

# The Analysis of Sculpture Lighting Design in the night Landscape

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**Abstract:** With the great accumulation of material accumulation, China's construction has received a baptism once, and the public landscape has been more mature in the baptism of the times. With the development of public landscapes, sculptures have gradually become symbolic symbols and indispensable in public landscapes. Based on the development of landscape lighting, this paper expounds the principles of garden landscape lighting design and puts forward the design method of sculpture lighting to make the design of sculpture lighting system more reasonable.

## 1. Introduction

“Wenlin Landscape Lighting” has the meaning of using art to create artistic re-creation of garden landscape, focusing on social, cultural and psychological spiritual leisure and aesthetic taste. The design meaning is to make visitors enjoy the scenery of Yulin more comfortably. The excellent landscape lighting design comes from the clear understanding of the garden landscape and the proficient application of lighting technology. It comes from the comprehensive processing of visual information and the deep accumulation of experience in the light environment. It comes from the interaction of two-way thinking and the art of harmony a comprehensive design of science. Now, with the gradual improvement of the construction level of the city's Zhoulinhua and the rapid development of the power industry, the landscape lighting business has undergone a major improvement. This paper makes a preliminary discussion on some basic problems encountered in the design of sculpture landscape lighting, in order to make the design of sculpture lighting system more reasonable, to maximize the effectiveness of its system [1].

## 2. Lighting design principles of landscape sculpture and sculpture

### 2.1 The principle of artistic.

Landscape sculpture lighting is a lighting system that integrates functional lighting and decorative lighting. The landscape lighting design should be consistent with the whole garden planning, and make full use of modern lighting technologies such as light and dark, virtual and real, light and shadow, motion and static, cold and warm to show a garden night landscape with different daytime scenery [1].

### 2.2 Principles of cultural characteristics.

The geographical position of each country and nation is different, the level of social and economic development is different, the history and culture are different, and people's aesthetic psychology and aesthetics are different. Similarly, the aesthetics of people in different regions are also different [2]. Therefore, in the design of landscape lighting, we must fully consider the preferences of people in different regions for light intensity and color.

### 2.3 Security principles.

In the landscape sculpture lighting system, many lamps are placed on the ground or off the ground, and can be touched [1]. When the lamps are selected, human damage and safety performance should be considered, and lamps with higher protection level should be selected. In addition to considering the insulation performance of lamps and cables, it is better to use a safe voltage for the power supply.

## **2.4 Feasibility principles.**

The feasibility of landscape sculpture lighting includes technical feasibility and economic feasibility. Technical feasibility should consider the effects of lighting, the reliability of the installation of the luminaire, the safety of the operation and the ease of maintenance [2]. The economic feasibility should be analyzed from the life cycle cost analysis, analysis of the construction cost and operating cost of the landscape sculpture lighting system, and reasonable selection of lighting and lighting methods.

## **2.5 Principle of coordination.**

The coordination of landscape sculpture lighting design should include the coordination of the following layers. The coordination of landscape sculpture lighting and garden scenery style [3]. The entire landscape sculpture lighting is coordinated with the surrounding environment.

## **2.6 Environmental principles.**

In the process of landscape lighting design, the principle of environmental protection should be reflected. In general, landscape lighting has the least impact on the ecological environment. The use of energy-saving lamps, energy-saving control technology and other measures to reduce energy consumption, to achieve low-carbon landscape lighting. Reasonable choice of light intensity and light color to reduce light pollution [3]. According to the types of plants and insects, the light intensity, light wavelength, light color and illumination time are reasonably selected and controlled to avoid or reduce the influence of light on plant flowering and pest trapping.

## **3. Problems in the development of landscape lighting construction**

### **3.1 Night landscape design is out of touch with urban design.**

Urban night lighting is a relatively complete system engineering. The overall planning is formulated. According to the overall development control plan, construction can avoid the concentration of funds surrendering, the brightness distribution is unreasonable, the color matching is not coordinated, the personality characteristics are not prominent, and the construction technology is not Norms, the shape does not form a whole pattern and other issues [4].

### **3.2 The main body of the city night lighting environment is seriously misplaced.**

Under the slogans of “lighting engineering”, “glorious engineering” and “light engineering”, some cities pay too much attention to the status of “light” and “light”, and some even put forward the status of “lighting body”. The function of night lighting is not to brighten, but to create a living environment that reflects the urban night environment and is beneficial to the public's physical and psychological environment [5]. The basic starting point is to create a leisure environment and create a different color of leisure space for different groups of people, reflecting.

### **3.3 Light pollution problems.**

The lights have illuminated our lives and beautified our city. However, Paris, Tokyo and Shanghai, which are known as the city that never sleeps, are indeed beautiful, but the light pollution caused by night lighting has affected people's lives and health [4]. The high-intensity lamp brightens the interior and affects people sleep quality.

## **4. Sculpture landscape lighting design method**

### **4.1 Design positioning analysis.**

What kind of urban night landscape is designed is the first question to be answered in shaping the image, and it is the most fundamental problem. No matter what kind of urban design activity we carry out, we must first think about it [5]. Then is how to design and design the implementation.

## **4.2 Ways and means of determining performance.**

The performance of landscape lighting should be expressed around the theme, in the form of simile and metaphor, with direct and indirect lighting methods. After determining the way of performance, it is necessary to give the shape effect and arrange the elements in space. With the development of lighting technology, various means and methods are provided for urban landscape lighting. For example, common lighting methods include face-light floodlighting, contour lighting, internal light-transmitting lighting, silhouette lighting, fiber optic tube, small string lighting, laser holographic stereo lighting, and the like [6]. Through these lightings, the best perspective for inducing visitors and the fascinating effects can be achieved. There is no general mode for the selection of the method. It depends on the specific situation of the subject, and the appropriate method is selected according to the function, characteristics, style and surrounding environment of the object.

## **4.3 Create a light and shadow atmosphere.**

The landscape lighting uses monochromatic light and multi-color light, with high brightness and low Chroma. In terms of color matching, the night scene lighting shows the various night scenes with different needs through the visual, psychological and emotional effects of color, intimacy, warmth, solemnity, distance, lightness and weight.

## **5. Sculpture lighting application in night landscape**

Modern sculpture is one of the elements that make up a city, with the same elements of urban architecture, greenery and essays. The construction of the public environment of the city reflects the degree of civilization of a city. Modern sculpture is an important part of the public environment and has become one of the symbols embodied in urban civilization. At the same time, the degree of urban civilization has profoundly affected the construction of this public environment. It affects the development of modern sculpture in the public environment of this city, and is an important starting point for the creation and design of modern sculpture.

### **5.1 Sculpture lighting and lighting design.**

Sculpture lighting design mainly uses narrow beam flood lighting design method, LED floodlights are installed on the ground, the choice of lighting focus depends on the type and appearance of the sculpture, floodlight. The purpose of lighting design is to illuminate the whole sculpture, but the lighting is not uniform. The skill of sculptural lighting design relies on the difference of brightness between light and shadow and various parts, highlighting its shape and body, and avoiding the sight of the tourists [5].

Regarding the design of the position of the lamp, the following three requirements should be met: the first is to ensure the illumination projection needs, the second is to be as concealed as possible, and the third is to avoid the occurrence of glare.

Low-profile sculptures generally use a wide beam of floodlights; towering sculptures require a narrow beam of spotlights.

The installation position can be carried out by using buried lights and peripheral high-beam projections, or installing small-sized floodlights in the sculptural structure belt, and paying attention to the concealment of the lamps during installation.

The lighting technique should be combined with the structural form and material of the sculpture body. Appropriate use of light is the basis for a good lighting effect. A simple geometric stone structure like the Egyptian pyramid is the most feasible means to implement floodlighting from a long distance.

### **5.2 Two-dimensional sculpture lighting design.**

For two-dimensional sculptures, such as ancient building walls and ancient stone monuments, there is generally only one angle of appreciation. The specific lighting design method needs to be determined according to the lighting theme to be emphasized. If the illuminated sculpture has some unique textures, using a close-range "tangential" illumination technique can create a dark surface in

the texture, creating a better three-dimensional effect, as shown in Figure 1. If the main emphasis is on the pattern or appearance of the sculpture, the LED floodlights are generally used to wash the sculpture as a whole.



Fig.1 Two-dimensional sculpture lighting design

### 5.3 Three-dimensional sculpture lighting design.

Three-dimensional sculpture lighting should consider its multi-angle, such as three-dimensional statues, structures. Light illumination from different directions and with some variation should be used to form a basic contrast between light and dark and a sense of three-dimensionality, as shown in Figure 2.



Fig.2 Three-dimensional sculpture lighting design

The multi-line angle provides a broad choice for the sculpture night scene creation, and can create different visual effects in different positions in the lighting design. Whether it is a three-dimensional sculpture or a two-dimensional sculpture, the brightness of the object should be reasonably determined, the appropriate contrast should be maintained with the background brightness, and the lighting scheme and the lighting method should be determined according to the theme of the sculpture, the posture, and the reflective characteristics of the surface material.

### 5.4 The lighting design of the environment in the sculpture.

Various forms of sculptures appearing in landscape sculptures, such as stone monuments, landscape walls, statues, structural pieces, etc. Lighting should start from the characteristics, appearance, materials, colors and surrounding landscape of the sculpture [6]. It should be cast from the top to the bottom. It should not be evenly illuminated from the front. This can create a true, radiant and three-dimensional illumination effect. Reasonable determination of the brightness of the object should maintain the appropriate contrast with its background brightness; and should determine the lighting scheme and the choice of lighting according to the theme of the sculpture, the volume, and the reflective properties of the surface material, as shown in Figure 3.



Fig.3 Lighting design of the surrounding environment of the sculpture

### 5.5 The iconic sculpture landscape lighting design.

The scenic landmark sculpture adopts appropriate illumination and color lighting facilities to form a rich visual layering, creating an elegant night atmosphere of the scenic spot, ensuring the artistic realm and pleasant atmosphere of the scenic spot, adding to the scenic night tour. The new charm, as shown in Figure 4. The brightness of the landscape should be appropriate to the dynamic and static functions of each scenic spot. It should not be saturated and swayed everywhere, avoiding the pollution of landscape intrusive light sources, the electric radiation pollution of plants, the light pollution of the ecological environment of animals and plants and the glare-hidden dangers of road traffic safety in the park.

When illuminating it that should not affect the shape, pattern, color and material of the sculpture itself, and show its morphological beauty, and should be in harmony with the surrounding landscape. Lighting should start from the characteristics, appearance, materials, colors and surrounding landscape of the sculpture. It should be cast from the top to the bottom. It should not be evenly illuminated from the front. This can create a true, radiant and three-dimensional illumination effect.



Fig. 4. Iconic sculpture landscape lighting

## 6. Summary

The work of Chinese landscape sculpture and sculpture lighting has just started, while there is still a gap between the practice level and the international level. For the complicated work of landscape sculpture lighting system, in addition to borrowing the stones of other mountains, more depends on the continuous efforts and exploration of landscape lighting workers themselves. Only in this way can we create a kind of suitable for China's national conditions, with our own unique landscape lighting culture.

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