MERGING STRUCTURES, CREATING FREEDOM

Transforming a vacant office building into flexible housing by merging a new structure with the existing and thereby making use of its potentials.

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TE HUUR
ca. 4.200 m²
kantoortuimte + 94

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BACKGROUND

- OFFICE VACANCY
- HOUSING SHORTAGE
- NEED FOR FLEXIBILITY
Expected Shortage in 2020 in %
The three aspects for a sustainable environment in which flexibility can play a major role
PROJECT DEFINITION

- TOPICS
- STRATEGY
- GOAL
- RELEVANCE
- CONCEPT FLEXIBILITY
- RESEARCH QUESTION
- RESEARCH
- LOAD-BEARING FAÇADES
TRANSFORMATION

Vacant office building

Housing

Flexibility
LAYOUT FREEDOM

- Free layout individual floorplans
- Variable housing sizes
1 Building can anticipate to:  
• changing housing market  
• requirements residents

2 Extended lifetime building:  
• Saves materials  
• Saves money
CONCEPT FLEXIBILITY

Floorplan normal housing

Floorplan flexible housing

X

√

Load-bearing structure
Shafts building services
How can building services for housing in vacant office buildings:

- be realized adaptable?
- make use of the existing building services?
- be merged with the existing load-bearing façades?
1. Building services housing
   - Literature study
   - Compare by spread sheet

2. Adaptability building services
   - Literature study
   - Compare by spread sheet

3. Building services office buildings
   - Literature study
   - Case studies

4. Load-bearing façades office buildings
   - Literature study
   - Case studies

5. Concepts
   - Compare by spread sheet
   - Case studies
   - Research by design
LOAD-BEARING FAÇADES

- Load-bearing façades in 1/3 office buildings
- Hardly impossible to replace these façades

Challenge

Closed elements

Beams

Parapets

Not flexible

Flexible
CONTEXT

- CHOSEN BUILDING
- TRANSFORMATION POTENTIAL
- LOCATION
- INFRASTRUCTURE
- FACILITIES
- FLOORPLAN
- CONSTRUCTION
CHosen Building

NAME
Ringpark

LOCATION
Amsterdam

SURFACE
19,000m²

BUILT
1966
**SURROUNDINGS**
- High level of longtime vacancy
- High level of housing shortage

**LOCATION**
- Edge of a park
- Required facilities <1km

**TRANSPORT**
- Good infrastructure
- Good public transport

**BUILDING**
- Load-bearing façade
- Large floor-height
Orientation: East-West
Spatial division: Corridor layout
Elevation point: Central
Structure: 5400-10800
CONSTRUCTION CROSS SECTION
CONSTRUCTION LONGITUDINAL SECTION
CONCEPT

- SPATIAL DIVISION
- SHAFTS BUILDING SERVICES
- WINTER GARDEN
- VARIABLE HOUSING SIZES
**SPATIAL DIVISION**

**CORRIDOR**
- ✓ Flexibility
- ✓ Usability
- ✓ Fits into building structure

**GALLERY**
- ✓ Flexibility
- ✗ Usability
- ✗ Fits into building structure

**PORCH**
- ✗ Flexibility
- ✓ Usability
- ✗ Fits into building structure

**RANDOM**
- ✓ Flexibility
- ✗ Usability
- ✓ Fits into building structure
✓ More layout freedom near the façade
✓ Fits better into existing construction
✓ Better accessible
Suitability for residence & Layout freedom

- Less
- Much
VARIABLE HOUSING SIZES

- **S** 53m²
  - S+S 106m²
  - S+M 122m²
  - S+L 140m²

- **M** 69m²
  - M+M 138m²
  - M+S 106m²
  - M+L 156m²

- **L** 87m²
  - L+L 174m²
  - S+L 140m²
  - M+L 156m²
DESIGN

• ENTRANCE
• CORRIDOR
• HOUSING
• HOUSING TYPES
• INTERIOR
HOUSING TYPE M
HOUSING TYPE S+M
BUILDING SERVICES

- FLOOR INTERVENTION
- SHAFTS
- VENTILATION
- FIRE SAFETY
- HEATING
- COOLING
FLOOR INTERVENTION

Remove non-load-bearing floor part where required.
SHAFTS 1-200

- Vertical shafts
- Horizontal shafts
SHAFTS 1-50

Vertical shafts

Horizontal shafts
VENTILATION PRINCIPLE

- Fresh Air
- Winter Garden
- Polluted Air
Situation opened fire doors

- **Smoke**
- **Compartment**
Situation closed fire doors

- Smoke
- Compartment
- Fire doors
Situation closed fire doors
FIRE SAFETY

Fire doors
Layout freedom: Possibility of placing walls

X  √  Radiators/Conectors
Night Ventilation
MATERIALISATION & DETAILING

- CONCEPT MATERIALISATION
- MATERIALISATION Corridor
- DETAILING Corridor
- MATERIALISATION Façade
- DETAILING Façade
CONCEPT MATERIALISATION
Closed zones
MATERIALISATION CORRIDOR
DETAILING CORRIDOR
DETAILING CORRIDOR
DETAILING FAÇADE
CONCLUSION

GOALS

1. Transformation office building into housing
2. Free layout individual floorplans
3. Variable housing sizes

SOLUTIONS

1. Using column structure office building: - Floor free of load-bearing walls
2. Vertical shafts in the corridor: - Floor free of shafts
3. Horizontal shafts between floorbeams: - More layout freedom bathroom, toilet, kitchen
4. Winter garden: - More layout freedom residential areas
THANK YOU FOR YOUR ATTENTION!