

STARTER HOUSINGS  
FINAL BOOKLET

Starter House  
Seminar: Starter House

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## PREFACE

Starters on the housing market are in general young and ambitious, but financially rather weak. The crucial theme of housing design for this target group therefore is scarcity. They can't have it all. Nonetheless residential projects for starters show a huge variety in their appearance.

The main goal of the seminar was to investigate how architects deal with the complicated puzzle of preferences and priorities among all those parameters that in the end add up to the all-in construction costs. Eighteen projects have been chosen to illustrate the links between the mix of decisions, requirements and approaches, and the variety in the resulting designs.

In order to visualize such a complex overview a set of logos and pictograms has been developed facilitating the comparison of otherwise very distinctive projects, each showing their specific mix of 'unique selling points'. The results were presented in a leaflet-like layout per project referring to the compact visual culture of real-estate agencies.

Eighteen projects are hardly enough to get a complete or even an appropriate perspective on starters housing. More elaborate research is recommended, but this makes a wonderful starting point.

Maarten Willems - Seminar Tutor  
February 2012

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## HISTORY OF STARTER HOUSINGS

The point of view of startershouses of these days is not just a matter of our time. Back in the days of 1970 till 1985, social unrest led a second postwar period. The economy stopped growing and became worse, wealth was declining and unemployment rates were high. That were the new concerns of the Dutch system. Of course the government had to take action against these bad situations which occurred amongst the people.

The minimum youth wage was raised just when the age at which people were entitled to independent housing was reduced from 21 to 18 years. This all had been realised in the period when Joop Den Uyl was the prime minister of the government which was leading in the Netherlands from 1973 till 1977.

### Attendance of the HAT-units

The period when Marcel van Dam was being the secretary of Housing and Physical Planning, resulted in the introduction of the note '*Housing single and two persons households*' in 1975 which led to the first HAT-units. At 16 february he formed a steering committee, specially for execution the note. Other specific housingtypes were realised for different targetgroups as well, like nursing homes and special collective housing groups.

These HAT-units were designed houses specifically focussed on the Housing of Singles and Double Households. (Huishouden Alleenstaanden en Tweepersonshuishoudens)

To solve the nationwide economical problems, it was the intention of the government to start building 110.000 HAT-units within a few years, which afterall they just managed to realise 77.000 of them. To improve this growth, there was a subvention scheme for housing associations, allowing that multiple units on one lot could be built. Most of these where build in the so called "Bloemkoolwijken".

The amount of HAT-units was not only increasing because of the major needs for housing the Single and Double Households, but also because of the subvention which the municipality would lose if they had some subvention left. At that moment, it was easy to just spend al the leftover money on building HAT-units. The complete regulation was cancelled in 1995 and building HAT-units was hereby reduced.

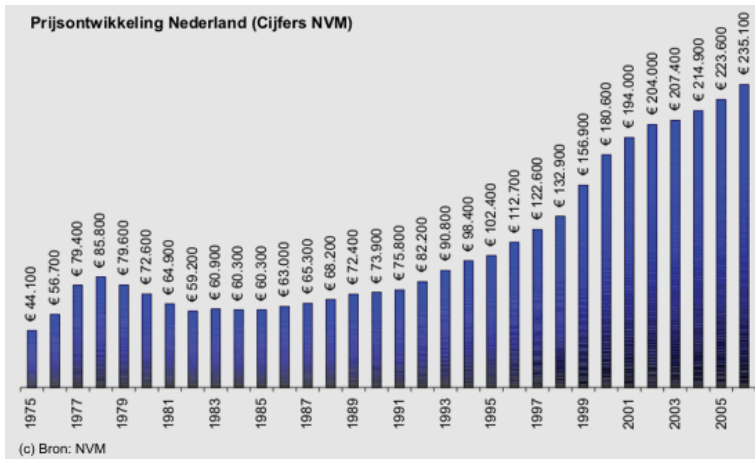
### Classification

A HAT-unit may be described as a relatively small and simple apartment with a varying area of 30m<sup>2</sup> - 50m<sup>2</sup> with a living room which is combined with a kitchen, a small bedroom and a bathroom combined with space for a washingmachine. Most of the time these apartments were all combined and designed in one big gallery flat with somewhere around three or four floorlevels. Mostly if there is a garden or a balcony, it will be in the form of a communal shared space.

### Change of demands

HAT-units were an effective solution for problematic times. Because of their low costs/ value, it was easy for starting people to buy their own house and start growing financially, making their lives more easy. As long as people who never been in the housingmarket were having their own space to live in, it was already fulfilling to their demands.

According to the real-estate developer Ruysdael Ontwikkeling B.V., the concept of HAT-units will not easily fit for starters these days anymore. Most of the HAT-units are not even for sale anymore. The only way people are still living in these apartments will be by renting them from housing associations. when they won't be able to afford buying a house themselves, or won't be able to find a house for sale in the area they would like to live in. According to the developer the demands and expectations of



Graph: Price development Housingmarket Netherlands (1975-2005)

Source: NVM



Image: Example HAT-House

Source: [www.duwo.nl](http://www.duwo.nl)



Image: Example HAT-House

Source: [www.vieya.nl](http://www.vieya.nl)

starters are completely different as they used to be. People are willing to spend more of their income on their housing, so they will be able to live with more space and more quality in having for example their own back or front-garden. A development where all the future architects will have to work towards, to listen to these new future demands.

### Starter of today

The characteristics of a starter in these days will be completely different as they used to be. This is a result of the changes in the currency over time, as well as the economy of the housingmarket.

At first being a starter will mean that you should not have entered the housingmarket earlier in your life so it will be the first time you will start living on your own or change between renting your home into buying one. Secondly there is a maximum amount of financial capital a starter may not exceed, which changes every year. At the moment that lies somewhere around the €20.000,-.

According to Wegwijs Kenniscentrum which based their numbers on the information given by the Dutch cadastre, the startermarket actually lowers year by year. In 2009 there were still 2.173 houses being sold to starters till an age of 25, but in 2011 only 1.692 starterhouses were sold, which is a decrease of 22% compared to the year 2009.

This indicates that the measures and the financial cuts by the government against the economic crisis and the economic crisis itself, which started in oktober 2008, has its influence on the housingmarket including starters. Designing and developing new houses which will be attractive for starters, might regain their interest into the housingmarket. After researching different types of starterhouses there will be an overall conclusion, which will indicate which properties starters houses will have to contain and what starters seek, when buying a new house. Is that Price, volume, collective space, location e.g. "What does a starter really want?"





## **Project Reviews**

Reviews by students based on their researches and interviews



PROJECT:  
MICRO COMAPCT HOME

LOCATION:  
TU MÜNICH O2 VILLAGE, ANYWHERE YOU WANT

STATUS:  
BUILT

ARCHITECT:  
HORDEN CHERRY LEE ARCHITECTS

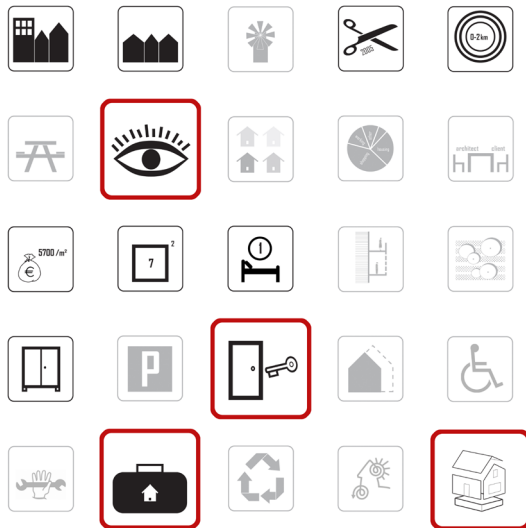
TOTAL PRICE:  
€ 50.000

SIZE:  
7 M<sup>2</sup>

## MICRO COMPACT HOME



The Micro Compact Home is a project by English architects Richard Horden his office. It included the cooperation of students from the University of Munich. It consists of a dwelling for one and maximum two people and has the very compact dimensions of 2,6 by 2,6 by 2,6 meters. The interior is based on principles used in the car and airplane industry. Richard Horden found himself thinking what it would be like to make the smallest house possible for a normal person to live in for a longer period of time. He came up with the concept of the Micro Compact Home. The project can stand anywhere and is available all over Europe, you can simply order one. This doesn't include the price for the ground which has to be paid for separately. The price including the ground and drainage is around €50.000,-. Compared to the other projects this is a lot if you keep in mind you will only get around 7 square meters.



### **Symbols: View, movability and ready for living**

The symbols on the left are used to see the unique selling points for this project in an instant. Since the Micro Compact Home is movable, you can actually put it anywhere in the world, like a simple caravan or trailer. Most of the locations where the unit was used have a nice view. A nice view is pretty important, because you will be forced outside when you live in such a small unit.

Movability is another advantage since this home is actually for temporary use. You can sell it, or take it to a different place where you can live in there for a few more months or years. The movability is of a different level than a caravan, since there are no real wheels and you will have to move the Micro Compact Home by a truck.

The unit is installed with luxury interior. The quality of the materials is very high and the finishing is

very neat detailed. You can use the limited space very efficiently, because of the interior. The Micro Compact Home is a complete package with a full interior, so you can start living in there from the start.

### The layout

When you enter the Micro Compact Home, it's only one room that is filled with all the function you can wish for in a normal house. The unit has the following interior features:

- two compact double beds, 198cm x 107cm
- storage space for bedding and cleaning equipment
- a sliding table, 105cm x 65cm
- flat screen television in the living/dining space
- a shower and toilet cubicle
- a kitchen area, sink and extending tap, microwave, fridge and freezer units, waste unit, storage shelves, cutlery drawers with gentle return sprung slides and double level work surfaces
- heating with thermostat. Fire alarm, smoke det.

All these functions fit in this small cube. To accommodate this, the cube is first split in two parts; the first part is with the table, beds and storage. To fit in, a bed and a table at the same time, these two are integrated together and you cannot use them both at the same time, at least not both beds. The storage space is also part of this area, and is also integrated with the beds. When you lie in the bed you will have your feet in the closet area. The other area is that of the kitchen, toilet and shower. The toilet and shower are integrated together, but the kitchen still has a block of its own. The small walkway in the middle separates the two areas and is actually also part of this second area, because you are standing there when you are doing things in the kitchen and sitting on the toilet.

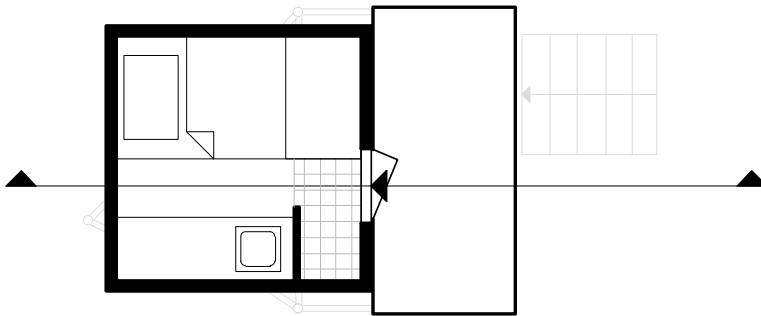


Image 1.1: Floor plan for the Micro Compact Home.

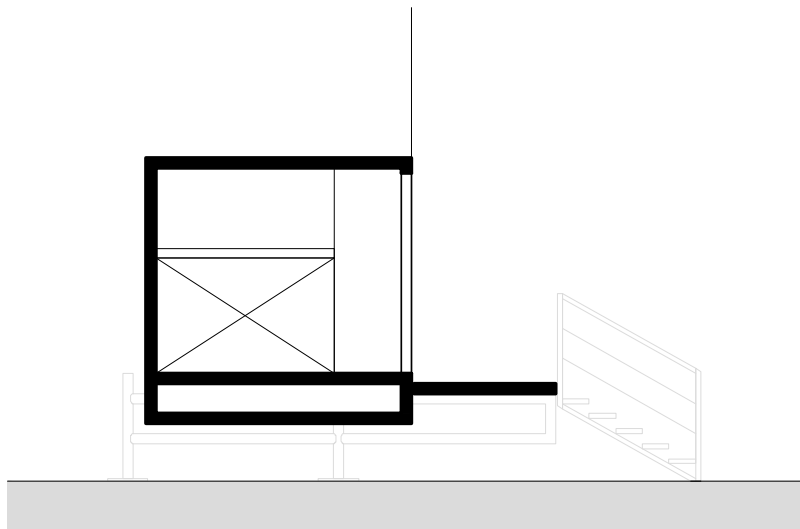


Image 1.2: Section over a Micro Compact Home.



Image 1.3: Wide Angle perspective of the interior.



Image 1.4: Interior image with on the right the kitchen and the toilet, on the left the 'living room' with a table/bed and a closet.

### **Downsides**

When you would like to take a lot of stuff with you, the Micro Compact Home obviously would not be the right choice for you. It is for a very specific target group of people who would like to live in a different way than anybody else. Another downside on the Micro Compact Home is that it is very expensive and might not even be affordable for students. The way it can be used for students is when a student housing organization buys them and the students themselves rent the Micro Homes from the housing organization.

### **Inspiration and development**

The unit itself started as a research project to design a 2,6m cube dwelling and was initiated by prof. Richard Horden. The concept was first tested at the university. Considerations were made whether the units could be clustered together and some designs were made. This way the O2 village at the university emerged, where some of Richard Horden his students lived for longer than half a year.

The team behind the Micro Compact Home at the University of Munich came up with the idea when they noticed an increase in demand for short stay living. Students, businessmen and weekenders are the target group for the unit. The unit uses techniques used in high quality compact living environments like airplanes, yachts and cars. The design is also influenced by the Japanese Tea House. Living in a Micro Compact Home means that you will have to shift your mind to the outside and only take with you what you really need. You must focus on the essential things and will not be able to take a lot of stuff with you inside. Certain people living in there state that it pushes you to think outside the ordinary.



Image 1.5: O2 village of Micro Compact Homes at the University of Munich.

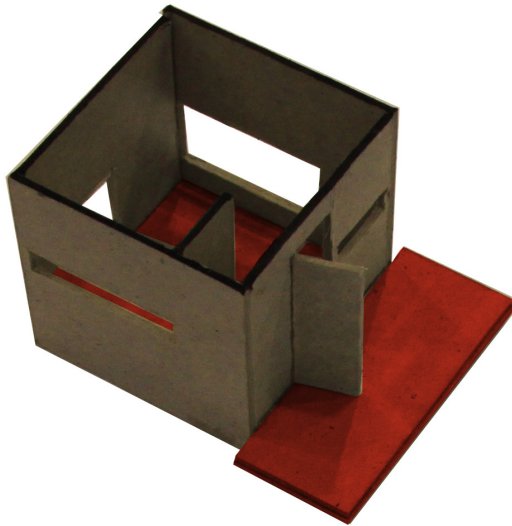


Image 1.6: Cardboard model of the Micro Compact Home.

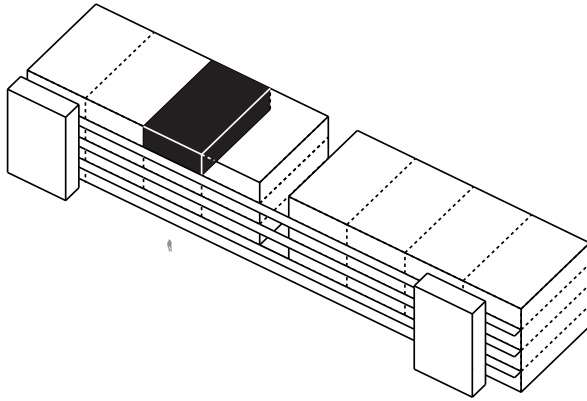
## Projects

The Micro Compact Home offers a lot of possibilities for designers as a starting point. In the image on the left you can find the O2 village where a lot of Micro Compact Homes are clustered together at the Technical University of Munich. The units were built as a study project for the students to live in. Another project is the 'reed huis' that would be used for short term staying, for summer sailing and winter skating. The design is made for a reed and water landscape. There is also a project called the tree village, where the units are stacked in a smart way. The tree village would also accommodate student housing. These two last projects are only research projects and have not been built yet.

## Is the Micro Compact Home a starters house?

It's not a real starters house, since you normally live in a starters house for a longer period of time. The Micro Compact Home is mainly used for short term staying and cannot be considered a house for starters in this way. The approach used by Richard Horden and his team to make a cheap, fully featured home is very interesting though.





PROJECT:  
BLOCK 25 IJBURG

LOCATION:  
AMSTERDAM, THE NETHERLANDS

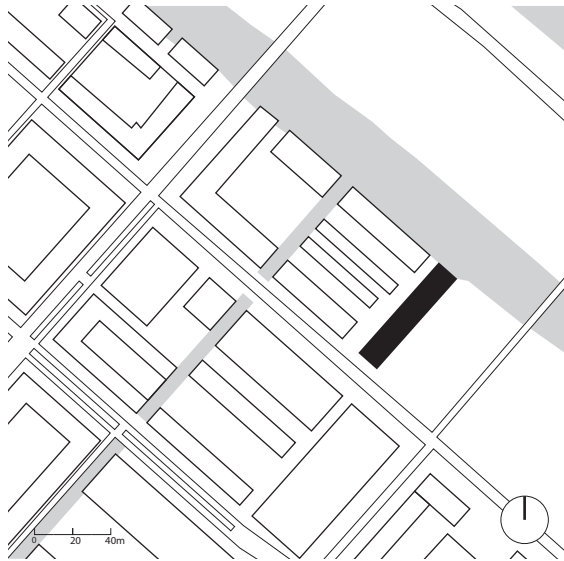
ARCHITECT:  
FARO ARCHITECTEN

TOTAL PRICE:  
€ 220.000

SIZE:  
85 M<sup>2</sup>



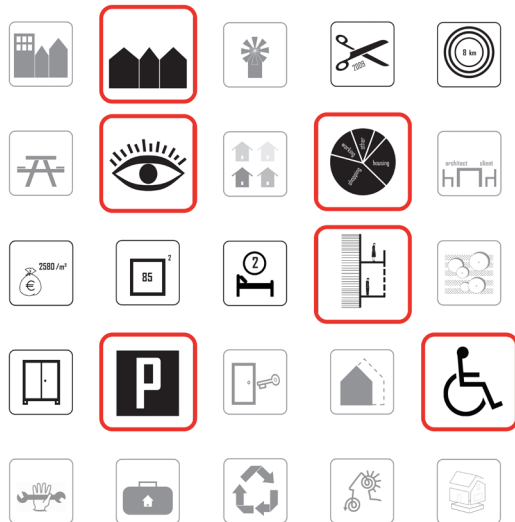
## BLOCK 25 IJBURG

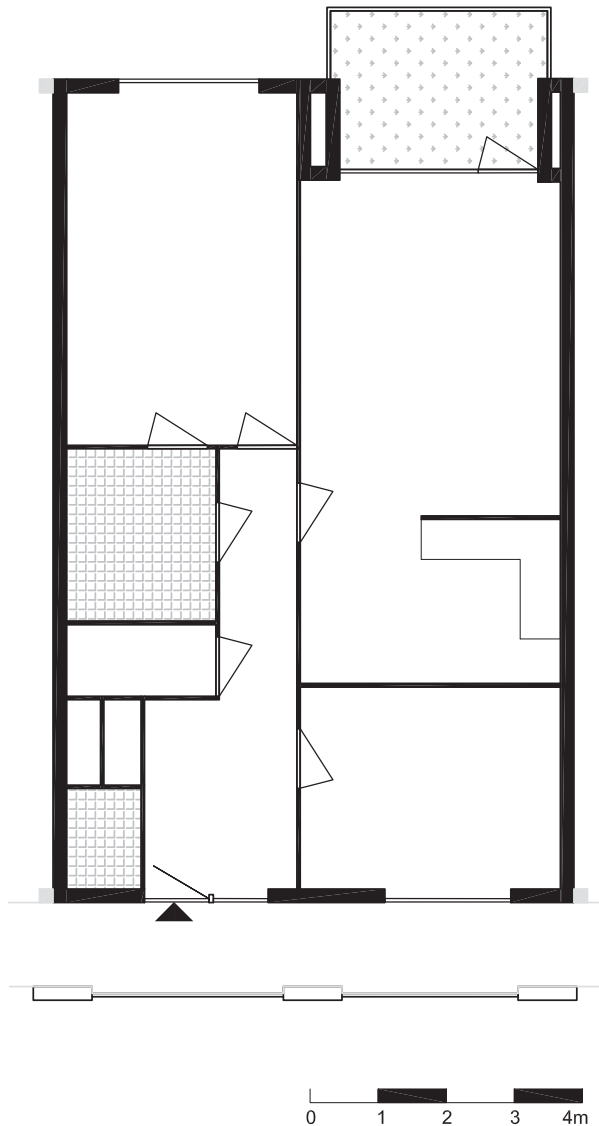


### Ijburg and Block 25

The project is located in IJburg, an artificial island which forms a new residential district of Amsterdam. IJburg provides all facilities necessary for young couples with children or starters. On the main boulevard are shops, cafes, etc. situated. Furthermore the district has schools, open green spaces and a beach. The island is connected to the city with a fast tram line, to compensate for the distance to the city centre.

Block 25, situated in the northern part of the island, consist of 3 parts: a U-shaped block with 63 social rental dwellings, 19 large terrace houses with gardens and 33 starter apartments. Moreover a children's day care center is located in the block, right below the starter apartments. A café is located in het rental block. Block 25 C, with starter's homes, is overlooking green space and water. A parking garage for 45 cars and for bikes is located underneath the block





### Apartments

In Block 25 C 33 apartments of 85m<sup>2</sup> are located. On the 4th floor 32 gallery type apartments are positioned, with windows to two sides, each fitted with 8m<sup>2</sup> loggias. On the ground floor is one dwelling situated, with windows to 3 sides. All dwellings have 2 bedrooms (17m<sup>2</sup> and 11m<sup>2</sup>), a living room with open kitchen (28m<sup>2</sup>).

### The starters home and Faro Architecten

Cities like Amsterdam, with a limited amount of houses, high demand and high prices, need to provide cheap housing for those who can't afford to buy a house, and who don't fit in the social housing regulations either. For instance without police officers, nurses, teachers, who can't afford houses on free market, cities can't function. That's why the municipality sells ground to developer who is then obligated to build affordable housing. According to the designers from Faro Architecten, there is no difference in designing normal dwellings or starter's apartments. The spatial, visual quality and materialization stay constant in both of cases. The main difference which makes a starters home is the fact that those buyers are not supposed to live their entire life in such dwellings. So, a starter home shouldn't have more than two bedrooms, a minimum of outdoor space and thus a relatively large living space. This ensures that people will move on to a bigger house once they expand their family with children; by doing so freeing up the place for the next starters on the housing market.



### **Faro Architecten and Block 25**

The building is strongly connected to the context- it has an urban exterior. The materials bring a pleasant warm atmosphere- brick refers to the Dutch architectural tradition.

The designers wanted to put their signature in the project, a new shining and optimistic accent in IJburg. They achieved that by using brighter colors of brick and white framing around the windows. The building was designed with higher energy efficiency standards than required.

Image 2.1 : General view to the site  
source: website of Faro Architecten



Image 2.2 : BLOCK 25 C  
source: website of Faro Architecten



Image 2.3 : Facade of Block 25 C  
source: website of Faro Architecten

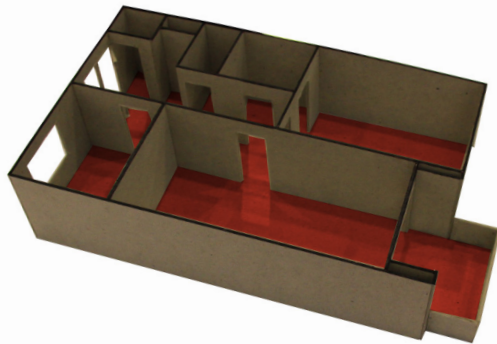


Image 2.4 : Model of apartment



Image 2.5 : Block 25 C back facade  
source: website of Faro Architecten

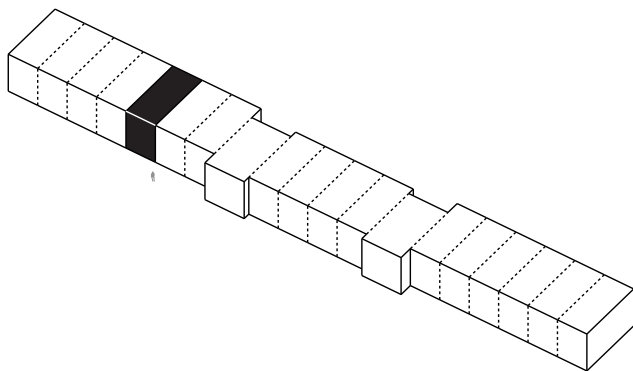
## Residents of Block 25

An interview with two couples who live in the apartment confirms that achievement. To the question 'why did you choose this building?' both of the interviewed couples answered for its architecture and its "happiness". Both are satisfied with the size of their apartments. As the major advantages of the apartments they pointed at the view from the apartments onto the water and the energy efficiency. One of the interviewed couples just got their first child, which made them decide to move out soon to a bigger house with more bedrooms and a garden; suitable for the needs of their child. The second interviewed couple is actually just moving in. In Block 25 they have their first owned home. They plan to stay in Block 25 until they get children and need a bigger home.

## Price

The developer was supposed to receive discount for the ground, in order to be able to offer lower prices for the apartments. Unfortunately there was no more money in the municipal fund for that arrangement and the discount couldn't be arranged. That's why the prices of the apartments in Block 25 are comparable to similar quality projects in the neighborhood





PROJECT:  
DE 17 STARTERWONINGEN VAN WATER-  
LEYN DELFT

LOCATION:  
DELFT, THE NETHERLANDS

ARCHITECT:  
STEENHUIS BUKMAN ARCHITECTEN

TOTAL PRICE:  
€ 190.000 - € 220.000

SIZE:  
81 M<sup>2</sup>

## DE 17 STARTERWONINGEN VAN WATERLEYN DELFT

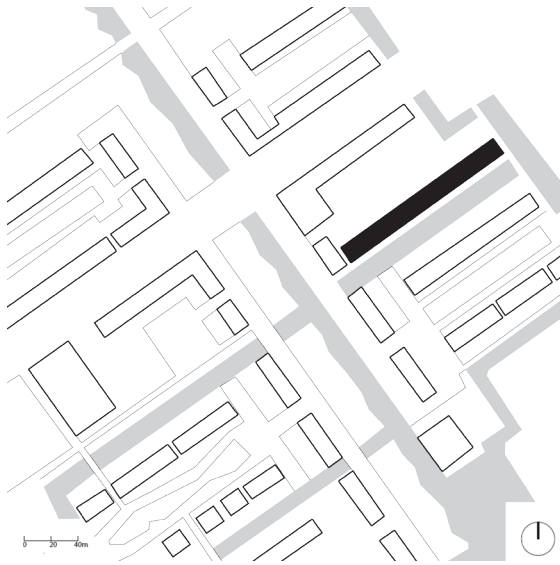
### Location

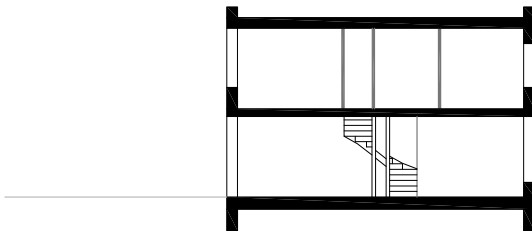
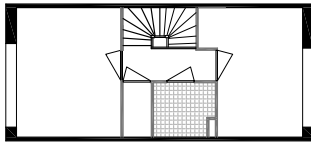
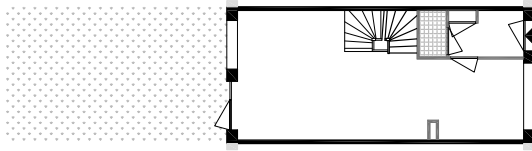
These starters houses are located in the newly developed area of Waterleyn in Delft. They are part of the big scale plan "Beeldkwaliteitplan Harnaschpolder Delft" which is conducted by the municipality of Delft. The area used to be an agricultural one during the 19th century with many glass houses. The plan now aims at the habitation of the area for a long period of time in a sustainable way. It also proposes a non-fragmental, clear architectural design that will impose flexibility and durability in the area. The materials used should be traditional and of high quality in order to achieve a good architectural expression.

The houses have been designed by the firm "Steenhuis Bukman Architecten" and have just been inhabited by their first owners who are mostly single families.

### Strategic Plan

As the project was part of the Master plan of Waterleyn, some of its regulations were taken into consideration. For example, as the apartments have flat roofs and are visible from other properties, their roofs should be green. Furthermore, the design should focus on the integration of the heating and other units. Generally speaking, although there were not many limitations from the Master plan to the design of the apartments, there was a limitation to the size of the site itself. The architects decided to divide the rectangular block into narrow slices so as to produce the maximum number of apartments in a certain width.





Map 4.1: From top to bottom: Ground Floor, First Floor, Section

## Organization

As far as the design is concerned, the project is developed as one rectangular block which consists of 17 two-storey apartments of approximately 81m<sup>2</sup> each. Every apartment has two big bedrooms on the first floor and its own big garden next to the river.

In detail, the basic plan on the ground floor consists of an entrance hall, a cupboard, a modern bathroom, a kitchen in the north side of the dwelling (2.70 x 3.50m) and a spacious living room in the south (5.90 x 4.25m). On the 1st floor, the two bedrooms (4.25 x 4.25 and 3.40m x 3.45/2.80m) are placed one opposite the other with a bathroom (2.00 x 1.80m) and a storage room in between.





Image 4.1: General View to the Site in 3D  
Source: Official Website of "Steenhuis Bukman Architecten"



Image 4.2: 3D view  
Source: Official Website of "Steenhuis Bukman Architecten"



Image 4.3: Exterior view of the back side with the private gardens

## Design

Each apartment has private storage space in the two storage units that vary from 4.5 to 5.5 m<sup>2</sup>. Furthermore, in the north there is parking space of 1.4 per apartment. From this area the inhabitants can directly enter their houses from their private entrances. The private gardens are placed in the south and, depending on the placement of the apartments, they may vary from 33 to 46 m<sup>2</sup>. The south orientation of the living room and the green roofs that act as natural thermostat contribute to the sustainability of the unit. Because of the small site area, the block does not provide any kind of communal space. However, a small public park is designed in its west side.

## Customization

However, the biggest advantage of this project is the freedom of customization that the clients are given. Apart from the two variations in the design (the corner apartments or the in between ones), the owners can complete the houses as they wish. The main additions that can be made on the basic plan are the position of the kitchen, the division of one bedroom into two, the type of the toilet and the addition of an extra floor that can host two more bedrooms or one bedroom and a terrace. In this way and with some extra costs, the owners can form their apartments depending on their needs.



Image 4.4: View of the entrances

### Costs

As far as the price is concerned, it varies from €190.000 to €220.000 per apartment, a variation which basically depends on the size of the garden and the view of the apartment. The construction costs are estimated to be €100.000 per apartment. Finally, the costs were kept in low levels because of the prefabricated construction methods that were used. The material's palette consists of prefabricated concrete casco, brick cladding and aluminum. The simplicity of the materials led to the minimum construction duration of 9 months.

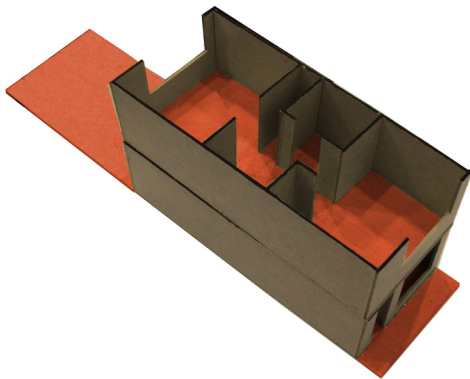
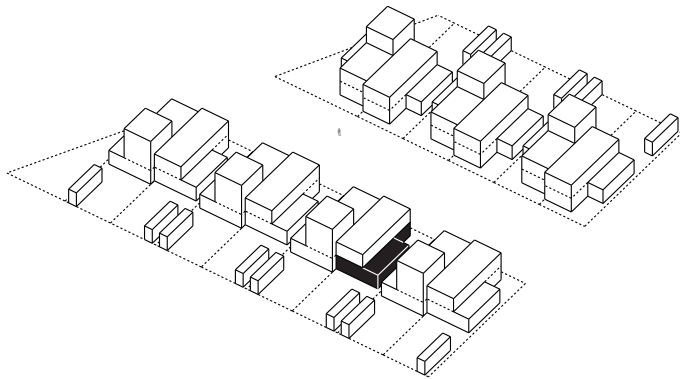


Image 4.5: Model of an apartment





PROJECT:  
STARTER VILLA'S WATERRIJK

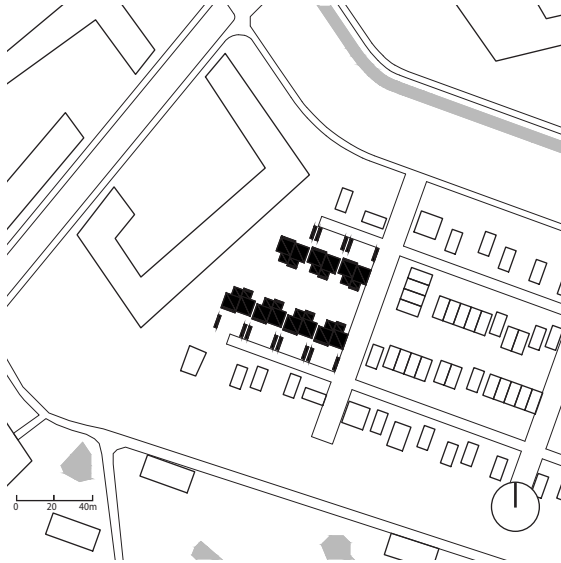
LOCATION:  
EINDHOVEN, THE NETHERLANDS

ARCHITECT:  
ZECC ARCHITECTS

TOTAL PRICE:  
€ 160.000

SIZE:  
66 M<sup>2</sup>

## STARTER VILLA'S WATERRIJK



This project is part of a bigger development plan named Waterrijk in Eindhoven. This development plan is supervised by Architectuurstudio Herman Hertzberger. This plan consists of a mix urban and scenic chambers. In these chambers you're able to discover different spheres. These chambers are developed by different developers. One of these scenic chambers is this project designed by Zecc Architects.

### Location

Architectuurstudio Herman Hertzberger has made a frame of constraints in their quality plan. It was the assignment of Zecc Architects to make a plan for 21 starter houses within these constraints. The main goal was to save on asphalt roads and show as much scenery as possible.

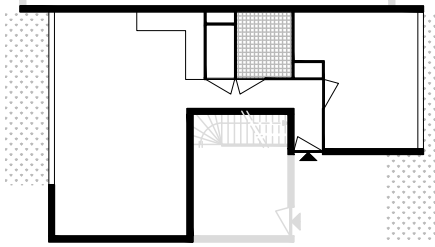
Zecc Architects succeeded to make a logical plan for the starter houses with a luxury look to it. One blocks of houses consists 4 starters houses. The houses are combined in such a way that 4 starters houses have the appearance of one villa.

The appearance of the area should look modest. The future buildings on the site should not appear to be a physical barrier by being a closed wall. The facade should be open enough to be able to look at what is behind the buildings.

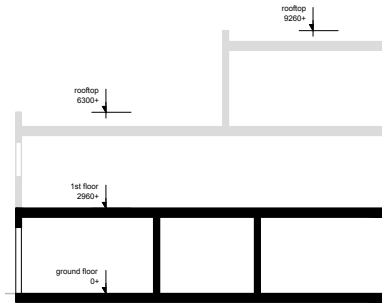
### Logo's

You're able to see on the left this house is fully designed and ready for starters to move in. It has a garden, the upper floors have a balcony for outside space. The housings in the area offer lots of variation. It is situated in a very green suburban location that is very green and not too far from the centre. There is space for facilities like storage and parking.





Map 4.1: floor plan - ground floor



Map 4.2: section



Image 4.1: Impression, avenue of trees  
source: the office of Zecc Architects

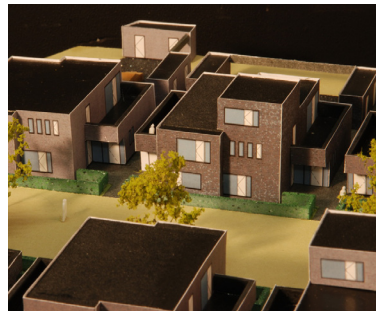


Image 4.2: Impression, block of four villa's  
source: the office of Zecc Architects

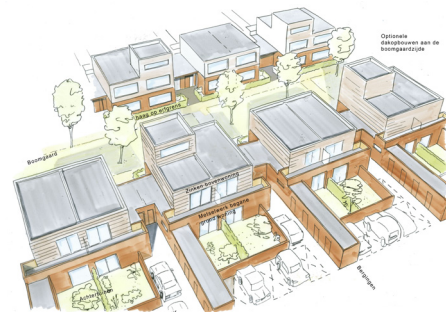


Image 4.3: Perspective drawing impression  
source: the office of Zecc Architects

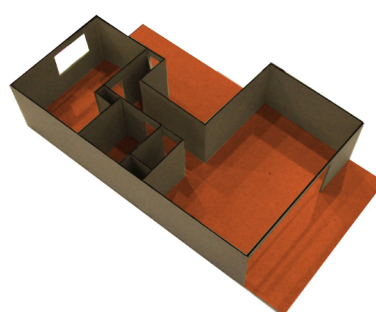


Image 4.4: model



Image 4.5: section area  
source: The office of Zecc Architects

## Design

All the houses lay against an avenue of trees without any cars. This is a representative entrance for visitors. There is enough outside space, storage and parking spaces for every starter house at the backside of the houses. This parking area is private. When you park your car as a visitor, you should park it on a visitors parking road at the end of the avenue of trees. This visitors parking road lays perpendicular on the avenue of trees. In this way you get a feeling of the scenic area when you walk this avenue. (Image 4.5: section area)

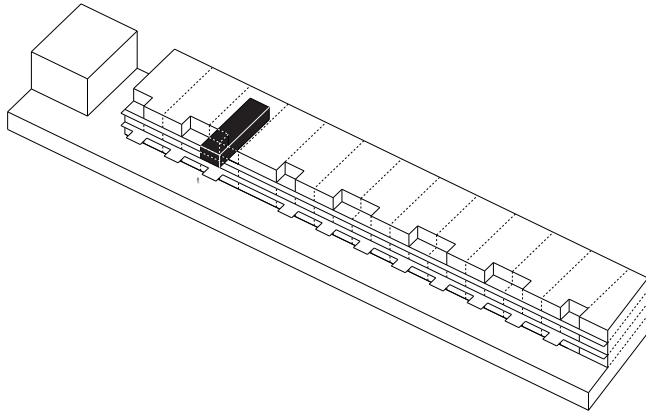
The plans are convenient and compact. There is always an open space for living with a kitchen combined with a living room. The private part is separated from the living part, on the other side of the house.

There are different plans to choose from. You can have your bedroom on the north or south side of the house. When you have your house on the 1st floor, you can choose whether or not you want an extra floor as an extra bedroom.

The images 4.1 and 4.2 represent some impressions. There is a warm and nature look reflects on the what the idea of the area is.

The house is not very cheap compared to the size. But you get something else in return. A beautiful home that is compact for within a very nice area to live in.





PROJECT:  
GROENENWEG

LOCATION:  
UTRECHT, THE NETHERLANDS

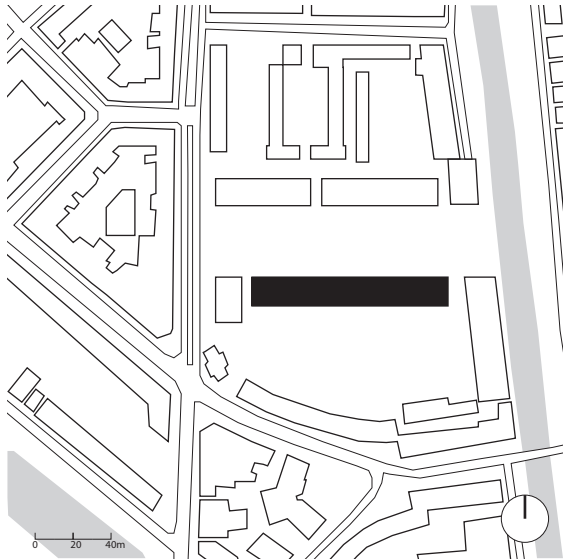
ARCHITECT:  
ARCHITECTEN VAN MAURIK

TOTAL PRICE:  
€ 105.000

SIZE:  
50 M<sup>2</sup>



## GROENENWEG



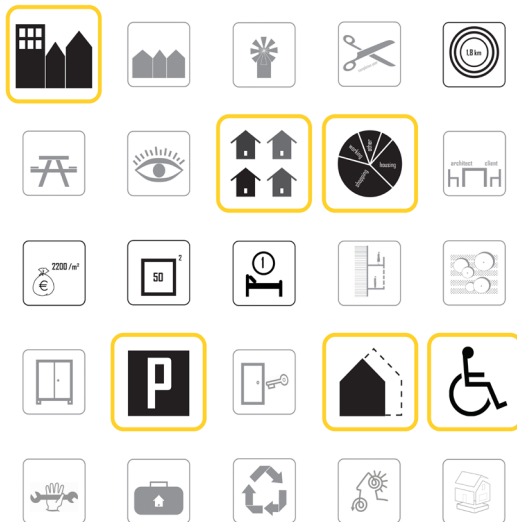
Lombok was originally a working class neighborhood located near the historical centre of Utrecht. Since the late nineties it's slowly transforming, mostly because of the influx of young families and yuppies, who find the vicinity of the city appealing and enjoy the variation of exotic shops and restaurant.

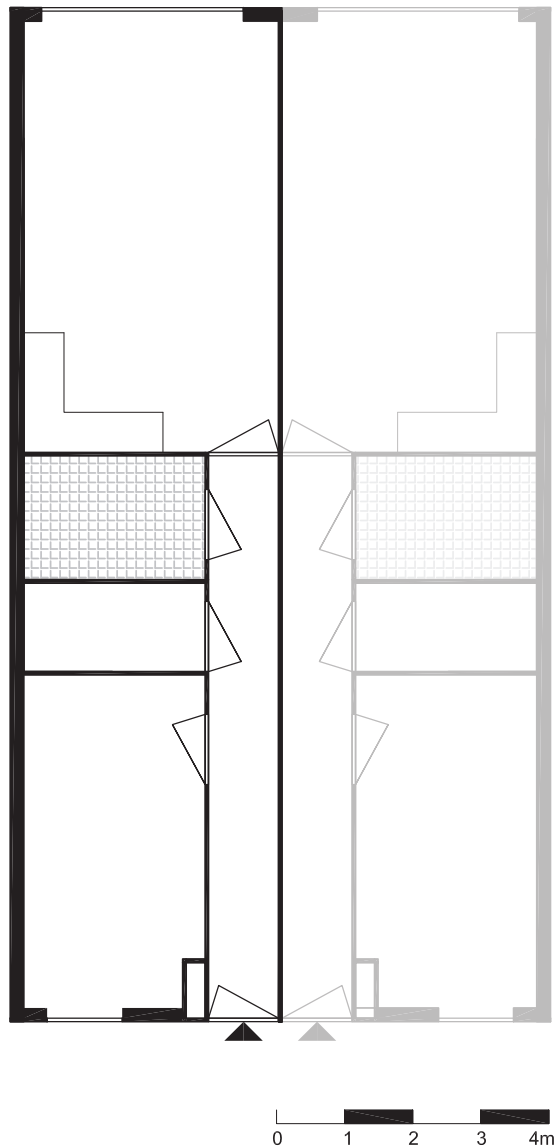
The area of Groeneweg is falling behind on the development of Lombok, partly because of the bad state of real estate, discount supermarkets and undefined public space. Developer company Multi Vastgoed will redevelop the area with a variety of apartments, a neighborhood centre and a public central square; based on an urban plan of T+T studio. The main goal of the revitalization of the area was to attract a young, ambitious and vivid community which will catalyze the changes.

An elongated central square connects Groeneweg and the Old Rhine, where stores can be found in the plinths of the blocks. The majority of the square can serve as a public plaza and parking nearby the square. A narrow strip on the Old Rhine is designed as a park.

As compensation of developing profitable retail in the area, the developer had taken the obligation to give back something to the future community: a Youth Centre with sports hall.

Van Maurik Architecten is responsible for the architectural design of the Youth Centre, shops and apartments. In the architectural design, on two sides of the central piazza elongated blocks are situated with the shops in the plinth, and apartments above. At the Old Rhine shore two blocks are placed with generous 3 and 4 bedroom dwellings.





## Block N

Block N is situated on the northern side of the piazza. In the corner from Groeneweg side, above the shops the Youth Centre is placed. The block is 4 stories high and hosts 46 apartments of 50m<sup>2</sup>, suitable for starters or students and 13 bigger apartments of 90m<sup>2</sup>.

Very unusual is the construction grid used in the design. Typical for The Netherlands is a span of 6 or 7,5 m from partition wall to partition wall. In block N designers proposed 8,1m. Such solution enabled design variety of smaller units at first and second floor (two dwellings fit into one span) and dwellings twice as big at the top floor. Moreover smaller units are divided by non-load bearing walls, which gives the possibility to combine two small units into one big. This gives the flexibility for the developer to adjust to changing and unsure situation on the real estate market.

Dwellings in Block N should be affordable, which makes sure that dwellings will be sold out even during difficult situations on the market. Moreover the developer has big financial losses because of constant design changes and years of struggle with the municipality. Designers from Architecten Van Maurik had to struggle with a very tight budget.

The first cost cut involved the parking for residents. The requirement from municipality is to provide a sufficient amount of public space as piazza. That's why parking for residents had to be placed within the blocks, but difficult groundwater conditions and high costs made them abandon the idea of building subsurface. Instead the large roof surfaces above the shops became the residents parking.



Image 5.1: General view to the site  
source : website of Architecten Van Maurik

The architects decided to design a gallery block- a gallery is a cheaper solution than a corridor, lower the amount of walls, heated areas and enable the design of dwellings with windows on two sides. Also the minimum of collective spaces were provided- as galleries. By doing so resigning from lots of small and low quality public spaces in favor of the large green central piazza.

### **Starters home and Architecten Van Maurik**

According to the designers of Architecten Van Maurik a starter home shouldn't be bigger than 50m<sup>2</sup>, the dwelling should include all required living spaces, bathroom (including toilet), one bedroom suitable for double bed (minimum 12m<sup>2</sup>). The living room should include a furniture layout space of 3,3 x 3,3m (woonmatje), a kitchen with a counter top of 2,1 m long and space for a dining area 1,8x 2,4 m (table with chairs). Moreover dwellings in Groeneweg include also space for small storage/ central heating and space for gas/water measurement equipment. In case of Groeneweg, starter homes are not fitted with a private outdoor space. The galleries that lead to the dwellings have enlargements, like a kind of balcony, which belong to each dwelling. All dwellings also have a French balcony.



Image 5.2: Block N  
source : website of Architecten Van Maurik



Image 5.3 : Youth Centre  
source : website of Architecten Van Maurik

### Cutting the costs

Lowering the cost of the construction is also directly connected to the dwellings, which are very deep (maximum depth) and have a minimum of façade surface, which is the most expensive element of the building. Moreover openings in the façade are minimized (according to light requirements). Designers tried to use cheaper materials and finishing, in such way that they are not recognizable and have no impact on the quality, for instance window frames are plastic instead of wooden (what makes it cheaper and easier with the maintenance) and construction elements of dividing walls are made in timber-frame construction.

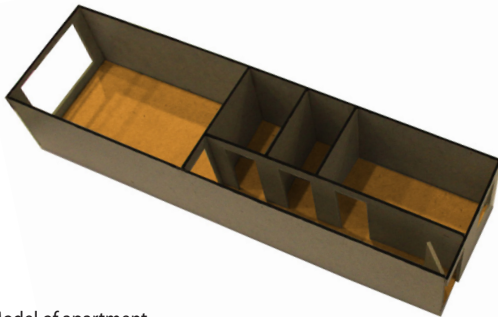
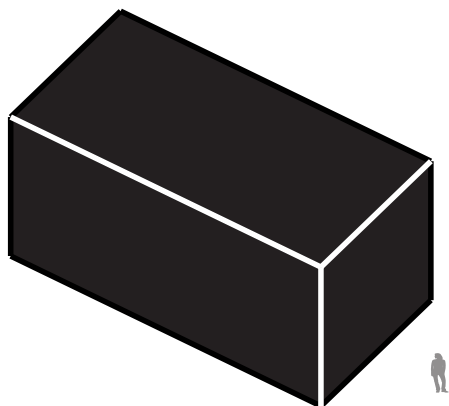


Image 5.4 : Model of apartment



Image 5.5 : Central Piazza  
source : website of Architecten Van Maurik





PROJECT:  
BAG-A-BOX

LOCATION:  
HOMERUSKWARTIER, ALMERE

ARCHITECT:  
COURAGE ARCHITECTEN

TOTAL PRICE:  
€ 142.000

SIZE:  
55 M<sup>2</sup>

## BAG-A-BOX



The history of the Bag-a-Box housing started in the project "I build affordable in Almere" (IBBA). The aim is to set private clients with a starters-income in a 'build-my-own' house position. The municipality of Almere arranged plots for this project in the Homeruskwartier (Almere). At the end of 2008, Courage architects and builder Roelofs & Haase were asked to present a home design for this project. They decided to use two earlier projects in Almere where they worked together, as the starting point for this design. These so-called 'Ipod-houses' have a shell of steel, a steel framed construction. Courage turns the design of the Apeldoorn 'ipod-houses' into starter homes that are presented in the catalog of the 'IBBA'.

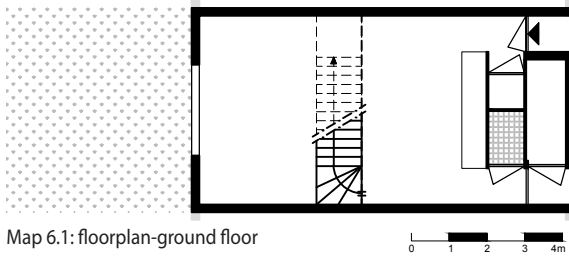
### 'Ipod-house'

The catalog houses consist of a basic design that is largely fixed. With the Bag-A-Box the buyer has freedom of choice in the width and length of the house, the layout, the layout of the rear elevation and the color of the facade. For this reason the designer called the house an 'Ipod-house' in a token interview. For a Bag-a-Box house with two layers, the basic design, customers pay around € 130,000 and € 180,000 for three layers, including foundations, installations and taxes. The price of the plot and costs like that are not included in the price. But compared with starter homes already built in Almere and cost around the € 129,000, the Bag-a-Box is relatively cheap.

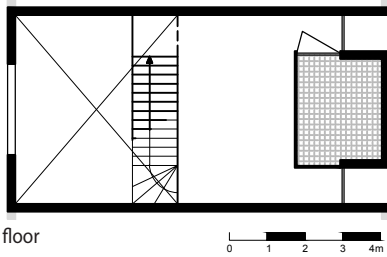
### Design

The basic design consists of a rectangular volume. This volume has a fixed square in it on the ground and first floor. The square in the ground floor plan exits of a the kitchen, bathroom and meter cupboard. On the second floor; the bathroom,

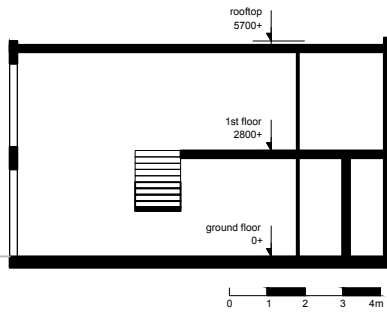




Map 6.1: floorplan-ground floor



Map 6.2: floorplan-1st floor



Map 6.3: section



Image 6.1: front view  
source: website, Roelofs & Haase



Image 6.2: impression inside  
source: website, Roelofs & Haase

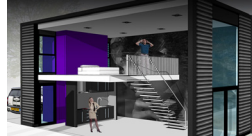
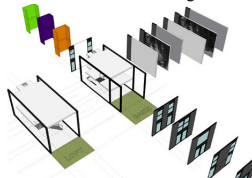


Image 6.3: impression section  
source: website, Courage



BAG-A-BOX



Image 6.4: Variations + Logo  
source: website, Courage

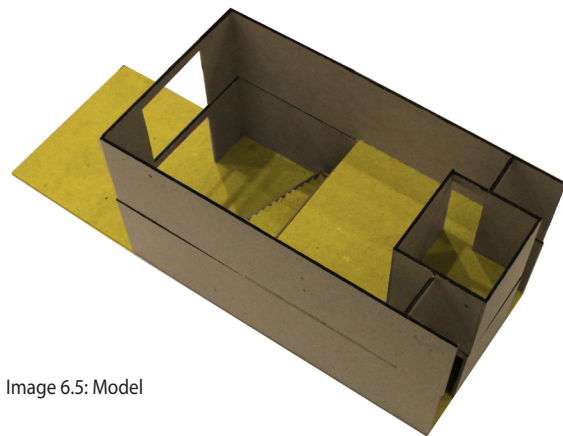


Image 6.5: Model

central heating and other installations. The customer can choose from a width of 4, 5 or 6 meters and from a 10, 11 or 12 meters depth. The supply block, situated in the middle-front of the building, is fixed and has a static place. The stairs may shift between several fixed positions in the floor plan. Apart from the supply block, the house has an open format with no interior walls. The house has two stories as a standard, but the construction can be prepared for expansion with a third and fourth floor and/or terrace. There is always a void in the floor plan, but that can be sealed later by extending the first floor. Besides the use of black plates of steel, a hallmark of Courage, the glass and the colored facade are the trademarks for the design. There are choices for the layout, material and color of the cladding to turn the house in a 'personal house'. That is why it is called 'lpod-home'.

### The Fun Factor

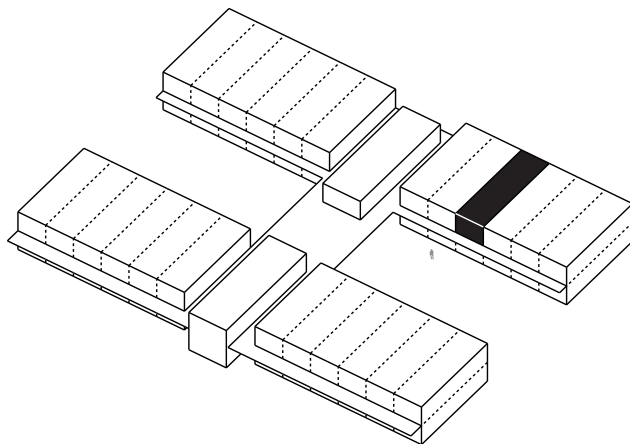
In the future there will be more houses of a higher price range in the area. Courage Architects achieved to make a house with lots of personality and style within the given price range. Bag-A-Box is all about image. It's a house of steel which has a lot of character, because of the unique appearance. It's not a massive house that is built in such a way that there is as much salable area as possible. This house has a great space inside and the outside is unique. You can be proud of a possession like this. an extra factor to it, Lars Courage called it "The Fun Factor". A nice fact is that one of the owners even calls himself "De Zwarte Doos" (translated: The Black Box) on the social media site Twitter.

This house doesn't adapt to your lifestyle.

This house is your lifestyle!







PROJECT:  
STARTERWONINGEN AMSTELVEEN

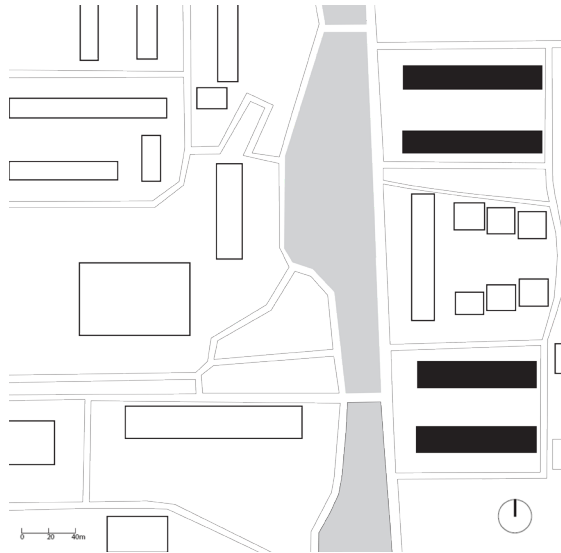
LOCATION:  
AMSTELVEEN, THE NETHERLANDS

ARCHITECT:  
B.A.G. ARCHITECTEN

TOTAL PRICE:  
€ 125.000

SIZE:  
55 M<sup>2</sup>

## STARTER WONINGEN AMSTELVEEN



### Location

The block of starters houses is in Amstelveen, a city 10km away from Amsterdam, with a population of around 80.000 people. Amstelveen is considered to be a residential area, as it is a cheap choice for people living near Amsterdam and working in the surrounding areas. Moreover, our research block, 2.5km away from the center of Amstelveen, is in the district of Bankras, with population of 4.680 people.

### Strategic Plan

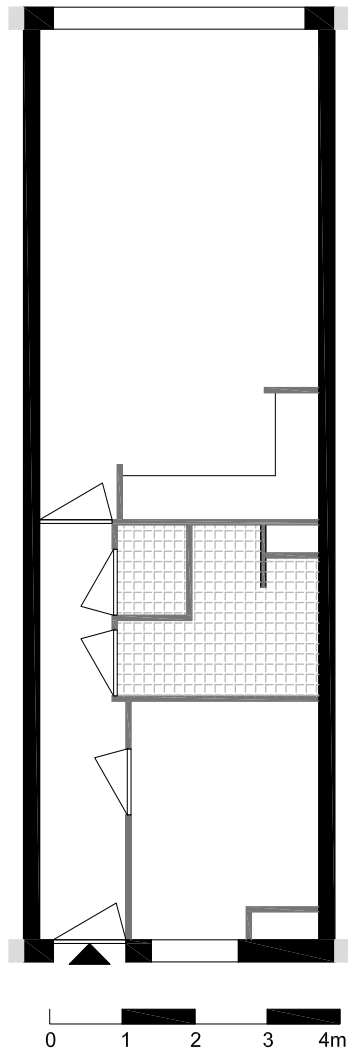
The strategic plan of the area from the municipality included the design of a highway. However, the plan was cancelled and the municipality decided to develop it as a new residential area. The municipality assigned B.A.G. Architecten to design and construct two blocks of starter's houses. There was not any restriction or limitation to the number of houses to be constructed. Two blocks of 48 apartments each were designed. After their completion in 2007, the apartments were bought by the agency Woongroep Holland, which was responsible for selling them to independent clients. The majority of the people who bought them work as nurses, teachers, policemen or firemen in the area of Amstelveen and Amsterdam.

### Organization

Each block consists of two rectangular shaped volumes with two rows of two-storey buildings each (4 buildings in each block). The apartments on the ground floor have a small private garden, whereas the apartments on the first floor have a French window. Access to the apartments on the first floor is possible through a gallery. Between the volumes there is a common collective space forming two types of community gardens: one for



reading and relaxing with tables and benches, and another for fiestas or barbeques. In the middle space of the block there is the core with the lift and private storage space of 2m<sup>2</sup> for each apartment. Private parking is not included, only public parking lot. Moreover, according to the regulations, each apartment has a 0.7 parking.



Map 8.1: Floor Plan-Ground



Image 8.1: General View to the Site



Image 8.2: View of the gardens



Image 8.3: Exterior view

## Construction

The construction of the blocks lasted 14 months and the materials used mainly were aluminum, wood and brick. All the materials were chosen with low maintenance costs in mind. According to the architect, he wanted to create a rough shell outside using metal and brick, whereas the inner walls were made by wood giving a softer impression. In order to save on energy all the living rooms face to the south. Also, the width of the in-between common space is the minimum required for the low light of the winter to reach the north façades.

Each apartment is approximately 55m<sup>2</sup>, suitable for one person.

## Flexibility

As far as the interior is concerned, the client could only choose whether the toilet would be in the bathroom or separate. For identity reasons, each apartment's front door has different pastel color (6 colors in total). The only bedroom of the apartment is rather small and there is not possibility of extension. As the architect informed us, his main intention was to reduce the level of comfort inside the apartment. The aim was for the owners to stay in the houses only for a few years and to be forced to sell them when they find a partner to live with. This design detail is also related to the contract rules of the houses. According to them, after the purchase the owners cannot sell the apartments by themselves, but they have to sell them back to Woongroep Holland. If the owners choose to sell the apartment within the first 15 years, they will have to give 30% of the amount they will receive to the agency. If they choose to sell them, after 15 years, they can keep the whole amount.



Image 8.4: Entrance of the apartments

### Costs

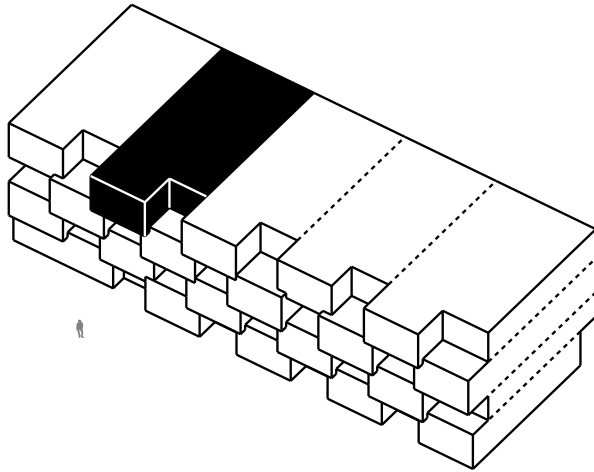
Each apartment cost around € 150.000. The agency paid € 25.000 for each apartment, so they were sold for approximately € 125.000 to the first buyers. Only the two corner apartments cost approx. 3.000 € more, due to the side windows they have. Moreover, the realization costs of € 125.000 are divided as follows: € 25.000 for the site, € 80.000 for the building costs and € 20.000 for extra costs, including engineers, architects, electricity, water and heating system.

In general, there are no extension possibilities for each apartment. There has been a thought, though, that if there is no need in the market for starters houses in the future, the apartments can be merged together in order to form bigger apartments suitable for families. That is the reason why parts of the floors or the division walls between the apartments are removable.



Image 8.5: Model of an apartment in the ground floor





PROJECT:  
STARTERSWONINGEN ALKMAAR

LOCATION:  
JAN VAN HEEMSTRAAT, ALKMAAR

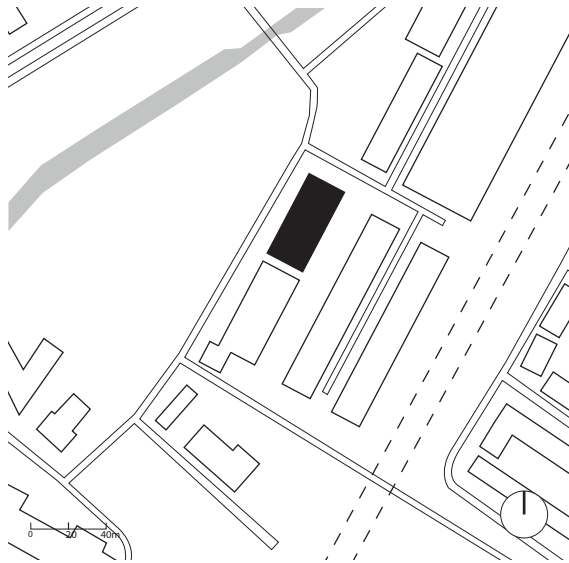
ARCHITECT:  
DOK ARCHITECTEN

TOTAL PRICE:  
€ 165.000

SIZE:  
~ 90 M<sup>2</sup>

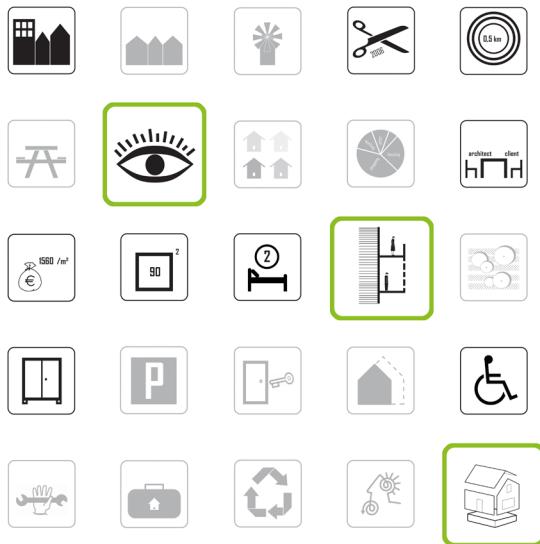


## STARTERSWONINGEN ALKMAAR



A starters housing project done by the Dutch architecture firm DOK Architecten. Responsible for this project are architects Ludo Grooteman and Gianni Cito, a pair that are doing a lot of projects together referring to the website of DOK Architecten.

The project is situated at the Jan van Heemstraat in Alkmaar. The houses are pretty close to the railroad which is the dotted line on the map on the left of this page. At the moment there is nothing present on the other side of the road, so here inhabitants have a nice view from the living room. This has not always been the case, since in the past there was a large factory building that has been demolished only a few years ago. This was probably an impulse for this location to accommodate new starters houses. People enter the building from the south where there are stairs and galleries.



### Symbols: View and private outer space

As every other project in this booklet unique selling points are accentuated by logos showing up on the left. The most important selling points for this project are the nice view, the private outer space and the fact there was some significant cost cutting by cooperating closely with the contractor/manufacturer of the houses. Another big advantage over some other projects is that it is wheelchair friendly. There is actually just one floor per apartment without any internal staircases. You can reach your own apartment by stair, but there is also an elevator. Another advantage is the distance to the city center which is in a radius of half a kilometer. This is pretty close for a starters house and not very common compared to some other projects. The neighborhood for the project itself is nice and quiet.

## The floor plan of the individual houses

Something that attracts our attention when analyzing the floor plans is that the individual units are very wide. At first you would not notice but when you analyze the floor plans a little further it is pretty big. The width of every apartment is 7,5 meters which was set in cooperation with contractor Heembeton. They still had the molds for the concrete floors available and the building was adjusted for these molds.

The floor plan itself is simple with a long hallway that connects all the individual spaces. This way all the space is just in the living areas themselves and very few is wasted on circulation space. The hallway ends up in the living room, that has an open kitchen in it. The form of the living room is adjusted because part of it is actually used as private outer space in the form of a loggia/balcony. In the section you can also see that the façade is jumping back and forth, and that not every apartment can be the same, since some are jumping further than others. This is also a way to vary the price per apartment and a way to make some variations in the floor plans. Some floor plans, for example the ones around the stairs, are organized differently.

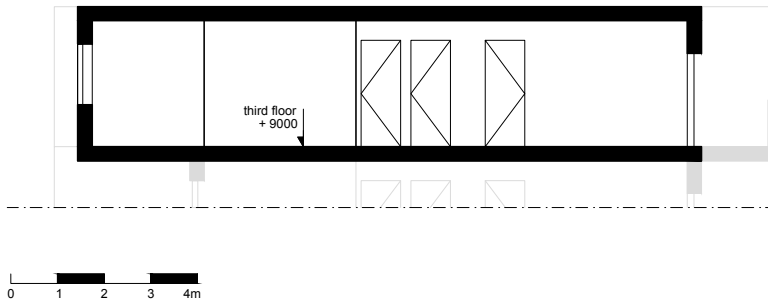


Image 8.1: Section through one of the startershomes. The relief-façade can be found on only one side of the building.

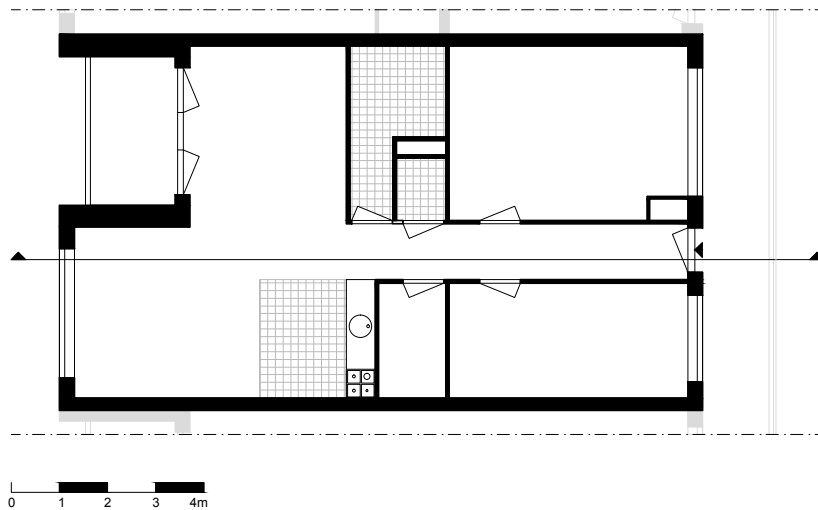


Image 8.2: Typical floor plan of a dwelling. There is a big hallway with bedrooms and a bedroom that ends up in the living room.

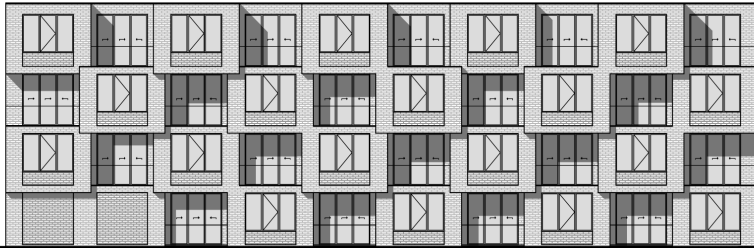


Image 8.3: The relief facade on the northern side of the building.

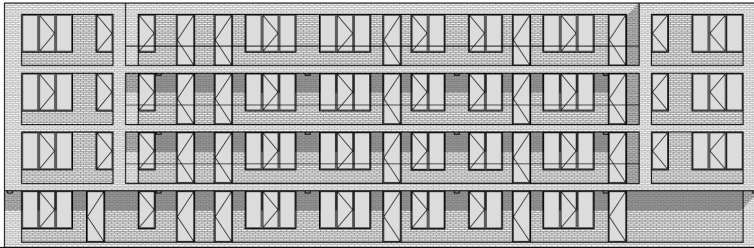


Image 8.4: Southern facade with galleries as access-principle.

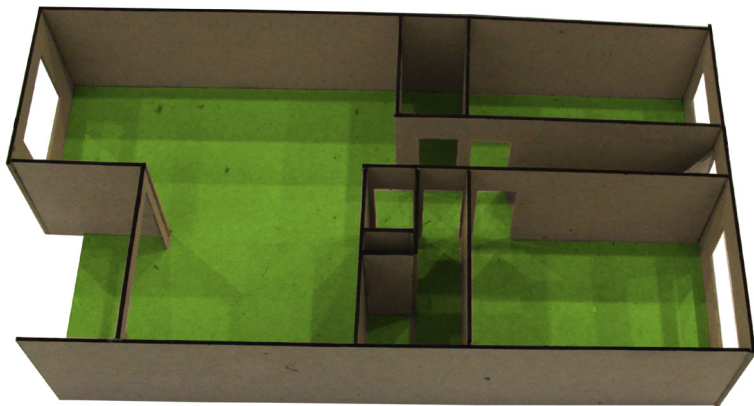


Image 8.5: The paper model of the building.

### Cooperation with contractor Heembeton

The normal way of building homes in the Netherlands is by 'calling for bids' (aanbesteding in Dutch). This is the traditional way of building and should make the market more competitive. This way contractors have to be competitive with their prices, but new approaches are often even more fruitful. Technical disciplines are involved earlier in the building process to express their wishes for the design. In simple projects this is done in a later phase than in very complex ones.

This project was actually technically pretty simple. Still the contractor was involved in an early phase. The people at Heembeton expressed their wishes for a floor span of 7,5 meters, for which they still had molds left. This means that the contractor could make the floors cheaper and DOK could design the building for this span. The structure of the building is actually a pretty simple concrete skeleton. The thick concrete walls are used for the sound requirements between the apartments. All walls are solid and the floors span from wall to wall. For the gallery on the south side, columns were necessary, because bearing walls are not present.

### Cutting the costs: Gallery access principle

In every starters housing project there are compromises made. The same is true for this one and can be seen on the façade views on the left of this page. One façade is the beautiful relief façade, but on the south there are the galleries. These galleries form, together with two internal staircases, the access principle for this building. This is not very common for starters houses and is mostly used in the social housing sector. Since your front door is located at the gallery this makes your entrance less inviting.



Image 8.6: Daytime view of the northern facade.



Image 8.7: Nighttime view of the northern facade. There is a large open field on this side of the building.

### **Relief Façade**

The relief façade is one of the most important features of the building. The façade offers much good things that are absent in other apartment buildings. First of all it gives the building a more appealing look. All the apartments are different which is considered a big plus in a building where normally every apartment is exactly the same.

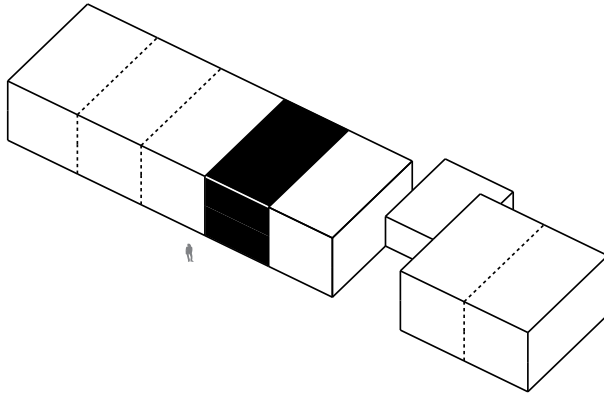
The living room gets divided in two parts which makes a good internal organization easy to achieve. Also balconies/loggias are created in this way. The balconies offer some private outer space for the inhabitants. These loggias are real private, because you are surrounded by the blocks and you cannot see your neighbor sitting in his loggia. The space might be a little oppressive for outer space though.

The detailing for the relief façade was done very traditional, which also put the cost for the building a bit down. The floors are not interrupted and the isolation package with the finishing outer walls are simply wrapped around the structural system.

### **Selling**

The selling of the apartments was done up front. About 67-80% was sold before starting the building process.





PROJECT:  
STARTERSWONINGEN TILBURG

LOCATION:  
TILBURG

STATUS:  
NOT BUILT

ARCHITECT:  
MARQUART ARCHITECTEN

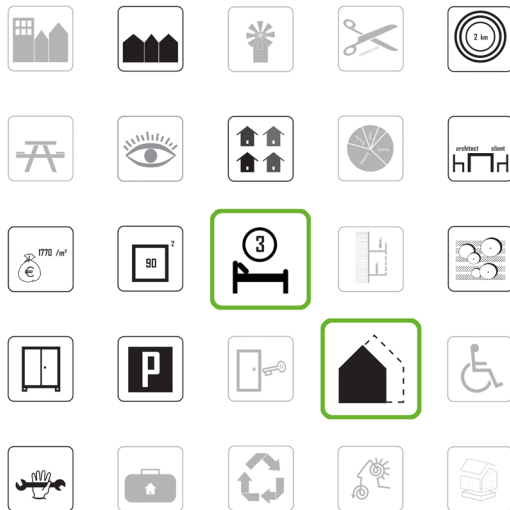
TOTAL PRICE:  
€ 160.000

SIZE:  
90 M<sup>2</sup>

## STARTERSWONINGEN TILBURG



This is a project by the Dutch architecture firm Marquart Architecten. It was an internal research for a contractor from Tilburg who asked the question if they could design something that is extendible. Because this was only a research project it was never built. Though it was never built we can say something about the location. The location is in the region of Tilburg in the Netherlands and it would have been built on a new piece of ground. There was no real plan developed so the research focuses on a single building block. Since the location is in a VINEX district, which is not spectacular in any way, it is kept out of the scope of this research on purpose.



### **Symbols: Bedrooms, extensibility.**

Something that is present in designs for starters by Marquart, is that they don't try to make the designs as small and cheap as possible. Their guide price should stay below €200.000,- though, that is their target. They try to make them cheaper but you don't want to make them as cheap as possible. This design is actually a pretty big one measured in cubic meters. The houses have three bedrooms on the first floor. There is also the possibility to extend the house, so there would be even more space. This starters house could be considered real future proof.

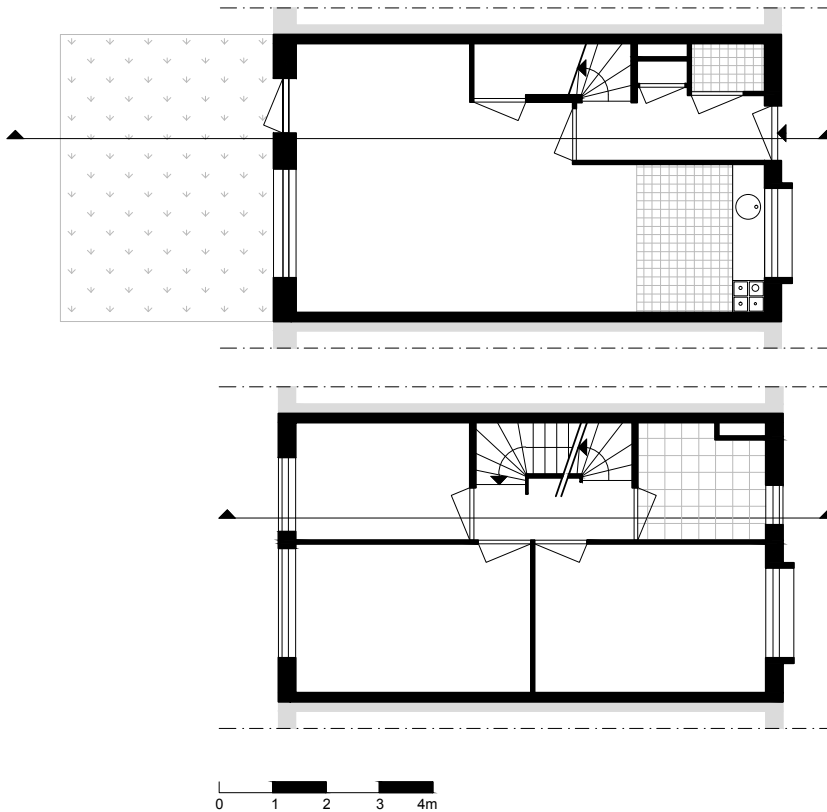


Image 9.1 and 9.2:  
Typical floor plan  
of the ground floor  
and the first floor.

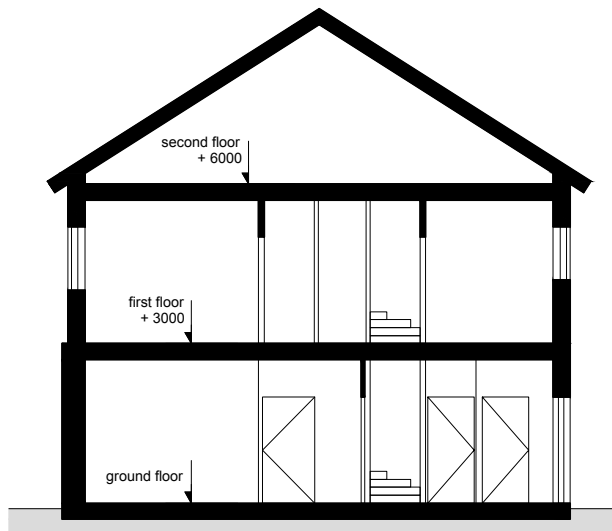


Image 9.3: Section of  
the building with the  
extended roof.

## The floor plan of the individual houses

When we have a look at the floor plans you can see that the spaces are actually pretty big for the price of the building. It must be said that we should look at these floor plans and sections without the sloped roof on it. The sloped roof is actually an extensibility options that is not present in the initial, cheapest form of the starters house. But still without this extensibility it is still a big floor space. The first floor consists of a small hallway, an open kitchen on the front and a living room on the back of the house. It is pretty much the traditional "doorzonwoning", with an open kitchen on the front. The advantage with this kind of layout is that light is coming from two sides and because of that a deeper building is possible.

Moving to the second floor we find three bedrooms and one bathroom. The three bedrooms are pretty small, but you will have three of them. So when you ever want to get children, you can use one of the rooms as your childrens bedroom and the other one for storage. The compromise you make is that the bedrooms themselves are relatively small.





Image 9.4: Variant of the building block with sloped roofs on all the houses. The houses on the corner with the garage would be more expensive than the middle ones.

## Extensions

The project is extendible. The extensions are of two kinds; you could extend your living room to the back, since you have enough garden space to do this. Also the light coming from two sides is a good reason for making this particular extension, because the building won't become too dark. If there was only light from one side and the building would be made any deeper, it would probably become too dark. The other extension is to put a sloped roof on the top floor. This can be seen on the bottom left picture of this page, where two houses have the sloped roof and the others don't. For example this extension can be used if your kids are getting older and you want them to have separate bedrooms on the first floor, and then you can have the attic for storage. You could also make bedrooms on the second floor or anything else that requires more space.



Image 9.5: Another variant of the building block. The sloped roof is again present, but not on every house this time. The facade is also different from the one above.

An important question is why this building was made extendible in the first place? Why would a starter need an extendible house? The contractor thought about this and noticed in the market that most people never stay in their first house for ever. When the first children are coming up, people will probably move to another home that has more space. You will have to find a new house and moving to another place is most of the time a lot of a hassle, especially in these days of economic crisis. That is why the contractor for this project asked Marquart Architekten to find a solution for this problem, in the form of extendible houses where you would not have to move, but just create extra space by extensions.



Image 9.6: Another view of the terraced houses.

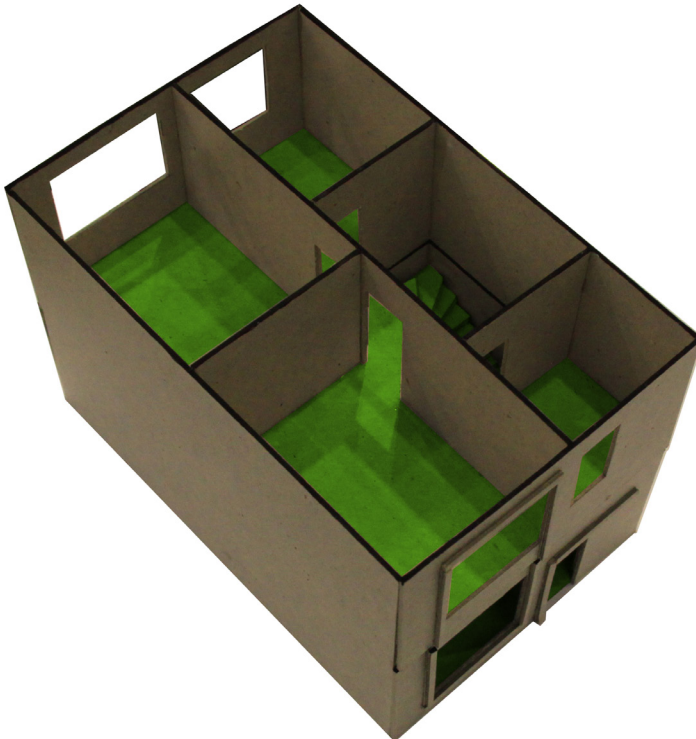


Image 9.7: Paper model of the building.

### **Agreements**

An important aspect when you make your terraced houses extendible is the agreements you have to make with your neighbors. You could imagine that when your neighbor starts building an extra floor on his home you will have less light in your garden. These are aspects that are pretty problematic because it is hard to make good contracts for it. A good way could be to assign a contractor with some standardized extensions where people can choose from.

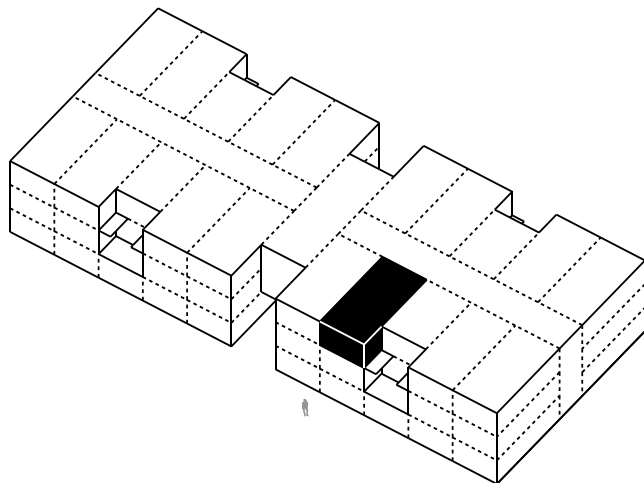
### **Mixed building types**

Marquart Architekten like to mix house types in a neighborhood. It is not very common to have a full district with only starters houses. There is always a mix with other types of houses, like social housing, duplex and free standing houses. This way the inhabitants of the neighborhood get also more varied. When buildings are made for extending the block itself gets more differentiated over time too. Also people could start with an extended house, so the building block is differentiated in the first place.

### **Materials**

For materials Marquart Architekten don't like to use the cheapest possible. This is because starters houses are for buying and people want to buy a certain kind of quality, also when it comes to materials. So window frames are wooden, and windows sills are stone. The cheaper materials like aluminum and plastic are good enough for social housing but starters prefers some more quality.





PROJECT:  
STARTER HOMES IN A FORMER TAX OFFICE

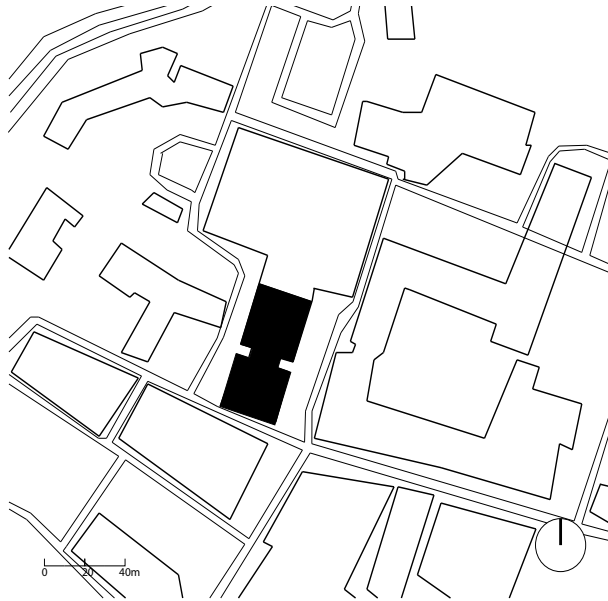
LOCATION:  
DOETINCHEM, NETHERLANDS

ARCHITECT:  
AZHX ARCHITECTEN BNA BV

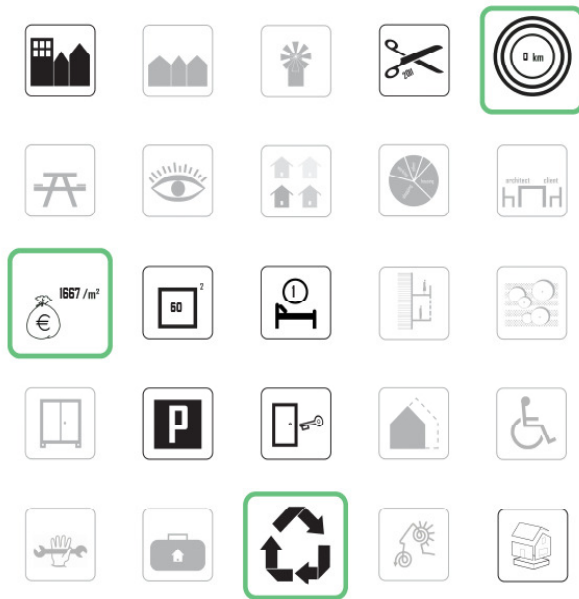
TOTAL PRICE:  
€ 100.000

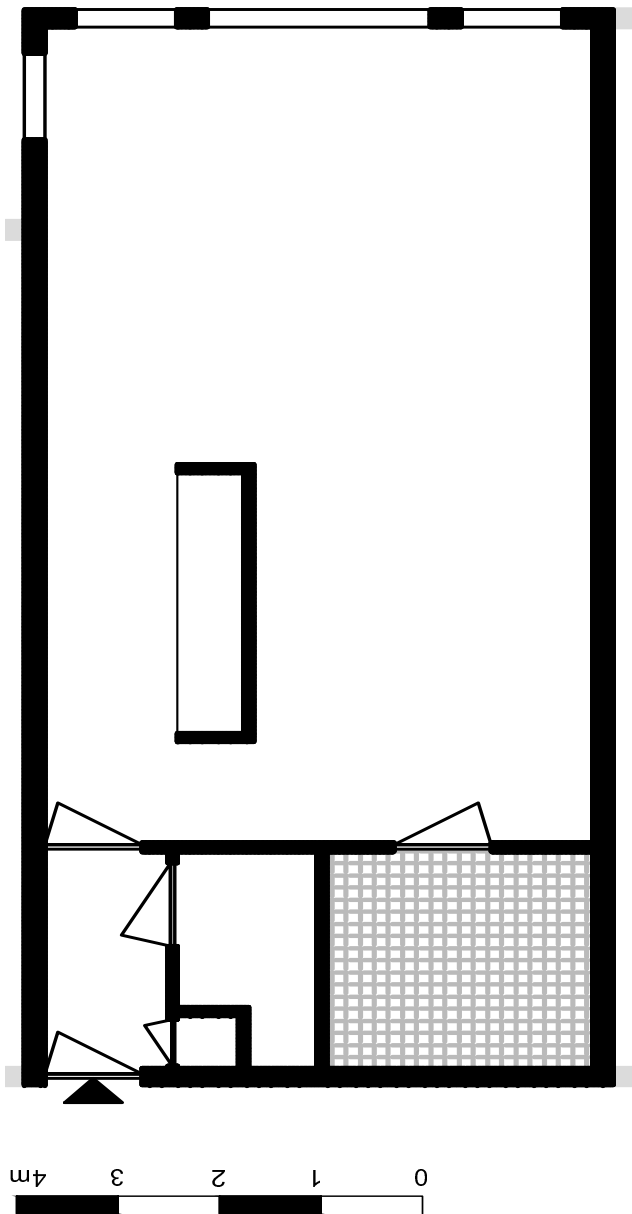
SIZE:  
60 M<sup>2</sup>

## STARTER HOMES IN A FORMER TAX OFFICE



A very important aspect of designing and developing starter homes is making the right compromises for your target group. AZHX architects from Elsloo has been dealing with these compromises for their starter home project in the city of Doetinchem. Doetinchem is a small town in the eastern part of the Netherlands with about 50.000 inhabitants. A former tax office in the city center will now be reallocated for starters. The location is perfect for young people, all the necessary facilities for starters are nearby. In this city, there is a shortage of starter homes, especially in the city center. This former tax office will accommodate 40 starter apartments. Because of the high costs of redesigning the building and expensive parking facilities, there was a small budget left for other things. Because of this, the relation between quality and price has been very important. AZHX architects has chosen the right materials for this specific project. By using prefabricated building systems, money and time has been saved during rebuilding the office. In the design, the architects used symmetry and repetition as an effective way to save even more costs to help keeping the purchase price as low as possible. As said, the relation between quality and price was very important. In this way the architects did not have to make compromises to materials. However, the architects could not spend a lot of money on sustainability. Nowadays, sustainability is a very important subject to people all over the world. But when there is not a lot of money available, sustainability is apparently one of the aspects to save money. Location and surface space are mostly inherent to each other. They are also the aspects which a starter considers the most important. The architects have tried to offer as much square meters as possible for this location for a small budget.





There were also some limitations the architects had to deal with. Because of the existing structure, there was no endless design freedom in designing the floor plans. It is also one of the reasons that there is no possibility of expanding the apartments. The apartments are not flexible so they are not very future-proof. They just focused on starters. The existing façade of the whole building is unchanged. However, for every apartment a 'French balcony' is added. By respecting the current architecture of the building the character of the building could be saved. The former tax office is an iconic building in the shopping center of Doetinchem and also will be so in the future, but with another function.

Map 10.1: floorplan-first floor  
source: AZHX Architecten



Image 10.1: Front View  
source: AZHX Architecten



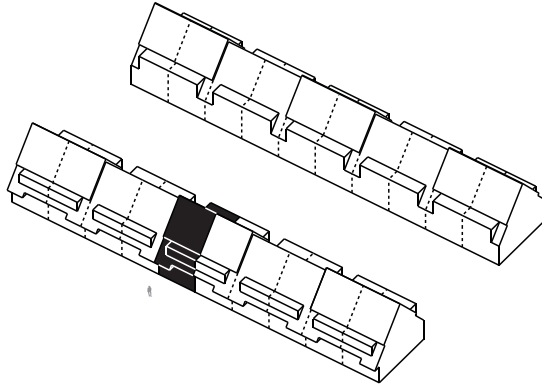
Image 10.2: Front View  
source: AZHX Architecten



Model







PROJECT:  
STEENAKKER FASE III STARTERSHOUSES

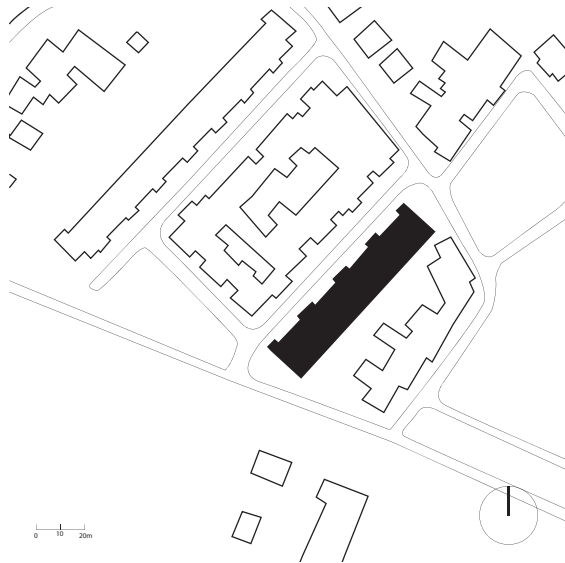
LOCATION:  
ZEELAND (NOORD-BRABANT)

ARCHITECT:  
VERMEULEN-VANAKEN ARCHITECTEN

TOTAL PRICE:  
€ 159.500

SIZE:  
102 m<sup>2</sup>

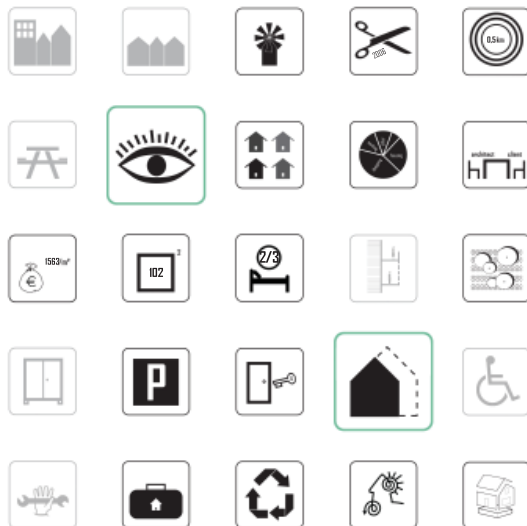
## STEENAKKER FASE III, ZEELAND

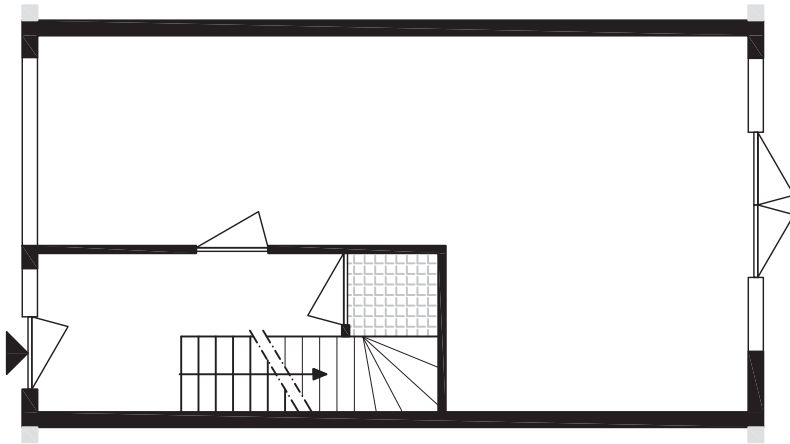


This development of starters housing started with a design contest between different architects. The area where the starters houses are located is between the centre of the village and the outer area of the village Zeeland. Vermeulen-VanAken architecten won the design contest. The reason that they won was because they combined their design with a creative selling concept for these startershouses. First they had the idea to realize 42 houses in total (including 8 startershouses) and fund the startershouses with extra money they earned with the more expensive houses. They worked out a complete plan wherein buyers were able to choose out of three variations to extend there living space in the future. So when starters started to grow in wealth as well as the amount of family members, they would be able to stay in their original house with the needed extra space.

### Situation in practice

After winning the design contest the architect and developer had some roadblocks. The municipality of Zeeland wasn't prepared to put a limit on the yearly income of the possible starter and his family. Because of that, more wealthy families wanted to buy this relatively cheap startershouse (partially funded by buyers, who bought the more expensive houses) and wanted to make use of the extension possibilities within a week after they purchased the house. With this new knowledge the real estate developer (Ruysdael ontwikkeling) decided to change course, they kept the original design, but made the lot smaller, made all terraced houses and used the same design for every house in the plan, without any (former) large extension possibilities. At the end there was a realistic plan for 56 new houses with a total of 21 startershouses.





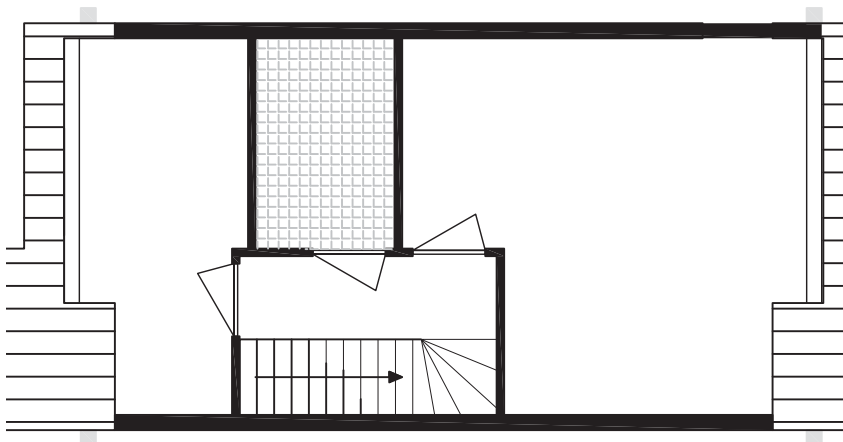
Map 11.1: floorplan-ground floor

## Aspects

The startershouse have a total floorspace of 102m<sup>2</sup> which will contain a large living room with an attached kitchen on the ground floor and two rather large bedrooms on the second floor. The division of the plan on the ground floor is very flexibel to arrange your furniture. With a facade which is almost completely filled with glazed windows and a double glazed door, it is possible to experience your garden like its completely merged with your livingroom. A visual extension of your living space at the groundfloor which will give you more accesibility with direct daylight to improve any kind of healthy spheres inside your house.

The real estate developer made an arrangement with a kitchencompany to give all the people the flexibel possibility to choose out of a short amount of rich looking kitchens for a low price. Here again you get confronted with the power of arranging things in a collective way.

The division of the plan on the second floor will give the opportunity to change one of the two larger bedrooms, into two smaller bedrooms. Which will give you a total of three bedrooms to classify for yourself. Furthermore all the sanitary equipment will be present before people will be moving in.



Map 11.2: floorplan-First floor



Image 11.1: Streetview



Image 11.2: Frontview Starterhouses



Image 11.3: Detailview thatch roof with roof tiles

### **Rich Character**

The architect which designed the concept for this project had created a vision that helped improving the attractiveness for these starterhouses.

One of the most interesting element of this architectural vision is the thatch roof that has been applied to these houses. Because the project is located inbetween the centre and the outer area of the village Zeeland, the houses became transitional element for the difference between these two. That is where the thatch roof came across in designing the architectural vision.

Secondly the proportion of the thatch roof compared to the rooftiles is in this way, so it would refer to the different status and price of the roofmaterials compared to the old days.

Earlier in the days, applying tiles as a cover for your roof was way more expensive as thatch roofs. It would increase the status of your house and as a result would therefore increase your own status. Compared to these days, this ratio is completely the other way around.

The underlying thought and focus of the architect was to make people more aware of the value of their house. Especially a house which has a higher esthetic and wealth value compared to general starterhouses these days. Therefore you could consider this architectural realisation of a starterhouse to be like a tribute to the way how the value of the used architectural materials and elements had developed itself.

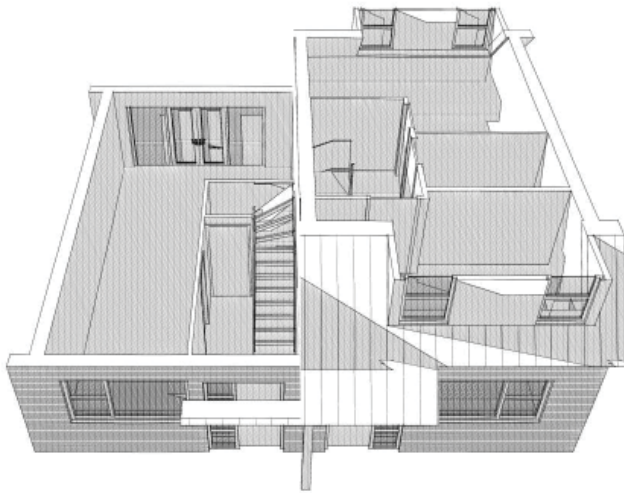


Image 11.4: Sketch interior

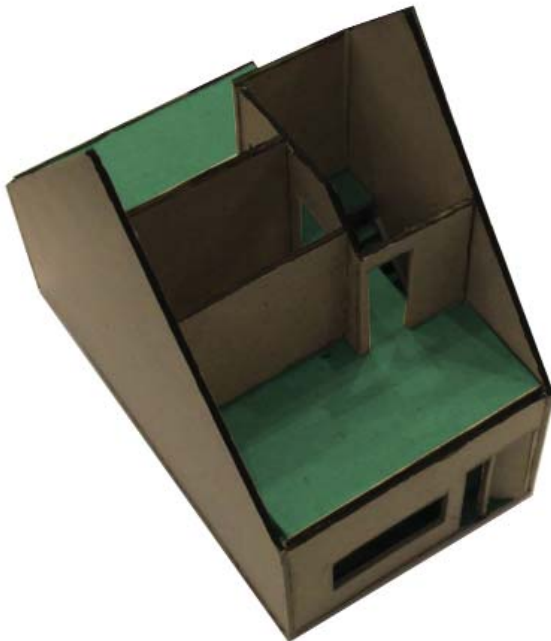
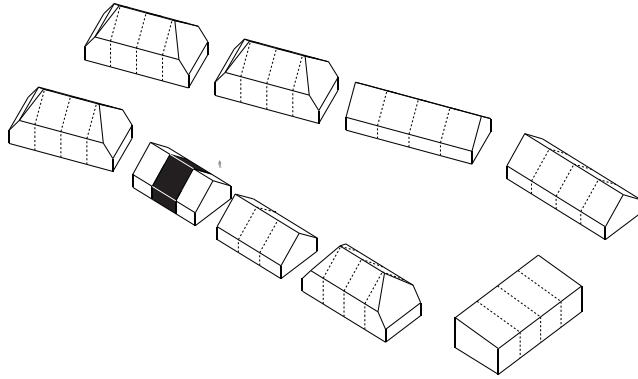


Image 11.5 Model

Applying a thatch roof on all of these houses makes these houses more interesting for starters as mentioned before. And because of the collective way of developing such a project, this does not have any disadvantages in the attractiveness of the selling price. And as the cream of the crop, the real estate developer arranged a deal with an insurance company to avoid any high premiums for people to ensure their houses against the higher flammability of the thatch roofs compared to other roof materials.

A ideal way, for unexperienced people to make a fair start.





PROJECT:  
STARTERWONINGEN ZANDSTRAAT

LOCATION:  
CASTEREN, NETHERLANDS

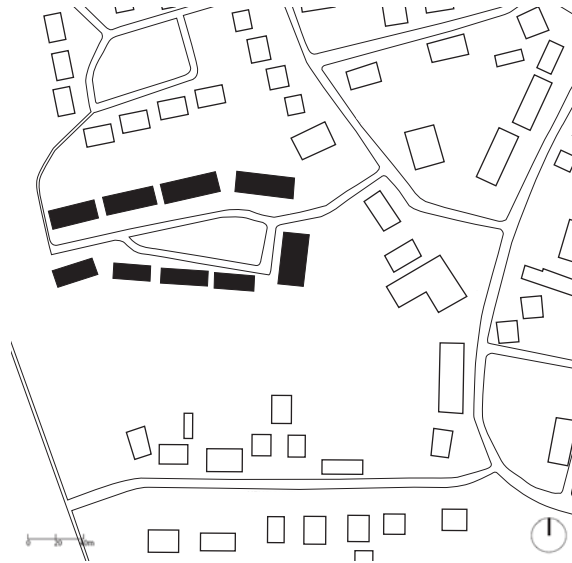
ARCHITECT:  
VAN DEN PAUWERT ARCHITECTEN

TOTAL PRICE:  
€ 145.000

SIZE:  
100 M<sup>2</sup>



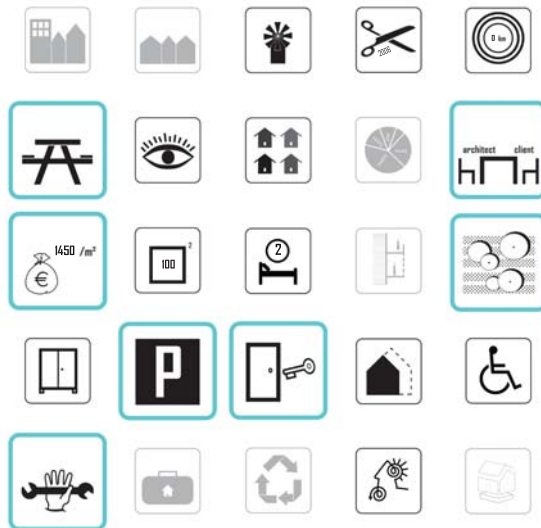
## STARTER WONINGEN ZANDSTRAAT



The construction of 34 starter houses during 2004 and 2005 in the village of Casteren is an initiative plan of the municipality Bladel in Netherlands (where Casteren is located). The aim of this initiative is to promote the quality of life in this small village. With the high housing prices, it is no longer possible for the young people to find a reasonably priced house in their own village and they are forced to leave.

### Location

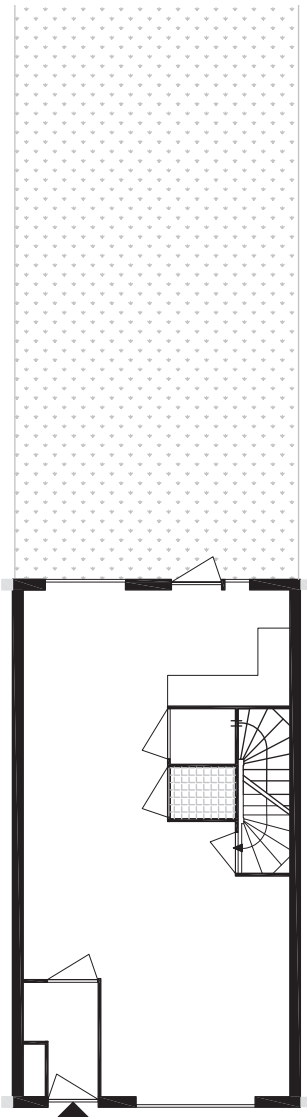
In one village, the homes are built over a longer period of time and their shape and architecture are different from each other. This theme is reflected in the plan to properly connect with the character of the village. Variation in height, shape and architecture of the new housing is providing a mixed picture. Over time, as the new trees that have grown and the materials are adjusted to environment, a visitor will not have the image that this square was built in one time. A total of approximately 34 homes realized that vary in size and appearance. They are grouped in four types of houses. There is sufficient space maintained between the building blocks like the buildings in the village.



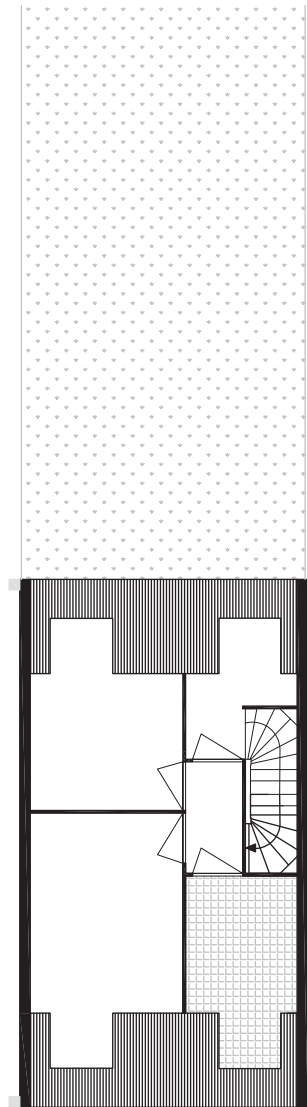
### Logos

The houses are varying in size and appearance. They are grouped in four types of houses. There is sufficient space maintained between the building blocks as a communal space. Zandstraat is in the center of Casteren. Houses have storage and parking and there is possibility of extension in them.

Target group are young couples and student who recently have moved out from the house of their parents.



Map 12.1: Floor Plan-Ground



Map 12.2: Floor Plan-First

## Organization

The province of North-Brabant agreed on running pilot project within 5 years period. The province considers the project "Zandstraat" as a sample project which solve the problems of aging in rural areas in Brabant. In the "village plan" the municipality makes new construction without corrupting the character and quality of Casteren. The buyers have formed an association for housing project. The municipality provides the land with all the facilities in order to sells it to buyers (for a reduced land price of € 166 / M<sup>2</sup> plus VAT and an average lot size of 200 M<sup>2</sup>). However, the requirement is that the price of houses must remain under € 158.000 which in this project, prices are between € 110.000 and € 145.000. Buyers will continue with meetings with architect in order to design and approve the types of housing, interior and exterior of the houses. This method delivers both a stronger involvement of the future residents and a considerable saving in the final cost for house (between 15% and 25% - 10.000 to 20.000) since a third party is left out of the picture and costs such as labor, material and arrangement are shared between 34 starters.



Image 12.1: General View to the Site  
Source (of all the images): Official Website of "Van Den Pauwert Architecten"



Image 12.2: Types and Number of Houses



Image 12.3: The Atelier Houses

## The Design

Given the size of the buyer group and the diversity of needs in size, architecture and construction four basic types have been chosen to design. There are two types of the façade, one is modern and the other is a vernacular variety architecturally. It was also an option for the houses by individual buyers to extend and change in format.

The central square will be a "green" facility with existing trees. The two small parking lots are situated in a friendly manner. The square is accessible for cars from one side and from the other side for cyclists and pedestrians for the convenience of residents. Its aim is to build a new plaza to slow traffic within the village. Parking is solved by the possibility to park on the 6 meters wide lane. For homes that are not directly located on the road, two small parking spaces have been built which are out of sight of the main square. It assumes a parking ratio of 1.5 parking spaces per dwelling.

For four buyers there is a specifically designed atelier house. These properties are finished in aluminum and galvanized steel with anthracite colored masonry and an aluminum roof and layout of the floor plan is free. White painted pine Oregon frames with laminated beams under them combined with roof and wooden roof sheets on the bottom of white plywood to give a hot picture. Moreover dwellings in this project include also space for small storage and sustainable heating system (use the warmth of air in bathroom and kitchen in order to warm up the water).



Image 12.4: Designs of Block

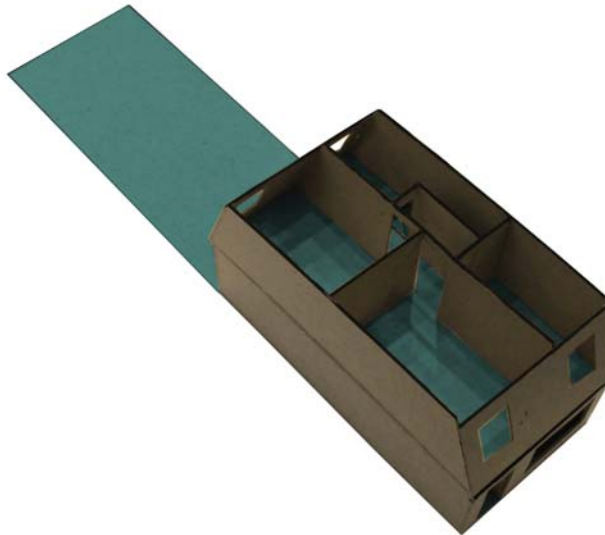


Image 12.5: Model of Type B Classic House

## The Flexibility

At first 4 different block designs (Campus, Castel, Strip and Es) were proposed to buyers with their pros and cons which in the end “de Es” was chosen by buyers.

The flexibility has appeared both in interior and exterior.

Buyers can decide different possible floor plans with their pros and cons and have the freedom to change the layout of any non-bearing walls. In this way even some houses became cheaper since the costs of materials and labor were no longer relevant.

Also buyers can choose the furnishers and details (such as door handles, sinks, toilet, bathrooms, and kitchen) from three categories based on cost; low, medium, high.

The exterior could have change based on materials and how it would look like (old or modern)

This has ensured maximum satisfaction to current buyers and maximum flexibility for future buyers.

## COSTS

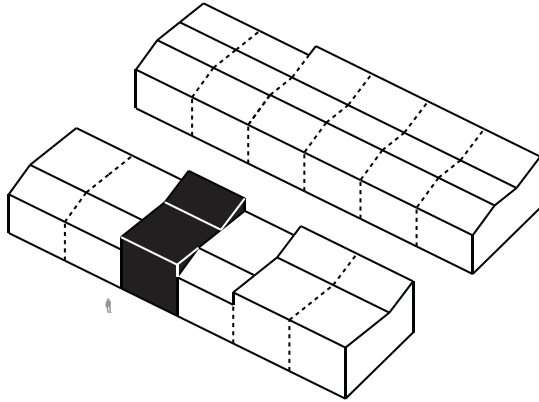
Using the most common material (brick, wood and concrete) and construction method has reduced the risk of problems and made the total cost cheap. Building costs: € 220 /M<sup>2</sup> exclude btw, in total around € 82.500 exclude btw

Ground costs: 5,4x23 M=127 M<sup>2</sup> x € 200 euro/M<sup>2</sup>: € 25.400 exclude btw

Extra costs of building permit, architect and other advisors: € 12.500 exclude btw

Total cost: Aprox. € 145.000 include btw





PROJECT:  
CRADLE 2 CRADLE STARTERSHOUSES

LOCATION:  
PEEL EN MAAS

ARCHITECT:  
WY.ARCHITECTEN

TOTAL PRICE:  
€ 110.000

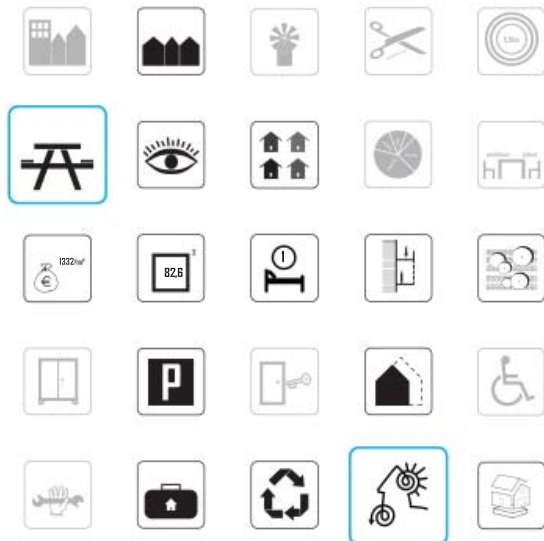
SIZE:  
83 m<sup>2</sup>

## CRADLE 2 CRADLE, PEEL EN MAAS



It is hard to define actual demands for a building or house to gain the title of being Cradle 2 Cradle. Sustainability is a very important element that needs to become a part of our future society. Efficient (re)use of materials and lowering our energy usages will avoid any future shortcomings. We need to take a few steps back, to take more care of this world we live in.

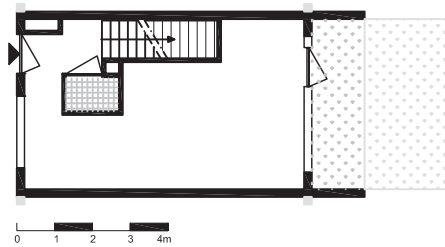
This is the same thought the municipality of Peel en Maas introduced in a architecture contest for a newly built area. The architect ir. Huub Swillens answered this contest with a pricewinning design on behalf of Wy.Architecten, which are established in Eindhoven. They created a design with 12 new starterhouses and a few apartments in an old agricultural school. The sellingvalue should not exceed 110.000 euro for each starterhouse, otherwise the municipality would not be able to reach their targets(starters) for moving in to these houses. Combined with the Cradle 2 Cradle concept, this was not an easy desigtask.



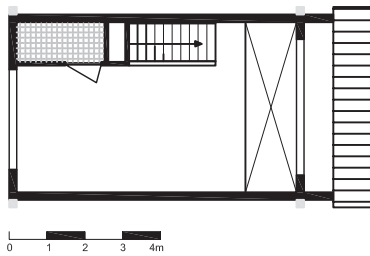
### Sacrifices for a better world

Like mentioned before, people will have to become more aware of their environment and the damage we inflict on this world. Therefore it is really important that this project will be realised and become one of the first important steps of hopefully many new developments in the field of architecture.

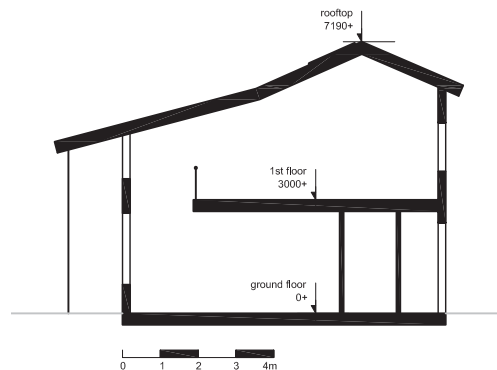
Because of the importancy of this project, every party had to make financial sacrifices to lower the original selling value of 180.000 euro towards the goal of 110.000 euro. Teamwork between suppliers, the contractor, architect and developer were essential during this project.



Map 13.1: floorplan-ground floor



Map 13.2: floorplan-First floor



Map 13.3: Section

## Flexibility as a standard

Sustainability could be translated in different ways. And when considering this to be the main concept, it should be translated in as well the materials/looks as in the design of the floorplans

Sustainability in the floorplans was reflected as flexibility in customizing and classifying your own interior space. The ground floor consists of one big empty space which was completely free of objects or walls. Because of a flexible building method even the kitchen could be placed anywhere you would like it to be. The structure is completely made out of a timber framework, with a result that the finishing could easily be detached or attached for replacing pipelines and electricity. Flexibility will be integrated to the maximum in this design.

The second floor contains the same extreme way of flexibility as the ground floor with its internal space. With the bathroom connected on the separational wall of the terraced houses and orientated on the front doors elevation, the resting space automatically forms a large single bedroom with a nice view. At the backside of the house, there is a void in the floor which visually connects the ground floor with the second floor. This will enlarge the spatial perception of the entire starterhouse with daylight and possibilities of three-dimensional social interaction. The functional property of this void is, that it makes it possible to make use of unconventional ventilation methods. When this project will be realized and sold to the targetting starters, they will have to put a lot of effort themselves in furnishing and completing all the sanitary inside, which will be the only sacrifice made by the starting residents for living in a pure flexible Cradle 2 Cradle starterhouse.





Image 13.1: Concept design  
 Source: <http://www.architectuur.org>  
<http://www.peelenmaas.nl>

### Integration of the concept

The starhouses are completely made and constructed out of wood. The contractor/supplier named Finforest helped the architect developing a specific wall construction which will reach a energy sufficient result for a Cradle 2 Cradle concept. The goal was to reach an thermal resistance value which should be as high as possible. A special plastic, normally used in space technology was applied in a testingmodel which was perfect at first, but way to expensive for using it for housing. The benefit of these wooden frame walls is that they can be completely filled with insulation, so there will be absolutely no waste of space of uninsulated materials and no thermal bridges.

Wood may not be the most low maintenance material, but it does function as a transition between manmade structures and nature. So it functioned as an addition for telling the Cradle 2 Cradle story.



Image 13.2: Urban concept design  
 Source: <http://www.architectuur.org>  
<http://www.peelenmaas.nl>

### Collective space

Living Cradle 2 Cradle in the way it is designed in this project, will mean that starters will live with together and will be sharing their outdoorspace as a social community. The collective way of living is being integrated in even the sanitary waste disposal in the form of a atrificial wetland that is designed inbetween the starterhouses and putting solarpanels on top of every roof. When combining all these sustainable and architectonic elements the Cradle 2 Cradle concept will start to live through these houses. With the costs reduced to a 110.000 euro, Wy.Architecten will hope that this design will be realised somewhere before the end of the year 2012 and we are trully able to experience a realistic sustainable project.



Map 13.4: Urban planning  
 Source: <http://www.passieffhuismarkt.nl>

### Making choices

For future residents (starters) it will be a great benefit when choosing for one of these starterhouses. At first you will be given the opportunity of living in a sustainable environment which could be an enormous example for everybody else. Secondly this project will make you more aware of your general energy demands which is one of the most important things we should try to lower ourselves. Wy.Architecten will give the people willingly to live there, the opportunity to choose between three different variations in roof forms. People who will buy these houses before execution of this project are the ones who will be able to choose one of the three different roof designs. These will vary between a standard house and two larger houses, because of a different slope of the pitched roof. Living sustainable will be a big item in the future and that is why starting to make sustainable architecture, will reach to a sustainable world.

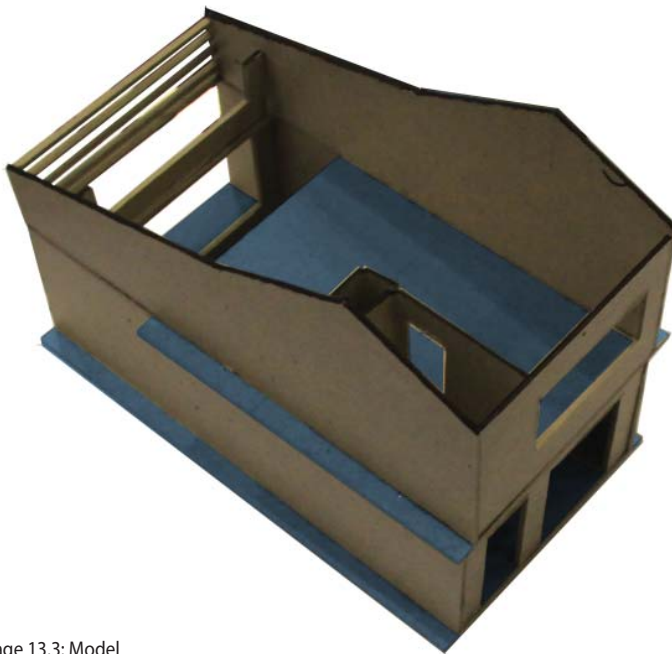
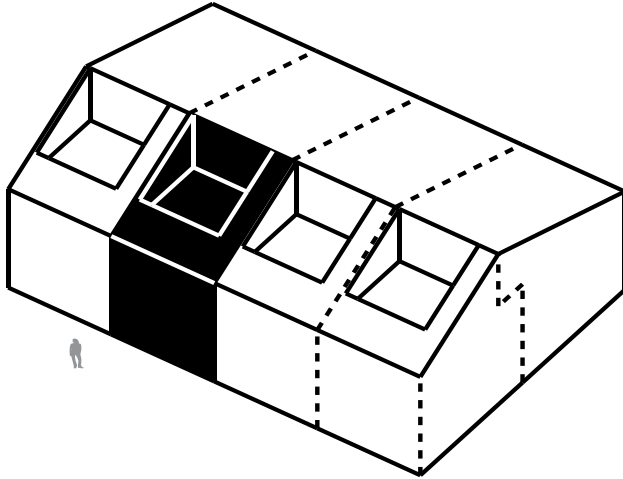


Image 13.3: Model





PROJECT:  
YOUTH HOMES

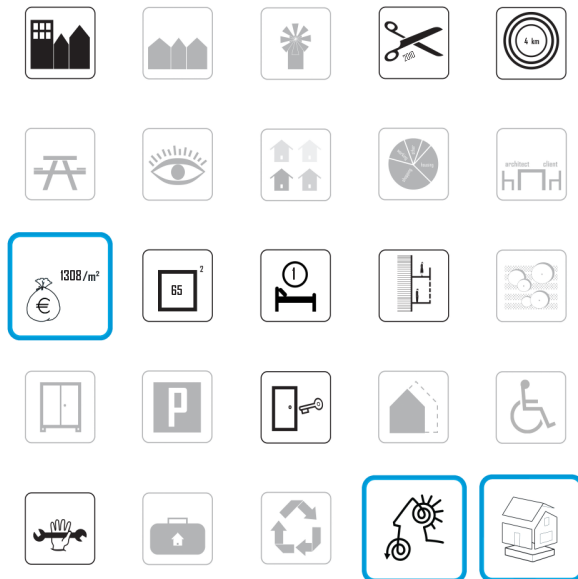
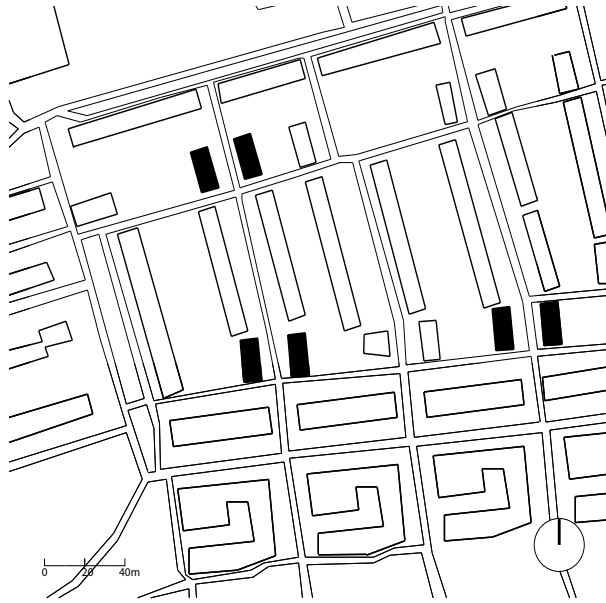
LOCATION:  
DEN BOSCH NETHERLANDS

ARCHITECT:  
DIEDERENDIRRIX

TOTAL PRICE:  
€ 80.000

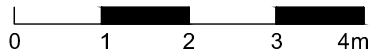
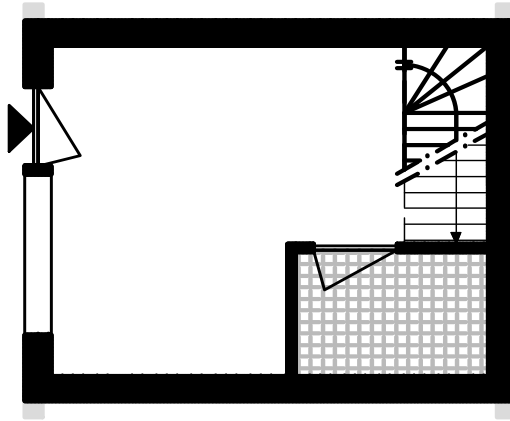
SIZE:  
62 M<sup>2</sup>

## YOUTH HOMES

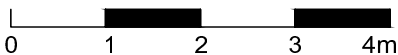
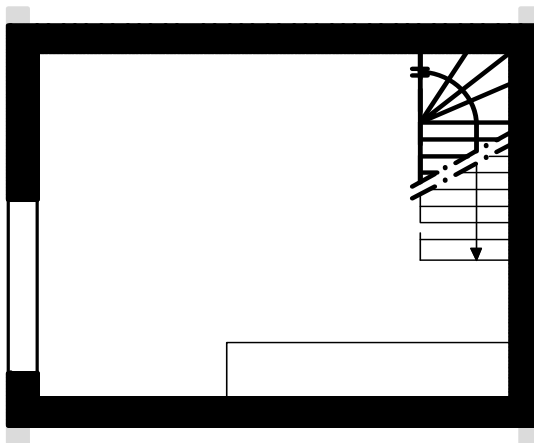


Architects Diederendirrix from Eindhoven has developed a youth home as a building concept in corporation with Huybregts Systeembouw. They have made a concept that can be fitted in every urban situation with limited building space. The concept is elaborated in advance but can be used in many different settings. The appearance of the houses is flexible so they are easily fitted in the current urban situation, which makes the concept also very suitable as a replacement concept. The façade is the only part of the building that is not prefabricated. Because of this, the designer or developer can customize the façade to the situation it stands in. Not only the façade and the floor plan of the house are flexible, also the size of it. Because of this, the youth homes can be adjusted to the situation and size of the lot. Every youth home is the same but a starter can still choose from a small list with options to customize their own home. It is possible to choose an extra room instead of a balcony, for example. Besides that, the other options are far less impressive like the color of the kitchen.

The whole youth home is made according to a prefabricated principle. Also, the houses are built by a script-principle which is the same for every location, situation or occupant. The houses can easily be built on difficult sites because of the modular and prefabricated building concept. The construction time is very limited because of the building method which saves costs and nuisance. Due to the modular building method, the architects could also save a lot of money by the repetition of detail. Every house has the same details which makes the design and build very easily.



Map 14.1: floorplan-ground floor  
source: Diederendirix Architecten



Map 14.2: floorplan-first floor  
source: Diederendirix Architecten

In case of the youth homes in Den Bosch, the concept is applied which contains six prefabricated building blocks with each eight living units (4 and 4 backwards situated). They are built in an inner-city living district in the east of Den Bosch. The homes are intended for young people who are buying their first home. The houses are very popular because of their low purchase price and exciting architecture. Every house has a floor area of 65m<sup>2</sup> and a volume of 243m<sup>3</sup>. For every house is one parking space available but most of the young people do not have cars and park their bicycles in front of their house. The building costs of one youth home is €80.000,- excluding taxes.

When youth homes are built in existing residential districts, the streets are getting an upgrade due to the come of new young inhabitants. In eastern Den Bosch, most houses are occupied by people unemployed or with a lower. The streets do now have more quality because of the new youth homes and their new fresh inhabitants. The charisma of the street is improved and the rear sides of the building blocks have been improved because of the new entrances.



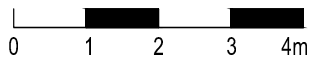
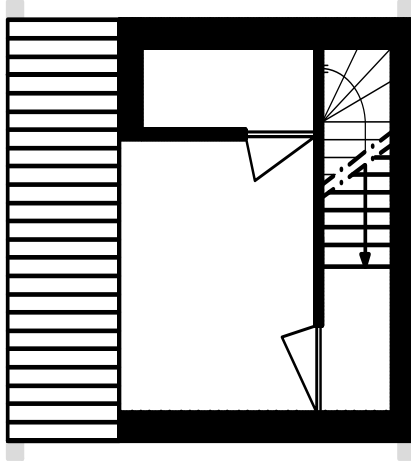
Image 14.1: Front View  
source: Diederendirrix Architecten

The most interesting part of the youth homes is that they are built according to the back2back principle. This means that every living unit has only one façade of its own. So daylight is only entering the house from one side thus the rooms are very shallow designed. Because of the back2back principle the architects could save a lot of money. Not only is the living space very limited, the construction walls are often shared with the other inhabitants. Due the back2back concept and the small space the houses could be built on a lot where previously detached houses were built. On the same area, now two smaller back2back houses can be built.

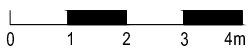
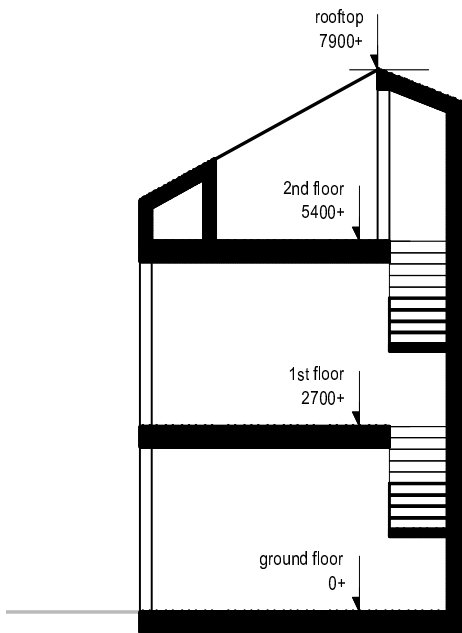
The back2back building concept is not only suitable for starters, there are also variants with the same building method for elderly or assisted handicapped people.



Image 14.2: Rear View  
source: Oscar de Boer



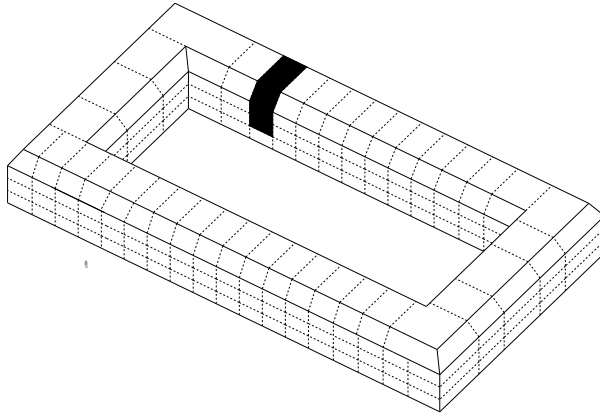
Map 14.3: floorplan-second floor  
source: DierenDirrix Architecten



Map 14.4: cross section  
source: DierenDirrix Architecten







PROJECT:  
WALLISBLOK, NR. 32

LOCATION:  
ROTTERDAM, THE NETHERLANDS

ARCHITECT:  
HULSHOF ARCHITECTEN

TOTAL PRICE:  
€ 132.000

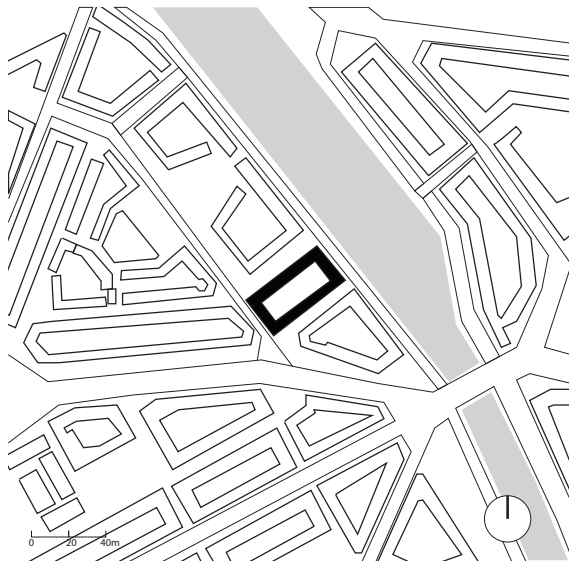
SIZE:  
150 M<sup>2</sup>

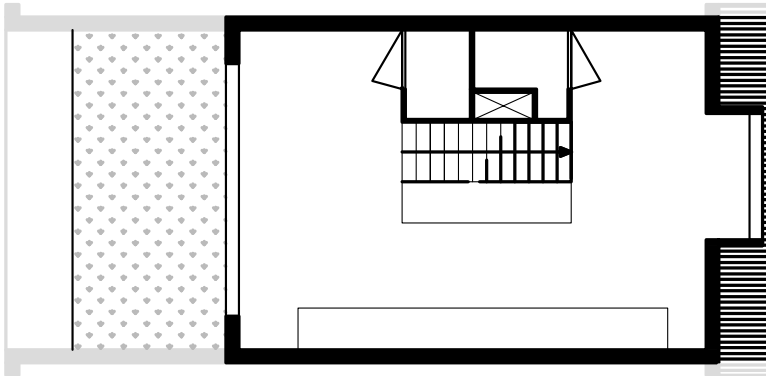
## WALLISBLOK

Wallisblok, built around 1930, was a dilapidated apartment building with 75 very small pre-war homes consisting of four floors including the roof. The block is located in Spangen, Rotterdam. Spangen is part of the priority area of Rotterdam-West. Wallisblok is an area on the edge of Spangen near the canal the "Schie" running from Delft to Delftshaven. It is a Rotterdam district with an historic harbour related to Delft and the old Sea trade in the golden age.

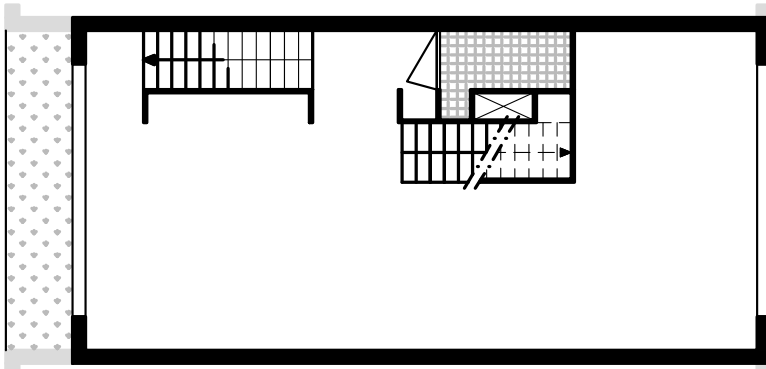
Spangen and especially the area near Wallisblok is struggling with drug nuisance, rogue homeowners and pollution. Many houses in the block were bought by the municipality to avoid annoyance by drugs dealers and users. For a long time, starting in 1990, it wasn't clear what to do with the houses. Through financial support (2003-2008) the municipality wanted to stop the decay by giving the area an impulse to improve.

Wallisblok is architecturally interesting. For this reason the municipality would not allow further deterioration. At the same time the municipality wanted to attract buyers. The project ties in closely to the Rotterdam policy: increasing home ownership and the number of attractive housing for different income groups. One idea is that homeowners are more involved in the neighbourhood than renters. Greater involvement can then pay off for more care in the home and neighbourhood and giving the neighbourhood a positive impulse. Incidentally the block was structurally qualified for renovation. The municipality now had the choice to renovate the block themselves and sell the houses or give the houses - controlled - out of their hands. For the latter option is ultimately chosen.

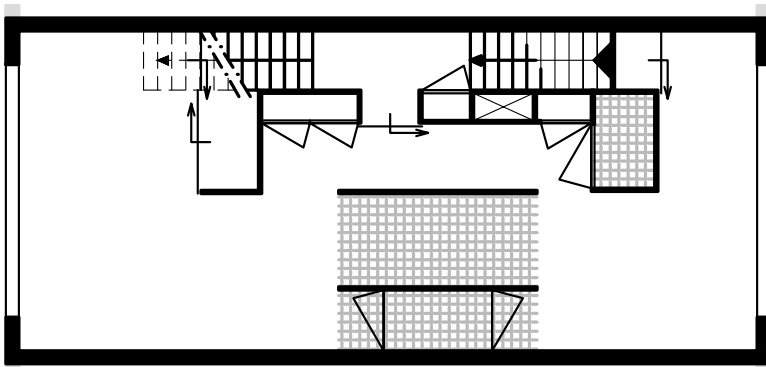




Map 15.1: floorplan-1st floor



Map 15.2: floorplan-2nd floor



Map 15.3: floorplan-3th floor

### Contribution Hulshof Architects

In 2003 the municipality assigned Hulshof Architects together with Steunpunt Wonen to investigate the condition of Wallisblok. The planning of the redevelopment started in 1990 but failed to redevelop Wallisblok as it was impossible to buy all the houses or to get the private owners interested in any development. Empty houses dilapidated and in 2003 the situation was very bad. The houses fenced and interiors were wet and rotten. Several houses were empty for years and a good place for birds and drugs dealers. For both its free shelter and you don't have to do anything about maintenance. Because of the bad condition of Wallisblok there were no buyers who wanted to buy the house and renovate it. They were too expensive for an individual household.

According to the National Television News of October 2004 the Rotterdam Municipality gave away houses for free, the best publicity one can get. Of course for free was not really the truth but it was very affordable; the future inhabitants had to consider an investment of in average 1000,- Euro for each square meter of living space. This development is made possible by Hulshof Architects, a project was realized with a collective assignment which connects a wide individual freedom with a powerful architecture.



Image 15.1: General view to the site taken from the inner common courtyard  
Source (of all the images): website of Hulshof Architects



Image 15.2: Facades after being demolished for renovation



Image 15.3: View from the third floor balcony

## Organization and design

Limited by the concept of the development made by Hulshof Architects, a project was realized with a collective assignment which connects a wide individual freedom with a powerful architecture. Hulshof Architects together with Steunpunt Wonen, made the concept for the development which consisted of a set of regulations to be considered, as the municipality insisted on a high level of technical standards.

A brochure on the project was made to explain the minimum plan which had to meet the technical standard level of new housing. As the technical condition of the houses was very different through the block it was agreed to make a plan upgrading all houses to the same level and share the cost among the group of buyers. With this basic rule it was possible to make the whole plan cheaper and affordable for all. This rule also made the group interested in the overall plan instead of just their own house. It also made way for an unusual approach on how to divide the housing block to each buyer. An important condition was that the participants had to renovate the buildings together. The estimated the costs for a single apartment were approximately 70 thousand euro up till 200 thousand euro for a house with four floors. In November 2004 the planning process started with a Group of 400 independent households interested in this approach. They found 35 to start the development seriously and a society was founded, a community builder started which makes the project notable.

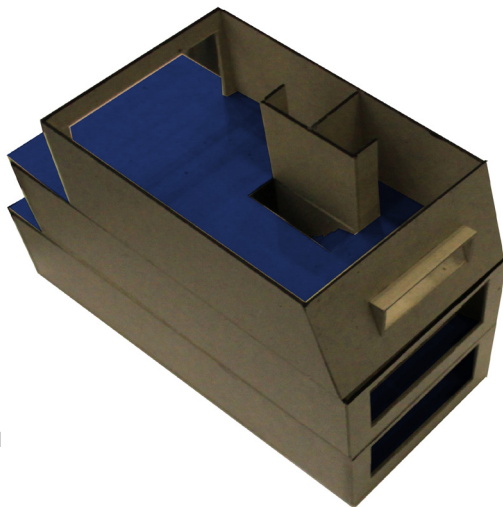
The basic intervention included the independent entrance for each house, new stairs, insulation, central heating, new installations and measurements. The buyers own the right to finish



Image 15.4: 'Dreamhouse' of an household



Map 15.5: Another 'dreamhouse' in the same block



Map 15.6: Model

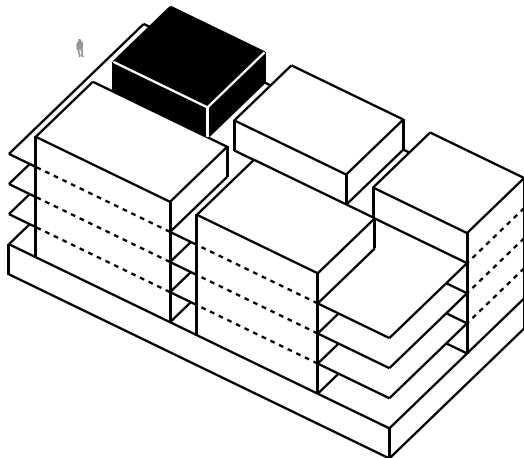
the houses as they wish but they have to follow legal regulations. Each buyer can use six months to finish the construction themselves or to have this done with the building company doing the general construction.

A variety of floor plans and possible sections were developed. In the end there were 35 different houses. Some people were only interested in one story, others in three or four; some people emphasized on living on de ground floor others preferred a place close to the roof, to enjoy the view.

### Conclusion

At the end the buyers spent 30% less than the market value. The main reason for this is good cooperation and the contribution and commitment of the households. They cut cost by installing their own kitchens and using the right material. Another unique point of this project is the large community that is involved in this project. They constructed together, designed together and it became a strong community. They have a big common inner courtyard and meet each other. The owners are people who are open for that and are open for a tight community. Hence the target group: people who want to live there.





PROJECT:  
LIVING STEEL KICKSTART

LOCATION:  
WARSAW, POLAND

ARCHITECT:  
CEPEZED

TOTAL PRICE:  
€ 50.000

SIZE:  
60 M<sup>2</sup>



## LIVING STEEL KICKSTART



The Kick Start Project from Cepezed Architects from Delft was the winning design for Poland in Living Steel's 1st Competition for Sustainable Housing. According to the jury report, "the jury was very impressed with this entry, highlighting particularly the simple floor plans, the robustness and flexibility of the design. The use of double-loaded corridors and the flexibility of the layout to enable full advantage to be made of ventilation and daylight were also appreciated. The jury also appreciated the scale of proposed design, in particular, how the configuration of the building responds to its context".

The problem of housing in growing populations is essentially one of availability. This availability is defined by land, usability and inevitably money. The great goal for the architect is to maximize the usability for the available money. That is why Cepezed Architects from Delft had created a building system that can provide a large sustainable and modern dwelling space with minimal use of material.

The building system is created of components that are prefabricated. They can be assembled in a great variety of combinations without complicating the system. All of these components can be recycled. Minimal use of materials and energy during the production and the life cycle have been reached by light construction and good insulation combined with energy reutilization.

The system enabled a near infinite possibility of plans and urban solutions. Dwellings can be created to any need of financial potential. Parking and dwellings can be created at virtually no extra costs, enabling high density solutions. With the use



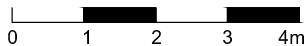
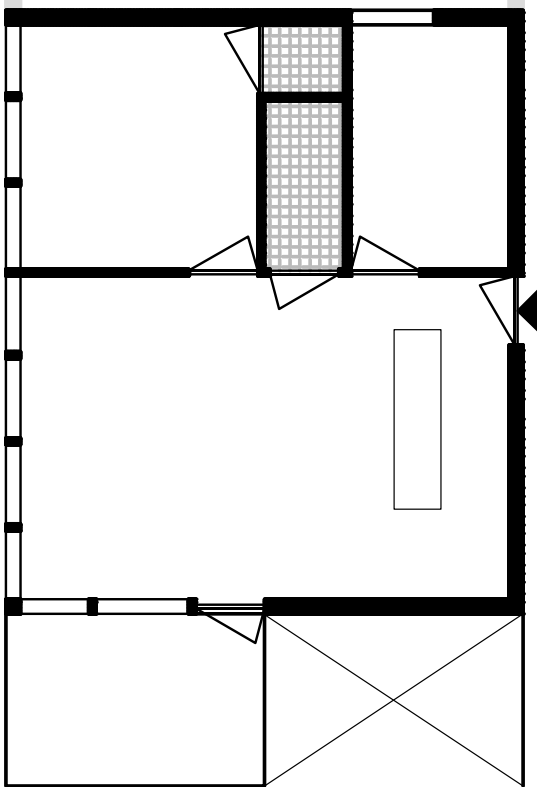
of this system, six levels can be made without extra provisions. Elevators can be added if necessary even at a later stage.

The system enabled easy change at little cost during the life time of the building, thus extending useful life. Plans and even ownership can be altered. Exchange, elimination and adding of components is possible over the lifetime. So the dwellings can be adapted to different programmatic needs, to changing social circumstances reinforcing social cohesion in neighborhoods.

The structure is standardized and provides a lightweight, environmentally friendly, safe, fire-resistant, acoustical insulation solution with minimal limitations for the user.

Sustainability is a composite issue. So sustainability in building is a matter of optimization of sometimes conflicting matters and simultaneously optimizing the effects of reinforcing interaction of elements. The greater part of energy use for building is the operational use of energy during the assumed lifespan of 30 years. Heating, ventilation, lighting, cooking and using hot water are essential to the proprietary use of dwellings. So they have to be reduced in their need for energy. Whenever this reduction had been effected the use of new technology becomes very attainable.

The amount of glazed exterior surfaces is adapted according to a loss/benefit balance depending on external climate, orientation and size of the dwelling. Thus solar gain can be optimized against transmission loss and energy use for lighting.



Map 16.1: floorplan-first floor  
source: CEPEZED Architekten



Image 16.1: General birdview  
source: cepezed



Image 16.2: impression  
source: cepezed

Remains to consider the energy content of the building structure and envelope. Due to optimization the use and waste of material has been minimized. The choice of materials has been defined by the structural needs. All materials except the concrete substructure can be recycled, have been recycled already or are secondary use from other processes. For example, the rubber strips in the floors are reused chipped and compressed car tires.

The project has been set up as a fully prefabricated system. So according size of series of dwellings or size of project production methods can be optimized. In a running production the size of the individual project then hardly matters. This is at most importance to provide housing in smaller communities or restructuring of urban areas. All parts can be started with common available production methods. All elements can be transported by road and assembled by small building cranes. Weight of elements has been limited to 2500 kg, so light transportable lifting units can be used in the assembly. Complicated parts like the bathroom/toilet combination are prefabricated in a three dimensional cell, which can also be assembled from 2 dimensional elements. This enables repair or replacement of parts over time, adaption of layout and renovation.

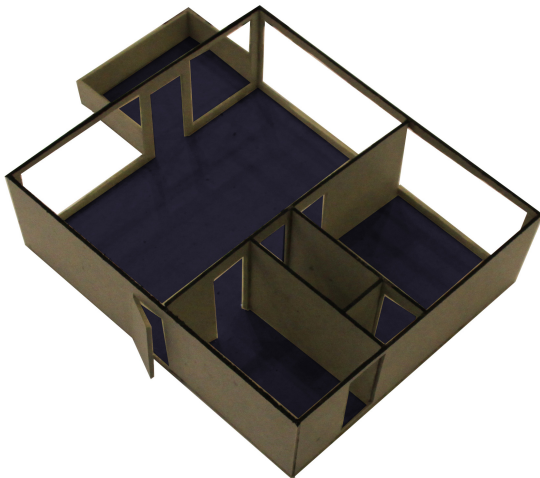
The competitiveness of the system is created by the economic use of technical possibilities available. Combined with effective use of materials and optimization of structures this creates a minimal use of material and labor with gain of quality. Shortly said: creating maximal result with minimal effort is always the most effective achievement. With Kick Start, Cepezed created maximum usefulness, space, density, cost effectiveness and



Image 16.3: interior  
source: cepezed

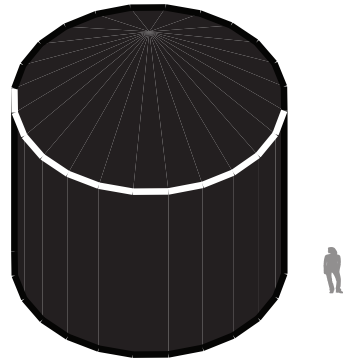
current and future value at once in a modern optimistic and adaptable way.

The home owners buy essentially a kit of parts that can be altered according to wish within the limitations of the site and the project. Adaptation of the house to changing dwelling requirements is easily effected. The investment carries a longer value to the owner. Energy use is minimized without impairing the dwelling comfort. The system can even be demounted and reused on a different site. Selling and buying parts second hand becomes a possibility.



Model of Type B





PROJECT:  
HOUSE IN A CAN (HIAC)

LOCATION:  
USA

ARCHITECT:  
AUSTIN + MERGOLD

TOTAL PRICE:  
€ 76.770

SIZE:  
115 M<sup>2</sup>

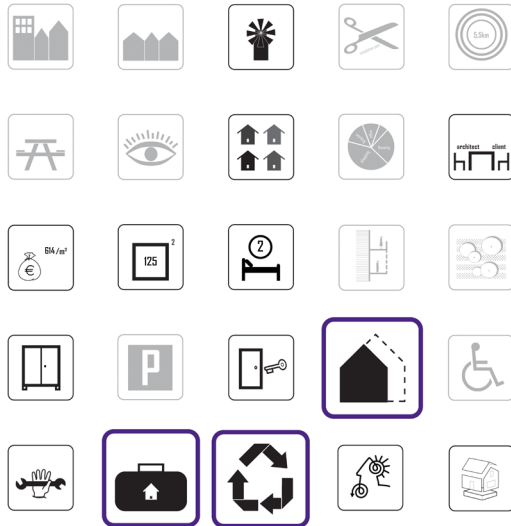
## HOUSE IN A CAN (HIAC)

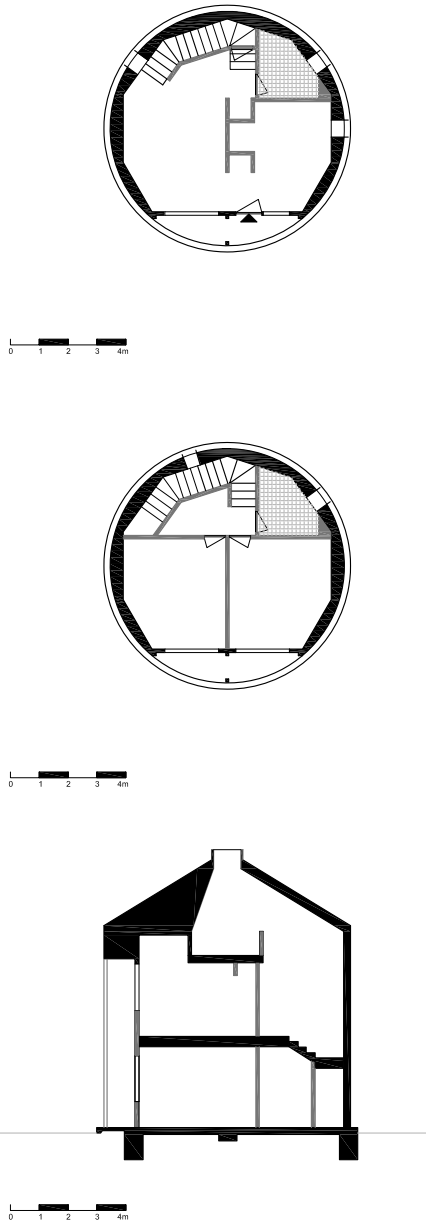
### Concept

The "House-in-a-Can" project (later referred to as HIAC) is an unrealized design of starter's houses. The Philadelphia based architectural firm "Austin+Mergold" rediscovers the prefabricated structure by the reuse of the typical metal grain dryers as a house. The concept is that, as these structures are an icon of the American landscape, the unused ones can be easily found and reused as a shell for a new house. The two variations of 36 and 24 feet diameter have already been designed and will be soon available by the web-based home design delivery service "Hometta". The target group of the design is the single families.

### Sustainability

According to architects Aleksandr Mergold and Jason Austin, the grain silos can be easily spilt into pieces and transferred anywhere in America where they can be framed again in the client's site in less than a week. This value makes the design accessible to more clients all over America. The HIACs are characterized by the fore-mentioned architects as durable, efficient, and inexpensive. They also believe that people should be sensitive to what others before us have left behind and make a good use of it, even if this new use was never originally intended.





### Organization

The basic plan of the house has a 24 ft diameter. The 1200 f2 (115m<sup>2</sup>) are spread on the three levels of the house. On the ground floor stand the semi-open kitchen, the living room and the toilet. On the first floor stand the two bedrooms and a bathroom and on the last floor there is an open space that can be used either as an extra bedroom or as a storage room.

Map 18.1: From top to bottom:Ground Floor, First Floor, Section



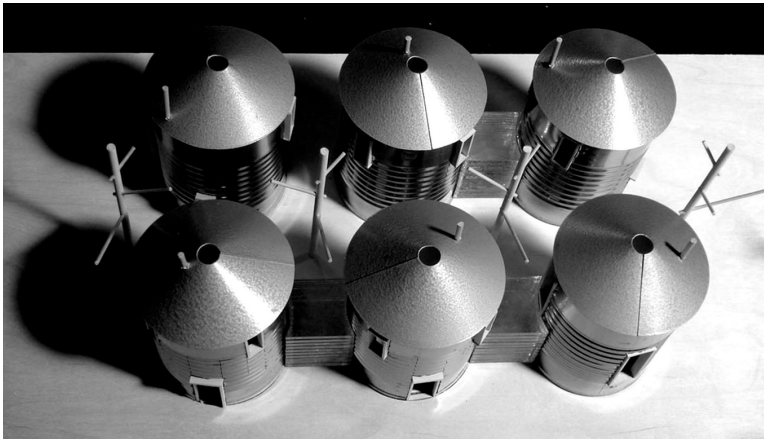


Image 18.1: Model of the HIAC

Source (of all the images): Official Website of "Mergold + Austin"



Image 18.2: Connection possibilities between the houses



Image 18.3: Exterior options

## Flexibility

One important part of the HIAC project is the possibility that is given to the client to decide on many aspects of the design. Apart from the size of the Can, they can choose the main façade out of the two options that they are given, the finishing of the house and the place and the number of the porthole windows. Furthermore, there are optional window/door systems, balcony, carport, fireplace, roof-mounted solar batteries and a greenhouse. Moreover, there are other diameters of grain-driers available to be used as planter beds, ponds and playgrounds. Finally, the architects have foreseen the possible future need for extension of the HIAC. For that reason, they have designed the houses with the linking possibility with other Cans. As long as the client has enough land to build on, the addition possibility is limitless.

## Construction

As far as the construction procedure is concerned, the 14 GA (Gauge) galvanized corrugated steel exterior is framed in situ. Afterwards, the wooden framing of the interior is added as a prefabricated element and the services such as water, plumbing and hydro can then be added. The whole construction can be finished in 2 months. In order for the house to be adapted in different climates, the insulation, the extent of enclosure and the fenestration are customizable for particular climatic conditions of the client's site.

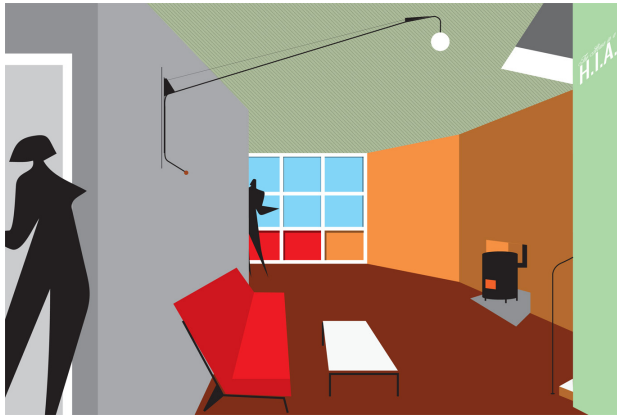


Image 18.4: Interior View

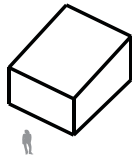
### Costs

Generally speaking, the 24-ft diameter HIAC is expected to be sold for € 76.770. The reason for this low price is basically the low price of the steel shell, the wooden prefabricated interior and the fact that many facilities have extra charges. Apart from the reuse of the old grain silos, the use of new ones is also possible. However, in that case, the budget for the frame rises from \$5.000 to \$30.000.



Image 18.5: Model of HIAC





PROJECT:  
TATA NANO HOUSE

LOCATION:  
(EVERYWHERE), INDIA

ARCHITECT:  
TATA STEEL

TOTAL PRICE:  
€ 500

SIZE:  
20 m<sup>2</sup>

## TATA NANO HOUSE INDIA



India today, has the second largest population in the world, with the amount of almost 1.167.000.000 people. Average 27,5% of India's population lives in poverty, with areas where percentages of people living below the poverty line exceed 40%. Approximately 170.000.000 Indian people are living in slums. Their daily income is estimated at 13 rupee, which is about (€ 0,20).

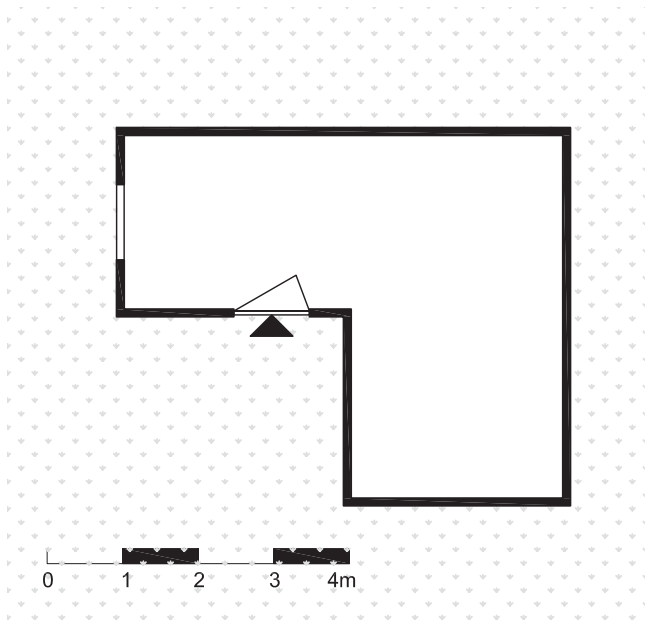
### Tata Steel

Tata Steel is a large company with different bussines operations. Besides that they produce steel, they are probably more well known because of their TATA NANO CAR. This car was developed to respond to the economic growth in India and make cars more accesible for the less prosperous people of India.

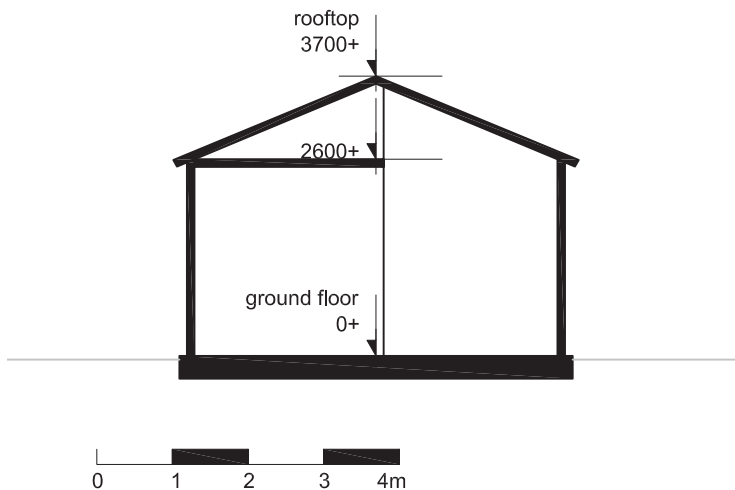
Now they are planning to do the same for housing in India. They are already developing real estate, but not in a way they are planning to do now. At the moment Tata is developing cheap affordable housing for the lowest income class in India. This type of house will be suitable all over India (provinces, outside urban areas and slums) The basic principles for this development is:

- Flexibility
- Affordable
- Sustainability
- Easy to build





Map 18.1: floorplan-ground floor



Map 18.2: Section

## Nano House

They call it the Tata Nano House. They offer it in different packages, with multiple options. Starting at 20m<sup>2</sup> for € 500,- is the most cheapest version, but it will provide the residents with all their basic needs. It is possible to upgrade the Nano House with 10m<sup>2</sup> more for an extra of € 200,- and for Indian people with more money it is even possible to add solar panels on their roof, to be independent of collective electrical infrastructure. Because not everybody will have the resources to pay off their house immediately, there is a possible financeplan based on € 0,10 a day. In this rate, the house is fully paid after 13-14 years. With the expected and guaranteed lifespan of over 20 years, this will be a useful investment.

## Design

The floorplan consist of only 1 floor. Within this space there are no pre-designed partitions, therefore owners have to arrange their own layout within this limited space.

The structure of the Nano House is designed in a steel frame build up by multiple C shaped profiles, with insulation in between. Tata produces and distributes these steel frames to local point through out the country. The potential occupants need to assemble the Nano house themselves, to reduce costs. Because of the light structure and conventional way of connecting the steel frames, this is not considered to be a problem.



Image 18.1: Tata Nano House in testphase (Frontside)  
source image : Tata Steel

When you look to the outer and inner side of the facade you can see that they kept it pretty basic. But appearances are deceptive. Especially the finish of the inner side of the facade. To keep production and materials costs under control they used cocos and jute/sackcloth as indoor finishing. It can be installed pretty easy and rollable, for distribution. In this facade are regular openings for windows and doors without expensive glass and are shielded with shutters and a cheap door. Because of heavy rainfalls, especially in rural areas the building is elevated on to a plateau. If this would be the case for every Nano House is unsure, because in some cases it would not be necessary and buyers would not always be able to make this on their own. The pitched roof is suitable for possibly additional solar panel.



Image 18.2: Inside structure and wall finishing  
source image: Tata Steel

Overall the Nano House is meant to change the way and quality of life for 170 million Indian people, and when this will be a complete success, then it might even be possible to be used for other poor people around the globe. Designed for basic needs and the highest possible quality, this house is truly meant to be successful.

Recent news is, that Tata is planning to release this house (product) on the market in 2012.

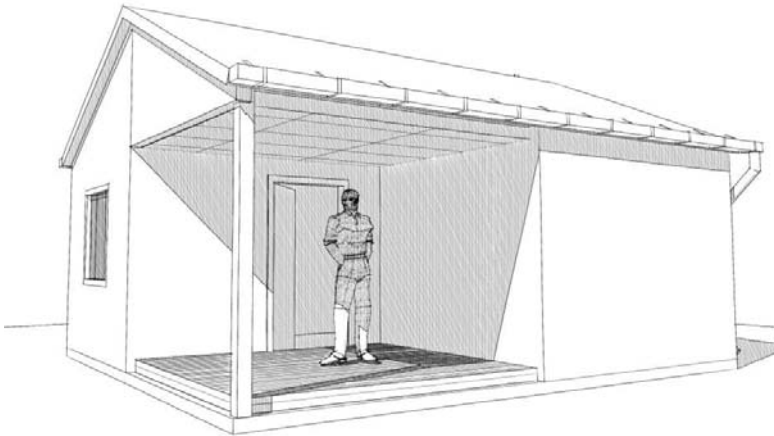


Image 18.3: Sketch Tata Nano House



Image 18.4: Model





## Conclusion

## Conclusion

In our current society there is a trend of higher average education, different composition of households, where households are getting smaller, an aging society which itself continue to live longer and remain on their own. Due to these changes and the lower financial capacity of these smaller households, the cheaper and affordable houses on the buying market are getting scarce.

Therefore people, who enter the housing market for buyers for the very first time, are having problems of finding affordable houses. A starter exists out of a young individual or couple which is moving out on their own, entering the housing market for the first time. Due to regulations, most of these starters are not able to rent most of the cheaper social housing, because they don't meet the acquired conditions and are therefore forced to buy a house. The problem is that these starters enter the housing market with barely any financial resources and just a starting salary, most of the time these young people just finished college and just beginning their career.

During this research of the different projects you can see some similar subconclusions, these are:

- Starters houses are not designed a lifetime stay residence. For that reason, the houses are rather small.
- Possibility to extend the house
- Development of startershousing needs to be done in a collective way.
- Importance of flexibility
- Close cooperation between developer, architect and end-user raises quality and lowers costs.

## Starting Development

Out of the former done analysis and research to different kind of starter houses we discovered the specific way of interest starters again for the housing market. The amount of people trying to become starters is lowering each year as mentioned before and it might be possible to re-interest this target group again by a good real-estate development strategy. That is why we noticed there to be a lot of collective development ways to bind a group of starters together in one project so they could lower their individual prices. For a contractor to build ten starter houses one by one, will cost more, instead of combining all these starter houses and see them as one project. The logistics at the building plot will be more organized so it will be easier and quicker to build. So developing in a collective way will be more interesting for starters to get the same result against doing it by their selves.

## Designing to interest

The other method in interesting starters again for the housing market is for an architect to focus on the attractiveness of new starter houses. It will be essential to create houses which completely fit to the demands for the future and today's starters. Design a vision or actually a real practice example of a new starter house which will have the right proportion between cost, area and appearance of it. Then as we can conclude out of the research before, starters are willing to spend more amount of their income on their quality of life instead of just square meters. The empty houses that are today still for sale are not always the most expensive ones, but a lot of times even the small and cheap ones remain empty. Designing a starter house will force you to design a more permanent concept, like an architectural concept in where starters will

be able to live longer in a house than just a couple of years. This appears to be more interesting for a large target group of starters to invest their money in and therefore entering the housing market again.

In the end, combining the development and designing phases of new to build starter houses and integrate communication with the starters target group, will be the collective way of bringing the starters together.



