

Discussion on the innovation of construction project management and green construction management methods

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Keywords: Green construction project management, importance, sustainable development, specific measures.

Abstract: With the rapid development of the Chinese social and economic level, the level of the construction industry has also been improved. However, the contradiction between Chinese engineering construction and ecological protection has become more intense, and China's ecological environment and natural resources problems have gradually become prominent. Therefore, the construction industry has gradually changed its previous rough construction management mode, and the concept of green building has been widely applied in the actual construction process of engineering projects. It can promote the goal of sustainable development in China, so if the construction industry wants to adapt to the development of the new era, it needs to rectify the various shortcomings of the industry itself. The first aspect that needs attention is construction project management, and only by effectively implementing various regulations and requirements in the project management process can the construction project be guaranteed. Green construction project management mainly refers to the management of green construction behavior for the construction-related personnel in the construction process. Since green construction engineering in China is relatively short, there is no sufficient experience. Therefore, Chinese green construction management still has a large space for improvement. This paper aims to discuss the importance of green building construction management, the benefits of the practical application in engineering projects, and the specific measures to promote green building construction management in China better.

1. The concept of green building

Compared with traditional construction projects, green building integrates green concepts into engineering projects' whole life cycle management. In the 1960s, Italian-American architect Paolo Soleri first referred to ecology and architecture as "ecological architecture," which originates from "green architecture." In 1992, at the United Nations Conference on Environment and Development, green building was explicitly introduced. Over the next 30 years, green building has gradually been refined and promoted. In layman's terms, a green building is a building that makes efficient use of resources and is designed to meet environmental protection requirements. The goal is to achieve a low carbon, reduce energy consumption, reduce water consumption, reduce the use of resources, and improve the utilization of materials so that the building can meet the needs of people's production and life in a long, safe, and healthy way without damaging the natural conditions. Green buildings are also known as ecologically sustainable buildings.

By about 2005, the concept of green building was introduced into China. Because of its late start in China, it is still in the early stage of development. Recently, green building is an important path in ecological, environmental protection work. The Party Central Committee attaches great importance to the promotion of green building. The requirements of improving building energy efficiency, promoting the development of green building, and promoting the use of green building materials have been put forward to the construction industry. The construction industry is continuously promoted to develop special programs for carbon peaking.

2. The importance of implementing green building engineering project management

Green construction project management is the further development of engineering management theory. At the same time, it is also an inevitable requirement for the in-depth implementation of a national sustainable development strategy. It requires enterprises to save resources, protect the natural environment of society, reduce environmental pollution and improve the recycling rate of building materials as much as possible to achieve the harmonious unity of social and economic benefits, long-term interests, and current interests. In the whole life cycle of green engineering projects, we use a series of operational and effective methods to implement, analyze, control, and evaluate each stage and section of the process. We insist on the leading principle of "green" from the beginning to the end. Green engineering management adds green management to traditional engineering project management, which separates engineering projects from the environment and society. However, green project management regards engineering projects as part of society and the environment and integrates the projects well with society and the environment. It is not just pursuing the success of the project like traditional engineering management, nor is it just making compromises to protect the ecological environment. Instead, it emphasizes the win-win principle of multiple objectives. Only through conscious and targeted management at every stage and every link of the project can we finally achieve the goal of green engineering management, which is used to achieve the common development of engineering projects, ecological environment, and society.

In green construction project management, the most important thing is to ensure the quality of construction projects to ensure safety. Project personnel must apply green construction materials and green project construction management concepts in building construction. In this way, construction materials can be reused in the actual construction process, which improves the utilization rate of resources and optimizes the allocation of natural resources such as land resources and water resources. The waste of resources is greatly reduced, and the environment's pollution is significantly reduced. To a greater extent, it meets the functional requirements of the building and increases the lifespan of the building. In this new construction mode, the concept of sustainable development is better practiced, and the harmony between human beings and nature is realized. The development of green building projects will inevitably put forward higher requirements for the relevant practitioners in the construction industry. Therefore, the relevant personnel must strengthen theoretical learning and actively carry out the practice. Further, strengthen the construction management standard. Promoting the management of green building projects is of great significance to realize the goal of sustainable development of human beings and the development of the construction industry.

3. Green building project engineering management methods in the construction process

3.1 The management of resource-saving

Proper management of water resources in construction. In the process of construction projects, water resources are very critical. During construction, water use should be reasonably planned and coordinated, and water-saving equipment with a small water flow should be used as much as possible to reduce the actual amount of water used in construction. Try to reduce the waste of water resources. It will significantly improve the surrounding environment and can also improve the economic benefits of enterprises. It is necessary to use and recycle the water resources in the construction site reasonably. For example, to control the waste of water resources, the construction site can use recycled water for cleaning work, for enhancing the utilization rate of water resources at the construction site, at the same time, in the organization of construction, on the one hand, need to choose safe and environmentally friendly construction materials with specific renewable capacity. On the other hand, the construction materials should be recycled, and the construction materials and the water used for construction should be managed appropriately at the construction site.

After the construction plan is drawn, the construction site needs to be scientifically arranged. The relevant facilities at the construction site, such as water and electricity and temporary road facilities, should be arranged appropriately. At the same time, the site layout should be done with the existing

resources on-site to help reduce the repetitive construction of engineering facilities and achieve the purpose of resource-saving. Strengthen the management of electricity. To achieve reasonable electricity use, all the equipment using electricity should be well managed, and the construction site's electricity should be well controlled. In addition, the construction sequence should be reasonably arranged.

3.2 Strengthen the innovation of management

Construction companies should innovate and optimize the existing management system when organizing management work because only then can the enterprise be maintained in a positive state. While carrying out innovation and optimization reform, it should be effectively adjusted according to the actual situation of construction enterprises. The enterprise should regularly train the relevant personnel's skills to strengthen the understanding of the staff's ability, and according to these, do an excellent job of personnel allocation.

3.3 Strengthen the management of construction site energy

The use of solar energy and lighting energy saving should be increased to save energy and avoid energy waste and reduce environmental pollution. When carrying out engineering construction, it is necessary to regularly organize the repair and maintenance of relevant construction equipment to ensure the normal operation of relevant construction facilities. At the same time, construction enterprises need to strengthen the study of advanced theories, actively introduce advanced technology and equipment, and further improve the construction quality and efficiency of green building projects by updating the traditional construction equipment to advanced construction equipment generation.

3.4 Strengthen the management of technology

A rainwater collection system should be installed at the green building project construction site. At the same time, to update the construction site equipment promptly and constantly optimize the rainwater collection system. Generally, rainwater collection work is carried out in the project site drains. Through the use of underground drains, the rainwater is collected to the collection pool, and then with the help of the pump, the collected rainwater is pumped to the high water tank, with the rainwater collection system to improve the recycling efficiency of water resources. Most of the construction site is one-time energy consumption. There are relatively few green and clean energy devices. By using green energy-saving devices and technical means, the efficiency of green energy utilization can be significantly improved, and the advantages of green energy are very great. In green construction, appropriate power and load should be selected. Strengthen the use of energy-saving lamps and solar energy devices.

3.5 Management of pollution at construction sites

3.5.1 The need to control the construction site mud pollution

Mud contamination is mainly caused by earthworks and foundation works. Therefore, it is necessary to use a unique process to deal with mud pollution or use certain artificial methods to solidify the mud and take specific isolation measures to stop the mud from flowing out of the site to achieve the purpose of pollution control.

3.5.2 Control of dust at construction sites

Dust is the most severe construction pollutant, and it often appears on construction sites when the weather is dry and windy. The more effective way is to spray water on the construction site, deal with the dust on the construction site in time, choose clean fuel, set up corresponding shelters and harden the road on the construction site.

3.5.3 Control the noise of the construction site

The noise pollution mainly comes from transport vehicles and some construction machinery. Therefore, it is necessary to strengthen the strength of environmental protection publicity, regular noise

detection, avoid the use of noisy machinery at night operations, and choose low-noise facilities. Prevent noise from causing harm to the surrounding environment and the health of the people.

3.5.4 for the scientific management of construction waste

Construction waste needs to be recycled regularly and on time, and a waste recycling system should be set up at the site of construction, through which waste materials can be recycled. On the one hand, the construction process should reduce the generation of waste, and on the other hand, the recycling rate of construction waste should be enhanced. For example, earth and gravel construction waste should be used in landfills or in the process of paving construction roads. The waste in the living area of the construction project should be well organized and categorized, and the waste should be recycled in closed containers.

3.5.5 Management of water pollution

The sewage discharge from the construction site should be following the national standards, according to the "Comprehensive Sewage Discharge Standard" requirements. Different sewage treatment equipment should be selected for different types of sewage, such as septic tanks, etc. Regardless of the location, groundwater needs to be protected, and for those areas where water resources are scarcer, protection should be strengthened. Do not extract groundwater while precipitating in the foundation pit to stop groundwater from being polluted. To prevent the pollution of groundwater, we should not extract groundwater while precipitating in the pit, and we should save water by installing water-saving devices, building sewage and wastewater treatment ponds, collecting rainwater, and treating it properly to realize the recycling of water resources. To effectively improve the management of green construction projects, the authors believe that sewage collection ponds, rainwater collection ponds, and sedimentation treatment ponds should be built at construction sites. The treated rainwater and sewage can be used for dust reduction, concrete mixing, maintenance, and washing of construction machinery and vehicles, thus improving the efficiency of water resources utilization.

3.5.6 Management of soil

The soil of the construction site should be protected to prevent soil loss or erosion, more trees should be planted, gravel should be laid on the construction site, and a drainage system should be installed to prevent soil loss. In addition, the hazardous waste from the construction site should be collected in time and sent to the relevant departments for disposal, such as paint, paint, etc.

4. Effective measures to promote the management of green building projects

4.1 Enhance the awareness of relevant staff on green building engineering

To effectively promote green engineering project management, the first key point is to start from the minds of project staff to ensure that they have a clear and comprehensive understanding of green construction engineering. Let them realize that green building is the future trend of the construction industry, and construction units need to strengthen the training of relevant personnel. Regularly carry out lectures to discuss and analyse various situations in construction projects. On the one hand, construction units need to fill the knowledge gaps of relevant personnel, continuously improve the professional level of relevant personnel, and enhance their comprehensive quality to have sufficient knowledge of green project management and professional management ability. On the other hand, construction enterprises need to actively teach advanced green project management concepts from foreign countries, promote the exchange and learning of relevant personnel, and through the collision of different management cultures, promote the renewal of the thinking of Chinese project management personnel and learn more advanced knowledge of green engineering management technology. In addition, the construction unit can improve the welfare treatment of relevant personnel and develop incentive measures on green construction management to attract more talents with professional management abilities. Publicize the concept of green construction and enhance the green awareness of

construction personnel. Construction enterprises should not ignore the problem of environmental protection because of their current interests. It is necessary to coordinate the relationship between engineering construction and the ecological environment. Thus, we can effectively promote the healthy and sustainable development of the Chinese construction industry.

4.2 Further strengthen and improve the government's macro-management

The effective promotion of green building engineering management needs the strong support of government departments. On the one hand, relevant government departments should strengthen the management and supervision of construction enterprises, fully understand the current situation of the application of green building concepts by construction enterprises, strengthen the publicity of green building construction concepts, and guide construction enterprises to actively apply the relevant technologies, in addition, government departments can give relevant rewards to those construction enterprises that actively apply green building concepts, for example, for those construction enterprises that actively and effectively promote and practice the green building concept, when they take loans from banks, they can appropriately reduce the loan interest; at the same time, for those construction enterprises that do not apply the green building concept effectively, they can give certain penalties, such as increasing the amount of loan interest, if they do so, they can definitely better urge the construction enterprises to practice the green building concept more effectively. On the other hand, the government needs to play its macro-control role, strengthen the supervision of construction enterprises, strictly regulate the market order, and timely make appropriate rectification and lead to those construction enterprises that do not meet the specifications.

4.3 Ensure the introduction and use of environmentally friendly materials

In the process of green building construction, an essential part is environmentally friendly materials. Therefore, we must implement the concept of green materials in the construction process, pay attention to the selection of green building materials, and strictly screen construction materials. Ensure that the construction materials are safe, green, and environmentally friendly. In addition, a strict material evaluation system should be established, with special professional personnel responsible for the purchase of green materials, control the procurement channels of construction materials, and quality inspection personnel also need to check these materials at any time to ensure the effectiveness of the materials. In the procurement of materials, we must follow the principle of cost-saving, which is combined with the actual amount of the project to lay the foundation for maximizing the economic benefits. The construction process is a critical period for the use of construction materials. In this process, the amount of construction materials is large, the loss is also large, and so we must plan the recovery and recycling of green materials, which considers the economic and ecological benefits of the project, and achieve the balance between them.

4.4 Improve the laws and regulations related to green building management

As the Chinese green building industry started late, many relevant laws and regulations are not perfect, resulting in many projects failing to meet the expected requirements, resulting in the waste of many resources and even laying down safety hazards. The development of the green building is inseparable from the sound laws and regulations, which can help to improve the effect of green project management and play a good role in restraining the orderly development of all activities in all aspects of the project. Therefore, the relevant departments need to analyze the overall energy consumption of engineering buildings, the current domestic economic situation, and future development planning. It also formulates reasonable laws and regulations on green building engineering management, which modifies and improves the relevant laws and regulations that do not conform to green building engineering management development. On the one hand, in addition to making the management of green engineering projects lawful, construction personnel should be made. In addition, a standardized and clear responsibility system and a reward and punishment system should be established to correct the illegal acts in the construction process promptly. On the other hand, the design and acceptance of green buildings should also be mandatory and strictly certified.

4.5 Sound evaluation system of green building project management

The improvement of the evaluation system of green building project management depends on the level of Chinese economic development and the construction industry. 1, a set of strict qualification evaluation standards should be set for construction enterprises. Before the construction project begins, the qualification of the construction enterprise should be evaluated, and the enterprise that does not meet the qualification of green building construction management should not be approved. 2, a special supervision department should be established to set up a supervision mechanism specific to green building projects. In the construction project process, the relevant supervisors should follow up and supervise the green materials and the whole process of the construction site, and those parts that do not meet the green construction index should be corrected in time. The part that does not meet the green construction index should be corrected in time. To ensure the sustainable development of green building projects, when the green building projects enter the completion acceptance stage, the relevant quality inspectors must strictly follow the relevant regulations to carry out the quality inspection of the projects to ensure that the green building quality is acceptance is qualified. Meanwhile, it is necessary to ensure that the service life of the buildings after they are put into use and meet the use requirements to ensure that the buildings meet the construction expectations. Only in this way can we ensure that the building can create a good living experience or use experience for the occupants, perfectly integrate the ecological and environmental protection, functionality, and livability of the green engineering project, and ensure that the green building engineering project is in line with the standard. 4, to establish Chinese unique green building project evaluation standards. At present, Chinese green building evaluation standards are used on the architectural standards of European and American countries. However, some standards do not apply to the Chinese situation due to the ecological environment, the living habits of residents, and the development level of green buildings. Therefore, Chinese green building project evaluation standards should be based on advanced foreign achievements and the integration of Chinese national conditions.

5. Conclusion

The construction industry is the pillar industry of the Chinese national economy. Nowadays, due to the continuous expansion of its construction volume and scale, green engineering project construction management will promote green engineering projects to fundamentally reduce project costs and effectively improve the overall construction quality of construction projects. In building engineering projects, the construction quality of the project is the core and focus of all construction work. In green building project management, quality management must be the top priority of all management. Meanwhile, the entire construction process should be carefully examined when controlling the quality of the purchased construction materials, and no detail should be missed. It is supposed we want to realize green construction projects fully. In that case, we must carry out scientific engineering management to enhance the informationization, industrialization, and mechanization of construction machinery. It can ensure that construction materials meet the quality and green requirements, control the emission of waste and pollutants inject construction process, reduce the loss of resources in the construction procession, and ensure that all parties involved in the project establish an awareness of ecological and environmental protection. Combined with the project's actual situation, develop a relatively perfect green management standard system. The construction of green engineering projects should be combined with past engineering management experience to accumulate green engineering management experience and ensure that green engineering management standards are more perfect. It is necessary to do a good job of analyzing the content and positioning of green management and guaranteeing the advancedness of construction materials and technology in each construction link. Make the green building achieve the expected effect after the construction is completed.

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