

Study of Road Landscape Design at Portal Space of Small Towns in Guanzhong[#]

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Abstract: To further study the effects of public service facilities on the land use intensity at regulatory planning level and enhance the scientific determination of land use intensity, this paper expounds the influence mechanism and factors of the public service facilities on land use intensity in regulatory planning, and conducts quantitative evaluation of the influence factors through theoretical analysis, mathematical analysis and analytic hierarchy process etc. The results show that the influence mechanism of public service facilities on the land use intensity goes throughout all three levels of regulatory planning. Different characteristics of public service facilities on each level determine their different influence factors and take effect on the land use intensity index of the corresponding level, thus affecting the determination of the block floor area ratio. Based on this, this paper proposes a method to determine the land use intensity in regulatory planning under the restriction of public service facilities and completes the test in practice, which may provide a reference for determining the land use intensity in regulatory planning.

Keywords: Impact assessment, land use intensity, public service facilities, regulatory planning.

1. INTRODUCTION

The town portal space is not only the urban space conversion node, but also the space to show the town's history, culture, politics, economy, environment and other characteristics, which has the functions of traffic, landscape, guidance and others. As the skeleton of the whole town portal space, the road landscape design plays an essential role in the entire portal space environment shaping. The road of portal space as an important channel contacting internal and external space, its landscape design requirements are not only on the physical space, but more on spiritual demand.

The small towns of Guanzhong are in the stage of rapid development, and their scope expansion has pushed the portal space farther in to the suburbs. However, these lots are more village and farmland, the landscape and environmental quality of roads is low, which is not enough to meet the cognitive demands of people in small towns. So it is necessary to sort out the features of road landscape at portal space of small towns in Guanzhong, and to clarify the design elements and contents, based on which can the design method of road landscape design at portal space of small towns in Guanzhong to be found. Ultimately an empirical research will be done and to provide a new idea for the road landscape design at portal space of small towns in Guanzhong.

2. THE FEATURES AND ELEMENTS OF ROAD LANDSCAPE AT PORTAL SPACE IN SMALL TOWNS

2.1. The Related Research Progress

In the aspect of theory, based on the "spirit of place" theory proposed by Norbert Schulz and the theory of Kevin

Lynch about the expression of the urban impression, many domestic scholars have studied on the features and methods of road landscape design at portal space in small towns: Lv Yuan proposed that urban road construction should take up the tasks of inheriting civilization and meeting the aesthetic needs of people; Zhang Yufen [1] advocated to the principles that road landscape design of urban entrance should be harmony with the environment; Zheng Sulan [2] and Li Lifeng proposed "emotional design" and the scene of the experience of road landscape design patterns for small towns; Liu Yongzhen [3], Zhang Zhen and Chen Lanrong [4], etc. put forward the road landscape design methods and principles of small town in terms of green land, sketches and road surface; Chang Kun [5] put forward a humanized direction of roads landscape design of small towns on the basis of characteristics; Ren Nana [6] summed up that the road landscape of portal space had scale, dynamic and visual three characteristics from the physical point of view; Yang Huizhong [7] pointed out that the portal space road landscape of "symbolic" and "culturality" features based on the characteristics above. In recent years, excellent cases of road landscape design at portal space in small towns are also increasing, as East Entrance Road Landscape Design and Planning in Zhangzhou City, of which "green" is the main factor in the humanities and the natural integration, creating Zhangzhou personality and characteristics of the entrance to the environment. And the five entrances' road reconstruction projects of Changshu showed cultural features and modern atmosphere of Changshu from different angles.

For the various researches it can be learned that the current road landscape design at portal space in small towns concentrated mostly in the form of physical space, including the green lands, sketches, roads facilities and other layouts, and pointed out that regional culture and spirit emotional are important factors to consider. But there is little research for the road landscape design under the influence of both

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[#]A Case Study of Road Landscape Design at the South Entrance in Pucheng

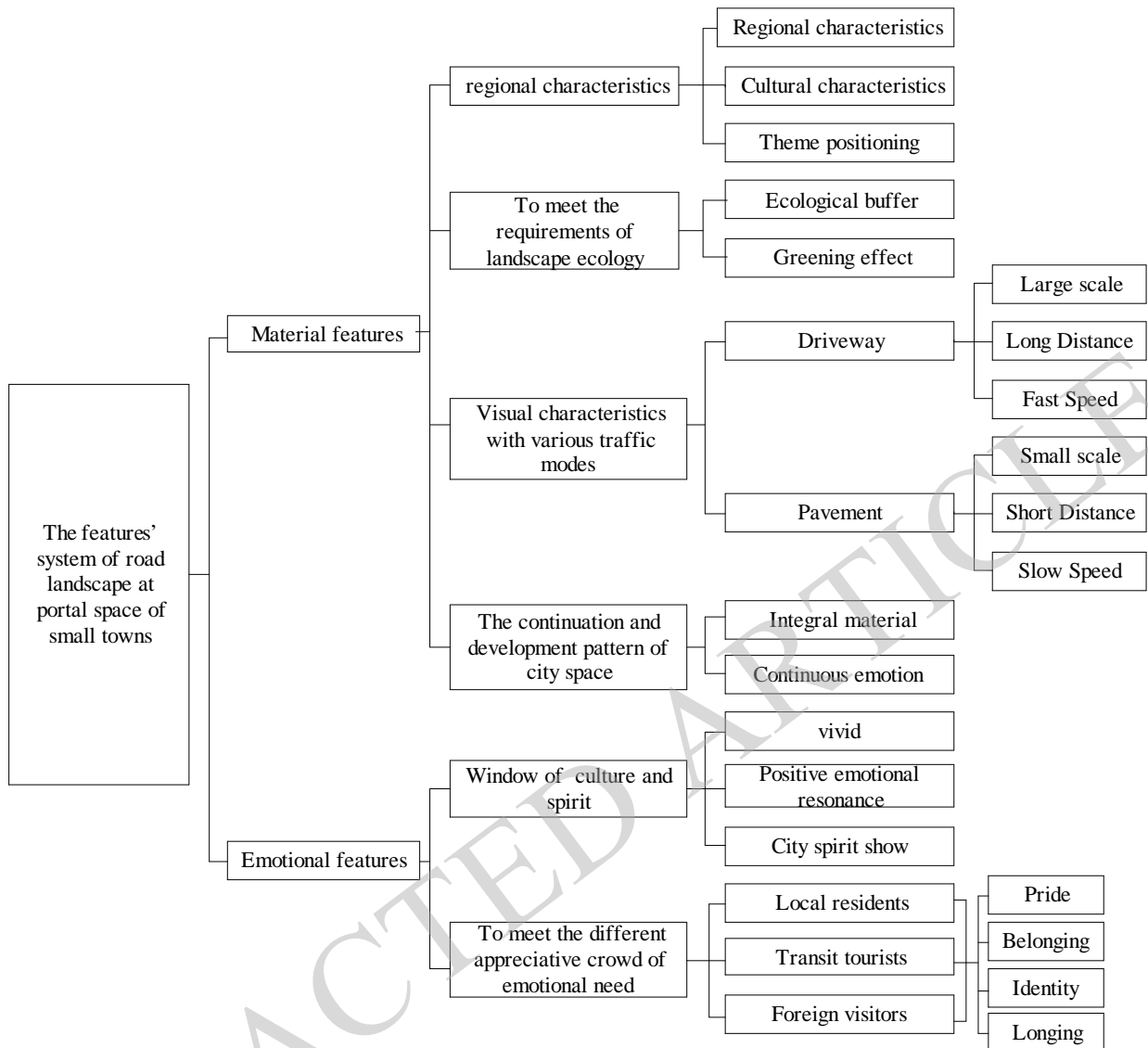


Fig. (1). The features' system of road landscape at portal space of small towns.

material and spiritual factors, of which the content is not deep enough and lack of the refining of elements and characteristics. So it is necessary to do the refining and sorting for the design elements as well as features.

2.2. Features of Road Landscape at Portal Space in Small Town

Combined with the study of literature above, it can be learned that road landscape at portal space in small town has many features. On this basis, the features' system of road landscape at portal space of small towns is analyzed under the influence of both material and spiritual factors Fig. (1).

2.2.1. Material features

(1) Have regional characteristics

Due to the development of small towns intensity is not high, most of them retain the traditional spatial structure and social life, which to a large extent also affect the way they shaping the road landscape at portal space. The contents of landscape they chose are often the most representative local

elements and they represent the visual impression of these small towns richly.

(2) Meet the needs of landscape ecology

Because of the ecological damage of small towns' expansion, the road landscape at portal space of the town not only provides the viewing effect, but also plays a role in the ecological buffer to ensure that the integrity of the urban ecosystem services functional capacity.

(3) Comply with the visual features of the various modes of transportation observer

Road landscape design must meet the visual needs of different modes of transportation, such as the size of the smaller objects is often ignored in high-speed movement, so the landscape of driveways should have the overall sense, such as good continuity and intervisibility⁶. While on the pavements, landscape design should take the low-speed and details more prominent, which have strong participation [7].

(4) The continuation and development of the towns' spatial patterns

As a part of combination between the outer and inner sides, road landscape design at portal space of small town should also be subjected to the principles of the upper urban planning, which is coordinated to the characteristics of urban planning and to meet the integrity requirements.

2.2.2. Spiritual features

(1) The window of urban culture and spirit

For the different characteristics of small towns, to the viewer to convey a different culture and spirit, so that the viewer can have the most intuitive impression while feeling the cultural and spiritual experience they convey, which is the basic characteristic of "vivid" landscape.

(2) Meet the different viewers' emotional needs

The purpose of the road landscape at portal space of small town is to convey the spirit, it evokes different emotions resonate in the hearts of the different types of appreciators, so as to achieve the purpose of the road landscape design at portal space.

2.3. The Elements of Road Landscape at Portal Space of Small Towns

The elements of the road landscape at portal space include two parts – material parts and spiritual parts. The first one has artificial elements and nature, while the latter part has culture and emotion. And the artificial elements are the main carrier of others, and it is mainly composed the road landscape system. So this paper will focus on the method of artificial elements' design (Fig. 2).

3. DESIGN METHODS OF ROAD LANDSCAPE AT PORTAL SPACE OF SMALL TOWNS IN GUANZHONG

3.1. The Situation and Problems of Road Landscape at Portal Space of Small Towns in Guanzhong

Guanzhong area has a long history with superior natural conditions and rich cultural landscape, as well as the natural

landscape, and it also bred many distinctive small towns (Table 1). According to the proposed requirements, through the literature analysis and the actual survey, it can be found that because of economic constraints and the lack of awareness of small towns in Guanzhong, most of road landscape at portal space are ignored, which only deal with forestation or scatter a few sketches that aren't systemic or connecting as portal space landmarks. The characteristics of small towns have disappeared.

Due to the large scale of rapid construction, it leads to completing-task construction type, which makes people lack of thinking on connotation of landscape, that caused the problem of road landscape at portal space in small towns has no system and connotation, as well as characteristics. First is in the "shape", as at the portal space, road landscape should have a sense of beauty and system, but rare small towns considered it; second is in the "spirit", the situation of "landscape" made "landscape" become more and more prominent, the portal road landscape only considered about the greening and lighting which lack of connotation, that has no association with regional culture, so it leads to no emotional sublimation road landscape on spirit level, and is not up to the purpose of to display. Summing up the above, it is necessary to sort out the elements of both kinds to clarify the design method of road landscape at portal space of small towns in Guanzhong.

3.2. The Elements of Road Landscape at Portal Space of Small Towns in Guanzhong

Based on the elements that summarized above, it can be extracted specifically that the elements in Guanzhong (Table 2).

3.3. Design Method

In the "both shape and soul" design, the "shape" of the main building is completed with material realm and the "soul" is to build artistic conception and emotion conception, including giving the cultural connotation and spiritual sublimation.

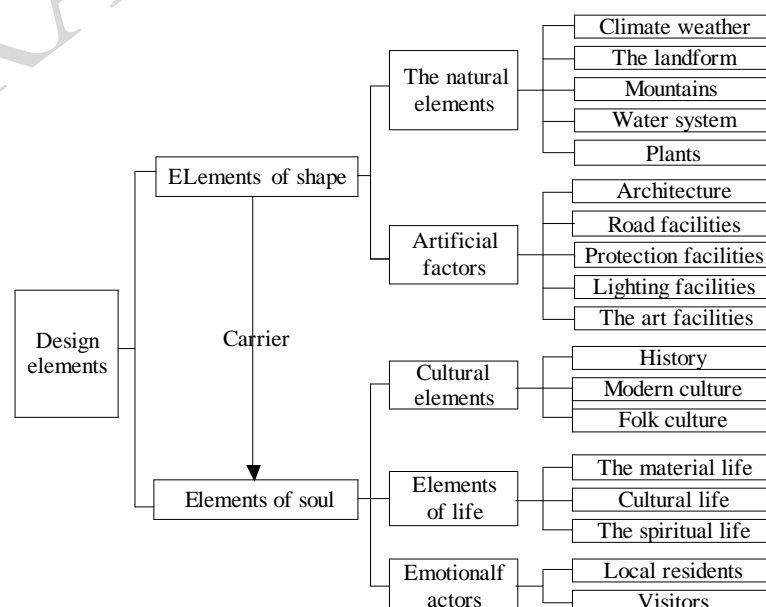


Fig. (2). Design elements of road landscape at portal space.

Table 1. Statistics of the small towns in guanzhong.

Main cities in Guanzhong	The main towns	Total
Xian City	Lantian County, Zhouzhi County, Hu County, Gaoling County	35
Tongchuan City	Yijun County	
Baoji City	Linyou County, Qishan County, Fufeng County, Mei County, Fengxiang County, Qianyang County, Taibai County, Feng County, Long County	
Xianyang City	Xingping County, Wugong County, Jingyang County, Liquan County, Qian County, Yongshou County, Xunyi County, Chunhua County, Changwu County, Bin County, Sanyuan County	
Weinan City	Han County, Huayin County, Hua County, Heyang County, Chengcheng County, Dali County, Fuping County, Pucheng County, Tongguan County, Baishui County	

Table 2. The list of road landscape elements at portal space of small towns in guanzhong.

Feature separation	Feature name	Content
Material	Natural elements	Topography: tableland and plateau, plains, mountains Weather and Climate: temperate monsoon climate with four distinct seasons, moderate rainfall Natural water system: Weihe River, Jinghe River, Feng River floods River, Shu River, Hao River, Chan River, Bahe River Natural mountain: Qinling, Kitayama Mountain, Xiaoshan Mountain, Qian Shan Mountain, Longshan Mountain Representative plant: the pomegranate tree, Hua Jiao tree, pear tree, persimmon tree
	Artificial elements	Urban Structure: chessboard Building Features: Courtyard space, sloping roof, loess, brick, tiles, symmetrical layout Facilities: street pavement, pedestrian bridges, advertising signs, sculptures and sketches, etc.
Spiritual	Cultural elements	History and Culture: Cultural Center of the Yellow River, the ancient capital of the ancient, Shaanxi culture, Jingwei cultural, spiritual and other Yan'an Modern Culture: international cooperation, accelerating urbanization and urban integration Folklore: Shaanxi opera, Huayin Laoqiang, Ansai waist drum, Huxian Peasant paintings, festival fire agency, stilts, paper-cut, steamed flower bun
	Emotional elements	Local residents: a sense of belonging and pride, foreign transits: a sense of longing and identity

3.4.1. The Creation Material Realm

(1) The orientation of overall image

For the "shape" of the overall of the road landscape design, from the reality and combined with the natural environment, as well as the socio-economic and technological conditions of Guanzhong area, the design should be added into the town's history and culture, so it can strengthen the exchanges of local culture language and modern landscape design.

(2) Respect for nature and protect the original landscape

The plateau and the tableland landscapes in Guanzhong area provide a good opportunity to shape the road landscape. To respect the site's natural environment can make the completion of the landscape and the environment in harmony. To bring the natural environment as much as possible into the landscape design elements' system to maintain its integrity, in which way can make the viewers feel walking in nature.

(3) Use local materials, reflect regional characteristics

During the linear development of urban roads at portal space, shaping the landscape features will directly affect the expression of the image of the town. The soft landscape of roads of small towns in Guanzhong can take the representative plants, such as pear trees, Hua Jiao trees, pomegranate trees, etc., or by means of the existing water system in the portal road landscape design to create a well-known feature of the environment; hard landscape can use the unique or widespread building materials in Guanzhong area, the regional characteristics of the landscape elements drawn as a prototype, not just on the regional characteristics shaping the landscape, it is also memory retention of the people living in town.

(4) Integrate with the towns' textures, continue the towns' space

The overall style of small towns in Guanzhong area is mainly traditional, showing a Geometric morphology and

reflecting the impact of the ritual system, which has a layered structure and the pleasant town scale and positive space of "Street - Road - Lane." In its portal road landscape design, they should continue this trait to form a structured and coordinated texture of small towns.

3.4.2. Integrate With the Artistic Situation and Emotion

(1) Artistic situation injection

The injection of artistic situation into road landscape design is the key part. Without the injection of artistic situation, the road landscape is like a flesh with no bones, neither a system nor significance.

1) Excavate history and culture

Because of the history, small towns in Guanzhong formed a unique culture, which became a symbol of the geographical spirit and civilization. The road landscape design at the portal space of small towns can obtain anecdotes of celebrities and other popular culture information occurred through the town history, which can cause people's hearts and resonates or widely known elements, or other story forms can quickly browse to show up. It is not only to enrich the landscape road system, increasing road landscape of fun, but also to play a positive role on the propaganda of regional culture.

2) Take people-oriented into people's activity

While shaping the geographical characteristics of urban landscape entrance, it should take full account of human activity, appealing them to participate, and be closed in the people's way of life habits, etc., as well as to introduce them

into the road landscape design at portal space. For example, we can take some folk activities into the space on both sides of the road pavements, which has become an important part of the identifiable geographical features of portal space

(2) Emotion giving

Giving emotion is the core part of road landscape design at portal space, including the following several aspects.

1) Sublimation theme, giving spiritual connotation

The main purpose of road landscape should be higher than practical significance level, and it should rise to explore the spiritual connotation, which creates the physical environment and artistic situation together to the human spirit demand. So the theme of road landscape at portal space of small town should be under the premise of people-oriented eventually, urban spirit will combine with the people demand, not only to "Keep Pace with Time", but also to "Co-Prosperity with People", encouraging towns and people together to develop the spiritual goals.

2) Back to basics, focusing on humane care

Human's basic need is that the experience of their lives is meaningful, and the purpose of the road landscape design at portal space lies in to save and convey that meaning. During the design process, people need to return to nature and to focus on humane care, which can cause emotional resonance in the process of viewing or a sense of belonging to the home, as well as yearning and longing to the town, and this was also the essential purpose of road landscape design at portal space.

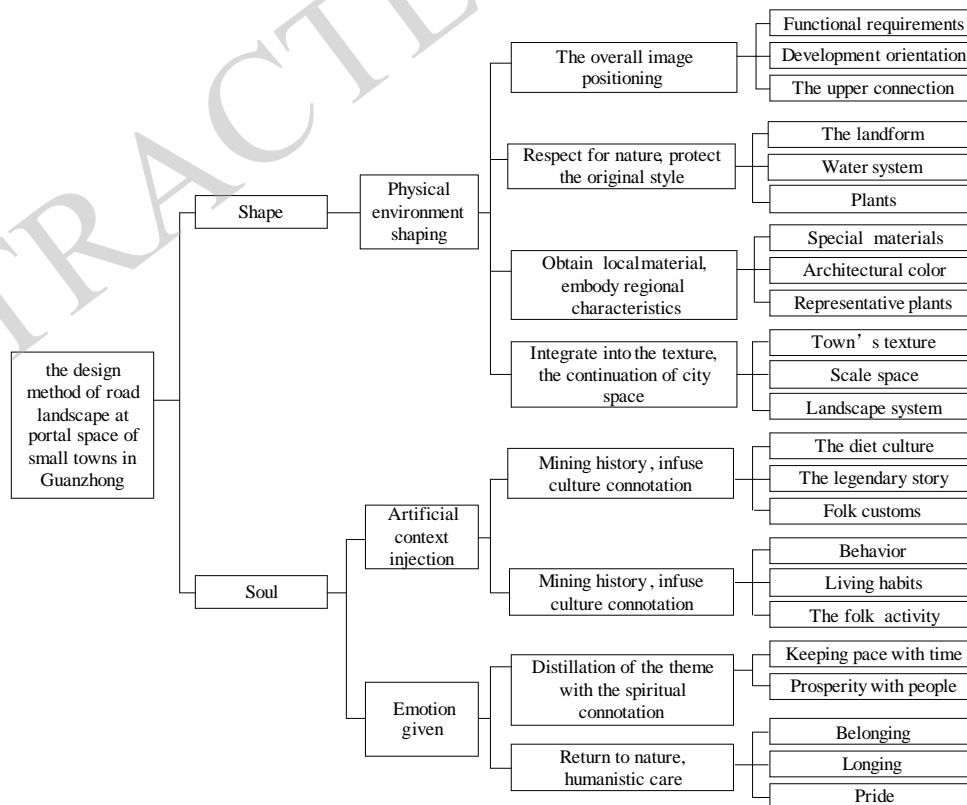


Fig. (3). The design method of road landscape at portal space of small towns in Guanzhong

3.4.3. Combined with shape and soul

By the method above, to integrate the regional culture and humanistic spirit organically into the landscape, so it makes the road landscape at portal space not only has the "shape", but also the "soul", which makes it reach the primarily design goal (Fig. 3).

4. ROAD LANDSCAPE DESIGN PRACTICE OF SOUTH ENTRANCE IN PUCHENG COUNTY

4.1. Overview of the Project

Pucheng County is located in the transition zone of the Loess Plateau and the Guanzhong Plain, which is mainly highland and tableland. The Project is located in the southern section of Yingbin Avenue, south to the Xiyu highway, north to the Xiyan railway, covering 330.32 ha, long of north to south is about 2588 meters, width of east to west is 1977 meters, mainly including the village and agricultural land, while village land for construction supplement.

4.2. Design Method of Both Shape and Soul

4.2.1. The Design Method of the "Shape"

(1) The overall image positioning

Yingbin Avenue section area is an important channel into Pucheng from the southwest, so the overall positioning of the area should not only consider the function and constitution, but also consider the overall image of Pucheng. Therefore, the planning of the overall position is to display the image and cultural of Pucheng external and the expansion axis links old city and the New Industrial Park internal (Fig. 4, Fig. 5).



Fig. (4). Airspace of south entrance in Pucheng



Fig. (5). Night view of south entrance in Pucheng

(2) Respect for the natural topography

Conforming to the natural environment, with the existing natural landscape road landscape design, the use of high terrain on the northwest can bring the water system into the base, and with a flat plateau surface to create an open-up vision to the landscape system.

(3) Reflect regional characteristics by local materials and improve the space environment of landscape

1) Street architecture design

As far as possible to use the existing architectural design, strive to realistic and calm appearance colors. Unify the colors of brown, brick red and pale yellow, as well as a extensive use of brick, stone, wall paint selection of long durability paint. The ground floor shops move back to open up the positive space, and uniform the form of design.

2) Greening design

The green belt of Area road mainly planted green shrubs with low height, the principle of which is not block the Butterfly Tower and Flower Tower. To plant a large area trees between Xiyu highway and turntable to embody the natural ecology. Large sequence is grown with the shape of bulk and sheet, forming the unity of the whole visual effect.

3) Water system design

Water system design of Pucheng led the water to west side of the road, whose formation is network structure. Taking characteristics of pear as the prototype to design the "Lihu Lake", and the Butterfly Tower means the butterfly falls on the petals that echo to the image positioning of "ecological waterfront, Green Lake".

4) Sketches of landscape design

The design use energy-saving LED lamps and the sketches design use features elements the form or structure of Pucheng architectural, such as wooden pavilion, story sculpture gallery etc..

(4) Integrate into the texture

Both sides of the road will inherit the traditional texture of "big community, small neighborhood", paying more attention to the feelings and needs of the people. Turn the large scale to small neighborhood to stimulate the urban vitality.

4.2.2. The Design Method of Soul

(1) Integrate with the artificial context

1) The integration of traditional history culture and modern fashion

Design Area is divided into four parts, the theme of which is nature, ecology, history and culture. The overall landscape system has three gates for clues to reflect the town image. The first gate is to show the eco Pucheng with "Pear lake and Butterfly Tower" (Fig. 6); the second gate is to display the history of Pucheng with a starting of celebrities sculptures, such as Wang Ding, Lin Zexu, etc., which are in chronological order from south to north, so the viewers will have a feeling of "walking in the historical painting" (Fig. 7); the third gate is to show the humanities, to use the footbridges as a symbol, arrange both sides of the road of



Fig. (6). The design of water system.



Fig. (7). The sculpture of road.



Fig. (8). The design of footbridge.

three-dimensional scrolls of Pucheng humanistic story, such as "Yang Jue Thanked to the water", "Taihe Entitled Plaque", so that the viewers are not only walking in the beauty, but also walking in the story (Fig. 8).

2) To create a participatory landscape into the human activity

In the road landscape design is not only the views but also the activities, such as access to the flower gallery, lawn trails, as well as small squares, in which to put some sculptures with folk activities to create a relaxed atmosphere.

(2) Sublimation of emotion

The most fundamental way to enhance the cultural taste is to allow residents understand their own culture better. To shape the landscape is not only face to the tourists, but also the people living in there. The propaganda of culture can be integrated into the whole process of shaping the landscape, both visible space and invisible spiritual sustenance. Whether it is foreign tourists or visitors, it can produce a feeling of longing and praise to Pucheng County, while local residents generated a series sense of belonging and pride under the influence of physical environment and artificial situation.

CONCLUSION

Road landscape design at portal space of small towns is an important window to show the image of the towns, as well as an important aspect of the planning and design for portal space of small towns. It cannot be simply interpreted as a decoration of sketches or green cover, but more should meet the dual requirements of material and spirit. In this paper, starting from the study of the related theory, it sorted out features and elements of road landscape at portal space of small towns in Guanzhong, and clarified the design content of both "shape and soul", then proposed road landscape design techniques, and finally gave an empirical research of road landscape design of the south entrance in Pucheng. The

research provides reference and guidance for road landscape design at portal space of small towns in Guanzhong.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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