THE BOLD LINE.
defining urban void by building a condition
PROJECT AREA

birds eye view of the St. Jacobsplaats
ST. JACOBSPLAATS ROTTERDAM
introduction

ST. JACOBSPLAATS ROTTERDAM
ST. JACOBSPLAATS ROTTERDAM EAST
introduction

ST. JACOBSPLAATS ROTTERDAM WEST
MINIMALL. ROTTERDAM
VISUAL PERCEPTION OF SPACE

introduction
ANALYSIS
MORPHOLOGY

HOW TO REACT ON CITY MORPHOLOGY?
WHAT IS A PROGRAMMATIC LINK BETWEEN THE CITY AND THE SITE?
STRIP

WHAT IS THE IDEOLOGY OF THE PROJECT?

open morphological structure of the strip

medium section broad section small section

south barriere north barriere

refreshing green concept (hofbogen)

unde/f_ined space active amrket square

typological interpretation of the strip

lack of green dominant green area of the strip lack of green

library

analysis
SITE

17/89
PARAMETERS OF INTERVENTION

SITE CHARACTERISTICS
- Two areas, a transport border, a trainline, and the highline park above the mini-mall
- Creating an explicit answer to the collage city by creating a new fragment
- The longitudinal character of the space reflects the historical entrance of the Rotte river
- Hybrid innercity - monofunctional periphery

ROUTING
- The main focus of the design is to connect on the north and south axes and cross the historical node (for slow traffic pedestrians and cyclists).
- The main route is a continuous route, connecting north and south, crossing the node;
- 70% of the route is in open air (uncovered).
- Easily accessible.
- A tram/bus stop will be directly connected to the main route;
- User will have to put no effort to cross.
- Feeding the main route.

ACCESSIBILITY
- A 'green wave' will be applied in order to make sure motorized traffic will not suffer from the intervention
- The secondary route is the smallest intervention, the play where the node will be crossed, organized by traffic lights.

BUILDING MASS
- The structure is easily accessible from the Hofbogen and the market.
- A connection will be made with the 'luchtsingel'.
- Since a tram stop will be included in the design, the relation of the design and the existing urban fabric will be enhanced;
- The structure will be accessible from different points in the existing city.

PARAMETERS OF INTERVENTION

RELATION THROUGH SIGHT
- Preserves the visual east-west connection along the Pompenburg
- The perception of the market starting from crossing the Goudse Singel and visa versus to the mini-mall
- Continues urban landscape through the structure, clear visual perception of the structure (entrance + movement)
- The new structure should soften the extreme transition from high rise to low rise

GREEN AND BLUE
- Building height
- Relation public - semi-collective

BUILDING HEIGHT
- The morphology of the structure continues
- The intervention has to transform the vash complex space into smaller identifiable areas
- Less density on the node
RECONFIGURE THE URBAN VOID

ONE UNDEFINED PUBLIC REALM

FOUR DEFINED IDENTITIES WITHIN THE PUBLIC REALM
1. public active life (shopping street)
2. public recreational (river/field & forest)
3. office district, reflective pond
4. urban agriculture

shopping deck
wild forest
office building, mirror pond
urban agriculture, greenhouses
HYBRIDITY

design proposal

Phase 1
- dwellings / hotel
- restaurant / coffee / juice bar
- aqua-park
- public stage / auditorium
- school of healthy lifestyle
- sports
- retail

Phase 2
- research center, office
- hostel
- mini bars
- greenhouses
- production center
- exposition pavillons of agriculture
- playground
BUILD SUSTAINABLE

1. SOCIAL SUSTAINABILITY
On the shopping deck people meet and interact, a mix of different inhabitants and cultures. Creating a notion of public anticipation and public awareness.

2. FOREST
Biodiversity, recreational but substantial green, urban acoustics, lowering temperature in summer, enhancing the air humidity.

3. THERMAL CAPACITY OF LAKE
Hence the temperature of water is cooler than land in summer, and warmer in winter it can pre-climatise air that is used to ventilate the building.

4. URBAN GREENHOUSES
Producing local food and storing excessive heat in aquifers under the ground. Public awareness of food production.

ENERGY STORAGE IN THE GROUND
Water bearing layer in the earth is used to store in summer redundant heat and in the winter redundant cold. This energy can be used when the building volumes need to be cooled or heated.

FOUR DEFINED IDENTITIES WITHIN THE PUBLIC REALM
1. public active life (shopping street)
2. public recreational (flower field & forest)
3. office district, reflective pond
4. urban agriculture
DESIGN PROPOSAL
CONCEPT

- FRAME
- PLATFORMS
- VOLUMES
- GREENERY

portals

space

train tunnel

platforms

volumes

public

private

greenery
PORTAL STRUCTURE

- STEEL PORTALS FOR 500M
  PARTITIONED EVERY 60M

- STRUCTURAL TRUSS
  COVERED (AND STRENGTHENED)
  BY STEEL SHEETS

- GRID OF 4.5M
_PORTAL STRUCTURE
STABILIZED IN ROOF SURFACE
IN ORDER TO MINIMISE THE BUCKLING LENGTH TWO HORIZONTAL CONNECTIVITY BEAMS ARE MADE IN THE FAÇADE SURFACE
PORTAL STRUCTURE

_STRUCTURE EVERY PARTITION
STABILISED IN FACADE SURFACE
PORTAL STRUCTURE

CONCRETE BEAMS AS FOUNDATION FOR PORTALS
PORTAL STRUCTURE

"THE CONCRETE BEAMS TRANSFER FORCES TO PERPENDICULAR BEAMS WHICH SPAN EVERY 13.5M ACROSS THE TRAIN TUNNEL.

"THE STRUCTURE BRIDGES THE TUNNEL AND FORCES GO INTO THE GROUND."
SCENES
**OVERVIEW**

**scene 1**
- terraced dwellings
- information center
- coffee bar
- bicycle renting place
- biological restaurant
- juice-bar

**scene 2**
- family rowhouses
- retail / shops
- aqua center
- juice-bar
- sphere with spa

**scene 3**
- auditorium
- elevated plaza / urban stage
- bar for stage and sport
- retail / shop
- courtyard building with educational center for healthy lifestyle

**scene 4**
- suspended capsular dwellings
- climbing wall
- sports center

**scene 5**
- bridging the Pompenburg
SCENE 1.1
CROSS- / LONGITUDINAL SECTION
GROUND FLOOR PLAN
scene 1.2

HOUSING TYPOLOGY

_TERRACED DWELLINGS:
100M2 APARTMENTS, 1 LARGE BEDROOM

_QUALITIES:
NICE VIEWS TO MULTIPLE SIDES,
PRIVACY, SEMI-COLLECTIVE
GREEN, RELATION TOWARDS
URBAN MARKET AREA

_TARGET GROUP:
WHEALTHY COUPLES,
AGE BETWEEN 30-70
scene 2.1
LONGITUDINAL SECTION
scene 2.1

GROUND FLOOR PLAN. RETAIL

Three layers:
- retail
- aqua park
- rowhouses

Ground floor:
- Retail in small box:
  - fresh fruit-vegetable-ice cream shop
  - organic chocolate shop
- Retail in big box:
  - a vegetable market and local agricultural products
  - fresh bakery
FIRST FLOOR PLAN. AQUA PARK
scene 2.2
FIFTH FLOOR PLAN. ROWHOUSES
TYPOLOGY

_DUTCH ROW HOUSES:
160M2 HOUSE, 3 BEDROOMS

_QUALITIES:
NICE VIEW TO FOREST SIDE,
TWO FLOORS, HIGH CEILING
LIVING ROOM, COLLECTIVE
GREEN SPACE, RELATION WITH
AQUAPARK AND CLOSE TO
EDUCATIONAL CENTER

_TARGET GROUP:
FAMILIES
**SMART BUILDING**
Bearing structure separate from facade. This offers more flexibility for changes in the future for.

**INDUSTRIAL, FLEXIBLE, DEMOUNTABLE**
- produce in conditioned circumstances;
- restrain waste on build location;
- simple re-use and recycling;
- fast construction

**BUILD LIGHT, IQ/KG**
Building with light materials and integrate systems and installations results in a low environmental impact of materials

**LIFESPAN FOR INDIVIDUAL BUILDELEMENT**
main structure, facades, installations and interior are separate and can be substituted according to the individual lifespan.
scene 2.2

SUSPENDING VOLUMES

_PORTALS

...
scene 2.2

SUSPENDING VOLUMES

_SUSPENDING COLUMNS

_CONSTRUCTION LINES
scene 2.2

SUSPENDING VOLUMES

CONNECTING CONSTRUCTION LINES
scene 2.2

SUSPENDING VOLUMES

_ PREFAB FLOORS  
(concrete hollow-core slabs)

_INSULATION

_CEILING

_HOUSE PARTITIONING  
WALL (acoustics)

_FACADE CLADDING
THE INSTALLATION-TECHNICAL INFRASTRUCTURE,

(ELECTRICITY, INTERNET, HEATH, COLD WATER, SEWAGE SYSTEM)

FOLLOWS CONSEQUENTLY THE INFRASTRUCTURE FOR TRAFFIC THROUGHOUT THE WHOLE INTERVENTION.

_SHAFTS

_GALLERIES AND CROSS-OVERS
**PVT HYBRID SOLAR COLLECTORS**
These systems combine a pv-cell, which converts electromagnetic radiation (photons) into electricity, with a solar thermal collector, which captures the remaining energy and removes waste heat.

**HEATING / COOLING**
Prefab floor system with integrated floor heating

**LOW TEMPERATURE HEATING AND HIGH TEMPERATURE COOLING**
Because of small temperature differences the efficiency of heat producers and coolers is higher and the losses in the pipes is less. It also works good in combination with aquifers.

**GREY WATER SYSTEM**
Rainwater and domestic grey water can be used after filtration and purification for irrigation of the greenhouses, flushing the toilet, or cleaning water, before it results into black water.

**PASSIVE SHELL**
Good insulation of the outer shell prevents heat loss.

**HYBRID / INTEGRAL USE OF BUILD-ELEMENTS**
The frame beholds multiple functions: it is structure, sun-shading, PVT collectors, unifying the urban appearance of the intervention, and lightning.

**VENTILATION**
Ventilation with air, naturally pre-climatised by the lake

**HEAT RECOVERY SYSTEM**
By making use of a heat recovery system, heat can be extracted from exhaust air and water.

**THERMAL CAPACITY OF LAKE**

**ENERGY STORAGE IN THE GROUND**

**GROENE DJAKEN (POL6)**

**STEAM HEATING**
Individuele regelbaarheid

**CO2 VRIJE ELEKTRISCHE ENERGIE**
CO2-vrije elektrische energie die de footprint van windenergie is.
- **suspended columns**
  (integrated water draining)

- **500mm thick frame**
  (architectural expression)

- **stability crosses integrated in**
  house separating walls

- **heating and cooling in floor**

- **facade material brass**
scene 3.1
LONGITUDINAL SECTION
GROUND FLOOR PLAN. SHOP, BIKES AND PUBLIC TOILET
SECOND FLOOR PLAN

scene 3.2
scene 3.2
CONSTRUCTION
Greenery is really invading the building in a third dimension. If you look at the scale and proportion, you understand how actually contextual the intervention is, despite its initial visible gesture on a more large scale. Looking at each cross section, even though they are all different in its expression, it is visible how the intervention really blends into surroundings and every time perfectly creates a new proportion in today's undefined space.

Sports with a mini football arena / games / fight ring / skateboarding / climbing wall / table tennis / spinning / indoor gym, etc.
GROUND FLOOR PLAN. SPORT CENTER
SECOND FLOOR PLAN. PUBLIC ROUTE
Third Floor Plan. Suspended Capsules
HOUSING TYPOLOGY

CAPSULAR DWELLINGS:
50M2 CAPSULE, 1 BEDROOM

QUALITIES:
UNIQUE CAPSULAR TYPOLOGY,
PRIVACY, ALL SIDED VIEWS,
CLOSE TO PUBLIC STAGE AND
SPORTS, GREEN SUSPENDED
TREES INBETWEEN

TARGET GROUP:
1 OR 2 PERSONS, CREATIVE
CLASS AND STARTERS
LONGITUDINAL / CROSS-SECTION