# Standard Research and Ecological Research on Landscape Materials

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**Abstract:** This paper studies the standard and ecology of landscape materials, briefly introduces the influence of material selection in the process of landscape construction, and explains the standard and ecology of landscape materials in detail at present, which provides some suggestions for the establishment of relevant standards in our country, and gives reasonable opinions to the construction units in the selection of landscape materials.

## 1. Introduction

with the deterioration of urban ecological environment, people pay more attention to the ecological nature of urban landscape. The ecology of landscape is mainly reflected in the selection of building materials, and the relevant departments should perfect the use standard of landscape materials to ensure that the landscape materials are low carbon, green and sustainable, and further strengthen the ecology of landscape, so that it can play its due role and improve the ecological environment of the city.

## 2. Effects of Material Selection on Landscape Landscape

The selection of materials in the process of landscape construction has a direct impact on the ecological environment. In the low carbonization and sustainable utilization of landscape materials, many experts and scholars have already carried out a lot of research, and have come to the following conclusion: in the whole life cycle of architecture, carbon dioxide emissions mainly come from building materials. Therefore, in the low-carbon construction of landscape architecture, the most important point is the choice of building materials. At the same time, building materials also occupy an important proportion in the overall construction of landscape, although the relevant personnel cannot calculate the proportion of building materials in the whole life cycle of landscape, but its influence is very huge. As the builder of landscape architecture, the relevant units should have a full understanding of the energy consumption of building materials, and improve the ecology of landscape landscape by reducing the use of high energy consumption materials, rather than using the amount of carbon sequestration of plants to make up for it.

## 3. Standard Research on Landscape Materials

China has always attached great importance to the construction of landscape architecture, and has issued corresponding policies and norms in the early years, and has stipulated the standards for the use of landscape materials, ecological sustainability and so on[1]. However, these standards were formulated earlier and were no longer applicable to the current social environment, and the selection of landscape architecture materials was not guided in the standards. As the ecological environment becomes more serious, many countries have set up relevant research groups to study the standards and ecology of building materials, and issued relevant norms to restrict the use of landscape materials. The United States, France, Germany and other countries put forward the concept of “green material “, further reduce the energy consumption in the construction of landscape architecture, and put forward certain requirements for ecology while improving the function of building materials.

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### 3.1 Foreign Landscape Materials Standards

#### 3.1.1 Singapore

In 2005, the Government of Singapore promulgated the GreenMark's evaluation system, which regulates the use of landscape materials, in an effort to regulate the construction works in Singapore, promote sustainable construction and raise the environmental awareness of construction workers. This evaluation system contains the evaluation criteria for urban landscape, the total score of landscape evaluation is 120 points, the score of material resources is 20 points, and the weight is 16.7% of the total score. Its evaluation criteria are mainly the proportion of recyclable materials in material resources, the specific content is: the materials of landscape should contain at least 30% of recyclable materials; in the construction of landscape as far as possible to use environmentally friendly products and so on.

#### 3.1.2 United States

The United States mentioned the standards and requirements for materials in landscape construction in the Sustainable Sites Initiative. The Sustainable Base Site Initiative is an American Association of Landscape Architects initiative on landscape construction, maintenance and management. In the Sustainable Site Initiative, the total score for landscapes is 250, and the material resource score is 36, accounting for 14.4 per cent of the total. The main criteria for its assessment are the reuse of existing material resources to achieve sustainable development purposes, specifically: the prohibition of the use of wood for endangered tree species in landscape construction; the reuse of discarded materials and vegetation; the use of wood certified by the relevant departments; the use of recyclable materials, etc.

#### 3.1.3 Seattle

The city of seattle issued “green residential building in seattle “, the city of seattle has detailed regulations on all aspects of green residential construction, and there are special sub-books to regulate the landscape materials. There are many evaluation criteria in the manual, including the safety of materials, durability, maintenance difficulty, functionality, aesthetic degree, ecological benefit and so on.

### 3.2 Comparison of Landscape Materials Standards

Through the above introduction, it can be found that the selection of materials has become an important scoring standard for landscape construction. In order to further draw on the advanced experience of foreign countries, comparing the standards in the above three regions, it can be concluded that in the relevant standards in Singapore, the United States and Seattle, the recyclable ingredients contained in the materials are regulated, and the use of environmentally friendly products is emphasized, and the standard certification of materials such as wood is strengthened to minimize the logging of endangered species. It can be concluded that from the selection of materials for landscape construction, more attention should be paid to the local nature of materials, recycling, energy consumption in the whole life cycle, material certification and other factors. In the process of making the standard of landscape materials, the relevant departments of our country should take it as the key content [2].

### 3.3 Suggestions on the Standard of Landscape Materials in China

#### 3.3.1 Developing Criteria for Sustainable Evaluation of Landscape

With the aggravation of the urban ecological environment problems, countries in the world began to devote more energy to the construction of landscape, one after another issued relevant standards to standardize the construction of landscape. The promulgation of these standards enables people to view the construction of landscape from the perspective of sustainable development, thus further strengthening the original effect of landscape on the ecological environment. China has issued relevant rules and regulations in the 20th century, with the development of the times, it is clear that the standards at that time have not been applicable to the current social development. In

order to better play the role of landscape architecture and improve the ecological environment of the city, the relevant departments need to formulate the corresponding landscape sustainable evaluation criteria as soon as possible, so that the construction units can have some reference in the process of landscape construction.

### 3.3.2 Establishment of a Quantitative Assessment System

The material used in landscape construction is the main source of energy emission of landscape, and the impact of the material on the ecological environment in the whole life cycle can greatly reflect the ecology of landscape. At present, experts and scholars have carried out a lot of research on the whole life cycle of building materials, and the results have certain guiding significance for the selection of landscape materials. The relevant departments should make statistics and analysis of the data obtained from the research, and establish a database of the whole life cycle of landscape materials, so as to provide reliable reference for the construction units. At the same time, the relevant personnel of landscape construction should have a certain understanding of the energy consumption of materials, take the energy consumption and the whole life cycle as the important reference in the process of landscape design, and find the balance between landscape construction and ecology in the process of practice, so as to establish a quantitative evaluation system and further improve the evaluation system of landscape construction in China.

## 4. Ecological Study of Landscape Materials

At present, all countries in the world are promoting the protection of the ecological environment, and the construction of landscape architecture is also promoting “green materials “. “Green material” refers to the building materials which can be recycled and have the characteristics of low pollution and low energy consumption, which can promote the harmonious development of man and nature. Therefore, in the process of landscape construction, we should strictly abide by the relevant characteristics of “green materials “, and combine the specific conditions of the construction site and the living needs of local residents to realize the ecology of landscape materials.

Green eco-sustainable materials should have the following characteristics: building materials should contain more than 30% of recyclable materials, which can be recycled; reduce the use of high energy-consuming materials in landscape construction; in the process of landscape construction, the use of high-hazard materials should be reduced, as far as possible to select materials with higher safety performance, materials need to have a certain. Fire-proof, anti-mildew ability; landscape should meet the removable requirements, in order to be able to maximize the use of abandoned materials and vegetation, etc.

It should be noted that while paying attention to the ecology of building materials, the functional requirements cannot be relaxed. For example, Dutch brick can be used as paving material for road, which can make rain water penetrate into the lower soil, play the role of water retention and drainage, have strong function, realize the requirement of green environmental protection, and can be recycled, and have strong ecology [3].

Therefore, in the design and construction of landscape architecture, we should fully consider the ecological sustainability of materials, comprehensively analyze the energy consumption of landscape materials in the whole process of production, transportation and maintenance, and use the results of the analysis as an important reference for the selection of landscape materials. The park design specification of our country stipulates that the green in the park should account for more than 65% of the total area, and the hard material should be about 20%. If the area of a park is 100 square meters, assuming that 65% of the green area is all mixed with trees and shrubs, and 20% of the roads are paved with concrete, the carbon sequestration and concrete emissions of green plants in the park can be calculated as follows: the annual carbon sequestration of plants is about 178700 kg, and the carbon dioxide emissions from the production of concrete used in paved roads are approximately 51400 kg, accounting for almost a third of the carbon sequestration of plants. Although it seems to be a small problem in the comparison of this data, it is already a more ideal situation. At present, in the construction of landscape in our country, the trend of using a lot of hard

paving and high energy consuming materials has begun to emerge, which leads to the reaction of the landscape which should have improved the ecological environment, and greatly affects the ecology of landscape. Therefore, in the process of constructing landscape architecture, we should fully consider its ecology, choose low carbon materials and local materials as far as possible, and reduce the use of high energy consumption materials.

## 5. Conclusion

To sum up, with the development of our economy, the ecological environment problem is becoming more and more serious, and improving the ecological environment has become the most important problem in the development of each city. To this end, all countries are vigorously promoting the construction of landscape, strive to enable people to live in a pleasant scenery, low-carbon environmental protection environment. Therefore, the relevant departments should standardize the materials of landscape, reduce the use of high energy-consuming materials, and maximize the role of landscape.

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