

Planning of design works and formation of the initial permissive documentation for projects of general education institutions

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Abstract. In this article, the stages of erecting the building of a general education institution (GEI) from the moment of the formation of the idea of construction to the transfer of the object into operation are considered. Based on the personal experience of the authors, as well as the study of the corresponding regulations for obtaining the initial permissive documentation (IPD), a list of IPDs was formed. In addition, during the study, a conditional schedule was drawn up for the collection of the IPD, as well as the necessary approvals for the initial phase of the object design.

1 Introduction

Nowadays in the Russian Federation because of large-scale programs the development of education in the country's regions raises the need for designing, building new buildings, and also for reconstructing operated general educational institutions, pre-school educational organizations and universities. The main stages of the investment and construction project are presented in Table 1.

Table 1. The main stages of the investment and construction project

No.	Stage	Participants of the stage	Necessary result
1	Forming an idea	An investor (investor) <i>is a legal or natural person who makes long-term investments.</i>	Idea for further detailed development
2	Feasibility study	Investor; The developer <i>is a legal entity or an individual owning (on the right of ownership, on the basis of a gratuitous use agreement, etc.) a land plot on which the construction of an object of capital construction is proposed;</i> The customer <i>is a legal entity or an individual contracting a state contract for the construction of a prop-</i>	Feasibility study (Decision making and obtaining the necessary approvals with the administration of the locality on the need to locate the object)

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No.	Stage	Participants of the stage	Necessary result
		<i>erty.</i> The investor, the developer and the customer can be in one person.	
3	Organization and conduct of an open tender for the execution of design work	The customer; Designer - <i>a legal entity or an individual who develops, on request and contract with the customer, project and estimate documentation for new construction, reconstruction.</i>	Determination based on the results of an open tender for a general designer, conclusion of a contract.
4	Designing an object	Designer	Performing works for the development of project documentation, incl. obtaining the necessary initial permissive documentation (IPD), design and estimate documentation for the facility
5	Coordination of the project with the customer	Customer; Technical customer Designer	Coordination of design, design and estimate documentation with the customer and technical customer.
6	Passage of the state expertise	Designer; State Expertise - <i>the activities of expert bodies, the main purpose of which is to identify the extent to which the objects of expertise meet the established standards, standards and rules in the field of capital construction objects.</i>	Getting a positive conclusion after removing comments from the state expert review for compliance with project documentation with the requirements of established norms, standards and rules. Transfer of a copy of project documentation, positive conclusion to the customer.
7	Organization and conduct of an open tender for construction works for the facility	Customer; The general contractor <i>is a legal entity or an individual who performs a complex of works on the construction of objects for various purposes.</i>	Determination based on the results of an open tender of a general contractor, conclusion of a contract.
8	Implementation of the project for the production of works	The general contractor	The project for the production of works
9	Performance of works on the construction of the object	General contractor; The subcontractor <i>is a legal entity or an individual involved in the performance of certain types of work under a subcontract agreement with a general contractor;</i> The organization that carries out technical supervision - <i>an organization carrying out a complex of verification works by experienced experts, in order to ensure the implementation of the project in the proper quality, within a specified time frame, with the established cost and volume of materials;</i> The designer - <i>carries out the</i>	Erection of an object

No.	Stage	Participants of the stage	Necessary result
		<i>author's supervision.</i>	
10	Putting the object into operation	Customer; General contractor; Operating organization - <i>a legal entity or an individual exercising on the rights of the owner or on behalf of the owner (most often an investor) of the technical operation of the facility. The operating organization is considered to represent the interests of users, unless otherwise stipulated by agreements between the participants of the investment process.</i>	Safe and reliable operation of the capital construction site.

In this article, the 4th stage of the investment and construction project - design is considered in more detail.

2 Designing an object

2.1 Requirements for the objects of GEI

A diagram was drawn up to determine the functional purpose of the GEI.

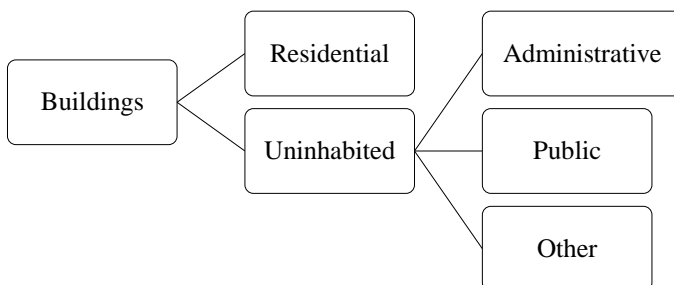


Fig. 1. Diagram of the functional purposes of buildings.

General educational organizations ensure the implementation of general education activities in accordance with the levels of education defined by federal law [1]: (Federal Law of December 29, 2012 No. 273-FZ "On Education in the Russian Federation" (edited on June 2, 2016).

- primary general education (grades 1-4);
- basic general education (grades 5-9);
- Secondary general education (10-11 or 8, 9-11 grades).

Table 2. The list of basic norms, standards and rules that are used in the design of general education institutions.

No.	Requirements for designing	Character of the norm
1	SP 251.1325800.2016 [2] This set of rules establishes in the territory of the Russian Federation the requirements for the location and organization of a network of buildings and complexes of general education organizations, to the site of the territory, functional groups, composition and areas of premises,	Recommendatory

No.	Requirements for designing	Character of the norm
	volume planning decisions, lighting, engineering equipment.	
2	SP 63.13330.2012 [3]	Mandatory (according to [4])
3	SP 118.13330.2012 [5]	Mandatory (according to [4])
4	Sanitary-epidemiological rules and standards SanPiN 2.4.2.2821-10 [6]	Mandatory (according to 1.4. [6])
5	Sanitary-epidemiological rules and standards SanPiN 2.2.1/2.1.1.1278-03 [7]	Mandatory (according to 1.4. [7])

2.2 Composition, procedure and sequence of necessary approvals and IPDs

The general designer is determined by the results of an open tender, information about which can be found on the official website of the "Unified information system in the procurement sphere" (<http://zakupki.gov.ru/epz/main/public/home.html>). After selecting the contest of interest, the applicant organization should study the attached tender documentation, familiarize itself with the evaluation criteria, as well as with the scoring system according to the criteria. The results of the check by the competitive commission of the packages with the tender documentation of all the contest participants are published on the site. Organization-winner of the competition for design and survey works concludes the contract with the customer and begins to fulfill its conditions. A mandatory annex to the contract is the technical design assignment (TDA), which sets out the main requirements for the projected capital construction site.

The next stage is the execution of a draft project (DP), which includes: a plan for the planning of the site, architectural and technological solutions for the projected facility, facades of the building with an estimated collation, and visualization of the idea in the form of a 3D model. In addition to DP, it is necessary to prepare a material card (MC), which indicates: the material of load-bearing structures, type of foundation, enclosing structures, facade system, etc. The draft project and the material card must be agreed with the Customer, the Ministry of Education and the Administration of the settlement, in which the construction is planned. If necessary, adjustments are made to the DP and MC, after which a reconciliation procedure is repeated.

After obtaining the necessary approvals, the designer can proceed to the main stage - design. At this stage, it is required to assemble the necessary package of initial permissive documentation (IPD) to provide the departments of the project organization with the necessary initial design data.

In the process of studying the topic, as well as on the basis of personal experience, an auxiliary table was compiled containing a list of the necessary IPDs to be obtained in the process / before the start of the design (Table 3). Also, the table contains excerpts from the regulations of organizations in which it is necessary to obtain the IPD.

Table 3. The list of the necessary IPDs to be obtained in the process/before the start of the design.

No.	Name of the document	Responsible	Organization, pre-delivering the IPD	Deadline for the document / labor for execution, days	Annex to the request / application
1	Draft project	Architect; Technologist	reconciliation with the administration of the settlement, the Ministry of Education and Science of the Russian Federation, the customer	5 (implementation) +1 (agreement)	
2	Town-planning plan of the stead (TPPS)	Assistant of Chief Project Engineer (CPE)	Customer	Up to 30 days	
3	Title documents for the land area	CPE assistant	Customer	Up to 30 days	
4	The act of assessing green plantations in the project site	CPE assistant	District administration	Up to 30 days	- Topographic survey with the boundaries of the future site - Title documents for land
5	Specification for the connection of the facility to the networks of cold water supply.	CPE assistant	Resource-supplying organization (ex.: "NOVOGOR-Prikamye")	Up to 30 days	- Set application form - Foundation documents of the customer - Title documents for land - Calculation of the flow of water - TPPS
6	Specification for connection to drainage networks				
7	Location of fire hydrants in the area of design				- Situation plan with the plot of the design
8	Information on the project of the sanitation zones of water well bore-holes				- Situation plan with the plot of the design
9	Conditions for connection to power supply networks	CPE assistant	Resource-supplying organization (note: MRSK of Urals)	Up to 30 days	- Set application form - Foundation documents of the customer - Title documents for land - Calculation

No.	Name of the document	Responsible	Organization, pre-delivering the IPD	Deadline for the document / labor for execution, days	Annex to the request / application
					of the flow of electricity - TPPS
10	Conditions for connection to heat supply networks	CPE assistant	Resource-supplying organization (note "PAO T-Plus")	Up to 30 days	- Set application form - Foundation documents of the customer - Title documents for land - Calculation of the flow of heat - TPPS
11	Conditions for the accomplishment of the land plot	CPE assistant	Office of the external well-being of the administration of the settlement	Up to 30 days	- Situation plan with the plot of the design
12	Specification for stormwater drainage			Up to 30 days	
13	Specification for the accession of projected drive-ways to existing ones			Up to 30 days	
14	Information on the presence of cultural monuments and historical heritage in the vicinity of the project site	CPE assistant	State Inspectorate for the Protection of Cultural Heritage Monuments	Up to 30 days	- Situation plan with the plot of the design
15	Information on the lack of (presence) of cattle and anthrax graves	CPE assistant	State veterinary inspection of the settlement	Up to 30 days	- Situation plan with application of the site of design
16	Conditions on the network of outdoor lighting	CPE assistant	Resource-supplying organization (note MUP NO "Gorsvet")	Up to 30 days	Set application form - Foundation documents of the customer - Title documents for land - TPPS

2.3 Schedule of works for the organization of design

Based on the obtained structuring of data from the regulations of organizations providing IPD, and also on the basis of studies of optimization of production activities and scheduling described in earlier publications [8-13], a conditional schedule for the implementation of

the formation of IPD was drawn up. (Table 4 uses numeric values in the column for document names from Table 3)

Table 4. Conditional timetable for the implementation of the formation of the IPD.

No.	Days																			
	1-10				11-20				21-30				31-40				41-50			
1																				
2																				
3																				
4																				
5																				
6																				
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16																				

3 Conclusion

Knowing what information is necessary for the design, as well as the timing of its provision, it becomes possible to form a conditional timetable for the implementation of work on the formation of IPD. Using this schedule, the project organization can clearly see what time it takes to get all the necessary IPDs. Thus, in order to reduce the time of production, it is allowed to increase the number of specialists to meet the design deadlines. In addition, such routine planning of design works will allow for the technical standardization of the activities of the technical customer, construction control specialists, chief project engineers and coordination departments.

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