Application of Wood Structure Protection Technology of Ancient Buildings in Modern Garden Engineering

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Abstract: Owing to the rapid progress of China's society and economy, people's material living standards are also continuously improving. The construction of modern garden technology is developing at a rapid speed, so that it can not only provide more high-quality air to the majority of residents, but also promote the people's living environment to become more suitable. According to the specific situation of ancient building structure protection technology in modern garden engineering, this paper puts forward the method of combining ancient building structure with modern garden, and analyzes the maintenance of ancient building wood structure and the application of protection technology in modern garden engineering.

1. Introduction

Modern garden engineering involves many contents. As for the construction of garden engineering, there is a very close relationship between each link from the initial design activity to the final completion. However, because the content of garden engineering construction is complicated, the relevant departments don't focus on protecting wooden structure of ancient buildings. Therefore, relevant departments should vigorously carry out relevant communication activities and actively participate in the protection of wooden structure of ancient buildings, so as to reduce costs and improve the quality of garden engineering.

2. Method of Combining Ancient Building Structure with Modern Garden

Owing to the deepening of reform and opening up, there are very prominent changes in garden engineering construction in China. Although garden engineering construction in China has achieved remarkable development results, it is difficult to meet people's needs for garden environment. Therefore, modern garden engineering has a very large development space [1]. In view of the current situation, the appreciation level of the public is continuously improving. In order to ensure the efficient completion of the integration of ancient buildings and modern gardens, in the process of garden engineering construction, we need to attach great importance to the following aspects:

Firstly, the formulation of garden engineering construction laws, regulations and technical standards can enhance the standardization of construction technology, play a good guiding role in

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production activities, contribute to the improvement of construction production efficiency, and then promote the progress of modern garden engineering construction. For the garden engineering construction industry, the formulated guidelines and policies can strengthen the efficiency of construction quality management and play a good coordinating role in garden engineering construction, so that it is conducive to the sustainable and harmonious development of garden engineering construction industry [2]. However, compared with developed countries and regions, the formulation time of technical standard system and legal system in China is relatively short, producing an impact on the technology level of garden construction in China and making it lag behind some developed countries and regions.

Secondly, due to the rapid progress of socialist market economy, urbanization construction process in China is accelerating, which is conducive to the construction of urban garden engineering to a great extent. The rapid progress of economy has also changed the industrial structure of garden engineering construction, promoted the industrial content to become more diverse, broke through the development limitations of field, and began to penetrate each other in the contents of industries, greatly promoting the progress of garden construction industry in China.

Thirdly, China has a large population. Since the reform and opening up, the growth rate of urban population is very fast, which promotes the shortage of land, especially residential land. Therefore, in order to realize the expansion of land resources, China is vigorously carrying out the restoration of ancient buildings. When repairing ancient buildings, priority should be given to minor repair and local mixing, and the original structure should be retained to the greatest extent. Only in this way can the historical value of ancient buildings be guaranteed [3]. During the repair work, for the process components, such as stone carvings, tile carvings, tile sales parts, etc., we should scientifically carry out treatment activities and comprehensively control the replacement times. The most appropriate way is not to replace them. For some incidental works of art, such as color paintings, murals, statues, etc., the repair work should obtain the permission of relevant departments, and we can’t carry out arbitrary activities without permission. Ancient architecture contains a variety of information such as history, science, technology and culture, which can effectively promote the research work on the history, traditional culture and social development of ancient architecture.

3. Application of Wood Structure Maintenance Technology of Ancient Buildings in Modern Garden Engineering

As for modern garden engineering, it is necessary to scientifically determine the specific damage degree before dealing with the damaged wood structure. As for the damage of wood structure construction, relevant maintenance work should be carried out according to the specific situation. In the face of slightly decayed components, we can clean the original paint on the surface, and then spray tung oil for 6 times to cover with plastic film respectively. For moderately decayed components, if the condition is relatively minor, they can be treated as slightly decayed; if the condition is relatively serious, they can be treated by patching method and cladding method. In the patching method, it is necessary to completely remove the decayed part, change it into geometric shape, thoroughly clean the sawdust and sundries in the tunnel, apply preservatives, make the same wood blocks according to the excavated shape and fix it after preservative treatment. In the face of severely decayed components, replacement measures are usually taken. As for the treatment of cracked components, the cracks of wood are mainly divided into dry shrinkage cracks and stress cracks. If the stress crack component endangers the safety of the structure, it should be replaced at the first time. In order to ensure the aesthetics of wood components, if the cracks are relatively small, strict sealing activities can be carried out through epoxy resin putty, which can not only not

affect the viewing performance, but also prevent the development of dry shrinkage cracks. In the dry shrinkage cracks, for the larger position, stainless steel nails can be used to take treatment measures. If the gap is relatively large, the treatment activities can be carried out through bamboo chips or wood strips. While filling the missing corner, wood blocks can be used to complete and make firm treatment. For the bamboo chips, wood strips and wood blocks used in specific work, preservative treatment activities should be carried out. After cleaning the base layer, tung oil needs to be painted for three times. Finally, 4 coats of natural resin varnish should be applied. Compared with the component diameter, if the depth and width of the along grain crack are higher than 1 / 4 and the length is higher than 1 / 2, the replacement activity can be carried out directly.

4. Application of Structure Protection Technology of Ancient Building in Modern Garden Engineering

Wood belongs to the category of biomaterials. It is easy to be eroded by pests under humid conditions for a long time. Some abiotic factors such as physical and chemical factors will also affect wood, resulting in its transformation. Therefore, while carrying out the construction of modern garden engineering, we should further strengthen the prevention of wood structure of ancient buildings.

4.1 Preservative Technology

Because wood resources in China are not enough, we should strengthen the relevant preservative treatment on the structure of ancient buildings. Generally, in the process of wood structure protection, chemical preservative technology is widely used, which mainly kills parasites or other organisms and inhibits the regeneration of other organisms. As for preservatives, they can be divided into two types: organic preservatives and inorganic preservatives. At present, preservatives have been applied to wood structures. If there is no need to carry out repair activities for ancient buildings, preservative treatment is generally not required, and wood containing preservatives can be purchased.

4.2 Pest Control Technology

In China, pest control technology of wood has been applied for a long time. In order to effectively prevent the growth of pests, it is necessary to cut trees reasonably. The wood decay can generally be divided into five levels: no decay, slight decay, mild decay, moderate decay and severe decay [4]. In the construction of modern garden buildings, through the combined application of ancient building structure, we should seriously carry out treatment activities on pesticide-clay mixture at the contact position between wood structure and ground, so as to effectively prevent the damage of underground termite pests to wood.

4.3 Fire Prevention Measures

The modern garden engineering belongs to outdoor water-facing buildings, so the requirements for fire prevention of wood components are not systematic. If the modern garden project belongs to the wood structure of houses, it should effectively prevent contact with high-temperature parts. In order to achieve good fire prevention effect, in individual cases, chemical treatment activities can also be carried out for wood structure to promote wood components to become flame retardant.

4.4 Crack Prevention Measures

The moisture content of wood affects the cracking to a certain extent. Among many physical properties of wood, moisture content is one of them, which plays a vital role and affects the preservative and pest control activities of wood to a great extent. Generally speaking, the moisture content of wood in the south is different from that in the north, 17% ~ 18% in the south and 12% ~ 13% in the north. In order to effectively prevent the occurrence of wood cracking, great attention should be paid to the wood provided by the manufacturer, and its storage time should be 2 ~ 3 years. Meanwhile, we need to pay great attention to the surface moisture content, which should not be higher than 25% under normal circumstances. In order to ensure that the relevant requirements are met, other methods can be used to develop moisture content treatment activities.

5. Conclusion

Recently, antique architecture and garden engineering have made rapid progress. Before the specific construction work, most units can't develop wood treatment activities according to relevant regulations, resulting in the widespread problem of wood structure damage. At present, the wood structure protection technology of ancient buildings has made some achievements, and has diversified ways and methods, which can better promote the development of structure protection of modern garden engineering. However, because there are many kinds of wood structure protection technologies for ancient buildings, relevant research activities should be carried out in detail according to the actual problems, and the optimal scheme should be determined based on the specific situation of the construction site. Therefore, in the process of garden engineering construction, we should deeply develop research activities on relevant technical measures, strengthen the training of comprehensive basic talents, so as to make great contributions to the sustainable, stable and harmonious development of garden engineering construction in China.

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