

Research on the Development and Application of Modern Wooden Structure in Tourist Towns

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Abstract: With the steady development of tourism industry and the vigorous development of tourism areas in China, many buildings in small towns imitate foreign styles, and a large number of materials such as concrete and steel bars are used. This has greatly damaged the traditional style of the tourist town. This paper summarizes the present situation of modern wooden structure at home and abroad, as well as the development of small tourist towns in China, and analyzes the application and development of modern wooden structure in small tourist towns.

Keywords: Modern wood structure; Small tourist town; Application advantages

1. Introduction

Wood is one of the most primitive building materials in the history of human civilization. With its warm material perception and unique ecological value, it has been widely concerned by people. Wood is a renewable green material^[1]. As a new type of architectural form, modern wood structure has the characteristics of sustainable development, energy saving and environmental protection^[2]. It is of great help to the development of tourism.

2. The present situation of modern wood structure at home and abroad

2.1. The connotation of modern wood structure

Timber structure building refers to the building that all or the main bearing parts are made of wood, which is the mainstream of traditional architecture in China^[3]. The concept of "modern" in modern wood structure is different from that of traditional wood structure, that is, the construction method with handicraft as the main way is different from that of traditional wood structure. Modern wood structure architecture refers to the theoretical basis of modern architectural science^[4]. Wooden structure building needs a large number of wooden engineering products^[5]. In terms of materials, through the processing of modern advanced technology, the performance of the wood itself has been significantly improved to meet the various needs in the construction process; in terms of components, standardized wood or modern technology are used to synthesize wood products, so that they can be assembled and prefabricated. In terms of component connection, metal components are used for connection, which makes the connection of building components more solid and improves the economy of the building. In terms of building construction, modern building science and technology are used for construction, such as mechanized processing and construction, and modern construction methods are used to speed up the construction of buildings and enhance the safety performance of buildings. In general, modern wood structure is a new type of wood structure building form which is different from traditional wood structure building, and has significant environmental benefits^[6].

2.2. Research status of modern wood structure in China

In ancient times, wood structure building is the main building type in China. The construction of the building relies on the construction technology of the traditional wood structure at that time, and it used to be in the world and has always been in a leading position^[7]. This situation began to change greatly in modern times. China has stagnated due to various reasons, making the development of modern wood structure buildings in China almost all dependent on the introduction of foreign technology, and China

's research on wood structure is less. Until 2000, the opening of wood import trade and the rapid development of China 's forestry alleviated the shortage of modern wood, and with China 's emphasis on the development and utilization of ecological environment and renewable wood structure^[8].By strengthening scientific and technological exchanges with foreign countries in the field of modern wood structure, the application of modern wood structure technology in China has gradually increased. The research on modern wood structure in China has been concentrated in these 20 years, and has shown a rapid growth trend^[9].The research on modern wood structure in China has been relatively perfect, and has achieved fruitful results in materials, components, connections, fire prevention, systems and personnel training. In some areas, it has been able to achieve synchronization with international research. The research on the material properties of the wood itself, the connection of nodes, the construction system of the wood structure, and the classification of building types has been discussed^[10].There is also some progress in wood structure design^[11].These studies provide strong scientific and technological support for the application and development of modern timber structures in China. However, there are few studies on the application of technology in regional adaptation, especially the application and practical analysis of modern wood structure in tourism industry and rural construction. With the rise of China 's tourism boom in recent years, the research and exploration of modern wood structure in the tourism industry should be widely concerned.

2.3. Research status of modern wood structure in foreign countries

The development of modern wood structure relies on the industrial revolution in the West, so the research on modern wood structure abroad is more in-depth. Because Japan, Canada and other countries have rich wood resources, traditional wood structure system, wood construction experience and complete wood structure standards, the research of modern wood structure system in these countries is at the forefront of the world^[12].In addition, due to the improvement of the performance of wood materials, a variety of design practices have been created. Not only in people 's residential buildings, but also in small and medium-sized public buildings, cultural buildings, office buildings and commercial buildings. Even, in some multi-function halls^[13]bridge^[14]high-rise building^[15]large gymnasium^[16]Modern wooden structures are also used in large public buildings. Through the continuous study of modern wood structure, a new form of wood structure building is built, and many classic wood structure buildings are well known.

However, the most widely used wood structure is still in people 's houses. The more common wood structure system in North America is the light wood structure system^[17].The system is mostly used in low-rise residential buildings, which has the characteristics of safety, economy and flexible structural layout. In the field of wood structure design, mature structural design methods have been developed. In the field of material properties, further optimization studies have been carried out on the insect prevention, anti-corrosion and fire prevention of wood. In Japan, the proportion of wooden structures is higher, and the houses are basically all wooden structures. Japan 's wood structure technology originated from China and has continued to develop in Japan. Modern wood structure is the product of the integration of traditional wood structure technology and Western wood structure technology after learning from Western wood structure technology in the late 19 th century^[18].Foreign research on the system of wood structure is more in-depth.

3. Development Status of Tourism Small Towns

3.1. Definition of tourism small town

Small towns refer to the administratively defined towns in China. They are the link between cities and villages, an entity between villages and cities, an important carrier of rural economic and social progress, and play an important role in connecting the preceding and the following. Tourism small town is a kind of small town with the nature of tourism and service. It is a small town that combines the tourism industry with the construction of small towns. Tourism small town refers to a small town that can attract foreign tourists, has rich tourism resources, and has a certain reception capacity. Later, through the vigorous development of tourism, the tourism economy occupies a certain important position in the overall economy of small towns^[19].As a type of small towns, tourism small towns have more characteristics of sustainable development than other types of towns^[20].

3.2. Development Status of Tourism Small Towns in China

The development of China's tourism industry is late, still in its infancy, and there is still a certain gap with foreign countries, all aspects are not very mature. However, with the advancement of urbanization in China, the tourism industry has begun to develop vigorously, and the tourism industry has begun to develop throughout the country. As an important way to promote China's tourism industry, tourism small towns have been supported by national policies and have begun to be widely promoted in practice. The research on tourism small towns in China tends to be mainly based on practical cases. In recent years, methods and theories have been extracted from cases, and there is a trend towards the development of theoretical system. Secondly, domestic research pays more attention to the role of the government in the development of small tourism towns. Most scholars generally believe that the government is in a dominant position in small tourism towns. Therefore, most of the research focuses on how the government dominates the tourism small towns and how to promote the development of tourism small towns. There are few studies on the construction of tourism small towns and the overall planning texture in China, and there is a lack of overall norms and guiding methods. The research in this area needs to be improved.

4. The advantages of modern wood structure in the development of tourist towns

4.1. The natural advantages of wood affinity landforms

As a building material derived from nature, wood itself has many incomparable advantages. It can not only naturally integrate into the surrounding environment and coexist harmoniously with nature, but also create a kind of kind and warm feeling in people's psychology with its unique texture and natural color. This inherent natural attribute enables wood to conform to the current people's aesthetic concept of advocating natural simplicity and become a popular material in modern architectural design. Modern wooden architecture, like a bright pearl inlaid in nature, is not only a part of the natural environment, but also an organic component of nature. Whether it is a mountain lake or a forest grassland, wood structure buildings can be integrated with it to form a beautiful picture. In addition, compared with building materials such as concrete, wooden buildings have less intervention in the environment. In the construction of small tourist towns, the use of wooden structures can not only protect the land environment and underground resources to the greatest extent, reduce the damage to the natural environment, but also provide tourists with a more comfortable and natural tourism experience. This environmentally friendly and energy-saving construction method not only conforms to the current concept of sustainable development, but also injects new vitality into the sustainable development of small tourist towns. Therefore, as a natural and environmentally friendly building material, the application of wood in modern wood structure buildings has broad prospects and important significance.

4.2. Combined with regional characteristics

As a cultural treasure, the cultural value of tourism small towns is irreplaceable. The wooden structure building, with its unique style and charm, has long been deeply imprinted in the cultural memory of the Chinese nation. In the construction of modern wood structure buildings, we can not only give full play to the natural advantages of wood, but also skillfully combine the texture and texture of wood with local cultural characteristics, so as to create a unique architectural style. Through the well-designed modern wooden structure building, we can integrate the local historical culture, folk customs and other elements into it, making it a vivid window to show the local culture. While appreciating these buildings, tourists can not only appreciate the nature and warmth brought by wood, but also feel the rich local cultural atmosphere and arouse their deep emotional yearning for the countryside. In addition, the combination of modern wooden architecture and local culture can also enhance tourists' sense of identity with local culture. During the tour, tourists can have a deeper understanding of the local cultural connotation through personal experience and perception, so as to establish a deeper emotional connection with this land. Therefore, the combination of modern wooden structure architecture and local cultural characteristics is not only the inheritance and innovation of traditional architectural culture, but also the deep excavation and display of the cultural value of small tourist towns. This kind of building can not only bring pleasant visual enjoyment to tourists, but also arouse people's emotional yearning for the countryside, enhance their sense of identity with the local culture, and become an important force to promote the sustainable development of small tourist towns.

4.3. Flexible creation of space atmosphere

In order to meet the growing demand for tourism space and streamline, modern wood structure buildings show excellent flexibility and adaptability with their lightweight shape design. Its unique structural characteristics make it easy for each functional space to achieve flexible conversion. Both indoor and outdoor scenes can be rejuvenated through simple adjustments. This flexibility not only improves the utilization of space, but also brings a variety of experiences to tourists. Modern wood structure buildings create a unique space atmosphere for tourists through their excellent performance advantages. The warm texture and natural texture of wood add a touch of warmth and intimacy to the space. At the same time, the flexible layout and transparent design of wooden buildings make the space full of rhythm and rhythm. Visitors stroll in such an environment, as if they can feel the breathing and pulsation of the space, and fully experience the pleasure and tranquility brought by the space. Therefore, modern wood structure buildings have broad application prospects in tourism space design. It can not only meet the needs of tourists for spatial flexibility and diversity, but also bring profound experience and memory to tourists through its unique spatial atmosphere.

4.4. The advantages of transportation and assembly of modern wood structure

In some small tourist towns, the terrain is rugged and steep, which undoubtedly brings great challenges to construction and material transportation. In such an environment, traditional building materials and construction methods are often difficult to implement, not only inefficient, but also costly. However, the emergence of timber buildings provides an ideal solution for these areas. With its lightweight shape and flexible construction method, the timber structure building can well adapt to the construction problems caused by steep terrain. The wood itself is light in weight, easy to transport and install, and greatly reduces the investment of manpower and material resources. More importantly, the wooden structure building can be cleverly integrated into the landscape with its light shape, and reconstruct the unique natural landscape. On the steep hillside, the wooden structure seems to float lightly between the mountains and coexist harmoniously with the surrounding natural environment. This integration with nature not only enhances the aesthetic value of the building, but also brings a more profound tourism experience to tourists. . Therefore, in small tourist towns, for those areas with steep terrain and difficult construction, the application of wood structure buildings is undoubtedly a wise choice.

4.5. The optimization system of ' material-structure-structure-space ' construction level of modern wood structure

The construction system of modern wood structure building, no matter how diverse its final form is, its core is composed of materials connected by structure. In this process, the structure not only carries the weight and stability of the building, but also creates a variety of spatial forms through its unique design. This transformation process from material to structure and then to space is the essence of modern wood structure architectural design. In practice, for the optimization of modern wood structure technology, it is often necessary to carry out comprehensive design from many aspects. First of all, from the perspective of the constituent elements, it is necessary to carefully select high-quality wood to ensure that it has good physical properties and durability. At the same time, through reasonable structural design, the wood is skillfully combined and connected, so that the overall structure is stable and beautiful. Secondly, from the perspective of the overall shape, it is necessary to optimize the modern wood structure as a whole according to the functional requirements of the building and the site environment. This includes a comprehensive consideration of the appearance of the building, the internal space layout and the relationship with the environment. By optimizing the design, modern wood structure buildings can better integrate into the natural environment and meet people's aesthetic and use needs. Finally, through the analysis and summary of different cases, a complete set of ' material-structure-structure-space ' four-level optimization system is formed. This system not only covers all aspects of modern wood structure building design, but also provides strong guidance in practical operation. Through the application of this system, we can more accurately grasp the design points of modern wood structure buildings, and realize its optimization and improvement on the ground.

5. Difficulties faced by the application of modern wood structure in tourism small towns

5.1. Wood resources issues

The original material used in modern timber structures is wood. Wood resources come from forests. Wood plays a vital role in the natural ecological balance. In China, forest resources are scarce, and most of the wood in the forest belongs to hardwood. Although the quality is hard, the wood is slow. Therefore, China encourages the use of imported timber to solve the demand, mainly from Russia, Canada and other countries. This greatly limits the wide development and popularization of modern wood structure.

5.2. Misunderstanding of modern wood structure cognition

In our country, people's cognition of modern wood structure has a great misunderstanding. Nowadays, the construction of tourism small towns is mostly driven by the market. However, ordinary people have the psychology of seeking new and different buildings, and the lack of recognition of traditional culture leads to the destruction of wood structure cultural relics. At the same time, people's rough imitation of foreign countries appeared. In addition, people think that wood structure is not strong, easy to fire, simple and threatening their own safety. Although modern wood structure has optimized and improved these defects, people's impression of wood structure architecture still stays in the traditional thought, and modern wood structure is difficult to be accepted in the contemporary era.

5.3. Economic problems of modern wood structure

In the construction of modern wood structure, in addition to the influence of terrain, construction conditions and other factors, there is also a limiting factor that can not be ignored, that is, the cost and cost of the building itself. Compared with the traditional concrete structure and steel structure, the cost of modern wood structure is generally higher, which is mainly due to the scarcity of wood itself, the increase of processing cost and the improvement of technical requirements. Therefore, in the construction process of modern wood structure, the one-time investment is larger, and the demand for funds is correspondingly higher. For small tourist towns, this problem is particularly prominent. Due to the relatively backward economic development of small tourist towns, the economic level is generally low, and it is difficult to bear the high cost of modern wood structure. Although the government has given support and subsidies to a certain extent, these support is still limited compared to large cities, and it is difficult to meet the needs of modern wood structure promotion. The high cost of modern timber structure not only limits its wide application in tourism small towns, but also affects the sustainable development of tourism small towns. In order to promote the popularization of modern wood structure in small tourist towns, it is necessary for the government, enterprises and all sectors of society to work together to explore ways and methods to reduce costs, such as improving wood utilization efficiency, optimizing construction process, and promoting new technologies. It is also necessary to strengthen publicity and sustainable development.

5.4. The problem of rural hollowing out

The single mode of production and the depressed rural economy make young people The loss of a large number of villages has become the price of the rapid development of urbanization in China. However, this ancient village is hidden. There are many historical relics, and the building itself is also a vivid carrier of local local construction techniques, showing the villagers ' response. The unique wisdom of the natural environment. However, these precious historical sites have not received the attention they deserve, and the spontaneity in the village. Reconstruction, and even built a European-style brick and concrete building, the village lost its own cultural value under the impact of modernization.

6. Conclusion

Modern wood structure building is a new type of building form with great development potential. With the rapid development of tourism industry, modern wood structure has been widely concerned in the field of architecture in China because of its unique advantages. The implementation of relevant national policies and the improvement of standards and norms have further expanded the wood

structure market, and modern wood structure will usher in great development opportunities. For modern wood structure, we can further enhance its application and development in the tourism industry through various studies. Further highlight the advantages of wood structure in the tourism industry, so that wood structure can play a greater role in the construction of small tourism towns.

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