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Application of Environmentally Friendly Green Construction System in Prefabricated Buildings and Construction of Evaluation Index System

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Abstract

Green construction management mainly refers to the need to meet project quality and safety and other basic needs in project construction and on the other hand, effective management measures and advanced technologies should be adopted to effectively improve resource utilization and reduce production Environmental pollution. That is, the concepts of water saving, land saving, material saving and environmental protection are integrated into every detail in project construction and construction. Green construction management occupies an important position in green buildings. At the same time, it also helps reduce resource and energy consumption in project construction. Management mainly refers to the management of multiple key elements such as resources, technology and personnel in project construction. In the management process, the environment for project construction should be reasonably selected in accordance with current reality and various economic policies proposed by the state should be fully implemented. In project management, the concept of sustainable development should be used as the guide and the concept should be penetrated into every link of project construction. In this way, while promoting the sustainable development of society and economy, it minimizes the negative impact of engineering construction on the ecological environment. Through the effective development of prefabricated buildings, it can be more reasonable.

Keywords: *Environmentally Friendly, Green Construction, Building;*

1. Introduction

The development of the construction industry has promoted competition among construction companies. In the new era, construction companies need to continuously improve their market competitiveness in order to remain invincible in the market competition and thus achieve sustainable development in the construction market. Therefore, construction companies need to keep pace with the times, pay attention to environmental protection, economy, quality and other aspects of construction and construction and strengthen management related to them in practice. In view of people's material life satisfaction and continuous pursuit of higher spiritual and cultural life, construction companies need to pay attention to green construction to continuously improve the comfort of people's living environment. Based on this, the analysis of "building construction management innovation and green construction management" has certain practical significance and theoretical value.

2. Environmentally friendly green construction system

The viewpoint of environment-friendly green construction is mainly obtained on the basis of environment-friendliness. The country seeks a development method for the development of green construction on the basis of promoting the sustainable development of the green construction industry. Environmentally friendly means that all economic activities in the process of economic

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development need to be implemented on the basis of not destroying the environment. Economic development needs to follow the laws of nature, promote the development of green construction on the basis of various advanced technologies and effectively protect the ecological environment And save resources, so as to achieve harmonious coexistence between man, nature and economy. The environmentally friendly green construction is the most important basis for protecting the ecological environment and natural resources during the production and development of green construction. In the development of environment-friendly green construction, any green construction activities need to follow the laws of nature and promote the protection of natural ecological balance and finally apply advanced technology to promote green construction production and ensure the economic benefits of green construction production. Therefore, it is necessary Pay attention to environmentally friendly green construction production and introduce advanced production models. However, the current domestic environment and professionals are limited and the economic value cannot be better realized. This has become the main content of concern. Therefore, at this stage, the contradiction between green construction technology innovation and economic development It becomes a problem that needs to be addressed and resolved[1]. The green construction system is in the figure below.

Figure 1. Green Construction System.

There is a close relationship between the development of green construction economy and the innovation of green construction technology. The innovation of environmentally friendly green construction technology takes the balance of environmental resources and the development of green construction production as the basic concept and aims at the development of stable and sustainable green construction production. Green construction production technology has the characteristics of poor income stability, high development difficulty and high risk. At present, the development of most private scientific research sites and green construction enterprises in China has a relatively slow start and the level of research and development during research is low, usually lacking investment Ability to develop environmentally friendly green construction technology. In order to solve these problems, my country has applied the talent training system and increased investment in green construction research to promote the improvement of environmentally friendly green construction technology innovation, thereby promoting the economic growth of green construction and achieving sustainable development of green construction. Only by effectively applying environment-friendly green construction production technology in production can we promote the better development of green construction production. my country's green construction technology application and promotion mechanism has long been lacking in talents and equipment and its related promotion system is not perfect[2]. At the early stage of the development of environmentally friendly green construction technology in my country, the realization of new technologies that are simple and easy to implement and low in cost is always a difficult problem in the current innovative development of environmentally friendly green construction technology, which requires in-depth analysis. The green construction management system is in the figure below.

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Figure 2. Green construction management system.

3. Principles of prefabricated building construction

3.1. Steel structure construction factors in structural design

The wind load of the building structure has a far-reaching impact, so it must be matched with an appropriate design plan. In the design, the corresponding design requirements must be followed, the local stability of the building must be fully considered and the design must be implemented in combination with the ultimate bearing capacity of the fabricated structure. In actual construction, it is necessary to ensure the stable performance of various performance functions during beam shaping to prevent lateral bending moment instability. At the same time, the spacing data of each support point is clarified and the lateral support points are set according to the width. In the process of setting up steel structure nodes, try to avoid laminar tearing problems. At the same time, when setting the joint width of structural nodes, it is necessary to comprehensively consider the seismic load and wind load of the building itself and select the technology according to the safety and load-bearing conditions of the connection points at different parts and cooperate with the most suitable connection method. Under normal circumstances, the frame structure of high-rise buildings is the most common application. The design of the frame structure will adopt a combination of rigidity and flexibility to ensure the hardness and make it have a certain degree of toughness. Because it is too hard or too tough, the structure may be damaged. When constructing the system structure according to the existing layout design framework, it is necessary to clarify the load-bearing requirements of the building and then accurately match the thickness of the components to prevent the stability of the structure from being affected by the quality of the components[3]. The green construction project system is in the figure below.

Figure 3. Green Construction Project System.

3.2. Choose the frame structure reasonably according to the actual situation

Generally, in the construction process, in order to ensure the sound system of the engineering structure system, the lateral force of the designed building and the requirements of its bearing gravity must be met. This requires designers to optimize the design of the weak links of the building structure. In an application related to the framework, to facilitate the solution of these problems. In each specific direction of the building frame, the designer must carry out corresponding mold connection. In this process, if there is no other anti-side force system, it can be

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called a pure frame structure. The lateral resistance of this structure and its bearing capacity both need to achieve effective control of the rigid-connected frame. The load-bearing wall in engineering construction also needs to be optimized and upgraded. After optimized and upgraded, it is conducive to effective application of the building space instead of doing wasteful work. It can also greatly improve the practicability and functionality of the building. Let the space function of the building have practical value and it can also improve the optimization of the multi-faceted design of the building. This facilitates an effective control of the building structure and also facilitates the optimization of the implementation of the architectural design link. The green construction frame system is in the figure below.

Figure 4. Green construction frame system.

3.3. Implement the people-oriented sustainable development thought

When designing buildings, it is very important to achieve an organic combination of buildings and nature. It can also help householders use energy to save resources. Currently, solar, hydro, wind, tidal and geothermal energy are all renewable energy sources. If these energy sources can be used well, it can provide a lot of help for our country's resource problems and save a lot of troubles. Using solar energy to solve the problem of water supply in certain areas of our country, although it may cost a lot of manpower, material and financial resources at the beginning, after long-term verification, it can be concluded that it can provide great help to people's lives[4]. Above, the advantages outweigh the disadvantages. Wind energy can also provide people with good resources. Many remote cities are not developing as fast as large cities and many resource problems cannot keep up. For example, if there is no air conditioner in summer and the wind power of electric fans is too small, wind energy generators can be installed on the roof. In this way, the natural wind is used, which not only saves electricity, but also solves the problem for residents. This also means that non-renewable resources can be replaced by renewable wind energy, which can help householders effectively save resources. The green construction resources system is in the figure below.

Figure 5. Green construction resources system.

4. Construction of construction system indicators

4.1. Strengthen the management and control of building resources and energy

In the development of green construction management of construction projects, the most important thing is energy management. Intensifying efforts to carry out green construction management of energy can not only improve the efficiency of resource and energy utilization, but also better avoid resource pollution to the environment. When selecting construction machinery and equipment, choose as much as possible those machinery with low energy consumption and strong environmental protection performance. Fully implement the management and control of building resources and energy, strengthen the protection of water resources at construction sites, carry out effective management and control of the use of water sources, optimize the sewage discharge system and start from all aspects to improve the utilization efficiency of building resources[5].

4.2. Prioritize the use of green environmental protection materials

The implementation of green management of building construction must pay attention to the

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environmental performance of building construction materials. When building construction companies purchase construction materials, they must pay attention to the price of the materials. This is mainly because there is a direct relationship between the price of materials and the cost of construction. To expand profit margins as much as possible, in order to pursue more profits, many construction companies tend to ignore the quality of construction materials, which will eventually lead to the adverse consequences of poor construction quality. The green construction protection system is in the figure below.

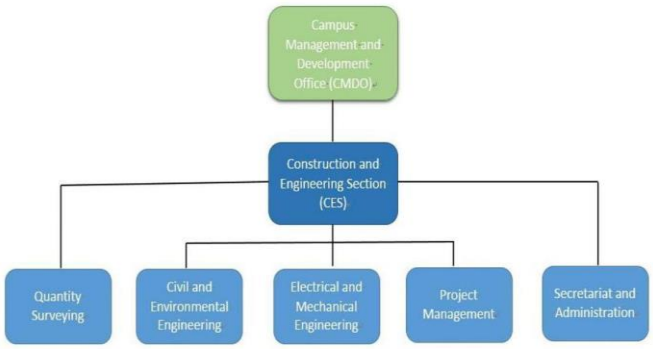

Figure 6. Green Construction Protection System.

4.3. Strengthen the attention to pollution problems during construction

Scientific pollution control is also the embodiment and requirement of green management of construction engineering. For building construction, pollution is diverse, so special treatment should be given to the attention and control of pollution problems. The problem of mud pollution will inevitably be encountered during construction. It is necessary to strengthen construction management and control, do a good job in the consolidation of mud and ensure that the mud is treated in place and cannot flow into the road at will. In addition, in order to solve the problem of dust pollution, clean fuels should be used to strengthen the hardening of road pavement, increase the frequency of water spray, reduce the dust content in the air and minimize dust pollution. Noise affects people's daily life and rest, so noise pollution cannot be ignored during construction. Therefore, strengthen the constraints on construction time, reduce night work and choose high-quality mechanical equipment as much as possible to reduce noise pollution. Only by scientifically controlling pollution can we realize the implementation of green management of building construction[6].

5. Conclusion

In the selection of construction machinery, it is necessary to select construction machinery with lower energy consumption based on the construction needs of the project. During the whole construction process, once construction machinery is damaged or malfunctioning, relevant technical personnel shall be organized to troubleshoot the fault in time and effective measures shall be taken to ensure that the construction machinery is in normal working condition, which can maximize construction efficiency and reduce energy waste. In addition, the construction unit needs to strengthen the energy conservation education of on-site construction personnel to encourage them to form a habit of energy conservation. Only in this way can we really effectively improve the energy waste of building construction and promote the improvement of construction efficiency.

References

[1] Chunshan Peng. Development and application of green building materials[J]. International Journal of Education and Economics,2020,3(3).

[2] Sriram Pradeep Saridhe,Thirumalini Selvaraj. Reporting the ancient green construction technology of limecrete slabs adopted in Udaipur, Rajasthan[J]. Journal of Cleaner Production,2021,279.

[3] Hilary Omatule Onubi,Nor'Aini Yusof,Ahmad Sanusi Hassan. How environmental performance influence client satisfaction on projects that adopt green construction practices: The role of economic performance and client types[J]. Journal of Cleaner Production,2020,272.

[4] Tavana Madjid,Izadikhah

Published by: The Mattingley Publishing Co., Inc.

July - August 2020
ISSN: 0193-4120 Page No. 5291 - 5296

Mohammad,Farzipoor Saen Reza,Zare Ramin. An integrated data envelopment analysis and life cycle assessment method for performance measurement in green construction management[J]. Environmental science and pollution research international,2020.

[5] Dina Khater,A. Ezeldin,Medhat Elshazly. Critical success factors of green project management for sustainable housing[J]. EAI Endorsed Transactions on Smart Cities,2020,4(12).

[6] Chenya Liao,Liao Chenya,Li Shuxun,Chen Shuyuan. A brief analysis of green construction of prefabricated building based on guide frame climbing lifting platform[J]. IOP Conference Series: Earth and Environmental Science,2020,560(1).

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