

LETTER TO THE EDITOR

Landscape Layout Design of Residential Environment Based on Landscape Ecology

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The increasingly prominent environmental problems have a certain impact on the sustainable development of human society. In order to reduce the carrying capacity of the environment and do a good job in basic ecological environment construction, it is necessary to introduce ecological theory into the landscape design of urban residential areas. In the process of landscape design of urban residential areas, many objective factors need to be considered. Through relevant measures, the influence scope of these factors can be minimized. The design idea of landscape ecology can guide the problems in the process of landscape design of urban residential areas, and make the final design meet the requirements of relevant regulations both in theory and in practice. In this paper, landscape ecology of urban residential landscape design ideas will be discussed in depth.

Landscape; ecology; residential area; landscape layout

1 Introduction

Residential areas play an important role in all the components of urban buildings. With the continuous reform of the real estate market management system, the overall economic strength of real estate enterprises has been greatly improved, making their strategic investment scope further expanded. At the same time, in the face of the increasingly mature housing market, developers in the face of fierce market environment, through taking necessary measures to timely adjust their work ideas, increase their competitive advantages, expand the overall scope of operation. Among them, doing a good job of landscape design in residential areas has an important impact on the increase of economic benefits of real estate enterprises (Fan et al 2017)

Zheng Xie published a paper entitled “Key Factors Influencing Landscape Design in Informatized Urban Development” on Issue 107 of Ekoloji in 2019. This document on urban development strategy is the need of urban development as a whole. In this study, the residents of Shandong Province were taken as the research object, and the questionnaire survey was conducted. In this study, there are 500 questionnaires. A total of 382 valid questionnaires were collected with a recovery rate of 76%. The results are as follows: (1) In the second level of assessment, the most important thing is “ecological principle”, followed by “consideration principle”, “applicable principle”, “economic principle” and “economic principle”. (2) The five most valuable indicators in the 15 evaluations are: reducing impact, improving environment, characteristics, environmental trends and supporting greening. Based on the results, it is suggested that the National Statistical Bureau should implement environmental planning and overall design through sound planning, and improve the overall quality of the

environment in order to promote sustainable development. On the basis of this document, the layout of residential environment landscape based on landscape ecology was designed.

2 Idea Description

2.1 The definition of ecology

Ecology: The study of the relationship between organisms and their surroundings. The existence, activity and reproduction of organisms need certain space, material and energy. In the process of long-term evolution, organisms gradually form special needs for some physical conditions and chemical components of the surrounding environment, such as air, light, water, heat and inorganic salts. Various organisms need different substances, energy and physical and chemical conditions, which are called the ecological characteristics of species. (Celik and Sakin 2017) With the expansion and diversification of human activities, the relationship between human beings and the environment has become more and more prominent. Therefore, the scope of modern ecology research has been extended to the complex system of various ecosystems, including human society, in addition to biological individuals, populations and biological communities. The population, resources, environment and other major problems facing mankind are the research contents of ecology (Martens and Nawrot 2018).

2.2 The Ecological Concept of the Landscape Design of the Residential Area

2.2.1 Maintain a certain degree of coordination with the natural environment

With the concept of “low-carbon economy” put forward, consumers in the process of choosing housing areas, in addition to considering housing prices, the landscape design of residential areas also attaches special importance. In order to highlight the ecological concept of residential landscape design, designers need to fully consider whether the design idea is in harmony with the natural environment. Landscape design of residential areas is to achieve the ultimate goal of coordination between all residential areas and the natural environment. The main purpose of this ecological concept is to reduce the impact of human activities, improve the ecological quality of residential landscape, make the landscape design of residential areas reach a certain advanced level, and create a good living environment for people (Su 2017).

2.2.2 Maintaining the Balance of Ecosystem

The landscape system of residential area has the characteristics of exploitation as a whole, which is relative to the ecosystem of nature. This openness objectively determines that the residential landscape must maintain the balance of the ecosystem in the specific design. Urban buildings occupy a large area, affecting the normal growth of surrounding green plants (Li 2017). When there are some problems in the biological structure and diversity of the internal ecosystem, the self-repairing ability can not guarantee the balance of the whole system. In order to restore the original function of the ecosystem, all the components of the internal ecosystem can maintain their normal living conditions, it is necessary to absorb a large amount of material and energy from the outside world, only in this way can the balance of the whole ecosystem be maintained. Therefore, to do a good job in landscape design of residential areas, it is necessary to make a comprehensive analysis of the existing ecosystem problems, bring scientific reference ideas for the follow-up design work, and ensure that the final design plan can highlight the ecological nature of residential landscape (Li 2017).

2.2.3 Highlight the diversity of residential landscape

The distinct ecological characteristic of residential landscape is that the landscape is too single and the overall structure is relatively closed. These disadvantageous situations not only affect the normal life of residents, but also fail to play the practical role of landscape ecosystem. The main factors contributing to this disadvantageous situation are as follows:

- (1) Because of the shortage of urban land, the area and components of landscape design are restricted to some extent in the actual planning process.
- (2) In the process of planning and construction of residential areas, building blocks and green space blocks constitute the main part of the residential landscape, reflecting the simplicity of the landscape content;
- (3) The objective facts of road construction and buildings in residential areas occupy most of the planned area of residential areas, making the landscape of residential areas too closed, affecting the effective play of ecosystem-related roles.

3 Design Principles of Environmental Landscape Layout in Residential Areas Based on Landscape Ecology

Based on the related concepts of landscape ecology, the residential landscape must follow certain principles in the specific design process. The main purpose of these principles is to highlight the ecological effects in landscape design, to prevent deviations in the design work and to influence the ecological role. These principles include:

- (1) The principle of integrity; in order to reflect the characteristics of residential landscape, it is necessary to adhere to the principle of integrity in the design process. This is mainly determined by the overall spatial structure of the city. The existence of residential landscape makes these areas have certain ecological functions. The ecological residential area is an important part of the urban spatial structure, which needs to maintain a certain degree of coordination with the spatial layout, cultural and historical details of the city. Therefore, residential landscape design needs to adhere to the principle of integrity;
- (2) Principles with certain ecological effects. The concept of this principle is similar to the ecological principle, which emphasizes the importance of harmonious coexistence between man and nature. Residential landscape design needs to adhere to such principles, which can effectively reflect its own local characteristics. At the same time, adhering to this principle also needs to do a good job in the design of artificial landscape.
- (3) Community diversity principle. The ecological effect of residential landscape objectively reflects the importance of community diversity. Following such principles in the design process is conducive to ensuring the stability of the ecosystem and making the layout of the landscape more scientific.

4 Landscape Design of Residential area based on Landscape Ecology

4.1 Layout of Residential District Landscape

Scientific and reasonable landscape design can effectively improve the living environment. In the city, there are many residential areas, which are distributed in all corners and regions of the city. These residential areas constitute large and small plates, and together constitute a large plate - city. (Golui et al., 2018)Therefore, in the process of landscape design of residential areas, these plates should be divided, according to the reasonable layout of different plates, so as to form a complete system of the whole plate. In the process of plate design, we should pay attention to the green space, River and ecological garden of a certain system plate, and use design means to connect these to form a complete "ecosystem". At the same time, in the process of design, the green space and construction land should be considered accurately, and the design scale should be strictly controlled so that the landscape system can be implemented and rationalized. In addition, public green space should be added between roads in residential areas to make it the core of the whole landscape. Green space system should also have rich levels, innovate landscape design, highlight the novelty of the landscape.

4.2Landscape Design of Residential area

In the process of landscape design, the first thing to be clear is the elements of the landscape. Only after the elements are clear can the landscape system be designed reasonably to meet the needs of landscape design. Mountains, rivers, grasslands and forests are the most basic natural elements, which are also the main components

of the landscape system. In the process of landscape design of residential areas, these natural elements can be used to improve and contrast the living environment, and also need to cooperate with artificial elements.

4.3A good landscape design can make people have a good visual enjoyment

In the process of landscape design, the elements of landscape should be designed reasonably and adequately. When designing the edge of a building, we should make the best use of the edge area and increase the length of the edge appropriately. When choosing plants, we should also pay attention to the expression of spatial level to improve the visual effect. At the same time, the water source design of residential area also has a very important impact on the whole landscape system. It is necessary to rationally design the pattern of the whole landscape system, transport the treated water source to the place where it is needed, and increase the utilization rate of water resources.

5 Suggestions on Environmental Landscape Planning of Residential Areas in China

5.1 Architectural Design

The architectural design of residential area pursues the unity of the whole, but through the analysis of the architectural design of Osmanthus City, we find that if each building looks the same and its personality is not strong, it will make most residents feel lack of vitality. At the same time, blindly imitating the western classical architectural style will greatly discount the original design effect. The architecture of Osmanthus fragrans city well reflects the unity of the whole. In terms of color adjustment, the green city Osmanthus fragrans city takes ochre red, light yellow and green grey as its main color, making it like a naturally formed settlement town in the south of the Yangtze River. The whole park is fresh, elegant, warm and beautiful. In addition, adding some traditional styles of foreign architecture appropriately can make the whole park look solemn and generous. It greatly stimulates residents' aesthetic experience of residential areas.

5.2 Landscape Planning with Appropriate Layout

When planning the landscape of residential areas, we must fully consider the impact of landscape environment on the behavior of residents in residential areas. Make good use of the landscape function of plants in the courtyard to create a balanced planning and design of garden plants with light, color, lines and functions, beauty and proportion. The traditional garden plant landscape should be integrated into the urban residential landscape design. To achieve the cycle of reciprocation, endless, in the limited space to create unlimited interest; in the aesthetic interest, the pursuit of godlike, not similar to the pursuit of shape, especially pay attention to local conditions, according to the situation.

6 Conclusion

The theoretical system and practical experience of residential landscape design based on landscape ecology are relatively rich, so there are many experiences and theoretical knowledge that can be used for reference in the process of residential landscape design. This plays a very important role in the quality of life of people living in residential areas and the sales benefits of real estate enterprises. In the process of residential landscape design, strictly abiding by the relevant principles and concepts of landscape ecology can not only improve people's living environment, improve ecological benefits, but also bring some visual enjoyment to people and maximize the function of landscape design.

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