

DELAY MANAGEMENT IN BUILDING CONSTRUCTION: A COMPARATIVE STUDY

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Construction projects are one-time endeavors with three strong constraints i.e., time, cost and quality. Construction management pursues success through the balanced accomplishment of the target levels of these. Since construction management has been and is still being performed to some extent by architects, AIA's guidance has a strong influence on the profession. Thus, AIA's "A201-2007 General Conditions of the Contract for Construction" is widely preferred among owners and contractors in the U.S. In Turkey, on the other hand, the government is the owner of a large number of public building projects with a total contract value that accounts for a sizeable portion of the national construction activity. Thus, the "General Conditions for Construction" that is issued by the Ministry of Environment and Urbanization is widely used in the industry. Delays have an important effect on both the owner and the contractor; while the owner experiences cost overruns as a direct result of delays, contractors suffer from excessive overhead. A201-2007 addresses the issue in "Article 8-Time"; the Turkish General Conditions addresses it in "Clause 30-Job Duration and Time Extension". A literature review is performed in this paper to understand the importance of the deviations from the project duration specified in the contract. The objective of this study is to determine the similarities/differences in the management of delays, as mandated by the general conditions commonly used in the U.S. and Turkey. Recommendations are made in the light of the findings to improve delay management.

Keywords: Work schedules, Contracts, Contract administration, Delays, General conditions.

1 INTRODUCTION

Building construction projects are relatively complex and expensive endeavors that take a long time from start of the investment decision to the delivery of the end product (Chui and Bai 2010). The success of a building construction project depends on three major constraints which are scope, time, and budget. Quality is the general aspect that is pursued through all processes. The three constraints are directly related, which means when one is altered, at least one of the others is affected. The contract documents regulate how these issues are managed among the owner, the architect and the contractor.

One of the most important pieces of the construction contract documents is the General Conditions (Chui and Bai 2010, Fisk 2002). This document defines the roles and liabilities of the parties i.e., the owner, the architect, and the contractor, and

expresses the methodology to be used for regulating the relationship between these parties throughout the construction process.

There are several General Conditions preferred by owners in the U.S. for managing the construction process. The most commonly used ones were introduced by the American Institute of Architects (AIA), the U.S. government (Federal Acquisition Regulation), and the Engineers Joint Contract Documents Committee (EJCDC) composed of the American Society of Civil Engineers (ASCE), the National Society of Professional Engineers (NSPE), the American Consulting Engineers Council (ACEC), and the Construction Specifications Institute (CSI) (Chui and Bai 2010). The General Conditions issued by the AIA is the most commonly used document (El-adaway *et al.* 2014) since in the traditional design-bid-build project delivery system, the bidding and construction phases are managed by architects.

The American Institute of Architects (AIA) has a long history of regulating the construction industry in the U.S. publishing the first General Conditions in 1911 (AIA 2007). With the "A201 Family of Documents", AIA regulates the roles of the owner, the architect/engineer, the contractor, and subcontractors. These also set standards for contract types such as stipulated sum, cost plus fee, etc. AIA's A201 – 2007 General Conditions of the Contract for Construction is the general set of rules covering all contracts.

Government is one of the most important investors in building construction projects in Turkey with 42.33 percent (YEM 2015). The bidding process and execution of public investments are regulated the Public Procurement Authority of the Ministry of Finance. Like other public institutions, the Ministry of Environment and Urbanization executes many public building projects, most of which are social mass housing projects. All public investments executed by government agencies are regulated by the General Conditions for Construction issued by the Public Procurement Authority (MEU 2014). This document is also referred to by a considerable number of investors in the private sector since it is used as baseline by courts of law.

2 MANAGEMENT OF TIME IN BUILDING CONSTRUCTION PROJECTS

Being one of the three constraints in building construction projects, time plays an important role in the success of a project. Thus, any variation in the duration set for a project, either affects the other two constraints i.e., scope and/or budget, or threatens the feasibility of the project.

Delay may occur in the planning, the design, and/or the construction phases of a project. The major reason why delays take place during the planning and design phases is changes in the owner's project requirements (Yang and Wei 2010). In the construction phase, delays may be caused by strikes, rework, lack of organization, material shortage, equipment failure, natural disasters, and change orders (Birgonul *et al.* 2015). Sometimes, two or more of these issues may cause a delay making the situation more complicated (Birgonul *et al.* 2015, Alkass *et al.* 1996). According to AlSehaimi *et al.*'s (2013) review of sixteen papers focusing on delays, ineffective planning and control is found to be the primary cause of delays in the construction phase with 87%, problems of supply and procurement of materials second with 69%, and poor site management third with 56% of the studies pointing to these causes of delay. Depending on the nature of the work and the probability of the problems,

concurrent delays may sometimes take place, which multiplies the effect of simple delays (Birgonul *et al.* 2015, Alkass *et al.* 1996).

Given that construction is a long term investment initiative, completing a building construction project on or ahead of schedule is important for success. In addition to ensuring a stable scope of work and completing the job within budget, time management is most important in the performance of a project (Kazaz *et al.* 2012, Enshassi *et al.* 2009). Much like the construction industry in many countries around the world, the Turkish construction industry suffers from delayed project completion and considerable financial losses related to these delays (Arditi *et al.* 1985). Because of the importance of time and the negative implications of delay, General Conditions place special emphasis on schedules and procedures to be followed in case of delays.

A201 – 2007 General Conditions of the Contract for Construction addresses time related issues in Article 8 - Time. This article defines the commencement, execution and substantial completion of the work, sets the use of day as the unit for measuring time, expresses the importance of time for the contract, and states the methods to be used to respond to variations from predefined deadlines in three sections. Section 8.3 Delays and Time Extensions states the steps to follow if a delay occurs. According to Section 8.3, if there is a delay caused by the owner or the architect, or other reasons justified by the architect, then the contractor should be awarded an extension of time determined by the architect. The claim for an extension has to be submitted in written form and in a timely manner, stating the additional cost of the delay and the effect on progress, including any additional documentation, as defined in Article 15. Section 8.3 also states that both the owner and the contractor have the right to seek recovery of damages for delay.

Table 1. Articles, sections and provisions of A201 – 2007 General Conditions of the Contract for Construction, and Turkish General Conditions for Construction regarding time of building construction contracts.

A201 – 2007 General Conditions of the Contract for Construction		General Conditions for Construction	
ARTICLE 8	TIME	ARTICLE 5	EXECUTION OF WORK
SECTION 8.3	DELAYS AND EXTENSIONS OF TIME	CLAUSE 30	JOB DURATION AND TIME EXTENSION
8.3.1	Architect's change order for a time extension		
8.3.2	Claims for a time extension		
8.3.3	Recovery of damages for delay		

Article 5 - Execution of Work of the General Conditions for Construction addresses several issues about how the contractor should carry out the work and how the owner should manage problems such as mobilization, labor, equipment, subcontractors, undefined work, change orders, non-conformity, expenses, and time and extensions. Clause 30 - Job Duration and Time Extension defines under what circumstances the contractor should be charged liquidated damages, and under what circumstances the contractor should be awarded a time extension. If a delay is caused by the contractor or

by natural disasters that are beyond the control of the contractor or the owner, the contractor should notify the owner about the cause of the delay with supportive documents within 20 days of the occurrence of the incident. The notification should clearly state the effect of the delay on the work schedule. If that is not possible, a time extension will be considered by the owner whenever the delay's impact on the total project duration is determined. It is also stated that a notification is not necessary if the delay is caused by the owner.

3 CONCLUSION

Time management is important in the success of a building construction project. Both the delivery of the product and the financial returns depend on the parties' ability to complete the works within scheduled deadlines. The General Conditions emphasize the importance of time management and clearly state the responsibilities of the parties in case delays occur. Since AIA has a long history of regulating the industry, and architects have a key role in managing the procurement and management of construction services, A201 – 2007 General Conditions of the Contract for Construction is the most commonly used general conditions in the U.S. Although limited by the law of the state in which the project is executed, this document expresses that,

- The contractor has to submit a schedule to the owner and the architect, within the time limit stated in the contract, not for approval but for information, since the contractor is solely responsible for the work.
- If delay is caused by the owner, or a factor not related to the contractor's performance, a time extension needs to be awarded by a change order in the amount determined by the architect.
- For a time extension to be awarded, the contractor should file a claim in a timely manner.
- Recovery of damages for delay is limited for both the owner and the contractor by state law.
- The contract may include a provision for liquidated damages to be applied in case the substantial completion date is not met by the contractor.

Being the biggest owner in Turkey, the government sets the rules and legal procedures to be followed in managing projects in the building construction industry. Since its use is mandatory by law in any kind of public investment, the General Conditions for Construction issued by the Public Procurement Authority is the most common document regulating the relationship between the owner, the architect and the contractor not only in public projects but also in private projects. This document states that:

- The contractor has to submit a schedule to the owner for approval, within the time limit stated in the contract or its addenda.
- The owner has the right to reject the schedule, or accept it with modifications.

- If the contractor fails to meet the substantial completion date recorded in the schedule, the penalty stated in the contract document is applied.
- If the delay is caused by a factor that is beyond the control of the contractor, a time extension needs to be issued by the owner to compensate for the entire delay or part of the delay depending on the cause of the delay.
- The contractor should file a claim within 20 days of the occurrence of the delay.
- The claim should state the reasons and their effect on the schedule.

Turkish construction firms are familiar with the General Conditions for Construction since they commonly perform in the domestic market, but they also compete in international markets such as Russia, Middle Eastern and Arab countries. Turkish companies also operate in Europe and the U.S. (Ugur 2010). Turkish construction companies should have a good understanding of the General Conditions used in other countries.

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