7th HEALTHY HOUSING AWARDS 2012/2013

Universitat d'Alacant
Universidad de Alicante

Hogeschool van Amsterdam

BEUTH HOCHSCHULE FÜR TECHNIK BERLIN
University of Applied Sciences

Cátedra MARJAL HEALTHY

Fundación Marjal

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Universidad de Alicante - Escuela Politécnica Superior

Hoogeschool van Amsterdam

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INDEX

PRESENTATION

The Healthy Housing workshop is placed inside the coorperation-frame, established between the University of Alicante, the Hogeschool van Amsterdam and the Beuth Hochschule fur technik Berlin.

Marjal Foundation is founder of this workshop and because of its success and its importance, it has become a chair for Professor Antonio Galiano Garrigós at the University of Alicante.

The workshop aims are the exchange of knowledge between universities inside the architectural reflexion at every scale.

In order to improve the exchanging process and to help students to understand the meaning of healthy housing and sustainability, teachers from the participating universities will explain the theme, conditions and cultural aspects for the workshop.

For students to share knowledge, the idea is to have them work in international teams. The aim of the workshop is to provide students a multidisciplinary focus in order to face the designing phase of a building.

Teachers from every knowledge area, which are teaching in Architecture, will be participating at the workshop. The different point of views will allow the students to understand how important the different opinions are and how difficult the election between them is.

All the different existing possibilities for designing a healthy/sustainable building must be used by the students in order to solve their project.

Every year, the workshop ends with a final session at the university of Alicante where only excellent Spanish, Dutch and German students together with the complete teaching staff will meet each other to share experiences.

The finality of the Workshop is facing the development of a building from a global point of view in the surroundings of Alicante, that is as well as healthy as sustainable by using passive designing methods.

Students received the importance of a interdisciplinary relationship in the practice of Architecture faced to a divided educational structure.

Rene Leene
Hogeschool van Amsterdam

ACKNOWLEDGMENTS

The 7th Healthy Housing Awards are the product of the effort and dedication of all the students, teachers and contributors.

All the works compiled in this edition were made possible by all the participant students and the lecturers from the Universidad de Alicante, Hogeschool van Amsterdan and the Beuth Hochschule für Technik Berlin.

Thanks are also due to the Marjal Foundation and the representatives of Grupo Marjal for their support.

THE COMPETITION

OBJECTIVES

The Healthy Housing Awards are focused on research in the field of sustainable and healthy architecture looking for people comfort by designing constructions integrated in the landscape with a balanced relation between the environment and technology. The development of innovative approaches within this field is the main purpose of these awards. The integration of simulation tools for designing the buildings, following the European directives, has become one of the most demanded requirements while developing a project.

REQUIREMENTS

The influence of the location in the final design of the building makes the Healthy Awards require projects to be sited on special locations. Views, orientation or proximity to special environments could be the factors that condition the choice of the and the building designed.

The project will consist on designing a single-family detached house inside a plot of 800m^2. The project must design the plot completely so the garden must be an essential part of the project and complementary uses, as a swimming pool, can be introduced.

The social group to whom the project must be addressed are European residents that use these houses for long periods, as a summer house for example, and it must be sufficiently flexible for receiving visits from familiars during the year.

The built area for the detached houses must be around 200 m^2. Flexibility of space and the possibility of adapting the house to the different requirements that the family could have, during the year or in the number of users throughout the year is an essential consideration.

Integration in the landscape, low energy measures and healthy solutions are mandatory.

Gardening and water facilities can be a design tool inside the project towards sustainable and technological solutions.

Alternatively the proposal could be a fiteen houses complex where the plot for each house is 800m^2.

Due to the international aim of this competition, all the proposals must be written in English.

BUILDING MINIMUM PROGRAM

The minimum program for the dwelling is as follows:

Single-family detached house:

· Maximum plot area: 800m^2

· Maximum built area: 200m^2

Minimum Program as flexible spaces:

· Living room

· Kitchen

· Bathroom(s)

· Bedroom(s)

· Working place

PARTICIPANT TEAM CHARACTERISTICS

Participants must work as a team, with a minimum of two members. Proposals developed by students working individually will not be accepted.

Teams will consist on the following members:

1. At least one student of Architecture.
2. The participation of students from Technical Architecture, Civil Engineering or Building Engineering degrees will be specially considered.
3. Students from other specialities such as Informatics, Chemistry, Financial Studies, Sociology or Telecommunications can be accepted but this option is totally elective.

Consultations done to specialists of these fields will be specially considered.

THE COMPETITION:

DOCUMENTS TO SUBMIT

The documents to present will consist on all the descriptive part of the architectural project: location floor plan, plot plan, different level of floor plans, elevations, sections and perspectives.

Documents from the constructive part of the project, which justify the influence of the simulation tools in the process of designing the house, must be developed.

The following constructive documents will be needed:

· Constructive sections, defining façade and roof typology.

· Energetic Efficiency.

· Efficient water use.

· Life Costing Cycle Analysis of materials and building techniques.

· Domotics applied to sustainability.

Other documents not listed above can be included in the proposal.

All the documents needed to explain the proposal must be gathered in a maximum of three A1 panels fixed on a rigid support. A model will be specially considered.

PRIZES

Two categories of prices are defined:

a. One prize of 1.000 € and a diploma to the project that better reflects design, construction and sustainability.

b. Four prizes of 500 € plus a diploma for the best four finalist projects to be elected among the projects presented by the other four universities, one from each participating university.

Projects intellectual property will belong to the authors. If the International Marjal Healthy Chair or Fundación Marjal would like to use any idea defined in the winning proposal or any other, in whole or in part, it will be always used under permission of the authors, signing an agreement, where the economic bases and responsibilities assumed by the team will be set out.

JURY

One professor from the participant institutions, Beuth Hoghschule für Technik Berlin, Hogeschool van Amsterdam, Universidad de Alicante and the Head of Marjal Foundation, will integrate the jury.

The jury will evaluate and remark those projects that can relate best the design and the level of sustainability, among others.

FINAL WORKSHOP

The participants will be awarded in Alicante in July 2013 within a public and institutional ceremony organized by the International Healthy Chair of the University of Alicante.

An international workshop will be organized prior to the ceremony where the acquired experiences during the project developments will be shared within the participants.

PARTICIPANTS:

_UA:

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NICKL, Celine
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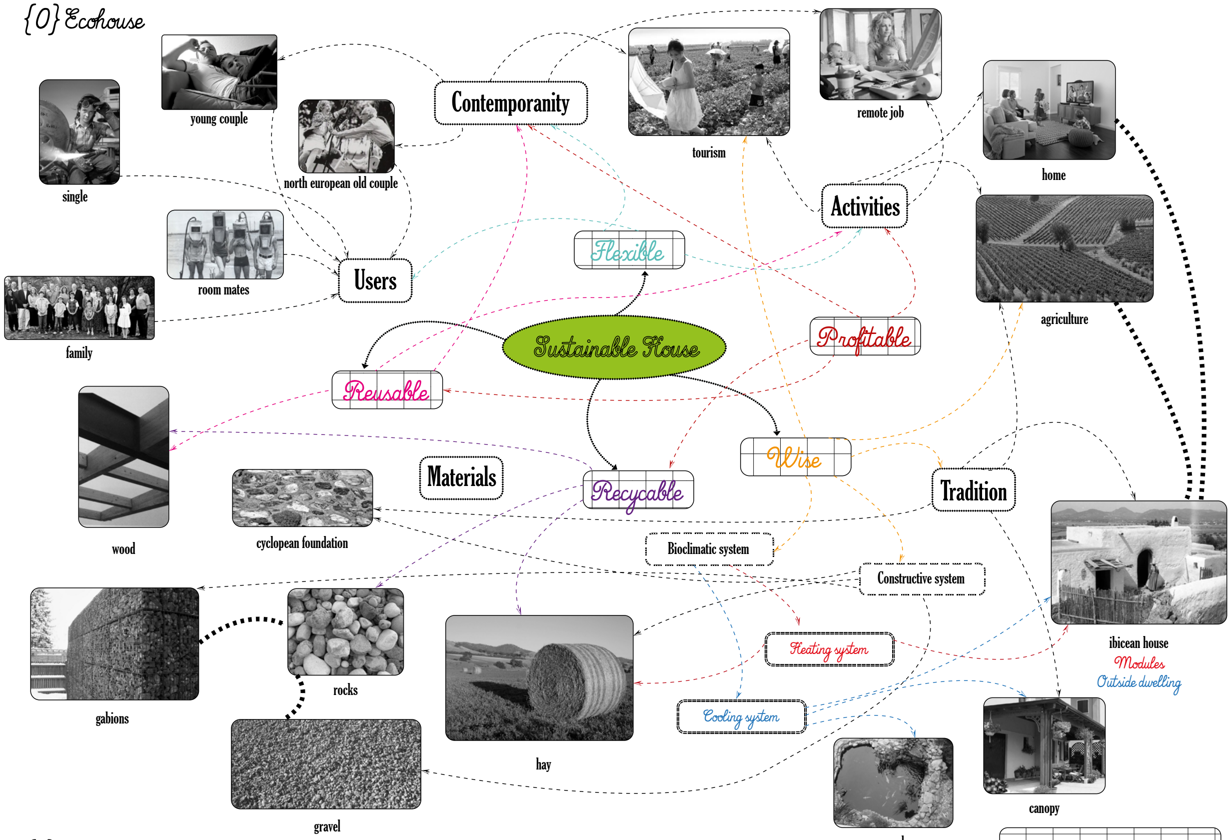
GREEN WINEHOUSE.

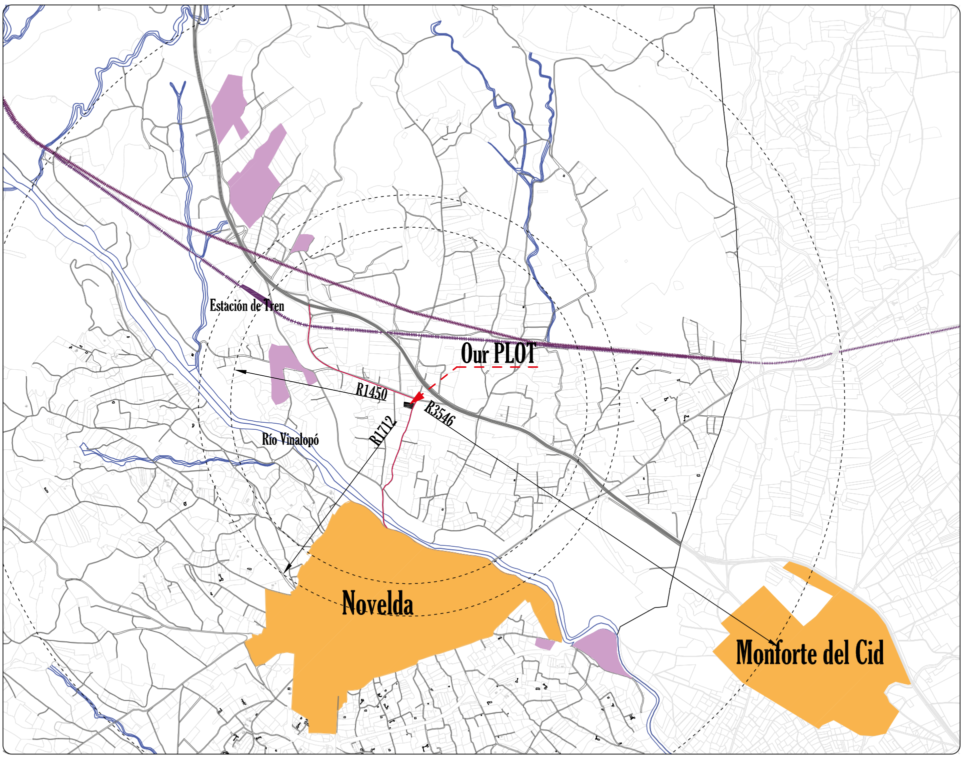
//MENTION

BUE MAALI, Clement
GÓMEZ LLOBELL, Belén
JONES, Dudley

{0} Ecohouse



{1} Location



Why this place?

* CLOSE TO URBAN
  EASY SERVICES AND FACILITIES
* AT THE RURAL AREA
  EASY GREEN AND CALM
* EASY BY CAR
* EASY BY bike
* EASY BY train
* LIVING OUTSIDE...
  NICE WEATHER
  BEAUTIFUL LANDSCAPE...

An image is worth a thousand words...

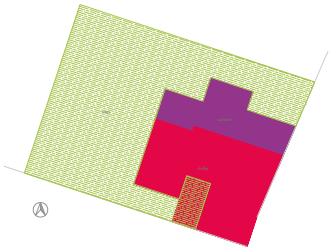
Elements of the territory

- River
- Highway
- Trainrail
- Plot
- Urban settlement
- Industrial area

{2} Strategies of design

*** SUMMER IS COMING...but this time we will live OUTSIDE**

By the extension of the living spaces of the house in:

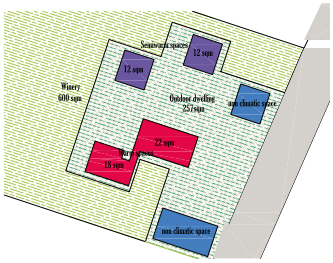


*** WINTER IS COMING...but this time we will need LESS ENERGY**

By the division of the different spaces of the house in:

Permanent Living spaces_Warm space
#Temporary Living spaces_Semiwarm space
#Non Living spaces_Cold space

Floor plan areas



DATA OF ENERGY NEED IN HARD DAYS

* 30000 w/h EVERY DAY
NORMAL HOUSE

2000 w/h EVERY DAY
6000 w/h OF INSPIRATION
WINE HOUSE

It consumes 1/4 of the energy of a normal house!

Floor plan

Scale 1:75

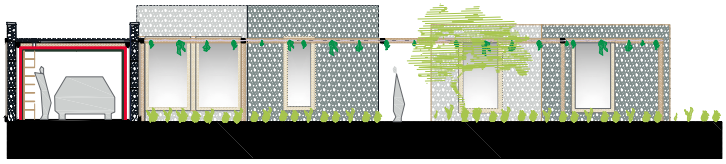
Winery continues through the dwelling

*** WINE IS ALL AROUND...the house is more than just a dwelling but a extension of the field**

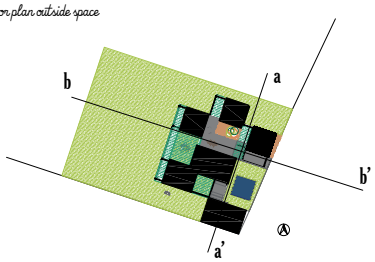
The winery appears in two ways:

Ground winery _650 sqm_Grape production/year 380.25kg
#Wriery canopy_100 sqm_Grape production/year 40kg
= Production around 80 boxes a year

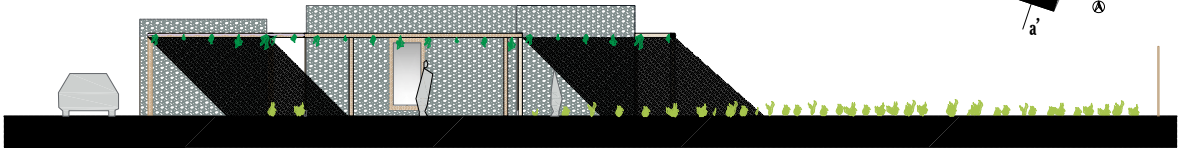
Section A-A'



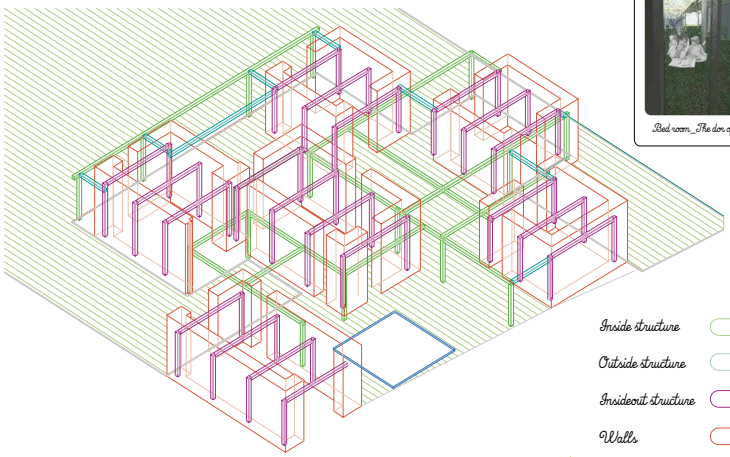
Floor plan outside space



Section B-B'



3d of the structure



Bed room_The dor of the playground

Inside structure
Outside structure
Insidecoit structure
Walls

* SIMPLE, FLEXIBLE, RECYCLABLE, REUSABLE AND MOVABLE... the system of the healthy constructive system

The idea of **simplicity and flexibility** is essential, because, allows..

#To keep great level of maintanance the idea is that the house can be repared easy by any user.
#To change the use, or is it is not necesary anymore, canbe disolved and the material can be used in any other thing

The materials **recyclable and reusable** are one of the main tools for achiving this.

#Novelda stones_the 60% of the sotnes is lost in the production
Gabions_Good and cheap way.
#Wood as the structural material that produces less CO 2
#Hay_Good material for Thermal isolation, came from other uses and produces less CO 2 than the rest of TI

To be **movable** is also a request because makes easier and cheaper its construction. In order to achieve that, the house is divided in 3 or 4 parts acording to the construction.

* BIOCLIMATIC SYSTEM...ecological but wise LEARNIGN from the NEW and the OLD

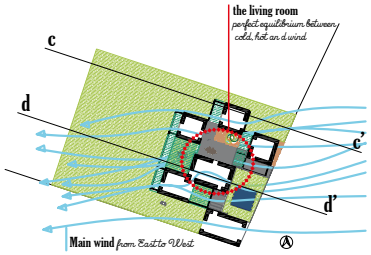
From the **new** the technologies that are developing with new materials:

Wall section_dry elements
#Window frame apart_from the dwelling

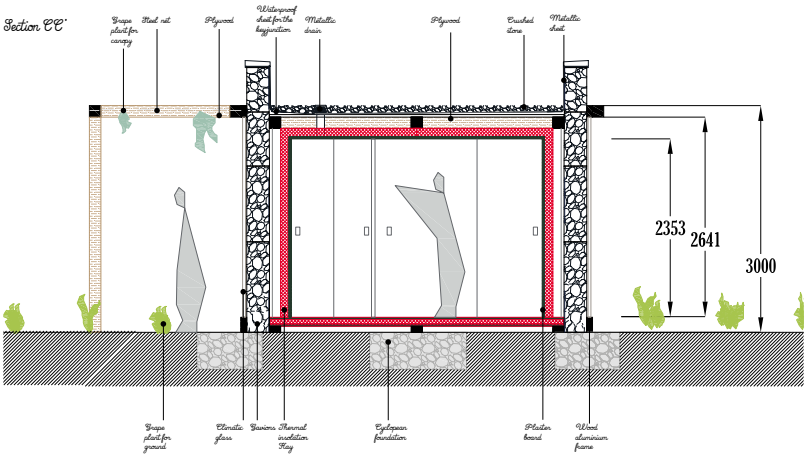
From the **old** the traditional elements of construction and design but with a different point of view:

Canopy for creating shadow_**NOW**! it gives grapes too
Grape storage_**NOW**! its the exchange space of the house
Porche (like the ibicean houses)_**NOW**! its more than a part of the dwelling.
Wind flows_**NOW**! its one of the most important elements!

Floor plan of the wind:



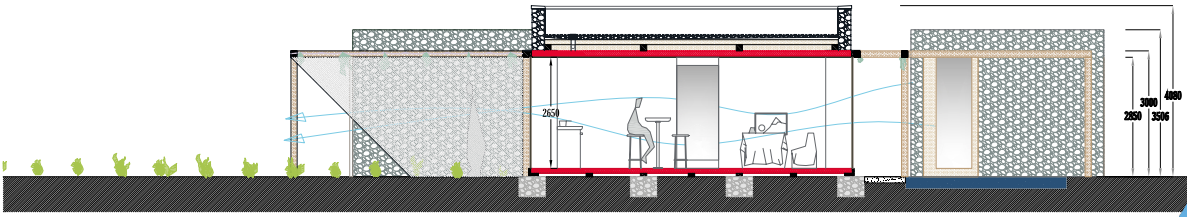
Section CC'



Dining room_Great moments with grandma's meal

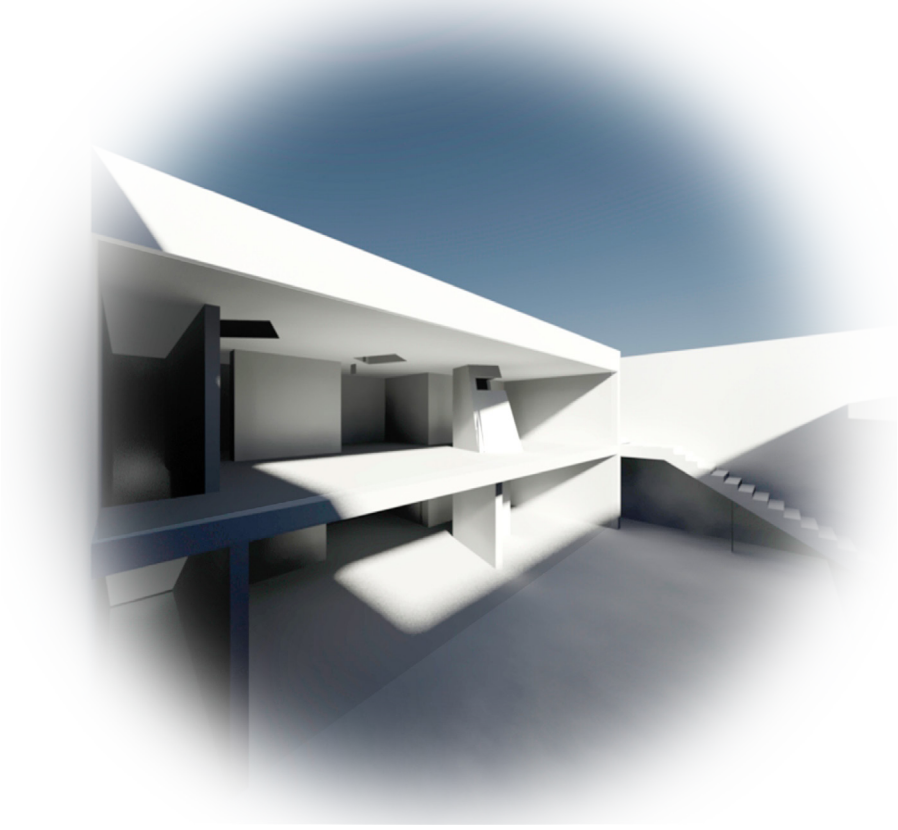
Living room_Sweet memories playing with the family

Section DD'



THE WATERYARD HOUSE.

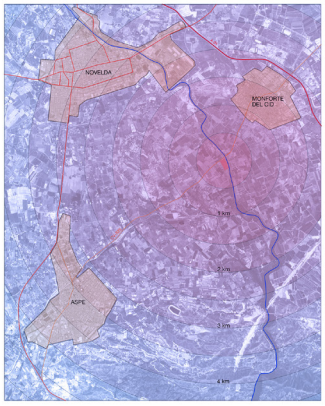
AKARCALI, Gül Ziba
FLORES RODRIGUEZ, Jorge
GIL LÓPEZ, David Josue
NICKL, Celine

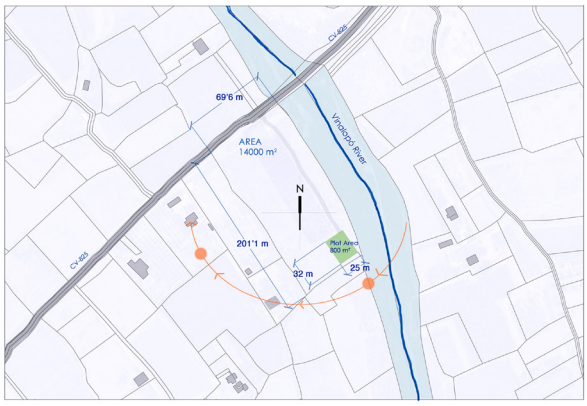


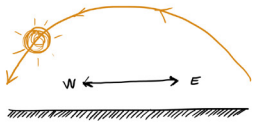
The Wateryard House

David J. Gil // Jorge Flores // Celine Nicki // Ziba Akarcali

The plot is located among three important centers: Novelda, Monforte del Cid and Aspe. The infrastructures, that those centers have, provide a good connection with surroundings and cheaper transportation of materials. It is also possible to use electricity and water installations from those centers. Short distances make it possible to reach commercial and cultural services better and easier.







The concept of the "Wateryard House" is:

1_ Hide the house under ground, to protect the house from afternoon sun, and get a better climatic isolation.

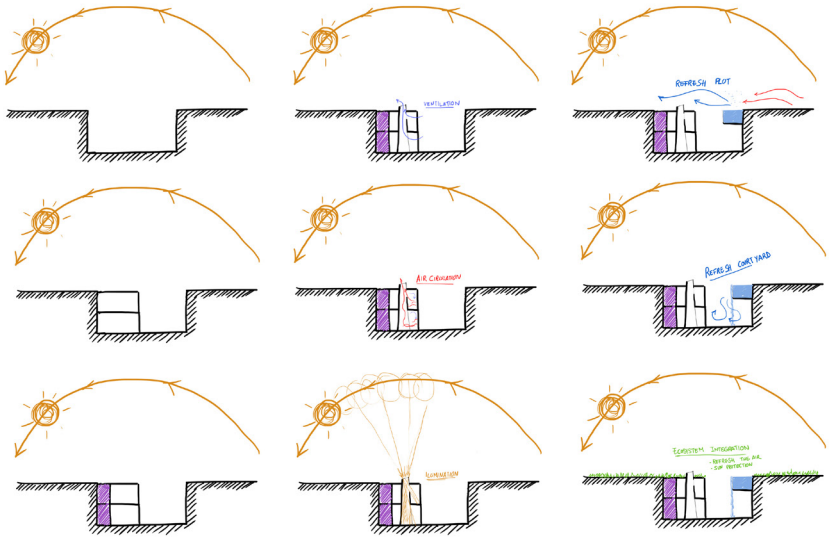
2_ Divide the house into living areas and services areas, the living areas are looking the east.

3_ Create chimneys to get natural ventilation, air circulation and natural illumination.

4_ Situate a pool in the east of the plot, as the principle winds are from east to west ,the pool refresh the air.

5_ Overflow the water of the pool to the courtyard, creating a water fall that refresh the courtyard.

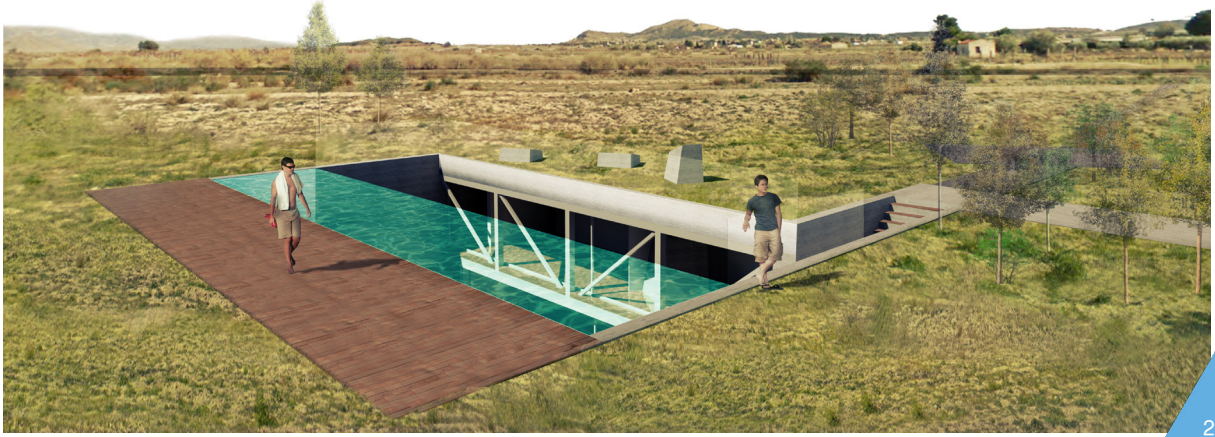
6_ Use the ground floor of this plot, for green areas creating a ecosystem integration, between the context and the plot.

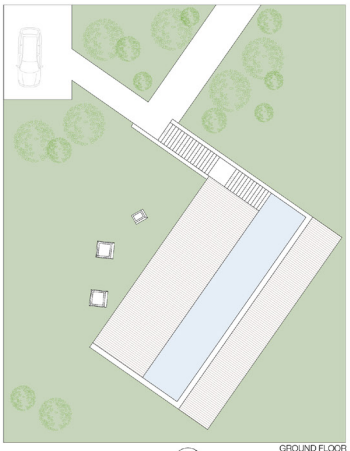


The location of the house on the plot is decided by the sun and wind orientation. We wanted to protect the house from dawning sun. To create this protection we decided to put the house underground and only opened the East facade. As a sustainable solution we used the main wind to cool the house down. With the help of a water element located on the East we enabled the main wind, which has a East-to-West orientation in this area, to carry the cool air inside the house.

The functions of the house are located according to their necessities of natural light. That's why the living areas are located on the east and have a full open facade, in order to take advantage of the sunlight. The wet areas are located in the back part of the building since they don't need natural light.
Apart from this division the house is also divided into a living area, which is used during the day, and a nightly area. The living area is on the second basement floor because in summer it is possible to open all of the windows and create a connection between indoors and outdoors.

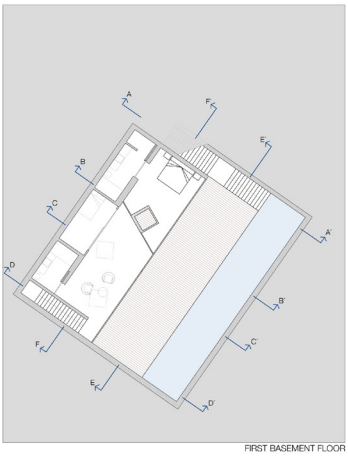
Three chimneys are designed on the ceiling in order to create a sustainable ventilation inside the building and let the sunlight in also from West.



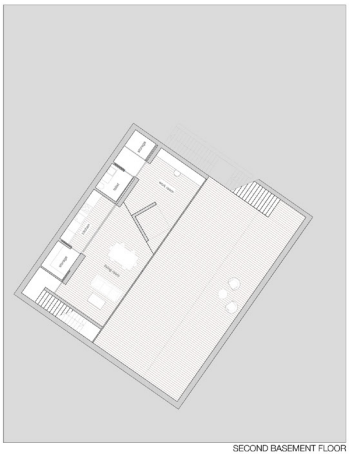


GROUND FLOOR

0 2 5 10m E. 1:150



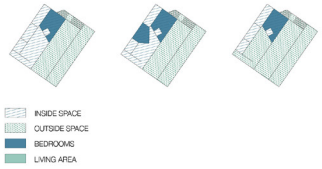
FIRST BASEMENT FLOOR

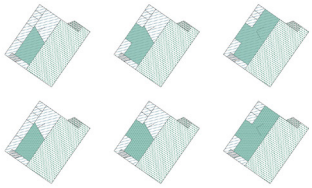


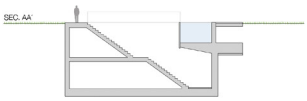
SECOND BASEMENT FLOOR

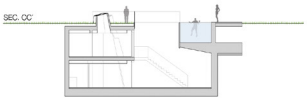
One of the important points of this project was creating a flexible plan scheme which is able to change according to seasons and necessity.
In the second basement floor the flexible functions are kitchen and working room which are able to open or close if it's necessary. In this floor, all of the functions can be connected to each other completely or totally separated.
In the first basement floor there is only one flexible room which can turn into a bedroom in the time of need. Also we can open the spaces and create an hibrid place that mix the interior with the exterior.

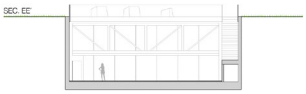
FLEXIBILITY AREAS

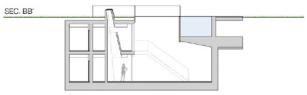


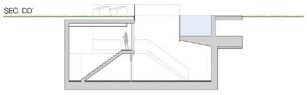




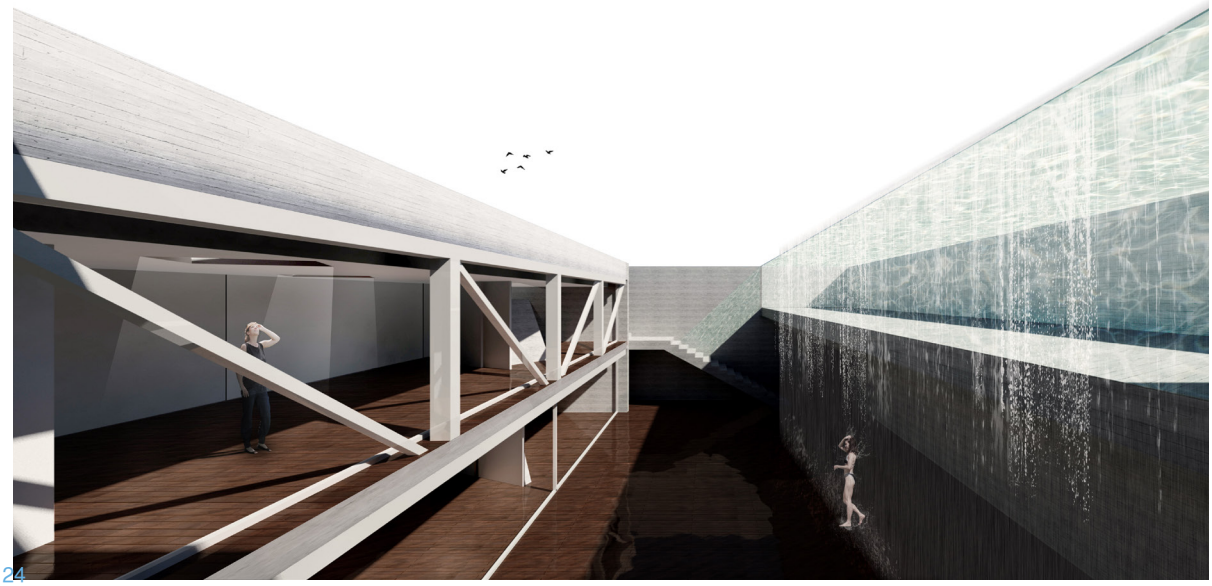


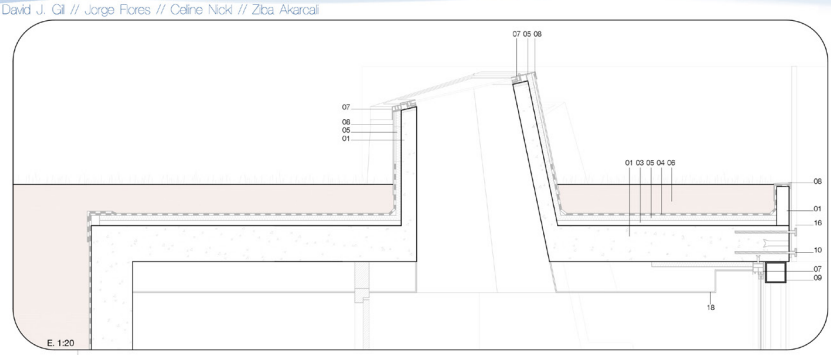


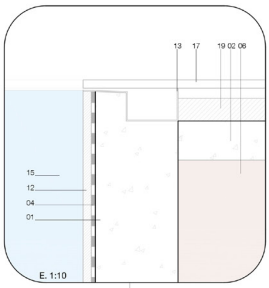


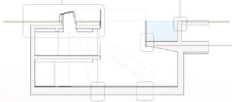


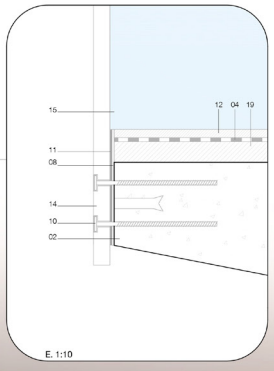
*Sections scale 1:200





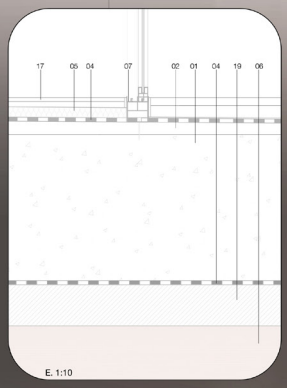


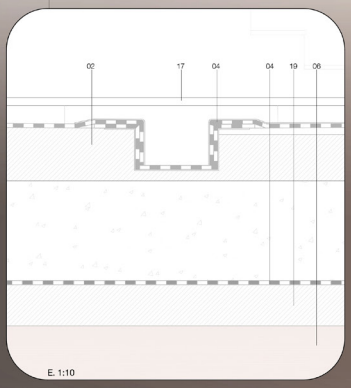




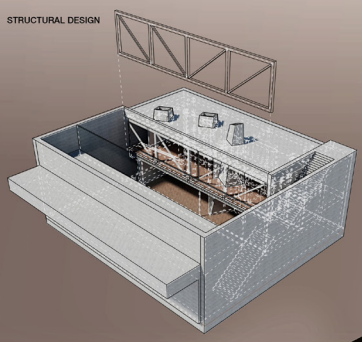
Legend

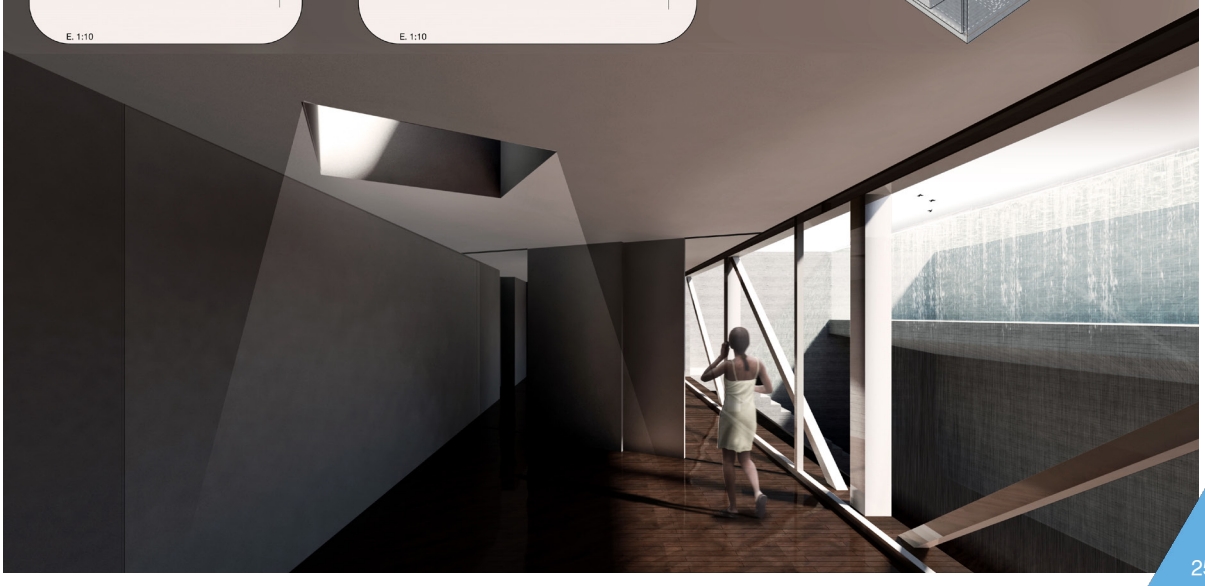
01 Reinforced Concrete_Support layer
02 Concrete_Support layer
03 Light concrete_Slope layer
04 Waterproof membrane
05 XPS_Thermal insulation
06 Earth_Greenery layer
07 Aluminum _Windows frame
08 Sheet metal_ Galvanized steel
09 Steel profile_Support structure
10 Stainless steel_Bolt
11 Joint_Rubber
12 Cement waterproofing + white paint_Proteccion
13 Overflow pool_Galvanized steel
14 Glass_ wall pool
15 Water
16 Glass_Proteccion wall
17 Wooden floor
18 Dropped ceiling_plaster
19 Cement mortar_ Regulation layer





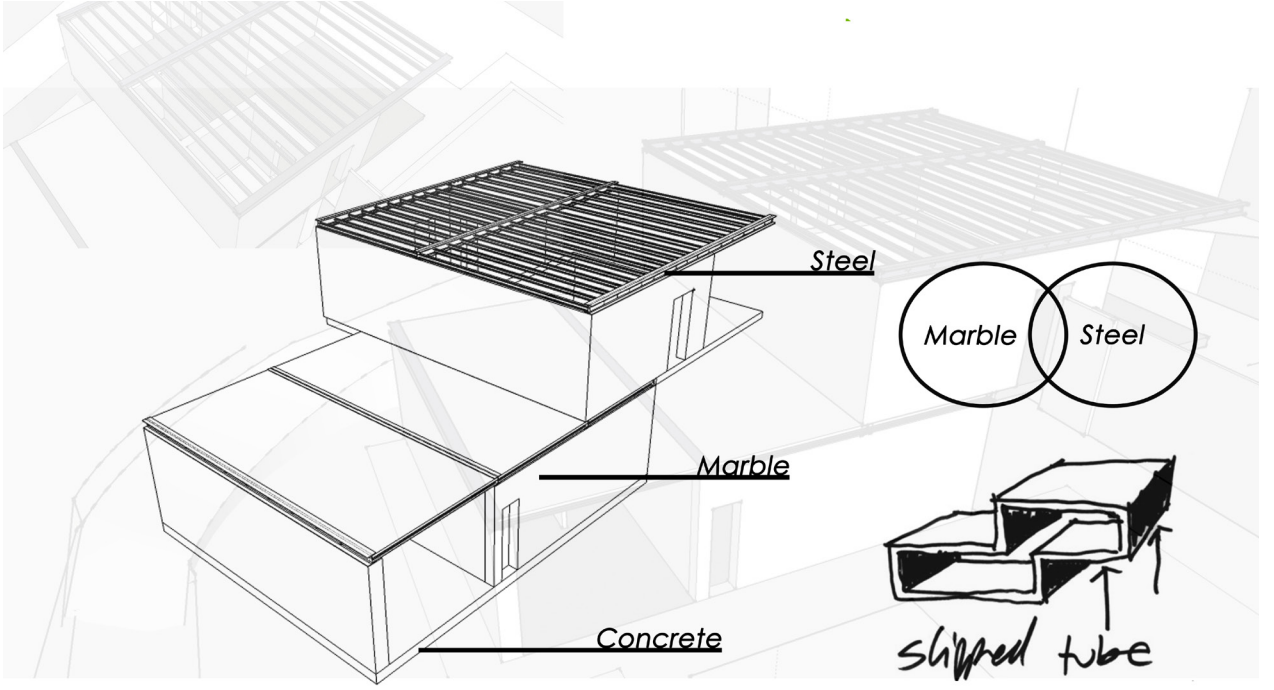
STRUCTURAL DESIGN





CASA ORITO.

ARAK, Elif
VIZZI, Fabrizzio
VÁZQUEZ LÓPEZ, Marina



7TH Alicante Sustainable and Healty Housing Award

Casa Orito_

LOCATION

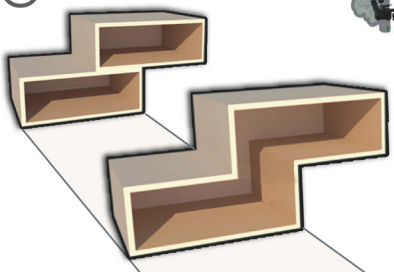
The project is located in Orito. Orito is a district that belongs to Monforte del Cid, in the province of Alicante (Comunidad Valenciana, Spain). Orito is a very well located residential area, really close and surrounded by other cities like Agost, Elda, Monóvar, Novelda, Aspe, Elche, Alicante and San Vicente del Raspeig.

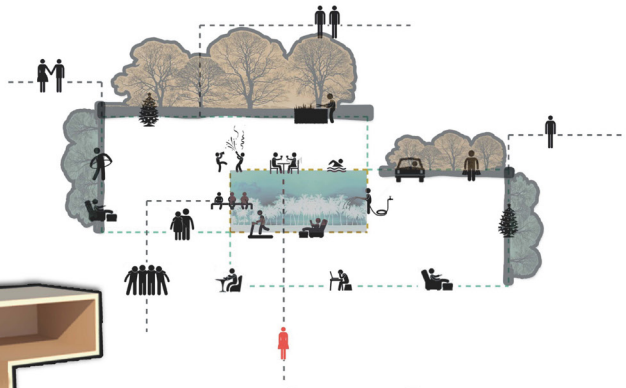
It´s only 15 km far from the airport of Alicante. It´s also good connected to the high way, so you can reach easily the A-31 and AP-7.
The house is situated in the southwest of Orito. It´s a quite place surrounded by other residential apartments, like individual villas.

CONCEPT

The idea of the house is "2 in 1". We have designed two volumes, one at street level and other underground, that are connected by the most important part of the house: "the lift space".

The most private part of the house is underground, so that volume is for the owners of the house. You can reach this part through a ramp. The upper floor will be for the son of the couple or for the guests.

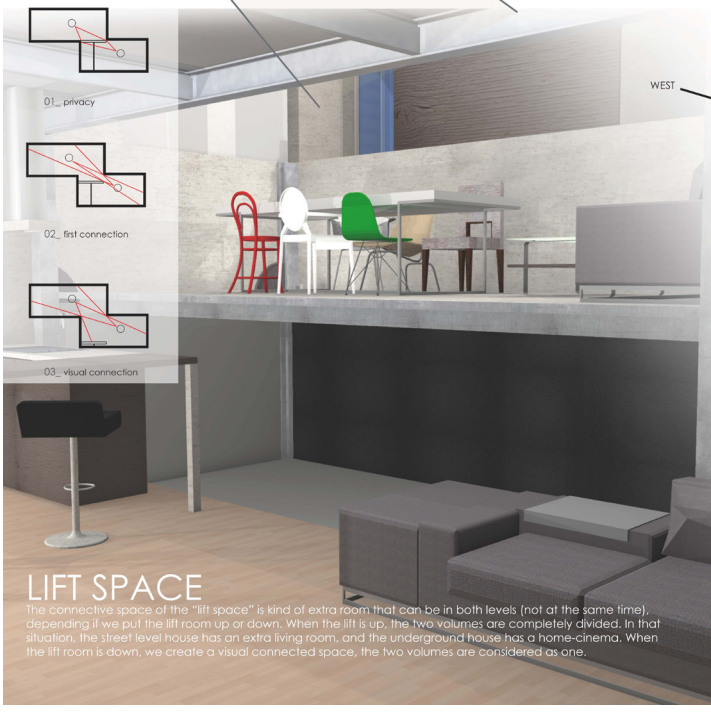


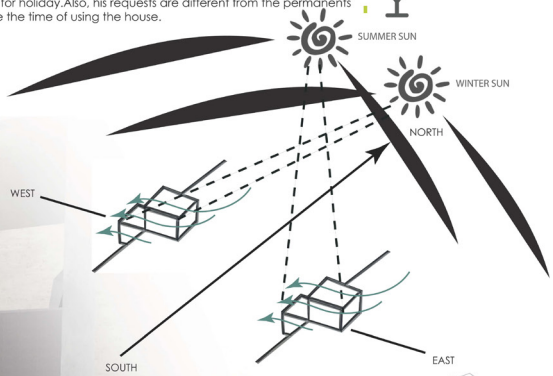


OWNERS AND REQUESTS

The permanent users of house are the old couple who live in the house whole year. Their son is temporary user of house, he comes to house only summer for holiday.Also, his requests are different from the permanents because the time of using the house.

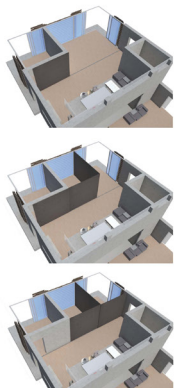
FLEXIBILTY





MOVABILITY

In the north-east part of the upper volume we have putted three movable walls. That allow as to divide the space in two independent rooms. They can be converter as extra bedrooms, extra living room, or any use the owners want to give to that space. If you move one wall you can make disappear one room and fused that space with the corridor. If we move the three walls, we create a big open space inside the house. Last possibility will be move just the interior movable wall and instead of two rooms, obtain just a big one.



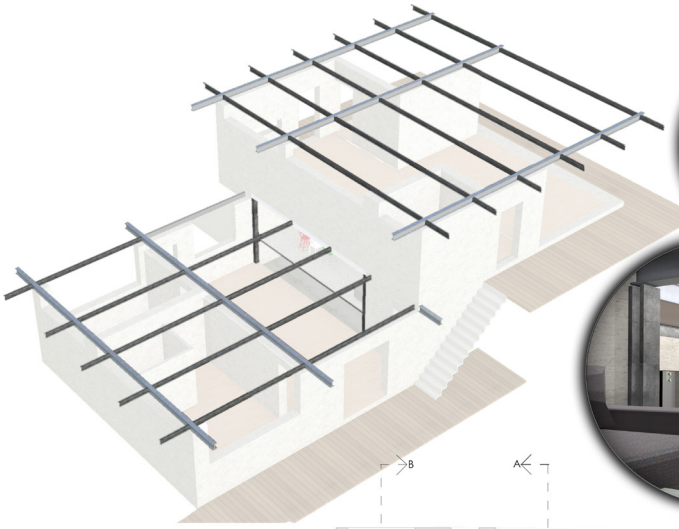
LIFT SPACE

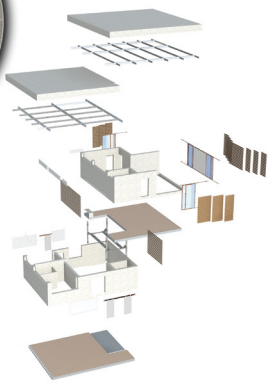
The connective space of the "lift space" is kind of extra room that can be in both levels (not at the same time), depending if we put the lift room up or down. When the lift is up, the two volumes are completely divided. In that situation, the street level house has an extra living room, and the underground house has a home-cinema. When the lift room is down, we create a visual connected space, the two volumes are considered as one.

Fabrizio Vizzi Elif Araç Marina Vázquez López

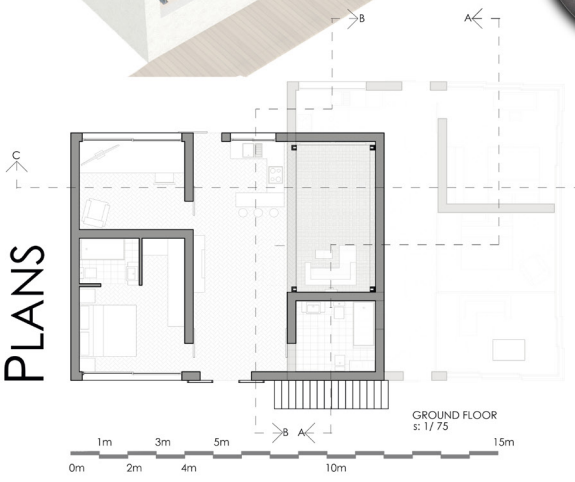
7TH Alicante Sustainable and Healty Housing Award

Casa Orito_



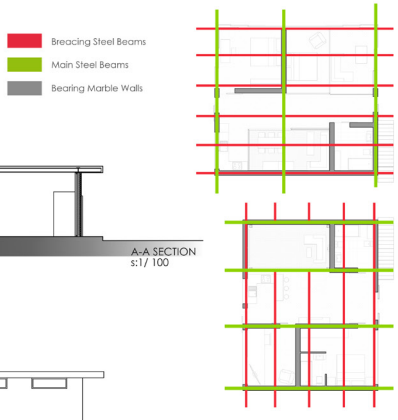


PLANS

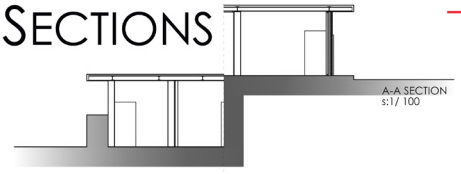


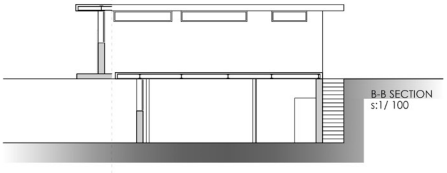
CONSTRUCTION

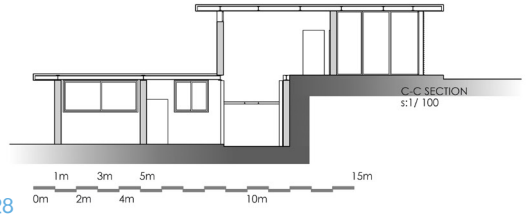
The solution is that creating connection between marble walls and steel beams. The structure of celling is from steel beams. There are different size of steel beams. Main beams and breacing beams, the breacing beams are connect with main beams like opposite lines.



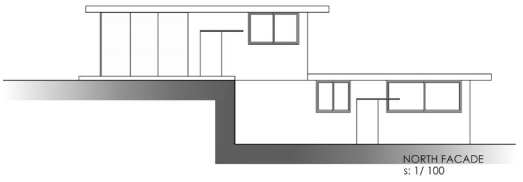
SECTIONS

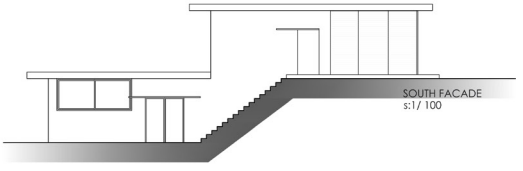


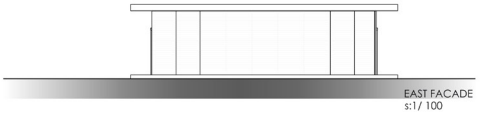


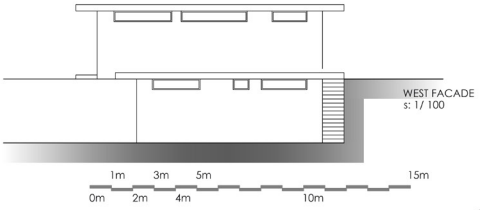


ELEVATIONS









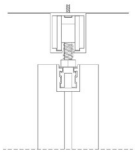
MATERIALS AND SUSTAINABILITY

DESIGN
The building is orientated to prevent heat gain or loss. Making the roof bigger than the shape of the house, we create awnings and ailerons to reduce heat.

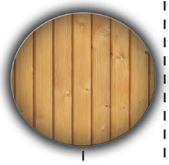
MATERIALS
The use low maintenance and local materials.

ADJUSTABLE LAMELLAS
Some of their benefits are:
- Sun protection
- Control of natural light
- Ventilation
- Singularity of the façade

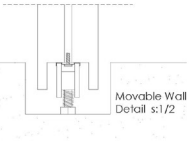
During winter we can open the lamellas so that the sun-light came inside.
During summer we can put them horizontally, so we obtain solar isolation.



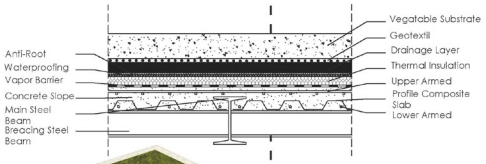
DETAILS



GREEN ROOF
The green roof that we have designed, with the combination of green and little plants give to the building benefits, some of them are:
- Positive influences in the urban microclimate
- C02 reduction
- Improve acoustics
- Thermal isolation
- Improve aesthetics



WOOD
The exterior and interior design element of the design is the wood which is used for covering of walking way and arround the swimming pool. Preservative-treated wood is made from teak which is our type of tree to used. This kind of tree is not cheapest material, However it is most water resist. Laminate floor coverings are used for interior floor covering which has same texture with the wood of outside covering. For exterior arrangement, using palm trees is decided.



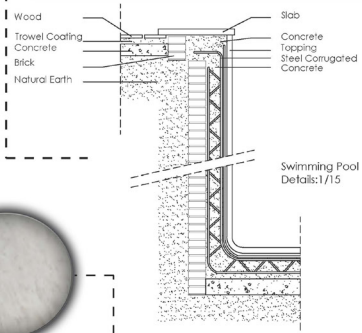
Green Roof
Detail s:1/10

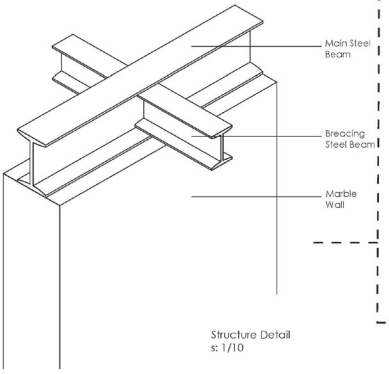
MOVABLE WALLS
In the north-east part of the upper volume are three movable walls. That allow as to divide the space in two independent rooms. If you move one wall you can make disappear one room and fused that space with the corridor. If we move the three walls, we create a big open space inside the house. Last possibility will be move just the interior movable wall and instead of two rooms, obtain just a big one.

VEGETATION
The vegetation and the trees cool the atmosphere in summer because the air is passing through them, turning it into fresh air

CONCRETE
The system is completed with concrete floor which is plain concrete.

CROSS VANTILATION
Occurs because of straight airflow.





Structure Detail
s: 1/10

GLASS
The material is used for general wall opening. Owing to glass, doors have visual connection as windows. In the west facade all of windows are quite small which have rectengular shape.

WINDOWS
The design, size and location of the windows are optimized for sun protection in summer and to let the sun in winter.
Also we have minimized the windows on the west side in order to prevent afternoon sun.

STEEL
The steel is needed to implement the construction. We decided to create connection between marble walls and steel beams. The structure of celling is from steel beams. There is different size of steel beams. Main beams and breacing beams, the breacing beams are connect with main beams like opposite lines. IPE profile

MARBLE
Marble the most common industry in the surrounding residential areas which can found easily. Moreover the marble is the low cost and sustainable material. The marble could be used for walls and the walls work like bearing-walls. The solution is that the structure has to be masonary system.

REHOUSE.

ARMERO DIAZ, Concepción Olaya
VAN DER HOFSTADT, Ana
WILSON, Christofer

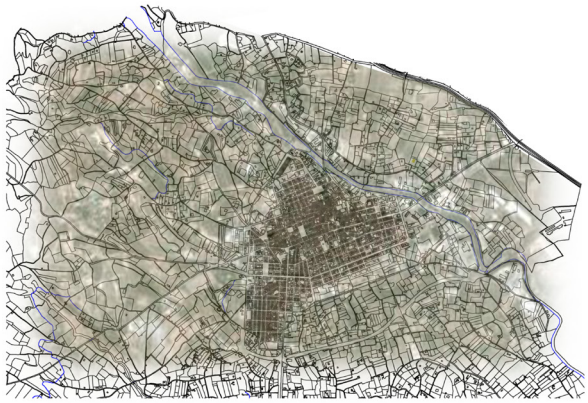
ReHouse
Novelda / Spain

Ana vanderHofstadt
Christofer Wilson
Concha Arnero

DoveCote Studios

Schaustall

We have gained inspiration from a number of precedents that have completed work similar to what we are trying to achieve with our project, for example Dovecote Studios by Hawarth Tompkins, and Schaustall by FNP Architekten. These examples have kept strictly to building within the original structure. We would like to take these ideas, and evolve them to what we see as the next step in modern living.

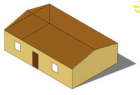


description of the idea

After exploring the area, we have found that there is an abundance of abandoned houses in the Vinalopó region. Many of these houses have fallen into a state of ruin and have been left to decay. We see a beauty in these buildings and would like to help them reach their full potential. The concept of our project is to bring these houses back to life, by performing an intervention. We have found a lot of houses that share very similar characteristics. Rather than designing one specific house to be mass produced, we have picked a building that is a very common type of housing in the area, and designed the intervention as an example of what can be done with these beautiful structures.

We have discovered that there are two main types of housing in the area that have been constructed using typical characteristics of the buildings in this area. These all share a number of similarities in the way they were built.

The first type that we have come across are designed for a single family. They are located in an isolated rural area, built only on the ground floor, and used for agriculture and livestock. The second type of houses that we found are much bigger and more complicated. They are designed for a number of families to live a connected collection of buildings. They are 2 storeys high, located next to roads or paths for accessibility, and primarily used for agriculture.



One family
Isolated in the plot
Only groundfloor
Agriculture + livestock

analysis

The houses are all orientated in the same direction, north to south. The south facades receive the most amount of direct sunlight throughout the day; this can be of a disadvantage in this climate as the temperatures can become uncomfortably hot. Therefore the fenestrations on the south façades have been kept to a minimum. The coolest part of the house is to the north, as this receives most shade during the hottest times of the day. This is why the courtyard gardens are located on this side of the building, so the families can be outside and in the shade during the daytime.

Original Concept

Phase 1

Phase 2

Phase 3

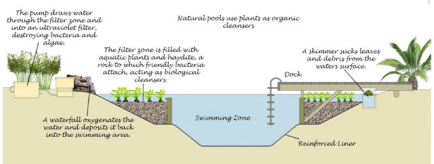
Phase 4

Phase 5

Phase 6

Evolved Concept

sustainable concepts



ReHouse
Novelda / Spain

AnavanderHofstadt
ChristoferWilson
ConchaArnero

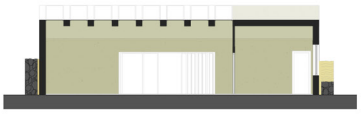
South Elevation

2nd section

4th section

1st section

3rd section



North elevation

views

By taking the original building shell and designing around it, we have created a range of inside and outside spaces that are seamlessly linked. Our intention is to create an environment that celebrates the original building, but adding a new dimension to how the building is experienced.

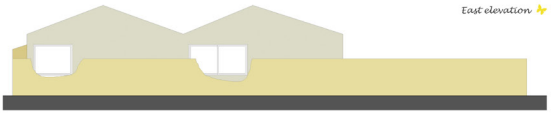
With this, the inhabitants' impression along the route inside the housing, are showed in the transition of the drawings.

West elevation

1st section

2nd section

East elevation

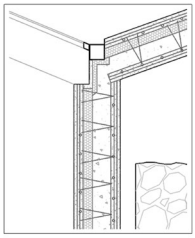


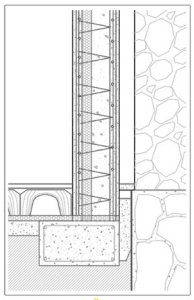
ReHouse

Novelda / Spain

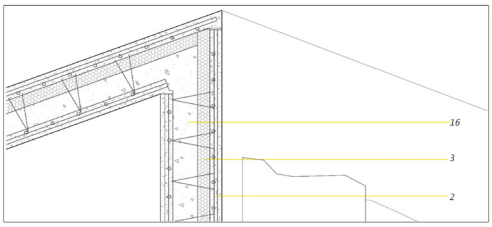
materials

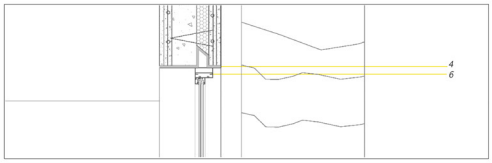
1. Steel Wall Plate
2. Concrete Sandwich Panel Inner Layer
3. Rigid Polystyrene Insulation Board
4. Steel Lintel
5. Aluminium Window Profile
6. Aluminium Window Frame
7. Glazing
8. Screed
9. Concrete Slab
10. Timber Joist
11. Rigid Polyurethane Insulation Board
12. Chipboard
13. Timber Floor Boards
14. Stone Pebbles
15. Original Stone Wall
16. Concrete
17. Ventilation Pipe
18. Plastic pieces for ventilated slab

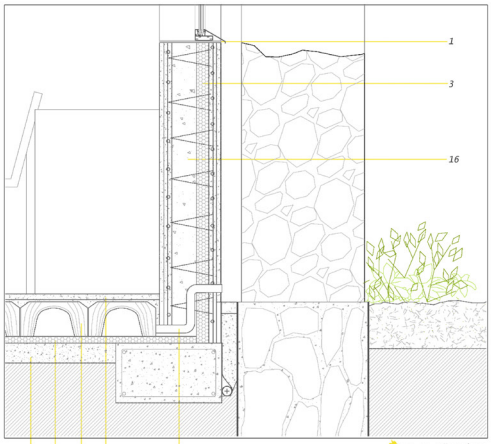




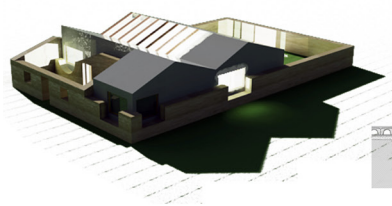
Detail 1/20

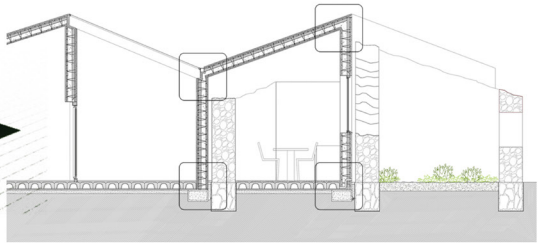




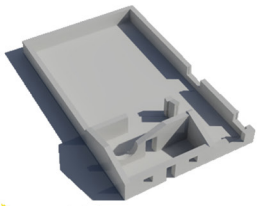


Detail 1/10



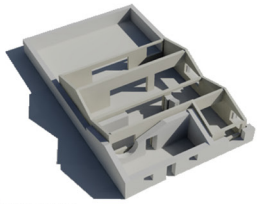


Detail 1/33



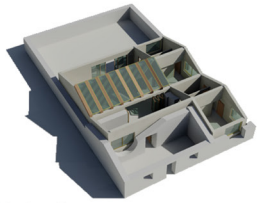
current state

The house distinguishes itself with a old tipology in a very poor situation. The construction is defined by the use of stone and a mixture of inside and outside spaces.



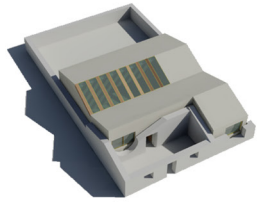
1st action

The creation of the new walls in the outside part of the original walls, made by prefabricated concrete panels. The concrete will be made with the stones picked up in the old house.



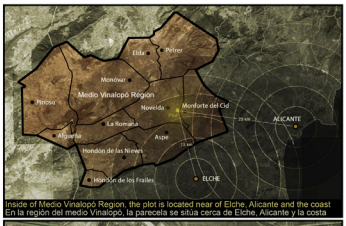
2nd action

The gaps are located in the best position to get the most sun. The placement of the interior walls separate the diferent spaces inside the house. The middle courtyard with a transparent roof will provide sunlight into the house.



HEARTH HOUSE.

GLUDER, Stefan
URBÁN MARTÍNEZ, Javier
VICENTE UCLÉS, José Ramón



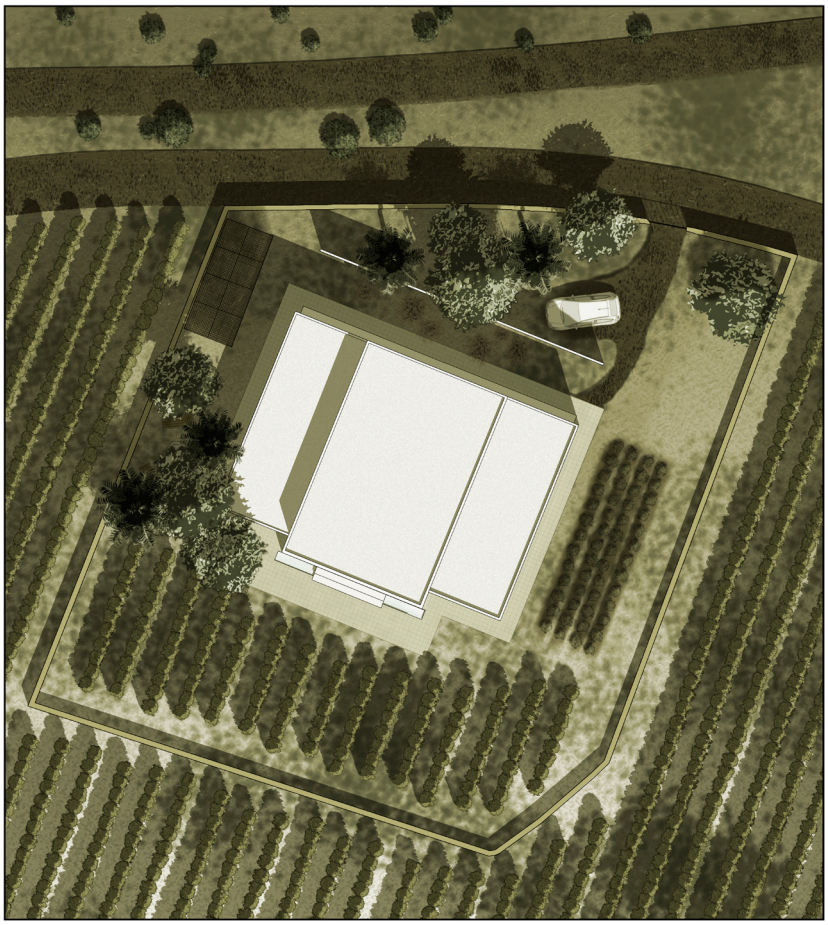
Inside of Medio Vinalopó Region, the plot is located near of Elche, Alicante and the coast
En la región del medio Vinalopó, la parcela se sitúa cerca de Elche, Alicante y la costa

Go to Novelda and Monforte del Cid walking or by bycicle enjoying the landscape
Vaya a Novelda y a Monforte caminando o en bicicleta mientras disfruta del paisaje


HISTORY
HISTORIA


ARCHITECTURE
ARQUITECTURA


MODERN STYLE
MODERNISMO

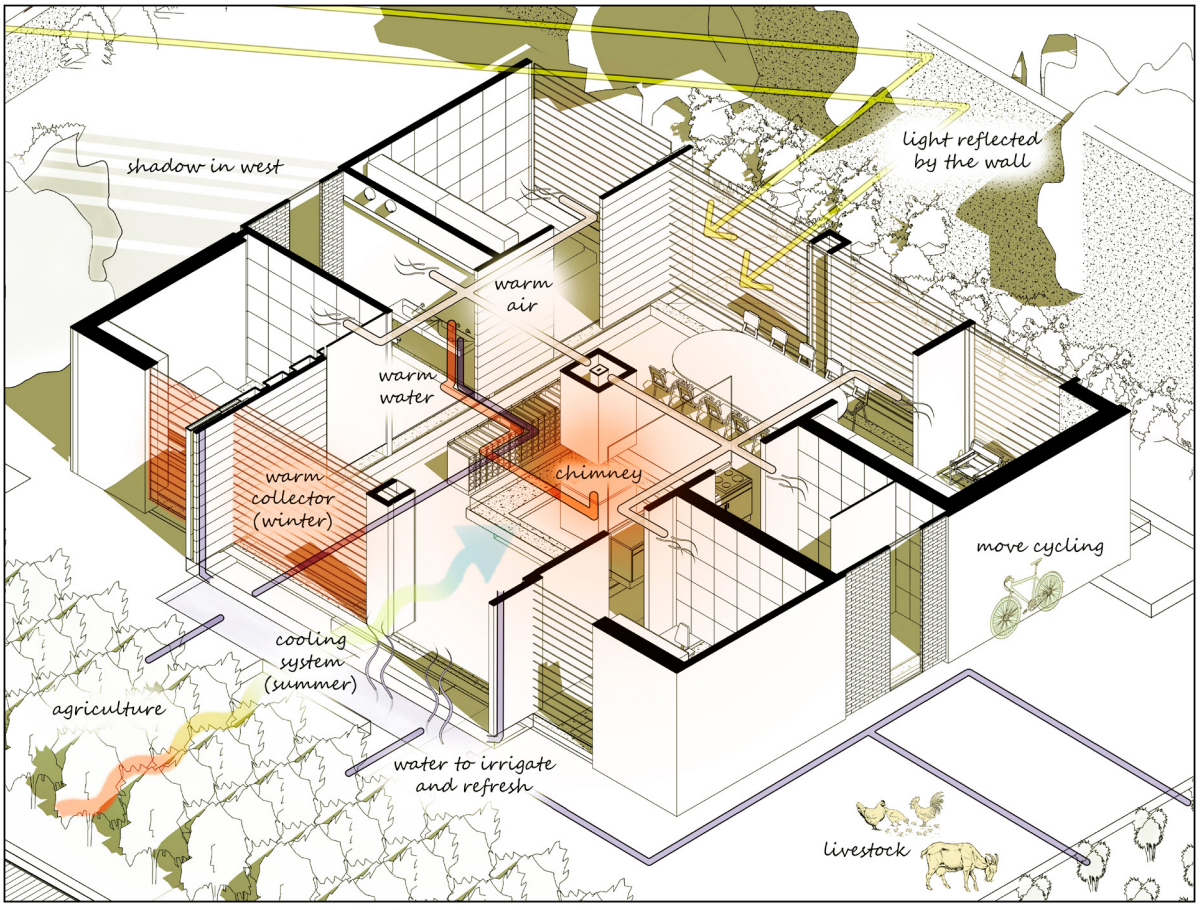


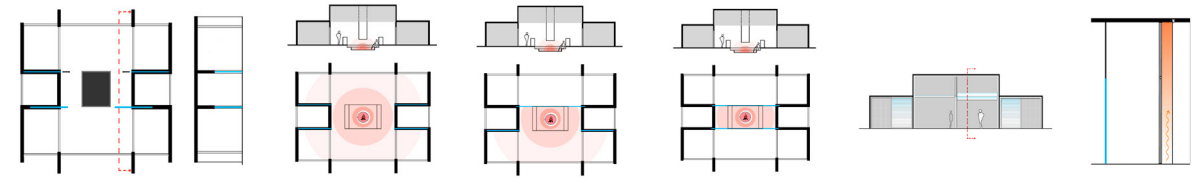

FESTIVITIES
FIESTAS PATRONALES

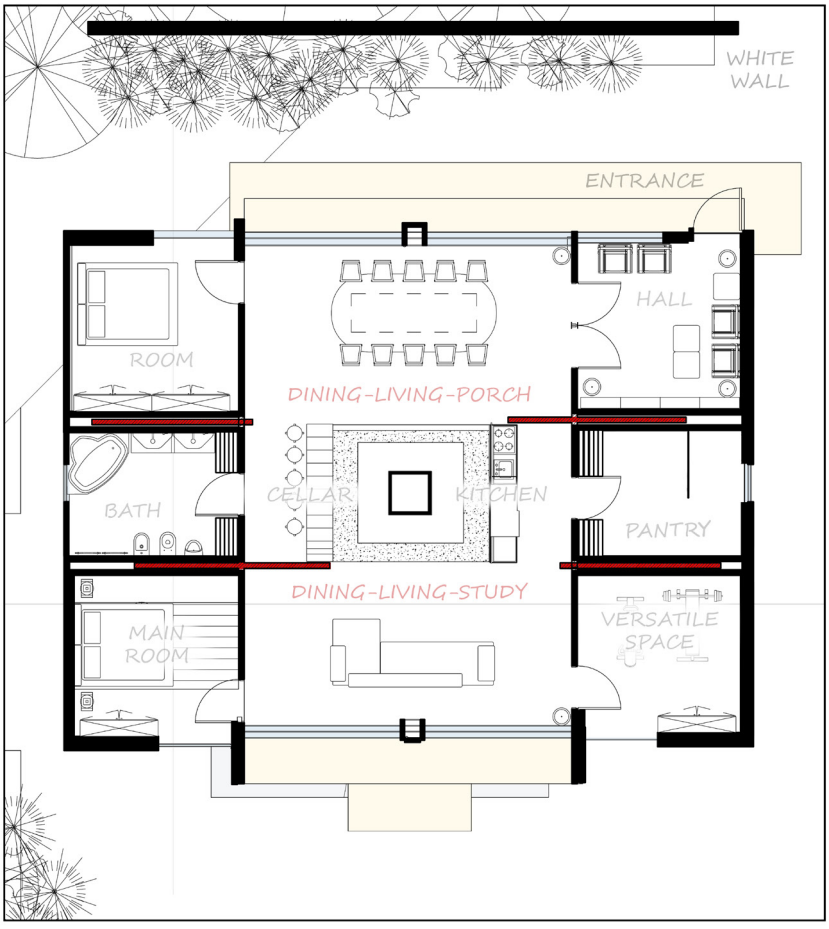

GASTRONOMY
GASTRONOMÍA

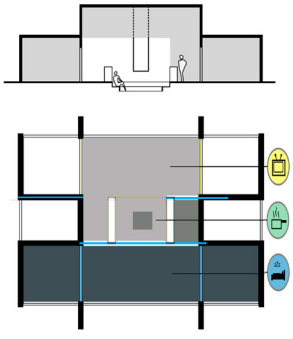

WALKING
SENDERISMO

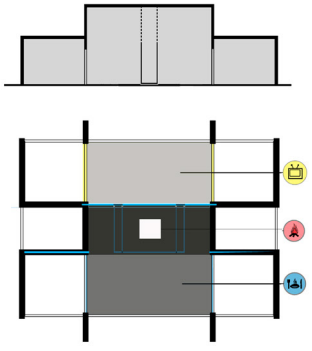

AGRICULTURE
AGRICULTURA

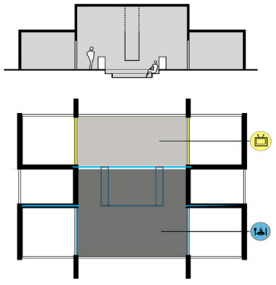

shadow in west
light reflected by the wall
warm air
warm water
warm collector (winter)
chimney
move cycling
cooling system (summer)
agriculture
water to irrigate and refresh
livestock

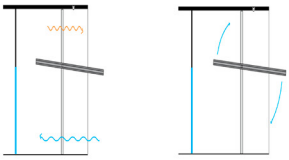


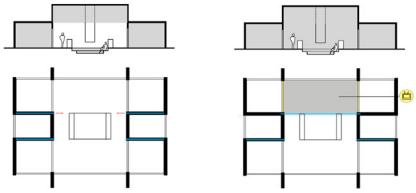

WHITE WALL
ENTRANCE
HALL
ROOM
DINING-LIVING-PORCH
BATH
CELLAR
KITCHEN
PANTRY
DINING-LIVING-STUDY
MAIN ROOM
VERSATILE SPACE





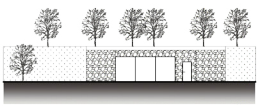
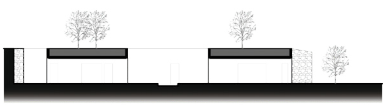
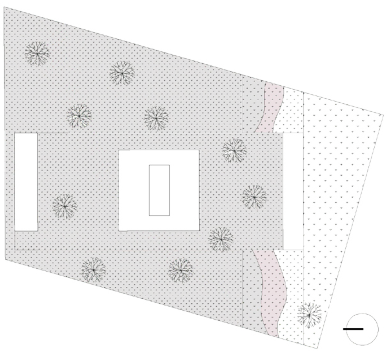
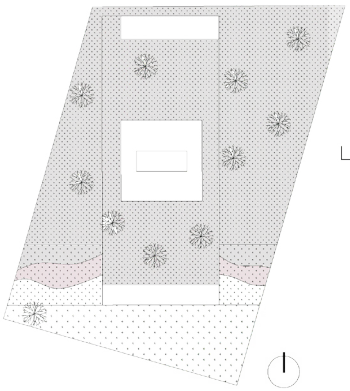
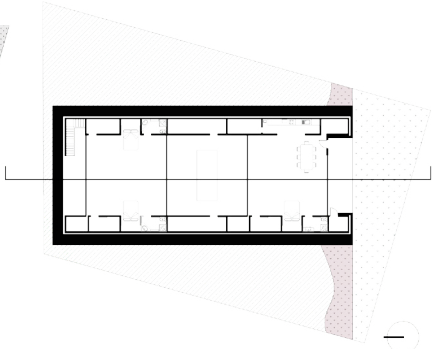






FLEXI-HOUSING.

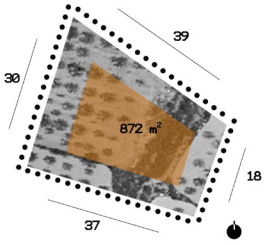
HANSEN, Lasse
LOPEZ SAEZ, Noemi
REIG VILA, Sabela

Flexi-housing

Lasse_Hansen Noemi_Lopez_Saez Sabela_Reig_Vila

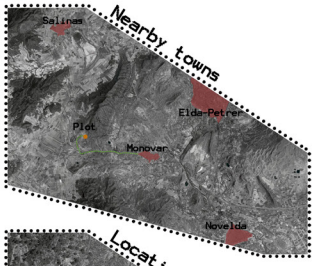
Situation and idea

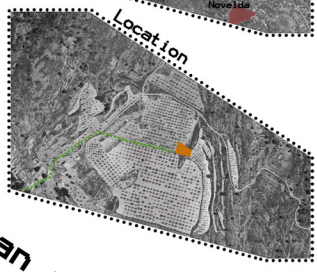


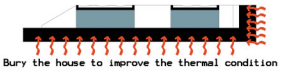
The plot we choose it is located in Monovar, in the area of Alicante. The plot is surrounded by several cultivation plots.

It is located close to several major cities and still remote enough so the owners can feel isolated in the southern part on Spain.

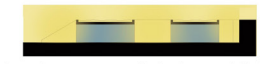
The plot is 872 m2 big with winds moving from NE to SE. Access is along a path that leads us to the northwestern part of the plot.
Is a free-standing plot, topped with a green cover. It has only one floor, plus the top plan, which can be walked.






Bury the house to improve the thermal condition


Water sheets for conditioning interior humidity

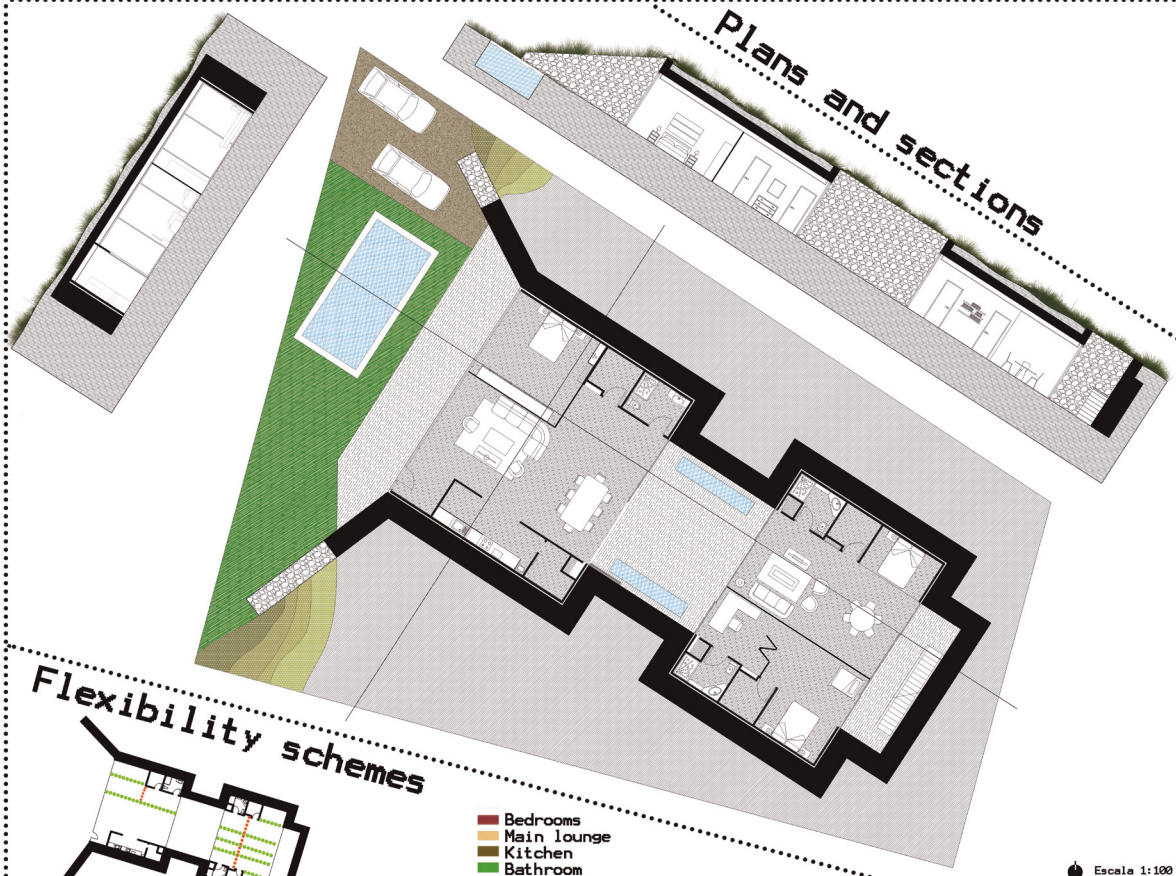

Several patios to provide the house with light


Natural airflow in the house with crossed ventilation

Top plan and elevation

Escala 1:100

Plans and sections

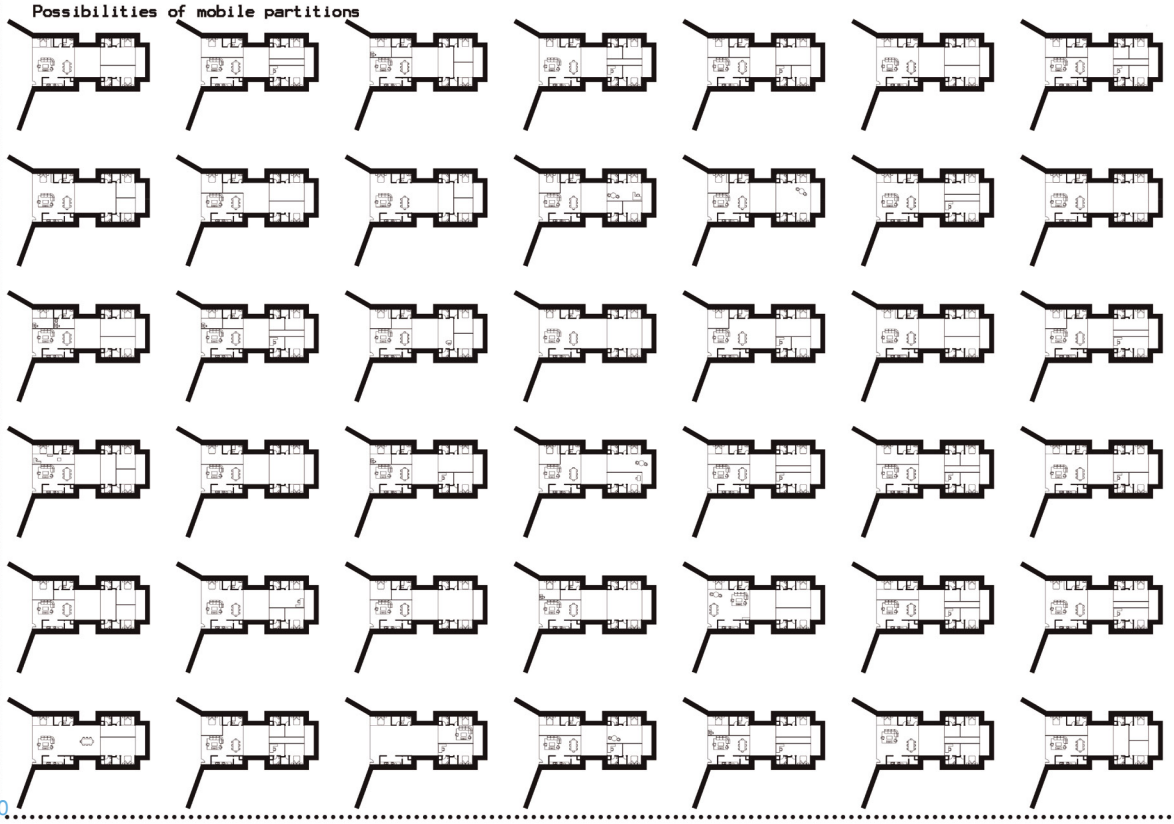


Flexibility schemes

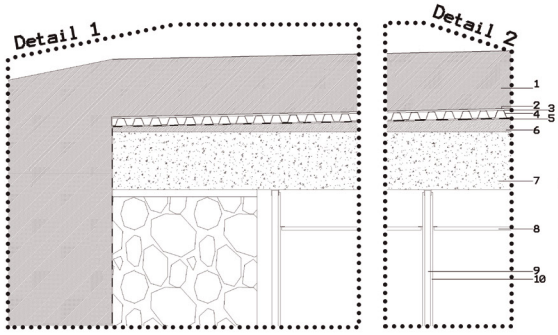
- Bedrooms
- Main lounge
- Kitchen
- Bathroom
- Living room
- Study area

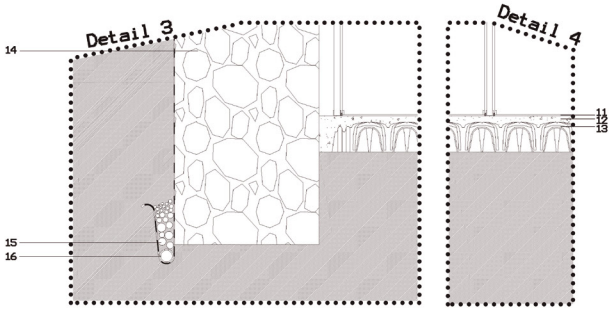
Escala 1:100

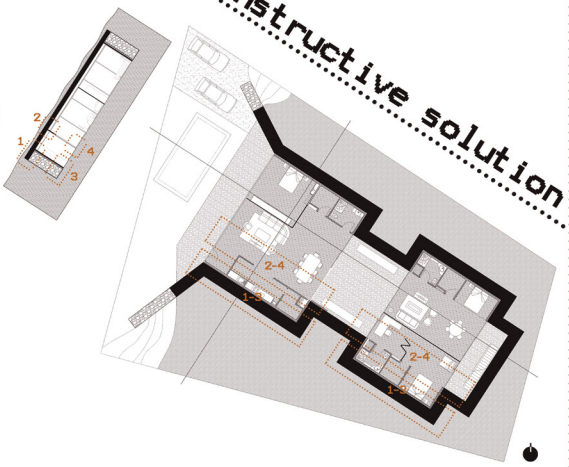
Possibilities of mobile partitions



Constructive solution



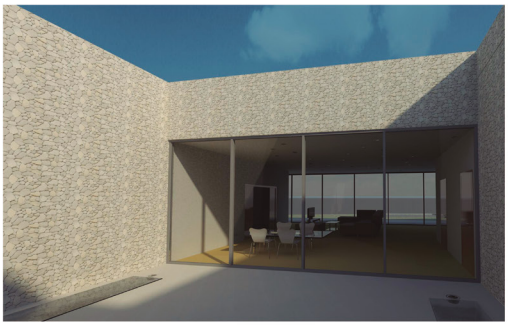




1-Ground - 400 mm
2-Textile layer - 2mm
3-Filter layer - 2mm
4-Draining layer - 40mm
5-Waterproof sheet - 2mm
6-Slope formation with concrete
7-Hollow core slab - 450 mm
8-False ceiling - 10 mm
9-Metal profile - 40 mm
10-Wood board - 15 mm
11-Parquet - 10 mm
12-Concrete - 80 mm
13-Cupolex system - 200 mm
14-Gabion wall - 1000 mm
15-Gravel
16-Draining pipe - 10 mm

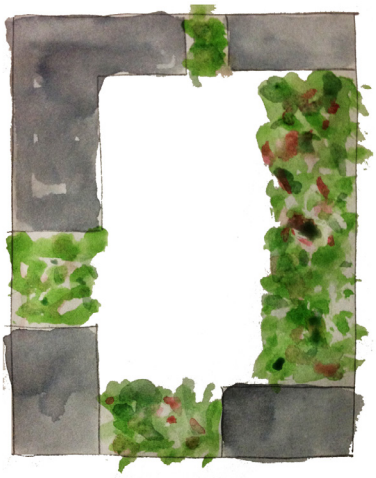
Escala 1:15

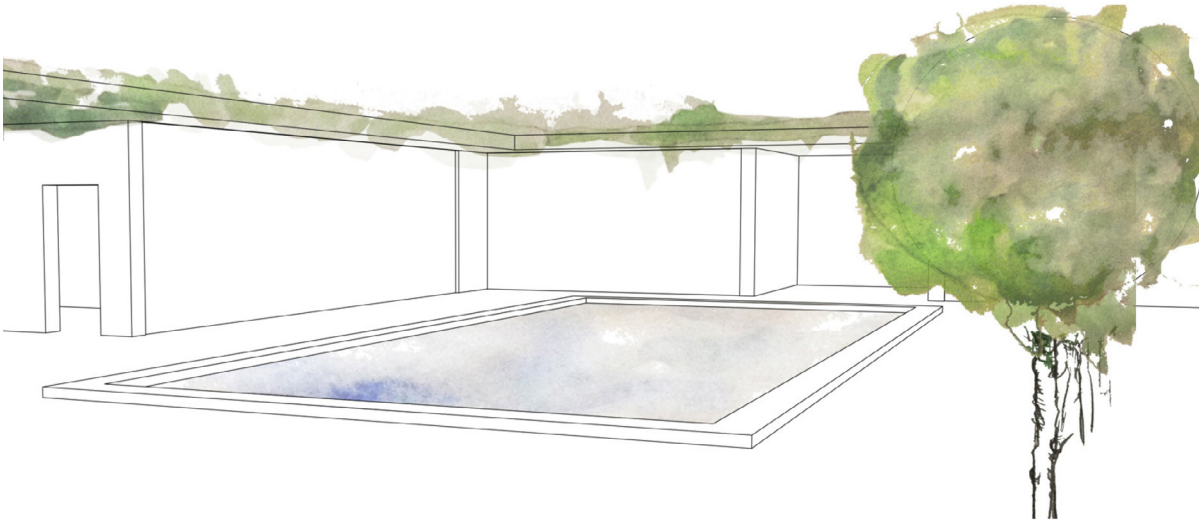
Interior perspectives



A PATIO WITH A HOUSE.

EGÍO PÉREZ, Rocío
KLING, Konrad
PALAU PALACIO, Sandra



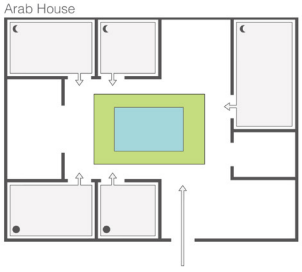


A PATIO WITH A HOUSE

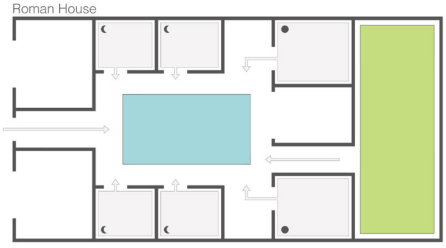
Attracted by the good weather and a relaxed pace of life, the northern European retirees look for a place to enjoy the retirement. The house is situated at an strategic point in the interior of the province of Alicante. In just a few minutes will be available to reach the main cities of Elche and Alicante, as well as the airport and the most important, the beach. The house, inspired by the ancient Mediterranean constructions, is built around a central courtyard, where thanks to its orientation, generates a microclimate that provides to the house nice living in winter as in summer. It is separated in modules which contents the different functions, giving it flexibility. Between these modules are arranged outside areas, protected with a green roof that expands and provides shade also inside. Using this bioclimatic design, clay as a green material and renewable energy, promotes the generation sustainable architecture with A PATIO WITH A HOUSE.

Atraídos por el buen clima y un ritmo de vida relajado, los jubilados del norte de europa buscan un lugar donde disfrutar del retiro. Situaremos la casa en un punto estratégico, en el interior de la provincia alicantina. En solo unos minutos tendrá a su disposición las principales ciudades de Elche y Alicante, así como el aeropuerto y lo más importante, la playa. La casa, inspirada en las antiguas construcciones mediterráneas, esta formada alrededor de un patio central, donde gracias a su orientación se genera un microclima, que hace la casa agradable tanto en invierno como en verano. Está separada en módulos que albergan las diferentes funciones, dotándola de flexibilidad. Entre los módulos se disponen zonas comunes exteriores protegidas con un techado verde que se expande y proporciona sombra también al interior. Utilizando este diseño bioclimático, arcilla como material verde y energías renovables se promueve la generación de una arquitectura sostenible con UN PATIO CON UNA CASA...

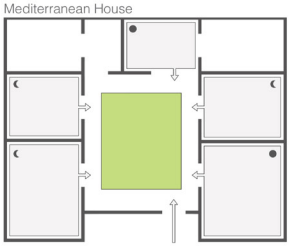
Arab House



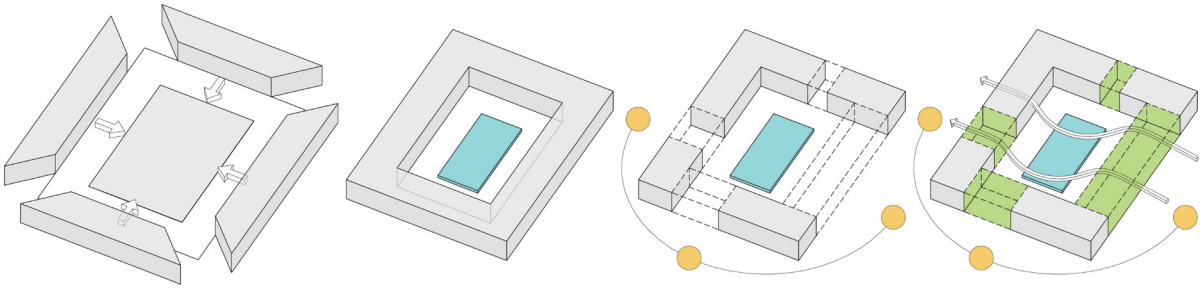
Roman House

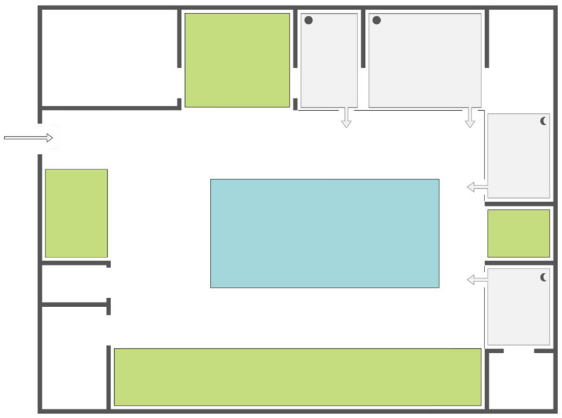


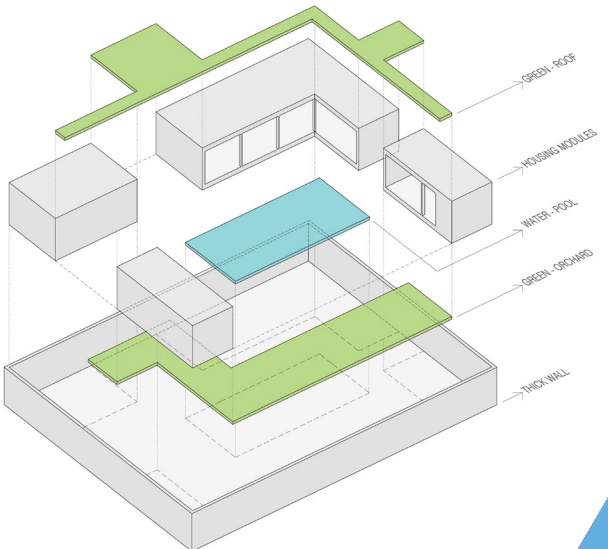
Mediterranean House

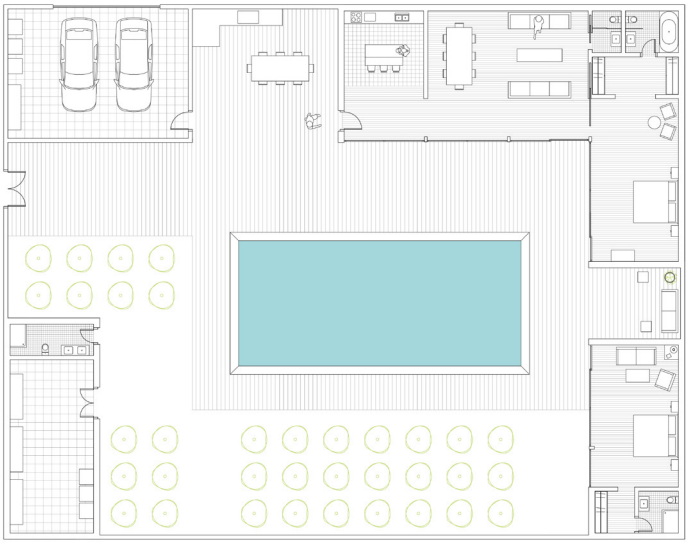


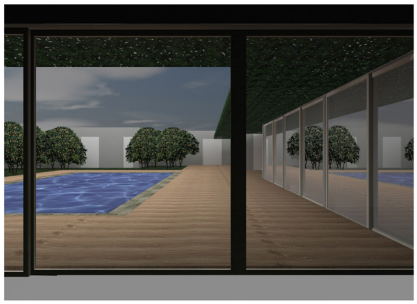
CENTRAL PATIO
WATER/GREEN
ORIENTATION
CROSS VENTILATION

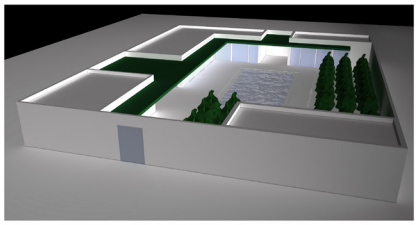












N elevation

e 1:100

E elevation

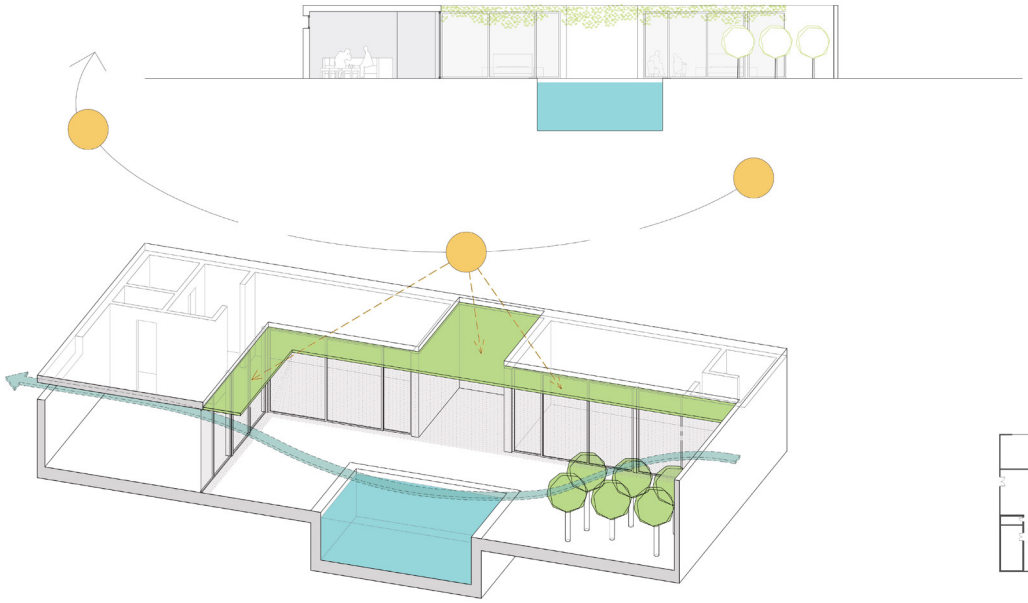
e 1:100

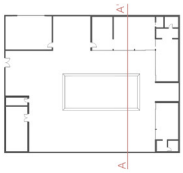
S elevation

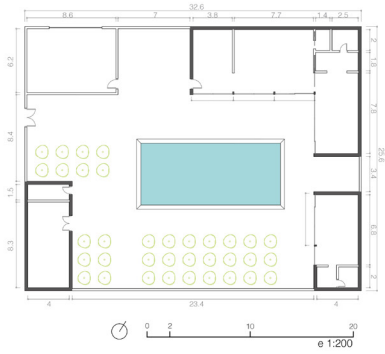
e 1:100

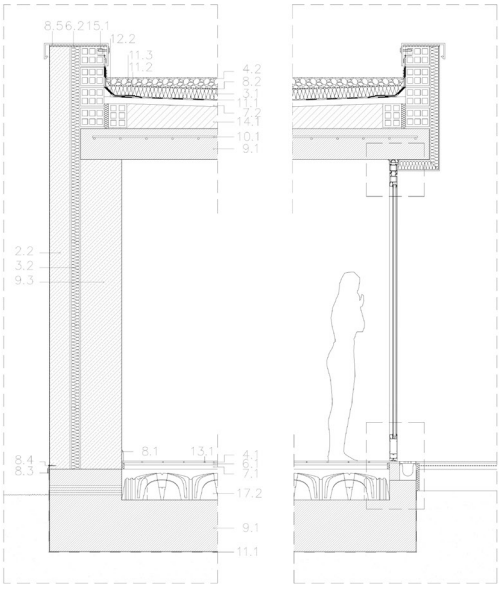
W elevation

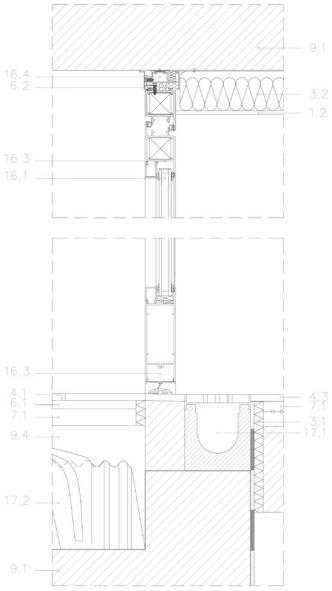
e 1:100

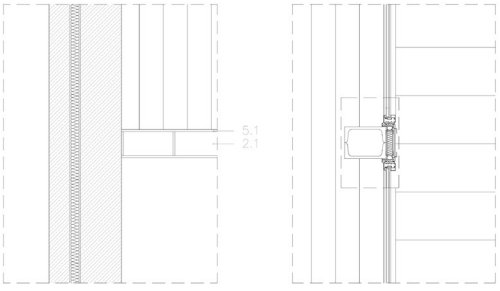


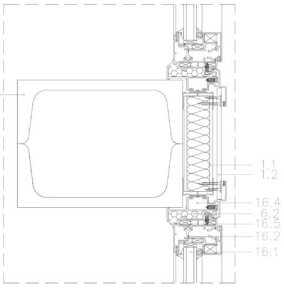












1	Exterior finishing	
1.1	Sandwich Panel	Prefabricated sandwich panel
1.2	Exterior facing	Ceramic
2	Masonry	
2.1	Brick wall	Hollow brick, ceramic double
2.2	Clay wall	Clay plus stronghold
3	Insolation	
3.1	Thermal insolation	Poliestireno expandido Tipo III (EPS)
3.2	Thermal insolation	Lana de roca
4	Pavement finishing	
4.1	Interior pavement finishing	Ceramic tile
4.2	Exterior terrase finishing	Gravel
4.3	Exterior pavement finishing	Ceramic tile
5	Acabado interior	
5.1	Pladur prefabricated	Prefabricated gypsum plate
6	Bonding materials	
6.1	Interior pavement bonding materials	Cement 1:6
6.2	Bonding foam	Polyurethane foam
7	Regulate layers	
7.1	Pavement regulate layer	Poor concrete
7.2	Roof regulate layer	Poor concrete
8	Protection elements	
8.1	Skirting board	Ceramic tile
8.2	Unpunching layer	Geotextil
8.3	Metal sheet waterproof layer protection	Metal
8.4	Anchor	
8.5	Metal sheet protection	Aluminio galvanizado
9	Structurals elements	
9.1	Ground plate	Concrete
9.2	Pilar	Perfil UPN x2
9.3	Clay wall	Clay plus stronghold
9.4	Ceiling plate	Concrete
10	Stronghold	
10.1	Ceiling plate stronghold	Steel
11	Waterproof layer	
11.1	Waterproof layer	
11.2	Inferior reinforcement waterproof layer	
11.3	Superior reinforcement waterproof layer	
12	Chamfer	
12.1	Chamfer for waterproof layer	Poor concrete
13	Join	
13.1	Dilation pavement join	Poliestireno expandido tipo I (EPS)
14	Gradient generation	
14.1	Roof gradient generation	Arlita
15	Ledge	
15.1	Ledge	Brick masonry
16	Opening elements	
16.1	Glass	
16.2	Aluminium window frames	Aluminium
16.3	Aluminium door frames	Aluminium
16.4	Preframe	Aluminium
16.5	Waterproof join	Silicone
17	Prefabricated elements	
17.1	Gutter	Concrete
17.2	Cupolex	

RENEWABLE ENERGY

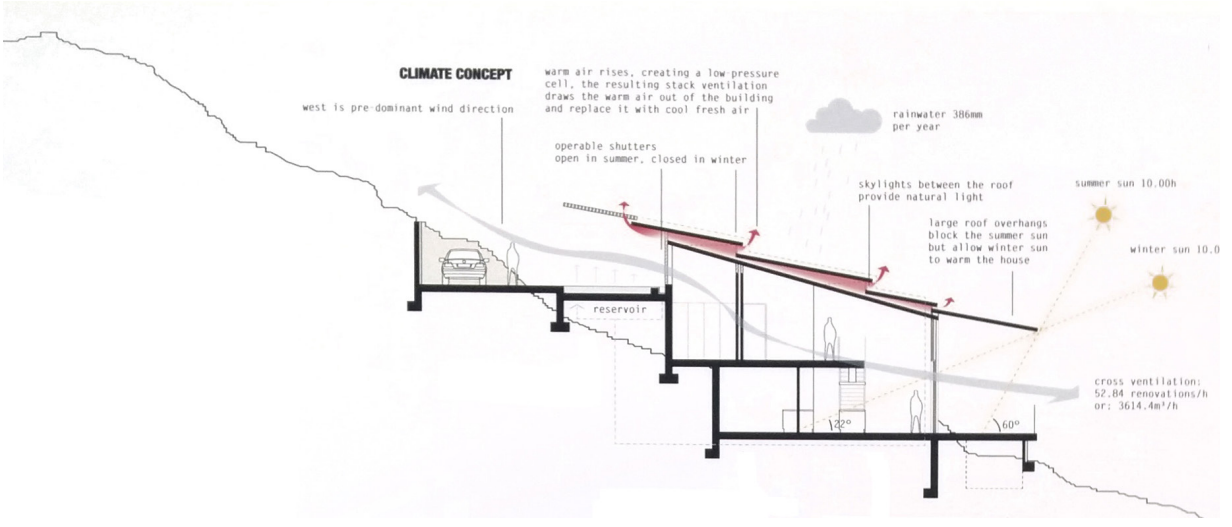
MATERIAL

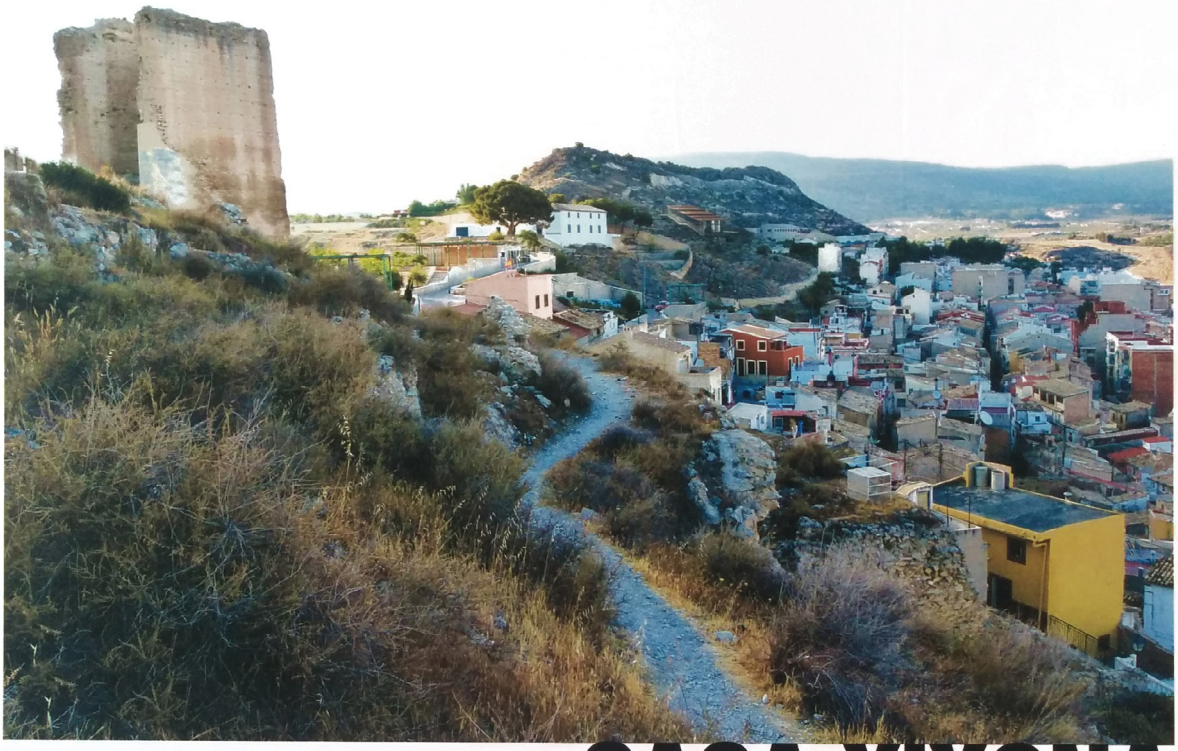
BIOCLIMATIC

CASA XIXONA.

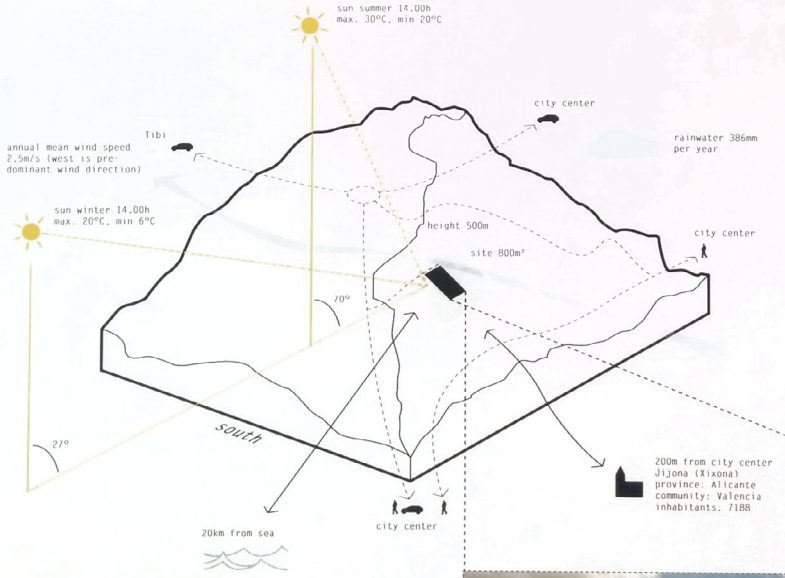
//MENTION

BERG, Sven
EWALTS, Lynn
HESTERMAN, Wouter
JOBIM PINHEIRO, Pedro
WESSELIUS, Devin





CASA XIXONA



Location: Jijona, Alicante, Spain
Area: 800m2
Projectteam: Pedro Jobim, Lynn Ewalts, Wouter Hesterman, Sven Berg, Devin Wesselius

The project concerns a house at the western side of Jijona (Xixona), a small village in the province Alicante surrounded by several mountains. The house has a beautiful view over the landscape and authentic houses of the village. The village has a variety of facilities that are easily accessible by foot or car.

Its cascading design generates an interesting dialog with the surrounding landscape that responds to the environment. The experience of living in the house is aimed to create different stages of views and a continuous flow between interior and exterior. Its design gives an abstract structure to the wise landscape that surrounds the building site.

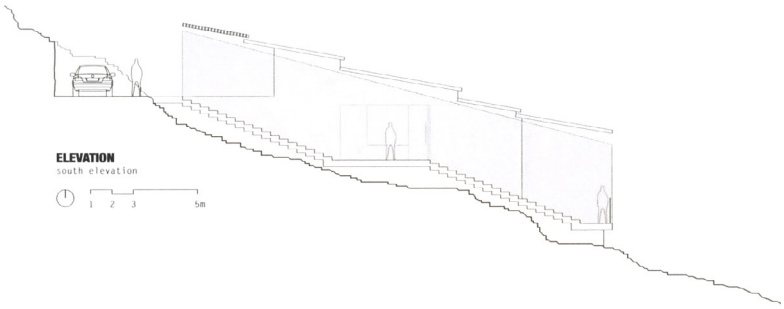
The cooling concept of the house is based on cross-ventilation, using the westerly wind to cool and ventilate the building. A pond at the top of the house is also part of this concept. Due to the heat, the water will evaporate and cool the wind that enters the house through open shutters in the facade. Through gratings the cool air will flow through the house and exiting the building. In the winter these shutters can be closed so the house won't cool down, but still can be ventilated.

impression interior

The entrance to the house is a staircase on the highest part of the site. One level down there is the front door to the building itself. Here are the flexible working spaces located. These rooms can be easily transformed in multiple guest rooms. At this floor is a bathroom located, which you can enter from two directions.

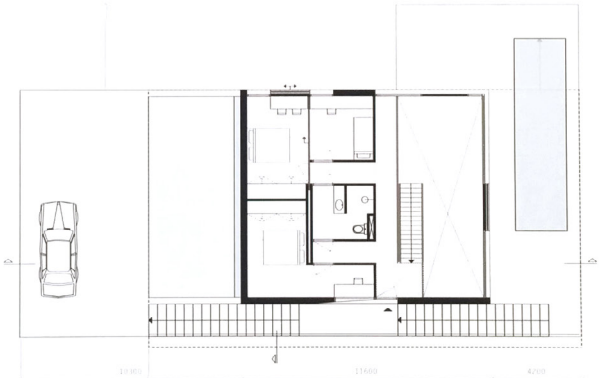
The master bedroom is located at the lowest level and orientated to the north side. It is directly connected to the living space, which consists of the living room and the kitchen. You can enter the deck from the living room by sliding open the panels and create an open space.

The house will partly be built with traditional materials, which are found in the environment. Constructive walls will be made of concrete and finished with white stucco plaster. The roof will be made of ceramic tiles, like the houses in the area. Aluminum is used for the perforated facade at the south side as well as for the shutters at the east and north side of the house.



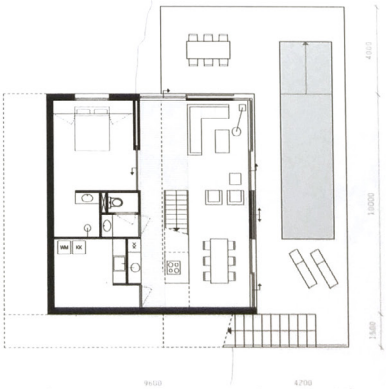
ELEVATION
south elevation

1 2 3 5m



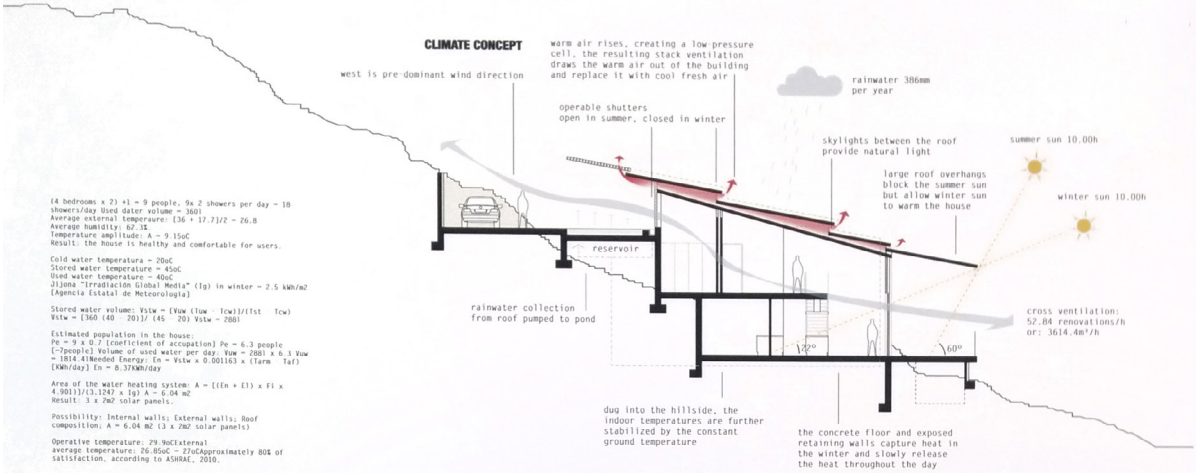
PLANS
first floor (above)
ground floor (right)

1 2 3 5m



impression used materials

CLIMATE CONCEPT



(4 bedrooms x 2) +1 = 9 people, 9x 2 showers per day = 18 showers/day Used dater volume = 360l
Average external temperature: (36 + 17.7)/2 = 26.8
Average humidity: 62.3%
Temperature amplitude: A = 9.15oC
Result: the house is healthy and comfortable for users.

Cold water temperatura = 20oC
Stored water temperature = 45oC
Used water temperature = 40oC
Jijona "Irradiación Global Media" (Ig) in winter = 2.5 kWh/m2 (Agencia Estatal de Meteorología)

Stored water volume: Vstw = [Vuw (Tuw - Tcw)]/(Tst - Tcw)
Vstw = (360 (40 - 20)]/ (45 - 20) Vstw = 288l

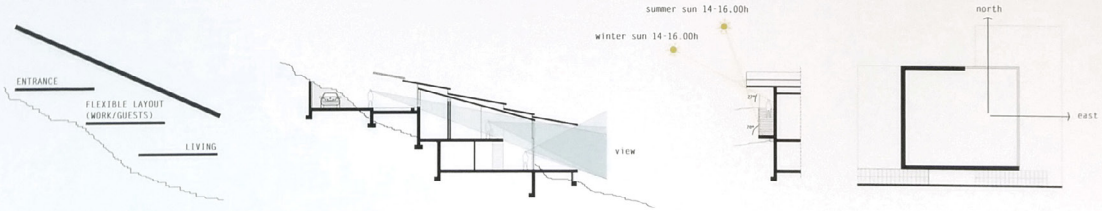
Estimated population in the house:
Pe = 9 x 0.7 [coeficient of accupation] Pe = 6.3 people [~7people] Volume of used water per day: Vuw = 288l x 6.3 Vuw = 1814.4lNeeded Energy: En = Vstw x 0.001163 x (Tarm - Taf) [KWh/day] En = 8.37kWh/day

Area of the water heating system: A = [(En x Ei) x Fi x 4.901)]/(3.1247 x Ig) A = 6.04 m2
Result: 3 x 2m2 solar panels.

Possibility: Internal walls; External walls; Roof composition; A = 6.04 m2 (3 x 2m2 solar panels)

Operative temperature: 29.9oCExternal average temperature: 26.85oC ~ 27oCApproximately 80% of satisfaction, according to ASHRAE; 2010.

impression exterior



Standing on top of the building and looking down the staircase, you can see the house at the left side, the perforated facade at your right and a small part of the landscape just in front of you. When you walk down the staircase towards the front door and entering the building you'll discover a bit more of the landscape. If you walk down the stairs to the living room, inside the house, you'll discover even more of the landscape. In the end when you're standing at the deck you'll have a wide panoramic view over Jijona and the surrounding landscape.

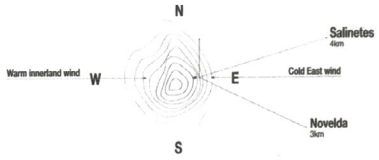
The staircase is located at the south of the house and serves as a buffer zone. In the summer , when the sun is at its highest point, the overhanging roof will block the sun from hitting the south facade. In the winter when the sun is at a lower point, the sunrays will reach the wall and heat it up.

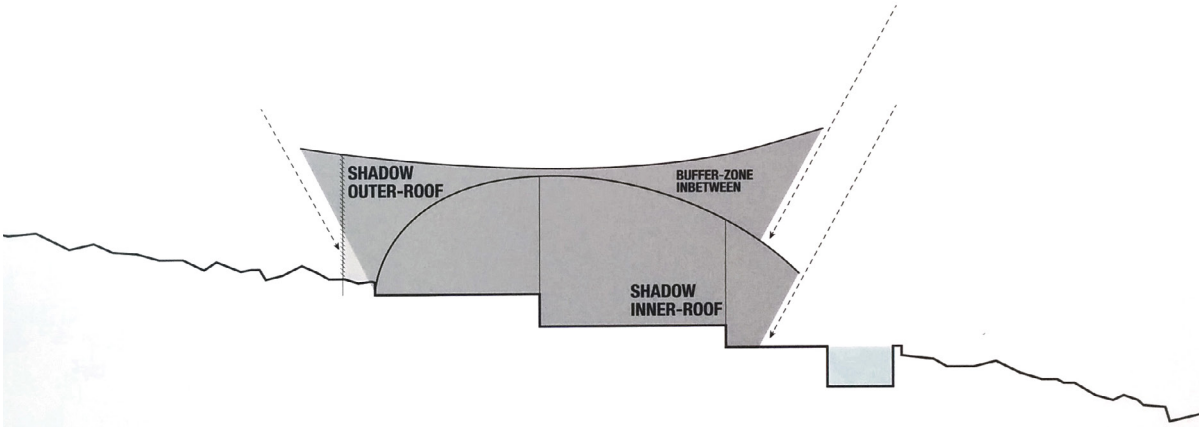
DOUBLE ROOF HOUSE.

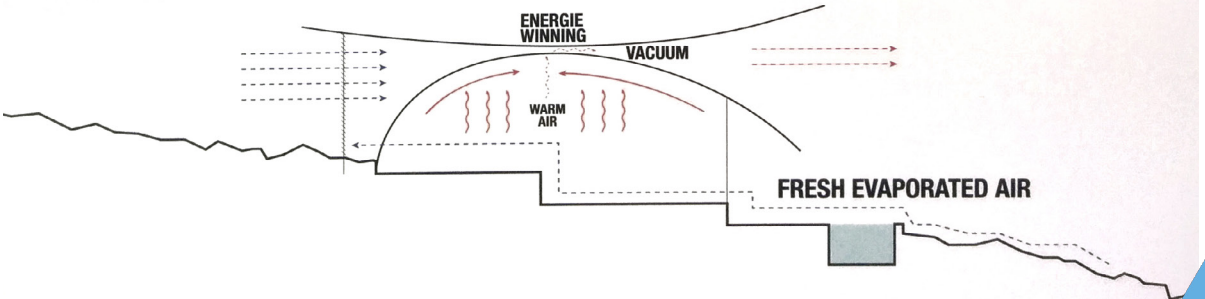
SPEETS, Malou
VERHOEVEN, Wesley

DOUBLE ROOF HOUSE

Wesley Verhoeven & Malou Speets

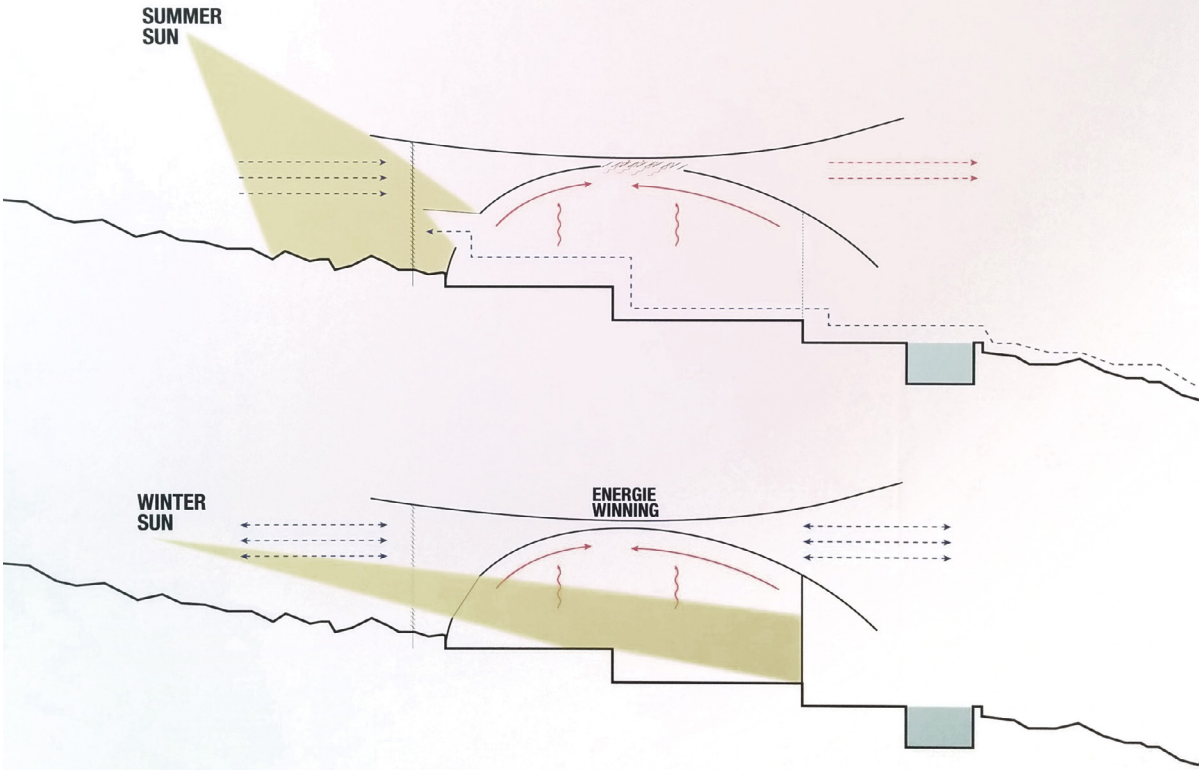


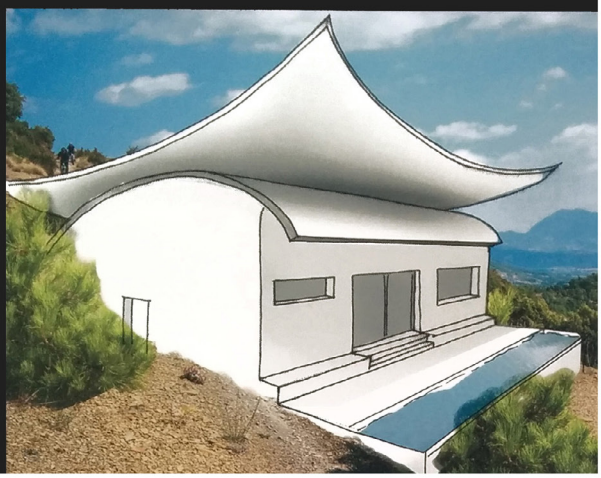


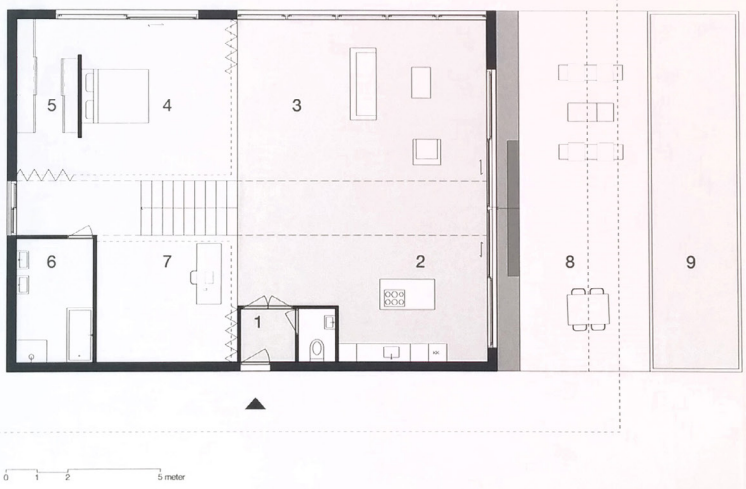


Roof principle
The design is fully stems from the 'Bernoulli' principle. By means of the roof, the wind is sent to the midpoint of the roof. At this point the wind will blow the hardest and we will use it in two different ways: We will be sucking the warm air out of the building because in this way a lower air pressure arises under the roof surface. Also we will place wind turbine, that will generate energy. The energy will be used in the house. The external roof also serves as a sunscreen for the house. An insulating buffer between the roofs ensures that the house will remain cool in the summer.

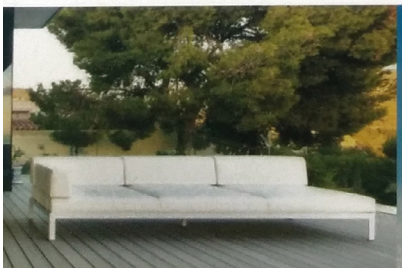
Ventilation principle
The house will be ventilated in a natural way. The wind that comes up the mountain will blow over the pool. The humid air will go trough the house and by the round shape roof, the warm wind will go up. At the highest point the wind will be sucked out of the roof by dint of the Bernoulli principle.

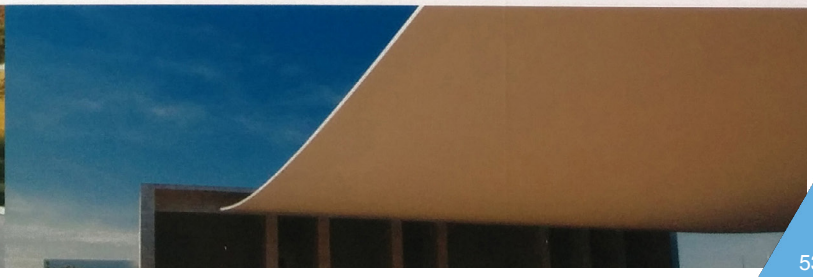






1. Entrance
2. Kitchen
3. Living Room
4. Bedroom
5. Walk in closet
6. Bathroom
7. Work space / flexible bedroom
8. Deck / Terrace
9. Pool



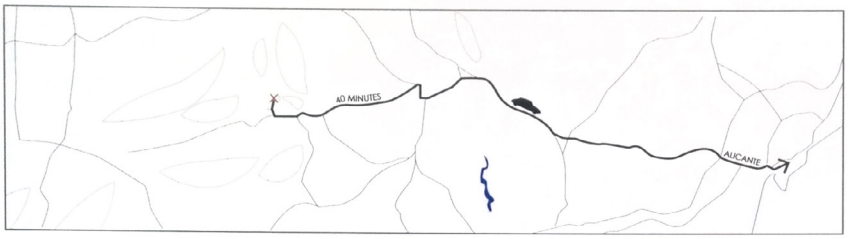


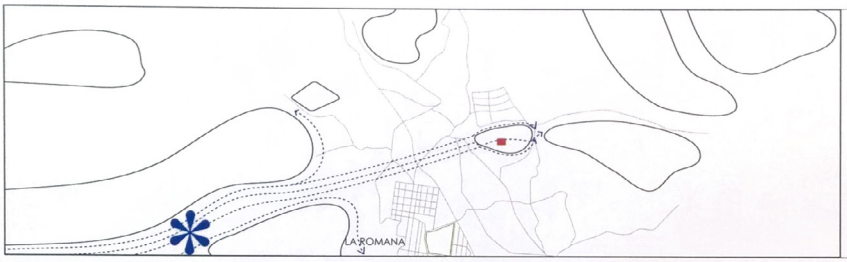
SHIFTING WALLS.

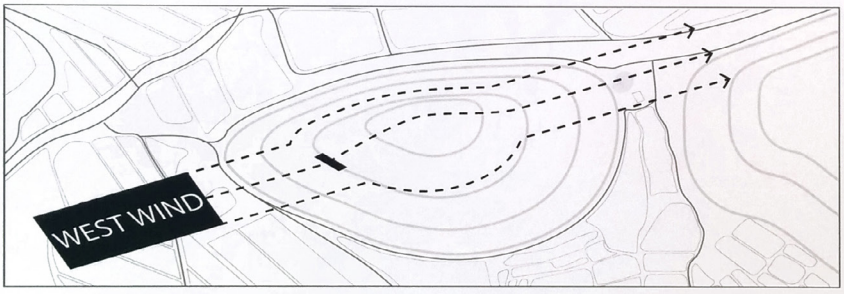
BATENBURG, Rowdy
CANDIDO, Lucas
MUTLU, Orçun
WEEL, Dex

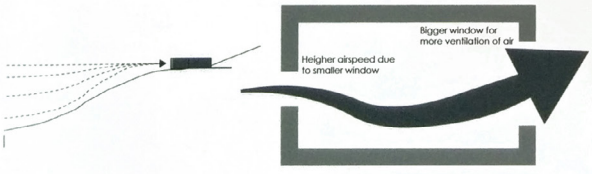
Shifting Walls

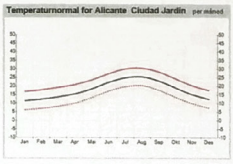
"Basic physics says that air cannot be created or destroyed as it moves through the building"











THE ASSIGNMENT

Healthy housing

With the support of the Marjal Foundation a design task for creating a healthy and sustainable housing was formed. The task requested smart use of passive sustainability methods for the designing of a 'holiday' home for retired people or small families from the north side of Europe (Netherlands, Germany, Norway etc.). A building that can protect the habitants against the Spanish sun but still give the of a comfortable house. This applies for the summer season as well as the winter season. Innovative methods that require as less mechanicals as possible but still provide comfort around the year.

OUR VISION

The vision to create a building versitile enough to reach the wishes of the European clients are listed below:

- Comfort all around the year (summer as well as winter)
- Located on a hill with clear views.
- Swimming pool
- Make use of the wind
- Open building without suffering of light intensity

-Mainly creating a sustainable flexible house.

LOCATION

Road to Alicante

The location is close to 'La Romana' for some quick shopping. Visiting Alicante once in a few weeks must be optional for the people. From the location it takes about 40 minutes by car and 1 houre by bus.

Wind tunnel

When we look closer at the site we see two valleys at the west side of the location. These parallel leading hills push the air mainly to the small hill where we are locating our house, this way we can use the wind to cool down our building for an healthy housing.

La Romana

The view from our side of the village.
If we look at the grid of La Romana it reminds us of the grid from Barcelona. La Romana has a large sector of industrie in marble and in the surroundings of the town are alot of wine fields.

METHODS

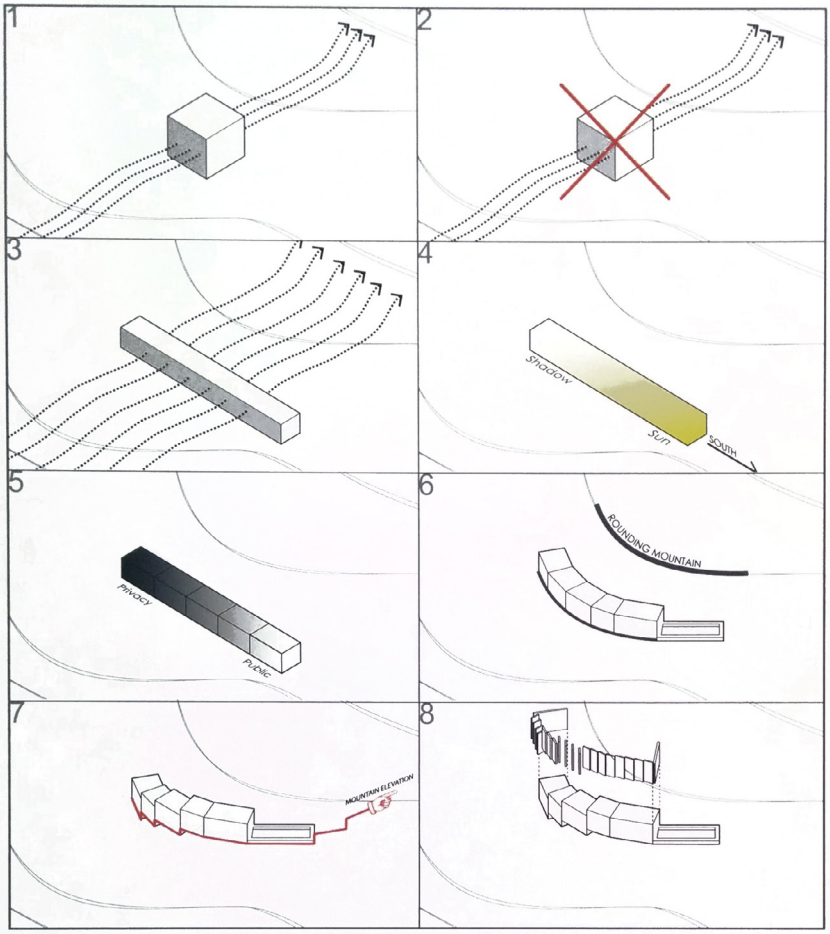
Temperatures

Even though Spain is known for there hot climate, there winters can still be cold. Temperatures won't drop below 0. But in winter facades or outside spaces should adapt to the season. A winter facade using dark materials and radiation compared to summer facades using light materials can make a big difference. The solution for this problem is explained on the 3rd panel.

Wind

There are a hand full of methods available for passive cooling. With the decision to use a hill as location wind is our best way of passive cooling. Using cross ventilation combined with the Venturi effect the rooms will be provided with fresh air at will. The Venturi method makes use of smaller and bigger window openings to create pressure and therefor heigher air speeds. Resulting in more ventilation and cooling for the residence.
As research indicated higher tempratures require higher wind speeds to remain comfortable (involves the speed in wich sweat evaporates from the body)

1



CONCEPT

Cube shape
We start with a cube shape with 200m2 space. For passive building this is the best shape to provide the perfect climate in the building. As we know the main wind direction is west, so we need a large side on the west to catch the wind.

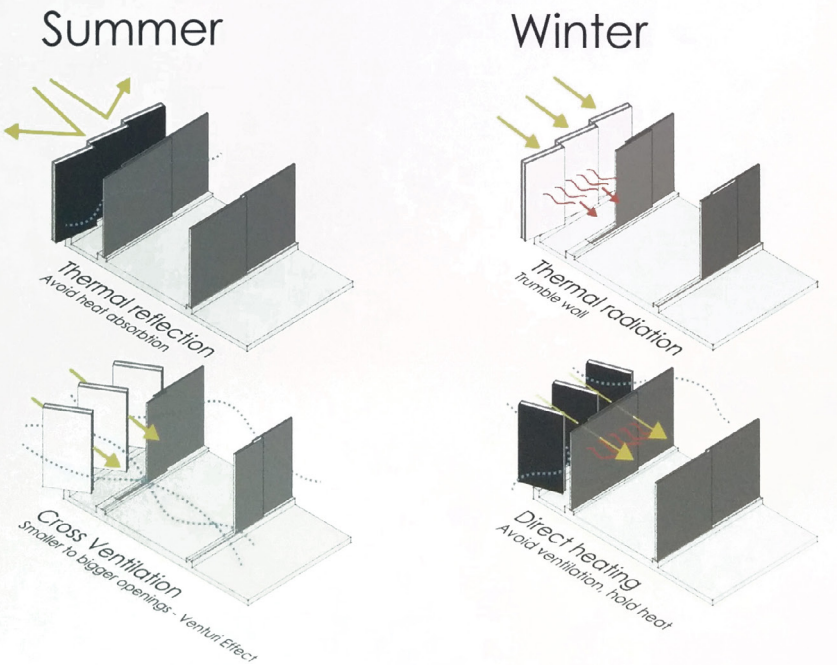
Long rectangle
The best shape to cross ventilate is a long small shape so that we can catch alot of wind.

North - South
This shape causes a north and south orientation. This way we can put the program in looking at the amount of daylight required at each function.

Privacy rounding
We combine the privacy and public area's with the orientation on the south. The public area's want more transparancy while the privacy area's need more coolness for rest.

Elevation
To get reunion with the landscape we take the shape of the hill into the floorplan. This will also help with gaining our range of different wind directions.

Thermal layer
A double layer shield on the south/west side of the building is the best way to make the building cool down in the summer and hold his warmth in the winter.



DOUBLE SKIN CONCEPT

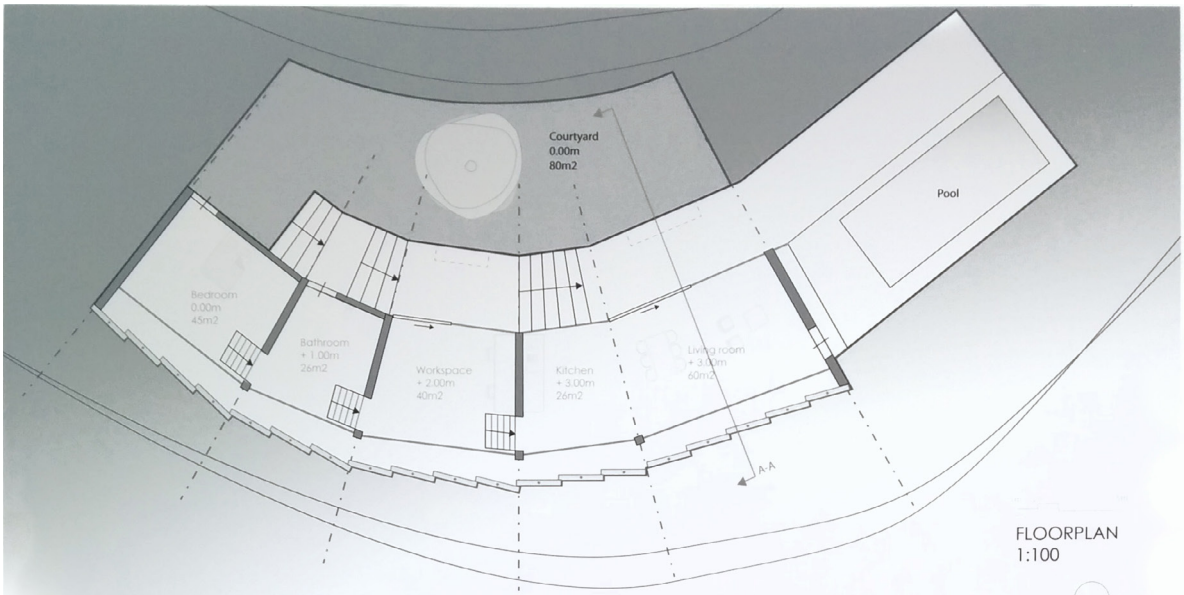
Seasonal protection
A double skin offers protection in a wide range. The skin is build-up by turning panels materialised by a light and dark side:

Summer
1: Most importantly the summer. While the light side of the panels are able to reflect sunlight the buffer-zone in between offers a natural cool insulation. This could be used in evenings when the rooms are freshly ventilated and the cool air wants to be held.
2: By opening up all the layers cross-ventilation can be used. Combining the stacked air speeds, and venturi effects (closing the panels more for smaller openings) a swift and cool breeze is achieved.

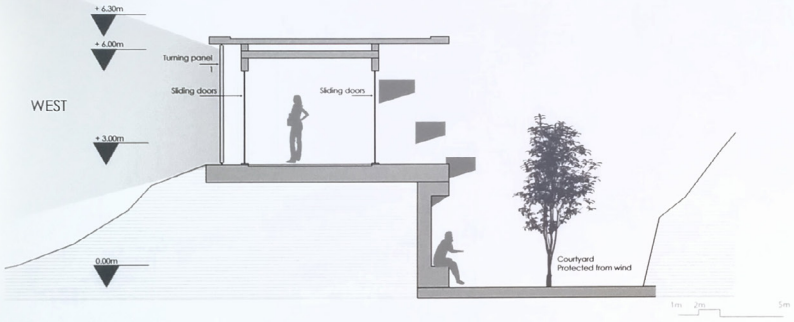
Winter
1: Closing the outer skin and pointing the dark areas out allows radiation of the material inside. Opening the 2nd (and if wished for) the 2nd layer warmth can be brought in.
2: Opening up the outer skin but closing the others allows warm sunlight to warm the inside areas but avoid the wind speeds into the area.

The given methods are applied to give users the most flexibility with there house. As not only the method is of importance also the users ability to choose for themselfs gives a psychological boost to the system.

2



FLOORPLAN
1:100



SECTION A-A
1:100

DESIGN

Floorplan

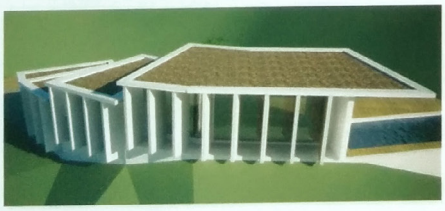
The main entrance of the building is at the courtyard, which is the heart of the building. The courtyard has a few functions: a car place and a no south-west sun sitting area (under the stairs). In the winter there will be no wind for sunbathing.
The stairs, which follow the shape of the building, give a simple route to the upper level of the building. Here are the living room, kitchen and pool located. The large overhang will block the southern vertical sun so the temperature in the living room will stay restrained.

In the section cut you can see that the roof has two layers. The wind collected with the west side thermal shield will also ventilate this space if the slide doors are closed. So if the slide doors are locked and the thermal shield is open, the temperature does not gain alot.

The level below the living room and kitchen is the workspace. This is a semi transparant space which is protected on two sides for sun intensity. The thermal layer on the west side will give shade and let wind through and the eastside got a large overhang against the south east morning sun.

Its possible to enter the bathroom from inside and outside. This way you can get a shower after swimming in the pool without walking through the whole house. For colder periods in the year the entrance from inside is suitable.

The bedroom is positioned at the northern part of the building. This will be the coolest part with an view over the valley and closed to the courtyard. For an entrance through the courtyard there will be a door also to be able to cross ventilate the room.



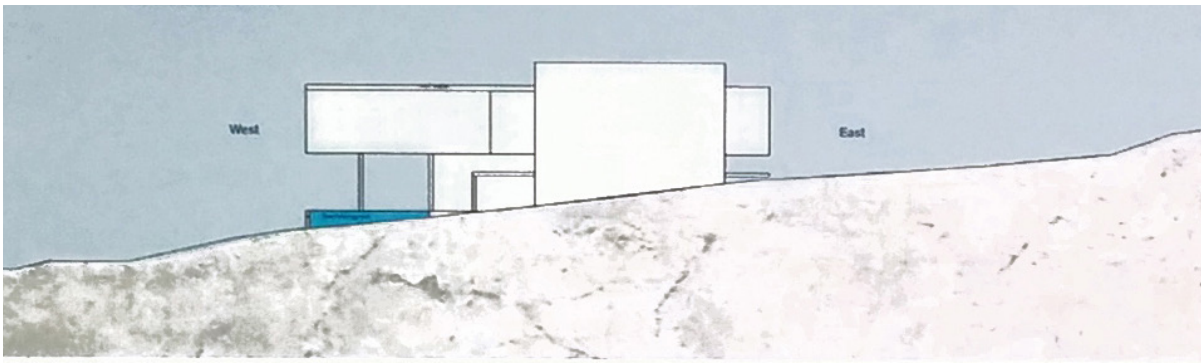
Project Alicante

09-04-2012

Dex Weel
Rowdy Batenburg
Orçun Mutlu
Lucas Cândido

3

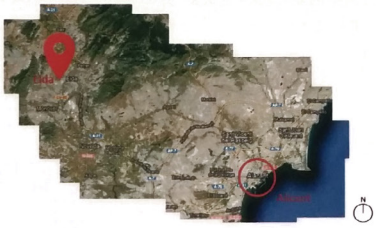
DEKKER, Eileen
MOOREN, Annabel
SCHMITZ, Benno
VIARO CORREA, Joao
WITSCHGE, Ruby



ANALYSES & CONCEPT - HEALTHY HOUSING DESIGN - HOW IT WORKS

Charakteristics of the location Elda, nearby Alicant

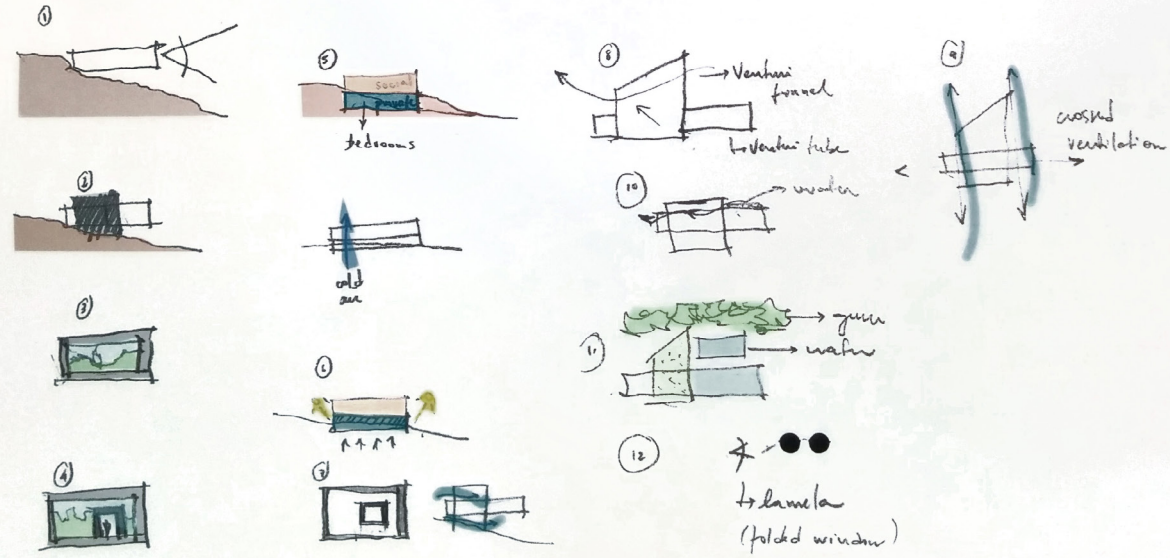
good connection
restaurants
high temperature
Great view
green environment
hotels
airport
swimming pool
villa's
mountains, nice view
sea nearby
golf courses
caves
town nearby

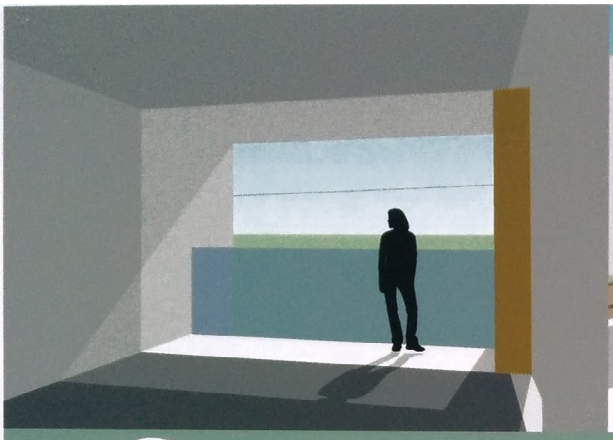


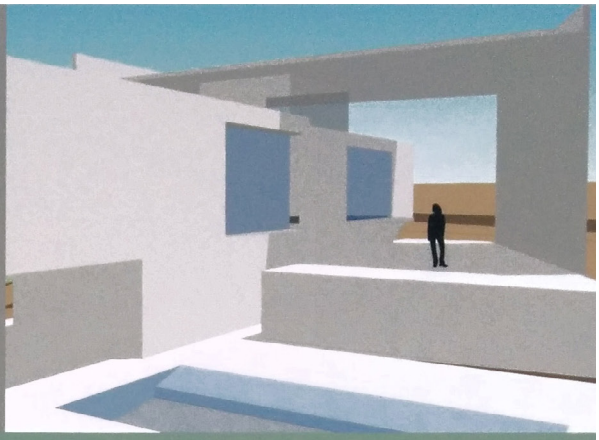
Introduction

This project is about designing a healthy house for a family from Europe. A healthy house means the house needs to be good for the people who live in it, good for the community and good for the earth.

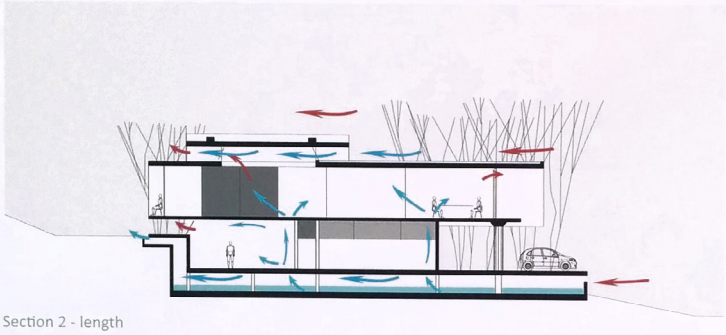
Designed by
Joao Viaro Correa from Brazil
Benno Schmitz from Germany
Eileen Dekker from Holland
Annabel Mooren from Holland
Ruby Witschge from Holland



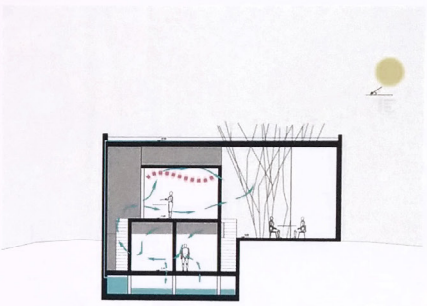




Ventilation/cooling system



Section 2 - length



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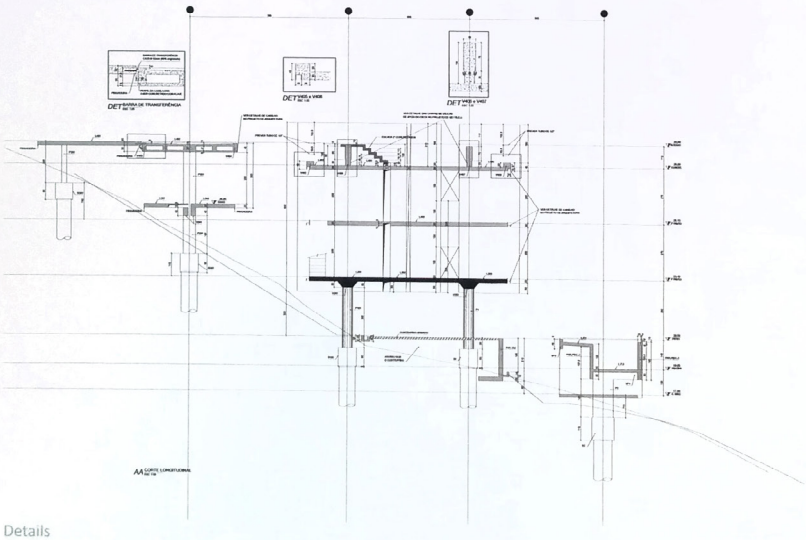
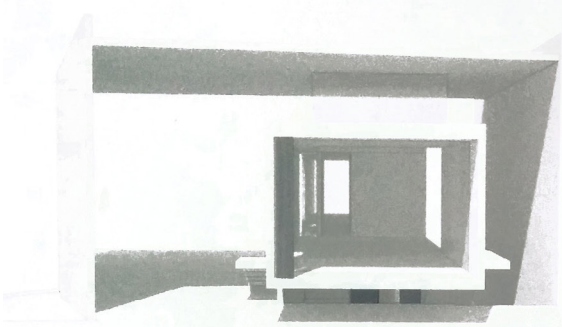
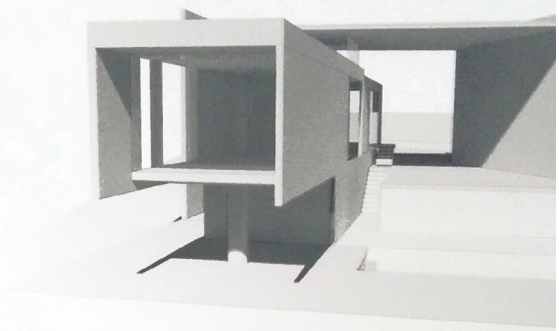


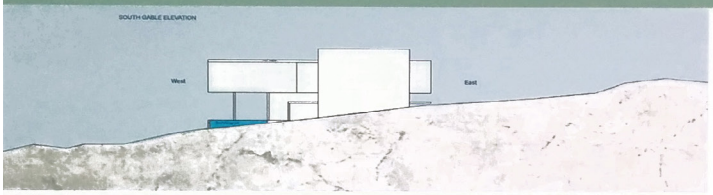
Details

Chimney aspirator

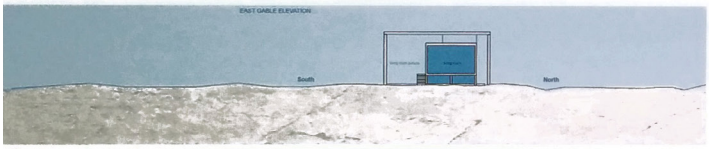




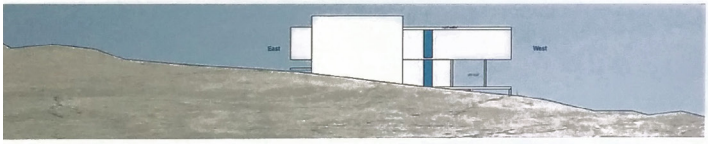
ANALYSES & CONCEPT - **HEALTHY HOUSING DESIGN** - HOW IT WORKS



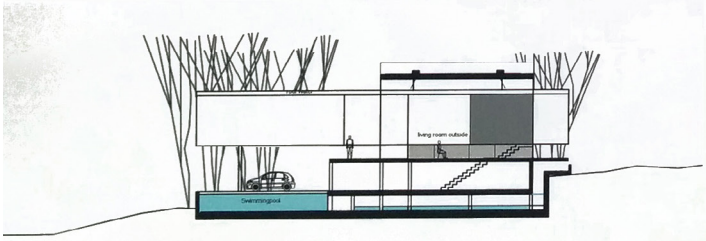
Elevation 1 - south



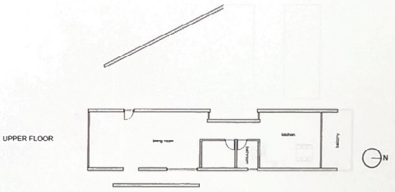
Elevation 2 - south

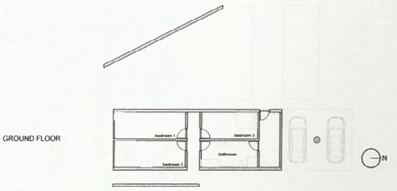


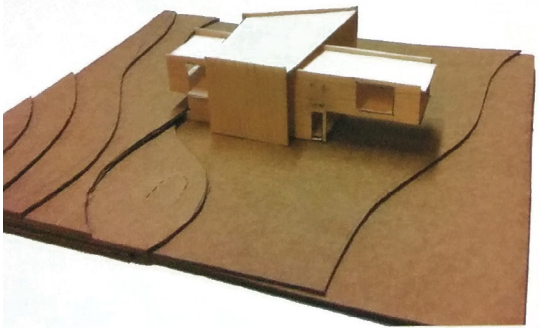
Elevation 3 - south

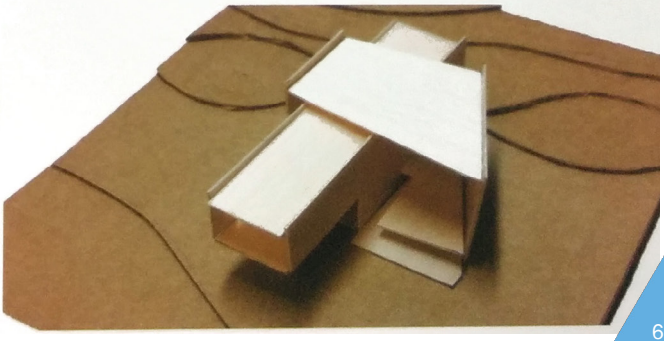


Section 1 - length

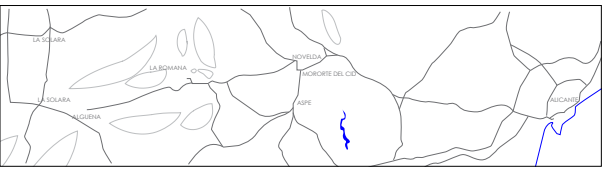




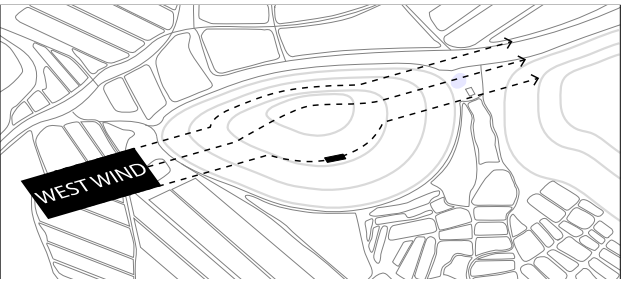


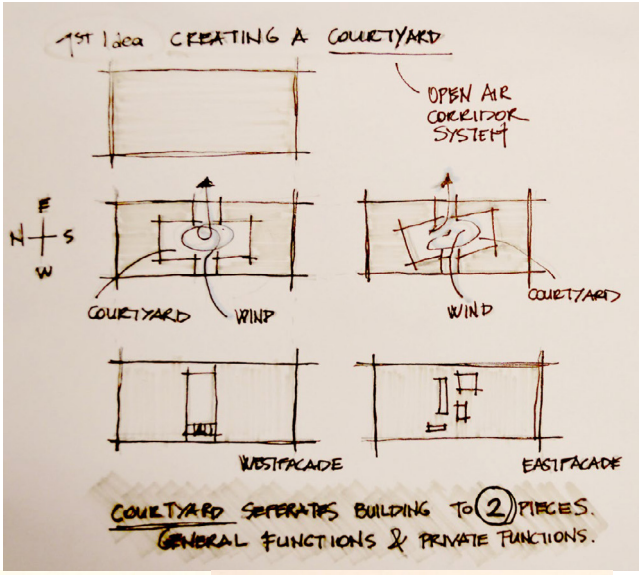


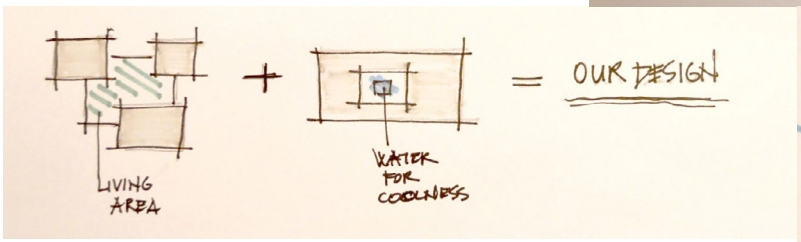
LOCATION

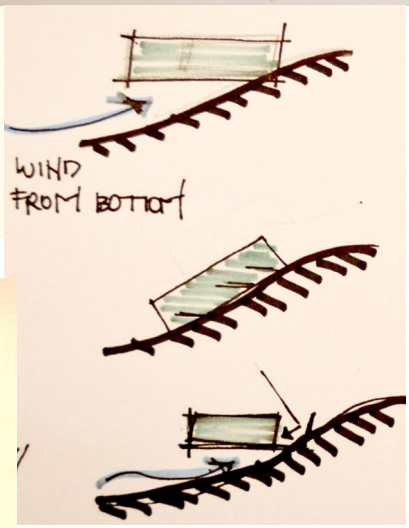


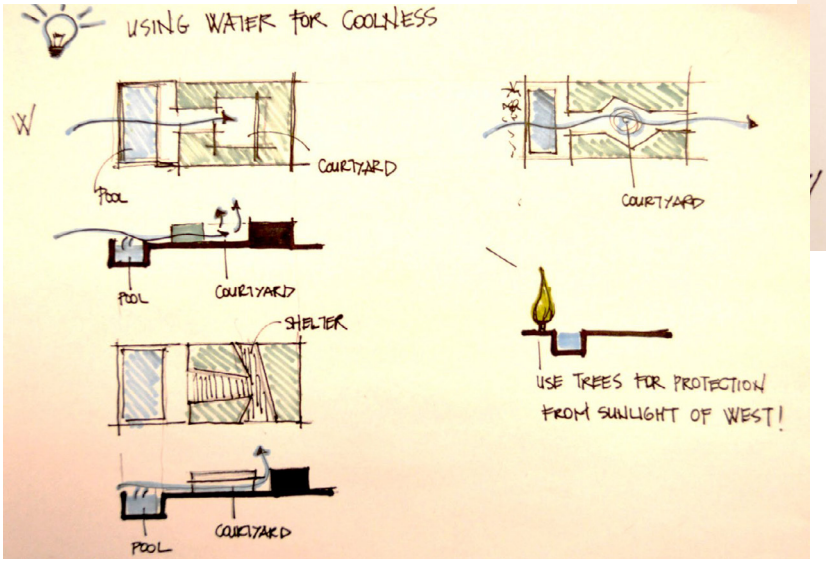
WIND



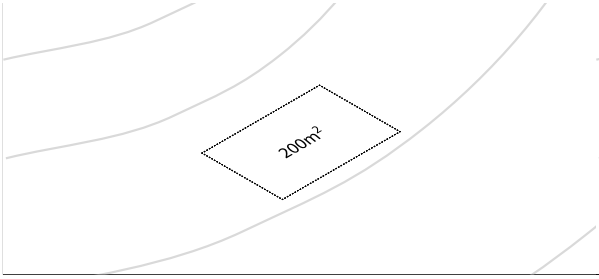








PLOT



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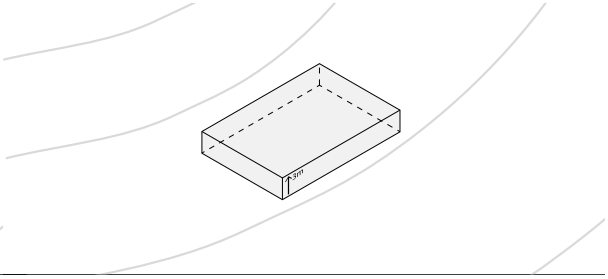
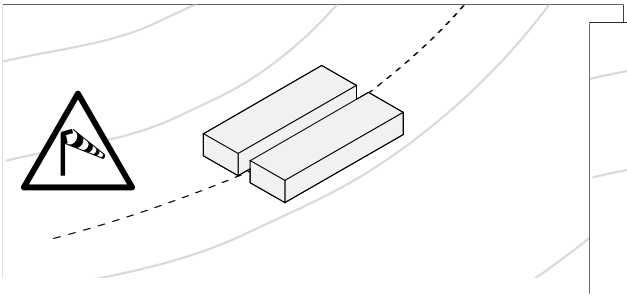
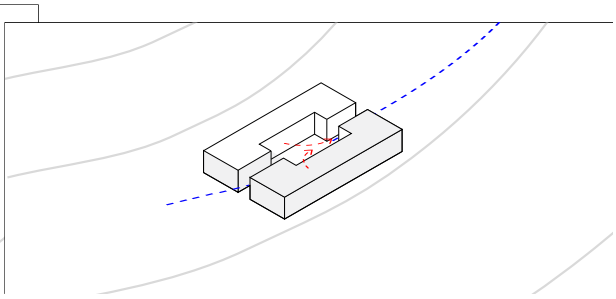


WIND

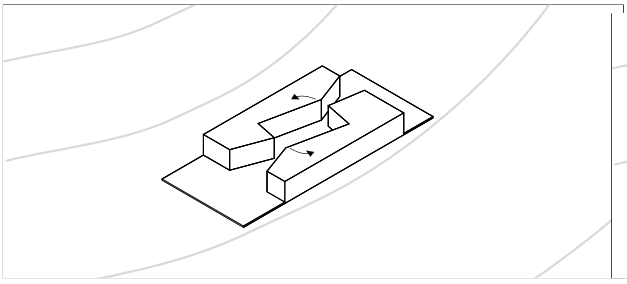


WIND PULL

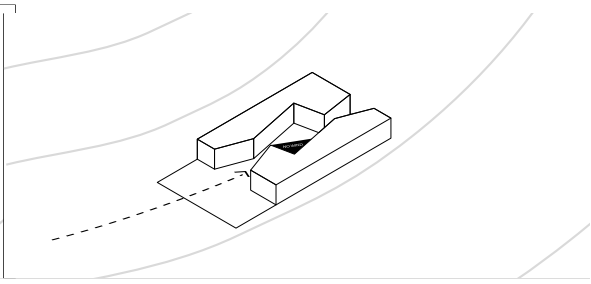


TWIST

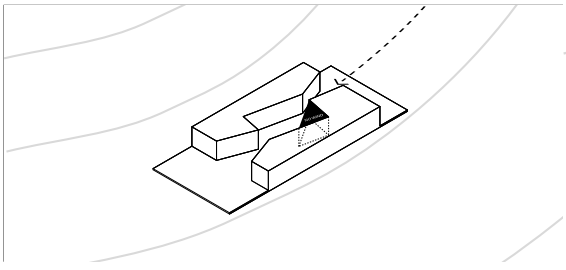
WEST WINDLESS



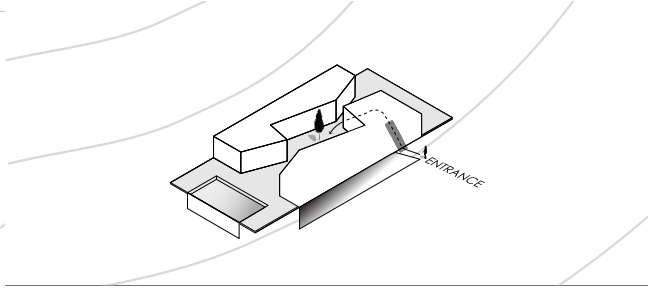
EAST WINDLESS



ENTRANCE



CAR



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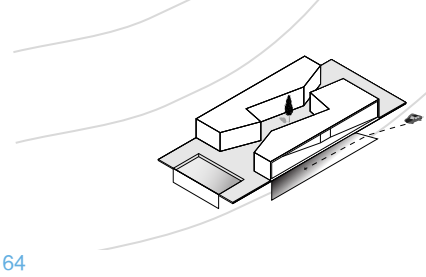
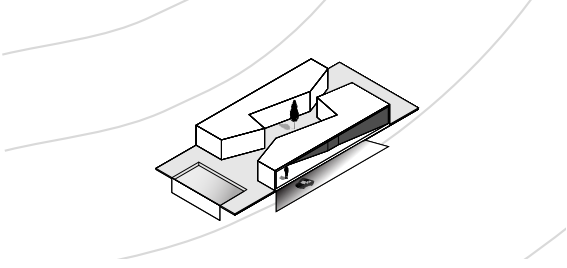
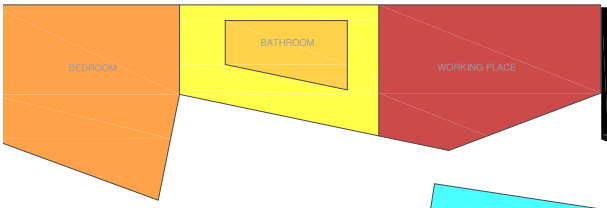
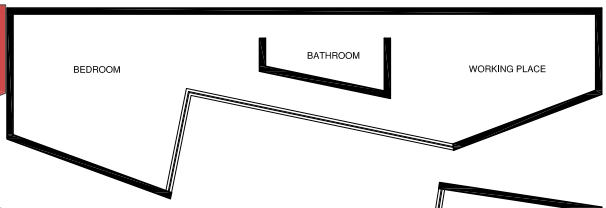
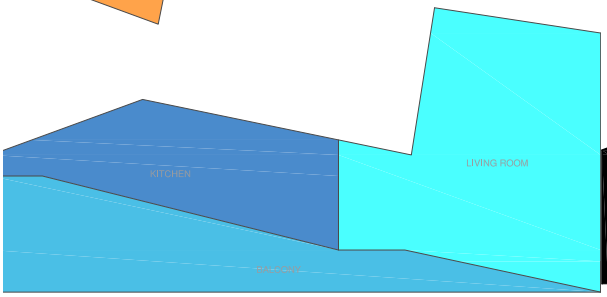
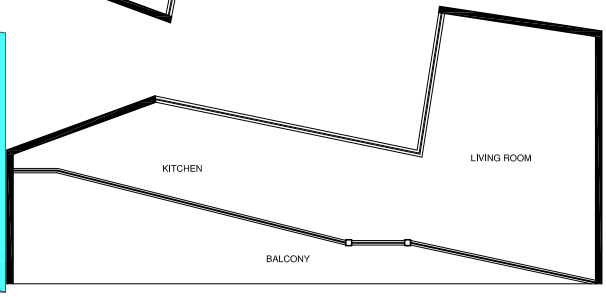


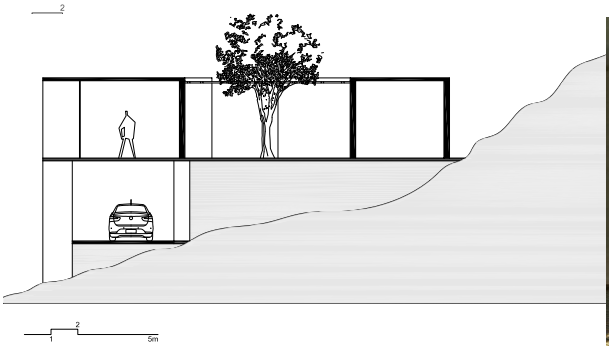



BEDROOM
BATHROOM
WORKING PLACE

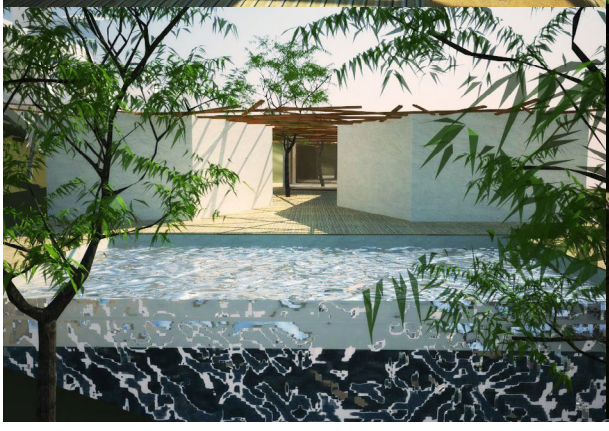

BEDROOM
BATHROOM
WORKING PLACE

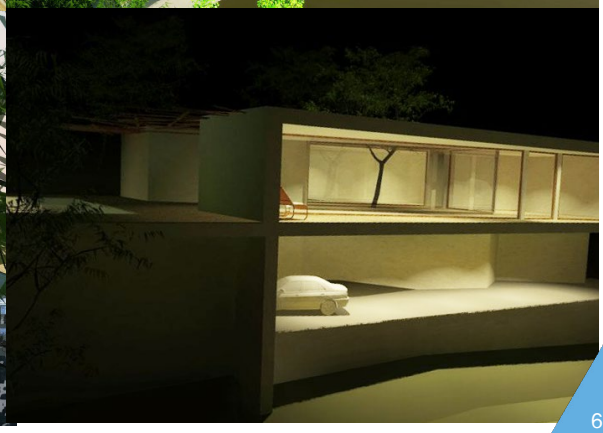

KITCHEN
LIVING ROOM


KITCHEN
LIVING ROOM
BALCONY


2
1
2
5m


2
1
5m





BERG, Sven

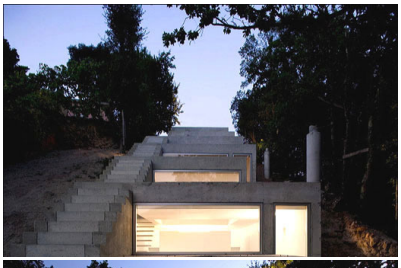
WESSELIUS, Devin

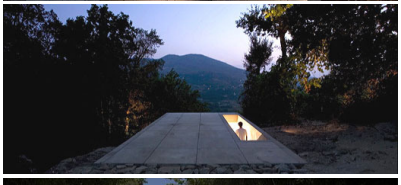
HESTERMAN, Wouter

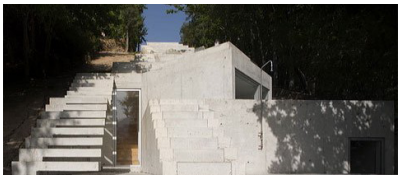
JOBIM PINHEIRO, Pedro Savio

EWALTS, Lynn

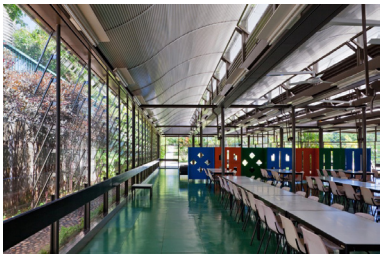
Alvaro Siza, Tolo House



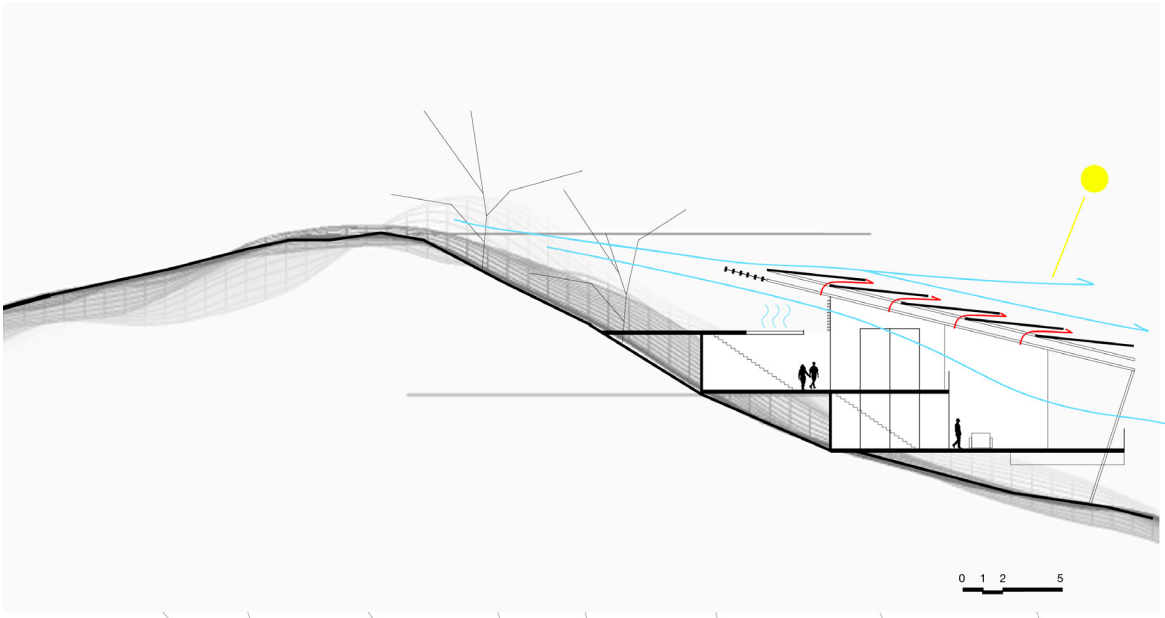




Lele, Hospital Sarah



Renzo Piano, PUnta Nave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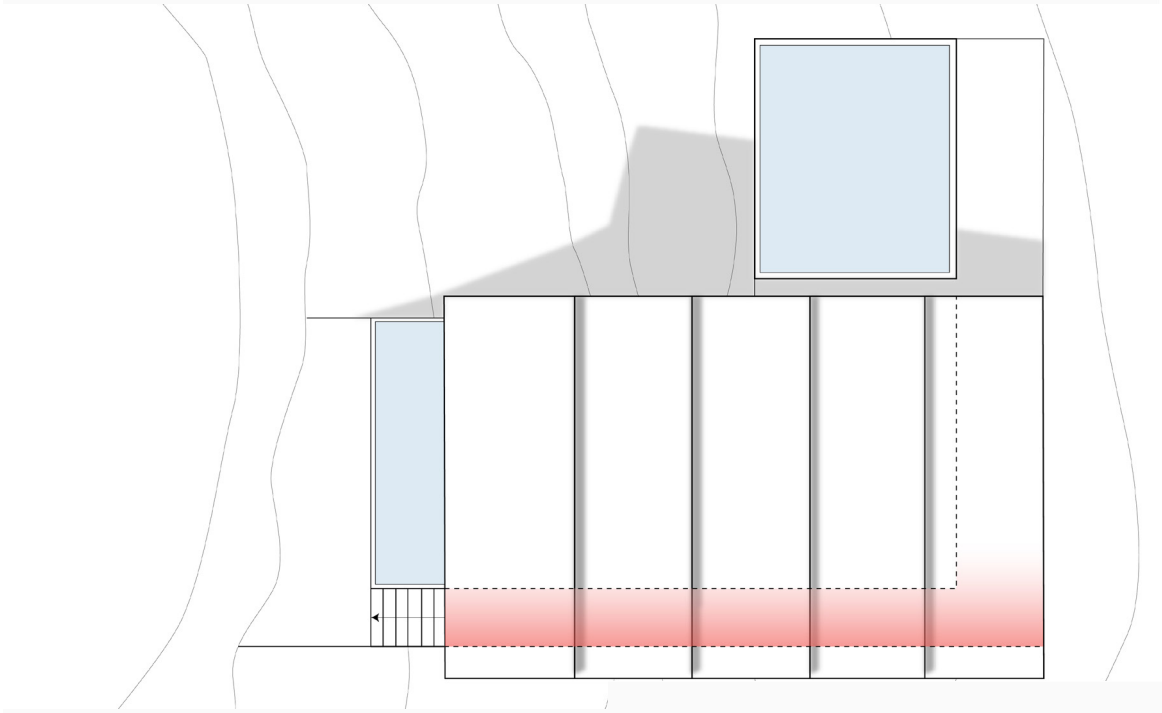

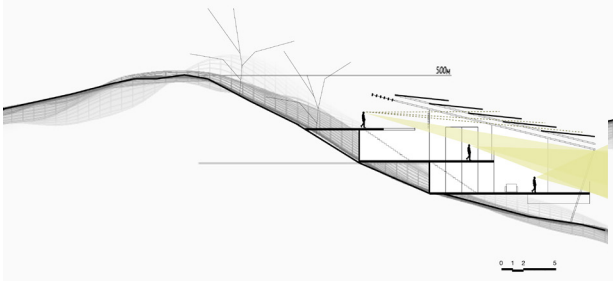
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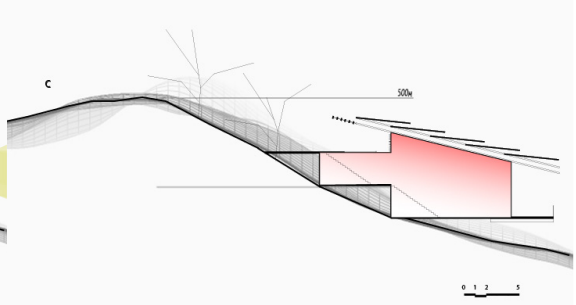
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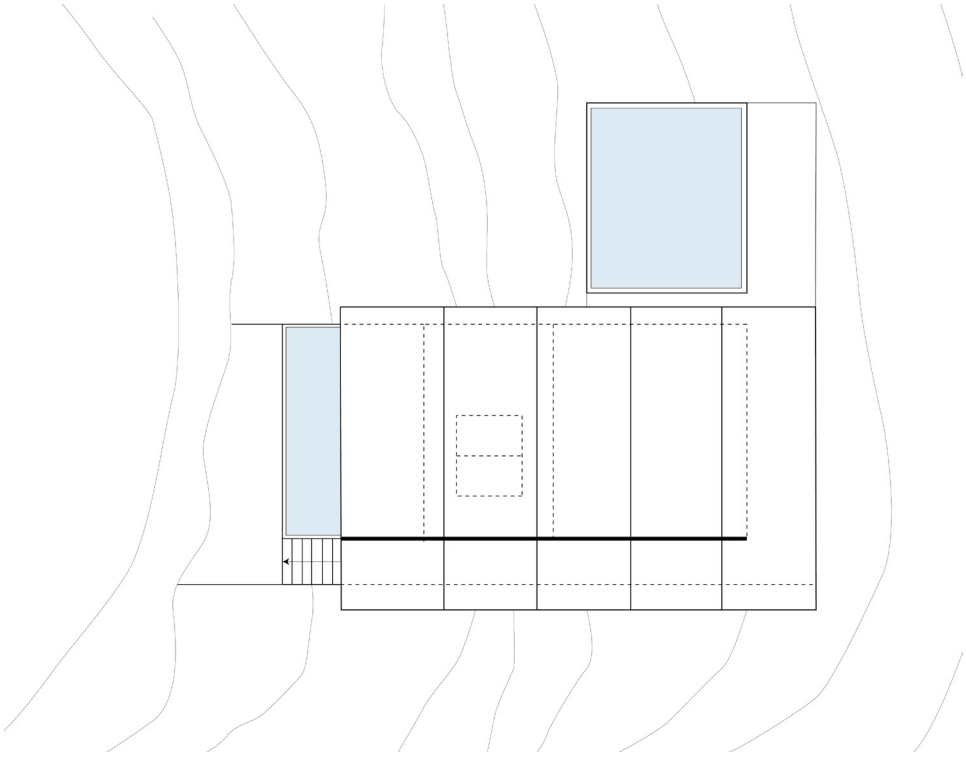
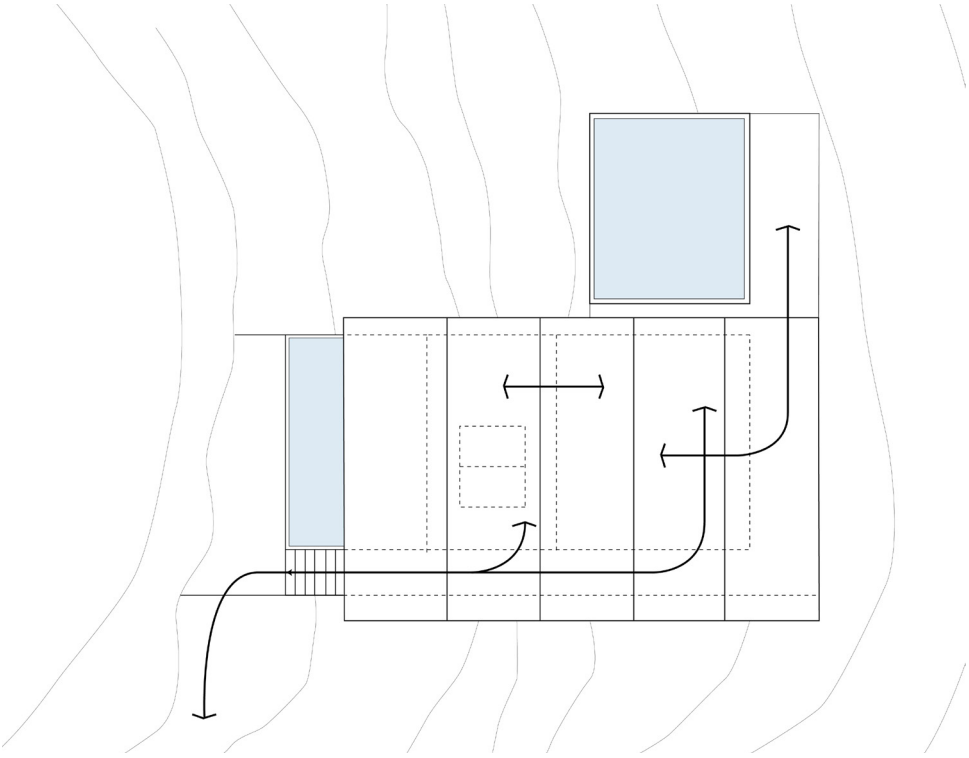
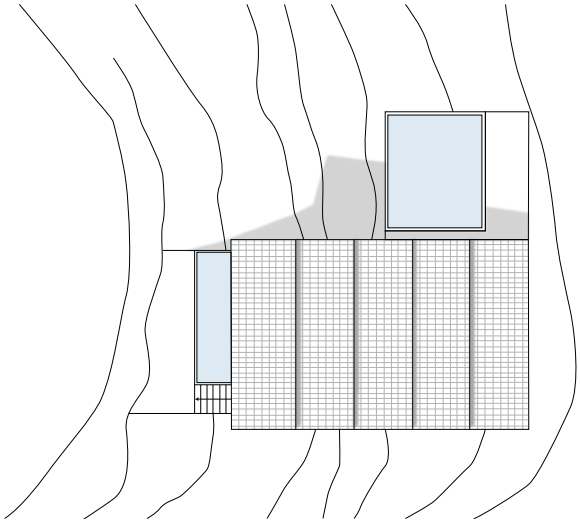
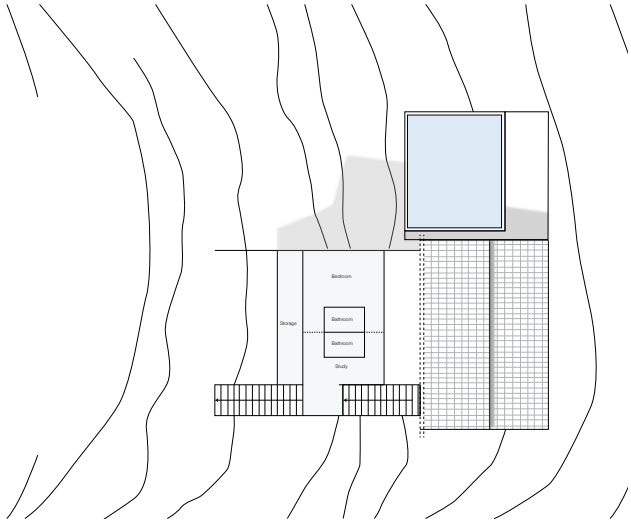
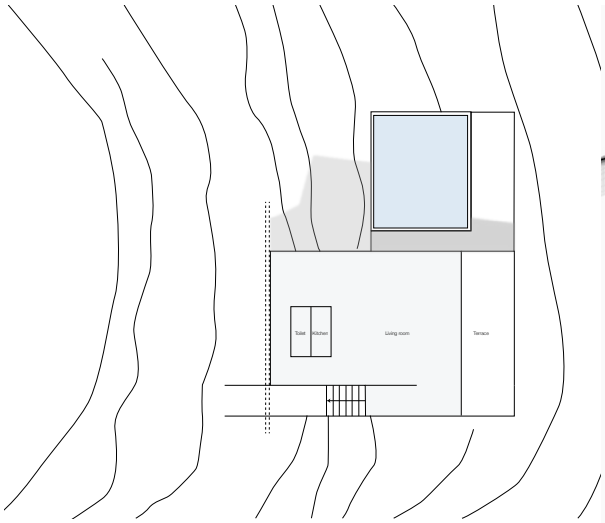
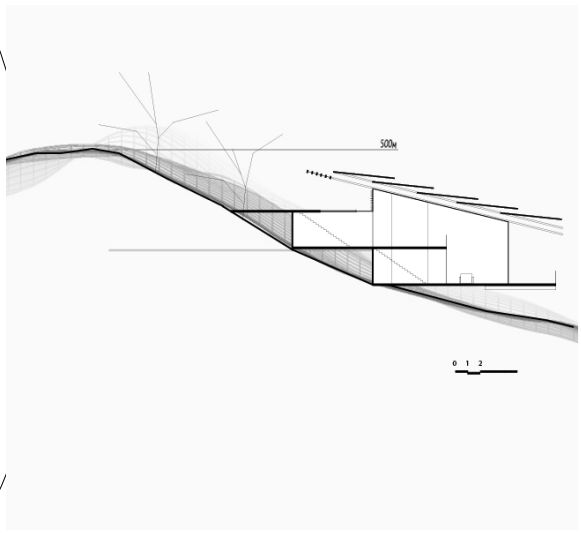







Bedroom
Storage
Bathroom
Bathroom
Study


Toilet
Kitchen
Living room
Terrace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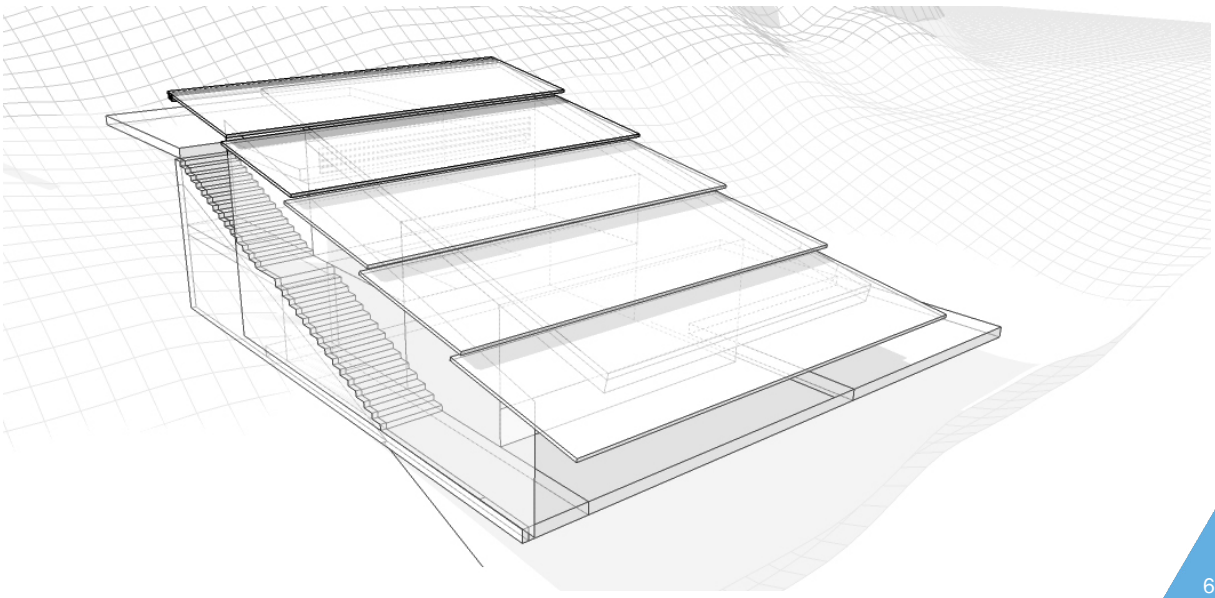


INTERIOR TERRACE.

//1st PRICE

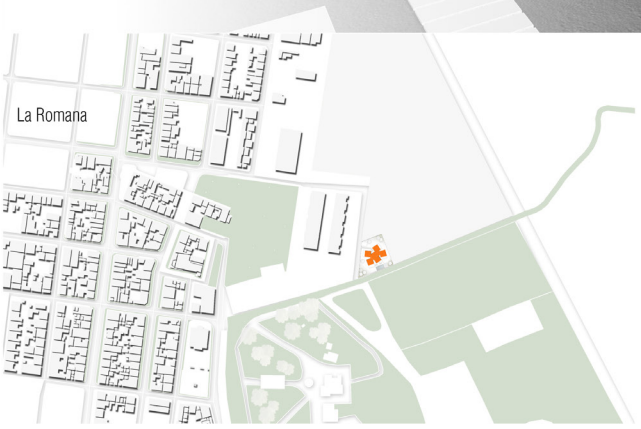
KAUFMANN, Julia
ZIMMERMANN, Linda

Floorplan 1_100

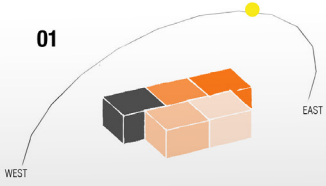
7TH HEALTHY HOUSING AWARD

Julia Kaufmann & Linda Zimmermann Beuth Hochschule für Technik Berlin

Interior terrace



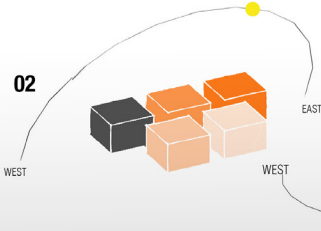
01



5 FUNCTIONS

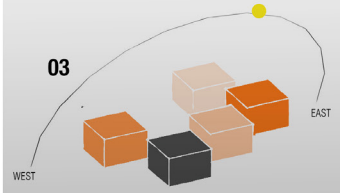
- LIVING
- KITCHEN
- WORK & HOBBY
- MASTER BEDROOM & BATH
- GUEST & BATH

02



CUBES POSITIONED WITH A DISTANCE TO USE WIND AS NATURAL VENTILATION AND COOLING

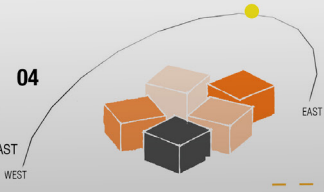
03



POSITION OF CUBES/ FUNCTION ACCORDING TO TIME DURING THE DAY WITH MOST LIGHT AND WHEN IT IS MOSTLY USED

- LIVING - evening - WEST
- KITCHEN - morning and evening - EAST AND WEST
- WORK & HOBBY - all day
- MASTER BEDROOM & BATH - morning and night -EAST
- GUEST & BATH - morning and night - east

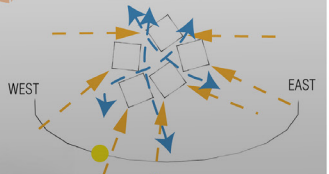
04



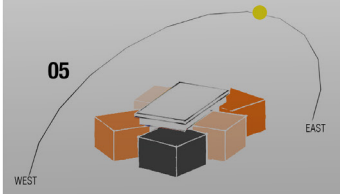
ORIENTATION OF THE CUBES DIAGONAL TO THE AXIS OF THE MOST AMMOUNT OF SUN DURING DAY

LESS INTENSE RADIATION DUE TO ANGLE OF WALLS

ENCLOSED AREA THAT WILL BE SHADED ALL DAY



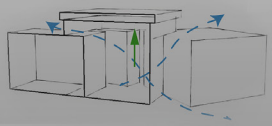
05



CONNECTING OF THE CUBES WITH A CENTRAL PART

AREA IS SHADED BY CUBES AND THE ROOF THEREFORE FUNCTIONS AS AN INTERIOR TERRACE

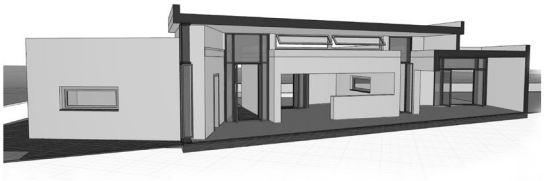
WINDOWS BETWEEN CUBES DELIVER LIGHT, AIRFLOW AND VIEWS OF QUTSIDE

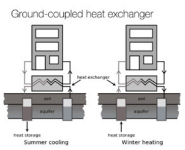


ROOF OVER LLINK IS LIFTED UP TO PROVIDE THERMAL AIRFLOW THAT WILL KEEP IT VENTILATED AND COOL

Julia Kaufmann & Linda Zimmermann Beuth Hochschule für Technik Berlin

Interior terrace





Floorplan 1_100

Energy Efficiency

- natural ventilation through thermal up-wind - high ceiling of central cube produces airflow
- walls and floors work as thermal mass inside and outside - concrete with isolation core
- Ground-coupled heat exchanger for cooling in summer and heating in winter
- solar heating panels - warm water and heating in winter
- photovoltaic panels for energy production

Sustainability

- affordable and/or local materials (concrete, marble, wood)
- long lasting materials - little maintenance needed
- natural cooling and heating
- renewable energies

North 1_100

East 1_100

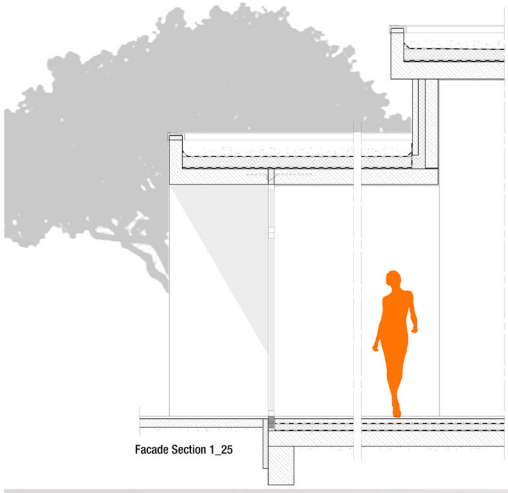
South 1_100

West 1_100

7TH HEALTHY HOUSING AWARD

Julia Kaufmann & Linda Zimmermann Beuth Hochschule für Technik Berlin

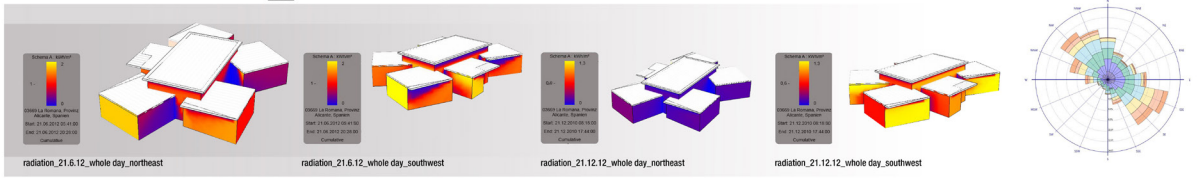
Interior terrace



Facade Section 1_25

Section North-South 1_100

Section East-West 1_100

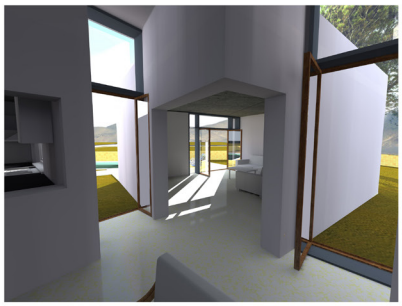


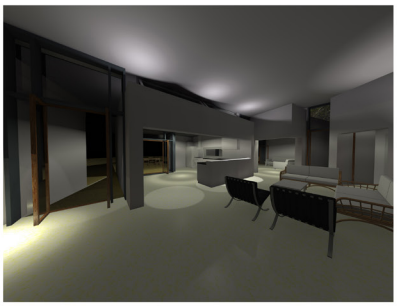
radiation_21.6.12_whole day_northeast

radiation_21.6.12_whole day_southwest

radiation_21.12.12_whole day_northeast

radiation_21.12.12_whole day_southwest





ATRIUM HOUSE.

//MENTION

HECK, Felix
MISCHKE, Robert

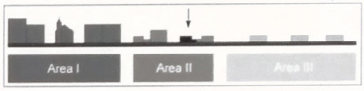
ATRIUM HOUSE

7th Healthy Housing Award
URBAN DEVELOPMENT

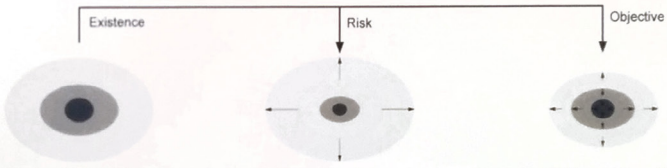
Map 1:500

Map Province of Alicante


Map Areas



Urban Development



- balance between the individual zones
- urban sprawl
- no village center
- more cost for infrastructure
- smooth organic growth in all areas

Mediterranean Architectural History

In the past when there were no ventilating and air-conditioning systems, people had to build with useful regional materials, adequate constructions and suitable design to implement a habitable house. There was just one way to construct and that was sustainable. Therefore we decided zo use this knowledge developed for centuries.

Atrium Houses


Regions with atrium house history


Granada, Spain

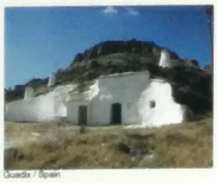

Vaison-la-Romaine, France


Rom, Italy


Sevilla, Spain

Clay Buildings


Regions with clay construction traditions


Guadix / Spain


Harran / Turkey


Marokko

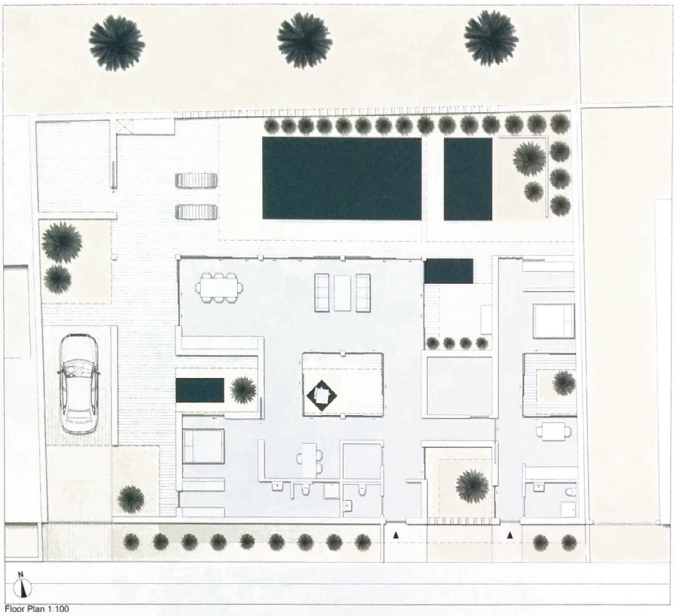

Kano / Nigeria

In order to allow the user the longest possible use of its building, we plan the house at ground level and barrier free. At the same time a ground-level building lowers the building costs.

Robert Mitschke
Felix He

ATRIUM HOUSE

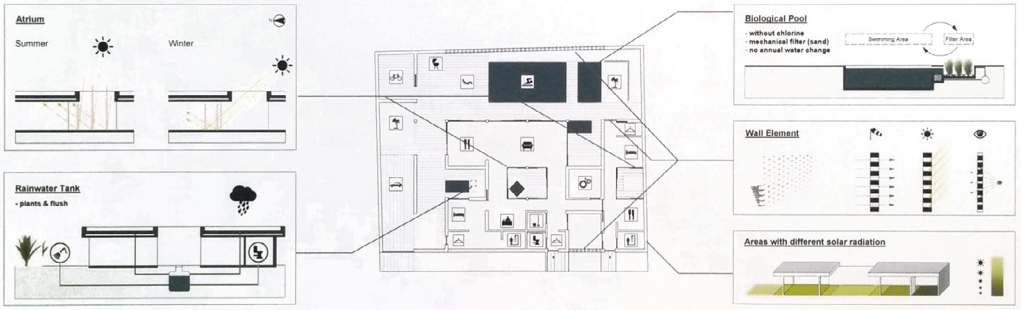
7th Healthy Housing Award
Design



Floor Plan 1:100

Perspective Garden

Perspective Living Room

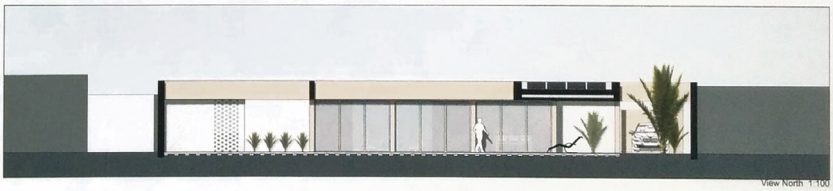


Materials

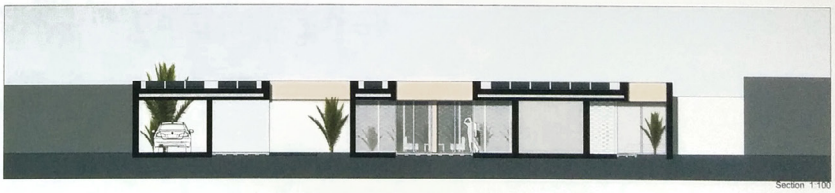
Clay (Walls)
- regional product (Provinz Alicante)
- healthy (humidity balancing, breathable, antiallergic)
- small amount of energy
- large thermal storage mass
- simple processing

Natural Stone / Marmol Crema (Floor)
- regional product (Provinz Alicante)
- antiallergic
- large thermal storage mass
- abrasion-resistant
- recyclable

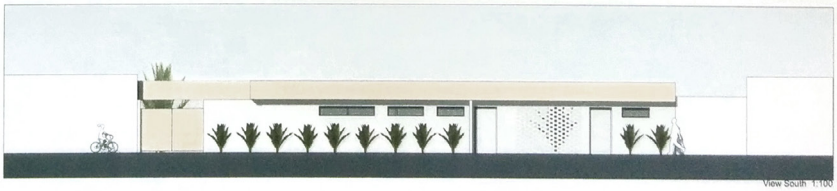
Robinia (Wooden Elemets-Roof,Terrace)
- regional product (Spain)
- european hardwood durability class 1 EN 350-1 (used in- and outdoor)
- recyclable
- CO2 neutral
- low moisture absorption



View North 1:100



Section 1:100



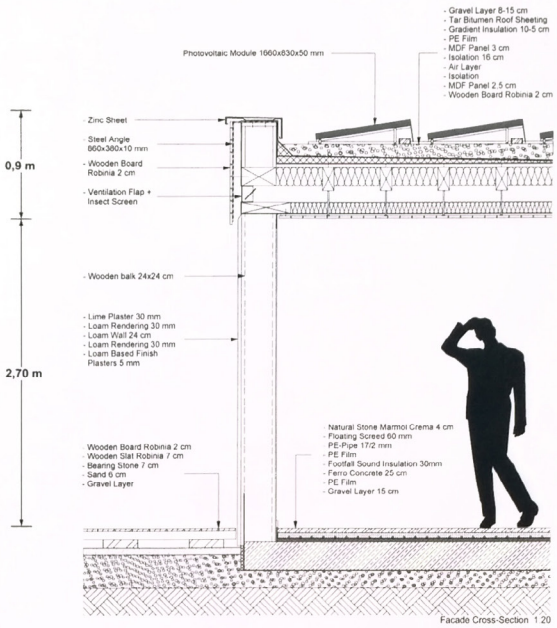
View South 1:100

Robert Mitschke
Felis Heck

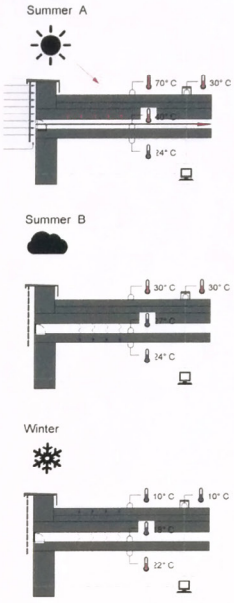
ATRIUM HOUSE

7th Healthy Housing Award
Construction&Energy

Facade View 1:20

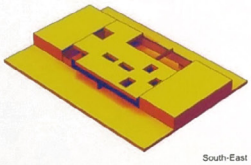


Facade Cross-Section 1:20

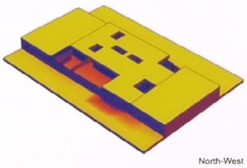


Solar Study

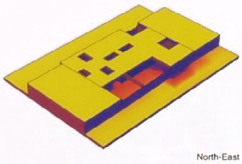
Summer, Sunrise to Sunset



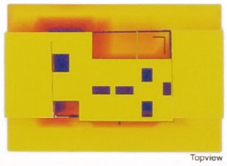
South-East



North-West

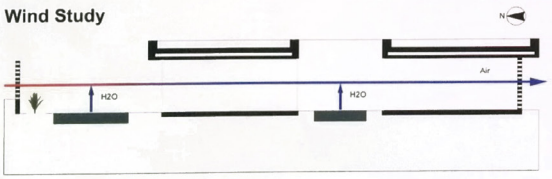


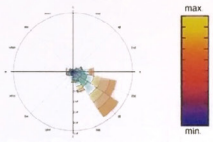
North-East



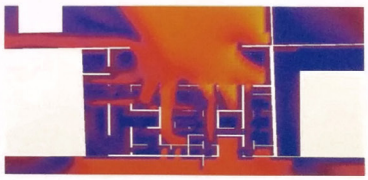
Topview

Wind Study

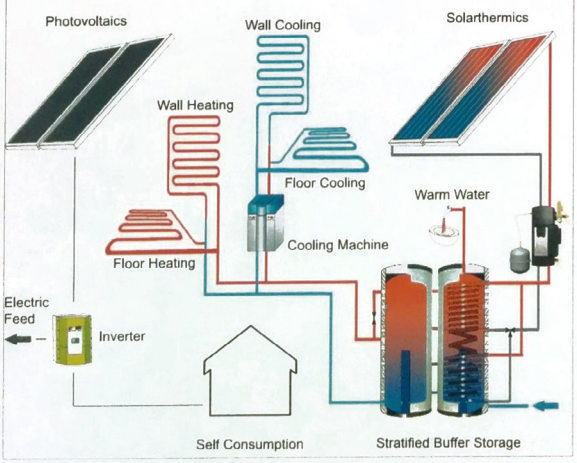




Windsituation May to October
8 am to 8 pm



Energy & Building Technology



Parameter

Plot: 570 m²
Roof: 360 m²
Entire Living Space: 190 m² / 684 m³
Living Space A : 141 m²
Living Space B : 49 m²
Roofed Outdoor Area: 170 m²

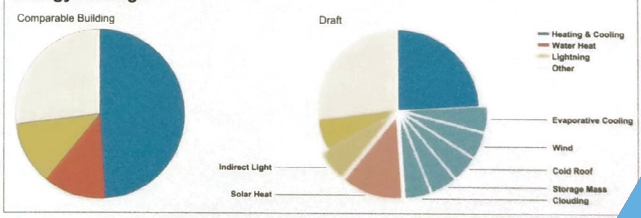
Estimated Building Cost

210.000 € (without PV)
220.000 € (PV for self consumption)
300.000 € (PV on the entire roof)

Photovoltaics

For self consumption (4500KWh/a):
= 20 m² = 8.000 €
ca. 0,18 €/kwh = 810 €/a
Amortisation: 10 Years
On the entire roof:
340 m² = 75.000 KWh/a = 90.000 €
Remuneration 0,12-0,45 €/KWh
= 9000 - 33800 €/a
Amortisation: 3-10 Years

Energy Savings



LIVING OUTSIDE, INSIDE.

//MENTION

KARNETZKI, Marta
SÜNDER, Frank

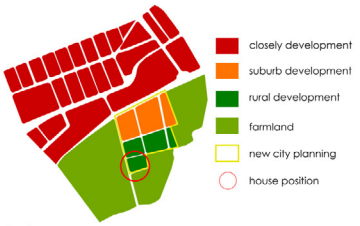
living outside, inside

7th healthy housing award
50+ north european in spain

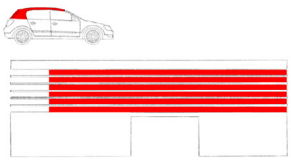
designed by
Frank A. Sünder
Marta Karnetzki

plan of Medio Vinalopó

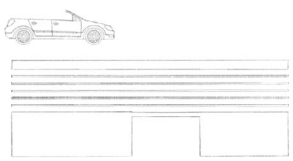
aerial view of elda



city planning

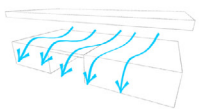


closed



open

cabrio effect

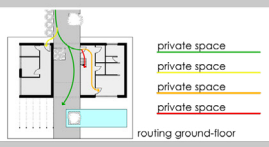


wind permeability

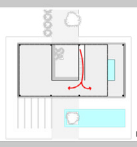
sun handling

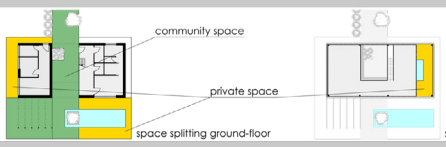
north elevation 1:100

east elevation 1:10



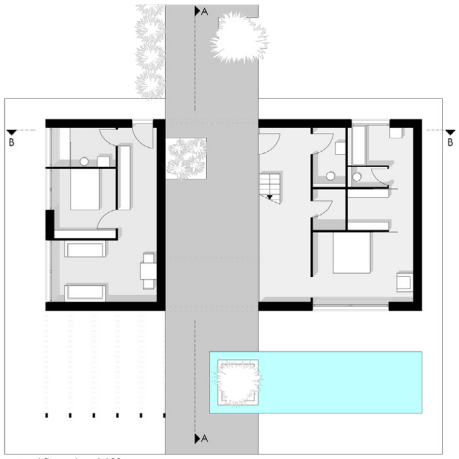
routing ground-floor


routing 1. floor

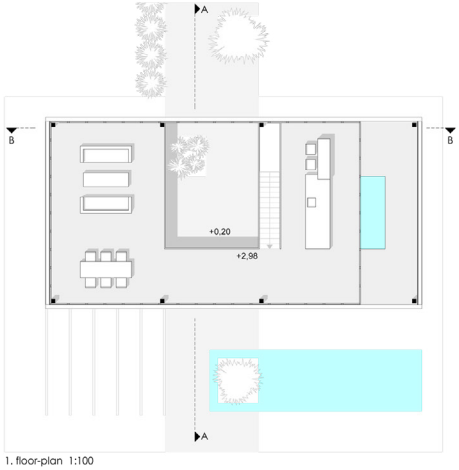


space splitting ground-floor

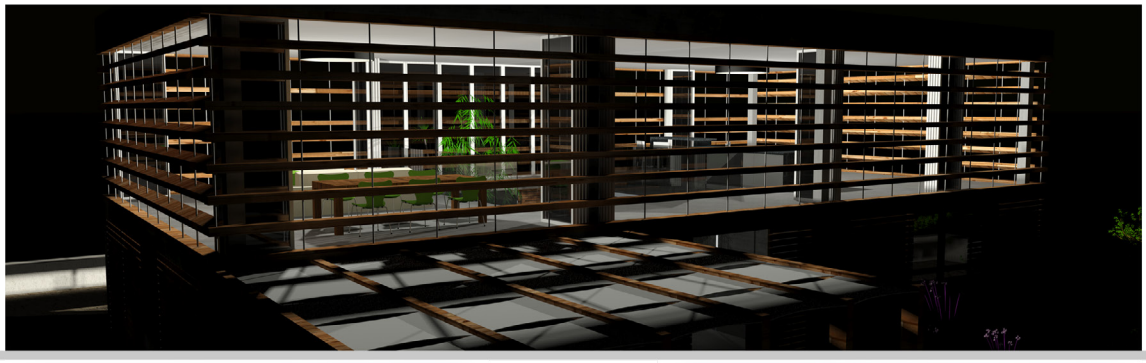
space splitting 1. flo



ground-floor-plan 1:100

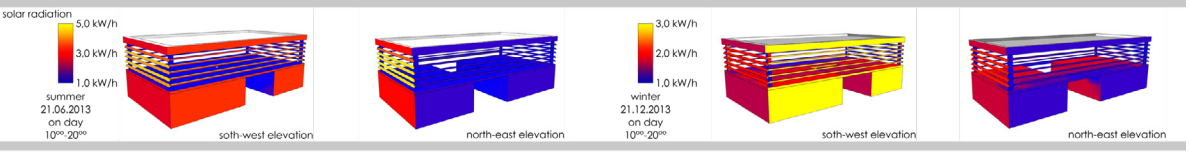


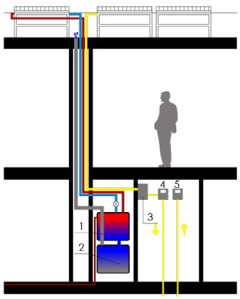
1. floor-plan 1:100




south elevation 1:100


west elevation 1:100

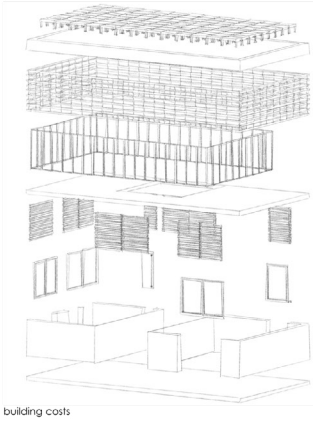




domestic installation

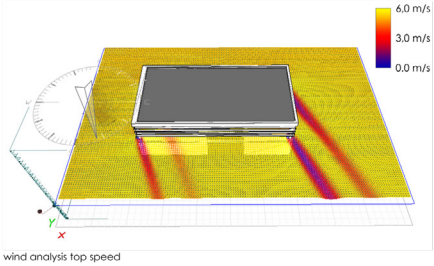
- return flow line hot
- flow line cold
- liquid waste/rain water
- elektronic
- pump

1	hot-water heater
2	filter plant
3	inverter (D.C. to A.C.)
4	feed counter
5	reference counter

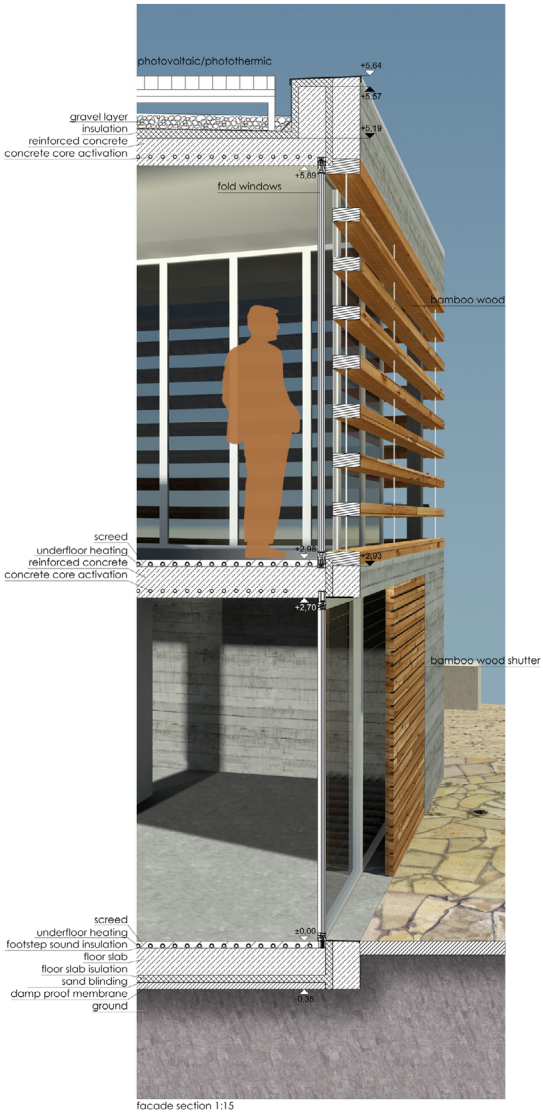


building costs

2/3 photovoltaic	103.000,00 €
1/3 photthermics	43.000,00 €
roof	31.800,00 €
bamboo lamellars	15.700,00 €
fold windows	29.000,00 €
ceiling	18.100,00 €
ceiling concrete	5.100,00 €
underfloor heating	6.500,00 €
concrete core activation	6.500,00 €
bamboo shutter	2.300,00 €
windows/doors	15.000,00 €
photovoltaic	10.500,00 €
floor slab	31.500,00 €
underfloor heating	8.500,00 €
floor slab	23.000,00 €
total costs	299.900,00 €



wind analysis top speed



facade section 1:15

section B-B 1:100

section A-A 1:100

SHADE HOUSE.

GAMMRATH, Lisa

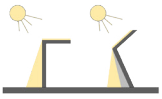
shade house

7th Healthy Housing Award - Alicante

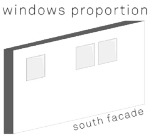
lisa gammrath
BEUTH HOCHSCHULE FÜR TECHNIK BERLIN
University of Applied Sciences
Prof. Dipl.-Ing. G. Glass Dipl.-Ing. R. Demel

ideas

wall orientation



windows proportions

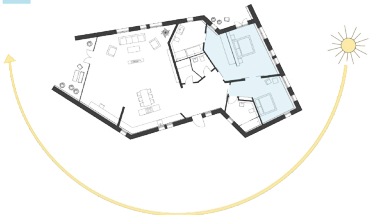


ground plan
1:100

daytime - using - analysis

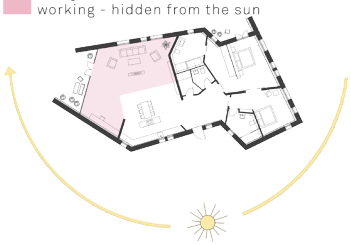
morning

bedroom - waking up with the sun



noon

living room - back area
working - hidden from the sun



evening

kitchen - hidden from the sun
dining area - eating during the sunset

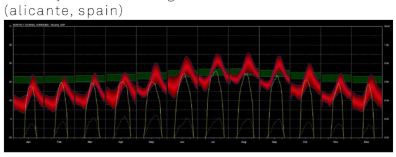
shade house

7th Healthy Housing Award - Alicante

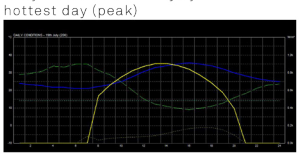
lisa gammrath
BEUTH HOCHSCHULE FÜR TECHNIK BERLIN
University of Applied Sciences
Prof. Dipl.-Ing. G. Glass Dipl.-Ing. R. Demel

analysis

monthly diurnal averages
(alicante, spain)

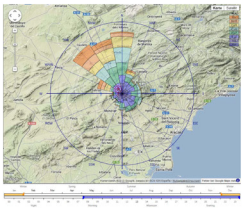


daily conditions - 19th july
hottest day (peak)

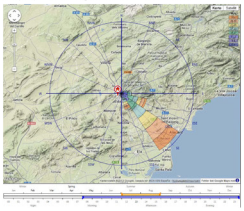


comfort
temperature
direkt solar
wind speed
diffuse solar

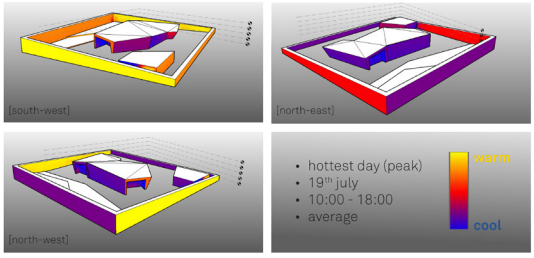
wind direction **winter**
01. december - 31. january | 08:00-00:00



wind direction **summer**
01.july - 31. august | 08:00-00:00

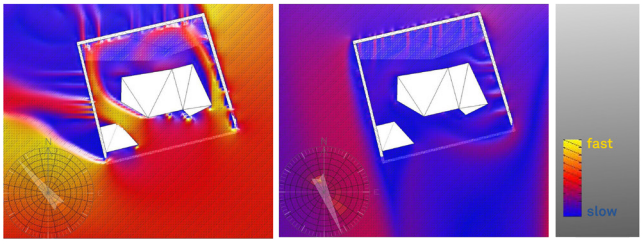


sunlight analysis



wind analysis

summer
winter



materials

facade
face concrete
white

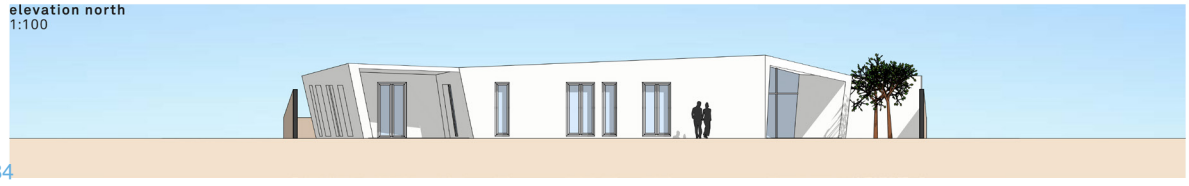
flooring
natural stone
light

window
double pane
glazing

bathroom
natural stone
light

terrace
tiles
light

elevation north
1:100

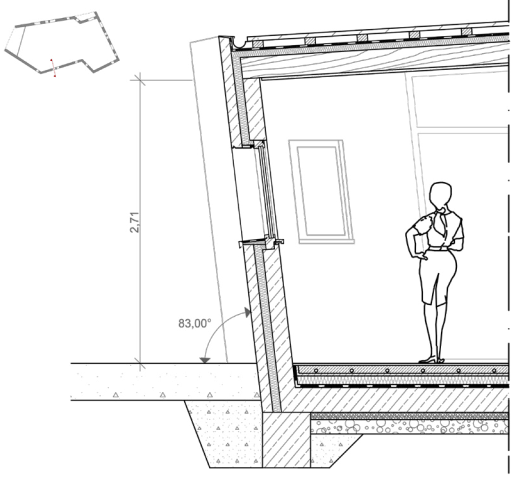


shade house

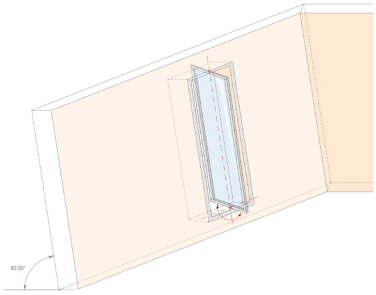
7th Healthy Housing Award - Alicante

lisa gammrath
BEUTH HOCHSCHULE FÜR TECHNIK BERLIN
University of Applied Sciences
Prof. Dipl.-Ing. G. Glass Dipl.-Ing. R. Demel

section
1:20

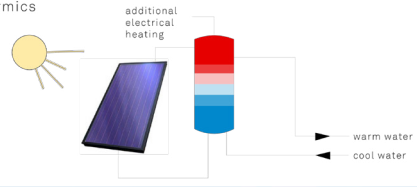


hung windows



section

building systems
solarthermics



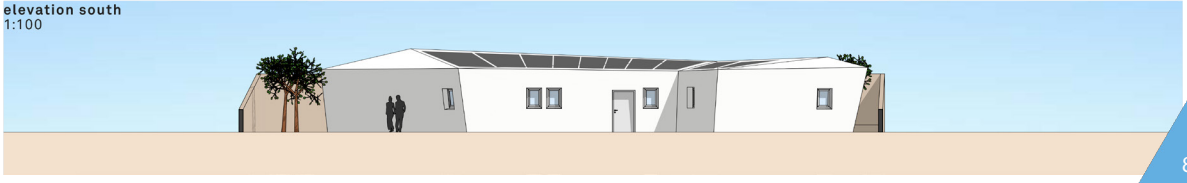
costs

example object:
residential building, high level, 2013, alicante
- living space 190 m²
- plot 1.300 m²

shade house:
- living space 205 m²
- plot 785 m²

259.900 €	77.970 €/m³	155.940 €/m²	215.717 €/m²
living space	gross volume	gross floor area	usable space

elevation south
1:100



7th HEALTHY HOUSING AWARDS 2012/2013