SPOLIA

Library & Sports Center along the wall

Rongmin 08/07/2020
1 URBAN IDEA

“reuse of the wall”
Wall collage

Urban idea

What to keep as the “spolia”? 

The wall is one of the few remnants of the buried river and a defining character in the site’s social manifestation. As a result of interactions with the differing segments of wall, it was renovated again and again and the qualities are variant.
What to keep as the “spolia”?  

The wall can acts as connection and separation, nature and built environment, protection and orientation, closure and openness.
Research on urban patterns

Urban idea

What to keep as the “spolia”?  

Previous urban patterns

Vertical comparison of the plot in different times

The research helps us aware that the history of the wall is important, because it reveals the relationship between local residence and industrial zoning; they are close to each other but not connected to each other. The wall works as a solid border shaped the separation of the whole plot.
Research on urban patterns

Urban idea

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Research on urban patterns

Urban idea

What to keep as the “spolia”?

Present urban pattern

Horizontal comparison between the plot and the traditional Brussels blocks at the surrounding

In urban design we reverse the traditional texture to make the inner part of the plot more accessible for people. The wall provides us an opportunity to intervene the plot and redefine the back and front.
Research on urban patterns

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What to keep as the “spolia”?

Our intention is to create a community oriented block, with the wall connect the newly added public facilities and form a linear landscape run through the whole block, thereby inverting the space along the wall from “back” to accessible “front” to serve the residents living in the neighborhood.
Step 1

1. The wall and the structures attached to it are kept and reused as part of the newly added buildings or landscape elements.
Step 2

The structures behind the wall are taken into consideration:

The warehouses and wholesalers are removed while their structures are left for reuse or recycle, according to the architectural proposal.

These industrial buildings are not necessary since they are temporarily let out by different companies and most of them are spare. What’s more, the industrial area is located on the other side of the railway so there is no need to keep some single buildings for production in the residential area.

Rotor is renovated into the housing to alleviate the housing shortage.
Step 3

Public facilities are introduced to make up for the shortage of social space in this neighborhood, which is especially meaningful for low-income group.
Master plan

Urban idea
Master plan

Urban idea

Urban Sections
Master plan
Urban idea

Urban Sections
Master plan

Urban idea

Middle part of the wall: a pocket park
2 ARCHITECTURAL PROPOSAL

Community library and sports center at a street corner
Program

Architectural proposal

Program: a combination of a library and sports center

Public facilities owned by government can be beneficial to everyone especially those who are not rich.

Why it is a combination of library & sports center?
1. The two programs can share the courtyard formed by the old wall as a common entrance.
2. An idea to have sight connection between silent activities and dynamic activities.

Sports club in Rotor
Street corner
Architectural proposal

What does a “street corner” mean?

The features of a corner:
1. Enclosed by the surrounding buildings
2. Worked as an entrance/guidance to somewhere else
3. Social spaces such as small shops, bars and public buildings are always gathered at street corners

The street corner, a central place of urban life, serves as a social meeting place and represents the best opportunity to reorient the neighborhood. A well-designed urban corner creates an attractive vista and gives strong visual appeal to the streetscape.
Perception of a street corner

A small shop / bar
Continuity of the street facade

Different types of street corner in the neighborhood

An entrance/guidance to a park
A joint in a residential area
A meeting place of shops and bars
Street corner
Architectural proposal

Why the “street corner” meaning is important?

It refers to the main users of the corner building.

The newly built complexes with various facilities inside: for rich people
My corner building as a public facility: mainly for residents living in our plot

Information source:
https://www.citydev.brussels/nl
Street corner

Architectural proposal

Why the “street corner” meaning is important?

When look at the street corner in an urban context, it can be seen from many directions.
Street corner
Architectural proposal

Why the “street corner” meaning is important?

When look at the street corner in an urban context, it can be seen from many directions
Street corner

Architectural proposal

Street corner in an urban context

Follow the serrate pattern from Les Goujons to keep a continuous streetscape.
Wall as spolia

Architectural proposal

Spolia in architectural level

Grey: demolished part
Red: kept part
Volume design

1. Keep the wall and the structures attached to it

2. Add 2 blocks which follow the original gesture

3. Add a long block to connect small ones together

4. The courtyard formed by the old wall as an entrance

Architectural proposal
Process draft model

Architectural proposal

Version1
Version2
Version3
Logic of the plan

1. Entrance: A Courtyard works as the shared main entrance. Both the library and the sports center have its own secondary entrance so they can open separately.

2. Function arrangement: Reading areas, which have a higher requirement of silence, are placed near Les Goujons to avoid noise from the railway.

3. Sight connection between the 2 programs.
Plan

Architectural drawings
Plan

Architectural drawings

corner park
corner bar
lobby on the ground floor
entrance garden
Plan

Architectural drawings

lobby on the ground floor  entrance garden  poster wall  green plant wall
Plan

Architectural drawings
Plan

Architectural drawings

reading room

pocket park (renovated from the warehouse and the storage yard)
Plan

Architectural drawings

from the warehouse and the storage yard

house (renovated from Rotor)
Section

Architectural drawings

1-1 section

01. courtyard
02. buffer zone
15. children’s reading area
24. light reading area
01. courtyard
03. lobby
20. Café
32. self-study area
3 MATERIALISATION

Refurbishment of corrugated aluminum panel
01. Corrugated aluminum panel (from Rotor)
02. Aluminum louver
03. Perforated aluminum panel
04. Wooden panel
05. Existing brick wall
1. Corrugated aluminum panel (from Rotor)
2. Aluminum louver
3. Perforated aluminum panel
4. Wooden panel
5. Existing brick wall
Refurbishment of aluminum panel

Materialisation

New construction

Aluminum
  Facade

Wood
  Frame structure
  Interior surface

Existing construction

Brick
  Old wall

Steel
  Existing structure
Reuse corrugated aluminum panels from Rotor
Refurbishment of aluminum panel

Materialisation

Process of refurbishment: powder coating

The reference photos are from Rivier Paints & Coatings Company and Fannov Aluminum Company.

1. Physically clean the surface
2. Dip pretreatment in water tank
3. Powder coating
4. Heat aluminum profiles in the curing oven
5. Dry and cool
6. Cut and assemble in size
Case: Cladding reused from industrial typologies

Headquarters of the asociacion aula abierta, Granada, Spain
Source: Alejandro Bahamón, rematerial: from waste to architecture, p260-261

Reuse discarded “metal for plank molds + metal sheeting + doors + windows + plastic + steel edging + pallets” from a dismantled factory
Case: cladding reused from industrial typologies

Diagram of the recycling of the pallets and aluminum sheets.
Source: The diagram is redrawn from Alejandro Bahamón, rematerial: from waste to architecture, p260-261

1. The pallets are grouped together with ceiled rods to create the total area of the wall.
2. Rock-wool insulation is placed in the gaps in the pallets.
3. The corrugated aluminum sheeting is placed on top of the pallet structure.
4. Holes are drilled in order to insert a beam that acts as a support for the wall.
5. The walls are put up and placed in their new site.
Reuse bricks from the demolished warehouses

The amount and size of those bricks from the demolished warehouses are various. They are suitable in reusing as the components of small landscape elements, such as pavement, flowerbed, benches and other infrastructures.
Case: bricks reused for infrastructure and landscape elements

Bricks for reuse in a project that links infrastructure to public space, Parc Albert I. Reusable bricks ("klampsteen" hand-molded, 18 x 9cm: 60,000 pieces, from Van Huele.

Source: The photos is from https://opalis.eu/fr/projets/parc-albert-i
4 BUILDING TECHNOLOGY
Structure
Building technology

Black part: new wooden frame
Span: 6-8m

Red part: old steel truss + old brick wall
Black part: new wooden frame  
(with secondary beams)  
Span: 6-8m  

Red part: old steel truss + old brick wall  
(with secondary beams)
Diagrams of the assembling of a wooden frame unit:

1. the concrete foundation as the base
2. the columns and main beams are connected though steel connectors and screws
3. secondary beams are added to support the laminated wooden floor
4. the nonbearing wall is attached to the frame structure
Stability:
Location of the bracing cables in plan

Logic of the bracing cables’ location:
Divide the building into 4 parts (volumes) and consider them separately
Stability:
Location of the bracing cables in 3D model

Logic of the bracing cables’ location:
Divide the building into 4 parts(volumes) and consider them separately
Climate
Building technology

The roof: the fifth facade

Planting roof:
1. A lot of residents living in Les Goujons have sight accessibility to the roof of the building. The greenery (Rye grass) on the roof can provide a comfortable view for them.
2. Plants on the roof can also help store rain water.
3. Improve the thermal insulation
Climate
Building technology

Heating and cooling

Geothermal heating water system:

1. Provide uniform heating
2. The water pipes can also provide cooling in summer if necessary

Winter
- Hot water
- Ground heat exchanger

Summer
- Cold water
- Ground heat exchanger
Ventilation

Plan of shafts and ducts

3 ventilation shafts worked separately
1:20 section

Building technology
Composition of the wall

01 Aluminum facade

Building technology

1:20 section
Composition of the wall

- Corrugated aluminum panel
- Exterior
- U-shaped connector
- Vertical wooden keel
- Interior
- Wooden keel
Composition of the wall

01 Aluminum facade

1:20 section

Building technology

osb panel + thermal insulation material

corrugated aluminum panel
U shaped connector

vertical wooden keel
interior
Composition of the wall

01 Aluminum facade

- Exterior cladding
- Corrugated aluminum panel
- U-shaped connector
- Vertical wooden keel
- Interior

Building technology
01 Aluminum facade

Composition of the wall

1:20 section

Building technology

corrugated aluminum panel

U shaped connector

vertical wooden keel

interior

exterior

shutter

Horizontal section
01 Aluminum facade

flashing
new aluminum panel
drainage ditch
edge banding
metal connector
corrugated aluminum
waterproof layer
18mm osb panel
160mm thermal insulation
ballast 40x40mm
service cavity
interior finishing

grass
200mm planting soil
geotextile filter
20mm plastic drainage sheets
root resistant waterproof layer
28mm cement mortar leveling layer
40mm cement mortar slope making layer
160mm insulation layer
100mm laminated wooden floor

floor finishing
service cavity
waterproof layer
100mm laminated wooden floor
thermal insulation layer
18mm osb panel
concrete cushion
compacted soil

Detail of the aluminum cladding

Detail of the aluminum louver

corrugated aluminum
edge banding
metal connector
aluminum panel
aluminum louver
02 Skylight

Structure of the skylight

- Wooden beam
- Layer
- Skylight
  - Slope making layer
  - Waterproof layer
  - OSB panel
  - Thermal insulation
  - OSB panel
  - Interior finishing

1:20 section

Building technology

- Base beam for supporting
- Skylight frame
- Panel & insulation
1:5 detail

Building technology

Zoom in details of the joints which prevent rain water from entering the room.
Composition of the roof and floor of the existing structure
03 Old & new connection

Composition of the roof and floor of the existing structure

1:20 section

Building technology

Reference drawing: longitudinal section of the existing building
1:5 detail

Building technology

Zoom in details of the settlement gap between the old structure and the new structure

Avoid differential settlements of the two foundations
A nonbearing wall attached to the existing structure
1:5 detail

Building technology

Zoom in details of the joints

1. Add a new beam on the existing foundation
2. Vertical wooden keels are connected to the beam through steel connectors
3. OSB panels are added at each side with thermal insulation filled in between
4. A small slope is added at the bottom to prevent water in
5 INTERIOR & EXTERIOR

Response to the urban idea: “wall” and “street corner”
How does the corner look like from different street?

Corner view 1:
- From the archway under the railway bridge
- The scale comparison between Les Goujons, the traditional houses and the public building
Corner view

Interior & exterior

How does the corner look like from different street?

Corner view 2:
- From Rue Dr Kuborn where the new residential complex will be built
- The front façade and the corner park is fully visible
Corner view
Interior & exterior

How does the corner look like from different street?

Corner view 3:
- From Rue Georges Moreau where traditional houses stand at each side
- Another front façade with the transparent and light ground floor can be seen and invite you to get closer
How does the corner look like from different street?

Corner view 4:
- From the foot of Les Goujons
- Compared with the existing situation, the corner is more complete by the enclosure of the railway bridge and the three buildings: the traditional houses, the residential complex (which will be built in next years), and my public building.
- The heights of the 3 buildings are similar and they stand face to face like they are having a dialogue
What is the difference of the 2 different programs?

- Wood is the basic material inside the building
- More freedom in using wood
What is the difference of the 2 different programs?

- Wood is the basic material inside the building
- Rough wood (the balls are flying around)
- Transparent PC panel at the first floor
- Light: from the high window and skylight
What is the difference of the 2 different programs?

- PC panel
Walls in the new context
Interior & exterior

What is the role of the reserved wall / building in the design?

- The structures behind the main wall are renovated to serve as a functional space in the facility
- The original parking lot → a shared entrance garden
What is the role of the reserved wall/building in the design?

- The structures behind the main wall are renovated to serve as a functional space in the facility.
- The warehouse with skylights → a bright reading room.
Walls in the new context

Interior & exterior

What is the role of the reserved wall / building in the design?

- The structures behind the main wall are renovated to serve as a functional space in the facility
- Another warehouse next to it → inner courtyard with some
What is the role of the reserved wall / structure in the design?

- The wall which follows Senne river works as a guide of the public space we created in the block.
- It also creates an ambiguous relation between Les Goujons and the public facilities.
What is the role of the reserved wall/structure in the design?

- The wall is neither completely closed to separate the 2 sides, nor completely open. It provides visual connection and easy access for the 2 sides while also leaves some privacy for the back entrance of Les Goujons.
Thank you!

Rongmin 08/07/2020