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The Applications of Low-Cost Landscape in Traditional Village Design

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Abstract
Firstly, this paper introduces the concept of low-cost landscape and the purpose and significance of the research, discusses traditional village landscape design from the "basic cognitions of landscape, village landscape and traditional village landscape", and proposes the applications of low-cost landscape in traditional village landscape according to "the design principle of traditional village low-cost landscape and design content of traditional village low-cost landscape". The paper also makes comprehensive resolutions on spatial layout, vertical design, waterscape design and drainage design, etc..

Key words: Landscape architecture; Traditional villages; Low cost

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1. BRIEF INTRODUCTION TO LOW-COST LANDSCAPE DESIGN

Low-cost landscape design requires to minimize the costs of the prior period of a project, the consumption during the construction, and the maintenance and management costs at the end of landscape design. Low-cost landscape not only refers to low cost in economy, but also refers to low cost in economy and landscape. Respect for nature and venue works through the entire process of what we call the low-cost landscape design. Designers need to take into account the function, site pavement, green plant, waterscape, post-maintenance and management, etc., and need to think about the aesthetical and practical values of the design (Lei, 2013).

Low-cost landscape design is not yet mature in China, but it is a design concept for the new era which breaks the conventional thought of "high investment and high output". Its significance lies in that a high-quality landscape does not necessarily needs a high investment. In addition, low-cost landscape design puts forward higher requirements on designers—requiring us to be more patient, more meticulous and more thoughtful, to pursue the historical and cultural connotations of a site and take into account the environmental factors to achieve a low-cost landscape design.

2. COGNITION TO THE BASIC CONCEPT OF TRADITIONAL VILLAGE LANDSCAPE

2.1 Landscape

Landscape is the scenery or sights carried by a land (Ye & Zhang, 2012). From a geographic perspective, landscape refers to a collection of topography, riverbank, water, flora and fauna, etc. in a specific area, showing the state of a natural environment in this area. From the perspectives of artistic aesthetics, natural geography and sociology, landscape does not only refer to natural or ecological phenomena, but also embodies the cultural connotations of a specific traditional village. Landscape has a certain ornamental value, and studies the space created by human and nature in the common living environment.

Landscape reflects the relationships between people and people, people and nature, people and land, people

and society. It reflects people's dream for a life in an outdoor environment, embodies historical, cultural and natural contents and has certain economic, ecological and cultural values (Liu & Liang, 2008).

2.2 Village Landscape

Village is the living environment gradually formed by people living in groups in rural areas, which normally refers to a rural settlement (Ibid.). Village landscape involves society, culture, ecology, form and other aspects. Normally, village landscape has a specific form and connotation. It is an area which develops from scattered farmhouses to a town able to provide services for production and living, and is characterized by extensive land utilization, small population density and obvious pastoral scenery (Hu, Liu, & Zhu, 2007). As a landscape complex integrating human civilization with surrounding natural environment, village landscape has different styles and cultural characteristics due to different geographical factors including location, topography, climate and vegetation, and different social factors including economic level, custom and culture.

With the development of urbanization, rural areas also represent the characteristics of dynamic development. Due to the interpretations from different angles, there is not yet a standard definition on village landscape. It can only be interpreted in the following classifications: (a) Village landscape is a landscape within rural areas, which evolves by human adaptation to nature, and is characterized by nature, settlement, agricultural production and extensive land utilization. (b) Village landscape is less affected by industrialization and is a natural human living landscape. (c) Village landscape includes natural landscape, settlement landscape and cultural landscape, etc..

The form of a village is composed of elements at different levels. When people are in a village, everything they receive visually, perceivably and spiritually is a part of the village landscape. According to different elements village landscape can be classified into three kinds: natural landscape, settlement landscape and cultural landscape. Natural landscape is the foundation for village formation and development, which is composed of natural geographical elements within the rural area, such as mountain, water, land, climate, plant and so on. These natural elements determine the location and layout of the village, form the foundation for the overall landscape, affect the formation of the overall village shape and the development of other landscapes in the area. According to different terrains, village natural landscape can be classified into three types: mountain village natural landscape, plain village natural landscape, foothill and valley village natural landscape. Settlement landscape is the landscape formed during the process of changes that the farmers keep dealing with their relationship with the living environment, such as the relationship between house and arable land, relationship between house and house, division of arable land, planning of road and water system. The results of human behaviors reflect the most direct relationship between human and nature. In a village, buildings, streets, roads, bridges, markets, cultivated lands, production, planting and other landscapes which involves human participation can be called as the settlement landscape. Cultural landscape refers to the spiritual landscape which human has produced during his adaptation to local natural conditions, interpersonal activities and other objective conditions over time, including tradition, history, custom, aesthetics and religion, etc.. These reflect in village ancestral hall, temple, local festival, wedding, funeral, living habit and other aspects. They are the achievements of human civilization, making village landscape more attractive and valuable.

3. THE BASIC COGNITION OF TRADITIONAL VILLAGE LANDSCAPE

3.1 Spatial Layout

The overall spatial layout of a village is normally like this: small number of and scattered villagers gather along rivers and roads to form parallel banded settlements, then develop to be clumps of settlements through the connection of roadways and streets, and continue to develop outwards in new ways. Therefore, it can be said that the overall layout of a village is a dynamic and continuous developmental process.

3.2 Spatial Level

Generally speaking, the spatial level of a traditional village is mainly reflected in the surrounding environment, village entrance, building groups, external space, village nodes and so on (Ibid.). Approaching from the outside, people will firstly feel the entrance when get close to a village. A village entrance often has a bridge, honorific arches, trees and so on. These constructions show the local settlement culture and social status in a unique style, which is the first level of landmark and openness. When people enter the village and walk through the residential buildings and streets, they will reach the center public area which is relatively more open and is in sharp contrast to the closed streets. This is the second level. In addition, well sites, ancestral halls, village committee and other node spaces constitute the auxiliary center of living and social activities, which can be considered the third level.

3.3 Structural Features

Traditional villages, as human settlements different from cities, have different spatial characteristics and structural sequences due to different natures, societies, economy, cultures and other objective factors. From the relationship

between human and nature, a traditional village landscape is normally characterized by the natural, free and closed structure.

The simplicity of farming economy also makes village society a self-sufficient ecological cycle relationship. The nature and life view of "harmony between human and nature" in the farming society since ancient times manifests the great affinity and symbiosis between human and nature. A vast hinterland with a high terrain nestling under a mountain and near a river is the requirement to determine a village site. The spatial layout of the village must fit the trend of landscape, the streets and roads must suit the terrain and drains, and the housing must be arranged according to the terrain. Seeing from the relationship between people, traditional village landscape has a high degree of openness and intersection, and has rich landscape structure characteristics.

For example, village interpersonal relationship is generally formed by the social interaction model of kinship and acquaintance. A village has gradually formed a relatively more closed relationship with unified interpersonal values, higher publicity and transparency, in which circumstance the villagers have the same cognition and loyalty to the village. The village landscape often has public buildings and public facilities, such as ancestral hall, well and other places. The villagers have frequent exchanges with each other.

4. THE APPLICATIONS OF LOW-COST LANDSCAPE DESIGN IN TRADITIONAL VILLAGES

4.1 The Principles of Low-Cost Landscape Design in Traditional Villages

(a) The principle of economy and aesthetics: "Functional, practical, beautiful" are the guiding principles of landscape design. The landscape design in traditional villages must firstly meet the practical design principle to create a recreational, comfortable and beautiful living environment for people.

(b) The principle of adapting to local conditions: Landscape design should respect the original topography of a site, and use the topography, water system and vegetation to reduce design cost.

(c) The principles of sustainability: Sustainability is a principle that landscape design must observe. Designers should make full use of the original landscape resources to reduce the losses caused by environment maladjustment and high maintenance cost.

4.2 The Content of Low-Cost Landscape Design in Traditional Villages

Low-cost landscape design should take an approach of development towards the entire landscape design process, should achieve good landscape results while controlling upfront costs and reducing maintenance costs.

4.2.1 Spatial Layout

Spatial layout should be divided according to the functions and forms of traditional village landscape, and the main landscape nodes on the main landscape axis should be highlighted. The secondary landscape nodes are not the objects of fine shaping in order to reduce the cost. Spatial layout should be designed based on the users' ages, statuses and hobbies.

4.2.2 Vertical Design

It refers to the design of vertical space, including landform arrangement and vertical greening distribution. Low-cost design must make full use of the original terrain, trying not to make large-scale excavation and filling. Vertical space greening must be in line with the landscape and overall style. A properly arranged environment of orderly density is more attractive.

Plants must tally with the ups and downs of the terrain. Tall and straight trees are often planted in a higher ground to increase terrain fluctuation. On the contrary, ground covers and hedges are planted in a recess to make the terrain smooth. In addition, low and flat vegetation are planted on the top of a mountain can also make the terrain gradual. In landscape construction, growing different types of plants in accordance with the high and low terrains can effectively reduce the construction cost but increase the ornamental value.

4.2.3 Hard Landscape Design

Local or neighboring materials should be chosen as much as possible to reduce transportation cost. Pavement should use water permeable brick or other cheap materials, but the areas with a large flow of people may use a small number of stones. Stone pavement size should try to be in line with the 300 mm module. Stone thickness must be managed to be 25-30 mm for footway and 40-50 mm for driveway.

Pavement design: Pavement design should try to be functional and reduce unnecessary hard site. Soft and hard landscape ratio must be reasonably designed. Hard pavement accounting for 20% to 30% of a landscape area is appropriate. Stone surface should make full use of singeing and be paved in accordance with rules. New environmentally friendly materials may be selected, such as PC brick.

Architecture and sculpture design: The number of architectures must be strictly controlled in order to simplify details. Stone facing should be reduced and replaced with slate, art brick or other inexpensive materials. For the areas with a small flow of people, architecture surface can be painted. Sculptures can be decorated with stone-like coating instead of real stone. Outdoor furniture should maximize the procurement of finished products.

4.2.4 Waterscape Design

Traditional village landscape is generally classified into hard waterscape and soft waterscape. Waterscape has high operation and maintenance costs, so it must be strictly controlled with the area and number. Waterscape should be only placed at the entrance or square in spotty distribution. The revetment of a natural waterscape may try to employ gentle slope into water. The depth of the stream is controlled to be approximately 300-400 mm and in flexible waterproof construction.

4.2.5 Plant Design

Plant is one of the main spatial elements of a landscape and forms the skeleton of a landscape. According to the growth characteristics of plants, a reasonable coordination of trees and plants can not only control costs, but also create a dynamic landscape. For the selection of native plant species, we need to give priority to native tree species and properly introduce new varieties to enrich local plant landscape. A sufficient supply of local tree seedlings can save a lot of costs. Their adaptability can increase the survival rate of the seedlings. In addition, they have a strong resistance to pests and diseases, so the maintenance and management are simple. Water-saving and drought-resistant plants. China has a growing shortage of fresh water resource, making water-saving and drought-resistant plants in a need of the landscape of residential areas. Water-saving and drought-resistant ornamental plants are characterized by low cost, high ornamental value and rich varieties, which can fundamentally reduce water consumption and save water from the source. Large tree transplanting. We need to strictly control the proportion of large trees, and only intersperse them in key landscape areas. Deciduous trees with DBH of more than 20 cm or evergreen trees with height greater than 5.0 m have a high transplanting cost, low survival rate and high maintenance cost in the later period. We should try to choose deciduous trees with DBH of 10-5 cm and evergreen trees with height no more than 3.5 m in transplanting, because they have a short recovery time and a high survival rate. Vegetation community. We should select suitable garden plants based on the specific conditions of a site. Plant design can simulate natural plant community, restore zonal vegetation, keep a more stable structure, have strong ecological protection and low maintenance cost, and establish an artificial plant community of good self-renewal ability. A combination of fast-growing tree species and slow-growing tree species can take effect in the short term.

4.2.6 Drainage Design

Landscape water supply includes automatic sprinkling irrigation system and artificial irrigation system, and we often use the combination of the two ways. The use of rainwater as a landscape replenishment can somewhat reduce the maintenance cost in residential areas. Priority should be given to roofing rainwater as the landscape water.

Landscape drainage includes ground drainage, pipeline drainage and ditch drainage, out of which ground drainage has the lowest cost and pipeline drainage has the highest cost. A site of large gradient should make use of ground drainage, and for a site with lower requirement on landscape effect, ditch drainage can be adopted with pebble belt placed on drainage board as decoration.

4.2.7 Lighting Design

Landscape lighting design is classified into functional lighting, decorative lighting, key lighting and security lighting. Low-cost landscape mainly uses garden light, lawn light and other functional lights instead of reflector light, buried light and other decorative lights. Energy-saving lights are preferred. Lighting should be rationally designed in accordance with the actual landscape size and lighting system. Basic lighting can be met by controlling the lights.

CONCLUSION

In summary, under the premise of meeting landscape effects, low-cost landscape in traditional villages can be achievable. A reasonable design can reduce the construction and maintenance costs, spend the least money to achieve the best results in the traditional village landscape.

REFERENCES

Hu, X. J., Liu, Y. Q., & Zhu, Z. M. (2007). Rural landscape culture and its sustainable development. *Economic Geography,* (6).

Lei, Y. H. (2013). An exploration on low-cost landscape design. *China Horticultural Abstracts,* (8).

Liu, X., & Liang, G. Q. (2008). An analysis on the differences between traditional courtyard space and modern residential area landscape. *Small Town Construction,* (4).

Wang, J. J. (2007). *An interpretation on housing—The possibility from traditional Huizhou housing to modern architecture* (Master's thesis). Hefei University of Technology.

Wang, X. C. (2015). A discussion on low-cost landscape design in residential area. *Beijing Agriculture,* 11.

Ye, M. Y., & Zhang, Y. (2012). The art of survival—An interpretation of Yu Kongjian's landscape design from his growing experiences. *Journal of Southwest China Normal University (Natural Science Edition),* 6.