P2 reflection

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Theme: South Chicago Lakeside development
Teachers: Olindo Caso
Title of Graduation project: Regeneration of South Chicago through introducing a new catalyst

Problem statement

South Chicago is facing economic and social downgrade due to the loss of losts of opportunities in comparison with north Chicago. Particularly, the Southworks in South Chicago is suffered from economic collapse since the time when the US steel industry had closed in 1992. Such an unfortunate condition forces the local inhabitants to rely on illegal businesses or to leave this area, resulting the site of 250 acres remained empty.

The problem begins with the absence of new industry for this economically abandoned neighborhood, thus the main issue is to address a proposal for this area, not only through considering spatial quality but also through social, economic or political aspects.

Moreover, the relation with existing neighborhood and newly proposed area also should be considered to avoid the local hostility in terms of building typologies. As a whole, the main issues is to investigate a new way of mediating expected conflict between new anchor and the existing neighborhood by considering economic, social and archetype models. In this manner, the question can be mentioned as, ‘To What Extent does new engine contribute to the positive perception of declined South Chicago’ and the research will be conducted to build a concrete framework for making an answer for this question.

Goal

The goal of the project is to investigate appropriate urban strategies for revitalizing the target area, which will be realized through several phases. In this regard, it is crucial to introduce a new economic catalyst which contributes directly to the Southworks as well as to the positive perception of South Chicago. The key player of this proposal is to provide more value on the site. Thus, the most logical, favorable and optimistic industry and its position will be chosen through research on the related social, economic and political issues of the site and referring case studies.

Urban proposal is conducted as a group work and further developed individually by zooming into selected fragments, following the urban strategies. The final goal of this project is not only going to be a crucial initiative to revitalize Southworks area, but also to be a new public domain where a different type of social groups or users can interact, by providing additional programs which is responding to the surrounding context. The new archetype I propose begins with a new station for the newly introduced recycling industry and expands to high speed rail station and market, functioning as a commercial hub for public and existing neighborhood and further developed to hotel.

By focusing environmental issues, the SouthChicago is appeared to be sustainable anchor which includes several key functions with special connection called eco-boulevard. Thus, this complex building is situated along a new linear green space named as ‘Green stream’ which is introduced to give a new ecological identity of Southworks, transitionally adapting open spaces into interior through morphological transformation of the building.
Recycling Chicago

This article is for more understanding of relevant issues embedded in the site based on several literature and case studies and to find out the factors which could be an initiative implementation for regenerating of specific sites, especially focusing on the similar cases which is surrounded by waterfront and existing urban area. Chicago is regarded as the midwestern hub of United States in terms of transportation as well as the core of world famous businesses, resulting a substantial number of infrastructural heritages in the city. The city’s rich heritage of innovation is, however, facing challenge of deterioration and weakening of competitiveness in overseas market. Meanwhile, the unequal condition between North and South Chicago derives also serious social conflict between two different region, resulting one of the most severely segeregaged society in the USA. All the inherited issues ranging from politic, culture, economic as well as existing built environment conditions help our working groups set up our problem statement that the SouthChicago needs a new power of growth in terms of economic and education for self-sufficient living.

“The Sustainable Chicago action plan offers concrete initiatives, metrics, and strategies aimed at advancing Chicago’s goal of becoming the most sustainable city in the country. From improving citywide energy efficiency and promoting diversified transit options, to launching citywide recycling, the roadmap is robust and comprehensive, touching upon the full spectrum of life for Chicagoans, whether at home, at work, on our streets or in our parks.”
- Rahm Emanuel, Mayor

The city’s ambition is the first step of the answer to our problem statement and we thought combining spatial values to this vision can enhance our strategy. Thus we starts to research the public demand and several guidelines towards the site and it becomes our base of masterplan. According to the guideline, Chicago set up 5 strategies to strengthen the position of the city as a new anchor in USA.

The main problem is the sheer volume of waste being produced and how we deal with it.

The strategies are aiming the alleviating the unequal balance of energy in Chicago, by introducing citywide recycling industry as well as the improving water quality and water infrastructure so as to make a good connection with the Loop (the center of Chicago) and the others regions. Given this, we assume that SouthChicago needs to take advantage of these strategies that recycling industry could provide jobs and it could be a new important initiative of revitalization method. Furthermore, our groups also thought that SouthChicago needs to respond to the growing demands for clean water which is also suggested in the city’s guideline. Accompanied with the need of recycling industry, in the project, we investigated how the SouthChicago could be an model for addressing urban water scarcity and pollution.

The presence of waste is an indication of overconsumption and that materials are not being used efficiently. This is carelessly reducing the Earths capacity to supply new raw materials in the future. The capacity of the natural environment to absorb and process these materials is also under stress. Valuable resources in the form of matter and energy are lost during waste disposal, requiring that a greater burden be placed on ecosystems to provide these.

‘Plastic constitutes a greater threat to India than a atomic bomb’

Said by the Indian Supreme Court
Urban Strategy reference - Reconnecting waterfront

- New York Manhattan waterfront regeneration, USA

The project mentioned above is chosen as a reference to deal with waterfront area and to correlate them into urban typology in the project. The main focus of this project is to analyze the relation between urban district and waterfront for revitalization strategies of downtown area. The Manhattan waterfront used to be a center position of industrial and economic activities and play an important role as a traffic hub between north and south area of Manhattan. For this reasons, along the waterfront area, many factories and industrial facilities are distributed, supported by motor-prioritized road without another traffic interception. However, turning to current period, this site situation became a physical barrier to separate waterfront and urban area, which is similar situation to the Southchicago area.

Dealing such problematic issues, the redevelopment plan process demonstrates that the success of waterfront regeneration largely depends on the issues of how much urban area and waterfront are well connected. [A Study on the Characteristics of Design for Renwal of New York Manhattan Waterfront for Downtown Revitalization, Kim Min-Kyung, Lee, Jung-Hyun p.47]

Hence, the scheme and outline used in the process of making masterplan of Manhattan waterfront project is based on this principle, providing more public access from city center to the with various in-between open spaces, combined with continuously opened sight towards the waterfront. [A Study on the Characteristics of Design for Renwal of New York Manhattan Waterfront for Downtown Revitalization, Kim Min-Kyung, Lee, Jung-Hyun p.49]

In urban typological value, the whole masterplan follows the basic principles that the newly developing area is not to block the relation with urban morphology, but rather make them coherent to shore sides. This is accompanied with the way of proposing diverse eco-friendly boulevard to attract more access to the waterfront, which is so called Farely Corridor. With keeping the surrounding urban sectors and scenic continuity, the project also promotes programmatic regeneration, considering a variety range of new attractive cultural nodes. [A Study on the Characteristics of Design for Renwal of New York Manhattan Waterfront for Downtown Revitalization, Kim Min-Kyung, Lee, Jung-Hyun p.53]

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Application

The design of the targeting area is to be a center of sustainable city in Chicago conducted with the conception of creating green corridor where the public transit nodes are passing along the threshold and pedestrian foot print returning the road to human being as a pedestrian friendly environment. These strategies begin with small intervention of public square and develop as a network by connecting them with pedestrian-friendly boulevards, which is also gradually absorbed into building, being part of architectural elements. These in-between spaces are new-collective spaces for mixed uses namely “public streets in the buildings”.

Sight - seeing network

Continuity of block shape and urban fabric

Open skyline towards waterfront with the characteristics of high-rise in urban center and low-rise in waterfront area

Pedestrian access and traffic network

Continuous street hierarchy and pedestrian accessibility to the waterfront

Walking route along waterfront

Pedestrian and bike-friendly street promenade

[Figure: Battery Park City park plan design strategies. A Study on the Characterization of Design for Renewal of New York Manhattan Waterfront for Downtown Revitilization, Kim Min-Kyung, Lee, Jung-Hyun p.52]
Midwest, Illinois, Chicago
South
DISTRIBUTION OF WELL-EDUCATED PERSONS (MASTERS OR ABOVE)

PERCENTAGE OF POPULATION BELOW POVERTY LINE

Source: Zipatlas

INDUSTRY CORRIDOR

PERCENTAGE OF POPULATION BELOW PEVERTY LINE
SouthWorks
Former Steel industry

The research work in the CP is aimed to build general impression of targeting sites and reasoning how the current situation happened and why it is still going on through several ways such as interviewing relevant officers, visiting the site in person. Based on this, the SouthChicago is defined as a new challenging site where needs a new power of growth for economic and education for self-sufficient living. This is the base of all the following issues like employment possibilities, bad images of Southchicago, mono functional areas only with residential and very few public program. However, in this stage, we should consider something more about the effect of new industrial anchor. Previously, the steel mill factory had provided huge impact on the neighborhood during the peak time, till 1970, giving numerous number of jobs. But even in a negative way, it also affects the neighborhood after closing of the factory. Southchicago have been even more suffered from the aftereffect of industrial pollution alike the lost of the economical influences of it. In this stage, we need to investigate which way is becoming more symbiotic relationship between new industrial anchor and neighborhood.
In 1881, the nation’s most modern and productive steel mills—excluding North Chicago, South Works, U.S. Steel, and U.S. Steel—were an enormous source of national pride. The plant employed some 20,000 people and covered a total of 600 acres (240 hectares).

In 1901, New York banker J. P. Morgan co-founded the creation of U.S. Steel, which would become the world's largest financial powerhouse. U.S. Steel became a giant enterprise.

Beginning in 1970, the steel industry began to experience steep decline due to increased competition from abroad.

1992
On 10 April 1992, the plant permanently shut down with fewer than 700 people employed at the time of its closing.
Golden age of 1890~1970s...

the nation’s most modern and productive steel mills. At its peak, the mill employed some 20,000 people and covered a total of 600 acres (240 hectares).
On Jan. 9, 1992, South Works was officially announced to shut down. In April of the same year the mill closed.

In 1994, all the properties were demolished & sold, with foundations of buildings remain embedded in the ground.
1870s, there was a large sand bar which created a bend in the river just before it emptied into Lake Michigan. In July 1870, Congress appropriates $50,000 for improvements in Calumet Harbor.

In the 1870s, there were thousands of people to the area because 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.

The steel mill created a whole new community, in which the community then had about 24,000 people, and more 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.

Over the years, labor difficulties became common. Facilities began closing. The demand for steel went down, so suppliers went down. 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.

South Chicago was annexed by Chicago in 1889. The South Works in its heyday South Works in 1950s. South Works need a new plan.

DEEPEN & WIDEN COMMUNITY DEVELOPMENT

1886 1893

SOUTH WORKS IN ITS HEYDAY A NEW PLAN

1953 2013
SOCAL
- crime
- no free time activities
- bad image
- weak community/no pride
- segregation
- single parent families
- low education

SPATIAL
- vacant plots
- food desert
- connectivity/infrastructure
- mono functional areas
- gang zones
- no access to lake side
ECONOMICAL
unemployment
no economical possibilities
no housing market
low income households
catalyst needs

New challenge..
Observation & Masterplan Strategy
Research question
“To What Extent does new engine contribute to the positive perception of declined South Chicago?”

- What would be a new engine for regenerating South Chicago?
- What kind of recycle-industry?
- How to connect recycle-industry with neighbourhood?
- What kind of interventions are needed?
More than 15 years ago, Mayor Richard M. Daley began to transform Chicago into the most environmentally friendly city in the nation. Today, Chicago is one of the world’s greenest and livable cities thanks to strong partnerships between government, residents and businesses.

Source: Chicago Climate Action Plan 2008

“The Sustainable Chicago action plan offers concrete initiatives, metrics, and strategies aimed at advancing Chicago’s goal of becoming the most sustainable city in the country. From improving citywide energy efficiency and promoting diversified transit options, to launching citywide recycling, the roadmap is robust and comprehensive, touching upon the full spectrum of life for Chicagoans, whether at home, at work, on our streets or in our parks.”

Rahm Emanuel, Mayor

Source: SUSTAINABLE CHICAGO 2015
“...Together, we can preserve the city, remain prosperous and build a future in which we, our children and grandchildren can thrive for generations to come.”
— Richard M. Daley
Chicago’s goal of becoming the most sustainable city in the country.

- Eliminate food deserts in Chicago

  Our site is located in a food deserts

- Launch city-wide recycling

  Our site is not a blue cart area of the cities blue cart program that is started to help individuals recycle
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- Create a world-class bike network and increase cycling

A bike path along Lake Michigan stops at the height of Lake Shore Drive South. There is no bike path from our site to the loop along Lake Michigan.

- Improve water efficiency, water quality, and water infrastructure

Water transportation good be an interesting opportunity for our site to make a connection with the Loop and Indiana
Environmental and Health Impact of Waste Management Activities
Social impact
Environmental and Health Impact of Waste Management Activities
What do they need?
Economic power vs social treatment

INDUSTRIAL ANCHOR

WAYNE STEGER
police teacher

NASUTSA MASHA
McCallery project manager
"I WOULD CLEAN THE NEIGHBORHOOD"
Recycle SouthWorks

Double meaning of recycling
WHAT KIND OF RECYCLE-INDUSTRY? I RECYCLE-INDUSTRY & REPRODUCTION

RECYCLE                     REUSE                 REDUCE         REPRODUCE

SOUTH WORKS
RECYCLE

RECYCLE
REDUCED REUSE

REPRODUCE
Recycle SouchWorks

from former Steel production

RECYCLE + REPRODUCE engine
1. Launching new industry: Waste Production → Recycling industry

2. New Positive identity for South Chicago

3. New jobs in South Chicago

4. Taking advantage of strongly positioned existing infrastructure

5. Creating visible connection between South Chicago and Lake Michigan
How to connect recycle-industry with SouchWorks neighbourhood?
Chicago is geographically considered as the center of train transportation of USA and socially, as one of the most segregated city. This metropolitan city has diverse ethnics, but practically, they have their own frame which is outstandingly concentrated in particular locations, depending on the groups. This social circumstance is driving several consequences.
City’s vision to remedy disconnection between Lake Michigan and Chicago
How to connect recycle-industry
& neighborhood?

Connect Green stream to ECO BOULEVARD
Stormwater infrastructure can be planned to deliver valuable ecological benefits to the city.

LID remediates polluted runoff through a network of treatment landscapes with distributed redundant, and resilient properties.

How the Green Stream Functions?

- **Lots**: LID lots infiltrate stormwater through reduction or elimination of impervious surfaces and replacement of turf grass with productive landscapes.
- **Streets**: LID streets are green streets reducing and filtering runoff as it enters public space while enhancing the quality of place.
- **Networks**: LID networks contain treatment facilities connected to regionally scaled systems of stormwater management.
Soft engineering
...metabolize pollutants
on site-parks, not pipes!

low impact management: watershed approach
slow, spread, soak

* Reference from [Low impact development a design manual for urban areas]
2010 UACDC, Fayetteville, Arkansas http://uacdc.uark.edu
What is Green Stream?

Green Stream remediates disconnection between neighborhood and New Southworks
Green Stream

* Reference from [Low impact development a design manual for urban areas] 2010 UACDC, Fayetteville, Arkansas http://uacdc.uark.edu
Recycling Gray water, changing to fresh and giving back to Lake Michigan lakeshore
Neighborhood

New Southworks

Protection from noise

Transitional Density
Transitional Density

New Southworks

Protection from noise
Introducing new High Speed Rail Station into SouthWorks to increase the accessibility to this site from the other US region.

Transportation Infra
3 Key Buildings

- Entertainment
  Intervention 3

- Industry
  Intervention 1

- Education
  Intervention 2
New Green Stream

As a transitional threshold between existing neighborhood and the new recycling industry zone, we set up a position where a new intervention could provide benefit for both and it is also available for alleviating the high influences on the Lakeshore drive by introducing new alternatives of transportation system. Accompanied with the need of recycling industry, the South Chicago could be an model for addressing urban water scarcity and pollution, can be regarded as a bridge which is derived from the vision of creating a green connection between the Michigan Lake and the inland area of South Chicago, and provide more clean water to the city. Thus, this horizontally continuous green corridor can also function in different scale, starting from small water treatment basin at street level in neighborhood, ending at the lakeside as a large water filtration park.
This, there are three-fold ideas which is wholly through this project. The first strategy is to restore the consistency between these two parts in a physical and visual way, through green stream which is not only meant to be visible action but also to be ecologically potential way. Secondly, We also investigated where would be the most optimistic place to position new recycling industry, where the left over industrial heritages such as freight rail way and Calumnet and Lakeside meet. These elements eventually used to be a good tool for previous steel industry thus we made a choice to reuse this site as the first phase of our project. The site is transformed to make more convenient freight circulation, considering railways and heavy industrial traffic like trucks. Not only for the optimistic infrastructural effect but also for the social effect of it. The area is chosen for positive influence on the neighborhood.
Fragment Choice

is to investigate how architectural intervention can improve the performances of the space in a physical and social way or how it contributes to increase positive perception of new industrial area.

In overall, our masterplan strategies can be explained in twofolds; One is to launch new recycling industry as an economic booster of the targeting area, the other is to enhance sustainable image of the city as well as the city’s water treatment system by introducing green infrastructure to the district.

The station is to be an opportunity for re-activating declined city and realizing common ground for all kind of social groups.

In the architectural scale, the new typology of station building will be investigated, considering surrounding context.

As a complex building that faces different circumstances, industrial area, Ecological strip as well as existing neighborhood, it will function in a diverse way to respond to these aspects.
My goal for the project is to investigate a new kind of typology which could improve the performance of the city... and increase positive perception of new industrial area.

**Goal of the project**

is to create a new common Ground where the diverse social groups can interact.

A new public domain which is meant to mediate the tension between new industrial area and ecological strip, providing new sustainable identity to SouthChicago industry.

Realizing complex building so as to respond to diverse demands from surrounding context.

In architectural scale, it is going to respond to different circumstances, from industrial areal, ecological strip and neighborhood, so it is going to function in a diverse way. Thus, my final goal is to create a building that is means to mediate the tension between different world.
New transport infra for recycle industry
New transport infra for recycle industry
Intermodal freight & passenger station research

Minimum required height = 21 ft.
minimum 6.408m

The combined transport segment is the segment which is growing most rapidly compared to the other freight businesses. Between 1988 and 2008 international unaccompanied combined transport (in tonnes) increased by 215% and between 2002 and 2015 it is expected to grow by 135% (Source: Study On Infrastructure Capacity Reserves For Combined Transport By 2015).
nearly 70% of United States intermodal shipments. Using double stack technology, a freight train of a given length can carry roughly **twice as many containers** sharply reducing costs per container, productivity on domestic routes.

The most common are **5-unit, 40-ft articulated cars (265-ft) in total length per car** for carrying 20-ft, 40-ft, and 45-ft international containers.

for single sided yards
12.00-15.00m
transfer loading platform
1.65-2.30

with double sided yards
15.00-21.00m
rail freight platforms for loading,
unloading and transfer loading

1.10 - 0.20

Railway specification
Railtrack shall give consideration to passenger safety by limiting the maximum stepping distance from the top edge of the platform to the top edge of the step board or floor of passenger rolling stock. The following maximum dimensions for stepping distances, calculated from the centre of the bottom of the door opening, shall apply unless dispensation has been sought from HSVHMRI for site specific cases relating to identified rolling stock. All such cases must be recorded in writing and maintained for future recerence.

(Neufert UK structure gauges and clearances 426p)
existing rail path

shifiting railway
to make new path

Positioning a new intervention
next to the intersection with
Southshore drive and railway

Green network to make linkage
between neighborhood and new
Southuhworks
The Chicago Lakeside is 16km away from the Loop, Chicago center, known as a part of South Chicago area. There used to be the Steel Mill factory at the mouth of the Calumet River and Lake Michigan which was a huge economic booster of the site, providing jobs for more than 2,000 of people living in this region. But now, it is facing the significant downgrading of living quality due to the closing of former steel manufacturing factory. The steel strike of 1959 devastated the american steel industry and thus, more than 85 percent of U.S steel production had been shut down for 4 month. Due to this situation, SouthWorks lost their engine and dramatically have been declined from 1975. As a result, it closed in 1992 and the site is now being abandoned ever after then. Thousands of people who used to work here had to leave to find another opportunity. Thus, all the existing infrastructures like freight railways and bridges as well as neighborhood areas have been abandoned ever after the closing steel industry. The South Works Industrial TIF was created to foster the industrial redevelopment of the southern portion of former USX/South Works Steel Mill in the South Chicago community. Located on Lake Michigan near the mouth of the Calumet River, the mill operated from the early 1900s into the 1980s, employing more than 15,000 people during periods of peak capacity. Nearly completely vacant since the 1990s, the site is planned, through the use of TIF increment, to serve as a lakefront extension of the South Chicago community and to provide employment, housing and other amenities for area residents. appropriate for new industrial users. Funds are targeted for site assembly, public works, and new public open spaces. Job training and related educational programs are also supported by the TIF. SouthChicago is defined as a new challenging site where needs a new power of growth for economic and education for self-sufficient living. Previously, the steel mill factory had provided huge impact on the neighborhood during the peak time, till 1970, giving numerous number of jobs. The strategies are aiming the alleviating the unequal balance of energy in Chicago, by introducing citywide recycling industry as well as the improving water quality and water infrastructure so as to make a good connection with the Loop (the center of Chicago) and the others regions. Given this, we assume that SouthChicago needs to respond to the growing demands for clean water which is also suggested in the city’s guideline. Accompanied with the need of recycling industry, in the project, we investigated how the SouthChicago could be an model for addressing urban water scarcity and pollution.
**New Green Stream**

As a transitional threshold between existing neighborhood and the new recycling industry zone, we set up a position where a new intervention could provide benefit for both part and it is also available for alleviating the high dependences on the Lakeshore drive by introducing new alternatives of transportation system. Accompanied with the need of recycling industry, the SouthChicago could be an model for addressing urban water scarcity and pollution, can be regarded as a bridge which is derived from the vision of creating a green connection between the Michigan Lake and the inland area of SouthChicago and provide more clean water to the city. Thus, this horizontally continuous green corridor can also function in different scale, starting from small water treatment basin at street level in neighborhood, ending at the lakeside as a large water filtration park.
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Interruption between two different circulation with the demand for multidimensional traffic system

Extension of street and bridging gap
For the ground level again, the ground level is receiving the extended street making connection with lakeshore drive.
Adding new landmark The new landmark is responding to different faces of urban context, in a morphological way, giving adjustment to height related to the surroundings.
Above the ground level, the overall image of the building is meant to be a new sloped topography of the South Chicago, where the lake Michigan and new industrial area as well as the new continuous green fabric can be seen like an observatory. This virtual figure has a multiple function from market, parking and hotel. They are blurred behind the sloped surface which is due to the reason that any noticeable distinct between different functions is not visible from outside, but only inside the building, and the level plan is done by considering the accessibility from neighborhood and public area. It is to make the building blended into lakeshore side, symbolizing accessibility towards the neighborhood and lakeshore drive, keeping the relation between the programs in it. By doing so, market is more stretched to the neighborhood side, and hotel part is more oriented to lakeside. And the building itself becomes a new bridge between green and industry, so through the building people can experience the different layers of city. The new green stream with biological water fountain area is through underneath the lakeshore drive, without disconnectivity, providing self-sufficient eco system, habitat for wild life, and it also gives inspiration of nature and recreation for people.
Freight transport
ONly approved public transportation
Zero Hotel
Green Roof
Horizontal Solar louver for south side
Steel frame
Parking center
Amenity/
Restaurant/
Conference/
Hotel lobby
Repair workshop center
Station/Retail
Uncerground Platform
Freight Rail path/
Storage
Vertical wood louver for North
Ground Roof
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Extended street to the inside of building continuous from public domain
Through floor leveling, the main gate to each floors are made along the slope and at the ground level as well.
Floors are extracted and it keeps the street into the building which is like a indoor street and each floors are connected through the vertical circulation core.

Vertical connection with Station
Freight station

Freight distribution center

A U T O D E S K의 교육용 제품으로 제작됨

Refering American standard freight delivering system

High speed rail station

A U T O D E S K의 교육용 제품으로 제작됨

Refering American standard freight delivering system

Green finger

Public access

A U T O D E S K의 교육용 제품으로 제작됨

Refering American standard freight delivering system
Station roof design

To begin with, the station typologies can be defined as a new gate, functioning as a transportation nodes or a passage to another place. Besides, it can be explained as a new public domain as a meeting point or a commercial center. Especially, the roof covering all the station have a potential to be a new public domain, connecting different programs or different buildings. It could act as the image of city with symbolic ideas of publicness. So this station project is investigated in this aspect, considering the design of the roof as an opportunity for designing the new city further.

The next step is to add public layers on the ground level as the roof of new station. At this moment a new high speed train station is situated, distanced by linear shape of common service facilities for both freight and passenger station. Unlike the freight station, this passenger oriented station is covered by a roof which make a new connection with public activity happened upon the roof. All the station entrance is positioned at this roof level and it can be through the specially chosen structure system materials of it and it will be also specially managed to handling natural daylight.

<table>
<thead>
<tr>
<th>Span</th>
<th>Climate</th>
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<tbody>
<tr>
<td>18m min.</td>
<td>Day light / HVAC</td>
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<table>
<thead>
<tr>
<th>Structural stability</th>
<th>Public</th>
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<td>Fire and anti vibration</td>
<td></td>
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transfering the forces from upper part to platform, doubling s
Equally distributed load bearing.

And the arch shape has secondary structures to make it more rigid, counteracting shear forces.

Preventing bending moment by adding structural elements
The ground level is for keeping the surrounding condition and is also for providing common ground for public. So, receiving the flow from bridging flow from green stream, the part is open to street level. It attracts people to enter the building, act as an interface between outdoor and indoor space. There is a gate directly connected to the station and the building, so it functions as a main gate of the building. It has a parking at the bottom two and the top two is for hotel. By doing this, the openness of ground level is emphasized and through this point, it is possible to access to another part of building. Even though the building has a free-free form itself, it has a regular 9 by 18m grid system from the station level to the top and if it is necessary, the distance is changed within this bay. For example, in the station level, for large available space, the bay becomes twice to 18 by 18m and such spans are supported by arch shape of prefabricated concrete component and it allows the two points of forces from the upper part to flow through the shape, concentrated to one point.

P : Public parking  
H : hotel  
O : observatory  
R : Repair workshop  
D : Delivery & Drop off area  
M : Train station  
C : Cafe  
BA : Bar  
I : Information
Castellated beam + Composite column

Ultra High performance concrete

18m for station

Composite structure

Castellated beam + Composite column

Ultra High performance concrete
3 m spacing
secondary beam
In particular, this station has a really tricky condition to have to support the forces from the building. So it has to distribute the load equally to any specific point, enlarging the distance between modules. From this, the roof is going to be an arch shape as it can stand the load from the point in the middle of the span, maintaining enough span at of platform level middle of the span, maintaining enough span at of platform level. And the arch shape has a secondary structures to make it more rigid, counteracting on the shear forces. So throughout the station level, 18m and 18m of grid is repeated and this becomes the base of all the building structures. Based on the platform grid, all the structures of the building is consistently following it, and played in 3 by systems, within the grid, giving variation of distance between structures from 3m to 9m.
To begin with, the station typologies can be defined as a new gate, functioning as a transportation nodes or a passage to another place. Besides, it can be explained as a new public domain as a meeting point or a commercial center. Especially, the roof covering all the station have a potential to be a new public domain, connecting different programs or different buildings. It could act as the image of city with symbolic ideas of publicness. So This station project is investigated in this aspect, considering the design of the roof as an opportunity for designing the new city further. The next step is to add public layers on the ground level as the roof of new station. At this moment a new high speed train station is situated, districted by linear shape of common service facilities for both freight and passenger station. Unlike the freight station, this passenger oriented station is covered by a roof which make a new connection with public activity happened upon the roof. All the station entrance is positioned at this roof level and lit can be through the specially chosen structure system materials of it and it will be also specially managed to handling natural daylight And the arch shape has a secondary structures to make it more rigid, counteracting on the shearforces. So throughout the station level, 18m and 18m of grid is repeated and this becomes the base of all the building structures. Based on the platform grid, all the structures of the building is consistently following it, and played in 3 by systems. within the grid, giving variation of distance between structures from 3m to 9m.
Hole deck slab system

For the material choice of station roof system additionally, I searched specific products which is called “Hole deck” slab which is combined with the roof system. It is specially designed to reduce the weight of materials and air ventilation duct to be installed inside the hole of it as well as to make it go through. By applying these materials, the underneath station can have daylight with minimum weight of roof which is possible to pass through on the top of the roof and the concrete material is functioning as high thermal mass. The building have four different functions and the different time spectrum when each space are used. Due to this reason, I need to differentiate the each zone and decide either it is for individual users in hotel rooms or for the large room such as market and lobby. Basically convective HVAC (heating, ventilation and air conditioning) system is chosen, and each systems are installed in the hole of main steel structural cellular beams. In the hotel, specifically floor radiant heating system is installed and additional fan coil unit system is also planned for individual control of each hotel rooms. For saving energy to heat or cooling air, the water collected from sloped roof can be reused as a energy resources. The water is heated by thermal photovoltaic panels installed in the glass roof and the heat is accumulated into thermal tank in the top of parking area.
In order to control sun penetration to the interior of buildings it is important to provide exterior shading as a part of the architectural envelope design. Such shading devices can be attached to the building or can be achieved by the articulation and disposition of the building floors to create overhangs. As the building represents the new recycling vision of South Chicago, the building should express such concept to public so that people can remind of the vision. Thus the roof is covered by ecological materials like grass, wood for some part, which provides consistent images with the green finger in front of the building and prevents the building to be overheated as well as heat island effects of whole site. Since the building is situated in a linear way along the Calumnet river and green finger, facing mainly north and south, thus the façade reacts depending the sun orientation, resulting horizontal photovoltaic panels on the South side, vertical louver for North, vertical and partially horizontal louver in West side. The building’s ventilation system is mechanical operated for market and station area and also partially aided by human-operated operable façade for hotel.
Control of Solar radiation through shading

GENERAL TYPES OF SHADING DEVICES:
The basic types of exterior shading devices can be identified as HORIZONTAL, VERTICAL OR EGGCRATE. When designing shading devices for heat avoidance it will be important to also weigh the amount of solar penetration that is desired during the heating months. Where the heating degree days greatly exceed the cooling degree days (in COLD climates), be careful not to compromise the potential for solar gain in the winter months. Where the cooling degree days exceed the heating degree days (HOT climates), shading should be effective for a longer period. In some climates this may warrant the virtual elimination of south facing windows, with deference to north facing windows to promote daylighting. Horizontal shading devices are suited to southern exposures. Roof overhangs can also easily be used to shade southern exposures on low rise buildings. This is perhaps the most economical and potentially aesthetically pleasing solution for residential applications. Where sun is hitting the facade from a south-easterly or south-westerly direction, vertical devices can effectively block the sun. Eggcrates are often used on non true south facing elevations as well.

http://www.tboake.com/carbon-aia/strategies1b.html
Solar shading devices

As the building represents the new recycling vision of South Chicago, the building should express such concept to public so that people can remind of the vision. Thus the roof is covered by ecological materials like grass, wood for some part, which provides consistent images with the green finger in front of the building and prevents the building to be overheated as well as heat island effects of whole site. Since the building is situated in a linear way along the Calumet river and green finger, facing mainly north and south, thus the façade reacts depending the sun orientation, resulting horizontal photovoltaic panels on the South side, vertical louver for North, vertical and partially horizontal louver in West side. The building’s ventilation system is mechanical operated for market and station area and also partially aided by human-operated operable façade for hotel.
The Shading Season

South facade
Operable solar pane

With a predominately East or West facing façade, a fixed system will not perform well throughout the day as the altitude of the sun varies throughout the day. Effective solar shading on the South, East and West façades can be achieved only by using an operable shading louver system on the building’s façade. The angle of the louvers is adjusted throughout the day to provide optimal shading.

How Long to Shade For?
Shading devices for heat avoidance need to be designed to be effective beyond the geometry of summer solstice when the sun is highest in the sky. Depending on the local climate conditions, cooling may be a priority from the mid spring to early fall seasons. The length of the south facing shading device should be sized for this extended season. The diagram below divides the types of shading devices into fixed and movable. Movable shading devices may include awnings, hinged extensions and vegetation. If a mechanically dependent solution, the device needs to be designed for durability.

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North

Vertical louver
South

Horizontal louver
Insulating Glass With Photovoltaic Panels
Facade structure consisting of 25mm steel plate mullions and transoms and humidity-treated wool blocks supporting 1.5mm thick folded flashing tecu bronze by KME
10mm PVC flooring  
50mm screed  
20mm impact sound insulation  
110mm corrug. metal with concrete  
Castellated beam  
52mm acoustic insulation  
18mm gypsum fibreboard  
12.5mm plasterboard

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10mm PVC flooring -
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Castellated beam -
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18mm gypsum fibreboard -
12.5mm plasterboard -

Facade structure consisting of 25mm steel plate mullions and transoms and humidity-treated wood blocks supporting 1.5mm thick folded flashing tecu Bronze by KME.
Solar panel

South North

Thermal buffer wall

Shading zone

Roof top

Roof top
A typical part of building which is showing the vertical relation between public realm on the ground level, station and the other part of building. At first, the main gate to the station is here and about 10m high floated floors are above it. Particularly in this part, it can be seen that new zero hotel is placed in the top, having different type of rooms which are fit in the regular grid. Hotel has a composition with two different type of rooms, for family and single and each rooms are facing north and south part. It starts from the 3rd level right above the lobby floor, which is close to lakeshore drive. It is gradually stacked higher along the sloped building shape, slightly shifted towards the lakeside and finally ends at the point above the public parking floors.

Basically, these rooms are for hotels built also for rented house for those who needs accommodation immediately. Thus each rooms have its independent kitchen and water supply facilities. and living quality of each rooms should be considered thoughtfully. The Zero hotel is planned with the daylight management showing how the light can go indoor space. Since the building itself has almost 40m deep, so this issues are dealt with through opening on the roof. The corridors inbetween guest rooms are used as a tool for this. About 4m wide opening in the corridor is functioning as a light well, allowing guests to feel as if they are in outside, have natural daylight, and thus this lightened corridor is alike a indoor street where people can meet and interact.
Cross ventilation through terrace

Daylight management

Hotel Unit type A for family

Hotel Unit type B for Single

Inbetween open spaces
Grey (sink, bath) water is piped to bio filters. Recycled rainwater is stored in the roof garden and used for flushing and cleaning. Green Stream is the key feature of this system.
Rainwater collector

Grey (Sink, bath) water is piped to bio filters

Eco pond + Bio filter

Water storage in roof garden

Pump

Eco pond

Recycled rainwater for flushing, cleaning

Water pond

Pump
This reflection paper is about the individual project conducted in the Complex Project studio. The chair of Complex Project (CP) is aimed to investigate all scales of the architectural thinking, details, building, city and region, focusing on dense urban areas development, which also broaden the architectural minds and thinking of future architects.

The project performed in the CP gave an opportunity to me to redefine approach to urban and architectural development. It challenges the strict distinction between Architecture, Urbanism, avoiding the linear process of it. To improve and develop any certain targeting sites, it is required to manage diverse relevant factors ranging from social, economic, cultural to political issues. Such factors have to be considered equally with architectural perspective. In this way, several intensive researches on multiple issues such as social economic, political aspects were conducted in the first session of the studio which is critical steps in advance to build strategy to develop the chosen sites.

Our group spend numerous time on investigating the economic, environmental, social issues Chicago have and reasoning what could be related to solve it. Thanks to the relevant documents about Chicago’s legislation, we found out that the city have an ambition to launch city-wide recycling industry as a new industrial engine which also solves uneqaul energy supply between cities and protection from environmental threaten. It becomes a crucial clues our group took advantage of it as the base for our urban strategy.

Accompanied with the need of recycling industry, in the project, we investigated how the SouthChicago could be an model for addressing urban water scarcity and pollution. By reviewing the project for myself, it is a bit doubt that the project is sufficiently conducted enough to be a good answer for the generic question of “What would be a new engine for regenerating South Chicago?”

Finally, we set up a more concrete ideas about recycling, by introducing green stream from the neighborhood to the lakeside where the biological water filtration system and exclusive habitat for wild life are positioned. And we defined it as a new recycling loop of SouthChicago which also gives a new positive identity to the former industrial heritage and we assume that it is also explained as “recycling the site” in larger terms.

From this, I approached my project responding to the surrounding context in a morphological way, working with rapid rate. My chosen site itself is very complex, since the different type of circumstances like natural stream, new industrial area and traffic infrastructures are settled next to each other. As a transitional threshold, I defined my project as a new horizon which can belongs to any sides, giving relation and impact on them. It begins with the necessity of traffic infrastructure for recycling industry, but rather becomes more public oriented facilities by providing enormous area of public domain. It is opend and accessible to everywhere, and especially the large building is blurred into the site in a landscaped way.

The new high speed rail station is also terminated here, thus the station itself should be a destination where someonees are willing to come for any reason, avoiding monotonous function. For this, I regarded as my project as a multi-complex buildings which is providing common grounds where different social groups can interact and do diverse activity, like commercial and overviewing the new SouthChicago. And it also gives transparency between the new station and public through specially designed roof system.

For self-evaluating the project, each elements should working together in a one buildings, so all of them had to be treated under the same priority, so when it comes to finalizing the project, it was not recommended way at all. Since it was actually tremendously complex project, the project went a bit out of focus. However, it is meaningful work in terms of realising a plan of how the different functions are working in a united way in a single building.
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**All the materials are re-modified and reorganized referring originals**
Appendix