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RESEARCH ON LANDSCAPE-ORIENTED URBAN DESIGN: ON THE EXAMPLE OF QIXIAN NEW INDUSTRIAL DISTRICT DESIGN IN FENGXIAN, SHANGHAI

Abstract: In recent years, low carbon production and ecology have gradually become one of the most important topics in the field of architecture and urban design. Under the background of new urbanization in China, the status of eco-city theory and landscape design practice are gradually increasing in urban design. Therefore, as a new type of urban design, the landscape-oriented urban design has a strong practical significance. This method requires landscape going first in urban design and the layout of the buildings around the landscape design comes afterward. Fengxian District, part of Shanghai, is located in the southeast of the Yangtze River Delta. Since 1980s, the industry in Fengxian District has been developing rapidly with the main industry types of food, cardboard boxes, candy, printing, beauty and so on. This article takes the urban design of QiXian industrial zone as an example, introducing the application of the landscape-oriented urban design method. In this project, the venue is about 1.2 km long from east to west and 350 m wide from north to south. The original land function is for industrial use and it is to be transformed into a new industrial park where leading health and beauty as the leading industry. The design concept revolves around the “U-shaped” landscape corridors and creates a continuous corridor suitable for walking. A multi-story layout of “architecture-landscape-architecture” is adopted to construct the layout of the buildings around the landscape design and takes the form of courtyard. The paper explores landscape-oriented urban morphology design and provides new possibilities for landscape eco-city design. This paper is subsidized by NSFC project which is named as <Research on Technical System of “Downtown Factory” Community-oriented Regeneration in Yangtze River Delta Region>, NO.51678412.

Keywords: urban design, landscape-oriented, Fengxian, industrial district, Shanghai.

1. Introduction

With the rapid development of China’s urban economy and the acceleration of urbanization, new urban areas are rapidly emerging in China and a large number of new urban design projects are in full swing.

Since the reform and opening up, urban design in China has made considerable progress. There are endless development theories and research perspectives, but there is also lack of a mainstream theory. It is difficult to reach consensus between different researchers and even the concept of “urban design” is still controversial.

In the period of rapid development of urban construction, it is necessary to find an urban design theory that suits the characteristics of China's development. Compared with the urban design of the Western countries which focuses on repairing and supplementing vacancies, China’s urban construction is mainly based on new construction at this stage. This requires urban designers to have a long-term and sustainable vision.

The landscape-oriented urban design was proposed in this context. Compared with urban design under the guidance of “urban architecturalism”, this method is a more scientific and sustainable way of urban design.

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2. Landscape-oriented urban design

2.1. Concept introduction

Landscape-oriented urban design means that in the process of urban design, the landscape is advanced, and the landscape is used as the main basis and inspiration source. The architectural space is built around the landscape space to create an urban space with appropriate scale and environment.

The “Landscape Priority” design concept maximizes the value of landscape and takes landscape as the dominant factor. From the perspective of sustainability, ecology, and landscape functionality, other factors emerge as supporting factors. This design method has overturned the current urban-based design method that is dominated by architecture and supplemented by landscapes. It is a design method with a sustainable perspective, which can effectively enhance urban space quality.

2.2. Examples of landscape-oriented urban design

JCFO (James Corner Field Operations) is the leader of landscape-dominated urban design. The importance of landscape elements in urban design practice can be easily felt in their global urban landscape projects.

SITE PLAN

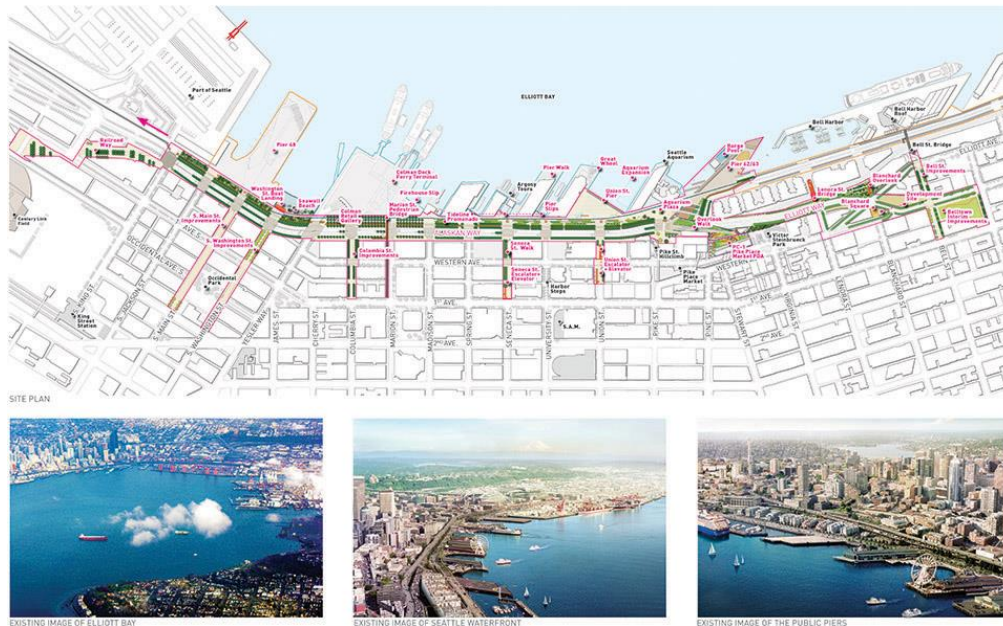


Figure 1. The Seattle Beachfront Space Renovation Project - Plan
Source: <http://www.goood.hk/waterfront-seattle.htm>

The famous high-line park project in the United States was led by JCFO to transform and design, combining protection and innovation, pioneering the activation of urban space along the route. The Seattle Beachfront Space Renovation Project (Fig.1) enabled JCFO to receive the ASLA Plan and Design Honour Award in 2013. This project embarks from the urban coastal landscape and balances historical elements, public power, urban texture, economic needs, and ecological and environmental protection factors in the design. In China, JCFO was commissioned to develop the master plan for a vibrant new city on 4,500 acres of reclaimed land in Shenzhen (Fig.2) – a city that is dense, compact, mixed, sustainable and centred around the water. The result is a hyper-dense, ecologically sensitive urban territory with an iconic waterfront, diverse building stock, cultural and recreational features, and unique, inter-connected public open spaces. A water finger prototype is currently under construction.

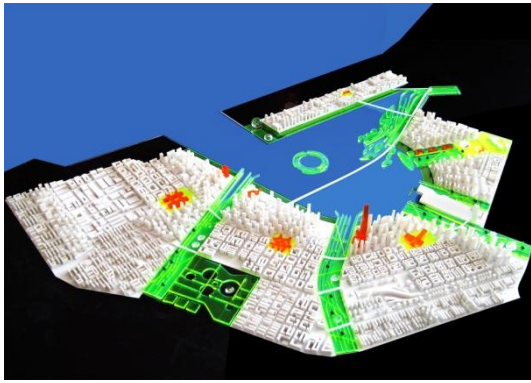


Figure 2. Shenzhen Qianhai Urban Design
Source: <http://www.fieldoperations.net>



Figure 3. Section II of the High Line
Source: [http:// www.goood.hk](http://www.goood.hk)

2.3 Features of landscape-oriented urban design

From the perspective of the city itself, landscape-oriented urban design makes urban development sustainable. During quite a long period in the past decades, the treatment of landscapes in China’s urban design projects was often neglected, it was secondary, and rough, while the landscape-oriented urban design took a long-term view of the city. Consideration of construction expands on the dimension of time and is therefore sustainable.

From the perspective of urban residents, landscape-oriented urban design provides residents with high-quality activities and excellent living environment.

In the long-term perspective, landscape-oriented urban design is a sustainable urban design approach that promotes the harmonious coexistence of humans and nature, cities and nature.

3. Qixian industrial district urban design

3.1 Basic introduction and challenges

Shanghai is one of the cities that has been developing relatively well among all the main cities in China. During these years, the developing speed of the city center has slowed down, while urban development has shown an outward trend of expansion.

Qixian Industrial Zone is located in the southeastern coastal area of Shanghai and is located in the Gongdong District of New Town, Fengxian Nanqiao. The site is east to Puxing Road, south to Nanfeng Highway, west to Jinhui Port and north to Fengpu Avenue. The plot is in a strip shape, and it is about 1.2 km long along the Tuannan Highway from east to west. (Fig.4) This has become a feature of this program.



Figure 4. Plan – Qixian Industry District Urban Design
Source: Made by Prof. LI Zhenyu Studio, Tongji Architectural Design (Group) Co., Ltd.

The construction faces multiple challenges. On the one hand, there is a number of residential projects under construction around the planning program, most of which are affordable housing. The demand for satisfaction of the cultural and recreational life needs of future resident life in the existing site construction has also become one of the factors that required consideration in urban design. On the other hand, the original industry needs require upgrade and transformation to attract innovative industries. This design can therefore connect north to the main downtown area of Shanghai, and can also serve south to the Yangtze River Delta region.

Landscape-oriented urban design methods are used in the design, which can effectively integrate ecology, production, and life of the whole area. While improving the quality of industrial services, they also improve the quality of life of urban residents.

3.2 Landscape-oriented design

The design plan is landscape-oriented. With the Tuannan road as the axis of symmetry, the “U-shaped” landscape walkway is implanted. All ten parcels are connected in series, forming an organic and compact entity.

1) POINT: Timing courtyard

In the design task, the entrusting party defines the new urban function of this industrial zone as “Oriental Beauty Valley”. The main industry of this area is the cosmetics-related innovation industry. The design scheme is a theme that echoes “beauty”. In the venue, four seasonal courtyards are set on the theme of the four seasons. The four gardens correspond to the four seasons of spring, summer, autumn and winter, respectively, and are planted with seasonal plants. The purpose is to maintain the vigor of the entire urban design landscape in the time dimension. At the same time, it avoids the unity of planting evergreen plants.

2) LINE: U-shaped landscape corridor

The design plan attempted to connect the dispersed ten plots with a continuous 2 km corridor to re-establish the organic connections in the area. The continuous landscape is the dominant factor in the entire design area, playing a multiple role in organizing space and guiding the traffic flow. The corridor of the landscape is set in the air about 4.8 m high, with a width of about 5 m. The entrance is located at the southwestern corner of the site and the exit is located at the north-western corner of the site. The linear corridor passes through the site. Some areas are connected to the building and used as the second-floor entrance of the building.

3) SURFACE: Thousand-layer cake type plane space mode

Looking from the urban plane, the entire space has formed a “thousand-layer cake” model of “architecture-landscape-architecture” in the north-south direction. The landscape interface is hidden behind the city interface and becomes the vibrant core of the entire block. The interface facing the main street of the city is relatively regular and closed, while the interface facing back to the main street of the city improves the vitality and walking quality of the space through the elimination of the volume and the fragmentation of the interface.



Figure 5. Plan – Qixian Industrial District Urban Design

Source: Made by Prof. LI Zhenyu Studio, Tongji Architectural Design (Group) Co., Ltd.

3.3 Other design concepts

In addition to taking the landscape as the main guiding factor, the search for a sustainable spatial form and comfortable walking space requires balancing of other factors. Therefore, there are many urban fabric and architectural considerations in the design.

1) “Pedestrian-friendly” - Walking Scale Units

Team X proposed in the 50s and 60s of the last century that urban design should be based on people and in line with human behavior. Creation of a suitable walking scale has become one of the key points in urban design. The 50m-based urban building block, which allows people to walk through in a minute, is a suitable spatial scale for walking. In the reconstruction plan of Potsdamer Platz in Germany in the 1990s, Hilmer and Sattler designed several 50*50*35 m blocks. The applicability of this unit scale is also confirmed in actual use. In the design plan of Qixian Industrial Area, the 50m-based spatial scale has also been applied, and changes have been made on this basis.



Figure 6. Plan – Potsdamer Platz
Source: From the Internet

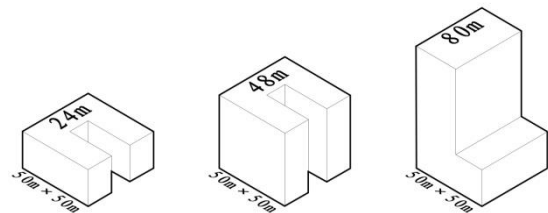


Figure 7. Plan – Units of Qixian
Source: Made by Prof. LI Zhenyu Studio, Tongji Architectural Design (Group) Co., Ltd.

2) “Valley-like Space” - Building Height and Urban Profile

In the book “Street's Aesthetics”, the street space theory put forward by Aihara Yoshiharu was applied to the design of this project. The height of the main building is controlled at three scales of 24 m, 48 m, and 80 m. The elevation angles formed with the centerline of the Tuannan Road are approximately 30°, 45°, and 60°, respectively, and are pleasantly perceived in the street space.

3. Conclusion

On the one hand, landscape-oriented urban design is a harmonious coexistence of human and nature. Landscape is used as a source of inspiration and design means to integrate the ecosystem into the basic structure of the city. Establishing a suitable urban space for scale, pursuing pleasant scales, and creating a continuous walking space are issues that still need to be considered in urban design.

On the other hand, landscape-oriented urban design is also a harmonious coexistence of man and city. M. Southworth thinks that “urban design should pay special attention to the user’s feelings and meet the needs of users at all levels”.

Compared with landscape, buildings are static (or slow-moving). However, landscapes are dynamic, bringing newer images to the city over time. The symbiosis between architecture and landscape is a dynamic and sustainable harmony.

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