

Difference Between the Urban Road Landscape Design and the Highway Landscape Design

Chen Yiling*, Jia Ying**

* (Department of Road and Railway Engineering, Chongqing Jiaotong University, Chongqing 400074, China)

** (Department of Road and Railway Engineering, Chongqing Jiaotong University, Chongqing 400074, China)

ABSTRACT

With the grade highway construction has entered a rapid development stage, the negative impact of road construction on the natural environment has received increasing attention. In the urban road construction, sight design is an indispensable part. Combined with the landscape design's principle, concept and the concrete design method, this paper analyzes the difference between the urban road landscape design and the highway landscape design.

Keywords: Landscape Design; the Urban Road; the Highway; Design Principle

I. INTRODUCTION

In recent years, with the continuous improvement of the road system, the negative impact of road construction on the natural environment has received increasing attention. According to the requirements of the sustainable development, a highway construction must try to reduce the destruction of environment. And environmental protection, landscaping, history, culture and other factors should be comprehensively considered so as to achieve the road become a new bright spot of the natural landscape.

The urban road and highway landscape design is also different. The different roads, their landscape design principles, design idea and concrete method is also differ from. By using cases in our life, we analyze the difference between the urban road landscape design and the highway landscape design from these aspects.

II. DIFFERENT LANDSCAPE DESIGN PRINCIPLES

2.1 PRINCIPLE OF URBAN ROAD LANDSCAPE DESIGN

Urban road landscape design is an important part in sustainable construction strategy. To promote economic development and population, resources, environment coordinated development. The landscape design should pay attention to the following principles.

1. Ecological principle

Urban landscape environmental protection should adhere to the ecological priority, to ensure that biological diversity, as well as to constitute a natural landscape. So on the one hand, urban construction should protect the natural resources of

the city, on the other hand, we have to make up for the inevitable destruction of the natural resources in the urbanization process, and establish the artificial ecosystem of the city, to ensure sustainable development.

2. Coordinative principle

We should coordinate the relationship between the ecological, social and economic benefits to ensure that the ecological benefits into full play, when we design the urban road landscape. While, we also should coordinate the multiple relations of protection and development, landscape and ecology, input and output, construction and maintenance, to ensure the sustainable development of greening system.

3. Service principle

Urban Road Landscape provides services to city residents, landscape design should reflect the concept people-oriented, and fully tap the city's profound historical cultural and geographical features, to meet the needs of all emotions, try to be natural scenery combined with planning the set.

2.2 PRINCIPLE OF HIGHWAY LANDSCAPE DESIGN

Highway is highly functional infrastructure, the specific road projects, has its emphasis on nature. Highway landscape design should be on the premise of meet the road traffic function premise, and according to their specific nature and purpose, combined with the climate conditions of the road along the route, the natural factors such as topography, ecological environment and history and culture, customs and habits in comprehensive consideration. To achieve the following main aspects.

1. Adjust measures to local conditions, reduce the damage to the natural environment.

Combined with the existing rock outcrops as far as possible. When we were in highway construction, we would pay more attention to avoid deep fill and deep dig and severe ecological environment space or visual landscape space to make the highway fusion with the surrounding environment.

Consider the traffic psychological demands and visual effect of passengers and drivers.

Safe and comfortable is an important goal of highway landscape design. Therefore, when design landscape, we should take full account of the visual space, color and size of the safety facilities, diversity of road feel, visually oriented and visual continuity of traffic psychological factors.

Distinctive style and has a slight change below the premise of unity.

Highway generally across different regions. So we can fully combined with regional characteristics and cultural characteristics to create the road landscape with a distinctive style. It also makes drivers and passengers in a good traffic environment.

III. DIFFERENT LANDSCAPE DESIGN IDEAS

3.1 URBAN ROAD LANDSCAPE DESIGN IDEAS

According to the characteristics of the urban road landscape design, we propose three central concepts.

Road grading landscape and the volume elements of landscape controlled concepts.

First we control the traffic channel width and construction landscape scale. Second, we control the manner and speed of traffic and landscape scale. Third, fully considerate cultural characteristics and aesthetic characteristics when we design.

2. The relationship of geopolitical landscape, urban planning form and urban visual axis point concept

First, we consider how to control the city planning area and surrounding land characteristics of roads to make the landscape Planning and Design of the road into the city overall planning.

Then, fully consider the road combined with green, city squares, and other public green landscape when we design the road landscape, making the road landscape and local urban public landscape more coordination and integration. We can build a urban tourism and visual corridor construction, and deal with the relationship of landscape axis and dotted the landscape structure.

3. Ecological corridors and sustained growing landscape concept.

From the strategic perspective of sustainable development to consider the space between green belt along the road and building, animal and plant

communities along the road, the local ecological protection, how to combine with local regional cultural relic's protection and landscape, humane facilities and rest space, and so on.

3.2 HIGHWAY LANDSCAPE DESIGN IDEAS

1. Pay attention to the design of site.

landscape design should fully utilize the local environment and emphasize the harmony with surrounding city environment to form an overall design concept

2. Pay attention to the design of space.

Road landscape is composed of two parts, one is composed of some landscape element entities, another one is made of the physical space. Pay attention to shape the space structure and landscape pattern. We emphasize the design concept of space is better than the entity. And the integrated design of the visual space is carried out.

3. Pay attention to the design of timeliness.

The difference between the road landscape design and road engineering design is that the road landscape is changing with the seasons and time, it has life. So we should focus on shape a stable road landscape that can be updated over time.

4. Pay attention to the representation of regional landscape.

The so-called "regional" landscape, is the sum of a region's natural landscape and historical context. It including the climate, topography, hydrology, geology, historical, cultural resources and a variety of activities, behavior of people and so on.

5. Pay attention to the design of simplicity.

"Less is more", simplicity is not simple, but is a honest performance of the nature. Contracted design concept includes three aspects. First is the simple design method, the second is the simple expression, the third is a simple design goals.

6. Pay attention to the design of ecosystem.

We should strive to implement the concept of ecology in some specific design when we design, plan and construct the road. To adapt to nature, we should reduce blind artificial environment, reduce the cost of road landscape maintenance and management. And according to the characteristics of the region's natural environment, we also avoid the complete destruction of the original environment.

Combine with the design concept of nature.

In general, when design the urban road landscape, we should mainly consider the combination between artificial and natural. And the role of nature should be enhanced.

Pay attention to the design of science.

Landscape Design is a complex interdisciplinary subject which is involved in a wide range. So the road landscape planning and design should take a scientific and rigorous attitude. And we can study

each subject characteristics fully, use modern science and technology, emphasize on scientific design methods.

Pay attention to the design of individuality.

This concept is not encourage someones' individuals perversity or some ideas that divorced from reality, but it emphasize the individual unique understanding about the natural, social, ecological, art, history and so on. It also emphasize the individual unique understanding of road landscape's connotation and nature.

IV. DIFFERENT THE SPECIFIC METHODS

4.1 SPECIFIC METHOD OF URBAN ROAD LANDSCAPE DESIGN

4.1.1 LANDSCAPE DESIGN OF URBAN EXPRESSWAY

1. design of road in the form.

Due to the fast track is in the city, we should consider fully the traditional urban landscape when design its height, width in order to avoid to separate the traditional landscape and the surrounding environment.

2. design of architectural forms.

The size of the building should be harmonious with the expressway, it could use double scales.

3. design of road facilities.

The facilities of fast road include the illuminated sign, logo signs, message signs, guardrail, sound insulation board, etc. we should not only consider These facilities' function, but also should pay attention to the visual effect of expressway beautification and modification functions.

4.1.2 LANDSCAPE DESIGN OF URBAN MIXED TRAFFIC ROAD

If the main objective of the road is to ensure a smooth traffic, the landscape characteristics of the road in addition to meet the security, identification, appreciation, suitability, manageability, it also must provide convenience for people's demand.

When design the road form, we must first consider its security. So we could isolates motor vehicle and bicycle. When consider traffic speed, we can use a straight line. At this time, it is better that it has no features on the road. When design the architectural forms, we should consider the double scales of the people and the cars. When design the the configuration of the road facilities, we should set more Set deceleration flag, deceleration facilities and sound insulation facilities, in order to reduce the noisy. And these facilities should be coordinated with the overall environment. When design the green, it most on the sidewalk, we should take full account of the landscape effect that could change over time. We

can consider to the lawn, hedge, flower beds, trees, and other forms.

If the main objective of the road is to satisfy people's lives, there are all kinds of cars that the cars drive slowly and many people on this road. This road can be divided into three species, it include the street of residential, the street of commercial and the street of administrative office.

When design the road form, we must first consider the street space can meet the needs of activities. And we also consider the change of the street space accord to the characteristics of the streets' function. When design the architectural along the road, we should fully consider the cultural and historical of construction. When design the green, we should use less lawn, because there is more people than cars. Other forms of greening is suitable for use with flower beds, shrubs, etc. We also should consider the lighting effects of afforestation to make the green landscape won't appear dark at night.

4.1.3 LANDSCAPE DESIGN OF WALKING STREET

In order to reflect the characteristics of the bustling commercial pedestrian street, we should show its business atmosphere when we design the green. So we should not use tall trees, and the density of plant should be moderate. When design the facility, we should consider that if it is easy to use, if the model is unique, if it is barrier-free use, and to consider the various application requirements in the crowd. When design the floor covering, we should select different surfacing materials. For example, if we are live in northern cold regions, we should select the material that is poor water absorption and its surface is rough and hard. If we are live in south, where is hot and rainy, we should use the materials whose water imbibition is strong, surface is rough.

4.2 SPECIFIC METHOD OF HIGHWAY LANDSCAPE DESIGN

1. Design of highway alignment.

When design the road alignment and structure, we should ensure it is able to guide the sight of drivers and passengers, and to meet their requirements of the visual landscape. The route also should be in accordance with local topography.

2. Design of highway line selection.

When choose the route of highway, we should identify the distance between the one scenic to another. In order to avoid separating ecological landscape space or visual landscape space.

3. Design of the highway belt-shaped landscape.

When highway route through the valley and high roadbed, we have to fill roadbed. At this time, we must consider it may affect original ecological

environment of the valley, such as ventilation and sunshine. When highway route through the forest zone, we should strengthen the design of roadbed section. When highway route through the plains and water zone, we should reasonably determine the height of the roadbed. When the villages along the road are sparse and the lateral interference is few, it is better to use the low embankment scheme to pass through the area. When the source of smoke and irritant gasses presence along the roads, and it may affect the driver's sight and smell. The route should be laid upwind of the source.

4. Design of road greening.

When we design the medium separation area, it must be the goals to guide sight of driver, and to ensure light-shielding, anti-glare. The height and width of the green must meet the current regulatory requirements. The role of green belts on both sides is mainly for dustproof and sound insulation. Its role is also to coordinate road and surroundings. The coverage rate of slope greening is required higher, The green period is required long, So it is better to choose the local wild grass for greening. The vertical greening area can plant creepers to cover the construction and beautify the road.

5. landscape design of ancillary facilities

In the design process, We should combine with the terrain, environment and the characteristic of roads to research the best model of the ancillary facilities. We also should consider the other various aspects, such as the color, the composition and the visual. The pieces landscape design should be implemented, which can overcome the big piece of monotonous landscape.

6. Restoration and reconstruction technology of Highway landscape

For the recovery of highway landscape, It is mainly base on the premise that vegetation is restored to make it coordinate with natural. We can use the green vegetation to prevent the water loss and soil erosion, in order to improve the stability of roadbed slope, to recover the ecological environment and landscape environment which along the highway.

V. CONCLUSION

Road construction in our country is in a stage of development, the speed that we build the infrastructure also grows rapid. At the same time, we must take the ecological and environmental protection as an important task and powerful guarantee. We could combine its function and landscape to create a road which can meet the demand of the modern life. Then we can make the road possess the basic function of modern transportation, and also be a perfect art. At this time, we can get the conclusion that it will be the development direction of the road landscape design

to evaluate the road with higher standard of cultural and aesthetic.

References

- [1]. Xu Jia-yu, Urban Road Design[M], China WaterPower Press, 2005
- [2]. Japan Society of Civil Engineers, Road Landscape Design[M], China Building Industry Press, 2003
- [3]. Xiong Guang-zhong, Urban Road Aesthetics[M], China Building Industry Press, 1990
- [4]. Ding Ming-ji, Introduce the Urban Road Greening Design[J], Sci-Tech Information Development & Economy, 2003
- [5]. Shen Qing-ji, Urban Ecology and Urban Environment[M], Tongji University Press, 1998
- [6]. Wang Cui-hua, Highway Landscaping and Environmental Protection, Bei Jin, Ministry of Science and Technology Information, 1993
- [7]. Hans Lorenz, Road linear and environmental design[M], Beijing people's Press, 1988