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Attitudes of People in the Thai Construction Industry Sector on Issues Related to Delay in the Approval of Submittals

Visuth Chovichien[1] and *Natee Suriyanon[2]

Abstract: This study investigated attitudes in the Thai construction industry sector towards 21 issues related to "delay in the approval of submittals" that may initiate conflicts among various parties. Knowledge gained from this study can be applied to the analyses of the completeness and appropriateness of contract conditions and to improve contract drafting. The attitudes of the majority of people in the industry towards several issues related to the time frame for the approval of submittals, compensation for cost increases and profit losses, and time frames for notifications of delayed approval and claim submission were found to be inconsistent with existing conditions in standard contracts. Various issues that are not covered in the standard contract forms, such as the time frame for providing reminders and the types of time loss and direct costs that can be claimed, were also found to have high tendencies to initiate conflicts between contracting parties. Finally, we also found that the organisational affiliation of the respondents (i.e., employer or contractor) influenced their attitudes towards some, but not all, contractual issues.

Keywords: Attitudes, Delay, Approval, Submittals, Thailand

INTRODUCTION

Employers use drawings, specifications, payment schedules, and other contract documents as tools to communicate work requirements to the contractor. Because a construction project is a complex task involving numerous work items, the employer may not be able to adequately communicate all the project requirements to contractors using these basic forms of information transmittal. Additionally, omissions, errors and inconsistencies are occasionally found in the contract documents provided by the employer, causing additional ambiguities and incorrect interpretations of the requirements.

To help prevent and resolve such misunderstandings, the practice of having the contractor present submittals to

[1]Department of Civil Engineering, Chulalongkorn University, Bangkok, Thailand
[2]Department of Civil Engineering, Mahanakorn University of Technology University, Bangkok, Thailand
*Corresponding Author: nsuriyan@hotmail.com

the employer has become a significant procedure in many construction projects. Submittals in construction industry may include shop drawings, material samples, or other requirements, usually necessitating the owner's approval. The contractors' understanding of the project requirements are shown to the employers via these submittals. With the approval of a submittal, the employer confirms that the particular submittal conforms to the project requirements and permission is granted for the contractor to perform the related work. Conversely, an employer can notify the contractor of any deviation of the submittal from the actual requirement by rejecting the submittal before any costs are incurred (Clough and Sears, 1994; Edgerton and MacDermott, 1996; Jacobsen, 1997; Civil Engineering Link, 2009).

The approval process sometimes causes problems for the contracting parties, as evidenced by prior studies showing that delayed employer actions, including late approval of submittals, are a common cause for contractor compensation claims (Yogeswaran et al., 1998; Zaneldin, 2006). Therefore, to effectively manage conflicts between contracting parties caused by delayed submittal approval, clauses covering issues related to this delay should be included in the construction contract.

To draft (analyse) contract conditions related to delay in the approval of submittals requires information about the attitudes of people in the construction industry towards the important issues related to approval delay, such as contractors' rights to claim for compensation and time frames for claim notification. Construction contracts that have several contract conditions that are inconsistent with the attitudes of the majority of people in the construction industry tend not to be used by the industry. Moreover, data on the attitudes of people in the construction industry toward issues related to delay in the approval of submittals can also be used to assess the probability that these issues will initiate conflicts between contracting parties. Probability of initiating conflict is one of the indexes indicating the level of importance of each issue considered. By providing this data, the relative levels of importance of issues that are not covered by the existing contracts can be determined.

An intensive literature review revealed that there have been very few studies on the attitudes of various parties in the construction industry towards contracting issues. Most, if not all, of these studies were done by a single group of investigators, namely, Scott and colleagues (Scott, 1993, 1997; Harris and Scott, 2000, 2001; Scott et al., 2004; Scott and Harris, 2004). These studies focused mainly on issues related to "delay claim". None of the research studies in the past have investigated the attitudes of people in the construction industry towards issues related to delay in the approval of submittals. Therefore, there remains a lack of

knowledge about these attitudes, which is needed for the analysis of contract clauses related to these issues.

To fill this knowledge gap, in this study, the attitudes of people in the construction industry sector towards issues related to "delay in the approval of submittals" that may initiate conflicts between contracting parties were investigated. The probability that each issue related to delays in submittal approval initiated conflict was also determined to indicate the level of importance of these issues in cases where they are not covered by the contract. Finally, to make full use of the data on industry attitudes identified in this survey, the data were also used to analyse whether the affiliation of the respondents with their particular organisations (either employer or contractor) influenced their attitudes towards each contractual issue.

PROCESS TO IDENTIFY THE ISSUES RELATED TO "DELAY IN THE APPROVAL OF SUBMITTALS" THAT MAY INITIATE CONFLICTS BETWEEN CONTRACTING PARTIES

The construction contract is a tool used to prevent possible conflicts between the contracting parties. It should therefore cover all issues that may initiate conflicts between them. To develop a list of the issues related to delay in the approval of submittals that may initiate conflicts, consultation documents from contracting parties related to legal issues in the contract and seven contract standard forms were studied. Contractors in the Thai construction industry were also interviewed to identify conflict-initiating issues that were not found in the document studies.

Data from the Study of Consultation Documents from Contracting Parties Related to Legal Issues in the Contract

By studying this type of document, the researchers determined which issues in the contract were legally unclear to the contracting parties and where they may have different opinions about the issues. Conflict between contracting parties may certainly be initiated by issues for which the parties have different attitudes. In Thailand, the Regulatory Authorities for Procurement Regulations, within the Prime Minister's Office, is the organisation that Thai government organisations (as employers) and Thai contractors can consult on legal issues in their contracts. Therefore, the decisions of the Regulatory Authorities for the Procurement Regulations (RAPR) were studied in this work.

From the study of RAPR decisions, four cases were found to be related to delays in submittal approvals. The issues that may initiate conflict or cause confusion for the contracting parties in these cases concerned the following:

- Time frame for approval of the submittal. One RAPR case decision (No. 1305/6327) was found to be

related to the time frame within which the employer had to do his duty. In this case, the contracting parties had different opinions on whether the employer's approval of the construction material to be used in the project constituted an approval delay that affected the construction operation.

- Compensation to the contractor for the unfavourable effects of delays in the approval of submittals. Two cases (RAPR decisions Nos. 1407/7349 and 1407/7394) were found to be related to compensation to the contractor for the unfavourable effects of approval delays. The issue causing conflict or confusion in these cases was the extension of construction time (or a reduction in the fine for delayed completion of the work) to compensate for the unfavourable effect of delays in the approval of construction materials and information from specified testing.
- In one case (RAPR decision No.1305/6929), the conflict between the employer and the contractor was about the length of time for construction, which was affected by a delay in the approval of construction material of the employer.

Data from the Study on Standard Contract Forms

By studying the standard contract forms, issues related to delay in the approval of submittals that are included in each standard form were identified. The main purpose of creating standard contract forms is to prevent or reduce conflicts between contracting parties by clarifying the duties and responsibilities of the contracting parties. Therefore, we assumed that the issues that are included in the standard contract forms are those issues that may lead to conflict and need to be clarified. Seven standard contract forms were studied: AIA, EJCDC, FIDIC, ICE, JCT, NEC3 and SCTG.

i. AIA - General Conditions of Contract for Construction. (1997). AIA Document A201, published by American Institute of Architects.
ii. EJCDC - Standard General Conditions of the Construction Contract. (2002). Published by Engineers Joint Contract Document Committee.
iii. FIDIC - Conditions of Contract for construction, First Edition. (1999). Published by International Federation of Consulting Engineers.
iv. ICE - The ICE Conditions of Contract, Seventh Editions. (1999). Published by Institute of Civil Engineers, Association of Consulting Engineers, and Federation of Civil Engineering Contractors.

v. JCT - Standard Building Contract With Quantities. (2005). Published by The Joint Contracts Tribunal LTD.
vi. NEC3 - The Engineering and Construction Contract, Third Edition. (2005). Published by The Institution of Civil Engineers.
vii. SCTG - Standard contract of Thai government (example of contract annexed to the procurement regulation of the Prime Minister's office).

Important issues related to delay in the approval of submittals that were included in the standard contract forms were about the following:

- Time frame for the approval of each type of submittal. In NEC3 and ICE, there are contract conditions specifying the time frame for the employer to approve specific types of submittals. NEC3 clause 31.3 allows two weeks for an employer to approve the construction schedule, whereas IEC clauses 14(2) and 14(7) allow 21 days for an employer to approve both the construction schedule and the construction method. In contrast, AIA and EJCDC do not clearly specify the time frame for the approval of a submittal. AIA clause 4.2.7 requires that the employer (architect) review and approve the contractor's submittals or take other actions promptly so as to cause no delay in the work. EJCDC clause 6.17 only requires that the employer (engineer) provide timely reviews of the shop drawings in accordance with a submission schedule that is acceptable to the employer (engineer).
- Compensation to the contractor for the unfavourable effects of delays in submittal approval. All seven standard contract forms studied allowed the contractor to claim for an extension of construction time due to delay (or negligence) by the employer in approving submittals. The relevant clauses providing are AIA 8.3.1, EJCDC 12.03(A), FIDIC 8.4 (e), ICE 14 (8), JCT 2–28 and 2–29, and SCTG 22. Only EJCD, ICE, and JCT mention compensation for negative effects on contractor expense. EJCD clause 12.03 (B) mentions that the contractor shall be entitled to an equitable adjustment in the contract price if the employer is responsible for the delay. ICE clause 14(8) states that the contractor shall be paid a reasonable amount in the case that the employer (engineer)'s consent to the proposed methods of construction is unreasonably delayed. JCT clauses 4–23 and 4–24 allow the contractor to claim for direct losses and/or expenses for negative effects due to acts of omission by the employer (engineer).
- Duty of the contractor to notify the employer of approval delay. EJCDC clause 10.05 (B), FIDIC clause 20.1, and SCTG clause 22 state that the

contractor must notify the employer of the occurrence of the event giving rise to the claim (including delay in the approval of submittal) to be able to claim for an extension of construction time and/or additional expense. The time frame after the occurrence of an event giving rise to the claim in which the contractor must notify the employer is specified as 30 days in EJCDC clause 10.05 (B) and 28 days in FIDIC Clause 20.1. SCTG clause 22 states that the contractor must notify the employer within 15 days of the end of the event. FIDIC clause 20.1 and SCTG clause 22 state that a contractor's failure to notify their employer of the event giving rise to the claim within the specified time frame means the contractor loses the right to claim for compensation.

- Time frame for claim submission. AIA, FIDIC, EJCDC, and ICE specify varying time frames for claim submission. AIA clause 4.3.2 states that the contractor must submit the claim within 21 days after the occurrence of the event giving rise to the claim. FIDIC clause 20.1 states that the contractor must submit the claim within 42 days after the contractor became aware of (or should have become aware of) the event. EJCDC clause 10.05 (B) states that the contractor must submit the claim within 60 days after the start of the event giving rise to the claim. ICE clauses 44 and 53(2) state that the contractor must submit the claim within 28 days after the occurrence of the event giving rise to the claim.

Data from the Interviews with Thai Contractors

In the interviews with the contractors in Thai construction industry, several other important issues related to delay in submittal approvals that were not identified in the document studies were raised. These issues were related to:

- Duty of the contractor to remind the employer of the need for timely approval. One of the interviewees raised an issue that some employers may reject the contractor's claim for compensation for late employer approval based on the excuse that the employer did not know that the submittals must be approved within a certain time and should therefore be reminded by the contractor of the necessity of approving the submittal on time. Moreover, he also mentioned that the employer may reject the claim in cases where this reminder is not made within a reasonable time frame.
- Compensation to the contractor for the negative effects of delay in the approval of submittals. Several interviewees mentioned that contracting parties usually have conflicts over issues related to the types of time loss and types of direct cost increases that can be claimed for.

Identification of the Issues that may Initiate Conflicts

Based on the data from the document study and the interviews with Thai contractors, 21 issues that may initiate conflict were identified, as listed in Table 1.

RESEARCH METHODOLOGY

Questionnaire Survey and Data Collection

In previous studies by Scott et al., the attitudes of construction practitioners regarding issues related to "delay claims" were studied by fully developed interview surveys. This type of data-gathering tool was appropriate for the previous studies, as the questions were meant to be thorough in dealing with complicated circumstances. Conversely, the data-gathering tool used in this study required only questionnaires, because the questions related to delay in the approval of submittals were relatively simple. The additional explanation done in the interviews can thus be omitted, and questionnaires can be done more widely and at a lower cost than interviews.

Representative samples for this study were classified into two groups. The first study group includes employees and consultants of Thai government organisations, the biggest group of employers in the Thai costruction industry. The second study group includes employees of Thai contractors. The process of data collection from these two groups of people consisted of two steps. In the first step, 151 Thai government organisations and 40 construction consultant companies were randomly selected from a list of Thai government organisations and from the companies listed as construction consultants for Thai government organisations, and eighty-eight construction companies were randomly selected from among the members of the Thai Contractors Association. In the second step, during March, 2008–April, 2008, questionnaires were sent to each organisation, with the number of questionnaires depending on the size of each organisation. To obtain more meaningful results for this study, the questionnaires directed the organisations that the target respondents must hold positions at the level of construction supervisor or higher.

The questionnaire used in this study consisted of two parts. In the first part, each respondent was asked to provide general information about the organisation and their construction experience. Data from this section were collected not only for constructing a general profile of the respondents but also for screening unqualified questionnaires. The second part of the questionnaire consisted of five sections covering five categories of issues related to employer's delays in approving submittals that may initiate conflicts between contracting parties.

Table 1. List of Issues Related to Delay in Approval of Submittals that may Initiate Conflict between Contracting Parties

Categories	Subcategories	Issues that may initiate conflict
Time frame for approval of submittal	Time frame for approval of submittal	Construction schedule
		Construction method
		Shop/working drawing
		Construction material
		Information from specified testing
Duty to remind employer of timely approval	Duty to remind employer of timely approval	Contractor's duty to remind employer of approval within the time frame
		Time frame for giving reminder
Compensation to contractor for unfavorable effects of delay in approval of submittals	Type of compensation to contractor	Extension of construction time
		Compensation for direct cost increase
		Compensation for overhead cost increase
		Compensation for profit loss
	Type of time loss that can be claimed for	Waiting time for employer to approve submittal
		Time of preparation for construction operation after receiving the employer's approval
		Time loss due to productivity loss
	Type of direct cost increase that can be claimed for	Expense during project suspension time
		Additional cost due to material price increase
		Additional expense due to productivity loss
Duty to notify employer of approval delay	Duty to notify employer of approval delay	Duty of contractor to notify employer of approval delay
		Time frame for notification
		Meaning of failure to notify employer of approval delay
Time frame for claim submission	Time frame for claim submission	Time frame for claim submission

This part particularly covered the time frame for the approval of each type of submittal, the duty of the contractor to remind the employer of the need for timely approval, the types of compensation made to the contractor, the duty of the contractor to notify the employer of approval delays, and the time frame for submitting claims. Closed-end questions were used in this part of the questionnaire to survey the attitudes of the respondents towards these issues.

Approach to Survey Data Analysis

In their prior studies, Scott et al. analysed and criticised the data qualitatively according to the type of respondent. The current study included additional quantitative analysis on the data available from the questionnaire survey to develop a wider knowledge base. This analysis consisted of four steps: (1) determining the attitudes of people in both the employer and contractor organisations towards each issue related to delays in submittal approval, (2) determining the attitudes of people in the construction industry sector towards each issue related to approval delay by giving the attitudes of the personnel in the employer and contractor organisations equal weighting, (3) calculating the probability of conflict between contracting parties by applying one of the four equations developed by the author, and (4) performing chi-square tests to determine whether the organisational affiliations of the respondents (employer or contractor) influenced their attitudes towards each contractual issue. The details of the four equations developed for calculating the probability of conflict between contracting parties in the third step are presented in the next section.

Assessment of the Probability of Conflicts between Contracting Parties

The probability that an issue will initiate conflict differs from the probability that the contracting parties have different attitudes. Although conflict may be initiated by differences in the attitudes of the contracting parties, attitude differences do not always result in conflict. For example, there will be no conflict between contracting parties if the contractor thinks that he has no right to claim for compensation, even if the employer thinks that the contractor does have this right. Conflict will not happen because the contractor will not make a claim in this case. Conversely, conflicts are more likely to occur if an action by one contracting party has an undesirable effect on the other party, such as in the case that the contractor claims for compensation when he believes he has the right to do so, but the employer rejects the claim because he thinks no such right exists.

Based on the this difference in opinions, the process of calculating the probability of conflict consists of three steps: (1) identifying scenarios that initiate conflict between the contracting parties when the attitudes of employers and contractors are in conflict, (2) calculating the probability of occurrence of each scenario, and (3) summing the probabilities of 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 cases where a yes/no question as used to study employer/contractor attitudes, equations (1) and (2) were used to assess the probability of conflict. An example of a yes/no question is "Do you think the contractor has the right to claim for a time extension?" Equation (1) was used to calculate the probability of conflict when the employer answers "no" and the contractor answers "yes". Conversely, equation (2) was used to calculate the probability of conflict when the employer replies "yes" and the contractor replies "no".

$$P = P_{en} * P_{cy} \quad (1)$$

$$P = P_{ey} * P_{cn} \quad (2)$$

Where

P = probability of conflict between contracting parties

P_{ey} = proportion of employers who answer yes

P_{en} = proportion of employers who answer no

P_{cy} = proportion of contractors who answer yes

P_{cn} = proportion of contractors who answer no

In cases when quantitative questions were used to study employer/contractor attitudes, equations (3) and (4) were used to assess the probability of conflict. An example of a quantitative question is "What is a suitable time frame for a contractor to claim for compensation?" Equation (3) was used to calculate the probability of conflict occurring when the value of the employer's response is lower than that of the contractor. Equation (4) was used to calculate the probability of conflict occurring when the value of the employer's response is higher than that of the contractor.

$$P = \sum_{j=1}^{n} (P_{cj} * \sum_{i<j} P_{ei}) \quad (3)$$

$$P = \sum_{i=1}^{n} (P_{ei} * \sum_{j<i} P_{cj}) \quad (4)$$

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

Questionnaire Response and Respondent Profile

The types of organisations that participated in this study, the numbers of their personnel to whom the questionnaires were distributed, and the number of respondents are presented in Table 2.

Six hundred and seventy-four copies of the questionnaire were distributed to the personnel in the employer organisations. Three hundred and seventy-six of them responded and returned the completed questionnaires to the researcher. Five of them were completed by respondents that were not in the target group of this study and were therefore excluded from the study, so only 371 returned questionnaires (55.04%) were included in the analysis (Table 2). The general information about the respondents in this group is as follows: 51% of their organisations completed less than ten construction projects a year, and 76%, 18% and 6% of the respondents were employed by organisations that had annual construction expenses of less than 100 million *baht*, 100–1,000 million *baht* and more than 1,000 million *baht*, respectively. The majority of respondents (67%) had at least ten years of experience in construction, 15% of the respondents had between five and ten years of experience and 18% had less than five years.

Four hundred and seventy-five questionnaires were distributed to the personnel in the contractor organisations. One hundred and seventeen of them responded and returned the completed questionnaires to the researcher. Twenty-eight of them were completed by respondents that were not in the target group of this study and were therefore excluded from the study, so only 89 returned questionnaires (18.73%) were included in the analysis (Table 2). By making direct telephone contact with the companies from which no completed questionnaire were sent back, it was found that the majority of Thai contractors did not want to discuss any contractual issues.

Table 2. The Number of Organisations Companies and their Personnel to which or to whom the Questionnaires were Distributed and the Numbers of Respondents

Type of organisation or company	No. of Organisations/Companies		No. of personnel		No. of questionnaires that met the criteria of inclusion
	to which questionnaires were distributed	responding to questionnaire	to which questionnaires were distributed	responding to questionnaire	
Employer					
Public university	23	19	60	29	29
Division of highway department	54	52	253	140	137
Division of irrigation department	10	9	40	25	26
Local administration unit	64	60	198	133	130
Construction consulting company	40	21	123	49	49
Total	191	161	674	376	371
Contractor					
Limited partnership	32	9	70	37	20
Company limited	52	18	365	58	48
Public company	4	4	40	22	21
Total	88	31	475	117	89

The general information about the respondents in this group is as follows: The majority of respondents (72%) stated that their organisations completed less than ten construction projects a year, and 22%, 52% and 26% of the respondents were employed by the organisations with annual construction incomes of less than 100 million bahts, 100–1,000 million bahts and more than 1,000 million bahts, respectively. The majority of the respondents (59%) had been involved in the construction industry for at least ten years, 17% of the respondents had between five years to ten years of experience in construction and 23% had less than five years.

RESULTS

Time Frames for the Approval of Each Type of Submittal

The data in Table 3 indicate that the majority of people in the Thai construction industry have the perception that one week is a reasonable time frame for approving the construction schedule and method. Regarding the time frame for approving shop/working drawings, approving construction materials and approving information from specified testing, no explicit conclusion can be drawn from the data. The overall proportions of Thai construction industry personnel who replied that one week and two weeks were acceptable time frames were nearly the same. It is also worth mentioning that the attitudes of the majority of employers and of the majority of contractors towards these issues were different. The majority of employers thought that one week, one week and two weeks were reasonable time frames for approving shop/working drawings, approving construction materials and approving information from specified testing, respectively. In contrast, the majority of contractors thought that two weeks, two weeks and one week were reasonable time frames for approving these three types of submittals.

The synthesis of survey data revealed that the acceptable time frames for an employer to approve each type of submittal tended to be different from the employer and contractor viewpoints and so caused conflicts. The probability that the issues of the time frames for approving the construction schedule, approving the construction method, approving shop/working drawings, approving construction materials, and approving information from specified testing would initiate conflict were 22%, 23%, 29%, 29% and 44 %, respectively.

The results of chi-square test indicate that the proportion of Thai employers and the proportion of Thai contractors who preferred each timeframe for approving the four types of submittal, i.e., approving the schedule,

approving the construction method, approving shop/working drawings, and approving construction materials, were not statistically different (asymptotic significance > 0.05). The results of the test, however, indicated that the proportions of Thai employers and Thai contractors who preferred each range of time frame for approving the information from specified testing were statistically different (asymptotic significance = 0.00). Roughly speaking, it can be concluded that the reasonable time frame for approving the information from specified testing tended to be longer from the employer's point of view than that from the contractor's point of view.

Duty of the Contractor to Remind the Employer of the Need for Timely Approval

The survey of attitudes in the Thai construction industry (Table 4) revealed that almost all people surveyed accepted the concept that it is the duty of contractor to remind the employer of the need for approval within a certain time frame. Only 10% of the population in the Thai construction industry did not agree with this concept. The survey also revealed that the majority of the respondents (60%) agreed that one week before the approval deadline was a reasonable time frame for the contractor to give a reminder to the employer.

Assessing the conflict probabilities revealed that the issue of the contractor's duty to notify the employer rarely initiated conflict between contracting parties, the probability being only 6%. However, differences on the issue of the time frame for the contractor to remind the employer had a higher chance of initiating conflict, with a probability of 24%.

Comparing the proportions of employers and contractors who agreed that it is the duty of the contractor to notify the employer beforehand, the proportion of people who agreed (87%) on this issue was lower in the employer group than in the contractor group (93%). The chi-square test, however, revealed that the proportion of Thai employers and contractors who agreed with this idea were not statistically different (asymptotic significance = 0.13); the test also revealed that differences in the proportions of the two study groups that preferred each range of the time frame for contractor to remind the employer beforehand were not statistically significant (asymptotic significance = 0.39).

Table 3. Attitude of People in Thai Construction Industry towards the Issues of Time Frame for Approval Each Type of Submittals

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
1	What is the reasonable time frame for employer to approve construction schedule?				22%	0.07
	1 week	60%	47%	53%		
	2 weeks	33%	42%	37%		
	1 month	7%	11%	9%		
2	What is the reasonable time frame for employer to approve construction method?				23%	0.15
	1 week	60%	48%	54%		
	2 weeks	33%	44%	38%		
	1 month	7%	8%	8%		
3	What is the reasonable time frame for employer to approve shop/working drawing?				29%	0.55
	1 week	45%	39%	42%		
	2 weeks	39%	44%	42%		
	1 month	17%	17%	17%		
4	What is the reasonable time frame for employer to approve construction material?				29%	0.81
	1 week	45%	41%	43%		
	2 weeks	40%	42%	41%		
	1 month	16%	17%	16%		
5	What is the reasonable time frame for employer to approve information from specified testing?				44%	0.00*
	1week	31%	50%	40%		
	2 weeks	45%	40%	43%		
	1 month	24%	10%	17%		

Compensation to the Contractor for Unfavourable Effects of Delay in Submittal Approval

The survey results shown in Table 5 revealed that the majority of people in the Thai construction industry agreed on the need for the adjustment of project duration to compensate for the time loss by the contractor due to the effect of delayed approval of submittals. The majority of the respondents also agreed that compensation for direct cost increases, overhead cost increases and opportunity losses should not be made to the contractor. However, it is noteworthy that the attitudes of the majority of employers differed from those of the majority of contractors regarding the issues of compensation for direct cost increases and overhead cost increases. The majority of employers disagreed with the idea that compensation should be made to the contractor for either direct cost increases (83%) or overhead cost increases (86%), but the majority of contractors (51% and 51%) thought that compensation should be made for these cost increases.

With respect to the issues of the types of time loss and the types of direct cost increases that justified claims for compensation, the majority of people in the Thai construction industry agreed that there should be an adjustment of project duration to compensate for the time spent waiting for an employer to approve a submittal and compensation for the contractor's expenses during project suspension time and for additional direct costs due to material price increases. However, the majority did not think that there should be an adjustment of project duration to account for the preparation time after receiving an approval and time loss due to a loss of productivity, nor should compensation for additional direct costs due to productivity loss be provided. It is also noteworthy that the majority attitudes of the employers and contractors differed on the issue of the contractor's expenses during project suspension time. The majority of employers (58%) thought that there should be no compensation for this type of effect on the contractor's direct cost, but the majority of contractors (72%) did think that there should be compensation.

The results of the probability assessments revealed that many issues in this area had a high tendency to initiate conflict between contracting parties. Six out of the ten issues studied had a greater than 25% probability of initiating conflict. These were: (1) the issue of compensation for the effects on direct costs (42%), (2) the issue of compensation for the effects on overhead costs (43%), (3) the issue of the extension of project duration to compensate for the preparation time after receiving an approval (30%), (4) the issue of the extension of project duration to compensate for time loss due to productivity

Table 4. Attitude of People in Thai Construction Industry towards the Issues of Duty of Contractor to Remind Employer of Timely Approval

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
6	Does contractor have the duty to remind employer of approval within time frame?				6%	0.13
	Yes	87%	93%	90%		
	No	13%	7%	10%		
7	What is the reasonable time frame before the deadline for approving the submittals that the contractor should give reminder to the employer?				24%	0.39
	3 days	27%	20%	24%		
	1 week	58%	63%	60%		
	2 weeks	15%	17%	16%		

loss (35%), (5) the issue of compensation for direct cost increases due to expenses during project suspension time (42%) and (6) the issue of compensation for direct cost increases due to additional expenses because of productivity loss (36%). The chi-square test revealed that the differences in the proportions of employers and contractors who agreed on the studied issues were statistically significant for all issues (asymptotic significance < 0.05).

Table 5. Attitudes in the Thai Construction Industry Sector towards Issues Related to the Types of Compensation Made to the Contractor

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
	What types of compensation should contractor be able to claim in case there is an approval delay?					
8	Extension of construction duration					
	Yes	88%	97%	92%	12%	0.02*
	No	12%	3%	8%		
9	Compensation for direct cost increases					
	Yes	17%	51%	34%	42%	0.00*
	No	83%	49%	66%		
10	Compensation for overhead cost increases					
	Yes	14%	51%	33%	43%	0.00*
	No	86%	49%	67%		
11	Compensation for profit					
	Yes	2%	10%	6%	10%	0.00*
	No	98%	90%	94%		
	What types of time losses should a contractor be able to claim for?					
12	Waiting time for employer to approve submittal					
	Yes	88%	98%	93%	12%	0.01*
	No	12%	2%	7%		

(continued)

Table 5. *(continued)*

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
13	Preparation time for construction operations after receiving the employer's approval					
	Yes	21%	38%	30%	30%	0.00*
	No	79%	62%	70%		
14	Time loss due to productivity loss					
	Yes	17%	42%	30%	35%	0.00*
	No	83%	58%	70%		
	What types of direct cost increases should a contractor be able to claim for?					
15	Expenses during project suspension time					
	Yes	42%	72%	57%	42%	0.00*
	No	58%	28%	43%		
16	Additional costs due to material price increases					
	Yes	76%	90%	83%	22%	0.00*
	No	24%	10%	17%		
17	Additional expenses due to productivity loss					
	Yes	23%	46%	34%	36%	0.00*
	No	77%	54%	66%		

In other words, the percentages of contractors who agreed with the survey questions on the type of compensation to the contractor, the type of time loss and the type of direct cost increase that the contractor can claim were significantly higher than the percentages of the employers who agreed on those issues.

Duty of Contractor to Notify the Employer of Approval Delay

Data from the survey (see Table 6) revealed that almost all the respondents were aware that the contractor had an obligation to notify the employer of approval delays. Fifty-five percent of the Thai construction industry population agreed that the contractor should notify the employer within seven days after the deadline date for the employer to approve the submittal. Additionally, the majority of respondents (74%) agreed that the contractor's failure to notify the employer of approval delays within the time frame specified in the contract meant that the contractor relinquished his right to claim for compensation.

The probability assessment results revealed that the issue of the contractor's duty to notify the employer of the approval delay had a very low tendency to initiate conflict between contracting parties (1%). Conversely, the probability of conflict between contracting parties due to the issue of the reasonable time frame for notification and failure to notify the employer of the event had high tendencies to initiate conflict between contracting parties (probabilities of 38% and 28%, respectively).

Chi-square tests revealed that the difference between the proportions of employers and contractors who agreed on the idea that the contractor has a duty to notify the employer of approval delays were not statistically significant (asymptotic significance = 0.10). However, with respect to the issue of a reasonable time frame for notification of approval delays, the difference between the proportions of employers and contractors who preferred each range for the time frame were statistically different (asymptotic significance = 0.01). Finally, regarding the issue of the meaning of a contractor's failure to notify the employer of approval delays, the test results indicated that the proportion of Thai employers who agreed that failure to notify the employer of approval delay within the time frame specified in the contract (or a reasonable time frame) meant that the contractor gave up the right to claim for compensation was statistically higher than the proportion of Thai contractors that agreed with this statement (asymptotic significance = 0.00).

Time Frame for Submitting the Claim

The survey results listed in Table 7 show that the majority of the Thai construction population (57%) agreed that 15 days after receiving a late submittal approval was a reasonable

Table 6. Attitudes in the Thai Construction Industry Sector towards Issues Related to the Duty of the Contractor to Notify the Employer of Approval Delays

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
18	Does the contractor have a duty to notify the employer of approval delays?				1%	0.10
	Yes	95%	99%	97%		
	No	5%	1%	3%		
19	What is a reasonable time frame after the deadline for approving submittals that the contractor should notify the employer of a late approval?				38%	0.01*
	1 day	21%	17%	19%		
	7 days	60%	49%	55%		
	15 days	19%	34%	26%		
20	Does failure to notify the employer of an approval delay within the time frame specified in the contract (or a reasonable time frame) mean that the contractor relinquishes the right to claim for compensation?				28%	0.00*
	Yes	83%	66%	74%		
	No	17%	34%	26%		

time frame for the contractor to file the claim with the employer. There was a 42% probability of conflict due to the employer's idea of the reasonable time frame for claim submission being shorter than that in the contractor's point of view.

Finally, the chi-square test revealed that the differences in the attitudes of the two study groups towards each range of the time frame for submitting the claim were statistically significant (asymptotic significance = 0.00). Therefore, it can be said that, from the employer's point of view, the reasonable time frame for submitting the claim tended to be shorter than that in the contractor's.

FINDINGS AND DISCUSSION

Attitudes of People in the Construction Industry towards Issues Related to Approval Delay

Based on the survey data on the attitudes of the respondents towards each issue related to approval delay, as determined by giving the attitudes of the personnel in the employer's and contractor's organisations equal weighting, it was found that there are 16 issues for which the majority attitudes of people in the Thai construction industry could be determined (i.e., more than 50% of the respondents had the same opinion). It is also worth mentioning that almost all respondents (more than 90% of population) had the same opinion on five issues, as follows: (1) the contractor has a duty to remind the employer of the need for approval within a certain time frame, (2) project duration should be adjusted to compensate for the effects of late approval, (3) the contractor should not be able to claim compensation for opportunity loss, (4) the time waiting for an employer to approve a submittal should be granted as a project duration extension and (5) direct cost increases due to material price increases should be compensated for.

In contrast, the survey data revealed that attitudes of people in the Thai construction industry towards the issue of a reasonable time frame for approving three types of submittals varied and thus a majority opinion could not be determined; i.e., none of the choices were accepted by more than 50% of the respondents. These three types of submittals were (1) shop drawings, (2) construction materials, and (3) information from specified testing.

It is noteworthy that there were six issues on which the majority of the respondents in the employer organisations and those in the contractor organisations had different attitudes. These issues were: (1) the time frame for approving shop/working drawings, (2) the time frame for approving construction materials, (3) the time frame for approving information from specified testing, (4)

Table 7. Attitudes In The Thai Construction Industry Sector Towards the Issue of the Time Frame for Submitting a Claim

No	Issues	% Employer's personnel who answered	% Contractor's personnel who answered	Average	Probability of conflict	Asymptotic Significance
21	What is a reasonable time frame after receiving a late submittal approval in which the contractor should submit a claim for compensation?				42%	0.00*
	15 days	69%	44%	57%		
	30 days	17%	35%	26%		
	Before project ends	14%	21%	18%		

compensation for direct cost increases, (5) compensation for overhead cost increases, and (6) compensation for the contractor's expenses during project suspension time as a direct cost increase.

Based on the study data, a comparison of the attitudes of the majority of the respondents on the issues related to delays in submittal approval and the clauses related to these issues in the standard contract forms revealed that:

(1) Clauses related to the time frame for submittal approval in various standard contract forms, e.g., NEC3 and ICE, are not consistent with the attitudes of Thai construction personnel. The standard contracts allow employers to approve contractor submittals within two or three weeks; however, according to the findings of this study, the majority of the Thai construction industry people surveyed accepted one week as a reasonable time frame for submittal approval.

(2) Contract conditions in all of the seven standard contract forms allowing the contractor to claim for a time extension to compensate for negative effects due to delayed submittal approval are consistent with the attitudes of the majority of people in the Thai construction industry.

(3) Contract conditions in EJCDC, ICE, and JCT allowing the contractor to claim for direct cost increases, overhead cost increases and profit losses are not consistent with the attitudes of people in the Thai construction industry. According to the findings of this study, the majority of people in the Thai construction industry do not think that the contractor has the right to claim for direct cost increases, overhead cost increases or profit losses.

(4) Contract conditions in EJCDC, FIDIC, and SCTG stating that the contractor has a duty to notify the employer of approval delays are consistent with the attitudes of the majority of people in the Thai construction industry.

(5) The time frames for notification of a delay in submittal approval that are specified in EJCD, FIDIC and SCTG are relatively longer than the time frames that the majority of people in the Thai construction industry think are reasonable. In their opinion, a reasonable time frame for notification of a delay in the approval of a submittal is seven days after the deadline.

(6) Contract conditions in FIDIC and SCTG specifying that failure of the contractor to notify the employer of an approval delay within the time frame specified in the contract means that the contractor loses the right to claim for compensation are consistent with the attitudes of the majority of the respondents.

(7) The time frames for claim submission specified in AIA, FIDIC, EJCDC are not consistent with the time frames that the majority of people in the Thai construction industry think are reasonable. In their opinion, a reasonable time frame for claim submission is 15 days after receiving late approval of a submittal.

The findings of inconsistency between the industry's attitudes towards various issues related to delay in the approval of submittals and the conditions found in the standard contracts implies that the direct application of these standard contracts in the Thai construction industry may not be appropriate. These contracts should be modified, at least with respect to the issues related to delay in the approval of submittals.

Probability of Conflicts Due to the Issues Related to Delays in the Approval of Submittals

According to the study data from on the probabilities of conflicts due to the studied issues, we concluded that most of these issues are important and should be covered by the contract. Among the 21 issues that were studied, 12 issues had high probabilities (more than 25 %) of initiating conflicts between the contracting parties. The five issues related to approval delay with the highest conflict-initiation probabilities, and are thus of particular concern in drafting a contract, were: (1) the time frame for approving information from specified testing (44%), (2) compensation for the effects of the employer's late approval on overhead costs (43%), (3) compensation for the effects of the employer's late approval on direct costs (42%), (4) compensation for direct cost increases due to expenses during project suspension time (42%), and (5) the time frame for submitting a claim to the employer (42%).

It is also worth mentioning that various issues that were not covered by any of the standard contract forms had high tendencies to initiate conflict. These were the issues related to (1) extension of project duration to compensate for preparation time after receiving an approval (30%), (2) extension of project duration to compensate for preparation time for construction operations after receiving the employer's approval (30%), (3) extension of project duration to compensate for time loss due to productivity loss (35%), (4) compensation for direct cost increases due to expenses during project suspension time (42%), and (5) compensation for direct cost increases due to productivity loss (36%). This finding implies that the standard contracts used in the industry remain incomplete, at least regarding the issues related to delay in the approval of submittals. This result also implies that the industry sector has not yet realised the importance of clarifying the understanding of the contracting parties on issues related to delay in the approval of submittals.

Influence of the Respondents' Organisational Affiliation on Attitudes towards the Contractual Issues

The results of chi-square tests revealed that the differences in the proportions of Thai employers and contractors who preferred each questionnaire choice on the contractual issues were statistically significant for 14 issues and nonsignificant for seven issues. The issues in which the differences were statistically significant were: (1) the time frame for approving the information from specified testing, (2) the four issues related to the types of compensation for which the contractor can claim, (3) the three issues related to the types of time loss for which the contractor can claim, (4) the three issues related to the types of direct cost increases for which the contractor can claim, (5) the two issues related to the duty of the contractor to notify the employer of approval delay, and (6) the time frame for claim submission. The issues in which the differences were statistically nonsignificant were (1) the time frame for approving the schedule, (2) the time frame for approving the construction method, (3) the time frame for approving shop/working drawings, (4) the time frame for approving construction materials, (5) the duty of the contractor to remind the employer of the need for timely approval, (6) the time frame for the contractor to give a reminder to the employer beforehand and (7) the duty of the contractor to notify the employer of approval delays. These findings revealed that the organisational affiliation of the respondents (either employer or contractor) had an influence on their attitudes towards some, but not all, contractual issues.

IMPLICATIONS AND LIMITATIONS OF THE STUDY

The findings of this study can be applied to the analysis of the appropriateness and completeness of contract conditions to improve contract writing. The statements in the standards contracts that differ from the opinions of the majority of people in the construction industry, as revealed by this study, should be rewritten or revised to make them consistent with the attitudes of the majority of the respondents. Issues that were shown by this study to have a tendency to initiate conflict but are not covered by these contracts should also be included in the revised contracts. The findings from this survey are clearly related most directly to the Thai construction industry and might not be relevant to other countries. However, due to similarities between the construction industry in Thailand and other developing nations in Southeast Asia, it is believed that the knowledge gained in this study can also be applied in these countries as well.

CONCLUSIONS

The study data revealed that more than 50% of the respondents had the same attitude towards 16 contractual issues. In contrast, the attitudes of people in the Thai construction industry towards the other three contractual issues varied; here, none of the questionnaire choices were accepted by more than 50% of the respondents. It is also noteworthy that the attitudes of the majority of people in the Thai construction industry towards several issues related to the time frame for the approval of submittals, compensation for cost increases and profit losses, and the time frames for notification of delayed approval and claim submission were inconsistent with the existing conditions found in the standard contracts.

The data on the probability of conflicts between contracting parties indicated that the issues related to delays in approving submittals were critical and should be covered in the contract by appropriate clauses. Twelve issues related to delay in approving submittals had high probabilities (more than 25%) of initiating conflicts. Based on our analysis of the probability of conflict between contracting parties, it is notable that a number of issues that had high tendencies to initiate conflict are not covered by the standard contract forms that we studied, namely, the issues related to the types of time loss and direct costs that can be claimed. Finally, chi-square test revealed that the differences in the proportions of Thai employers and contractors who preferred each choice for the contractual issues were statistically significant for 14 issues and nonsignificant for seven issues. These findings revealed that the affiliation of the respondents with their respective organisations (employers and contractors) influenced their attitudes towards some, but not all, contractual issues.

REFERENCES

Civil Engineering Link. (2009). *Submittal Review Process in Construction Management.* [Online]. Available at: http://civilengineerlink.com/submittal-review-process-construction-management/ [Accessed on 16 June 2011].

Clough, R. and Sears, G. A. (1994). *Construction Contracting*. 6th Edition. NY: John Wiley & Sons.

Edgerton, W. W. and MacDermott, J. (1996). The three-category submittal review process. *Proceedings: The International Conference on North American Tunneling '96 and the 22nd General Assembly of the International Tunneling Association (Volume 2).* Washington D.C, 21–24 April 1996. Rotterdam: A.A.Balkema Publishers, 563–571.

Jacobsen, Wm. L. (1997). Submittal approval critical behind every success full contract. *Petroleum Equipment & Technology*, September: 30.

Harris, R.A. and Scott, S. (2000). Delay claims research: a pragmatic approach. *Proceedings: The International Conference on Information and Communication in Construction Procurement*. Santiago, April, 669–682.

_____. (2001). UK practice in dealing with claims for delay. *Engineering, Construction and Architectural Management*, 8(5): 317–324.

Scott, S. (1993). Dealing with delay claims: a survey. *International Journal of Project Management*, 11(3): 143–153.

_____. (1997). Delay claims in U.K. contracts. *Journal of Construction Engineering and Management*, 123(3): 238–244.

Scott, S., Harris, R.A. and Greenwood, D. (2004). Assessing the new United Kingdom protocol for dealing with delay and disruption. *Journal of Professional Issues in Engineering Education and Practice*, 130(1): 50–59.

Scott, S. and Harris, R.A. (2004). United Kingdom construction claims: views of professionals. *Journal of Construction Engineering and Management*, 130(5): 734–741.

Yogeswaran, K., Kumaraswamy, M.M. and Miller, D.R.A. (1998). Claims for extensions of time in civil engineering projects. *Journal of Construction Management and Economics*, 16(3): 283–293.

Zaneldin, E.K. (2006). Construction claims in United Arab Emirates: types, causes, and frequency. *International Journal of Project Management*, 24(5): 453–459.