

# THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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—Reconstructing the Nature Corridor of Jinan Central Business District

Two thin, light green wavy lines that originate from the right side of the horizontal line and curve downwards and to the left, ending under the subtitle.

## PROJECT STATEMENT

Once noted as the most striking west gateway of Jinan Central Business District (CBD), Maoling Hill has suffered from severe soil erosion, fragmented and fragile ecosystem, and risky engineering muck piles caused by urban construction, and gradually faded into the "industrial wasteland" over time.

Through a deep research into the history, nature and culture of Jinan City, and with key strategies like restoring the hills, reshaping the landform, revegetating and rejuvenating the forests, the project aims to restore the hills and forests and embrace the return of long-time-gone nature into the densely populated city center and reconstruct the nature corridor of Jinan CBD that is featured by the open space with landmarks and natural landscape of local spirit.

## PROJECT NARRATIVE

Maolingshan Park is situated at the CBD, Jinan, Shandong Province, China, with a total area of about 340000m<sup>2</sup>. It is a typical nature conservation project in Jinan over recent years.

With the spatial layout of "two axes and four points", the project plans to construct a world-class ecological park system in Jinan CBD to strengthen the ties between the city center areas and the surrounding environment. Maoling Hill functions as a key entrance into the central CBD and its western visual gateway. However, it has been eroded and destroyed by urban construction in the process of rapid urban development. Due to the

destruction caused by quarrying and mining in the early years, and the mass piling of engineering muck excavated from surrounding construction plots in recent years, Maoling Hill, once recorded as a wonderland of natural beauty in the history, is now confronting with the ecosystem fragmentation and serious safety hazards caused by engineering muck piles.

- **Seeking Solutions from History — Restoring Hills & Embracing the Return of Hills into the Core of the City**
- **Seeking Solutions from Nature—Revegetating and Rejuvenating the Forests**
- **Seeking Solutions from Culture—Reconstructing the "Flowing" Nature Corridor**

The project seeks and adopts key strategies from the nature, history and culture of Jinan, such as: reshaping the landform, forming the terrain framework stretching from the east to the west, and recovering the destroyed hills by taking advantage of the engineering muck pile in the site; revegetating and rejuvenating the forests by the use of indigenous plants; creating a main traffic flow by designing a key circulation from CBD to the hills, and reconstructing the representative nature corridor that maps out connections between the city and nature.

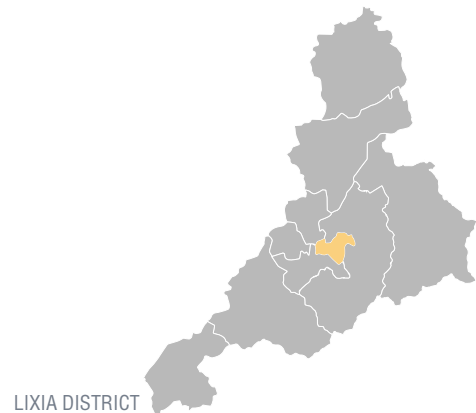
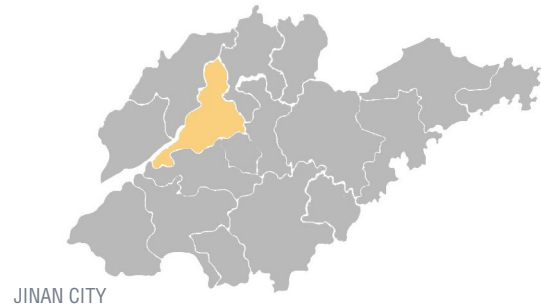
Upon the completion, the project will restore the hills and forests and embrace the return of long-time-gone nature into the densely populated city center, forming the nature corridor of Jinan CBD and urban forests with seasonal plantscape. Maolingshan Park, thus, will become the representative public space, the most eye-catching west gateway, and the natural corridor benefiting all species (including mankind), as well as the window for the "first glimpse" of Jinan CBD for a better future.



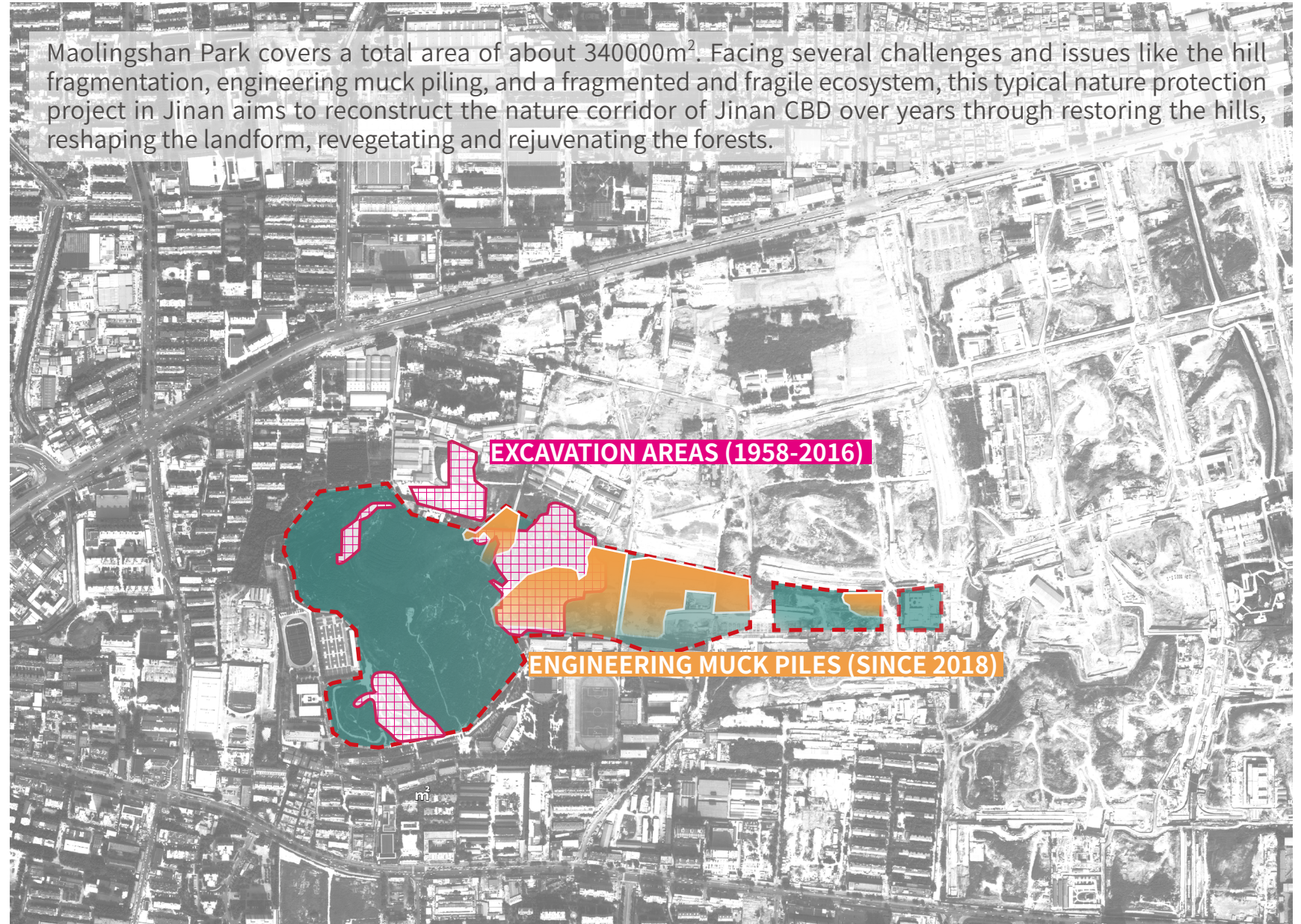
# PROJECT OVERVIEW

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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Maolingshan Park covers a total area of about 340000m<sup>2</sup>. Facing several challenges and issues like the hill fragmentation, engineering muck piling, and a fragmented and fragile ecosystem, this typical nature protection project in Jinan aims to reconstruct the nature corridor of Jinan CBD over years through restoring the hills, reshaping the landform, revegetating and rejuvenating the forests.

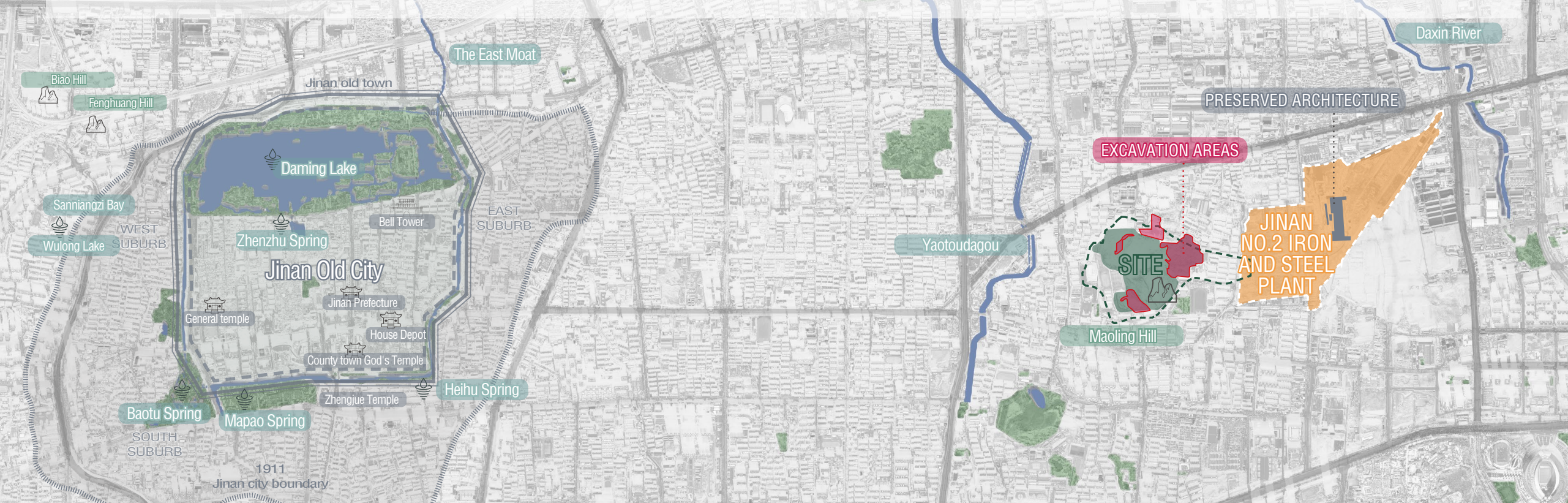




# HISTORY OF MAOLING HILL

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS Reconstructing the Nature Corridor of Jinan Central Business District

Maoling Hill, with a vertical height of 50 meters or so, is the first hill on the plain terrain to the east of Jinan Old City. Standing on the top of the hill, visitors can get a full view of the whole city. The construction of The Second Jinan Iron and Steel Plant was established on the east side of Maoling Hill in 1958, but then it was relocated in March 2016. During this period, quarrying and mining on a large scale caused damages to Maoling Hill.



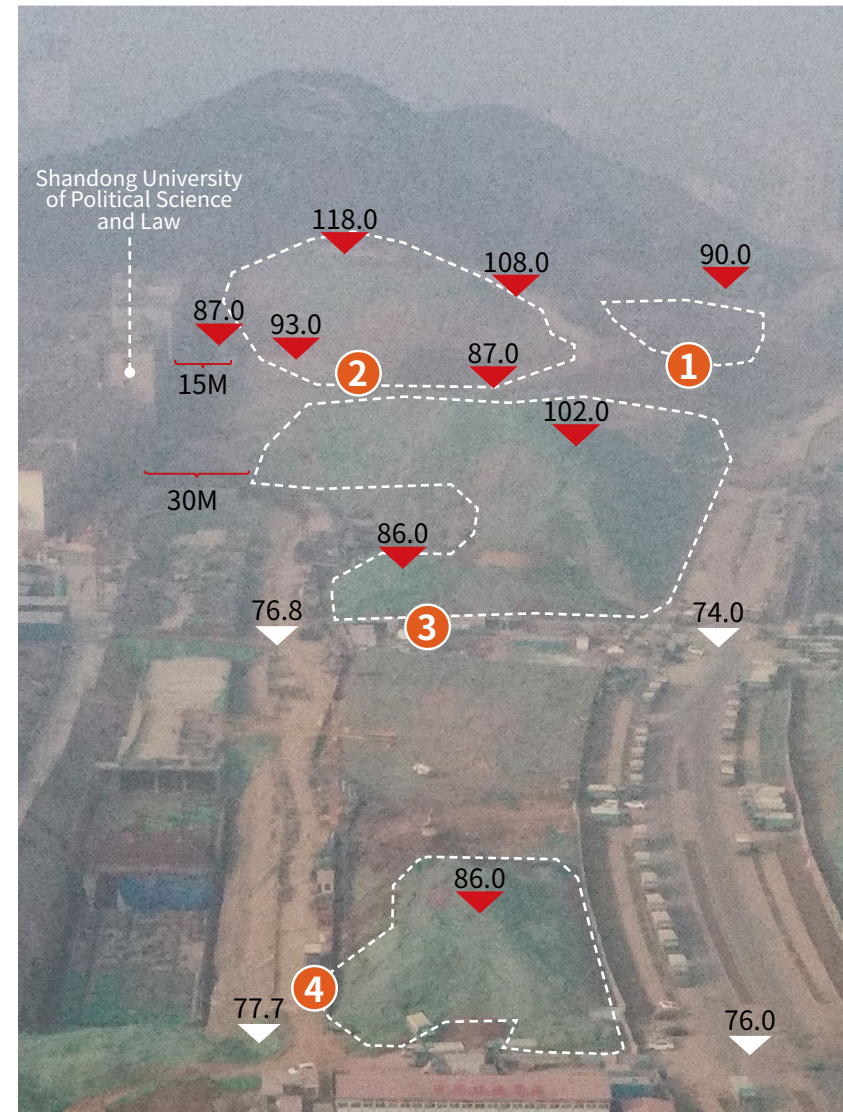
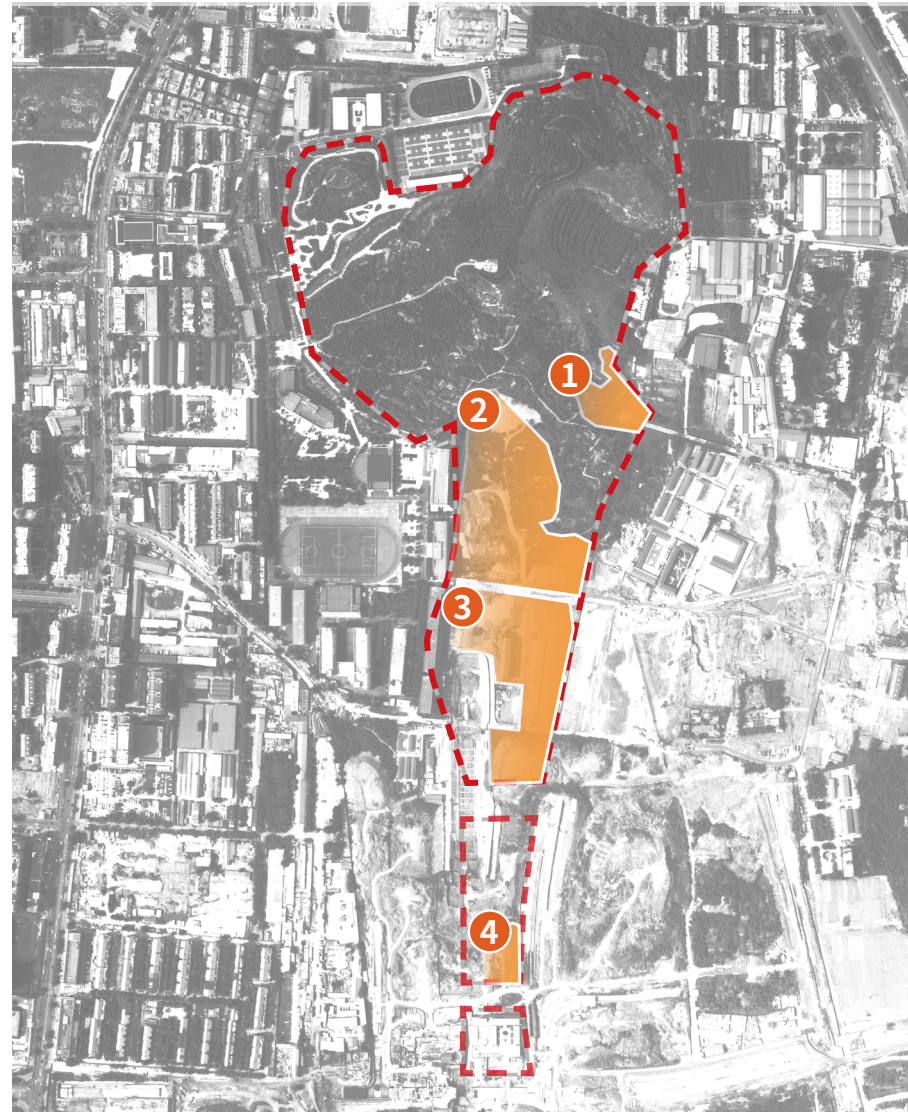
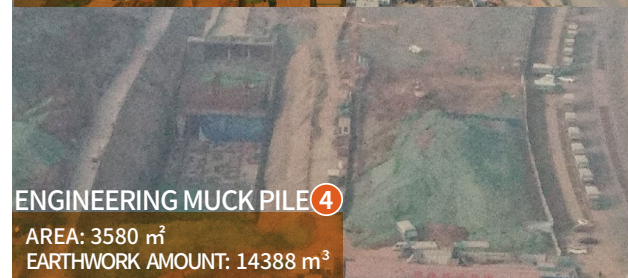


# MAOLING HILL BEFORE CONSTRUCTION

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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With the construction of Jinan CBD, the large number of engineering mucks excavated in the surrounding construction plots stacked up in the plain areas of Maoling Hill, forming four muck piles with huge volume of earth works add up to about 880,000 cubic meters. For parts of the piles, the slope even exceeds 45 degrees, and the elevation difference between the piles and the site boundary reaches nearly 30m, or no less than 15m from the surrounding buildings, posing great potential safety hazards.





# MAOLING HILL AFTER CONSTRUCTION

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Maoling Hill will become the most eye-catching west gateway to the world-class ecological park system of Jinan CBD, serving as a key entrance into the central CBD and its western visual gateway. Standing on the top of the hill, visitors can get a full view of the CBD and its surrounding areas. Maolingshan Park will become the green backbone of CBD, as a landmark.



**2 AXES**  
**5 GATEWAY PARKS**  
**4 COMMUNITY PARKS**



# CORE ISSUES & CHALLENGES

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How to consume the stacking muck-piles in place and tackle the challenges of brownfield regeneration and potential safety hazards?



How to restore the damaged hills and vegetation and embrace the return of the long-time-gone nature into the city center?



How to create a representative gateway and successful public space in the CBD?

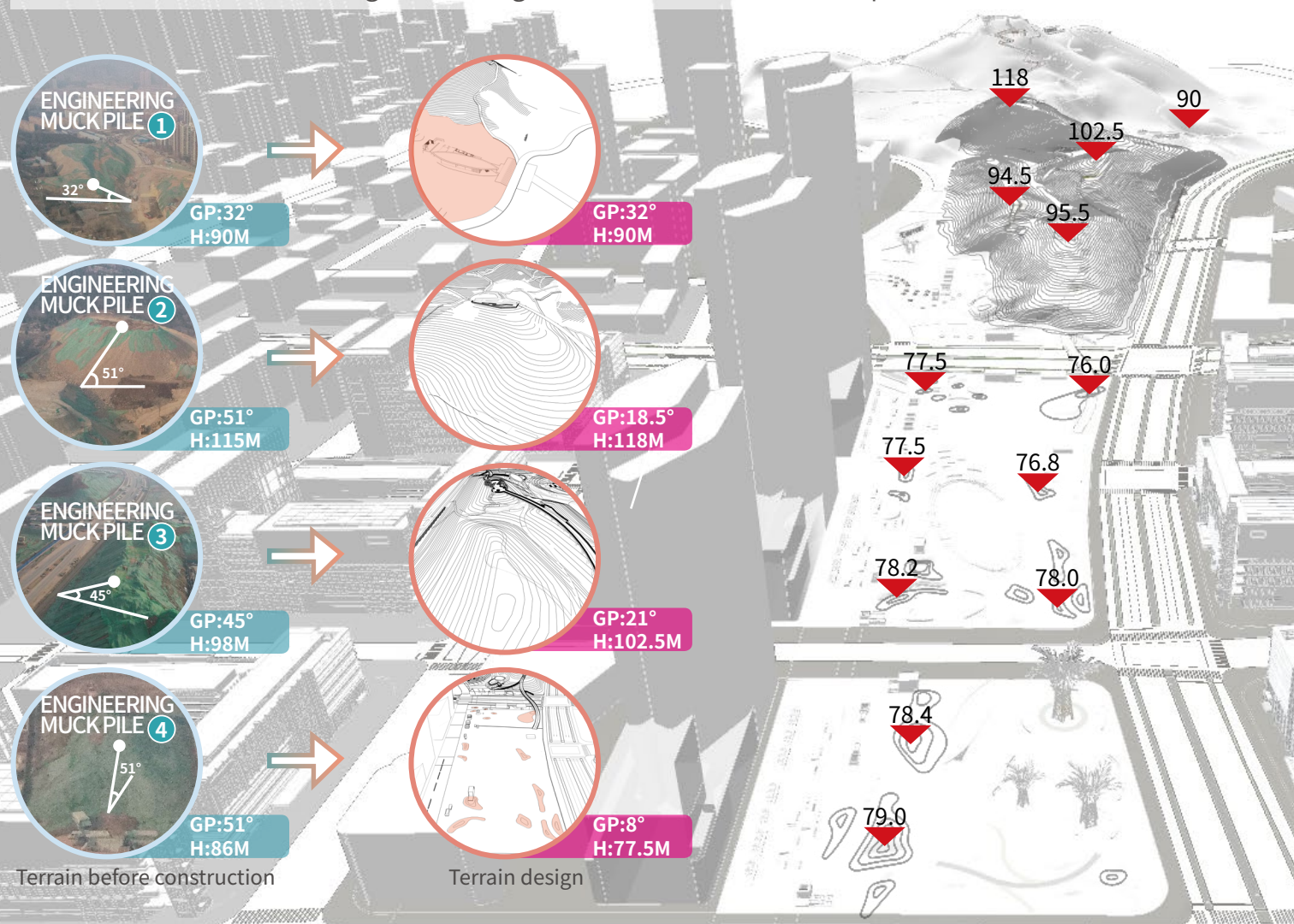




# KEY STRATEGIES

## SEEKING SOLUTIONS FROM HISTORY — RESTORING HILLS & EMBRACING THE RETURN OF HILLS INTO THE CORE OF THE CITY

According to the Annals of Licheng County, "Maoling Hill is situated eight miles away from the east of Jinan City. And there were five peaks in the hill, also known as Wuding Maoling Hill". As the name implies, there were originally five peaks in Maoling Hill, but today only two are left, and the other three were leveled when quarrying and mining in the early years. Upholding the principle of "restoring hills into the core of the city", the project utilizes the existing engineering muck piles to construct the large terrain framework, restore the hills, and extend the original terrain to the core area of CBD, so as to form the terrain framework stretching from the east to the west and the green ecological backbone of the whole park center.



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## ENSURING SAFETY AND STABILITY BY MEANS OF ENGINEERING TECHNOLOGY

TOP VIEW



SIDE ELEVATION



### STEP 1: LAYERED FILLING

A HORIZONTALLY LAYERED FILLING METHOD IS ADOPTED TO ENSURE THE STABILITY OF THE FILLED HILL, AND THE VERTICAL DYNAMIC COMPACTION IS CONDUCTED EVERY 5 METERS, WITH THE COMPACTION ENERGY NO LESS THAN 2000KJ.

### STEP 2: SOIL IMPROVEMENT

SOIL IMPROVEMENT IS CONDUCTED ON THE BACKFILLED STACKING PILES IN THE SURFACE PLANTING AREAS, SO AS TO CATER TO THE PLANTING REQUIREMENTS.



# KEY STRATEGIES

## SEEKING SOLUTIONS FROM NATURE —REVEGETATING AND REJUVENATING THE FORESTS

Given the pollutants, contaminated soil, bare hills and barren engineering muck piles left over from the relocation site of The Second Jinan Iron and Steel Plant, efforts will be made to plant about 11,000 trees and shrubs, which are all local plants to remediate the soil and legume plants with nitrogen fixation to improve the barren soil, of more than 100 local species. The move aims to embed the reconstructed forest into the core area of Jinan City, construct an urban forest with a healthy and stable ecosystem, improve the soil and air quality, reduce the urban heat island effect and foster biodiversity there in an efficient manner.

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### EVERGREEN TREES

1222 PCS

8 KINDS

### DECIDUOUS TREES

4676 PCS

34 KINDS

### DECIDUOUS FLOWERING SMALL TREES AND SHRUBS

5398 PCS

29 KINDS

### PREFERRED FEEDING PLANTS OF BIRDS



*Lonicera maackii*



*Malus × micromalus*



*Crataegus pinnatifida*



*Diospyros kaki*



*Cotoneaster horizontalis*

### HABITAT CREATION



*Thalia dealbata*



*Iris pseudacorus*



*Nelumbo nucifera*



*Metasequoia glyptostroboides*



*Salix babylonica*

### LOCAL PLANTS



*Pinus tabulaeformis*



*Celtis sinensis*



*Fraxinus chinensis*



*Salix matsudana 'Umbraculifera'*



*Lagerstroemia indica*



*Hibiscus syriacus*

### LEGUME PLANTS WITH NITROGEN FIXATION



*Sophora japonica*



*Robinia pseudoacacia*



*Styphnolobium japonicum 'Golden Stem'*



*Gleditsia sinensis*



*Cercis chinensis*



*Albizia julibrissin*

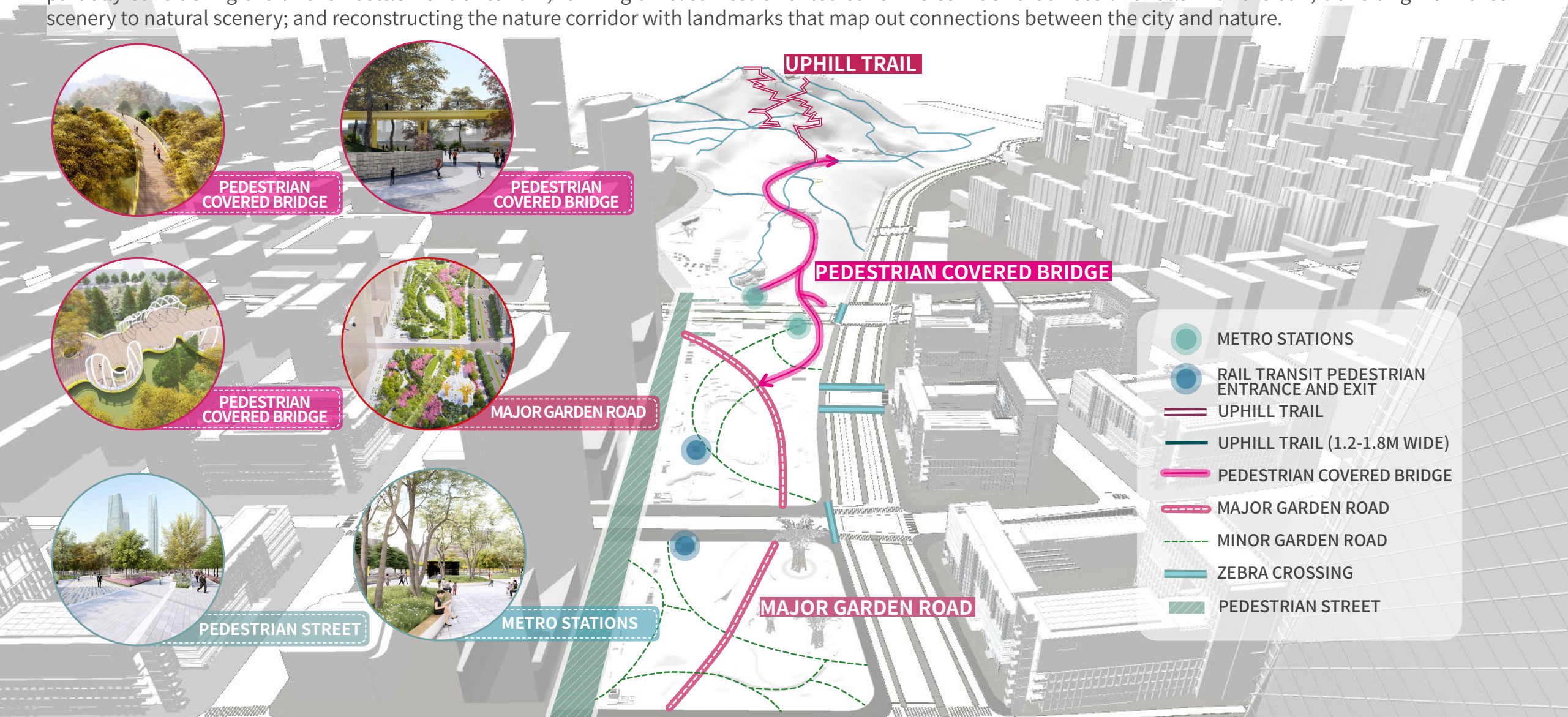


# KEY STRATEGIES

## SEEKING SOLUTIONS FROM CULTURE — RECONSTRUCTING THE "FLOWING" NATURE CORRIDOR

Jinan owns a unique landscape mixing elements of "mountain, spring, lake, river and city", and the interconnection of these elements constitutes the "flowing nature" in Jinan's culture-the harmony between the city and nature. The design emphasizes the key circulation from CBD to the hills and adopts overhead treatment partially considering the uneven settlement of terrain, forming an east-west-oriented sunshine corridor that rises and falls with the sun, transiting from urban scenery to natural scenery; and reconstructing the nature corridor with landmarks that map out connections between the city and nature.

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# GENERAL DESIGN

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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Originating from Maoling Hill in the west, the Park goes straight to the CBD core area through artificial large terrain framework in the east. The sunshine corridor, the three-level garden road system and the uphill trail form a sightseeing network in the Park, connecting main attractions including Yongquan Square, Urban Living Room, Green Valley Gateway and Tree-lined Trestle.



- 1 RIBBON PARK
- 2 LOTUS POND
- 3 CULTURAL BLOCK
- 4 BUSINESS PEDESTRIAN STREET
- 5 STREETREVITALIZE COMMERCE
- 6 RESIDENTIAL AREAS
- 7 KINDERGARTEN
- 8 SHANDONG UNIVERSITY OF POLITICAL SCIENCE AND LAW

- 1 YONGQUAN PLAZA
- 2 TREE-LINED GARDEN
- 3 INTERACTIVE GARDEN
- 4 URBAN LIVING ROOM
- 5 BUSINESS PEDESTRIAN STREET
- 6 METRO DISTRIBUTION SQUARE
- 7 SUNSHINE BRIDGE
- 8 GREEN VALLEY GATEWAY
- 9 READING GARDEN
- 10 SUB-ENTRANCE SQUARE
- 11 TREE-LINED TRESTLE
- 12 GREEN VALLEY GARDEN

- 13 HILL SLOPE
- 14 MAINTENANCE MANAGEMENT LANE
- 15 TERRACE GARDEN
- 16 CHILDREN'S PARK
- 17 PIEDMONT SQUARE
- 18 REVOLUTIONARY MEMORY PATH
- 19 HILLTOP VIEWING PLATFORM
- 20 HILLTOP SERVICE AREA
- 21 HILLTOP SQUARE
- 22 VIEWING PAVILION
- 23 UPHILL TRAIL
- 24 VIEWING PLATFORM



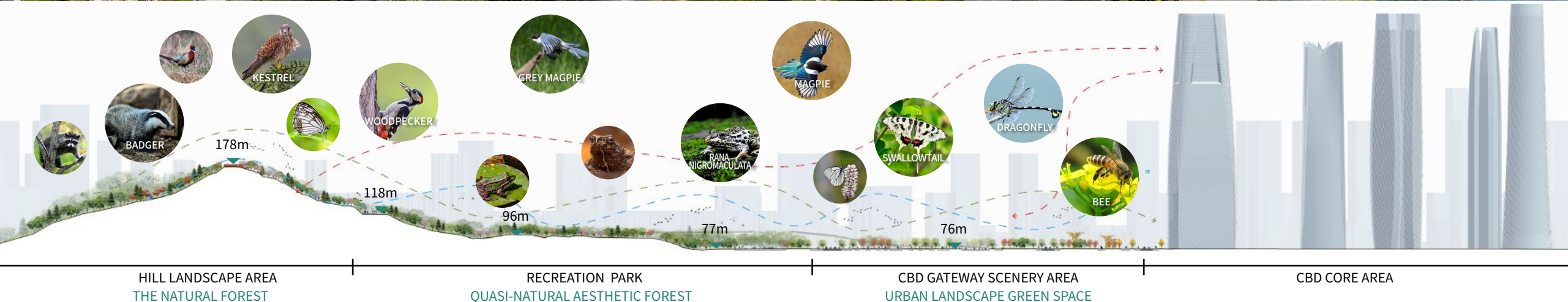
# VISIONS

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

—Reconstructing the Nature Corridor of Jinan Central Business District

### FROM "URBAN MULTIFUNCTIONAL ZONE" TO "REPRESENTATIVE NATURE CORRIDOR"

The construction of the east-west-oriented natural corridor on the basis of three typical plant communities of urban landscape green space, quasi-natural aesthetic forest and the natural forest realizes the transition from city to nature and from high density to low density and creates a good ecological environment for both animal and human activities.





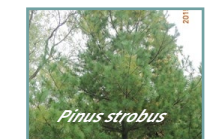
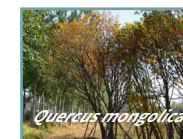
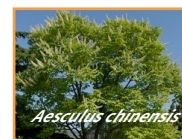
# VISIONS

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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### THE URBAN FORESTS WITH SEASONAL PLANTSCAPE

Based on the distinctive plant changes in spring, summer, autumn and winter in Jinan, an urban forest landscape with flowers in spring, shade in summer, color in autumn and green in winter has been built as per a pre-designed ratio of the indigenous vegetation.





# THE CONSTRUCTION PROCESS

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS —Reconstructing the Nature Corridor of Jinan Central Business District

Based on the joint efforts from the employer, the contractor, the designer and the engineers from various fields including landscape, architecture, vegetation, geotechnical, ecology, structure and hydropower, its construction was started on April 5, 2020 and completed on May 2021, lasting 428 days.

### MANUALLY RESHAPING THE LANDFORM



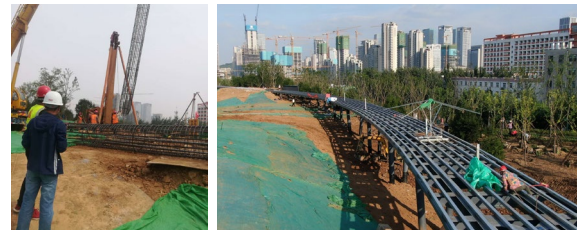
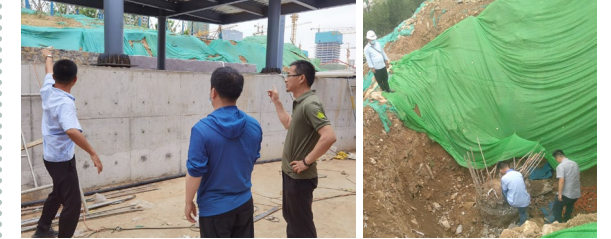
### REVEGETATING AND REJUVENATING THE FORESTS



### THE NATURE CORRIDOR WITH LANDMARKS



### MULTI-PARTY PROFESSIONAL COLLABORATION





# COMPARISON BEFORE AND AFTER CONSTRUCTION

THE RESTORATION AND RETURN OF THE HILLS AND FORESTS  
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■ BEFORE CONSTRUCTION



■ DESIGN EFFECT



■ AFTER CONSTRUCTION





# URBAN LANDSCAPE GREEN SPACE



ARTISTIC STRUCTURES



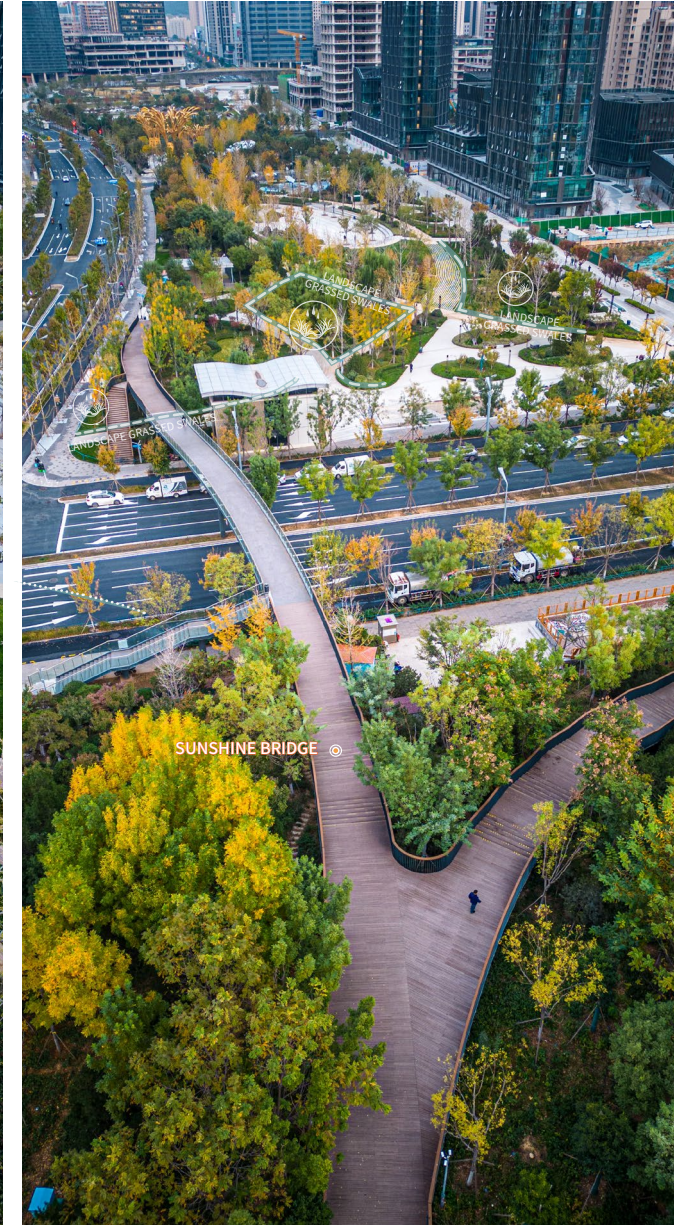
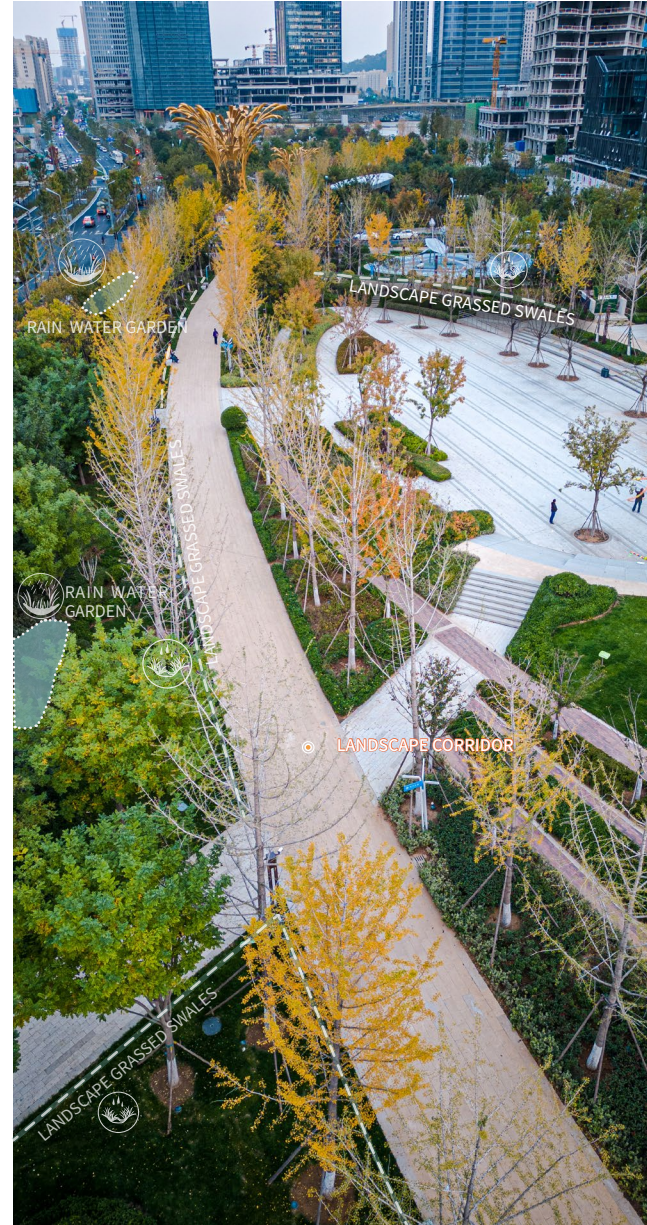
LANDSCAPE CORRIDOR



SUNSHINE BRIDGE



## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS —Reconstructing the Nature Corridor of Jinan Central Business District





# QUASI-NATURAL AESTHETIC FOREST

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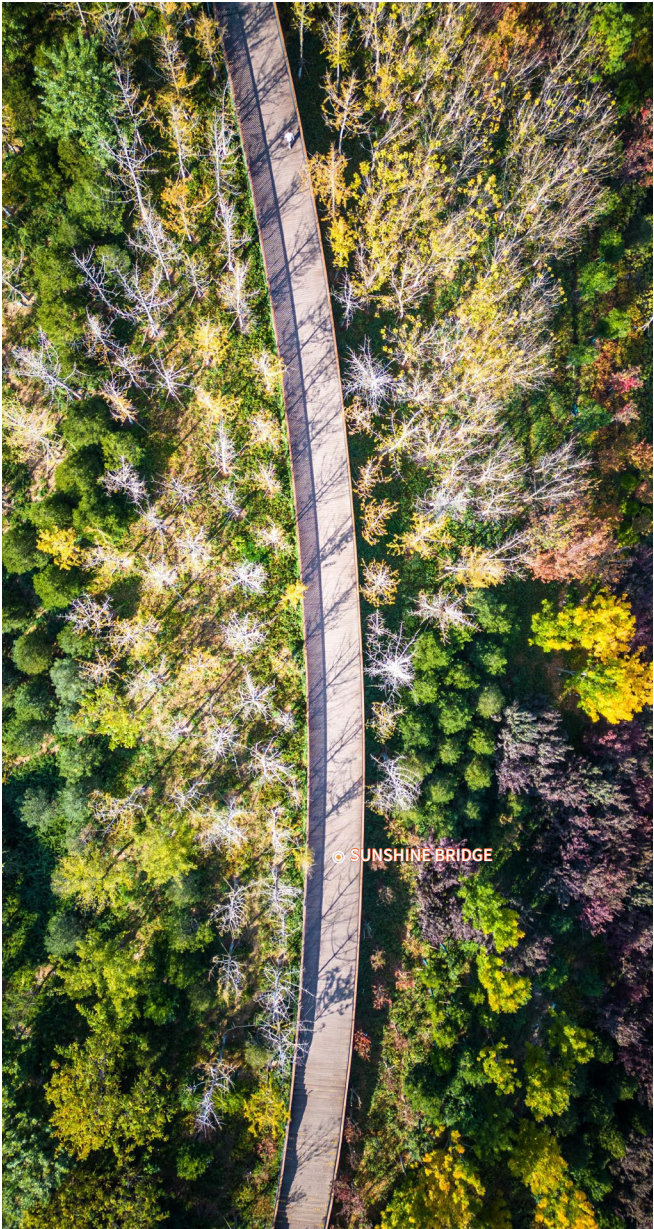
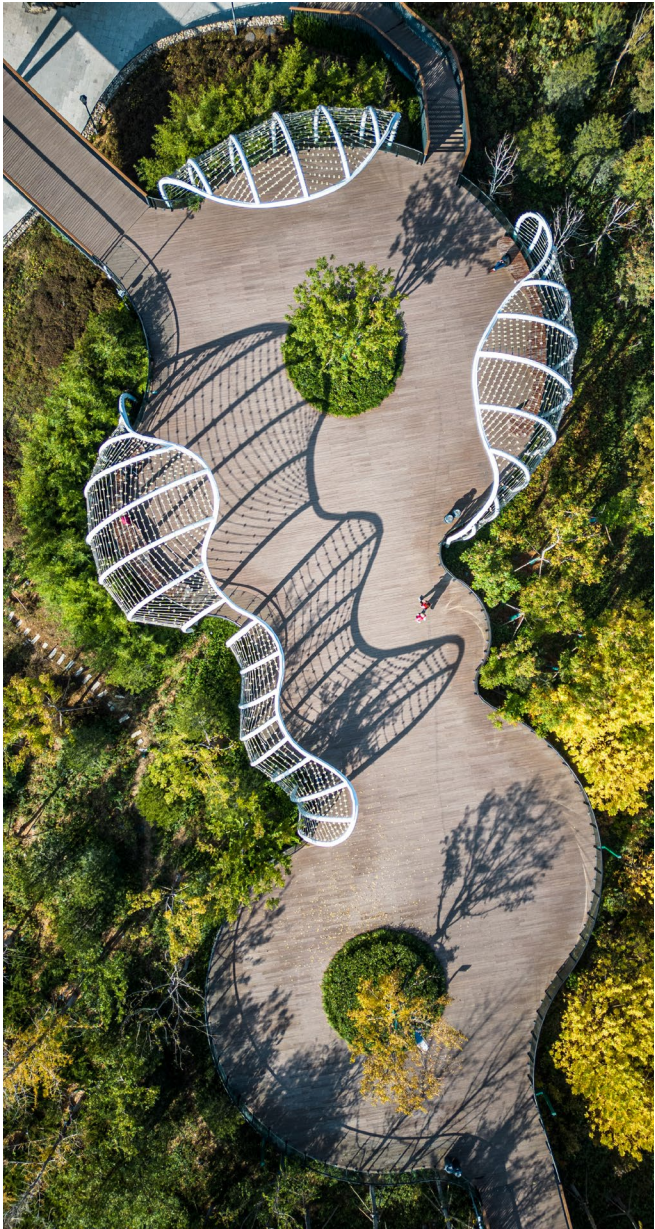
TREE-LINED TRESTLE



SUNSHINE BRIDGE



GREEN VALLEY GARDEN



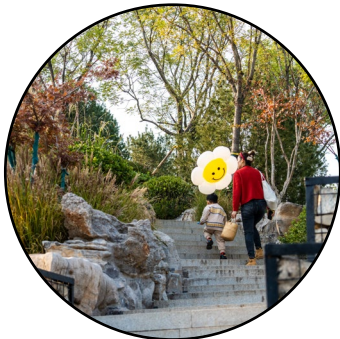


# THE NATURAL FOREST

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS —Reconstructing the Nature Corridor of Jinan Central Business District



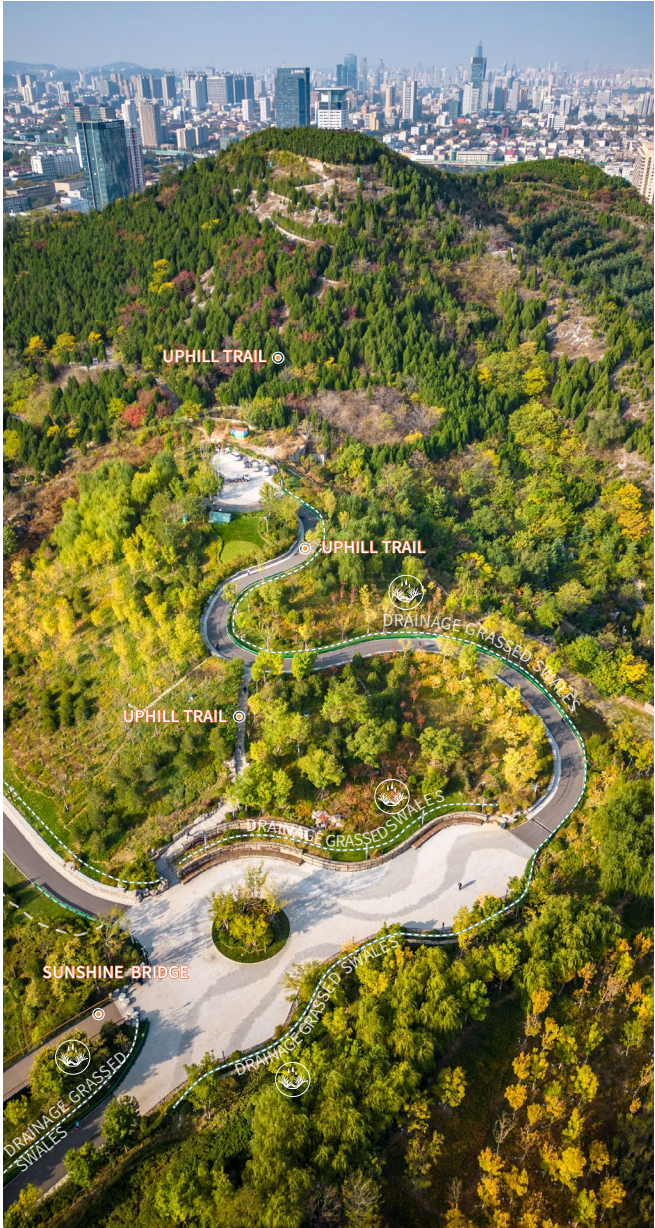
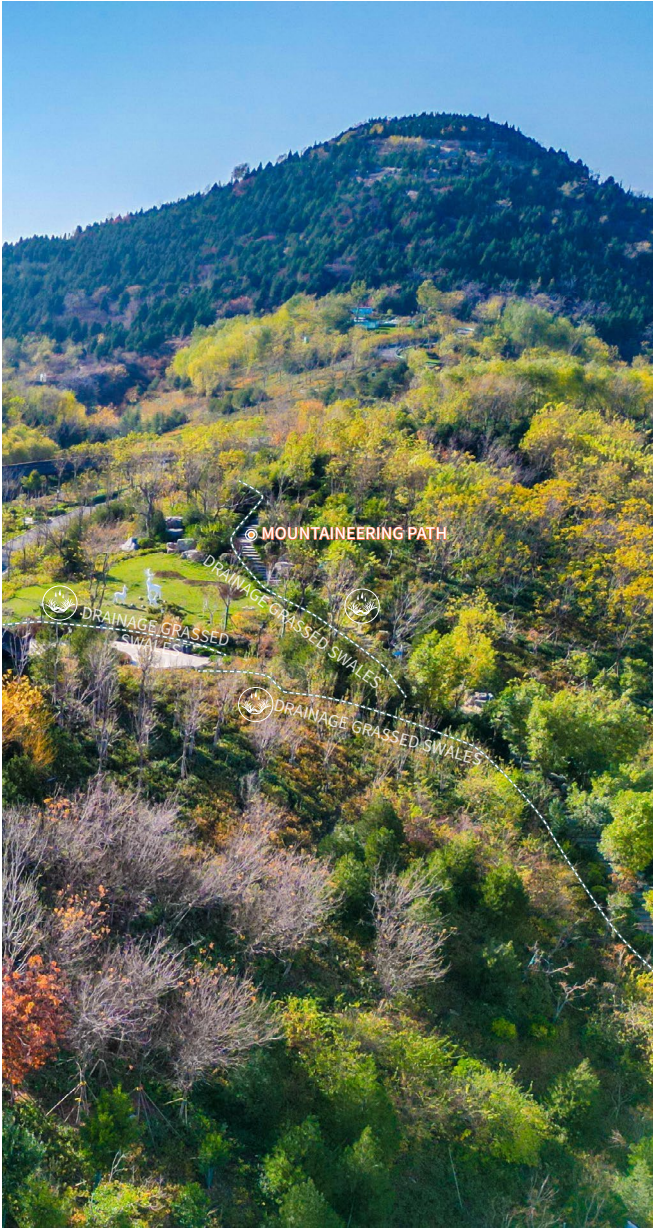
TERRACE GARDEN



UPHILL TRAIL



HILLTOP VIEWING PLATFORM



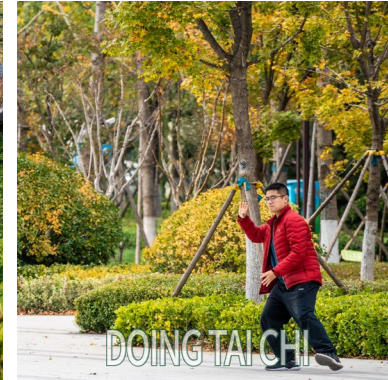
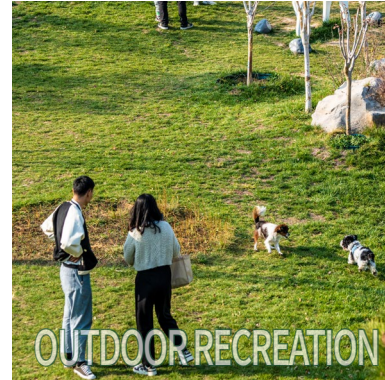


# DISPLAY UPON COMPLETION

## THE RESTORATION AND RETURN OF THE HILLS AND FORESTS

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The densely populated city center, with restored hills and forests, has grown into a natural corridor benefiting all species (including mankind), and a more livable urban environment for citizens and visitors to keep close contact with nature in the CBD.





DISPLAY UPON COMPLETION

THE RESTORATION AND RETURN OF THE HILLS AND FORESTS  
Reconstructing the Natural Corridor of Foshan Central Business District





DISPLAY UPON COMPLETION

THE RESTORATION AND RETURN OF THE HILLS AND FORESTS  
—Reconstructing the Ecological Environment of Jinan Central Business District





DISPLAY UPON COMPLETION

THE RESTORATION AND RETURN OF THE HILLS AND FORESTS  
Reconstructing the Nature Corridor of Jia'an Central Business District





DISPLAY UPON COMPLETION

THE RESTORATION AND RETURN OF THE HILLS AND FORESTS  
Reconstructing the Nature Corridor of Jinan Central Business District

