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Analysis And Optimization Of The Cost Of Construction And Installation Work At Construction Sites

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ABSTRACT

In this research paper provides analysis of compliance with the construction deadlines showed a violation of the construction duration for many objects. All this speaks of the unfavorable financial condition of the enterprise.

During the analysis, it was found that the increase in cost was associated with an increase in the cost of all production resources. Therefore, to reduce its level, it is necessary to take measures to strengthen control over the more efficient use of enterprise resources.

KEYWORDS

Analysis, cost of construction, construction sites, installation work, optimization.

INTRODUCTION

High end results of the activities of construction organizations are achieved by ensuring the commissioning of production capacities and other construction objects in a timely manner with high quality and minimal costs of production and technical resources. When developing a plan for construction and installation work and monitoring its implementation, the norms for the duration of construction of enterprises, start-up complexes, workshops, buildings and structures are used. The Construction Duration
Standards (KMK) include the time from the start of the preparatory period to the

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commissioning of production facilities, their queues, start-up complexes, workshops and other facilities with the full implementation of the work stipulated by the projects.

The planned dates are set in the title list, the normative ones are set by the current building codes and regulations (KMK) of the objects, and the actual ones are determined from the month the accounting department charges the costs of work on the object until the time of the approval of the acceptance certificate of the object.

For the installation of equipment, the actual start of work is established according to the acts of readiness of the object (foundations, supporting structures) for the production of installation work. The total duration of installation work includes the time required for testing, mechanical adjustment of units, devices, etc.

The terms of commissioning of facilities must comply with building codes and regulations, which are mandatory both in the development of plans and control over their implementation. It is necessary that the volumes of work in progress according to the title lists ensure the creation of normal backlogs for the commissioning of production capacities and construction projects, taking into account the volume of work on facilities started and finished with construction in the planned year.

METHODS OF RESEARCH

The amount of construction in progress depends on the structure of the facilities and capacities put into operation, the norms for the duration of construction, and the planned annual volumes of construction and installation work, as well as changes in their balances at the beginning and end of the planned period. The volume of work in progress is expressed by the formula:

$$N_{WP} = N_S + W_{PS} - S_{WF}$$

where, N_{WP} - work in progress at the end of the year;

N_S - the same at the beginning of the year;

W_{PS}- planned scope of work for the year;

S_{WF}- scope of work for the facilities, capacities and work packages handed over to the customer.

In the process of analyzing the compliance with the construction timeframes, the actual construction timeframes are compared with the planned, normative ones, as well as those actually prevailing in the previous reporting periods for similar facilities and capacities, and the degree of tension of the planned and standard construction timeframes is checked.

The analysis also establishes the facts of violation of the standard terms of the duration of construction and the reasons that caused them. The deviation of the actual duration of construction from the one stipulated by the plan indicates shortcomings in the production and economic activities of the contractor and customers, and the deviation of the planned time from the established standards indicates the shortcomings of planning the commissioning of capacities and facilities. Compliance with the norms for the duration of construction is influenced by various factors: timely provision of design and estimate documentation, material and technical

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resources, labor, insufficient coordination of the scope of work with the capacities of construction organizations, delivery times of equipment for installation, etc.

In the analyzed construction organization, the deviation of the actual construction time from the normative and planned ones is characterized by the following indicators (table 1.)

Table 1. Analysis of the construction time of the workshop facility

Name of facilities and construction objects	Duration of construction in months			Deviations (+, -)	
	by KMK	according to plan	actually	from KMK	from the plan
Residential complex	24	24	22	-2	-2
Boiler room	9	9	11	+2	+2
Kindergarten	14	16	20	+6	+4
House	8	8	8	-	-
Main workshop	12	13	12	-	-1
Ancillary production workshop	18	17	15	-3	-2
House of culture	12	12	12	-	-
	15	14	-	-	-

Deviations in commissioned objects indicate shortcomings in the production and economic activities of the construction organization and customers, in the planning of work. So, for the boiler house, instead of the standard construction period of 14 months, the plan provides for 16 months, or it is overstated by 2 months. In fact, it was put into operation with a delay of 6 months compared to the KMK.

RESULTS

The terms for the duration of construction were also violated for other facilities, they were put into operation in comparison with the KMK. The plan provided for the reduction of the standard time frame for the construction of the workshop of the technological equipment plant by a month. The actual fulfillment of this plan showed that it was over fulfilled by 2 months, and in comparison with the norms of the KMK by three months. This deserves a positive

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assessment in the work of the construction organization.

Despite the early commissioning of the main building of the repair plant for 2 months, it was not possible to obtain an economic effect, since the boiler house was commissioned with a delay of 2 months compared to KMK and 2 months against the plan, i.e. into operation of facilities and facilities.

CONCLUSION

Consequently, positive result of the work of the construction organization is the early commissioning of the workshop of the technological equipment plant for 1 month. The reduction in terms of time indicates that the efforts of the team of the construction organization are aimed at increasing the efficiency of construction production. Violation of the standard terms for the construction of a kindergarten by 6 months in comparison with KMK led to significant losses in economic effect. The calculation of losses of economic effect is made according to the following formula:

$$E_e=N_{SE}*T_{EC}(D_A-D_S)$$

where , E_e - loss of economic effect, thousand soums.

N_{SE} - the standard efficiency coefficient (established for each branch of the national economy) for industry is 0.16;

T_{EC} - total estimated cost of the object, thousand soums.;

D_A - actual duration of construction, years;

D_S - standard duration of construction, years.

Losses of economic effect from delay in commissioning of capacities in the main building of the repair plant (E_e) will amount to 39 797 101.45 million soums.

The resulting economic effect from the early commissioning of the workshop of the technological equipment plant will be 24 318 840.58 million soums. The presence of losses in the economic effect due to the delay in commissioning of capacities, the receipt of the economic effect from the reduction in the duration of construction must be taken into account when evaluating the work of both contractors and customers.

Fulfillment of the plan for the commissioning of facilities and capacities, and, above all, a reduction in the duration of construction, ensure an increase in the efficiency of capital construction.

Reducing the duration of construction creates the conditions for the commissioning of facilities and capacities and for reducing the volume of work in progress, as well as accelerating the turnover of working capital.

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