# RIJNDAM CLINIC DESIGN

## Design brief
- the design task
- the program
- the aim for the design

## Technical
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## Research
- Case study
- Reflection

## Site
- Current situation
- Analysis

## Design
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- Urban scale
- Architectural scale
Design brief

the design task
the program
the aim for the design
The building program for a new Rijndam rehabilitation centre is based on the existing organization of the current centre. As the increasing requirement of space the Rijndam client wanted to renew the building.
The program contains 4 main categories:

**Treatments**
- Therapies
- Sports (Gym and pool)
- Services

**Patient**
- Accommodation
- Nursing

**Staff**
- Offices
- Technical service
- Education
- Other services

**Community**
- Community facilities
- Public functions
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**Treatments**
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- Other services

**Community**
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- Public functions
the aim for the design

“Public interior”
Explore the potential that both users of the building and public partipate in the building, whatever outside and inside the buildings.

Clear orgnization
The building should have a clear orgnization.

Convenient and efficient
The design should meet all the demands of clinic and provide a convient and efficient scheme for users at the same time.

High quality of interior
The clinic Should not only be an efficient machine but also a pleasant public building.
Research
Case study
Reflection
In the early stage, we did some research on healthcare institutions in the workshop. I started to get familiar with healthcare architecture.
Reflection

What effect the public space brings to users in my design?
How can I organize the public space to improve the quality of my building?
Site
Current situation
Analysis
The site is in the south part of Rotterdam, located in Westsingel, adjacent to the Museum park. In the site there are a pump station and a primary school. The formal rehabilitation center Rijndam clinic was in between the two and next to a traditional rawhouse block.
Zoom out to the urban scale, the north part of the site has many traditional buildings.
On the south side of the site there are mainly modern buildings. Most of them are taller than the buildings on north side.
Location and context

The museum park is close to the site. It is a back yard of the site which provides high environmental quality.
The site is the key point of tradition, modern and nature. It brings many possibilities.
Current situation

Zoom in to the site, it is a building block along the museum park. The exiting clinic is part of the block.
The rowhouses along the road, has similar style and certain rythem.
Current situation
Current situation

Start from the residential buildings, there are newer buildings.
Current situation
Current situation

Museum Park improves the quality of the site.
Current situation
Design

Architectural concept
Urban scale
Architectural scale
Technical
Public spaces in clinic:

Many studies have confirmed that community can enhance patient's healing process. Public space in clinic plays a significant role that not only patient can escape from loneliness and adjust his/her mental condition before/after therapy but also provides an environment for their family members to relax and killing boredom.
Architectural Concept

Opportunities for public spaces

- **atrium**
  - Usually atrium in hospital is quite public. The space is large and high. Many public activities will happen here. Different users will mix in atrium. But it's a little noisy. According to Jan Gehl's theory, because of there are many public facilities and functions here, most of the optional activities and social activities should take place in here.

- **waiting area**

- **living room**
Architectural Concept

Opportunities for public spaces

- atrium
- waiting area
- living room

Waiting area is one of the most necessary functions in a clinic. It provides seats and gathering patients together. Most necessary activities happen here according to Jan Gehl. The reason why people stay in here is they have to wait for therapy. High quality waiting room can reduce the feeling of boring and nervous. But it still needs to be quiet.
Architectural Concept

Opportunities for public spaces

atrium

waiting area

living room

In clinic, living room mainly serve for inpatient. It provides space to meet the requirements of communication. Because inpatients will stay in clinic for quite a long time, living room acts as the role of small society. Although it is a public space, it still needs to be quiet and usually used by patients.
Opportunities for public spaces

- atrium: public
- waiting area: less public
- living room: less public
Urban scale
Connect to the museum park

Break the formal closed masterplan, create a square as the entrance of museum park and attract public use the square. Create the possibility of communicate.
End of the block

Making the clinic another end of the block. Cause the building in the other end of the block is not simple volume and quite big, So I use the new clinic to imitate the unsimple and big volume.
Urban scale

Continue the old block

Using part of the volume to continue the old block by making it the similar height of the rowhouses.
Urban scale

Continue the newer buildings

Using part of the clinic to continue the tall residential buildings and form the public square by making part of the building higher than the rowhouses. In this way the building continue the old block and newer buildings.
Urban scale

After studied the design brief and calculated all the area, the programme can be divided in three main parts: the accommodation part, the treatment part and the staff part.
Urban scale

Public space as buffer

The public spaces can be a buffer in between each parts.
Using ring shape to connect accommodation part and staff to the treatment part. Two atriums are formed naturally. Pull up the middle volume so that the two atriums can be connected together.
To increase the possibility of communication, outpatient and inpatient will no longer separated. They do treatment together. The living room for inpatient and waiting room for outpatient are merged together. The living room can provide outpatient high quality and the waiting area can provide the inpatient new participators.
Urban scale

Gym and pool are placed in the lowest part. The square provides people a route to museum park. In the square people from public can use the gym and club. In this way, the entrance of public and patient are separated.
Architectural scale

Interior
Facade
Architectural scale

Interior

Organization
Architectural scale

Interior

Departments in treatment part

Motion therapy
Ergotherapy
Psycho-social ADL
Psycho-social
Medical assistant
Two atriums

Two atriums are independent from each other. The first one is the entrance hall, which is more public, people who come to the clinic will be gathered here. The second one is an inner garden. The main user is the patient, it’s more quiet, provides good environment for inpatient accommodation.
Public functions in entrance hall

The entrance hall is the most public space in the clinic. Lots of public functions serve for it. For instance, the cafe, the restaurant, commercial functions and so on. These public functions also have entrance along the street, serve for people from public.
Architectural scale

Interior

The first atrium
Public functions in inner garden

The main user of the garden is patients. Functions like library and activity room, hobby room, family meeting room and creche are put in this atrium. This garden provides large space for many activities. In this atrium people can see the gym and club which are in the lower level.
The space relationship: inner garden and gym
Architectural scale

Interior

The inner garden
**Functions open for public**

The gym and club in this level also open for public. There is an entrance in the square. The gym is facing towards the museum, people can enjoy the beautiful view when they doing sports. The swimming pool only serve for the patient because of the hygienic requirement.
Bedroom setting

The clinic has three types of bedrooms: single bedroom (facing museum park, have nice view) double bedroom (facing south, with nice sunlight) and 4 bedroom (facing museum park) two double bedrooms share one balcony which creates opportunities for communication.
**Merge living room and outpatient waiting room**

Because treatment departments are arranged in different levels, outpatient will also use each floor of the treatment part. This brings opportunities for inpatients that they will meet some new faces. When outpatient waiting in the living room, the environment will be no longer boring. They can also talk to inpatients.
The rotating living room

The living room in the middle volume changes position in each level. The overlapping part of two living rooms is double high space which can connect two living rooms in vertical direction.
Diverse views of living room

Because the living rooms are rotating in each floor, living rooms have 4 different views: Museum Park, inner garden, entrance hall and westsingle. Each living room has two views which provides the living room high quality.
Each living room has vertical connection with others
Each living room has different views of outside
Level 3 living room (waiting area): view of inner garden
Level 5 living room (waiting area): view of west single
Architectural scale

Interior

View of corridor
The rhythm of the windows: merge the three volumes as a whole

Although the three volumes have different functions, they work together as a whole. After many test, I find that using the similar elements to merge them is the best way. There are mainly two kinds of window in the facade, 3 or 4 windows becomes an unit, and units are rotating along the facade with certain rhythm, The whole facade have a trend of continue.
Architectural scale

Facade

Still have identifiability: The middle volume has less windows

Big glass curtain wall: the double high spaces are reflected on the facade
Architectural scale
Facade

Westsingle facade
Architectural scale
Facade

View from Westsinge
Architectural scale

Facade

Museum Park facade
Architectural scale

Facade

South facade
Architectural scale
Facade

View from the square
Architectural scale

Facade

North facade
Architectural scale

Facade

View from museum park
Technical
Structure
Climate
Detail
Technical Structure

Structural floor plan  prefabricated concrete floor slab
Technical Structure

Structural floor plan
Technical Structure

Structural floor plan
Technical Climate

Ventilation principle
Ventilation shafts and ducts: typical level
Ventilation shafts and ducts: level 1
Technical Climate

Ventilation shafts and ducts: level 0
3D model: Horizontal shafts and ducts for HVAC
Technical
Climate

different climate zones
Technical
Climate

Climate section
Technical Detail

floor

- Stone flags: 15mm
- Mortar bed: 15mm
- Floor heating: 100mm
- Separating layer
- Impact sound insulation: 20mm
- Prefab concrete slab: 200mm
- Plaster: 10mm
- Total: 360mm
Technical Detail

wall

- Render 20mm
- Clay masonry (29 x 12.5 x 19 cm) 125mm
- Ventilated cavity 20mm
- Water proof layer
- Thermal insulation 200mm
- Vapor proof layer
- Clay masonry (29 x 12.5 x 19 cm) 125mm
- Plaster 15mm
- Total 505mm
Technical Detail

Steel beam IPE800

- Render: 20mm
- Clay masonry (29 x 12.5 x 19 cm): 125mm
- Ventilated cavity: 20mm
  - Waterproof layer
  - Thermal insulation: 100mm
  - Vapor proof layer
- Clay masonry (29 x 12.5 x 19 cm): 125mm

Prefabricated concrete lintel
Detail of the corner

wall

- Render
- Clay masonry
- (29 x 12.5 x 19 cm)
- Ventilated cavity
- (29 x 12.5 x 19 cm)
- Waterproof layer
- Thermal insulation
- Vapor proof layer
- Clay masonry
- (29 x 12.5 x 19 cm)
- Plaster
- Total

Dimensions:
- Render: 20mm
- Clay masonry: 125mm
- Ventilated cavity: 20mm
- Waterproof layer: 200mm
- Thermal insulation: 125mm
- Vapor proof layer: 15mm
- Plaster: 50mm
- Total: 305mm
Technical Detail

Detail of the glass roof (middle volume)

Steel beam HEB500

Steel beam HEB1000

Render 20mm
Clay masonry (29 x 12.5 x 19 cm) 125mm
Ventilated cavity 30mm
Water proof layer 50mm
Thermal insulation 100mm
Vapor proof layer 40mm
Plaster board 40mm

Wood brick

Steel lintel
Thank You!