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Mountain Forest Scenic Landscape Greenway Construction

-Take the design of landscape greenway project in qiliping south area of emei banshan as an example

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Abstract: This article summarizes the characteristics of the landscape greenway design of the mountain forest park by expounding the concept and characteristics of the landscape greenway in the mountain forest park, that is, the mountain greenway is different from the urban greenway, and the particularity of the mountain environment makes In the planning and design, it should focus on various aspects such as terrain, space, slope, material and ecological protection. Taking the landscape greenway design project of Qiliping South District as an example, combined with the background of the project site, the status quo and the analysis of outstanding cases at home and abroad, the planning and design of the project should focus on the selection of line, landscape node, ecological material and greening. Based on this, we will make recommendations on the construction, implementation path and design of the landscape greenway in the mountain forest park.

Keywords: Landscape greenway; Mountain forest park; Nature and ecology; Qiliping for mount emei

1. Introduction

Landscape greenway is one of the important sub-items of the overall construction of the project. It not only has the transportation function of connecting the groups and scenic spots of the scenic spot, but also has the ecological environment function of creating cultural landscape and responding to the natural environment. The diversity and complexity of the recreational functions, which meet the needs of tourists to participate, put forward higher requirements for greenway design. At present, there have been relevant studies and cases on the design of greenway in scenic spots at home and abroad. For example, cheng jun (2011), taking the inner ring road of zhongshan cemetery scenic spot as an example, proposed that road construction in scenic spots should focus on the protection of nature and ecological environment and humanized design [1]. Huang chao (2009) took feiguang avenue in jiuhua mountain as an example and proposed that the design of landscape roads should be combined with regional landscape resources to create a stable ecological environment, take the road of sustainable development and realize a virtuous cycle of road landscape construction [2]. Chen yan (2009) et al. proposed that the design of scenic roads should be people-oriented and easy to use in terms of the classification, traffic composition and characteristics, vehicle speed, landscape and aesthetic requirements of scenic roads. Greenway design should combine the integrity and functionality of landscape [3]. Taking fuzhou gushan greenway network planning as an example, zheng bin (2014) proposed that mountain greenway should focus on the relationship between line selection, landscape node, material and greening [4].

However, few existing research and design cases focus on the study of greenway design in mountain forest scenic spots. Mountain forest scenic spot is a scenic spot built for people to have a holiday, rest and visit with large area of artificial forest or natural forest as the main body on the mountains with a certain altitude and more winding and undulating terrain. It is distinguished from other scenic spots by its large area, relying on mountainous areas with one or more ecosystems and unique forest natural landscape [5]. It has the characteristics of distinctive natural landscape, rich vegetation and complicated ecological balance system. Some mountain forest scenic spots also have unique regional historical and cultural landscape, as well as special topographical landform and cultural landscape. These factors determine that the mountain forest scenic spot landscape road construction should also be different from other scenic spots. Therefore, this paper takes a typical mountain forest scenic greenway "landscape greenway project in south qiliping district of banshan emei mountain" (hereinafter referred to as landscape greenway) as an example, aiming at combining similar cases at home and abroad, to put forward the key points of landscape greenway construction in mountain forest scenic spot, and provide reference for other similar design projects.

2. Project Background, Field Investigation and Similar Typical Case Analysis

2.1. Project background and field research

Qiliping forest scenic spot is located in gaomiaozhen, hongya county, meishan city, sichuan province, at the junction of emeishan city and meishan city. It is about 1300m above sea level, 3.5km away from the "zero-kilometer" scenic spot of mount emei and 26km away from the "jinding" scenic spot. It is 58km away from the national forest park, with a sea area of about 1300m. It covers an area of 12 square kilometers, with a forest coverage rate of over 90%. The average annual temperature is 18°C.

Through field survey, investigation and analysis, it is found that the site of the project has the following characteristics :(1) the terrain is rich and varied, the elevation difference of the site is 4-5m, and the terrain is complicated and zigzag, including up and down, flat and spacious, cliff, slope retaining wall and other four types of terrain. (2) the route passes through three good scenic spots, overlooking the unique sea of clouds and jinding of mount emei. According to this, appropriate scenic spots can be set up to borrow the scenery of mount emei, so that the project landscape can be extended; (3) the site vegetation is well preserved, with abies emei as the main body, and the overall ecological environment is better; (4) in order to meet the requirements of the greenway elevation design specification, the excavation surface of the part of the mountain where the greenway runs shall be excavated to form the excavation surface, resulting in the hidden danger of unstable slope and landslide; (5) the greenway connects the three groups of H3, F5 and H1, and meets the two main roads in the scenic spot, so the traffic environment is complicated.

2.2. The analysis of similar typical cases

2.2.1. Landscape greenway project of Qin Jingze forest hot spring resort area

The project is located on a plain in the southern foothills of asakama, one of Japan's largest and most active volcanoes, northeast of Tokyo. About 1000m above sea level, mount emei is similar to mount emei. It is also a famous summer resort in Japan, with a pleasant natural environment. It is known as the "back garden of Tokyo". In the mountain forest greenway construction, the design concept of combining nature, life and culture was put forward. In landscape construction, attention is paid to integrate buildings, roads and other artificial projects into the natural environment. Green way line design, the series of thousand dragon waterfall, wild forest and near a stream yukawa attractions, such as formation of twists and turns and rich life path, let visitors while walking in nature, can also be built along the way to visit the mountain, such as art museums, the memorial of the forest landscape architecture, enjoy the culture.

2.2.2. The renovation project of landscape road in Canada's huangshan park

Olmsted, the landscape architect of the project, proposed to integrate the mountain's own characteristics into the planning and design of the area. The landscape greenway construction project was organically combined with the site topography, hydrological characteristics and vegetation, and the original natural environment and cultural factors were rearranged to reshape the road landscape. In terms of the shaping of greenway, the original landscape road system in the site was modified, the recreation path was redesigned, and the original guillotine was rearranged to create a new circular road. In the use of road materials, a large number of local wood, granite and other materials, to save the cost, reduce the disturbance to nature. In terms of ecological hydrology and water treatment, a large amount of runoff is allowed to pass through the region, promoting the formation of biodiversity communities. In order to improve the ecological value of landscape roads and ensure the safety of tourists, measures such as replanting of local plants and creating migration channels for animals are adopted, so that the migration of animals and the passage of tourists do not interfere with each other, protecting the ecological environment and harmoniously co-existing natural and human activities.

2.2.3. Enlightenment of cases

The greenway construction in the above two cases is mainly based on the following points: first, take measures according to local conditions, combine the terrain of the site, the surrounding environment and other factors, reasonably design the greenway line, set up scenic spots, landscape architecture and other supporting facilities. Secondly, we should respect nature and combine with ecology. As far as possible, the greenway should avoid the existing forest land, water source, animal habitat and other ecologically sensitive areas. In the form of road structure, the pavement should be paved with elevated base or gravel, wood chips, etc., so as to reduce road hardening and ecological damage and ensure soil and water conservation. Third, the use of materials in the use of native materials, local materials, reduce the cost.

3. Landscape Design Concept and Planning Design

Through field reconnaissance, similar to a typical case analysis, confirmed: "respect, adjust measures to local conditions, based on the nature of ecological, cultural landscape for the soul" the design theme, that is: don't destroy the ground vegetation, to reduce ground excavation disturbance, and USES the local native plant species,

restore vegetation or landscape landscape, landscape material use natural materials, such as the local stone, wood chips, local materials, make the greenway landscape with local characteristics, reduce cost and low carbon environmental protection; Add bike paths and fitness paths between the trees to make the greenway more versatile and interesting.

3.1. Landscape design concept

3.1.1. Ensure the ecological nature of the landscape

In the design of landscape greenway, the trees of "DBH">30mm in the site are marked and protection measures are put forward in the design. In the design of greenway elevation, measures should be taken according to local conditions to reduce the construction volume. Local native tree species were used to restore damaged vegetation on the site. In the design scheme of this project, the special description of engineering implementation measures is put forward, and the protection of the original ecological environment of the site during the construction process is included in the hard and fast provisions.

3.1.2. Combine environment to build reasonable landscape effect

In terms of landscape construction, the unique cultural characteristics of qiliping in emei banshan, where the greenway is located, are integrated -- "leisure, fitness and health". Through project design within the scope of the landscape construction and external borrow scene, the project on the emei mountain scenic area in the environment to consider, using landscape green road walk line passes through the observation, by setting the observation deck, station, half-way house, to borrow scene gimmick to jinding and landscape include such as sea of clouds, be landscape view of the project itself to extend, the emeishan humanities, natural landscape, and the project.

3.1.3. Pay attention to tourists' recreation and experience

There are many functions of the landscape greenway, including the function of connecting the traffic of each group, as well as the landscape experience functions such as viewing, leisure and recreation. On the road line selection design combined with landform and part of the deep primitive forest recreation trail, together with the present situation of terrain, mountains and the observation conditions, appropriate setting for visitors to stop, stop, observation, the rest of the site, on the road node set, combined with the characteristics of regional culture landscape sketch, such as the hut, water trucks, tools, such as the local agricultural characteristics of objects and elements of landscape sketch "zen culture", such as wash one, both, drinking fountains, allow tourists to visit in the process of road traffic, have a rest, feel the fun of nature, the terrain change, experience the cultural atmosphere.

3.2. The plan of landscape

3.2.1. The master planning of landscape-- three axis, two belt, four nodes

The three axes are the three landscape axes of vehicular roadway, sidewalk and recreational road. The main axis is vehicle-way, connecting road nodes, and the two axes are sidewalk and recreational road, mainly allowing tourists to stroll and enjoy the scenery. The two belts are the landscape belt of vehicle-way and the landscape belt of pedestrian and recreation road. The four nodes are the traffic circle node formed at the starting point of the greenway (figure 1), the traffic node formed by connecting the F3 yunting group and H5 yunyi group and the Hilton Hotel node at the end of the greenway.

Figure 1. The traffic roundabout node at the beginning of the greenway

3.2.2. Terrain treatment - appropriate for local conditions, appropriate for the scene

Terrain treatment is the key point of greenway design. Road line selection goes through complicated terrain. Due to the restrictions of road longitudinal slope, part of the mountain needs to be excavated to form the excavation surface with large height difference and steep slope (figure 2, figure 3). In order to prevent landslide, soil and water loss, landslide and other geological instability of the excavation surface, and to consider both landscape and ecological effect, the slope protection treatment was carried out with ecological planting grass belt, and the top soil reinforcement and bare soil cover ecological treatment were carried out on the slope top with climbing plants to stabilize the whole excavation surface. Dotted with spherical shrubs planted along contour lines, local stones with a diameter of 800mm~1200mm were embedded in the slope surface to stabilize the landscape.

Through the above measures, the excavation surface was formed into a stable ecological slope protection (figure 4), with good landscape effect.

Figure 2. Mountain excavation face

Figure 3. Mountain excavation face 2

Figure 4. Perspective of ecological slope protection treatment

3.2.3. Traffic planning -- landscape traffic organization

The whole greenway design system is divided into vehicular roadway, sidewalk and recreation path (figure 5) with a total cross-sectional width of 9m. The carriageway is the main line and skeleton of the whole greenway, with a design speed of 20km/ h. Its routing is the backbone of the traffic system of landscape greenway. In the design of vehicular roadway, it is necessary to design routing according to local conditions in combination with the site elevation. On terrain processing, on the premise of meet the maximum longitudinal grade standard, in the position of the two-way lanes terrain differences let roadway have some ups and downs, according to the terrain separation zone set up the path, every period of about 300 m long separation zone, in which each interval of 100 m left blank, for the pedestrian crossing the street and turn around, and solve the traffic road two-way difference, through plants show different color, the seasonal changes create a different theme. The quantity of excavation and filling is saved and certain landscape is formed.

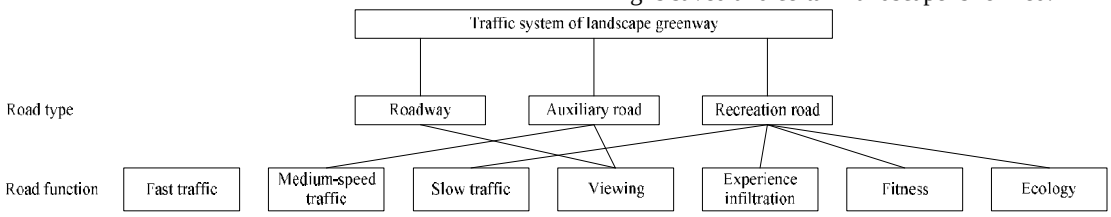

Figure 5. Transportation system diagram

The sidewalk runs parallel to the roadway, separated from the roadway by 1m - 2m wide green belts. Stop points or observation platforms are arranged at intervals of 500m~1000m on the sidewalk, and seats and automatic water dispenzers are set for tourists to rest and enjoy the view. It is also combined with sightseeing stations, bike-sharing stations and charging stations for new energy vehicles.

Recreation type road design to satisfy tourists sightseeing, recreation, experience is given priority to, the function of on line selection design, suit to landform, topography, winding roads, or climbing a hill, or plummet, or Bridges, or been, is one of the most interesting in the green channel system of roads, let visitors embarked on the road, feel the fun, fully realize the QiLiPing scenic picturesque (figure 6).

Figure 6. Recreational road design drawing

3.2.4. Plant configuration and vegetation restoration - retain the original vegetation and highlight the mountain features

In terms of plant configuration design, the local plant varieties were adopted, and the grass seeds configured on the base slope of artificial excavation face were mixed and matched with rye-wheat winter in cold season and no. 2 in warm season in Taiwan. The slope adopts the bulbous shrub, the red flower, the gold leaf privet, the lobular privet, the haitong bulb and so on several plants collocation processing. The trees on both sides are planted with the local tree species of hibiscus, dangui and camphor.

3.2.5. Use of hard greenway materials

The project site is rich in resources. During the greenway implementation, local materials are provided without damaging the ecological environment of the site. For example, a large amount of basalt gravel in the project site is used as the main paving material, surface layer and base course. Fracture, fallen trees, sick and dead trees, etc. in the site are used as landscape materials.

4. Conclusion

The construction of landscape greenway in mountain forest park should take into account the characteristics of high elevation, large slope, complicated and changeable geological terrain, insufficient open space and high ecological protection requirements. In terms of design, first of all, we should respect nature, rely on nature and adjust measures to local conditions. For this kind of project, the construction land is limited by terrain, and the site terrain is complex, often including mountains, woodlands, lakes, hills, etc. It is difficult to implement according to the standard mode, which will affect the overall layout structure and development direction of greenway. Its function should not only meet the passing function of standard design, but also lay out the road direction rationally according to different topography and landform, emphasizing the participation of tourists. For example, the design of landscape greenway in Canada's huangshan park reduced the engineering earthwork, saved the engineering cost, avoided the destruction and impact of natural landform and vegetation in the scenic spot, and was conducive to the protection of the original ecological environment. Secondly, the use of landscape materials should be based on local materials, such as the road surface paving materials as far as possible to choose local materials or wood chips, gravel and other permeable materials. In the selection of plant varieties, local native tree species are taken as the main body to supplement some plant varieties that adapt to the local altitude climate and ecological environment and can well adapt to the growth environment, so as to increase the survival rate of plants and reduce the cost of plant conservation. The principles of ecology, landscape, uniqueness and participation are realized, which are embodied by the design methods of road routing, terrain treatment, plant configuration and material application, so as to organically combine the functions of vehicle transportation, pedestrian transportation and recreation.

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