

Exploration of the Jingzhou Ancient City Moat and Surrounding Environment

Dongfang Jin, Jun Wu*

School of Urban Construction, Yangtze University, Jingzhou 434023, China.

Abstract: As one of the first famous historical and cultural cities announced by the State Council, Jingzhou ancient City has a long history and rich cultural landscape resources. It is the most complete ancient capital of the existing city walls in China. Due to the severe pollution of the moat, the ancient capital has gradually lost its long history. In recent years, in Jingzhou city to create the background of the national civilized city and ecological city, through the research of moat water quality status, analysis of the causes of the pollution, proposed to strengthen moat and its surrounding environment, such as the construction of ring greenway, wetland park, rain pollution diversion, public square measures to greatly improve the appearance of Jingzhou ancient city moat, for the historical and cultural city protection and renewal added a new sum.

Keywords: Ancient City of Jingzhou; Famous Historical and Cultural City; Moat; Transformation

1. Introduction

Jingzhou moat is the first line of defense of Jingzhou ancient city. The moat is 11,000 meters long, 20~120 meters wide, and 2. 5~8 meters deep. The moat originally connected Taihu Lake in the west and Long Lake in the east, to the ancient Canal. Like the ancient city wall, it has a long history. The moat of the moat, blue waves rippling, long clear water flow, beautiful scenery. It is the most important name card of Jingzhou ancient city. However, in recent years, due to social changes, the defects of urban sewage pipes and the integration of rainwater and sewage, a large amount of domestic sewage flows into the moat, resulting in a sharp deterioration of water quality, the moat gradually turned into a smelly pool. In recent years, the Jingzhou Municipal Government has taken a number of measures to repair the moat and its surrounding ecological environment, and has achieved remarkable results, but there are still some problems to be solved.

First, to control and repair water pollution in the moat. Then, the surrounding environment of the moat will be comprehensively transformed and planned, such as the layout of the green belt along the river and the transformation of the residential spatial structure along the river, so as to restore the historical features of the ancient moat.

2. Current status of the moat and the surrounding environment

①The river still has seriously polluted problems. There is still domestic garbage on the moat of the west gate of the ancient city wall from the west gate to the north gate of the section, and there are still some sewage outlets that discharge domestic sewage into the moat. (Figure 1)

②The moat water is water without a source. Since the moat is not discharged from clean water, the moat pollution becomes more serious. Another important reason for the gradual rise in the moat pollution index is that the bulk of sewage is not diluted by clean water. Therefore, the moat lacks the necessary ecological supply of water.

③There are serious differences in the landscape on both sides of the moat. Close to the moat side of the city wall, relying on the ancient city wall, has been built a complete ring city park, with a good public green space landscape and activity places. On the other side of the moat, there are overgrown and illegal buildings, randomly built and indiscriminately, very different from the local residential style. All kinds of land space are arranged staggered, and there is no unified layout of green space and public space, giving people a feeling of different days on both sides of the Taiwan Straits. (Figure 2)

④The chaotic population of residents around There are numerous residential areas around the north side of the moat. Although the residential area of urban muscle and the spatial structure has a good relationship, and has the characteristics of some local residential buildings, but due to long-term free development, the existing environmental conditions are quite noisy, chaotic, neither coordinate with the ancient city, and affect the moat surrounding landscape, therefore, should be appropriate transformation. (Figure 3)

⑤There is a lot of household waste on the moat surface and its activity sites on both sides. There are activity venues on the moat and both sides, but there are not enough garbage cans on these activity sites, resulting in the loss of household garbage at will, seriously affecting the beauty of the moat. (Fig. 4) (Self-taken)



(Figure 1 (around the south gate of ancient city) Figure 2 (around the West gate of ancient city) Figure 3 (around the north gate) Figure 4 (around the east gate of ancient city))

3. Necessity and objectives of transformation

3.1 Necessity of moat river reconstruction

① is an urgent need to implement the Protection Plan of Jingzhou Historical and Cultural City. The implementation of this project meets the protection and maintenance of Jingzhou historical and cultural city and will bring good economic, social, ecological and environmental protection benefits to Jingzhou; The cultural tourism industry with the core will become the pillar of the cultural and social development of Jingzhou and have a positive and far-reaching impact on the development of Jingzhou.

② is the need of the ancient city of Jingzhou system protection and cultural relics protection. The ancient city system of Jingzhou is the core of the cultural and tourism resources of Jingzhou, and with the combination of cultural heritage, historical blocks, style and ecology in the ancient city, it jointly constitutes the cultural heritage and tourism resources system. At present, part of the ancient city wall, the city tower and the water system have been restored and protected, but the overall layout is not complete, and the local damage is seriously damaged. Improving the water system of the ancient city can consolidate the foundation of the ancient city style showing the simple and romantic personality characteristics of Jingchu culture, and lay a solid foundation for the subsequent development of the ancient city of Jingzhou.

③ is the need to improve the environment and functional space governance of the ancient city. The ancient city of Jingzhou has experienced vicissitudes of life, and its original function has already been overwhelmed, and it urgently needs to be improved and improved urgently. Through the management of the environment and functional space of the ancient city, improve the urban living environment and the natural ecological environment, beautify the public space, improve the infrastructure, improve the tourism service system, so that the ancient city of Jingzhou has not only the demonstration effect of cultural inheritance, but also the living and development function of the modern society.

④ The needs of Jingzhou striving to become a national civilized city. Jingzhou is famous for its ancient city wall. Under the general environment of cultural creation, it must improve its name card, increase the governance of the ancient city wall and moat and its surrounding environment, and restore the original historical features of the ancient city.

3.2 Goal of moat river reconstruction

①The urban shoreline inside and outside With the moat as the city skeleton, create a dynamic urban activity space along both sides of the moat, display the cultural heritage of Jingzhou ancient city, and provide a good urban waterfront leisure place for citizens.

②The endoplasmically diverse waterfront landscape of the Activity venues with different landscapes are built on both sides of the moat, reflecting the diversification of the ancient city of Jingzhou.

③Harmonious symbiotic ecological green corridor. To create an ecological green corridor where the waterfront landscape on both sides of the moat will coexist and harmoniously with each other.

④The is a cohesive cultural carrier.

4. Transformation measures

4. 1 Overall planning of the moat river course and its surrounding environment

As for the current situation of Jingzhou moat, the goal of its overall planning is to form a belt green space with the background of ancient city wall and Jingzhou history and cultural culture and Chu culture as the keynote, retain the existing water surface form, and give partial dredging, widening, stacking and shape. Fully consider the water, plants and other natural landscape elements, combined with the ground paving, tour routes, garden architecture, garden sketch, to create an activity place with cultural connotation and to meet the public recreation. The landscape belt, in the form of "front line through six beads", connects Mingyue Park, Three Kingdoms Park, Jinfeng Square, Guan Gongyi Garden, Yuhe Square, nine old fairy capital with the water system, organically integrating the long-honored Jingchu culture and Jiangnan water town culture (Figure 5 below).

4. 2 Reconstruction and restoration of moat river channels and water bodies

① Rain and sewage diversion. Due to the layout of the sewage pipe network around the ancient city and the moat is imperfect or even missing, the urban sewage in the area is not discharged into the moat. Therefore, it is necessary to lay sewer networks in these areas, intercept domestic and industrial wastewater, and introduce them into the newly laid sewer network for organized transportation. Then, through the sewer network, these urban sewage will be concentrated in the municipal sewage treatment plants, purified and discharged into the Yangtze River or moat. Rainwater and sewage are discharged separately and conduped. Rainwater is directly discharged into the moat through the rainwater pipe network, and the sewage is collected and sent to a nearby sewage treatment plant for treatment to avoid sewage directly entering the moat. Centralized management of rainwater collection, utilization and discharge can reduce the impact of water volume on the sewage treatment plant and ensure the treatment efficiency of the sewage treatment plant.



(Figure 5. Schematic diagram of the layout of "One Line through Six beads" in the moat of Jingzhou Ancient City)

(Self-drawn)

②The introduction of external clean water source. In order to ensure continuous renewal of moat water without forming stagnant water, it is necessary to introduce clean water. Taihu Port outside the northern section of the moat can serve as a source of water. Taihu Lake on the west, and Haizi Lake to the south, is an outer river of the city. The river flows all the year round, and the water level is slightly higher than the moat, which can naturally introduce the moat as the recent water source of the moat. (See Figure 6)

③Export of the moat water. Water from the clean water is introduced east from the moat west of the city and then divided into two tributaries. One flows from the moat near the north into the east and the other from the junction to the west of the city. Connect the first branch near the east moat. After the two rivers converge with the moat in the east of the city, they flow east into the Jinghe River (Beijing West Road), along the river east to the end of the river (beside Wenhui Park), and north into the Xigan Canal. It flows directly into the Yangtze River through the open channel of the suburban river. (See Figure 6)

④Purified the water quality of the moat in an ecological way. In addition to introducing external sources of clean water and exporting the moat river, so that the moat will no longer become a pool of stagnant water, fish fry and mussels can also be put in the moat to purify the water quality. Reed and water plants are heavily planted to absorb harmful substances in the water, and use these ecological methods to purify the water quality of the moat.

4. 3 Transformation of the surrounding environment of the moat

①Setting of green belt and public spaces along the river. The existing landscape conditions on both sides of the moat are also very different. On one side of this near the wall is a circular park. The environment is more beautiful, so it should be retained as a reserved landscape area on the side of the moat. On the other side, the periphery of the moat, messy, here should be the key area of our transformation. As this side is close to the newly-built development zone and the old city, the land use situation is relatively complicated, and it should be transformed by the arrangement of isolation belt. According to the regulations of the ancient city environmental coordination area), the moat flow ecological protection belt will be set up as the urban public green space within 20-50 meters away from the river, and then the landscape green space along the river will be appropriately arranged in the area to unify and coordinate with the reserved landscape belt on one side.

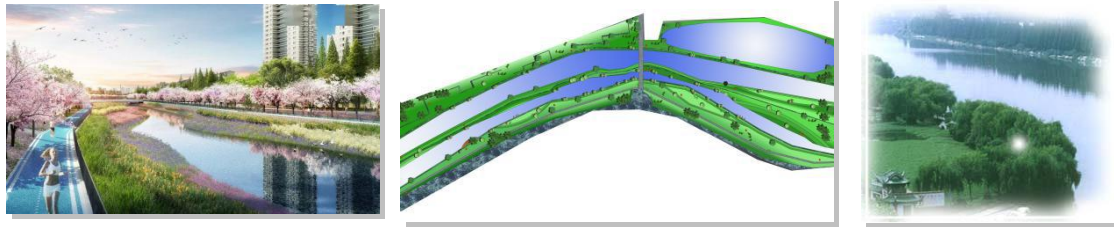
②Renovation of the moat-side dwellings. Outside the moat, there are a large range of local residential areas, all close to the river. The environmental conditions are not very good, affecting the landscape around the moat. Therefore, these dwellings should be appropriately transformed to make them a beautiful urban landscape by the moat. The specific reconstruction principle is to retain the relationship between the urban texture and spatial structure of the existing residence. The walking area set up by the moat can be used as a landscape along the river, but also to appropriately develop some businesses. After the reconstruction of residential buildings, the basic functional requirements of the current city, such as unified layout of water pipe network, urban traffic, fire protection and other requirements.

③Improvement of traditional spatial nodes. Traditional space nodes, such as bridge heads, city walls, docks, are repaired and restored according to the needs of the people of Jingzhou to strengthen the traditional characteristics of the moat, and the waterfront space is used to reflect the cultural diversity of the ancient city of Jingzhou. The moat has dozens of bridges, large and small. When transforming these Bridges, the first thing to pay attention to is the appearance of the bridge. A bridge should not become a dead corner of the moat landscape, they should be regarded as a landscape node of the moat, making it a highlight and visual center of the moat landscape. Each bridge should have a different characteristics of the cultural heritage of the ancient city of Jingzhou. The second is to increase the height of the bridge arch to meet the requirements of small cruise ships in the future to develop water tourism projects on the moat.

④Environmental modification of other water systems by the moat. The landscape along the moat, especially the area of the moat outside the northwest, has not been systematically planned, which appears chaotic. There are still more garbage floating on the moat that seriously affects the tourists' perception. Therefore, there should be corresponding measures and transformation for this section. For example, clean up the garbage floating objects on this section of the river, systematically plan the banks along both sides of the moat, and design the waterfront square.

⑤Slow traffic system improvement. According to the urban slow traffic system planning, the scheme combines the

road network water system scheme designed by the moat on both sides of the slow road. In the case that the urban green line allows the waterfront green road, the rest node is set up combined with the activity square. Through the slow trails, the water and open space in the city are connected to form a complete urban slow system. Slow road materials are durable, low maintenance cost, convenient replacement of materials, the whole production process to introduce less pollution of advanced green technology. The main ecological materials used in this project include permeable concrete, permeable brick, permeable asphalt, porous materials, etc.



Slow traffic trail design Renderings of the northwest gate The overall effect

(Figure 6 Local renderings after the Reconstruction of Jingzhou Ancient City Moats) (Self-drawn)

5. Conclusion

The protection and utilization of the moat from the perspective of ecological city and sustainable development, in Jingzhou under the background of national civilized city, using the construction of ring greenway, wetland park, rain and sewage diversion, public activity square measures to greatly improve the appearance of the ancient city of Jingzhou moat, make the ancient city of Jingzhou gradually restore the past. As one of the first famous historical and cultural cities announced by the State Council, the moat is an important tourism resource of Jingzhou. The renewal of the moat function and the inheritance of the historical context are an important task of the moat transformation. Some opinions and suggestions put forward by the author are only preliminary exploration and can be used by the relevant departments and city builders. The reconstruction of the Jingzhou moat and its surrounding environment still needs the attention and support of the broad masses of the people and relevant departments.

References

- [1] Qiao, L.F., Reconstruction of urban watercourse landscape under the concept of Sponge City -- A case study of shuangcheng Moat Reconstruction. *Green Building Materials*, 2019 (3) : 81.
- [2] Yu, R.H., Zhao, D., Moat dynamic design in the old city reconstruction. *Sichuan Construction*, 2017,37 (6): 66~68.
- [3] Liu, L.L., Study on the renewal and continuation of Nanjing moat landscape. Nanjing: Nanjing Forestry University, 2014.
- [4] Shi, X.S., Research on the development of Xi'an moat under the protection of a famous historical and cultural city. Xi'an: Xi'an University of Architecture and Technology, 2013.
- [5] Wang, G.Z., Tang, D.S., On the development of urban moat in China ——Take the Qinhuai River in Nanjing as an example. *Journal of Water Conservancy and Construction Engineering*, 2010,8 (4): 216~220.
- [6] Li, C.F., moat reconstruction and landscape improvement planning and design—to Qidong City Lusi port moat as an example. *Green Technology*, 2020,6.

Foundation Project: 5020802901-2021 High Level Undergraduate Education Construction Project of University Quality Engineering (Principle of Urban Planning)

About the author: 1. Wu Jun (1972-), male, professor, master tutor, corresponding author, mainly engaged in theoretical and practical research on urban and rural planning.

2. Jin Dongfang (1998-), male, from Shiyan, Hubei Province, with a master's degree in urban and rural planning, with a research direction in the protection and renewal of historical and cultural heritage.