

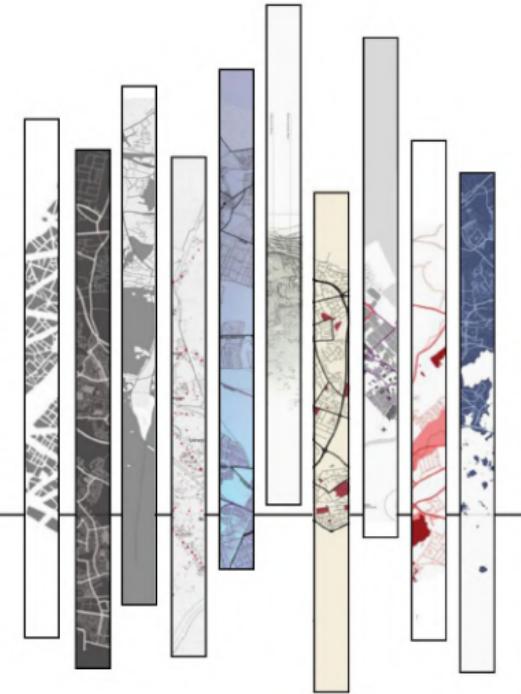


SPATIAL DATA SCIENCE
URBAN PLANNING

Data Science
Urban Analytics
Academic Research
Urban Regeneration
Urban Design
Architecture

孙佩锦 个人作品集

PORTFOLIO OF SUN PEIJIN



Geospatial Data Science in Academic Research

Multimodal Data Mining & Cognitive Computing

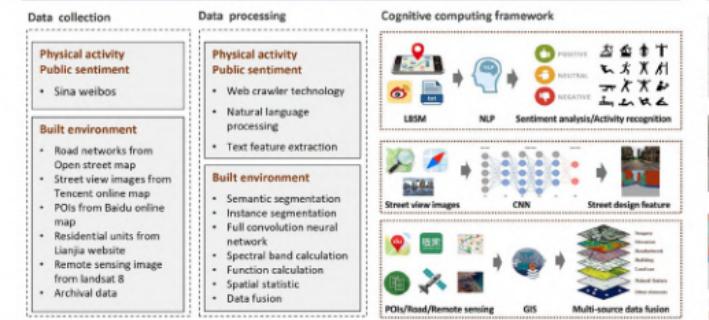
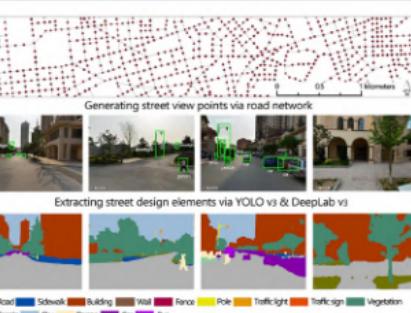
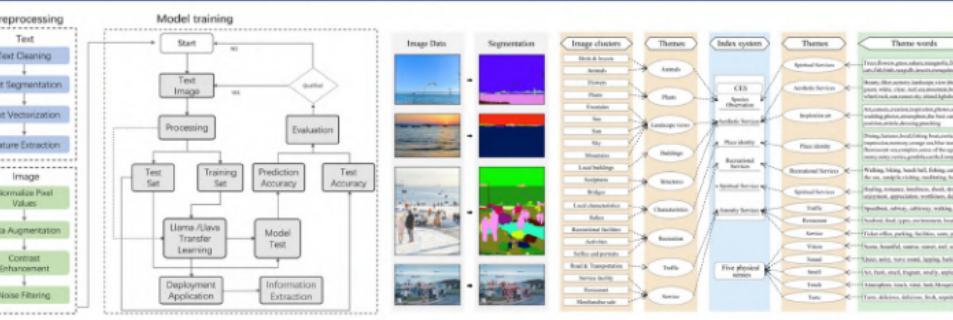


Image Recognition via Deep Learning

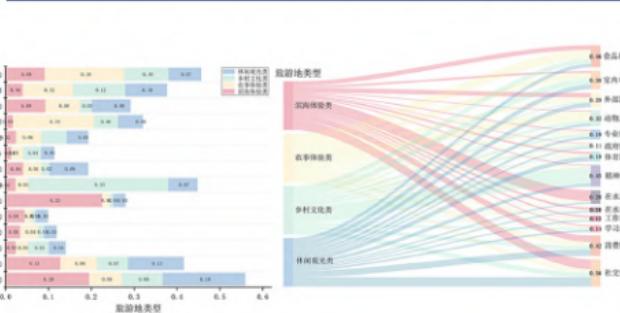


Geospatial Data Science in Academic Research

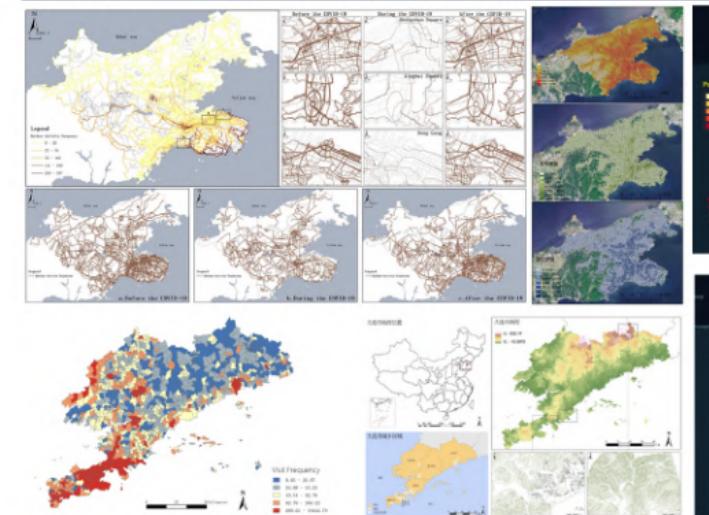
Task-Oriented Multimodal Large Language Model Applications



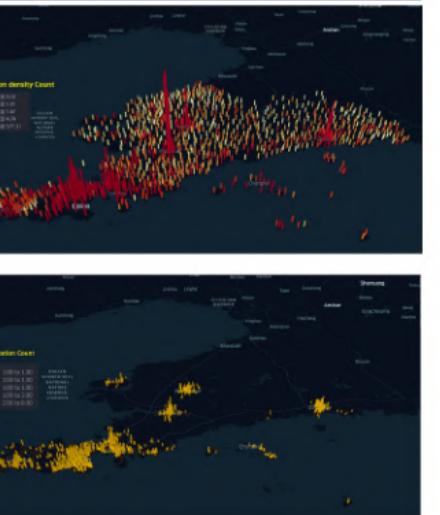
Behavioral Pattern Mining from Social Media Content



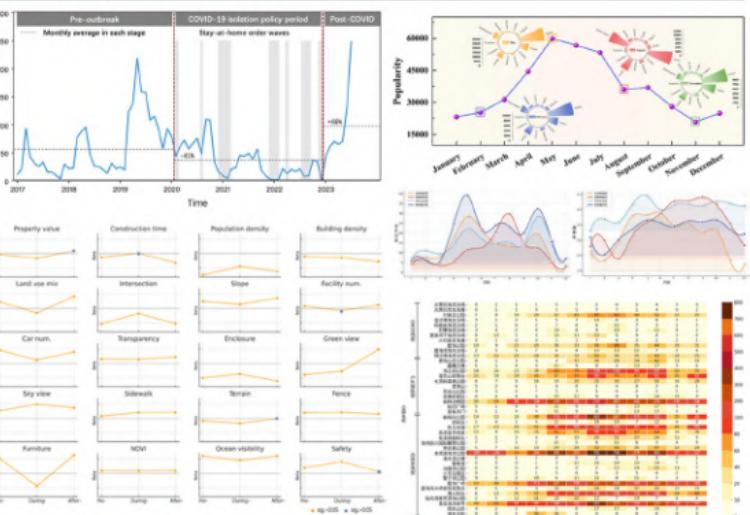
Mobility Data Mining from Smartphone Trajectories



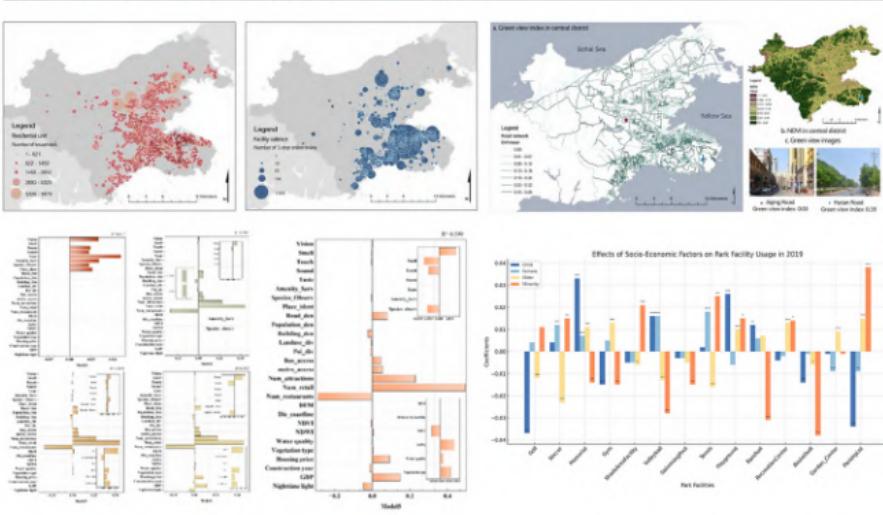
Visualization



Time-Series Analysis & Visualization



Spatial and Statistical Data Visualization

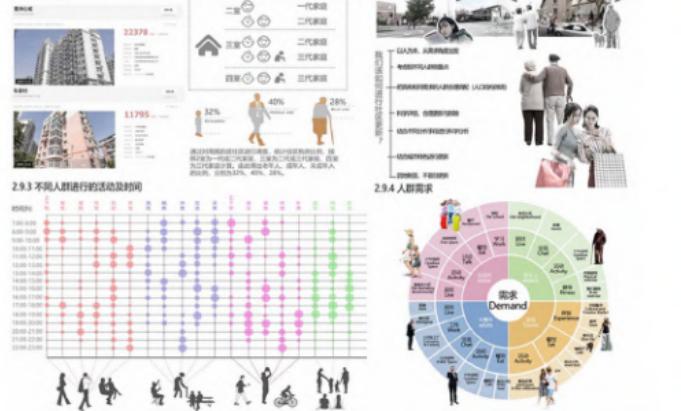


Real-World Urban Regeneration with Spatial Analytics

Site Context Analysis



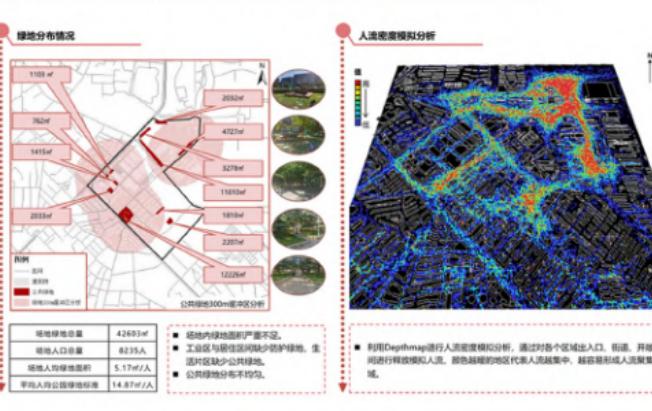
Demographic Analysis



Policy & Regulatory Review

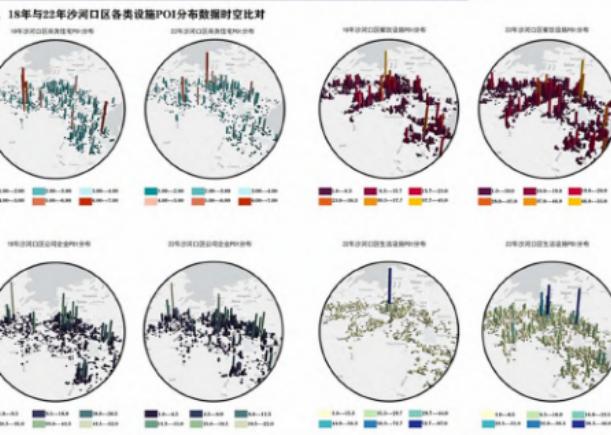


Pedestrian Flow Forecasting



Real-World Urban Regeneration with Spatial Analytics

Facility Location Trends Over Time



Commercial Land Use Analysis





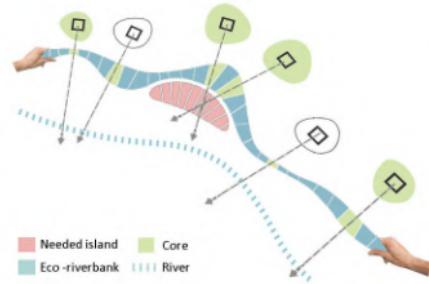
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MODEL PLAN

Before we begin urban design, we build up model and system first.

We decided to add an island to integrate the site. Then the model plan is completed with river, banks and island connection together.

Here is our preliminary plan and the further.



PRE-ANALYSIS

ECOLOGICAL RENEWAL

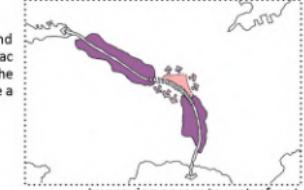
How can our work on the Malan River address the environmental imperatives of our generation? Specifically, what can we do on the riverfront and in the surrounding communities to rebuild a healthy ecosystem for its productive potential? How can we discover a new aesthetic that interacts, interlinks and interpenetrates the contract between human, urban and natural environment?



URBAN DESIGN

SOCIAL EQUITY

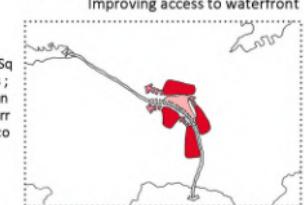
The communities, especially between the Upper Riverfront and West Hill Reservoir, are dramatically underserved in terms of access to ecosystem of urban natural environment. How can the landscape resource that belongs to the communities become a destination for the whole city to achieve the social equity?



URBAN DESIGN

IMPROVING VALUE

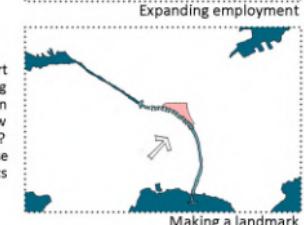
The Malan River connects the Xian Road CBD and the Peace Square, which are two of the most valuable economy districts; there is the largest square in Asia—Xinghai Square. How can we foster new tourist and economic activity in a resurgent river corridor? How can investments over the river catalyze broader economic activity and attract the businesses of the future?



URBAN DESIGN

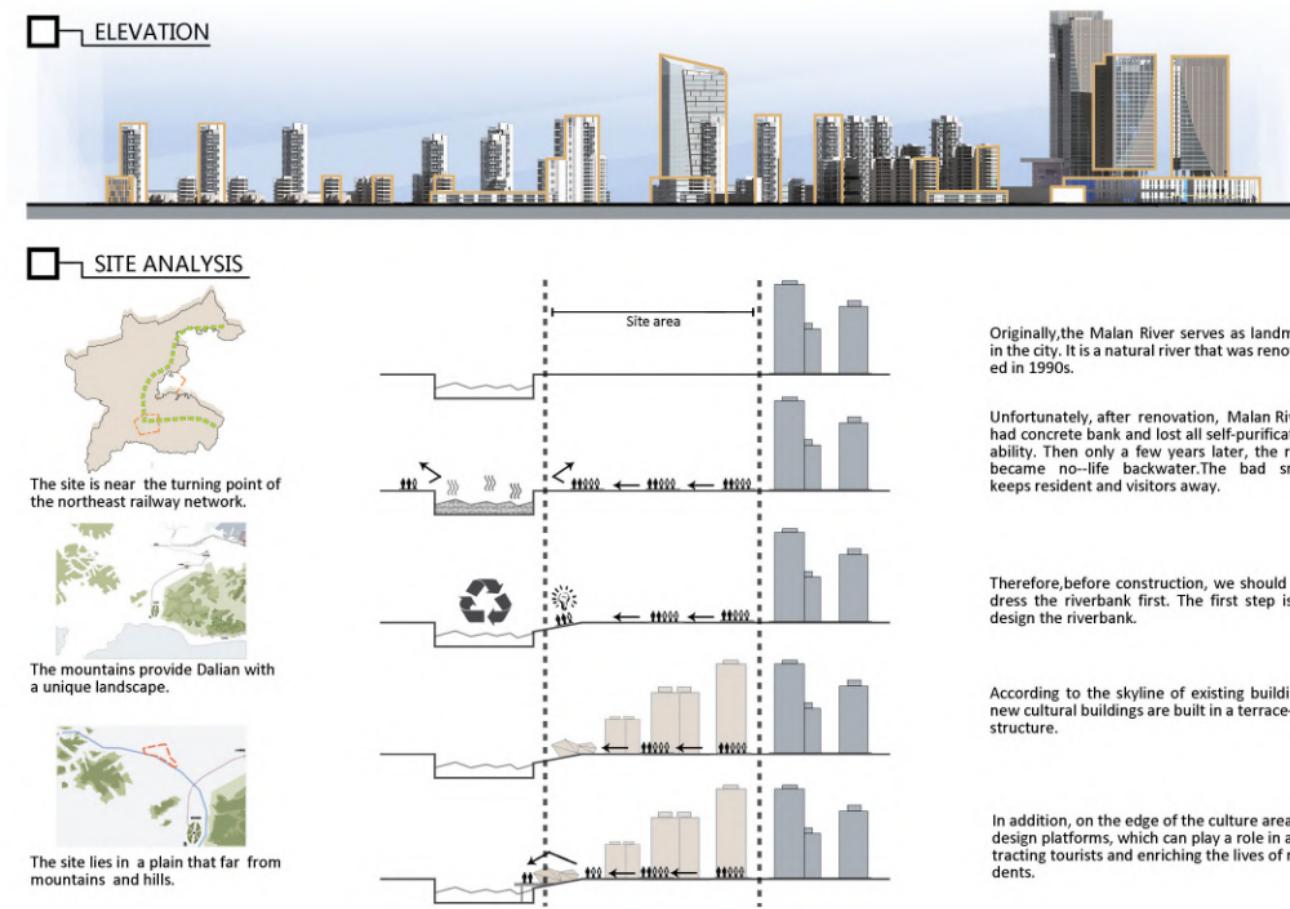
CULTURAL IDENTITY

As an important cultural and economic metropolis in the Northeast in China, Dalian will become the leading role holding most international exhibitions of the northeast of China in the near future. Malan River will be a main city river. How can it provide the residents a kind of cultural atmosphere? How can it become the authentic "City of the River"? These sociocultural questions together with others in three topics above, may be the four main entry points throughout.



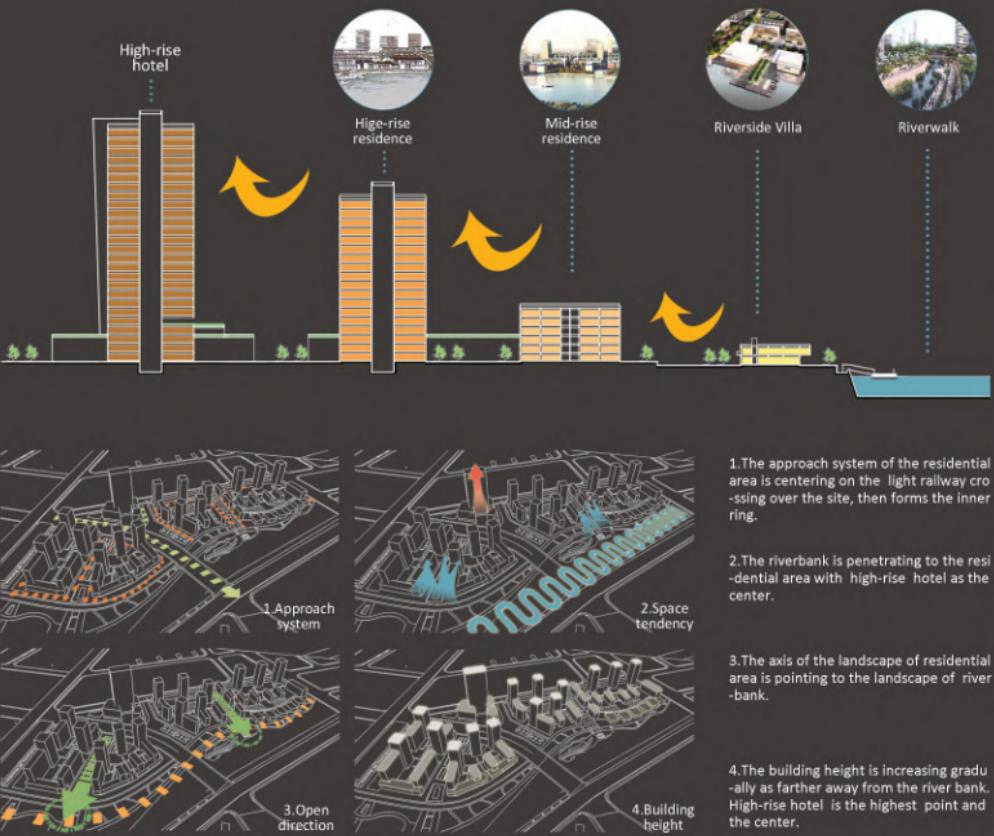
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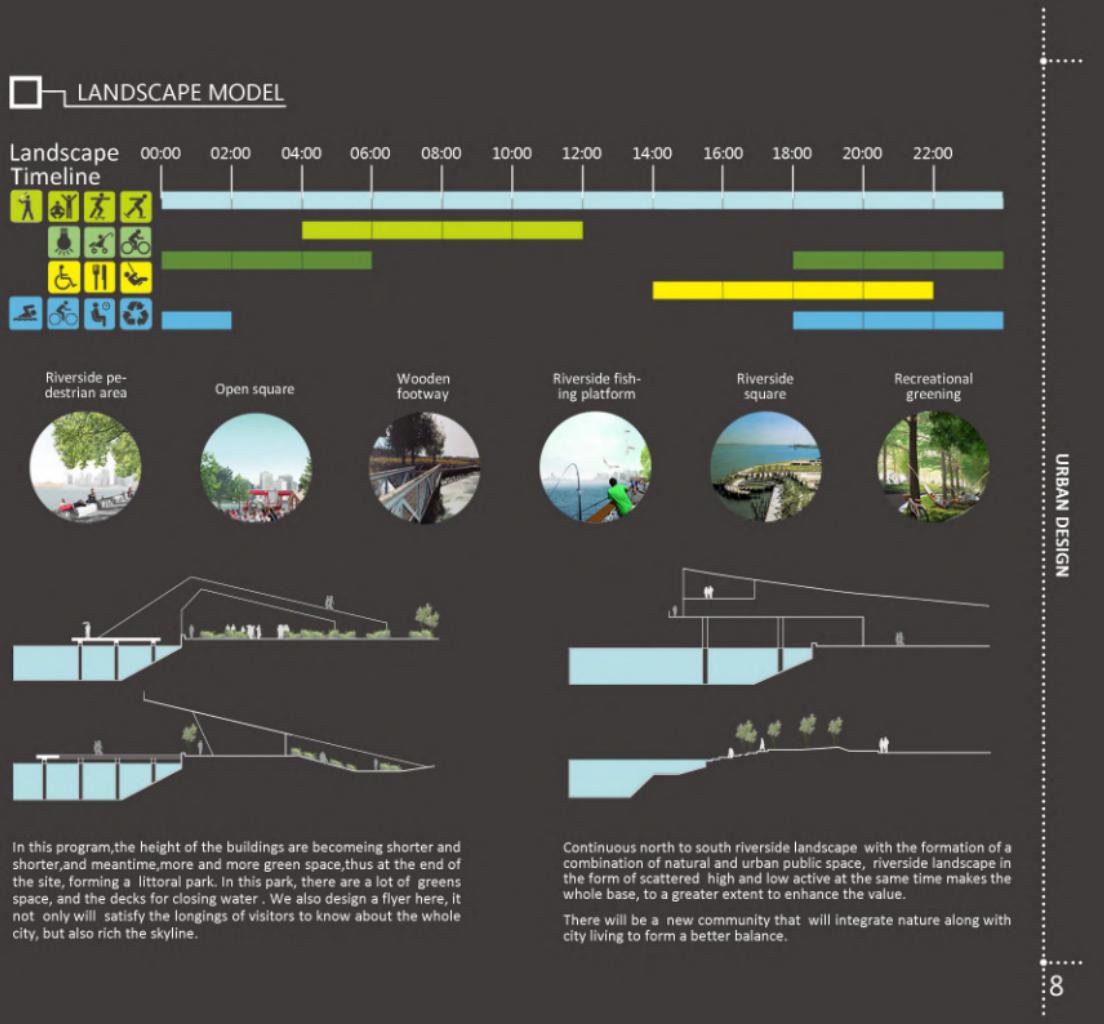
RESIDENT AREA

URBAN DESIGN





7



URBAN DESIGN

8

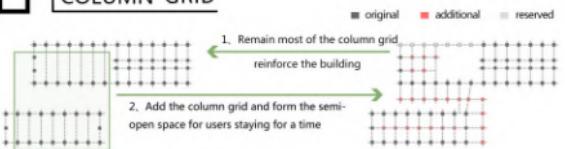


□ LOCATIONAL ANALYSIS

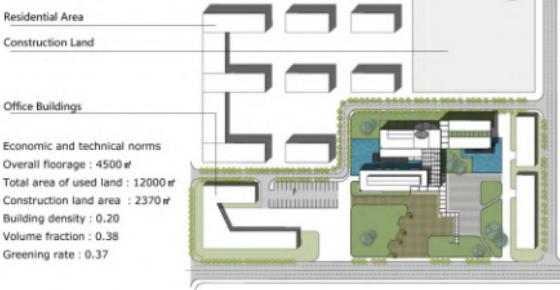


The base is situated at the famous manufacturing district---Shenyang Tixi District. The new Shenyang Tixi District consists of Shenyang Tixi District and Shenyang Technology development zone. It faces Huanggu District to the north, YuHong District to the west and HePing District to the east. The district is well traffic developed strong industry culture and beautiful environment. The design comes from culture and greens environmental protection in order to recovery plant vigor for creating a ecological exhibition center.

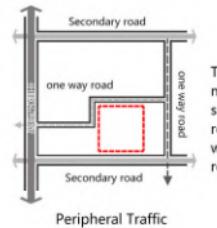
□ COLUMN GRID



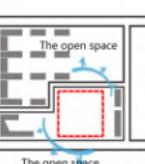
□ SITE PLANNING



□ SURROUNDING ANALYSIS

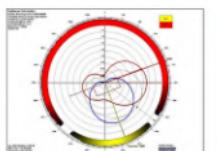


The west side is the main road. The south side is the secondary road. The east and west side are one way road.

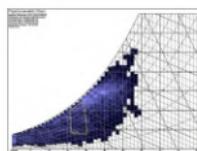


Open Spaces

□ CLIMATE ANALYSIS

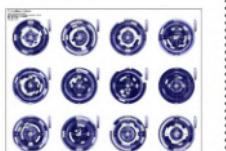


The best towards analysis
The best is south and 20 degrees east in Shenyang. This little deflection can be ignored. So the project is adopted the due south for the original plant.



The comfort analysis

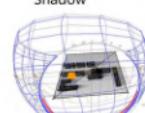
The rain capacity is 600-800mm in Shenyang. The water shortage in this city is affected by the monsoon climate. Rainfall concentrates in hot summer, dry winter. The effective temperature adjustment will increase the comfort experience.



Monsoon changes significantly in Shenyang, southeast wind in summer and northwest wind in winter. So, we put the effective use of ventilation and cooling into consideration for the heat loss of winter monsoon wind.

Shadow

Spring Equinox Shadow



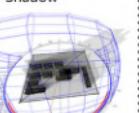
Summer Solstice Shadow



Autumnal Equinox Shadow

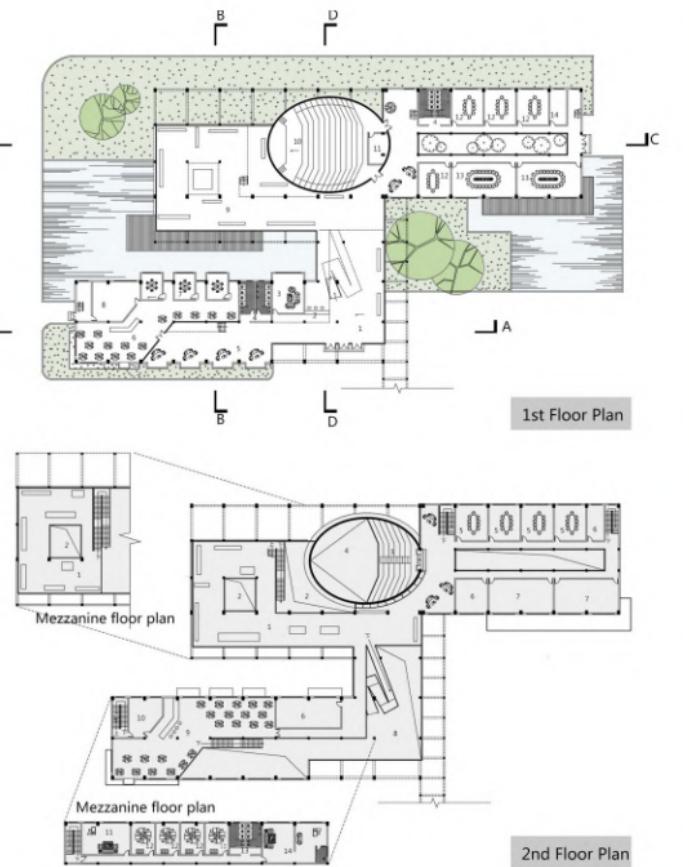
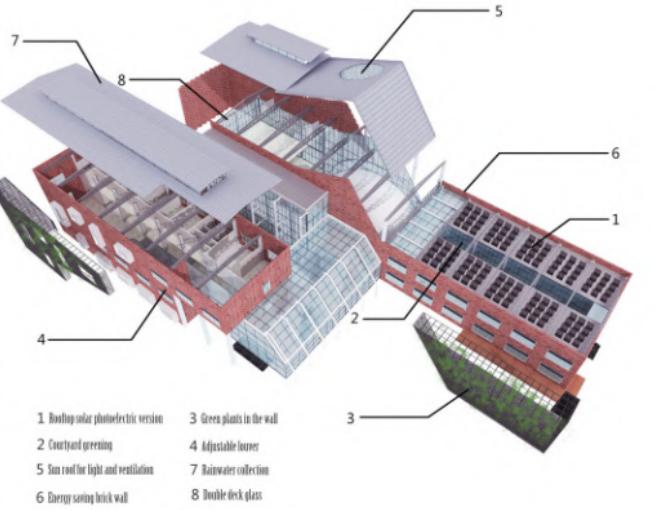


Winter Solstice Shadow



Wake Up Factory Culture In An Environmental Way

ANALYSIS OF GREEN DESIGN



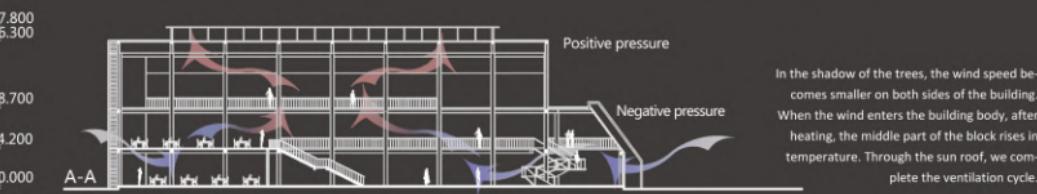
WALL PLANTING



We put vertical greening into consideration. We can plant climbing plant for environmental purposes and overshadow, such as, lilac clematis, honeysuckle, celestris orbiculatus, and boston ivy etc.

VENTILATION

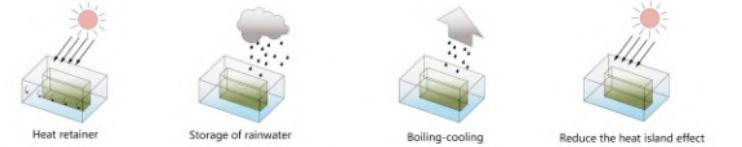
Separate air circulation is formed between each layer. The cold air enters from the side window and the hot air discharges from the side window. In the exhibition hall, the cold air enters from the side window and discharges from the sun roof. We would like to meet the requirements of different function spaces on the wind and to reduce building energy consumption for energy conservation.



C-C SECTION GREEN ENERGY-SAVING

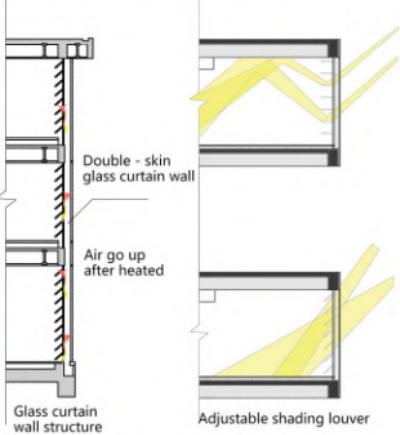
Courtyard greening and energy saving analysis

Design a skylight in the profile. According to the sunlight intensity and angle, it can adjust by itself. When the light comes into inside from the baffle plate, light becomes softness. In addition, the method of interior design of plants can adjust room temperature and clean the air.

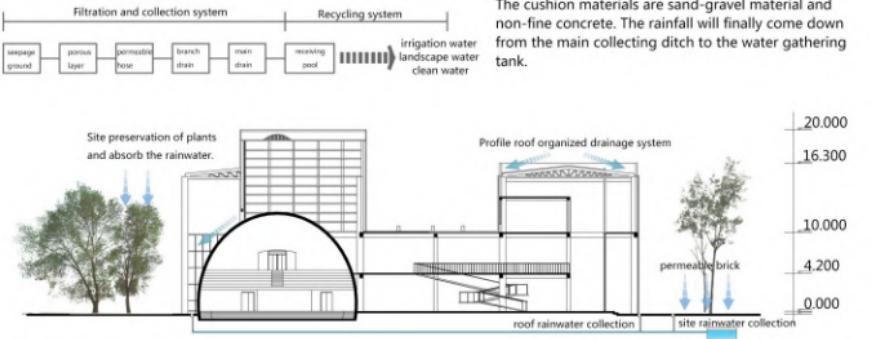


GLASS CURTAIN WALL

We install controlled blinds on the form to adjust light. At the same time, through the refraction principle, it can influence the effect of light. The blinds can automatic control by the temperature.



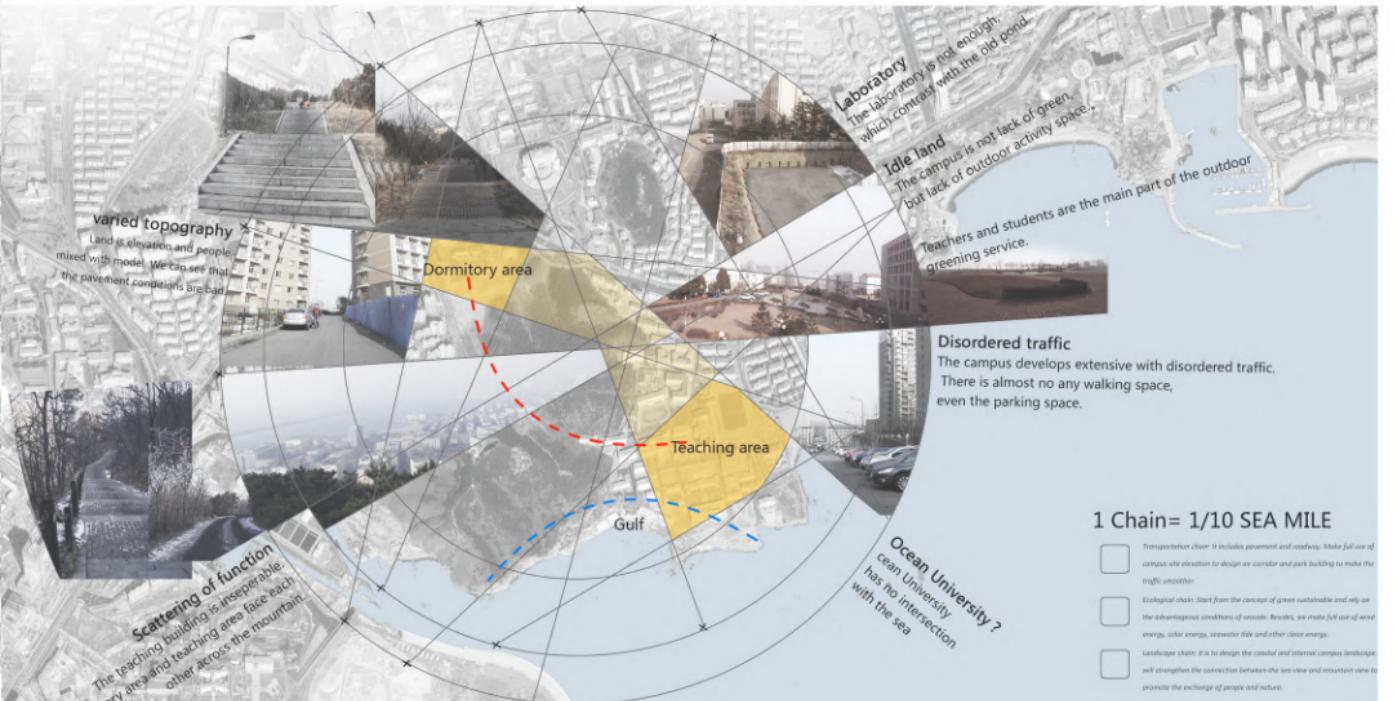
D-D Section Rainwater Collection



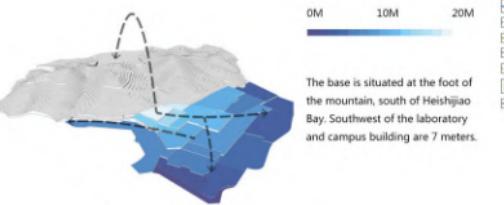
Field permeability structure material can be classified into permeable bricks and explicit pervious concrete. The cushion materials are sand-gravel material and non-fine concrete. The rainfall will finally come down from the main collecting ditch to the water gathering tank.



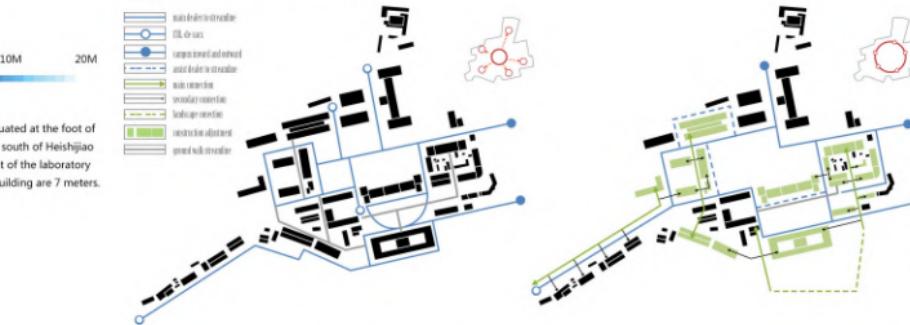
□ GREEN TRANSFORMATION OF CAMPUS PARKING



□ TERRAIN ANALYSIS

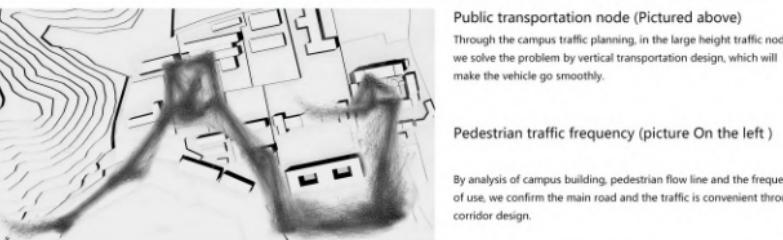
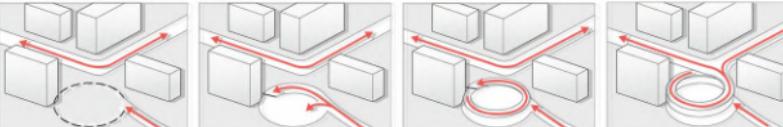


□ CAMPUS TRAFFIC



Due to space height difference, the campus roads are located at different heights. Some of the regional have fault scarp, with extension transport mode, showing coexistence of people and vehicles.

Transportation Streamline



□ OPTIMIZATION OF CAMPUS PARKING

Landscape Architecture

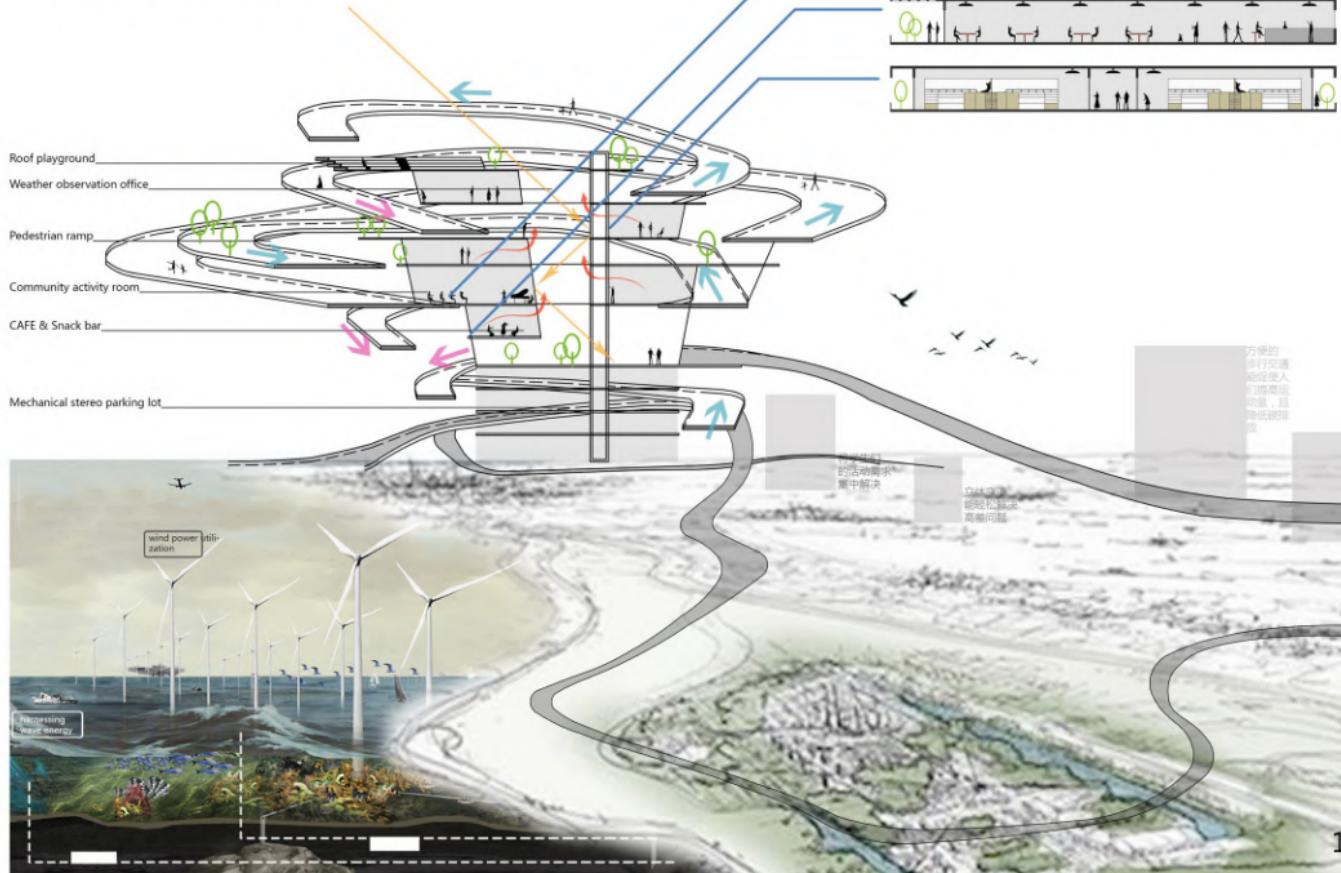
Campus leisure tea bar
Storage room
Campus sports field
Administrative office buildings
Student cafeteria
Library
Teaching and laboratory building
Teaching and laboratory building

Stereo parking building+student hall
Teaching and laboratory building
Graduate teaching and laboratory building
Comprehensive teaching building
Undergraduate laboratory building

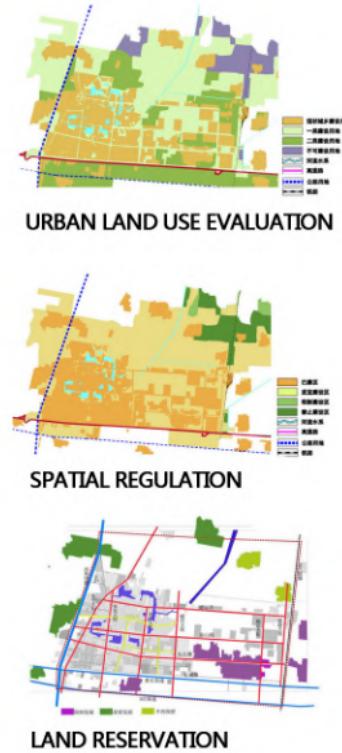
Technical and economic target
overall floorage : 118300m²
land Area : 167000m²
building area : 39900m²
building density : 0.238
the volume of construction : 0.708



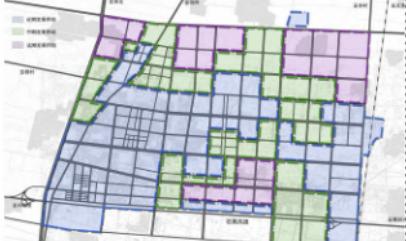
□ SECTION OF PARKING BUILDING AND STUDENT HALL



URBAN COMPREHENSIVE PLANNING



URBAN LAND USE



STAGE PLANNING



SHORT-TERM PLAN

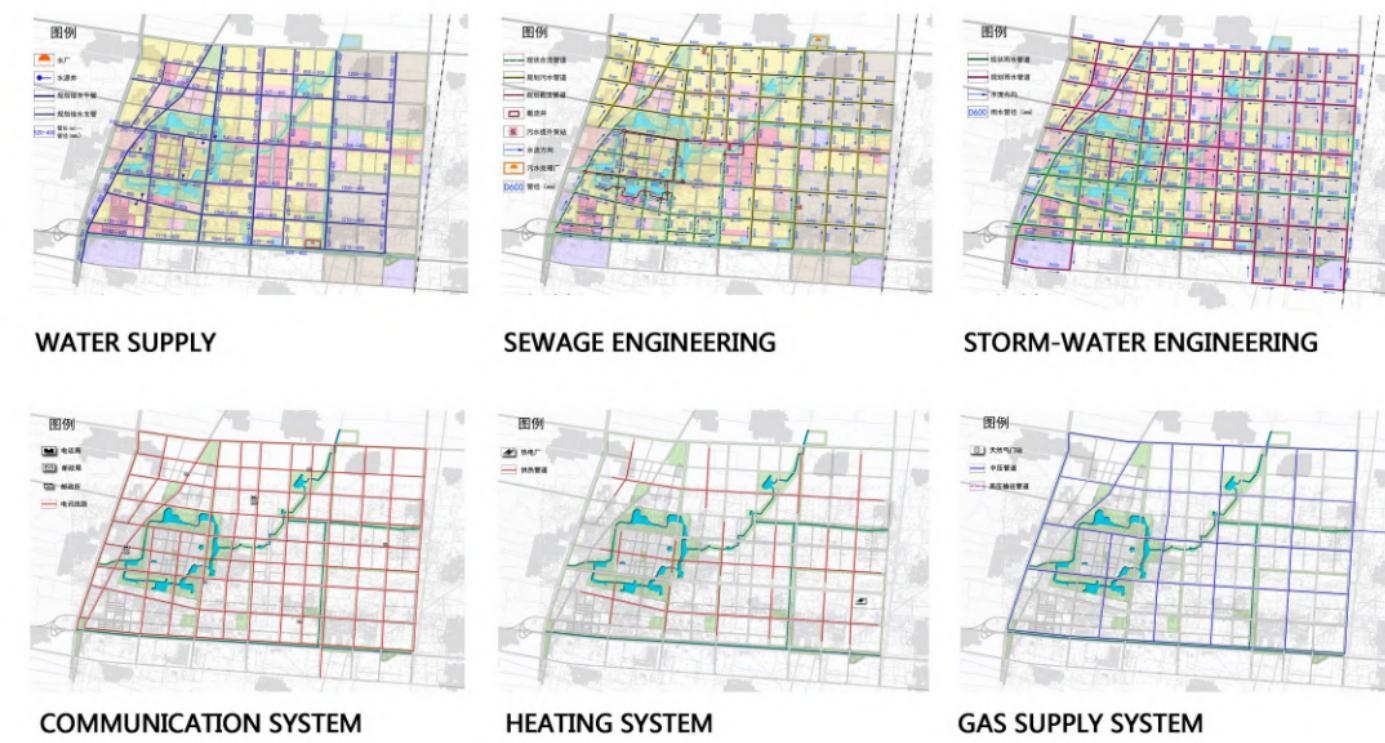


LONG-TERM PLAN

URBAN PUBLIC FACILITIES PLANNING

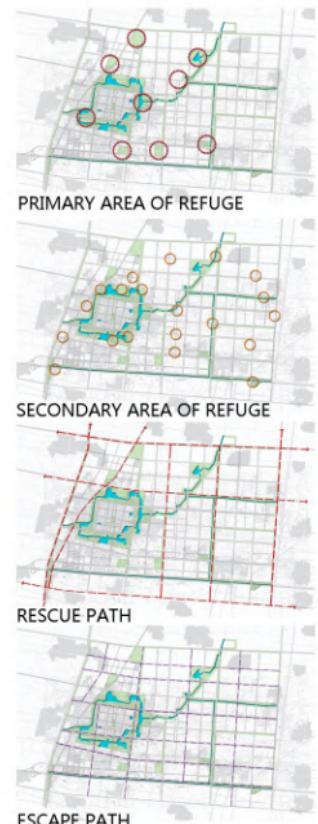
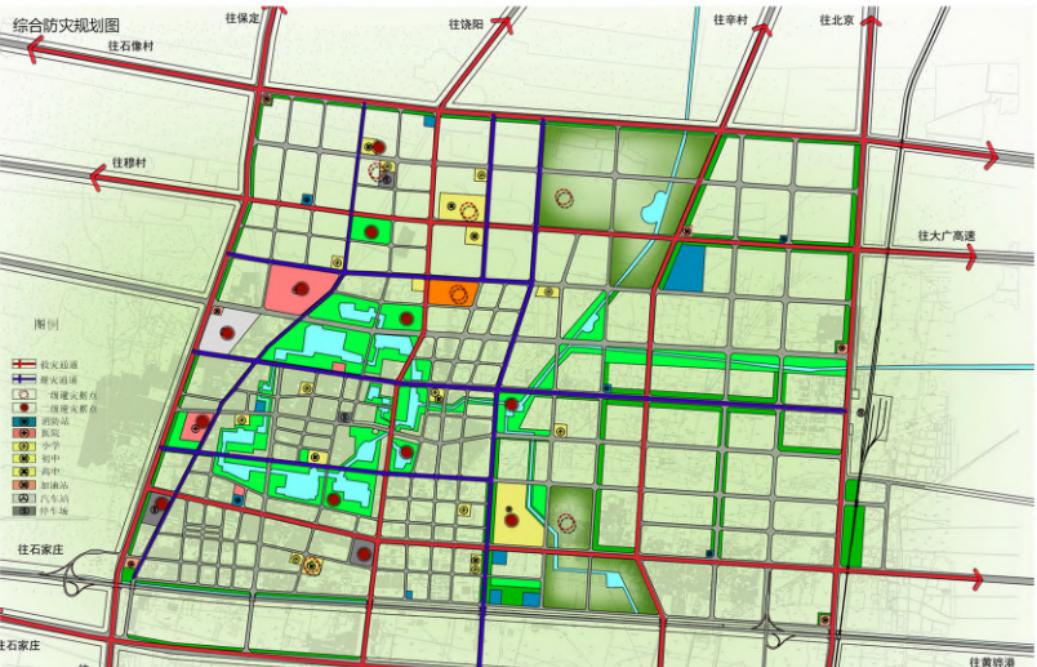


URBAN INFRASTRUCTURE PLANNING



COMPREHENSIVE DISASTER PREVENTION

In the present situation, we should increase the green area in residential land of old city. At the same time, we should also add green areas on both side of river to form a climate of landscape, which provides a casual and comfortable place as the main refuge in the way of integrating into other green areas and parking spaces.



TRAFFIC PLANNING



Processing scheme one:
The intersection is situated at roundabout in order to control the direction of the traffic effectively. it makes the pedestrians more convenient and safe.



Processing scheme two:
The roundabout can slow down the traffic and make them go to the same direction, which will cut down the accident.



Fracture solution:
The parking is set at the road separator. So, it can make the street has a better walking space. The city has become to a higher degree of homogenization.

