urban agriculture

ea vertically-integrated approach to Shougang’s social, economic, and physical revitalization

background

explosive growth

Beijing’s population explosion places an extraordinary burden on the existing urban support system. Shougang’s location makes it an appropriate urban growth boundary.

site contamination

expansive site contamination requires extensive remediation; however, little concrete data on the effectiveness of remediation in large brownfields exists.

post-industrial legacy

The closing of the Shougang plant represents a transition into a post-industrial landscape. Future plans must take into account these monumental social, economic, and physical tectonics by maintaining a connection to Shougang’s past.

response

research clusters

China’s national agricultural research system is the largest publicly funded research system in the world, over 60,000 researchers work in 400 research institutes and 70 universities distributed across China.

Shougang is an incredible opportunity to create a world-renowned research center that focuses on remediation and urban agriculture.

concept

vertical agriculture concept plan

Weaving agriculture in a hyperdense urban fabric generates a vertically integrated mixed-use environment where agricultural production and brownfield remediation intertwine with research and commerce surrounding food systems and modern ecology, educational institutions, agricultural tourism, living units, and multi-modal transit.

This proposal responds to the paradoxical land use demands of explosive growth by resolving how to feed, house and employ the urban population.

projected impacts

shougang is an opportunity to form a global center for research surrounding brownfield remediation and urban agriculture, rather than view shougang’s broad-reaching pollution and industrial infrastructure as a constraint, this industrial heritage can be a catalyst for social, economic, and physical revitalization.

MIT-Tsinghua Beijing Design Studio 2008

11 July 2008

Sandra Frem • Deborah H. Morris • Pamela Ritchot • Colin Zhao • Sara Zeng
development projections:

- 40% research facilities
- 25% office facilities
- 5% education facilities
- 6% flat agricultural space
- 10% recreation space
- 3% retail spaces
- 1% convention space
- 10% residential and hotel

employment types:
- land maintenance (skilled and unskilled)
- land maintenance
- agricultural workers (skilled and unskilled)
- remediation lab technicians
- climate-control technicians
- researchers
- engineers
- agri-business technicians
- managers
- educators
- retail staff
- tourism services
- restaurant staff
- custodians
- administrative support
development scheme 規劃結構
vertical spine 高密度中心區
required remediation:
expanded phytodegradation + extraction
remediation crops:
mustard, alfalfa, sunflowers, bamboo
food crops:
soybeans, potatoes, cabbage and greens
suggested development:
3,000,000 m² research facilities
1,000,000 m² office facilities
100,000 m² education facilities
500,000 m² agriculture facilities
10,000 m² retail spaces

food fair and convention center 食品交易會展區
required remediation:
expanded phytodegradation + extraction
remediation crops:
indian mustard, alfalfa, sorghum, barley, and rye
key agricultural products:
soybeans, potatoes, cabbage, greens, fruits.
suggested development:
1,000,000 m² research facilities
1,000,000 m² office facilities
100,000 m² agriculture facilities
50,000 m² retail spaces
100,000 m² convention space

agricultural tourism and recreation 文化娛樂農業活動中心
required remediation:
phytodegradation + extraction
remediation crops:
indian mustard, alfalfa, sunflowers, bamboo
food crops: soybeans, potatoes, cabbage and greens
development ratio:
20% agriculture facilities
30% recreation/open space
15% tourism facilities
20% residential units
15% hotel rooms

transportation 軌道交通
road system 道路系統
public spaces 公共開放空間

MIT-Tsinghua Beijing Design Studio 2008
11 July 2008
Sandra Frem • Deborah H. Morris • Pamela Ritchot • Colin Zhao • Sara Zeng
設計說明

中心車站未來將成爲進入新首爾地區的門戶，它位於高密度住宅型中心區的中央，出入口直接面向群明湖。

中心車站既作爲鐵路車站的到達車站，也連接一號線延長的電鐵，並且作爲內部有軌公交車發車站，它將成爲地段最重要的交通綜合體。設計中考慮不同流線交通的分流：地下——地鐵/火車；地下一層——停車；地上——行人；出租車。

設計尊重原來的群明湖廣場牌坊軸線，並加以放大，開闢連接首爾群明湖地區和東邊居住區的道路，並且周邊布置各種商業辦公設施。

MIT-Tsinghua Beijing Design Studio 2008
11 July 2008  Sandra Frem - Deborah H. Morris - Pamela Ritchot - Colin Zhao - Sara Zeng
Creating a hyperdense, vertically-productive spine within Shougang, makes it both economically feasible and beneficial to have large plots of land open for natural phyto-remediation. Doing so avoids the high capital costs of soil washing and extraction while creating a valuable research asset: the remediation itself.

Landmark industrial structures are adapted for agricultural or commercial uses, thus reviving the industrial spirit of Shougang while maintaining its legacy.

Because toxicity of the land requires phased development and extensive remediation in the areas of highest contamination, early development should be a research cluster surrounding the issue of remediation, as soon as the land is remediated, it can be transitioned into plots for agricultural research, and, with time, agricultural production. Research, educational, and commercial clusters surrounding urban agriculture and brownfield remediation will bring economic vitality, a transportation hub will draw people to, and moves them through the area. Areas with lower intensity pollution can be more easily adapted for a range of uses, including tourism, residences, and light industrial programs.

MIT-Tsinghua Beijing Design Studio 2008
11 July 2008  Sandra Frem • Deborah H. Morris • Pamela Ritchot • Colin Zhao • Sara Zeng