

Study on the Design of Greenway Network Leisure Space in Mountainous Cities--Taking the Southern Area of Chongqing as an Example

Peng Weiyan

Chongqing Jianzhu College, 400072, China

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Abstract: With the development of society, the environment in the city is gradually deteriorating, and people need a more livable living environment. The urban greenway network leisure space emerged as the times required. The greenway is a linear form of green space, which establishes a reasonable humanized green corridor and connects the urban greenbelt. In recent years, great progress has been made in the research of greenway in China. The construction of the greenway is in the infancy in China, and the main design theories are based on the abroad excellent design cases. Mountainous cities with special topographical environments require greenways to improve the urban landscape environment. Due to the topography of mountainous cities, many problems have occurred in the urban ecological environment. The establishment of greenway can improve environmental problems very well. The study and analysis on the use status of the existing greenway system can play a certain reference role in the future greenway construction. It is especially important to start the greenway construction and build a greenway suitable for mountainous cities in mountainous cities represented by Chongqing. This paper first explains the related concepts of mountainous greenways, establishes the evaluation mode of the use of greenway in mountainous cities, and studies the use status of greenways in southern Chongqing through the evaluation model of greenway in mountainous cities, providing some reference for the planning and design of greenways in other mountainous cities.

1. Introduction

At present, the scale of research on urban greenway in China is expanding, and urban greenway is an important part of the design of urban green landscape network. Greenway can provide new travel and recreational options for citizens and protect the humanities. With the development of social economy, urban environmental problems have become increasingly prominent. It is particularly important to solve the urban environmental problems by building greenways that are suitable for urban environment. It is the demand for leisure activities of citizens to build urban greenway network leisure space, and it is the promotion of green travel. The ecological landscape of mountainous cities is relatively fragile and the urban environmental problems are complex. Mountainous cities have special topography. There are many problems in the construction of urban parks. Greenway construction can enclose mountains and water resources, improve the urban landscape environment, and facilitate the leisure of urban residents. The linear landscape space greenway can better outline the geographical characteristics of the mountainous cities and is suitable for the landscape development of the mountainous cities.

2. The concept of urban greenway

The Greenway was first proposed in the United States in 1959. With the development of social sciences, many subject experts have different views on the conceptual connotation analysis of greenways according to different research directions. China's research on greenways started late. At present, China is vigorously developing ecological landscape construction. The concept of greenway emphasizes the functional combination of ecological landscape and leisure, which is an indispensable green landscape model in today's society.

According to the difference of function and volume, the common greenways are greenways to

increase the area of urban green space, greenways to facilitate citizens' leisure, greenways built according to the line of urban municipal facilities, etc. The greenway extends from a greenway with single linear space to a multi-faceted urban greenway. With the development of the times, the functions carried by the greenway include urban disaster prevention and other aspects. The greenway has changed from a single linear landscape corridor to a multi-functional ecological urban landscape greenway[1].

3. Current situation of greenway construction in mountainous cities

In recent years, mountainous cities have gradually developed greenway landscape construction, and various types of hiking fitness trails have gradually formed. However, due to the unique landscape pattern in the urban area of the mountainous cities, certain problems have appeared in the urban greenway system, which has a great impact on the development of urban greenway.

The greenway in mountainous cities is in the developing stage, and there is a big gap compared with foreign countries. The study and planning on greenway in Chongqing is in the infancy. The main reason for the imperfect greenway landscape system is the lack of recognition of greenway and the lack of reference.

With the acceleration of urbanization in China, most of the green space construction in cities has not been combined with the characteristics of cities. The special space of the mountainous cities disappeared and the plain developed. The urban greenway should be a leisure green space with multiple functions. However, the current function of urban greenway is relatively deficient. For example, some greenways focus on landscape ecology to meet the needs of users for walking. But the Greenway ignores issues such as humanity construction. Some greenways are dominated by artificial landscapes, and the excessive artificial traces weaken the natural landscape.

Due to the special climate of mountainous areas, the amount of plants in the greenway is relatively scarce. Attention should be paid to plant configuration to meet the ecological leisure needs of users. In the existing greenway in mountainous cities, the number and type of plants in the greenway are lacking.

4. Evaluation of the use of greenways in southern Chongqing

4.1. Overview of natural and social resources in Chongqing

Chongqing is one of the four municipalities in China. It is a famous cultural city with more than 3000 years of history and civilization. The main urban area is a hilly valley with parallel folds and rivers. Chongqing has formed a unique natural landscape of mountains and waters. Chongqing's main urban area has excellent natural landscape skeleton and abundant animal and plant resources, forming a natural factor of landscape forest. It is a subtropical humid monsoon climate with hot summers and warm winters, suitable for the growth of most vegetation landscapes. Artificial buildings and natural terrain are integrated with each other. Chongqing's landscape pattern is unique. In the construction of greenway, it should be fully protected and constructed rationally.

Chongqing is a typical mountainous city, which faces many problems in maintenance. The state has put forward a policy of comprehensively strengthening urban construction and improving the living environment. In order to improve the beautification of the city, Chongqing has intensified its efforts in landscape construction. And various types of urban parks, wetland parks, etc. have been built to connect the urban green space plates and enhance the green ecology.

Due to the mountainous terrain, the urban green space construction form conforms to the topographic changes. The inner green landscape in Chongqing city mainly presents plate-type development. Most of the existing green spaces in Chongqing are spread in the main urban area. The green environment in the city is too scattered. The current greenway development in the main urban area of Chongqing is on the rise. Government departments are paying more and more attention to the greenway. Urban greenways can be combined with existing green space plates. The existing types of greenways in the main urban area of Chongqing can be roughly divided into

fitness trails, historic and cultural streets and leisure landscape greenways[2].

4.2. The situation of greenway in Chongqing

The main tourist resources in Jiulongpo, Chongqing are natural landscape. With the acceleration of urban development, many problems have arisen in the landscape environment in Jiulongpo, Chongqing. And the aesthetics of the city has been reduced. In order to improve the existing environmental problems, Jiulongpo District has begun to build urban greenways with the characteristics of mountainous cities.

The greenway in Jiulongpo is located in the central area. The Greenway is centered around the central business district of Jiulongpo District, connecting the existing green space resources such as Chongqing Zoo and Taohuaxi. The greenways combine the resources of ornamental and recreational activities in the area. Residents in the nearby core area can go out to enjoy the scenery and exercise.

It strengthens the protection of natural landscape in the design of greenway in Jiulongpo, Chongqing. A green channel network base with strong integrity is created Through the construction of the urban greenway system. The connection between greenway network planning and greenway system planning can effectively connect existing urban green space plates and enrich the inner spiritual culture of greenway system. The greenway in Jiulongpo, Chongqing is located in the downtown area, and the greenway is large in scale. There are almost all kinds of topographical features of the city, including waterfront sections. The greenway in Jiulongpo is representative of other mountainous cities in greenway construction.

The success of the greenway in Jiulongpo is accurate positioning, focusing on the historical characteristics of the city, rational using topographic changes and the comprehensive and system of the knowledge. The greenway in Jiulongpo is an urban ecological leisure greenway. The greenway has greatly improved the quality of life of residents and beautified the urban environment. The greenway shows the style of the old city in Chongqing on several sections, combines cultural features and allows users to experience the special culture.

The shortcomings of greenway in Jiulongpo, Chongqing are the insufficient promotion, lack of plant diversity and inadequate public facilities. The greenway in Jiulongpo is lacking in publicity and promotion, and there is a shortage of greenways in plant diversity and vegetation coverage. The user does not feel comfortable green space in the greenway. And noise disturbance in residential areas is obvious, the number of toilets is small in the greenway, and users are not so satisfied with public facilities.

5. Optimizing and promoting strategies of urban greenway

5.1. Attach importance to the construction of natural environment

The optimization strategy of greenway in mountainous cities should start with attaching importance to the construction of natural environment, combining with the characteristics of urban culture and enhancing the function of spatial layout. Because of the terrain and other factors, there is less green space in mountainous cities. The belt-shaped greenway natural landscape can make up for the lack of green space. Mountainous urban greenways should take full account of plant diversity and the amount of plants in the greenway.

The greenway routes in mountainous cities are more complicated. There is a need for rich plant landscape construction in the greenway. The florescence, height of plants should be taken into account in the allocation of greenway plants. Through the color matching of the plant, the height difference of the slope of the terrain is buffered, and the user's fatigue is relieved in the visual sense[3].

Planting design of greenway plants should be combined with artificial pavement. Multicolored shrubs are used on both sides of the greenway to enclose to lead the route of the greenway ecologically. Adding flower beds and shrubs to the greenway. Designing it in conjunction with the overall style of the greenway. Through the combination of various plant types, the visual fatigue

caused by hard pavement can be effectively softened and the ecological benefits of greenway can be increased.

5.2. Take into account the urban cultural features

The development of greenways in mountainous cities is relatively late. The greenway should be designed taking into account the city's own cultural features, so that it is closer to the daily life of users. The city's history and culture are displayed through the landscape facilities in the greenway, so that users can have a stronger sense of belonging during the tour[4].

In the development of mountainous cities, many humanities products in some historical blocks have been demolished. Mountainous greenways should series connect the urban special cultural space in the form of strip walking path. If the greenway has no corresponding cultural characteristics, it will come into being boring and plain. In the design of greenway in mountainous cities, many methods can be used to integrate the historical and humanistic characteristics of the city. Through the integrated planning of greenway routes and the construction of landscape sketches, the original street is rebuilt and designed to add new greenway space to the city.

Combining the greenway landscape with the humanistic features of the city, the historical and cultural elements of the city are integrated into the landscape design, avoiding the similar phenomenon with other green space styles. The newly constructed greenways in the mountainous cities can reflect the contents of the city's humanities through the facilities such as the landscape wall, and further draw in the garden chairs to present the greenway style full of the city's humanistic characteristics.

5.3. Enhance the functionality of spatial layout

The main function of urban greenway is leisure and recreation. Most of the greenways in mountain cities are limited in size and the space layout should be more compact. The greenway with weak function is not suitable for the unique terrain of mountainous cities. Greenways should play the most practical value. In order to improve the utilization rate of greenways in mountainous cities, it is necessary to set up a functional area such as an entrance distribution square and a trailing area inside the greenway. The functional area is rationally distributed at the greenway planning site to enhance the ecological benefits of the greenway. The square area inside the greenway can meet the needs of users in different activities in the square.

The ecological leisure area accounts for a large proportion in the greenway, and a large number of green spaces and trees and shrubs are reasonably matched to meet the needs of users for walking and leisure. In the relatively flat terrain section, a cycling track area can be set up to facilitate users to run and do other activities. Physical fitness zone can provide users with a variety of fitness methods, attracting more middle-aged and elderly users to visit. The construction of the personal leisure area can alleviate the problem of long-term stay of the users. The establishment of facilities such as children's sandy land and children's fitness equipment can enhance the interaction between parents and children.

5.4. Improve public supporting facilities

In urban greenway design, people-oriented design concept should be fully embodied. The public facilities in the greenway should be fully furnished. It is necessary to combine the natural landscape of the greenway and design in terms of the number and form of public facilities. The greenway should be a linear space. The bathroom settings should be evenly distributed across the sections. Enough garden chairs and trash cans should be set up in sections where users often stop and the parent-child leisure section. Greenways in mountainous cities often change in elevation, so it is very important to set up signs. The style and shape of signs can be unified with road lamps.

Among the greenway users are the disabled, infants and so on. Barrier-free design should proceed from the actual needs. Handrails should be installed on slopes, pavilions and steps. Dedicated blind roads should be set on the main garden road. All barrier-free facilities in the greenway need to be ergonomic to reflect the humane care of the greenway.

6. Conclusion

This paper mainly studies the evaluation of the use of greenways in mountainous cities, and conducts research in conjunction with the case of greenway in Chongqing. Based on theoretical knowledge, this paper analyzes the concept of greenway in mountainous cities in detail. Because of the special ecological environment of mountainous cities, there are fewer successful cases. This paper takes the greenway in southern Chongqing as a case study, and evaluates the users' satisfaction with the greenway by investigating the usage status of the greenway. It is hoped that the greenway planning, artificial landscape and cultural connotation are studied from the perspective of users. The research will be used for the future improvement of greenway, and provide a reference for the design of greenway in mountainous cities.

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