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METHODICAL ASPECTS OF CONSTRUCTION SUPERVISION AND CONTROL CARRYING OUT IN THE MODERN CONDITIONS OF CONSTRUCTION

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ABSTRACT

Purpose of the research is to study aspects of carrying out a supervision of the investment and construction projects and possibility of decisions within carrying out a construction control on the best practice methodical base. In the paper advantages of technical supervision of construction that allows to provide technology observance, to prevent plunders, to achieve economy of finance, to guarantee accident-free operation of object are considered and the subject of state supervision - an assessment of compliance of design documentation to requirements of technical regulations, including sanitary and epidemiologic, ecological requirements, requirements of the state protection of the cultural heritage objects, requirements of fire, industrial, nuclear, radiation and other safety, and also results of engineering researches are considered. Main results and major conclusions consists in determining terms and restrictions of state supervision of the project documentation, functions of the Customer Management on monitoring procedure at the various stages of the construction project implementation – providing object with design documentation, the organizations of construction, performance of construction works and completing the construction project, in offering the methodology development of carrying out a technical control in construction company are given.

Key words

Construction supervision; control and auditing check

Technical supervision of construction consists of the actions which are aimed to making process of project, budgeting, engineering and construction works more operated, more transparent, clear and predictable that the customer could check process of work from the beginning to the end of the construction project. When construction and repair work are carrying out it is very important to provide continuous construction technical supervision from the representative of customer over all technological and production works. Technical supervision of construction allows to provide observance of technology, to prevent abuses, to achieve powerful economy of financial means, to guarantee accident-free operation of object.

Involvement of technical supervision service (according to 2010 - 2013) allowed to save to customers from 31% to 46% of money invested in construction.

Participation of independent service of technical supervision during installation and construction works in 98% of cases helps to prevent failure to meet time constraints of the project.

Only in 2013 participation of technical supervision and construction control experts in conducting installation and construction works prevented 173 cases of unauthorized use by contractors the cheap materials which aren't conforming to design requirements and technologies. Therefore consideration of the construction supervision and control process and distribution of tasks of its performance is actual.

Technical supervision of construction traces:

- observance of standard requirements in construction (Construction Norms and Regulations, GOSTs, TU and so on);
- following the project documentation;
- observance of construction period;
- schedule of building materials and equipment supply;
- level of the applied materials quality, existence of the corresponding certificates, passports, applicability of these materials for specific conditions of construction.
- adequate recording of the performed works in the corresponding documentation (magazine of works), the correct maintaining working drawings and schemes, acts of the hidden works and so on;
- implementation of the government and supervisory authorities requirements, in particular inspections of the state architectural and construction supervision, bodies of fire-prevention, sanitary, epidemiologic and environmental control.
- stage-by-stage acceptance of the performed works with check of observance technology and quality requirements;
- continuous feedback with customers, informing about the process of works and all significant events within production process;
- adjustment of claims activities, i.e. accurate statement and formulation of remarks and claims on quality, terms of works, volumes and types of used materials for contractor;
- control of correctness of the current documentation preparation concerning the carried out works.

The new town-planning code of Russian Federation which is called of the plan developers to lower administrative barriers during design and construction process and to make investments into construction more attractive, was accepted by the State Duma of Russian Federation on December 22, 2004.

By general rule, project documentation of capital construction projects is a subject of state examination.

Subject of state examination is an assessment of project documentation compliance to requirements of technical regulations, including sanitary and epidemiologic, ecological requirements,

requirements of the state protection of the cultural heritage objects, requirements of fire, industrial, nuclear, radiation and other safety, and also results of engineering researches.

The state examination procedure and payment for its carrying out are established by the Government of Russian Federation.

The terms of state examination is defined by complexity of the construction project, but shouldn't exceed three months.

In carrying out of the project documentation' state examination can be refused only the following cases:

- absence of the obligatory sections provided by the Town-planning code in project documentation;
- discrepancies of the project documentation sections to the requirements of structure and contents established by the Government of the Russian Federation.

The conclusion of project documentation compliance (the positive conclusion) or discrepancy (the negative conclusion) to requirements of technical regulations and results of engineering researches is result of state examination.

The negative conclusion can be challenged both the builder and the customer in a judicial proceeding. The builder or the customer has a right after including the necessary changes and corrections to send project documentation repeatedly on state examination.

State examination of project documentation isn't required for the following objects:

- 1) separate houses with quantity of floors no more than three, intended for one family accommodation (objects of individual housing construction);
- 2) houses with quantity of floors no more than three, consisting of several blocks which quantity doesn't exceed ten and each of which is intended for one family accommodation, has the general wall (the general walls) without apertures with the next block or the next blocks, is located on the separate land plot and has an exit to the territory of general use (houses of the blocked building);
- 3) apartment houses with quantity of floors no more than three, consisting of one or several block - sections which quantity doesn't exceed four and in each of its some apartments and public rooms are located and each of that has a separate entrance with an exit to the public territory;
- 4) separate construction projects with quantity of floors no more than two with total area no more than 1500 square meters and which aren't intended for citizens accommodation and implementation of the production activity;
- 5) separate construction projects with quantity of floors no more than two which total area makes no more than 1500 square meters which are intended for implementation of production activity and for which within borders of the land plots establishment of sanitary protection zones are required.

State examination is also not carried out in the following cases:

- if construction, reconstruction, capital repairs doesn't need obtaining the construction license;
- if standard project documentation (that means the positive decision of state examination of project documentation for construction was already received and it is applied repeatedly) is applied,
- if changes (modifications) of project documentation which isn't affecting to constructive and other characteristics of reliability and safety of construction projects is carried out.

In the process of construction checking a compliance of the performed works of project documentation to requirements of technical regulations, results of engineering researches, requirements of the development plan for the land plot has to be carried out by the construction organization (the builder, the customer). Construction control in other words has to be exercised.

The builder (customer) on the initiative can involve designers to check compliance of the performed works to project documentation.

Remarks of the builder (either the customer, or the persons involved in the carrying out of construction control) on shortcomings of work in construction process have to be issued in writing. About elimination of the specified shortcomings the statement has to be signed by person who showed remarks and person who is carrying out construction.

In the process of construction the construction company and the builder (customer) have to carry out a control for:

- performance of the work which have impact on safety of construction project and according to technology of construction control over these works can't be carried out after performance of other works;

- safety of construction elements and networks of technical providing if elimination of the shortcomings revealed in process of carrying out of construction control is impossible without dismantling or damage of other construction elements and sites of networks of technical providing

- compliance of the specified works, elements and sites of networks to requirements of technical regulations and project documentation.

By results of monitoring procedure of the specified works performance, safety of the specified construction elements, sites of networks of technical providing statements of survey of the specified works, designs, sites of networks are drawn up. At identification of shortcomings statements of survey to be drawn up only after elimination of the revealed shortcomings.

After elimination of shortcomings the builder (or the customer) can demand carrying out actions of repeated control.

In cases if performance of work has to be begun more than in six months from the date of the end of the corresponding control, repeated control with drawing up the relevant acts have to be held.

The state construction supervision is carried out in construction, reconstruction of construction objects, and also in their repairs if in carrying out process constructive and other characteristics of reliability and safety of such objects are mentioned and project documentation of such objects is a subject of state examination, or project documentation of such objects is a standard project documentation or its modification.

By the general rule, the state construction supervision is carried out by authorized bodies of executive power of territorial subjects of the Russian Federation. Exceptions can be provided by provisions of current legislation (so, for example, a special order of supervision when constructing facilities use of atomic energy, hazardous production facilities, communication lines, objects of defense and safety and so on).

The procedure of the state construction supervision, and also criteria of reference of capital construction projects to especially dangerous, technically difficult or unique objects are established by the Government of the Russian Federation.

The authorized bodies carrying out the state construction supervision have the right of easy access for all capital construction projects falling under supervision action. The construction company is obliged to provide access to the territory in which construction is carried out and to provide them necessary documentation.

The procedure of carrying out other actions of control is regulated, in particular, by provisions of the Federal law of the Russian Federation "About protection of the rights of legal entities and individual entrepreneurs when carrying out the state control (supervision)" which contains rather detailed list of requirements to procedures of checking, contents an order for its carrying out and results of

registration, and also specifies restrictions during implementation of control actions and action which legal entities and individual entrepreneurs for protection can undertake.

The town-planning code of the Russian Federation specifies that by results of carried out inspection the statement which can be the basis for delivery the instruction about elimination of the revealed violations surely to contractor, builder or customer is drawn up.

In the instruction have to be surely specified:

- type of violation;
- link to the regulatory legal act, technical regulations, project documentation which requirements are violated;
- terms of elimination of the revealed violations.

For the specified period construction, reconstruction or capital repairs can be suspended only with observance of the order established by the legislation. Important aspect of monitoring procedure of the construction project implementation is functions distribution in the company of united customer.

Such functions are:

At the stage of providing with project documentation.

- participation when carrying out the tender for implementation of project works on the stage "Project", transfer to design organization (DO) which won the tender a design assignment, IAD (initial and allowing documentation), materials for the project development;
 - receiving specifications to city engineering communications accession;
 - coordination (with investor assistance) the specification and the planned schedule of the work on the project development performance;
 - implementation of project materials acceptance, control of design decisions qualities in process of project documentation creation and realization and work on consideration of architectural and town-planning solutions of the designed project in the coordinating organizations;
 - providing the timely and conforming consideration, coordination and examination and approval of the project to requirements of the normative legal documents (with registration of contracts, obtaining accounts and acts of the coordinating services);
 - ensuring coordination of the project with planning workshop or Institute of General plan; Chief architect of the district; Prefect (or deputy prefect) of districts; Regional Justice; Department of the operational map; Gossanepidnadzor; Department of issue of Moskompriroda felling tickets; Moscow state examination and so on.
 - order of projects (with registration of contracts, obtaining accounts and acts) on carrying out of engineering networks from a building spot, cutting down of trees with registration of the felling ticket, the organizing of movement on temporary and constant schemes, demolition the existing structures, provides an order of the stroygenplan project and its subsequent coordination, controls of the signed contracts implementation, provides the temporary specifications on accession to city engineering communications and transfers the prepared building site under the act of organization - the general contractor.

At the stage of the construction organizing

- order of marking plan of the object axes and its fixing in nature in Mosgorgeotrest;
- obtaining permission of relevant operating organizations to works in a zone of passing of the city high-level networks located closely to the building site;
- purpose of persons who carrying out a technical supervision of the object construction, and obtaining permission to production of installation and construction works in Moscow;

- ensuring of technical solutions control when developing working design and budget documentation are carried out, provide its acceptance, storage and transfer to the general contractor;
- coordination (together with the Investor) the planned schedule of the installation and construction works performance, control of construction process, ensuring control of interaction of construction project participants, including claims presentation to contractors;
- providing (together with contractors) claims presentation in time to manufacturers or suppliers of the equipment and materials for construction object;

At the stage of implementation of the construction project

- control and technical supervision of construction facilities, including volumes, quality, cost and terms of performance of earth, construction, finishing works, works on improvement, according to project documentation, conditions of the contract signed with the Investor and requirements of the existing normative documents, with attraction if necessary of independent examination.

During the process of technical supervision (if necessary – with registration of contracts, obtaining accounts and acts):

- control of compliance of the performed installation and construction works, the applied designs, products, materials and the delivered equipment to design decisions;
- control of revealed defects elimination in project documentation, provides its revision (in case if necessary) and prevention of unreasonable increase of construction cost;
- verification of documents certifying quality of used in construction products and materials (technical data sheets, certificates, results of laboratory researches, etc.);
- control of geodetic works in the construction process are made in time;
- survey and an assessment (together with contractors) the performed works and the constructive elements hidden by production of the subsequent works;
- with participation of representatives of the contract and specialized organizations provide an intermediate acceptance of responsible designs of buildings and constructions;
- control of compliance of working documentation to volumes and quality of executed construction works and shown for payment;
- control of execution by contract organizations instructions of architectural supervision and city architectural and construction supervision bodies relating to quality of the carried out construction works, the applied designs, products, materials and the equipment;
- provides of the defects elimination in time and subquality work revealed at acceptance of separate types of works, constructive elements of object;
- notice to city architectural and construction supervision bodies on all cases of the object critical condition and amounts of works on accident elimination.

At the stage of acceptance for operation finished construction object

- provides carrying out in established periods and in accordance with the established procedure the working and acceptance commissions on acceptance of finished construction object and prepared for operation;
- accepts from the general contractor the finished construction object (together with a set of the necessary documentation) according to requirements of the existing normative documents and the signed contract;
- provides registration of object input in operation in accordance with the established procedure;
- transfers to the investor a collected set of documentation on acceptance of object to operation if other isn't established by normative documents of city authorities;

- provides transfer in time to the Moscow Land Committee of the necessary documents for renewal of the property and land relations;
- defines the mode of the object operation during approbation and acceptance period;
- addresses to bodies of city supervision for obtaining the conclusion about compliance of the object shown to acceptance to the approved project, existing rules and standards;
- transfers after acceptance by an inspection together with contract organization the objects which are in due time finished by construction (together with a set of the necessary documentation) to the operating organization specified by the investor.

As the conclusion it is possible to formulate the following outputs. It is necessary on stage-by-stage simplification of procedure of input of capital construction projects into operation:

The 1st stage — offer a mechanism of participation of the insurance and self-regulating companies (SRO) in an assessment of the capital construction projects compliance to requirements of the legislation of the Russian Federation;

The 2nd stage — establishment the rules providing input of objects in operation at the conclusion of the contract with insurance company and on condition of confirmation with construction supervision of the constructed capital construction project compliance to requirements of the legislation (with cancellation all other compulsory procedures and requirements after creation a steady market of operating companies), and also the rules providing financial responsibility of the builder for the entire warranty period of the specified capital construction project operation (since January 1, 2018).

It is absolutely logical to systematize all types of construction examinations regardless of that as they are called, to unite and reallocate or make persons under surveillance to uniform federal executive authority.

In this regard, the concept of expert maintenance of a capital construction project at all stages of its life cycle is submitted as productive: from researches, design, construction, operation, before reconstruction and utilization. A task of such expert maintenance – consultation and support of interaction of the real estate owner with professional participants of construction process: researchers, designers, contractors, suppliers, the technical customer, the operating company, control supervisory authorities, including regarding adoption of significant administrative decisions and implementation of responsible actions and also minimization of own risks and risks of causing damage to the third parties.

It is necessary to improve institute of examination in construction being guided by the self-regulation mechanism which are already realized in the construction sphere — National associations of builders (NOSTROY), designers (NOP), researchers (NOIZ), by means of introduction of National association of organizations for examination in construction (NOEKS) in the town-planning relations as their legitimate participant.

Following to idea of creation of non-state system of mutually control and differentiation of spheres of competence of the construction process participants, the new National association will allow to isolate, to unite and to control the specialized expert organizations which are carrying out different types of construction examinations, researches and estimates of compliance.

It will allow the National association to carry out at the expense for own financial and expert resources:

- development of the standards which are obligatory for execution by members of SRO;
- development and establishment of obligatory requirements to the experts level of professional qualification;
- development and establishment of obligatory requirements to the expert organizations material and staffing level;

— experts professional development and certification in different types of examinations, including in the sphere of judicial construction technical expertise;
—to develop a system and to provide measures of professional liability of experts and the expert organizations, including mechanism of indemnification funds and insurance of responsibility.

The list of the used literature:

1. Town-planning code of the Russian Federation, 2004
- 2.The federal law of the Russian Federation "Technical regulations about safety of buildings and constructions", 2009;
- 3.The federal law of the Russian Federation "Technical regulations about requirements of fire safety", 2008;
- 4.The federal law of the Russian Federation "About energy saving and about increase of power efficiency", 2009;
- 5.The resolution of the Government of the Russian Federation "About an order of the organization and carrying out state examination of project documentation and results of engineering researches", 2007;
- 6.GOST P 53778-2010 "Buildings and constructions. Rules of inspection and monitoring of technical condition", 2010;
7. Dzikovsky G. I. Construction control of the customer builder (short handbook). – M.: IRTs State Public Scientific Technical Library of Russia, 2007.