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## TRANSLATION OF PUBLISHED ARTICLE

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## LEGAL AND REGULATORY FRAMEWORK OF QUALITY MANAGEMENT IN CONSTRUCTION: INTERNATIONAL NORMS AND UKRAINIAN REALITIES

(ABSTRACT, KEY WORDS)

**Problem statement.** Further effective development of the construction industry in Ukraine and attracting investments in this field are associated by most experts nowadays with the implementation of international construction standards FIDIC and the involvement of FIDIC consulting engineer, which entails the need to analyze the compliance of the rights and responsibilities of consulting engineer under Ukrainian law to world standards embodied in standard forms of international standards developed by the International Federation of Consulting Engineers (FIDIC). **The purpose** of the work is to substantiate proposals to achieve compliance of the rights and responsibilities of consulting engineer in Ukraine to international standards (including FIDIC); introduction of professional engineering supervision in Ukraine; substantiation of directions of creation of an effective quality management system in construction taking into account requirements of the international standards. **Methods.** To solve the problems of research, the following scientific methods were used: historical and legal during the study of the history of formation and development of international building standards; comparative and legal – in the course of comparative analysis of approaches to the role of FIDIC consulting engineer in the system of construction quality control under Ukrainian law and consulting engineer in the quality management system under international standards; formal and logical during the analysis of the current legislation, which establishes the legal status of a consulting engineer; dialectical and modeling to substantiate proposals to take into account key approaches to world best practice in the field of regulation of relations between participants in investment and construction activities. **Result.** It is established that despite certain legislative initiatives, the current legislation of Ukraine does not fully take into account the key approaches of the best world practice in the field of regulation of relations between participants in investment and construction activities, in particular FIDIC. **Conclusions.** It is substantiated the necessity to expand the possibility of using internationally recognized standards forms of contracts (in particular, FIDIC contracts) for the implementation of publicly funded projects by making appropriate changes to the General Conditions for the concluding and executing of contracts in the capital construction, approved by the Cabinet of Ministry of Ukraine from 01.08.2005 No. 668. It is proposed to introduce the Ukrainian Law "On Public Procurement" for works and services contracts that contain signs of intellectual activity, in accordance with the provisions of Directive 2014/24/EU on public procurement. The expediency of clarifying the status of a consulting engineer within construction using FIDIC contracts in Ukraine is reasoned as well as the implementation of the international standard ISO 9001:2015, which establishes the criteria of the quality management system.

**Key words:** investment and construction activities; consulting engineer; engineering; contracts FIDIC; quality; procurement; defects notification period

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## Problem statement

According to the audit of the Ukrainian economy prepared by the Cabinet of Ministers of Ukraine, over the past 25 years, Ukraine has shown relatively low economic growth rates compared to the Central European countries. Even despite significant GDP growth within the period from 2000 to 2007, average economic growth rate in Ukraine from 1996 to 2019 was 2.8 percentage points lower than in its European neighbours with a socialist past [1]. During the same period, the share of the construction industry in the economy (GDP) has become three times lower, and now stands at only 2.2%, while in the European Union construction constitutes about 6–8 % [2]. A clear indicator of the state of affairs in this area is the fact that according to the data of 2017, in Ukraine, 95 % of roads were in a condition that does not meet the standards [3].

Even more regrettable is the fact that construction industry not only produces construction products, but also creates orders for a significant number of other sectors of the economy, including mining, metallurgy and metalworking, energy, production of construction materials, etc. Thus, the importance of its successful operation and development is greater due to the impact of the construction industry on a holistic system of interconnected markets.

The issue of improving the legal and regulatory framework of construction activities taking into account the possibility of using approaches and proforma contract templates of the International Federation of Consulting Engineers (FIDIC) has been addressed in a number of scientific works. For instance, A. Grynenko provides an analysis of the current process and quality control of road construction works and comes to the conclusion that in order to achieve positive changes in this area it is necessary to adapt successful solutions of FIDIC and the ones of independent consulting engineers accredited by the International Association FIDIC to the Ukrainian reality/legislation [4]; O.V. Lilov determines possible place and role of a consulting engineer in the construction practice of Ukraine when applying various organizational forms of construction management [5]; T.A. Kolyada and N.O. Gvozdeva analyse the stage of implementation of FIDIC contracts in Ukraine and the problems hindering their use, including issues of quality control of road works by an independent consulting engineer [6]; I.V. Kharaim summarizes and systematizes theoretical and methodological aspects of public man-

agement of engineering activities in construction [7]. However, the above issues were not considered in a comprehensive manner from the point of view of the lack of quality management system in Ukraine at all stages of construction in accordance with international standards.

As to the foreign scientists, Lukas Klee, in particular, (Klee, 2018) studies legal and managerial aspects of international construction projects and the use of standard FIDIC forms in various legal systems, application in practice of the principles of international construction contract law and management of construction contracts [8]; the research of Jaeger Axel-Volkmar and Götz-Sebastian Hök (Axel-Volkmar and Hök, 2010) focuses on particular features of the application of FIDIC proforma contracts (especially the provisions that are based on the common law) in the countries of the continental legal system [9]; Mohamed-Asem Abdul-Malak and Farah El Masri (2016) provide an in-depth analysis of the tasks and roles of an engineer in the administration of construction contracts [10]; Jayalath (Jayalath, 2012) analyzes the functions of an engineer under FIDIC contracts and justifies his participation in the construction process, including as an independent person, the "quality auditor" [11]. However, it should be mentioned that in Ukraine there are certain specific features of the implementation of FIDIC contracts, their coordination with the norms of current legislation and established practice.

Hence, further development of legislation is associated with a theoretical conceptualization of approaches to expanding the possibility of using internationally recognized standard contract templates in Ukraine (in particular, FIDIC contracts); ensuring professional status of a consulting engineer in the framework of construction using FIDIC contracts; introducing international standards in the procedures for purchasing works and services that contain attributes of intellectual activity, and quality management systems at all stages of the life cycle of the construction object. Therefore, the purpose of the article is to justify proposals for achieving compliance of the rights and obligations of consulting engineers in Ukraine, their role in the construction works quality management system with international standards (in particular, FIDIC); introduction of quality-based selection for the procurement of engineering services, including technical supervision; justification of directions for creating an effective quality management system in construction, taking into account the requirements of international standards. The novelty lies in the author's justification of the appropriateness of implementing an integrated approach to improving

the quality of construction by ensuring professional status of a consulting engineer within the framework of construction using FIDIC contracts; the introduction of professional engineering supervision in Ukraine and the replacement of the quality control system with the quality management system, as necessary conditions for sustainable construction.

The objectives of the article are to determine ways to use standard FIDIC contract templates in Ukraine, improve the legal status of a consulting engineer in the framework of construction using FIDIC contracts; make a transition to a quality-oriented selection process during procurement procedures, implement a quality management system at all stages of the life cycle of a construction object.

### **Legislative initiatives of Ukraine aimed at developing construction industry and legal regulation of relations in the field of road construction**

Undoubtedly, the attention that has been paid in recent years to the development of the construction industry and the legal regulation of relations in this area by the country's leadership and the government is positive. Special mention should be made of the National Project "Big construction" which is also associated with certain legislative initiatives, regulatory and methodological support.

In particular, the decree of the President of Ukraine "On certain measures to create conditions for the development and improvement of the quality of highways" No. 529/2019 dated 19.07.2019 [12] provides for a number of measures aimed at creating safe and comfortable conditions for road users, developing a network of high-quality roads, and creating favourable conditions for business. One of them is to establish the obligation for employers of construction, reconstruction and repair of highways to involve an independent consulting engineer in the field of road construction (FIDIC) on a competitive basis at the stages of procurement, performance of works, and warranty service.

The law of Ukraine "On amendments to certain legislative acts of Ukraine concerning the improvement of the procedure for providing administrative services in the construction sector and the creation of a unified state electronic system in the construction sector" No. 199-IX dated 17.10.2019 [13] defines the legal status of a consulting engineer. In addition, Part Six was

added to the Article 11 of the law of Ukraine "On architectural activities", which provides that "the obligation to carry out technical supervision may be assigned by the employer to a specialized organization or a specialist in technical supervision or a consulting engineer, with the definition of their powers in the contract. Proforma contracts for the implementation of technical supervision and for the provision of engineer and consulting services in construction are approved by the central executive authority, which ensures the development of state policy in the field of architecture.

As part of implementation of the above-mentioned legislative innovations, Ukravtodor has taken measures to separate technical supervision from the employer's service in the road industry in order to develop the market for providing services for independent technical supervision of the construction and repair of highways. It may be recalled that before, technical supervision work was performed by engineers of the technical supervision service of the construction employer, and there was a significant number of abuses in terms of overstating the volume of work, improper quality control, and so on. Appropriate methods are being developed, taking into account specifics of purchasing engineering services.

In order to strengthen control over the quality and scope of work, compliance with design decisions and requirements of state standards, building codes and regulations, Ukravtodor began to involve companies that were supposed to carry out the above-mentioned control during the entire period of work.

The draft law "On amendments to the Criminal Code of Ukraine and the Code of Ukraine on Administrative Offenses concerning strengthening responsibility for offenses in the field of urban development" dated 24.07.2020 [14] was initiated, which strengthens personal administrative and criminal liability of specialists in the field of architectural activities, and technical supervision engineers, in particular.

But despite such significant and supposedly innovative developments, the question arises: did these legislative initiatives aimed at improving the supervision of work really take into account international and European experience in terms of high-quality construction, reconstruction and repair of highways? Will the quality improve only by involving independent engineering companies and strengthening personal responsibility of specialists working in the engineering services market? What international practices and changes in Ukrainian legislation will contribute to the development of high-quality roads?

### Legal status of a consulting engineer under Ukrainian legislation and FIDIC contract: main inconsistencies

Today, there are still discussions among specialists in the construction industry as to who are the FIDIC consulting engineers? And why exactly is FIDIC emphasized in the above-mentioned legal act? Based on international and European experience, the conclusion can be drawn that the requirement for mandatory involvement of a FIDIC consulting engineer in the field of road construction was based on positive experience in implementing projects financed by MFIs, since the key figure in these projects during the entire period of construction work is a consulting engineer.

At the same time, as a result of further legislative and governmental initiatives launched and implemented in compliance with the presidential decree, FIDIC's key approaches were not taken into account.

FIDIC is the International Federation of Consulting Engineers that has developed universal contract templates for the implementation of construction projects. FIDIC consulting engineer is a professional company that has a staff of qualified engineers and other professionals with sufficient competence to carry out the duties assigned to them, providing professional services taking into account the conditions defined in the contracts of the International Federation of Consulting Engineers.

Considering the above, the consulting engineer defined in Article 1 of the law of Ukraine "On regulation of urban development activities" [15] is not a FIDIC consulting engineer due to the fact that the former provides services in view of the conditions defined in the capital construction contract, the standard form of which is approved by the resolution of the Cabinet of Ministers of Ukraine No. 668 of 01.08.2005 [16].

FIDIC contracts are not regulations adopted by the legislative body, but only recommended documents, rules of conduct, and a set of tools developed by the International Federation to regulate relations in the construction industry. But in many countries of the world they are mandatory for the implementation of large-scale, technologically complex, expensive, ongoing construction projects that require a higher level of management, and risks have a higher price [17].

These universal contract templates have been largely used in international practice and it has been proved that they can regulate relations

between participants in construction activities. And, despite the fact that the jurisdictions of many states have their own legal landscape, which affects the application of FIDIC contracts in construction, taking into account different approaches to legal settlement in general and continental law [18], FIDIC contracts are most often used, and therefore are considered the best world practice in the field of construction.

Construction under FIDIC contracts will provide a legal framework for the work of FIDIC consulting engineers and contribute to improving the quality of construction.

What are the advantages of construction under the above-mentioned contracts? Here are a few points as to the contract for the performance of construction works under the terms of an international construction contract for the employer's project, 1999 (hereinafter referred to as the FIDIC contract) [19], in comparison with the capital construction contract in accordance with the legislation of Ukraine.

*The FIDIC contract assigns an extremely important role to the engineer, his individual status, who performs professional engineer supervision.* The main obligation of the employer is to appoint an engineer who performs the duties stipulated in the contract.

It may be recalled that FIDIC contract engineer means a person appointed by the employer as an engineer who performs the duties stipulated in the contract. Its staff includes qualified engineers and other professionals with sufficient competence to carry out these duties.

The employer must entrust a significant part of his functions in terms of construction control and financial control to an engineer. In particular, the engineer issues personally a Taking-Over Certificate based on reports on the progress of work prepared and provided to him by the contractor. After accepting the work, the engineer issues personally an interim payment certificate or final payment certificate based on the financial report or final financial report prepared and provided to him by the contractor. The engineer transfers to the employer for payment only the amounts that he considers to be payable to the contractor. Given the above, the employer has nothing to do with confirming the amount of work performed by the contractor and confirming the amounts for payments, signing the relevant documents. The employer shall accept the work only after it is completed in accordance with the contract or after the engineer issues a Taking-Over Certificate.

However, when the engineer has an individual status under the main construction contract, it is the employer who is responsible to the contractor for the actions or lack of actions of the latter. In a FIDIC con-

tract, the engineer is not a party to the contract, but is considered the most important figure who acts professionally to organize the contract execution process, so it is the employer's responsibility to choose the right, qualified and experienced engineer. The engineer is responsible only to the employer under a separate consulting contract concluded with him, and receives remuneration for performing his tasks.

This approach is understandable and justified. Let us recall that it was at the request of international banks in the 60s of the last century that FIDIC developed the first proforma, which defines the special role of an individual who would not be a party to the contract (neither the employer nor the contractor), but a professional in the relevant field, who would control the construction process from a technical point of view, and also provide banks with sufficient information that would allow them to assess comprehensive risks during the project implementation.

And do the third-party companies involved, including international ones that carry out technical supervision work, have the status of an individual engineer in accordance with the regulatory legal acts of Ukraine, similar to the FIDIC contract?

The basis for starting construction is a concluded agreement (article 640 of the Civil Code of Ukraine), which entered into force (article 631 of the Civil Code of Ukraine) [20]. Until now, construction in Ukraine has been carried out according to the General conditions for the conclusion and execution of contracts in the capital construction, approved by resolution of the Cabinet of Ministers of Ukraine No. 668 of 01.08.2005.

The employer has the *right* to conclude a contract for the provision of this type of service with a specialized organization or specialist in order to exercise control and supervision over construction and make appropriate decisions on his own behalf (article 881 of the Civil Code of Ukraine).

The main obligations of the employer are acceptance of works performed by the contractor, payment of the amounts for the performance of work by the contractor (article 882 of the Civil Code of Ukraine, article 318 of the Commercial Code of Ukraine [21]) and technical supervision over compliance with the quality of work performed (law of Ukraine "On architectural activities" [22], the procedure for technical supervision during the construction of an architectural object,

approved by the resolution of the Cabinet of Ministers of Ukraine No. 903 of 11.07.2007 [23]).

Technical supervision is provided by the employer and is carried out by persons who have a qualification certificate (Article 11 of the law of Ukraine "On architectural activity").

The employer has the right "to delegate, in accordance with the procedure established by law, the powers to carry out technical supervision and control to a third party, in particular to a specialized organization (consulting, project, engineering, etc.) or to a specialist who has the appropriate permits, with the definition of their powers in the contract. Delegating powers by the employer does not exempt him from liability to the contractor for non-performance or improper performance of contractual obligations, and also does not deprive him of the right to exercise control over the progress, quality, cost and scope of work" (paragraph 28 of the General conditions for the conclusion and execution of contracts in the capital construction, approved by resolution of the Cabinet of Ministers of Ukraine No. 668 of 01.08.2005) [24].

Taking into account this approach, Taking-Over Certificates for completed construction works (forms KB-2b) and certificates on the cost of the completed works and expenses (forms KB-3) are prepared and signed by the contractor, and transmitted to the employer, according to proforma documents approved by DSTU B D 1.1-1:2013 "Rules for determining the cost of construction". The engineer (inspector of technical supervision) only checks and approves (agrees) the quantity and quality of work performed in the reporting period.

Unlike the FIDIC contract, under the capital construction contract, it is the employer who plays the main role in accepting and paying for the work performed.

Thus, engineer in the FIDIC contract acts as *an agent of the employer* and provides an engineer supervision service corresponding to the agency contract provided for in Article 297 of the Commercial Code of Ukraine, with one party (commercial agent) undertaking to provide services to the second party (the entity represented by the agent) in concluding contracts or facilitate their conclusion (provision of actual services) on behalf of this entity and at its expense.

And, according to the current legislation of Ukraine, the consulting engineer (technical supervision engineer) acts only as a *representative of the employer* and acts under the mandate contract, performing some of the obligations of the employer, corresponding to the mandate contract provided for in Article 1000 of the Civil Code of Ukraine, with one

party (mandatary) undertaking to perform certain legal actions on behalf of and at the expense of the second party (mandator). A juristic act made by a mandatary creates, modifies, or terminates the civil rights and obligations of the mandator.

The analysis of legislation in the field of urban development regulation and the practice of its application indicates that a consulting engineer does not have a completely independent status, and therefore its independence causes a lot of debates.

*FIDIC contracts have a different procedure of work acceptance and elimination of defects, which also contributes to ensuring quality control.*

In accordance with Article 10 of the FIDIC contract, the employer accepts works only after they are completed in accordance with the contract or after the engineer issues a Taking-Over Certificate. The Taking-Over Certificate indicates the date of completion of work in accordance with the contract, after which the employer has the right to use the construction object or part of it, and the contractor – to receive 50% of the total deduction amount that is on the employer's account, received from each interim payment certificate during the construction period.

From the date specified in the Taking-Over Certificate, the Defects Notification Period begins. The specified period is set for reporting defects found in the works or in the stage of work (depending on the circumstances) indicated in special conditions (taking into account any extension of this period). The recommended Defects Notification Period is 18 and 24 months.

During the Defects Notification Period, the contractor, at his own expense and at his own risk, is obliged, among other things, to perform all the necessary work to correct defects or repair damages that may be requested by the employer (or a person on his behalf) within the Defects Notification Period and that occurred due to the contractor's fault. In particular, all works or deficiencies, if the need to carry them out arises in connection with: a) any project for which the contractor is responsible; b) non-compliance of equipment, materials or quality of work with the terms of the contract or c) failure of the contractor to fulfil any of his other obligations.

The second half of the deduction amount is one of the ways to ensure the contractor's obligations in terms of eliminating defects and encourage the contractor to perform high-quality work. Because in case of poor quality of work, the employer can eliminate the defects inde-

pendently using the deduction amount or even extend the Defects Notification Period.

Following the end of the Defects Notification Period, elimination of defects that occurred due to the contractor's fault, adjustment of the contract price (if there are grounds for possible expenses during the elimination of defects and damages), the engineer issues a Performance Certificate.

The contractor is not considered to have fulfilled his obligations under the contract until the he is issued a Performance Certificate by the engineer indicating the date on which the contractor completed the performance of his obligations. Only the Performance Certificate means the final acceptance of work and confirmation of the final performance of the contractor's obligations. In fact, according to the legislation of Ukraine, the Performance Certificate of Contract is equated to a facility operation readiness act or a certificate of facility readiness for operation (article 39 of the law of Ukraine "On regulation of urban development activities").

Within 56 days after receiving the Performance Certificate, the contractor shall submit to the engineer a draft Final Payment Certificate and a Final Statement. These documents certify that all defects (explicit, implicit, hidden, etc.) have been eliminated, the contract price has been adjusted, and all claims have been settled. At this stage, the contractual relationship and liability under the contract come to the end and legal liability takes effect. Therefore, if other defects are identified after the termination of the contract, one acquires the right to apply to the court for reparation.

Thus, the quality of work performed is regulated by the provisions of the contract and consists in the following:

- 1) the Taking-Over Certificate confirms the completion of work according to the volume of work performed, which is provided for in the project documentation, and the Performance Certificate – acceptance of the results of work according to the quality requirements (absence of defects in the results of work, achievement of operational indicators of the object, etc);

- 2) final quality acceptance is possible after 12 or 24 months after the employer starts using the results of work or the construction object as a whole;

- 3) the contractor is obliged to eliminate at his own expense all the identified defects, even those identified during usage by the employer, if the engineer confirms that these defects occurred due to the fault of the contractor. The contractor is responsible not only for the defects that could not be identified with the usual method of work acceptance and that were

deliberately hidden by the contractor, but for all the defects that occurred due to the contractor's fault, discovered even during a certain time of its operation, because during the operation of the finished object, defects are often found as they were difficult to foresee at the stage of creating construction documentation;

4) the engineer fulfils his obligations during the entire Defects Notification Period and within 28 days after the Performance Certificate is issued.

In contrast to the provisions of FIDIC contracts under the capital construction contract and the legislation of Ukraine, one document is signed during the acceptance of work, and the date of signing the KB-2b form by the contractor and the employer is both the date of completion of work (construction of the object) and the date of its acceptance by the employer (taking into account quality requirements).

The contractor eliminates defects that occurred due to his fault and were identified during the work acceptance (signing the KB-2b form) and during acceptance by the commission appointed by the employer (article 882 of the Civil Code of Ukraine).

According to Article 879 of the Civil Code of Ukraine and Article 321 of the Commercial Code of Ukraine, as a general approach, payment for the performance of work to the contractor is made by the employer after the final delivery of the construction object, if the contract does not provide for advance payment for the work performed or its individual stages, provided that the work is performed properly and within the agreed time frame.

According to the legislation of Ukraine, after the commission signs the facility operation readiness act, the contractor has the obligation to eliminate at his own expense all the defects that occurred due to his fault and were identified during the preparation of the Taking-Over Certificates during construction and acceptance by the commission of the finished object for operation, and the right to demand final calculation. And the employer, provided that the work is performed properly, has the right to put the object into operation and fulfils the obligation to pay the contractor the stipulated contract price (Part 5 of Article 321 of the Commercial Code of Ukraine). The provision of services of a technical supervision engineer or consulting engineer is also terminated by signing the facility operation readiness act.

After that, the contractor is responsible only for those shortcomings (defects) identified in the completed construction object, and within the warranty period of operation of the object, which could not be detected or known to the employer during the work acceptance during construction and acceptance of the object into operation. According to the law, the warranty period is 10 years, if another warranty period is not established by the agreement or law (Article 884 of the Civil Code of Ukraine). In addition, the employer's claims arising from improper quality of work under the capital construction contract, that are indicated from the date of work acceptance by the employer, can only be put forward taking into account the appropriate jurisdiction and are limited by the statute of limitations (Part 3 of Article 322 of the Commercial Code of Ukraine).

Thus, the capital construction contract does not contain clear rules and instructions for high-quality performance of work and ensuring the contractor's obligations in terms of eliminating the identified defects.

And this is explained by the fact that the legislation of Ukraine has the system of construction quality control. Construction quality control is assigned to the employer, and therefore the latter is responsible for poor quality of construction. In order to control the quality of construction, the employer either performs technical supervision on his own or exercises the right to delegate this function to a third-party specialized organization or specialist. This does not mean an improvement in the quality of construction, but only aims to delegate the functions of construction quality control by the employer.

#### **Quality management system as a best practice for achieving proper construction quality**

FIDIC contracts implement a completely different policy, which deserves attention due to the fact that *each party in the construction process must fulfill its obligations to achieve quality in construction, and aims to implement the Quality Management System* (international standard ISO 9001:2015 regarding the quality management system [25] in construction to coordinate and manage the organization's activities in ensuring consistent compliance with the necessary quality standards).

Thus, starting from the procurement stage, the employer pays special attention to technical specifications, especially the quality specification, which contains detailed requirements that determine the quality of the product, service or process. Quality requirements in the form of specification are included in the tender documents and contain administrative and

procedural requirements for quality assurance and control, testing and inspections necessary to demonstrate compliance with certain or specified requirements. The employer can hire an engineer to prepare quality specifications.

The main responsibilities of the contractor in terms of achieving quality in construction according to the FIDIC provisions are development and implementation of the quality management system and a compliance verification system in accordance with the quality control criteria established by the employer and/or the criteria for accepting the results of construction work, providing a procedure to eliminate defects when there is a non-compliance with the quality control criteria and/or the criteria for accepting the results of construction work, etc.

The obligations engineer under the contract FIDIC in this part are to participate in the quality assurance procedure and monitor on a daily basis the quality control measures of the work performed by the contractor, checking compliance with the drawings and specifications of the contract. The engineer also manages, coordinates and administers all quality assurance and quality control. He is authorized to conduct an audit of any aspects of the contractor's quality assurance system. Audit of the contractor's quality management system (provides for the presence of an audit plan), samples and verification of works is one of the functions of the engineer – the function of technical supervision.

Thus, under FIDIC contracts, *the main responsibility for the quality of construction and ensuring the effective functioning of its control systems is borne by the contractor*, and the engineer participates in the quality assurance procedure throughout the construction process through monitoring, audit and verification.

At the same time, despite the fact that some international standards on quality management systems that were developed based on ISO 9001, are adapted in Ukraine, ISO 9001:2015 regarding the quality management system that meets the above principles and approaches of FIDIC policy, has not yet been implemented in the national building codes and standards of Ukraine.

#### **Optimization of the procurement of engineering services in the context of construction quality assurance**

To improve the quality of construction, it is necessary to introduce quality-based selection

for the procurement of engineering services, including the ones provided by engineers.

Because it is impossible to determine in advance the quality aspects (i.e. specification) of intellectual services, which are the engineering services, the price as the only criterion should not be used for these services. Therefore, the selection of an engineer who provides professional engineering services under FIDIC contracts is based on quality criteria, including qualifications, experience, professionalism and integrity, and not only on price. If the most cost-effective offer (i.e. quality) is important, then the price in the price/quality ratio should not exceed 50 %. If the price is higher than 50 %, then the most cost-effective offer will not be the best one based on the results of evaluating tender offers. In a perfect scenario, the specific weight of the price criterion should not be higher than 20–30 % of the quality [26].

In addition, according to the provisions of the European Union Directive No. 2014/24/EC of 26.02.2014 on public procurement (concerning the coordination of the procedure for awarding public contracts for the performance of works, the supply of goods and the provision of services), certain public service contracts and certain public works contracts having as their subject-matter intellectual performances shall not be the object of electronic auction (paragraph 35). Auctions are best suited for goods, works and services, when the participants' offers have the same quality and technical characteristics, including goods, primary construction materials, simple services, etc. [27].

At the same time, one of the main obstacles to achieving quality in construction is the provisions of the law of Ukraine "On public procurement", according to which the services of a consulting engineer (technical supervision engineer) are purchased through an open electronic auction, where the price criterion for selecting entities is 70 %, which actually forces employers to specify a single selection criterion – 100 % price.

#### **Conclusions**

In view of the above, it can be noted that, despite certain legislative initiatives, the key approaches of the best international practice in the field of regulating relations between participants in investment and construction activities, in particular FIDIC, are not fully taken into account. In addition, formal and fragmentary implementation of international and European practices may have a number of negative consequences in future. We consider the following promising.

In order to implement the decree of the president

of Ukraine "On some measures to create conditions for the development and improvement of the quality of highways" No. 529/2019 of 19.07.2019, it is necessary to:

1. Expand the possibilities of using internationally recognized contract templates (in particular, FIDIC contracts) for the implementation of projects financed with public funds, by making appropriate changes to the General conditions for the conclusion and execution of contracts in the capital construction, approved by the resolution of the Cabinet of Ministers of Ukraine No. 668 of 01.08.2005.

2. Procurement procedures for works and services that contain attributes of intellectual activity, including engineer supervision services, in the law of Ukraine "On public procurement", bring in line with the provisions of the European Union Directive No. 2014/24/EC of 26.02.2014 on public procurement.

3. Make necessary changes to the regulatory legal acts of Ukraine regarding the procedure for appointing, replacing, and ensuring the individual professional status of a consulting engineer in the framework of construction using FIDIC contracts.

4. Implement the international standard ISO

9001:2015, which sets the criteria for the quality management system and is a ready-made solution containing a quality management plan and a quality assurance plan for all construction participants (employer, contractor and consulting engineer) at all stages of the life cycle of the construction object.

These first-priority legislative initiatives will contribute to the application of FIDIC proforma in construction, creation of the effective quality management system, introduction of professional engineer supervision and, as a result, improving the quality of construction and improving the investment attractiveness of the country.

#### Conflict of interest

The author declares that there is no conflict of interest or violation of the intellectual property rights of any third parties.

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