

Original Paper

Urban Waterfront Park Plant Landscape Design—Take Ganjiang Citizen Park as an Example

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Abstract

The design of waterfront parks is discussed with the aim of enhancing the ornamental nature of waterfront landscape greenery and enriching urban public space. In the urban waterfront, vegetation is a kind of landscape with various functions such as ecological, ornamental and aesthetic, which plays a pivotal role in improving people's quality of life, ecological quality of life and urban image. Through the study of the basic principles and arrangement of waterfront urban landscaping, it has certain guiding significance for the planning and arrangement of waterfront park greenery.

Keywords

waterfront park, plant landscape, design principles

Based on the concern for urban ecology and the human nature to be pro-water, waterfront gardening landscape is much favored for its unique water environment. In the garden, only vegetation is the gentlest, and it is a growing garden that is both ecologically significant and artistic. It also harmonizes with the surrounding environment. The plant landscape of the waterfront park can be combined with the zone construction of the water environment, topographic features, and with the ecological habits of various plants, so that it can better play the role of ecological aesthetics, and be arranged in a scientific and reasonable way to improve the climate environment of the city, so as to achieve the needs of people and nature.

Taking Ganjiang Civic Park as an example, this paper discusses the creative techniques of landscaping from the perspective of plant creation, combining site and garden. On this basis, the laws and strategies of vegetation distribution suitable for waterfront and waterfront areas are summarized according to the unique regional culture of Nanchang, in order to enhance the artistry of vegetation distribution in

waterfront areas and to have some reference significance for the construction of eco-water system in Nanchang.

1. Waterfront Park

1.1 Conceptualization

“Waterfront” is broadly defined as the land adjacent to rivers, lakes and oceans, as well as the section of the city bordering the water. A waterfront garden is a strip of land that combines water and land.

1.2 Waterfront Park Plant Design Essentials

Waterfront plant landscape is a natural complex formed by combining water and land in a certain area with all vegetation according to a certain structure. The plant species in waterfront parks are mainly aquatic plants, wet plants in the junction of land and water, coastal trees, shrubs, ground cover plants and lawns. The specific design and practice of the greening of Ganjiang City Park is discussed from several aspects: thematic characteristics, ecological value, seasonal changes, and spatial transformation

1.3 Principles of Plant Landscape Design for Waterfront Parks

1.3.1 Waterfront Park Plant Landscape Design Principles

(1) A combination of fast-growing and slow-growing trees. Its growth rate varies from tree to tree. When landscaping the urban waterfront, it is important to first select several fast-growing tree species to achieve a large greening effect in the shortest possible time. In contrast, planting slower-growing trees in the park will ensure that the overall landscape in the park will remain more stable over a longer period of time and will meet the needs of the green space.

(2) Combination of trees and shrubs. Greening is an effective means of greening the landscape of urban waterfront, which can effectively improve the quality of urban landscape and enhance the quality of urban landscape. However, tree planting alone does not contribute to the establishment of a fully ecological society. Therefore, it is necessary to develop a scientific mix of trees and shrubs or vines to establish a rich and stable plant ecological community, which will in turn make the landscape richer and thus increase the ecological beauty of the park (Yang et al., 2015). Thirdly, suitable tree species should be selected by combining local soil, climate and other factors.

1.3.2 Waterfront Park Landscape Features

Waterfront parks are usually a combination of man-made and natural complexes that link water bodies, roads, etc., and are combined in a limited space according to certain rules. Landscape characteristics of waterfront parks: 1) in terms of geography, the vegetation landscape of the waterfront area shows a trend of extending outward along the river; 2) under the concept of “human-centered”, the planning of the garden should be based on “human-centered, human-use”. On this basis, the planning of many functions such as shade, coolness, rest, leisure and evacuation is carried out by combining the natural geographical conditions and the distribution characteristics of plants. 3) From the perspective of cultural space, it plays an important role in displaying and inheriting the cultural characteristics of the city, and the development and construction process of a city’s waterfront park landscape can reflect the cultural connotation of

urban development. For example, in the design process of Ganjiang Park, some historical relics of the old site of Mison Town are preserved. When carrying out the design, innovative ideas and designs are integrated into it, so that the industrial elements of the original shipyard and the surrounding ecological environment can be maintained, while modern environmental protection concepts and innovative ideas can be integrated into it, thus demonstrating and carrying the development process of the city, and also playing the role of recording history.

2. Waterfront Park Plant Landscape Design Analysis—Ganjiang Citizen Park as an Example

2.1 Overall Design

2.1.1 Project Overview

The project is located in Jiulong Lake Area, Honggu Tan New District, Nanchang City, Jiangxi Province. It is a riverfront green space on the west bank of Ganjiang River (Shengmi Bridge to Shipyard section), with a total area of about 474,000 square meters, a length of about 3.1 kilometers and a width of 120-230 meters. The project site is adjacent to Ganjiang River, the mother river of Jiangxi, to the east and Chengyun Avenue to the west, along Longhu North Avenue to Shengmi Shengmi Avenue plot. The riverfront green belt is seamlessly connected to the Jiulong Lake Ecological Green Corridor to strengthen the connectivity of the green corridor network system, and the riverfront zone is an important green ecological interface connecting the urban green network with the Ganjiang River. The planning and design reasonably integrates the scheme with the surrounding plots of various properties to provide reasonable space and sites for visitors, surrounding residents, etc. With waterscape as the main design idea, different landscape spaces, rivers and waters complement each other, and are supplemented by hardware facilities such as platform squares, so that visitors have sufficient space for activities, and the shaping of vegetation and landforms in the garden makes the waterfront garden more ornamental value.

2.1.2 Site Analysis

After the field survey and analysis of the site, the site is rich in plant green space resources, there is a large area of green space can be richly used, the design needs to consider plant maintenance and plant landscape enhancement in the later stage. The right side of the base faces Ganjiang River, which is rich in water resources. The water level should be taken into account in the pedestrian space of the waterfront landscape zone to ensure safety. There is a large amount of mudflats along the Ganjiang River, so the barge treatment is the focus of the design, and how to improve water quality and enhance ecology is the key to the design. The site is divided into three types of barges. The first type of barge is roughly divided into three levels, road, gentle slope and mudflat. The road and the gentle slope are separated by a hard flood control embankment with a 2-3 meters height difference; the gentle slope has a gentle topography and is rich and interesting at the same time. The mudflats are larger in the dry season and are mainly sandy, with water waves leaving a rich texture. Class II barges are roughly divided into roads, mudflats. Between the road and the gentle slope is a rigid flood control embankment with a height difference of 6-8 meters; in addition to some sandy areas, there is also a large area of natural grass, with a very open

view. All three types of barges are composed of hard flood control embankments, and the road is directly transitioned from the embankment to the water surface, with a large slope of the embankment, which requires a guardrail on the road side.

2.1.3 Design Strategy

With the orientation of gardening, while keeping the original vegetation as much as possible, giving full play to the advantages of regional humanities, the spatial characteristics, functional expression and personality creation of gardening are emphasized through the combination of native tree species. There are mainly: colorful trees interlaced with each other, forming a colorful ribbon from east to west; through the mixed forest, constituting a composite ecological green corridor.

2.1.4 Design Structure

According to the characteristics of water system, roads, squares, slopes and terraces of Ganjiang River, unique tree species such as cherry blossoms and zinnias are integrated into the greening of the whole garden, forming a number of greening landscapes with unique styles such as flower valley, flower corridor, flower stream and flower path, forming a greening pattern of “one axis and four areas”.

2.2 Plant Zoning Design

In the planning of the park’s attractions, the park was divided into four thematic spots: “Garden Valley”, “Ecological Wetland”, and “Seasonal Landscape” to highlight its characteristics. In the first section, the riverbed was widened to make the surface of the riverbed larger and to allow more water to fall on the riverbed. In the area slightly to the south of the scenic spot, taking into account flood control, the river takes the form of grass slope into the river barge, and willow trees are planted around the lake to show its vitality with its reflection in the water. In terms of flowers, there are: Bauhinia, Blue Flowering English, Ginkgo, Acacia, Chrysanthemum, etc.

In the second part, since the lake is close to the street, wooden bridges and pavilions were set up in the lake in order to give the viewers a better access to the water while visiting the lake by standing at the roadside. The breeding of various types of ornamental fish has also been carried out to give them greater landscape value and thus better attract visitors. Water plants in the exhibition include: water lilies, weeping willows, water fir, reeds, water plants, etc.

In the third part, the gently sloping grass and vegetation on the waterfront of Jiangnan are fully utilized to create a natural landscape close to nature, creating a “forest ecology”. An arch bridge divides the water surface into two. The main theme is the original vegetation in the base, including balsam fir, daisies, willow, laurel, lady’s mantle and wild flowers and plants that guard the base. Zone 4 is dominated by vegetation of different colors to create a unique landscape in different seasons. For example, in spring: lotus magnolia, cottonwood, peach blossom, sheep’s foot, Japanese late cherry, Tokyo cherry, etc.; in summer: white orchid, yellow orchid, flame wood, yellow oleander, eggplant, etc.; in autumn: ginkgo, yellow acacia, gooseberry, etc.; in winter: plum, wax plum, camellia, etc.

2.3 Plant Configuration

2.3.1 Plant Configuration Principles

(1) Principle of regional culture. All plants in nature have a certain degree of territoriality. Therefore, it is necessary to keep the plants with better growth condition as much as possible to increase their survival rate and prevent them from being invaded by exotic species. In the planning, attention should be paid to the selection of tree species suitable for local natural conditions or introduced, and the organic combination of nature, rocks, water systems, pavilions and other hardscapes. The reasonable configuration of vegetation such as trees, shrubs, vines, water plants, etc. will make the maximum expression of both natural and human aspects of the area.

(2) The principle of combining form and function. The waterfront space of the city park, which is the most favorite place for the public, should first meet its functionality so that it can be appreciated by the visitors. Therefore, in the greening, to function as the starting point, the use of structure and change, so that it produces a kind of formal beauty, so as to create a kind of both garden mood and artistic waterfront environment. In the design, attention should be paid to both the shape and the balance and variation of the shape, contrast and coordination, rhythm and tempo, so that the best combination of shape, function and art can be achieved.

(3) The principle of shaping the sense of space. In landscape gardening, there are three types of space forms: open, closed and semi-closed. Different spatial sense brings different feelings. Wide space brings a relaxed and happy mind with a glance; closed space is more private and has a quiet feeling of being uncontested with the world, creating a private space where one can stay and communicate; in design, different spatial forms are created by using factors such as terrain and tree species to bring visitors a variety of different spatial feelings.

(4) The principle of economy. In the greening, should also pay attention to the post-greening management, maintenance and survival rate, to achieve economy and simplicity.

2.3.2 Plant Seasonal Landscape Design.

The Ganjiang City Park has a reasonable configuration of trees, shrubs, grasses, ground cover and other ground cover vegetation, which makes it have the unique landscape characteristics of “evergreen and flowers in all seasons”. Among them, weeping willow, golden-leaved maidenhair, cherry blossom and begonia are the representatives. We can consider this kind of small ornamental trees as the main material, with flowering bushes and shrubs as auxiliary materials, so that the park can present a prosperous scene in the spring. In the summer vegetation landscape design, you can choose some trees with larger canopies and better shade, and arrange some herbaceous flowers such as flowering shrubs, plantain and calamus around them, and add some aquatic plants unique to summer, such as water lilies and lotus. In the vegetation garden in autumn, trees and shrubs with strong ornamental properties should be chosen and combined with gooseberries, ginkgoes, octocarpus, wolfsbane, etc. In winter, evergreen species such as maidenhair, whitebark pine and big-leaved boxwood can be used for landscaping. Very common. On this basis, a reasonable configuration of different kinds of vegetation is carried out, thus highlighting its

vegetation landscape characteristics of being vibrant in winter and evergreen in all seasons. Therefore, in the selection of green plants, it is necessary to combine the climatic characteristics of Nanchang area and pay attention to the reasonable matching between different kinds of green plants, so as to enhance the aesthetic effect of green plants.

2.3.3 Plant Ecological Landscape Design

In the park design process, the reasonable use of ecological barges can enrich the landscape pattern of waterfront plants. Ecological barges adhere to the principle of sustainable ecological protection, ensuring the circulation, exchange and regulation of water between the river and the barge, and ensuring the diversity of biological ecology from the water to the land area.

In garden planning and design, the proper use of ecological barges can make the spatial distribution of landscaping more abundant. Currently, artificial barges are wasteful in terms of materials, ecological damage, poor flexibility and monotony. Ecological barges follow a sustainable ecological conservation policy, ensuring the circulation, exchange and regulation of water between rivers and barges, and the diversity of biological communities from water bodies to land areas.

At the same time, from the perspective of “people-oriented”, the “water-friendly platform” is built, and the “resting platform” and related recreational facilities are arranged in the park, so that people in the waterfront park “Water-friendly”, “water-friendly”, “water-friendly”. In addition, when designing the barge, it is necessary to integrate ecological factors into it, using composite materials to highlight the permeability of the riverbank, and also planting some aquatic plants with strong resistance to adversity, so as to create a continuous green space from the land to the water.

3. Summary

Waterfront park is a kind of landscape form with “multi-function” as the core. In the process of urban development, we should pay attention to the greening and greening of waterfront parks to improve people’s quality of life. Urban waterfront is a kind of “people” as the center, “water” as the main feature, with “water” characteristics, “people” The “people” activity place.

In waterfront gardens, the design of plant gardens must take into account spatial and temporal factors, adhere to the combination of ecology and art, the reasonable configuration of plant communities of trees, irrigation, ground covers and grasses, to create a plant garden with both functional and economic value, to give people a comfortable feeling, enchanting, purifying the soul of the green space.

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