MEDICAL LIBRARY:
From steel factory to health city

Complex Graduation Project
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I. ANALYSIS:
SOUTH CHICAGO - SOUTH WORKS SITE

II. GROUP STRATEGY:
HEALTH CITY

III. INDIVIDUAL DESIGN:
MEDICAL LIBRARY

1. Location: spacial context
2. Architectural Concept: historic context
3. Program Organization
4. Structure
5. Climate
6. Facade, Details

CONCLUSION

APPENDIX: REFLECTION
I. ANALYSIS:
South Chicago - South Works site
The site is located in south side of Chicago, which gives people impressions of violence, shooting, drugs...
PROBLEM

- Unemployment
- Unquality education
- Crime
- Poor health

PUBLIC HEALTH CRISIS!

- AIDS
- TEEN DRINKING!
- THE COVER-UP!
- OBESITY!
- MENTAL ILLNESS!
- MARGINE SHORTAGE!
- VIOLLENCE!
- HUNGER!
- HOMELESS!
- TOXIC!
South Chicago was annexed by Chicago in 1889. The community then had about 24,000 people, and more were on the way. The steel mill created a whole new community, in which it played a large role in the people's lives. It brought thousands of people to the area since it offered so many jobs. People of different ethnic backgrounds came to live in the area because they all wanted to live close to where they worked.

Over the years, labor difficulties became common, and the company started its decline. In 1979, employment went down to about 10,000. After that, layoffs were becoming common. Facilities began closing. The demand for steel went down, so suppliers went down with it. On Thursday Jan. 9, 1992, the announcement of the shut down was official. In April of the same year the mill closed with less then 700 workers.

Why does this area have those problems? How to change the situation? You will understand it starting from its history. "It was friendly community." South Chicago has its golden age. In 1901, U.S. Steel opened, which became one of the world's largest steel factories. It attracted many workers, who immigrated here. Later, due to the shifting market of steel, the factory closed in 1992. In 1994, all property are demolished and sold. The site became empty. Workers lost their jobs. The South Chicago declined.

SOUTH CHICAGO NEEDS NEW INVESTMENT. They need jobs. They need healthcare, education and social support.
DIRECTION: NORTH TO SOUTH

ADVANTAGE:
THE MOST CONVENIENT WAY OF PUBLIC CONNECTION FROM SOUTH CHICAGO TO DOWNTOWN

DISADVANTAGE:
LOW FREQUENCY
ABSENCE OF CONNECTION FROM EAST TO WEST

PROPOSAL:
CREATING THE EFFICIENT CONNECTION WITH THE SOUTHWORKS SITE

THE METRA LINE

SITE CONDITIONS

1704m

1593m
THE LAKE SHORE DRIVE
DIRECTION: NORTH TO SOUTH

ADVANTAGE:
THE MOST CONVENIENT WAY OF PRIVATE CONNECTION FROM THE SOUTH CHICAGO TO DOWNTOWN

DISADVANTAGE:
SPATIAL SEPARATION BETWEEN THE NEIGHBOURHOOD AND THE SITE

PROPOSAL:
CREATING A VERTICAL PUBLIC CORRIDOR TO DISSOLVE THE SPATIAL SEPARATION

SITE CONDITIONS
EXISTING MAIN ROADS
DIRECTION: WEST TO EAST

ADVANTAGE:
CONNECTING THE METRO AND THE LAKESHORE DRIVE
CONNECTING THE NEIGHBOURHOOD AND THE LAKE SIDE PARK

DISADVANTAGE:
THE PRESENCE OF THE CARS AND BUSES EXERTED AN ADVERSE INFLUENCE OF
THE QUALITY OF THE PUBLIC SPACE

PROPOSAL:
THE SEPARATION OF PEOPLE AND VEHICLES
CREATING A PUBLIC CORRIDOR FOR PEDESTRIANS
THE EXISTING BUILDINGS AND HERITAGE
STATION, VELODROME, ORE WALLS AND THE LAKESIDE PARK

ADVANTAGE:
ATTRACTION OF PEOPLE

DISADVANTAGE:
SEPERATED AND OUT-OF-ORDER

PROPOSAL:
CREATING A PUBLIC CORRIDOR FROM THE STATION TO THE LAKESIDE PARK

THE EXISTING ORE WALLS
SITE CONDITIONS

- THE EXISTING VELODROME (WILL BE RECONSTRUCTED IN 2014)

- THE EXISTING LAKESIDE PARK
II. GROUP STRATEGY:
Health City
HEALTHY CHICAGO PUBLIC HEALTH AGENDA:

Chicago is promoting new healthy policy, which need a large area to build a healthcare center for providing a big stage for cooperation. South Chicago is such a suitable place, which has large area, cheap labors and good natural environment. We plan to build a health city in south works.
DEFINITION OF A HEALTH CITY

HEALTH SCIENCE RELATED
HEALTHY LIFESTYLE RELATED
BOTH

■ WHAT'S A HEALTH CITY?
AMPLE HEALTH RELATED SERVICE INDUSTRY
CUTTING EDGE MEDICAL TECHNOLOGY
ADVANCED PATIENT CARE SERVICES
ENVIRONMENTAL QUALITY
RECREATION & SPORTS SPACE
EFFICIENT AND ENVIRONMENTALLY FRIENDLY PUBLIC TRANSPORTATION
QUALITATIVE, SUSTAINABLE, AFFORDABLE HOUSING
ECONOMIC OPPORTUNITIES
AWARENESS OF THE IMPORTANCE OF HEALTH
HEALTHY FOOD
HEALTHCARE
HEALTH EDUCATION
SPORT FACILITY
PARK
CLINIC
HEALTHY FOOD
WALKING & BIKING INSTEAD OF CAR

PRINCIPLES OF HEALTH CITY
The health city depends on the health science core. Campus provides job opportunities, education and medical support to the neighborhood. Healthy life style communities are surrounded. Each community zone has its community center, which has clinic, sport facilities and fresh food market.

FUNCTION LINK BETWEEN THE CLUSTERS

- **HEALTH CITY LABORATORY**
- **EDUCATION FOUNDATION**
- **PUBLIC SERVICES**
- **JOB OPPORTUNITIES**
- **AFFORDABLE HOUSING**
- **MEDICAL SUPPORT**
INVENTORY OF GREEN SPACES

- LAKEFRONT PARK
- LINEAR PARKS
- COURTYARDS

Space Qualities

Strategy for Transport
First: routing through/under buildings
Second: health plant gardens (semi-public)
Third: linear park (public)

The campus has different space divided by walls. The south one, linear park, is public, connect neighborhood to the new site and to the lake. So most of it is grass, in order not to block the view to the lake. The north one is a zig-zag routing through or under buildings. The middle one is semi-public. There are several different health gardens, which is related to the building functions.
The health science campus includes not only education, but also research, hospitals, health business and public services.
STEP 1
THE BASIC BUILDINGS FOR A CAMPUS

STEP 2
NEW PROGRAMS APPEARS
UNION RESEARCH, PATIENT CARE
■ STEP 3
MIXED DEVELOPMENT OF BUSINESS & RESEARCH ZONE

■ STEP 4
EXPANSION OF EDUCATION ZONE MIXED WITH HEALTH RELATED BUSINESS
AND CONTINUE TO GROW INTO NEW COMMUNITIES ALONG THE N-S AXIS
III. INDIVIDUAL DESIGN:
South Chicago - South Works site
1. Location: spacial context

A. ON THE WALL

Why put it on the Ore Wall?
The current situation of the wall is abandon. It has risk to be demolished. They need to insert new life to add values. There are many possibilities. We choose to put functional buildings, which will attract certain people to have activities here. It will activate the wall. Besides, the Ore Wall create quiet environment for the library.
The medical library is in the crossing of two main axis in the campus, which lead people to the library.
C. PROGRAM COOPERATION

Medical library has cooperation programs with education, hospitals, research.

The location is easy to be reached by students, doctors, researchers, companies.
Newcomers often hear about "the good old days."

Many former workers didn't leave. They still live here. They love the neighborhood. They are proud of the good old days.
GOAL: REFLECT INDUSTRIAL PAST.

One of the campus’ missions is to develop the neighborhood. As the heart of campus, the medical library is a proper building to express the idea. The medical library belongs to today and future. At the same time, it reflects the industrial past, which add strong cultural atmosphere to the new area. It seems to tell people that we will create better future based on the glorious history.

In the past, the wall is used to store Iron Ore and support the crane and bridge. The short crane is used to unload Iron Ore from ships to the space between low walls. The long bridge, which can move on the wall, is used to distribute and store Iron Ore.

Gantry Crane: unload Iron Ore
Travelling bridge: distribute & store Iron Ore

Ship: transport Iron Ore to harbour
The library uses several strips to symbolize the busy construction in history.
Form Generation:

1. short strip and long strips
2. extend end: better view
3. connect: less facade, more sustainable
Use truss structure and modern book transport system to reinforce the industrial impression.
As mentioned before, the middle strip is "health plant gardens". The garden types are related to the buildings. From west to east, the west parts are "market-style plant gardens", which cooperate with the commerce function in conference center. The middle parts are "medicinal plant gardens". They are just like medicinal plant books for readers to learn and make experiments, which is part of medical library. The east parts are "healthful plant gardens". The plants are good for peoples' health, cooperating with the experience function in the public health education centre.
A. MEDICINAL PLANT GARDENS

Scenes in medicinal plant gardens:

sow  cognitive learning  pick  medicine experiment
B. BUILDING

ENTRANCE
LOBBY CONNECT ATTRACTIVE POINTS

lobby
attractive point
routing
Using the automatic book transport system is not only to adapt the modern needs, but also to symbolize the Ore transport system in the past. The main book stacks is located between the two low walls. Borrow books: You order the book on the internet. The book will automatically deliver from stacks to book transport facility room. Then you can pick it up in a machine. Return books: You can put the book into the return machine, which you get a receipt. Then the books will automatic deliver to the stacks, journal room or subject reading rooms.

Blue line: borrow books
Red line: return books
4. Structure: Truss: supported by Ore Wall
5. **Climate**: Healthy building is sustainable.

**Thermal properties of the water**: Heating and Cooling

**Solar panel**: generate electricity
Mechanical Ventilation: as a public building
6. Facade, Details:
Structure outside
Vertical louvers: changes according to weather, controled by computers.

**Situation 1: closed - strong sunshine**

**Situation 2: twist angle - weak sunshine**

**Situation 3: slide to one side - cloudy**
Composite floor: steel deck + concrete slab

ComFlor 210
deep 270mm
span 4.5m-6m
(5.6m)

Density of concrete is taken as:

1. Deck and beam deflection (i.e. ponding)
2. Deck and mesh weight is not included
3. Weight of concrete figures.

The nestable profile shape reduces
transport and handling costs.

Up to 2 hours fire rating with
unprotected soffit.

The original SlimFlor long span steel deck, ComFlor 210
has the capability to span up to 6 metres in unpropped
cases.

Typical unpropped span
Deep composite profile
ComFlor 210
Conclusion of the building:

The building reflects industry history, which adapts the regionalism. It shows the mission of the healthy city, which is to develop neighborhood.

It is a medical library, which is a part of health city.
Following our strategy, the South Chicago will rise again, establishing its health center brand. As a significant part of it, my project of the medical library is a main building in this healthy science campus, which demonstrates the concept of healthy city, showing the mission to develop the neighborhood. Conducting our strategy, Chicago will regain its fame as a harmonious multi-racial metropolis.
Reflection

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Studio: Graduation studio for Complex Projects

Relationship between theme of the studio and my project:
The theme of the studio is to develop South Chicago (Fig.1) in order to help the city of Chicago to achieve its global ambitions. The main problem in South Chicago is concluded as follow: After the close of US Steel in 1992 (Fig.2), South Chicago lost its economical anchor that led to serious decline. What is urgently needed here is a new external strength to help the district to establish its new brand.

For our team, the strategy is building a healthy city. The idea originated from the recent unveiling of the Healthy Chicago Public Agenda in 2011 by the mayor of Chicago (Fig.3). There are a series of policies to improve the public health environment of Chicago. It is a good opportunity for us to build a new district with the theme of public health in South Chicago. One of the major features of the health city is the health science core. (Fig.4) The campus of health city will provide job opportunities, education and medical support to the neighborhood and promote healthy life style. Each community zone has its community center, including the program of a clinic, sport facilities and fresh food market. Other than education, the health science campus also includes research, hospitals, health business and public services.
For my individual architecture design, I concentrate my work on the medical library, which is the main building in healthy science campus. One major mission of the health campus is to help develop the neighborhood. As the heart of the campus, the medical library is seen as a building with great potential to achieve the mission. The medical library represents the today and future of the neighborhood. At the same time, it also reflects the industrial past, adding a strong cultural atmosphere to the new area. It has the underlying idea of telling people that we will create a better future based on the glorious history.

(Fig.5, Fig.6)

![Fig. 5 construction to unload Iron Ore](image)

![Fig. 6 medical library reflects industry history](image)

1. short strip and long strips
2. extend end: better view
3. connect: less facade, more sustainable

(Fig. 7 form generation)

**Relationship between research and design:**
In research, we concluded that the south side of Chicago gives people the impression of violence, shooting, drugs, etc. It has problems of unemployment, low quality education, crime and poor health care. With this conclusion in mind, we raised the research question: Why does this area have these problems? How to change the situation? We started our research to understand the problem by studying its history. What we found is that in the contrary, it used to be a friendly neighborhood. South Chicago had its own golden age. In 1901, U.S. Steel opened, which became one of the world's largest steel factories. It attracted many workers, who immigrated here. Later, due to the shifting market
of steel, the factory closed in 1992. In 1994, all property are demolished and sold. The site became empty. Workers lost their jobs. The South Chicago declined. We carried out further research on the culture, economy, policy and infrastructure to better understand the background.

According to the research, we defined our design direction: South Chicago requires new investment. They need jobs. They need healthcare. They need education and social support. These arguments led to key ideas for our design.

**Relationship between methodical line of approach of the studio and the method chosen by me:**
The methodical line of approach of the studio is as follow: Firstly, doing research & analysis on Large, Medium, and Small (L, M, S) scales, which is from the scale of country of USA, to the scale of the city of Chicago, and to the scale of the site of South Chicago. Secondly, define strategies/ambitions for the entire site & neighborhood. Thirdly, make urban design in teams. Lastly, design architecture and building technology individually.

The method chosen by me is based on the structure of the. Firstly, we went to Chicago to carry out research and analysis on different aspects. We tried to search information from literature and on the Internet. As a summary to the research, three booklets are developed, respectively referred as L, M, S research booklet. Secondly, we tried to make a good strategy to solve the problems in South Chicago. We chose to build a healthy city on the site. The strategy design dealt with complex conditions. It was more related to policies, social needs, and financial support than just an urban design. We also make case studies to help us have a better understanding of the context and design. For example, the Medellin case is a good example to upgrade the neighborhood according to high standards in the poorest area, which gave us inspirations. Thirdly, we formed a four people group to make urban design depend on our strategies. We analyzed design of many medical colleges as references. Lastly, I designed a medical library, which is in the phase 1 of the master plan. I explored the shape, structure, transport, interior, and climate to emphasis the strategies.

**Relationship between the project and the wider social context:**
In the past, the southern and western part of Chicago had a bad reputation for its safety. However, according to our strategy, South Chicago will revitalize again by establishing its identity and brand as a health center of Chicago. As a significant part of it, my project of the medical library is the main building in this healthy science campus, which demonstrates the concept of healthy city, showing the mission to develop the neighborhood. Conducting our strategy, Chicago will regain its fame as a harmonious multi-racial metropolis.