The Fertile City

Raising Food Awareness Through Architecture

Drawing booklet

Jino Fattah
The Fertile City
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Project location

Frederiksplein
Amsterdam
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Design concept
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Design concept
### Project Data

<table>
<thead>
<tr>
<th>Floor</th>
<th>Maisonettes</th>
<th>m² Woning</th>
<th>m² Groen</th>
<th>Average Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG + 1e verdieping</td>
<td>38</td>
<td>85 m²</td>
<td>22,6 m² (11,3 per verd.)</td>
<td>1 tot 4 per woning</td>
</tr>
<tr>
<td>2e + 3e verdieping</td>
<td>68</td>
<td>77 m²</td>
<td>22,6 m² (11,3 per verd.)</td>
<td>gemiddeld 2,5p/w</td>
</tr>
<tr>
<td>4e verdieping</td>
<td>68</td>
<td>34 m² / 39m²</td>
<td>11,3 m² / 8,6 m²</td>
<td></td>
</tr>
<tr>
<td>5e verdieping</td>
<td>34</td>
<td>75 m²</td>
<td>12,8 m²</td>
<td></td>
</tr>
<tr>
<td>6e verdieping</td>
<td>34</td>
<td>75 m²</td>
<td>12,8 m²</td>
<td></td>
</tr>
<tr>
<td>7e + 8e verdieping</td>
<td>29</td>
<td>117 m²</td>
<td>46 m² (23 per verd.)</td>
<td></td>
</tr>
<tr>
<td><strong>Totaal:</strong></td>
<td><strong>271</strong></td>
<td><strong>19185 m²</strong></td>
<td><strong>5277 m²</strong></td>
<td><strong>678 bewoners</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parking Places</th>
<th>Bergingen</th>
<th>m2 Binnentuin</th>
<th>m2 Kas</th>
</tr>
</thead>
<tbody>
<tr>
<td>89</td>
<td>203 prive</td>
<td>3288</td>
<td>678 x 25m² = 16950m² nodig!</td>
</tr>
<tr>
<td></td>
<td>6x gezamenlijk</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Project Data

A residential building for everyone who wants to get involved in the food production through an active way.

A cultivating community through urban agriculture

Food awareness through:
- Food production
- Education exhibition
- Food-based activities
- Community
- Neighborhood facilities
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Urban Plan: scale 1:1000
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Scale 1:500
First Floor
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Scale 1:500
Fifth & Sixth Floor
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Scale 1:500
Eighth Floor
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Floor plan: +1200m Ground floor 1:200
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Floor plan: First floor 1:200
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Floor plan: Second floor 1:200
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Floor plan: Third floor 1:200
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Floor plan: Fourth floor 1:200
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Floor plan: Fifth & sixth floor 1:200
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Floor plan: Eighth floor 1:200
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North (city&park) & South (Singelgracht) facade 1:500
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West and east facade 1:500
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Different types of green

1. Edible garden around the building: vegetable gardens around the building for local residents. According to the community rules belonging to the building people could share and maintain the allotment gardens
2. Wintergardens: each dwelling has its own wintergarden to be able to grow food in all seasons.
3. Balustrades: balustrades as plant buckets to grow food
4. Planters: where there is place to grow food outside for ground floor dwellings
5. The courtyard: communal vegetable gardens for the inhabitants of the apartment block and pupils of the nearby primary school.
The Dwellings
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Floor plan 1:100
Ground & first floor maisonnette 85 m²
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Floor plan 1:100
Second & third floor maisonette 77 m²
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Floor plan 1:100
Fourth floor studio 34 & 39 m²
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Floor plan 1:100
Fifth & Sixth floor apartment m²
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Floor plan: Seventh & Eighth floor penthouses 117 m²
Building Technology
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Building Structure

From first floor and higher:
- CLT-wooden walls 300 mm

Ground floor:
- Lignatur wooden floors 300 mm

Half-sunken basement:
- prefabricated concrete load-bearing walls and beams 300 mm

Kanaalplaat floor 300 mm

From first floor and higher:
- CLT-wooden walls 300 mm
- Lignatur wooden floors 300 mm

Ground floor:
- Kanaalplaat floor - CLT-wooden walls

Half-sunken basement:
- cast in situ concrete floor and walls
- prefabricated concrete load-bearing walls and beams that support the kanaalplaat floor

Staircases with elevator

Prefabricated concrete load-bearing walls and beams 300 mm
Structure: Section & Facade fragment 1:20 (here 1:100)
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Structure: Section & Facade fragment 1:20 (here 1:100)
Fermacell woningscheidende wand 300 mm
- 2x 12.5mm FERMACELL gipsvezelplaat
- 250 mm steenwol
- 2x 12.5mm FERMACELL gipsvezelplaat

CLT- dragende wand 300 mm

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Floor plan: fragment 1:50 second floor maisonnette
Loggia beglazing voor plaatsing op een borstwering, type MBR-1A, opgebouwd uit een draaipaneel en schuifdraaipanelen.

- Lignatur houten vloer 360 mm
- viltlaag 16 MM
- Moso bamboo 12 MM
- ophangssysteem voor Moso bambo platen
- epdm ter plaatse van bevestiging
vloerelement naar keuze +/- 20 mm
Fenocell afdekplaat 25 mm
Fenocelgipsvezelplaat 18 mm met buizen vloerverwarming
polysyreen 50 mm
Fenocell honingraat 50 mm
Lignatur houten vloer 380 mm

schuifdeur HR++ dubbele beglazing
gehard en gelaagd glas
voorzien van jaloezie in de spouw
- aarde
- membraan
- fijngrind
- grofgrind
- drainage pijp
- afwatering naar het regenwateropslag
Climate: overview

Underfloor heating
- conservatory and loggia as a climate buffer, they act as an intermediate zone in which the outdoor climate is tempered in a natural way.
- natural air supply
- mechanical ventilation

Green sedum roofs:
- hold rainfall for longer
- hold against energy waste
- positive effect on air quality

Geotherm Energy System (WKO)
- geothermal heating and cooling systems take advantage of the stable temperature underground using a piping system, commonly referred to as a ‘loop’. Water circulates in the loop to exchange heat between the building, the ground source heat pump, and the earth, providing geothermal heating, cooling, and hot water at remarkably high efficiencies.
- Function: heating through underfloor heating, cooling, hot tap water.
- Used energy: electricity
- medium: water

Rainwater harvesting system:
- (1) underground tank collects rainwater drained from the roofs through rainwater downpipe, and rainwater from the courtyard through fluted gutters
- the water flows then to the other tanks (2) with water purification system and a pump, that is connected with the washing machine, bath and toilet. This water will also be used for the irrigation of the plants

Water tanks in the building: 226,000 L x 3 = 678,000 L
(water tanks dimensions: height 2000 mm, radius 6000 mm)

Conclusion: water tanks in the building that collect rain water provide plenty water for the purposes mentioned above.

3,435 m² roof x 800 mm (average rainfall a year in the Netherland) x 0.05 = 137,400 L (tank capacity)

Average water consumption a person a day for shower/bath + toilet + washing machine + plants = 103.28 L
+/- 690 residents x 103.28 = 72,000 Liter water a day for all residents

Rainwater harvesting system:
- hold rainfall for longer
- positive effect on air quality

Greenery in the surrounding and courtyard
- hold rainfall for longer
- positive effect on air quality
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Climate: energy, heating and ventilation

- conservatory and loggia as a climate buffer, they act as an intermediate zone in which the outdoor climate is tempered in a natural way.
- natural air supply
- mechanical ventilation
- local exhaust (kitchen and bath)

Geotherm Energy System (WKO)
- Geothermal heating and cooling systems take advantage of the stable temperature underground using a piping system, commonly referred to as a "loop." Water circulates in the loop to exchange heat between the building, the ground source heat pump, and the earth, providing geothermal heating, cooling, and hot water at remarkably high efficiencies.
- Function: heating through underfloor heating, cooling, hot tap water.
- Used energy: electricity
- Medium: water
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Climate: water & green

green sedum roofs:
- hold rainfall for longer
- hold against energy waist
- positive effect on air quality

rainwater harvesting system:
- a pond in the green courtyard with oxygen plants to keep the water bright and clean
- a pump for oxygen supply

rainwater harvesting system:
- (1) underground tank collects rainwater drained from the roofs through rainwater downpipe, and rainwater from the courtyard through fluted gutters
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Climate: shafts
Impressions