

A Comprehensive Development of Urban Greenery Morphs --The Analysis of Greenery Construction of the Middle Ring Line (Puxi section) of Shanghai

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Abstract

All-round development of urban greenery network morphology is an integrated part of urban space system. The greenbelt construction of the Middle Ring Line is capable of changing linear planning and merging the peripheral greenery construction with 3-D space design to jointly form a broad open space.

Key Words : Green Network, Urban Space, Green Corridor, Line Greenbelt

The urban high-speed trunk way in Shanghai, China has been developed into three circles. The inner elevated highway traverses among the concrete forest of the city; the outer high-speed trunk way runs in a free and easy way parallel with the green belt and forms a circle; and most the newly-established central trunk way goes through residential areas on the ground. The three circles bring about a favorable opportunity for the linear planning of road greenery to develop in a comprehensive wide way. With the road greenery as a line to bring about the green combination of the land for multifunctional uses on both sides, a wide circular belt is formed.

By developing the concentrated green space in residential communities, the public green space in residential areas, the street and road greening, the public facility greening, and the greenery patches for ecological buffer into an ecological green belt extending to both sides in a comprehensive way, the green space can be developed in a well-coordinated way in the process of developing the city morphs, the

ecological environments suitable for living can be established, and the city can be developed in a comprehensive way.

The comprehensive development of structuring urban green network morph is an integrated component part of urban space system as well a major content for realizing the sustainable development of urban environmental scenery planning. The "Constructional Scheme of Shanghai Municipality in the Near Future (2003~2007)" emphasizes that one of the central construction tasks before 2005 is the construction of the ecological scenery corridor in the middle ring. With the "one lengthwise line, two horizontal lines and three Rings", namely, the Huangpu River, Yan'an Road, the Suzhou Creek, the Inner Ring, the Middle Ring and the Outer Ring", various kinds of green corridors will be formed, becoming one of the urban green network framework systems.

The greenbelt construction of the Middle Ring Line changes the original lineal scheming status. The three

dimensional space is the conceiving platform. With the utilization of the functional greening of roads as the main line to affect the greening combination of the land for diversified functions in the west side, they can mutually penetrate into each other and jointly form an open space in a wide and ring-shaped way.

I. THE GREENBELT FEATURES OF INNER RING LINE AND OUTER RING LINE

The Three Rings (the Inner Ring Line, the Middle Ring Line and the Outer Ring Line) of the central urban area of Shanghai are the three rings of urban express trunk roads. Due to the multiple differences of their locations in their regions, they have formed their respective features and advantages.

The Inner Line, based on Zhongshan Ring Road, forms an express trunk way for the traffic by using elevated roads. It goes through the urban center as well as numerous groups of high-rises. The nearest place of its margin is only a few meters away from buildings. For resolving the issues of views and noise disturbance, noise-prevention screens with the length of a few thousand meters have to be set up. So far as greening is concerned, vegetation that can stand shades is planted under the east-to-west elevated road, making use of every inch. Along the elevated roads, potted plants are intermittently arranged. Insufficient volume of green plants is basically the product of urban concrete forest.

The greening construction of the Inner Ring Line was completed in the middle of the 1990s.

The 400-meter greenbelt construction of the Outer Ring Line was completed in 2003. It is the boundary for the development of the central urban area of Shanghai. Its completion symbolizes the establishment

of the buffering space of urban ecology. Its enormous volume of green plants and the forest along the line provide a solid foundation for Shanghai to create a state landscape city.

The greenbelt construction of the Outer Ring Line has achieved comprehensive social, economical and environmental effects. The harmonious coexistence between the city and nature is its social feature. Its economical effect lies in the coexistence between its productivity and the agricultural and forestry economy in the region. Its environmental effect is represented by its ecological nature. Due to the geographical location of the Outer Ring Line, the driveway of the roads is in an isolation status. The greening planting of the greenbelt is in an extensive and natural form. Most of the tree species are local ones and the species of the plant habitat are plentiful. As a result, it has become a reliable supplying base for urban greening production and planting materials. In addition, it has also provided a solid foundation for protecting the development of the plant resources of Shanghai region.

II. THE GEOGRAPHICAL FEATURE OF THE MIDDLE RING LINE (PUXI SECTION)

The Middle Ring Line is located between the Outer Ring Line and the Inner Ring Line, the boundary for the development of the central area of the central urban area. At present, the line form of the road in the Puxi section takes the established road as the main while the road in the Pudong section has not yet been linked up. Its region in the Puxi section consists of Hongmei Road, Hongxu Road, Zhenbei Road, Wenshui Road, Handan Road, Yinxiang Road and Jungong Road: while the Pudong section takes Jinqiao Road, Zhangjiang Road, Huaxia Road and

Park Green Space	Excellent Residential Area	Scientific Research and Educational Institution	Large-scale Commercial and Entertainment Facilities
Shanghai Botanical Park: Meilong Green Space: Guijiang Rd. Green Space: Caohejing Development Zone Park: Beixinjing Green Space: Haitang Park: Jinding Rd. Park: Wujiaochang Green Space	Yuannan Xincun: Lingyun Xincun: Gumei Xincun: Jinxin Huayuan: Gubei Xinqu: Donghu Villa: Maotai Xinyuan: Xinjing Xincun: Zhenyuan Xincun: Qingjian Xincun: Shanghai Wanlicheng: Mingducun: Kangtai Xincun: Fuxing Huayuan: Guangliang Xuncun: Lanhua Xincun: Huansha Xincun: Songhua Xincun	East China Technology U.: Technological College of Jiaotong U.: West Shanghai Campus of Tongji U.: East China Power Experiment Institute: Fudan U.: Shanghai Application Technology College: No.2 Military Medical U.: Shanghai Cable Institute: Shanghai Technology U.: Shanghai Aquatic Product U	Jinjiang Amusement Center: Hongqiao Golf Course: Xijiao Hotel: Commercial Area of Hongqiao Town: Beixinjing Area of Commercial Fuduan U.: Shanghai Yanjiaqiao: Commercial Area of Wujiaochang: Metro Shopping Center (No.2): Opec Shopping Center
In Total	8	18	10

Shangzhong Road as the lead. The total length is around seventy kilometers.

This article takes the Puxi section for example with the total length of 38.2 kilometers. Along the way, seven places are intersected with urban radiating trunk ways.

The environmental connection along the Middle Ring Line (the Puxi section) is as follows:

From the above table, it can be seen that the Middle Ring Line Express Trunk Way goes among numerous excellent residential areas and scientific research and educational institutions, of which quite a few are well-known residential areas and famous institutes and universities. Meanwhile it is also linked up with many green spaces, parks and commercial facilities.

Therefore, the Middle Ring Line has not adopted the form of close traffic trunk way. Instead, open form is used to serve the city and the land on both sides.

III. THE GEOGRAPHICAL REGION OF THE MIDDLE RING LINE

HAS BROUGHT ABOUT A FAVORABLE OPPORTUNITY TO EXPAND A SPACE FOR GREENING

The surveyed materials of the geographical region of the Middle Ring Line show that it differ from the Inner Ring Line and the Outer Ring Line in their respective features. As a traffic trunk way in the city residential areas, it serves residents' outing, shopping and entertainment activities. These features make road space extensively linked up with the two sides as well as make the green spaces be able to be expanded and linked up in a whole stretch with the greening of the massifs on both sides. It is beneficial to form the comprehensive utilization of various kinds of green spaces in the city, forming broad green corridors and enhancing the life quality or urban residents.

IV. GREEN CORRIDORS ARE IMPORTANT LINKS TO THE URBAN GREEN NETWORK

In the green system of a special large city, green corridors are powerful framework to enhance the quality of urban ecological environments as well as the trend and demand of urban development. It improves the accessibility and equilibration to structure the entire green space in the city while green corridors are the important links for the network. Its rapid growth and development support the formation and penetration of the network in a dynamic way. Compared with the green systems of the Inner Ring Line and the Outer Ring Line, the green system of the Middle Ring Line has better advantages to develop the green corridor.

Therefore, the road greening of the Middle Ring Line is not merely a lineal development. It should be regarded as a clue for horizontal penetration and comprehensive development. It should be to encourage an integrated development of the two sides and form a circular green corridor inside the central area of the city.

In effect, a demand for comprehensive development has appeared for the greening of the massifs on either side of the Middle Ring Line.

Take the Hongqiao Golf Course for an example. The extensive lawns and excellent trend of plant growth have displaced its green environment. Anyhow, the intersection of Hongxu Road has separated it two stiff massifs. In spite of the fact that it is linked up with a scenery bridge, the continuity of the green scenery is still interrupted. It is beneficial to the penetration and mergence of greening and makes up the drawbacks caused by Hongxu Road to intensify the greening system of the Middle Ring Line by appropriately demolishing the wall to reveal the green scenery.

Take the residential area of the Mingducheng Apartment Building on Hongxu Road for another example. The landscaping inside the area has already been satisfactorily made but the planting outside the

entrance of the area can't be matched with the inside. But by greening the Middle Ring Line, the relaxation street and the landscaping of other residential areas can be linked up with the Mingducheng Apartment Building and form jointly a marvelous residential surrounding of about two square kilometers.

The planting of Beixinjing area is rather scattered. When completed, the landscaping system of the Middle Ring Line (Zhenbei Road section) can link up together with the landscaping of the river course at Xinjing Harbor and the newly established residential area in Xianxia Road (W.). In this way, the effect of regional boundary can be displayed to form jointly an open space and enhance the living standard of the extensive peripheral area.

The landscaping of the Middle Ring Line at the Handan Road section can create an integrated greening stretch of the university city area in the northeast of Shanghai with Fudan University as the dominant school.

The above examples show clearly that it will benefit the comprehensive development of urban greening morph to place road landscaping on the platform of regional planting system for examination.

Similarly, in case road landscaping separates itself from other types of greening support of the peripheral regions, it is no more than a line. It will be of greater benefit to display the potential value and comprehensive value by enhancing the level of the existence of road landscaping. The mutual compensation of the two factors shows obviously the group effect that one plus one is larger than two.

V. GREEN CORRIDORS SHOULD MAINTAIN THEIR RESPECTIVE EMANDS AND INDIVIDUALITIES

At the same time when road landscaping and

environments are advocated for mutual merging and penetration, efforts should be made avoided to weaken their respective demands and individualities. The planting construction of the Middle Ring Line should still pay attention to the fundamental functions and planting demands of street greening. Sufficient attention should be paid to the demands of protection, dazzling and buffering, full considerations should be given to the visual enjoyment of the rapid-moving sceneries for the people driving along the road as well as the visual enjoyment of slow-moving sceneries for the people strolling along the sidewalk. In addition, necessary screen protection against noises and sheltering protection for the vision can't be neglected.

Due to the need of traffic arrangement in the locality and road sections of the Middle Ring Line, the structural form of higher motorway exchanges and underground tunnels is used, enriching greatly the vertical design of streets and bringing about beautiful waving rhythms to landscaping construction. These variations change the lineal design into uninterrupted cylinder space design and result in the effect of three-way greening. By appropriately handling the scenery combination of motorway exchanges and the vertical wall access of the underground tunnel, people-oriented features of the greenbelt of the Middle Ring Line can be fully embodied and street individualities of going through the residential area in the city can be once again displayed. Here, discreet and appropriate selection is the key to handling details.

Another street individuality of the Middle Ring Line is its nature of relaxation. Because of its correspondence with the peripheral surroundings, its relaxation function is its important feature differing from the Inner Ring and Outer Ring. Therefore, the arrangement of green scenery of the sidewalks of the Middle Ring Line has to give considerations to multiple landscaping elements. They are the mergence

with the surrounding environments, the curve changes of the inner side of the sidewalk, the key treatment of street corners, the sheltering demand of street trees, the contrast and unity of colors, the rhythm of human body yardstick, etc. It is also necessary to understand the psychological feelings of the relaxing people. All this is the necessary language to jointly express relaxation individuality.

The planting arrangement should emphasize habitat nature, feeling of layers and the changes of seasonal appearance of plants. The selection of color-leave plants and healthcare plants is also an advantageous means to emphasize the individuality of the greenbelt of the Middle Ring Line.

By summing up the above views, it can be seen that the Middle Ring Road, as one of the main green corridors of Shanghai municipality, supports effectively the development of urban green network morph. To emphasize street greenbelts protruding their respective individualities can make the green network more colorful while to emphasize the mutual combination and penetration between the street greenbelts and the peripheral massifs can be more advantageous to the development of urban landscape morph and promote the rapid appearance of an urban space system.

The urban landscape system should be classified in accordance with their functions and carried out in various construction projects with the joint participation of all the people of the city and various enterprises and institutions in the greening construction. Meanwhile, it will also speed up the comprehensive development by using the penetration principle of fuzzy margins to blend and contain the space combination for various kinds of landscaping projects.

At present, the construction of street network in our country is being enfolded in a vigorous way. Theoretically, both the concept of urban green

corridors and functional positioning are lack of clear understanding and designing philosophy. In practical operation, the phenomena of giving emphasis to beautification and paying no attention to the fundamental functions of street garden and royal court streets occur frequently. Seeking for plane

composition is more than for three-dimensional design and simple lineal scheme is more than space combination. The purpose of this article is to provide some thinking for detailed designing ideas. Hopefully, it can achieve the effect of casting a brick to attract jade as the Chinese saying goes.

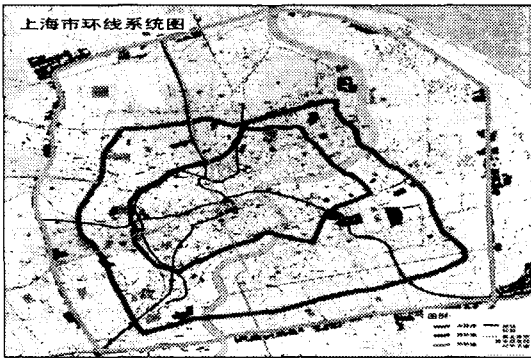


图-1 上海市环线系统图

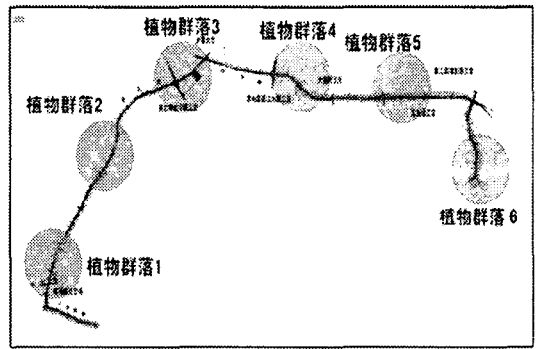


图-4 植物群落布置图

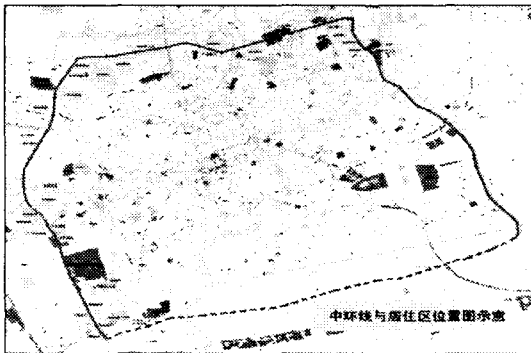


图-2 中环线与居住区位置图示意

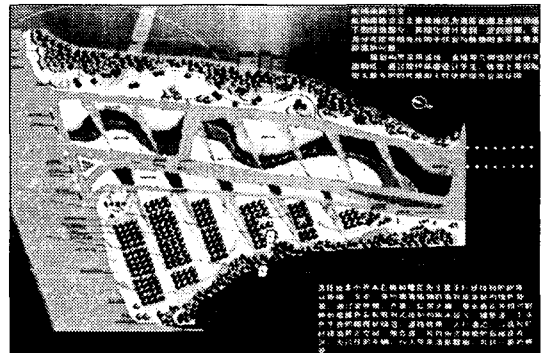


图-5 虹梅路平面图

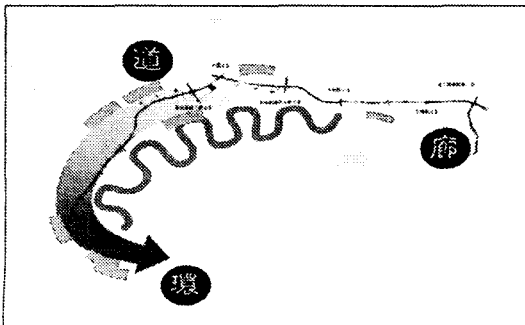


图-3 环线景观系统结构图

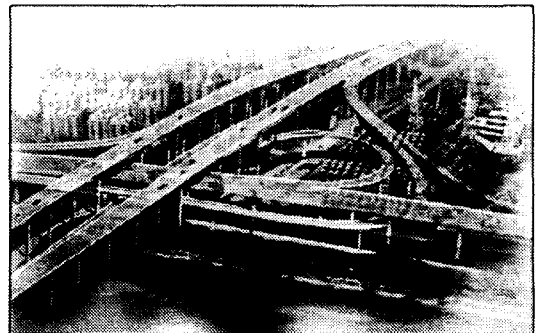


图-6 虹梅路效果图

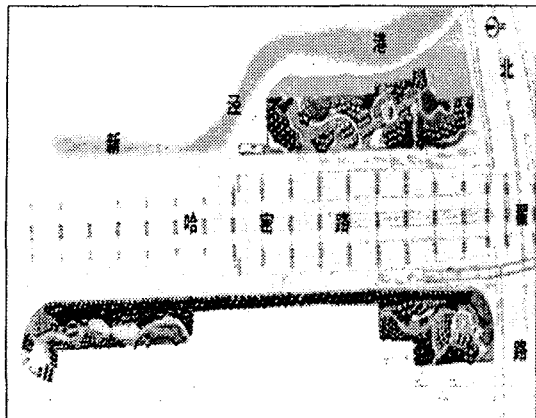


图-7 北翟路平面图

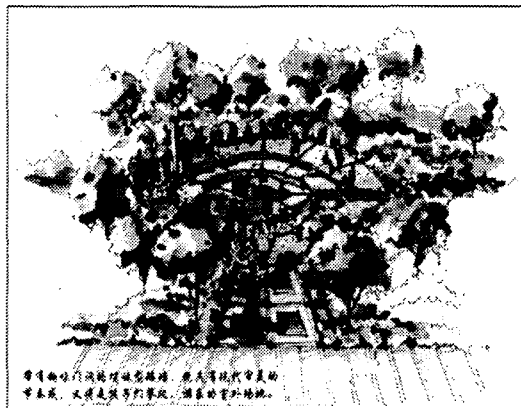


图-10 虹许路绿地效果

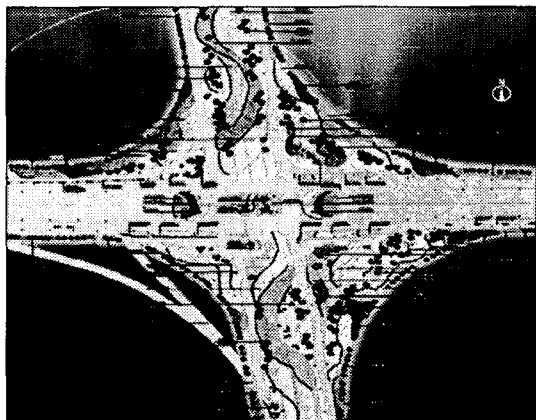


图-8 真北路、沪宁路立交平面

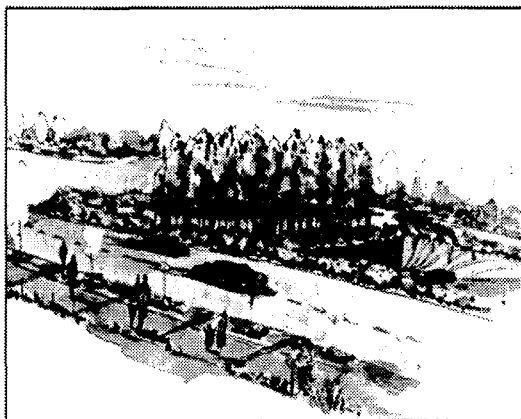


图-11 地道入口景观

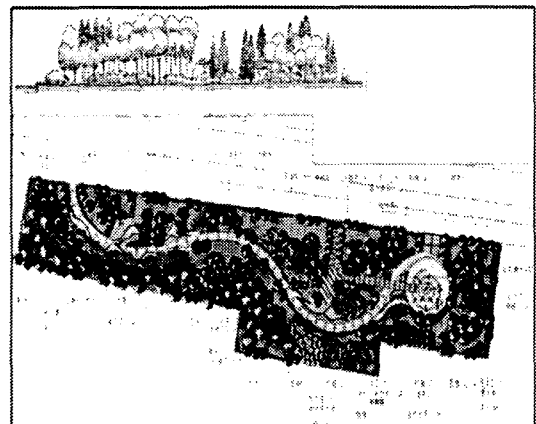


图-9 虹许路绿地平面

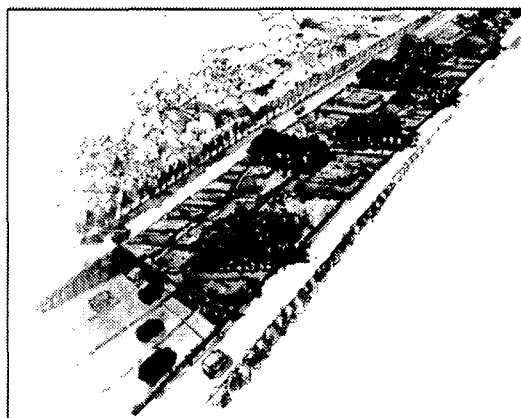


图-12 西郊宾馆地道入口景观