# **DIPLOMA THESIS**

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# HUNGARIAN UNIVERSITY OF AGRICULTURE AND LIFE SCIENCES INSTITUTE OF LANDSCAPE ARCHITECTURE, URBAN PLANNING AND GARDEN ART BUDAPEST

# MASTER OF ARTS IN LANDSCAPE ARCHITECTURE AND GARDEN ART

# **PUYANG ACROBATIC SPORTS THEME PARK**

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#### **ABSTRACT**

As an innovative urban park project, Puyang Acrobatic Park not only enrichis the local cultural life, but also provides a new perspective for the green development of the city. This paper aims to explore the design concept of the park, its implementation process and its impact on the urban environment and cultural industry. By analyzing the layout of the park, the integration of cultural elements, the construction of ecological environment and the construction of the smart park, this paper reveals how the Puyang Acrobatic Park has become a model of harmonious coexistence of culture and nature in the urban space.

First of all, the design of the park cleverly combines the acrobatic elements with the natural landscape, through the 17-meter-wide south gate main passage of the star corridor, the central area of the main square of the theme sculpture design, showing the unique charm of Puyang acrobatics. Secondly, the facilities such as sunshine lawn and fitness walk in the park, as well as the 30,000 square meters of underground parking lot, not only enhance the experience of the public, but also reflect the humanization and functionality of the park design. In addition, the park's sponge city construction, such as the use of rain gardens and other ecological facilities.

The Puyang Acrobatic Park was designed not only with aesthetics and functionality in mind, but also with a focus on sustainability and community engagement. The greening of the park uses native plants to reduce water consumption and provide habitat for biodiversity. In addition, the design process of the park actively absorbed the opinions of the community, making it a real public space belonging to the citizens.

The park has also been designed with special attention to the needs of children and the elderly, providing safe play facilities and rest areas. These details make the park an ideal leisure place for citizens of all ages. At the same time, the performance venues and education centers in the park provide a platform for the inheritance and popularization of acrobatic art, further strengthening the park's function as a cultural transmission.

In short, the design of Puyang Acrobatic Park shows an innovative way of combining traditional culture with modern technology. It is not only a place for leisure and entertainment, but also a complex of cultural education and ecological environmental protection. Through the analysis of this design, we can see that the successful construction of Puyang Acrobatic Park provides valuable experience and inspiration for the future development of urban parks.

To sum up, the design and construction of Puyang Acrobatic Park not only enhances the image of Puyang City, but also provides a new idea and example for the development of urban parks. This paper hopes to provide reference and inspiration for the planning and design of urban parks in the future.

\*\* Keywords: \*\* Puyang Acrobatic Park; Urban park design; Cultural integration; Ecological environment; Sustainable design; Community participation; kid-friendly

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# 1. ANALYSIS

# 1.1LOCATION

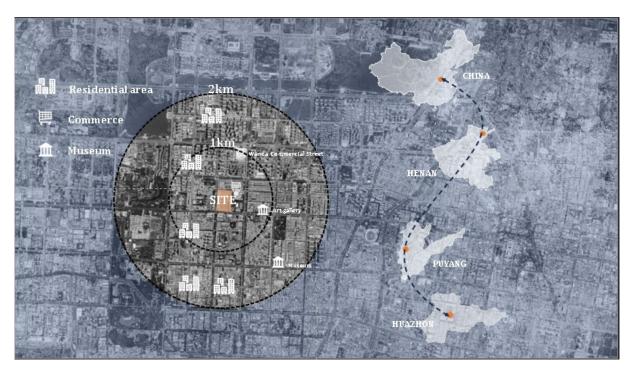


Figure 1: Location of the site in Puyang city. Source: map made by author using Google Earth map

The site is located in Puyang City, Huazhong District, Henan Province, which is an area with a long history and culture, covering an area of 81,000 square meters. It is also the birthplace and important base of Chinese acrobatics. (see Figure 1)

Henan Province, referred to as "Yu", is a provincial-level administrative region of the People's Republic of China. The provincial capital is Zhengzhou. It is located in the middle and lower reaches of the Yellow River in central and eastern China, bordering Anhui and Shandong to the east, Hebei and Shanxi to the north, Shaanxi to the west, and Hubei to the south. The total area of Henan Province is approximately 167,000 square kilometers.<sup>24</sup>

Puyang City, located in the northeastern part of Henan Province, China, is a city with a long history and rich culture. <sup>24</sup>

Huazhong District of Puyang City is located in the northeastern part of Henan Province and the central part of Puyang City, between 115°07′-115°89′ east longitude and 35°78′-36°12′ north latitude, at the junction of the three provinces of Hebei, Shandong and Henan. Central China

District borders Puyang County to the south and Qingfeng County to the north, with a total area of 107.90 square kilometers. <sup>24</sup>

- Geographical location: Puyang City is located at the junction of the three provinces of Hebei, Shandong and Henan in the lower reaches of the Yellow River. It faces Jining City and Heze City in Shandong Province across the river in the east and south, is adjacent to Liaocheng City and Tai'an City in Shandong Province in the northeast, and is bordered by Hebei Province in the north. It is connected to Handan City, to the west is Anyang City, Henan Province, and to the southwest is Xinxiang City, Henan Province. <sup>24</sup>
- Historical evolution: Puyang is one of the important birthplaces of ancient Chinese civilization. It is known as the "legacy capital of Zhuan Xu and the hometown of Emperor Shun" and was named the "Imperial Capital of China" by the Chinese Ancient Capital Society. During the Spring and Autumn Period, the Puyang area belonged to the State of Wei. During the Qin Dynasty, Puyang County was established and belonged to Dongjun. <sup>24</sup>
- Economic development: Puyang is an important commercial grain production base in the country and one of the main grain, cotton and oil production areas. At the same time, Puyang is also the location of the Zhongyuan Oilfield and is an important national petrochemical base and petroleum machinery and equipment manufacturing base. <sup>24</sup>
- Cultural characteristics: Puyang is known as the "Hometown of Acrobatics in China". The acrobatic culture has a long history and has a broad mass base. In addition, Puyang is also one of the important origins of Chinese surnames, with surnames such as Lu, Zhang, Fan, Yao, Qin, Gu, Meng, and Luo all originating here. <sup>24</sup>
- Administrative division: As of 2022, Puyang City has jurisdiction over 1 district, 5 counties, 1 industrial park, and 1 economic and technological development zone, with a total area of 4,271 square kilometers and a permanent population of 3.743 million. <sup>24</sup>

#### 1.2 BACKGROUND

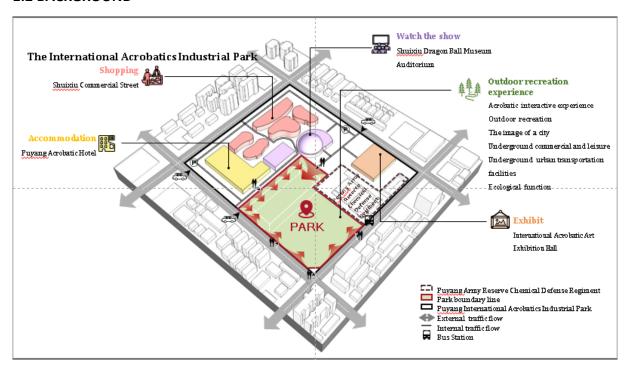


Figure 2: International Acrobatics Industrial Park Planning. Source: map made by author
The International Acrobatics Industrial Park surrounds an area and forms a spatial pattern
system of one park and three pavilions, that is, one theme park and three acrobatic theme
pavilions. The site is the park part of the industrial park.

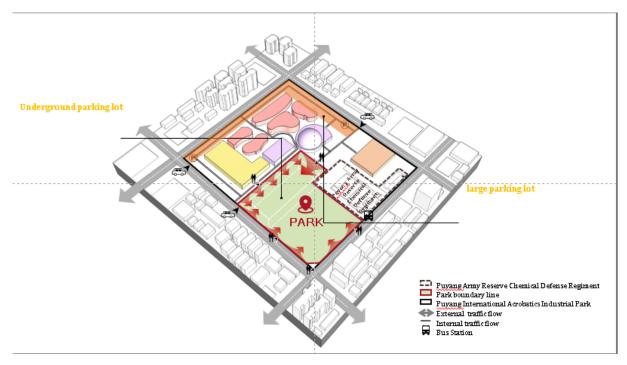


Figure 3: the parking lot in International Acrobatics Industrial Park. Source: map made by author

large parking lot:

located in the Acrobatics Cultural Tourism Park, can accommodate large buses and private cars.

Underground parking lot:

located in the Acrobatics Theme Park, with a construction area of 30,000 square meters and 981 planned parking spaces

#### 1.3 ACROBATIC CULTURAL

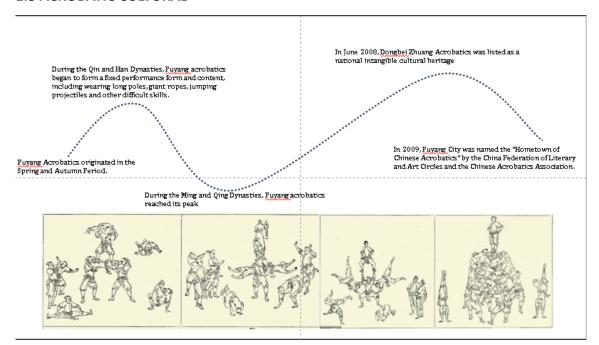


Figure 4: Puyang's historical and cultural acrobatic context Puyang city. Source: made by author with Baidu

Acrobatic culture is a type of traditional Chinese performing arts with a long history and rich content. The following is a detailed introduction to acrobatic culture:

- 1. Historical origin: Acrobatics began in China during the Neolithic Age, and entertainment acrobatics programs began to form during the Qin Dynasty. In the Han Dynasty, acrobatic content was richer and its skills more advanced. By the Eastern Han Dynasty, acrobatic art became a "Hundred Operas" system centered on performing arts.<sup>17</sup>
- 2. Artistic characteristics: Chinese acrobatics emphasizes the training of waist and leg thrusting

skills, and pursues a performance style that seeks stability amidst danger and seeks stillness amidst movement. It also focuses on seeking out the ordinary, expressing human creativity through ingenuity. Acrobatics shows usually combine superhuman strength with nimble and dexterous skills, as well as daily utensils and labor tools as props, showing the close relationship between acrobatics and working life.<sup>18</sup>

- 3. Social status: Since the Song Dynasty, acrobatic art began to move from the court to the private sector, forming professional acrobatic classes and "technical classes" for training newcomers. After liberation, acrobatic art gained new life and developed into a comprehensive art performance with bands, dance, lighting, etc.<sup>17</sup>
- 4. Home of acrobatics: There are many home of acrobatics in China, such as Liaocheng in Shandong, Yancheng in Jiangsu, Zhoukou and Puyang in Henan, etc.<sup>18</sup>
- 5. International influence: Chinese acrobatic art began to spread overseas in the late Qing Dynasty and the early Republic of China, and became well-known in Europe and the United States. Contemporary Chinese acrobatics has become an art loved by people all over the world. Chinese acrobats have won many awards in international competitions, making China universally recognized as the "number one acrobatic country".<sup>17</sup>

Acrobatic culture is not only a traditional Chinese art, but also a treasure in the world's cultural treasure house. It has attracted the attention of countless audiences with its unique charm and superb skills.<sup>18</sup>

**Puyang Acrobatics:** 

- 1. Puyang Acrobatics originated in the Spring and Autumn Period. 19
- 2.During the Qin and Han Dynasties, Puyang acrobatics began to form a fixed performance form and content, including wearing long poles, giant ropes, jumping projectiles and other difficult skills<sup>19</sup>.
- 3. During the Ming and Qing Dynasties, Puyang acrobatics reached its peak<sup>19</sup>
- 4.In June 2008, Dongbei Zhuang Acrobatics was listed as a national intangible cultural heritage.<sup>19</sup>
- 5.In 2009, Puyang City was named the "Hometown of Chinese Acrobatics" by the China Federation of Literary and Art Circles and the Chinese Acrobatics Association<sup>19</sup>. (see from

# Figure 4)

## 1.4 Green space system

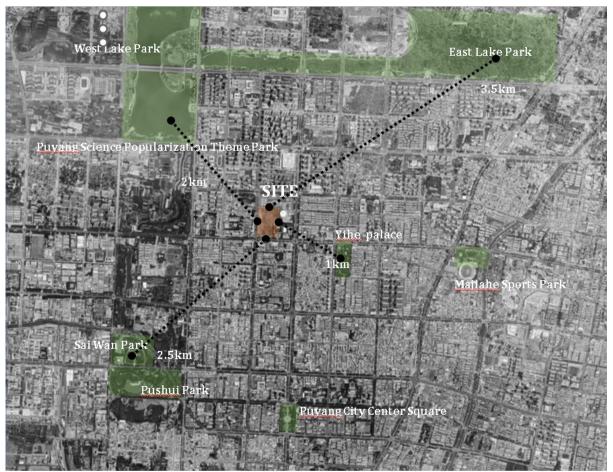


Figure 5: Green space system around the site. Source: map made by author using Google Earth map

#### Introduce

Pushang Garden: This is an urban park integrating leisure, entertainment, and cultural experiences, providing a comfortable environment for citizens to rest and have fun.

Zhongyuan Green Manor: Located in the west of Puyang City, covering an area of 1,087 acres, it is a large-scale natural ecological park that integrates ecological protection, technology demonstration, sightseeing, vacation and other functions.

Qicheng Park: As an important park in Puyang City, Qicheng Park not only provides green space, but also a place for citizens to carry out cultural and entertainment activities.

Central Square: Although primarily an open square space, the green belt surrounding it provides citizens with places to rest and gather.

Pushui Park: This park features water features and provides a water-friendly environment. It is a good place for citizens to relax and take a walk.

There are several small and medium-sized community parks and a large waterfront park within three kilometers of the site.

Therefore, the residents of this neighborhood need a green space that can provide leisure and entertainment. (see from Figure 5)

#### 1.5 TRAFFIC

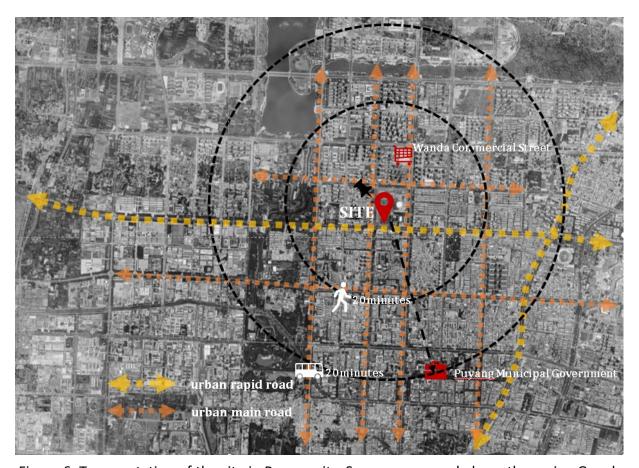


Figure 6: Transportation of the site in Puyang city. Source: map made by author using Google Earth map

The site is located at the northwest corner of the intersection of Zhongyuan West Road and Kunwu North Road in Puyang City. There are many bus lines around the site, such as No. 1 and No. 21. There are many parking lots near the park, such as the Puyang International Acrobatics Cultural Industrial Park parking lot.

Therefore, transportation around the site is very convenient, and there are many travel modes to choose from.

#### Details are as follows:

Main roads: The park is bounded by Zhongyuan West Road to the south and Kunwu North Road to the west. These two are the main traffic arteries in Puyang City, making it convenient for citizens to come to the park from different directions.

Parking facilities: There is an underground parking lot of 30,000 square meters in the park, providing nearly 1,000 parking spaces, providing ample parking space for self-driving tourists. At the same time, the parking lot is also equipped with charging facilities to facilitate electric vehicle owners.

Public transportation: There are many bus lines passing near Puyang Acrobatic Park, making it convenient for citizens to arrive by public transportation. In addition, there are taxis and shared bicycle services around the park, providing a variety of travel options.

Acrobatic cultural tourism route: Puyang City has also launched the "Acrobatic Kung Fu-Special Tour" route, which brings together scenic spots with acrobatic characteristics in series to create a special tourist route that integrates acrobatic performances, ecological sightseeing, and rural leisure, providing convenience for tourists. Transportation services.

#### 1.6 SURROUNDING

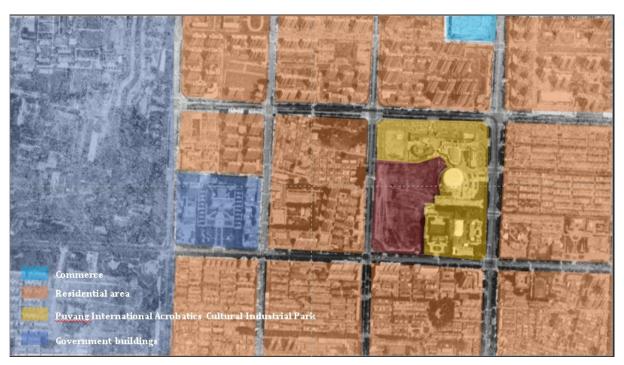


Figure 7: surrounding function of the site in Puyang city. Source: map made by author using

# Google Earth map

The surrounding functions are relatively simple. Mainly residential areas, with a small number of commercial and other amusement function can be found near to the site. (see from figure 7)

# **1.7 CURRENT**

The internal terrain of the base is relatively flat, with an average elevation of 52.35. Internal facilities include: a built public toilet along the Zhongyuan Middle Road side; external facilities include: a set of ground power facilities and underground fire pools on the northeast side. (see from figure 8)

Acrobatic Culture Industrial Park: This is a comprehensive area with acrobatic culture as the core, including acrobatic experience theme area, hot spring resort area, wildlife theme area, traditional folk village area, supporting service area, children's play area, etc. The coordinated development of these regions aims to build a pan-tourism industry format through original ecological acrobatic culture. (see from figure 8)



Figure 8: Current of the site in Puyang city. Source: map made by author using Google Earth map

Shuixiu Dragon Ball Hall and Shuixiu Style Street: The completed Shuixiu Dragon Ball Hall and Shuixiu Style Street complement each other with the acrobatic theme park and provide a rich cultural and entertainment experience. These areas, together with the upcoming Crazy Circus City, constitute a complete "new picture" of Puyang acrobatics.

Acrobatic Cultural Experience Park: Located at the northernmost side of the industrial park, it is a comprehensive supporting service area for acrobatic cultural experience and the industrial park, providing tourists with a comprehensive acrobatic cultural experience space.

Folk Acrobatics Performance Park: Centering around the Folk Acrobatics Experience Hall and Folk Acrobatics Park, traditional acrobatics are displayed in an all-round way, allowing visitors to experience the characteristics and charm of traditional acrobatic culture.

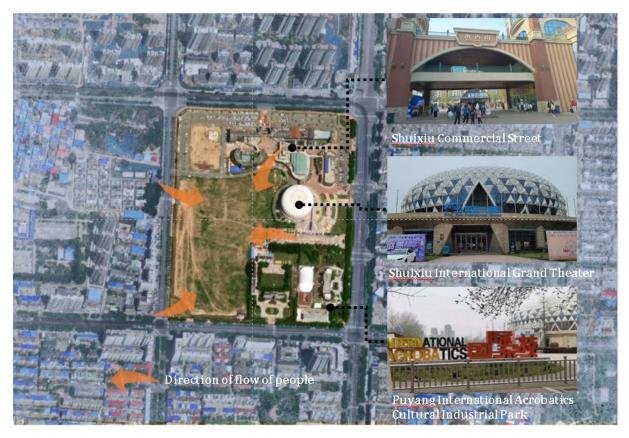


Figure 9: Current of the site in Puyang city. Source: map made by author using Google Earth map

International Acrobatic Performance Park: an area that showcases exotic acrobatic culture. It contains performance venues such as the International Acrobatic Performing Arts Hall, Asian

Pavilion, American Pavilion and African Pavilion for international acrobatic cultural exchanges and commercial performances.

The base is adjacent to Zhongyuan Middle Road on the south side, Kunwu North Road on the west side, the parking lot and Shuixiu Commercial Street on the north side, and the Shuixiu Dragon Ball Hall on the east side, and is separated from the current chemical defense group area by a wall. (see from figure 9)

#### **1.8 USERS**

The main users may be nearby residents and tourists in the acrobatic industrial park, and the required functions are mainly cultural activities and rest and entertainment activities. Therefore, the function of the park should meet the needs of visitors and nearby residents. (see from figure 9)

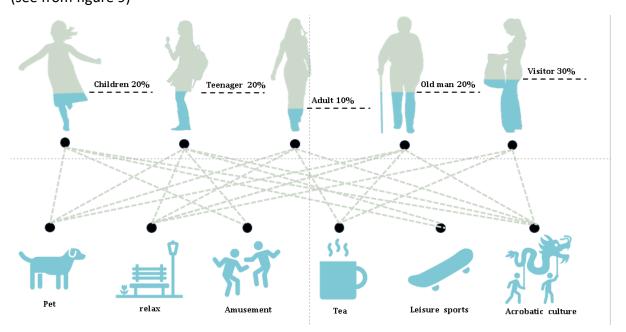


Figure 10: People who may have to use it in the future. Source: made by author

Family tourists: There should be a dedicated children's activity area and landscape activity area in the park, which is very suitable for families to play with their children and enjoy parent-child time.

Acrobatics enthusiasts: Since Puyang City is the hometown of acrobatics in China, a large number of acrobatic cultural elements should be incorporated into the park, attracting many tourists who are interested in acrobatic art.

Fitness people: The park should have sunny lawns and fitness trails, equipped with fitness

facilities, suitable for citizens who like outdoor sports and fitness.

Cultural experiencers: The park should use the concept of acrobatic culture to provide an immersive park experience.<sup>19</sup>

Leisure tourists: The openness and rich cultural background that the park should have will also attract leisure tourists, who can relax here and enjoy the beautiful natural scenery and cultural atmosphere.<sup>3</sup>

Advocates of ecological and environmental protection: The green ecological design that the park should have has also attracted people who care about ecological and environmental protection.<sup>5</sup>

Photography and art creation enthusiasts: The acrobatic-themed sculptures and beautiful landscape designs that may be found in the park provide photographers and artists with rich creative inspiration.<sup>4</sup>

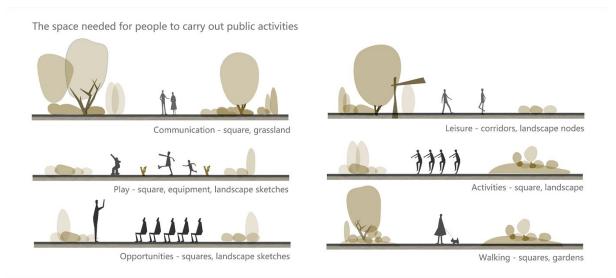


Figure 11: Different spaces people use. Source: made by author

#### 2. ANALYSIS CONCLUSION

# **2.1 SWOT**

#### Strengths:

1. The transportation is convenient. 2. The surrounding culture is rich in cultural connections.

#### Weakness:

The current terrain is flat and there are no existing landscape elements that can be utilized.

#### **Opportunity:**

It may become a theme cultural park that plays a role in publicizing and promoting Puyang's acrobatic culture.

#### Threat:

How to integrate green space and promote acrobatic culture? (See from Figure 12)



Figure 12: swot. Source: made by author

# 2.2 CONFLICT MAP

# Advantage:

- 1.Convenient transportation
- 2.The theme of the venue is clear
- 3. Flat terrain, wide sight lines

# Weakness

- 1. There are no landscape elements that can be used
- 2. Need to be well connected with surrounding commercial streets and exhibition halls
- 3. There are no landscape elements that can be used
- 4. Landscape design needs to incorporate acrobatic culture



Figure 13: Conflict Map of the site. Source: map made by author using Google Earth map

# **3.CASE STUDIES**

## 3.1 Xi'an Olympic Sports Center Landscape

The landscape of the Xi'an Olympic Sports Center is designed to be environmentally friendly, harmonious, inclusive, dynamic, and diversified. Here are some key features of the landscape: Forest Park & Sports Center: The design goal for the landscape planning was to create a "forest park & sports center" that combines natural beauty with sports facilities<sup>1</sup>.

Design Inspiration: The conceptual image of the pomegranate flower, which is associated with Xi'an, inspired the landscape design. It features an east-west axis that runs through the site, connecting the cultural lineage of the ancient capital with the modern sports spirit<sup>1</sup>.

Ecological and Open: The landscape pattern is ecological and open, aiming to create an internationalized appearance that reflects both the history and the contemporary use of the space<sup>2</sup>.

Structural Layout: The main structure of the landscape is organized around "one axis, one ring, and five squares," providing a clear and accessible layout for visitors<sup>2</sup>.

Cultural Integration: The design integrates the cultural heritage of Xi'an, which was the starting point of the Silk Road, with the natural landscape bounded by Mount Li on the east and River Ba on the west<sup>2</sup>.

Stadium Design: The main stadium's form was inspired by the abstraction of Xi'an's city flower

the pomegranate, reflecting the local identity in the architecture<sup>1</sup>.

Similarity: 1.SPORTS PARK 2.NEAR THE VENUE 3. CULTURAL THEME



Figure 14: Panorama of the Xi'an Olympic Sports Center Landscape. Source: 西安奥体中心景观设计 / 中国建筑西北设计研究院有限公司装饰环艺院 - 谷德设计网 (gooood.cn)

#### ADVANTAGE:

- 1. Space Sequence of Olympic Sports Center Axis: Starting, Carrying, Extending and Combining
- 2. "Silk Road" as the Thread Encircling the Site, As a circular line for exercise and slow walking
- 3.Pomegranate Flower, the city flower of Xi'an, appears in "Trace of Prosperity" Square after abstraction and refinement
- 4. Space under the tree leaves along the flanks of the axis

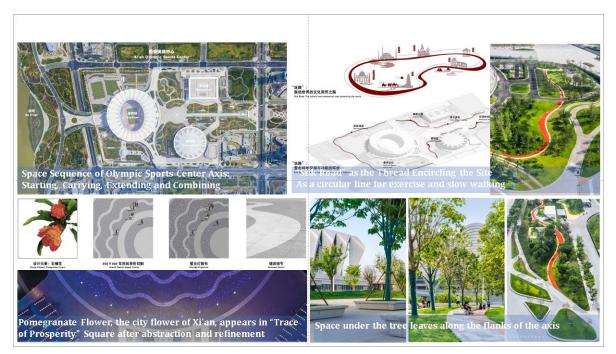


Figure 15: Advantage of the Xi'an Olympic Sports Center Landscape. Source: made by author using 西安奥体中心景观设计 / 中国建筑西北设计研究院有限公司装饰环艺院 - 谷德设计网 (gooood.cn)

# 3.2 The Tianfu Fire Culture Park

The Tianfu Fire Culture Park is a project located in Chengdu, China. It was designed by BSED (Beijing Sino-Ocean & L&A Design), and it's a space that integrates various elements to reflect the theme of fire culture. The park includes design features that are meant to celebrate and educate visitors about fire safety and firefighting techniques, as well as to honor the history and contributions of fire services<sup>1</sup>.

Key aspects of the park include:

Interactive Installations: The park may feature interactive installations that allow visitors to engage with the theme of fire culture in an educational and entertaining way<sup>2</sup>.

Educational Value: It likely serves as a venue for learning about fire prevention, firefighting history, and the science behind fire control<sup>1</sup>.

Cultural Significance: The park is designed to be more than just a recreational area; it's a cultural exhibit that reflects the local connotations and history related to fire services<sup>2</sup>.

Similarity: 1. Close to residential areas 2. Cultural theme



Figure 16: The Tianfu Fire Culture Park. Source: gooood website <u>天府消防文化公园,成都/蓝</u>海景观 - 谷德设计网 (gooood.cn)

# ADVANTAGE:

- 1. "learning"-fire knowledge, "perception"-ecological technology, "play"-fire camp, "sports"-health and fitness
- 2. History plaza 3. Fitness area 4. Popular science education area

# 5. Crawling with the theme of fire 6. The corridor of time(see from figure 16)

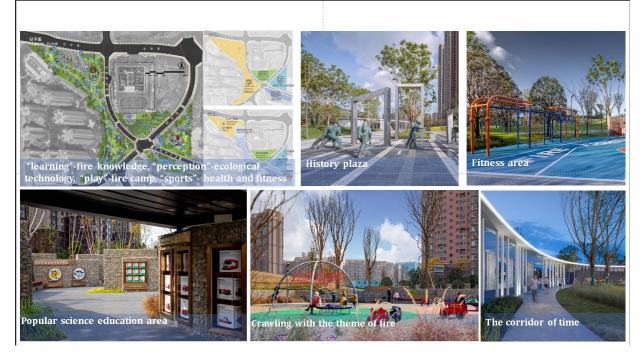


Figure 17: Advantage of The Tianfu Fire Culture Park. Source: chat made by author using gooood website 天府消防文化公园,成都 / 蓝海景观 - 谷德设计网 (gooood.cn)

# **4.CONCEPT DESIGN**

#### **4.1 DESIGN POSITIONING**

Create a place that integrates ecology, leisure and place spirit **Culture and Art Park**In order to achieve the design goals of a Puyang Acrobatic Culture and Art Park that integrates ecology, leisure and local spirit, the following issues need to be solved:

1. Ecological protection and sustainability<sup>12</sup>:

How to build without damaging local ecosystems?

How to ensure that park operations and maintenance are sustainable?

2. Cultural inheritance and display:

How to effectively integrate elements of Puyang acrobatic culture?

How to design a space to showcase acrobatic culture while attracting visitors to participate and experience it?

3. Leisure and entertainment functions:

How to balance the leisure, entertainment and educational functions of the park?

How to design diversified leisure activities to satisfy tourists of different ages and interests?

4. Community participation and stakeholder management:

How to encourage community residents to participate in park planning and activities?

How to deal with possible conflicts of interest, such as between developers, governments and local residents?

5. Economic benefits and fund raising:

How will the construction and operation of the park be funded?

How to ensure the economic benefits of the park so that it is self-sustaining in the long term?

6. Space planning and design:

How to design a flexible space that can host large-scale events while still providing quiet areas for personal relaxation?

How to use existing terrain features to create a unique landscape design?

7. Integration of green space and natural landscape:

How can green spaces be designed to promote biodiversity and provide ecological services? How to integrate natural landscape and create a harmonious environment?

8. Safety and Maintenance:

How to ensure the safety of the park, especially for children and elderly visitors?

How will the day-to-day maintenance and management of the park be conducted?

#### **4.2 DESIGN STRATEGY**

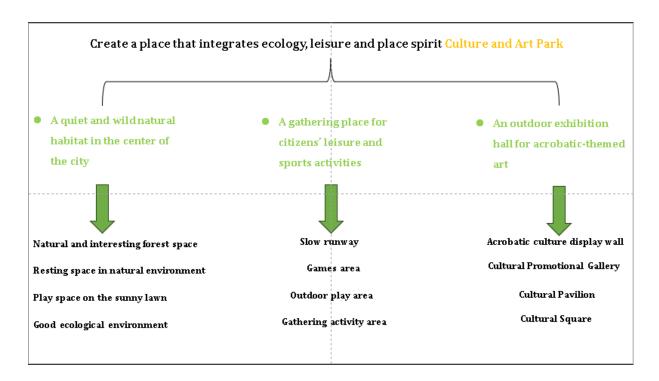


Figure 18: Design Strategy. Source:chat made by author

- 1.A QUIET AND WILD NATURAL HABITAT IN THE CENTER OF THE CITY
- 1.1Natural and interesting forest space<sup>13</sup>
- 1.2Resting space in natural environment<sup>11</sup>
- 1.3Play space on the sunny lawn<sup>12</sup>
- 1.4Good ecological environment<sup>12</sup>
- 2. A GATHERING PLACE FOR CITIZENS' LEISURE AND SPORTS ACTIVITIES
- 2.1Slow runway<sup>3</sup>
- 2.2 games area<sup>7</sup>
- 2.3 Outdoor play area<sup>3</sup>
- 2.4 Gathering activity area<sup>6</sup>
- 3.AN OUTDOOR EXHIBITION HALL FOR ACROBATIC-THEMED ART
- 3.1Acrobatic culture display wall<sup>9</sup>
- 3.2Cultural Promotional Gallery<sup>3</sup>
- 3.3Cultural Square8
- 3.4Cultural Pavilion<sup>8</sup> (see from Figure 18)

#### **4.3 PLANT STRATEGY**



Figure 19: Plant Strategy. Source: made by author

# 1. Selection of native plants:

Prefer native varieties as they are adapted to local climate and soil conditions, are easier to grow and are less expensive to maintain.<sup>12</sup>

Native plants also help maintain ecological balance and provide habitat for local wildlife.

# 2. Diversity and Seasonality:

Choose from different types of plants, including trees, shrubs, herbs and groundcovers, to create a multi-layered greening effect.<sup>14</sup>

Consider seasonal changes in vegetation to ensure the park is attractive all year round.

#### 3. Ecological functions:

Choose plants that can provide ecological services, such as air purification, wind protection and sand fixation, soil and water conservation, etc.<sup>12</sup>

Design plant communities to mimic natural ecosystems and enhance biodiversity. 16

#### 4. Aesthetic considerations:

Design by incorporating the color, form and texture of plants to create visual appeal. 15

Create landscape focal points through plant arrangements such as flower beds, hedges or

feature gardens.11

# 5. Sustainability:

Use drought- and disease-resistant plants to reduce water and chemical fertilizer use.

Use organic gardening practices such as composting and natural pest control. 10

#### 6. Cultural symbols:

Select plants with local cultural significance, such as flowers and trees representing Puyang or acrobatic culture.<sup>14</sup>

Use plant layouts to tell local stories or history. 13

# **4.4DESIGN AREA**

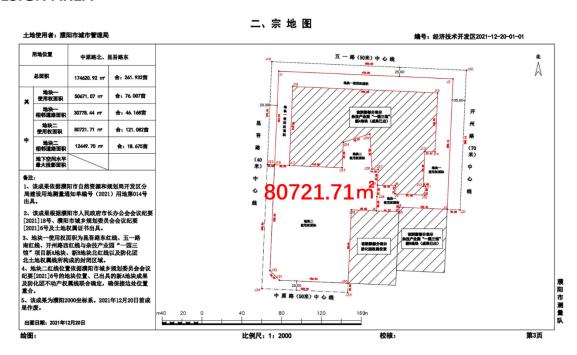


Figure 20: Design Area. Source: government.

The location of the red line is jointly determined based on the plot location in Yuanyang City Chengduo Planning Committee Meeting Minutes [202116], the issued results of the new A plot, and the real estate ownership line of the Chemical Defense Group to ensure that the location of the edge is consistent.(see from Figure 20)

#### **4.5 INSIDE TRAFFIC FOR FUTURE**

It is convenient for tourists and nearby residents to quickly reach the exhibition hall and commercial street.



Figure 21: inside traffic for future. Source: map made by author using google map

Main entrance: The park has three main entrances to facilitate visitors to enter the park from different directions.

Park roads: The road system in the park is complete, convenient and smooth, ensuring that tourists can easily reach various scenic spots in the park, and making it convenient for tourists and nearby residents to quickly reach the exhibition hall and commercial streets. (see from Figure 21)

Fitness trails: The circular roads in the central area can be used as fitness trails for residents to run and exercise.

Parking lot: In order to meet the needs of self-driving tourists, the park has a 30,000-square-meter underground parking lot planned by the government, providing nearly 1,000 parking spaces and equipped with charging facilities. It is currently the largest underground public parking lot in Puyang City.

#### **4.6 BUBBLE CHART**

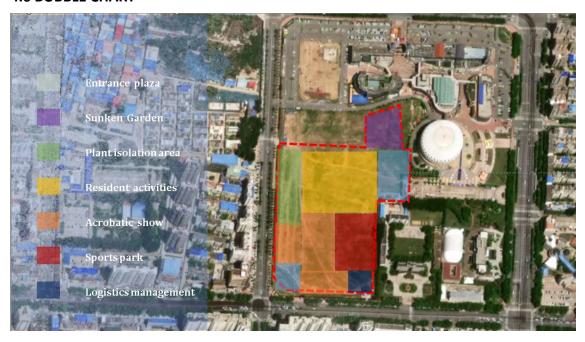


Figure 22: Bubble Chart. Source: map made by author using google map.

The large open lawn in the center: the lawn boundary processing is flexible and changeable, providing rich visitor experience. The lawn is not only a free activity space for tourists, but also an outdoor performance venue for the acrobatic art festival. The flat lawn provides a space for the acrobatics mobile greenhouse. (see from Figure 22)

The main square in the central area: theme facilities with acrobatic elements as the main elements have been built to become the cultural exhibition center of the park.

Children's activity area: An activity area specially designed for children, allowing children to learn about acrobatic culture while having fun.

Sunshine Lawn and Fitness Trail: equipped with fitness facilities, suitable for tourists who engage in outdoor sports and fitness.

Cultural promotion area: Carry forward the Puyang spirit of the new era through cultural walls and bulletin boards, and enhance the cultural atmosphere of the park.

#### 5. LANDSCAPE DESIGN

#### **5.1 MASTER PLAN**



Figure 23: Master Plan. Source: map made by author

Function: Transform from a traditional green space to multiple complex functions such as cultural themes and urban life

Culture: Shape local acrobatic art and cultural characteristics and create regional spiritual and cutural landmarks.

Scale: The space changes and transforms flexibly, allowing for both enjoyable sightseeing and immersive experience. The scale is comfortable and pleasant.

Sports: Sports activities integrating acrobatics suitable for visitors of all ages and sports enthusiasts.

Transportation: Fully open entrance, borderless accessto the park and the city.

Greening: Introduce modern gardening into urban parks and inject a fresh and exquisite viewing experience into urban forests.

#### **5.2 TRANSPORTATION**



Figure 24: Parkway system. Source: map made by author

Main entrance: The park has 4 main entrances to facilitate visitors to enter the park from different directions.

Park roads: The road system in the park is complete, convenient and smooth, ensuring that tourists can easily reach various attractions in the park.

Main passage: The main passage at the south gate is 17 meters wide and is equipped with an acrobatics cultural corridor, providing visitors with a spacious and comfortable walking space. Fitness trails: There are fitness trails in the park, equipped with fitness facilities, suitable for tourists who like outdoor sports. (See from Figure 24)

# **5.3 AXIS**



Figure 25: Axis system. Source: map made by author

Main axis: The main channel of the south gate of the park is 14 meters wide and is equipped with a starlight corridor with acrobatic art as the main style, providing visitors with a spacious and comfortable walking space.

This axis points directly towards the main square in the central area, forming the main visual and circulation focus within the park.

Main square in the central area: The core part of the axis is the main square in the central area, which becomes the cultural exhibition center of the park.

The square is not only the visual focus of the park, but also the main place for various activities and gatherings. (See from Figure 25)

#### **5.4 FIRST PART**



Figure 26: Part 1 plan and characteristic plants. Source: made by author

Part 1 includes the acrobatic cultural axis, the central cultural square and the flower field. It is the core area of the park's cultural display. (See from Figure 26)

# Plant cultivation:

# Beech tree landscape axis:

Beech trees are planted on both sides of the cultural axis to form a beech tree landscape axis.

Appearance: With its straight trunk, fine branches and leaves, large crown and dense shade, it often becomes the preferred tree species for squares and street trees.

Seasonal phase: The color of beech leaves changes greatly with each season. In summer, it is densely shaded and green, and in autumn, the tree full of yellow leaves slowly turns red. The leaf period is also relatively long, and the leaves do not fall off in winter.

Habits: easy to survive, long life, strong wind resistance and strong adaptability.

In addition, the beech tree is also an excellent tree species for forest formation and is one of the key tree species in the landscape forest area, echoing the main axis of the landscape.

Plant theme: The flower border is rich in color, with light pink, white and yellow as the main colors.<sup>23</sup>

Greening style: Sparse forest garden, the garden is characterized by regular ground cover and flower border.

Seasonal features: low, soft four-season flower meadows under the forest

Variety selection: Upper wood: Yulania denudata

Underwood: tulips, onions, purple flowers, ranunculus, Icelandic poppies,

cornflowers, pansies.<sup>22</sup>



Figure 27: The central cultural square. Source: made by author

The central cultural square is located at the end of the acrobatic cultural axis. In the central area of the park, there are flower fields planted on three sides of the square.

Facing the central lawn, there are viewing seats arranged between the central lawn and the central cultural square for people to rest, watch the scenery and watch cultural activities on the lawn.

There is a section of cultural corridor in the middle of the square, which can provide shade for people in the square and sit in the square to watch the display of Puyang culture in the water show program on the cultural corridor.

There are two heterosexual flower ponds arranged in the cultural square with seats for people to rest and watch the activities held in the square. Various beautiful and interesting perennial herbaceous plants are planted in the flower ponds. (See from Figure 27)



Figure 28: flower field. Source: made by author

The flower field is located in the center of the park, surrounding the central cultural square.

There are some sparsely planted cherry blossom trees in the flower field, providing color matching and shade for everyone.

There are some two-meter-wide wooden planks in the flower field that are above the ground, allowing people to walk through them and feel like they are in a sea of flowers without affecting the growth of plants.

There are some wooden platforms and seats arranged in the flower field, which can provide an area for tourists who are tired from walking to rest and watch the flower field. (See from Figure 28)

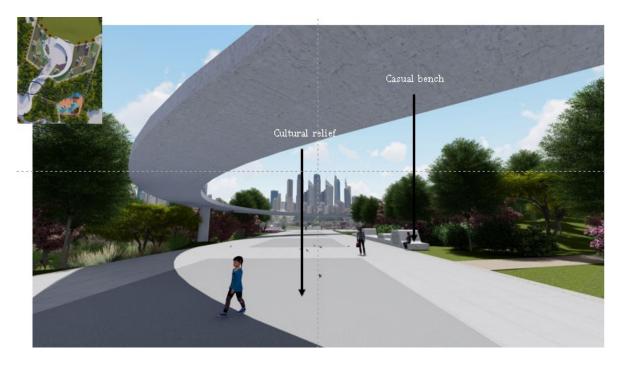


Figure 29: Acrobatic cultural axis. Source: made by author

The acrobatic axis is 17 meters wide.

The acrobatic culture axis starts from the main entrance of the park located in the southwest of the park, a central cultural square that leads to the central area of the park, and points to the central lawn and the entrance to the northeast of the park near Shuixiu Commercial Street.

There are some reliefs on the ground of the acrobatic culture axis that tell the story of acrobatic culture, allowing tourists to talk about the historical context of Puyang's acrobatic culture while crossing the acrobatic cultural axis.

There are some interesting seats on both sides of the acrobatic cultural axis where visitors can rest and do some leisure activities.

The "SHUI XIU" Cultural Corridor runs across the Acrobatic Culture Corridor. There are facilities and pictures to promote the Water Show and Acrobatic Cultural Show. Together with the reliefs on the ground, visitors can understand Puyang's acrobatic culture when they look up and down. (See from Figure 29)

#### **5.5 SECOND PART**



Figure 30: Part 2 plan and characteristic plants. Source: made by author

Part 2 is mainly located in the southwest corner of the park, and mainly includes a part of the citizen cultural and leisure square, the rain garden area and the Ginkgo Avenue on the edge of the flower field. (See from Figure 30)

Ginkgo Avenue runs from the west side of the Central Cultural Plaza along the main road to the northwest exit of the park.

Ginkgo biloba is a very unique and ancient tree species known for its beautiful appearance, distinctive seasonal changes and unique growth habits. The following is a detailed introduction about Ginkgo:<sup>23</sup>

#### attitude:

Ginkgo is a tall tree with a height of up to 40 meters and a diameter at breast height of 4 meters.<sup>23</sup>

The crown of the young tree is conical, while the mature ginkgo crown is broadly ovate1.

The bark is shallowly split longitudinally when young, but becomes grayish-brown and deeply split vertically when mature, appearing rough<sup>24</sup>.

The branches of Ginkgo are nearly whorled, extending diagonally upward, and have a beautiful shape.<sup>25</sup>

Phase of the season:23

In spring, the ginkgo tree grows small tender green buds, which gradually unfold into fanshaped leaves<sup>24</sup>.

In summer, the leaves are dense and dark green, and the ginkgo tree will also bear fruits at this time.<sup>24</sup>

In autumn, the leaves of ginkgo turn golden yellow, which is the most spectacular season of ginkgo. The golden leaves fall like butterflies.<sup>24</sup>

In winter, when all the leaves fall, the ginkgo trees show bare branches, waiting for new life in the coming year.<sup>24</sup>

## Habits:

Ginkgo is a positive tree species and likes a sunny environment.<sup>23</sup>

Ginkgo's growth is slow in the early stages, but female plants begin to bear fruit after about 20 years, and their lifespan is extremely long. Some individuals can grow for hundreds or even thousands of years.<sup>23</sup>

Generally, the leaves sprout from late March to early April, bloom from early to mid-April, mature seeds from late September to early October, and drop leaves from late October to November.<sup>23</sup>



Figure 31: Citizen Culture and Leisure Plaza. Source: made by author

The Citizen Leisure and Culture Plaza is located at the edge of the park. It is closer to the residential area and can be more easily used by nearby residents who need to use it. It can also provide a space for passers-by to rest and learn about Puyang's acrobatic culture.

Some landscape walls displaying Puyang's acrobatic culture are arranged in the area near the park, allowing residents and passers-by to learn about Puyang's acrobatic culture.

There are some interesting tree pools and benches arranged in the middle of the square,

which can provide residents and passers-by with a place to relax and rest.

The seats face the cultural landscape wall, allowing passers-by and nearby residents to watch and learn about Puyang Acrobatic culture while resting. (See from Figure 31)

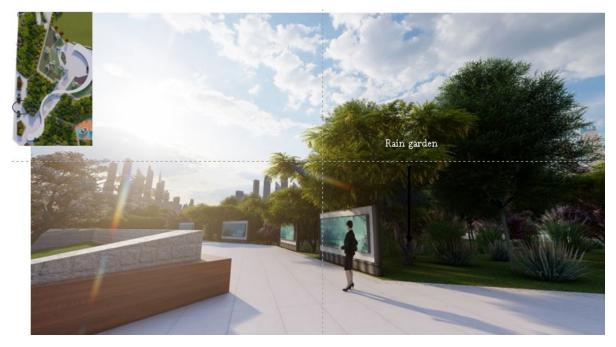


Figure 32: Plaza and rain garden. Source: made by author

## Rain garden

Collect rainwater: Rain gardens can collect surface runoff from surrounding roads, squares, roads and flower fields, reducing soil erosion.

Ecological rainwater system: Designed with an ecological rainwater system, rainwater is naturally filtered through plants and soil, reducing urban runoff and improving water quality. Multifunctional Landscape: A rain garden is not just a drainage facility, but also a place for people to relax and enjoy the beauty of nature.

Beautification: Through carefully designed plant configurations and landscape layouts, rain gardens enhance the overall aesthetics of the park. (See from Figure 32)



Figure 33: Ginkgo Avenue. Source: made by author

Ginkgo tree arrangement: Rows of ginkgo trees are planted on both sides of the avenue. In autumn, these leaves will turn golden yellow, forming a beautiful landscape.

Leisure Walk: Ginkgo Avenue is an ideal place for visitors to take a leisure walk, providing a peaceful environment where people can relax amidst natural beauty.

Cultural atmosphere: Combined with the acrobatic cultural theme of Puyang Acrobatic Park, Ginkgo Avenue not only displays the natural landscape, but also incorporates some elements of acrobatic culture, such as sculptures or art installations, to enhance the cultural atmosphere.

Ecological environment: Ginkgo may be part of the park ecosystem. Ginkgo trees can provide ecological services, such as improving air quality and reducing noise pollution.<sup>21</sup>(See from Figure 33)

## **5.6 THIRD PART**



Figure 34: PART 3 plan and characteristic plants ,Source: made by author

PART 3 include children's activity areas and some cultural and leisure squares. (See from

Figure 34)

## Plant characteristics:

Safety: Choose plants that are safe for children and avoid poisonous or prickly varieties to ensure children are safe while playing in the activity area.

Educational: Through plant label annotations and other methods, children can learn about the names, growth habits, flowering periods and other information of plants, and increase the dissemination of popular science knowledge.

Participation: Consider children's participation when designing plant spaces, and set up interactive plant areas to allow children to learn and explore in nature.

Interesting: Through the diverse configuration of plants, an interesting game environment is created to stimulate children's curiosity and desire to explore nature.

Aesthetic functions: The hue, leaf shape, and seasonal changes of plants are all objects of appreciation and learning for children. Plant design enhances children's visual, tactile, auditory, olfactory and other sensory development.<sup>20</sup>

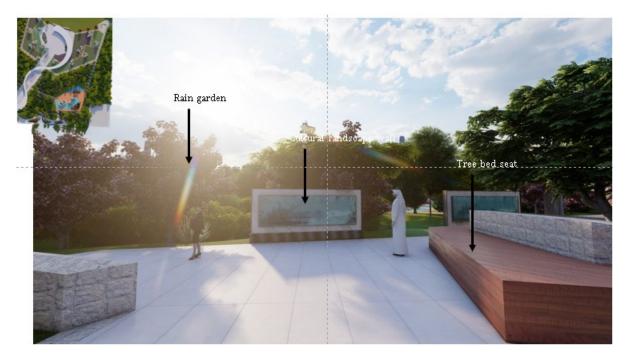


Figure 35: Cultural and leisure square. Source: made by author

Location: The southern entrance of the park is located on Zhongyuan West Road, which is a convenient location for citizens and tourists to enter, It can provide a space for leisure and activities for residents living nearby on the south side of the park and for people passing by. There are also cultural landscape walls and characteristic tree pools here, allowing passers-by and nearby residents to understand Puyang's acrobatic culture.

The rain garden is located between the cultural and leisure square, children's activity area and the central cultural axis, and can collect surface runoff from these areas.

The citizen leisure square connects the children's activity area and can be used as the entrance space to the park. (See from Figure 35)



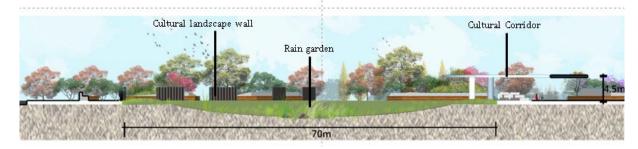


Figure 36: Rain garden section. Source: made by author

## Vertical design:

Rain gardens are designed as depressions below ground level to collect and treat rainwater. The vertical structure includes multiple layers, such as tree layer, shrub layer, herb layer and ground cover layer, which work together to support the diversity and stability of the ecosystem.

Layers of plants of varying heights help create visual hierarchy while also providing habitat for diverse wildlife.

## Plant configuration:

The selection of plants should consider their adaptability to the environment, including water and moisture tolerance, drought tolerance and stress resistance.

Arbor plants, such as camphor and metasequoia, are usually located in the upper layers to provide shade and reduce rainwater evaporation.

Shrubs, such as heather and wisteria, are placed in the middle layer to help reduce runoff pollution and provide an aesthetically pleasing middle layer.

Groundcovers and vines, such as daylilies and ivy, cover the ground, prevent soil erosion, and increase the diversity of the ground layer.

Aquatic plants, such as reeds and irises, are usually planted in areas with higher water levels to help purify water and provide an aquatic ecological environment.

The vertical design and plant configuration of the rain garden are designed to simulate the natural rainwater circulation process and achieve the collection, purification and utilization of rainwater through the synergy of various plants, while providing rich biodiversity and beautiful landscape effects.

This design not only contributes to the sustainable development of the city, but also improves the quality of life of residents.<sup>22</sup>

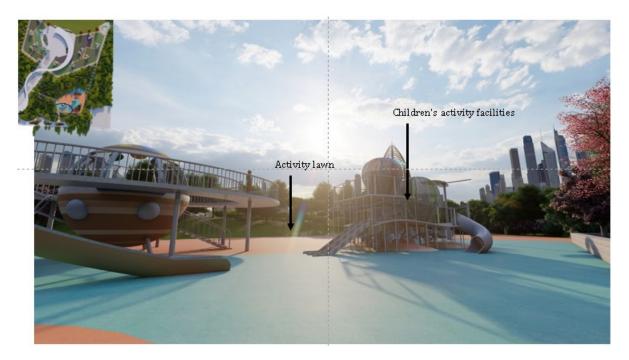


Figure 37: Children's activity area and children's activity hill. Source: made by author A hilly terrain for children is designed in the north of the children's activity area.

Diversity: The hilly terrain is designed with different heights and slopes, providing a variety of climbing and sliding experiences to stimulate children's desire to explore.

Interactivity: The undulating changes in the terrain can be used as a place for interactive games among children, such as hide-and-seek, climbing competitions, etc., to enhance social skills.

Educational: The hilly terrain can be combined with natural elements, such as plants, stones, sand, etc., allowing children to contact and learn about the natural environment during play. Safety: While hilly terrain provides opportunities for climbing and exploration, it needs to be designed to ensure the safety of children while playing and avoid the dangers of terrain that is too high or steep.

Creativity: The hilly terrain can stimulate children's imagination and they can see it as different scenes like a castle or any other place they can imagine.

Physical development: Through climbing and running, the hilly terrain helps children's physical development and enhances their sense of balance and coordination.

The hilly terrain for children's play is a multi-functional area in the playground, which not only provides a wealth of ways to play, but also contributes to the overall development of children's body and mind. Safety, education and fun should be taken into consideration when designing to create a play environment that is both safe and conducive to children's growth.

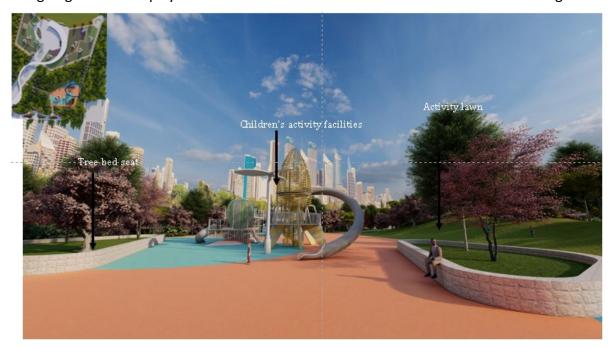


Figure 38: Children's activity area. Source:made by author

The children's activity area is specially designed for children, integrating elements of acrobatic culture and parent-child entertainment.

Safe play facilities: The children's activity area is equipped with safe play facilities to ensure the safety of children while playing.

Acrobatic cultural experience: There are acrobatic-themed decorations and facilities in the activity area, allowing children to get in touch with and understand Puyang's acrobatic culture while having fun.

Highly interactive: A variety of interactive games and activities are designed to encourage children to actively participate and promote the development of their social skills and physical coordination.

Educational significance: Through games and activities, children's activity areas also have certain educational significance, helping children learn new knowledge and develop cognitive abilities.

Landscape activity area: There are landscape activity areas along Zhongyuan Road and Kunwu Road, providing a rich natural environment and outdoor space for children to explore and play.

The children's activity area of Puyang Acrobatic Theme Park not only provides children with a safe and interesting play environment, but also cleverly integrates acrobatic culture into it, making it an educational and entertaining place.

## **5.7 FOURTH PART**

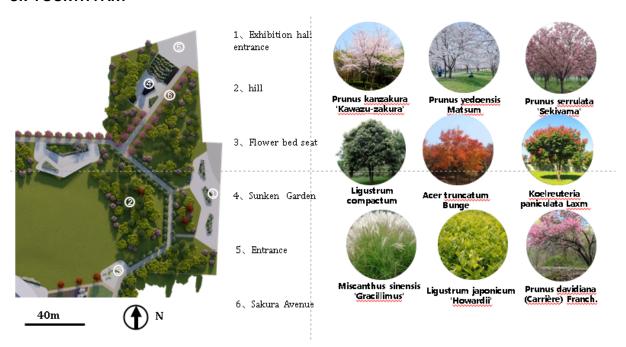


Figure 39: Part 4 plan and characteristic plants. Source: made by author

PART 4 is located in the northeastern area of the park, including the entrance where the park connects to the "Shuixiu" commercial street, and the park connects to the "Shuixiu" commercial street. (See from Figure 39)

The entrance of the pavilion is a leisure node between the hilly terrain and flower fields opposite the entrance and the central lawn.

Also included is a cherry blossom landscape axis that runs from the north entrance of the park to the northwest entrance of the park.

Cherry Blossom Landscape Axis: A fascinating path of brilliant cherry blossoms.

The landscape sequence of early cherry blossoms-middle cherry blossoms-late cherry blossoms

This axis runs through the park from south to north, with a length of about 300 meters. The cherry blossom varieties are changed at a rhythm of about 100 meters to extend the flowering period of the cherry blossoms.

Along this line, the planting range of cherry blossoms is expanded at the nodes to form nodes and enhance the atmosphere.



Figure 40: Northern entrance. Source:made by author

The north entrance needs to be connected to the "Shuixiu" commercial street, so a larger area of paving is designed to carry the flow of people coming from the commercial street.

The north entrance also needs to carry the flow of people coming out of the terrain parking lot.

There are also some seats arranged at the north entrance to provide visitors with a resting space. (See from Figure 40)



Figure 41: Sunken garden. Source:made by author

The sunken garden is designed to make it easier for visitors to exit from the underground parking lot.

The sunken garden is designed with interesting flower beds and pools where visitors can enjoy water features and plant landscaping.

There are also seats arranged beside the tree pool and pool so that visitors can rest and enjoy.

There are shaped facade greening arranged on the wall. (See from Figure 41)

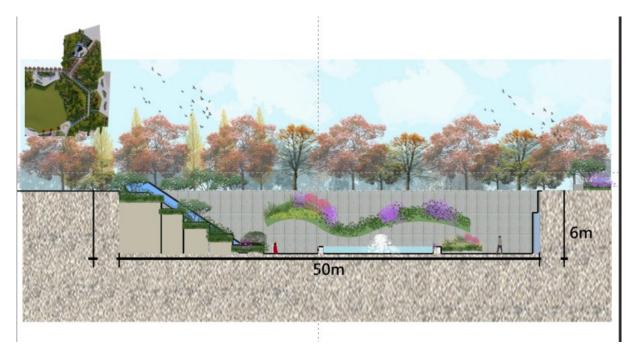


Figure 42: Sunken garden section. Source: made by author

The underground parking lot is three meters high and covered with three meters of soil.

The sunken garden is six meters deep and 50 meters long.

It also has escalators and a terraced garden. (See from Figure 42)



Figure 43: square. Source: made by author

A small square with a view of the hilly terrain

The hill has a viewing function and allows tourists to enjoy different scenery.

The hill also blocks sight lines and noise, reducing the impact on the "Water Show" exhibition hall. (See from Figure 43)

#### **5.8 FIFTH PART**



Figure 44: Part 5 plan and characteristic plants. Source: made by author Part 5 includes the small square of the viewing platform, the central lawn and the northwest entrance.  $_{\circ}$ 

Sijiqing Pure Lawn - an open, multi-functional evergreen lawn

Space experience: completely open and pure lawn. Plant only one or two rows of graceful courtyard trees that change with the seasons on the edge to meet the needs of surrounding trees and the perception of the landscape.

Seasonal changes: Mix warm-season and cool-season grasses to keep them evergreen all year round.

Functional requirements: For the large-scale lawn area in the core of the garden, trampling-resistant green grass is selected for multi-functional use.

Tree species selection: horse chestnut, Liriodendron tulipifera, Pistacia chinensis, aple, soapberry.<sup>20</sup>(See from Figure 44)



Figure 45: Viewing platform. Source: made by author

The viewing platform is located in the north of the Great Lawn. Standing here, you can see the entire Central Great Lawn and the Central Cultural Square.

The terrace features a flower bed with perennial herbs.

Flower beds can provide visitors with resting spaces and as foregrounds for taking photos. There are some tables and chairs arranged under the platform for tourists to use. <sup>21</sup> (See from Figure 45)



Figure 46: northwest entrance. Source: made by author

The northwest entrance is designed with a water art installation and fountain water feature.

Plant some beautiful and layered plant groups behind the water feature as the background

of the water feature. (See from Figure 46)



Figure 47: northwest square. Source: made by author

As a relatively quiet small square, there are many beautiful plant groups planted around it for visitors to enjoy and to isolate noise and sight.

There are many seats and rest facilities along the steps. (See from Figure 47

## 6. SPECIAL DESIGN

## **6.1 PAVEMENT DESIGN**

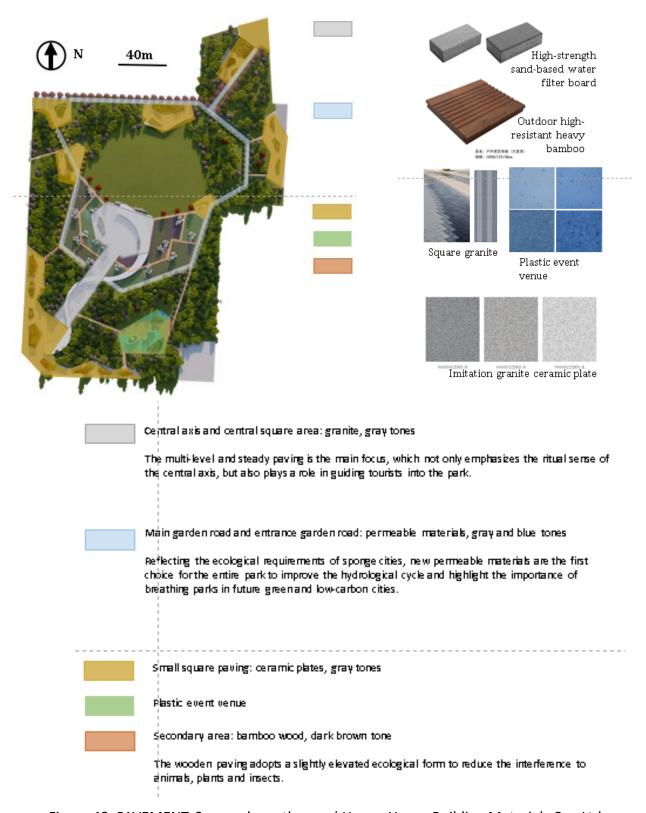


Figure 48: PAVEMENT. Source: by author and Henan Huaya Building Materials Co., Ltd.

## **6.2 FACILITY DESIGN**



Figure 49: Shape tree pool combined with landscape wall. Source: made by author

The leisure and cultural tree gratel is mainly arranged in the cultural and leisure square.
(See from Figure 49)

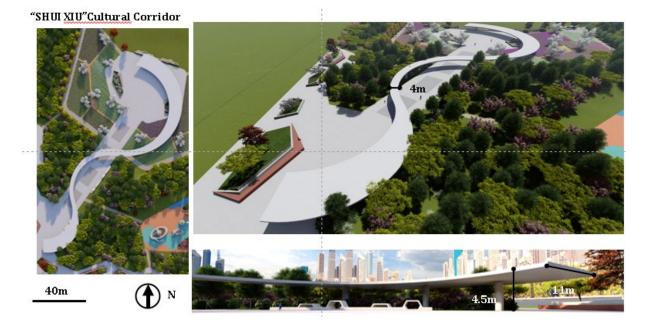


Figure 50: "SHUI XIU" Cultural Corridor. Source: made by author

The "Water Show" cultural corridor runs through the central cultural axis. (See from Figure 50)

Material:

Polycarbonate:

Polycarbonate is a lightweight, clean-lined material that can vary in color and light effects, providing a lot of freedom in design.

It can be applied to facades, interiors or roofs, and the microperforated plate technology facilitates the even diffusion of natural light, reducing the need for artificial lighting.<sup>21</sup>

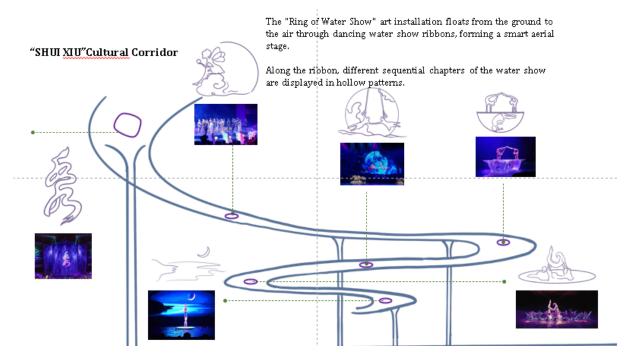


Figure 51: "SHUI XIU" Cultural Corridor. Source: made by author and "shui xiu" show

The "Ring of Water Show" art installation floats from the ground to the air through dancing water show ribbons, forming a smart aerial stage.

Along the ribbon, different sequential chapters of the water show are displayed in hollow patterns. (See from Figure 51)



Figure 52: Viewing platform. Source: made by author

The sensory platform is reached from the ground through a ramp, making it easy for visitors with limited legs and feet to reach it.

The platform is four meters high and thirteen meters wide, and is designed with flower beds for casual photography.

The fence is made of glass, allowing smaller children to enjoy the scenery.

The shady space under the platform is equipped with tables and chairs for visitors to rest or play some games. (See from Figure 52)



Figure 53: cultural wall. Source: made by author



Figure 54: water structure. Source: made by author
A waterscape structure inspired by acrobatic streamers. (See from Figure 54)



标识类版 RESIDENTIAL	标识名称 SIGNAGE NAME	安装位置 SIGANAGE LOCATION	安装方式 LOCATION MODE
Index class identifier	Entrance total index identifier	Primary and secondary entrances and core nodes of the park	Installation on site
Directive identification class	Pedestrian guide signs, bicycle parking sign	Main pedestrian circulation nodes	Stand installation Wall installation
Description class identifier	Attraction introduction signs,  Admission information sign	main landscape nodes	Installation on site
Warning signs	Warm reminder signs of flowers and plants Waterscape safety warning signs	Flowers and plants landscape deep water by river	Installation on site

Figure 55: Identification system. Source: made by author and Henan leading sign company.

#### **6.3 SPONGE CITY**

#### Reduce surface runoff and increase rainwater infiltration

The main thing is to change various road surfaces and ground paving materials, adjust the vertical direction of green spaces, and retain rainwater from the source and then "seep" it down. The park uses **permeable paving and overhead paving.** 

## Slow down the speed of rainwater runoff

Mainly through micro-terrain adjustment, rainwater is slowly collected in one place, exchanging time for space. Through "stagnation", the peak of runoff can be delayed. The park adopts: sunken green space, rain garden, and ecological tree pond.



Figure 56: SPONGE CITYof the park. Source: made by author

The permeable pavement :

The permeable pavement itself is porous, and on the one hand, the rainwater system stored inside it can be recycled. On the other hand, its strong absorption resistance can absorb the excess sewage discharge caused by the surrounding non-remote water bell installations. Ecological tree pond:

- (1) The bottom of the tree pond has continuous openings on both sides. During rainfall periods, the site flows through the boat mouth to drain the sacred tree pond:
- (2) Set up an initial abandonment well to intercept initial rainwater:
- (3) The tree roots should be covered with geotextile to prevent the rainwater from flowing into the tree pond during the clear rainfall and affecting the growth of the tree roots;
- (4) Rainwater flows through the ball sand layer and body stone layer to the stream and is purified.

Rain garden

Roads and sites compete with each other for land, and the slopes of roads and sites are used to collect rainwater. In the garden, four spherical layers of pebbles, plants, fine sand and earth walls are used to connect and drain the garden.

# Sunken green space

The step-like sinking forms a sunken green space, with gabion as a barrier. Xiao Fanguo's store represents the construction of a rain garden.



Figure 57: Location of the site in Puyang city. Source: map made by author and website<sup>22</sup>

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Winter comes and summer comes, spring and autumn pass by, time flies by like a breeze, and graduation is approaching in the blink of an eye. Spring dreams and autumn clouds, less gathering and more separation.

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# **Appendix**

- 1. Masterplan 1:2000(520mmX297mm)
- 2. Zoom design 1:200(520mmX297mm)
- 3. Zoom design 1:200(520mmX297mm)
- 4. Zoom design 1:200(520mmX297mm)
- 5. Six Posters<
- 6. Statement on consultation practices
- 7. Declaration on authenticity and public assess





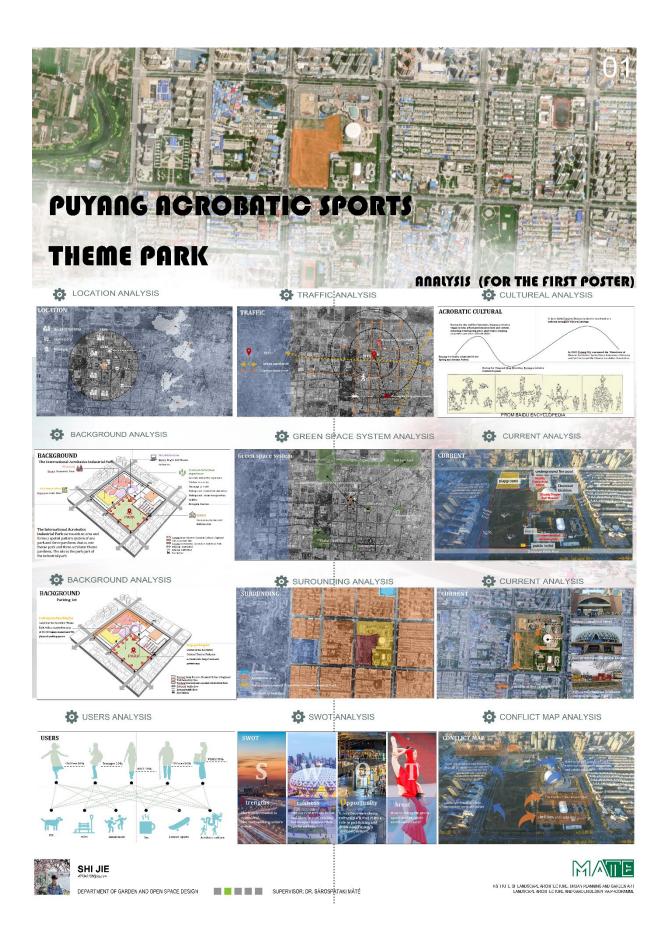








E-03







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