

Study on Civil Engineering Management and Effective Control of Engineering Cost Based on Working Process

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Abstract: Promoted by economic development, the construction industry has also made great progress. Civil engineering related enterprises have also obtained a greater driving force for development. Cost of project is the sum of the total cost needed in the process of project construction. With the rapid development of economy, urban infrastructure construction is also growing rapidly, and the corresponding projects are gradually increasing. Therefore, the effective control of civil engineering management and engineering cost is becoming more and more important. As far as civil engineering is concerned, it is necessary to adopt a reasonable management method to effectively control the project cost on the basis of ensuring the quality and safety of its construction, which is conducive to optimizing the project as a whole. Based on this, according to the problems existing in civil engineering management, this paper puts forward the control measures to strengthen civil engineering management and project cost.

1. Introduction

Economic globalization is constantly evolving, and in a complex context, the construction industry is facing fierce competition. Relatively speaking, the civil engineering management system is relatively complex and has a strong comprehensiveness. Its engineering cost management and cost control are key contents [1]. Only by establishing correct ideas, increasing investment in civil engineering management, and attaching importance to the importance of project cost, can enterprises better achieve maximum economic benefits and occupy a place in the current fierce market environment [2]. Therefore, the civil engineering construction unit, the construction unit and the supervision unit need to strengthen cooperation, and the construction unit should carry out feasibility demonstration repeatedly to avoid investment failure when carrying out the project. If construction enterprises want to improve the quality of the project as a whole, they must form correct ideas, strengthen the management of civil engineering, and pay more attention to the control of project cost. Only in this way can economic benefits be maximized. Construction projects cover a wide range, including not only design and construction, but also project cost, which has a decisive impact on the whole project construction [3]. From the perspective of civil engineering cost and direct management relationship, we will continuously improve the management level of civil engineering and effectively control the cost of each link. Therefore, it is necessary for us to further clarify the management elements of civil engineering and realize the scientific and effective management of the cost of civil engineering, so as to further improve the quality of civil engineering.

2. Overview of Civil Engineering Management and Engineering Cost Control

2.1 Overview of civil engineering management

Civil engineering construction is a comprehensive and complex process, which often involves a wide range of professional knowledge and skills, which not only imposes higher requirements on the relevant operators, but also consumes a lot of manpower and material resources. The successful completion of construction and completion of civil engineering projects depends on the quality of civil engineering project management [4]. Therefore, in the process of civil engineering projects, it

is necessary to strengthen the management of civil engineering projects. In order to ensure good quality from the source, a strict quality responsibility system should be established, construction techniques and methods should be continuously improved, perfect design plans should be made in advance, and specific methods and contents of the whole style should be made clear before construction. With the continuous development of the construction industry today, further strengthening the management of civil engineering and realizing effective control of engineering cost can give full play to the positive role of national engineering projects in construction, meet the needs of China's economic development and promote the development of knowledge-based construction enterprises [5]. At present, civil engineering incorporates quality management, schedule management, cost management and safety management into project management, and achieves the construction objectives under the conditions of guaranteeing construction quality, construction cost and construction safety.

2.2 Overview of civil engineering cost control

At this stage, civil engineering can only complete the task of civil engineering construction and fully improve the entire project if it meets the requirements of supporting the economy and fully utilizes scientific and rational management technology and innovative management mode. The quality of project construction provides a strong guarantee for the economic development of enterprises. Civil engineering involves the decision-making and design phases, the construction phase, and the completion acceptance phase. In the development process of each stage, reasonable construction plans should be discussed according to the quality requirements, functional requirements and actual conditions of the project [6]. That is to say, a work flow will involve many professional skills, because the civil engineering itself has high technical content and the operation flow is extremely complicated [7]. The objectives and tasks of civil engineering cost control are: to carefully calculate the bill of quantities, to write the tender documents, and to provide the contractors with reference value for engineering cost control basis; The construction shall be carried out in strict accordance with the construction drawings to ensure the construction quality and control the project cost in the construction practice. Knowledge is regarded as the motive force of enterprise development, and the engineering management system and operation mechanism are innovated to realize effective control of engineering cost and ensure smooth development of engineering projects.

3. Problems Existing in Cost Control of Civil Engineering

3.1 Cost control objectives and plans are not rigorous

The construction project shall be predicted according to the evaluation report provided by the professional team when formulating the general objectives and plans. Therefore, the management of the construction site is relatively complicated, and the construction will also be affected by external factors, increasing the uncertainty and complexity of the construction, further increasing the difficulty of site management. For a project, scientific and sound construction process and optimized construction process are of realistic significance [8]. With the continuous expansion of the scale of civil engineering projects, it is also necessary to set up special engineering supervision departments based on regions. That is to say, because civil engineering is a complicated project, materials and mechanical equipment of different specifications and models are often used, resulting in messy construction and random accumulation of various equipment and materials. The duties of the staff are not clearly defined [9]. No matter which company, only with more knowledge, can survive in the fierce market competition, can obtain a dominant position, further improve the economic efficiency of the enterprise, and practice the sustainable development of the enterprise. The phenomenon of rework has frequently occurred, resulting in serious waste of construction materials, causing huge economic losses to the enterprise, and the construction progress cannot be carried out on time.

3.2 Enterprise financial management mechanism needs to be further improved

Construction companies must accurately collect, process, archive and store information when performing cost calculations. Therefore, it is more complicated to carry out on-site management work and is more prone to problems. Whether the on-site management work can be carried out directly determines the progress and quality of the construction. Managers also do not give full play to their management and supervisory responsibilities. In the event of a security incident or other unexpected incident, they often cannot find responsible persons or push each other. Construction companies need to develop an efficient financial management system to have a comprehensive plan for the overall financial situation of the project, using the information collected to control the entire project expenditure. In addition, the lack of details in its budget has also affected the smooth development of the project [10]. Some of the construction roads are still occupied, and many problems such as low enthusiasm of the staff, perfunctory work, often lucky psychology, overall quality still to be improved and so on all exist in the construction site. However, many engineering construction units do not realize the necessity of cost, which leads to problems such as the financial management system can not give full play to its role, the construction project profit and loss cannot be counted, the finance is not clear, and the cost cannot be controlled.

4. Countermeasures to Improve the Management Level of Civil Engineering

4.1 Make full use of science and technology

In the process of civil engineering management, the relevant staff should conduct in-depth research on the feasibility of the project, further strengthen the project decision-makers' sense of responsibility, and enable project decision-makers to treat the project construction with a rigorous work attitude. The management of the corresponding mechanical equipment, materials, operators, venues, etc., construction companies should be combined with the specific conditions of construction and corresponding requirements to determine scientific and reasonable management tools. It is necessary to build a perfect quality responsibility system, strengthen the construction technology and methods, establish and improve the design plan in advance, and determine the specific methods and overall style before construction. Civil engineering projects should be built on the basis of economic and social benefits. Only in this way can the positive role of civil engineering be brought into play and the scientific nature of project management be realized.

4.2 Strengthen the safety construction awareness of construction workers

Construction safety is an important factor that directly affects the life safety and engineering benefits of construction workers. A major safety accident caused by construction safety hazards will not only bring huge loss of life and property to construction workers. According to the contract signed by the construction unit, the construction unit and the supervision unit, the construction quality is strictly controlled within the scope of the contract, and the construction materials with safety and quality assurance are selected. Safety supervision of construction projects needs to be expanded from physical supervision of construction sites to engineering supervision related to engineering construction. Attention should be paid to the establishment and improvement of safety supervision system of construction sites. In addition, in the process of project construction, we should also strengthen the supervision of the whole construction process. Once any problems are found, we must deal with them in time and summarize the results, so as to build corresponding guidelines for future project construction. To improve the staff's sense of responsibility, to promote them to complete the work earnestly and actively, to enhance their sense of responsibility and loyalty to the enterprise, and to create greater economic value for the enterprise.

4.3 Establish a sustainable development concept

The concept of sustainable development means that the ecological environment around the building should not be destroyed as much as possible without reducing the needs of future generations. The best effect is to coordinate or integrate with the surrounding environment to realize

the construction of civil engineering projects. Therefore, enterprises must improve the overall quality of relevant personnel. They can regularly organize management personnel and technical personnel to carry out professional skills training and conduct professional ethics lectures to let them understand the importance of construction quality and safety. We should do a good job in cleaning up, control the implementation and use of construction funds, formulate detailed engineering work plans, and, if necessary, draw lessons from new construction methods and work flow at home and abroad. In addition, project builders must establish the concept of sustainable development, and in the process of project implementation, do a good job in the organic coordination of economy and environment, maintain and rationally use natural resources.

5. Effective Control Measures of Civil Engineering Cost

5.1 Concrete implementation in the investment decision stage

For a project, the significance of investment decisions is very significant, and it directly determines whether the project can achieve normal production. This phase is global and fundamental compared to other phases. There is an accurate and reliable calculation of the cost of building design, construction and construction materials, basic construction and construction costs, taxes, etc., which creates favorable conditions for the expenses of various stages such as construction and construction. Strengthen the improvement of business level, ensure that the bid evaluation personnel have a high quality, and do not allow the phenomenon of depressing the quotation caused by human factors. Therefore, in the design stage, we should actively understand the characteristics of nearby buildings and make corresponding geological survey reports to help builders to better control costs. In the investment stage, great attention should be paid to the management of project cost. However, the most critical factor in project cost management at the investment stage is to realize investment estimation, which is the basis for examining the feasibility of the whole project. All aspects of civil engineering shall be fully controlled, and relevant management systems shall be determined for construction technology, equipment, materials and construction safety.

5.2 The concrete implementation in the design phase

After completing the investment decision, the next stage of the construction project is the design stage. It is the most complicated stage of cost control in the whole process of the project, causing many influencing factors to the project cost control. Therefore, the progress of the project construction will also change to a certain extent, thus the construction cost and construction quality will inevitably change to a certain extent, thus affecting the whole project. Sorting out and optimizing some schemes that have been formed in the investment decision-making stage, and based on this, making scientific adjustments to the whole scheme, relevant staff can pay special attention to the positive role of new technology and new technology in the management and control of project cost. To strengthen the supervision of the work during the bidding period; Continuously improve the business level, ensure the quality of the bidders, and prohibit artificially lowering the quotation. At the same time, it also strengthens ideological and moral education and improves the sense of responsibility of construction workers; the supervision unit should always monitor the construction process on site to ensure that the construction quality of the project is up to standard. Combined with the current survey results of civil engineering market, artificial market and material market, predict the short-term profit and long-term economic benefits after project completion, conduct project feasibility analysis, and develop a standard operational analysis report to assist project decision-making.

5.3 Optimize the cost control in the construction operation phase

In the process of cost control, reasonable measures are taken to optimize the cost review process, and the documents with the greatest impact on the entire project cost are strictly reviewed and controlled, and the calculation size and paper size are strictly checked. The staff at the construction

site must be strictly controlled to fully grasp the records, and in order to avoid economic disputes in the process of cost settlement, it is necessary to implement all aspects of the construction project. In view of the whole process of construction, special personnel are assigned to effectively cooperate with the project supervisors. In view of the inconsistency between the quantity of the project and the design, timely proposals are made, causes are analyzed, and timely corrections are made. We should carefully study the purpose and function of the building, as well as the problems that the building needs to undertake, and formulate a more reasonable budget plan based on this. In addition, we can use the Internet platform to compare prices, follow the principle of quality and price. For large materials, we can choose the way of bidding, attract a large number of material suppliers, and obtain the most favorable competitive price.

6. Conclusion

To sum up, in order to ensure the overall optimal operation of civil engineering projects, the cost of each link is controlled on the premise of ensuring the construction quality and safety. Based on this, the management mode is continuously innovated. In order to meet the development requirements of the times, the most advanced management method is adopted to reduce the cost control of civil engineering to the greatest extent. Construction engineering units should strengthen safety supervision and management, innovate management concepts and safety supervision and management modes, and strive to improve the level of safety supervision and management of construction projects so as to ensure the quality of construction projects. To ensure the normal and efficient operation of the entire project, it has never laid a good foundation for the sustainable development of civil engineering enterprises. At the same time, it can also comprehensively improve the construction quality and enhance the value of engineering construction. Therefore, it pays attention to the effective control of civil engineering management and engineering cost, and continuously optimizes relevant measures, thus providing more theoretical basis for the long-term development of construction engineering.

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