MUIDERPOORT-STATION RE-NEWED

Studio: Hybrid Buildings | Topic: Renewal of Urban Renewal
Location: Oosterspoorplein, Old East Amsterdam, the Netherlands

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The Hybrid Buildings Studio, ‘Renewal of the city renewal’:

How can architectural interventions activate and contribute to the process to the urban transformation?

1. Problematic neighborhoods
2. Specific traffic infrastructures such as railway tracks in the existing urban areas are considered as a problematic element in general. Because its morphological shape with its scale creates large segregation physically.
Muiderpoort station, East Amsterdam

Rotterdam Zuid station, Rotterdam

Moerwijk station, Den Haag
Three common features:

1. Each study area is the expansion parts from the old city from the middle of 19th to the middle of 20th century. (residential areas)

2. Traffic infrastructures, especially railway tracks, were placed in the middle of these study areas. It causes Urban Fragmentation of these areas.

3. Nowadays, these study areas are located between the city centers(old districts) and the peripheries(outskirts area or suburban areas).
Muiderpoort station, East Amsterdam

Rotterdam Zuid station, Rotterdam

Moerwijk station, Den Haag

Unzipping the potential

Filling 'emptiness' brings 'livable atmosphere' back
Muiderpoort station, East Amsterdam

Rotterdam Zuid station, Rotterdam

Moerwijk station, Den Haag
Muiderpoort station, East Amsterdam
Amsterdam East, two reasons:

1. In a morphological aspect, Amsterdam East shows the strong relation between the urban fragmentation and the railway infrastructures.

2. In a micro scale, the space made by the underpass and the dike for the lefted railway track shows relation between its spatial quality and the degree of connectivity among urban areas. This issue is related to phenomenological aspects.
**Problem Statement:**

The railway infrastructures in and around Muiderpoort station, Amsterdam East leads spatial isolation and disconnection among urban areas. Because underpasses’ bad spatial quality and railway infrastructures as urban barrier for people not to recognize it as non-urban area.

**Hypothesis:**

When railway infrastructures be converted into a part of urban blocks with appropriate spatial condition, the area in and around Muiderpoort station will be activated as urban area and occupied by citizen. And it lead to solve two major problems, disconnection among urban blocks and non-cognitive areas which are Oosterspoorplein and Muiderpoort station.
Expansion of Amsterdam since 19th century
352 Het uitbreidingsplan van J. Kalff

de meeste woningen werden grotendeels gehandhaafd en met enkele uitzonderingen in de bouw
1840-1870: Two Railways
1870-1890: City Expansion
1890-1900: New Stations & 2nd City Expansion
1900-1936: Development over Railways
1939-1980: Moving stations & Railways on Dikes
1980-2011: New Stations
Railway on ground level
- Until the early 1900, railway tracks was a boundary of the city of Amsterdam.

Railway as an urban obstacle
- Rapid urban sprawl till 1930 led that railways became the physical blockage in urban areas because tracks became to be placed in between urban blocks.
33. Gelijkvloerse spoorwegovergang in de Linnaeusstraat, circa 1930.
Muiderpoort station till 1930's
Before 1930s': Traffic Control by Signal
TWO SOLUTIONS FOR TWO PROBLEMS
1. RE-LOCATION
1900 - 1936: Development over Railways

1939 - 1980: Moving stations & Railways on Dikes
2. DIKE & VIA-DUCT
East Amsterdam before 1936
Dike for railway track in Amsterdam Oost (from 1936 till The Present)
Muiderpoort station in 1980s
Pedestrian path alongside Muiderpoort station
**Railways on a dike**

Railways was raised onto a dike in the 1930s. Consequently, it resulted in the decline in visual connection among urban blocks.

**Viaduct for urban connection**

The introduction of viaducts in the 1930s aimed to create physical points to improve urban connection among blocks. Technically, it was helpful but this instrument was designed not for pedestrians but more for transportation.

![Diagram of viaducts](image-url)
RESULT?
Till 1936: Direct Access on Ground

1939 - 1980s: Access through the Hall
Retail characterizes some streets as two-sided shopping streets, the shops do not continue on the edges of the Oosterpark. The dashed line shows this discontinuity. The horeca follows the same lines in general, but is also situated in the parks.
35. De Dappermarkt op het Dapperplein (4 juni 1981)
1939 - 1980: Access through the Hall

After 1990: Access from Underpasses
This station which serves two lines is part of Amsterdam’s new east side railway system. The signal box which rises to one side of the main hall is constructed of reinforced concrete left uncovered. Floor surfaces in the hall and on the staircases are of Norwegian quartzite, which is hard-wearing and has a non-slip surface. Walls are faced internally with black Norwegian stone, and externally with brick. Tunnel floors are of rough tiles and the walls are faced with glazed yellow-stone.
key: ground floor Muiderpoort station

1, entrance. 2, exit. 3, booking office. 4, booking hall. 5, luggage. 6, waiting room. 7, ramp. 8, turnstiles. 9, timetables. 10, two-level subway. 11, lower level subway (exit and luggage). 12, lift. 13, telephones. 14, bicycle park. 15, shop. 16, refreshment room. 17, underbridge. 18, platform.
Changes of Usages: the hall of Muiderpoort station
The Entrance of Muiderpoort Station

The Entrance of Muiderpoort Station
Not large-scale urban intervention
Southern parts of the underpass will be more opened and be inserted local functions in order to make it as a part of urban fabrics. Underneath of the structure will be placed strong public programs like educational facilities or public library. Some parts of the structure will be occupied by the group of artists.

The north part of the underpass will be improved its connection condition and be converted into multi functions related to broaden contexts: e.g. Gallery, retail shops or bookstore.

Implanted similar buildings to the station hall along side the street will create urbanity visually.

Oosterpoortplein can be converted to a urban plaza.
**Suggestion 01 - Light-box and Void**

The introduction of light-box and void help to improve the spatial quality of underpass by getting more natural light. Moreover, light-boxes are also helpful for citizens to change their negative perception toward railway infrastructures.

**Suggestion 02 - progames & enlarged underpass**

Embedding functions help to make railway infrastructures as a part of urban blocks. Enlarged underpasses can improve the spatial quality of the existing underpasses which have negative perception by citizens.
Opening + Symbol + Function + Platform
1. Oosterspoorplein (Public Square)
2. Restaurant (Previous Station hall)
3. Train Platform (Amsterdam-Amersfoort)
4. Train Platform (Amsterdam-Utrecht)
5. Light-boxes
1. Oosterspoorplein (Public Square)
2. Restaurant (Previous Station hall)
3. Public Library
4. Local Music School
5. Workshops (rentable)
6. Bookshop
7. Art-gallery
8. Retails (rentable)

First Floor: Various public & private facilities | 1:300 scale

Ground Floor: Various public & private facilities | 1:300 scale
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SECTION A-A’ (1:300 scale)

SECTION B-B’ (1:300 scale)

First Floor: Various public & private facilities | 1:300 scale

SECTION C-C’ (1:300 scale)

SECTION D-D’ (1:300 scale)
Bookshop + Art Gallery + Retails  |  West Elevation

Bookshop + Art Gallery + Retails  |  East Elevation
"We need to talk."

It’s not funny when it happens to you.
Thermal Insulation

No. 05: Pavement of Platform (vertical detail)
- Precast Concrete Pavement Block, 500x500mm, 100mm thickness
- Foot for Pavement Block
- Waterproof membrane (bitumen wax), base
- Prefabricated Concrete Deck

No. 06: Sandwich Concrete Slab (vertical detail)
- Concrete Mortar for Rail-Free Sleeperbed
- Waterproof membrane (bitumen wax), 6mm
- Reinforced Concrete Slab, 200mm
- Thermal Insulation (Pebble Foam, 100mm) with Steel-wire Mesh
- Reinforced Concrete Slab, 150mm
- Prefabricated A40M20 concrete beam, 700mm
Anti-vibration system

Rail pads
- Elastic polyurethane pads, installed directly under the foot of the rail. Wide range of rail pads for almost every required stiffness rating, from standard tracks to tram systems.
- Increase the elasticity of the track superstructure
- Improve load distribution
- More comfortable ride
- Less wear on the track superstructure

Baseplate pads
- Used to ensure elasticity on slab track systems, installed between the iron base plate and the concrete slab.

Reduction of noise and vibration in slab track
- Elastic baseplate pads for turnouts available customer made elastic rail fastening design possible

Sleeper pads
- Generally employed in tunnel sections of various types.
- Can reduce vibrations
- Provide necessary elasticity in slab tracks
- Also solutions for turnouts available

Bearings for mass-spring systems
- Used in applications where there are extremely stringent requirements for protection against vibration and noise.
- Highly efficient isolation of vibrations (various construction methods possible: full surface, linear support, point bearings)
- Minimal maintenance expenses

Mass-spring systems for trams
- Primarily used in TRAM Systems in city centres.
- Highly efficient isolation of vibrations (protection of vibration sensitive building in the vicinity of the TRAM track)

Ballast mats
- Allow a high level of track elasticity to be achieved. Sylomer and Syloidyn ballast mats are installed for reduction of secondary airborne noise, vibrations. Also they are installed in areas with very low ballast depth.
- Reduction of noise and vibrations in ballasted tracks installed in areas with reduced ballast depth to keep ballast in good condition
- Reduction of maintenance costs
- Weather independent installation possible
No. 07: Railway Track (vertical detail)

- Standard Railway Track
- Anti-vibration mat layer 1
- Anti-vibration mat layer 2
- Sleepers
- Concrete Mortar for Railway Sleepers
Lighting System
Natural & Mechanical Air-Ventilation
Natural & Mechanical Air-Ventilation
No. 15: Ground Floor

(Vertical detail)

- Reinforced Concrete with wire-mesh, 200mm
- Thermal Insulation Layer (cement mortar), 100mm
- Waterproof Layer, 10mm
- Hardcore (Gravel), 200mm
- Earth-nest

No. 16: Floating Floor

(Vertical detail)

- Floating Floor (with wooden floor or carpet)
- Floor Heating Devices for Floating Floor
- Fix for Floating Floor
- Concrete Batten
Water collecting & reusing system
No. 01: Roof Edge of Light-box (vertical detail)

No. 02: Edge between Light-box and Translucent Glass Shelter (vertical detail)

No. 04: Drainage of Light-Box (vertical detail)

Double Glazing Glass
Thermal Breeding Element
Aluminum Flashing (For Drainage)
Rectangular Steel Beam with (fire-resistance coating), 400x200mm

In-swing-opening window (Aluminum profile)
Aluminum Flashing for drainage
Translucent Double-glazing Glass
Cube Steel Beam (fire-resistance coating), 200x200mm

Cube Steel Beam with (fire-resistance coating), 200x200mm
Double-glazing glass
Aluminum Fascia System (Aluminum profile)
Thermal Insulation Layer
Water-proof membrane
Aluminum Flashing
Rectangular Steel Beam with (fire-resistance coating), 400x200mm
No. 03: Drainage of Translucent Glass Shelter (vertical detail)

- Aluminum flashing
- Double-glazing Translucent Glass
- Drain
- Cube Steel Beam (with water-repellent coating), 100x100mm
- Lighting covered by Translucent PVs cover
- Cube Steel Beam (with water-repellent coating), 200x200mm

No. 08: Edge between Prefabricated Brick Tiles and Concrete Roof (vertical detail)

- Sarking
- Prefabricated Brick tile panel
- (150x30mm, Wire 10mm, Concrete block 80mm)
- Drainage
- Step Flashing
- Reinforced Concrete Slab, 200mm

No. 11: Bottom of Facade-window (vertical detail)

- Laminated Wood Oak Wood (Dark, Iroko), 30mm
- Stone Threshold
- Reinforced Concrete Wall, 200mm
- Thermal Insulation Layer, 50mm
- Waterproof membrane, 5mm
- Prefabricated Concrete Block, 240mm
No. 12: Fiber Concrete Facade - Window
(horizontal detail)

- Double-glazing glass
- Laminated Wood Mullion, 50x150mm
- Laminated Hard Oak Wood (Dark, Interior), 30mm
- C-shape steel profile, 7mm thickness, 90x100mm
- Thermal Insulation Layer
- Water protection layer
- C-shape steel profile, 7mm thickness, 150x140mm
- Laminated Hard Oak Wood (Dark, Exterior), 45mm
- Inward-Opening Window (with wooden frame)

No. 13: Window - Window
(horizontal detail)

- Double-glazing glass
- Laminated Wood Mullion, 50x150mm
- Laminated Hard Oak Wood (Dark, Interior), 30mm
- C-shape steel profile, 7mm thickness, 90x100mm
- Thermal Insulation Layer
- Waterproof membrane
- C-shape steel profile, 7mm thickness, 150x140mm
- Laminated Hard Oak Wood (Dark, Exterior), 45mm
- Concrete wall, 16.5mm
- Fiber Concrete Panel, 35mm