Civil Engineering Management Level Improvement Strategy Based on Information Construction

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Abstract: In the information age of the 21st century, the traditional management model has been unable to effectively improve the efficiency of civil engineering management. To this end, it is necessary to fully utilize information technology to promote the organic combination of information construction and civil engineering management, and fully realize the civil engineering construction design. This paper will discuss the strategy of civil engineering management level improvement based on information construction, and hope to provide reference and reference for civil engineering construction.

1. Introduction
From the perspective of the overall structure, the basic meaning of civil engineering management information construction refers to the construction of civil engineering management information platform by means of information technology. We do a comprehensive collection of civil engineering construction scheme design, project cost, construction schedule, construction site safety supervision and management information, integration and analysis, thus effectively improving the level of civil engineering management. This article will use the information technology to design the civil engineering construction model, realize the civil engineering cost management informationization, improve the civil engineering information management system, and promote the information integration management and the organic integration of civil engineering construction supervision. This article will analyze how to improve the level of civil engineering management in information construction from the four aspects above.

2. Designing Civil Engineering Construction Model by Means of Information Technology
Construction design is the basic content of civil engineering construction operations. At this stage, engineering management personnel should cooperate with designers to make full use of information technology to design the most complete construction model. At present, BIM technology is widely used in the design of civil engineering models. This technology is a product of the information age. It can collect, integrate, split, consult and accurately calculate all the data of civil engineering construction design. Project staff provide accurate parameter data. At the same time, BIM can build a single project and a complete database, which can realize data information sharing, ensure the consistency of civil engineering information, and quickly solve the problems of distributed information docking and heterogeneous engineering information sharing problem in the first time. In the process of civil engineering construction model design, designers must separately build local models and overall models, so as to provide a more accurate reference for civil engineering construction operations, and further improve the level of civil engineering management. In the process of designing the local model, the designer should carefully collect and refer to the previous modeling
data information to accurately calculate all modeling parameters. Secondly, in the process of designing the overall model, the designer should integrate all the reference data and related information, and integrate the graphic data with BIM technology to accurately construct a complete information engineering model. At the same time, the designer should pay attention to accurately reflect the construction dynamics in the civil engineering model, scientifically control the construction progress, scientifically adjust the construction plan according to the model data information and the planned area, and realize the construction plan according to the information reflected by the model. In addition, designers should make full use of BIM technology to design accurate construction drawings, and fully embody the assembly of prefabricated components, civil engineering internal space structure, water supply and drainage system, HVAC, lighting equipment and various electrical systems in civil engineering models [1].

3. Realize the Informationization of Civil Engineering Cost Management

From a narrow perspective, the cost of civil engineering refers specifically to the price of civil engineering construction. From the perspective of dialectical analysis, the cost of civil engineering has two meanings. The first meaning refers to the total investment cost of carrying out the expected expenditure or actual expenditure of civil engineering, that is, the sum of the one-time costs required by the fixed assets and intangible assets formed by civil engineering throughout the construction process. The second meaning refers to the civil engineering price, that is, the total price of the expected or actual land market price, the mechanical equipment market price, the technical market price, the entire contract market transaction price and the installation price. To strengthen the management of civil engineering cost, save costs and increase the level of civil engineering cost management, we must fully utilize information technology to realize the informationization of cost management and continuously improve the civil engineering pricing plan [2].

Secondly, in the civil engineering information management work, the civil engineering project estimate, project budget estimate, project budget cost, civil engineering project contract, civil engineering settlement price and civil engineering final settlement price should be reasonably determined. Generally, in the formulation of civil engineering project proposals, it is necessary to make full use of information technology, preliminary preparation of project estimates according to standard requirements, and provide reference for preliminary project cost management. After entering the construction design stage of the civil engineering project, it is necessary to use information technology, prepare the project budget plan according to the regulations, and define the maximum civil engineering cost. Because the general design phase of the civil engineering project bidding contracting and ordering mode is required in the preliminary design stage, a contractual contract agreement needs to be signed, and the contract price also needs to be within the corresponding range of the total budgetary estimate (maximum price limit).

Thirdly, the cost management personnel should focus on building a civil engineering cost control management information platform, improve the internal software and hardware equipment of the platform, use remote technology to monitor the civil engineering construction activities in an all-round way, and timely deal with the problems reflected by the monitoring content. At present, in the civil engineering construction process, it is often necessary to invest a large amount of material costs and mechanical equipment. If not effectively controlled, it will inevitably lead to cost overruns and out-of-cost problems. Therefore, we need to use information technology to set up a price network, comprehensively understand the market price information of various construction materials and mechanical equipment, and try to purchase inexpensive construction materials and equipment.

In addition, cost management personnel must make full use of information technology to continuously optimize the pricing management plan, and deal with the pricing details according to the pricing characteristics. From a microscopic point of view, civil engineering valuation has four characteristics, namely, multiple nature, combination, diversity, and complexity. The so-called multiple nature refers to the construction of civil engineering is a relatively long process, the construction phase is not the same, need to carry out multiple pricing, so the diversity of pricing work is determined. In
short, the entire valuation process is from the general to the details, from shallow to deep, and after several times of pricing, the actual cost of civil engineering can be realized. To ensure the accuracy of multiple pricing work, you must make full use of the cost management information platform to obtain information and do all kinds of accounting work. The combination means that the pricing work is a combination of civil engineering division operations, sub-projects, corresponding quotas and different cost standards. Diversity means that there are different basis for pricing in different stages, and the accuracy requirements are also different. As a result, the pricing method presents diversity characteristics. Complexity means that the content and basis of pricing work are not the same throughout the valuation process. Therefore, the pricing process is also complex. In the pricing work, it is necessary to fully utilize the information management platform to select the best pricing model based on the actual content and basis to ensure the accuracy of the pricing result.

4. Sound Civil Engineering Information Management System
From the overall structure analysis, the civil engineering information management system is mainly composed of three subsystems, which are construction information control subsystem, construction management subsystem and business information subsystem [3]. Among them, the construction information control subsystem can make up for the defects of the traditional manual management mode, and do the difficult management work, such as replacing the traditional artificial proportioning mode with the concrete proportioning of the concrete to ensure the accuracy of the formula. In part of the blasting work, it is also necessary to use computer for calculation to accurately predict the blasting angle and the effect after blasting, and scientifically control the hazard of blasting activities. The construction management subsystem is mainly used to manage various sub-projects of civil engineering construction, that is, using the system to classify and store various sub-projects, realize sub-project management archiving, and transform various complicated project management operations into digital management. Thereby effectively improving the efficiency of civil engineering project management. The business information subsystem is mainly used for civil engineering project investment management, cost estimation, material equipment procurement and bidding management. Moreover, the system can realize the transparency of bidding information, avoid malicious competition, help construction companies to select the best suppliers (such suppliers can improve the quality of cheap materials), and avoid mixing inferior materials.

5. Promote the Organic Integration of Information Management and Civil Engineering Construction Supervision
In the civil engineering construction process, the traditional supervision mode is mostly manual supervision, which inevitably affects the quality of safety supervision and management due to the shortage of human resources and the lack of professional skills of some supervision engineers. In this regard, efforts should be made to promote the organic integration of information management and civil engineering construction supervision, thus effectively ensuring the safety of civil engineering construction management [4]. In the information supervision work, the supervision enterprise shall assist the construction enterprise to comprehensively refine the safety supervision and management work during the whole construction period and during the acceptance period. If safety hazards are found, feedback should be made in time to solve the hidden danger problem. At the same time, the supervision enterprise should cooperate with the construction enterprise to do the following three basic tasks.

First, the safety supervision responsibility system for civil engineering construction sites. In the process of carrying out this work, the supervision enterprise should combine the Chinese construction law provisions and relevant guidance documents, make full use of information technology, prepare the civil engineering construction site safety supervision responsibility system, and refine the supervision work indicators. At the same time, the supervision enterprise legal person shall perform the full responsibility of the enterprise for the sub-projects with greater risk of civil engineering. Secondly, the chief management engineer should play the role of the main heart, fulfill the safety supervision
responsibility according to law, and clarify the duties of other supervision team members.

Second, for the safety points of civil engineering construction, the sub-project safety supervision plan and various rules are prepared. In this work, the supervision engineer should give full play to the guiding role of the information supervision and management platform, refine the sub-project safety supervision procedures, promote the organic combination of the construction process and the safety supervision and management work flow, and strictly control the safety quality of each construction progress. To avoid the problem of potential safety hazards due to errors in a certain construction link. In addition, the supervision enterprise should combine the safety supervision characteristics of the entire civil engineering, improve the safety supervision system for high-risk sub-projects of civil engineering construction, formulate corresponding safety supervision and management methods for different processes, and standardize the construction quality safety inspection methods for each sub-project. For example, after the safety quality of the first floor to the tenth floor is up to standard, the safety construction above the tenth floor can be carried out, so as to avoid the safety accidents caused by hidden dangers in the lower base.

Third, strictly check the qualifications and safety documents of nuclear construction enterprises, construction teams and other cooperative units, and assist the construction team to build a sound security system. At this stage, the supervision enterprise should carefully refer to the “Regulations on the Safety Management of Construction Projects”, carefully review the certificates and qualifications of all the cooperation units, and accurately determine whether all the documents meet the requirements of safety standards. Secondly, it is necessary to formulate a feasible safety construction management organization system for the construction site, equip professional safety personnel, formulate a responsibility mechanism for building construction safety production, fully utilize the information technology to construct a civil engineering construction safety management network, and implement the civil engineering safety construction system. The safe operation process of different construction operations. Thirdly, the supervision company must carefully review the employment certificates of special operators, conduct strict examinations on new materials, new processes, new structural systems and new technologies for high-risk construction operations, formulate safety construction technical plans, and comprehensively adopt safety measures to ensure the safety of civil engineering. In addition, the supervision enterprise should pay attention to guiding all supervision engineers to comprehensively improve their vocational skills and perform their duties according to law.

On the other hand, the supervision engineer should use the information security supervision and management platform to do a good job of reviewing the calculation book and various argumentation materials. The current civil engineering construction calculation book mainly includes construction drawings and various parameters. During the parameter review process, the supervision engineer must carefully review and use the information technology to accurately calculate the template support fixed parameters, all load design parameters, load bearing capacity, and support system stiffness. Whether the parameters such as the strength, the stability value of the lower beam of the beam plate, the bearing capacity of the fixed facility foundation, and the lower bearing capacity of the conversion layer can conform to the safety standard range is still need to be measured. At the same time, carefully check the material size and specifications, and control the spacing of the building's vertical and horizontal support structures. In addition, the supervision engineer should cooperate with the construction engineer to carefully review the partial drawings of the high-risk project to ensure the accuracy of the important drawings such as the safety construction drawings of the support system, the plan horizontal and horizontal plan paper, and the shear wall support drawings. Moreover, in the process of reviewing the special argumentation materials, it is necessary to cooperate with the construction experts to analyze the special construction plan to ensure the perfection and safety of the plan [5].

6. Conclusion
To sum up, we need to comprehensively carry out civil engineering management work based on informatization construction to ensure the quality of civil engineering construction. Construction enterprises must start from the basic links and make full use of information technology to design civil
engineering construction models and construction drawings. Secondly, the cost management personnel should focus on building a civil engineering cost control management information platform, improve the internal software and hardware equipment of the platform, use remote technology to monitor the civil engineering construction activities in an all-round way, timely deal with the problems reflected by the monitoring content, and fully realize the civil engineering cost management information construction. Third, the construction enterprise should give full play to the role of construction information control subsystem, construction management subsystem and business information subsystem to build a complete information management system. In addition, construction enterprises should focus on strengthening cooperation with supervision enterprises, and strive to promote the organic integration of information management and civil engineering construction supervision, so as to effectively ensure the safety of civil engineering construction management.

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