HIGHWAY AS URBAN CENTRE
INTRODUCTION

FASCINATION
DREAM
FUTURE
LOCATION
PROJECT AIM

RESEARCH

AREA
SOUND
MOBILITY

DESIGN

PROGRAM
ORGANISATION
STRUCTURE
EXPERIENCE
FASCINATION

Prins Claus plein, A12 close to The Hague. (source: www.panoramio.com, M. Demirdögen, 22-11-13)
High way as urban centre. (Source: combination of: own work, 2013. and Mensink, 2006)
Location of the design, A12 intersection Westraven, Urecht.
The location of my project is a stretch of high-way between intersection Lunetten and Ouderijn, it was given by the studio.
Article about future mobility. (source: volkskrant, 11-13)
**CHANGING HIGHWAY**

**trends in mobility**

High-way as an all-connected system.

More sharing programs, and more specific vehicles.

Interactive road surface (loading cars) that will be energy neutral.

City centers will become disconnected from the high-way and only reachable when changing mode of transportation.
PROJECT AIM

NEW TRANSIT HUB
The location of my project is a stretch of high-way between intersection of Utrecht- Lunetten and Ouderijn
AREA
MAP OF THE A12-ZONE

(source: own work, 2013, based on top10 vector map, TuDelft Kaartenkamer, 2006)
Resident growth of Utrecht

Housing shortage Utrecht

Space need in the province of Utrecht 2010-2040

Utrecht and his infrastructural borders, in red the A12.
The empty spaces of the high-way are mostly owned by the government.

G = Green empty zones
AREA
HIGHWAY AS BARRIER

SOUND

HEIGHT

FREEDOM OF MOVEMENT
The infrastructure divides the area into islands, all residential areas are focused on a centre away from the high-way, business areas only use the high-way as advertisement possibility.

The two main typologies of the borders of the A12 high-way zone.
Impression of the slow traffic route through the area.

Impression of sport activities in the empty spaces of the highway.
improve quality of connections and break the island effect

densify a specific area in the empty highway zone, and introduce sharp boundaries

sports as connecting activity that will give a positive impuls to the area
TRAFFIC NOISE
SOURCE

Numbers based on: RIVM report, Effect of electric cars on traffic noise and safety (2011)

**Combustion**
- **0-68 dB**
  - 0-50 km/h - combustion engine
  - 0-50 km/h - exhaust
- **68-87 dB**
  - 50-180 km/h - tyre road contact
- **>87 dB**
  - < 180 km/h - aerodynamics

**Electric**
- **0-60 km/h**
  - 0-60 km/h - electric engine
  - Till 12 dB reduction
TRAFFIC NOISE
BROKEN DREAM?
Landuse & zonning

Sound Principles: energy loss through air over distance

Topography

Sound Principles: Absorption by mass and reflection due to height differences of the embankment

Barriers

Sound Principles: Reflection due to height barrier, and possible absorption.

Planting

Sound Principles: Absorption and reflection, planting will increase reflections and therefore have absorbing capabilities.

Building orientation and shapes

Sound Principles: Reflection (controlled), the buildings will guide noise away from certain places.

Building Features

Sound Principles: Reflection and absorption, facade elements balconies that will reflect and absorb sound.

New source

Sound Principles: Addition of pleasant and natural sound to overrule the noise.
MOBILITY
Dominant way of transport. (Source: Goudappel Coffing, De mobiele stad, 2012)
MOBILITY

OBSERVATION: AVERT SPECIFIC TRANSPORT
MOBILITY

OBSERVATION: TRANSFER

A  
public transport

private transport

combination 0,2%

B

Dominant way of transport. (Source: Goudappel Coffing, De mobiele stad, 2012)
MOBILITY
FUTURE TREND

car as part of public transport

VALIDATION

[Logos of various car-sharing and mobility companies]
MOBILITY
MOBILITY AS ONE SYSTEM

no ownership, but flexible lease
MOBILITY
A NEW TYPE OF TRANSIT HUB, P&R +
the new hub will have direct connections between the highway and public transport
- important gateway to and from utrecht
- access to light rail connection
- part of the beforehand chosen A12 zone
simplefy the junction to make easy transfer possible
**SUMMARY**

**MOBILITY**

Connect all traffic flows

**AREA**

Create a high quality connection for all users.

**SOUND**

Protect user from traffic noise
DESIGN
DESIGN
NEW URBAN CENTRE PROGRAM

LINK station

CONNECTION pathways, cycle tracks

IMPULS sports facilities

VIABLE working, dwell, leisure
NEW URBAN CENTRE PROGRAM

LINK
- public square

CONNECT
- tram station
- bus station
- p-cars
- fast charging
- p-bikes
- high-way
- sec. road
- bike/pedestrian path

SPORTS
- climbing wall
- locker rooms
- fitness indoor
- street soccer
- beach volleyball
- locker rooms
- skate park
- fitness outdoor
- swimming
- biking
- running
- walking

LEISURE
- exhibition
- media library
- cinema
- disco/bar
- course rooms

WORK
- flex spaces
- congress
- working cafe

SLEEP
- hotel rooms
- 80

DWELL
- dwellings
- 120

SUPPORTING
- shops
- 5
- cafe
- restaurant
complexity of all program and infrastructure in multiple levels
use of structure to create freedom and accommodate logistics
DESIGN
STRUCTURE AS SOLUTION

Plan

Section

Plan

Section
DESIGN
PROGRAM IMPLEMENTATION

LINK

→
DESIGN
PROGRAM IMPLEMENTATION

VIABLE
The square has a open character with visual connections with all functions and by the 3 main elements becomes a lively and attractive square. The building manifests its self as a whole by the closed ring facade, the 4 towers with their own identity make the ensemble to a urban center.
DESIGN
BUILDING STRUCTURE

BASIC INTERSECTION
MAKE ROOM INSIDE HIGHWAY
DESIGN
BUILDING STRUCTURE

PLACE STATIONS INSIDE NEW SPACE
DESIGN
BUILDING STRUCTURE

PLACE AUTOMATED CAR PARKING SYSTEM
DESIGN
BUILDING STRUCTURE

COVER THE MAIN ROAD
DESIGN
BUILDING STRUCTURE

CONNECTION GROUND FLOOR WITH SLOPE
TRANSFORMING DUE TO LOCATION
DESIGN
BUILDING STRUCTURE

A SQUARE FILLS UP THE MIDDLE SPACE
PROGRAM IS PLACED ON THE NEW DECK
THE STATION WITH ROOFS ARE ADDED TO THE SQUARE
DESIGN
BUILDING STRUCTURE

SOUND ABSORBENT FACADE AND GLASS ROOF ADDED
THE ADDITIONAL PROGRAM FORMS TOWERS
DESIGN
OUTSIDE IMPRESSION

FACADE / SECTION // 1:500

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Datum: 07-11-2014

FACADE NORTH
FACADE EAST
SECTION
OUTSIDE IMPRESSION
INSIDE FACADE FRAGMENT (S) 1:50
SECTION RING 1:50
HORIZONTAL SECTION 3FLOOR (INSIDE)

OUTSIDE FACADE FRAGMENT (N) 1:50

DETAILS 2 // 1:5

- KERTO WOOD/ALUMINIUM FACADE SYSTEM
- LENO MASSIVE WOODEN FLOOR (220MM)
- EXPANSION JOINT ROAD SURFACE
- WOOD PLATE THAT STOPS THE PENETRATION OF SOUND
- SOUND ABSORBING ORGANIC MATERIAL

POSSIBLE 13 dB REDUCTION
DESIGN
CONSTRUCTION PRINCIPLES

CONCRETE

WOOD
A big mass buffer creates a temperate climate, other program could profit from it.

Solar energy

Roof shape improves ventilation

Rain water collection

Roof shape collects rain water
DESIGN QUALITIES

IMPROVED CONNECTION ON MULTIPLE LEVELS

FROM LEFT OVER SPACE TO NEW COMPACT CENTER

EASY ACCESS TRANSIT LOCATION

INCENTIVE TOWARDS NEW MOBILITY TRENDS

CITY MANIFESTS ITSELF ON THE HIGHWAY
DESIGN EXPERIENCE
DESIGN
USER AND ROUTE

jaarbeurs (boat show)

schoonhoven
QUESTIONS?

Colofoon

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