	- consequence of third party's action	112/2533, 163/2533	-

Table G.3.3.2 (continued) List of the decisions of the Office of the Attorney General and the decisions of RAPR related to force majeure

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
2.3	The contractor's right to claim for the effect of a force majeure event that occurs after the stipulated project completion date	129/2540, 130/2540	1305/2460
3.	Notification of a force majeure event		
3.1	Duty of the contractor to notify the employer of a force majeure event	-	1305/9751

Table G.3.4.1 List of the rulings of the Thai Supreme Court related to the ineffective performance of the employer

No.	Dispute issues	Thai Supreme Court Ruling No.
1.	The employer's obligations	
1.1	The employer's obligations	
	- to give the right of access to, and possession of the site to the contractor	6407/2545
	- to provide a reference point to the contractor	4957/2536
2.	Compensation for unfavorable effects due to the ineffective performance of the employer	
2.1	Compensation for extra expense due to the ineffective performance of the employer	
	- for the contractor's extra expense due to the employer's delay in providing a reference point	4957/2536

Table G.3.4.2 List of the decisions of the Office of the Attorney General and the decisions of RAPR on the issues related to the ineffective performance of the employer

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
1.	Obligations of the employer and timeframe to fulfill duties		
1.1	Obligations of the employer		
	- to give the right of access to, and possession of the site to the contractor	-	มท. 1002/4493, 1407/6812
1.2	Timeframe to fulfill duties		
	- Timeframe for approval of material	-	1305/6327
2.	Compensation to the contractor for unfavorable effects due to the ineffective performance of the employer		
2.1	Extension of construction time (or reduction of the fine for delay in completion of the work)		
	- delay in providing the right of access to, and possession of the site to the contractor	-	1305/11953, 1407/2829
	- delay in approval of material	-	1305/6327, 1407/7349, 1407/7394,
	- delay approval of information from specified testing	-	1407/7394
	- delay in submitting the request for permission from the regulator	-	1305/11995

Table G.3.4.2 (continued) List of the decisions of the Office of the Attorney General and the decisions of RAPR on the issues related to the ineffective performance of the employer

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
3.	Notification of the ineffective performance of the employer and claim submission		
3.1	Timeframe for notification of the event and submitting the claim.	50/2538, 108/2535	1304/375, 1304/7588, 1305/11953
4.	Assessment of the effect of the ineffective performance of the employer as concerns construction duration.		
4.1	Length of time that was affected	-	1305/6929
4.2	Approach for assessment of the effect of the event on construction duration	-	1305/1231

Table G.3.5.1 List of the rulings of the Thai Supreme Court related to differing site conditions

No.	Dispute issues	Thai Supreme Court Ruling No.
1.	The contractor's response to differing site conditions	
1.1	Individual who has authority to make decision on how to solve the problem	1601/2527
2.	Compensation to the contractor for the unfavorable effects due to differing site conditions	
2.1	Compensation for extra expense due to differing site conditions	
	- Contractors have difficulty in doing the work (the actual physical conditions are different from those described by the employer)	3979/2536, 7211/2537, 6550/2544
2.2	Compensation for effects on the contractor during the time of waiting for the employer to make a decision on how to manage the problem	1601/2527, 3856/2533

Table G.3.5.2 List of the decisions of the Office of the Attorney General and the decisions of RAPR related to differing site conditions

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
1.	The contractor's response to differing site conditions		
1.1	The duty of the contractor to notify the employer of the event	-	1304/375
1.2	The contractor's right to stop construction while waiting for a decision from the employer	68/2537	-
2.	Compensation to the contractor for unfavorable effects due to differing site conditions		
2.1	Extension of construction time (or reduction of the fine for delay in completion of the work)		
	- Work can not be performed in accordance with the contract	-	1304/375, 1305/5794
	- Performing contractual work is much more difficult than expected	41/2530	-
2.2	Compensation for extra expense due to change in the work because work can not be performed in accordance with the contract and due to work difficulty		
	- Work can not be performed in accordance with the contract	71/2538	1305/9769
	- Performing the contractual work is much more difficult than expected	17/2532	-

Table G.3.5.2 (continued) List of the decisions of the Office of the Attorney General and the decisions of RAPR related to differing site conditions

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
2.3	The reduction of project price in case the incorrectness of information received from the employer is beneficial to the contractor		
	- The contractor benefits from the employer's order when the work can not be performed in accordance with the contract	101/2534, 32/2538	1305/10163, 1407/4122
2.4	Compensation for the loss during waiting time for the employer to make a decision on how to manage the problem	10/2536, 23/2537, 68/2537, 76/2538, 133/2541	มท. 1002/9835, 1304/375, 1305/8752, 1305/11995
3.	Notification of the differing site conditions		
3.1	Necessity of the notification of the event to the employer when they have already witnessed the event		1304/375

Table G.3.6.1 List of the rulings of the Thai Supreme Court related to an interference action by the employer

No.	Dispute issues	Thai Supreme Court Ruling No.
1.	Right and duty of contracting parties	
1.1	Duty of the contractor to ask for permission from the employer	
	- Asking for permission to hire a subcontractor	1202/2518
1.2	The employer's right to perform an interference action	
	- Giving order for temporary suspension of construction	948/2525, 5542/2534
2.	Compensation to the contractor for unfavorable effects due to an interference action by the employer	
2.1	Compensation for extra expense due to an interference action by the employer	
	- Giving order for temporary suspension of construction	948/2525, 5542/2534

Table G.3.6.2 List of the decisions of the Office of the Attorney General and the decisions of RAPR related to the employer's ineffective performance

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
1.	Rights and duties of contracting parties		
1.1	Duty of contractor to ask for permission from employer		
	- Permission to hire a subcontractor	92/2538	-
2.	Compensation to the contractor for unfavorable effects due to an interference action by the employer		
2.1	The extension of construction time (or reduction of the fine for delay in completion of work)		
	- Specify the type of material to be used	-	1305/8752
	- Specify construction method	-	1305/11995
	- Giving order for temporary construction suspension	6/2534, 75/2535	1305/3973, 1305/7975, 1407/6813
	- Occupying an area of the site while the construction is still going on.	-	1305/8121

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Table G.3.7.1 List of the rulings of the Thai Supreme Court related to the employer's order to change the scope of work

No.	Dispute issues	Thai Supreme Court Ruling No.
1.	The implementation of the employer's order to change the scope of work	
1.1	Who has the authority to give an order to change the scope of work?	701/2500, 3005-3006/2517, 2831/2539, 5234/2540
1.2	The validity of a verbal order to change the scope of work	2326/2544, 97/2546
1.3	Reaction of the contractor after receiving a verbal order and while waiting for a written order from the employer to change the scope of work	948/2546
2.	Assessment of the effect of the employer's order to change the scope of work on the project completion date	
2.1	Effect on the project completion date	3846/2533, 962/2537, 4833/2539
3.	Adjustment of project price due to the employer's order to change the scope of work	
3.1	Adjustment of project price due to the employer's order to increase the scope of work	4833/2539
3.2	Adjustment of project price due to the employer's order to decrease the scope of work	5034-5035/2533

Table G.3.7.2 List of the decisions of the Office of the Attorney General and the decisions of RAPR related to the employer's order to change the scope of work

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
1.	The employer's right to give an order to change the scope of work		
1.1	The employer's right to give an order to change the scope of work	12/2535	-
2.	The implementation of the employer's order to change the scope of work		
2.1	Who has the authority to give an order to change the scope of work?	30/2538	ศร. 1001/2203, 1305/1443
2.2	The validity of the verbal order to change the scope of work	30/2538	1305/8121
3.	Compensation to the contractor for the effects of the employer's order to change the scope of work.		
3.1	Extension of construction time (or reduction of the fine for delay in completion of the work)		มท. 1002/568,, 1305/8465, 1305/8752
3.2	Adjustment of the project completion date due to the employer's order to cancel a part of the work		1305/10989, 1305/10996
3.3	Compensation for the expense due to the employer's order to change the scope of work	19/2532	

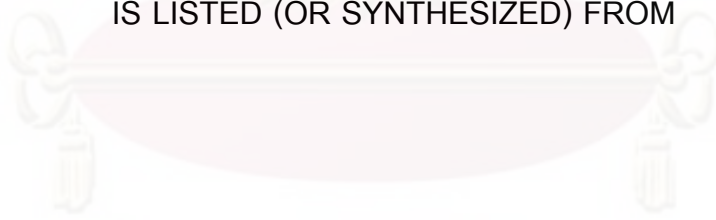
Table G.3.7.2 (continued) List of the decisions of the Office of the Attorney General and the decisions of RAPR related to the employer's order to change the scope of work

No.	Issues of conflict or confusion	Decisions of OAG No.	Decisions of RAPR No.
4.	Assessment of the effect of the employer's order to change the scope of work on the project completion date		
4.1	Adjustment of construction time or change in the project completion date due to the employer's order to cancel a part of the work		1305/10989, 1305/10996
5.	Adjustment of project price due to the employer's order to change the scope of work		
5.1	Adjustment of project price due to the employer's order to cancel a part of the work	32/2538, 109/2540	1407/1022
6.	Adjustment of fine rate		
6.1	Adjustment of fine rate due to the employer's order to cancel a part of the work	9/2538	



APPENDIX H

SOURCE OF THE DOCUMENT THAT EACH CONFLICT-INITIATING ISSUE
IS LISTED (OR SYNTHESIZED) FROM



ศูนย์วิจัยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table H.3.12.2 Conflict-initiating issues related to force majeure

The definition of force majeure

No	Issues	SR	AG&RAPP	SC	R&A
1.	Characteristics of force majeure				
1.1	Unpredictable		●		
1.2	Not preventable and/or uncontrollable		●		
1.3	Natural phenomenon		●		
1.4	Not the risk in doing business		▲		
2.	List of some events that can be classified as force majeure				
2.1	Normal weather conditions			●	
2.2	Severe weather conditions		▲	▲	
2.3	Natural catastrophes		▲	▲	
2.4	War/coup			▲	
2.5	Unfavorable effects of the action of a third party		●	▲	
2.6	Unfavorable effects of the action of the contractor's personnel	▲	▲		
2.7	Lack of resources	▲	▲		
2.8	Change in general law	▲	▲		
2.9	Change in law related to construction		●		
2.10	Loss of access to transportation		▲		
3.	Criteria to define severe weather conditions				
3.1	Frequency of the event			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.2 (continued) Conflict-initiating issues related to force majeure

Compensation to the contractor

No	Issues	SR	AG&RAPP	SC	R&A
1.	Compensation to the contractor for unfavorable effects due to force majeure				
1.1	Extension of construction time	▲	▲	▲	●
1.2	Compensation for direct cost increase	▲	▲	▲	
1.3	Compensation for overhead cost increase		●	▲	
1.4	Compensation for profit loss		●	●	
2.	Granting or restricting the contractor's right to claim for compensation in case force majeure occurs after the stipulated completion date of the project				
2.1	Force majeure event occurs after the stipulated completion date of the project		▲		
3.	Types of time loss that can be claimed for				
3.1	Duration of the force majeure event	●	●	●	
3.2	Time for fixing the damaged resource or time to seek its replacement	●	●	●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.2 (continued) Conflict-initiating issues related to force majeure

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
3.3	Time for fixing the damage to the work and for clearing site	●	●	●	
3.4	Time loss due to decrease in productivity	●	●	●	
4.	Types of direct cost increase that can be claimed for				
4.1	Cost of fixing the damaged resource or cost of its replacement	●	●	●	
4.2	Cost of fixing the damage to the work and cost of clearing the site	●	●	●	
4.3	Costs during project suspension	●	●	●	
4.4	Increase in costs due to decrease in productivity	●	●	●	
4.5	Increase in costs due to material price increase	●	●	●	
5.	Compensation for damage to the work				
5.1	Work that has not been inspected/certified and/or not paid yet	▲		●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.2 (continued) Conflict-initiating issues related to force majeure

Notification and claim submission

No	Issues	SR	AG&RAPP	SC	R&A
1.	Notification of force majeure event				
1.1	Duty of contractor to notify employer of force majeure event		▲	▲	
1.2	Timeframe for notification of the event			▲	
1.3	Necessity of notification of the event when the employer has already witnessed the event			▲	
1.4	Meaning of failure to notify employer of the event			▲	
2.	Claim submission				
2.1	Timeframe for claim submission			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.3 Conflict-initiating issues related to the ineffective performance of the employer

The duties of contracting parties

No	Issues	SR	AG&RAPP	SC	R&A
1.	Timeframe to give contractor the right of access to the site				
1.1	Timeframe to give the contractor the right of access to and occupancy of the site	●		▲	
2.	Timeframe for approval of submittal				
2.1	Construction schedule		●	▲	
2.2	Construction method		●	▲	
2.3	Shop/working drawing		●	▲	
2.4	Construction material		▲	▲	
2.5	Data from specified testing		●	▲	
3.	Duty to remind of timely approval				
3.1	Duty of contractor to remind employer of approval within timeframe			▲	
3.2.	Timeframe for giving reminder			▲	
4.	Request for inspection				
4.1	Duty of the contractor to request inspection from employer before cover-up			▲	
4.2	Timeframe for notification to the employer in advance of the inspection			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.3 (continued) Conflict-initiating issues related to ineffective performance of the employer

Compensation to contractor

No	Issues	SR	AG&RAPP	SC	R&A
1.	Compensation to contractor in case there is an approval delay				
1.1	Extension of construction time	●	▲	▲	●
1.2	Compensation for direct cost increase	▲	●	▲	▲
1.3	Compensation for overhead cost increase	●	●	▲	●
1.4	Compensation for profit loss	●	●	▲	●
2.	Type of time loss that can be claimed for in case there is an approval delay				
2.1	Time waiting for employer to approve submittal	●	●	●	●
2.2	Time of preparation for construction operations after receiving the employer's approval	●	●	●	●
2.3	Time loss due to decrease in productivity	●	●	●	●
3	Type of direct cost increase that can be claimed for in case there is an approval delay				
3.1	Costs during project suspension	●	●	●	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.3 (continued) Conflict-initiating issues related to ineffective performance of the employer

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
3.2	Increase in costs due to material price increase	●	●	●	●
3.3	Increase in costs due to decrease in productivity	●	●	●	●
4.	Compensation to contractor in case there is an employer's mistake such as providing incorrect reference point				
4.1	Extension of construction time			▲	
4.2	Compensation for direct cost increase			▲	
4.3	Compensation for overhead cost increase			▲	
4.4	Compensation for profit loss			▲	
5.	Type of time loss due to a mistake in an employer's action that can be claimed for				
5.1	Time of preparation for correction/rework			●	
5.2	Time spent for correction/rework			●	
5.3	Time loss due to decrease in productivity			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.3 (continued) Conflict-initiating issues related to ineffective performance
 Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
6.	Type of direct cost increase that can be claimed for in case there is a mistake in an employer's action				
6.1	Additional expense for work correction			●	
6.2	Additional expense due to work difficulty			●	
6.3	Additional expense due to decrease in productivity			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.3 (continued) Conflict-initiating issues related to ineffective performance of the employer

Notification and claim submission

No	Issues	SR	AG&RAPP	SC	R&A
1.	Notification of the ineffective performance of the employer				
1.1	Duty of contractor to notify employer of the ineffectiveness of the performance of the employer			▲	▲
1.2	Timeframe for notification of the event		▲	▲	▲
1.3	Necessity of notification to employer of an event when they have already witnessed the event			●	
1.4	Meaning of failure to notify employer of the event			▲	
2.	Claim submission				
2.1	Timeframe for claim submission			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 Conflict-initiating issues related to differing site conditions

The response of the contractor when confronted with differing site conditions

No	Issues	SR	AG&RAPP	SC	R&A
1	Contractor's response when confronted with differing site conditions				
1.1	Work can be done in accordance with the contract but the differing site conditions have negative effects on the contractor; for example, the contractor has to spend more time and pay more expense when the ground condition specified in the contract is clay but the actual ground condition is lime		▲	▲	
1.2	Work cannot be done in accordance with the contract due to the actual conditions being different from that described by the employer; for example, the contractor cannot construct the building in accordance with the contract when the area of the site is actually smaller than that specified in the contract		●	▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

The response of the contractor when confronted with differing site conditions

No	Issues	SR	AG&RAPP	SC	R&A
1.3	Work cannot be done in accordance with the contract because of the topography of the site; for example, the pile cannot be driven to the required length due to the existence of a rock layer		●		

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to the contractor

No	Issues	SR	AG&RAPP	SC	R&A
1.	Compensation to the contractor in case the work can be done in accordance with the contract and the differing site conditions have negative effects on the contractor				
1.1	Extension of construction time	●	▲	▲	●
1.2	Compensation for direct cost increase	▲	▲	▲	▲
1.3	Compensation for overhead cost increase	●	●	▲	▲
1.4	Compensation for profit loss	●	●	▲	●
2.	The adjustment of duration and cost in case the work can be done in accordance with the contract and the differing site conditions are beneficial to the contractor				
2.1	Reduction of construction time		●	▲	▲
2.2	Reduction of direct costs		▲	▲	▲
2.3	Reduction of overhead costs		●	▲	▲
2.4	Reduction of profit		●	●	●
3	Granting or restricting the contractor's right to claim compensation in specific cases				

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to the contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
3.1	The contractor does not receive any information from the employer, and the physical conditions are different from what they expected.		▲		
3.2	The contract states that it is the responsibility of the contractor to evaluate and interpret the given information by themselves		▲	▲	
3.3	The contractor should realize the incorrectness of the given data before bidding		▲	▲	
4.	Compensation to the contractor in case the contractor gets a negative effect from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those described by the employer				
4.1	Extension of construction time		▲	▲	▲
4.2	Compensation for direct cost increase		▲	▲	▲
4.3	Compensation for overhead cost increase		●	▲	▲
4.4	Compensation for profit loss		●	▲	▲

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to the contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
5.	Adjustment of duration and cost in case contractor gets benefit from the employer's order when the work cannot be done in accordance with the contract because the actual condition is different from that described by the employer				
5.1	Reduction of construction time		●	▲	
5.2	Reduction of direct costs		▲	▲	
5.3	Reduction of overhead costs		●	▲	
5.4	Reduction of profit		●	●	
6.	Compensation to the contractor in case the contractor gets negative effect from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
6.1	Extension of construction time		●		
6.2	Compensation for direct cost increase		▲		
6.3	Compensation for overhead cost increase		●		
6.4	Compensation for profit loss		●		

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
7.	Adjustment of duration and cost in case contractor benefits from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
7.1	Reduction of construction time		●		
7.2	Reduction of direct costs		●		
7.3	Reduction of overhead costs		●		
7.4	Reduction of profit		●		
8.	Types of time loss that can be claimed for				
8.1	Time waiting for the employer to make decision	●	●	●	●
8.2	Time of preparation for construction operations after receiving the order from the employer	●	●	●	●
8.3	Increase in working time due to work difficulty	●	●	●	●
9.	Types of direct cost increase that can be claimed				
9.1	Expenses during the time waiting for the employer to make a decision	▲	●	●	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
9.2	Additional expense due to work difficulty	●	●	●	●
9.3	Additional cost due to material price increase	●	●	●	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.4 (continued) Conflict-initiating issues related to differing site conditions

Submission of claim

No	Issues	SR	AG&RAPP	SC	R&A
1.	Claim submission				
1.1	Timeframe for claim submission			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 Conflict-initiating issues related to an interference action by the employer

Rights and duties of contracting parties

No	Issues	SR	AG&RAPP	SC	R&A
1.	Duties of the contractor to ask for approval/permission from the employer				
1.1	Approval of construction material			▲	
1.2	Approval of subcontractor	▲	▲	▲	
1.3	Permission to work during holidays and/or beyond normal working time			▲	
1.4	Approval of construction method		●	●	
2.	Definition of normal working time				
2.1	Normal working day			▲	
2.2	Normal daily working hours			▲	
3.	Binding of the decision of the employer to the request				
3.1	The employer's consideration on the contractor's request for approval/permission is final		●		

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Rights and duties of contracting parties (Continued)

No	Issues	SR	AG&RAPP	SC	R&A
4.	The employer's right to perform an interference action				
4.1	Suspend the construction	▲		▲	
4.2	Do other construction work within the site			▲	
4.3	Occupy an area of the site while its construction is still going on		●	▲	
5.	The limitation of the employer's right to suspend the construction				
5.1	The length of time that the employer can give an order for work suspension			▲	
5.2	Number of times that the employer can give an order for work suspension			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Compensation to contractor

No	Issues	SR	AG&RAPP	SC	R&A
1.	Compensation to contractor in case employer refuses the contractor's request for approval/permission without a sound reason				
1.1	Extension of construction time		▲		
1.2	Compensation for direct cost increase		●	▲	
1.3	Compensation for overhead cost increase		●	▲	
1.4	Compensation for profit loss		●	▲	
2.	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission				
2.1	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission			●	
3.	Compensation to the contractor in case there is an interference action by the employer				
3.1	Extension of construction time	●	▲	▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
3.2	Compensation for direct cost increase	▲	●	▲	
3.3	Compensation for overhead cost increase	●	●	▲	
3.4	Compensation for profit loss	●	●	▲	
4.	Compensation to the contractor in case the contract allows the employer to perform an interference action				
4.1	Compensation to the contractor in case the contract allows the employer to perform an interference action			●	
5.	Types of time loss that can be claimed in case the contractor's operations are interfered with by some action of the employer				
5.1	Time loss during suspension /stop period	●	●	●	
5.2	Time for preparation of construction operations	●	●	●	
5.3	Time loss due to decrease in productivity	●	●	●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Compensation to the contractor (Continued)

No	Issues	SR	AG&RAPP	SC	R&A
6.	Types of direct cost increase that can be claimed in case the contractor's operations are interfered with by some action of employer				
6.1	Expense during the suspension/stop period	●	●	●	
6.2	Expenses that cannot be refunded from the supplier/subcontractor	●	●	●	
6.3	Additional costs due to material price increase	●	●	●	
6.4	Additional cost due to decrease in productivity	●	●	●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.5 (continued) Conflict-initiating issues related to an interference action by the employer

Notification and claim submission

No	Issues	SR	AG&RAPP	SC	R&A
1.	Notification of an interference action by the employer				
1.1	Duty of the contractor to notify the employer of an interference action by the employer			▲	
1.2	Timeframe for notification of the event			▲	
1.3	Necessity of notification of the event when the employer has already witnessed the event			▲	
1.4	Meaning of failure to notify the employer of the event			▲	
2.	Claim submission				
2.1	Timeframe for claim submission			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 Conflict-initiating issues related to the employer's order to change the scope of work

Employer's right to give an order to change the scope of work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Employer's right to give an order to change the scope of work				
1.1	Employer's right to give an order to change the scope of work		▲	▲	
1.2	The right to give an order for additional work which is beyond the scope of the work specified in the contract			▲	
1.3	The right to give an order to change the quantity of work items dramatically in case the employer has the right to change the scope of work				●
1.4	The maximum total amount of work that the employer can give an order to add				▲
1.5	The maximum total amount of work that the employer can give an order to cancel				▲
1.6	The cancellation of the work in order to hire other contractors to perform that work				▲

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to the employer's order to change the scope of work

Implementation of the employer's order to change the scope of work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Person who has the authority to give an order to change the scope of work				
1.1	Employer's representative	▲	▲		
1.2	Chief of project consultant/inspector	▲	▲		
1.3	Project consultant/inspector		▲		
2.	Verbal order to change the scope of work				
2.1	The validity of a verbal order to change the scope of work	▲	▲	▲	▲
3.	Response of the contractor when they receive an order to change the scope of work				
3.1	Response of the contractor when they receive a verbal order to change the scope of work	▲		▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to the employer's order to change the scope of work

Implementation of the employer's order to change the scope of work

No	Issues	SR	AG&RAPP	SC	R&A
3.2	Response of the contractor when they know that the employer will give an order to change the scope of work	●			
3.3	Contractor's duty to perform the work even though the agreement on the compensation has not been finalized yet			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to the employer's order to change the scope of work

Compensation to the contractor

No	Issues	SR	AG&RAPP	SC	R&A
1.	Compensation to the contractor in case the employer gives an order to do additional work				
1.1	Extension of construction time	●	▲		●
1.2	Compensation for direct cost increase	▲		▲	▲
1.3	Compensation for overhead cost increase	●	●	▲	▲
1.4	Compensation for profit loss	●	●	▲	▲
2.	Adjustment of project duration and costs in case employer gives an order to cancel some part of the work				
2.1	Reduction of construction time	●	▲	▲	
2.2	Reduction of direct costs	▲	▲	▲	
2.3	Reduction of overhead costs	●		▲	
2.4	Reduction of profit	●		▲	
3	Compensation to the contractor in case the contract allows the employer to give an order to change the scope of work				
3.1	Compensation to contractor in case the contract allows the employer to give an order to change the scope of work			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to the employer's order to change the scope of work

Compensation to contractor (continued)

No	Issues	SR	AG&RAPP	SC	R&A
4.	Types of time loss that can be claimed				
4.1	Time waiting for the details of work modification	●	●	●	
4.2	Time for preparation of construction operations	●	●	●	
4.3	Additional time due to additional work or modification of the work	●	●	●	
4.4	Time loss due to decrease in productivity	●	●	●	
5.	Types of direct cost increase that can be claimed				
5.1	Expenses during the suspension period	●	▲	●	
5.2	Expenses that cannot be refunded from the supplier/subcontractor	●	●	●	
5.3	Expenses due to additional work or modification of the work	●	●	●	
5.4	Additional costs due to material price increase	●	●	●	
5.5	Additional expenses due to decrease in productivity	●	●	●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to employer's order to change the scope of work

Claim submission

No	Issues	SR	AG&RAPP	SC	R&A
1.	Claim submission				
1.1	Timeframe for claim submission			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to employer's order to change the scope of work

The adjustment of the price of designated phases of the work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Adjustment of the price of designated phases of the work in case the modified work was listed in a phase of the work				
1.1	Additional work			●	●
1.2	Deducted work			●	●
2.	Adjustment of the price of the designated phases of the work in case the modified work was not listed in any phase of the work				
2.1	Additional work			●	●
2.2	Deducted work			●	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.6 (continued) Conflict-initiating issues related to employer's order to change the scope of work

The adjustment of fine rate

No	Issues	SR	AG&RAPP	SC	R&A
1.	Adjustment of the daily rate of fine for the delay of the work				
1.1	Additional work		▲		
1.2	Deducted work		●		

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.7 Conflict-initiating issues related to the assessment of the effect of undesirable events on the project completion date

Approach to assess the effect of undesirable events on a construction activity

No	Issues	SR	AG&RAPP	SC	R&A
1.	Approach to assess the effect on a construction activity				
1.1	Length of time for repairing of work damage				●
1.2	Length of time for preparation of construction operations after it has been stopped or suspended				●
1.3	Time loss due to decrease in productivity				▲
1.4	Time loss due to differing site conditions				●
1.5	Time loss due to employer's order to change the scope of work				●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.7 (continued) Conflict-initiating issues related to the assessment of the effect of undesirable events on the project completion date

The adjustment of actual construction time

No	Issues	SR	AG&RAPP	SC	R&A
1.	Adjustment of actual construction time				
1.1	The contractor does not operate the construction effectively			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.7 (continued) Conflict-initiating issues related to the assessment of the effect of undesirable events on the project completion date

The projection of the length of time for the operations

No	Issues	SR	AG&RAPP	SC	R&A
1.	Projection of the length of time for the operations				
1.1	Additional time to cover the contractor's risk			▲	
1.2	Additional time to cover the increase in operation time due to the limitations of the resources of the contractor				▲

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.7 (continued) Conflict-initiating issues related to the assessment of the effect of undesirable events on the project completion date

The assessment of effect on the completion date of the project

No	Issues	SR	AG&RAPP	SC	R&A
1.	Type of schedule program to be used as reference for the assessment of the effect				
1.1	The schedule program to be used as reference for the assessment of the effect			▲	
2.	Assessment of the effect on the completion date of the project				
2.1	Considering the limitations of the resources of the contractor available for construction operations			▲	
2.2	Approach to assess the effect on the completion date of the project			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 Conflict-initiating issues related to the assessment of compensation for direct cost increase

Definition of direct costs

No	Issues	SR	AG&RAPP	SC	R&A
1.	Expenses included in direct costs				
1.1	Payroll of contractor's employees on site			▲	
1.2	Specialized consultant's fee			▲	
1.3	Rental of the site office/worker's camp			▲	
1.4	Contractor's HO expense			▲	
1.5	Contractor's all risk insurance costs			▲	
1.6	Contractor's capital expense			▲	
2.	Definition of labor cost				
2.1	Including related expenses such as fringe benefits			▲	
3.	Definition of material cost and equipment cost				
3.1	Including related expenses such as transportation/mobilization costs			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

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Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

Approach to assess the effect on direct costs to perform each item of work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Approach to assess the effect on direct costs				
1.1	Additional expense for repairing the work damage			●	●
1.2	Additional expense due to the employer's request for a specified product			●	●
1.3	Additional expense during the stop or suspension period			●	●
1.4	Additional expense due to material price increase			●	●
1.5	Additional expense due to decrease in productivity			●	●
1.6	Additional expense due to differing site conditions			●	●
1.7	Additional expense due to change in the scope of work			▲	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

The adjustment of actual expense of construction

No	Issues	SR	AG&RAPP	SC	R&A
1.	The adjustment of actual expense of construction				
1.1	The adjustment in case the contractor does not operate the construction effectively			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

Declaring actual expenses

No	Issues	SR	AG&RAPP	SC	R&A
1.	Declaring actual expenses				
1.1	Contractor's duty to declare actual expenses			▲	
1.2	Meaning of accepting the declaration without any argument			●	
1.3	Timeframe for the employer to make argument against the expenses declared by the contractor			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

Approach for assessing the cost of work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Adjustment of the quantity and unit cost to cover the cost of material loss				
1.1	Adding the quantity of work to cover the expected cost of the material loss			●	
1.2	Adding unit cost to cover the expected cost of material loss			●	
2.	Approach to determine the unit rate in case its rate cost is specified in BOQ				
2.1	Approach to determine the unit rate in case its rate cost is specified in BOQ			▲	▲
2.2	Adjustment of unit cost when the quantity of work is changed dramatically			▲	▲
2.3	Adjustment of unit cost when the employer gives an order to perform the work beyond the stipulated completion date of the project			●	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

Approach for assessing the cost of work

No	Issues	SR	AG&RAPP	SC	R&A
3.	Approach to determine the unit rate in case there is no cost rate specified in BOQ				
3.1	Approach to determine unit rate in case there is no cost rate specified in BOQ			▲	

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

Table H.3.12.8 (continued) Conflict-initiating issues related to the assessment of compensation for direct cost increase

The assessment of the cost of canceled/deducted work

No	Issues	SR	AG&RAPP	SC	R&A
1.	Approach to assess the cost of canceled/deducted work				
1.1	The quantity specified in BOQ is less than actual quantity			●	●
1.2	The quantity specified in BOQ is more than actual quantity			●	●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study

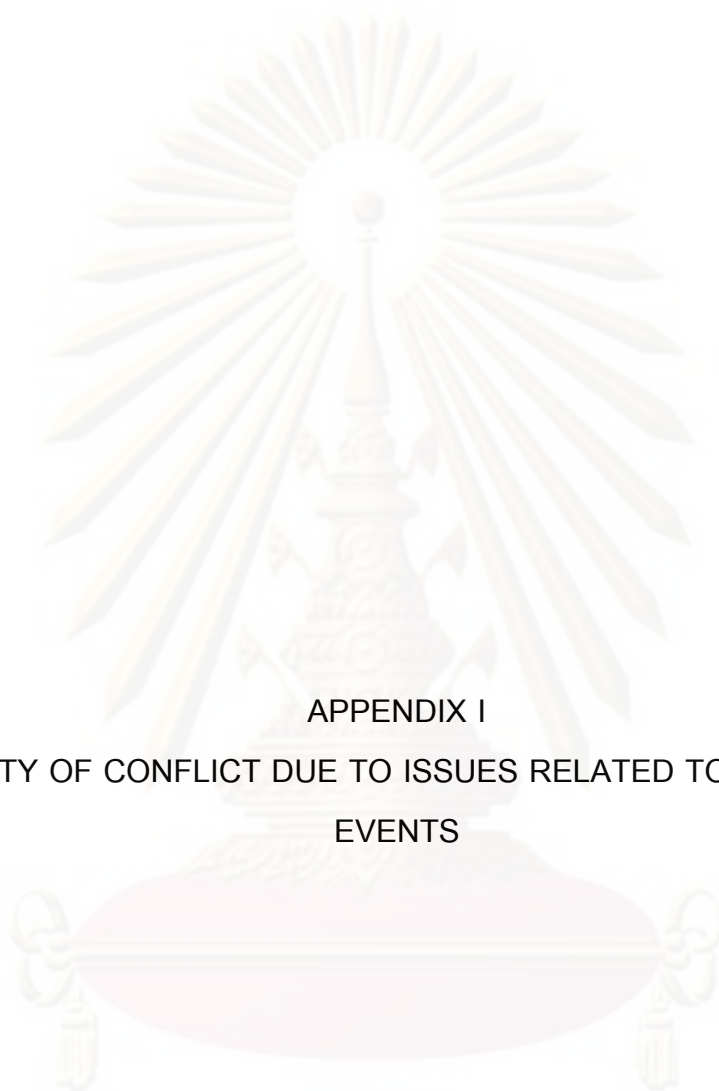
Table H.3.12.9 Conflict-initiating issues related to the assessment of compensation for overhead cost increase and for profit loss

Assessment of compensation for overhead cost increase and profit loss

No	Issues	SR	AG&RAPP	SC	R&A
1.	Approach to assess the compensation for overhead cost increase				
1.1	The undesirable events affect only the construction duration				▲
1.2	The undesirable events affect only the construction cost				▲
1.3	The undesirable events affect both the duration and cost of construction				▲
2	Approach to assess the compensation for profit loss				
2.1	The undesirable events affect only the construction duration				●
2.2	The undesirable events affect only the construction cost				●
2.3	The undesirable events affect both the duration and cost of construction				●

▲ issues which were identified from the document study

● issues which were added to elaborate the issues that were identified from the document study



APPENDIX I

PROBABILITY OF CONFLICT DUE TO ISSUES RELATED TO UNDESIRABLE
EVENTS

ศูนย์วิทยทรัพยากร
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Table I.4.4.1 Probability of conflict due to issues related to the definition of force majeure

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Characteristics of force majeure				
	Is the following a characteristic of force majeure?				
1.1	Unpredictable			13%	Medium
	Yes	78%	84%		
	No	22%	16%		
1.2	Not preventable and/or uncontrollable			23%	Medium
	Yes	54%	57%		
	No	46%	43%		
1.3	Natural phenomenon			26%	High
	Yes	66%	61%		
	No	34%	39%		
1.4	Not the risk in doing business			8%	Medium
	Yes	10%	14%		
	No	90%	86%		
2	Events that can be classified as force majeure				
	Is the following event classified as force majeure?				
2.1	Normal weather conditions			22%	Medium
	Yes	25%	29%		
	No	75%	71%		
2.2	Severe weather conditions			16%	Medium
	Yes	80%	83%		
	No	20%	17%		
2.3	Natural catastrophes			16%	Medium
	Yes	79%	75%		
	No	21%	25%		
2.4	War/coup			23%	Medium
	Yes	63%	61%		
	No	37%	39%		

Table I.4.4.1 (continued) Probability of conflict due to issues related to the definition of force majeure

No	Issues	% of respondents who answered		Probability of conflict	Level of importance	
		Employer	Contractor			
2.5	Unfavorable effects of an action of a third party			25%	High	
	Yes	48%	48%			
	No	52%	52%			
2.6	Unfavorable effects of an action of the contractor's personnel			17%	Medium	
	Yes	15%	20%			
	No	85%	80%			
2.7	Lack of resources			24%	Medium	
	Yes	17%	29%			
	No	83%	71%			
2.8	Change in general law			22%	Medium	
	Yes	18%	26%			
	No	82%	74%			
2.9	Change in law related to construction			16%	Medium	
	Yes	7%	17%			
	No	93%	83%			
2.10	Loss of access to transportation			27%	High	
	Yes	53%	57%			
	No	47%	43%			
3	Criteria to define severe weather conditions					
3.1	The occurrence of one event every ____year(s) is considered to be severe weather conditions			34%	High	
	1 year	25%	25%			
	5 years	47%	53%			
	10 years	28%	22%			

Table I.4.4.2 Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of force majeure

No	Issues	% Respondent who answered		Probability of conflict	Level of Importance
		Employer	Contractor		
1	Compensation to the contractor for the effects of a force majeure event				
	What types of compensation should the contractor be able to claim for as the effects of force majeure?				
1.1	Extension of construction time			8%	Medium
	Yes	91%	95%		
	No	9%	5%		
1.2	Compensation for direct cost increase			28%	High
	Yes	10%	31%		
	No	90%	69%		
1.3	Compensation for overhead cost increase			33%	High
	Yes	11%	37%		
	No	89%	63%		
1.4	Compensation for profit loss			8%	Medium
	Yes	1%	8%		
	No	99%	92%		
2	Granting or restriction of the contractor's right to claim compensation in case the force majeure occurs after the stipulated completion date of the project				
2.1	Should the contractor be compensated if the force majeure event occurs after the stipulated completion date of the project?			33%	High
	Yes	27%	46%		
	No	73%	54%		
3	Types of time loss that can be claimed for				
	What types of time loss should the contractor be able to claim for?				
3.1	Duration of the force majeure event			7%	Medium
	Yes	92%	94%		
	No	8%	6%		
3.2	Time for fixing the damaged resource or time to seek its replacement			32%	High
	Yes	19%	40%		
	No	81%	60%		

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Table I.4.4.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of force majeure

No	Issues	% of respondents who answered		Probability of conflict	Level Of importance
		Employer	Contractor		
3.3	Time for fixing the damage to the work and for clearing the site			37%	High
	Yes	36%	58%		
	No	64%	42%		
3.4	Time loss due to decrease in productivity			25%	High
	Yes	12%	28%		
	No	88%	72%		
4	Types of direct cost increase that can be claimed for				
	What types of direct cost increase should the contractor be able to claim?				
4.1	Cost of fixing the damaged resource or cost of its replacement			34%	High
	Yes	18%	42%		
	No	82%	58%		
4.2	Cost of fixing the damage to the work and cost of clearing the site			27%	High
	Yes	64%	76%		
	No	36%	24%		
4.3	Cost during project suspension			25%	High
	Yes	13%	29%		
	No	87%	71%		
4.4	Increase in cost due to decrease in productivity			17%	Medium
	Yes	14%	20%		
	No	86%	80%		
4.5	Increase in cost due to material price increase			38%	High
	Yes	49%	76%		
	No	51%	24%		
5	Compensation for damage to the work				
5.1	Should the contractor be compensated for the damage to the work that has not been inspected/certified and/or not paid yet?			43%	High
	Yes	48%	82%		
	No	52%	18%		

Table I.4.4.3 Probability of conflict due to issues related to the notification of a force majeure event and claim submission

No	Issues	% of respondents who answered		Probability of conflict	Level Of importance	
		Employer	Contractor			
1	Notification of a force majeure event					
1.1	Is it the duty of the contractor to notify the employer of a force majeure event?			1%	Low	
	Yes	96%	99%			
	No	4%	1%			
1.2	What is the reasonable timeframe after the occurrence of the force majeure event for the contractor to notify the employer of the event?			40%	High	
	1 day	27%	22%			
	7 days	50%	40%			
	15 days	23%	38%			
1.3	Is it required that the contractor notify the employer of the event when the employer has already witnessed the event?			5%	Medium	
	Yes	95%	94%			
	No	5%	6%			
1.4	Does failure to notify the employer of the force majeure within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?			30%	High	
	Yes	87%	66%			
	No	13%	34%			
2	Claim submission					
2.1	What is the reasonable timeframe after the end of the force majeure that the contractor should submit their claim for compensation?			46%	High	
	≤15 days	62%	34%			
	≤30 days	20%	40%			
	Before project ends	17%	23%			
	No limitation	1%	2%			

Table I.4.5.1 Probability of conflict due to issues related to the duties of contracting parties

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Timeframe to give the contractor the right of access to the site				
1.1	What is the reasonable timeframe for the employer to give the contractor the right of access to and occupancy of the site?			21%	Medium
	1 month	73%	75%		
	3 months	22%	23%		
	6 months	4%	2%		
2	Timeframe for the approval of submittal				
	What is the reasonable timeframe for the employer to approve the following submittal?				
2.1	Construction schedule			22%	Medium
	1 week	60%	47%		
	2 weeks	33%	42%		
	1 month	7%	11%		
2.2	Construction method			23%	Medium
	1 week	60%	48%		
	2 weeks	33%	44%		
	1 month	7%	8%		
2.3	Shop/working drawing			29%	High
	1 week	45%	39%		
	2 weeks	39%	44%		
	1 month	17%	17%		
2.4	Construction material			29%	High
	1 week	45%	41%		
	2 weeks	40%	42%		
	1 month	16%	17%		
2.5	Data from specified testing			44%	High
	1 week	31%	50%		
	2 weeks	45%	40%		
	1 month	24%	10%		
3	Duty to remind of timely approval				
3.1	Does the contractor have the duty to remind the employer of approval within the timeframe?			6%	Medium
	Yes	87%	93%		
	No	13%	7%		

Table I.4.5.1 (continued) Probability of conflict due to issues related to the duties of contracting parties

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
3.2	What is the reasonable timeframe before the deadline for approving the submittals that the contractor should give reminder to the employer?			24%	Medium
	3 days	27%	20%		
	1 week	58%	63%		
	2 weeks	15%	17%		
4	Request for inspection				
4.1	Does the contractor have the duty to request inspection from the employer before cover-up?			5%	Medium
	Yes	94%	94%		
	No	6%	6%		
4.2	What is a reasonable timeframe for the contractor to notify the employer in advance of the inspection?			37%	High
	1/2 day	4%	7%		
	1 day	43%	58%		
	3 days	53%	35%		

Table I.4.5.2 Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of the ineffective performance of the employer

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Compensation to the contractor in case there is an approval delay				
	What types of compensation should the contractor be able to claim for in case there is an approval delay?				
1.1	Extension of construction time			12%	Medium
	Yes	88%	97%		
	No	12%	3%		
1.2	Compensation for direct cost increase			42%	High
	Yes	17%	51%		
	No	83%	49%		
1.3	Compensation for overhead cost increase			43%	High
	Yes	14%	51%		
	No	86%	49%		
1.4	Compensation for profit loss			10%	Medium
	Yes	2%	10%		
	No	98%	90%		
2	Type of time loss that can be claimed for in case there is an approval delay				
	What types of time loss should the contractor be able to claim for in case there is an approval delay?				
2.1	Time waiting for employer to approve submittal			12%	Medium
	Yes	88%	98%		
	No	12%	2%		
2.2	Time of preparation for construction operations after receiving the employer's approval			30%	High
	Yes	21%	38%		
	No	79%	62%		
2.3	Time loss due to decrease in productivity			35%	High
	Yes	17%	42%		
	No	83%	58%		
3	Type of direct cost increase that can be claimed for in case there is an approval delay				
	What types of direct cost increase should the contractor be able to claim for in case there is an approval delay?				
3.1	Cost during project suspension			42%	High
	Yes	42%	72%		
	No	58%	28%		

Table I.4.5.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of the ineffective performance of the employer

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
3.2	Increase in cost due to material price increase			22%	Medium
	Yes	76%	90%		
	No	24%	10%		
3.3	Increase in cost due to decrease in productivity			36%	High
	Yes	23%	46%		
	No	77%	54%		
4	What types of compensation should the contractor be able to claim for in case there is an employer's mistake (other than approval delay) such as providing an incorrect reference point?				
4.1	Extension of construction time			26%	High
	Yes	71%	91%		
	No	29%	9%		
4.2	Compensation for direct cost increase			48%	High
	Yes	43%	84%		
	No	57%	16%		
4.3	Compensation for overhead cost increase			44%	High
	Yes	32%	64%		
	No	68%	36%		
4.4	Compensation for profit loss			15%	Medium
	Yes	4%	16%		
	No	96%	84%		
5	Type of time loss due to a mistake in an employer's action (other than approval delay) that can be claimed for				
	What types of time loss should the contractor be able to claim for in case there is a mistake in an employer's action (other than approval delay)?				
5.1	Time of preparation for correction/rework			45%	High
	Yes	37%	71%		
	No	63%	29%		
5.2	Time spent for correction/rework			17%	Medium
	Yes	81%	92%		
	No	19%	8%		
5.3	Time loss due to decrease in productivity			34%	High
	Yes	24%	45%		
	No	76%	55%		

Table I.4.5.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the effects of the ineffective performance of the employer

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
6	Type of direct cost increase that can be claimed for in case there is a mistake in an employer's action (other than approval delay)?				
	What types of direct cost increase should the contractor be able to claim in this case?				
6.1	Additional expense for work correction			27%	High
	Yes	69%	88%		
	No	31%	12%		
6.2	Additional expense due to work difficulty			33%	High
	Yes	61%	86%		
	No	39%	14%		
6.3	Additional expense due to decrease in productivity			35%	High
	Yes	21%	45%		
	No	79%	55%		

Table I.4.5.3 Probability of conflict due to issues related to notification of the ineffective performance of the employer and claim submission

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Notification of the ineffective performance of the employer				
1.1	Is it the duty of contractor to notify the employer of the ineffective performance of employer?			1%	Low
	Yes	95%	99%		
	No	5%	1%		
1.2	What is the reasonable timeframe after the deadline for approving submittals or after realizing an employer's mistake that the contractor should notify the employer of the event?			38%	High
	1 day	21%	17%		
	7 days	60%	49%		
	15 days	19%	34%		
1.3	Is it required that the contractor notify the employer of the event when they are already aware of the delay or mistake?			9%	Medium
	Yes	93%	90%		
	No	7%	10%		
1.4	Does failure to notify the employer of approval delay or a mistake within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?			28%	High
	Yes	83%	66%		
	No	17%	34%		
2	Claim submission				
2.1	What is a reasonable timeframe after receiving the late approval of submittal or after correcting the mistake that the contractor should submit the claim for compensation?			42%	High
	≤15 days	69%	44%		
	≤30 days	17%	35%		
	Before project ends	14%	21%		
	No limitation	0%	0%		

Table I.4.6.1 Probability of conflict due to issues related to the response of the contractor when confronted with differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	The contractor's response when confronted with differing site conditions				
	How should the contractor respond in the following situations?				
1.1	Work can be done in accordance with the contract; differing site conditions have negative effects on the contractor			51%	Very high
	Cease operations, inform the employer and wait for the employer's instruction	49%	44%		
	Inform the employer and continue operations	49%	56%		
	Continue operations without informing the employer	1%	0%		
1.2	Work cannot be done in accordance with the contract due to the actual conditions being different from those described by the employer			43%	High
	Cease operations, inform the employer and wait for the employer's instruction	69%	68%		
	Inform the employer and continue operations	30%	32%		
	Continue operations without informing the employer	0%	0%		
1.3	Work cannot be done in accordance with the contract because of the topography of the site			44%	High
	Cease operations, inform the employer and wait for the employer's instruction	71%	66%		
	Inform the employer and continue operations	28%	34%		
	Continue operations without informing the employer	1%	0%		

Table I.4.6.2 Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Compensation to the contractor in case the work can be done in accordance with the contract and the differing site conditions have negative effects on the contractor?				
	What types of compensation should the contractor be able to claim?				
1.1	Extension of construction time			26%	High
	Yes	68%	84%		
	No	32%	16%		
1.2	Compensation for direct cost increase			50%	High
	Yes	38%	80%		
	No	62%	20%		
1.3	Compensation for overhead cost increase			39%	High
	Yes	38%	63%		
	No	62%	37%		
1.4	Compensation for profit loss			16%	Medium
	Yes	6%	17%		
	No	94%	83%		
2	Adjustment of duration and cost in case the work can be done in accordance with the contract and the differing site conditions are beneficial to the contractor				
	What kind of adjustment should it be?				
2.1	Reduction of construction time			23%	Medium
	Yes	36%	35%		
	No	64%	65%		
2.2	Reduction of direct cost			17%	Medium
	Yes	31%	45%		
	No	69%	55%		
2.3	Reduction of overhead cost			26%	High
	Yes	35%	26%		
	No	65%	74%		
2.4	Reduction of profit			6%	Medium
	Yes	6%	4%		
	No	94%	96%		

Table I.4.6.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level Of importance
		Employer	Contractor		
3	Granting or restricting the contractor's right to claim compensation in specific cases				
3.1	Should the contractor be compensated if they have not received any information from the employer, and the physical conditions are different from what they expected?			38%	High
	Yes	53%	81%		
	No	47%	19%		
3.2	Should the contractor be compensated if the contract states that it is the responsibility of the contractor to evaluate and interpret the given information by themselves?			46%	High
	Yes	45%	83%		
	No	55%	17%		
3.3	Should the contractor be compensated if the contractor has realized the incorrectness of the given information before bidding?			41%	High
	Yes	41%	70%		
	No	59%	30%		
4	Compensation to the contractor in case the contractor gets negative effects from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those described by the employer				
	What types of compensation should the contractor be able to claim for?				
4.1	Extension of construction time			29%	High
	Yes	64%	80%		
	No	36%	20%		
4.2	Compensation for direct cost increase			51%	Very high
	Yes	33%	76%		
	No	67%	24%		
4.3	Compensation for overhead cost increase			35%	High
	Yes	31%	51%		
	No	69%	49%		
4.4	Compensation for profit loss			12%	Medium
	Yes	5%	13%		
	No	95%	87%		

Table I.4.6.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level Of importance
		Employer	Contractor		
5	Adjustment of duration and cost in case the contractor gets benefit from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those informed by employer				
	What kind of adjustment should it be?				
5.1	Reduction of construction time			26%	High
	Yes	40%	35%		
	No	60%	65%		
5.2	Reduction of direct cost			15%	Medium
	Yes	45%	67%		
	No	55%	33%		
5.3	Reduction of overhead cost			26%	High
	Yes	40%	35%		
	No	60%	65%		
5.4	Reduction of profit			10%	Medium
	Yes	11%	6%		
	No	89%	94%		
6	Compensation to the contractor in case the contractor gets negative effects from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
	What types of compensation should the contractor be able to claim?				
6.1	Extension of construction time			37%	High
	Yes	48%	70%		
	No	52%	30%		
6.2	Compensation for direct cost increase			50%	Very high
	Yes	40%	83%		
	No	60%	17%		
6.3	Compensation for overhead cost increase			40%	High
	Yes	33%	61%		
	No	67%	39%		
6.4	Compensation for profit loss			17%	Medium
	Yes	8%	19%		
	No	92%	81%		

Table I.4.6.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
7	Adjustment of duration and cost in case the contractor benefits from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
	What kind of adjustment should it be?				
7.1	Reduction of construction time			21%	Medium
	Yes	29%	25%		
	No	71%	75%		
7.2	Reduction of direct cost			16%	Medium
	Yes	35%	56%		
	No	65%	44%		
7.3	Reduction of overhead cost			24%	Medium
	Yes	33%	26%		
	No	67%	74%		
7.4	Reduction of profit			7%	Medium
	Yes	8%	6%		
	No	92%	94%		
8	Types of time loss that can be claimed for				
	What types of time loss should the contractor be able to claim when confronted with differing site conditions?				
8.1	Time waiting for employer to a make a decision			28%	High
	Yes	64%	76%		
	No	36%	24%		
8.2	Time of preparation for construction operations after receiving the order from the employer			42%	High
	Yes	38%	68%		
	No	62%	32%		
8.3	Increase in working time due to work difficulty			29%	High
	Yes	57%	68%		
	No	43%	32%		

Table I.4.6.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of differing site conditions

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
9	Types of direct cost increase that can be claimed				
	What types of direct cost increase should the contractor be able to claim for when confronted with differing site conditions?				
9.1	Expense during the time waiting for the employer to make decision			43%	High
	Yes	35%	66%		
	No	65%	34%		
9.2	Additional expense due to work difficulty			26%	High
	Yes	71%	88%		
	No	29%	12%		
9.3	Additional cost due to material price increase			39%	High
	Yes	49%	77%		
	No	51%	23%		

Table I.4.6.3 Probability of conflict due to issues related to submission of claim for compensation for the unfavorable effects due to differing site conditions

No	Issues	% of respondent who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Claim submission				
1.1	What is a reasonable timeframe (after all the problems related to differing site conditions have been solved) within which the contractor should submit their claim for compensation?			39%	High
	≤15 days	62%	45%		
	≤30 days	20%	32%		
	Before project ends	16%	21%		
	No limitation	1%	1%		

Table I.4.7.1 Probability of conflict due to issues related to the rights and duties of contracting parties

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Duties of the contractor to ask for the approval/permission from employer				
	Does the contractor have the duty to ask for the approval/permission of the following from the employer?				
1.1	Construction material			13%	Medium
	Yes	97%	86%		
	No	3%	14%		
1.2	Employment of subcontractor			32%	High
	Yes	63%	49%		
	No	37%	51%		
1.3	Work during holidays and/or beyond normal working time			35%	High
	Yes	75%	53%		
	No	25%	47%		
1.4	Construction method			19%	Medium
	Yes	92%	79%		
	No	8%	21%		
2	Definition of normal working time				
2.1	What days are normal working days?			50%	Very high
	Monday-Friday	62%	25%		
	Monday-Saturday	26%	60%		
	Monday-Sunday	12%	15%		
2.2	What hours are normal daily working hours?			53%	Very high
	8.00 – 16.30	51%	4%		
	8.00 – 17.00	45%	88%		
	8.00 – 18.00	3%	8%		
3	Binding of the decision of the employer to the request				
3.1	Is the employer's consideration on the contractor's request for approval considered final?			31%	High
	Yes	41%	25%		
	No	59%	75%		
4	The employer's right to perform an interference action				
4.1	Does the employer have the right to suspend the construction?			13%	Medium
	Yes	16%	19%		
	No	84%	81%		

Table I.4.7.1 (continued) Probability of conflict due to issues related to the rights and duties of contracting parties

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
4.2	Does the employer have the right to do other construction work within the site?			27%	High
	Yes	37%	28%		
	No	63%	72%		
4.3	Does the employer have the right to occupy an area of the site while its construction is still going on?			16%	Medium
	Yes	24%	31%		
	No	76%	69%		
5	The limitation of the employer's right to suspend the construction				
5.1	What is the maximum duration per time that the employer can give an order for work suspension?			40%	High
	2 weeks	51%	65%		
	1 month	9%	24%		
	No limitation	38%	11%		
5.2	How many times per project can the employer give an order for work suspension?			41%	High
	1 time	14%	28%		
	5 times	20%	28%		
	No limitation	65%	45%		

Table I.4.7.2 Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of an interference action by the employer

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Compensation to the contractor in case the employer refuses the contractor's request for approval/permission without a sound reason				
	What types of compensation should the contractor be able to claim?				
1.1	Extension of construction time			29%	High
	Yes	59%	71%		
	No	41%	29%		
1.2	Compensation for direct cost increase			53%	Very high
	Yes	37%	85%		
	No	63%	15%		
1.3	Compensation for overhead cost increase			33%	High
	Yes	15%	39%		
	No	85%	61%		
1.4	Compensation for profit loss			13%	Medium
	Yes	4%	14%		
	No	96%	86%		
2	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission				
2.1	Should the contractor be compensated in case the contract allows the employer to refuse the contractor's request for approval/permission?			33%	High
	Yes	55%	73%		
	No	45%	27%		
3	Compensation to the contractor in case there is an interference action by the employer				
	What types of compensation should the contractor be able to claim?				
3.1	Extension of construction time			10%	Medium
	Yes	87%	81%		
	No	13%	19%		
3.2	Compensation for direct cost increase			35%	High
	Yes	26%	47%		
	No	74%	53%		
3.3	Compensation for overhead cost increase			39%	High
	Yes	22%	50%		
	No	78%	50%		

Table I.4.7.2 (continued) Probability of conflict due to issues related to compensation to the contractor for the unfavorable effects of an interference action by the employer

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
3.4	Compensation for profit loss			15%	Medium
	Yes	2%	15%		
	No	98%	85%		
4	Compensation to the contractor in case the contract allows the employer to perform an interference action				
4.1	Should the contractor be compensated in case the contract allows the employer to perform an interference action?			24%	Medium
	Yes	68%	73%		
	No	32%	27%		
5	Types of time loss that can be claimed in case the contractor's operations are interfered with by some action of the employer				
	What types of time loss should the contractor be able to claim?				
5.1	Time loss during suspension/stop period			12%	Medium
	Yes	85%	79%		
	No	15%	21%		
5.2	Time of preparation for construction operations			47%	High
	Yes	33%	69%		
	No	67%	31%		
5.3	Time loss due to decrease in productivity			35%	High
	Yes	26%	47%		
	No	74%	53%		
6	Types of direct cost increase that can be claimed for in case the contractor's operations are interfered with by some action of the employer				
	What types of direct cost increase should the contractor be able to claim?				
6.1	Expense during the suspension/stop period			39%	High
	Yes	36%	61%		
	No	64%	39%		
6.2	Expense that cannot be refunded from the supplier/subcontractor			38%	High
	Yes	43%	66%		
	No	57%	34%		
6.3	Additional cost due to material price increase			22%	Medium
	Yes	72%	77%		
	No	28%	23%		
6.4	Additional cost due to decrease in productivity			37%	High
	Yes	24%	49%		
	No	76%	51%		

Table I.4.7.3 Probability of conflict due to issues related to the notification of an interference action by the employer and claim submission

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Notification of an interference action by the employer				
1.1	Is it the duty of the contractor to notify the employer of an interference action by the employer?			0%	Low
	Yes	97%	100%		
	No	3%	0%		
1.2	What is the reasonable timeframe after becoming aware of the employer's action that the contractor should notify the employer of the event?			38%	High
	≤1 day	15%	10%		
	≤7 days	60%	49%		
	≤15 days	25%	41%		
1.3	Does the contractor have to notify the employer of an event when the employer is already aware of the interference action?			7%	Medium
	Yes	97%	93%		
	No	3%	7%		
1.4	Does failure to notify the employer of an employer's interference action within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?			12%	Medium
	Yes	74%	46%		
	No	26%	54%		
2	Claim submission				
2.1	What is the reasonable timeframe after the end of the interference action that the contractor should submit their claim for compensation?			38%	High
	≤15 days	71%	54%		
	≤30 days	17%	15%		
	Before project ends	11%	29%		
	No limitation	1%	1%		

Table I.4.8.1 Probability of conflict due to issues related to the employer's right to give an order to change the scope of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	The employer's right to give an order to change the scope of work				
1.1	Does the employer have the right to give an order to change the scope of work?			12%	Medium
	Yes	84%	85%		
	No	16%	15%		
1.2	If the employer has the right to give an order to change the scope of work, can they give an order for additional work beyond the scope of work specified in the contract?			15%	Medium
	Yes	50%	71%		
	No	50%	29%		
1.3	If the employer has the right to give an order to change the scope of work, can he give an order to dramatically change the quantity of work items ?			22%	Medium
	Yes	36%	38%		
	No	64%	62%		
1.4	What is the maximum total amount of work that the employer can give an order to add?			24%	Medium
	10%	64%	54%		
	20%	18%	21%		
	50%	2%	6%		
	No limitation	16%	19%		
1.5	What is the maximum total amount of work that the employer can give an order to cancel?			36%	High
	10%	49%	58%		
	20%	23%	18%		
	50%	5%	6%		
	No limitation	24%	18%		
1.6	Can the employer give an order to cancel some part of the work in order to hire another contractor to perform that work?			36%	High
	Yes	42%	16%		
	No	58%	84%		

Table 1.4.8.2 Probability of conflict due to issues related to the implementation of the employer's order to change the scope of work and the contractor's response

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Individual who has the authority to give an order to change the scope of work				
	Does the following person have the authority to give an order to change the scope of work?				
1.1	Employer's representative			20%	Medium
	Yes	60%	49%		
	No	40%	51%		
1.2	Authorized project consultant			19%	Medium
	Yes	46%	36%		
	No	54%	64%		
1.3	Project inspector			11%	Medium
	Yes	25%	15%		
	No	75%	85%		
2	Verbal order to change the scope of work				
2.1	Is a verbal order to change the scope of work valid?			4%	Low
	Yes	99%	96%		
	No	1%	4%		
3	Response of the contractor when they receive an order to change the scope of work				
3.1	How should the contractor respond when they receive a verbal order to change the scope of work?			62%	Very high
	Request a written or formal order to change the scope of work and cease operations while waiting for the formal order	46%	53%		
	Request a written or formal order to change the scope of work and continue operations as if there is no such order	15%	12%		
	Request a written or formal order to change the scope of work and perform the work following a verbal order	38%	32%		
	Perform the work following a verbal order without-a request for the formal order	1%	0%		
	Neglect the verbal order and perform the work as if there is no such order	0%	3%		

Table I.4.8.2 (continued) Probability of conflict due to issues related to the implementation of the employer's order to change the scope of work and the contractor's response

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
3.2	How should the contractor respond when he knows that the employer will give an order to change the scope of work?			43%	High
	Continue the construction operations as usual	29%	34%		
	Cease operations on that part of the work that there will be an order to change	71%	66%		
3.3	Does the contractor have to perform the work even though the agreement on compensation is not finalized yet?			28%	High
	Yes	38%	25%		
	No	62%	75%		

Table I.4.8.3 Probability of conflict due to issues related to compensation to the contractor for the effects of the employer's order to change the scope of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Compensation to the contractor in case the employer gives an order to the contractor to do additional work				
	In this case, what types of compensation should the contractor be able to claim?				
1.1	Extension of construction time			17%	Medium
	Yes	79%	80%		
	No	21%	20%		
1.2	Compensation for direct cost increase			25%	High
	Yes	71%	88%		
	No	29%	12%		
1.3	Compensation for overhead cost increase			39%	High
	Yes	32%	57%		
	No	68%	43%		
1.4	Compensation for profit loss			27%	High
	Yes	11%	31%		
	No	89%	69%		
2	Adjustment of project duration and cost in case the employer gives an order to cancel some part of the work				
	What should be the adjustment in this case?				
2.1	Reduction of construction time			35%	High
	Yes	50%	30%		
	No	50%	70%		
2.2	Reduction of direct cost			15%	Medium
	Yes	65%	77%		
	No	35%	23%		
2.3	Reduction of overhead cost			22%	Medium
	Yes	29%	23%		
	No	71%	77%		
2.4	Reduction of profit			13%	Medium
	Yes	15%	11%		
	No	85%	89%		
3	Compensation to the contractor in case the contract allows the employer to give an order to change the scope of work				
3.1	Should the contractor be compensated in this case?			20%	Medium
	Yes	77%	85%		
	No	23%	15%		

Table I.4.8.3 (continued) Probability of conflict due to issues related to compensation to the contractor for the effects of the employer's order to change the scope of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
4	Types of time loss that can be claimed in case the employer gives an order to change the scope of work				
	What types of time loss should the contractor be able to claim in this case?				
4.1	Time waiting for the detail of work modification			23%	Medium
	Yes	72%	81%		
	No	28%	19%		
4.2	Time of preparation for construction operations			37%	High
	Yes	33%	55%		
	No	67%	45%		
4.3	Additional time due to additional work or modification of the work			20%	Medium
	Yes	78%	89%		
	No	22%	11%		
4.4	Time loss due to decrease in productivity			30%	High
	Yes	24%	40%		
	No	76%	60%		
5	Types of direct cost increase that can be claimed in case the employer gives an order to change the scope of work				
	What types of direct cost increase that the contractor should be able to claim in this case?				
5.1	Expense during suspension period			35%	High
	Yes	41%	59%		
	No	59%	41%		
5.2	Expense that cannot be refunded from the supplier/subcontractor			43%	High
	Yes	41%	72%		
	No	59%	28%		
5.3	Expense due to additional work or modification of the work			20%	Medium
	Yes	76%	81%		
	No	24%	19%		
5.4	Additional cost due to material price increase			32%	High
	Yes	54%	71%		
	No	46%	29%		
5.5	Additional expense due to decrease in productivity			27%	High
	Yes	20%	33%		
	No	80%	67%		

Table I.4.8.4 Probability of conflict due to issues related to submission of claim for the effects of the employer's order to change the scope of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Claim submission				
1.1	What is a reasonable timeframe after receiving the order within which the contractor should submit their claim for compensation?			43%	High
	≤15 days	23%	19%		
	≤30 days	38%	30%		
	Before project ends	20%	26%		
	No limitation	20%	26%		

Table I.4.8.5 Probability of conflict due to issues related to the adjustment of the price of designated phases of the work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Adjustment of the price of designated phases of the work in case the modified work was listed in a phase of the work				
	How should the price of designated phases of the work be adjusted in this case?				
1.1	Additional work			24%	Medium
	Increase the price of that phase	64%	68%		
	Increase the price of the last phase	36%	32%		
1.2	Deducted work			28%	High
	Reduce the price of that phase	69%	59%		
	Reduce the price of the last phase	31%	41%		
2	Adjustment of the price of designated phases of the work in case the modified work was not listed in any phase of the work				
	How should the price of the designated phases of the work be adjusted in this case?				
2.1	Additional work			31%	High
	Increase the price of a closely related phase	60%	76%		
	Increase the price of the last phase	40%	24%		
2.2	Deducted work			25%	High
	Reduce the price of a closely related phase	58%	57%		
	Reduce the price of the last phase	42%	43%		

Table I.4.8.6 Probability of conflict due to issues related to the adjustment of fine rate

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Adjustment of the daily rate of fine for the delay of the work				
1.1	Should the fine rate be increased in case the contract price of the project is increased?			30%	High
	Yes	70%	58%		
	No	30%	42%		
1.2	Should the fine rate be reduced in case the contract price of the project is reduced?			24%	Medium
	Yes	65%	68%		
	No	35%	32%		

Table I.4.9.1 Probability of conflict due to issues related to the approach to assess the effect of undesirable events on a construction activity

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Approach to assess the effect of undesirable events on a construction activity				
	How should the following effect on construction activity be assessed?				
1.1	Length of time for repairing work damage			64%	Very high
	Comparing actual time with planned time	50%	41%		
	Specifying the length of time that the contractor spent to fix the damage	20%	25%		
	Estimated from the quantity of the damaged work to be repaired	29%	34%		
1.2	Length of time of preparation for construction operations after stopping or suspension			50%	Very high
	Specifying the actual length of time that the contractor spent for the preparation	50%	63%		
	Estimated from the normal preparation time that is acceptable to the industry sector	50%	37%		
1.3	Time loss due to decrease in productivity			49%	High
	Comparing actual time with planned time	55%	62%		
	Comparing productivity rate before and after the event.	45%	38%		
1.4	Time loss due to differing site condition			45%	High
	Comparing actual time with planned time	30%	37%		
	Specifying the actual length of time that the contractor was affected.	70%	63%		
	Comparing the expected length of time for working under actual conditions with that under expected conditions	0%	0%		
1.5	Time loss due to the employer's order to change the scope of work			68%	Very high
	Comparing actual time with planned time	26%	15%		
	Specifying the actual length of time that the contractor was affected	18%	52%		
	Estimated from the quantity of work that was modified by the employer's order	57%	33%		

Table I.4.9.2 Probability of conflict due to issues related to the adjustment of actual construction time

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Adjustment of actual construction time				
1.1	Should the actual construction time to be used for assessing the effect of undesirable events on a construction activity be adjusted if the contractor does not operate the construction effectively?			32%	High
	Yes	65%	52%		
	No	35%	48%		

Table I.4.9.3 Probability of conflict due to issues related to the projection of the length of time for the operations

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Projection of the length of time for operations				
1.1	Additional time to cover the expected increase in operation time due to risks assigned to the contractor			19%	Medium
	Yes	79%	92%		
	No	21%	8%		
1.2	Additional time to cover the expected increase in operation time due to the limitations of the resources of the contractor			42%	High
	Yes	50%	84%		
	No	50%	16%		

Table I.4.9.4 Probability of conflict due to issues related to the assessment of the effect of the event on the completion date of the project

No	Issues	% of respondent who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Type of schedule program to be used as reference for the assessment of the effect of the event				
1.1	The schedule program to be used as reference for the assessment of the effect			66%	Very high
	Original master plan	34%	32%		
	Recently updated master plan	28%	30%		
	Master plan updated to reflect the status before the undesirable event occurs	38%	38%		
2	Assessment of the effect of the event on the completion date of the project				
2.1	Considering the limitation of the resources of the contractor available for construction operations			41%	High
	Yes	44%	73%		
	No	56%	27%		
2.2	Approach to assess the effect of the event on the completion date of the project			50%	High
	Negotiation	26%	49%		
	Critical path method (CPM)	74%	51%		

Table I.4.10.1 Probability of conflict due to issues related to the definition of direct costs

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Expenses included in direct costs				
	Are the following expenses included in direct costs?				
1.1	The payroll of the contractor's employees on site			20%	Medium
	Yes	47%	38%		
	No	53%	62%		
1.2	Specialized consultant's fee			15%	Medium
	Yes	20%	19%		
	No	80%	81%		
1.3	Rental of the site office/worker's camp			21%	Medium
	Yes	39%	35%		
	No	61%	65%		
1.4	The contractor's HO expenses			14%	Medium
	Yes	25%	19%		
	No	75%	81%		
1.5	The contractor's all risk insurance cost			15%	Medium
	Yes	28%	21%		
	No	72%	79%		
1.6	The contractor's capital expense			17%	Medium
	Yes	42%	29%		
	No	58%	71%		
2	Definition of labor cost				
2.1	Does labor cost include related expenses such as fringe benefits?			20%	Medium
	Yes	60%	50%		
	No	40%	50%		
3	Definition of material cost and equipment cost				
3.1	Does material cost and equipment cost include related expenses such as transportation/mobilization costs?			13%	Medium
	Yes	83%	77%		
	No	17%	23%		

Table I.4.10.2 Probability of conflict due to issues related to the approach to assess the effect of the event on the direct costs of performing each item of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Approach to assess the effect on the direct costs to perform each item of work				
	How should the following effects on direct costs be assessed?				
1.1	Additional expense for repairing the work damage			72%	Very high
	Comparing actual expense with the cost that was proposed in the BOQ	29%	24%		
	Comparing actual expense with the cost that was expected to be spent	34%	40%		
	Specifying a list of actual expenses that were related to the repairing	25%	26%		
	Estimated from the quantity of damaged work to be repaired	12%	10%		
1.2	Additional expense due to the employer's request for a specified product			81%	Very high
	Comparing actual expense with expense that was proposed in the BOQ	21%	21%		
	Comparing actual expense with expense that was expected to be spent	20%	28%		
	Specifying a list of actual costs that were related to the changing of the product	9%	24%		
	Comparing marketing price with the price that was proposed in the BOQ	28%	12%		
	Comparing marketing price with the price that that was expected to be spent	21%	16%		
1.3	Additional expense during the stop or suspension period			50%	Very high
	Specifying a list of actual expenses that incurred during the stop or suspension period	41%	51%		
	Estimated from the reasonable amount of resources to be used per day, and the duration of suspension	59%	49%		
1.4	Additional expense due to material price increase			74%	Very high
	Comparing actual expense with cost that was proposed in the BOQ	17%	25%		
	Comparing actual expense with cost that was expected to be spent	16%	20%		

Table I.4.10.2 (continued) Probability of conflict due to issues related to the approach to assess the effect of the event on the direct costs of performing each item of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
	Comparing actual unit price with unit price that was proposed in the BOQ	32%	28%		
	Comparing actual unit price before and after the occurrence of the affecting event	34%	27%		
1.5	Additional expense due to decrease in productivity			50%	Very high
	Comparing actual expense with cost that was proposed in the BOQ	41%	52%		
	Comparing actual unit cost rate before and after the occurrence of the affecting event	59%	48%		
1.6	Additional expense due to differing site conditions			80%	Very high
	Comparing actual expense with cost that was proposed in the BOQ	22%	19%		
	Comparing actual expense with cost that was expected to be spent	17%	15%		
	Specifying a list of actual expenses that incurred due to differing site conditions	21%	31%		
	Comparing expected expense for working under actual conditions with the cost that was proposed in the BOQ	18%	24%		
	Comparing expected expense for working under actual conditions with that under expected condition	21%	12%		
1.7	Additional expense due to change in the scope of work			73%	Very high
	Comparing actual expense with cost that was proposed in the BOQ	30%	32%		
	Comparing actual expense with expected cost for performing the work according to the contract	20%	18%		
	Specifying a list of actual expenses that incurred due to the change	16%	20%		
	Estimated from quantity of the work that was modified	34%	30%		

Table I.4.10.3 Probability of conflict due to issues related to the adjustment of the actual expenses of construction

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	The adjustment of the actual expenses of construction				
1.1	Should the actual expenses of the contractor to be used for assessing the compensation be adjusted if the contractor does not operate the construction effectively?			32%	High
	Yes	68%	52%		
	No	32%	48%		

Table I.4.10.4 Probability of conflict due to issues related to declaring actual expenses

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Declaring actual expenses				
1.1	Does the contractor have the duty to declare actual expenses?			41%	High
	Yes	71%	43%		
	No	29%	57%		
1.2	Does the acceptance of the declaration without any argument (within a reasonable timeframe) mean the employer agrees that the declared items are correct?			20%	Medium
	Yes	75%	81%		
	No	25%	19%		
1.3	What is the reasonable timeframe for the employer to make an argument against the expenses declared by the contractor?			32%	High
	≤15 days	33%	35%		
	≤30 days	53%	57%		
	Before project ends	14%	7%		
	No limitation	x	x		

Table I.4.10.5 Probability of conflict due to issues related to the approach to assess the cost of work

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Adjustment of the quantity and unit cost to cover the cost of material loss				
1.1	Should the quantity of the work be adjusted to cover the expected cost of material loss?			23%	Medium
	Yes	72%	83%		
	No	28%	17%		
1.2	Should the unit price of the work be adjusted to cover the expected cost of material loss?			36%	High
	Yes	53%	76%		
	No	47%	24%		
2	Approach to determine the unit rate in case its rate cost is specified in BOQ				
2.1	Should the unit rate specified in BOQ be used to assess related direct costs if the modified work has a unit price specified in the BOQ?			29%	High
	Yes	78%	63%		
	No	22%	37%		
2.2	Should there be an adjustment in unit cost if the quantity of work is changed dramatically?			26%	High
	Yes	69%	84%		
	No	31%	16%		
2.3	Should there be an adjustment in unit cost if the employer gives an order to perform the work beyond the stipulated completion date of the project?			30%	High
	Yes	66%	90%		
	No	34%	10%		
3	Approach to determine the unit rate in case the cost rate is not specified in BOQ				
3.1	What approach is appropriate for determining the unit rate in case the cost rate is not specified in BOQ?			50%	High
	Use the average market rate	74%	51%		
	Determine from the actual expenses of the contractor	26%	49%		

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Table I.4.10.6 Probability of conflict due to issues related to the assessment of the cost of deducted work

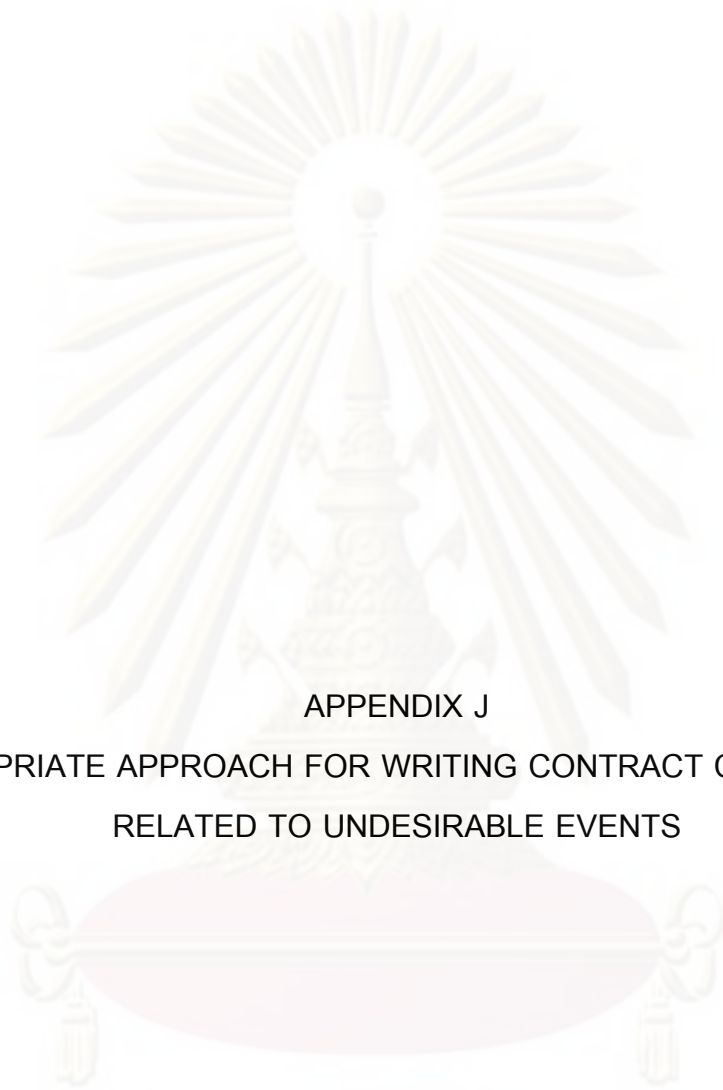
No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Approach to assess the cost of deducted work				
1.1	How should the cost of the cancelled/reduced work be assessed if the quantity specified in BOQ is less than the actual quantity?			28%	High
	Use the total cost	16%	17%		
	Calculate from the quantity of work and proposed unit price	84%	83%		
1.2	How should the cost of the cancelled/reduced work be assessed if the quantity specified in BOQ is more than the actual quantity?			28%	High
	Use the total cost	15%	19%		
	Calculate from the quantity of work and proposed unit price	85%	81%		

Table I.4.11.1 Probability of conflict due to issues related to the assessment of compensation for overhead cost increase and profit loss

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
1	Approach to assess compensation for overhead cost increase				
	How should the overhead costs be compensated in the following conditions?				
1.1	The undesirable events affect only the construction duration			74%	Very high
	Compensate based on the increase in project duration	28%	42%		
	No compensation	28%	8%		
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event.	28%	32%		
	Compensate for only the expected additional overhead costs due to the affecting event.	17%	18%		
1.2	The undesirable events affect only the construction cost			73%	Very high
	No compensation	45%	15%		
	Compensate based on the increase in project cost	28%	46%		
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event.	19%	34%		
	Compensate for only the expected additional overhead costs due to the affecting event.	8%	5%		
1.3	The undesirable events affect both the duration and cost of construction			74%	Very high
	Compensate based on the increase in project duration	21%	25%		
	Compensate based on the increase in project cost	33%	25%		
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event	29%	35%		
	Compensate for only the expected additional overhead costs due to the affecting event.	17%	16%		

Table I.4.11.1 (continued) Probability of conflict due to issues related to the assessment of compensation for overhead cost increase and profit loss

No	Issues	% of respondents who answered		Probability of conflict	Level of importance
		Employer	Contractor		
2	Approach to assess compensation for profit loss				
	How should profit loss be compensated in the following conditions?				
2.1	The undesirable events affect only the construction duration			52%	Very high
	Compensate based on the increase in project duration	42%	61%		
	No compensation	58%	39%		
2.2	The undesirable events affect only the construction cost			48%	High
	No compensation	46%	24%		
	Compensate based on the increase in project cost	54%	76%		
2.3	The undesirable events affect both the duration and cost of construction			35%	High
	Compensate based on the increase in project duration	25%	20%		
	Compensate based on the increase in project cost	75%	80%		



APPENDIX J

APPROPRIATE APPROACH FOR WRITING CONTRACT CONDITIONS
RELATED TO UNDESIRABLE EVENTS

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table J.5.3.1 Appropriate approach for writing contract conditions related to the issues of definition of force majeure

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Characteristics of force majeure				
	Is the following a characteristic of force majeure?				
1.1	Unpredictable				
	Yes	78%	84%	81%	*
	No	22%	16%	19%	
1.2	Not preventable and/or uncontrollable				
	Yes	54%	57%	56%	*
	No	46%	43%	44%	
1.3	Natural phenomenon				
	Yes	66%	61%	64%	*
	No	34%	39%	36%	
1.4	Not the risk in doing business				
	Yes	10%	14%	12%	
	No	90%	86%	88%	*
2	Events that can be classified as force majeure				
	Is the following event classified as force majeure?				
2.1	Normal weather conditions				
	Yes	25%	29%	27%	
	No	75%	71%	73%	*
2.2	Severe weather conditions				
	Yes	80%	83%	81%	*
	No	20%	17%	19%	
2.3	Natural catastrophes				
	Yes	79%	75%	77%	*
	No	21%	25%	23%	
2.4	War/coup				
	Yes	63%	61%	62%	*
	No	37%	39%	38%	

Table J.5.3.1 (continued) Appropriate approach for writing contract conditions related to the issues of definition of force majeure

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
2.5	Unfavorable effects of an action of a third party				
	Yes	48%	48%	48%	
	No	52%	52%	52%	*
2.6	Unfavorable effects of an action of the contractor's personnel				
	Yes	15%	20%	17%	
	No	85%	80%	83%	*
2.7	Lack of resources				
	Yes	17%	29%	23%	
	No	83%	71%	77%	*
2.8	Change in general law				
	Yes	18%	26%	22%	
	No	82%	74%	78%	*
2.9	Change in law related to construction				
	Yes	7%	17%	12%	
	No	93%	83%	88%	*
2.10	Loss of access to transportation				
	Yes	53%	57%	55%	*
	No	47%	43%	45%	
3	Criteria to define severe weather conditions				
3.1	The occurrence of one event every _____year(s) is considered to be severe weather conditions				
	1 year	25%	100%	63%	
	5 years	72%	75%	73%	*
	10 years	100%	22%	61%	

Table J.5.3.2 Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of force majeure

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
1	Compensation to the contractor for the effects of a force majeure event				
	What types of compensation should the contractor be able to claim for as the effects of force majeure?				
1.1	Extension of construction time				
	Yes	91%	95%	93%	*
	No	9%	5%	7%	
1.2	Compensation for direct cost increase				
	Yes	10%	31%	21%	
	No	90%	69%	79%	*
1.3	Compensation for overhead cost increase				
	Yes	11%	37%	24%	
	No	89%	63%	76%	*
1.4	Compensation for profit loss				
	Yes	1%	8%	5%	
	No	99%	92%	95%	*
2	Granting or restriction of the contractor's right to claim compensation in case the force majeure occurs after the stipulated completion date of the project				
2.1	Should the contractor be compensated if the force majeure event occurs after the stipulated completion date of the project?				
	Yes	27%	46%	36%	
	No	73%	54%	64%	*
3	Types of time loss that can be claimed for				
	What types of time loss should the contractor be able to claim for?				
3.1	Duration of the force majeure event				
	Yes	92%	94%	93%	*
	No	8%	6%	7%	
3.2	Time for fixing the damaged resource or time to seek its replacement				
	Yes	19%	40%	30%	
	No	81%	60%	70%	*

Table J.5.3.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of force majeure

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
3.3	Time for fixing the damage to the work and for clearing the site				
	Yes	36%	58%	47%	
	No	64%	42%	53%	*
3.4	Time loss due to decrease in productivity				
	Yes	12%	28%	20%	
	No	88%	72%	80%	*
4	Types of direct cost increase that can be claimed for				
	What types of direct cost increase should the contractor be able to claim?				
4.1	Cost of fixing the damaged resource or cost of its replacement				
	Yes	18%	42%	30%	
	No	82%	58%	70%	*
4.2	Cost of fixing the damage to the work and cost of clearing the site				
	Yes	64%	76%	70%	*
	No	36%	24%	30%	
4.3	Cost during project suspension				
	Yes	13%	29%	21%	
	No	87%	71%	79%	*
4.4	Increase in cost due to decrease in productivity				
	Yes	14%	20%	17%	
	No	86%	80%	83%	*
4.5	Increase in cost due to material price increase				
	Yes	49%	76%	62%	*
	No	51%	24%	38%	
5	Compensation for damage to the work				
5.1	Should the contractor be compensated for the damage to the work that has not been inspected/certified and/or not paid yet?				
	Yes	48%	82%	65%	*
	No	52%	18%	35%	

Table J.5.3.3 Appropriate approach for writing contract conditions related to the issues of notification of force majeure event and claim submission

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Notification of a force majeure event				
1.1	Is it the duty of the contractor to notify the employer of a force majeure event?				
	Yes	96%	99%	97%	*
	No	4%	1%	3%	
1.2	What is the reasonable timeframe after the occurrence of the force majeure event for the contractor to notify the employer of the event?				
	1 day	100%	22%	61%	
	7 days	73%	62%	67%	*
	15 days	23%	100%	62%	
1.3	Is it required that the contractor notify the employer of the event when the employer has already witnessed the event?				
	Yes	95%	94%	95%	*
	No	5%	6%	5%	
1.4	Does failure to notify the employer of the force majeure within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?				
	Yes	87%	66%	76%	*
	No	13%	34%	24%	
2	Claim submission				
2.1	What is the reasonable timeframe after the end of the force majeure that the contractor should submit their claim for compensation?				
	≤15 days	100%	34%	67%	*
	≤30 days	38%	75%	57%	
	Before project ends	18%	98%	58%	
	No limitation	1%	100%	50%	

Table J.5.4.1 Appropriate approach for writing contract conditions related to the issues of the duties of contracting parties

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
1	Timeframe to give the contractor the right of access to the site				
1.1	What is the reasonable timeframe for the employer to give the contractor the right of access to and occupancy of the site?				
	1 month	73%	100%	87%	*
	3 months	96%	25%	61%	
	6 months	100%	2%	51%	
2	Timeframe for the approval of submittal				
	What is the reasonable timeframe for the employer to approve the following submittal?				
2.1	Construction schedule				
	1 week	60%	100%	80%	*
	2 weeks	93%	53%	73%	
	1 month	100%	11%	56%	
2.2	Construction method				
	1 week	60%	100%	80%	*
	2 weeks	93%	52%	72%	
	1 month	100%	8%	54%	
2.3	Shop/working drawing				
	1 week	45%	100%	72%	
	2 weeks	83%	61%	72%	*
	1 month	100%	17%	59%	
2.4	Construction material				
	1 week	45%	100%	72%	*
	2 weeks	84%	59%	72%	
	1 month	100%	17%	59%	
2.5	Data from specified testing				
	1 week	31%	100%	65%	*
	2 weeks	76%	50%	63%	
	1 month	100%	10%	55%	
3	Duty to remind of timely approval				
3.1	Does the contractor have the duty to remind the employer of approval within the timeframe?				
	Yes	87%	93%	90%	*
	No	13%	7%	10%	

Table J.5.4.1 (continued) Appropriate approach for writing contract conditions related to the issues of the duties of contracting parties

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
3.2	What is the reasonable timeframe before the deadline for approving the submittals that the contractor should give reminder to the employer?				
	3 days	27%	100%	64%	
	1 week	85%	80%	82%	*
	2 weeks	100%	17%	59%	
4	Request for inspection				
4.1	Does the contractor have the duty to request inspection from the employer before cover-up?				
	Yes	94%	94%	94%	*
	No	6%	6%	6%	
4.2	What is a reasonable timeframe for the contractor to notify the employer in advance of the inspection?				
	1/2 day	4%	100%	52%	
	1 day	47%	93%	70%	*
	3 days	100%	35%	67%	

Table J.5.4.2 Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of ineffective performance of the employer

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
1	Compensation to the contractor in case there is an approval delay				
	What types of compensation should the contractor be able to claim for in case there is an approval delay?				
1.1	Extension of construction time				
	Yes	88%	97%	92%	*
	No	12%	3%	8%	
1.2	Compensation for direct cost increase				
	Yes	17%	51%	34%	
	No	83%	49%	66%	*
1.3	Compensation for overhead cost increase				
	Yes	14%	51%	33%	
	No	86%	49%	67%	*
1.4	Compensation for profit loss				
	Yes	2%	10%	6%	
	No	98%	90%	94%	*
2	Type of time loss that can be claimed for in case there is an approval delay				
	What types of time loss should the contractor be able to claim for in case there is an approval delay?				
2.1	Time waiting for employer to approve submittal				
	Yes	88%	98%	93%	*
	No	12%	2%	7%	
2.2	Time of preparation for construction operations after receiving the employer's approval				
	Yes	21%	38%	30%	
	No	79%	62%	70%	*
2.3	Time loss due to decrease in productivity				
	Yes	17%	42%	30%	
	No	83%	58%	70%	*
3	Type of direct cost increase that can be claimed for in case there is an approval delay				
	What types of direct cost increase should the contractor be able to claim for in case there is an approval delay?				
3.1	Cost during project suspension				
	Yes	42%	72%	57%	*
	No	58%	28%	43%	

Table J.5.4.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of ineffective performance of the employer

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
3.2	Increase in cost due to material price increase				
	Yes	76%	90%	83%	*
	No	24%	10%	17%	
3.3	Increase in cost due to decrease in productivity				
	Yes	23%	46%	34%	
	No	77%	54%	66%	*
4	What types of compensation should the contractor be able to claim for in case there is an employer's mistake (other than approval delay) such as providing an incorrect reference point?				
4.1	Extension of construction time				
	Yes	71%	91%	81%	*
	No	29%	9%	19%	
4.2	Compensation for direct cost increase				
	Yes	43%	84%	63%	*
	No	57%	16%	37%	
4.3	Compensation for overhead cost increase				
	Yes	32%	64%	48%	
	No	68%	36%	52%	*
4.4	Compensation for profit loss				
	Yes	4%	16%	10%	
	No	96%	84%	90%	*
5	Type of time loss due to a mistake in an employer's action (other than approval delay) that can be claimed for				
	What types of time loss should the contractor be able to claim for in case there is a mistake in an employer's action (other than approval delay)?				
5.1	Time of preparation for correction/rework				
	Yes	37%	71%	54%	*
	No	63%	29%	46%	
5.2	Time spent for correction/rework				
	Yes	81%	92%	87%	*
	No	19%	8%	13%	
5.3	Time loss due to decrease in productivity				
	Yes	24%	45%	35%	
	No	76%	55%	65%	*

Table J.5.4.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of ineffective performance of the employer

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
6	Type of direct cost increase that can be claimed for in case there is a mistake in an employer's action (other than approval delay)?				
	What types of direct cost increase should the contractor be able to claim in this case?				
6.1	Additional expense for work correction				
	Yes	69%	88%	79%	*
	No	31%	12%	21%	
6.2	Additional expense due to work difficulty				
	Yes	61%	86%	73%	*
	No	39%	14%	27%	
6.3	Additional expense due to decrease in productivity				
	Yes	21%	45%	33%	
	No	79%	55%	67%	*

Table J.5.4.3 Appropriate approach for writing contract conditions related to the issues of notification of the ineffective performance of the employer and claim submission

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Notification of the ineffective performance of the employer				
1.1	Is it the duty of contractor to notify the employer of the ineffective performance of employer?				
	Yes	95%	99%	97%	*
	No	5%	1%	3%	
1.2	What is the reasonable timeframe after the deadline for approving submittals or after realizing an employer's mistake that the contractor should notify the employer of the event?				
	1 day	100%	17%	58%	
	7 days	79%	66%	73%	*
	15 days	19%	100%	60%	
1.3	Is it required that the contractor notify the employer of the event when they are already aware of the delay or mistake?				
	Yes	93%	90%	92%	*
	No	7%	10%	8%	
1.4	Does failure to notify the employer of approval delay or a mistake within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?				
	Yes	83%	66%	74%	*
	No	17%	34%	26%	
2	Claim submission				
2.1	What is a reasonable timeframe after receiving the late approval of submittal or after correcting the mistake that the contractor should submit the claim for compensation?				
	≤15 days	100%	44%	72%	*
	≤30 days	31%	79%	55%	
	Before project ends	14%	100%	57%	
	No limitation	0%	100%	50%	

Table J.5.5.1 Appropriate approach for writing contract conditions related to the issues of the response of contractor when confronting with differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	The contractor's response when confronted with differing site conditions				
	How should the contractor respond in the following situations?				
1.1	Work can be done in accordance with the contract; differing site conditions have negative effects on the contractor				
	Cease operations, inform the employer and wait for the employer's instruction	49%	44%	46%	
	Inform the employer and continue operations	49%	56%	53%	*
	Continue operations without informing the employer	1%	0%	1%	
1.2	Work cannot be done in accordance with the contract due to the actual conditions being different from those described by the employer				
	Cease operations, inform the employer and wait for the employer's instruction	69%	68%	69%	*
	Inform the employer and continue operations	30%	32%	31%	
	Continue operations without informing the employer	0%	0%	0%	
1.3	Work cannot be done in accordance with the contract because of the topography of the site				
	Cease operations, inform the employer and wait for the employer's instruction	71%	66%	69%	*
	Inform the employer and continue operations	28%	34%	31%	
	Continue operations without informing the employer	1%	0%	0%	

Table J.5.5.2 Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Compensation to the contractor in case the work can be done in accordance with the contract and the differing site conditions have negative effects on the contractor?				
	What types of compensation should the contractor be able to claim?				
1.1	Extension of construction time				
	Yes	68%	84%	76%	*
	No	32%	16%	24%	
1.2	Compensation for direct cost increase				
	Yes	38%	80%	59%	*
	No	62%	20%	41%	
1.3	Compensation for overhead cost increase				
	Yes	38%	63%	50%	
	No	62%	37%	50%	*
1.4	Compensation for profit loss				
	Yes	6%	17%	12%	
	No	94%	83%	88%	*
2	Adjustment of duration and cost in case the work can be done in accordance with the contract and the differing site conditions are beneficial to the contractor				
	What kind of adjustment should it be?				
2.1	Reduction of construction time				
	Yes	36%	35%	35%	
	No	64%	65%	65%	*
2.2	Reduction of direct cost				
	Yes	31%	45%	38%	
	No	69%	55%	62%	*
2.3	Reduction of overhead cost				
	Yes	35%	26%	30%	
	No	65%	74%	70%	*
2.4	Reduction of profit				
	Yes	6%	4%	5%	
	No	94%	96%	95%	*

Table J.5.5.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
3	Granting or restricting the contractor's right to claim compensation in specific cases				
3.1	Should the contractor be compensated if they have not received any information from the employer, and the physical conditions are different from what they expected?				
	Yes	53%	81%	67%	*
	No	47%	19%	33%	
3.2	Should the contractor be compensated if the contract states that it is the responsibility of the contractor to evaluate and interpret the given information by themselves?				
	Yes	45%	83%	64%	*
	No	55%	17%	36%	
3.3	Should the contractor be compensated if the contractor has realized the incorrectness of the given information before bidding?				
	Yes	41%	70%	56%	*
	No	59%	30%	44%	
4	Compensation to the contractor in case the contractor gets negative effects from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those described by the employer				
	What types of compensation should the contractor be able to claim for?				
4.1	Extension of construction time				
	Yes	64%	80%	72%	*
	No	36%	20%	28%	
4.2	Compensation for direct cost increase				
	Yes	33%	76%	55%	*
	No	67%	24%	45%	
4.3	Compensation for overhead cost increase				
	Yes	31%	51%	41%	
	No	69%	49%	59%	*
4.4	Compensation for profit loss				
	Yes	5%	13%	9%	
	No	95%	87%	91%	*

Table J.5.5.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
5	Adjustment of duration and cost in case the contractor gets benefit from the employer's order when the work cannot be done in accordance with the contract because the actual conditions are different from those informed by employer				
	What kind of adjustment should it be?				
5.1	Reduction of construction time				
	Yes	40%	35%	37%	
	No	60%	65%	63%	*
5.2	Reduction of direct cost				
	Yes	45%	67%	56%	*
	No	55%	33%	44%	
5.3	Reduction of overhead cost				
	Yes	40%	35%	37%	
	No	60%	65%	63%	*
5.4	Reduction of profit				
	Yes	11%	6%	8%	
	No	89%	94%	92%	*
6	Compensation to the contractor in case the contractor gets negative effects from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
	What types of compensation should the contractor be able to claim?				
6.1	Extension of construction time				
	Yes	48%	70%	59%	*
	No	52%	30%	41%	
6.2	Compensation for direct cost increase				
	Yes	40%	83%	62%	*
	No	60%	17%	38%	
6.3	Compensation for overhead cost increase				
	Yes	33%	61%	47%	
	No	67%	39%	53%	*
6.4	Compensation for profit loss				
	Yes	8%	19%	14%	
	No	92%	81%	86%	*

Table J.5.5.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
7	Adjustment of duration and cost in case the contractor benefits from the employer's order when the work cannot be done in accordance with the contract because of the topography of the site				
	What kind of adjustment should it be?				
7.1	Reduction of construction time				
	Yes	29%	25%	27%	
	No	71%	75%	73%	*
7.2	Reduction of direct cost				
	Yes	35%	56%	46%	
	No	65%	44%	54%	*
7.3	Reduction of overhead cost				
	Yes	33%	26%	30%	
	No	67%	74%	70%	*
7.4	Reduction of profit				
	Yes	8%	6%	7%	
	No	92%	94%	93%	*
8	Types of time loss that can be claimed for				
	What types of time loss should the contractor be able to claim when confronted with differing site conditions?				
8.1	Time waiting for employer to a make a decision				
	Yes	64%	76%	70%	*
	No	36%	24%	30%	
8.2	Time of preparation for construction operations after receiving the order from the employer				
	Yes	38%	68%	53%	*
	No	62%	32%	47%	
8.3	Increase in working time due to work difficulty				
	Yes	57%	68%	63%	*
	No	43%	32%	37%	

Table J.5.5.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
9	Types of direct cost increase that can be claimed				
	What types of direct cost increase should the contractor be able to claim for when confronted with differing site conditions?				
9.1	Expense during the time waiting for the employer to make decision				
	Yes	35%	66%	51%	*
	No	65%	34%	49%	
9.2	Additional expense due to work difficulty				
	Yes	71%	88%	80%	*
	No	29%	12%	20%	
9.3	Additional cost due to material price increase				
	Yes	49%	77%	63%	*
	No	51%	23%	37%	

Table J.5.5.3 Appropriate approach for writing contract conditions related to the issues of submission of claim for compensation for unfavorable effects due to differing site conditions

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Claim submission				
1.1	What is a reasonable timeframe (after all the problems related to differing site conditions have been solved) within which the contractor should submit their claim for compensation?				
	≤15 days	100%	45%	73%	*
	≤30 days	38%	77%	58%	
	Before project ends	18%	99%	58%	
	No limitation	1%	100%	51%	

Table J.5.6.1 Appropriate approach for writing contract conditions related to the issues of rights and duties of contracting parties

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Duties of the contractor to ask for the approval/permission from employer				
	Does the contractor have the duty to ask for the approval/permission of the following from the employer?				
1.1	Construction material				
	Yes	97%	86%	92%	*
	No	3%	14%	8%	
1.2	Employment of subcontractor				
	Yes	63%	49%	56%	*
	No	37%	51%	44%	
1.3	Work during holidays and/or beyond normal working time				
	Yes	75%	53%	64%	*
	No	25%	47%	36%	
1.4	Construction method				
	Yes	92%	79%	86%	*
	No	8%	21%	14%	
2	Definition of normal working time				
2.1	What days are normal working days?				
	Monday-Friday	100%	25%	63%	*
	Monday-Saturday	38%	85%	62%	
	Monday-Sunday	12%	100%	56%	
2.2	What hours are normal daily working hours?				
	8.00 – 16.30	100%	4%	52%	
	8.00 – 17.00	49%	92%	70%	*
	8.00 – 18.00	3%	100%	52%	
3	Binding of the decision of the employer to the request				
3.1	Is the employer's consideration on the contractor's request for approval considered final?				
	Yes	41%	25%	33%	
	No	59%	75%	67%	*
4	The employer's right to perform an interference action				
4.1	Does the employer have the right to suspend the construction?				
	Yes	16%	19%	17%	
	No	84%	81%	83%	*
4.2	Duties of the contractor to ask for the approval/permission from employer				
	Does the contractor have the duty to ask for the approval/permission of the following from the employer?				
	Construction material	37%	28%	32%	
	Construction material	63%	72%	68%	*

Table J.5.6.1 (continued) Appropriate approach for writing contract conditions related to the issues of rights and duties of contracting parties

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
4.3	Does the employer have the right to do other construction work within the site?				
	Yes	24%	31%	27%	
	No	76%	69%	73%	*
5	Does the employer have the right to occupy an area of the site while its construction is still going on?				
5.1	Yes				
	No	51%	100%	75%	*
	The limitation of the employer's right to suspend the construction	60%	35%	48%	
	What is the maximum duration per time that the employer can give an order for work suspension?	98%	11%	55%	
5.2	2 weeks				
	1 month	14%	100%	57%	
	No limitation	34%	72%	53%	
	How many times per project can the employer give an order for work suspension?	99%	45%	72%	*

Table J.5.6.2 Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of interference action of the employer

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Compensation to the contractor in case the employer refuses the contractor's request for approval/permission without a sound reason				
	What types of compensation should the contractor be able to claim?				
1.1	Extension of construction time				
	Yes	59%	71%	65%	*
	No	41%	29%	35%	
1.2	Compensation for direct cost increase				
	Yes	37%	85%	61%	*
	No	63%	15%	39%	
1.3	Compensation for overhead cost increase				
	Yes	15%	39%	27%	
	No	85%	61%	73%	*
1.4	Compensation for profit loss				
	Yes	4%	14%	9%	
	No	96%	86%	91%	*
2	Compensation to the contractor in case the contract allows the employer to deny the contractor's request for approval/permission				
2.1	Should the contractor be compensated in case the contract allows the employer to refuse the contractor's request for approval/permission?				
	Yes	55%	73%	64%	*
	No	45%	27%	36%	
3	Compensation to the contractor in case there is an interference action by the employer				
	What types of compensation should the contractor be able to claim?				
3.1	Extension of construction time				
	Yes	87%	81%	84%	*
	No	13%	19%	16%	
3.2	Compensation for direct cost increase				
	Yes	26%	47%	37%	
	No	74%	53%	63%	*
3.3	Compensation for overhead cost increase				
	Yes	22%	50%	36%	
	No	78%	50%	64%	*

Table J.5.6.2 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for unfavorable effects of interference action of the employer

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
3.4	Compensation for profit loss				
	Yes	2%	15%	8%	
	No	98%	85%	92%	*
4	Compensation to the contractor in case the contract allows the employer to perform an interference action				
4.1	Should the contractor be compensated in case the contract allows the employer to perform an interference action?				
	Yes	68%	73%	70%	*
	No	32%	27%	30%	
5	Types of time loss that can be claimed in case the contractor's operations are interfered with by some action of the employer				
	What types of time loss should the contractor be able to claim?				
5.1	Time loss during suspension/stop period				
	Yes	85%	79%	82%	*
	No	15%	21%	18%	
5.2	Time of preparation for construction operations				
	Yes	33%	69%	51%	*
	No	67%	31%	49%	
5.3	Time loss due to decrease in productivity				
	Yes	26%	47%	37%	
	No	74%	53%	63%	*
6	Types of direct cost increase that can be claimed for in case the contractor's operations are interfered with by some action of the employer				
	What types of direct cost increase should the contractor be able to claim?				
6.1	Expense during the suspension/stop period				
	Yes	36%	61%	48%	
	No	64%	39%	52%	*
6.2	Expense that cannot be refunded from the supplier/subcontractor				
	Yes	43%	66%	55%	*
	No	57%	34%	45%	
6.3	Additional cost due to material price increase				
	Yes	72%	77%	74%	*
	No	28%	23%	26%	
6.4	Additional cost due to decrease in productivity				
	Yes	24%	49%	36%	
	No	76%	51%	64%	*

Table J.5.6.3 Appropriate approach for writing contract conditions related to the issues of notification of interference action of the employer and claim submission

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Notification of an interference action by the employer				
1.1	Is it the duty of the contractor to notify the employer of an interference action by the employer?				
	Yes	97%	100%	98%	*
	No	3%	0%	2%	
1.2	What is the reasonable timeframe after becoming aware of the employer's action that the contractor should notify the employer of the event?				
	≤1 day	100%	10%	55%	
	≤7 days	85%	59%	72%	*
	≤15 days	25%	100%	62%	
1.3	Does the contractor have to notify the employer of an event when the employer is already aware of the interference action?				
	Yes	97%	93%	95%	*
	No	3%	7%	5%	
1.4	Does failure to notify the employer of an employer's interference action within the timeframe specified in the contract (reasonable timeframe) mean the contractor gives up their right to claim compensation?				
	Yes	74%	46%	60%	*
	No	26%	54%	40%	
2	Claim submission				
2.1	What is the reasonable timeframe after the end of the interference action that the contractor should submit their claim for compensation?				
	≤15 days	100%	54%	77%	*
	≤30 days	29%	69%	49%	
	Before project ends	12%	99%	55%	
	No limitation	1%	100%	50%	

Table J.5.7.1 Appropriate approach for writing contract conditions related to the issues of employer's right to give an order to change the scope of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	The employer's right to give an order to change the scope of work				
1.1	Does the employer have the right to give an order to change the scope of work?				
	Yes	84%	85%	85%	*
	No	16%	15%	15%	
1.2	If the employer has the right to give an order to change the scope of work, can they give an order for additional work beyond the scope of work specified in the contract?				
	Yes	50%	71%	60%	*
	No	50%	29%	40%	
1.3	If the employer has the right to give an order to change the scope of work, can he give an order to dramatically change the quantity of work items ?				
	Yes	36%	38%	37%	
	No	64%	62%	63%	*
1.4	What is the maximum total amount of work that the employer can give an order to add?				
	10%	64%	100%	82%	*
	20%	82%	46%	64%	
	50%	84%	25%	54%	
	No limitation	100%	19%	60%	
1.5	What is the maximum total amount of work that the employer can give an order to cancel?				
	10%	49%	100%	74%	*
	20%	71%	42%	57%	
	50%	76%	24%	50%	
	No limitation	100%	18%	59%	
1.6	Can the employer give an order to cancel some part of the work in order to hire another contractor to perform that work?				
	Yes	42%	16%	29%	
	No	58%	84%	71%	*

Table J.5.7.2 Appropriate approach for writing contract conditions related to the issues of implementation of the employer's order to change the scope of work and contractor's response

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Individual who has the authority to give an order to change the scope of work				
	Does the following person have the authority to give an order to change the scope of work?				
1.1	Employer's representative				
	Yes	60%	49%	55%	*
	No	40%	51%	45%	
1.2	Authorized project consultant				
	Yes	46%	36%	41%	
	No	54%	64%	59%	*
1.3	Project inspector				
	Yes	25%	15%	20%	
	No	75%	85%	80%	*
2	Verbal order to change the scope of work				
2.1	Is a verbal order to change the scope of work valid?				
	Yes	99%	96%	97%	*
	No	1%	4%	3%	
3	Response of the contractor when they receive an order to change the scope of work				
3.1	How should the contractor respond when they receive a verbal order to change the scope of work?				
	Request a written or formal order to change the scope of work and cease operations while waiting for the formal order	46%	53%	49%	*
	Request a written or formal order to change the scope of work and continue operations as if there is no such order	15%	12%	14%	
	Request a written or formal order to change the scope of work and perform the work following a verbal order	38%	32%	35%	
	Perform the work following a verbal order without-a request for the formal order	1%	0%	0%	
	Neglect the verbal order and perform the work as if there is no such order	0%	3%	2%	

Table J.5.7.2 (continued) Appropriate approach for writing contract conditions related to the issues of implementation of the employer's order to change the scope of work and contractor's response

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
3.2	How should the contractor respond when he knows that the employer will give an order to change the scope of work?				
	Continue the construction operations as usual	29%	34%	32%	
	Cease operations on that part of the work that there will be an order to change	71%	66%	68%	*
3.3	Does the contractor have to perform the work even though the agreement on compensation is not finalized yet?				
	Yes	38%	25%	31%	
	No	62%	75%	69%	*

Table J.5.7.3 Appropriate approach for writing contract conditions related to the issues of compensation to contractor for the effects of employer's order to change in scope of work

No	Issues	% of Acceptability			Appro. approach
		Employer	Contractor	Average	
1	Compensation to the contractor in case the employer gives an order to the contractor to do additional work				
	In this case, what types of compensation should the contractor be able to claim?				
1.1	Extension of construction time				
	Yes	79%	80%	79%	*
	No	21%	20%	21%	
1.2	Compensation for direct cost increase				
	Yes	71%	88%	80%	*
	No	29%	12%	20%	
1.3	Compensation for overhead cost increase				
	Yes	32%	57%	45%	
	No	68%	43%	55%	*
1.4	Compensation for profit loss				
	Yes	11%	31%	21%	
	No	89%	69%	79%	*
2	Adjustment of project duration and cost in case the employer gives an order to cancel some part of the work				
	What should be the adjustment in this case?				
2.1	Reduction of construction time				
	Yes	50%	30%	40%	
	No	50%	70%	60%	*
2.2	Reduction of direct cost				
	Yes	65%	77%	71%	*
	No	35%	23%	29%	
2.3	Reduction of overhead cost				
	Yes	29%	23%	26%	
	No	71%	77%	74%	*
2.4	Reduction of profit				
	Yes	15%	11%	13%	
	No	85%	89%	87%	*
3	Compensation to the contractor in case the contract allows the employer to give an order to change the scope of work				
3.1	Should the contractor be compensated in this case?				
	Yes	77%	85%	81%	*
	No	23%	15%	19%	

Table J.5.7.3 (continued) Appropriate approach for writing contract conditions related to the issues of compensation to contractor for the effects of employer's order to change in scope of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
4	Types of time loss that can be claimed in case the employer gives an order to change the scope of work				
	What types of time loss should the contractor be able to claim in this case?				
4.1	Time waiting for the detail of work modification				
	Yes	72%	81%	76%	*
	No	28%	19%	24%	
4.2	Time of preparation for construction operations				
	Yes	33%	55%	44%	
	No	67%	45%	56%	*
4.3	Additional time due to additional work or modification of the work				
	Yes	78%	89%	83%	*
	No	22%	11%	17%	
4.4	Time loss due to decrease in productivity				
	Yes	24%	40%	32%	
	No	76%	60%	68%	*
5	Types of direct cost increase that can be claimed in case the employer gives an order to change the scope of work				
	What types of direct cost increase that the contractor should be able to claim in this case?				
5.1	Expense during suspension period				
	Yes	41%	59%	50%	
	No	59%	41%	50%	*
5.2	Expense that cannot be refunded from the supplier/subcontractor				
	Yes	41%	72%	56%	*
	No	59%	28%	44%	
5.3	Expense due to additional work or modification of the work				
	Yes	76%	81%	78%	*
	No	24%	19%	22%	
5.4	Additional cost due to material price increase				
	Yes	54%	71%	62%	*
	No	46%	29%	38%	
5.5	Additional expense due to decrease in productivity				
	Yes	20%	33%	27%	
	No	80%	67%	73%	*

Table J.5.7.4 Appropriate approach for writing contract conditions related to the issues of submission of claim for the effects of employer's order to change the scope of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Claim submission				
1.1	What is a reasonable timeframe after receiving the order within which the contractor should submit their claim for compensation?				
	≤15 days	100%	19%	59%	
	≤30 days	77%	49%	63%	*
	Before project ends	39%	74%	57%	
	No limitation	20%	100%	60%	

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Table J.5.7.5 Appropriate approach for writing contract conditions related to the issues of adjustment of the price of designated phases of the work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Adjustment of the price of designated phases of the work in case the modified work was listed in a phase of the work				
	How should the price of designated phases of the work be adjusted in this case?				
1.1	Additional work				
	Increase the price of that phase	64%	100%	82%	*
	Increase the price of the last phase	100%	32%	66%	
1.2	Deducted work				
	Reduce the price of that phase	100%	59%	79%	*
	Reduce the price of the last phase	31%	100%	66%	
2	Adjustment of the price of designated phases of the work in case the modified work was not listed in any phase of the work				
	How should the price of the designated phases of the work be adjusted in this case?				
2.1	Additional work				
	Increase the price of a closely related phase	60%	100%	80%	*
	Increase the price of the last phase	100%	24%	62%	
2.2	Deducted work				
	Reduce the price of a closely related phase	100%	57%	78%	*
	Reduce the price of the last phase	42%	100%	71%	

Table J.5.7.6 Appropriate approach for writing contract conditions related to the issues of adjustment of fine rate

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Adjustment of the daily rate of fine for the delay of the work				
1.1	Should the fine rate be increased in case the contract price of the project is increased?				
	Yes	70%	58%	64%	*
	No	30%	42%	36%	
1.2	Should the fine rate be reduced in case the contract price of the project is reduced?				
	Yes	65%	68%	66%	*
	No	35%	32%	34%	

Table J.5.8.1 Appropriate approach for writing contract conditions related to the issues of the approach assess the effect of undesirable events on a construction activity

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
1	Approach to assess the effect of undesirable events on a construction activity				
	How should the following effect on construction activity be assessed?				
1.1	Length of time for repairing work damage				
	Comparing actual time with planned time	50%	41%	46%	*
	Specifying the length of time that the contractor spent to fix the damage	20%	25%	22%	
	Estimated from the quantity of the damaged work to be repaired	29%	34%	32%	
1.2	Length of time of preparation for construction operations after stopping or suspension				
	Specifying the actual length of time that the contractor spent for the preparation	50%	63%	57%	*
	Estimated from the normal preparation time that is acceptable to the industry sector	50%	37%	43%	
1.3	Time loss due to decrease in productivity				
	Comparing actual time with planned time	55%	62%	59%	*
	Comparing productivity rate before and after the event.	45%	38%	41%	
1.4	Time loss due to differing site condition				
	Comparing actual time with planned time	30%	37%	33%	
	Specifying the actual length of time that the contractor was affected.	70%	63%	67%	*
	Comparing the expected length of time for working under actual conditions with that under expected conditions	0%	0%	0%	
1.5	Time loss due to the employer's order to change the scope of work				
	Comparing actual time with planned time	26%	15%	20%	
	Specifying the actual length of time that the contractor was affected	18%	52%	35%	
	Estimated from the quantity of work that was modified by the employer's order	57%	33%	45%	*

Table J.5.8.2 Appropriate approach for writing contract conditions related to the issues of the adjustment of actual construction time

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Adjustment of actual construction time				
1.1	Should the actual construction time to be used for assessing the effect of undesirable events on a construction activity be adjusted if the contractor does not operate the construction effectively?				
	Yes	65%	52%	58%	*
	No	35%	48%	42%	

Table J.5.8.3 Appropriate approach for writing contract conditions related to the issues of projection of the length of time for the operation

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Projection of the length of time for operations				
1.1	Additional time to cover the expected increase in operation time due to risks assigned to the contractor				
	Yes	79%	92%	86%	*
	No	21%	8%	14%	
1.2	Additional time to cover the expected increase in operation time due to the limitations of the resources of the contractor				
	Yes	50%	84%	67%	*
	No	50%	16%	33%	

Table J.5.8.4 Appropriate approach for writing contract conditions related to the issues of assessment of the effect of the event on completion date of the project

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Type of schedule program to be used as reference for the assessment of the effect of the event				
1.1	The schedule program to be used as reference for the assessment of the effect				
	Original master plan	34%	32%	33%	
	Recently updated master plan	28%	30%	29%	
	Master plan updated to reflect the status before the undesirable event occurs	38%	38%	38%	*
2	Assessment of the effect of the event on the completion date of the project				
2.1	Considering the limitation of the resources of the contractor available for construction operations				
	Yes	44%	73%	59%	*
	No	56%	27%	41%	
2.2	Approach to assess the effect of the event on the completion date of the project				
	Negotiation	26%	49%	37%	
	Critical path method (CPM)	74%	51%	63%	*

Table J.5.9.1 Appropriate approach for writing contract conditions related to the issues of definition of direct cost

No	Issues	% of Acceptability			Appropriate Approach
		Employer	Contractor	Average	
1	Expenses included in direct costs				
	Are the following expenses included in direct costs?				
1.1	The payroll of the contractor's employees on site				
	Yes	47%	38%	42%	
	No	53%	62%	58%	*
1.2	Specialized consultant's fee				
	Yes	20%	19%	19%	
	No	80%	81%	81%	*
1.3	Rental of the site office/worker's camp				
	Yes	39%	35%	37%	
	No	61%	65%	63%	*
1.4	The contractor's HO expenses				
	Yes	25%	19%	22%	
	No	75%	81%	78%	*
1.5	The contractor's all risk insurance cost				
	Yes	28%	21%	24%	
	No	72%	79%	76%	*
1.6	The contractor's capital expense				
	Yes	42%	29%	35%	
	No	58%	71%	65%	*
2	Definition of labor cost				
2.1	Does labor cost include related expenses such as fringe benefits?				
	Yes	60%	50%	55%	*
	No	40%	50%	45%	
3	Definition of material cost and equipment cost				
3.1	Does material cost and equipment cost include related expenses such as transportation/mobilization costs?				
	Yes	83%	77%	80%	*
	No	17%	23%	20%	

Table J.5.9.2 Appropriate approach for writing contract conditions related to the issues of approach to assess the effect of the event on direct cost of performing each item of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Approach to assess the effect on the direct costs to perform each item of work				
	How should the following effects on direct costs be assessed?				
1.1	Additional expense for repairing the work damage				
	Comparing actual expense with the cost that was proposed in the BOQ	29%	24%	27%	
	Comparing actual expense with the cost that was expected to be spent	34%	40%	37%	*
	Specifying a list of actual expenses that were related to the repairing	25%	26%	25%	
	Estimated from the quantity of damaged work to be repaired	12%	10%	11%	
1.2	Additional expense due to the employer's request for a specified product				
	Comparing actual expense with expense that was proposed in the BOQ	21%	21%	21%	
	Comparing actual expense with expense that was expected to be spent	20%	28%	24%	*
	Specifying a list of actual costs that were related to the changing of the product	9%	24%	17%	
	Comparing marketing price with the price that was proposed in the BOQ	28%	12%	20%	
	Comparing marketing price with the price that that was expected to be spent	21%	16%	18%	
1.3	Additional expense during the stop or suspension period				
	Specifying a list of actual expenses that incurred during the stop or suspension period	41%	51%	46%	
	Estimated from the reasonable amount of resources to be used per day, and the duration of suspension	59%	49%	54%	*

Table J.5.9.2 (continued) Appropriate approach for writing contract conditions related to the issues of approach to assess the effect of the event on direct cost of performing each item of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1.4	Additional expense due to material price increase				
	Comparing actual expense with cost that was proposed in the BOQ	17%	25%	21%	
	Comparing actual expense with cost that was expected to be spent	16%	20%	18%	
	Comparing actual unit price with unit price that was proposed in the BOQ	32%	28%	30%	
	Comparing actual unit price before and after the occurrence of the affecting event	34%	27%	30%	*
1.5	Additional expense due to decrease in productivity				
	Comparing actual expense with cost that was proposed in the BOQ	41%	52%	47%	
	Comparing actual unit cost rate before and after the occurrence of the affecting event	59%	48%	53%	*
1.6	Additional expense due to differing site conditions				
	Comparing actual expense with cost that was proposed in the BOQ	22%	19%	21%	
	Comparing actual expense with cost that was expected to be spent	17%	15%	16%	
	Specifying a list of actual expenses that incurred due to differing site conditions	21%	31%	26%	*
	Comparing expected expense for working under actual conditions with the cost that was proposed in the BOQ	18%	24%	21%	
	Comparing expected expense for working under actual conditions with that under expected condition	21%	12%	16%	

Table J.5.9.2 (continued) Appropriate approach for writing contract conditions related to the issues of approach to assess the effect of the event on direct cost of performing each item of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1.7	Additional expense due to change in the scope of work				
	Comparing actual expense with cost that was proposed in the BOQ	30%	32%	31%	
	Comparing actual expense with expected cost for performing the work according to the contract	20%	18%	19%	
	Specifying a list of actual expenses that incurred due to the change	16%	20%	18%	
	Estimated from quantity of the work that was modified	34%	30%	32%	*

Table J.5.9.3 Appropriate approach for writing contract conditions related to the issues of adjustment of actual expense of construction

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	The adjustment of the actual expenses of construction				
1.1	Should the actual expenses of the contractor to be used for assessing the compensation be adjusted if the contractor does not operate the construction effectively?				
	Yes	68%	52%	60%	*
	No	32%	48%	40%	

Table J.5.9.4 Appropriate approach for writing contract conditions related to the issues of declaring actual expense

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Declaring actual expenses				
1.1	Does the contractor have the duty to declare actual expenses?				
	Yes	71%	43%	57%	*
	No	29%	57%	43%	
1.2	Does the acceptance of the declaration without any argument (within a reasonable timeframe) mean the employer agrees that the declared items are correct?				
	Yes	75%	81%	78%	*
	No	25%	19%	22%	
1.3	What is the reasonable timeframe for the employer to make an argument against the expenses declared by the contractor?				
	≤15 days	33%	100%	66%	
	≤30 days	86%	65%	75%	*
	Before project ends	100%	7%	54%	
	No limitation				

Table J.5.9.5 Appropriate approach for writing contract conditions related to the issues of approach to assess the cost of work

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Adjustment of the quantity and unit cost to cover the cost of material loss				
1.1	Should the quantity of the work be adjusted to cover the expected cost of material loss?				
	Yes	72%	83%	77%	*
	No	28%	17%	23%	
1.2	Should the unit price of the work be adjusted to cover the expected cost of material loss?				
	Yes	53%	76%	65%	*
	No	47%	24%	35%	
2	Approach to determine the unit rate in case its rate cost is specified in BOQ				
2.1	Should the unit rate specified in BOQ be used to assess related direct costs if the modified work has a unit price specified in the BOQ?				
	Yes	78%	63%	71%	*
	No	22%	37%	29%	
2.2	Should there be an adjustment in unit cost if the quantity of work is changed dramatically?				
	Yes	69%	84%	76%	*
	No	31%	16%	24%	
2.3	Should there be an adjustment in unit cost if the employer gives an order to perform the work beyond the stipulated completion date of the project?				
	Yes	66%	90%	78%	*
	No	34%	10%	22%	
3	Approach to determine the unit rate in case the cost rate is not specified in BOQ				
3.1	What approach is appropriate for determining the unit rate in case the cost rate is not specified in BOQ?				
	Use the average market rate	74%	51%	63%	*
	Determine from the actual expenses of the contractor	26%	49%	37%	

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Table J.5.9.6 Appropriate approach for writing contract conditions related to the issues of assessment of the cost of deducted work

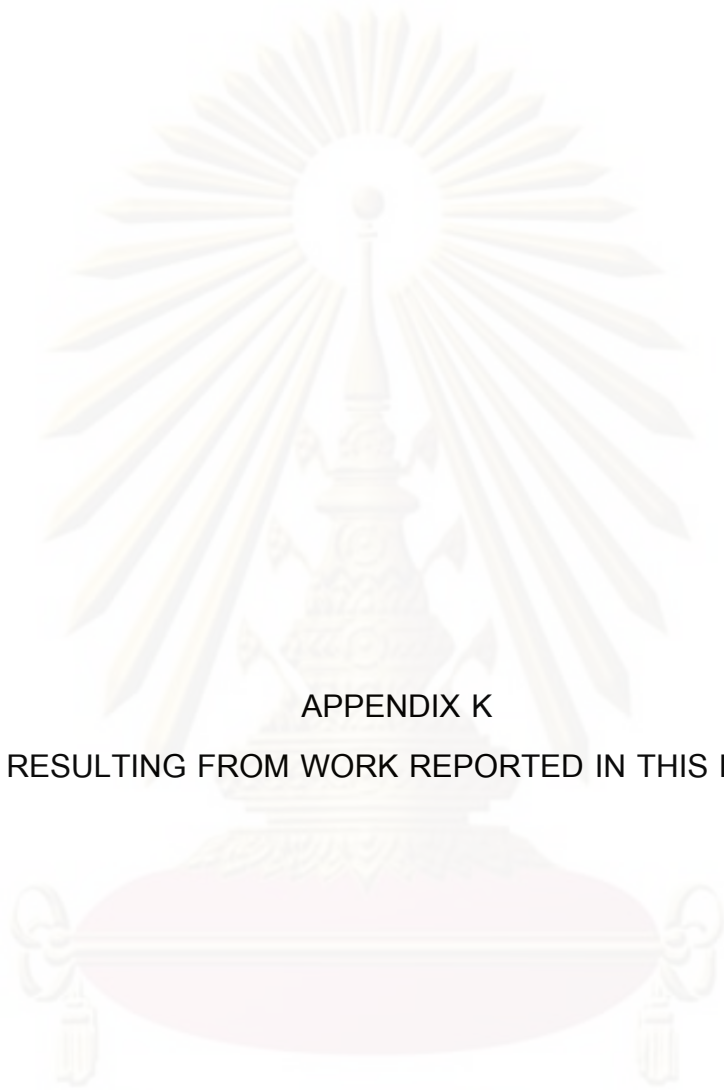
No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Approach to assess the cost of deducted work				
1.1	How should the cost of the cancelled/reduced work be assessed if the quantity specified in BOQ is less than the actual quantity?				
	Use the total cost	16%	17%	17%	
	Calculate from the quantity of work and proposed unit price	84%	83%	83%	*
1.2	How should the cost of the cancelled/reduced work be assessed if the quantity specified in BOQ is more than the actual quantity?				
	Use the total cost	15%	19%	17%	
	Calculate from the quantity of work and proposed unit price	85%	81%	83%	*

Table J.5.10.1 Appropriate approach for writing contract conditions related to the issues of the assessment of compensation for overhead cost increase and for profit loss

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
1	Approach to assess compensation for overhead cost increase				
	How should the overhead costs be compensated in the following conditions?				
1.1	The undesirable events affect only the construction duration				
	Compensate based on the increase in project duration	28%	42%	35%	*
	No compensation	28%	8%	18%	
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event.	28%	32%	30%	
	Compensate for only the expected additional overhead costs due to the affecting event.	17%	18%	18%	
1.2	The undesirable events affect only the construction cost				
	No compensation	45%	15%	30%	
	Compensate based on the increase in project cost	28%	46%	37%	*
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event.	19%	34%	27%	
	Compensate for only the expected additional overhead costs due to the affecting event.	8%	5%	6%	
1.3	The undesirable events affect both the duration and cost of construction				
	Compensate based on the increase in project duration	21%	25%	23%	
	Compensate based on the increase in project cost	33%	25%	29%	
	Compensate for specific actual overhead costs that can be shown to be due to the affecting event	29%	35%	32%	*
	Compensate for only the expected additional overhead costs due to the affecting event.	17%	16%	16%	

Table J.5.10.1 (continued) Appropriate approach for writing contract conditions related to the issues of the assessment of compensation for overhead cost increase and for profit loss

No	Issues	% of Acceptability			Appropriate approach
		Employer	Contractor	Average	
2	Approach to assess compensation for profit loss				
	How should profit loss be compensated in the following conditions?				
2.1	The undesirable events affect only the construction duration				
	Compensate based on the increase in project duration	42%	61%	52%	*
	No compensation	58%	39%	48%	
2.2	The undesirable events affect only the construction cost				
	No compensation	46%	24%	35%	
	Compensate based on the increase in project cost	54%	76%	65%	*
2.3	The undesirable events affect both the duration and cost of construction				
	Compensate based on the increase in project duration	25%	20%	23%	
	Compensate based on the increase in project cost	75%	80%	78%	*



APPENDIX K

ARTICLES RESULTING FROM WORK REPORTED IN THIS DISSERTATION

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ARTICLES RESULTING FROM WORK REPORTED IN THIS DISSERTATION

Published

- Suriyanon, N.; Chovichien, V. 2009. Applying Conjoint Analysis to Study Attitude of Thai Government Organizations. The Australasian Journal of Construction Economics and Building 9(1): 45-54.

Accepted for publication

- Suriyanon, N.; Chovichien, V. 2009. A study on attitude of Thai contractors towards the restrictions of their rights to claim compensation for unfavorable effects from undesirable events. International Journal of Construction Project Management (Accepted to be published in the 2nd issues)
- Suriyanon, N.; Chovichien, V. 2009. Issues Related to Employer's Omission Order on Construction Works. The 22th KKCNN Symposium on Civil Engineering

On reviewing process

- "Study of the attitudes of people in Thai construction industry on issues related to delay in approval of submittals" was submitted to Journal of Construction in Developing Countries
- "Completeness and appropriateness of FIDIC's Force Majeure clauses" was submitted to the Engineering, Construction and Architectural Management
- "Conceptual framework for analysis of standard contract clauses" was submitted to International Journal of Construction Management
- "Applying choice based conjoint analysis for allocating responsibility for the effects of disturbing events" was submitted to International Journal of Construction Education and Research

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Mr. Natee Suriyanon was born in 1975. He received a Bachelor's degree in Civil Engineering from Chiang Mai University with second class honors in 1996 and received a Master's degree in Construction Engineering and Management from the University of Michigan in 1998. He has been working as a lecturer at Mahanakorn University of Technology since 1999 where he lectures both graduate and undergraduate courses. He also lectures a graduate course at Chiang Mai University as visiting lecturer.



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