

Original Research Article

Research on the innovation mode of construction site management under the concept of green construction

Hongtao Wang

Hainan Vocational University of Science and Technology, Haikou, Hainan, 571126, China

Abstract: The establishment of the concept of green construction is a major change in the concept of sustainable development in the construction industry, but there are some problems in the construction site management under green construction, such as insufficient awareness of green construction, fragmented implementation, superficial technology application and so on. Starting from the value turn of green construction and the practical dilemma, this paper puts forward a five in one construction site management innovation mode of "concept Remodeling - organization restructuring - process reengineering - technology integration - Evaluation driven". This paper studies how to change the green concept from passive compliance to active value creation, break the hierarchical barriers to achieve collaborative development, integrate the circular low-carbon thinking, form the information feedback system, and strengthen the sustainable incentive constraints to promote the realization of the green goal, hoping to bring new enlightenment to the green development of the construction industry in the future.

Keywords: green construction concept; building construction; construction site management; innovation model

1. Value turn and practical dilemma of construction site management under the concept of green construction

The so-called green construction concept is to save resources and reduce the negative impact on the environment as much as possible in the construction process under the premise of ensuring the quality, and to achieve the purposes of energy saving, land saving, water saving, material saving and environmental protection. The application of this concept has brought about profound changes in the management of construction site, and significant changes have taken place in the value orientation of management: first, the goal has been changed from the duration and benefits to the multiple values of economic and social benefits; The second is to change the responsibility from the responsibility of unilateral contract performance from the single responsibility of quality and safety to the broad social responsibility including community impact and ecological protection; Third, in the process dimension, from the terminal governance of passive rectification after the event to the active management of source prevention and dynamic control of the whole process^[1].

However, in practice, it is found that many construction enterprises still have many problems in their actual work: ideologically, they believe that green construction is a part of increasing costs, "it is important to say, secondary to do, and not to be busy", but only passively respond; From the perspective of organization, it is often the safety officer who takes the responsibility for environmental protection, and there is no linkage between departments. The instructions on green construction are only issued level by level. Technically, although some dust monitoring, spray dust suppression and other related facilities have been introduced, the systems are not related to each other and cannot realize scientific decision-making under the guidance of data^[2]; From the perspective of assessment, it is still the result oriented node supervision, which does not really play the role of continuous incentive for process behavior. This fragmented and mobile management status quo is contrary to the inherent requirements of the systematization and normalization of the green construction concept. Therefore, it has become an urgent task for the transformation and upgrading of the industry to get rid of the inherent inertial thinking mode and explore an innovative management mode that fits the concept of green construction.

2. Innovative mode of construction site management under the concept of green construction

2.1. Reshape the concept, from passive compliance to active value creation

Under the traditional construction management mode, people are used to regard green construction as a superficial work to increase costs or to complete indicators, and carry out green construction with the idea of negative coping, which seriously affects the effect of green construction. The first step of innovation mode under the concept of green construction is to change the concept, so that project managers can understand the green Construction creates benefits. By means of refined management, the company has saved material consumption, improved material turnover efficiency and reduced energy consumption from the source, which not only directly reduced project costs and expenses, but also established a good social image of the enterprise and gained a competitive advantage in the same industry. This means that the leadership should turn environmental protection and resource conservation into conscious behavior. When doing projects, dust reduction, noise reduction and material saving are no longer the purpose, but a natural result. In this way, green will not remain in words, but will penetrate into every detail of construction.

2.2. Organizational restructuring to establish a flat green collaborative mechanism

The implementation of management methods should have corresponding organizational guarantee. The traditional top-down multi-layer communication mode makes the requirements of green construction often discounted or even lagged behind in the process of on-site implementation. Therefore, we should establish a flat green management communication platform, eliminate the communication barriers between departments, and set up a special green construction supervisor in the project department, but let him shout slogans? No, it is to ask him to coordinate the engineering party, technical party, material party, safety party, etc.^[3] Through regular on-site green meetings and instant messaging software, front-line team leaders, technicians and even workers' representatives can participate in the improvement of environmental management measures. Providing top-down resource tilt based on bottom-up feedback can quickly solve some temporary environmental management problems on the site, such as timely adjusting the construction process to reduce the impact of noise on surrounding residents, etc., or transferring idle materials to the place where they are needed at the first time, so that every link of green construction can be watched, managed and dispatched.

2.3. Process reengineering, embedding the logic closed loop of cycle and low carbon

The construction site is a production process in which resources are continuously invested and new resources are generated. Innovation management is to implement green reconstruction of this process, that is, to transform the traditional linear "resource product waste" into a closed "resource product renewable resources". This includes setting reduction and classification targets of construction waste in the construction planning, recycling and management of waste steel bars, waste concrete blocks, waste packaging boxes, etc., and recycling within or outside the site as much as possible. At the same time, carry out low-carbon transformation of the construction process, such as using clean power machinery such as electric energy as much as possible, optimizing the site layout to reduce transportation energy consumption, and using the idea of combining permanent and temporary construction to connect the pipelines and lines of the formal project to the construction for temporary use in advance. Through such a series of interlocking process fine control, economy and environmental protection are integrated into every operation rather than preventive measures in advance.

2.4. Technology integration to build a data-driven closed-loop control mode

The innovative practice of the green construction concept has transformed the technology from the role of recorder to the leader. The so-called innovation mode under the green construction concept refers to that the data-driven intelligent management system replaces the traditional "discovery notification rectification reporting" one-way management mode, and the perception terminals are deployed in the whole scene of the construction site. The green indicators such as dust, noise and water consumption are no longer independent charts on the wall, but real-time flowing and interrelated data. The above information forms a data-based description of the environmental performance of the whole project. On this basis, the decision-making of managers is no longer subjective experience and can be objectively quantified. More importantly, it has changed from "post-

processing" to "pre prediction". Once it is found that a certain link or behavior corresponds to the change of some environmental parameters, it can intervene in advance, and at the same time push the improvement suggestions to the corresponding positions, or directly link to the equipment for automatic adjustment. This data-driven, platform centered management closed loop frees the responsibility and action of green construction from the folder of the safety section or environmental supervisor, making it a normal collaborative behavior across all processes and teams, and realizing the organic integration of management efficiency and environmental benefits.

2.5. Evaluation driven, establish a long-term incentive and restraint mechanism

No matter what kind of construction site management mode, it is inseparable from effective evaluation and assessment, while the conventional result based inspection and scoring is prone to temporary surprise remediation. The new evaluation model should focus on the whole process and assess the daily work performance, work improvement and work proposal of green construction^[4]. The "green integral system" can be implemented for the front-line teams and groups to turn material saving, classified delivery, rationalization suggestions, etc. into visible rewards and stimulate their internal motivation. For managers, green performance should be included in the performance of the whole project, leading them to actively pursue innovative solutions and technological upgrading, not just to meet the standards, so as to The combination of hardness and softness rewards green measures, punishes waste and pollution, forms a cultural atmosphere of spontaneous pursuit of energy conservation, low carbon and environmental protection in the whole project site, and provides an inexhaustible source of power for the innovation mode under the concept of green construction.

3. Conclusion

The innovation of construction site management under the concept of green construction is by no means a partial technical improvement or system improvement, but a profound transformation in terms of value concept, organization mode, process mode, technical means, evaluation mechanism, etc. From passive adaptation to active action, from upper and lower levels to horizontal linkage organization mode, from linear consumption to recycling low-carbon process reengineering, from experience judgment to data-driven technology integration, from node inspection to whole process incentive evaluation drive, five-dimensional coordination is a complete closed loop of green management on construction site. Only when the green concept is really internalized into the soul of management, externalized into system norms, materialized into technical means, and transformed into behavior consciousness, can the construction industry realize high-quality and sustainable development in the era of ecological civilization construction.

About the author

Hongtao Wang (1985.06-), male, Han Dynasty, Dongying, Shandong Province, master, lecturer, research direction: Construction Management Teaching.

References

- [1] Zhang Yi. Research on green construction management innovation strategy of construction engineering [J]. science and technology and economy of Inner Mongolia, 2025, (24):46-48+56.
- [2] Li Yong, sunyurui, Zhang Xiaobing Digital enabling construction technology and on-site construction management innovation [J]. research on Urban Construction Theory (electronic version), 2025, (32):26-28.
- [3] Wei Dynasty army Innovation path of construction project management mode under the concept of green construction [J]. China real estate industry, 2025, (34):46-49.
- [4] Wei Bo. Research on building construction management innovation based on green construction concept [J]. housing, 2025 (3): 235-237.