

Low-carbon Landscape Design of Jiashan Park in Mingguang
City under the Concept of Carbon Neutrality

Design author: Li Longhao

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摘要：本设计以安徽省明光市嘉山公园为例，提出了一个名为“智绿未来”的创新公园设计理念，旨在构建面向2030年的低碳城市公园。通过结合智能科技和可持续设计策略，本项目不仅致力于创造生态友好的绿色空间，还强调公园在城市生态系统中的作用，促进生物多样性和环境教育。设计中包括智能照明系统、雨水收集和循环利用机制、本土植被的广泛应用以及可持续材料的使用，旨在实现能源效率最大化和碳排放最小化。另外，公园将经由过程社区介入和互动式体验，成为市民休闲、教诲和文化交流的主要场合。

关键词：智能科技、低碳设计、可持续景观

Abstract: This project presents an innovative park design concept named “Green Intelligence: Future” for Jia Shan Park in Mingguang City, Anhui Province, aimed at creating a low-carbon urban park by 2030. Integrating smart technology with sustainable design strategies, the project seeks to establish an eco-friendly green space that emphasizes the park’s role in the urban ecosystem, promoting biodiversity and environmental education. Key features include intelligent lighting systems, rainwater harvesting and recycling mechanisms, extensive use of native vegetation, and sustainable materials, all aiming to maximize energy efficiency and minimize carbon emissions. Additionally, the park will serve as a vital hub for community engagement and interactive experiences, facilitating leisure, education, and cultural exchange among residents. This design not only enhances the quality of urban green spaces but also sets a sustainable and innovative precedent for future low-carbon city parks.

Keywords: intelligent technology, Low carbon design, sustainable landscape

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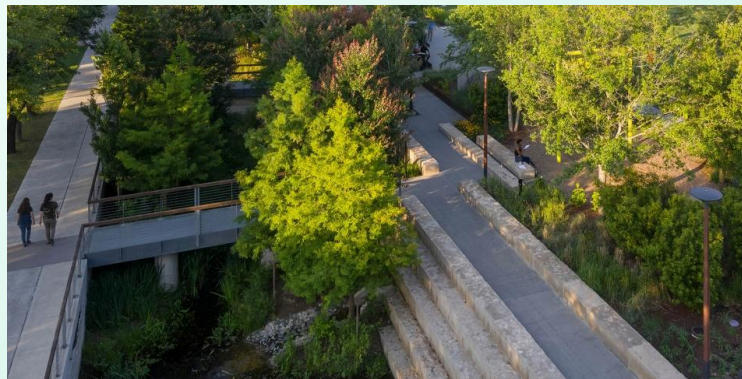
01.background of the subject

- 1.1 research background
- 1.2 purpose of research
- 1.3 research significance
- 1.4 Current research status at home and abroad
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Research background



- With the global climate change and the rapid acceleration of urbanization, the ecological functions and social values of urban green spaces have received increasing attention and emphasis. Especially in China, the pressure on the environment and resources caused by the rapid urban development is constantly growing, and the design of low-carbon and sustainable urban parks has become a key to the sustainable development of cities.
- As a typical medium and small-sized city, Mingguang City in Anhui Province, optimizing and innovatively designing the urban green space system is of great significance for improving the urban environmental quality and promoting sustainable development.



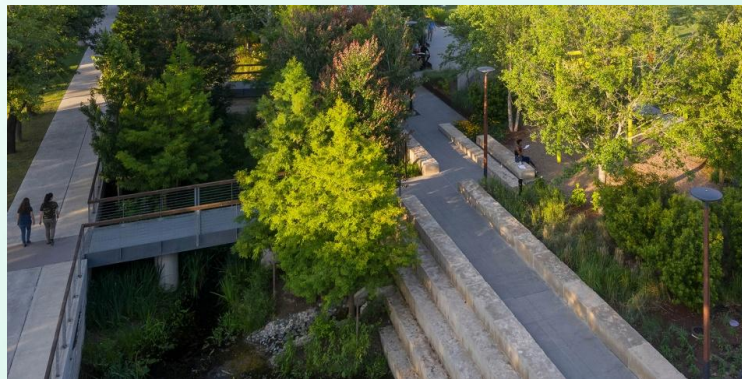
Purpose of research



- This plan aims to explore and practice the concept of low-carbon and intelligent urban park planning. Based on the case of Jiashan Park in Mingguang City, design a low-carbon urban park that can not only meet the ecological needs of the city but also provide high-quality public space.

Specific purposes include:

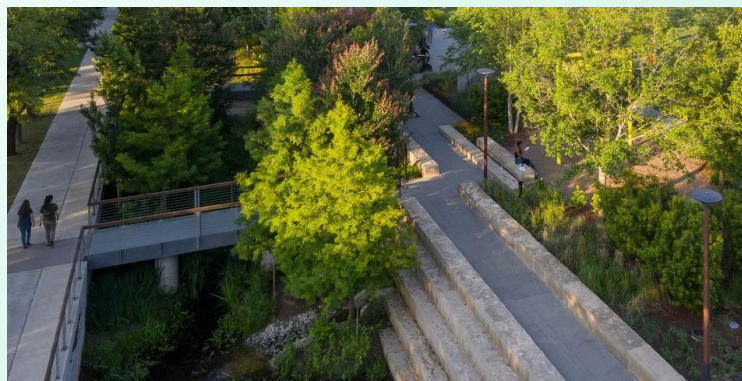
- 1) Optimize the energy and resource management of the park by leveraging intelligent technologies.
- 2) Enhance the ecological functions of the park through sustainable planning capabilities.
- 3) Promote community intervention to make the park a place for citizens to relax, receive education and engage in cultural activities.



Research significance



- The Metropolis Square was built to meet the diverse needs of urban social life. It is composed of various types of landscapes, such as buildings, gateway roads, mountains and terrains, forming a closed space. The subway square adopts the type of transportation and is a node of the popular outdoor activity space of the subway, with the necessary ideological and thematic range.
- This design not only enhances the ecological quality and social functions of urban green Spaces in Mingguang City, but also has a demonstration significance for promoting the low-carbon transformation of urban parks in China and even around the world. It will provide urban planners, designers and policymakers with references and feasible design strategies that are conducive to achieving sustainable urban development goals.



Status quo of domestic research



status quo of domestic research

- China has achieved remarkable results in the planning and support of urban green space systems. The focus is on enhancing the quality and accessibility of green Spaces, as well as integrating green infrastructure into urban planning. The layout of the green space system in major cities includes various forms such as public green Spaces, street green belts and vertical greening. Promoting ecological diversity and enhancing the ecological quality of cities under the green space system model, for instance, by creating biological corridors and protecting areas, mitigating the urban heat island effect, and considering climate adaptability in the design.
- In recent years, many Chinese cities aim to develop into eco-cities with a focus on sustainable development and environmental protection. Research explores urban ecological restoration through green space design, covering energy-saving buildings, green transport, waste management and urban agriculture. It analyzes domestic cases such as Guangzhou's low-carbon projects and Shanghai's green buildings, and advocates sustainable eco-city development via overall planning, green infrastructure and environmental legislation.

Status quo of domestic research



status quo of domestic research

- Park design that reduces carbon emissions has always been highly valued, with research mainly focusing on how to lower carbon emissions from park operations through the use of renewable energy, water resource management, and land planning. The principles and techniques of low-carbon urban park design, such as the use of native plants, ecological water treatment systems and renewable energy. The role of low-carbon parks in reducing greenhouse gas emissions and enhancing the resilience of urban ecosystems. Cases of low-carbon parks within the country, such as the Central Park in Suzhou Industrial Park, particularly demonstrate the "cooperation" between humans and nature.

Current situation of overseas research



current situation of overseas research

- Sustainable landscape design has become mainstream abroad, especially in Europe and North America. These designs not only take aesthetics into account but also focus on ecological benefits, such as the enhancement of biodiversity and the mitigation of the urban heat island effect.
- The latest trends in sustainable landscape design internationally focus on the protection and development of Marine and terrestrial natural resources, including ecological restoration, the use of local plants, and the application of sustainable materials. Through landscape design, the harmonious coexistence of the city and nature is achieved, along with the naturalized urban drainage system and the protection of biodiversity.
- For instance, Millennium Park in the United States is renowned for its iconic art and architecture (such as the "Cloud Gate" and Pritzker Hall), multi-functional Spaces (such as the Kone Fountain and Morgan Botanic Garden), extensive green coverage, environmental protection measures, rich cultural and entertainment activities (including free concerts and film screenings), convenient transportation, and emphasis on community participation and the improvement of overall quality of life. It is a model urban park integrating social interaction, leisure and culture.

Current situation of overseas research



current situation of overseas research

- Research conducted abroad highlights the role of communities in park planning and management, emphasizing that public participation is crucial for creating eco-friendly and community-friendly parks. The role in park planning, design and management should be appropriately expanded, such as through community workshops and volunteer programs. How to assess the social costs of park space, including community cohesion and public safety. Learn from and study the management models of community flower beds and community-oriented parks in places like London, UK.
- European and American countries are at the forefront in the construction of smart parks, leveraging technology to enhance the sustainability and visitor experience of parks, such as the use of intelligent irrigation systems and energy-efficient lighting. Explore technological innovations in smart parks, using sensors to monitor environmental quality, visitor flow and the usage of park facilities. Analyzing smart parks to enhance visitor experience and park management efficiency, such as providing visitor information and interactive experiences through mobile applications. Such as Singapore's Smart National Park Initiative and the Netherlands' Smart Green Space Project.

References

- [1] Liu Lina. Innovative Practice of Plant Patterns in Sightseeing Tea Gardens: Trio of Space, Technology and Nature[J]. Molecular Plant Breeding, 2024.
- [2] Hong Jiayi. Research on Human Behavior Patterns of Pocket Parks in High-density Urban Areas[J]. Modern Horticulture, 2024.
- [3] Feng Jie. Analysis on the Application of Traditional Cultural Elements in Urban Landscape Design[J]. Shanghai Packaging, 2023.
- [4] Tang Peijie. Research on Urban Landscape in the Context of Ecological Aesthetics[J]. Beauty & Times(City Edition), 2023.
- [5] Wang Peirui. A Preliminary Study on the Expression of Regional Culture in Urban Park Landscape Design[J]. Footwear Technology and Design, 2023.
- [6] Ren Surui. Design of Social Survey Activities Oriented to the Cultivation of Geographic Practice Ability——Taking "Regional Culture and Urban-Rural Landscape" as an Example[J]. Geography Teaching, 2023.
- [7] Guo Yongjiu, Zhang Xuetong. Residential Area Spatial Landscape Design Based on the Concept of Sustainable Development[J]. Shanghai Textile Science & Technology, 2023.
- [8] Yan Haojun. Research on Urban Green Heart Planning and Design Based on Landscape Urbanism Theory[J]. Urbanism and Architecture, 2023.
- [9] Yao Zheng. Study on Plant Selection and Configuration Mode of Low-maintenance Flower Border in Jinan Urban Parks[D]. Shandong Jianzhu University, 2023.
- [10] Liu Yuanyuan. Analysis of Ecological Garden Landscape Design and Plant Allocation[J]. Foshan Ceramics, 2023.

References

- [11] Wang Yuyan. Integration and Application of Color Landscape in Landscape Design[J]. Peony, 2023.
- [12] Li Rubo, Zhu Dandan, Xiao Jing. Exploration on Landscape Design of Urban Mountain Riverside Park under the Dual-carbon Goal——Taking Zigong Shuangfeng Riverside Park as an Example[J]. Hydropower Station Design, 2023.
- [13] Chen Jie, Wang Lijuan. An Empirical Study on Green Technological Innovation of Advanced Manufacturing Industry Boosting High-quality Development under the Dual-carbon Strategic Goal[J/OL]. Journal of Chongqing University of Posts and Telecommunications, 2023.
- [14] Xu Ruiliang, Gan Na. Research on Aging-friendly Design of Community Parks Based on Behavior Simulation from the Perspective of Park City——Taking Chengdu Hemei Community Park as an Example[J/OL]. Journal of Sichuan Normal University(Natural Science Edition), 2024.
- [15] Li Hongye. Analysis on the Integration of Regional Landscape in Urban Forest Park Design——Taking the 8th China Forestry Academic Conference Forest Ecology Branch 2023 Seminar as an Example[J]. Forest Products Industry, 2023.
- [16] Huang Rushì. Landscape Zoning Design of Pocket Parks under the Background of Urban Modernization——Taking Shouning County Pocket Park as an Example[J]. Sichuan Cement, 2023.
- [17] Hu Jianyu. Research on Healthy Urban Park Design Based on Public Landscape Preference[D]. Yanshan University, 2023.
- [18] Hu Jianyu. Research on Landscape Planning and Design of Wuhan Gumi Mountain under the Concept of Urban Regeneration and Restoration[J]. Green Science and Technology, 2022.
- [19] Zhou Jiayu, Zhang Xiaoyan. Research and Analysis on Landscape Design of Urban Ecological Parks[J]. Design, 2022.
- [20] Song Lianghua, Zhang Dan. Flower Border Design in Modern Garden Landscape Design[J]. Horticulture & Seedlings, 2023.

Design Case Analysis



- The design team has always adhered to the core design approach of minimally invasive intervention, making use of the original vertical, human-land and vegetation relationships to create landscapes in accordance with local conditions, emphasizing the concept of light design and heavy origin. They adhere to the principles of ecology, low-cost maintenance and sustainability, guided by the ideology of "scenery in all four seasons and everywhere".
- Taking full advantage of its superior geographical location and green base, the design team transformed the once abandoned land into a vibrant park. They transform useless areas into useful ones, update old scenes into new looks, and bring silent environments to life.

Location: Hongshan, Anshun

Designer: L&A Group

Time: January 2020

Design Case Analysis

- The oval-shaped area in the first phase gradually extends into a wide basic walkway, providing an ideal place for nearby residents to take a walk, chat and take photos.
- The wetland walkway winds along, offering not only a view of the riverbank but also attracting visitors to stroll along the river, allowing them to get closer to nature.
- The small island reserve offers a new resting place for migratory birds and residents of Long Island City, giving them the opportunity to have a close encounter with nature. 。



Project Information: Hunter's Point Nanbin Park Phase II

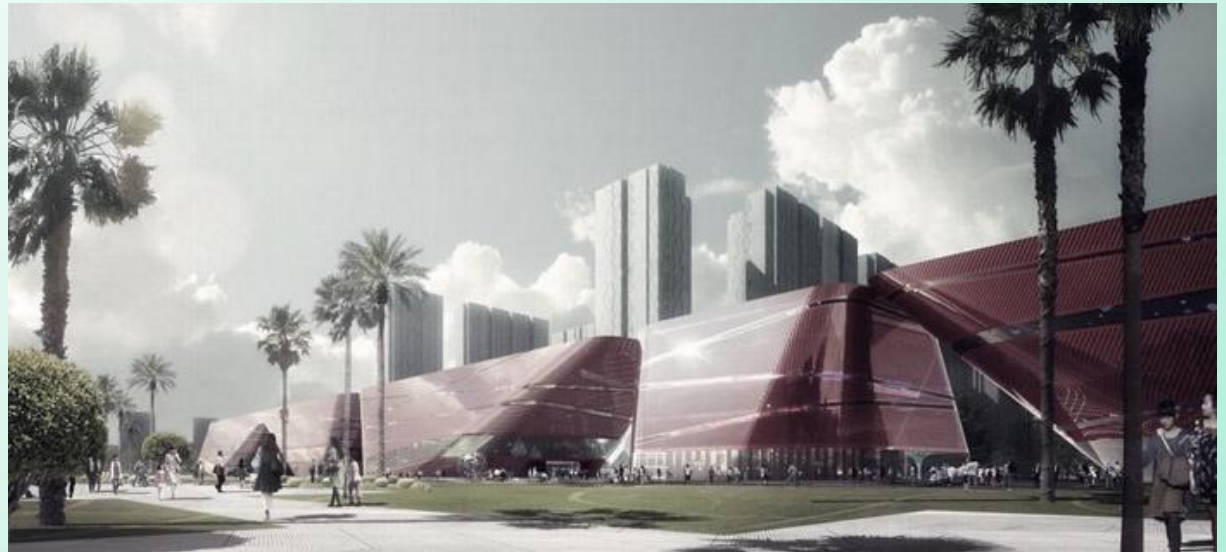
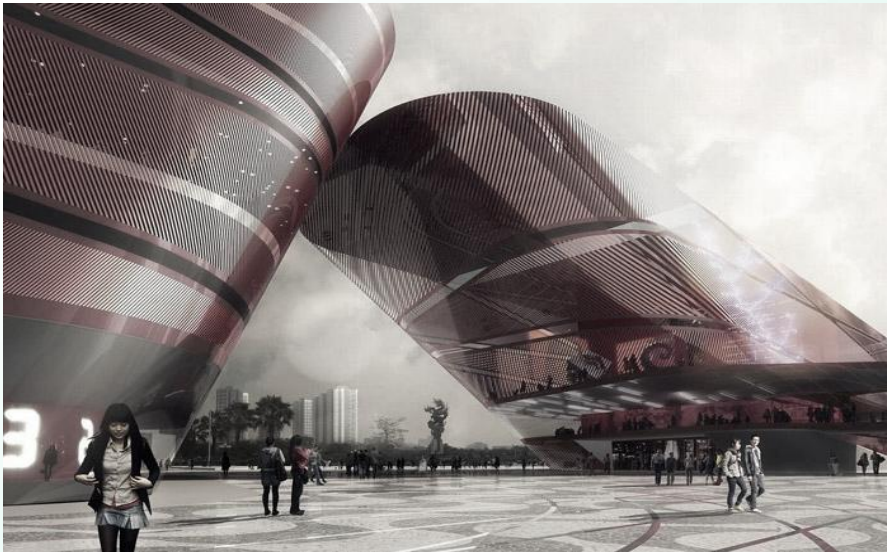
Location: The United States

Design [ArupSWA/BALSLEYWEISS/MANFREDI](#)

Time 2020.04

Case summary

- All will be in contact. The focus of the plan is on the contact and development with the surrounding areas and houses.
- Meet the needs of life and promote economic prosperity.
- Sustainable development and the expansion of innovative concepts.



Project overview

“ geographic position ”



Chuzhou City, Anhui Province

Chuzhou, in eastern Anhui Province, is a key city in the Yangtze River Delta integration, situated between the Nanjing and Hefei economic circles. Covering 13,500 km² (about 1/10 of Anhui's total area), it stretches 193 km east-west and 150 km north-south.

economy



Develop cities

The national economy continued to show a development trend of stability with consolidation and improvement. The three industries developed in a high-quality coordinated manner. People's livelihood was effectively guaranteed. New achievements were made in high-quality development.

climatic condition ”



climate

The subtropical monsoon climate, also known as the subtropical monsoon climate, is a type of mid-latitude monsoon climate that is alternately regulated by tropical Marine air masses and polar continental air masses, with obvious non-periodic changes in climate and precipitation seasonal changes.



02. Research Contents and Methods

2.1 Research contents

2.2 Research technique

Project overview

01 The project is on Qicang Road, Mingguang, with a prime location and convenient transport.

02 The site is the former Jiashan City Park, which features an inner waterway with a small island (our 4.0-hectare site on the west) and a large island. It will be transformed into an innovative cultural park.

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Research contents

origin

This study explores current urban park planning trends, especially low-carbon and sustainable design. It aims to create an innovative, technology-integrated park that enhances ecological benefits, fosters community engagement, and raises environmental awareness.

- First, conduct an analysis of the site and a community needs assessment.
Geographical environment analysis: Gain a thorough understanding of the natural features of Jia Shan Park, including climate, terrain, soil, and the existing ecosystem. Collect the expectations and demands of community members for the park design through questionnaires, group discussions, etc.
- The analysis includes site assessment and community needs evaluation:
Geographically, we study Jiashan Park's natural features (climate, terrain, soil, existing ecosystems). We also collect residents' expectations via questionnaires and group discussions.



Research technique

- Literature Review: By analyzing domestic and foreign studies on low-carbon park planning, this paper summarizes latest theories and practices. Through investigating typical cases, it identifies existing problems and proposes optimization strategies. Meanwhile, it enriches and complements relevant planning practice and theoretical research.
- Field investigation: The on-site survey of Jiashan Park collects basic data on terrain, ecosystems and climate. It adopts interviews, photography and field recording to lay a foundation for subsequent design and analysis.
- Community Questionnaire and Interview: Questionnaires and interviews are adopted to collect residents' preferences and demands for park functions and design. Targeted analysis is conducted based on local residents' actual needs and expectations.
- Study on successful domestic and foreign low-carbon park cases: We sort out and analyze collected data to extract applicable design elements and operation modes, then brainstorm schemes and summarize experiences to explore the most localized landscape design.





03. Research analysis

🎯 3.1 Location analysis

🎯 3.2 Site perception

🎯 3.3 Resource analysis

🎯 3.4 Status analysis

🎯 3.5 Solving ideas

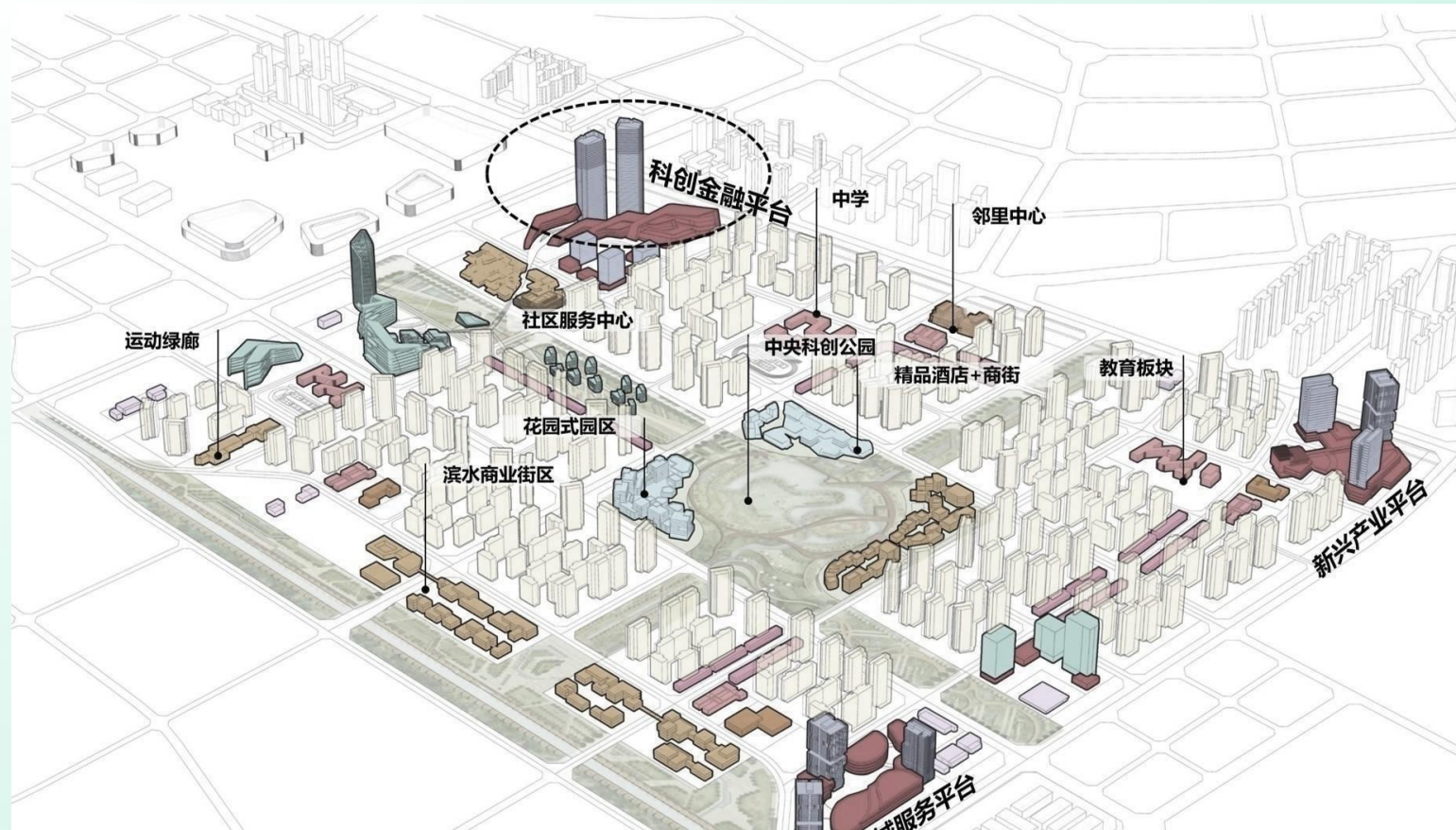
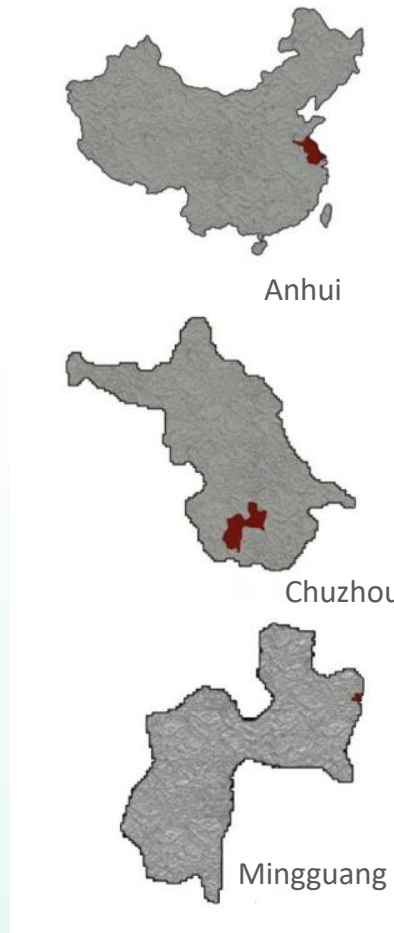
🎯 3.6 Design Vision

🎯 3.7 Design strategy

- Chuzhou lies in eastern Anhui Province. It is a core city of both the Nanjing Metropolitan Area and Hefei Economic Circle, and an important hub in the Yangtze River Delta integration zone.

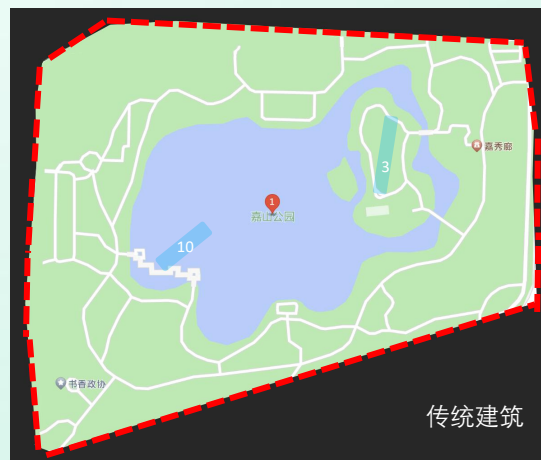
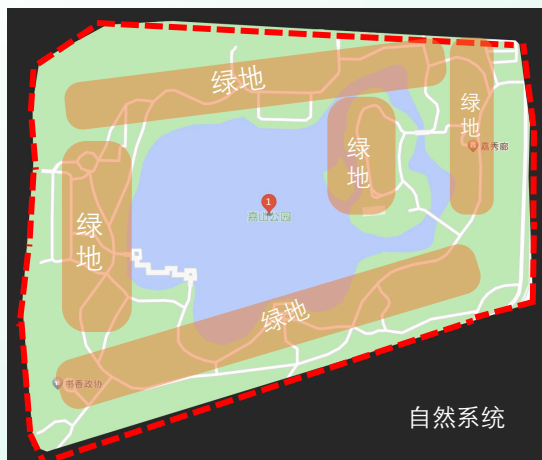
Location analysis

- Basically, it forms three major functional zones: science and education new town, industrial landscape area and natural landscape area.
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Site perception

- Site area: 4hm²
- The site lies in the core eastern area of Mingguang City, adjoining the urban main road on the west. To its north is Mingguang Municipal People's Government, and residential communities stand on the east. 建筑肌理
- Open space
- Emerging industry base



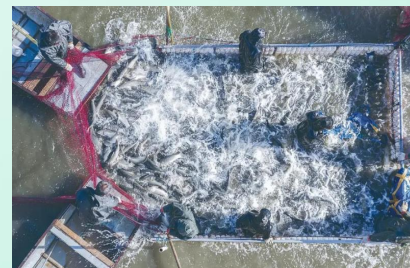
Building resources

- Two bridges, one pavilion, one corridor, one lake, two houses.
- Emerging science and education buildings.
- It has the most technologically advanced architectural complex in the local area.



Economic industrial resources

- Focusing on five major industrial clusters worth ten billion yuan each — green coatings, attapulgite new materials, high-end electronic information, photovoltaic glass and wormwood industry — Chuzhou is booming. The government prioritizes key industries, fosters chain-leading enterprises, and builds cross-regional industrial and innovation ecosystems to expand industrial scale and drive economic growth.
- Focusing on five major industrial clusters worth ten billion yuan each — green coatings, attapulgite new materials, high-end electronic information, photovoltaic glass and wormwood industry — Chuzhou is booming. The government prioritizes key industries, fosters chain-leading enterprises, and builds cross-regional industrial and innovation ecosystems to expand industrial scale and drive economic growth.
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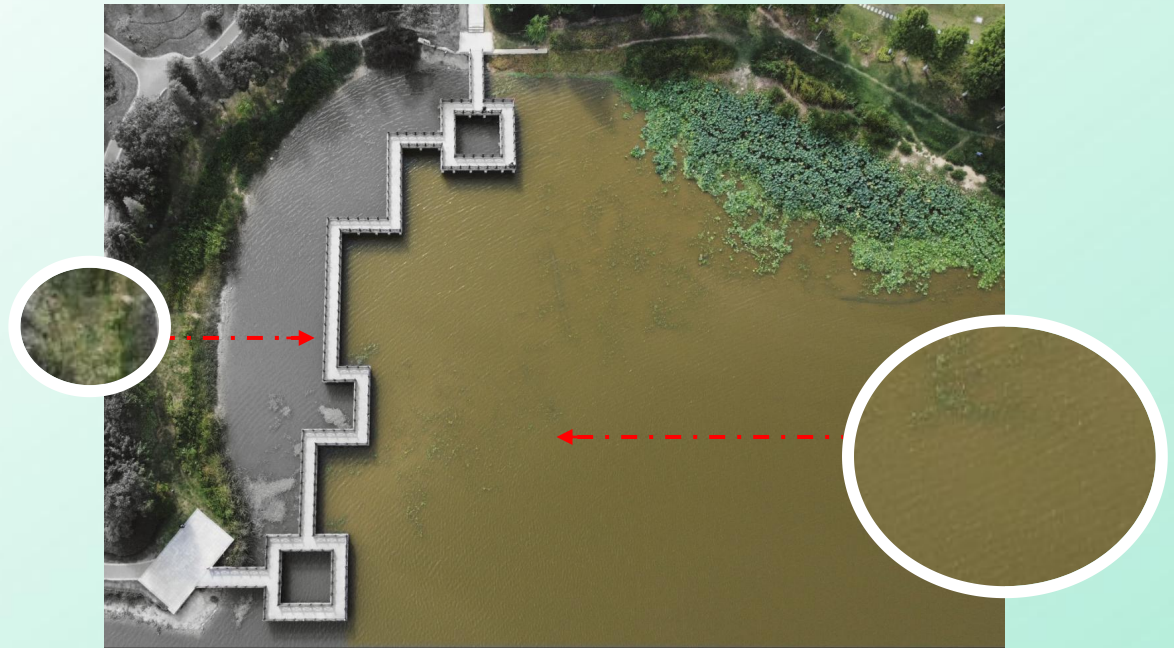


Present situation of the base

- The planting areas within the park are unevenly distributed and unreasonably arranged. Plants along roads vary greatly in density and size, resulting in large areas of exposed soil, poor visual effect and uncomfortable experience.
- The plant layout lacks reasonable hierarchical and color collocation, with monotonous ground cover and arbor species, leading to insufficient landscape appeal. It is suggested to enrich plant layers and colors to enhance visual diversity. Meanwhile, landscape elements can be arranged around the water body to enrich vitality and ornamental value.

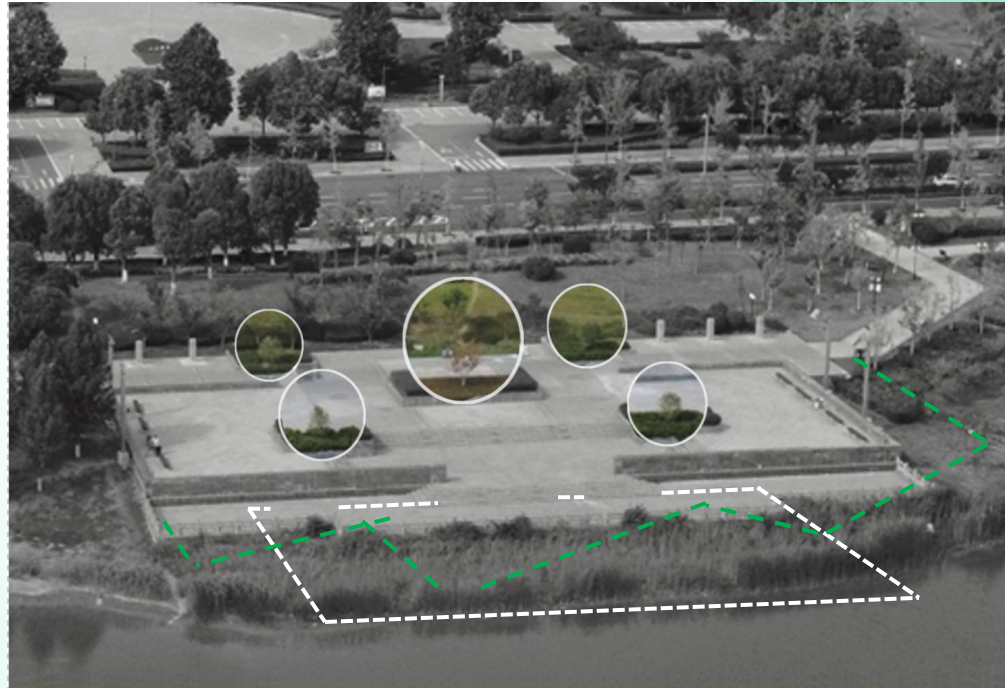
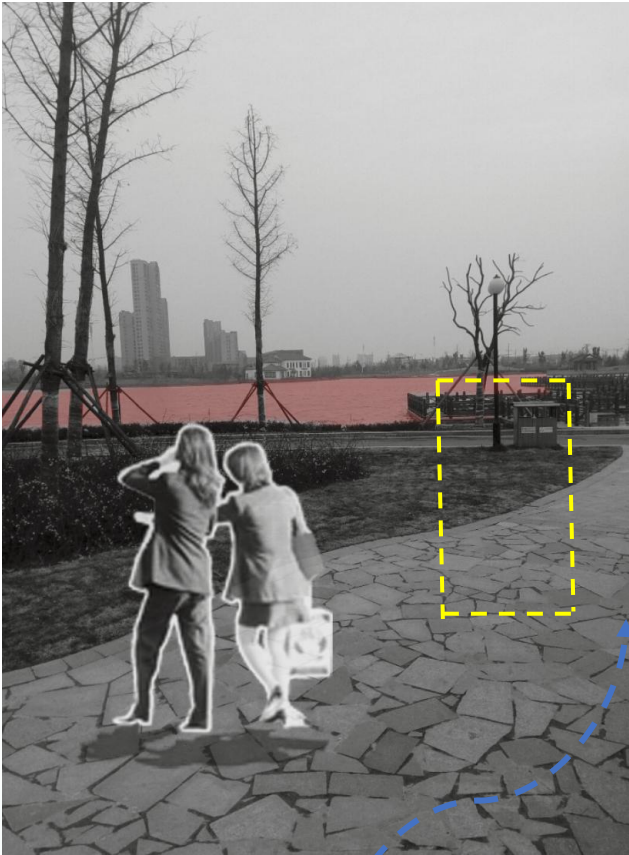


▲The plant configuration is monotonous.



▲The vegetation along the water and the water body configuration are scarce

Present situation of the base



- The safety facilities on site fail to blend into the environment and appear abrupt, requiring better integration with the landscape.
- The waterside lacks fence protection, posing potential safety hazards. Meanwhile, the view is partially blocked by plants with insufficient openness, which needs redesigning.
- Plant landscaping fails to connect functional spaces effectively, leaving the site empty and lacking visual focal points.
- Basic supporting facilities are placed randomly without considering tourists' experience and boundary effects. Seating areas lack tree shading, resulting in wasted space. All these problems shall be properly addressed in the design.

SWOT

SWOT ANALYSIS

Innovation & Technology Integration: Adopt smart technology and sustainable design concepts to reflect high innovation.

Ecological Conservation: Prioritize native plants and ecosystem protection to enhance biodiversity.

Community Engagement: Encourage public participation and environmental education to strengthen community cohesion.

Sustainable Resource Utilization: Apply renewable energy and recycled water systems to reduce environmental impact.

Healthy Lifestyle Promotion: Provide multi-functional green spaces to boost physical and mental well-being.

STRENGTH

Cost and Maintenance: High-tech solutions may increase initial investment and long-term maintenance costs.

Technology Dependence: Over-reliance on technology may neglect traditional greening methods.

Implementation Difficulty: Innovative design may face technical and administrative obstacles in implementation.

Public Acceptance: New technologies and designs require time for public adaptation and recognition.

WEAKNESS

Sustainable Development Orientation: Align with global environmental protection and sustainable development trends.

Policy Support: Likely to gain support and funding from governments and environmental organizations.

Education and Research Value: Serve as an experimental base for sustainable development education and research.

Investment and Tourism Attraction: Unique design can attract tourists and social investment.

OPPORTUNITY

Environmental Changes: Climate change poses challenges to ecological design.

Rapid Technological Update: Fast technological iteration may make the design obsolete quickly.

Funding Constraints: Economic pressure may restrict financial support for the project.

Urban Policy Adjustment: Changes in urban policies and planning may hinder the implementation of project goals.

THREAT

VISION

With ecological sustainability as the core, Jiashan Park integrates cutting-edge technologies to achieve low-carbon goals. Adopting the "Smart Green" concept, it highlights the harmonious integration of natural ecosystems and intelligent technologies. Closely aligned with the 2030 Sustainable Development Goals, the park strives to build an eco-friendly, technology-enabled and vibrant public space, pioneering the future development of urban parks.



▲Principles of Smart City

The park adopts sustainable design to build an eco-friendly, cost-effective and socially inclusive space.

It focuses on ecological protection and restoration, native plant application and resource efficiency, using eco-friendly materials while limiting motor vehicles to cut pollution and noise.



▲Sustainable design

Design strategy

By 2030, Jiashan Park will emerge as the green heart of Mingguang City, showcasing a futuristic landscape blending natural beauty and modern technology. More than a recreational venue for citizens, it will serve as a demonstration and educational base for sustainable living.

Design element:

Intelligent Ecosystem:IoT monitors vegetation, water quality and energy consumption; a mobile APP provides park ecological and cultural information.

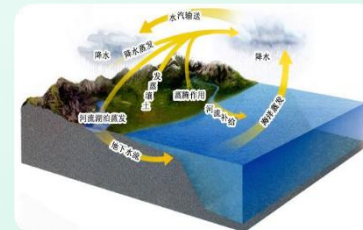
Sustainable Energy:Solar and wind facilities power park facilities while serving as landscape landmarks.

Ecological Water System:Rainwater recycling and natural wetland purification supply irrigation and aquatic maintenance.

Green Mobility:Cycling and pedestrian routes with e-bike rental encourage low-carbon travel.

Eco-Education Space:Indoor and outdoor areas hold regular environmental and sustainability workshops.

Multifunctional Open Space:Flexible venues support markets, exhibitions, events and outdoor performances.



Design strategy



Design objective

Ecological Conservation: Restore and protect local ecosystems to boost plant biodiversity.

Community Engagement: Encourage public participation to enhance space utility.

Education & Awareness: Promote environmental awareness through practical interactive programs.

Sustainable Development: Demonstrate green technologies and lifestyles as an urban model.

Jiashan Park will integrate ecological conservation, recreation, education and technological innovation, leading the city's future green development.



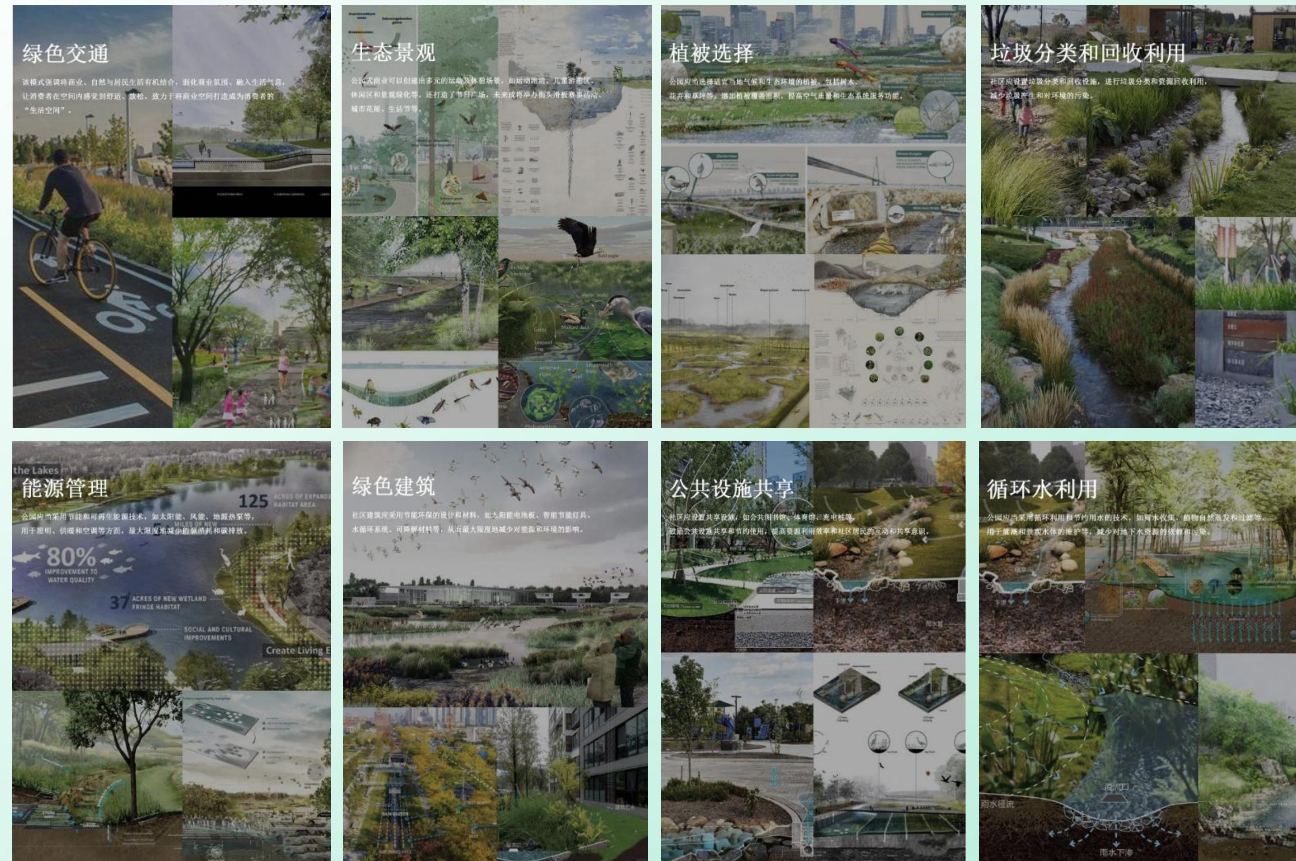
04. Interpretation of the Plan

- 🎯 4.1 element extraction
- 🎯 4.2 site cognition
- 🎯 4.3 resource analysis

Design element extraction

This design will advocate and practice low-carbon and environmental protection concepts through technological and innovative means, building a community characterized by high energy efficiency, resource recycling and ecological protection.

Green buildings are a key part: community buildings will adopt energy-saving and environment-friendly designs and materials, such as solar panels, intelligent energy-saving lamps, water circulation systems and degradable materials, to minimize impact on energy and the environment.



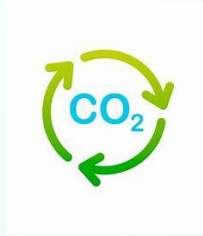
Design element extraction



Garden maze



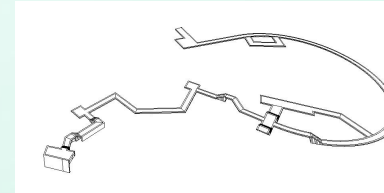
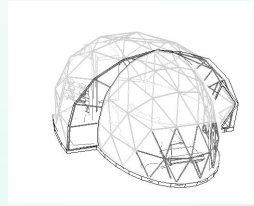
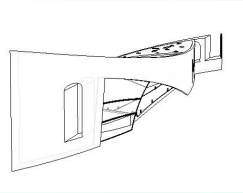
Sailboat



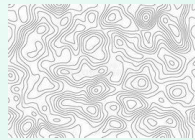
Eggshell structure



Ribbon curve



Terraced fields



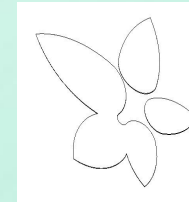
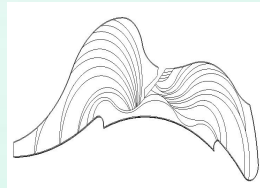
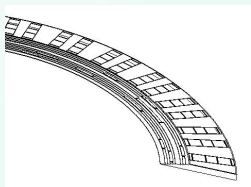
Contour texture



Contour texture



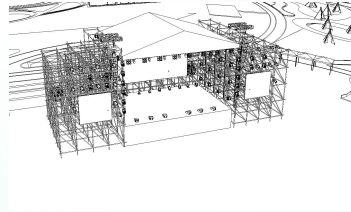
Green concept



Design element extraction



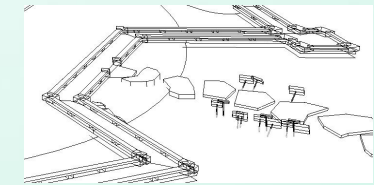
Traditional stage



Smart stage/interact



Afterfront amusement/lack of water experience



Road pool/terrace walking



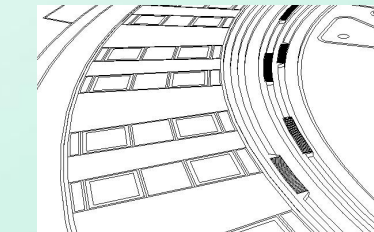
Fitness zone/lack



Full use of time



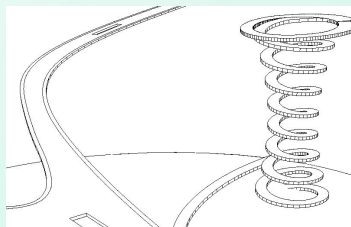
Single tree pool/Isolate



Road tree pool/terrace seating



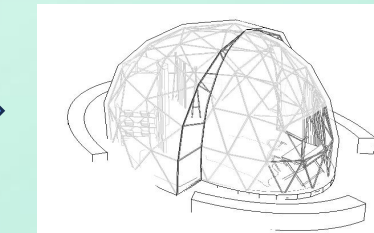
Highway interchange /lack



Highway interchange /guide



Single tree pool/Isolate

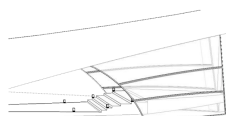


Smart building/shelter/leisure area

Design element extraction

SPACE TYPE

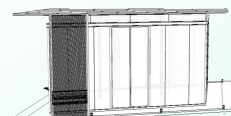
功能空间 FUNCTIONAL SPACE



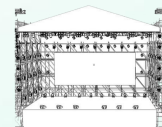
帆船
FUNCTIONAL SPACE



休闲厅
FUNCTIONAL SPACE



餐厅
FUNCTIONAL SPACE

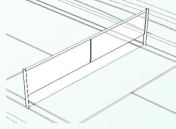


舞台
FUNCTIONAL SPACE

休闲空间 LEISURE SPACE



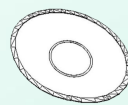
交流角
FUNCTIONAL SPACE



球场
FUNCTIONAL SPACE



露营
FUNCTIONAL SPACE

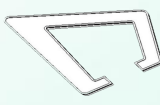


圆盘广场
FUNCTIONAL SPACE

构成元素 BUILDING BLOCKS



环形跑道
FUNCTIONAL SPACE



C形广场
FUNCTIONAL SPACE



半亩花田
FUNCTIONAL SPACE

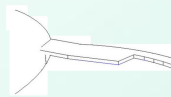


草丛蝴蝶
FUNCTIONAL SPACE

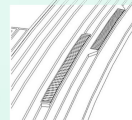
滨水空间 WATERRONT SPACE



滨水桥梁
FUNCTIONAL SPACE



木栈道
FUNCTIONAL SPACE



社交广场
FUNCTIONAL SPACE

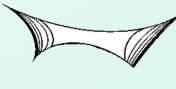


演唱台
FUNCTIONAL SPACE

文化空间 CULTURAL SPACE



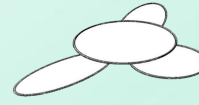
千帆竞发
FUNCTIONAL SPACE



无限限制
FUNCTIONAL SPACE



低碳水池
FUNCTIONAL SPACE



四叶平台
FUNCTIONAL SPACE

Spatial Design Strategies::

Guided by the carbon-neutral concept of Smart Green Future, the low-carbon design of Jiashan Park focuses on natural integration and ecological conservation. Addressing existing urban issues and embracing future possibilities, the design takes into account time, space and human activities. By leveraging terrain, vegetation and water landscapes, it creates a park harmoniously integrated with the surroundings. Renewable energy and green building materials are adopted to cut carbon emissions and achieve genuine carbon neutrality.

人群分析



年轻人



运动



休憩



散步



约会



餐饮

年轻人活动类型多为动态，并带有一定的跳跃性。



老年人



健身



散步



聊天



阅读



茶饮



静思

老年人活动多静态，相对更加有私密需求。



儿童



餐饮



运动



游戏



练习



服务



娱乐

儿童活动类型较多，灵活性最高。

不同年龄段人群公共活动不一，具有明显的多样性丰富性。因此，再设计中应综合考虑人们活动的形式的多样性，且考虑其所需要的空间。

Plan



Design Statement

This design explores and practices the concept of low-carbon and intelligent urban park design. Taking Jiashan Park in Mingguang City as the carrier, it aims to create a low-carbon urban park that meets urban ecological needs and provides high-quality public space.

Objectives:

Optimize park energy and resource management through smart technology.

Enhance ecological functions via sustainable design strategies.

Promote community participation, making the park a venue for leisure, education and cultural activities.

Plan



■ Design Concept

■ Ecology is taken as the primary principle. Existing vegetation is preserved to improve carbon sequestration and biodiversity, retaining original green land, lawns and wetlands to enhance landscape and ecological benefits.

■ Multi-layered Layout: Simulate natural ecosystems with arbors, shrubs and grasses to form rustic garden landscapes.

■ Material Recycling: Reuse and reconstruct waste and renewable materials, including on-site waste recycling.

■ Carbon Footprint Reduction: Adopt local materials and plants to reduce energy consumption.

plan



design procedures

Reduce the use of high-carbon and heavily processed materials such as plastics, steel and concrete. Wetlands and marshes are retained as core green spaces to cut carbon emissions and improve ecological benefits. Recycled materials including reclaimed steel and aluminum are adopted to lower resource consumption and carbon output. Native and locally adaptive plants are selected for easy maintenance, oxygen supply and landscape beautification. Natural renewable materials like wood and bamboo are prioritized for their low environmental impact.

Landscape System Analysis

This plan adopts the "one belt and multiple points" approach to construct the environmental functional structure.

- The waterfront landscape belt is a distinctive feature along the water area of Jiashan Park. Starting from natural water runoff, it connects both banks via landscape bridges to form an integrated scenic corridor, laying a solid foundation for future development. This belt also creates pleasant scenery around the site, offering leisure areas and waterfront experience spaces for residents and visitors.
- The design adopts a multi-point layout to combine various leisure, interactive and experiential spaces, forming a diversified waterfront landscape belt. This layout enriches landscape functions, caters to the needs of different groups, and enhances the overall appeal and vitality of the area.



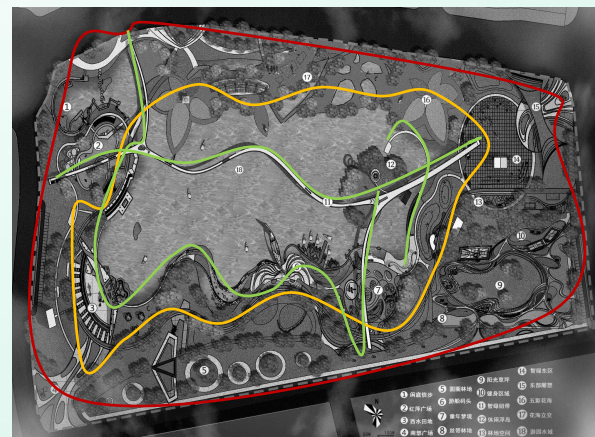
Analysis of Landscape Axis

■ First-level landscape axis

■ Secondary landscape axis

★ First-level landscape node

★ Secondary landscape node



Internal traffic analysis

■ External main channel

■ Internal main passage

■ secondary road



Analysis of landscape Sightlines

● landscape location

➔ Scenic View

Functions and Facilities



Waterway cruise ship



Waterway cruise ship



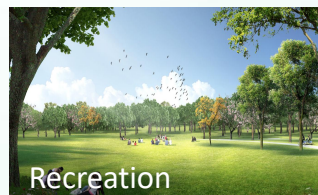
eco-trail



Water-friendly amusement



performance area



Recreation



photovoltaic power



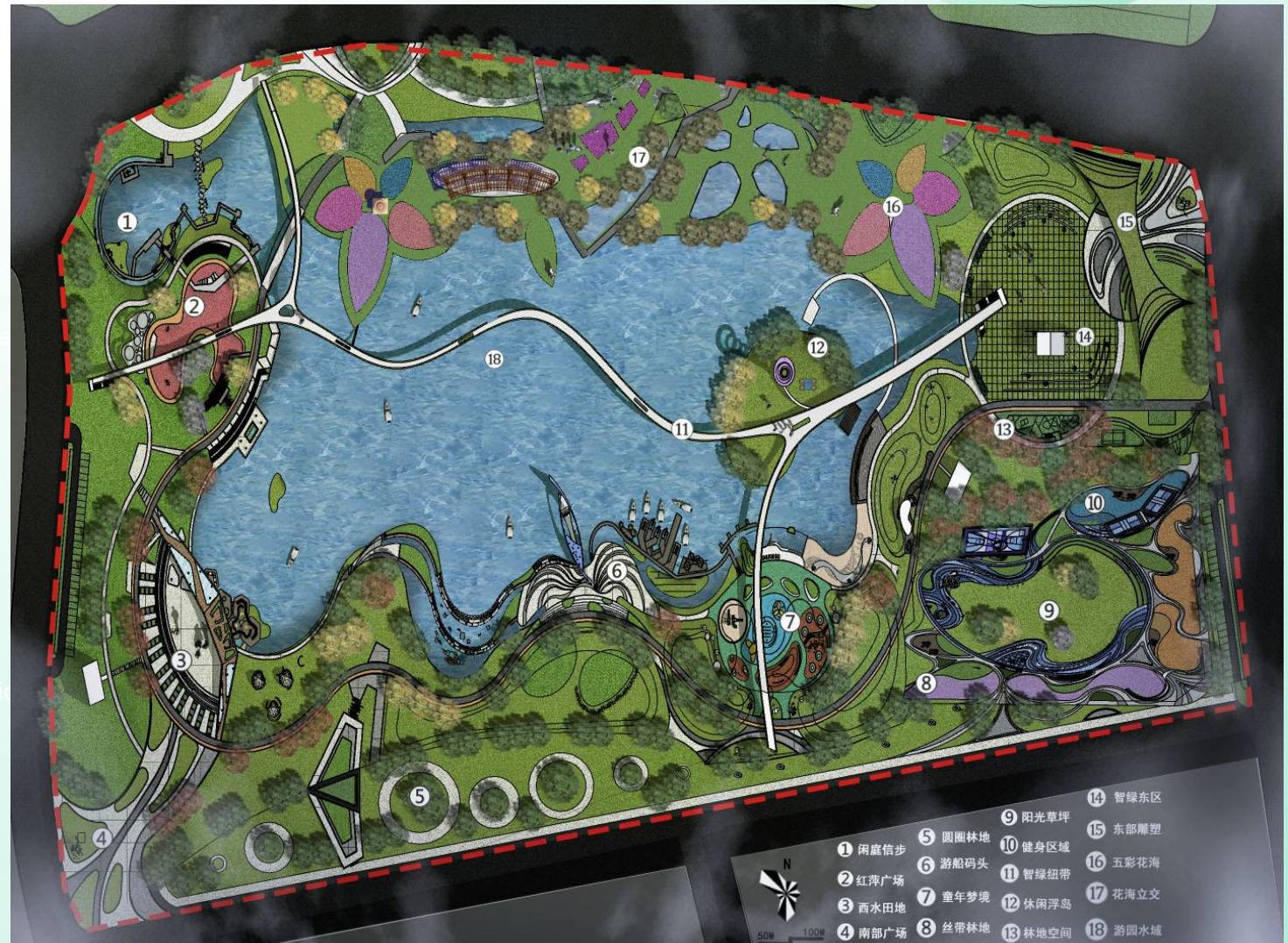
Environmental protection sculpture



Low Carbon Knowledge Teaching



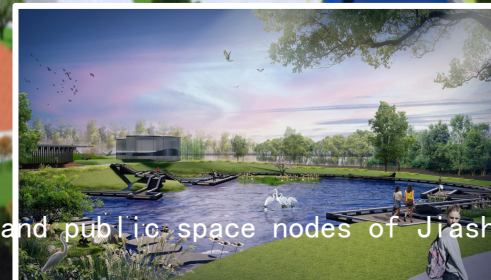
environmental protection movement



Aerial view



Landscape node index



This design mainly includes the design of the waterfront landscape belt and public space nodes of Jiashan Park



Effect drawing display: Smart stage area at the entrance square

This area features a barrier-free viewing platform. Around 60 square meters of solar photovoltaic panels in the corridor generate about 9,070 kWh of electricity annually, cutting carbon emissions by approximately 5,300 kg. Built with eco-friendly materials, the platform is equipped with recreational facilities and popular science displays. It offers fine views for visitors while enriching their low-carbon experience.



Green Square



△A multi-level and rich plant configuration can reduce carbon emissions



Rendering display: Intelligent waterfront coastline landscape node

Jiashan Park focuses on immersive waterfront landscape construction. Waterfront bridges, stepping stones and shoreline cruise services deliver an intimate water-contact experience for visitors. An AR system is integrated along the circular runway, with AI facial recognition robots serving as start and finish check-in points. After registration, visitors can complete check-in via facial recognition before and after exercise.



AFTER

coastline



BEFORE



Rendering display: Landscape node of the riverside bridge abutment

The southern area of Jiashan Park features open water surfaces. Combined with Huizhou architectural style, two characteristic branch water-crossing bridges and a rainwater recycling system are built between the Cultural Square and the southern zone. Modern design blends with historical heritage, creating a unique spatial charm and artistic tension.



Spiegel Square



△Wetlands have an excellent carbon sequestration capacity

Cross-sectional view: Landscape node of the waterfront abutment

The southern area of Jiashan Park boasts expansive water landscapes. Integrated with Huizhou architectural style, two distinctive branch water bridges and a rainwater recycling system are constructed between the Cultural Square and the southern zone.



Spiegel Square



Rendering display: Landscape nodes of the leisure activity space

Designed as a lively children's playground with modern and low-carbon techniques, this area offers entertainment for kids and accompanying spaces for guardians. Supported by a mobile application, visitors can enjoy smart park services including sightseeing, management and information inquiry. Users can exchange low-carbon credits for access to intelligent interactive facilities, effectively boosting the pleasure of park visits.



Genius Space





Rendering display: Landscape nodes of the leisure activity space

Residents, tourists, students and children can enjoy flying kites, chatting, sketching and sightseeing here in their spare time. Adhering to green design concepts, this space meets people's physical and mental entertainment needs.



低碳草场
Low carbon grassland





Effect drawing display: Smart stage area at the entrance square

The west entrance adopts low-carbon and eco-design concepts and energy-saving green composite materials to create a scenic green area. It provides tourists with three distinctive recreational experiences, enriching their leisure time and enhancing their sightseeing enjoyment.



AFTER

West square



BEFORE



Rendering display: Landscape nodes of the leisure activity space

The expansive water area and waterfront gardens embody low-carbon eco-design ideas. Aquatic plants and landscape stones are arranged alongside wooden bridges with milky white decks that represent low-carbon concepts, forming a natural space where humans, flora and fauna coexist harmoniously.



Genius Space





Rendering display: Landscape nodes of the leisure activity space

The low-carbon birdhouse creates a comfortable space for visitors while minimizing environmental impacts. Constructed from certified renewable materials such as bamboo and reclaimed timber, the building makes full use of natural light and ventilation to cut energy consumption. Solar panels on the roof supply power, and an on-site rainwater collection system helps preserve the natural landscape and avoid ecological damage. These practices improve visitor experience and contribute to biodiversity conservation.



Low carbon space





Rendering display: Landscape nodes of the intelligent fitness space

This low-carbon running track supports physical exercise while delivering an eco-friendly and smart sports experience. Built with renewable materials and energy-saving technologies for long-term safety, it is equipped with an intelligent shopping system. Visitors can purchase eco-friendly goods via mobile apps, and runners can earn carbon points to redeem environmental gifts or coupons, encouraging greater engagement in low-carbon activities.



AFTER

低碳跑道
Low-carbon runway



BEFORE



Rendering display: Landscape nodes of the leisure activity space

This area serves as a cozy resting space for visitors to unwind and embrace nature. It features waterfront paths, sunlit lawns and camping zones, where people can stroll, jog, take part in leisure activities, or relax and read in tents. Following eco-friendly design principles, the whole area adopts green materials and energy-saving facilities, encouraging visitors to protect nature and build a sustainable future.



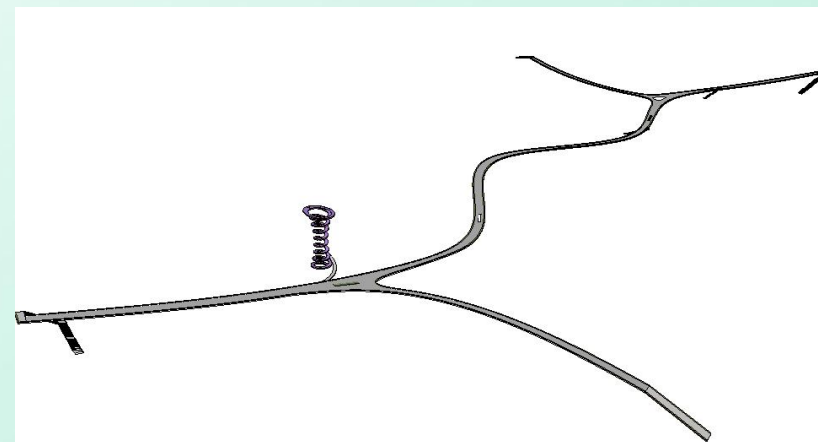
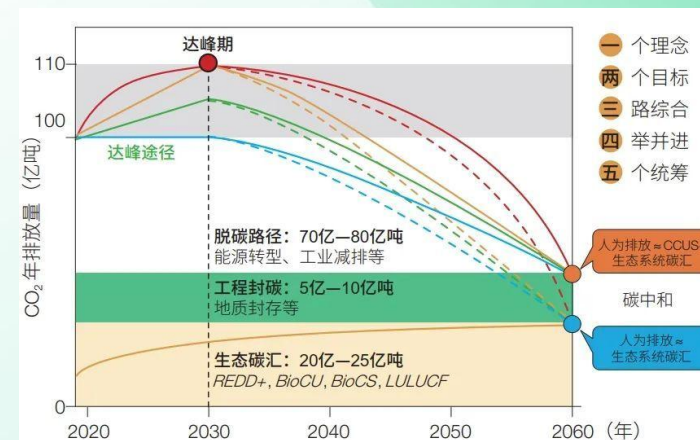
Free Space





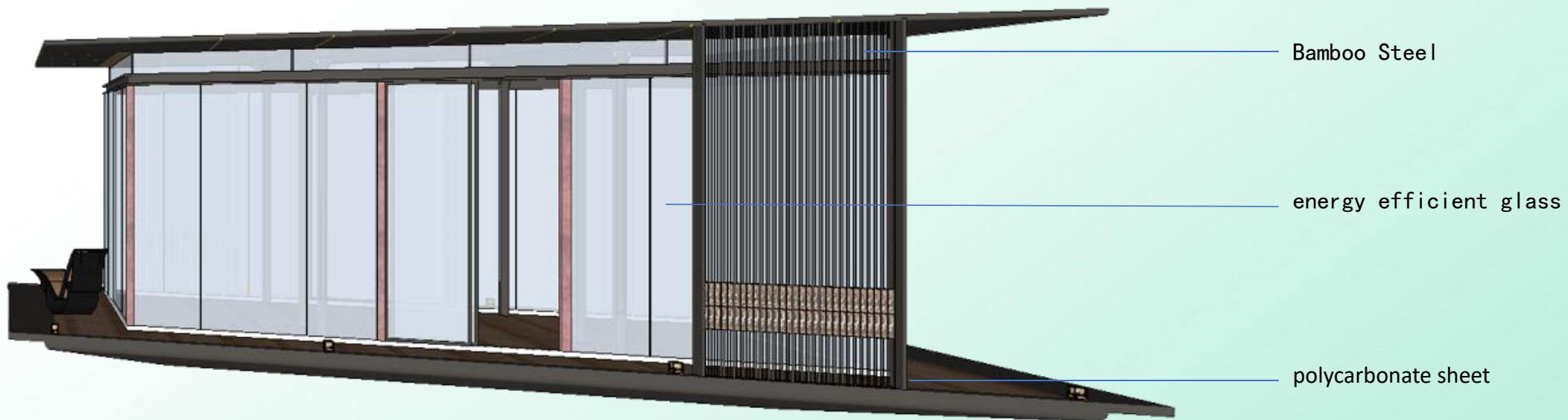
Low-carbon public art for landscape facilities

The water-crossing bridges adopt low-carbon curved design elements. Integrating the pathways to carbon peaking, the design symbolizes the carbon trend from



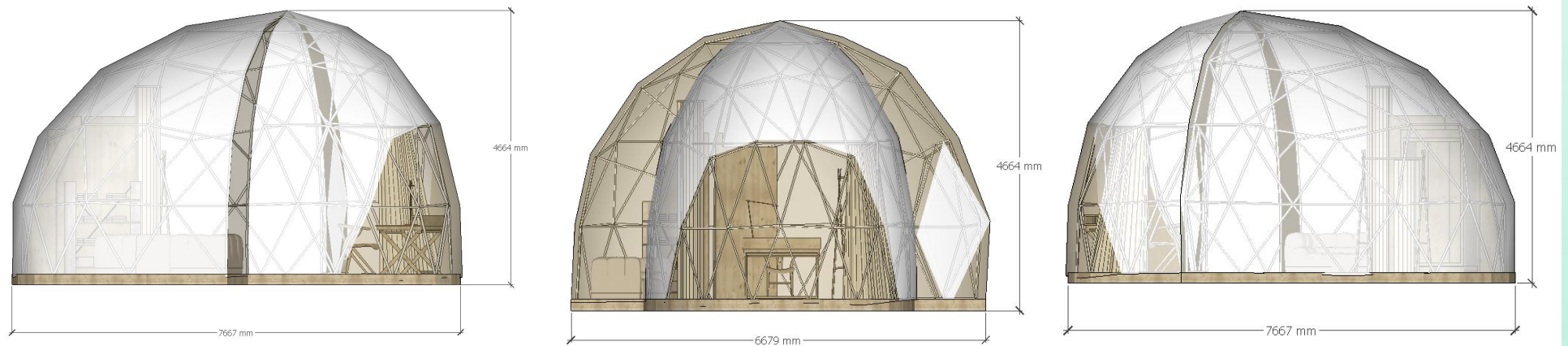
Low-carbon public art for landscape facilities

The building facade uses low-carbon materials including energy-efficient glass, engineered bamboo and polycarbonate sheets for low emissions and zero pollution.



Low-carbon public art for landscape facilities

Bird house leisure hall by intelligent glass and birch welding shell shape, by professional equipment fixed on the land.



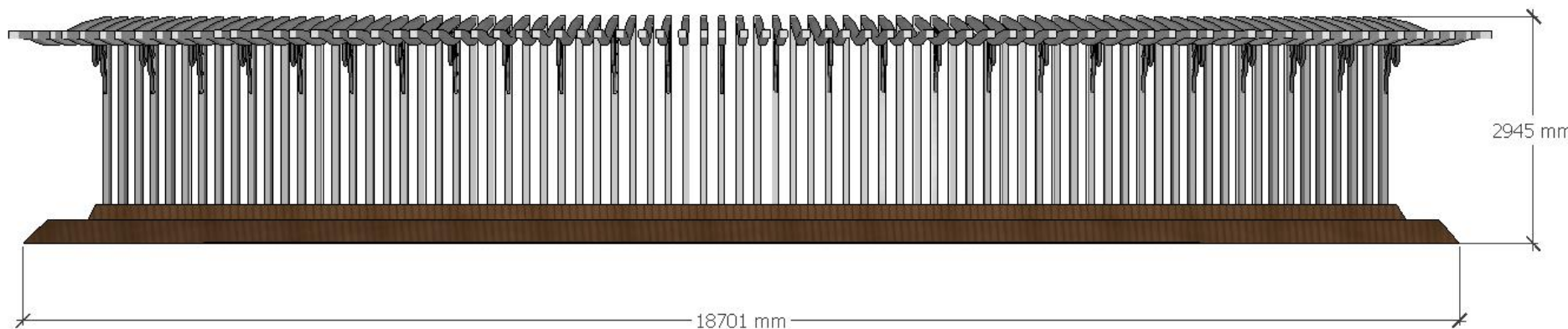
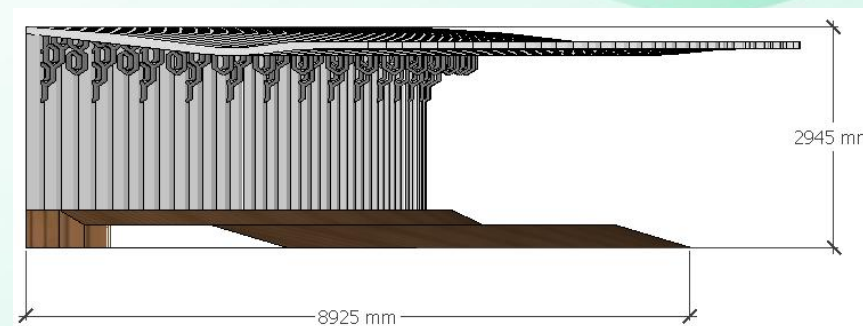
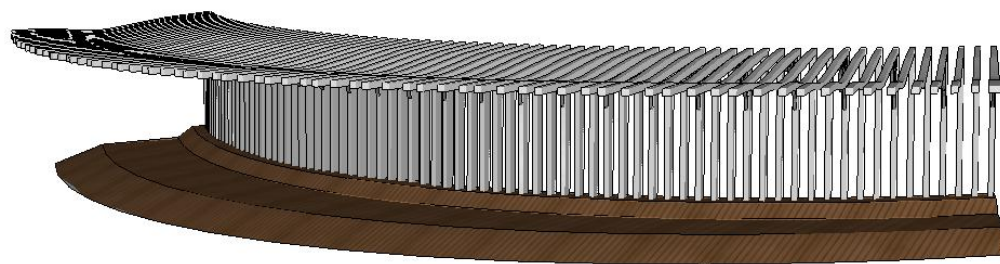
block-diagram

front elevation

side elevation

Low-carbon public art for landscape facilities

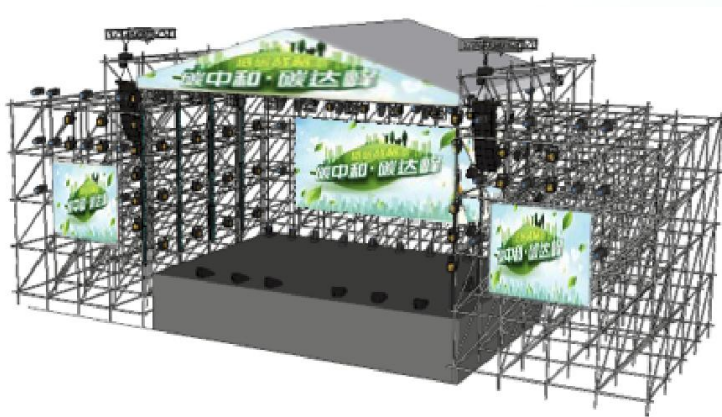
Landscape corridor



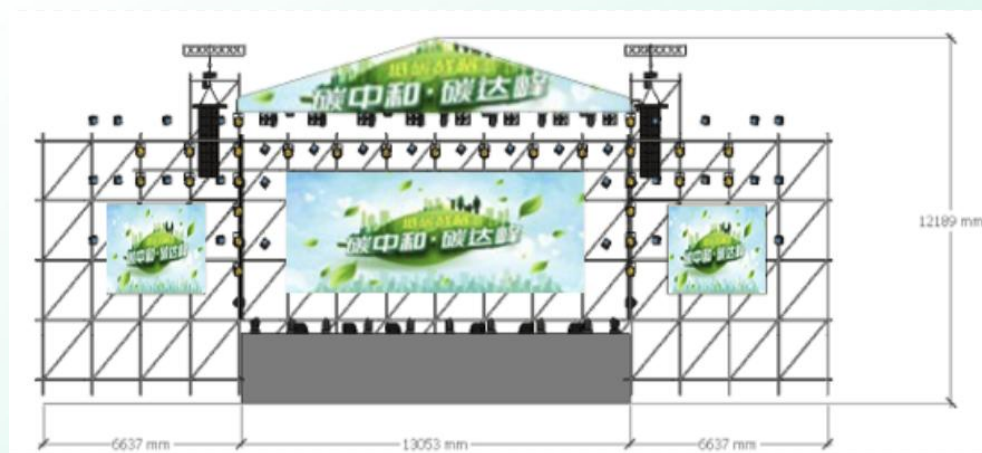
front elevation

front elevation

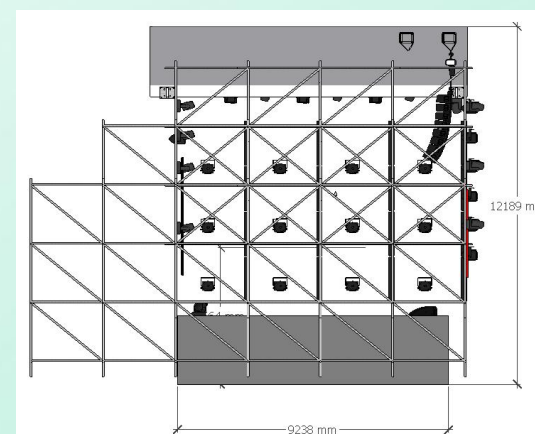
stage



Besides shading, the canopy generates electricity to reduce carbon emissions.

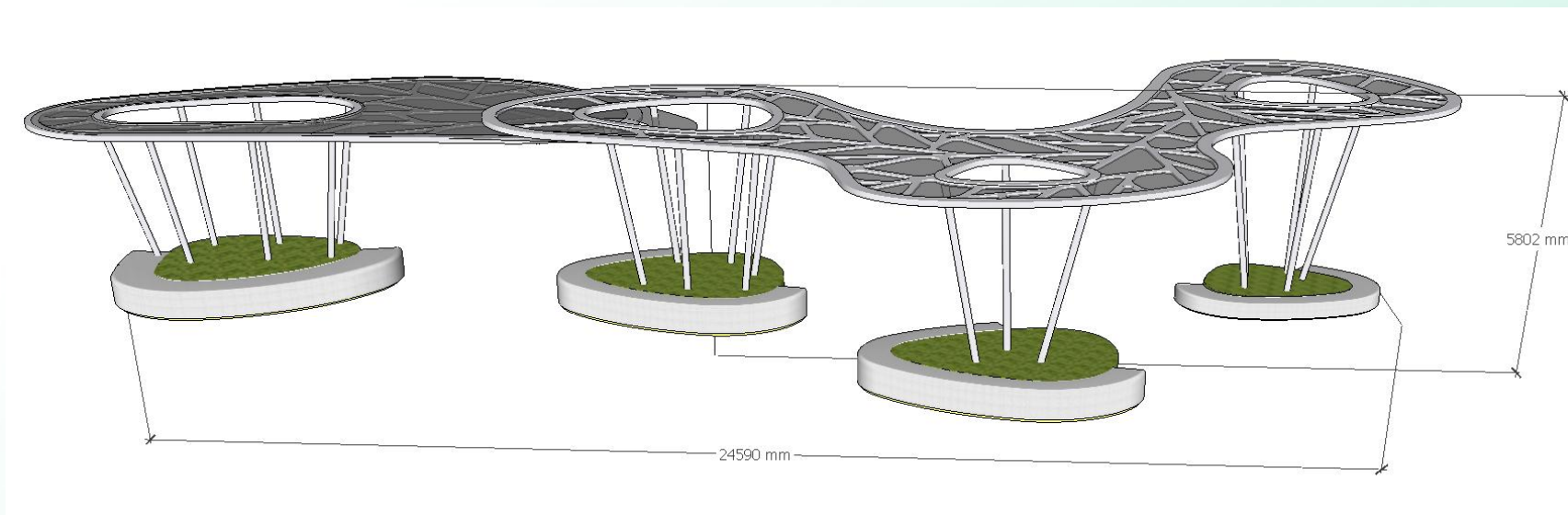


front elevation



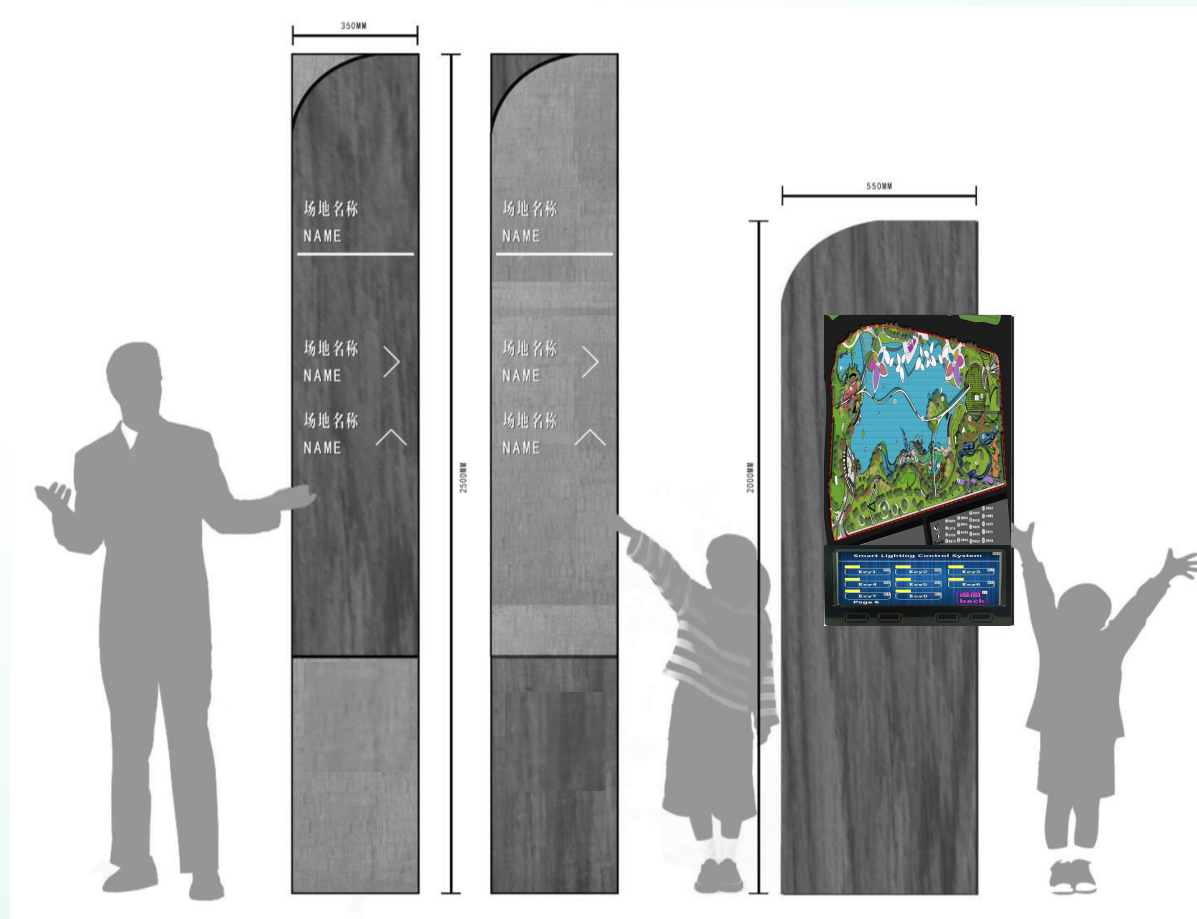
side elevation

front elevation



Pergola ornaments

Sign design interactive wayfinding system

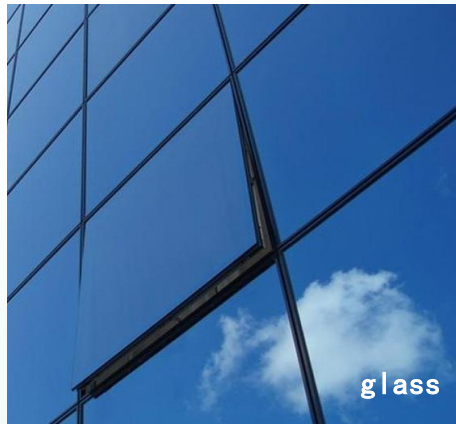
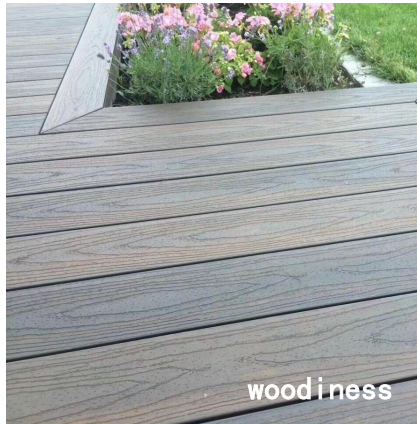


The smart touchscreen guidance system is an intelligent information service for urban parks. Equipped with touch technology and real-time data updates, it delivers reliable guidance and information to optimize visitors' experience.

Key features

- ◆ **Interactive:** User-friendly interface for map browsing, inquiry and trip planning.
- ◆ **Real-time update:** Linked to the park management system, it timely refreshes scenic introductions, event schedules and weather information.
- ◆ **Multilingual:** Supports multiple languages to serve international visitors.
- ◆ **Positioning:** Adopts GPS to locate users and offer navigation.
- ◆ **Rich information:** Covers scenic details, opening hours, transport, facility locations and emergency services.
- ◆ **Customizable:** Managers can adjust the interface and content to fit park characteristics.

materials purchase strategy



Plant-themed design

Low-carbon plants are planted in a comprehensive layout. Existing large arbors are preserved, while maples, birches and evergreen shrubs are arranged along walkways.



shrub border

Dahlia pinnata



The modern beauty of green, ecological and natural



Plant-themed design

Comprehensively plant low-carbon plants, retain the existing large trees, and plant maple trees, birch trees, evergreen shrubs, etc. along the walkways



Nethen

stipa capillata



The modern beauty of green, ecological and natural



Plant-themed design



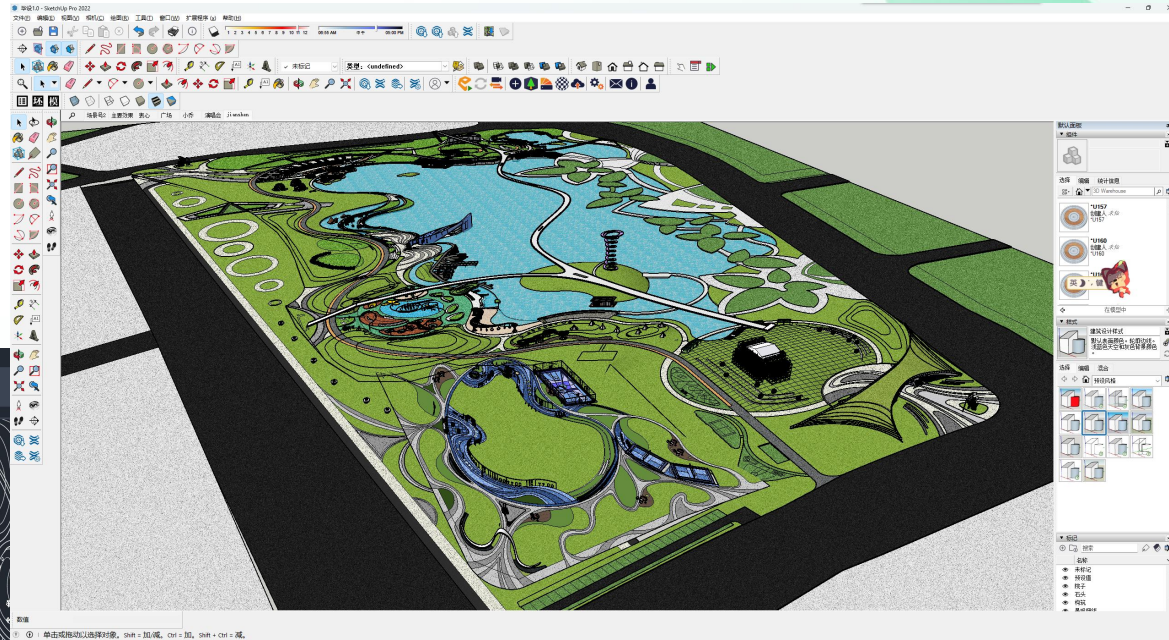
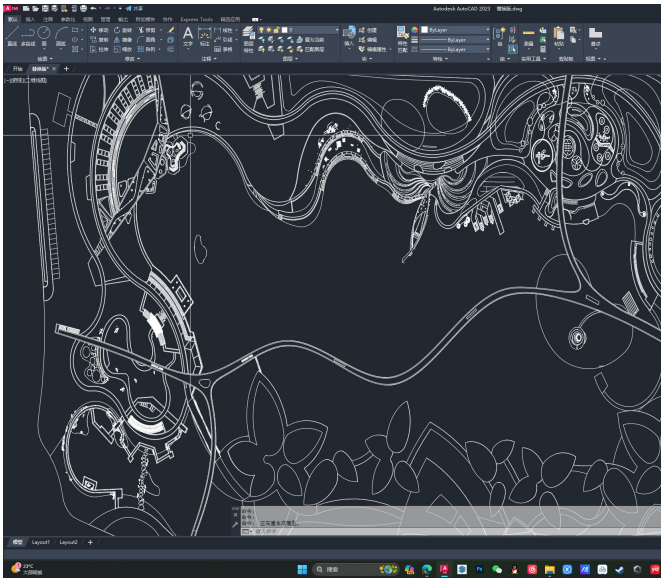
Shortcomings and future prospects

Due to time and resource constraints, the collected data is insufficient, which undermines the accuracy and reliability of analysis results. The methodology has logical defects and deficiencies, making the analysis process ambiguous and conclusion derivation inaccurate. In addition, immature technologies and tools also lead to unsatisfactory operation and unconvincing outcomes.

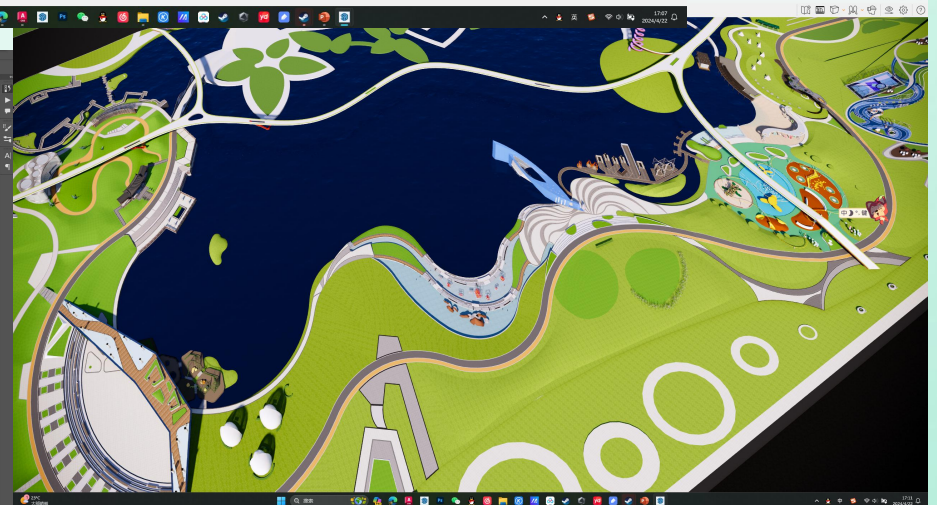
From this design practice, I realize landscape designers must fully consider projects' value to ecology, greenhouse gas reduction and green resource utilization throughout the whole process. More refined carbon-neutral measures will bring remarkable environmental benefits. Plant selection is a vital decision in landscape design, as it affects not only landscape beautification but also the entire ecosystem. Integrating environmental protection and functional improvement in design fulfills our environmental responsibilities, and actively responds to the national carbon neutrality goals and global sustainable development.

working process

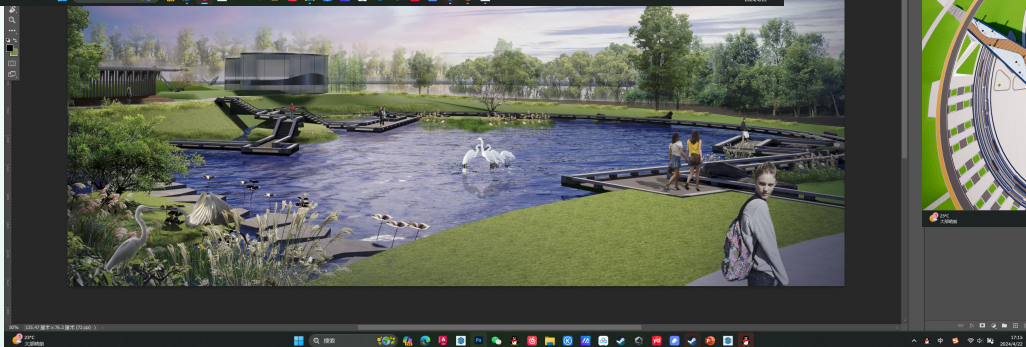
Step1: CAD



Step2: SU



Step3: ENSCAPE



Step4: PS

Photoshop 后期



感谢各位老师批评指正

THANK YOU FOR WATCHING

设计作者：李隆浩

学 院：美术与设计学院

指导教师：王堞凡 教授

专业班级：环设（景观）204

学 号：2000640538