Universidad de Navarra | CÁTEDRA MADERA

TIMBER CONSTRUCTION COURSE

19 to 23 August 2019

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Fondo Europeo de Desarrollo Regional (Feder)
This project is funded by the
European Regional Development Fund (Feder)
Ce projet est financé par le
Fonds Européen de Développement Régional (Feder)

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-10:00	Bus to Pamplona	Master class	Master class	Master class	Bus to Pamplona
10:00-11:00	**Case Presentation**	**Material & Spatial Order**	**Plan & Spatial Section**	**Detail & Image**	**Pecha Kucha Presentation**
11:00-12:00	Project site	Design	Design	Design	Jury
12:00-13:00	Project site	Design	Design	Design	Jury
13:00-14:00	Bus back to Bertiz	Design	Design	Design	Jury
14:00-16:00	*lunch*	*lunch*	*lunch*	*lunch*	*lunch*
16:00-19:00	**Narrative**	Visit	Visit	Visit	

Day 1 | Monday, 19 august

1. Case Presentation: an explanation of the task to be developed during the workshop. Following the presentation of Nasuvinsa, the group will have time to visit the site.

2. Narrative: the analysis of the opportunities and constraints of the project will look for design strategies, creative processes, recurrent concerns and topics, ways of dealing with the project, etc. This analysis will come up with a clear concept that can be developed architecturally. Outcome: one written paragraph 150-200 words.

Day 2 | Tuesday, 20 august

3. Material & Spatial Order: following the timber construction class the groups of students are to carry out a thorough research on timber products in order to materialize their future proposal. Outcome: selection of timber products and the spatial configuration of their proposal by series of sketches.

Day 3 | Wednesday, 21 august

4. Plan & Spatial Section: sitting around a large size sheet of paper, the groups of students are to discuss verbally and, overall, graphically the plans and sections of their proposal. Outcome: a large sheet of paper with the first approximations to plans and sections.

Day 4 | Thursday, 22 august

5. Detail & Image: The groups are to develop a detail of the encounter between timber material and glass under day light. At the same time, the group will produce a drawing sketching possible trajectories that the final image of the project can take. Outcome: 1:10 sectioned axonometric and a final image of the project.

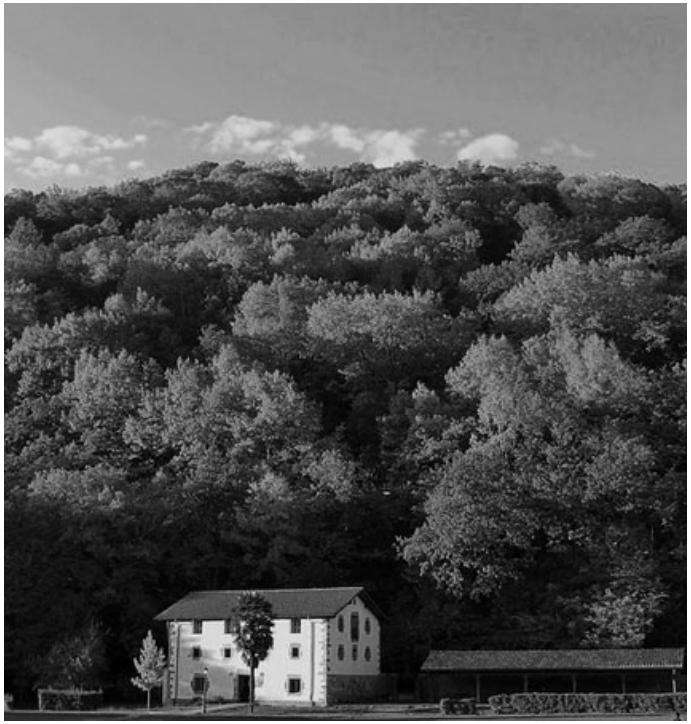
Day 5 | Friday, 23 august

6. Pecha Kucha Presentation: The day will be dedicated to the presentation of the Pecha-Kucha to the jury. It will last a maximum of five minutes.

DEFINING PRACTICE

Bertiz Project Workshop

Case Description



"I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived..."

"What is the use of a house if you haven't got a tolerable planet to put it on?"

Henry David Thoreau

Nestled in the heart of the Navarra mountain, in the center of the Cantabrian Valleys, we find a space of singular beauty. The Natural Park "Señorío de Bértiz" rises over the untamed Pyrenean mountains, covering the hillsides of the valley with an exuberant forest. Captive in this magnificent natural environment we have the opportunity to emulate Thoreau and "go to the woods to live deeply".

Now, although living immersed in nature is an undeniable attraction, we observe how more and more people live in cities. The city is becoming, little by little, our natural habitat. This is reflected in the latest report of the United Nations where it is expected that the number of inhabitants in cities will continue to grow to reach two thirds of the world population by the year 2050. This situation often leads to an uncontrolled growth of the city that invites us to consider again the words of the American philosopher: "What is the use of a house if you haven't got a tolerable planet to put it on?"

Faced with this unique context, and thanks to the environmental awareness of today's society, timber construction has experienced a global renaissance. The improvements that this technology has experienced through the creation of elements that allow us to build in a more sustainable and efficient way make wood the ideal material for the future of construction. Even more, with the help of this magnificent material, we may be able to transfer some of the values that we find in the extraordinary forests of the Bertiz Natural Park to the city.

We now move to the southeast of Pamplona where we will design a collective housing building for young people. Commissioned by the Aranguren City Council the Entremutilvas Partial Plan aims to provide the site with residential use, completed with offices, garages and shops.

This plan establishes a series of regulations that we will preserve in the development of this exercise. We add the compulsory use of timber structure as a additional requirement, which can also be extended to the rest of the construction elements. The final purpose of this series of conditions, and ultimately of the exercise proposed, is to awaken a reflection on the construction with wood and its relationship with the type of collective housing.

The program consists of 35 VPO houses for young people. We have in the building the possibility to develop Ground Floor + 4 Upper Floors with a bay of 13 meters and a basement (20 meters of bay). For this, we have a total of 5800 m² of which 3700 m² are arranged on the upper floors, where we will design: 22 two-bedroom apartments (minimum of 70 m²), 8 three-bedroom apartments (at least 90 m²), 4 one-bedroom apartments (at least 60 m²) and 1 four-bedroom apartment (at least 110 m²). The necessary space for corridors, rest areas, elevators and stairs will be taken into account. We will also project a single basement with 1 garage space per house and 1 storage room per house that may be in the basement or on the ground floor. The rest of the space on the ground floor will be used for community neighborhood uses.

THE TREE OF THREE TRUNKS

The tree of the three trunks emerges from the intention to use timber as a constructive and structural system in the most efficient and rational way by choosing different "engineered timber products" so that its behavior is optimal depending on the requirements to which it should adapt.

Furthermore, three lifts and stair cores built in CLT for their rigidity and resistance organize 35 houses, consequently 3 houses per landing and 9 houses per floor.

The supporting structure is based on posts and beams of glulam timber made of spruce, similar to branches operating at compression and bending. In addition, the slab made of CLT has a concrete compression layer due to its greater thermal inertia, acoustic insulation and resistance to fire, therefore the residential program will be developed with the greatest flexibility. Moreover, the façade that represents the foliage of a tree will be composed by cross boards of larch due to its adequate and functional response to outdoor conditions. Two of the three trunks or cores are located facing the northeast and the other one southeast.

Similarly, the terraces are oriented to the south to obtain greater solar gains in winter and grant the increase in thermal energy of the building as it absorbs incident solar radiation. The access from the outside is directly from the street ensuring a correct accessibility and it enables a natural ventilation in the basement used as garage.

The ground floor together with the basement, is conceived in concrete with the objective of absorbing the necessary spans for the various programs that can be housed there, without conditioning the structural distribution in timber of the upper floors. In this way, a concrete podium on which the three trunks arise, house 35 VPO timber dwellings.

The five storey building demonstrates that solid timber construction is environmentally sustainable by reducing C02 levels and nearly-zero consumption.

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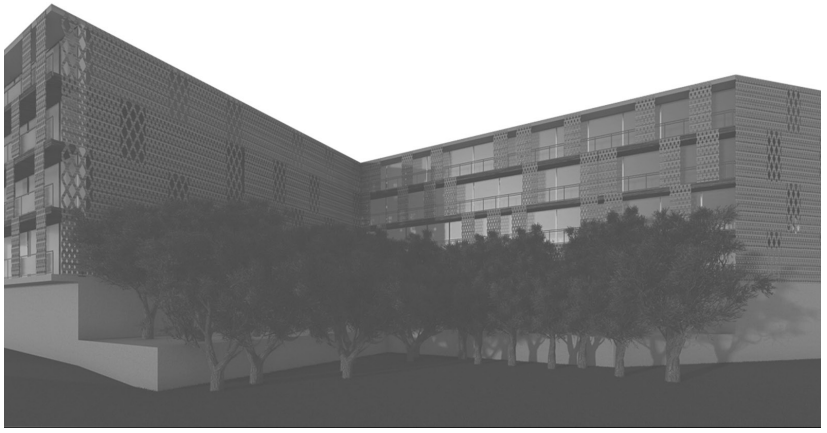
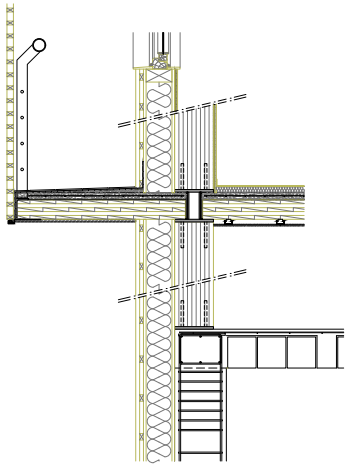
TEAM

Mark Arbizu, Andrea Giammattei, Mª José Cornejo,
Ángel Luis Gonzalez, Iñaki del Prim

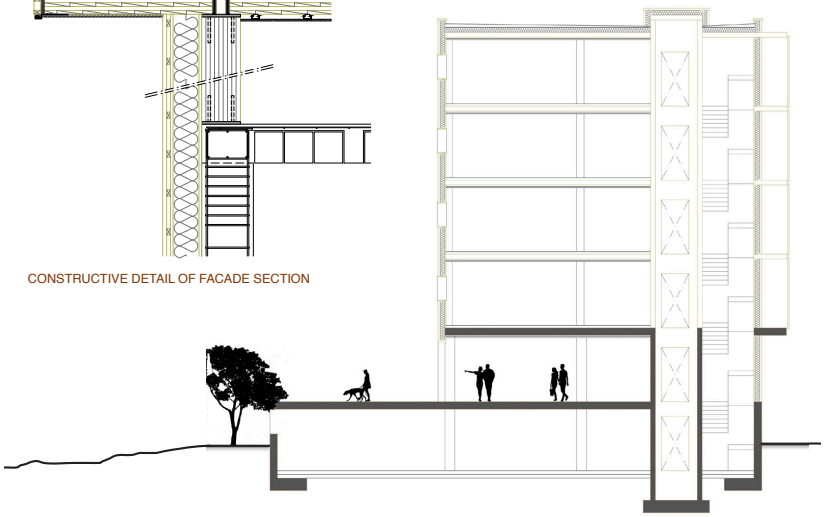
TREE OF THREE TRUNKS

Type Floor Ground Floor Basement

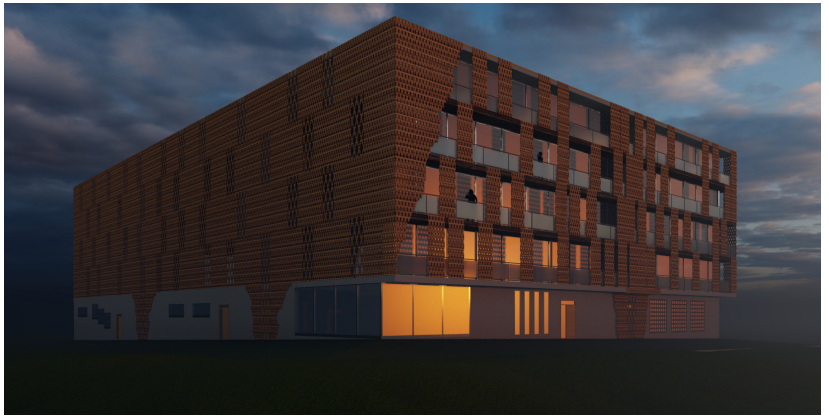




CONSTRUCTIVE DETAIL OF FACADE SECTION



TRANSVERSAL SECTION



THE EDGE

The plot provided to us is located between a residential area and a commercial area, through which the main road passes. This poses a threat to the project, whether due to noise pollution and lack of privacy. On the other hand, the proposed east wing of the building would shade the main façade that faces south. We, therefore, create two volumes, one with residential use and the other with commercial use. We vary the heights of these volumes to optimize the light entrance in the residential part.

At the same time, we want to strengthen the weakness of the north-facing corner of the site by creating two light entrances inside the corners of the façade, generating open spaces,

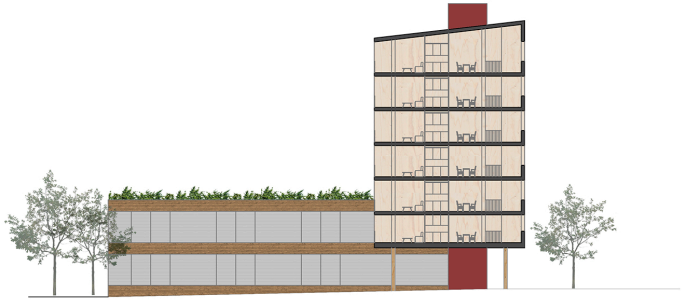
The building is accessed by the highest point of the plot and the open space is on the opposite side which can be crossed in the lower part of the building. With this we generate an open area to create a good movement of circulation between one side to the other, in addition to encouraging public life among neighborhood residents.

The building will be built by the initial material we have learned in this seminar, wood. Since we have two volumes we generate a contrast between the comical building with the entire access area and communication with the rest of the building forming the residential part, we will build the CLT public area creating a strong character compared to the private area which will be structurally of a spruce/pine framework. The reason why we choose this wood is because it has a very good behavior even though having the initial of creating lightness since we fulfilled our initial idea, take advantage of the lining towards the whole building.

TEAM

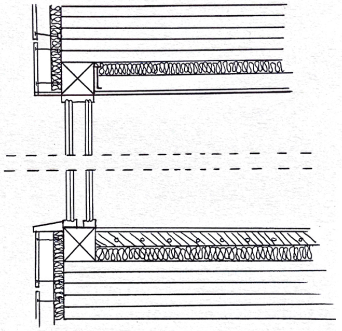
Eneritz Arruti, Stefania Sabal,
Lucía Gamarro, Pol Monjo

SECTIONS

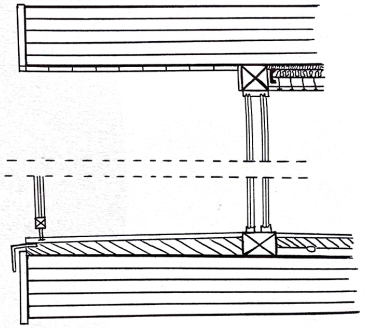


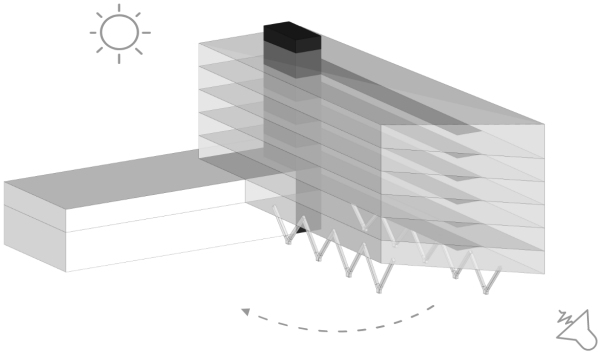
DETAILS

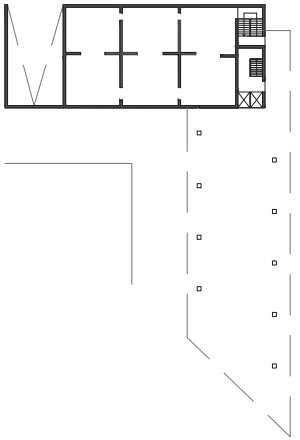
type 1

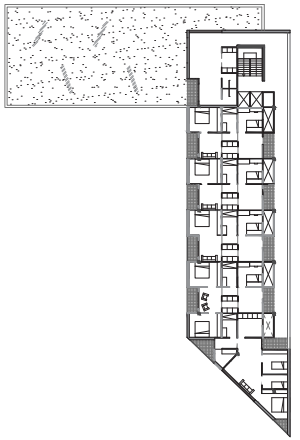


type 2









THE SOCIAL CORE

The projected building aims to be an entry point to a new residential area in growth, breaking with the industrial and commercial area located in the north, and being integrated with the rural area that opens to the east.

The concept focuses on create a social link with the neighbours of both the building itself and the buildings nearby. To do this, internally, big common areas will be created that will be used as a core at the same time. Each of them will have a use and a different function. In this way, the movement of the neighbours throughout the building and the identity of each of them with the common space will be encouraged.

Externally, the project focuses on the creation of a square that serves as a social nucleus with the neighbours of other buildings. The square will be a big green area linked with the entrance to the common areas. Moreover, the project intends to integrate the new building with the nearby rural environment. For this, autochthonous tree and shrub species and local wood will be present inside and outside the building.

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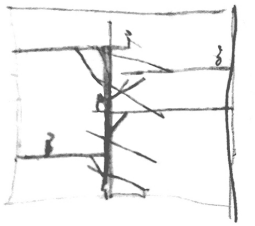
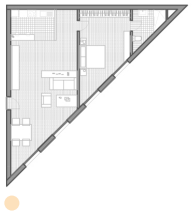
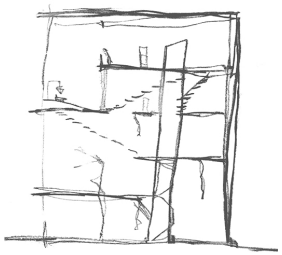
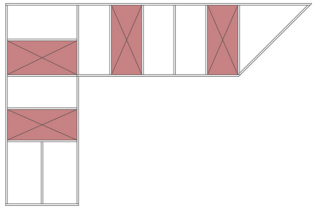
TEAM

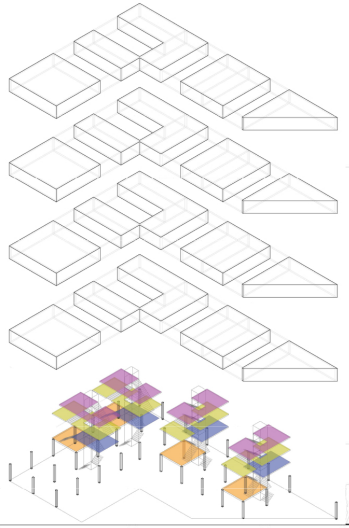
Irene Biera, Marcos Alarcia,
Lidia Guitart, Cinta Lluis

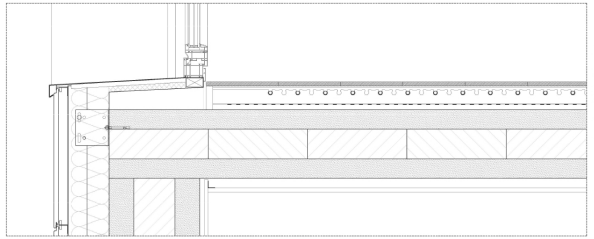












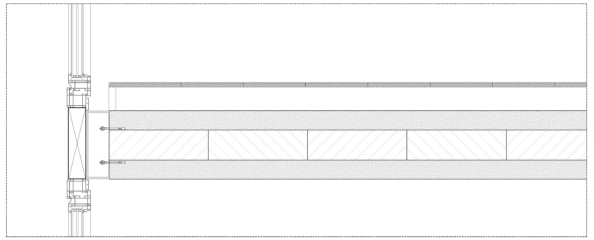
Facade

Tile of Oak
Horizontal anchor piece
Steel Substructure profile "T"
Steel pletines of free movement
Heat insulation 150mm
CLT Wall
Omega Profile
Laminated plasterboard panels

Slab

Porcelane stonewall tiles 20mm
Radiant Floor 52mm
Pre-slab radiant floor 5cm
EGO CLT Panel
Laminated plasterboard panels

VERTICAL SECTION FACADE VENTILATED 1/20



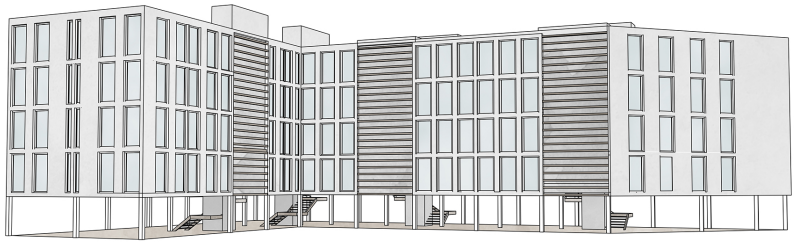
Facade

Tile of Oak
Horizontal anchor piece
Steel Substructure profile "U"
Steel pletines of free movement
Heat insulation 150mm
CLT Wall
Omega Profile
Laminated plasterboard panels

Slab

Porcelane stonewall tiles 20mm
Radiant Floor 52mm
Pre-slab radiant floor 5cm
EGO CLT SLAB
Laminated plasterboard panels

VERTICAL SECTION COURTAIN WALL 1/20



BETWEEN TWO WALLS

The location where our project is placed is between two opposite areas, the residential and industrial one on the left and the rural, green one on the right. The higher storeys have views all over the rural zone, past through the low height service buildings, which leave our building almost in the urban border. Taking this into account we wanted to generate a more friendly environment in such a hard one, so we could provide some vegetation to the zone and could progressively bring closer the nature to our building.

In order to achieve this idea of transition, our façades are divided in a rougher and more solid one oriented to the urban part and a more aerated one that opens itself to the countryside. It is also reinforced in the ground floor, generated by a permeable pass connecting both façades. The south east façade is also more flexible because of its good orientation that allows it to receive enough sunshine making more efficient and better illuminated dwellings. All of them are facing the garden, planned in the free part of the plot, permitting the vegetation to enter our building through exterior courtyards, so it's embrace by the nature.

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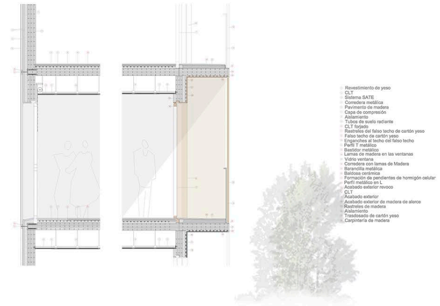
TEAM

Paula de la Peña, Guillermo Martínez,
Montse Pastor, Alejandra Herrera


Revestimiento de yeso
CLT
Sistema SATE
Corredera metálica
Pavimento de madera
Capa de compresión
Aislamiento
Tubos de suelo radiante
CLT forjado
Rastreles del falso techo de cartón yeso
Falso techo de cartón yeso
Enganches al techo del falso techo
Perfil T metálico
Bastidor metálico
Lamas de madera en las ventanas
Vidrio ventana
Corredera con lamas de Madera
Barandilla metálica
Baldosa cerámica
Formación de pendientes de hormigón celular
Perfil metálico en L
Acabado exterior revoco
CLT
Acabado exterior
Acabado exterior de madera de alerce
Rastreles de madera
Aislamiento
Trasdosado de cartón yeso
Carpintería de madera

THE EXOSKELETON

Our concept was born from the idea of giving the structure of the building a second function, turning it also in the skin of the project; So that it's visible from the outside, working as the façade, letting us manipulate the inside distribution in a freer way.

The structure will consist in beams connected to members of the lattice by a hexagonal steel plate, which are going to work under tension and compression transferring the load of the floors to the foundations, allowing us to optimized the potential and structural characteristics of the timber in a reduce section.

In addition, arranged in a triangular formation, it will allow us to play with the opaque and visible sections on the façade, creating a rhythm and different light and shadows effects. We basically create two skins that embrace and complement each other, making a rigid and monolithic envelop that hugs the soft interior.

We located three main communication cores distributed in key points of the floors; keeping in mind the condition of creating natural ventilation in every flat, we gave each access to a terrace that will allow the air to flow, and gives dynamic sense to the building because it grand us the possibility to play with the volume.

The main transversal beams are made of larch glulam timber (Gl32h). Also, we came to the conclusion that the ideal timber for this type of construction is larch because of its structural properties and its high moisture resistance. The internal partitions of the building are assembled on site by means of timber framework and plasterboard.

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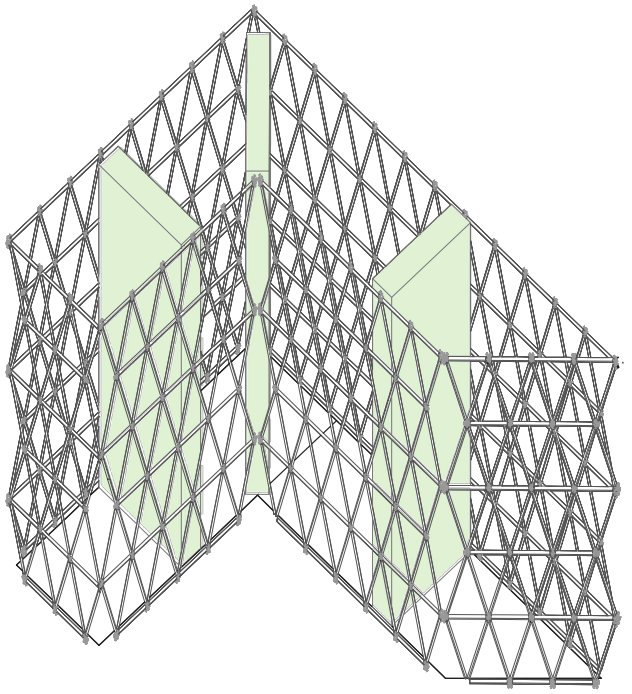
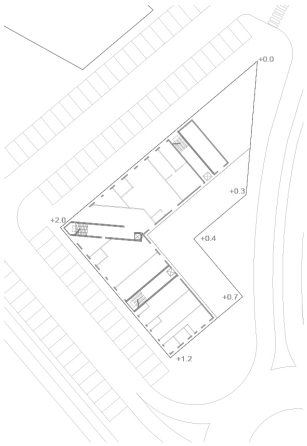
TEAM

María Fabregas, Clarissa González,
Fabio Ferrer, Mª Emilia Acosta

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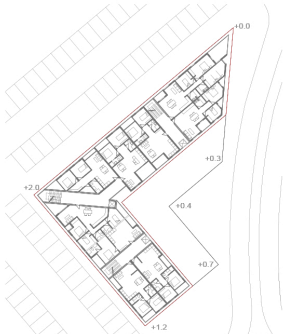
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