



Knowledge Partnership Week
**Partnership Forum:
Innovation for Resilient
and Smart Communities**

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Improving Mobility, Improving Resilience

Shanghai Houtan Park:

Landscape as a Living System



3



Project Summary
Design Strategy
Benefits

Shanghai Houtan Park

Project
Summary

1

- Location:** Shanghai, 2010 Shanghai Expo Park, China
- Size:** 14 hectares
- Date of Design:** January 2007-October 2009
- Date of Completion:** 2010-15
- Client:** Shanghai World Expo Land Development Co., Ltd.
- Landscape Architect:** Turenscape



A bird's eye view from the southwest.

Shanghai Houtan Park

Project
Summary

1

Objectives

- Create a green Expo that demonstrates green technologies in flood control, water treatment, and park design.
- To transition from a demonstration to a permanent public waterfront park.



A bird's eye view from the southwest.

Shanghai Houtan Park

Design Challenges

Project Summary

1

- Restore the degraded environment that is littered with industrial debris.
- Improve the water quality.
- Improve flood control.



Site conditions before development

Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Design
Strategy

2



Cascades and Terraces oxygenate water, remove and retain nutrients, reduce suspended sediments.

Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Design
Strategy

2



Wetland plants absorb pollutants, improving water quality of approximately 2,400 cubic meters of water for non-potable uses.

Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Design
Strategy

2



The terraced wetland is heavily planted to clean contaminated water. The boardwalk is made of decomposable bamboo.

Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Design
Strategy

2



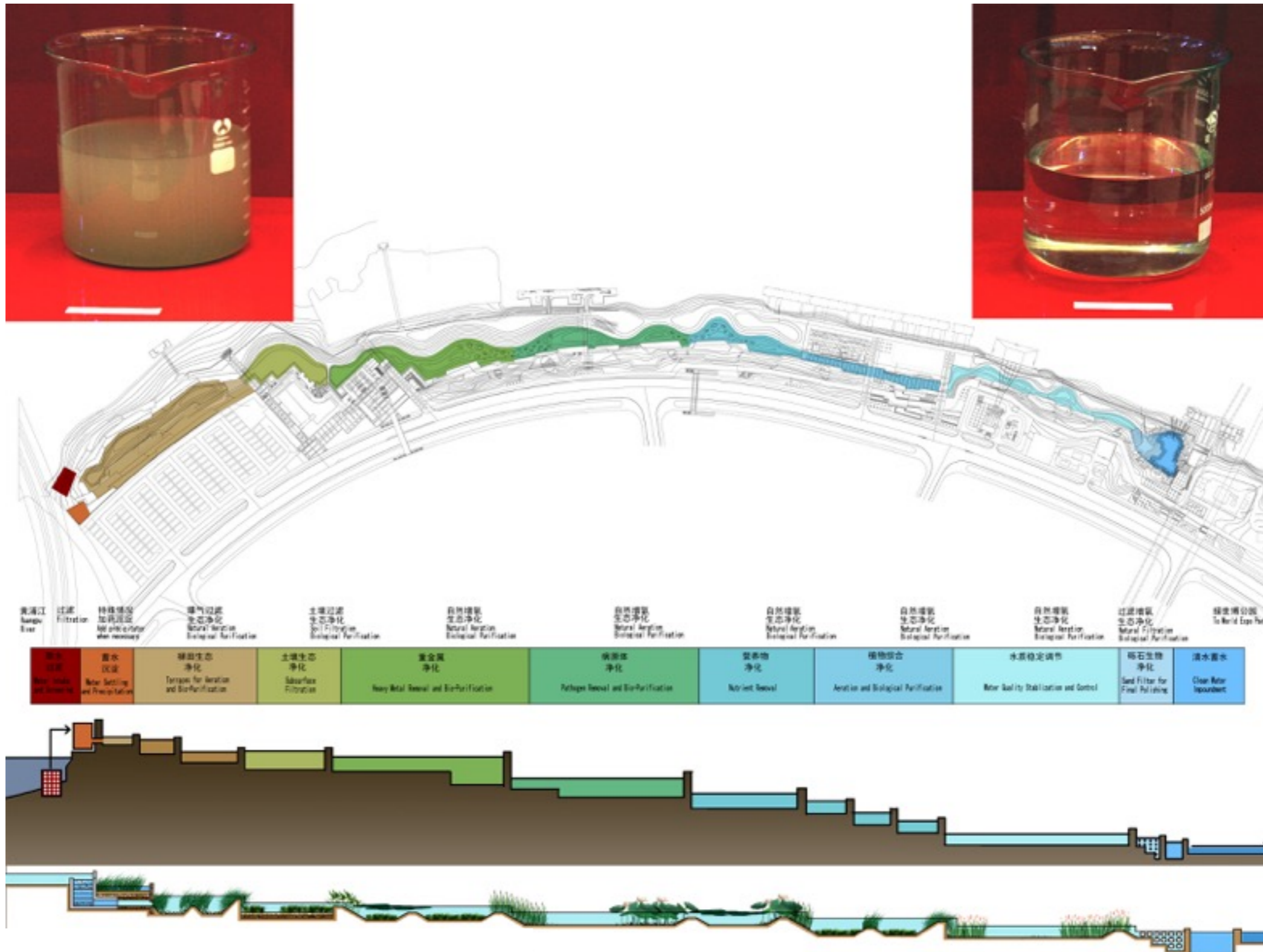
Crops of sunflower and rice filter excess nutrients from the water and makes the landscape productive and educational.

Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Design Strategy

2



The water cleaning mechanism of the man-made wetland.

Shanghai Houtan Park

Heritage and Vision

Design
Strategy

2



The hanging garden, designed around an existing industrial structure with hanging planters installed above the tea house.

Shanghai Houtan Park

Heritage and Vision

Design
Strategy

2



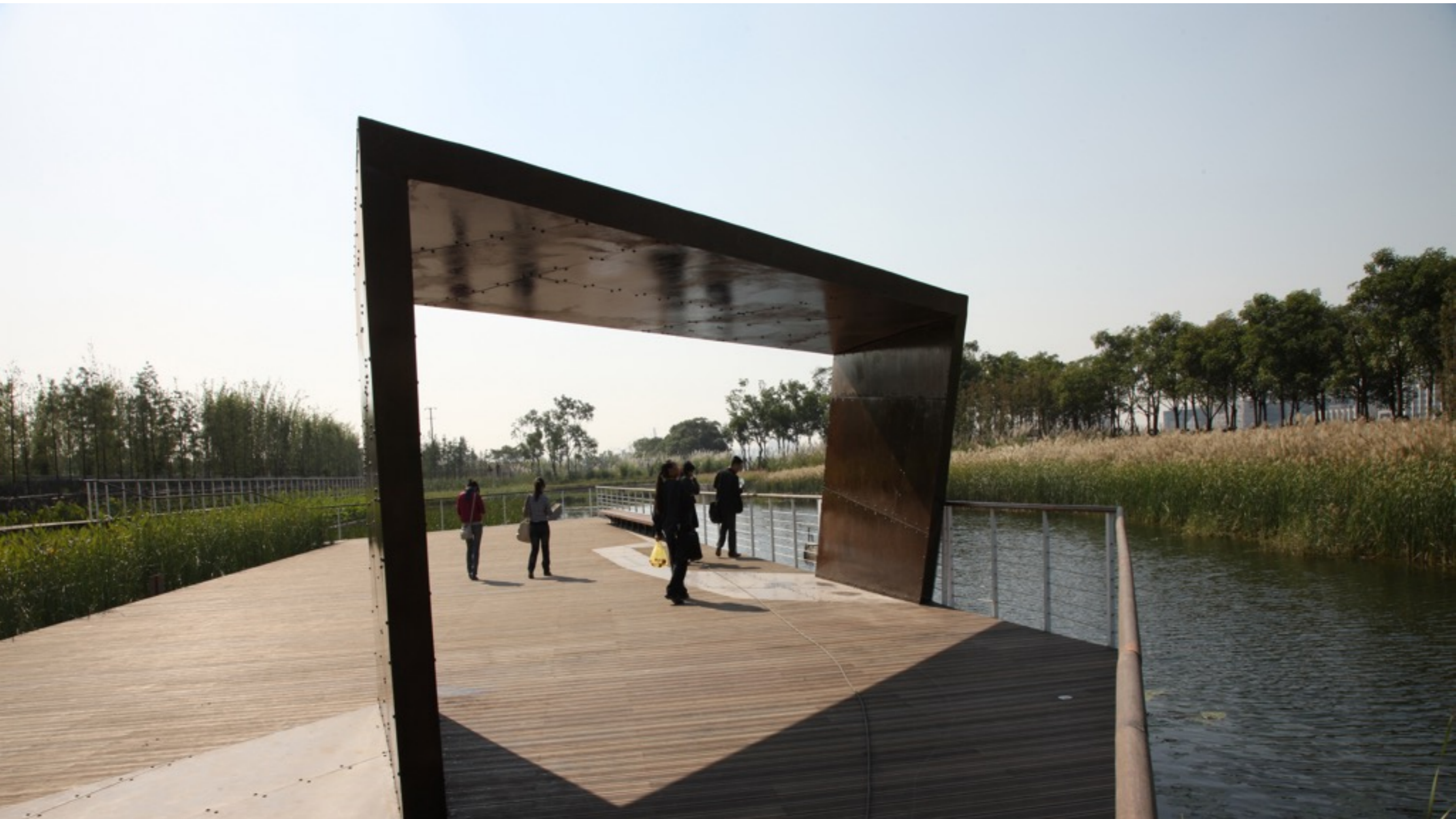
The floating garden designed around the existing cargo pier, integrated with a shade structure, seating, planters and screens become an overlook above the Huangpu River.

Shanghai Houtan Park

Heritage and Vision

Design
Strategy

2



The steel arbor is composed of recycled steel panels from the site, which provides shelter, frames views, and shapes spaces.

Shanghai Houtan Park

Heritage and Vision

Design
Strategy

2



The existing cargo pier is transformed into an overlook platform above the Huangpu River, updated with an arbor, railings, seating and planters.

Shanghai Houtan Park

Path Network

Design
Strategy

2



A network of paths is designed to allow visitors to surround themselves in the landscape. The native grass (*Miscanthus sinensis*) phytoremediates the soil and requires little maintenance.

Shanghai Houtan Park

Path Network

Design
Strategy

2



The terraced wetland creates a quiet valley, allowing people to access the water and enjoy the views.

Shanghai Houtan Park

Path Network

Design
Strategy

2



The terraced wetland is accessible for visitors to enter the inner spaces of the living landscape - dramatically increasing the capacity of the park without sacrificing sensational experience.

Shanghai Houtan Park

Environmental

Benefits

3

- Cleans up to 634,000 gallons of polluted river water daily, improving the water's quality from Grade V (unsuitable for human contact) to Grade II (suitable for landscape irrigation) using only biological processes.
- Increased the biodiversity of the site dramatically, with 93 species of plants and over 200 species of animals observed.
- Sequesters an estimated 242 tons of carbon annually in park's extensive wetlands, perennial plantings, and trees.
- Successfully demonstrated state-of-the-art design and construction techniques, resulting in 8 national design patents and 20-30 subsequent ecological water purification projects that employ the techniques created for Houtan Park.

Shanghai Houtan Park

Social

Benefits

3

Provided recreation and educational opportunities to some 590,500 visitors during the 2010 Shanghai World Expo. The park continues to provide these benefits to city residents and visitors from around China and the world.

Shanghai Houtan Park

Economic

Benefits

3

- Saves \$116,800/year in water costs at the adjacent Expo Park where 264,000 gallons of water treated by Houtan Park's wetland purification system is used in the water features.
- Reduced waste and saved an estimated \$17,300 by reusing 37 tons of steel and roughly 34,000 post-industrial bricks found on the site.

Shanghai Houtan Park

Conclusion

Houtan Park demonstrates a living system where ecological infrastructure can provide multiple services for society and nature and new ecological water treatment and flood control methods. The postindustrial design demonstrates a unique productive landscape evoking the memories of the past and the future of the ecological civilization, paying homage to a new aesthetics based on low maintenance and high performance landscapes.

Sources:

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