

Urban Garden Plant Landscape Design Based on Low Carbon Concept

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Abstract: With the development of the sustainable development strategy, the construction concept of green environmental protection has been gradually popularized, and relevant issues have also been paid attention to. As an irreplaceable part of urban construction, the integration of low-carbon concept into the design of urban garden plant landscape has many advantages, such as improving design quality, improving urban aesthetics, expanding urban green area, conforming to the concept of green, low-carbon, environmental protection and sustainable development. Therefore, relevant practitioners must pay attention to the application of low-carbon concept in the current design of urban landscape plants, and actively explore more effective application measures, so as to play a certain role in promoting the good development of urban greening.

1. Introduction

At present, under the background of various environmental problems becoming increasingly prominent, the concept of low carbon has become a key guiding ideology in people's life. In the process of self-development of each industry, the key point is gradually put on environmental protection, and the low-carbon concept is also being imperceptibly applied. In the process of urban construction, the most basic content is the urban garden plant landscape, which is also a place for urban residents' leisure and entertainment. The application of low-carbon concept in the process of urban garden plant landscape design can not only protect the ecological balance, but also play a certain role in the life of urban residents, and ultimately fundamentally promote the sustainable development of urban economy. It can be seen that this study has certain practical significance.

2. Overview of Low Carbon Concept

Low carbon concept is a relatively broad concept, involving social life, culture, economy and other fields. At present, as an important branch of the low-carbon concept, the concepts of low-carbon life and low-carbon economy have been widely promoted and accepted by the general public, and have become a new fashion in developed countries. The so-called low-carbon concept actually refers to the concept of reducing carbon emissions. The concept of low carbon is a scientific concept of human development and an important guarantee to promote the rapid and stable development of social economy. In China, another interpretation of the concept of low carbon is the concept of sustainable scientific development. In the process of China's social development, we should uphold the concept of low carbon and persevere in the path of sustainable and scientific development.

3. Principles of Applying Low Carbon Concept in Urban Garden Plant Landscape Design

3.1. Adhering to the Design Principle of Ecological Concept

In the design of urban garden plant landscape, the staff should fully consider the actual situation of the city, and make the design of urban garden plant landscape reflect the cultural characteristics of the region, so as to integrate the urban garden plant landscape with the whole city. At the same time, in order to ensure that the planted plants can adapt to the healthy growth of the local environment, environmental factors should be incorporated into the design, that is, the principles,

methods and knowledge of biological ecology, system ecology, human ecology and landscape ecology should be applied to the planning and design of urban garden plant landscape.

3.2. Adhering to the Design Principle of Suiting Measures to Local Conditions

The so-called suiting measures to local conditions is to achieve “no violation of nature” and “coordination between man and nature”, which requires that social behavior should maintain coordinated development with nature. Landscape is a comprehensive art that connects man and nature most closely. It highlights the development of social culture, politics and economy with a simple relationship. Therefore, in the urban landscape design, the staff should understand the local natural attributes, fully investigate and analyze the site, and also consider the climate, landform and other factors. In addition, the transformation of the garden should be carried out on the original basis as much as possible, and local materials should be used as much as possible. This can not only save a lot of costs, but also effectively reduce the carbon dioxide generated in the transportation process. This is an important embodiment of the application of the low-carbon concept.

3.3. Adhering to the Design Principle of Building Plant Communities

The principle of building plant community requires that the plant landscape design of urban gardens should take the community as the unit. For example, trees, shrubs, grasses and vines can be arranged in the community according to local conditions, so as to avoid competition among plants, and form a community structure with reasonable structure, sound functions and stable population. At the same time, in order to ensure better ecological benefits, different characteristics of plants can be used to complement each other. For example, seasonal deciduous plants and evergreen plants can be reasonably matched. This is not only beautiful, but also improves the overall carbon fixation level of the garden.

3.4. Adhering to the Design Principle of Sustainable Development

In order to thoroughly implement the concept of low carbon, we should adhere to the principle of sustainable development in the design of urban landscape plants. The principle of sustainable development is mainly reflected in the following two aspects. On the one hand, it is the principle of land efficiency, which refers to the efficient use of land resources, the use of limited land to establish a multi-level landscape environment, and improve the efficiency of greening. On the other hand, it is the efficiency of energy, which not only refers to energy conservation, but also to a comprehensive understanding of the connotation of environmental protection.

4. Practice of Urban Garden Plant Landscape Design Based on Low Carbon Concept

4.1. Design Elements

4.1.1. Stereoscopic Form

The stereoscopic form is the carrier of plant landscape, which presents the three-dimensional landscape through multiple spatial levels. For example, the base surface of stereoscopic landscape is generally used to carry flower beds, lawns and low vegetation. The vertical plane is mainly used as a stereoscopic support to carry trees and plants. The top surface is used to create a closed sense of plant landscape and to carry some types of plants with luxuriant branches and leaves. These three levels can build a stereoscopic plant landscape effect, making the landscape design more spatial and hierarchical.

4.1.2. Plant Selection

In the process of plant landscape design, plant elements are mainly plant shape and plant texture. In terms of shape, different shapes represent different meanings. For example, circle can convey the meaning of harmony, cone and cylinder can show a strong sense of three-dimensional, while irregular shapes can construct a unique landscape. In terms of the texture of plants, it is mainly the category collocation between plants to highlight the sense of hierarchy and uprightness. For

example, the thin rhizome can give people a feeling of elegance and lightness, while the thick rhizome can bring ornamental to a certain extent.

4.1.3. Color Matching

Plants have a variety of colors, and in the process of concrete presentation, they are mainly concentrated in flowers, fruits, leaves and other parts. The color of plants can play a good role in landscape design. If the color can be reasonably matched, it can also create a sense of space and hierarchy on the visual level (see Figure 1). In addition, the colors of plants can also convey corresponding emotions through their symbols. For example, red symbolizes celebration and joy, white gives people the impression of purity, pink and purple are warm and romantic, and orange can bring warm and warm sensory experience.



Figure 1 Color matching of urban garden plant landscape

4.1.4. Odor Irritation

In the process of plant landscape design, smell plays a very important role. Usually, the smell of plants is generated because the chemical molecules they emit float in the air and stimulate people's sense of smell. Therefore, in the process of designing plant landscape, the smell can play a role in setting off the unique atmosphere. For example, when designing the plant landscape with fragrance as the theme, plants such as lotus and osmanthus can be used. Such plants are gladdening the heart and refreshing the mind.

4.2. Embodiment of Low Carbon Concept

4.2.1. Wall Greening

Based on the green and low-carbon concept of wall greening landscape design, it mainly reflects the scientific rationality of plant configuration and the urban wall greening coverage.

When using green plants to cover a large area of urban walls, staff should pay attention to the scientific nature and rationality of plant configuration, so as to better show the design concept of low-carbon and environmental protection. For example, in winter, the leaves of plants covered on the wall will fall off, and the sun can directly irradiate the building wall, and improve the wall temperature of the building, so as to reduce energy consumption and improve the comfort of the living environment. The increase of urban green coverage can reduce the exposed area of steel and cement in urban buildings, effectively improve the urban climate and effectively mitigate the heat island effect.

4.2.2. Roof Greening

Roof greening has been paid more and more attention in the landscape design of garden plants. Therefore, it is necessary to take the concept of green and low carbon as the basis, and reasonably design the roof environment space, so as to make the roof landscape resources more fully developed.

Urban roof greening can not only improve the coverage of urban greening, make people's life closer to nature, but also improve the urban living environment. In addition, the green plants on the

roof can reduce noise pollution, absorb solar radiation, purify the air through photosynthesis, and improve the environment.

4.2.3. Carbon Fixation Plant

Different types of garden plants have differences in carbon sequestration capacity. Therefore, in the process of configuring garden plants, it is necessary to have a clear understanding of their own carbon sequestration capacity, so that the carbon sequestration capacity of different types of garden plants can complement each other, and enhance their own carbon sequestration capacity while beautifying the garden environment.

In plant configuration, deciduous trees with weak carbon sequestration capacity are usually matched with evergreen shrubs with high carbon sequestration capacity. Because such a combination can not only realize the complementation of carbon sequestration capacity, but also build a delicate plant landscape to provide people with visual enjoyment.

4.3. Design Measures

4.3.1. Strengthening Garden Site Treatment

The treatment of garden site plays a key role in the design of garden plant landscape. For plants in the landscape, soil is the key foundation for growth, which is related to the survival rate and growth status of plants, especially the water and fertility of soil have a direct impact on the health of plant growth.

Therefore, in the process of landscape design, it is necessary to check the plant growth environment. At the same time, the concept of low-carbon environmental protection is integrated into the site treatment process, so that the landscape design is combined with the concept of low-carbon to better protect the soil. For example, in the process of plant cultivation, weeds need to be cleaned to curb the impact on the soil environment and adjust the flow direction of energy.

4.3.2. Increasing Green Plant Area

In the design of plant landscape, the expansion of vegetation coverage based on the low-carbon concept can significantly improve the garden ecological environment, effectively increase the oxygen content in the air, and create a green, healthy and livable environment.

The increase of green vegetation area can better apply the concept of low carbon and environmental protection. Therefore, in the process of landscape design, the staff should improve the use of low-carbon materials, reduce the carbon emissions in the garden, realize the protection of the garden environment and achieve sustainable development.

4.3.3. Selecting Plants Reasonably

The structure system of plants has a direct impact on carbon emissions, so we should pay attention to the carbon sequestration effect of plants in the process of plant selection. At the same time, the staff should also give priority to local tree species and combine the landscape design of garden plants with relevant requirements to reflect the local urban characteristics.

In the design of garden plant landscape, the structure and performance of plants should also be fully considered. Because there may be mutual restraint between some plants, which is not conducive to the growth of plants. Therefore, it is necessary to fully consider the surrounding plants in the design process to achieve the mutual coordination of plant growth.

5. Conclusion

To sum up, with the continuous acceleration of urbanization, people have higher and higher requirements for garden landscape. When designing the garden plant landscape, the designer should not only fully combine the requirements of low carbon, but also fully understand the objective situation of the actual location of the garden landscape. The designer should also fully understand the designed plants, and select the appropriate plants for reasonable matching and design according to the regional characteristics. Garden facilities should clarify the key contents of landscape design

to attract social attention. Landscape design should focus on the characteristics of garden design style. At the same time, in order to create a healthier lifestyle, it is necessary to fully understand the growth characteristics of local plants. In the process of landscape design, landscape design is carried out in combination with regional characteristics to create a landscape effect with regional characteristics.

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