VOID EXPANSION
SPORTS COMPLEX ARCHITECTURE DESIGN

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Location of the site: Chicago south works, about 2.8 km², surrounded by 79th street, lake Michigan and the Calumet River.
History: 1857-North Chicago Rolling Mill; 1889-Illinois Steel; 1901-US Steel
Decline: 1970s-1992. workers from 20,000-10,000-700-0.
Problems: low quality education, unemployment, crime, health crisis, etc.
SOM plan: mixed-use community housing, businesses, and green space.
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Health care policy: Unveiled on August 16, 2011 by Chicago Mayor; Healthy Chicago.
Top-down strategy: A mixed-use new anchor based on health related issues. the Health City.
Definition of Health City: health science related, healthy life style related and both.
Interactive connection

- Health City Laboratory
- Education Foundation
- Public Services
- Job Opportunities
- Medical Support
- Affordable Housing
- Employees

Science Cluster

Residential Cluster

Existing Neighborhood
Lecture in De-paul University: "A campus is almost a guarantee to have a mixed race without any significant social problems since it attracts multiple people. The neighbourhood where De-Paul University is was 30 years ago a poor, gang-invested, high crime ghetto area and now it is one of the best neighbourhoods in Chicago."
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Component of Health City: Sports space.
Target groups: Interaction between people related with the site.
Central campus: Sports complex connects with other functions.
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Ore walls: Heritage. But will be demolished in SOM plan.
Ore wall dimension: over 700m long.
Site traffic conditions: in group plan. cross the walls, along the walls.
Specific road: the axis connects both sides.
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Current: The path. Main traffic of the building.
Relationship between the path and building.
Develop: From path to spatial expansion.
Simple one-floor space: A box with 6 faces.
Show the path
Low for sunlight
Flying roof/box
Connections
More spatial qualities
Final step
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Flying board: atmosphere under the roof. contrast between bright and dark, solid and void, light and heavy.
Flying box: contrast with the ore walls from harbor perspective.
Design progress: Sketch and model-spatial prototype in mind. Building and site conditions-achieve it.
Skylight: the performance of the ore wall's characteristics.
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Long corridor: connects all the functions.
Reference: Dixon sports center in Oregon State University.
Ground floor: divided by ore walls and path.
Ground floor route: path with space on both sides.
1st and 2nd floor: function rooms connect together
1st and 2nd floor: traffic above the ore walls.
Vertical traffic: stairs and elevators.
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For more than a century, groundwater has been used by homes and industries throughout the Chicago region.

The earliest known withdrawal from the COA in Chicago was in 1864, when a well was drilled at the corner of Chicago and Western avenues. Water flowed out of this well without pumping and initially had enough pressure to raise water in the well about 80 feet above land surface. By 1900, many wells had been drilled into the COA, causing water levels to decrease beneath Chicago, Joliet, and other major pumping centers.

Recharge to the COA is rather limited and occurs very slowly. By the 1940s, more water was being pumped from the aquifer than was being recharged naturally. Although industrial withdrawals began to decline in the 1970s, drinking water withdrawals to serve a growing population continued to increase. Groundwater usage peaked in 1979, at 182.9 million gallons per day (MGD), nearly triple the estimated sustained yield of the aquifer system. Water levels had been lowered by as much as 850 feet in Chicago and other major pumping centers,
Winter/heating
Summer/cooling
Winter ventilation

Summer ventilation
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Structure network
Truss combines with truss.
Truss
Isometric
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Stone cladding reference
Skylight reference
flying roof reference
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flying roof: combination of architecture and building technology.
Progress: based on program and site, step by step.
Design method: through sketch and models, to achieve spatial qualities.
Combination architecture and building technology: to achieve architectural proposals