TIME MANAGEMENT OF PROJECTS BY APPLYING THE FIDIC CONDITIONS OF CONTRACT

Stoyan Neychev[1]
siconsult.ood@gmail.com

Abstract

In the implementation of large investment projects, it is a common practice to exceed the set budget and/or extend the time for completion compared to a predetermined duration. As a general rule, the contractual relationship between the parties implies effective project time management. One of the best examples and templates for the above is the FIDIC conditions of contract, containing detailed and time-tested methods for efficient project time management. The present study briefly reviews the main methods in this regard.

Keywords: Time management, FIDIC conditions of contract
JEL: M21, K12, L74

Introduction

The FIDIC conditions of contract regulate in a very high degree of detail the relationships between the individual parties in the process of investment design and construction. One of the main aspects addressed by these conditions is time management. In practice, there are often cases, especially in the case of large-scale infrastructure projects, that circumstances arise that prevent the implementation of projects within a predetermined period. It is the conditions of FIDIC that indicate the actions of individual parties in similar cases, and the application of these conditions implies achieving a balance in relationships, incl. achieving the ultimate goals of each of the parties.

1. FIDIC's Conditions of Contract – essence and types

FIDIC is an international union of consulting engineers (sometimes referred to as a „federation"). Founded in 1913, FIDIC is charged with promoting and implementing the consulting engineering industry's strategic goals on behalf of its Member Associations and to disseminate information and resources of interest to its members. Today, FIDIC membership covers over 100 countries of the world[2].

The main objectives of the federation in brief are:

- ✓ To be an internationally recognized organization in the field of best practices related to engineering consulting;

[1] PhD in the International Economic Relations and Business department, University of National and World Economy, GSM +359888392904.
[2] https://fidic.org/about-us

- ✓ To assist and support the international development of viable consulting engineering services;
- ✓ To promote and strengthen the leading position of contractual conditions of FIDIC, etc.

Currently, the most common terms of contract worldwide (known as the „Rainbow of FIDIC“ due to the use in the names of different colors) are those that are the first edition of FIDIC, 1999 (with the use of the terms of contract from 2017). They include the following standard forms of contract (the list is not exhaustive):

Colour	Form	Scope
Red Book	Construction Contract	Building and Engineering Works Designed by the Employer
Yellow Book	Conditions of Contract for Plant & Design-Build	For Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor
Silver Book	Conditions of Contract for EPC Turnkey Projects	EPC/Turnkey Projects

Source: The FIDIC official website

There are also other contractual conditions (Green Book, Golden Book, etc.), but they are not so widely applied in terms of the number of concluded contracts. However, the latter should not be perceived in such a way that these contractual conditions do not contain corresponding advantages, on the contrary.

The contractual conditions contain two main parts – General and Particular conditions. The first are those issued by FIDIC, and the second are drawn up by the Contracting Authority (the interested parties) in order to adapt and supplement the general conditions in relation to the specific requirements, the current legislation and the rules of the relevant country (countries) in which they are performed international projects, incl. parts of the General Terms and Conditions are canceled (deleted) in cases where they are inapplicable or contrary to the laws of the country.

The subject of the present development are the contractual conditions – Yellow and Red Books, first edition 1999, due to the author's restriction of access to the other stated conditions.

The parties to the Conditions of contract of FIDIC (Yellow and Red Books), as well as the settlement of their functions (conditionally, since their roles are outlined in practically all clauses of the Contract Terms), are:

- ➢ Employer – clause 2;
- ➢ Engineer – clause 3;
- ➢ Contractor – clause 4.

Other institutions and persons defined in the Contract Terms (such as the Dispute Resolution Commission) are specified and cited in the Contract Terms and Conditions,

but they have no specific relation to the subject of this study, which is why they are not the subject of consideration.

2. Project cycle and importance of project time management during its individual stages

As a general rule, valid for any significant project (especially international), it contains a life (project) cycle consisting of several main elements in its composition. According to the generally valid rules derived in theory and applicable in practice, every project in its life cycle contains main phases and the processes related to them. Project management institute identifies the following project management process groups/phases (PMI, 2008):

- Initiation – initial shaping of the general scope and content of the planned project;
- Planning – detailing the scope of the project and the relevant work packages/activities, determining the final goals and results, performing financial and economic analyzes proving the appropriateness of the (in general) investment intention and its viability; technical, environmental, legal and ecological aspects and their impact on the scope of the project works and the relevant specific actions;
- Implementation – the actual part of the implementation of the project in accordance with its previously defined scope and in accordance with the set final goals and the methods for their achievement;
- Control and monitoring – carried out practically throughout the project cycle and guaranteeing that the set tasks will be achieved through the correct implementation of the specified activities in its various aspects (technical, financial, managerial, etc.), incl. in accordance with the set quality requirements;
- Completion – reporting of the results and acceptance by the contracting authority/client of the works carried out within the framework of the project.

Time management is one of the main areas of knowledge in project management (including international ones), regarding the effective and efficient achievement of the set final goals. In addition, time management has a decisive influence on quality project management, resp. their implementation according to predetermined indicators.

The PMBoK, in its role as one of the main international project management standards, is used as a baseline for defining the nature and importance of time management as it relates to projects, regardless of their nature. It clearly states the individual areas of project management knowledge. Among the main ones are (the list is not exhaustive):

- ✓ Project integration management;
- ✓ Project scope management;
- ✓ Time management in the project;
- ✓ Project cost management etc.

The importance of time management in the project cycle is paramount for several main reasons:

- The duration of the project as a general rule is set in the initial phases of the cycle (approximately at the „initiation“ phase and with a much greater degree of accuracy at the „planning“ phase) and is subject to monitoring and control until the completion and reporting stage of the project. In this regard, the duration can be defined as one of the most important and essential indicators in the implementation of international projects;
- By its very nature, duration refers to planned activities. In view of the fact that the completion of some activities (for example, the design of investment projects in the case of an infrastructure project) is a condition for the initiation of subsequent activities (in the case of construction), the timely completion and, to a lesser extent, the control over this has significant influence on the overall implementation of the project and reaching the pre-set requirements from the contracting authority/client;
- It should also be noted that it is a common practice that in the case of a delay (i.e. a deviation from the pre-determined time schedule) of the activities, this affects the quality of the implementation of the project works related to the technological requirements and sequence of execution of the various construction (and accompanying) processes;
- With no less importance, it is necessary to emphasize that within the main activities themselves, logistics related to coordination and timely execution, as well as following a certain technological sequence, are often necessary – in view of the fact that a significant part of the international projects contain an investment (construction) component, during their implementation coordination works are carried out with various suppliers (of machinery, facilities, equipment, materials, etc.). In cases where this type of coordination is not at a sufficient level, it manifests various negative effects. Such are, for example, downtime of construction machinery (the provision of which is associated with a significant financial commitment); delivery, but not use of materials that technologically require their timely use (for example, concrete that loses its properties after a certain period of time; asphalt that requires to be laid at certain temperature characteristics, etc.);
- In view of the fact that international projects are carried out in many parts of the world, in some of them the climatic conditions have a direct impact on the overall organization of project works. For example, in countries with a sub-equatorial or tropical climate, during the summer months, the temperature conditions are such that they often do not allow the full deployment of the performance. Another typical example is in cases where project activities take place in parts of the world with a sub-polar or polar climate. In view of the above, proper time management in the project is often of crucial importance for its successful implementation and with the necessary quality, incl. in the predetermined terms;
- A specific element of time management is related to the financial security of the activities. At the „planning“ stage, one of the components subject to planning is the financial plan of the project. As a general rule, it is related to and reflects

incoming cash flows arising from borrowed funds (raised capital) from credit institutions. The financial plan usually contains a schedule of tranches, resp. schedule (incl. start date) of utilization of the funds, from which derives another part of the financial plan, namely the recovery of the attracted capital, incl. the interest on it. In the event that the time in the project is not effectively managed and deviations from the originally planned are found, then for the interested parties, in general, additional costs arise, and in some isolated cases (with a significant deviation from the schedule) – impossibility to secure the necessary financial resources or its increase in cost and, more generally, creating conditions for potentially jeopardizing the normal implementation of the project, related to its financial aspects;

- Another element of the importance of time management in the project can be highlighted in the fact that sometimes the implementation of projects is related to the holding of events of an international scale (for example, trade, sports, etc.). Contracts with contractors often contain penalties for delay, because in view of the interests of the contracting authority (and other interested parties) related to the timely implementation of the project, benefiting from the results of its implementation is an essential element of the general external environment.

3. Time management by applying FIDIC conditions of contract

Below are the main factors arising from the content of the FIDIC Conditions of Contract, Yellow Book, First Edition 1999 (much of what is stated below also applies to the 1999 edition Red Book). They can be grouped into two main directions from the Contractor's point of view in the sense of item 1.1.2.3 of sub-clause 1.1 of the General Conditions of the Contract (GCC):

- internal to him;
- external to him.

The subject of the present study is only the internal factors, as external factors are also partially affected, and more specifically the actions of the Engineer.

With regard to the first group, the following main aspects can be identified, again divided into two groups, namely before the date of submission of the offer and after the commencement date in terms of sub-clause 8.1 GCC. In relation to the first group, to lead to effective time management, a major factor is a high level of familiarity with site data within the meaning of sub-clause 4.10. An influence in this case is exerted by a factor external to the Contractor, namely the ability of the Contracting Authority to provide sufficient volume, quality and correctness of similar data. In this regard, both the commercial practices of privately funded projects and those implemented through a public resource imply the possibility for interested parties to request and receive additional data and clarifications regarding these data.

For example, Art. 33, para. 1 of the Bulgarian law on public procurement allows for the possibility that individuals may request in writing from the contracting authority

clarifications on conditions contained in the documentation for the public procurement. Participants should take advantage of this opportunity, incl. the potential future contractor to the extent that sub-clause 4.11 indicates that the site particulars are sufficient to form the contract sum proposed by him. The terms of the contract do not imply a change in the contract price and/or time for completion in terms of clause 20 in so far as sub-clause 4.10 directs that based on the site data he has satisfied himself as to all material matters relating to any aspects relating to its form, nature, conditions, etc.

In summary, to effectively manage the time before the date of submission of the offer, the Contractor is supposed to make sufficient efforts at the stage of preparation of his offer to minimize the occurrence or negative manifestation of future circumstances after the date of commencement having resulting in a delay in completion time.

The set of measures aimed at managing time after the start date is much richer. Main among them are:

- measures related to securing the right of access to the site (sub-clause 2.1) – the Contractor should make sure that, within the framework of his competences and contractual rights (and obligations), he has secured all his documents (in the sense of item 1.1 .6.1 of sub-clause 2.1) of the Employer. Otherwise, he loses the right to claim an extension of time for completion. It is characteristic of ensuring the right of access to the site that this is one of the many obligations attributed to the Contracting Authority. At the same time, the lack of access prevents the Contractor from effectively implementing its Program (within the meaning of sub-clause 8.3), including its part concerning investment design. As for the latter, timely initiation of preparatory activities (geodesic surveys and measurements; acquisition of additional data regarding geological and hydrogeological characteristics of the site, etc.) protects the Contractor to a certain extent from future delays and/or poor construction performance.

It is no coincidence that the notes to the preparation of tender documents as part of the FIDIC conditions for this provision of the contract state that it may be of particular importance for the contractor to have prior access to the site in connection with carrying out preliminary surveys.

It should be pointed out that FIDIC contract conditions do not define the definition of „access to the site and possession". However, they have different aspects – both documentary and physical. Accordingly, the absence of any of these elements will have a different impact on time for completion, requiring the Contractor to ensure that all possible aspects of site access are in place.

As a next measure, bearing in mind the chronology of contract execution, the timely development of the investment project in the sense of clause 5 should be identified. It is related to the previously identified measures. Their actual and timely implementation is a prerequisite (following the principle that the completion of a given, even an intermediate product, is a condition for creating the next one insofar as it benefits from the results of previous products) for the timely implementation of the main construction.

Another aspect binding the design and time management procedure is the quality of the project itself. As far as this is entirely the responsibility of the Contractor, in his

interest, in addition to its timely production, but the same should also be of the required quality in terms of scope and content, incl. in relation to the requirements of the contracting authority in the sense of item 1.1.1.5 of sub-clause 1.1. This would protect him from the need for future amendments, which is associated both with additional delay, but also with the expenditure of a relevant financial resource (for design services; for ordering materials that are not really needed due to errors in the project; for already completed construction works (eg excavation) that were not necessary, etc.).

Last but not least, the timely development of the project in cases where, at the time of the start date, the requirements for the technological equipment, the materials for investment in the construction have not been specified (clause 5), is a prerequisite for the timely initiation of the procedure for their approval. The latter is particularly applicable to equipment requiring a long technological period for its production (and delivery to the site).

- again following the technological sequence in the implementation of the contract, as the next identified measure for effective time management, the timely initiation and implementation of the procedure for offering for approval of the equipment and materials by the Engineer, incl. with all required accompanying documents (declarations, certificates, etc.);

- the provision of resources (beyond technological equipment and materials) adequate to the needs and technological progress in the implementation of the actual construction is also essential for effective time management. In this case, it refers to the provision of both the necessary equipment and mechanization, as well as human resources. Specific to the latter is the engagement of a Contractor's representative within the meaning of sub-clause 4.3 possessing both the necessary theoretical knowledge and practical experience. This person is highly capable (assuming full commitment to managing the performance of the contract) to identify, at the earliest possible stage, potential risks/threats that will impact on compliance with the completion time;

- another aspect concerning the provision of resources is the availability of sufficient financial resources to ensure rhythmicity in the supply of materials (although one of the purposes of the advance payment in the sense of sub-clause 14.2 is such), the payment of remuneration and payments to subcontractors within the meaning of sub-clause 4.4. An effective method of doing this is the proper preparation of documents in accordance with sub-clause 14.3, namely reports and accompanying documents. This would ensure the rhythm of payments, and hence the meeting of all currently arising expenses. In case of delay on the part of the Contracting Authority to make payments, the contractual conditions of FIDIC specify both clear terms (sub-clause 14.7) and options for compensating the Contractor in case of delay (sub-clause 14.8). As a final option, which is generally beyond the interest of the Contractor, the contract allows its termination by the latter (sub-clause 16.2, letters (b) and (c));

- as a horizontal aspect regarding time management arising from this type of contractual conditions is the clear and detailed settlement of the procedures related to the Contractor's claims (clause 20), especially regarding events and circumstances

affecting the time for completion. Such an advantage, however, also hides some features and conditions, failure to comply with which deprives the Contractor of the possibility, even if he proves the existence of circumstances that influence the implementation of the Program's time frame, to be deprived of the possibility of extending the completion time. In particular, cut-off periods are available, the occurrence of which, in the absence of action by the Contractor, renders it impossible for the Engineer, by decision under sub-clause 3.5, to extend the time for completion.

However, following the principles of fairness and good faith, the contractual conditions suggest (last paragraph of sub-clause 20.1) that such an omission should be evaluated as a degree of influence against the Contractor's objective assessment of the event in the process of investigating the event or the circumstance that led to until a claim for extension of time for completion. Despite this possibility, it is entirely in the interest of the Contractor to follow the contractual clauses regarding the terms of notification to the parties of the occurrence of such circumstances leading to disruption of the program and overall delay.

Insofar as in real construction it is not always objectively possible to determine the time/moment at which such a circumstance arises, especially knowing that it affects the completion time, the flexible perception of the actions or inactions of the Engineer, laid down in the last paragraph of sub- clause 20.1 is precisely the instrument arising from the terms of the FIDIC, protecting to some extent the Contractor from an excessive limitation of his possibilities to extend the time for completion. It is not in the interest of any of the parties for the Contractor to be unreasonably „pressured“ when applying the terms of the contract. Such conduct (by the Engineer or by the Employer under sub-clause 3.1 allowing the latter to grant specific approval of the Engineer's actions and in particular decisions to extend the time for completion) could have the ultimate effect of forcing the Contractor to terminate the contract, for to limit significant losses (in the form of late payment penalties under sub-clause 8.7). It is for this reason that the certain flexibility in the relationship between the parties ultimately has a favorable impact on the final results, incl. the timely performance of contractual obligations;

- a special place should be allocated (in view of the subject matter and complexity of the contracts and their scope, namely in the general case large-scale and long-term construction) for events characterized as unforeseeable physical conditions (sub-clause 4.12). When they occur, the Contractor has the obligation to notify the Engineer „as soon as possible“. Formulated in this way, the notification period implies a certain flexibility, which in turn relatively exempts the Contractor from the 28-day notification period strictly defined by sub-clause 20.1. At the same time, the contract in this part refers precisely to the general clause 20 for the extension of the completion time. It should be noted the practical difficulties faced by the Contractor (and the Engineer) in assessing the extent to which such physical conditions were 1) unforeseeable and 2) disruptive to his programme. Last but not least, it is necessary to consider the fact that, given the technological sequence of a number of construction operations and the

interdependence between them, the occurrence of such conditions could be decisive in relation to the completion time.

Strict and complete compliance with all actions indicated by sub-clause 4.12 of the Contractor are entirely in his interest. This circle also includes the good faith behavior of the Contractor to timely notify the Engineer, who will make relevant inspections and determine how unpredictable such conditions are, incl. their presence is grounds for extending the completion time.

There are also a number of other internal factors arising from FIDIC's contractual conditions for effective time management and the following can be identified:

- quality of construction, control over which is carried out by the Engineer given his specific functions of acceptance of the works. Quality performance implies successful completion tests (sub-clause 9.1) prior to the issuence of a Taking-over Certificate (sub-clause 10.1) or remedy of defects during the relevant period (clause 11);
- constant control and monitoring of the schedule as part of the Contractor's program (sub-clause 8.3);
- implementation of effective cooperation with the other parties in the process in accordance with the provision of sub-clause 4.6;
- maintenance of insurances pursuant to clause 18, etc.

One of the most essential elements of the FIDIC Contract Terms relating to time management relates to the provision of sub-clause 8.3. They are in several main directions:

1) The content of the program – it governs the order in which the Contractor intends to perform the Site, including the expected time allocation of each stage of the project, the Contractor's Documents, delivery, production, inspection, delivery to the Site, construction, installation, testing, commissioning and trial exploitation. In terms of content, this practically represents an implementation schedule, from which, last but not least, the critical path for project implementation can be deduced. The program is a basic document presenting the sequence and interdependence and interdependence between the individual main activities. It enables the Contractor to correctly predict, and the Engineer to control, the process of managing the resources involved in the implementation of the project (human, mechanization, suppliers, etc.). Last but not least, the program provides an opportunity to register potential risks related to a delay in implementation;

2) Next, the Contractor's obligation to submit a revised program when the previous program ceases to correspond to the actual progress or the Contractor's obligations. The revised programme, together with the catch-up measures described in the reports under sub-clause 4.21, are extremely appropriate time management tools as they represent to the greatest extent the current status of project implementation and enable control by side of the Engineer. It is equally important to note that as a result of revising a program, the opportunity arises to optimize the management of other aspects of the project (eg risks, suppliers, resources). Evidence for this statement is indicated in the sub-clause: the staff of the Employer will be able to rely on the program when planning their activities. In this connection is also the opportunity referred to in the last paragraph of the

sub-clause given to the Engineer to give notice to the Contractor that the program is failing (to the extent specified) to adhere to the Contract or to be consistent with actual progress and disclosed intentions of the Contractor. In this case, the contract foresees the emergence of an obligation towards the latter to submit a revised work program. The contractual conditions, by introducing the functions of the Engineer, regulated in this case in sub-clause 8.6, provide mechanisms for time control, but already from a source external to the Contractor (namely the Engineer). Specifically, the introduction of a requirement to submit revised methods to accelerate the rate of progress.

Perhaps an even more powerful tool than this action is the sanction regime provided for continued delay. The same is materialized through sub-clause 8.7, referring to sub-clause 2.5 and allowing payment of compensation for delay to the Employer;

3) In addition to the time management options set forth above, the FIDIC contractual conditions in this sub-clause provide for additional ones related to the Contractor's obligations that are subject to control by the Engineer. More specifically, in this case, it is the Contractor's obligation to immediately notify the Engineer of specific possible future events or circumstances that may adversely affect the work, increase the Contract Price or delay the performance of the Site. It is also an essential tool for the Engineer's control of important aspects of the contract and in particular the time for completion (or the deadline).

Conclusion

FIDIC contractual conditions contain significant advantages in terms of effective time management insofar as they define in detail, comprehensively and at the same time balanced the actions of the parties in cases where the Contractor deviates from a predetermined deadline. There are a number of practical methods contained in these contractual conditions, in the application of which the ultimate goals for each party are achieved, incl. the ultimate goals of each of the participants in the investment process.

Sources

1. Plant and Design-Build Contract 1st Ed (1999 Yellow Book). Conditions of Contract for Plant & Design-Build (First Ed, 1999). For Electrical & Mech. Plant & For Building & Engineering Works Designed by the Contractor. Gen. Conds; Guidance for the Prepn of Conds of Particular Application; Forms of Tender; FIDIC 1999;

2. Construction Contract 1st Ed (1999 Red Book); FIDIC 1999;

3. Public Procurement Law of Bulgaria.