MINISTRY OF CULTURE OF UKRAINE

KHARKIV STATE ACADEMY OF DESIGN AND FINE ARTS

Faculty of Design and Architecture

Educational-Professional Program "Design and Architecture"

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Study on Landscape Renewal of Changzhou Ancient Canal South Street from the Perspective of Traffic Heritage Corridor

Qualification work for obtaining the HED «Master»

in the specialty B2 Design EPP « Design and Architecture »

The qualification work contains the results of own research

The use of ideas, results and texts of other authors must be referenced to the appropriate source. Signed by: Ma ding BCFA53BFA39D4F9... Ma Ding（Mike）

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Kharkiv-2026

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Abstract

Traffic heritage is an important type of human activity space heritage. China has made a lot of traffic achievements in the long historical development and gradually formed a traffic heritage system. Wang Chang and others think that the cultural routes, cultural landscapes and related important material and intangible cultural heritages generated by transportation can be included in the scope of the transportation heritage system. Compared with natural heritage, cultural heritage and other heritage types, the practice and research on the protection of traffic heritage in China are still weak. In terms of protection practice, China's heritage protection work focuses on natural heritage, historical and cultural cities, towns and villages, site protection and so on, and pays insufficient attention to traffic heritage. Among the 57 world cultural heritage projects in China, only the Beijing-Hangzhou Grand Canal and the Silk Road "Chang 'an-Tianshan Corridor Road Network" are two traffic heritages. Among the 5,058 national key cultural relics protection units in 8 batches, there are only 18 traffic heritages. After the sixth batch of national key cultural relics protection units was approved in 2006, the number of traffic heritages was gradually increased. At present, there are still many traffic heritages in various places that have not been included in the heritage catalogue and protection scope at all levels. In addition, the rapid development of modern transportation has largely replaced traditional transportation, and many traditional transportation lines are gradually abandoned, which objectively increases the difficulty of protecting and activating transportation heritage.

Key Words: Traffic heritage corridor, Changzhou grand canal, Landscape renewal design

INTRODUCTION

With the acceleration of urbanization and the rapid iteration of current technology, traffic heritage is facing severe challenges such as functional decline, spatial fragmentation and historical narrative fracture. The Beijing-Hangzhou Grand Canal, as a water conservancy artery running through the north and south, is a problem to be solved at present.

Firstly, through reading and studying the literature, this paper combs the theoretical system and related practical cases of traffic heritage corridor, conducts theoretical research on related disciplines, understands and discriminates the concept of canal waterfront landscape space, and summarizes its characteristics, ideas and related technical methods. Secondly, using field investigation and spatial analysis, the cultural elements and current situation of Nandajie section are deeply analyzed; At the same time, it also studies and analyzes the concept of traffic cultural heritage, the related concepts of canal culture and the types of canal landscape space, defines the specific design steps and contents, forms a complete design theory system, and lays a foundation for later practical application. Finally, integrating the professional knowledge of various disciplines, through the interpretation of relevant cases, absorbing and drawing lessons from the design techniques of the heritage corridor, as an important reference for the later project design.

CHAPTER 1

RESEARCH BACKGROUND

1.1 The demand of traffic heritage corridor construction

In the long historical development of the Chinese nation, in the process of production, trade, migration and war, the constantly improving transportation network system has provided a strong guarantee and fundamental support for the unified and continuous development of Chinese civilization, and a large number of cultural routes and related relics have been born based on transportation. It has left a wealth of transportation and cultural heritages, such as hanging spring bamboo slips, Dunhuang and Turpan documents, the Beijing-Hangzhou Grand Canal, the Yangtze River Silk Road, the Shu Road, the Yellow River plank road, the site of Zhenghe's voyage to the West in Nanjing in the Ming Dynasty, the ancient tea-horse road and a large number of ancient bridges, all of which profoundly record and show the historical process of the ancient people of China in building the country, developing Chinese and foreign transportation, and making unremitting efforts.

The protection and development of traffic heritage is not simply a nostalgic historical review, but a civilized choice facing the future. With the vision of "heritage is the future", the transportation heritage will be brought into the framework of urban climate adaptation strategy, regional collaborative governance and mutual learning of civilizations, and the value cognition system of transportation heritage will be reconstructed, from "technical history view" to "civilization history view", and the contemporary functions and diversified values of transportation heritage such as railways, ancient roads, canals, towns and villages, factories and mines will be deeply explored in the process of globalization.

At present, the research on historical transportation in China is still short of understanding the concept, connotation and system of national transportation cultural heritage from the perspective of cultural heritage, comprehensive investigation and in-depth study of related heritage, investigation, research, identification, protection and rational utilization of transportation heritage, and the construction of national transportation heritage system. In the current protection and utilization of cultural heritage, traffic heritage is still a new field to be explored and should become an important content in the construction of a "traffic power".

1.2 The importance of the continuation of canal culture

As a valuable blue-green resource in the city, waterfront area bears multiple missions: it not only reveals the historical and cultural heritage of the city, but also provides an excellent

place for citizens to get close to nature and have fun. Among them, the ancient canal, with its unique linear landscape and historical traces, constitutes the most beautiful landscape in the waterfront landscape. They are not only a link in the ecosystem, but also a living fossil of urban memory, organically integrated into the blood of the city, demonstrating the vitality and unique charm of the city. With the accelerated development of the city, the traditional shipping function of the ancient canal has been gradually cancelled, but its function as an urban public space and recreation place has become increasingly prominent, and the public space along the ancient canal is becoming an important urban waterfront. The renovation and beautification of the canal waterfront has always been the focus of international attention, which is not only a reflection on the protection and utilization of the space along the canal, but also a profound embodiment of the inheritance and development of the canal culture. Therefore, worldwide, academic research in the field of canals mainly focuses on issues such as heritage corridors and waterfront landscapes.

1.3 Theoretical significance

(1) The localization application of the theory of "traffic heritage corridor": The theory of heritage corridor is mostly applied to the linear heritage protection at the regional scale. This study focuses on the specific area of the built-up area of the canal city, and discusses the renewal strategy along the corresponding area of the canal in view of the heritage corridor with the core function of "transportation". The purpose of this paper is to explore the practical application of this theory in urban landscape space, so as to enrich and develop the application scope and depth of heritage activation after the transformation of traffic functions.

(2) It provides a new perspective for the protection and renewal of urban linear cultural heritage: the traditional protection mode focuses on a single "point", such as a single cultural relic site or architectural site, but cannot be related to the surrounding environment. This study emphasizes the linear space in the form of "corridor" as a whole, and systematically integrates scattered cultural relics sites, continuous canal context and modern urban functions. This is helpful to break the limitation of single factor protection, promote the mode change from "static preservation" to "dynamic activation", and emphasize the integrity and inclusive design principle of traffic heritage.

(3) Promote the cross-integration of urban and rural planning and historical and cultural heritage protection: This study is not a simple discussion of landscape design, but involves the cross-disciplinary research of traffic history, cultural heritage, public space design and so on. By taking landscape design as the medium, the concrete application of heritage corridor in environmental design practice is promoted, and the interdisciplinary intersection and integration

between them are deepened, which provides a new perspective and methodology for future environmental design research.

1.4 Practical significance

(1) Improving the quality of urban public space: This study faces the realistic difficulties faced by the south street section of Changzhou Ancient Canal, such as the aging landscape, the lack of public space and the weakening of historical memory. The proposed landscape renewal design strategy and scheme can effectively improve the physical environment and psychological atmosphere in this area, making it a place where citizens are willing to stay and move, thus improving the overall quality of urban public space and the quality of life.

(2) Enhance the vitality of the city and social integration: through the overall landscape renewal of the south street section of the ancient canal, the cultural landmarks in the core area of the city can be reshaped and the "canal culture" of the city can be continued. Matching cultural corridors, increasing public activity space and improving ecological environment can directly improve the quality of life of residents around the canal, enhance the happiness of urban people, and make the achievements of cultural heritage protection benefit the people.

(3) Promote the strategic development of the city: The construction of the Grand Canal Cultural Belt emphasizes "protection first, live transmission and rational utilization". This study is the practice and deepening of this national strategy at the local level. By making the South Street section of Changzhou Ancient Canal a successful example of renewal, it can provide valuable "Changzhou experience" for the protection and utilization of urban sections along the Grand Canal and contribute to the prosperity and development of the overall cultural belt.

1.5 Core research content

(1) The connotation of traffic heritage corridor theory.

The transportation heritage corridor focuses on the overall protection, emphasizing the protection of linear heritage and towns, buildings, natural landscapes and intangible cultural heritage along the line as a whole. This has changed the "scattered point" mode of protecting only landmark buildings in the past. Multi-value integration pursues the comprehensive balance and common promotion of cultural, ecological, economic and social values. Protection is not only to preserve history, but also to improve ecology, promote tourism and promote regional revitalization. Dynamic adaptive utilization pays attention to the reuse of the original buildings and spaces to meet the modern needs on the premise of protecting the core values of the heritage, and injects new vitality into the heritage. Spatial linear structure usually has four elements: green corridor, hiking trail, heritage node and interpretation system, which are integrated in series

through linear space.

(2) The application of traffic heritage corridor theory.

Railway traffic heritage: In the research on the protection of Lushun section of Middle East Railway and Taibai Railway in Taiyuan, the isolated and dilapidated industrial heritage sites were connected in series by using the theory of traffic heritage corridor, and the cultural and economic values of these railway heritages were reactivated by building museums, hiking trails and landscape parks.

Ancient Road and Highway Traffic Heritage: Duku Highway in Xinjiang is regarded as a cultural landscape corridor. The research aims to protect the natural landscape and national culture and promote the sustainable development of tourism along the route by constructing a four-in-one resilient protection model of "ecology-culture-management-consumption".

Canal traffic heritage: In the conservation planning of Liaocheng section of the Grand Canal in China, the traffic heritage corridor not only protects a large number of cultural relics, but also restores biodiversity along the canal, and connects the canal with the urban park green space system, creating high-quality public space for residents.

CHAPTER 2
RELATED THEORETICAL BASIS AND RESEARCH STATUS QUO

2.1 Construction of Traffic Heritage Corridor in Canal Landscape Space

（1）Characteristics of Traffic Heritage Corridor

The most fundamental feature of traffic heritage corridor lies in its linear, holistic and dynamic vision. It breaks through the traditional limitation of "isolated island" protection of a single cultural relic, and regards a traffic route and all its heritage nodes, natural ecological environment and intangible cultural heritage as an organic whole and inseparable spatial system. This corridor has a unified cultural theme and historical narrative, emphasizes cross-regional and cross-departmental collaborative management, and pays attention to active utilization and sustainable development on the premise of protecting core values, thus transforming static historical sites into dynamic areas that connect the past and the future and have cultural, ecological and economic values.

（2）Characteristics of canal landscape space

Spatial layout: In terms of spatial layout and functional integration, Changzhou canal landscape space shows the characteristics of "integration of ancient and modern, multi-integration". Its core lies in the creative transformation and linked development of historical resources: on the one hand, the blocks bearing profound historical context, such as Qingguo Lane, are protected and repaired, and while retaining the architectural texture of the Republic of China, modern cultural and creative, commercial and leisure formats are introduced to become a living "city museum"; On the other hand, the industrial remains along the canal, such as the former site of Hengyuanchang Factory and Qiji Factory, were replaced by functions and artistically reshaped, and they were turned into cultural landmarks like the "Canal No.5" creative block, realizing a gorgeous turn from "industrial rust belt" to "life show belt". At the same time, through the riverside trail and the ecological green space system, they are connected in series to form a canal landscape public space integrating historical pursuit, cultural experience, creative life and natural leisure.

Landscape depth: the landscape space of Changzhou Canal profoundly embodies the regional characteristics of "thriving because of the river and long context". Its cultural narrative closely revolves around the industrial and commercial civilization spawned by the canal. The

landscape belt preserves and explains the remains of modern national industries such as textiles and machinery. Through the construction of the Grand Canal industrial heritage exhibition hall and the red education base, the heavy industrial history will be transformed into sensible and touchable public education resources, and the collective memory of the city will be awakened. At the same time, the garden culture, which relied on canal irrigation and the prosperity of literati in history, has also been revived. In addition, the static history and culture are "alive" by holding the Canal Culture Festival continuously and developing the theme cultural creation, which fills the citizens' "cultural granary" and enhances the city's cultural identity.

Design concept: In terms of ecological management and design concept, Changzhou Canal landscape space adheres to the core concept of "symbiosis and sustainable development of city and water". Facing the challenges brought by shipping and industrial development, through a series of systematic ecological projects, such as channel dredging, living water circulation and wetland restoration, the water quality and overall ecological environment of the canal have been significantly improved, laying a solid foundation for realizing "clean water, green shore and beautiful scenery". Once shanty towns and polluted plots were transformed into scenic canal parks and ecological green spaces, which provided habitats for waterfowl and other creatures and greatly improved the hydrophilic experience and quality of life of citizens. In terms of planning and design, we should emphasize protection and development, respect historical relics, let new and old buildings start a dialogue along the Yun River, promote the integration of culture and tourism, and make the canal a model of sustainable development with both cultural charm and economic vitality, thus truly realizing the harmonious coexistence between man and nature, history and future.

2.2 Research progress of canal culture theory in China

（1）Study on the overall utilization of canal cultural value

Cities, villages and buildings along the canal are like bright pearls embedded in the long river of history. They not only show the cultural characteristics and humanistic features in different historical periods, but also contain rich cultural connotations and profound cultural connotations. Canal is not only a manifestation of water conservancy project, but also a symbol of culture and civilization. It represents the wisdom of harmonious coexistence between man and nature, and embodies the management and utilization ability of water resources in ancient society. For the public, the canal culture is a window to understand and learn traditional culture. Through it, the relevant departments can deeply understand the cultural roots and spiritual connotation of the Chinese nation and enhance their knowledge and understanding of traditional culture.

（2）Analysis and Research on the Protection and Inheritance of Canal Culture

Strengthening the research and inheritance of the canal culture is a crucial task. In order to deeply explore the connotation of the canal culture, relevant departments need to conduct comprehensive and in-depth research from multiple dimensions such as history, science and social culture. This includes discussing the digging history, development and changes of the canal, and its interactive relationship with the social, economic and political environment at that time; Study the technical achievements of canal engineering, such as water conservancy engineering and building technology, and discuss the scientific significance of these technologies at that time and now. Use the media, online platforms and other channels to popularize the knowledge of canal culture and enhance the public's understanding of the importance of canal culture. Revive the traditional folk activities related to the canal and enhance the sense of experience and participation of the canal culture; On the premise of protection, the canal cultural heritage should be activated and utilized to integrate the canal culture with modern life. Strengthen exchanges and cooperation with other canal cities in the world to jointly promote the protection and inheritance of canal culture.

（3）Study on Waterfront Landscape Design of Canal

In 2016, it launched an investigation around the Hangzhou section of the Grand Canal, and based on the historical corridor, summarized the technical methods between this type of urban design and waterfront space. In 2018, Qiu Lu and others took Linchuan District of Fuzhou as a practical goal, and theoretically remolded the inheritance of regional culture and the development of cultural space from the aspects of cognition, interpretation, planning, design and prospect, and improved the system construction of urban regional cultural carriers. Under the background of cultural heritage corridor, the division scope of waterfront will also shift from landscape environment shaping for specific areas to urban space integration at a higher level, and the landscape design of urban waterfront areas will be more systematic in the future.

2.3 Research progress of canal culture theory abroad

At present, the theoretical study of canal culture abroad is no longer confined to a single historical perspective, but has formed a multi-disciplinary pattern. Its core is to redefine the canal from a simple traffic project into a dynamic "cultural landscape" and "memory streamline". Focus on the process of "heritage activation" of the canal, and analyze the transformation relationship and cultural influence behind its transformation from industrial facilities to traffic cultural heritage; At the same time, it combines the criticism of political economy to reveal the

power discourse in the heritage narrative; And using the theory of cultural memory, this paper discusses how the canal carries the collective identity. The latest trend emphasizes the canal as an organic living body, promoting its ecological restoration and sustainable development, thus realizing the transformation from historical heritage to living cultural resources.

2.4 Domestic project cases

Domestic canal waterfront landscape design focuses on systematic ecological governance, the overall activation of linear cultural heritage and the remodeling of waterfront public space, and is committed to balancing the relationship between protection and development, so that canal culture can be integrated into contemporary life. Taking Suzhou section of the "One River and One River" project in Shanghai as an example, it completely transformed the once closed productive coastline by connecting the waterfront coastline, restoring ecological revetment, and planting leisure trails and public service facilities. At the same time, the original old warehouses, factories and other industrial remains were retained and reused in the design, which turned them into cultural exhibitions or commercial spaces, and successfully integrated the protection and inheritance of the Grand Canal cultural belt with the goals of enhancing urban public vitality and improving ecological functions.



Suzhou Reach in Shanghai's "One River and One River" Through Project

https://www.shobserver.cn/wx/detail.do?id=308278

The "Grand Canal Theatre" in Hangzhou, Zhejiang Province and the comprehensive renovation project of surrounding blocks reflect the deep exploration of cultural scene creation and community vitality stimulation in the construction of the "Grand Canal Cultural Belt" in

China. Instead of demolishing and building, the project has built a theater building with modern design on the banks of the river, and integrated the original historical blocks, museums and public docks in the west of the bridge, forming a cultural hub integrating cultural performances, tourism, leisure and community life. It has successfully transformed the Beijing-Hangzhou Grand Canal from a historical corridor to an experiential and consumable contemporary "cultural reception room", showing the advanced design idea that the transportation cultural heritage drives the organic renewal of the city.



Canal Grand Theatre in Hangzhou, Zhejiang Province

https://www.gooood.cn/hangzhou-canal-central-park-phase-ii-zhejiang-province-institute-of-architectural-design-and-research.htm

2.5 Foreign project cases

The frontier concept of canal waterfront landscape design abroad emphasizes the integration of ecological restoration, climate adaptation and modern expression of cultural heritage, and regards the canal as a dynamic social-ecological system, aiming at improving its comprehensive resilience as a green infrastructure. For example, the renovation project of Catharijnesingel Canal in Utrecht, the Netherlands, reopened the waterway covered for highway construction in the 1960s, which not only restored the river and vegetation to enhance biodiversity and rainwater management ability, but also reshaped it into a linear park for citizens to rest and move through careful landscape design, skillfully combining the historical waterway shape with the demand of modern urban public space, and became a model of "returning water to the city" and "symbiosis with nature".



Catharijnesingel Canal, Utrecht, Netherlands

https://www.gooood.cn/catharijnesingel-utrecht-okra.htm

The renovation of Manchester Ship Canal and Salford Quays in England is a classic example of the revival of industrial heritage. Facing the decline of the post-industrial era, the design did not retain its original freight function, but completely reshaped the regional vitality through water purification, adaptive reuse of historical buildings and injection of new cultural functions. Among them, the most prominent representative is the North Pavilion of Imperial War Museum, which was transformed from a wharf warehouse. The bold architectural form interprets the "fragments of global conflicts", which has not only become a landmark, but also transformed into a cultural destination attracting global tourists as an industrial heritage, realizing the transformation from industrial infrastructure to a cultural and economic complex.



Salford wharf

https://www.163.com/dy/article/J22JLN2S0514DPPR.html

CHAPTER 3

RESEARCH OBJECTIVES AND METHODS OF LANDSCAPE RENEWAL FROM THE PERSECTIVE OF TRAFFIC HERITAGE CORRIDOR

3.1 Research objectives

(1) The correlation between the perspective of traffic heritage corridor and landscape renewal. Through theoretical analysis and practical design, a feasible and innovative scheme of landscape space activation along the canal is put forward, aiming at improving the quality of urban public space, promoting the comfort of citizens and promoting the sustainable development of the city.

(2) Deeply explore the renewal strategy of the canal landscape space, and explore the spatial planning and design methods of the landscape along the canal by learning from the successful experience at home and abroad, hoping to provide a scientific, systematic and operable design framework for the regeneration of the canal landscape space.

(3) Taking the landscape space in the south street section of Changzhou Ancient Canal as an example, it can improve the urban spatial environment, promote the mental health and well-being of citizens, and promote the development of the city in a more humane, ecological and sustainable direction.

3.2 Main research methods

(1) Literature research method

Based on consulting a large number of documents in related fields and mastering the theories about canal culture, urban landscape, urban ecology, urban design and waterfront landscape design at home and abroad, a large number of theoretical achievements about space utilization along the canal and urban waterfront landscape are deeply studied as the basis of research.

(2) Inductive Deduction

Based on the related literature and the collected information of canal landscape design at home and abroad, through induction, deduction and analysis, this paper sorts out and deeply analyzes the spatial attributes, elements, utilization status and existing problems of the canal landscape space, and guides the proposal of activation research from the perspective of post-traffic

(3) On-the-spot investigation method

Select the landscape space in the south street section of the ancient canal as the research object, understand the utilization status, landscape characteristics, traffic conditions, human behavior activities and needs of the landscape space through on-the-spot investigation, taking photos and issuing questionnaires, solicit the public's views and feelings on the landscape space, and analyze the key points of the utilization or transformation of the canal landscape space, so as to provide a certain basis for design.

(4) Case study method

The South Street section of Changzhou Ancient Canal is selected as the practice site, and the reuse ideas and strategies of canal landscape space proposed in this paper are adopted. In practice, the specific problems of canal landscape space are solved and the previous viewpoints are disproved.

(5) Questionnaires

Get the residents' intention demand and principle for the landscape space in the south street section of the ancient canal, and increase the scientificity, rationality and public participation of space utilization.

(6) Behavioral analysis

Behavioral analysis is a research method to understand the influence of environment on human behavior by observing and analyzing people's behavior patterns in a specific environment. In this study, the behavior analysis method will be used to deeply explore the use status of landscape space in the south street section of Changzhou ancient canal, the characteristics of crowd behavior and the interaction between space and behavior, thus providing empirical basis for space activation design.

3.3 Research innovation point

(1) Possibility of spatial connection between traffic heritage corridor vision and canal landscape

Novelty of theoretical connection——Traffic Heritage Corridor mainly revives the left traffic heritage through environmental design. This topic applies the vision of traffic heritage corridor to the canal landscape space, a special urban cultural space, which is a brand-new theoretical connection. From the perspective of traffic heritage, this paper discusses how to promote the protection and activation of traffic cultural heritage through landscape renewal design, which has significant theoretical innovation value.

Unique perspective——Compared with other similar studies, the perspective of this topic

is more unique. Most of the existing studies focus on the transformation and functional diversification of the canal landscape space, such as adding parking lots, leisure sermons, special punch points, etc., but less attention is paid to the impact of these spaces on the traffic heritage level. This topic takes the view of traffic heritage corridor as the core, not only pays attention to the transformation of physical level, but also emphasizes the activation of canal cultural heritage through landscape renewal design, thus giving new life and vitality to the canal landscape space.

Interdisciplinary research——this topic will cross-study canal culture, urban planning, landscape design and other disciplines, and comprehensively analyze how space establishes traffic heritage corridors through design through interdisciplinary theories and methods. This interdisciplinary perspective makes the research more in-depth and provides more comprehensive theoretical support for the actual design.

(2) According to the characteristics of landscape space of Changzhou ancient canal south street, the scheme is put forward

Make full use of spatial characteristics——The landscape space of the South Street of Changzhou Ancient Canal has unique geographical location and morphological characteristics: the landscape space of the canal is influenced by the physical streamline of the canal, as well as the cultural influences of the city wall monuments, dragon boat culture and so on. Taking this characteristic into full consideration, this topic puts forward a design scheme combining the spatial characteristics of canal waterfront. By using the water landscape of the canal and combining with Changzhou local culture, a unique corridor with ecological and traffic cultural heritage is created.

The integration of ecology and culture——the canal is not only a natural landscape, but also an important part of Changzhou's urban history and culture. In the design of this topic, attention is paid to integrating the historical and cultural elements of the canal into the canal landscape space. Through landscape design and the setting of cultural facilities, the canal landscape space becomes a window to display Changzhou urban culture. At the same time, through ecological restoration and vegetation design, the ecological function of the canal landscape space will be improved, making it a public space with both historical and cultural heritage and natural ecological atmosphere.

Design with Diversified Functions ——Combined with the activity needs of Changzhou urban residents, this topic puts forward a design scheme with diversified functions. A variety of functional areas, such as leisure squares, walkways and cultural exhibition areas, are set up in the canal landscape space to meet people of different ages and different activity needs. At the same

time, through reasonable spatial layout and streamline design, the permeability and accessibility of the canal landscape space are ensured, so that people can feel comfortable and happy when they are active in it.

CHAPTER 4

DESIGN STRAGEGY SYSTEM

4.1 Morphological space strategy

(1) Enhance culture

He enhancement of culture is not only to protect the "old", but also to implant the "new" and reproduce history with contemporary design language. Translation of Corridor: From traffic corridor to cultural corridor, the linear space prototypes such as "corridor shed" and "fiber path" that served shipping in history are translated into modern landscape veranda, wind and rain corridor and hydrophilic platform. These new corridors not only provide practical functions for pedestrians to shelter from the wind and rain, but also become visual corridors and behavior guiding lines connecting various cultural nodes in series. Borrowing scenery from window frames: Looking at the ancient and modern in the frame scenery, a series of "scenery windows" are consciously set on the waterfront interface, which may be traditional moon cave doors or silhouettes of openings or verandahs in modern buildings. Through these "mouths", the ancient Tianning Tower, the Ming City Wall and other distant views are brought into the viewer's field of vision as "paintings", forming a wonderful experience of looking at each other one step at a time, and strengthening the spatial level and cultural depth of the place.

(2) Improve hydrophilicity

The site is close to the Grand Canal. Combining water elements into the design, improving hydrophilicity can improve spatial affinity. Hydrophilic platforms and trails are set up near the water area for citizens to enjoy the water features and get close to nature. Canal channel has been used as a transportation channel since ancient times, and some experience projects can also be set up in combination with ships. By planting aquatic plants and setting up landscape sketches, we can enrich the waterfront landscape level and enhance the hydrophilic experience. Necessary safety protection measures, such as guardrails, warning signs, etc., shall be set in the hydrophilic area to ensure the safety of citizens.

(3) Enhance functionality

In order to meet the needs of different people, the canal landscape space should have diversified functions. Specific strategies include: dividing functional areas: according to spatial characteristics and citizens' needs, residents need sports venues, painting venues, entertainment venues and so on. And divide the canal landscape space into different functional areas, such as leisure area, sports area and cultural exhibition area. Introduce public facilities: set up public facilities such as seats, sunshade facilities and garbage cans in the space to improve the comfort

and convenience of the space. Organize activities: organize various activities regularly, such as cultural performances, dragon boat races, community gatherings, etc. , attracting people and enhancing the vitality of the space.

4.2 Functional space strategy

(1) Placement of appropriate functional types

In the activation of canal landscape space, its functional orientation should be fully considered and appropriate functional types should be placed. Specific strategies include: combining the needs of citizens: understanding the needs and expectations of citizens for the space along the canal through investigation, and determining the functional types according to the needs. Introducing cultural elements: Combining the cultural characteristics of Changzhou, setting up cultural exhibition areas and art installations to enhance the cultural connotation of the space. Develop commercial services: On the premise of not affecting traffic, introduce small commercial service facilities, such as cafes, and make them into mobile cars to meet the consumption needs of citizens.

(2) Harmonious surrounding environment landscape

The landscape space along the canal should be coordinated with the surrounding environment to form a whole urban landscape. Specific strategies include: keeping style consistent: in landscape design, keeping harmony with the surrounding environment in terms of style and color, and avoiding abrupt feeling. Utilization of surrounding resources: Make full use of the natural landscape, historical and cultural resources around the canal to improve the overall quality of the space. Strengthen the spatial connection: strengthen the connection and interaction between the canal and the surrounding space through cultural installations and landscape sketches.

(3) Improve basic service facilities

In order to improve the experience of landscape space along the canal, basic service facilities should be improved. Specific strategies include: adding lighting facilities: setting reasonable lighting facilities in the space to ensure the safety and comfort of night use. Improve sanitary facilities: set up enough sanitary facilities such as toilets and garbage cans to keep the space clean and hygienic. Improve traffic facilities: optimize traffic streamline, set up reasonable traffic facilities such as parking lots and bus stops, and improve the accessibility and convenience of space.

4.3 Ecological space strategy

(1) Restoring vegetation community

When it comes to revitalizing the landscape along the canal, plant communities are a key way to boost the ecological quality. The specific strategies include: picking the right plants based on sunlight, humidity, and other conditions along the canal; creating multi-layered greenery with trees, shrubs, and ground plants to make a rich ecological landscape; and keeping up with maintenance like regular pruning, fertilizing, and pest control to make sure the plants stay healthy.

(2) Soften the hard interface

To make the canal-side landscape feel less stiff, we should soften the hard edges. Some strategies include: adding green belts: place green belts near the hard edges along the canal to soften them with plant growth and spread. using eco-friendly materials: use permeable pavements, eco-bricks, and other ecological materials in the space to improve air and water permeability. adding landscape features: put in sculptures, benches, flower beds, and other small landscape elements to add layers and enhance the visual appeal.

(3) Optimize the water cycle

When revitalizing the landscape along the canal, we should optimize the water cycle and enhance the ecological value of the space. Specific strategies include: setting up a rainwater collection system: install systems to collect and use rainwater for irrigation, cleaning, and other purposes. Strengthening water quality protection: regularly monitor and protect the water quality to keep the water clean and healthy.

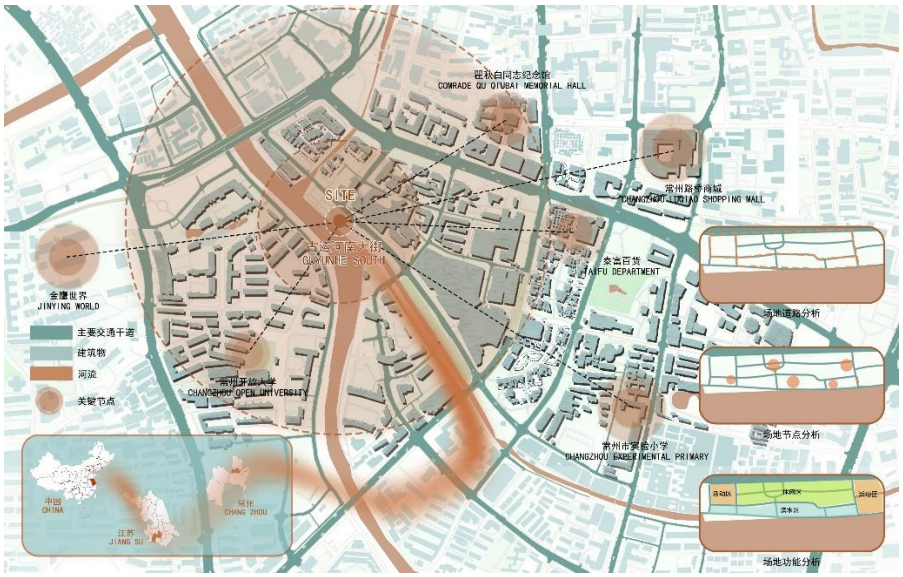
CHAPTER 5

DESIGN PRACTICE FOR THE LANDSCAPE RENEWAL OF HENAN STREETALONG THE ANCIENT CANAL IN CHANGZHOU

5.1 Overview of South Street

(1) Geographical location

The Changzhou Ancient Canal South Street Cultural Tourism Area is located on South Street in the city center of Changzhou. It's the only canal cultural scenic area in the country where the ancient canal runs through the city center. It stretches from Jinling Middle Road in the east to Huaide Bridge in the west, borders the ancient canal to the south, and is next to Yanling West Road to the north. The area includes five main sections, such as Biji Alley and Xiyingmen City Wall, covering a total of about 300,000 square meters. In 2011, it was awarded the AAAAA-level tourist attraction by the National Tourism Administration.



Location analysis map (drawn by the author)

(2) Venue History

The historical changes of the South Street section along the Ancient Canal in Changzhou are pretty clear: it originally started as the Nanshi River dug during the Spring and Autumn period and was widened into a major transport route during the Sui Dynasty. In the Yuan and Ming periods, when the canal was rerouted, its role as a main transport artery gradually shifted to the new city canal. It then developed into an inner-city waterway bustling with commercial and residential life, nurturing culturally rich historic streets like Qingguo Lane. In modern times, with the construction of the new canal, its transport function further declined. Today, following the successful heritage listing of the Grand Canal, the South Street section is going through a

transformation from a transportation route to a cultural attraction, with protective updates helping to restore its historic look and urban vitality.

(3) Surroundings

The area around Nan Street along the old canal in Changzhou, centered on historic cultural streets like Qingguo Lane and Biji Lane, preserves a rich heritage of canal culture and the traditional Jiangnan water town vibe. At the same time, relying on the Nan Street commercial area and the Canal No. 5 Creative District, it has become a vibrant zone where traditional commerce and modern creative industries blend. In recent years, with riverside pathways, community renovations, and environmental improvements, it has gradually developed into a comprehensive urban waterfront space that combines historical preservation, shopping and leisure, and livable ecology, showcasing the unique charm of Changzhou's ancient city mixed with modern urban life.

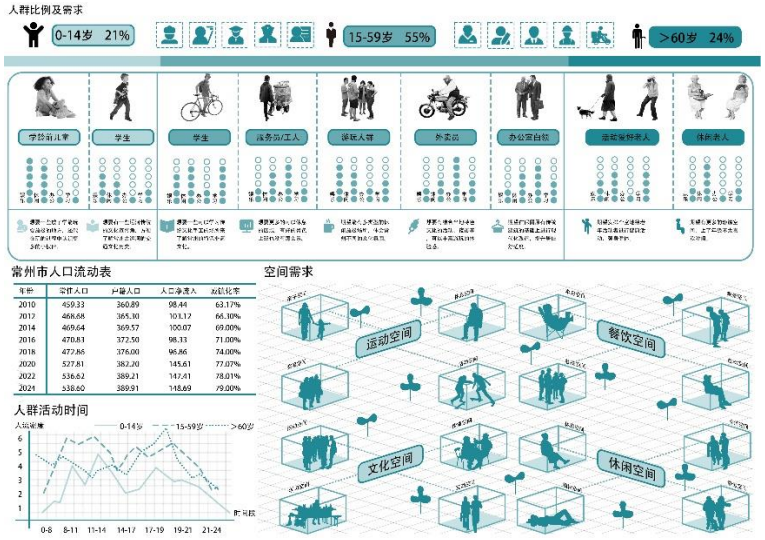


Photos around the site (taken by the author)

5.2 Crowd Analysis

Based on the population mobility data of Changzhou, the people using the site can be divided into three categories: school-age children aged 0-14 make up 21%, young and middle-aged people aged 15-59 account for 55%, and the elderly over 60 make up 24%. There are obvious differences in spatial needs and activity times among these groups. Young and middle-aged people are the core users of the site, including students, office workers, professionals, and tourists: students want to use the corridors for study tours on canal intangible cultural heritage and shipping culture; local professionals need spaces for short breaks; visitors hope for an immersive canal cultural experience. The elderly are divided into fitness-oriented and leisure-

oriented groups, needing open activity areas and quiet viewing spots, respectively. School-age children prefer natural playgrounds where they can experience canal culture through parent-child activities. Considering Changzhou's continuous net population inflow, the site design should combine multiple functions such as parent-child activities, sports, cultural learning, and social relaxation, balancing the daily leisure needs of local residents with the heritage tourism experiences of visitors.



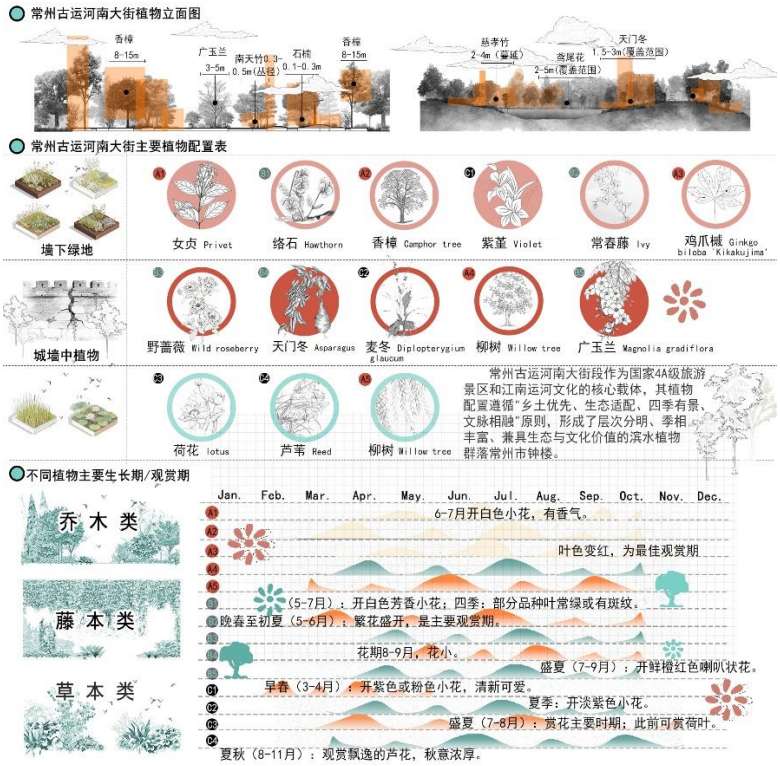
Crowd analysis chart (drawn by the author)

5.3 Site Plant Analysis

The plant layout along the section of Henan Avenue by the ancient canal in Changzhou follows the principles of prioritizing native plants and ecological adaptation. The site's plants are divided into three categories: trees, vines, and herbs. Trees mainly include native species like camphor, southern magnolia, Japanese maple, and willow. Vines like star jasmine, ivy, and wild roses are used for vertical greening on city walls and walls. Herbs such as mondo grass, violet, lotus, and reeds are applied to waterside wetlands and under-wall green spaces, creating a natural canal-side habitat.

From a seasonal landscape perspective, the flowering times of different plants are staggered: violets bloom in early spring, southern magnolia in late spring; lotus flowers peak in summer, and Japanese maple leaves turn red in autumn; reeds and heavenly bamboo continue to add visual interest through autumn and winter, making the scenery appealing all year round. The vertical plant design integrates with the site's space, using trees to shape the canopy line, while ground cover and vines fill the lower layers, forming a multi-level green interface. The overall plant system balances ecological restoration and flood bank protection, while reflecting the regional characteristics of the Jiangnan canals, achieving a unity of ecological and cultural

landscape values.



Site Plant Analysis Diagram (drawn by the author)

5.4 SWOT

(1) Strengths

Cultural Advantages: It’s a national 4A-level scenic spot and the only cultural site in the country where the ancient canal runs through the city center. It boasts historic sites like Biji Alley, Xiyingmen City Wall, and Wenheng Bridge, with the 'Biliang Lanterns' being one of Changzhou's famous eight scenic spots. Regional Advantages: Located in the core business district of the city center, with convenient water and land transportation. Free to visit, it attracts a lot of foot traffic. The intangible cultural heritage of comb culture and the night tourism economy are distinctive, and there’s a solid foundation for integrating culture and tourism.

(2) Weaknesses

Aging facilities: Some buildings are old, which hurts the visitor experience. There's serious business homogeneity, with not enough revitalization of long-established brands, and competition with nearby areas like Qingguo Alley is splitting customers. The space is tightly packed, and the waterfront walkway and pedestrian system aren’t fully connected. Single-type businesses: Mainly traditional dining and retail, with few immersive experiences. Nighttime economy lacks variety beyond lighting, and the cultural aspects aren't deeply explored.

(3) Opportunities

Cultural Empowerment: Taking advantage of the revival of the old town and the creation of 5A scenic spots, projects like Daguan Tower and the Jizi Cultural Center are stepping up their capabilities. The Grand Canal Cultural Belt promotes water and land connectivity, with a planned pedestrian street to link both sides. Digital Upgrade: Digital technology empowers immersive canal cultural experiences and light shows. By blending intangible cultural heritage with commerce, events like the Old Brand Wonderful Night can expand cultural tourism consumption. Subway and boat connections form a multi-dimensional sightseeing system.

(4) Threats

City Competition: Nearby cities have intense competition in cultural and tourism projects, and similar canal districts in the Yangtze River Delta are drawing away visitors. There's also a risk of over-commercialization during urban renewal, which could weaken the historic charm and local vibe. Insufficient Updates: Changing consumer habits mean that younger crowds prefer trendy experiences, so traditional streets are becoming less attractive. Lack of funding might affect maintenance, renovations, and business upgrades, limiting sustainable development.



SWOT Analysis Chart (self-drawn by the author)

5.5 Overall Layout Plan

The site stretches along the old canal in a ribbon-like shape, using the canal as the main heritage corridor. Combined with the city roads behind it, it forms a three-layer traffic structure: 'canal waterway corridor — waterfront pedestrian green corridor — city roads.' The overall area

is divided from west to east into multiple themed landscape nodes, connected by continuous waterfront park paths, creating a linear heritage park that carries the memory of canal shipping.

The west section mainly features an ecological and relaxing space, with circular viewing platforms, open woods and lawns, small water features, and shaded rest areas, preserving a natural shoreline. The central section is the core heritage experience area, with waterside platforms, wooden boardwalks, special landscape structures, and light service facilities like bubble houses, enhancing the interaction between people and the canal. The east section serves as the gateway and distribution area, with a large cultural plaza, parking lots, and a boat dock, handling tourist gatherings and water transport connections, opening up the water-land transition points and highlighting the canal's role in ancient transport.



General layout plan (drawn by the author)

5.6 Site Node Configuration

(1) Water transportation

A restored boat dock is set up on the east side of the site as a stop for water tours, continuing the transportation role of the Grand Canal for cargo navigation and creating a water tour route for a heritage corridor experience. In the middle section, wooden platforms extend over the water to simulate ancient canal piers, bringing back the spatial memory of landing by the water in the old days.



Cruise Ship Dock Rendering (hand-drawn by the author)

(2) Slow walking on land

We’re creating a continuous waterfront main park path along the canal, connecting the previously broken waterfront trail to form an uninterrupted heritage walking corridor. From the main path, several smaller trails branch out, linking different scenic spots to build a clear main-and-secondary walking network. On the north side of the site, a parking lot and entrance plaza are set up along the city’s main road, serving as a transfer point for vehicles and enabling a multi-modal route of 'car—walk—boat,' forming a complete heritage corridor touring system.



Activity area rendering (drawn by the author)

(3) Waterfront Spaces and Ecological Shoreline Renewal

The shoreline uses an ecological approach combining soft and hard revetments. Some areas keep natural vegetation on gentle slopes, while certain spots have hard waterside platforms, balancing flood control with water-friendly experiences. Floating ecological islands and aquatic plant communities are planned on the water to restore the canal's waterfront ecology and improve the water environment.



Waterfront quay rendering (hand-drawn by the author)

Along the waterfront, multiple viewing platforms and rest spots are scattered, offering sightlines to enjoy the canal and look back at the old town streets. The canal serves as a scenic interface, connecting the waterfront space with the old town on South Street, allowing the heritage corridor landscape to blend through.



Viewpoint platform rendering (hand-drawn by the author)

(4) Canal Transportation Heritage Cultural Site

The western circular viewing platform serves as a spot to enjoy distant views of the canal; the middle section features unique landscape elements and light service facilities, creating an immersive canal culture experience; and the eastern main entrance plaza has a central landscape sculpture, acting as the cultural gateway of the heritage corridor and hosting canal traffic culture displays and crowd gathering functions.



Cultural Square Rendering (Hand-drawn by the Author)

(5) Site Planting Layout

The site’s plant layout uses native trees to create a plant space with varying density. Sparse forests, flower borders, and waterside vegetation are used to shape a rich, layered green landscape, making the green space the green base of the heritage corridor and softening the boundary between the city roads and the canal.



Site planting rendering (hand-drawn by the author)

5.7 Chapter Summary

To address the shortcomings of the neighborhood, such as a single type of business, broken pedestrian pathways, and disconnected waterfront spaces, this update improves spatial connectivity through continuous walking corridors. It also enriches experiences with features like water piers and cultural plazas, creating immersive heritage experiences. By leveraging a combined land-and-water tour system, it aligns with the revitalization of the old town and the development of the Grand Canal cultural belt. While protecting the canal's traffic heritage, it moderately introduces cultural and tourism activity spaces to avoid over-commercialization and

balance heritage preservation, public leisure, and cultural tourism development.

GENERAL CONCLUSION

This study, which is based on the theory of traffic heritage corridors for the landscape renewal design of Nanda Street along the Changzhou Ancient Canal, still has some limitations. The research mainly focuses on landscape space design and lacks sufficient exploration of social and economic aspects such as land ownership, funding operations, and heritage protection policies, so the implementation of the plan still requires coordinated efforts from multiple stakeholders. The survey of people mainly analyzed static needs, lacking long-term and seasonal dynamic monitoring of pedestrian flows, so predictions of people's behavior are somewhat idealized. At the same time, the study is limited to the waterfront section of Nanda Street, and the regional interaction analysis of heritage nodes upstream and downstream of the canal is not thorough enough. In addition, the long-term effectiveness of the proposed ecological restoration and heritage activation strategies still needs to be continuously monitored and verified after implementation.

Future updates to the ancient canal could break through the limitations of single sections and create a fully connected Grand Canal heritage corridor, linking streets and heritage sites along the way to form a complete cultural narrative of canal transportation. We'll keep exploring intangible cultural heritage related to canal transport and use digital technology to enrich immersive cultural experiences. There's also the idea of trying out a long-term management model involving the government, communities, and businesses, balancing local residents' everyday needs with cultural tourism development and preventing over-commercialization. The hope is that through gradual, small-scale updates, the canal's shipping heritage can be transformed into high-quality waterfront public spaces, achieving coordination between heritage protection, ecological restoration, community wellbeing, and cultural tourism development, and serving as a reference example for similar canal heritage updates in other domestic cities.

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