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Research on fine management in the construction process of construction projects

Jiayue Zhu

College of Quality & Safety Engineering, China Jiliang University, Hangzhou, 310000, China

2100602406@cjlu.edu.cn

Abstract. Fine management is one of the important methods to ensure the quality of construction, to ensure the safety of construction and to improve the economic benefit of construction enterprises. In the construction process, the construction personnel and the management personnel of the construction enterprise should take the fine management as an important work content. Fine management has strong operability in practice, can effectively improve work efficiency and quality, and ensure the smooth progress of work. This paper mainly expounds the concept of fine management in the construction process at first. Then, the problems existing in the fine management of the current construction process in China are analyzed. Finally, the relevant optimization measures and countermeasures are put forward. The conclusion of the paper is expected to strengthen the fine management level of the construction process in China, so as to provide a certain reference for improving the economic benefits of construction enterprises.

Keywords: Fine management, Building Construction, Management System, Technology Application.

1. Introduction

Taylor, the father of scientific management, first put forward the idea of fine management. In 1881, 25-year-old Taylor, during his work in the steel factory, through the study and analysis of the workers' operating actions, summed up a set of reasonable operating methods and tools to train the workers. Including the elimination of unnecessary actions, correct the wrong action, determine the reasonable operation method, select the appropriate tools, etc., so that most people can achieve more than the quota. 1911, Taylor published the book "Principles of Scientific Management", which is the world's first book of fine management works. After the Second World War, the expansion of the scale of enterprises. Production technology is becoming more complex, the product replacement cycle is shortened, and the production collaboration requirements are higher. In this case, the management of business operators put forward more refined requirements. Later, the Japanese idea of lean production has considerable influence on the formation of the idea of refined management. It is interesting to note that management theories are often formed in the United States and applied in Japan, as is the case with quality management. Refined management is a scientific management concept and management techniques, is a serious and rigorous work attitude, the requirements of production management to achieve refinement, data, process, standardisation, the management of the responsibility for specific and clear. The core

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concept is fine, accurate, fine, strict, the implementation of refined management is an important way to improve the overall management level of enterprises, is an important initiative to ensure stable and controllable safety production, is an important means to ensure efficient implementation capacity [1].

The current urbanisation process is accelerating, and the scale and number of high-rise buildings are increasing. In order to further promote the continuous development of the construction industry, it is necessary to focus on the effective implementation of the concept of fine management. There are some problems in the current construction management process, such as more safety hazards, frequent quality problems, and low management efficiency. Therefore, it is necessary to do a good job in the fine management of construction projects, accelerate the stable development of the modern construction industry, and eliminate and solve the unstable factors existing in the construction. It provides powerful conditions for cost control and environmental, and enhances the comprehensive benefits of construction projects. The relevant construction unit should introduce a complete refinement management system, strengthen the refinement management and control before, during and after the event, to achieve the overall management of the project as a whole, and improve the core competitiveness of the enterprise as well as economic benefits [2].

Engineering construction is a complex systematic project that involves all aspects of construction, so it is necessary to strictly control every link in the construction process in order to make the whole project successfully completed within the specified time. In this paper, through the elaboration of the connotation and characteristics of fine management, the importance of fine management to the construction enterprise, and combine the actual situation of the company on how to implement fine management in the construction process was analysed.

2. Fine management development during the construction process

2.1. Develop and improve various management systems

Developing and improving the project management system is to meet the needs of project management work, the project organisational structure, division of responsibilities, staffing, quality objectives, economic responsibility and other specific provisions. Enterprises should combine their own characteristics, develop a set of project management system suitable for the company, and continuously improve in the implementation.

(1) Improving the organisational structure

According to the characteristics of the construction project, divide the functional departments and operation groups in accordance with the principle of setting up the organisational structure of the project. To carry out a reasonable division of labour for the project personnel, clear responsibilities, to avoid the phenomenon of “kicking the ball”; to set up a scientific management level, to ensure the achievement of management objectives.

(2) Improving the quality objectives

Through clarifying the quality responsibility of each level and determining the quality control points and other means, scientific and reasonable quality objectives are formulated. Enterprises can be divided into engineering categories according to construction projects and product categories, and develop corresponding quality standards according to different engineering categories. In the process of implementation, the quality objectives should be constantly improved in conjunction with the actual situation of the enterprise.

Table 1. Integrated management system for the whole process of construction [3].

Construction phase	A specific system	Institutional content
Pre-construction stage	Participation in the membership system	Determine the number of personnel, their specialities and other needs for allocation; formulate emergency plans for personnel; assign personnel to work tasks and clarify their job responsibilities.

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Table 1. (continued).

Pre-construction stage	Relevant Drawing Interpretation System	Interpretation of engineering drawing details and construction difficulties to ensure that the drawings are perfect.
	Sample Reference Guidance System	Construction project samples, as a construction quality, degree of refinement and construction standards, as well as for the acceptance of the later works to provide a certain standard reference.
	Material Component Manufacturer Audit System	Organise technical representatives from all parties to go to material and component manufacturers to conduct field production visits, and review and select manufacturers based on the results of the comprehensive inspection.
	Participating members' management system	Strengthen the professional skills training of personnel, enhance the professionalism of technicians, conduct regular evaluations, and establish a reasonable system of rewards and penalties.
Construction process phase	Quality inspection system for material components	Inspection of the use of sample experimental audit method, the quality of incoming materials and components quality assessment.
	Engineering Information Sharing System	Using BIM technology, establish a multi-disciplinary collaborative work platform to achieve visualisation and sharing of engineering information.
Post-construction phase	Issues and Risks Accountability System	The causes of problems and risks are analysed, responsibility is assigned to individuals, penalties are imposed according to the degree of impact on the project, and any failure to report is dealt with seriously.
	Operation and Maintenance Management System	Clarify the workflow and process interface, and do a good job of filing and handover records of information.

(3) Improving the economic responsibility

Enterprises should formulate the corresponding economic responsibility according to the characteristics of the project, and strictly implement it in practice. For all levels of personnel to implement a system of rewards and penalties, the implementation of a good job responsibility system and accountability system; for the project manager and construction management personnel to implement the economic contracting responsibility system. The entire construction process is generally divided into three stages, pre-construction, construction process and post-construction. Relatively sophisticated systems are already in place for each of these phases, as can be seen in table 1.

2.2. Setting Fine Management Objectives

In the construction process should be fully combined with the characteristics of the enterprise itself, to develop a fine management objectives in line with the development of enterprises, so that employees can have a goal to work [4]. For example, a company in the construction process has clearly formulated the fine management objectives, that is, "people, machines, materials, methods, environment" and other aspects of the fine management, through the refinement of each job to the individual, clear division of labour and scope of responsibility, to ensure that the work can be carried out in an orderly manner. In addition, construction companies in the development of fine management objectives and staff to combine their own situation, so that they can integrate the objectives into their daily work. For example, a company in the construction process clearly requires each project manager and technical responsible person to strengthen the training work of the team, and to do the construction of the team to have plans, arrangements, summaries and implementation. Through the development of fine management objectives,

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so that employees can clarify their own responsibilities, so that the fine management is put into practice [5].

2.3. Scientific division of construction area

The division of the construction area is the basis of fine management, and the scientific and reasonable division of the construction area is an important prerequisite for ensuring construction quality and safety [6]. To combine the actual situation of the project, according to the different characteristics of the construction site of the construction project, in accordance with the safety, quality, schedule, cost and other aspects of comprehensive consideration, with the project manager as the responsible person, the various construction zones are divided into different professional areas, and according to the characteristics of the respective areas to develop the corresponding construction programme. The on-site personnel will be divided into a clear division of labour and responsibility. At the same time to strengthen the management and education of the site personnel to ensure that construction personnel have a good sense of safety and quality awareness. In addition, in the construction process, but also to strengthen the implementation of on-site safety measures to supervise and inspect, for the construction site there may be security risks and loopholes, and timely development of appropriate safety precautions and contingency plans to ensure that the entire project in terms of safety, quality, schedule and other aspects of the project have been safeguarded.

3. Fine management of the construction process

3.1. Optimisation of construction organisation design

Optimisation of construction organisation design is an important part of the implementation of fine management, which has an important impact on the quality, schedule and cost of the project. The advantages and disadvantages of the construction organisation design directly determines the success or failure of the project, so in the development of the construction organisation design should strictly follow the principle of "safety, quality, progress, cost", so that the construction organisation design is more scientific, reasonable and operable [7]. In the construction process, to grasp the construction site in a timely manner, make full use of existing resources, the construction tasks for the scientific and reasonable arrangements and deployment, to reduce unnecessary nesting phenomenon. Under the premise of guaranteeing quality, the duration of the construction period should be optimised to make it more in line with the actual situation. At the same time, it is necessary to do a good job of organising and coordinating the work, and timely solve the problems and contradictions that arise in the construction process. In the development of construction organisational design, attention should be paid to the combination of the actual situation of the progress of the plan to optimise the adjustment, so as to reduce the occurrence of unnecessary nesting phenomenon. In the development of specific construction programmes should take into account the cost of construction and construction progress, to ensure that the finalised construction programme is both economic and reasonable. Table 2 shows the comparison of parts of the programme of a building project [8].

Table 2. Comparison of parts of the programme of a building project [8].

Name	Content in traditional management models	Additional elements of the refined management model
Project overview	Brief and present the project and include some analysis	Develop a comprehensive and detailed presentation of neighbourhood conditions and data
Organisational management rules	Clarify the person responsible for each type of work and the responsibilities of the work	Detailed division of responsibilities and duties intelligently specified to individual operators

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Table 2. (continued).

Work schedule	Plan based on process or milestone criteria, plus redundancy time	Maximise precision planning based on scientific calculations and forecasts
Technological route	Clarify the main contents and standards of various types of processes and construction techniques	Provide a clear basis for detailed specifications and acceptance criteria for each operational step.
Risk Management Strategy	Formulate preventive measures and disposal procedures for common problems in construction based on similar projects or on-site conditions.	Possible risk situations are analysed. Acomprehensive responsibility mechanism and disposal plan was also set to achieve high-quality and personalised risk management in accordance with the actual project.

3.2. Good construction site management

Construction site management includes the management of materials, machinery and equipment, personnel, in the construction site should be fine management of materials and personnel, so that the enterprise's capital investment is fully utilised to avoid the waste of funds. At the same time, the construction site should strengthen the safety production management and improve the safety awareness of employees [9]. Through the fine management of the site personnel, to achieve effective control of the progress and quality of the project.

Fine management requires managers to start from the details in the actual work and find out the methods and ways to solve the problems. Refined management requires managers to go deep into the construction site, a comprehensive grasp of the situation on the construction site, starting from the basic work, starting from the technical data, comprehensive control of the progress of the project, quality, safety and so on. Through the refined management and control of the project quality and safety are effectively controlled, so that enterprises in the fierce market competition invincible.

3.3. Focus on dynamic control of the construction process

Dynamic control of the construction process refers to the timely adoption of appropriate measures to solve the problems arising in the construction process, and to adjust the construction plan and programme according to the actual situation in order to achieve the expected results [10]. The dynamic control of the construction process should be carried out throughout the construction process, which is not only a supplement to the construction plan, but also an important part of the control of the whole process of construction. In practice, enterprises should combine the actual situation of the project, timely adjustment of construction plans and programmes, according to the progress of the project timely adjustment, improvement and implementation of the corresponding measures [11]. In the formulation of the target plan and programme, the enterprise should take into account the actual situation and possible problems, combined with the actual situation on the site and the scientific concept of development as the guiding ideology, to develop a practical and realistic target plan and programme. During the construction process, it is necessary to do a good job of dynamic control, adjusting plans and programmes in a timely manner in accordance with the actual situation, so as to ensure that the entire project is carried out in accordance with the expected goals.

4. Conclusion

Fine management is a modern enterprise management concept. It is a gradual and continuous improvement process. Through fine management, the development and progress of construction enterprises can be effectively promoted, and the management level of enterprises can be continuously improved. The implementation of fine management in the construction process can effectively control all aspects of the enterprise, reduce the problems in the construction process, and improve the quality and efficiency of the project. In practice, the construction unit should be combined with the actual

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situation of the enterprise, and the research results show that through the use of modern information means and scientific, standardized and efficient management mode, the construction process is comprehensively and effectively controlled. In the construction process, it is necessary to constantly improve the construction scheme, technical measures and quality assurance measures, in order to effectively control the quality and efficiency of the project. At the same time, it is necessary to strengthen the quality training of employees in the process of project implementation, so that employees can correctly handle the relationship between all aspects, so as to ensure the smooth progress of the construction project.

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