

## ASSUMPTIONS OF THE CONCEPT OF A PHASE MODEL OF AN INFRASTRUCTURAL PROJECT IMPLEMENTED ON THIS BASIS OF YELLOW FIDIC CONDITIONS OF CONTRACT

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**Purpose:** The aim of the article is to develop theoretical and practical assumptions of the phase model concept for infrastructural projects implemented from the perspective of design offices on the FIDIC rules.

**Design/methodology/approach:** In the article, the author develops and presents the assumptions of the phase model concept based on the available literature in the field of project management and the assumptions of the FIDIC Contract Conditions. The research problem is as follows: What elements does the course of an infrastructural project based on the assumptions of the Yellow FIDIC Conditions of Contract consist of? In the article, the author deepens the analysis of the research problem by pointing out specific questions. In her research, the author will use the method of modeling business processes, which allows for a detailed analysis of the studied phenomenon.

**Findings:** As a result of the conducted research, the author developed a concept of a phased model for infrastructural projects implemented from the perspective of the design office on the basis of the Yellow FIDIC Conditions of Contract. The presented concept integrates the project phase model typical for project management with the Yellow FIDIC Conditions of Contract model.

**Research limitations/implications:** The issues discussed in the literature require further development in the form of qualitative and model research. In the literature on the subject, the author identified insufficient knowledge resources in the field of integration of the project management phase model with the Yellow FIDIC Conditions of Contract model.

**Practical implications:** The conducted research will be an added value for the company, as it will help to systematize project management in a design and engineering company. They can be used as a starting point for developing a dedicated project management model in the researched industry.

**Originality/value:** The innovation in the conducted research is the integration of the project management phase model with the FIDIC Conditions of Contract model.

**Keywords:** project management, project phase model, infrastructure project, design office, FIDIC Conditions of Contract.

**Category of the paper:** Research paper.

## 1. Introduction

Project management is an independent field of management science. The rapid development of knowledge in this field is noticeable both in theory and in practice. This is visible both at universities and among associations associating project management enthusiasts. Awareness is increasing both in terms of the tools used for project management and in the issue of system modeling of project management for projects implemented in a specific environment. Among the many different types of projects, one can distinguish infrastructure projects that are implemented in the sphere of infrastructure, and their primary goal is to improve the quality of infrastructure services provided (Węgrzyn, 2014). From the point of view of the success of the infrastructure project, one of the key elements is effective management, regardless of the stage of project implementation (Zamojska, Susmarski, 2017). An inseparable element of project management is the project phase model, which is the basic planning tool for the implementation of a specific project. A properly built phase model already in the initial phase of the project allows you to get answers to bothering questions about the legitimacy of the implementation of a specific project.

The aim of the article is to develop theoretical and practical assumptions of the phase model concept for infrastructural projects implemented from the perspective of design offices on the FIDIC rules. The research problem consists in identifying what elements make up the course of an infrastructural project implemented under the Yellow FIDIC Conditions of Contract.

The article lists five parts, of which the first two parts are literature research in the field of the project phase model and the foundations of the FIDIC Conditions of Contract. The article contains the results of research in the form of a conceptualization of a phase model of an infrastructural project created on the basis of literature research and model analysis of business processes.

## 2. Project phase model

The implementation of projects requires a skillful selection of management methods and techniques for specific conditions. According to the definition of M. Trotsky, a project is an organizationally separate, unique and complex undertaking, which includes an organized sequence of activities carried out over a specific period of time, with limited resources and is aimed at achieving a specific result (Trotsky, 2012). Proper implementation of projects requires the use of a methodological approach, adapted to the specifics of the organization (Strojny, 2019). In order to increase control (Willems, Vanhoucke, 2015) and coordinate activities, the project is divided into several phases. One of the most important features of the project is

its duration, which is individual for each project. The project duration can be defined as the project life cycle, covering the period from the beginning of work on defining the problem to obtaining the expected result, output, i.e. until the end of the project duration (Rokoszewski, 2014). In the literature, the project life cycle is often referred to as a "phase model", "stage concepts", or "stage models". According to the PMI definition, the project life cycle is defined as "the successive phases through which a project passes from its initiation to its closing" (PMI, 2017). The project phase model is one of the key tools necessary for efficient project management. It plays a key role in the project approach, as it is a standardized presentation of the course of project tasks divided into finite time intervals, each of which is uniquely identified and generates significant sub-objectives of the project (IPMA, 2014). The phase model results from good operating practices and is a kind of division of the project into stages, with each stage containing standardized information on the implementation of the project. The definition of the project life cycle, by defining specific activities, supports the link between the project and the operational activities of the organization that implements it (PM Book Guide, 2003). A well-developed phase model is the backbone of the project, which sets the direction and purpose of action. According to the definition of the Government Project Monitoring Office, the project life cycle includes four phases: preparation, planning, implementation, closing (Szyborska, Charchuła, Duma, Janka, Karpińska, Kwiatek, Nocoń, 2021), this model presents a cascade approach that is adapted to linear value creation. Traditional project management methodologies, based on the project life cycle, in which the sequence of steps that must be taken for the implementation of a given project is identified (Strojny, Szmigiel, 2015). According to traditional project management methodologies, project objectives, methods of achieving it and a detailed schedule are fully defined, and the probability of changes in the scope of the project is low. The answer to the traditional approach are agile project management methods dedicated mainly to projects characterized by high uncertainty and the inability to accurately plan all events in the project. The following table provides a comparative analysis of the traditional and agile project management cycle.

**Table 1.**

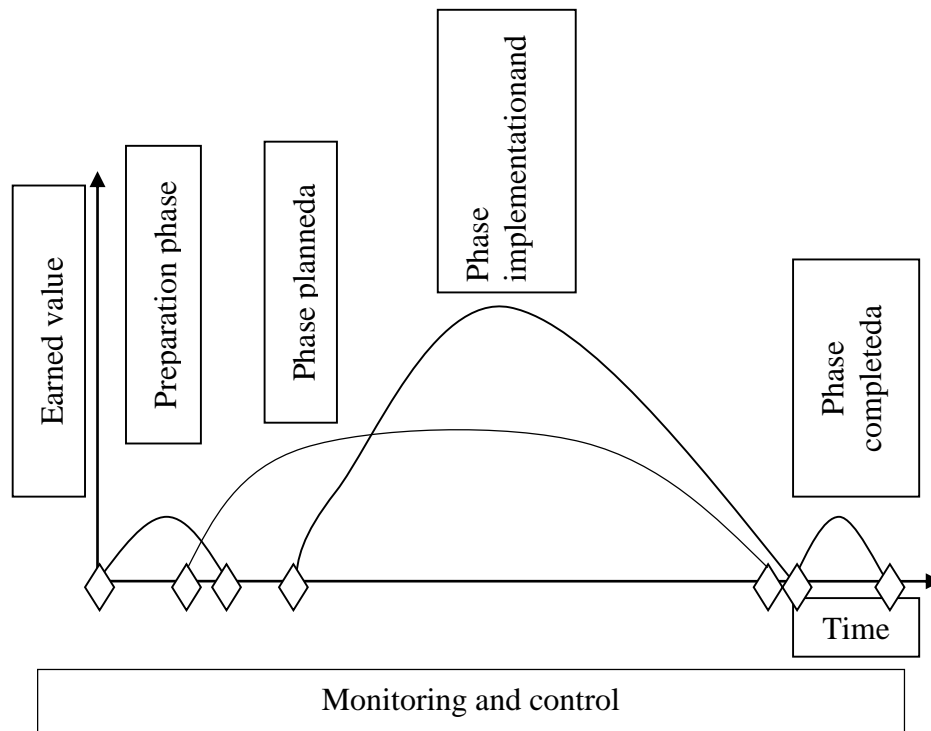
*Comparison of the project management cycle in traditional and agile terms<sup>1</sup>*

<b>Project management lifecycle</b>	
<b>Traditional approach</b>	<b>Agile approach</b>
<ul style="list-style-type: none"> <li>- deterministic and linear, based on precisely defined design stages,</li> <li>- defined key design processes</li> <li>- planning based on detailed schedules as a basis for project management</li> </ul>	<ul style="list-style-type: none"> <li>- iterative and empirical, based on the delivery of functional elements,</li> <li>- short schedules of the value creation process,</li> <li>- adaptability and adaptation to changing conditions,</li> <li>- processes maximally simplified</li> </ul>

Source: Own elaboration based on: Strojny, Szmigiel, 2015, p. 255.

The figure below shows an example of a project life cycle diagram consisting of 4 phases: preparation phase, planning phase, implementation phase and closure phase, monitoring and control process takes place throughout the duration of the project. The presented model may correspond to an adaptive approach using both traditional and agile project management

methodologies. This is illustrated primarily by the presented planning phase, which de facto should be considered in 3 stages: initial planning, proper planning, current planning.



**Figure 1.** Project Life Cycle.

Source: own elaboration.

Initial planning is a stage that begins already in the preparation phase, where initial schedule assumptions are made, including the analysis of the necessary resources and project costs. Proper planning takes place in the planning phase and at this stage a basic project schedule is created, taking into account specific deadlines based on the availability of necessary resources and taking into account the risks and necessary cost outlays spread over time. Current planning takes place in the project implementation phase and should go hand in hand with a cyclical monitoring process, where the basis for planning current implementation activities is a base schedule in coordination with a report on the progress of project work verified in the cyclical project monitoring and control process. In addition, the presented approach to the project planning process allows to streamline the decision-making process and reduce the risks occurring in the project.

**Project preparation phase.** This is the conceptual phase. The impulse to take action in the field of a specific project is an idea derived from the need to implement a need. The purpose of this phase is to define the initial assumptions of the project as well as the possibilities and legitimacy of implementation. At this stage, the sources of financing, the time frame of the project, the benefits of implementation, and a preliminary stakeholder analysis is developed. The product produced in this phase is the project initiation document, e.g. the Project Charter. The way out of the preparation phase is the decision to implement or resign from the project.

Project planning phase. The phase, which consists of all planning activities related to the implementation of the project, project management plans, risk, communication, schedule, etc. are created. The essence of this phase is to get answers to the questions of how to achieve the set goal of the project, at what time and what are the necessary resources. This is an extremely important phase from the point of view of project implementation, because at this stage a skeleton of the implementation formula is created, which will have a direct impact on the effects achieved. At this stage, the main documents used during the project are developed (Cabbage, 2013).

Project Implementation Phase. The phase of actual implementation, production of project effects, value for the client. It is important in this phase to coordinate the resources assigned to the project in relation to the project work schedule. The key activity in this phase, in addition to the implementation and specification of previously planned tasks, is an adequate response to the changing reality (Szymborska, Charchuła, Duma, Janka, Karpińska, Kwiatek, Nocoń, 2021).

The Project Closing Phase includes the final management processes to lead to the final completion of the project (Szczepaniak, 2019). This phase should end with archiving the project documentation.

The important fact is that any subsequent phase will not be possible if the previous factor fails. For this reason, at each stage of the project life cycle, control and monitoring is carried out whether everything goes according to the plan (Targiel, 2015).

Each of the stages of the phase model is characterized by certain features. The table below presents a phase model consisting of four phases: definition phase, preparation phase, execution phase, completion phase. The analysis of each of the above-mentioned phases took into account the following elements: nature of the activity, purpose, processes, participants, inputs/costs.

**Table 2.**  
*Design phase model<sup>2</sup>*

Description/ Phases	Definition phase	Preparation phase	Execution phase	Completion phase
Nature of the activity	Conceptual activity	Planning and organizational activities	Design and implementation activities	Implementation and reporting activities
Purpose	Define a project	Organizing and planning the work of the project	Project execution, control and coordination of works	Implementation, acceptance and settlement of the project, evaluation of project experience

Cont. table 2.

Processes	-Initiating a project -Defining the project	-Organizing the project team -Planning the structure of the project -Planning project dates -Project resource planning -Project budgeting -Organizing the execution of the project	-Designing the project result -Implementation of the project -Control of project execution (control, coordination)	- Closure of the project
Participants	Initiator, sponsor, users, specialists	Project team, sponsor, users, contractors, suppliers, specialists, experts	Contractors, subcontractors, suppliers, project team, sponsor, users, specialists, experts	Contractors, project team, sponsor, users, specialists, experts
Costs, Inputs	Low, 12%	Medium, 20 %	High, 61% (43% execution and 18% monitoring and control)	Low, 7%

Source: Own elaboration based on Trocki, Grucza, Ogonek, 2003, p. 32.

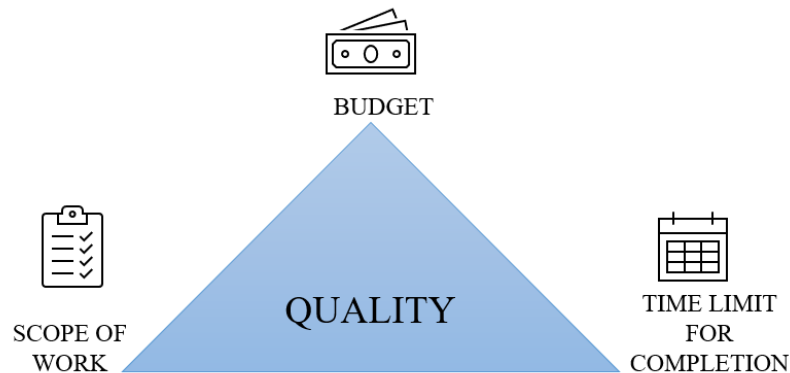
The phase model is a very important element from the point of view of strategic project management in an enterprise. The use of this tool at the level of operational management allows for good planning of the course of a specific project and supports supervision and control over its implementation. In addition, the key feature of this tool in relation to strategic management is the ability to decide on the business justification for the implementation of a specific project at its initial stage at low cost.

The phase model of the project is adapted to the specifications of a specific organization and projects implemented in it, it may differ both in the number of phases and the scope of activities that are recommended to be performed.

### 3. FIDIC contract conditions

All infrastructure investments start with approved project documentation. The design industry is characterized by very specific conditions and many limitations. In addition to all external conditions that the design office has to face, there are internal conflicts of interest. Designers producing a sales product most often disregard the financial sphere (Bilon, 2016), these are most often people with engineering education who can uncritically agree to introduce additional changes in the documentation in order to improve the designed facility, not paying attention to the costs of additional man-hours. This contradicts the concept of the iron triangle of the design, presented in Figure 2. The indicated concept defines the most important

dimensions in the project, which are: the scope of work, budget, and deadline for implementation, which shape the quality of the project. Changes in any of the listed elements (dimensions) in the triangle, assuming no change in the other, result in changes in the others (Leg, 2015). Considering the above, it is very important in running a design office to properly manage projects based on both engineering and management knowledge and practice.

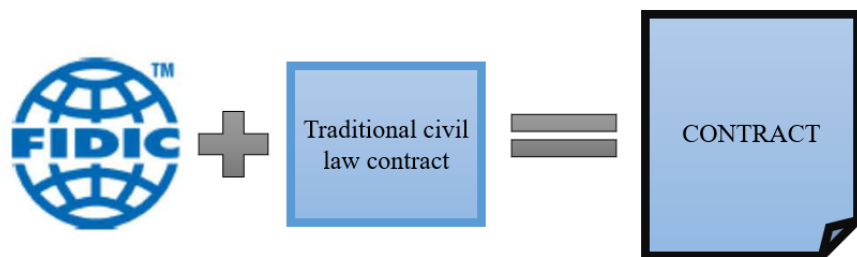


**Figure 2.** Golden triangle of the project.

Source: Own elaboration.

Contracts are one of the main elements of the entire project management cycle (Purba, Prastowo, 2020), therefore they largely translate into project success. Among the commonly used systems for the implementation of construction investments in Poland is a system based on the models of Contract Conditions developed by the International Federation of Consulting Engineers (Fédération Internationale Des Ingénieurs-Conseils French acronym: FIDIC), which was founded in 1913 by three national associations of consulting engineers in Europe (FIDIC, 2008). FIDIC contract conditions are widely recognized international standards - contract templates for design and construction contracts, describe the course of construction investments based on mutual obligations and relations of the contracting authority as the investor and the contractor as the construction contractor, as well as the contract engineer as the project administrator (./adviser.law/, 2023). FIDIC Contracts are based on a legal concept derived from common law. Contracts executed on FIDIC principles are known and recognized in the world as examples of good solutions developed on the basis of many years of experience (Chen, Wang, Zhang, You, 2018; Choi, Kim, 2016). FIDIC contracts are contracts of great importance and value, a large part of these contracts are large technology transfer contracts (Omran, 2019). Due to the size of the contracts and their inherent complexity, these contracts often involve various types of disputes. These disputes generally result in a significant loss of time and money for stakeholders (Walsh, 2017). The basic idea behind the FIDIC development was to create user-friendly systematized construction management rules, containing both practical tips and proposed management support tools. The purpose of the FIDIC Conditions of Contract is to maintain a balance between the requirements and interests of the parties, as well as a fair distribution of risks, threats and liability between the parties to the contract (Rybka, J., Rybka, D., 2020).

Issues related to the implementation of construction investments in accordance with FIDIC conditions are discussed in the national literature, among others by: (Połośki, Kowalski, Wrzesiński, 2019; Skoruski, 2019; Lendo-Siwicka, Pawluk, Połośki, Goszczyńska, 2016), which may indicate the growing popularity of the use of FIDIC conditions in Poland. The most common reason for the use of FIDIC Conditions of Contract is the size and complexity of the investment task. The popularity of the application of FIDIC Conditions of Contract in Poland was also greatly influenced by the sources of financing received for the implementation of infrastructure projects. Co-financing of contracts from the European Commission, the European Investment Bank or the World Bank became possible after adapting the provisions of Polish law to EU law (Lendo-Siwicka, Pawluk, Żerek, Trach, 2018). FIDIC Conditions of Contract are applied in Poland by incorporating their provisions into a specific contract within the limits of freedom of contract (Article 3531 of the Civil Code), and are increasingly used in the public and private sectors.



**Figure 3.** Diagram of contract elements using the FIDIC Conditions of Contract.

Source: Own elaboration.

In construction practice in Poland, two of them are most often used: the so-called red book entitled: Contract Conditions for Construction for engineering and construction works designed by the Contracting Authority, and the so-called yellow book – Contract Conditions for equipment and design and construction for electrical and mechanical equipment as well as engineering and construction works designed by the contractor (Pawłowski, Szymański, 2017). The other two that are included in the basic conditions for conducting contracts in Poland are: the Terms of the Contract for the "turnkey" implementation referred to as the silver book and the Short form of the contract referred to as the green book (Belter, 2018). The first editions of the FIDIC red, yellow and silver books were published in 1999, quickly gained popularity and became one of the most widely used engineering contract templates (Godwin, 2020). Due to the rapid development of the industry and the experience gained over the years in applying the Conditions of Contract, the FIDIC Contracts Committee was forced to update and in 2017 a new edition of the FIDIC Conditions of Contract was published.

The parties to the FIDIC contract are the Contracting Employer and the *Contractor*. The FIDIC Contract Engineer (Engineer Consultant) is the Employer's representative authorized by him to take economic, organizational and technical actions and decisions related to the performance of the contract (.pjm.pl., 2023).



The FIDIC Yellow Model defines the basic terms of the contract between the Contracting Authority and the Contractor regarding the development of design documentation and the execution of Construction Works. The FIDIC Yellow model, called the "design and build" model, is used, among others, in projects such as: power plants, water and sewage systems, industrial installations implemented for the public sector.

#### **4. Methodology of own research**

**The aim of the article is to develop theoretical and practical assumptions of the phase model concept for infrastructure projects implemented from the perspective of design offices on the principles of Yellow FIDIC.** In the article, the author develops and presents the assumptions of the phase model concept based on the available literature in the field of project management and the assumptions of the FIDIC Contract Conditions. The research problem is as follows: **What elements does the course of an infrastructure project implemented on the basis of the FIDIC Yellow Conditions of Contract consist of?** The defined research problem has been clarified by research issues within which the following research questions have been distinguished:

**1. What is the organizational structure of the project implemented on the basis of the FIDIC Yellow Conditions of Contract?**

**2. What are the elements of the phase model of a project implemented on the basis of the FIDIC Yellow Conditions of Contract?**

**3. What are the phases of development of the documentation used in the implementation of the phase model based on the FIDIC Yellow Conditions of Contract?**

In order to obtain answers to the research questions posed, literature research was carried out in the first place, which allows us to understand what has been researched and how and what are the key issues regarding a given scientific field (Zdonek, Hysa, Zdonek, 2016). This research allowed to learn about key sources of literature, main theories, ideas, concepts, points of view.

Operationalizing the assumptions of the phase model of the infrastructure project implemented on the basis of the Yellow FIDIC Conditions of Contract, a detailed analysis of the processes was carried out, on the basis of which schemes were developed using the business process modeling method. Business process modeling is the art of graphic presentation of business processes for the purposes of their optimization and archiving (Żytnerski, Zadora), allows you to document processes or create their definitions (Gawin, Marcinkowski, 2013). The use of the process decoupling method allows for a detailed analysis of the studied phenomenon, which in turn allows for the improvement of processes. Process modeling gives you more opportunities in the area of analysis and when planning changes. Thanks to modelling,

we have the opportunity to learn about processes from beginning to end, which guarantees a better understanding of specific stages (Lipski, Lipski, 2021).

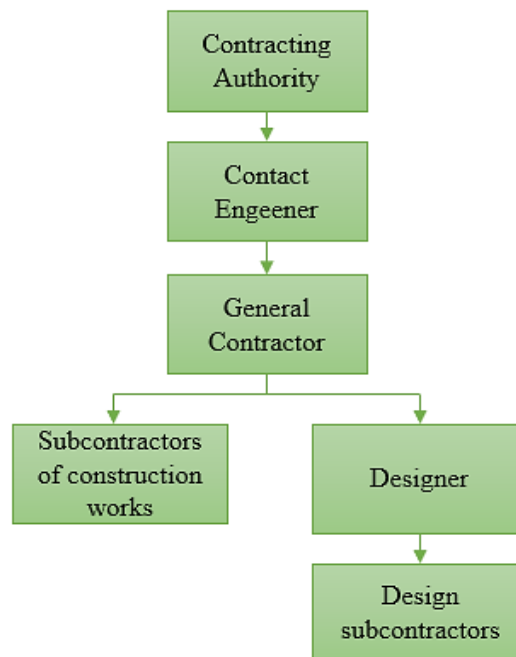
The research was conducted in the sector of architecture and construction engineering, on a group of infrastructure projects. The architecture and environmental engineering sector significantly affects the development of all countries and contributes to the growth of gross domestic product. The architecture and civil engineering sector stands out from other industries around the world primarily due to the following factors: participation of several stakeholders, construction and non-construction involvement, uniqueness of the project, limited degree of automation, huge financial outlays, long time frames (Khawaja, Mustapha, 2021) all the indicated factors have an impact on a higher level of project risk than in other industries. Infrastructure projects are used to implement infrastructure investments aimed at financing the development of services provided to citizens and supporting the development of the economy (.pfr.pl, 2023). Infrastructure projects include primarily water and sewage networks, roads, schools, hospitals, bridges and airports. Infrastructure projects are characterized by specific features affecting the management of the organization:

- high level of risk,
- a high level of complexity,
- high variability of the scope of the project and its nature over time,
- the use of modern, non-standard technologies and solutions (Flyvbjerg, 2021).
- the existence of many stakeholders whose interests are – at best inconvergent – and sometimes also conflictual, with a high impact of stakeholders with a lot of power (Frąkiewicz-Wronka, 2010). The objectives of infrastructure projects often arouse controversy in the environment, which negatively affects the level of risk. Infrastructure projects require a lot of commitment and arouse interest in the eyes of various stakeholders (Vuorinen, Martinsuo, 2019), which is why proper stakeholder management is very important in infrastructure projects.

## **5. Assumptions of the concept of a phase model of the project implemented on the basis of the contract conditions of the Yellow FIDIC**

Items The purpose of this subchapter is to present the results of the operationalization of the phase model of an infrastructural project, using for this purpose the literature research conducted above and based on the analysis of the FIDIC Conditions of Contract in the design and build formula, the so-called yellow book. According to the discussed formula, the Contractor is responsible for developing and approving the design documentation necessary for the implementation of the Works. The contractor may have his own design office, but in many cases he uses the services of independent design offices (subcontractor).

From the point of view of the design office, the form of investment implementation is very important. The implementation of the investment based on the so-called Yellow FIDIC seems to be slightly more complicated than the implementation of an order strictly at the request of the ordering party. This is usually due to the fact of multi-stage reconciliation of project documentation and different expectations of the Contractor (who is the client for the design office) and the Contracting Authority (being the investor of the investment). Figure 4 shows a diagram of the organizational structure based on the assumptions of the FIDIC Yellow Conditions of Contract.

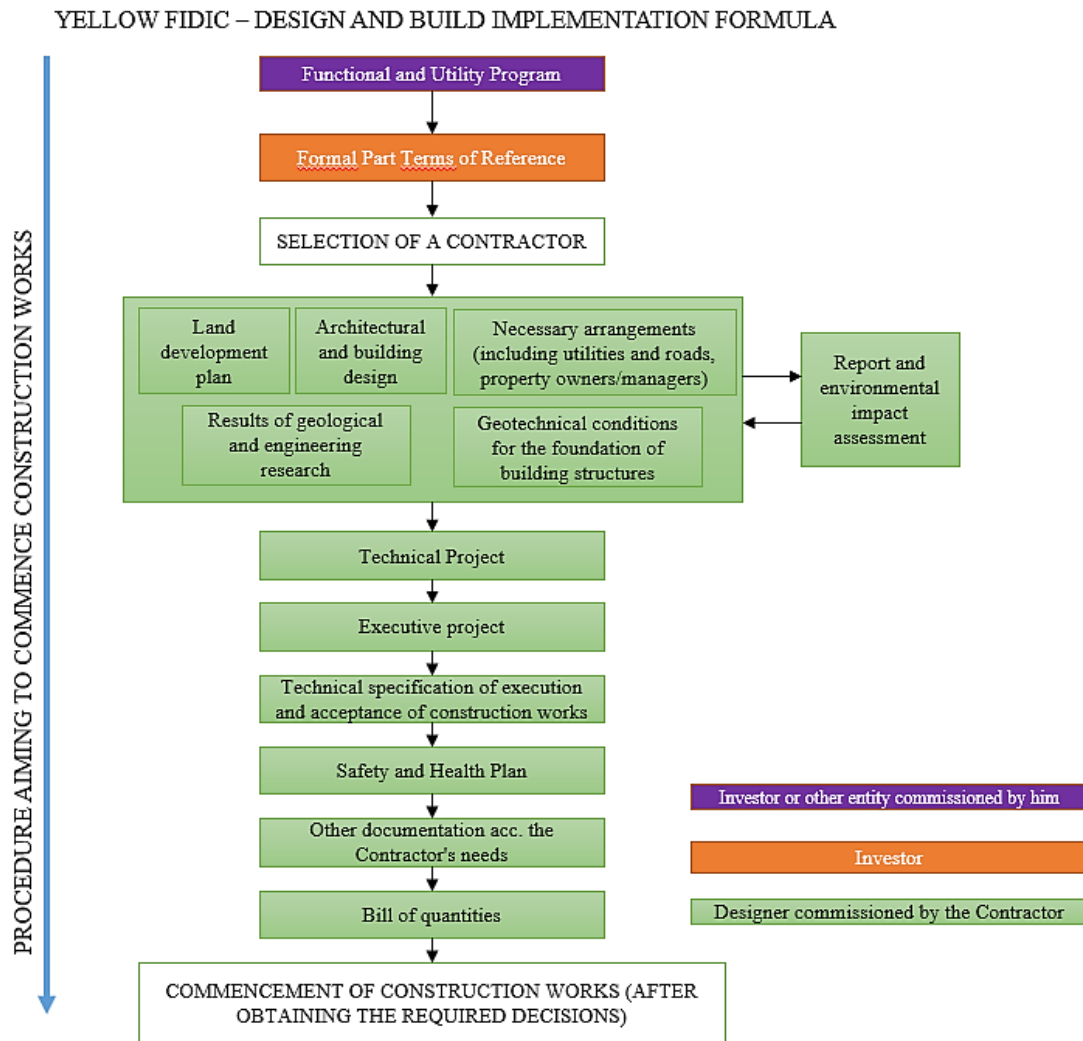


**Figure 4.** Diagram of the organizational structure for projects implemented in the "design and build" formula - Conditions of Contract FIDIC yellow.

Source: Own elaboration.

The above organizational chart presents the model of role dependencies in the project implemented under the FIDIC Yellow Conditions of Contract. The greatest decision-making power in the project belongs to the Contracting Authority, whose one of the basic tasks is to accept changes to the Contract. The basic task of the Contract Engineer is to manage the Contract on behalf of the Contracting Authority, direct contact with the Contractor and ongoing supervision over the implementation of the investment. The Contractor is a company selected or selected by the Investor as part of a tender. In the presented implementation model, the Contractor is responsible for the development of design documentation, therefore the Contractor is responsible for the designer's activities. The designer acting both as an internal resource of the Contractor and an external design office must act consistently with the provisions of the Contract concluded between the parties, i.e. the Contracting Authority and the General Contractor.

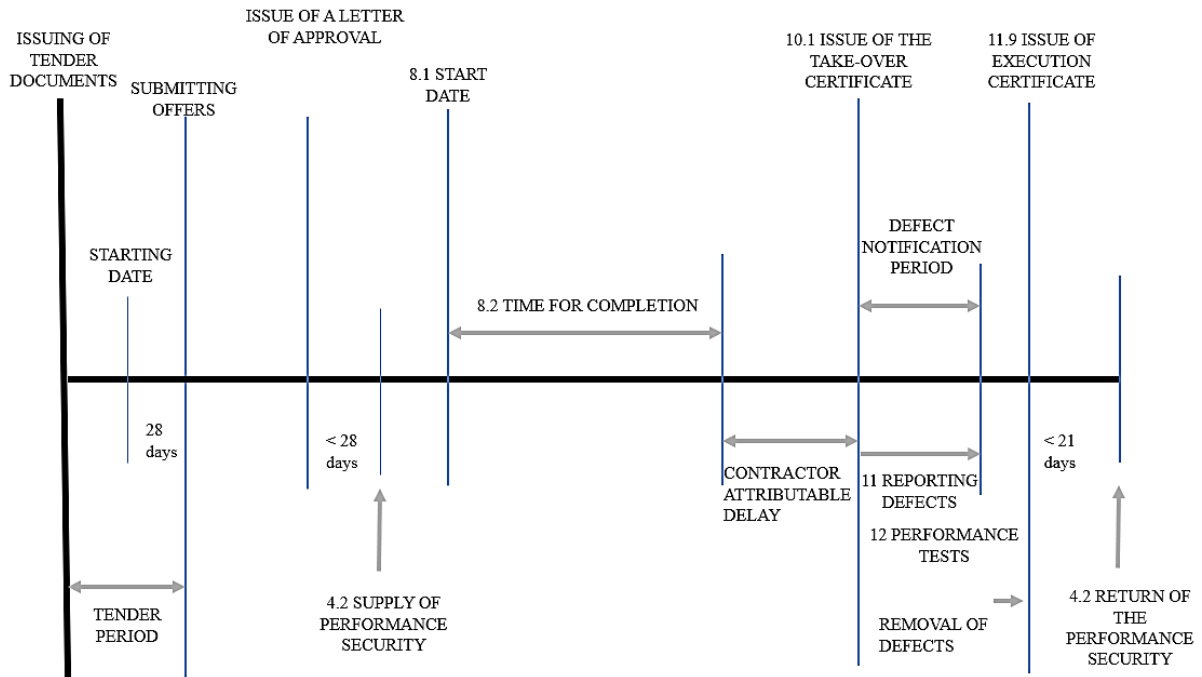
Figure 5 presents a model of manufactured products in the form of design documentation in the "design and build" implementation formula. The scope of responsibility for the delivery of individual products as part of the investment was also indicated. The basis for the development of design documentation for the Designer / design office is the Functional and Utility Program provided by the Contracting Authority at the stage of announcing the tender for the selection of the General Contractor.



**Figure 5.** Sequence of preparation of project documentation in the "design and build" implementation formula.

Source: Own elaboration based on: Handbook for Investors of infrastructure projects, Ministry of Regional Development, Warsaw 2007-2013, p. 207.

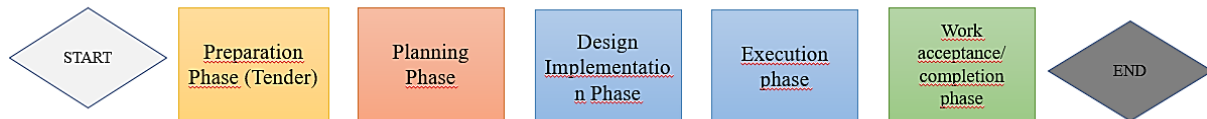
The FIDIC Yellow Contract Conditions for Equipment and Construction Design are characterized by typical major events occurring in each project implemented in this formula. They are a kind of model of successive processes. The model in question is shown in the figure below.



**Figure 6.** Typical sequence of major events for Equipment and Design and Construction.

Source: Own elaboration based on: *FIDIC SIDiR Contract Conditions of Equipment and Design and Construction for electrical and mechanical equipment as well as engineering and construction works designed by the Contractor. Fourth English-Polish edition 2008.*

In the phase model implemented in accordance with the assumptions of the Yellow FIDIC Conditions of Contract, 5 phases of the project can be distinguished. The diagram below shows a graphical presentation of phases for this model.



**Figure 7.** Phase diagram in the phase model of a project implemented in the "Design and Build" formula.

Source: Own elaboration.

A detailed description with an overview of the individual phases of the model is presented in the table below. For each phase, an analysis was carried out taking into account the following aspects: phase objective, milestone, basic tasks, good practices.

**Table 3.**

*Assumptions of the phase model concept for infrastructure projects implemented on the basis of 3 FIDIC Yellow Conditions of Contract*

<b>Project phase model in accordance with the assumptions of the Contract Conditions FIDIC Yellow</b>		
<b>Project preparation phase – Offer preparation stage</b>	Phase objective	Defining the project initiative, determining the need for project implementation (specify the project is beneficial, feasible or needed), providing resources for project planning, conducting risk analysis.
	Milestone	Submission of a bid
	Basic tasks	Detailed analysis of tender documentation; preparation of the offer
	Good practices	A detailed analysis of the tender documentation along with questions and answers provided at the stage of the tender procedure is very important at this stage. It is also necessary to analyze the provisions of the Terms of Contract, Model Agreement, Technical specification of execution and acceptance of construction works, General Requirements, Functional and Utility Program in terms of their impact on the price, deadline, as well as the possibility of occurrence of risks charged to the bidder. At this stage, it is worth engaging specialists in their fields to analyze the documentation in order to verify the documentation in terms of the requirements, then it is suggested to perform an analysis of opportunities and threats, e.g. using the brainstorming method
<b>Planning phase</b>	Phase objective	Verification of project implementation options, selection of appropriate management methodology, cost estimation, risk analysis resulting from the implementation of the project
	Milestone	Selection of the submitted offer as the most advantageous
	Basic tasks	Development of a work schedule, work growth monitoring \and management system, assignment of responsibility in the project, development of a communication model, development of a correspondence/documentation management system, development of a quality management system
	Good practices	During the planning phase, it is recommended to prepare a uniform text of the tender document conditions, such as the General and Special Conditions, tender questions and answers and other relevant documents, and to send them to the project team members to ensure efficient communication and eliminate ignorance resulting from lack of access to the documentation. It is also important to analyse in detail the deadlines resulting from the contract, contracts, KPA in order to develop a real schedule, and an appropriate system for monitoring deadlines. At this stage, it is important to thoroughly conduct a stakeholder analysis and develop a stakeholder management strategy.
<b>Project implementation phase</b>	Phase objective	Manufacturing the Product or Products of the Project, obtaining acceptance and the final acceptance protocol of the works, monitoring and responding to any risks and unforeseen emerging situations.
	Milestone	Signing the contract.
	Basic tasks	Preparation of complete design documentation, Obtaining the necessary arrangements, Obtaining a legally valid building permit / Certificates of no objection to the intention of construction
	Good practices	An important management task in this phase is the ongoing updating of the schedule – systematic introduction of changes to the schedule. It is important to monitor the progress of work on an ongoing basis and discuss the problems that have arisen in order to solve them quickly, this avoids implementation downtime after encountering a problem. It is recommended to record in a systematic way all events that took place during the implementation of the contract, primarily due to the fact that they can be the basis for submitting relevant notifications, as well as to gather experience that may serve subsequent implementations.

Cont. table 3.

Executive phase	Phase objective	Positive verification of the prepared project documentation.
	Milestone	Obtaining a legally valid building permit / Certificate of no objection to the intention of construction
	Basic tasks	Author's supervision over the implementation of the investment, development of as-built documentation.
	Good practices	In this phase, the main task of the design office is to verify whether the construction works performed by the General Contractor and its subcontractors are carried out in accordance with the provisions of the project. In the case of changes, the Designer decides whether a given change is a significant change and a change in the building permit is required, or whether it can be qualified as insignificant changes. It is important to keep an appropriate register of implementation changes in relation to the project documentation. This will allow you to maintain order in the documentation and facilitate the development of as-built documentation.
Acceptance phase/completion	Phase objective	Verification of the achieved goals set in the project, closing the project, determining the method of monitoring the benefits of the project.
	Milestone	Acceptance of final acceptance of works/final payment certificate
	Basic tasks	Settlement of the project, collection of good practices, verification of the benefits obtained, thanks to the entire project team, preparation and approval of the closing report.
	Good practices	During the closure phase, the dossier must be finally systematised. It is crucial to verify the benefits and determine how to further monitor the benefits and risks. A good way is to write down the so-called Lesson Learned, i.e. write down both good and bad practices that can be used to implement subsequent projects. Another important element from the perspective of the design office at the end of the project is to obtain references, i.e. certification of a well-performed service. If it is necessary to close the project early, the closing phase can be initiated at any time during the project.

Source: Own elaboration.

The project management method must be consistent with the contract terms model FIDIC yellow.

The FIDIC Conditions of Contract also set certain standards for document management. According to the model, all correspondence generated during the term of the Contract is conducted between the parties to the Contract, i.e. the Contracting Authority and the Contractor. All correspondence, as well as design documentation produced by the Designer, must go to the Contractor, who officially forwards the correspondence to the Ordering Party. In the design phase, the Designer takes an active part in the ongoing update of documentation. The table below contains a list of suggested documents used to manage the Contract under the FIDIC Yellow Contract Conditions model.

**Table 4.***Document management scheme in the Contract Conditions model 4FIDIC Yellow*

Documents	Preparation phase (tender)	Planning phase	Implementation phase	Acceptance phase / Completion
<b>Tender documentation received from the Contracting Authority</b>	analysis	analysis	analysis	archiving
<b>Project card</b>	creation	update	update	archiving
<b>Schedule</b>	creation	update	update	archiving

Cont. table 4.

<b>Stakeholder Analysis + Management Strategy</b>	creation	update	update	archiving
<b>Risk analysis + matrix</b>	creation	update	update	archiving
<b>Quote offer</b>	creation	review	verification/update	archiving
<b>Deadlines and obligations of the Contractor</b>		creation	review	archiving
<b>Deadlines and obligations of the Contract Engineer</b>		creation	review	archiving
<b>Deadlines and obligations of the Ordering Party</b>		creation	review	archiving
<b>Notice deadlines, including claims</b>		creation	review	archiving
<b>Deadlines according to KPA</b>		creation	review	archiving
<b>Monitoring of claims</b>		creation	review	archiving
<b>Issue Register</b>		creation	update	archiving
<b>Electronic correspondence log</b>		creation	update	update / archiving
<b>List of subcontractors</b>		creation	update	archiving
<b>Summary of quality assurance plans</b>		creation	update	archiving
<b>List of Technology and Organization Projects Robot</b>		creation	update	archiving
<b>Summary of Amendments to the Agreement</b>		creation	update	archiving
<b>Summary of implementation changes in relation to the project documentation</b>			creation	archiving
<b>Progress report</b>		creation	update	archiving
<b>Experience Report</b>		creation	update	archiving
<b>Partial acceptance report/ Interim Payment Certificate</b>			create/update	archiving
<b>Final acceptance report/ Final payment certificate</b>			creation	archiving
<b>Close report</b>				create/archive

Source: Own elaboration.

Contracts concluded on the basis of the FIDIC Yellow Conditions of Contract are often multi-page and extensive in terms of their content, therefore it is suggested to create documents containing the most important provisions of the Contract concerning, above all, the applicable deadlines and responsibility in the project in order to verify them efficiently at the implementation stage. These documents should be made available to all members of the project team.



## 6. Summary

In this article, the main goal was achieved by presenting the concept of a phase model for infrastructure projects implemented from the perspective of the design office on the basis of the FIDIC Yellow Contract Conditions. The presented concept integrates the project phase model typical for project management with the FIDIC Yellow Contract Conditions model.

The development of the concept in question is the result of searching for an answer to the posed research problem, which is as follows: what elements does the course of an infrastructural project based on the assumptions of the Yellow FIDIC Conditions of Contract consist of? The answer to the presented research problem was obtained through the analysis of individual research questions.

Research question 1: What is the organizational structure of the project implemented on the basis of the FIDIC Yellow Conditions of Contract?

A detailed analysis of the organizational structure is presented both graphically and in descriptive form in Chapter 4. The key roles of the organizational structure developed based on the assumptions in the FIDIC K Treaty Frameworks are the Contracting Authority, the Contract Engineer and the General Contractor, the next role is the designer, who can be internal the resources of the General Contractor, or an external company. What is important is the dependence of individual roles on each other and a clearly defined scope of responsibility, as well as establishing an appropriate communication system.

Research question 2: What are the elements of the phase model of a project based on the FIDIC Yellow Conditions of Contract?

The basic elements of the phase model of the project implemented on the basis of the FIDIC Yellow Contract Conditions include the following phases: Preparation phase (tender), Planning phase, Project implementation phase, Contractor implementation phase, Acceptance/completion phase. The individual phases follow one after the other and are dependent on each other.

Research question 3: What are the phases of development of the documentation used in the implementation of the phase model based on the FIDIC Yellow Conditions of Contract?

The Yellow FIDIC Contract Conditions defines certain standards for contract management, these standards also apply to the documentation produced. It is important to work out the appropriate documentation management mode, as well as to train all members of the project team who have direct contact with the manufactured documentation in this area.

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