

Research on the Strategy and Method of Controlling Engineering Cost in the Architectural Design Phase Based on Ability Training

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ABSTRACT. *As a developing country, China's overall national strength has been significantly improved in the process of reform and opening up to socialist modernization. Among them, the development of economic level and the progress of science and technology are the most significant. This has also promoted China's gradual transformation from an agricultural country to a semi-agricultural and semi-industrial role. This also reflects from another aspect that China's construction project cost level is constantly increasing. In order to promote the sustainable development of various projects in China's construction industry, we must combine economic and scientific and technological development to promote construction. The reasonable implementation of engineering cost work has made China's construction industry obtain greater economic benefits.*

KEYWORDS: *Strategy, Method, Controlling engineering cost, Architectural design phase, Ability training*

1. Introduction

Construction cost is very important in construction engineering, it can effectively control the total cost of the project in actual construction. The so-called project cost control mainly refers to the overall control of the entire stage of the project during the operation process; before the construction project has entered the actual operation stage, it is necessary to budget the overall cost of the project in advance and design how to make the project cost The overall cost is effectively controlled. The purpose of doing so is to control the cost of the project. For a long time, people have not paid enough attention to the control of the input cost in the early design stage of engineering construction projects. Basically, they only care about the budgeting process of the construction stage and construction drawings, and ignore the design stage. They mainly focus on the engineering project in the actual construction. The total cost. At present, the primary task of a construction engineering unit is to control the capital investment of the project, and to formulate effective plans and methods to control the cost of the project during the design phase

of the building. This article first expounds the significance of cost control in the design phase of construction engineering, and then discusses several strategies and methods of cost control in the current construction design phase based on these meanings. It aims to propose some new ideas and approaches for cost control in construction engineering.

2. Significance of Controlling Engineering Cost in the Architectural Design Stage

Promote the rationality of the cost structure. The initiative of the cost process is usually prepared based on the feasibility study and preliminary design when formulating the investment plan for the construction project. It ensures the process standards, design conditions, and all relevant standards. In addition, the lower the capital expenditure and the shorter the construction period, the more effective the investment will become. Adopting a reasonable budget preparation design in the design stage can not only clearly grasp the main components of engineering cost, understand the scientific nature of capital allocation, but also apply engineering theory to analyze the satisfaction of the allocation of the functions and costs of each component of the construction project, and promote The overall project functions and costs are more sufficient to be more rational. Good design work is an important basic guarantee for the smooth implementation of the project. Once the design drawings are determined, the project's style structure, construction standards, materials, and selected construction equipment are all clear. The approximate investment amount of the project is also You are almost sure. When applying construction drawings to actual construction operations, the relevant construction unit should not change the design drawings without authorization. Since the overall project cost is roughly determined during the design phase, the budget and settlement can only be measured but can not significantly change the overall project cost. Therefore, the implementation of engineering cost control during the design phase is also a preliminary control idea. The specific implementation is the basis for universities to control investment in construction projects, and even the core and key to investment control. Only in this way can the cost control work be more proactive.

Desirable and more significant cost control effect Cost control in the design phase is the first link of overall project cost control. Only by strictly controlling and controlling this link can we lay a solid foundation for overall project cost control. In the design stage, the concept of controlling investment is deeply rooted in the designer's ideology, which can effectively ensure that engineering and technical personnel select the appropriate design standards. In addition, the continuous strengthening and emphasis on engineering cost management control in the design phase can motivate designers to apply scientific and reasonable construction techniques and select appropriate structural forms, materials and equipment to achieve engineering cost based on the realization of relevant design task standards. The technical value and economic benefits of management are well reflected.

Enhancing the maximum economic benefits of the construction industry As a practitioner of the construction industry, the first thing that needs to be clear is that

the methods and strategies for accelerating the control of engineering costs are not only important requirements in the process of changing times, but also proposed by higher-level governments Reasonable policy. The realization of this goal is in order to adapt to the importance of engineering cost control means in the development of the times, and also to meet the needs of its reform, and to strengthen the realization of the full coverage of the development of the construction industry. In this process, on the one hand, it is necessary to conduct research by using excellent development cases at home and abroad to summarize its experience, and to optimize and improve technical means and engineering cost methods in combination with China's actual national conditions and actual working conditions. In addition, we must pay attention to the requirements of the information age for social development. It is necessary to break through the traditional thinking restraints and methods, and combine high-performance technology products and Internet technology to be able to effectively innovate the idea of engineering cost control throughout the entire architectural design stage. Therefore, for each level and stage of construction project cost, people must invest a lot of energy into the actual work process, especially in the review stage of the construction drawing budget and the control stage of the construction process, so as to effectively guarantee China The work process of the engineering cost link has been in a stable development process for a long time, thereby improving the economic benefits of building construction enterprises to maximize their acquisition.

3. Strategies and Methods for Controlling Engineering Costs in the Design Phase Based on Capacity Development

Give play to the role of value engineering and increase the value of design products. Value engineering is a modern management science that combines technology and economy. Its goal is to increase the value of research objects, and its core is functional analysis. The expression of value is: $\text{value} = \text{Function} / \text{cost}$. As a mature and effective management method, value engineering has been widely used in engineering construction in many countries. Although the application of value engineering theory has just begun in China, it is in engineering design The value and benefits of China's control of project investment, especially with the promotion of the general contracting system of survey, design, and construction, will gradually show that it can play a huge role in controlling project investment. A large amount of human, financial and material inputs, applying the principles and methods of value engineering for functional cost analysis, allowing designers to fully consider the reasonable allocation of construction costs and maintenance costs during the life cycle through full communication with the owner and various stakeholders, From the function of the research object, it is necessary to find out which functions are necessary, and to make the functional structure of the project more Reasonable, can function than the cost of the project optimal.

Implement limit design to achieve dynamic management of engineering cost. Limit design is to control the initial design according to standard investment estimates, and to control the construction drawing design according to the standard

preliminary design general estimate, which means that the investment amount approved in the previous stage is used as the next design. The overall goal of stage investment control. The control object of limit design is the control cost that affects the static investment (or base price) of engineering design, unifies technology and economy, and changes from calculation to calculation. In the guarantee function Under the premise, the preliminary design is controlled in accordance with the approved design task book and investment estimates, and the construction drawing design is controlled according to the preliminary estimates, so that the phenomenon of fat beams, fat columns, dense steel bars, and deep foundations disappears in the design stage to reduce common problems. Three super (probable budget over estimate, budget over budget estimate, final budget over budget) problem. When implementing the limit design, we should grasp the vertical and horizontal two-way control. First, we must pay attention to the choice of the plan in the preliminary design and follow the investment in the feasibility study stage of the verification. Further implement the possibility of its investment, and concreteize the project investment estimates; the second is to strictly control the construction drawing budget within the approved estimates and to some extent The third is to establish dynamic management in the limit design, improve and strengthen the economic responsibility system of the design unit to the construction unit and the design unit, and correctly handle the relationship between responsibility, power and profit. When implementing the limit design, It is necessary to continuously improve and improve the design work, fully reflect the importance of controlling investment, overcome the long-standing thinking of focusing on technology and light economy, establish a high sense of responsibility for designers, and do not blindly pursue high standards and levels, so that construction standards are fully based on objective conditions. Reflect the economic, applicable and beautiful construction principles.

Strengthen the management of design changes and the promotion of design supervision. During the implementation of engineering projects, design changes often occur, but design changes should be controlled as far as possible during the initial stage of design, procurement or construction, so as not to cause major changes such as re-procurement and demolition. Loss. Design changes must be made as early as possible, the earlier the change occurs, the smaller the loss, and the greater the converse. If the change is made during the design stage, only the drawings need to be modified, and other costs have not yet occurred, and the loss is limited; Not only do drawings need to be modified, but equipment and materials must be re-purchased; if changes are made during the construction phase, in addition to the above costs, already-constructed projects must be demolished, which will inevitably cause major change losses. Therefore, design change management should be strengthened to the greatest extent possible. Controlling design changes at the beginning of the design phase, especially for major design changes that affect project cost, should be solved by accounting first and then changing, and multiple parties can participate in technical and economic demonstrations, and can only be carried out after obtaining approval from relevant management departments. Therefore, the project cost can be effectively controlled. Design supervision can break the unitary control of the design unit. In the design stage, the focus of supervision and control should be quality control and investment control. At the same time, a design claim system should be

implemented to ensure the quality and economics of engineering design. In addition, design and construction general contracting methods can be implemented. The construction is carried out by a unit, so that the contractor is involved in the project at the early stage of the design, and factors such as construction technology, cost reduction, and construction period are reflected in the design documents. This will not only reduce the possibility of problems during construction, In addition, the frequency of design changes can be greatly reduced, effective control of engineering costs in the design phase is guaranteed, and the realization of fixed price contracts becomes possible.

Strengthen the design change management process. Prior to the actual construction process of the construction project, special attention must be paid to the control of the design change. In order to ensure the stability of the development of the construction industry, it is necessary to control the maximum economic benefits of the project. In the stage of cost design, some design problems that may occur are changed and controlled, so that possible changes may be advanced as much as possible, thereby effectively reducing all losses. In addition, the effective management of design changes should be strengthened to reduce all negative impacts and expenditure costs as much as possible, and to enable the project to combine the participation of multiple parties in the implementation process to demonstrate economic feasibility and ensure that Realize strategic control of construction project cost during strict department control.

Committed to improving the quality of the signing of the contract The contract documents are important information to ensure the smooth progress of the project, and the methods and standards for calculating the project cost should be clearly specified in the contract. Therefore, we should first strive to improve the quality of signing relevant contracts. From the perspective of word formation, the contract must be written clearly, without ambiguity or ambiguity. In terms of the signing method, both parties to the contract must consciously and voluntarily sign the contract. From then on, contract documents will have their legal effect, and the violator will have to bear the consequences by himself.

Strictly control the difference between the expected cost and the actual construction. The control of the difference between the expected cost and the actual construction is a difficult point in the project cost audit, and it is also a key link that cannot be ignored. Enterprise construction requires a lot of human resources, and it is inevitable that the moral quality of the construction workers will be uneven. This will cause the construction workers to make false quotes to make profits. In order to reduce the occurrence of this phenomenon, it is necessary to strictly control the error between the construction cost and the expected cost. It is necessary to find the source of each difference in the amount and ensure that the project funds can be used to the greatest extent.

Cultivate high-quality professional and technical talents High-quality professional and technical talents can undoubtedly play a huge role in the development of engineering cost auditing work. Therefore, the state should attach great importance to the training of talents and continue to improve through training

and lectures. The professional level and moral quality of on-the-job staff can promote the improvement of the overall comprehensive quality of auditors, which can improve the level of China's construction cost pre-settlement review from the root cause.

4. Conclusion

In summary, engineering cost is an important task in the design process of construction projects, which can effectively control the cost of the project. Therefore, the construction department must seize the critical stage of engineering design to minimize the expected cost and actual The difference between the costs, so that you can see the obvious effect when controlling engineering costs during the design phase.

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