

Research on Innovative Application of High-rise Green Energy-saving Building Construction Technology in Complex Environment

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Abstract: With the continuous expansion of the scale of high-rise buildings, the problems of resource waste and environmental pollution in the construction of high-rise buildings can no longer meet the development concept of modern environmental protection, so the green construction technology with great environmental benefits has been widely used in the construction of high-rise buildings. The development of green buildings gave birth to green construction technology. As the symbol of the development of the times, the application of green construction technology in high-rise buildings is an important means to ensure its sustainable development. With the deepening of the concept of environmental protection. At present, China vigorously advocates the concept of sustainable development. The development of high-rise buildings should actively respond to national policies and popularize the application of green construction technology, which can greatly improve the environmental protection of high-rise building construction. This paper introduces the application advantages of green building construction technology, and then explores the innovative application of green technology in high-rise building construction in complex environment, in order to provide reference for high-rise.

1. Introduction

With the growth of social economy, the quality of national life is also greatly improved, and higher requirements are put forward in the daily living environment [1]. Nowadays, with the continuous and in-depth development of urbanization, a large number of buildings are emerging. With the continuous expansion of the scale of high-rise buildings, the problems such as resource waste and environmental pollution in high-rise building construction no longer adapt to the development concept of modern environmental protection. Therefore, green construction technology with great environmental benefits has been widely used in high-rise building construction [2]. Traditional building construction does not consider the impact on the natural environment at all. Many construction will damage the ecological environment and waste resources. The construction of construction engineering needs to consume a lot of energy, and it will also cause environmental pollution, which will pose great pressure on urban resources and environment [3]. As China is now in a period of rapid economic development, the construction industry, as an industry with large consumption and serious environmental pollution, should bear the major responsibility of sustainable development in China's social development [4]. Therefore, as a modern construction enterprise, keeping up with the pace of the times, injecting green power into high-rise building construction, using green technology and realizing ecological harmony has become a necessary work for modern architects [5].

Construction projects need to consume a lot of energy, but also cause environmental pollution, which will pose great pressure on urban resources and environment. The construction needs to be carried out under the complex environment. In order to realize the sustainable development of high-rise buildings, we must pay more attention to green construction technology [6]. In order to realize the development of high-rise buildings in the direction of environmental protection and less pollution, the application of green construction technology in building construction is particularly important. However, there are still some problems in the application of green construction technology in high-rise buildings in China, which need the attention of all parties [7]. In the

construction of construction projects, appropriate green construction technology must be selected in combination with the actual situation, so as to effectively reduce the energy consumption of construction projects and improve the use efficiency of construction projects. Based on the basic characteristics of complex environment, adopting reasonable green energy-saving building construction can speed up the construction progress of green energy-saving buildings and play a positive role in improving the construction quality of green energy-saving buildings [8]. This paper introduces the application advantages of green building construction technology, and then explores the innovative application of green technology in high-rise building construction in complex environment, in order to provide reference for high-rise building engineering construction.

2. Importance of green construction technology

The concept of green construction technology is very broad, which refers to the construction method that takes the basic requirements of quality and safety as the premise, minimizes the negative impact of engineering construction on the environment and improves the utilization rate of resources through the application of technology and scientific management. With the social and economic growth, the quality of national life is also greatly improved, and higher requirements are put forward in the daily living environment. In today's environment of continuous and in-depth development of urbanization, a large number of buildings are constantly emerging. Green construction technology refers to a wide range. In the construction of building projects, on the premise of ensuring the project quality and progress, the application of green environmental protection technology can maximize the utilization rate of resources in construction, reduce the adverse effects of construction on the ecological environment, and finally play a role in protecting the environment [9]. Environmental protection measures in green construction technology have effectively improved the environmental protection degree of building use. It reduces the demand for resources in the later use process, such as the consumption of resources such as power supply and heating, and reduces the use cost of users. Green construction not only means that there is no noise, no dust, no disturbance to people, but also a closed construction with flowers and grass, which also includes greening in design. It can be more beneficial to the recycling of resources, the sustainable development of economy, the key protection of ecology and so on. In the past, building power supply and heating required a lot of cost, and solar energy technology can effectively solve this problem. For the builders, the safety of their construction is improved.

In the traditional high-rise building construction, the related construction technology is not yet mature, and the construction materials are not environment-friendly materials, so the working environment of the constructors is very bad, and a large amount of dust will cause great harm to the constructors' bodies. Besides, the traditional construction technology can not fully guarantee the safety of the constructors. Green construction technology is a new type of construction technology. Compared with the original construction technology, it has higher construction efficiency and less impact on the environment. Using some modern construction technologies and management concepts in the construction process can not only effectively improve the construction efficiency of building projects, but also ensure the construction quality of building projects. Through the green construction technology, the unfavorable waste of construction resources can be reduced as much as possible, which is very beneficial to the balance and development of the ecosystem and can give full play to the existing resources. Through green construction technology, culture and architecture can be fully integrated, and the long-term balance of ecological system can be scientifically maintained, so as to vigorously protect the environment and speed up socialist construction. Compared with the traditional technology, the green construction technology of architectural engineering emphasizes the efficient utilization of energy and the strengthening of construction environment protection in practical application, so that architectural engineering can not only meet the construction requirements, but also take the road of sustainable development.

3. Application of green construction technology in high-rise construction under complex environment

In the past high-rise building construction, due to the limitation of construction conditions and construction technology, the working environment of constructors is often very bad, and the inhalation of dust and other substances has greatly affected the health of constructors. The application of green construction technology can ensure the safety and health of constructors at the same time. For the high-rise building itself, it can realize environmental protection and prolong the service life of the building. In the process of engineering construction, on the premise of ensuring the quality and safety, the construction technology and management methods are innovated, which greatly realizes the resource conservation and environmental protection [10]. Under the background of modern economic development, the application of green construction technology in high-rise buildings will become the trend of future development, which will not only create social benefits, but also prolong the effective service life of buildings and promote the harmonious development of buildings and nature. The application of green construction technology in high-rise buildings is based on the premise of ensuring the building quality and progress. It uses a lot of green pollution-free and renewable energy, which can effectively alleviate the current situation of resource shortage in China, and will not cause any negative impact on the ecological environment. Therefore, under the global background of advocating environmental protection and improving energy efficiency, the application and popularization of green construction technology in high-rise building construction will surely become the development direction of the whole construction industry in the future, and realize the harmonious unity between man and nature.

3.1. Ventilation technology

In order to improve the air quality of high-rise buildings and deal with the problems of air circulation, the construction party needs to improve the ventilation system and apply green ventilation technology to carry out the construction work, so that the health of users in the buildings can be more protected. Reasonable ventilation of buildings is of great significance and should be designed reasonably according to the use characteristics of buildings. The warehouse itself has a high requirement on the dryness of the environment. In summer, the light penetrates through the skylight and other windows, increasing the lighting and enhancing the ventilation. When the weather is cold, you can close the windows to keep warm. When applying green ventilation construction technology, it is necessary to consider the problems of large air circulation and rapid internal heat loss in winter, so as to avoid the increase of heating energy consumption in engineering cost. Skylight construction technology can be used in ventilation construction of high-rise buildings. In view of the high humidity of local environment, construction enterprises effectively apply ventilation technology, effectively solve the dark and humid problems in high-rise buildings, and improve the indoor air circulation. In winter with low temperature, the heat loss rate can be slowed down by closing skylights and shutters, and users can open windows for ventilation according to their own needs.

3.2. Water saving technology

Water resources on the earth are limited. Protecting water resources and water ecology and paying attention to sustainable development are the development goals of building water-saving cities at present. As a big user of water, it is particularly important to save water in construction projects. In the process of construction, water-saving indicators will be included in daily assessment management to optimize the water supply and drainage system of construction projects. The pool of high-rise building should be underground to prevent the aesthetic of the building from being affected. Choose circulating water treatment equipment with low energy consumption and low noise, otherwise it will waste too much resources, and excessive noise will affect people's normal life. In the construction of building projects, domestic water and production water need to be measured separately. Domestic water facilities should use water-saving appliances as much as possible. The collected rainwater or reclaimed water can be used to wash the on-site machines and

equipment in the production process, and it should be recycled. Construction enterprises can set the pool underground, which can reduce the negative impact of the building environment. Moreover, when choosing the treatment device of circulating water, the equipment with low energy consumption and low noise should be selected first. This can not only reduce the energy consumption, but also avoid the noise pollution generated during the operation of the equipment, and reduce the influence of users. In the base construction of high-rise buildings, precipitation technology should be used to monitor the groundwater level, so as to prevent the negative impact of groundwater surge on building construction.

3.3. Exterior wall insulation technology

In traditional high-rise buildings, thermal insulation materials for exterior walls mostly use thermal insulation slurry. Although this material has obvious advantages in thermal insulation performance and cost, its chemical stability is strong, which is not conducive to the later degradation and environmental pollution. The structural performance of exterior wall insulation will affect the energy-saving effect of high-rise buildings. Polymer insulation slurry has the advantages of less capital investment and better insulation effect. In the past high-rise building construction, thermal insulation slurry was often used as the thermal insulation material of exterior wall. This material has good thermal insulation and low price, but due to its stable chemical properties, it is difficult to degrade in the later stage, which may cause environmental pollution. In the previous construction, the constructor often used it, but because of its strong stability, it was not easy to degrade in the later stage, which was not conducive to recycling and caused environmental pollution. On this basis, when the external wall thermal insulation technology is applied, composite thermal insulation wall panels can be applied, which can effectively avoid the problem of thermal insulation wall looseness and has high stability. In the green construction technology, the exterior wall thermal insulation materials mostly use panels that conform to the thermal insulation wall, which is simple in construction and good in stability, and improves the efficiency of later recycling while ensuring the stability of the thermal insulation wall.

3.4. Noise control technology

Because various types of mechanical equipment must be used in the construction of construction projects, these mechanical equipment will inevitably produce certain noise in normal construction. If the noise is not effectively controlled, it will interfere with the daily work and life of residents around the construction area, and it will not be conducive to the normal construction of the project and reduce the construction efficiency. For high-rise building projects, noise pollution has a serious impact on people's lives, so noise control is also an important part of the application of green construction technology. Attention must be paid to noise control and effective measures should be taken to reduce noise. First of all, avoid the construction that will produce loud noise at night, and use the construction equipment with relatively low noise, such as silent vibrating equipment. If the site conditions permit, noise insulation devices such as noise reduction screen shall be added to concrete pump and chainsaw room to block noise transmission. When choosing construction equipment, it is necessary to choose green equipment with low noise and weak vibration as much as possible, and temporarily optimize the sound barrier and vibration reduction facilities. If electric saws and planers are needed, attention should be paid to temporarily build a closed construction shed in advance, and select a place far away from residential areas to build it.

4. Conclusions

Nowadays, people's awareness of energy conservation and environmental protection is getting stronger and stronger. At the same time, in the construction of building projects, the green construction technology is becoming more and more perfect. With the development and progress of the times, people pay more and more attention to the concept of environmental protection, and it also goes deeper and deeper into people's lives. Therefore, there are higher and higher requirements for green construction in the process of high-rise building construction, and it is necessary to make

full and reasonable use of green construction technology in the process of construction. The application of green construction technology requires the use of environment-friendly construction materials, which can improve the utilization rate of resources and energy, and will not pollute the environment, and can also effectively reduce the cost of various facilities during and after construction. Facing the great pressure of environment and resources at present, only by vigorously developing new green buildings can we create a healthy and pleasant building environment for people. In the process of high-rise building construction, we should actively adopt advanced green construction technology, protect construction land resources, save construction materials, and minimize the pollution problems in the construction process.

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