

# DISCUSSION ON THE PROBLEMS AND SOLUTIONS OF CONSTRUCTION PROGRESS MANAGEMENT

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**Abstract:** In today's Chinese market, the scale of construction projects is expanding, construction enterprises are growing, and construction enterprises are facing increasingly fierce market competition in the construction process. In this market environment, if enterprises want to maintain their advantages in the market, they must improve their own management level. Only by completing the required construction schedule on time and with high quality can construction enterprises occupy a dominant position in the market competition. Whether the construction progress of the construction project can be completed on schedule directly reflects the project management level of the construction enterprise. Through the investigation of construction progress management, there are still major problems such as unreasonable construction schedule, inadequate construction organization and implementation, imperfect management of construction equipment, insufficient guarantee of construction funds, and low technical ability of construction personnel.

**Keywords:** Construction engineering; Construction progress; Schedule management; Project management

## 1 RESEARCH BACKGROUND AND SIGNIFICANCE

### 1.1 Research Background

In recent years, due to the increasing number and scale of construction projects, the progress control of construction has been paid more and more attention by construction enterprises, and many construction progress theories and methods have been widely recognized and applied. But there are still some enterprises in the project construction only according to the perennial construction experience to control the construction progress, no scientific evaluation of construction progress, often appear, resulting in the best economic benefits, and part of the enterprise of the construction schedule management is often not comprehensive, only strictly control the construction period, unable to effective control of resources, funds, which caused the period and cost cannot perfect fusion in, resulting in the construction project cannot achieve the ideal benefit.

### 1.2 Study Significance

In the fierce market competition, if the construction enterprises want to gain the leading position, they must take active measures to manage the project, focus on the construction schedule management, ensure that the quality meets the design standards, scientifically control the construction period, and reduce the project cost input to the minimum, so that the enterprise is far ahead in the industry[1]. In order to ensure that the success of the construction project can be completed, the construction enterprise should strengthen the control of the construction project, reduce the cost of the construction, under the premise of the overall benefit of the construction project. Only in the management of the construction progress is strictly controlled, in accordance with the schedule arrangement, so that the construction project can be carried out smoothly, to ensure the quality of the construction project, improve the efficiency of the construction project, to achieve the purpose of economic benefits and social benefits. Therefore, the construction enterprises must strictly abide by the engineering standards, efficiently complete the construction tasks within the specified time, ensure the quality and efficiency of the project, actively carry out the project progress management work, optimize the management mode, coordinate every link in the construction process, complete the project construction on time, and realize the optimal development of the project construction[2].

## 2 RELEVANT KNOWLEDGE OF BUILDING CONSTRUCTION PROGRESS MANAGEMENT

### 2.1 Meaning of Construction Schedule Management

The total progress of a construction project is the progress objectives determined in the project definition stage, and the main task of construction progress management is to control these objectives in the implementation stage.

Construction schedule management refers to the control and management in the process of project construction, According to the schedule requirements of the construction contract, According to the content, procedure, duration and connection mode of the project, Using scientific management methods to track, supervise and check the actual progress

of the project, And after a careful and detailed comparison, Find out the difference and differences between actual and planned, And evaluate and analyze the formation of differences and differences and make plans, For the plan to be implemented in the execution of the project, And regularly check the implementation of the project, And to analyze the implementation of the project plan, And analyze the effects of it, And to correct or modify it, Until completion and delivery.

## 2.2 Principles of Construction Schedule Management

**Dynamic control principle:** Construction projects are a complex and dynamic system, which is affected by a variety of internal and external factors, such as design changes, material supply, construction conditions, natural environment, policies and laws, etc., resulting in the progress of the project is difficult to predict and stabilize[3]. Therefore, when the construction progress is controlled, it is necessary to compare the actual progress with the planned progress in real time, so as to find the plan in time, and analyze and correct it, so as to ensure the normal progress of the construction.

**Systemic principle:** construction progress systematic principle, refers to the actual construction process, a certain project or a specific setting link in the project as the whole project or a part of it, through effective methods and systematic thinking to manage[4]. Construction work is through the project manager assigned to the head of each professional, each professional head to lead staff to complete the construction work, and in the whole construction process, dominated by the project manager, collaboration between other professional work, so the construction work is a kind of organized system engineering. The control of the construction progress should also be carried out systematically according to the systematic vertical transmission of information.

**Information feedback principle:** Information feedback is an important way in the progress control process of construction projects. In the event of any deviation in the construction schedule, the construction enterprise should make corrections to the original construction schedule, which should be based on accurate progress deviation information. These information also needs to be conveyed to the decision makers timely, effectively and accurately through specific procedures and channels. On this basis, there should be rich managers to summarize, analyze and summarize these data, and then vertically convey them layer by layer. In the process of decision formation and implementation, managers should pay close attention to the impact of correction actions, and provide timely information to decision makers to provide the basis for the next step of control.

**Elastic principle:** in the process of construction progress control, it is often affected by various factors, which is inevitable. To ensure certain major milestones in the construction plan.

## 3 MAIN PROBLEMS EXISTING IN THE CONSTRUCTION SCHEDULE MANAGEMENT

### 3.1 Unreasonable Construction Schedule

In the process of construction, due to the many and complicated construction steps, the situation encountered in the construction process is more complicated, and the construction progress management and the formulation of the progress plan are closely related. The smooth progress of building construction must have a set of scientific progress planning as its guidance and support. Improper construction schedule will cause the project delay, increase the project cost, and reduce the quality of the project. Especially in major projects and complex projects, due to the improper arrangement of the schedule, it will not only cause engineering risks, but also cause engineering quality, safety and other problems, which will cause great damage to the construction progress.

The unreasonable construction schedule is mainly reflected in the large difference between the construction schedule plan and the actual construction situation, which leads to the delay of the normal construction progress. The root cause of this problem is that, in the initial design stage, because of the large scale of the construction, and the uncertainty about the work, let the early construction and planning work appear more difficult, when many construction enterprises make the schedule, often associated with randomness and idealization, ignoring the limitations of the site construction, without fully considering the specific circumstances of the project, therefore, Inaccurate arrangement, The formulated construction schedule plan cannot provide a reference for the specific work, this is likely to hide the problems arising in the actual construction, thus the estimation of the overall amount of work, if an emergency occurs during the construction process, it is very difficult to develop an effective emergency rescue plan, in severe cases, it will stop work, slow down the construction progress, it will also cause the deviation between the progress management and the management plan, later will involve the construction project rework and repair work[5]. In addition, the focus of the construction schedule planning is insufficient. In the whole construction process, it involves many complicated aspects such as site survey, material and machinery supply, and construction implementation. The content of the construction schedule planning is too single or too complicated to efficiently track and control the construction process.

### 3.2 The Construction Organization and Implementation is not in Place

When the construction organization is not in place, it will inevitably directly lead to the construction progress delay, quality problems and engineering safety risks and other problems. Site layout in the process of construction is unreasonable is the key factor directly affecting the construction progress, first, the construction site area is limited, if the site organization arrangement is unreasonable, building materials without basis, mechanical equipment into not clear, in the need to approach material machinery, not appear in time, delay the next material machinery approach, will

inevitably affect the construction progress. The site logo is not clear, the distance between the living office area and the construction site is too close, and the control of dangerous goods is lax. Once safety problems occur and there is no clear safety indication area, it is not only a threat to personal safety, but also will cause irreversible consequences to the construction progress.

Second, construction organization and implementation is not in place, quality control aspects, In the construction, there are often the site personnel team did not carry out the construction in strict accordance with the construction instructions in the technical disclosure, often use their own years of experience to deal with the details, if the project department does not find out and deal with it in time, the supervisor fails to pass the inspection, many partial projects are reported and re-construction is a serious delay to the overall construction progress; Time-node aspect, when the site personnel team carries out the partial project in time order, if the construction is not strictly according to the schedule, the delay time of each sub-project is accumulated, will cause the delay of the overall construction time node. On the contrary, some construction enterprises in order to blindly pursue construction progress, violate the acceptance process, the previous process without acceptance on the next process, before a partial project problems because has started the next partial project lead to rework, supervisor cannot complete the acceptance, seriously hinder the construction progress, even the project rot.

### **3.3 Imperfect Management of Construction Equipment**

With the rapid expansion of the scope of mechanical construction, there are still many management problems in the construction of engineering equipment. Some construction enterprises do not fully realize the importance of construction equipment maintenance work, the construction equipment management work problems, the main reason is that the management system of construction equipment is not sound, and its implementation is not enough. Some construction enterprises only pay attention to the use of equipment, do not pay attention to its maintenance, only pay attention to short-term profits, ignore the long-term operation, resulting in a large number of construction machinery in a long time overload operation, which will aggravate the wear and aging of machinery and equipment, reduce its working life. When the equipment cannot be used, the enterprise needs to pay more energy and financial resources to carry out maintenance, which increases the maintenance cost and delays the construction period, which will cause chaos in the management of construction equipment management, and the completion of the project schedule causes a great impact.

In addition, although some enterprises have established a corresponding complete maintenance system, but it has not been effectively implemented, and the management of construction equipment is weak. In the case of large construction workload, the enterprise existing construction equipment is often difficult to meet the requirements of the construction, and the construction workload is small or no work, these equipment will be completely idle, led to a huge waste of resources, and equipment aging problem will appear, thus limiting the construction process of the enterprise.

### **3.4 Insufficient Guarantee of Construction Funds**

The normal construction of construction requires a large amount of funds, because the construction project itself has the characteristics of long cycle, large demand for funds, long cycle of capital use and so on, which makes it difficult for construction enterprises to avoid the situation of insufficient capital guarantee. Inadequate construction fund guarantee will lead to the delay of project progress, project quality decline, construction team members lax and other problems. Once the capital chain is broken in the construction process, the project will lead to the shutdown. If the enterprise capital investment is insufficient, it is difficult to guarantee the cost in the construction process, which will inevitably have a serious impact on the overall project progress.

Cause construction funds guarantee there are many reasons, the first construction enterprise is responsible for the capital staff is not professional financial personnel, they do not have enough professional knowledge, and their information degree is not high, so when they use modern management technology and equipment, cant be the assets management system and equipment function fully use. Second non-professional financial personnel quality level is not enough, not for fixed capital management, or the financial management is not serious, not responsible for it, this will cause problems in financial accounts, will produce financial distortion, this increases the financial risk, but also reduce the accuracy and accuracy of financial information, further let enterprises to reasonable allocation of liquidity, will eventually cause the circulation of funds.

In addition, the construction enterprises own financial management system implementation is not sound. First of all, some construction enterprises lack the corresponding financial supervision departments, and also lack of matching financial supervision mechanism. Second construction enterprise capital experience is not scientific, problems in the use of funds, unreasonable use of capital and non-standard management, let enterprises cant accurately understand their operating status, which has a certain influence on the decision, also let the company financial staff cannot effectively effective accounting of capital, let the enterprise in a state of capital chain tension. The capital flow of the construction project is blocked, which affects the time period of purchasing materials and components, and slows down the progress of the project.

### **3.5 Low Technical Ability of the Construction Personnel**

All the technical operation and organization cooperation in the construction process need the participation of people, and the unreasonable allocation of construction personnel will undoubtedly have a direct impact on the construction progress[6]. People are an important part of the project construction, the low level of construction technology is often caused by the lack of professional knowledge, lack of practical experience, lack of training and other factors, therefore, the site staff will appear technical performance is not strong, operation error, the construction requirements are not clear and other problems. The main reason for the above problems is that the technical standards of the construction enterprise project department are too lax on the inspection, resulting in ineffective supervision work, resulting in a large number of illegal operations, and then reduce the benefits of the project construction. If there are problems such as insufficient workers, mismatched skills, or inadequate training, it will lead to a lag in the project[7].

At present, the technical level of construction workers in construction enterprises is relatively poor, which is embodied as follows: first, the technical level of management personnel is not high, and many project managers do not have the corresponding business skills, nor the corresponding production technology management skills. In the process of project implementation, there is a big gap between the composition of technical personnel and the actual situation of the project, and it is difficult to effectively control the implementation process of the project. Not enough understanding of the true process of the project. In addition, the overall planning of the project also lacks the overall consideration of the overall planning due to the lack of its technical level. In the construction of the project, there are often some unexpected situations. If these unexpected situations are not solved timely and efficiently, it will cause the delay of the project period. In addition, because most of the construction workers are mainly heavy physical work, without special skills training, so they do not master the appropriate construction work skills, some will also appear the phenomenon of illegal work. In the actual construction process, the operation of the machine mainly depends on the subjective feelings of the operator, resulting in more time-consuming operation process, and a certain impact on the quality of partial projects, often rework, which seriously restricts the construction process of the project.

## **4 SOLUTIONS TO PROBLEMS IN CONSTRUCTION SCHEDULE MANAGEMENT**

### **4.1 Improve the Construction Schedule**

The preparation of construction plan is an important part of the project schedule management. On the basis of the construction plan, improve the construction schedule, reasonably arrange the supply of resources, save the construction cost and ensure the smooth construction. To give enough attention to all possible factors, to exclude, to make the construction schedule become more perfect, you must to each stage, each step of the detailed analysis, resources in each link of reasonable configuration, and the optimal construction structure adjustment, but also strengthen the monitoring and tracking, build a set of effective communication and coordination mechanism, so as to ensure that the construction schedule can get effective execution and success.

In the process of construction progress plan, according to the actual construction characteristics, different construction conditions for the specific analysis, before construction, construction enterprises must according to the relevant requirements, provide a detailed construction plan, and then by the supervision personnel review the construction plan, to ensure the feasibility and safety of the construction scheme, ensure the construction quality of the project, to meet the basic requirements of the project management. In addition, at the time of construction scheme review, the auditor should attach importance to the project construction target review, will each item and the connection between the overall project clear, in order to realize the fine management, make the project progress conform to the requirements of the construction contract, and promote the progress of the project management. At the same time, the feasibility analysis of each construction step is also carried out, so as to make a more scientific plan in line with the original project schedule. After the start of the construction, schedule management personnel to improve the project guarantee measures, collect the actual progress of the progress report or routine progress report to complete data check and collect, to ensure the correctness of the data, progress management personnel should regularly to the site, understand the specific progress of the project. Construction personnel should carry out the construction in strict accordance with the system and do it. The progress of the project should be strictly tracked and regularly tracked. Once the progress delay is found, the problems should be reported in the first time and solved to ensure the smooth progress of the project.

### **4.2 Optimize the Construction Organization and Implementation**

Construction enterprises in the construction organization and implementation, to be in strict accordance with the construction organization design. In the aspect of site management, the building materials and materials, based on the overall layout plan, the building materials and materials should be scientifically stored, but also be marked, and the timely storage and transportation of construction and household garbage.

During the site construction implementation, relevant management personnel should strictly control the quality of the construction site, clarify the project construction condition, record the detailed information of the construction link of each section, use this information to provide a strong basis for the acceptance of partial projects, benefit to the overall management of the construction project, enhance the efficiency of construction project management, and then improve the construction progress; in addition, the management personnel control of the construction time node should also be accurate, conduct each sub-project as per the schedule as possible, in the face of the delay time of the field personnel team rectification punishment, take measures of rewards and punishments accordingly, according to the terms of the labor contract, to commend the on-site personnel team who have completed the work content in advance, fully tap the

potential of the site personnel team, while ensuring the smooth construction progress, it can also promote the progress of the construction project. To optimize the implementation of construction organization and implementation, it is necessary to establish a scientific management system and work system from the aspects of construction equipment, material management, safety management, communication and supervision, and ensure the efficiency and quality of construction organization and implementation to ensure the smooth construction progress.

### **4.3 Strengthen the Management of Construction Equipment**

Construction equipment plays an important role in the construction. Strengthening its management can effectively improve the construction progress, reduce the construction cost, and help to improve the quality of the project and ensure the construction safety. Strengthening the management of construction equipment is an important measure to ensure the construction progress and quality. It is necessary to strengthen the management from the management organization, standard system, maintenance, storage system and safety management, to ensure the safe and effective use of construction equipment, which has a great impact on the smooth progress of the construction progress.

During the project initiation phase, detailed demand analysis and market research are carried out to determine the specifications, quantities and delivery times of the required equipment[8]. Furthermore, according to the construction scale and demand, set up special equipment management department, set up the specialist is responsible for the equipment storage, use and maintenance, and apply to information technology, build and perfect a complete system of equipment maintenance management system, standardize the file processing process, so as to improve the efficiency of maintenance and management. At the same time, the establishment of equipment files and maintenance records, detailed understanding of the use and use cycle of equipment, for different types, different types of machinery, establish its operation parameters files. To build a perfect mechanical operation post responsibility system, the establishment of full-time mechanical management departments, in the construction rules and regulations of the responsibilities and obligations of each staff. Formulate the equipment use and operation specifications, require the construction personnel to use the equipment safely under the condition of ensuring its normal operation, and increase the awareness of the use and maintenance of the construction personnel. The mechanical equipment should be inspected to ensure that the mechanical equipment can meet the construction requirements of the bid section, conduct regular inspection and maintenance of the mechanical equipment and make inspection records, and replace the equipment that does not meet the site requirements in time[9].

### **4.4 Guarantee of Construction Funds**

At present, there are often capital problems in part of the construction, and the capital chain is broken during the construction, which leads to it difficult to continue the construction of the project, which seriously affects the construction progress. Therefore, the construction unit should strengthen the control of funds to ensure the sufficient funds of the project[10]. Construction enterprises should increase the training of employees, improve the professional level and quality of financial management personnel, so that financial personnel can have a more comprehensive understanding of the relevant knowledge and skills of financial management, so that they have independent decision-making and risk control ability. At the same time, we should strengthen the management and operation of the assets of enterprises. To ensure that the selected financial personnel have a certain risk control awareness and management ability, to carry out careful statistics of financial information, to work carefully, to ensure the accuracy of financial statements and data information, to be able to effectively prevent financial crisis, which is of great help to the control of financial risks. Managers should strictly control and manage the funds at any time, control the accurate financial information, and be able to ensure that there are sufficient funds to buy the required materials and equipment in the repayment process, so as to make the flow of funds more active.

In addition, before the project is approved, the construction enterprise should, according to the actual situation of the project construction, plan the specific budget and fund source of the project, clarify the fund demand and fund raising plan in the project construction, and formulate a set of reasonable fund use plan. Establish a sound internal management system, strictly manage the flow of financial funds, strengthen the management of financial funds, and implement the risk control mechanism and internal management system in place. In this way, financial personnel can be more clearly aware of the significance of financial risk management, so as to better grasp the countermeasures of financial risk management. When carrying out financial work, we must be in accordance with the requirements of internal management, a careful analysis of the needs of funds, and combined with the realistic conditions of a reasonable flow of funds, the use of financial funds is strictly controlled. In addition, it is necessary to ensure that sufficient funds can be repaid on time, effectively improve the efficiency of the use of capital, so that it can carry out scientific working capital circulation, so as to effectively control financial risks. Managers should always abide by the provisions of the internal management system, and manage and supervise the flow and circulation of financial funds, so as to avoid financial risks and prevent misappropriation of funds or lax management. At the same time, strengthen the management of the assets and capital of the enterprise shall ensure the internal control of the enterprise and prevent the financial style of the enterprise.

### **4.5 Improve the Technical Ability of the Personnel**

The main body of the construction is the construction personnel, and the technical ability level of the construction personnel directly affects the construction progress of the whole project. Therefore, it is particularly important to do a good job in personnel assessment management, strengthen the control of access, performance and arrival, and improve the mastery of the number of construction personnel and the amount of work by project management personnel to improve the level of progress management[11]. These training can be taught by internal engineers and technicians, or by external professional institutions. To regularly for construction management and site construction personnel management and professional skills training, to strictly abide by the approach clarification, before shift education system, using simulation work, let the construction personnel in the actual work can better master their own technology, so as to improve their work efficiency, strengthen their technical accumulation and the ability to deal with job changes, so that the construction personnel can use their construction equipment at the scene, and can be skilled operation, as far as possible for the construction personnel to their mechanical operation to zero deviation, make their work better implement, make the construction quality get better.

In addition, in the construction personnel on-the-job training, should also implement strict on-the-job evaluation system for them, and regular inspection of them, and their comparison and feedback, supervise the staff work progress and skills, and give real-time feedback and improvement Suggestions, motivate employees, ensure that employees have high work enthusiasm and quality consciousness, to ensure that the construction of the enterprise construction personnel with high quality, ensure the construction progress, no delay.

## 5 CONCLUSION

At present, under the background of the rapid development of national economic construction, progress management plays a very important role in construction, It can not only improve the efficiency of project management, but also better control the construction quality and safety, but also reduce the incidence of construction safety accidents. In the process of construction, the construction unit must conduct a comprehensive analysis and study of the various influencing factors of the construction project progress. According to the problems in the construction progress management, take corresponding measures to actively control the construction progress. In the whole project, all the participants take active actions, make full use of strengths and circumvent weaknesses, and work together. Under the joint efforts of various majors and each link, can we formulate a scientific construction schedule plan and build a reasonable control system, to ensure that the project progress can meet the provisions of the contract. Only by effectively controlling the construction progress, can the construction enterprises achieve stable development in the construction field, so as to promote the sustainable development of the construction market.

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## COMPETING INTERESTS

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