

Measures for the Party A in Construction Engineering to Effectively Conduct On-site Technical Management

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Abstract: During the implementation of construction engineering projects, Party A as the leader and responsible unit has its own technical management ability directly affect the project quality, safety production, economic benefits. Studies on Party A's overall coordination and supervision functions in technical management It proposes specific solutions beginning with key areas such as the management of pre-construction and construction process. The aim is to assist Party A in clarifying key points of technical management, resolving common issues such as regulatory deficiencies, collaboration gaps and delayed risk warnings, and ensuring the conformity of project implementation with technical specifications in a manner that achieves the dual objectives of investment efficiency and project quality.

1. Introduction

Construction site serves as a bridge between technical implementation and quality and safety supervision in an overall control system of construction projects. As the client and end-responsible subject of engineering construction, Party A's professional technical management ability is not only related to project construction period, it is also one of the important factors affecting post-delivery safety and functional qualification performance and return on investment. Even today, certain units of Party A appear to have a distinctly management-centric sort of thinking: where progress is valued over technologies, and results over processes. Consequently, it often results in issues like poor implementation of the technical plans, miscoordination of multiple work types and possible defects in constructed works at site due to concealment. These problems not only lead to costs associated with rework, but also introduce safety accidents and operational maintenance risks during the later stage. To explore practical implementation plans, this paper focuses on the functional positioning of Party A and management content in engineering projects. The research is to help Party A clarify the technical management authority and responsibilities, regulate the implementation of technical specifications according to the requirements of unique facilities for construction quality requirements and risk factors in all stages through systematic precise management methods, promote the successful out-of-a safe, reliable high-quality and efficient project start-up goals, for Party A's technical management system improvement in practical guidance of engineering.

2. Key Points for the Party A in Construction Engineering to Conduct On-site Technical Management

2.1 Coordination and Communication

With the design of construction engineering projects individually developing in scales, the communication and data sharing among many parties at different stages of construction are much more complicated. Transmission of information is often delayed, which produces a cognitive bias in planning the progress and results in disorder at site operations ^[1]. The orderly promotion of personnel on site, equipment in place, material supply, technical implementation and environmental control is the responsibility of the Party A ^[2], which also argues that A must pay great attention to field coordination management. An information collection and transmission mechanism can be established based on efficient, accurate summary of technical key points at each construction node

and timely transmission of relevant information to reach a consensus among all participants in sharing information so as to improve the collaborative efficiency of engineering construction on site.

2.2 Safety Management

On-site safety management in the construction of construction engineering projects is a key content of party A's daily management work, directly related to the realization of overall project benefits and effective implementation of project safety responsibility ^[3]. Party A is the main entity responsible for engineering construction Party A should select on-site representatives with a strong sense of responsibility and professionalism according to the characteristics of each project and the progress requirements of each stage of construction. These representatives need to have comprehensive supervision of construction safety, civilization construction and project quality, and should carry out stage- and discipline-specific implementation of safety control measures ^[4]. As for the specific implementation, Party A should pay more attention to safety hazard and management shortcomings. The Party A should strengthen research on the safety management model and improve safety production from various aspects, such as conducting training on the responsibility of safety affairs, strengthening the personnel management for labor staff, preventing safety accidents during construction, improving the system of accountability for safety production ^[5], clarifying responsible persons of unsafe behavior in Behavior Safety Management (BSM), continuously implementing rectification measures and strict supervision of key links.

2.3 Progress Management

The construction process of engineering projects consists of many links and cumbersome procedures. The on-site control of Party A generally starts from the construction preparation stage; it requires various participating units to systematically formulate detailed constructions Proceed according to the results analysis function combining technical capability and human resource allocation, so as to provide a basis for subsequent process supervision ^[6]. In the daily management, Party A is mainly to rely on construction organization design and operation instructions, real-time monitoring of project progress and on-site image. Party A sets up a daily tracking system and provides necessary resource support for participating units to ensure that they are paid; at the same time, Party A also closely tracks policy adjustments and fund availability. For example, when the project is delayed due to unexpected circumstances, Party A needs to hold special discussions and formulate response strategies. Through measures like making reverse plans for the critical nodes and scheduling progress plans, Party A can enhance management efficiency and adopt a guarantee of both timing and quality for each stage ^[7].

2.4 Quality Objective Management

It is an important management measure adopted by the Party A in order to design indicators of different tasks which must be regulated at all stages of the construction process so that the project can be completed as scheduled and with guaranteed quality. Task indicators are the most common "control-type" elements used by Party A, which must be refined from various aspects into operable specific requirements and executed using systematic management methods. Simultaneously, the task indicators for each phase should be strongly linked to the overall project workflow ^[8]. Modern information technology means such as data mining and cloud computing technologies should be used to conduct scientific evaluation of the feasibility of project implementation by Party A. The specific decomposition and demonstration of project indicators should be carried out by a professional project management team who is responsible for maintaining the on-site construction situation closely consistent with the task indicators previously set ^[9]. Correspondingly, Party An should take the quality management as a core task indicator and constantly optimize the project progress arrangement while introducing innovative management thinking and an efficient management model to improve the rationality of project task objectives.

3. Measures for the Party A in Construction Engineering to Conduct On-site Technical Management

3.1 Pre-construction Stage Management

In the preparation stage before project initiation, as an important prerequisite for engineering construction, it plays a decisive role in the smooth development of subsequent operation procedures and the control of project quality. At this stage, the Party A needs to coordinate all aspects and lay a solid foundation for the orderly development of the project. The primary step is to prepare a thorough construction organization plan. The Party A shall timely clarify the start time node, overall project duration arrangement, task division of each construction stage between both parties based on practical conditions of the projects and scale as well as human stability and material resource allocation strategies. A scientific and reasonable construction organization plan can effectively control the overall progress and various potential risks in advance.

Also, there is a need for pre-preparation of construction materials and mechanical equipment. Party A should strictly follow the project progress plan and complete the procurement of all kinds of building materials and construction equipment in advance, so as to ensure that various materials and equipment can arrive on the site on time. This preparatory work in advance can avoid some project delays caused by material shortages and lay a good foundation for the smooth progress of the project. Particularly at this time, HRES is in the process of building a rigorous on-site management rights and responsibilities system. Party A must form a sound organizational framework for on-site management, clarify the work contents and authority scope of each functional position, and set up core posts such as commander-in-chief of the construction on-site, safety supervision professional and quality control supervisor. Assigning responsibilities to individuals ensures uniformity in the management of the entire construction process.

3.2 Alternating Construction Quality Management

There are often a variety of complex construction tasks that need to be dealt with during the engineering construction process. That is that a professional construction teams of different categories be arranged by cross-operations reasonable for the assurance progression of project on schedule. In this regard, the proposal is that Party A should optimize the mechanism of on-site management, strengthen quality control awareness and strictly control quality requirements in construction. Party A and on-site representatives should have a very deep understanding of the technical key points of construction, especially focusing on the construction specifications of key processes. While these details may not present problems in the short term, they can lead to long-term hazards for future projects.

For instance, in the implementation stage of a project, Party A should utilize modern inspection instruments to periodically measure the verticality of walls to confirm whether its deviation values are adhering to industry-required standards. In staged acceptance, if it is found that the verticality exceeds the allowable range, the construction unit shall be required to rectify it immediately. Every sub-project during construction can have an indirect domino effect on quality. If it remains unaddressed in time, it will eventually develop into serious quality defects. So the Party A should do at an early stage of a problem. In view of the quality risks brought by multi-work type cross-operations, management personnel of Party A should actively strengthen quality warning mechanism, increase random inspections based on routine inspections and conduct dynamic monitoring to make sure about construction quality of alternating operation links.

3.3 Material Management

As the basic raw materials in engineering construction, building materials directly affect the project safety performance and service life requirements. In order to meet the compliance requirements of regulatory authorities for the quality of construction projects, Party A must strengthen whole-process supervision and control of building materials by comprehensively controlling from procurement source to on-site application, so as to ensure that building materials are reliable and stable. To begin with, there needs to be a comprehensive procurement management

set up. In the stage of selecting raw materials, we should give priority to accessible suppliers, and their production license and operating quality should be verified. The Party A can compile detailed procurement technical specifications in advance, with the technical parameters and quality indicators of various materials clearly stipulated to ensure that the purchased materials fully meet the actual needs of the project. Secondly, the Party A needs to implement a strict material acceptance system.

When the materials arrive at site, sampling inspection shall be carried out, and full test of performance property index and chemical indicator of soil material. With this quality control procedure, possible quality deficiencies are quickly detected and construction components that do not comply with the specifications are rejected before entering construction sites, ultimately affecting the overall quality of a project. Lastly, at the stage of construction, the Party A need to focus on the use link of material. Construction personnel must strictly use the materials according to the operation requirements, and any violations or mixed use of different types are prohibited. During this period, BIM technology can be used to inspect, verify, and screen materials. Once unqualified material quality is detected, the entry of materials should be immediately stopped, and the responsible personnel should be held accountable.

3.4 Design Change Management

During the engineering construction process, design changes are inevitable. If a design change occurs, the Party A's relevant personnel must promptly revise the construction organization design and progress arrangement to ensure that the project progress is not disrupted. The Party A should strictly control the design change link and prevent the increase in construction standards or scale expansion due to changes, keeping the project investment within the budget range. For changes caused by objective factors such as geological condition changes and abnormal material supply, the construction unit can make local adjustments. In other cases, changes are not allowed in principle. If a change is indeed necessary, the construction unit must calculate the project quantity and cost adjustment plan, which can only be implemented after approval by the Party A. During the change implementation stage, the Party A needs to collaborate with the construction unit to control costs, standardize the preparation of change budget documents, and fulfill the review procedures to prevent false reporting of project costs. The determination of project change prices should follow the following criteria: ① When the change content matches the project characteristics in the bill of quantities, refer to the bill price for execution; ② When the change content belongs to the bill project but the characteristics do not match, re-price based on the original unit price.

3.5 Technical Management Supervision and Inspection

On-site technical management is an important part of the construction engineering project, and its implementation effect directly influences the quality control of construction effect and duration controlling over the project. According to the characteristics of project construction, Party A should strengthen the audit and supervision of technical management. Make sure that scheme content conforms with design drawings, whether operable or can really meet engineering construction needs etc.

First, in order to review the technical plan of the project is smooth cooperation according to the mechanism of technical scheme. In the process of preparing the technical scheme, a professional team should be organized to sort through the key points systematically, but focus on verifying whether there is a matching degree between scheme content and design drawing; at the same time, it must be combined with actual construction to verify its applicability. The review team members should have sufficient professional background to be able to thoroughly appraise the scheme, both from theoretical analysis and field practice perspectives. Second, the Party A should establish a regulatory system for construction technology implementation process and establish a regular review system, and all technical documents submitted by the contractor in the implementation of construction should be tracked and managed to make sure that on-site operations strictly follow the approved technical scheme. The work of supervision should be carried out in key links including project progress control, construction quality control and production safety supervision. Any

abnormal situation detected should be responded to immediately. The AE shall Cooperate with the contractor to verify on-the-site carrying out of various construction technical measures. The two parties should carry out in-depth discussions on important technical requirements and operating procedures, immediately coordinate and solve some problems, and jointly promote the project to proceed in an orderly manner. Finally, Party A should establish a unified project technical scheme revision mechanism. If it is necessary to adjust the technical scheme in the project implementation stage, it must go through a strict review procedure and be implemented after professional evaluation and formal approval. This eliminates the risks that arbitrary changes may cause in engineering quality and project duration.

4. Conclusion

In summary, in the engineering construction process, Party A as the project leader should effectively implement core information including on-site coordination, progress control and safety supervision. At present, in construction management, Party A have main problems of no or few technical standards and loose management system. To this end, party a can improve from multiple dimensions, including pre-construction preparation, process control mechanism construction, technical integration and application improvement and safety risk prevention measures to significantly enhance the efficiency of on-site control ensuring that engineering projects are carried out smoothly.

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