Thematic research paper

(Uberhaupt, 2015)

Name: Bouwe Verlaan
Student number: 4037189
Studio: Architectural engineering 16
Tutors: Annebregje Snijders, Marcel Bilow

Table of contents

1. Abstract
2. Backgournd
3. Method
4. Results
    a. Case study
    b. Location
    c. Usage
5. Conclusion & discussion
6. References

Abstract

At first the project started in a total other way. What was supposed to happen with this graduation, was to realize transportable movable homes. Research about this subject was done. The idea was to combine standard dimensions of truck containers with affordable living units. They had to be compact, cheap, expandable and easy to transport.
This was not the only thing what I wanted to realize. I also wanted them to look like a real solid home. (without fold seams, the cheap thin caravan look or the transportable look-a-like). After lots of research and a couple of presentation, it seems to be the case that this idea was not possible. Therefore there had to be another concept which would provide the a good base for graduation. After a discussion with me and the tutors we came to the conclusion we could fill the interspaces of the canal houses in Amsterdam. With doing this we could keep the compact character of the mobile homes and at the same time create something small what can be more expensive.
The first thing what will happen in this paper is the written background. This is a way of showing the reader how the project came to what it is now. This is shown by some facts about the canal belt in Amsterdam, because this is the side where the project should be built upon. When this is made clear we continue with the research methods. The research methods is the part of the paper where is shown what are the intentions of the research. It is a description of what will be research to create an image with the project. Afterwards The results of this methods will be explained. The research results will be discuss and it will be tried to make them as understandable as possible for the reader. The first thing what will be research is case studies of similar projects. This will be narrow house and how they are made and what choices are made to create them.

After heaving several of this case studies the location need to be specified. This is shown in a map with dots on it which will indicate the chosen locations in the Amsterdam canal belt. After those two research methods and their results, the boundaries of the volume in the locations can be made. However the exact dimensions of the inside of the project are not quite clear. That's where the last part is coming in, the usage of Neufert and Haak to set the minimum usage space for different functions. With doing this a minimum space can be created for the project, and if the functions are placed into the project it will be clear soon if they will fit or not. After this part a conclusion needs to be drawn to start a good design. Therefore all the research needs to be combined in one conclusion to try to set a good base boundary to start the design with.

Background

Amsterdam was built with the concept of canals. Those first canals were built for water supply and to defend the city from outside threat. After some time the city quickly expanded. What happen when the city quickly expanded was the canal belt enclosed by the city walls. Therefore they lost their function. However after some time they regained a function. They became the kind of an infrastructure to provide houses and stores with supplies. In the 16th and 17th century this was the main way of transporting supplies into the country and the city. (De geschiedenis van de Amsterdamse grachten, 2016)
Every time when the city needed to expand there came another canal with houses in between the old and the new canal. This also happened in the 17th century. After research it turned out to be so that in that century the population of the city expanded from 30.000 to 200.000. Therefore the city needed to expand. What they did with the expansion was created houses on the west and create the industry on the east of the city. The people who came to the city were most of the time poor workers who wanted to earn money. Therefore the houses created with the expansion needed to be not that expansive. Moreover the sites were the houses were placed on also needed to be small. What they decided was to place the new houses with the expansion in the canal belt west. (Grachtengordel: weerspiegeling van de Gouden Eeuw, 2013)

This resulted in small long houses with less space in between. Through the years some things in the city changed while some gabs in between the houses were created. There also were some alleys in that days which lost their function or became dead ended through the years. What also gave a great contribution to this was the facade refurbishment end of the 19th century. That also created some new not used spaces. (van Dommelen, 2013) So there are small spaces in the west canal belt which are not used nowadays, and which have potential to create a private or public space in.

Method

The research started with a previous project. In this previous project research about several subjects are done. Some parts of this research can be used in the current project which I switched to. This was possible because of the similar dimensions these projects have. The sizes are not the same, but they are both focused on the compactness. Both projects should have this because of their boundaries. In the previous project the main goal was transportation. if a projects is focussing on transportation compactness is one of the top demands. Because of the transportation boundaries need to be set about what is the best and cheapest way to transport the unit.

The current project is mainly about the width the project can have in its specific locations. The spaces the design should be developed in are narrow, so measures about the dimensions of the project have to be made to create a well developed design.

After getting this straight the bases of the current project was founded. After doing some reading I decided the best way for me to do research was to use case studies to develop the project in the (for me) best possible way. This way I become to know what kind of buildings there are in this segment, and what they are made out of. After gaining this knowledge I can compare the case studies to gain knowledge about what is best for my situation.

However, to do that I have to know what my situation is. Therefore I chose a scene in Amsterdam were the project had to be realized. I chose the west/south part of Amsterdam canal belt to create my project in because this is popular piece of ground in the city. Therefore possible profit can be made out of this project. At this stage we still don't know what the project will look like. But we got the boundaries of the context where the design has to be made in clear. The sizes of these contexts are explained in the location part further on in this research paper.

When those first boundaries clear we will have to make clear, what will be a possible to design with boundaries. And what can and can't be designed in this places. To make this visible for myself and others I decided to find something what could do this. After doing some research about what is the best way to express yourself on paper I noticed case studies. Many projects used case studies to do research about their own project. With rating those case studies measurable demands can be made. The method I used for my research is the ones which includes icons to compare different case studies. This way I make my research visible for people who read this paper.

I wanted to rate my case studies with icons because I thought it was a good idea to compare them in an understandable way. (Garcia, Badre & Stasko, 1993)

So to start with I randomly started with knowing what kind of constructions the case studies used. Soon I noticed three materials they used often. Those were concrete, metal and wood. However there were some other minor construction materials which were made out of another material. So what I did was make symbols of these material to rate the case studies with them. Therefore I decided to make four different icons to show the possible constructions for these (and other possible) projects and to compare them with these icons.

concrete metal wood other

Another thing I added to the construction is about how the buildings are supported. Some of them are built as a parasite and others are self supportive. I also decided to rate that with icons.


parasite


self supportive

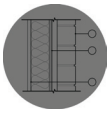

water storage

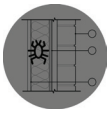

waste water storage


sewer connection


waterworks connection

After that another subject I translated into icons is about the insulation of the case study projects. Some of them are insulated by themselves and other are not. We can divide the ones which are not insulated into two groups, the ones which are insulated on only the front and the back of the building and the ones which are not insulated at all. The ones which are only insulated on the front and the back of the building mostly use the insulation of the neighbour buildings for their side insulation. The ones which are not insulated at all mostly are in warmer climates, or climates were insulation on the side is enough. I made this four icons for the insulation:


self ins.


parasite ins.


semi parasite ins.

The following rating is about the waterworks and the sewer. Most of the researched buildings are built on site after the surrounding buildings were created on that specific place. Sometimes it is hard to connect a new building to the existing ones, which on their turn are already connected to the sewer or waterworks on location. Therefore some of them have their own storage system. This can be for fresh-, waste water or both. This is a concept most mobile homes also use (Water in de caravan, 2016) The icons i gave them to rate with are those:

The last thing I want to compete in the case study research is the open- and closeness of the projects. Some of them have got a open facade in the front or in the back. Both open is also possible but neither of them are closed on both sides. Therefore three icons to rate with were created:


front + back


only front


only back

To be sure it would work, I had to find the cost per m2 ground in the canal belt in Amsterdam. I found out it has got a price of €2605,- per m2. (Amsterdam.nl, 2016) This is a very high price for a piece of ground in the Netherlands. Therefore I thought it would be possible to realize this project right here in the Netherlands.
After this said, the specific first/main boundaries needed to be clear, to help to make a conclusion in the final step of this research paper.

A method I also used is to look at other projects that wanted to use narrow spaces. (Tussen-ruimte, 2013) After some reading I came at bureau Jarrikouburg. They wanted to create public functions in those spaces to create a better social cohesion in the neighbourhood. The sizes bureau Jarrikouburg used in their research about the "in between spaces" in Amsterdam started at a minimum width of around one meter. The big difference comparing my project versus the one of Jarrikouburg, is the use of these spaces. His were used for outdoor use, instead of creating a living space in these places. (Office Jarrik Ouburg, 2016) The thing is, to create a house in these spaces you need more width than one meter. The narrowest house with his own construction I found is the Keret house in Poland. This house has got a width of 1.52 meter. (Dit is het smalste huis ter wereld, 2012) With this in mind I set my own boundary of minimum width. The minimum width of spaces I want do design in will be at least 1.30 meters. However there is a maximum width boundary I want to set to keep the concept of the design alive. That's when the design allows it to place furniture in the width. When this is possible the design will be completely different and the concept wouldn't be alive anymore. Therefore my maximum boundary will be set at 2.50 meters. This is the width which allows it to place a bed in the neighbour-neighbour direction instead of the garden-street direction. (Haak, 2005) If this is happening the routing and minimum use spaces will be completely different, and it isn't possible anymore to design in the conceptual idea. Therefore the design has to adjust to this. I also made this visible in icons, which were used in the part of the research about locations. The icons will look like this:

< 1.30 meter

> 1.30 < 2.50 meter

> 2.50 meter

There are many locations in this part of Amsterdam. In this phase of the project the in between spaces are measured with calculating the existing objects in the pictures and compare them with the width of the location. (Measuring angle and distance with your thumb, 2016) This way you get insight in which area's suffice to the demands which were made earlier. The rates are shown in the next (result) part. When the design part will start, exact sizes will be needed to fit the concept in those places.

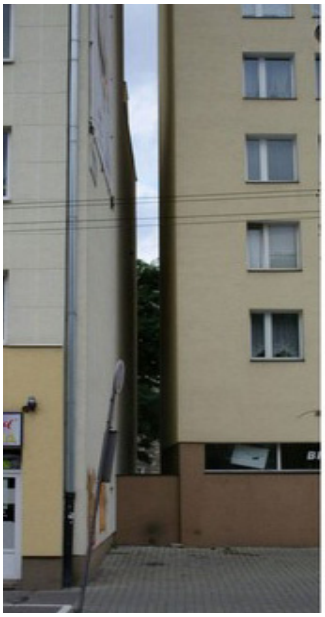
With this said E.Neufert and J.H.Haak come in. They both did research about the minimum spaces users of buildings need to keep them functioning. The research they have done about this subject, they translated into illustrations. The illustrations show what the minimum spaces are that people need to move in a specific act. I think using their research is a nice method to do research with, for my conceptual idea. This way I know what the minimum space is which I need to place furniture in, and the spaces to use that furniture.
When I gathered the information they provide me for those functions, I can optimize the conceptual model to make it as compact and useful as possible.

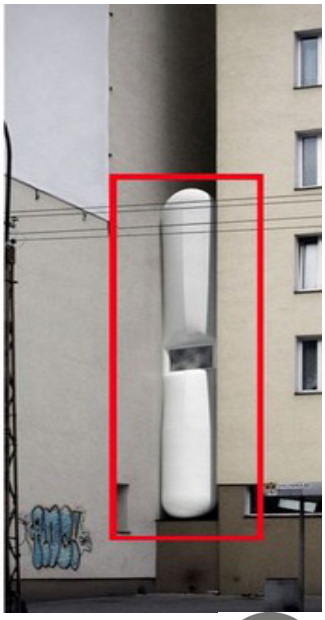
Result

Keret house

Name: Keret house
Location: Warsaw, Poland
Architect: Jakub Szczesny

Outdoor images

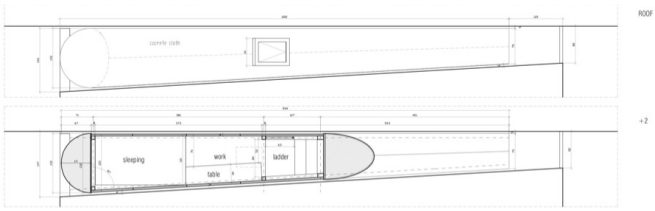


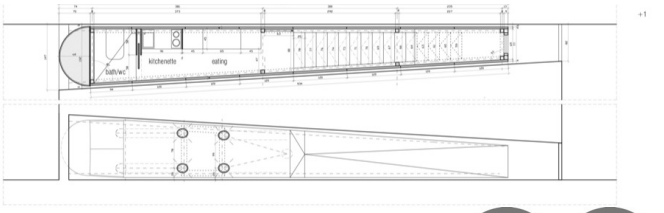



Indoor images

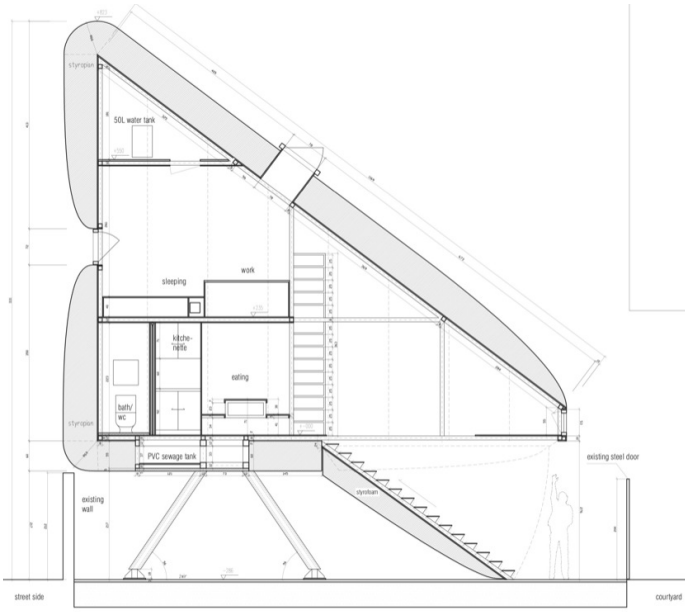



Floorplan





Section



The Keret house in Warsaw is designed by Polish architect Jakub Szczesny, the house is existing out of two levels connected by a ladder. The house includes a small kitchen, a bathroom with a shower and a dining space on 1st floor. The bedroom only has a single bed because there is simply no space left for a double. Near the bedroom there is a desk on the 2nd floor. To enter the house, you have to climb 2.70 meters from the street level. This stairs is a trapdoor which can be closed.
The insulation which the building has is styropian which is some kind of lightweight foam board insulation. (Styrofoam, 2016) An advantage of this materials is, that you can construct it on site in all kinds of shapes. Also when it is a difficult place to adjust, because it is lightweight.

Construction

The construction is existing out of steel which makes it possible to build this narrow. The steel structure and side panels were painted white with a polycarbonate roof which permits indirect light from above. This was chosen to avoid claustrophobic effects to the users.
Due this thin structure it was possible to build in a building site which is 152 centimeters at its widest point and 92 at its narrowest. The inside is 127 centimetres at its widest and 76 at its narrowest. (Inside the world's narrowest home, 2016)

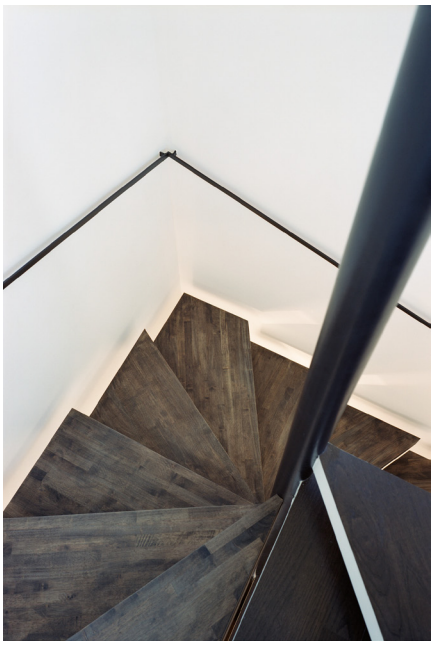
House K

Name: House K
Location: Tokyo, Japan
Architect: Hiroyuki Shinozaki Architects

Outdoor images

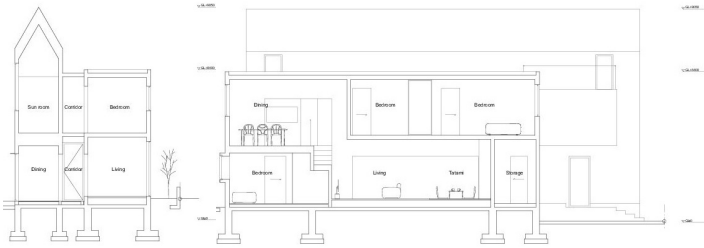


Indoor images

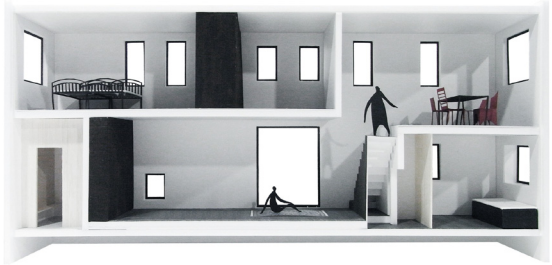

Floorplan

Section



House K is a special design compared to its user. The house is made for two families and not for just one. This is called a duplex house. The Footprint of the house is not that narrow actually. However if you watch the program, you will see that one of the families is living in a space that is only 180 centimeters in width. However the strange thing is the supplies of these two houses are partly shared, so in the floor plans it is hard to see the separation of the two houses.
Another thing noticed is the middle of the house, which is existing out of a long corridor. This corridor is separating the two small living units and allows the two families to come and go along the corridor to switch between the functions in the house. (Nakamura, 2016)(House K in Tokyo, 2016)

Construction

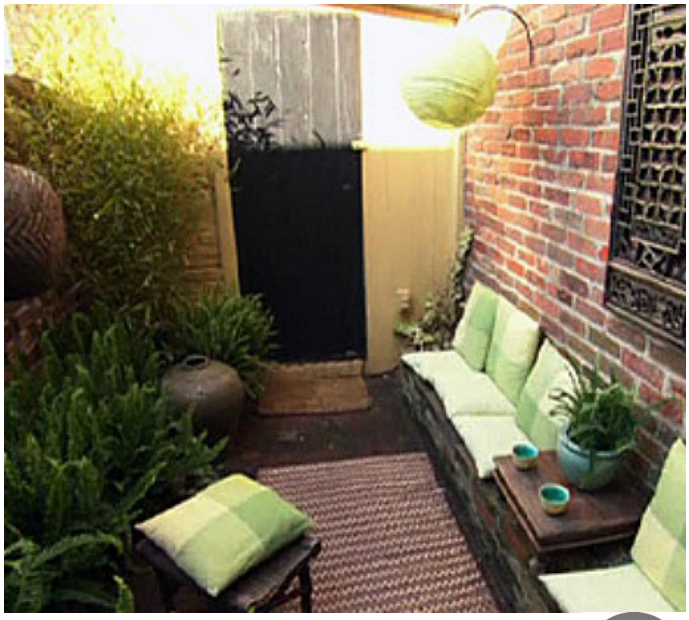


The construction is mainly existing out of concrete, whereas some construction parts in the house are existing out of wood. For instance the beams, walls and floors of the kichten, bathroom and closet. The construction of those is existing out of wood and the finish is plywood.
The living space, living room, dining room and bedroom are placed in a concrete box.

Hollensbury spite house

Name: Hollensbury spite house
Location: Alexandria, Virginia, USA
Architect: (Unknown)

Outdoor images



Indoor images

Floorplan (not found)

The Hollensbury spite house is a 213 centimetres wide house made in an old alley. Once walking traffic and carriage traffic passed this alley. On the walls, you can see traces of indentations where wagon wheels in the early days brushed up against the wall.

Section (not found)

It's called the Hollensbury Spite House because John Hollensbury, who was once the owner of the house next door, built it in 1830 to keep horse-drawn wagons and loiterers in good shape. The owner who is living there nowadays is quoting "it was quite a challenge" to make the kitchen work in the tiny space the house is providing for it. The (American) kitchen has got a freezer, fridge, four-burner stove, and an oven. Because of the tiny spaces in the house there have been some smart adjustments. For instance there is extra storage space under the bench in the kitchen and seat and extra cabinets in the corner to finish the kitchen. The last thing they did to finish the kitchen is making a small microwave place under the stairs. The owner who is living there now purchased it for $135,000 in 1990.

Construction

Structurally, it's more of an enclosed alley than a house. The brick walls of older houses on either side are used as inner walls in the Hollensbury spite house. They painted them and place furniture against it. Insulation on both sides was not used. The construction materials of the floors are made out of wood, and the small façade is made out of bricks. (""The spite house"in Alexandria, Virginia", 2008)

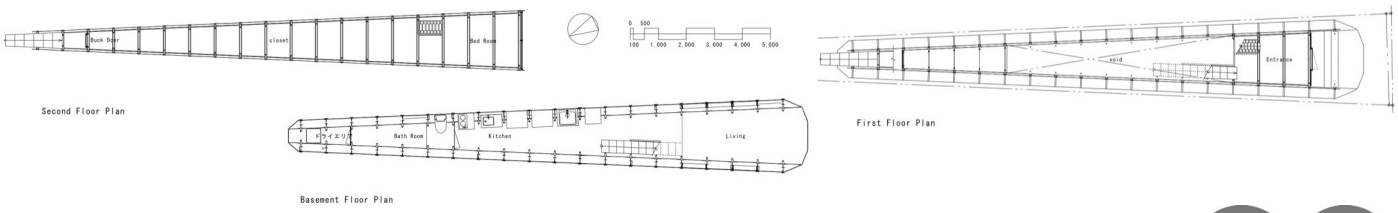
Lucky drops

Name: Lucky drops
Location: Tokyo, Japan
Architect: Yasuhiro Yamashita

Outdoor images

Indoor images

Floorplan



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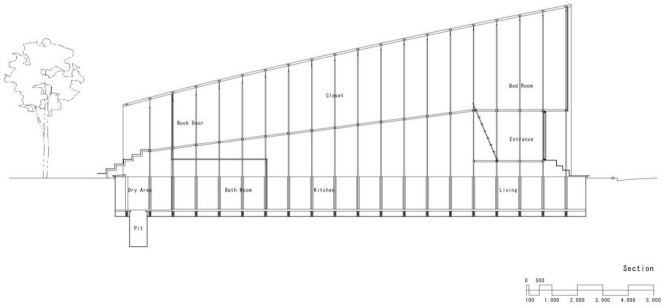
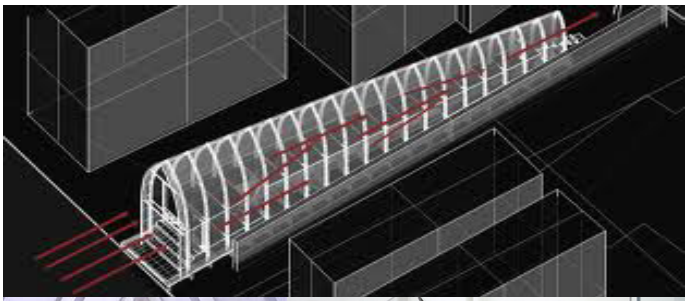
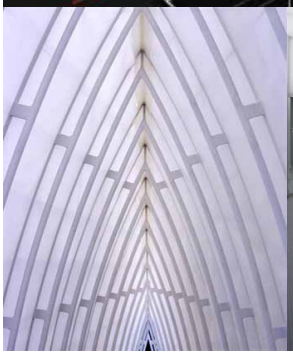
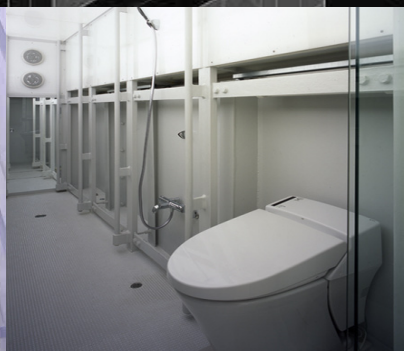


Lucky drops is a long, narrow trapezoid design house with a footprint which is 320 centimetres wide and a height of 2930 centimetres. The depth is 2930 centimetres as well and the upper base is 70 centimetres. However, if we look into the inside of the house there is an offset of 50 centimetres of the walls.
The client had specific taste in design, structure, construction and maker, so it was a tough project for the developers. The site has got a long narrow shape, it was decided to use the maximum length of it and design the building into this. This translated itself into a slope inside. This way the underground space could be used as efficient as possible, and the facade could be thin without insulation. The facade is completely translucent, indirect light is coming in all over the facade.

Construction







The floor material is expanded metal letting sunlight fall deeper underground, in the attempt to deviate from the floor's of determinacy function.
Construction wise there are some out of the box choices made, instead of the normal ones. For instance the 8 mm thick steel plates which were used as floor instead of concrete what they normally do. They choice this ones because this way they could decrease the working width on site with 50 centimetres. However the plates had to be assembled/edited with some anticorrosive, heat-insulation and waterproof treatments. . (Lucky Drops/Atelier Tekuto, 2011)(Design interventions,2010)("session 01 – atelier tekuto, Tokyo", 2016)(Niz, 2010)

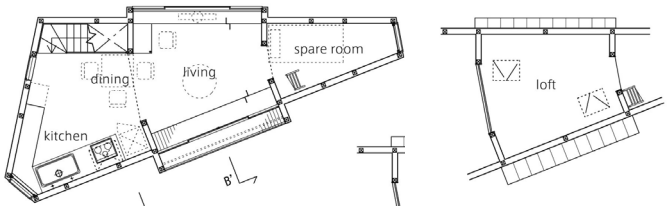
House in Horinouchi

Name: House in Horinouchi
Location: Tokyo
Architect: Mizuishi Architects atelier

Outdoor images

Indoor images

Floorplan



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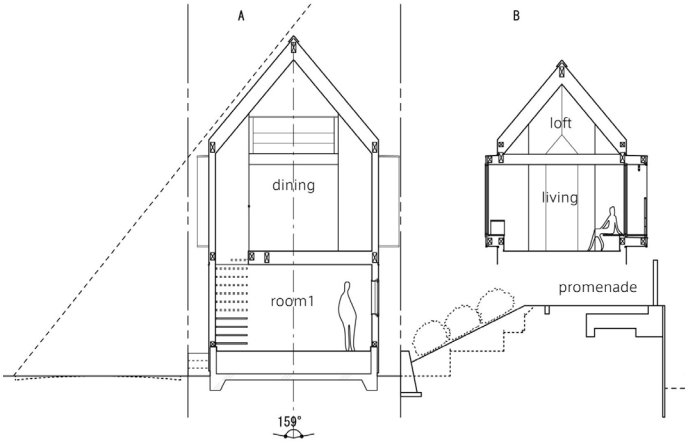
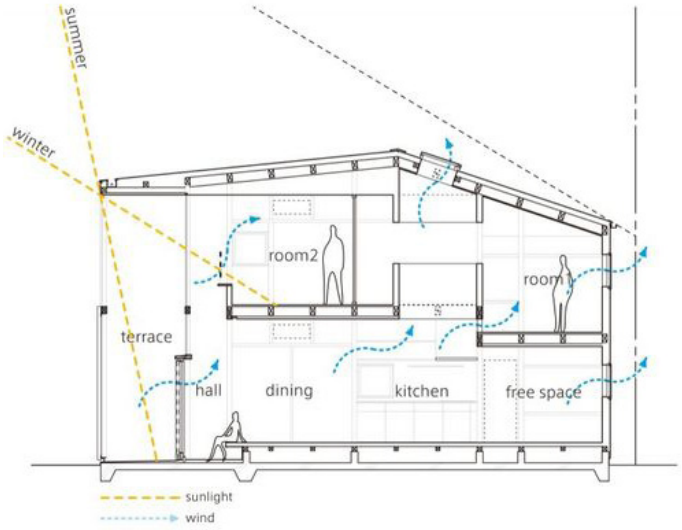


House in Horinouchi is a narrow house, but different from the other. It has got a triangle shape instead of a long narrow one. It has got his shape due the river and the road kind of cross each other in that place. The shape of the house was chosen to strengthen the natural and cultural outcome of that specific spot. However the shape is not really the same as the project which I am developing, but it is a small house which has some design ideas which I can use in my project. Most of it are the places of the furniture and kitchen cabinets which are placed smartly. Furthermore the living space has got full-opening windows on both sides and a balcony.
space with two skylights is the loft which allows light come in to lighten the whole area.

Construction



The ground floor is mainly a storage and routing space with stairs, storage, etc. except for a bathroom which also is placed there. The first floor is divided into small functional areas surrounded by structural narrow walls. These constructural walls are connected with one by the ridgeline of a roof.
The construction of the walls and floors are existing out of wooden beams with provide the building to carry itself and stability. (House in Horinouchi/ Mizuishi architects atelier, 2011)

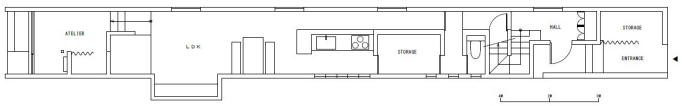
Promonade house

Name: Promonade house
Location: Shiga, Japan
Architect: Kouichi Kimura architects

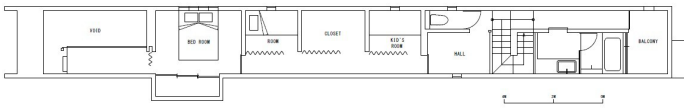
Outdoor images

Indoor images

Floorplan

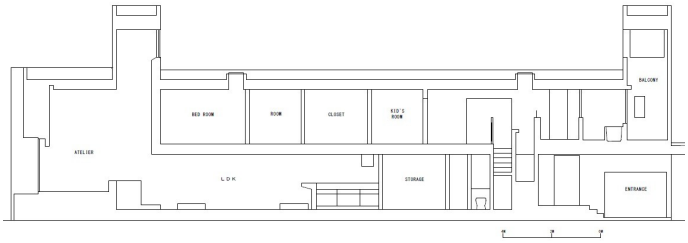


Ground floor



First floor

Section



Section

Promonade house is a family house in Shiga, Japan. It is 27 metres long but only 2700 centimetres wide which is a bit wider as the set boundary. It contains two floors with ling corridors to connect the functions.
Most rooms open out to a corridor, making use of all available space.
The ground floor contains a kitchen, dining and living room. It also got windows that line the edges of the floor.
In the rear of the house there is a ladder leads from the study to the floor above. As it seems many of the case study houses got a ladder to use as less space as possible, however in this particular situation the staircase at the front of the house is also providing some vertical movement.

Construction

The second floor is divided in two. bedrooms and storages at one end, while the bathrooms are on the other end.
There are more double-height constructed floors in the house whereas one of them is providing light through a big window into the house.
The building contains concrete surfaces crop, while the living room floor is built out of wood.
The hallways constructed in this house are the routing spaces that follow the geometry of the site. The construction is build upon this conceptual idea.
(Promonade house by FORM/Kouichi Kimura architects, 2013)

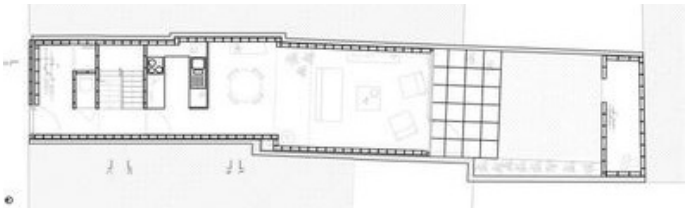
Silver house

Name: Silver house
Location: London, United Kingdom
Architect: Boyarksy Murphy Architects

Outdoor images

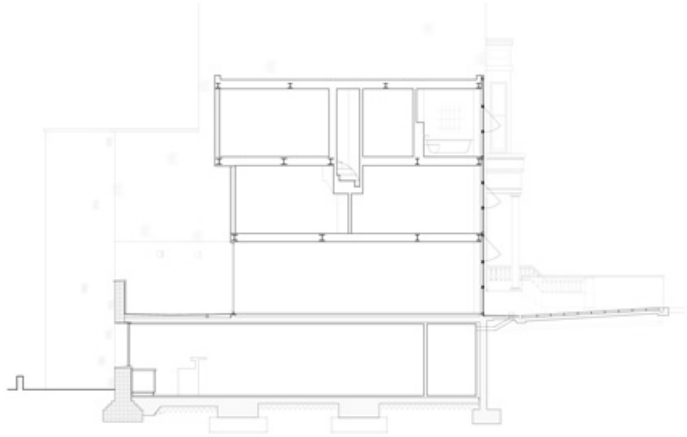
Indoor images

Floorplan



The silver house design by Boyarsky Murphy architects and is placed in Elgin Avenue in London. Interesting is, that this project is designed in a small dark space which was in between two existing buildings.

Section



Another thing what was noticed about this project was the narrow shape it had to be designed in. This was not a straight narrow space but a bit diagonal through the existing buildings.
In the early days this site was meant to be for a wine vault which was providing a pub nearby.
At first it looks impossibly small with its 3 meters wide facade and 8 meters height. In this perticulair case it looks even smaller due the adjoining house. They are all existing out of brick, terracotta, stucco and tall sash windows. The Silver house it's made out of translucent glass which is a big contrast.

Construction

The construction of the building is mainly existing out of steel beams which carry the floors. Insulation is put on the outside of the walls from the existing buildings. Therefore it is a semi parasite insulated building, because it is only insulated a little part of the building, which includes soundproofing.
(The 3 meter silver house by boyarsky Murphy, 2007)
(Bond, 2011)

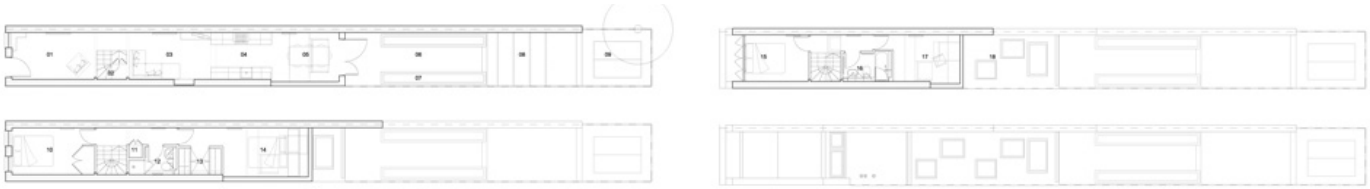
Slim house extension

Name: Slim house extension
Location: London, United kingdom
Architect: Alma-nac's architects

Outdoor images

Indoor images

Floorplan



Section

The slim house extension has got a width of 230 centimeters. The house has got a sloped roof with several windows in it. This way the design brings natural lights in to lighten the house. It is an extension of an existing house which was famous because of his poor natural lighting. With this solution the architect wanted to fix the problem.
What was added to the existing house was a new ground floor dining area, an extra bedroom on the first floor and a study on the second Floor.
As you can see in the section it is terraced to allow the light to come in. Due the left space in the garden the architects decided to make a dining area here to connect the inside and outside of the building.

Construction

A funny fact on this project was there was a strict budget. The couple who initiated the project was a young couple with less money.
This is interesting for my project to see the possibilities of making money.
The bedrooms were originally in the front while the habitants suffered from noise of the traffic.
The complexity comes in with the construction. Due the terraced idea the concept had a more difficult construction with floors and the roof what is more expensive to built.
The solution was a slated clad-roof which covered the terraced floors with as less material as possible.
The project also used the insulation and walls of the neighbors to construct. If this is possible, it can be as cheap as possible. (Slim house extension by Alma-nac, 2013)(Ravenscroft, 2013)

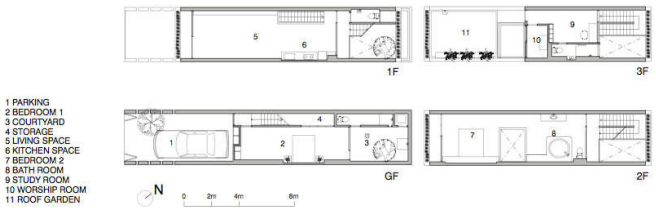
Stacking green

Name: Stacking green
Location: Saigon, Vietnam
Architect: V.T. Nghia, D. Sanuki, S. Nishizawa

Outdoor images

Indoor images

Floorplan

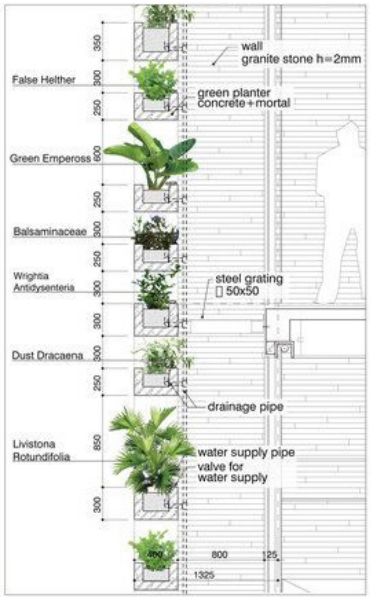


When someone sees stacking green, the green plants are noticed at once. This is a strong conceptual idea which is instantly the façade of the building.
The house is designed for a couple and one of their mothers.

Section

The building site which it is build upon, is 4 by 20 meters. The inside of the building however is around 3 meters because of his self supportive construction. They design has a special lighting situation. The plants are designed in such a way natural sunlight is filtered to prevent heating, but allowing enough light to lighten the building. There is also a roof light with a roof garden to create the same concept, to give the house enough light. They did this with placing the plants with interspaces of 25 to 40 centimeters. Irrigation pipes inside are used to water the plants.

Construction



The construction of the house is made out of a RC frame construction, which is a concrete system (Yakut, 2011). The back and front of the house are cantilevered in combination with the plants.
The concrete house is partly added with granite finish. The inside is constructed I a way the front an the back of the building can be completely open to create natural ventilation. When opening those doors the plants are still filtering the direct sunlight.
(Stacking green/ Vo Trong Nghia Architects, 2012)
(Stacking Green by Vo Trong Nghia, 2012)

Terrace home

Name: Terrace home
Location: Haringey, London
Architect: (Built by a keen entrepeneur)

Outdoor images

Indoor images

Floorplan (not found)

Terrace home is a two-bedroom house with a construction site width of 213 centimeters. After building it the inner wifth which was left is 188 centimeters. The floorplans have got a surface of 43 square metres.

Section (not found)

Due the location in London the house is as expensive as a normal house elsewhere in the country. The house contains two bedrooms, a kitchen, a living room and a bathroom. It is probably England his smallest house.
It is built in 1996 on a entrepreneur his driveway. He wanted to rent the house to create some extra income. This was achieved and executed until 2014 when he sold it.

Construction

Construction wise it uses the walls of the adjoining houses. This was the only way because if it had to support itself there was simply no space left to put the user space in. In the kitchen there is one architectural bow. However this is an ornament instead of a real constructive one. The roof is constructed with wood and roof tiles. This way it isn't creating attention but it is just part of the neighbourhood. (Glanfield, 2014)(Narrow home in Haringey goes on sale for 200.000, 2014)

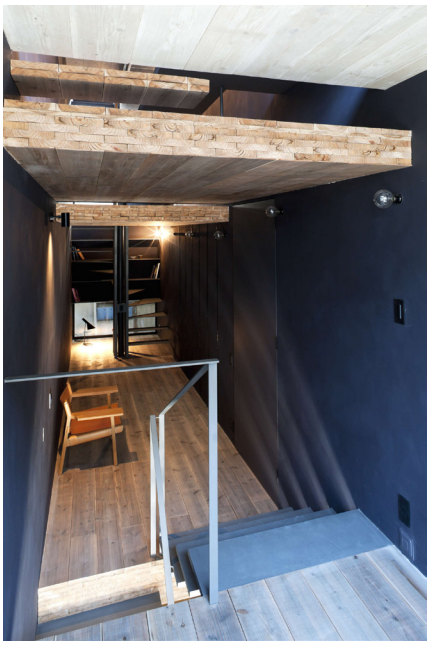
Ultra MOD

Name: Ultra MOD
Location: Tokyo, Japan
Architect: YUAA architects

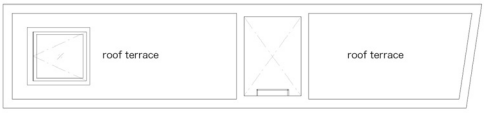
Outdoor images

The Ultra MOD is a narrow house in Japan. The complete building including construction, façade etc. is 1800 centimeters wide. The funny thing on this building is the space it has to provide. In Japan it is normal to live with more family members in a house. For example grandma and pa and the younger kids with their parents so multiple generations live there. The complete floor plans are 80 m2 in total.
It is built in a space between two houses which were already existing. The facade is completely open in the front which provide people from looking in and out whole day long.

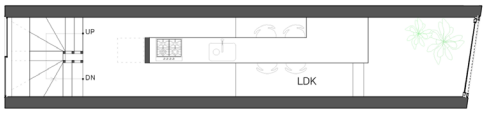
Indoor images



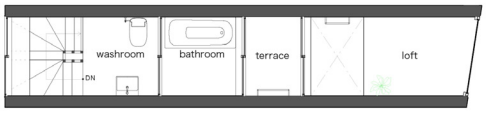
Floorplan



PHFL PLAN



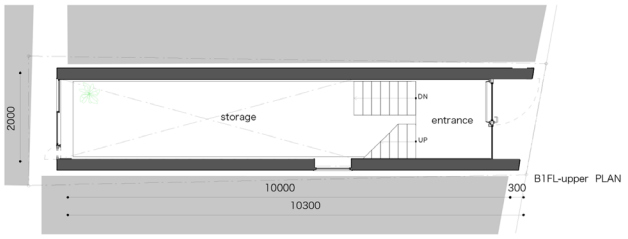
2FL PLAN



3FL PLAN

Section

1FL PLAN



B1FL-upper PLAN

Construction

The house is existing out of four floors. The living room, dining room and kitchen are located in the back to create privacy due the huge glass front façade. The upper floors are providing the bedrooms and also the bathrooms in the back to create privacy. In the basement there is some storage space.
The full glass façade is created to bring daylight into the house because of the narrow shape it has got. Some floors are made out of metal mesh to create openness in combination with the narrow shape. Another advantage is the price this brings it with. The construction itself is existing out of concrete wall discs which provide stability and support. (Freda, 2015)(Rogers, 2016)

Location

The location study Starts with a map. As written in the method part I have chosen the canal belt of Amsterdam. This ground has got a high value and is popular with the inhabitants. To get the places in this area a location visit was too short and therefore wouldn't work. What I did was starting to walk through Google street view. (Google streetview, 2016) By doing this in the chosen area I gained all places which were possible to built my project in.
I gained the Intel and started to rate it. I did this by eliminating places. I eliminated the ones which I thought would be between 130 and 250 centimetres. I gave them icons in this result part with which I can work with in the design part.
Also I made a map of the locations to have an overview of what area I am working in. The map is shown on the right the adresses of the map are shown on the left of it and the rated spaces with icons are shown below and the results will be discussed in the conclusion part.

Bergstraat 4

Singel 176
Singel 192
Singel 214
Singel 306
Singel 310
Singel 358

Romeinsarmsteeg 7

Langestraat 3
Langestraat 22
Langestraat 52
Langestraat 54
Langestraat 58

Herengracht 11
Herengracht 15
Herengracht 29
Herengracht 127
Herengracht 153
Herengracht 221
Herengracht 227
Herengracht 261
Herengracht 283
Herengracht 287
Herengracht 351
Herengracht 423

Keizersgracht 46
Keizersgracht 78
Keizersgracht 207
Keizersgracht 222
Keizersgracht 371
Keizersgracht 385
Keizersgracht 432
Keizersgracht 491
Keizersgracht 710

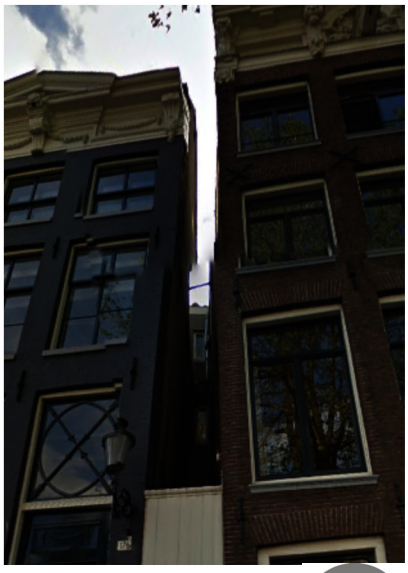
Brouwersgracht 87

Huidenstraat 2

Prinsengracht 43
Prinsengracht 239
Prinsengracht 441
Prinsengracht 497
Prinsengracht 509
Prinsengracht 553
Prinsengracht 555
Prinsengracht 733
Prinsengracht 741
Prinsengracht 769
Prinsengracht 819

Kerkstraat 170

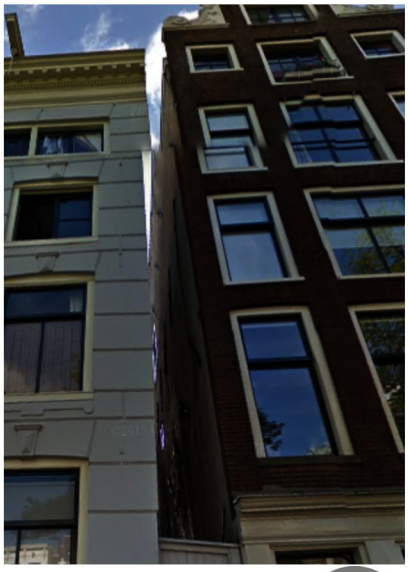
Bergstraat 4



Singel 176

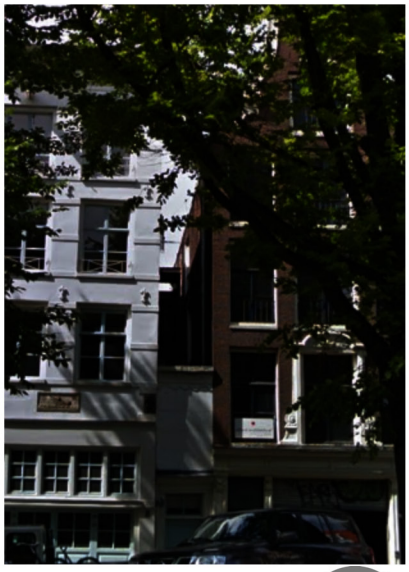
Singel 192

Singel 214



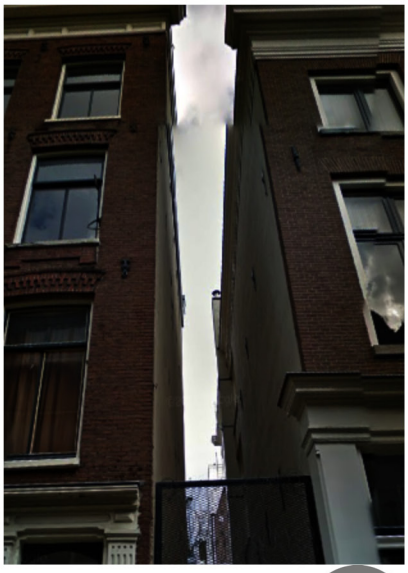
Singel 306

Singel 310

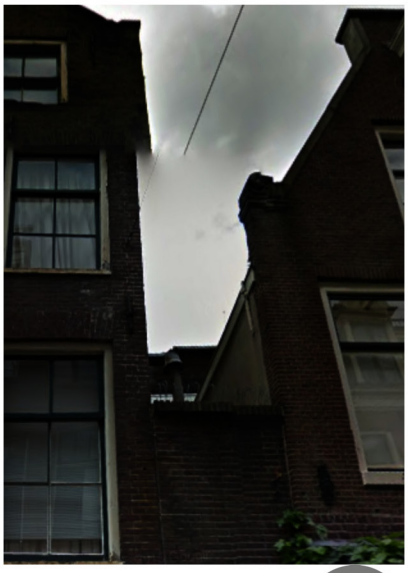


Singel 358

Romeinsarmsteeg 7



Langestraat 3



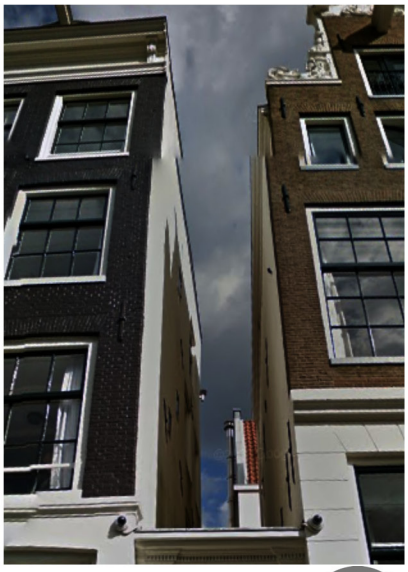
Langestraat 22

Langestraat 52

Langestraat 54

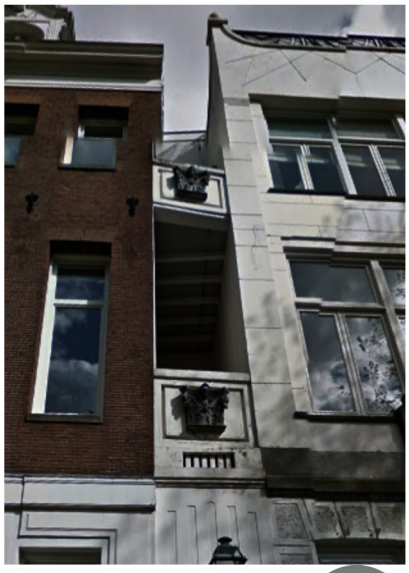
Langestraat 58

Herengracht 11

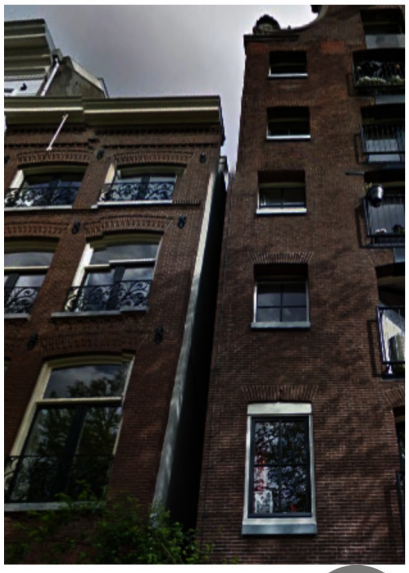


Herengracht 15

Herengracht 29



Herengracht 127



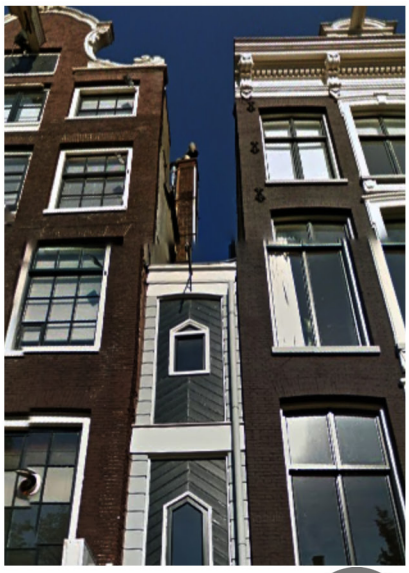
Herengracht 153

Herengracht 221

Herengracht 227

Herengracht 261

Herengracht 283

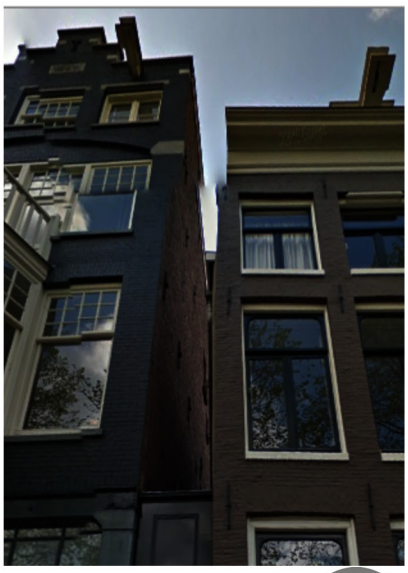


Herengracht 287

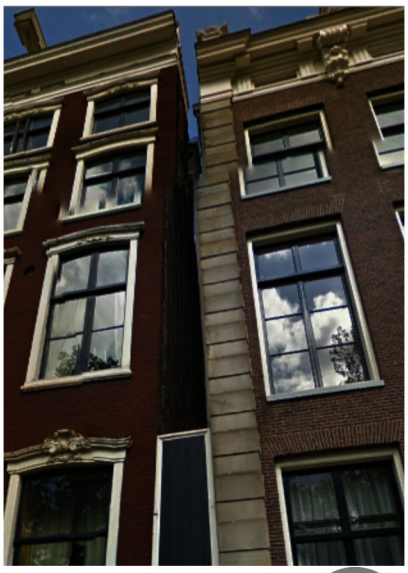
Herengracht 351

Herengracht 423

Keizersgracht 46 < 1.30



Keizersgracht 78 < 1.30

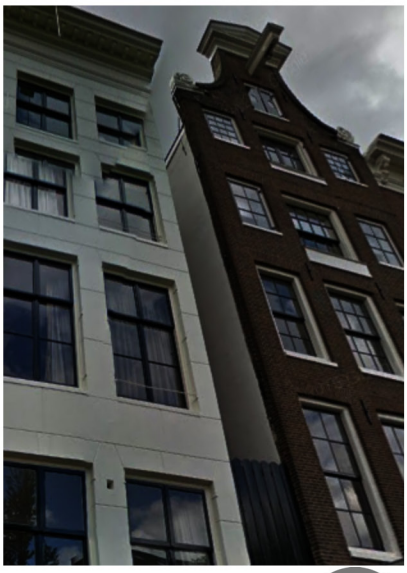


Keizersgracht 207 < 1.30

Keizersgracht 222 < 1.30

Keizersgracht 371 > 2.50

Keizersgracht 385 1.30 < < 2.50

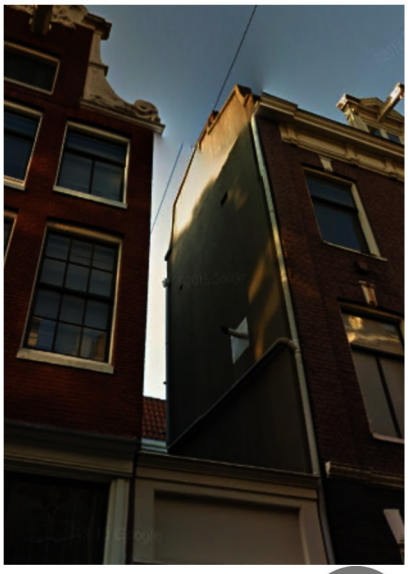


Keizersgracht 432 < 1.30

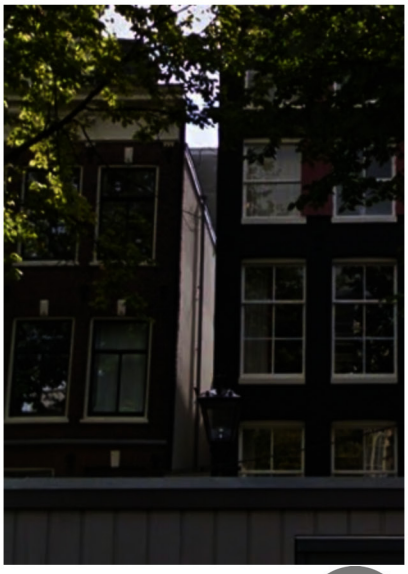
Keizersgracht 491 < 1.30

Keizersgracht 710 > 2.50

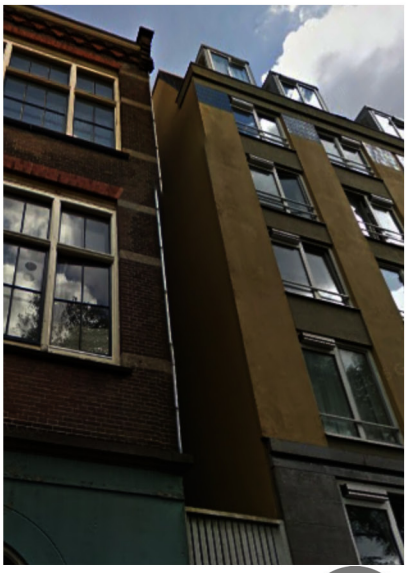
Brouwersgracht 87 < 1.30



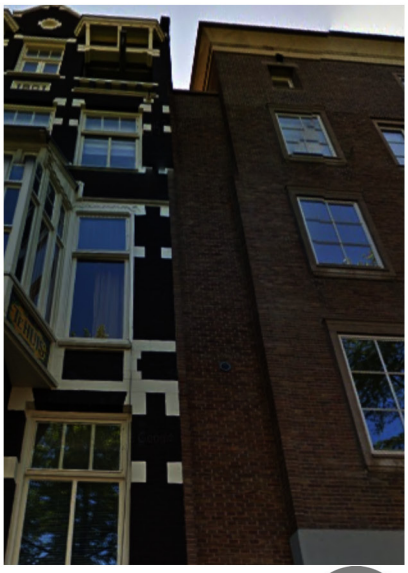
Huidenstraat 2 1.30 < < 2.50



Prinsengracht 43 < 1.30



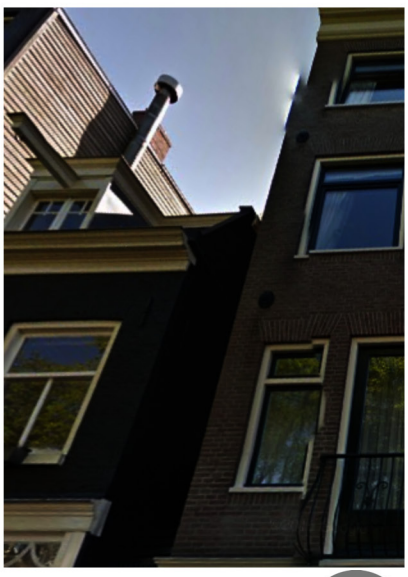
Prinsengracht 239 < 1.30



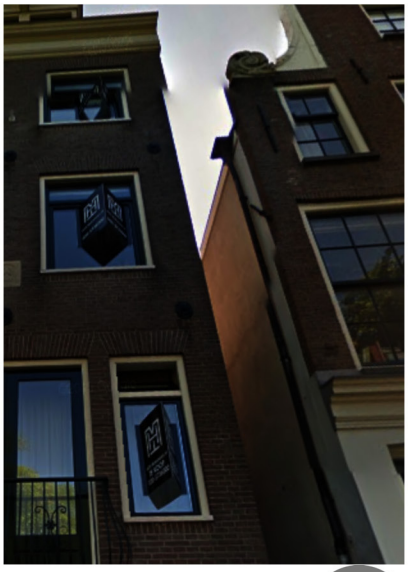
Prinsengracht 441 < 1.30

Prinsengracht 497 1.30 < < 2.50

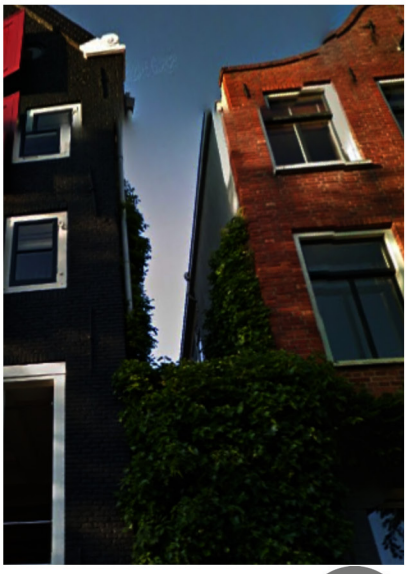
Prinsengracht 509 1.30 < < 2.50



Prinsengracht553 > 2.50

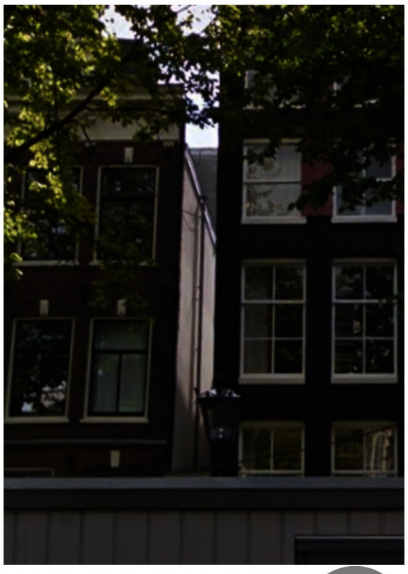


Prinsengracht 555 1.30 < < 2.50



Prinsengracht 733

Prinsengracht 741



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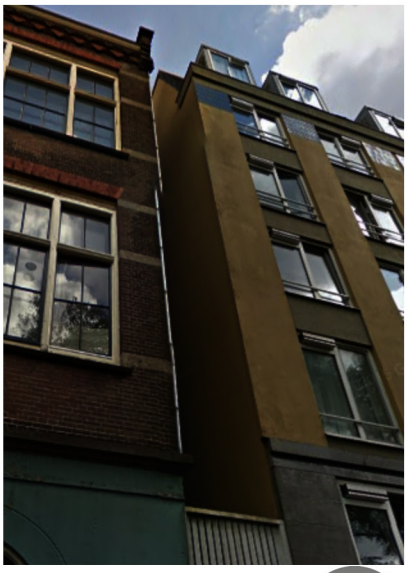
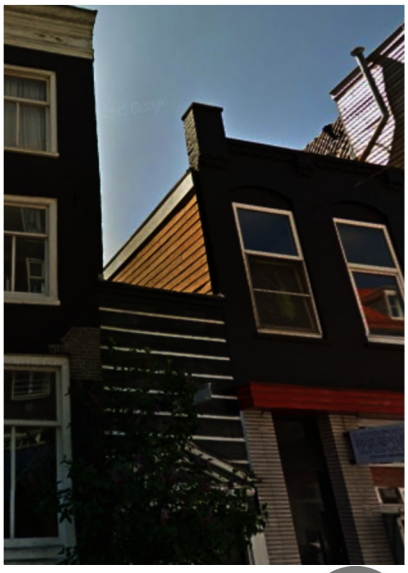


Prinsengracht 819

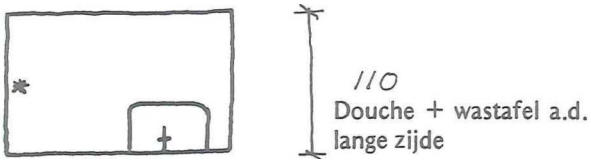


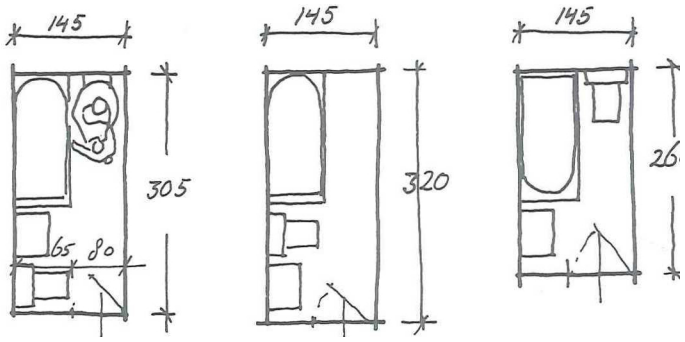
Kerkstraat 170

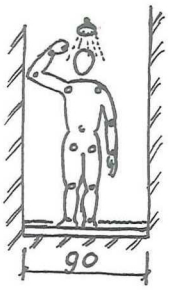
Usage

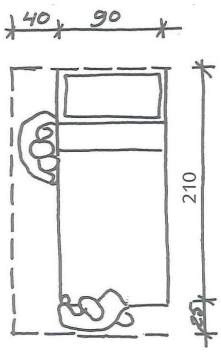
After the case studies and the research about the location inner design research is needed. Because the project is very narrow an optimum use of space is required. Therefore we need to know what people need in a household and how much space they need when they are moving or using furniture. Studies about this has been done. One of the famous ones who did research about this subject is Ernst Neufert. He is the first student of Bauhaus in Weimar (Jones, 1980 p.IX) and did research about the space people need when being in a house. What he made was drawings about different spaces in the households with the usage space and what minimum was required.
Another researcher who was fascinated by this form of analysing in architecture was A.J.H. Haak. He did the same thing in the Netherlands but was more using the relation between the usage dimensions and the dimensions of the human body. The drawings he made where quite similar compared to Neufert. (Haak, 2015)

The Intel I gained from researching the work of those two researchers is at the moment not directly linked to my design. However what I want to do is use the research they did and their drawings to optimize my own design. I am not going to show every drawing they made in this paper because there are simply too much to show. But to show my intentions I will show a few downhere. First the work of Haak.

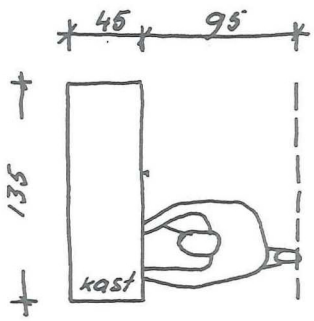






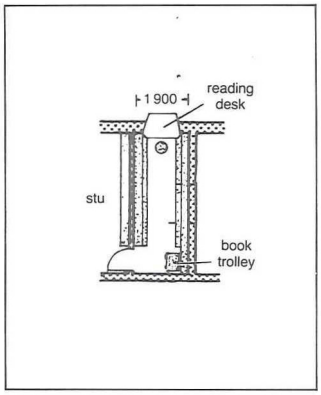


Een bed opmaken



Knielen voor kast of
lage serviesplank

In these drawings from “de menselijke maat” you can see the space people need to use several spaces. There are a lot more of those drawing Haak made that can be used to design a house as small as possible without the loss of usage space.



9 Book sto in long narrow rm with ample wall space: reading desk under window, small book trolley near door

Compared to Haak, Neufert did this kind of research earlier and have written bigger books about this subject. Because he did this more literature of his work is available. An advantage of this is the different spaces he researched with the minimum space they require. For example the sleeping rooms. He drawn different sleeping rooms with different widths. The nice thing about this is, you can compare them easily and with it, it is easier to make design choices about the placing of the sleeping room and its usage space. With his research you can optimize a small design with less space. A drawing of Neufert his sleeping rooms is shown below, and a drawing of a small library room is shown on the side. (Baich & Waliman, 2000) There are much more drawing of Neufert which all shown the possibility of optimizing a design with its usage spaces.

72 Habitat

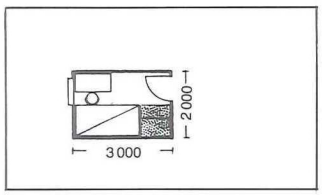
Houses

BEDROOMS

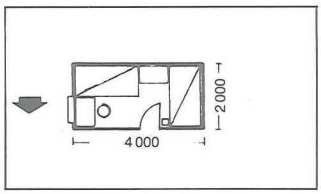
Rm sizes determined by bed sizes: beds and wardrobes often built in →(1)(4)(6)(11) and sizes of small rm accord with standard bed sizes. Window preferably parallel to bed (for reading and view) so that with desirable E orientation bed will stand N–S →(2)(5) (8)(9)(13)(15) etc. Doors should open without encroaching on sleeping area →(2)(8)(9)(12)(14)(16)(18) etc. Comfortable access to whole rm of of paramount importance →(5)(7)(11).

USA bedr sizes →p44(1) 70

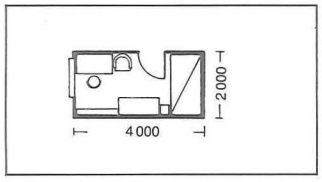
Stu/bedr also →p140(1)–(5)



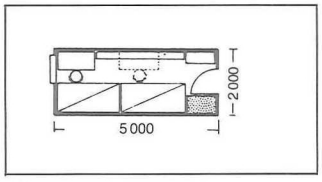
1 Single bedr



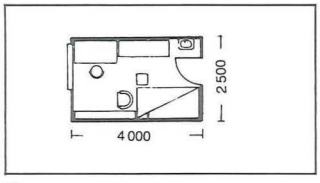
9



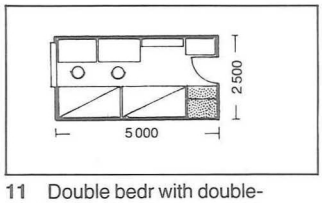
2



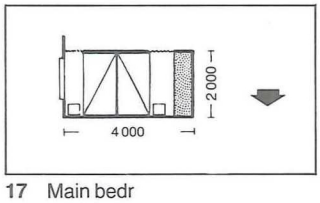
10



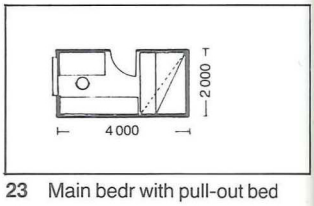
3



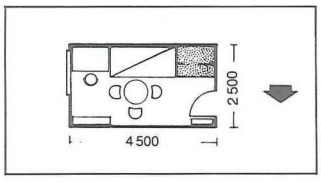
11 Double bedr with double-depth cpd



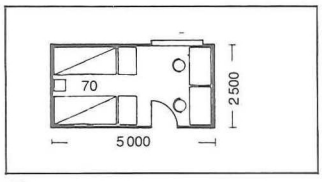
17 Main bedr



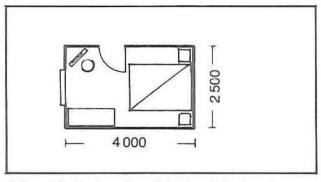
23 Main bedr with pull-out bed



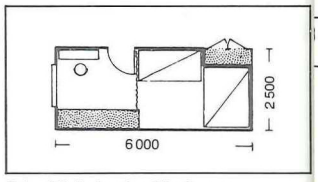
4 Bed-sitting rm



12



18 Main bedr with double bed



24 Main bedr with dre ar

Conclusion & discussion

To finish this research the results of it need to be put in a framework which will provide the design with boundaries and a way of working to a result.
The first thing i did in this research was do reading about different case studies. After doing this a few were selected to do further research with. Then the research done about this case studies is tried to made visible for the public due icons and text combined with pictures, floor plans, sections and other drawings about this case studies.
There were a several thing noticed about this small case study projects. One of the first thing noticed was when they were build. Most of them were build after the rest of the context was already realized, al the adjoining houses were already there and the case studies were put in between. Therefore some benefits could be made. The benefits which are meant are based on parasitism. Some of the case studies used the adjoining buildings for their construction or insulation. If this is possible the to built project will be cheaper. This will give a potential buyer an example.
Another important issue learned from the case studies is the lighting. Because the case studies are narrow they often have got a lighting problem. This problem needs to be solved to give the user of the houses a pleasant state of mind and a not a prison feeling .
Interesting to see in the cas studies is the waterworks and sewer connection. Because they are built later compared to the rest of the location a connection to the waterworks and sewer is not always available. Therefore some of the case study buildings are using water storage tanks for fresh and waste water. In some cases this also will save space in the design.
Construction wise we don't see a lot of wood in these narrow houses. This is because the thickness of wood will be some more if it is used as construction material compared to concrete and steel. If we compare those last two with the case studies we see that steel is the most thin of them.
Smart furniture is also noticed, like tables which are used in combination with stairs where people can stand on to use it. This way the space is used compact and smart.
These are all smart methods which can be used to make the volume which will be designed in, as small as possible. These methods will be used in the design of the graduation project to improve the quality it has.
The locations which are found are also rated with icons. These three icons show the if the location is too small, good or too big. The spaces which are too big are not used because they can for fill other more varieties functions. The too small spaces however, cannot be used to design in but can maybe used for other functions like storing bikes or other public goals. If the width of a possible location is between 130 centimetres and 250 centimetres it for fills the requirements made. The maximum of 250 centimetres is set because of the placing of the bed, because if the width is above 250 centimetres a bed can be put in the width axis instead of the length axis. This will completely changes the design of the building and waste the conceptual idea.
The usage spaces will also be important to know which minimum space van be chosen to keep the building functioning. Therefore research is done and literature from Neufert and Haak are consulted to know when a function in a building is working or not. What is learned from this literature is the minimum spaces needed for every function in a household and how they should be designed if the house is narrow. The conclusion at this part is that they should be consult every time when a choice in the design phase is made. This is essential to keep the building working.
If these three research parts are combined together and used the design which will be made, it is likely to think that the design will work and uncertainties about it will be gone.

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