

Escalas: Library, Cultural Center and a Hostel in Pinedo, Valencia

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ESCUELA TÉCNICA
SUPERIOR DE
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UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

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1.Location

What is Pinedo?



Aerial view of Pinedo

My project will be located in Pinedo. It is a small fisherman and agricultural town on the southern edge of Valencia. With a population of 2500 habitants, lots of restaurants and a great picturesque views, it is a small town, which is quite interesting for the people who come from Valencia

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Evolution of Pinedo



T.M. Valencia
F.V. 23-10-1962

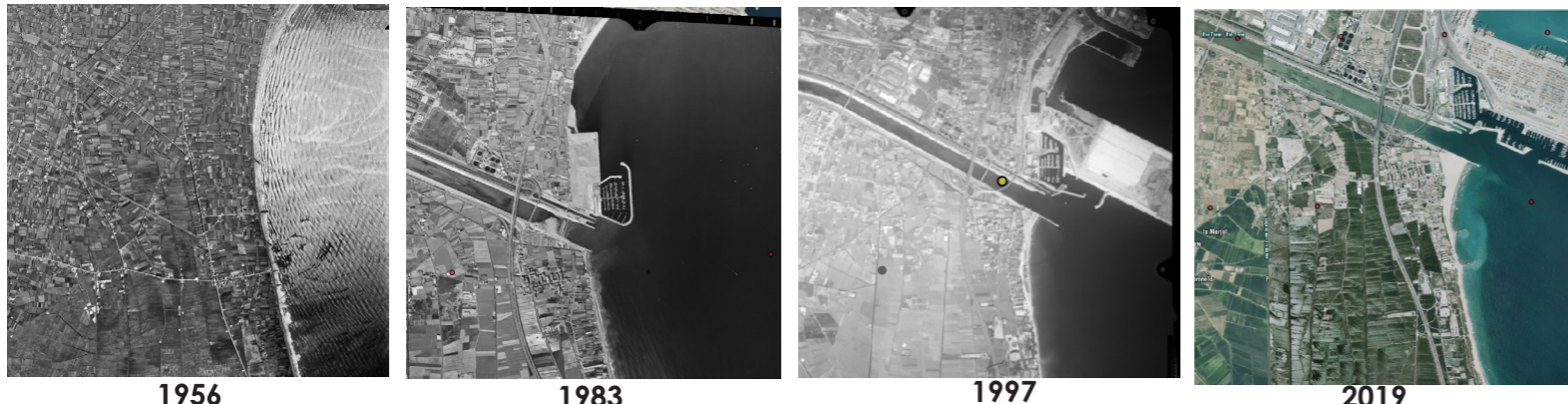
Aerial view in 1962



aerial view in 2020

Pinedo before and after the construction of new riverbed for Turia river.

EVOLUTION



1956

1983

1997

2019

Between 1962 and 1972 the riverbed for river Turia got moved from passing through Valencia, and instead now passes immediately next to Pinedo, thus cutting the communication with Valencia. It has been one of the most important engineering projects of it's time, spanning at 150m wide, and at 12 km length.

Now it can be seen that Pinedo has grown, but the majority of the constructions seen in a photo from 1962 are still visible. Camps have disappeared from the immediate vicinity of the town, thus creating a seclusion zone. Higher demand for parking spots has led to a conversion of the eastern border of the town into vast areas of parking, mainly used by visiting tourists.

How was Pinedo formed?



Main intersection, view towards Albufera



Main intersection, view towards Valencia



Main intersection, view towards the beach



Views towards Albufera from the footbridge



Views towards Valencia from the footbridge

Historically main core of Pinedo was formed around the crossing between Carrera del Riu (road to river), that connects towns of el Saler to Valencia, and road that connects Pinedo and Sedavi, cami de Tremollar (Valenciano "to tremble in a wind") that continues as a Travessia de Pinedo al Mar (road through Pinedo to the Sea). This intersection feels as a center of the street life of Pinedo. It gives an impression of a place that is actively used by locals, there are few cafeterias and bars that are open and are with a lot of customers.

Western border of Pinedo is cut off by the motorway that serves the same purpose as the road that crosses through the town core, but manages to redirect the traffic from it. The only way to cross it is either by foot or bicycle via footbridge, or by car going around it through a series of intersections.

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Road connecting Valencia and Pinedo



Bridge that now connects Pinedo to Valencia is hidden behind the bridge that is used to deliver loads to port of Valencia



Main street of Pinedo



Main street is wide enough, with plenty of space for both cars and pedestrians



The street that has most of life in Pinedo, is the one connecting it to Valencia, called Camino del Rio (road to River). Not only it houses most of the installations that Pinedo has to offer, but also it is the widest road, at 18m. total width. Unsurprisingly, it has a lot of bars and restaurants, but they seem to be focused mostly on local people, thus, the ambience is completely different from the restaurants that are located next to the sea.

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Road that connects Pinedo and Sedavi



Walkways are narrow



Street serves to redistribute the traffic



Historic buildings and facades can still be seen on this road



People playing on a street, photo is taken in august of 1942

Road that connects Pinedo and Sedavi, cami de Tremollar (Valenciano "to tremble in a wind") that continues as a Travessia de Pinedo al Mar (road through Pinedo to the Sea).

Another important road that forms the town's main intersection together with Camino del Rio. Being narrower, at around 10 meters it poses a completely different character to the latter. It has enough space for two-lane traffic and one row of parking spots, as well as decently sized sidewalks on each side, but isn't wide enough to house any space for people to stop and rest in. Even though there are several small businesses on that street, none of them invades the street, which results in that the street is only used for transit, in which it excels, nicely connecting all of the town together.

Pinedo's main square



Main square of Pinedo



Church of Pinedo, hidden behind the trees



14. Ruzafa. (Valencia).-Poblado de Pinedo.



Main square of Pinedo was formed after the creation of the new riverbed for river Turia. It is located near the main intersection, but out of the way of main roads. After the original church of Pinedo, that was in a way of construction of the riverbed, got demolished, a new one was created, and placed on the square.

Now it is covered with foliage, and houses a town hall-which is located on a ground floor of one of the buildings, supermarket, a bakery and a couple of small shops.

The place is in good condition, it has many plants and looks pleasant, but it's located away from where the majority of town's life. As a result, there is very little interest shown towards it, and it does not feel like the main square and the center of the town.

Old church of Pinedo that got demolished(left) and a new church of Pinedo(right)

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Another important core



Intersection between travesia Pinedo al mar and c/Muntanyars: C/muntanyars and view towards the sea



Pinedo did not always occupy the space it does now. It used to be formed around the intersection of Travesia de Pinedo al Mar with Camino del Rio, while there was another smaller core further towards the sea, on an intersection with the camino de Muntanyars. It used to house mostly residential buildings, and connected some slayer houses, scattered through camps of Albufera and Saler, with Valencia.

Eventually both of the cores grew and got unified, forming Pinedo as we know it today.

Views of the intersection

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Beach of Pinedo



Beach of Pinedo



Seafrent sidewalk, to the left and right of the end of travesia Pinedo al Mar



Sidewalk in Albufera

Travesia Pinedo al Mar ends abruptly in a tiny circle that intersects with a seaside path of Pinedo. It follows the minimum width established by the coastline's defence law, which results in it being only 6 meters wide, including both the pedestrian and bike lanes.

Facing it there is a beach of Pinedo. Over time the amount of the sand next to the Turia river has increased significantly, meaning that the shore got wider and the area became more exposed. This has caused dynamic erosion that the town must be protected from. The solution is to artificially create dunes in order to establish a defence line and therefore shield Pinedo from the sand and the wind.

Dune restoration process

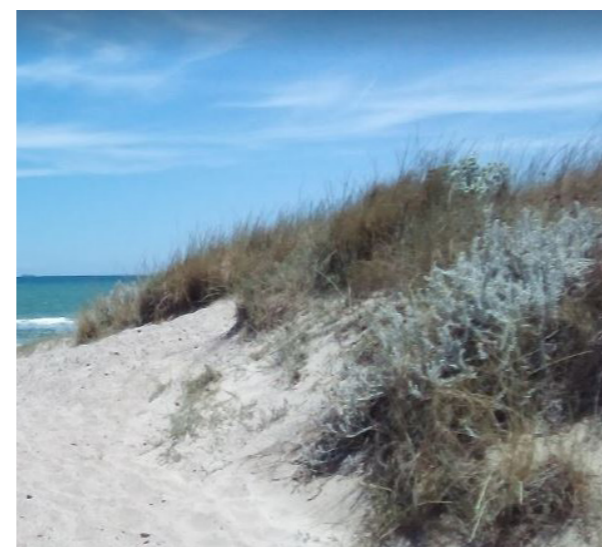


Dunes are a common type of terrain in a natural park of Albufera. They are present all around the natural park, creating areas of high biodiversity and preserving the beaches from destruction.

Even though dunes can form naturally, there is also a way to create them artificially. In order to restore a dune, first a series of wooden barriers is installed. With the action of the wind, sand gets gradually accumulated, which results in the formation of a dune. Then, in order to reinforce newly formed dune, local vegetation is planted. The roots of the plants strengthen the newly formed dune, and prevent it from erosion. Plant succession occurs meaning that after pioneering species, more variable grasses will grow, making it possible for the flowers and taller bushes to appear later.

Currently the border between Pinedo and the coast is protected by dense bushes of Tamarix. It works great as a barrier against sand, and can also withstand high levels of salt and low levels of water. This plant is already widely spread in Pinedo and successfully grows next to the coastline, and therefore can be reused in a further restoration of the dune landscape around town.

Dune in a process of the restoration in Albufera



Restored dune

Natural dune

Parking situation in Pinedo



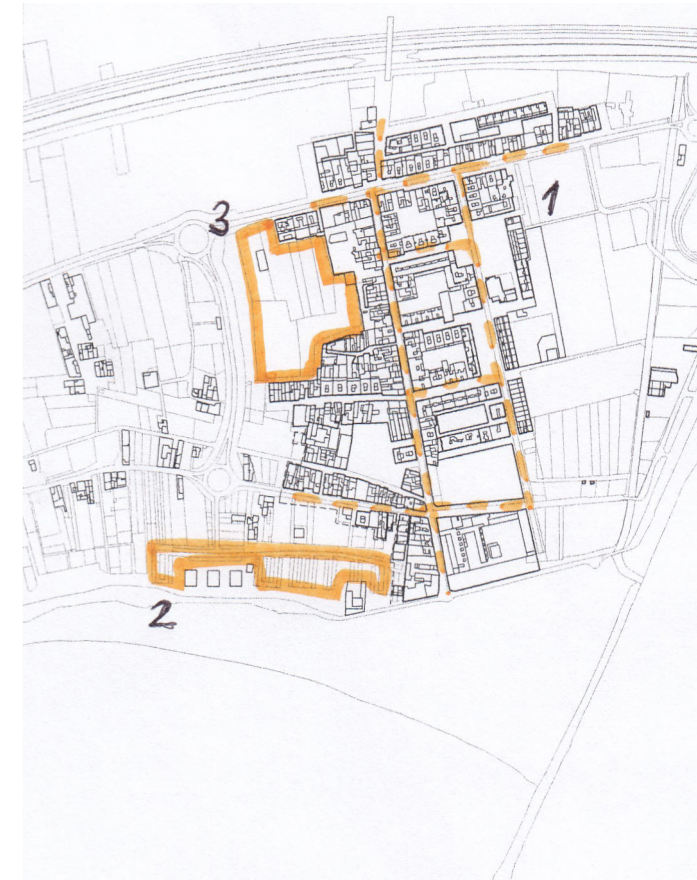
1. Parking on a street



2. Parking near the seafront



3. Camper parking



Pinedo seems to be in a constant need of parking spots. Not only all of the streets of Pinedo have parking spots, but also areas around town are occupied by parked cars

Parking spots in Pinedo can be divided into following categories:

- 1 Spots, used by local people, those are located on streets of Pinedo
- 2 Spots, used by tourists that come and visit the town, mostly concentrated close to the sea
- 3 Spots, used for motorhomes and campervans, located in the industrial plots on a northern part of the town

As a result, plots, most valuable from a landscape point of view, in immediate proximity to the sea, are being occupied by the cars of people who don't even live there, which results in an area that can be used as a part of a natural reserve and should belong to the local people.

Also current situation with campers parking is far from ideal, it is noisy, deteriorated, and is a source of problems for the people of the surrounding area.

Proposition for the parking spots



Vacant area with a potential for relocation of the parking spots

As a part of the proposition for the project, parking spots from the seaside are relocated into empty industrial spots, currently occupied by abandoned industrial translate and improvised living in a shape of campers and motorhomes. This plot is only 2 minutes away from the seaside by foot, but such relocation would allow for the natural park to infiltrate the connection between town and the sea



Mediterranean forest, composed of the Mediterenan pine



Pinetrees around Pinedo

As mentioned before, removal of the parking spots next to the coastline creates a vast vacant spot. In order to give it some scenic value, and further reinforce freshly created dunes, it is planned to restore it to its original state of mediterranean forest. Species local to albufera can be used here. Trees such as Aleppo pine and stone pine are great candidates for it, being native to the area and specifically to areas in a proximity to the coastline. These trees have a wide root system that reinforces the soil, and retains water so that other plants can easily grow.

Trees to be used in the project



Mediterranean hackberry



Ash tree



Oak tree

As for the trees next to the building, the Mediterranean hackberry, Ash tree and Holm oak are chosen. All of them can deal with a dry environment, and need a lot of sunlight. All those species are not invasive, and would further aid the biodiversity of the area. These species are well adapted to be able to grow in harsh conditions created by the closeness of the sea.

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Installations



Aerial view of the highschool and sports center



Pinedo is a great destination because of its gastronomy and proximity to a natural park. Coastline presents a great amount of sandy beaches. On a downside, the town is separated from Valencia by a river, and lack of inflow of new habitants has been causing decrease in population and as a result, decrease in the amount of the commercial property. One way to tackle this problem would be to improve the installations Pinedo has to offer in order to make it more interesting for people to move to, and also create a place for visiting people to stay in.

Nowadays the crossing between Carretera Pinedo al Mar and c/ Muntanyars houses two main installations that Pinedo has to offer. One of them is a public primary and secondary school of Pinedo. It is considered to be quite prestigious and attracts people from Valencia to bring their kids there to study. Another important installation is the sports center just across the road from the school, complete with a football field.

Artur Volobuev



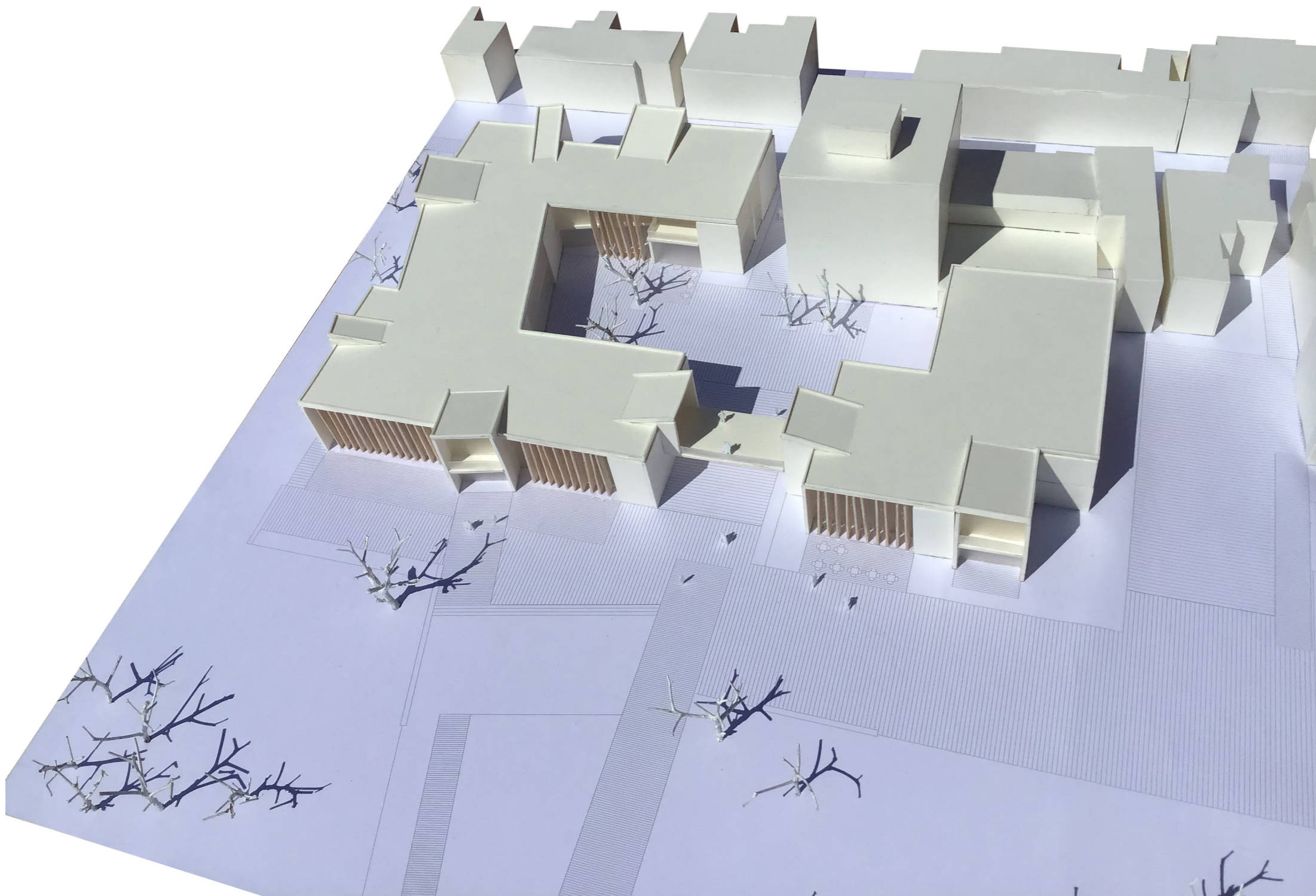
School of Pinedo, before and after the reconstruction

Potential



2. Concept

Goals of the project



My project would complete installations of the town , by offering a community center and a library for locals, and a hotel for the visitors to stay in. The plot I chose for my project is located in immediate proximity to the shore. It is designed to complete the eastern border of the town, creating the front between the prolongation of natural park and urban landscape.

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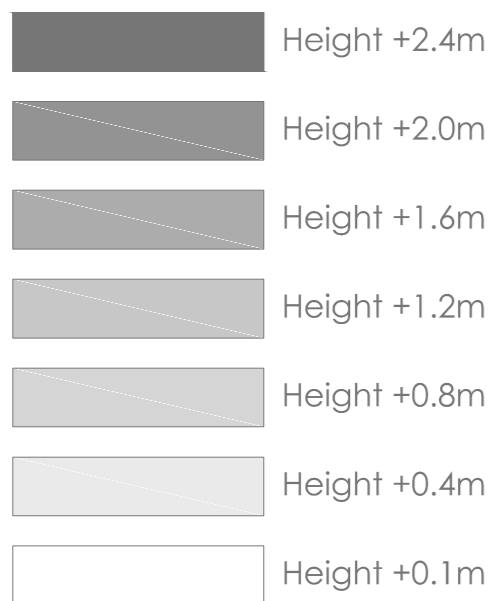
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Terrain heights

Pre-existing buildings



Heights in the immediate proximity of the plot

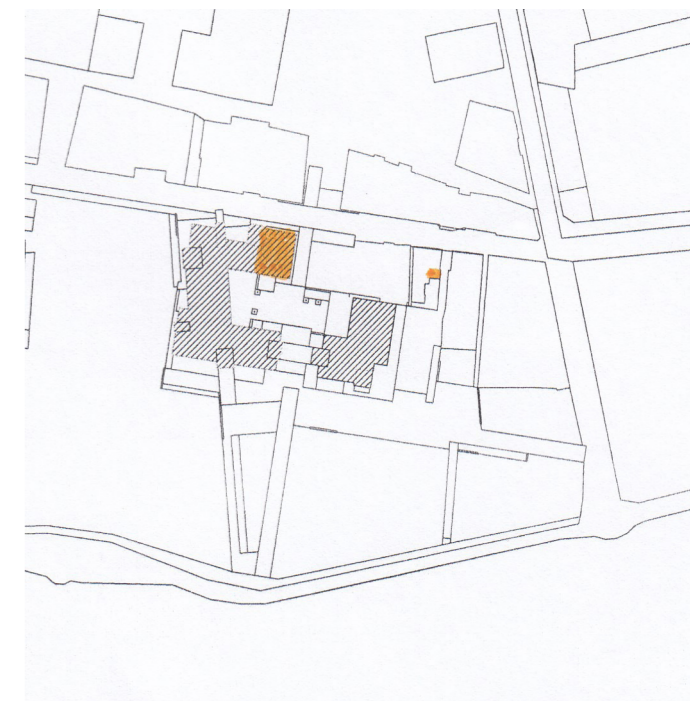


Proposed building would sit comfortably at around 1.6-2 meters above sea level, and would be protected by the remnants of the dune. It is decided not to construct underground levels due to the proximity of the sea level.

*Darker colour means higher elevation
**Sea level is set at elevation 0.0m



Building that is located on the plot of the project



Barraca, historic photo, and a photo of the one next to a plot

Currently there is a building on a plot where I am planning to create my project. It is a small construction, at 12 meters wide and 8 meters deep. Currently it is deteriorated, so, as a part of my project, it will be completely restored from the ground up, and changed to fulfill the needs of the building I am designing.

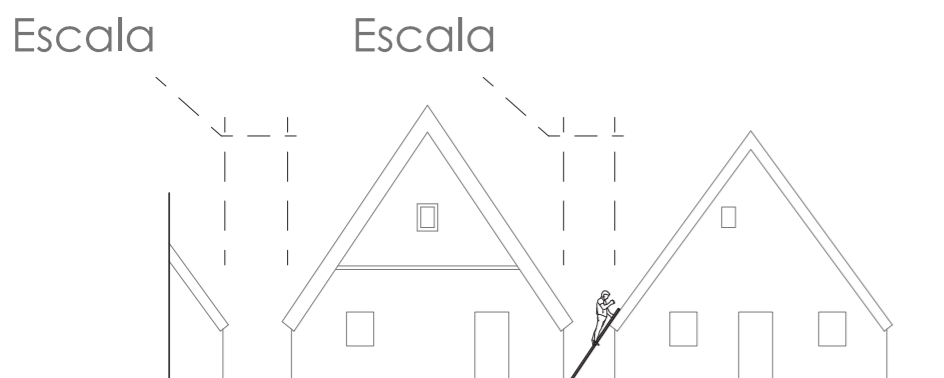
Another point of interest is a historic valencian building-barraca. It is located in one of the backyards of the buildings located on c/ Muntanyars

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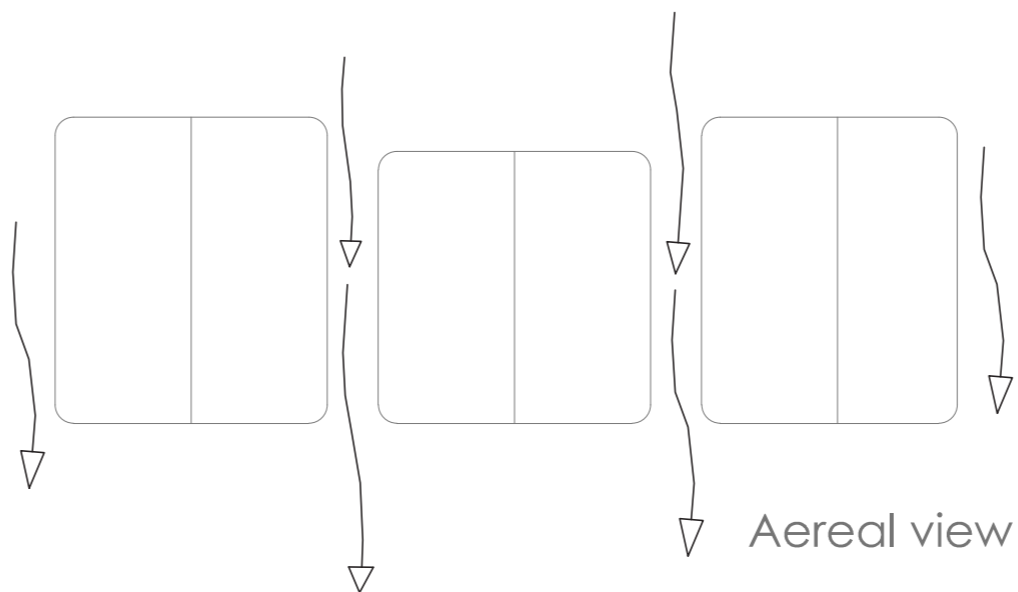
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Why "Escalas"?



Narrow passageways between barracas



Aerial view



The reason behind the name comes from the valencian word «Escalas», which was a name given to narrow passageways between traditional fisherman huts-barracas-that were primarily used to scale up the straw roofs in order to repair them. Remnants of those narrow passageways can be seen reaching through the eastern border of the town, and are a characteristic part of the surrounding area of the plot. An important part of the design of the project and the urbanistic design addresses those passageways and gives a modern overlook on them.

Second one comes from the direct meaning of the word escalas-scales. The objective of this project is to improve the town on different scales: starting from the scale of a project, and going up the scale in order to create an urbanistic response to the environment.

Escalas next to the project's plot

Escalas

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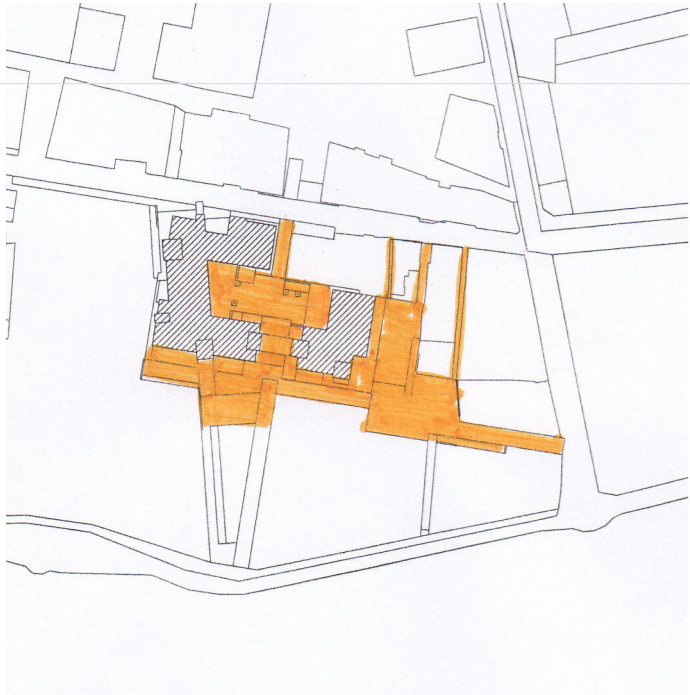
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Escalas 24/92

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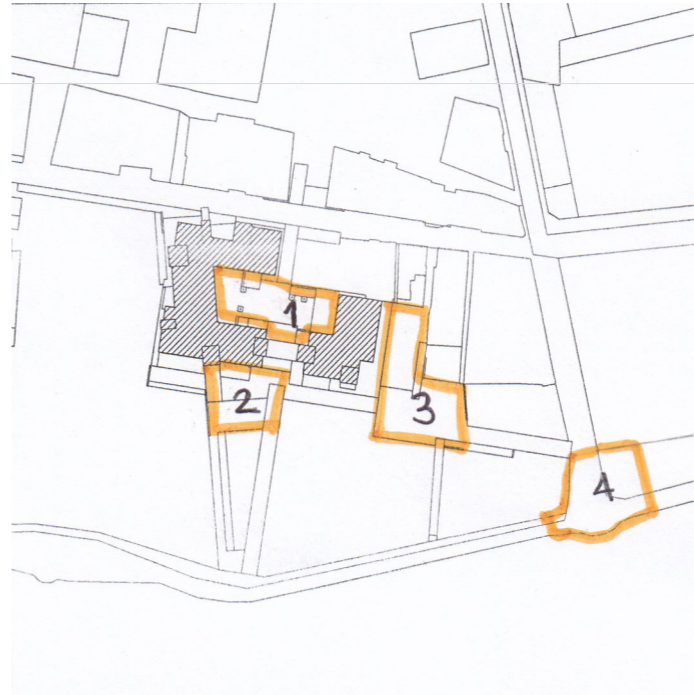
Urbanistic response



My design is not only focused on the building itself, but also on a creating of the space that can be offered to the town

As spoken before, most of the life in Pinedo seems to happen around the intersection of the road that leads to Valencia and the road that connects Pinedo to inland towns. My idea is to shift the focus from that intersection, and move it towards the sequence of squares around my project, creating a destination for the local people, by offering an open space, suitable for the reunions, rest, and social activities.

Squares around my project



A total of three squares are created. First one is surrounded by the building, and serves as the inner yard. It's location between library and a community center makes it a main hub of the project, that, in case of a big events, can be used as a prolongation of the building

Second square is the one in front of the library. It offers some shade from Oak trees, and some benches to sit and rest on.

Third square is the one on the northern side of the project. Biggest of all three, and the closest one to the communication roads of Pinedo, it is expected to be the most used one, and has a series of small pavilions, benches, and trees taht provide shade for the hot summer months.

Also, by the creation of my project, and removal of the buildings in a immediate proximity to the seawalk, the square that concludes the travesia de Pinedo al Mar is significantly opened up, which greatly improves its quality and gives the proper closure to the Travesis when it encounters the coastline.



Two main transversal accesses to the plot, which would connect proposed parking plots in the western part of town with the seaside through the plot of the project, thus improving the flow of foot traffic and reducing car congestion

Accesses to the northern square in the project, made through pre-existing narrow passages between plots(Escalas)

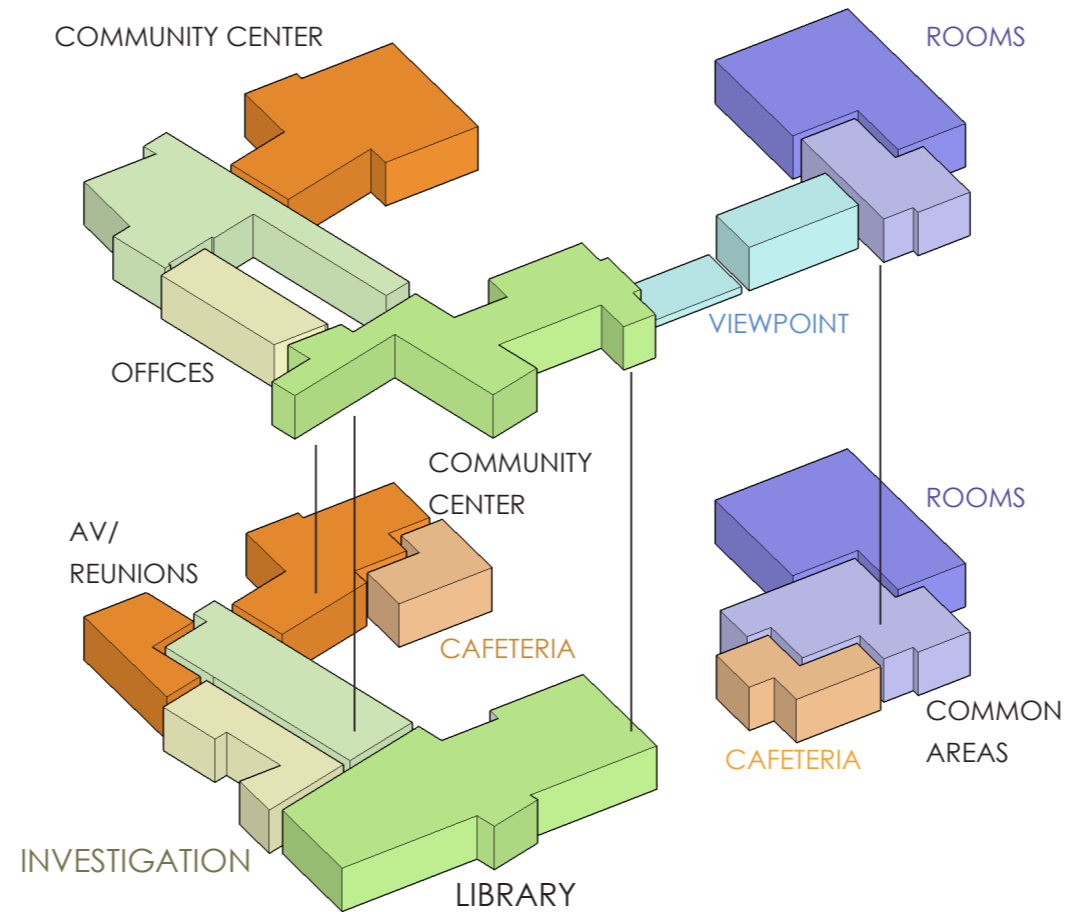
Block of buildings with higher floor count, protected by the green line

Main street of the town of Pinedo, currently serves a sa main access to the beach for the local people

Local school

Eastern facade

Building type



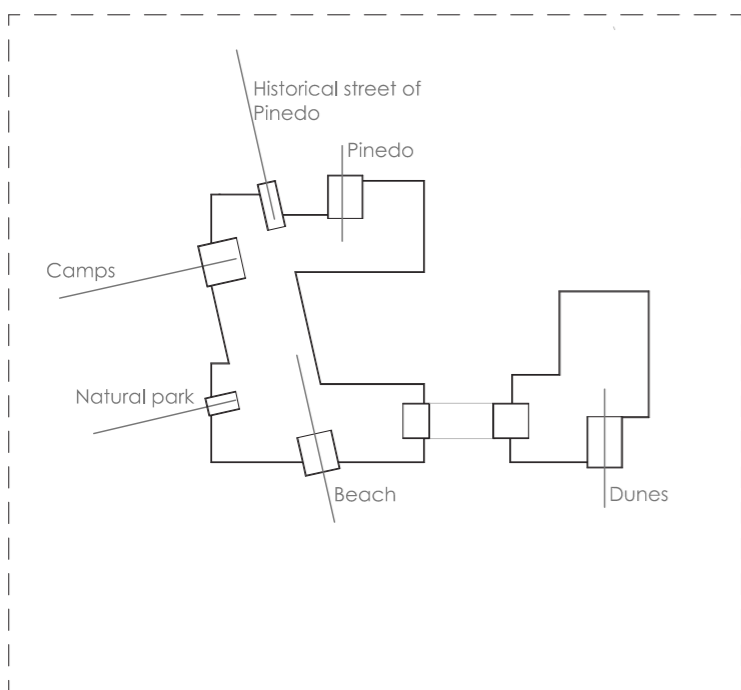
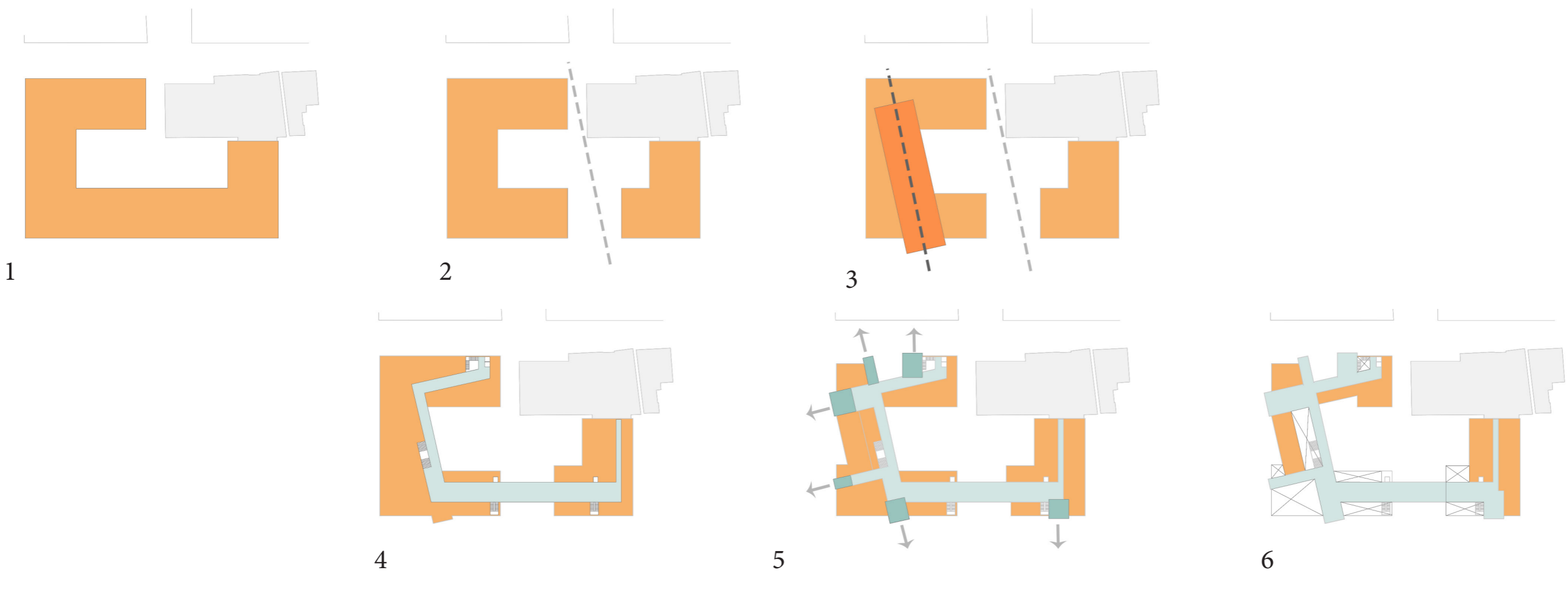
The building I am making is designed to be a two-storey construction, built around the central patio. It is separated into two parts, one housing a community center and library, while another one is assigned to the hotel. Two parts are seen as two separate units, connected together by a footbridge, which doubles as a viewpoint.

Escalas

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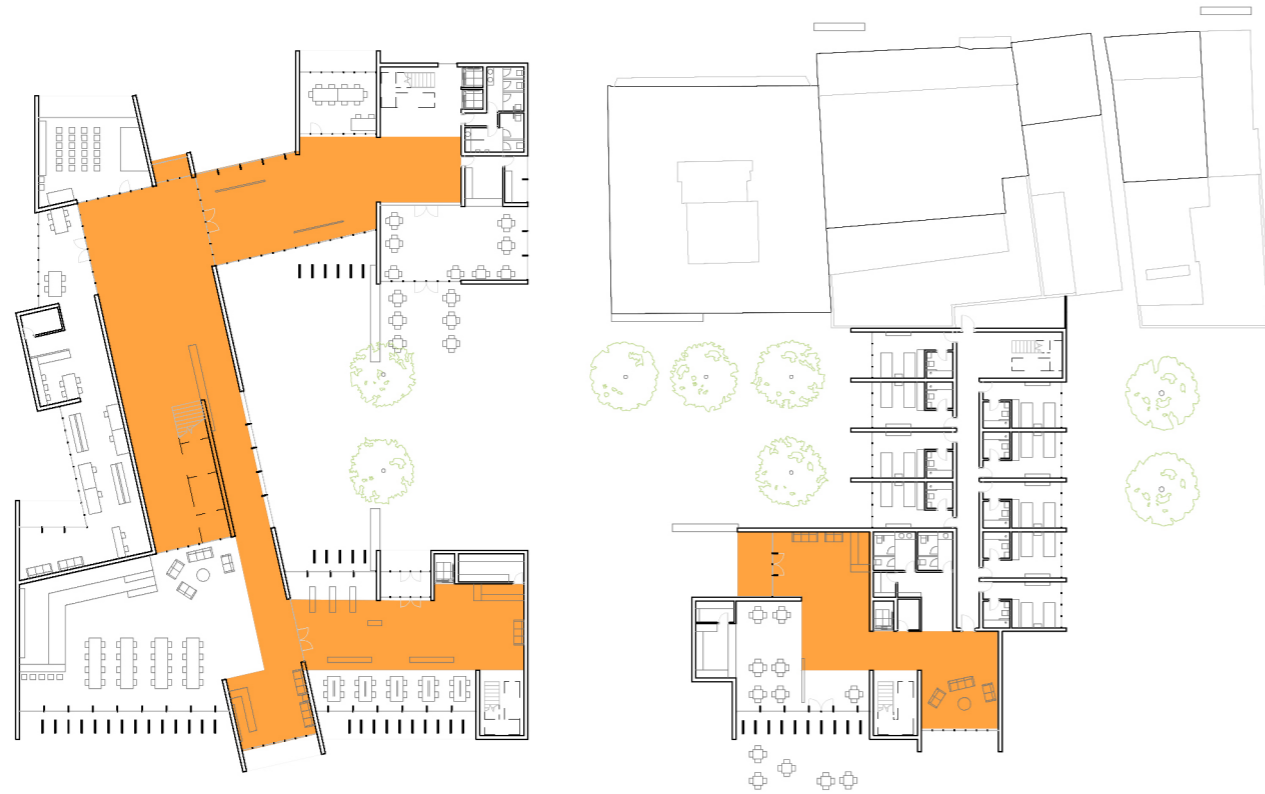
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Shape generation

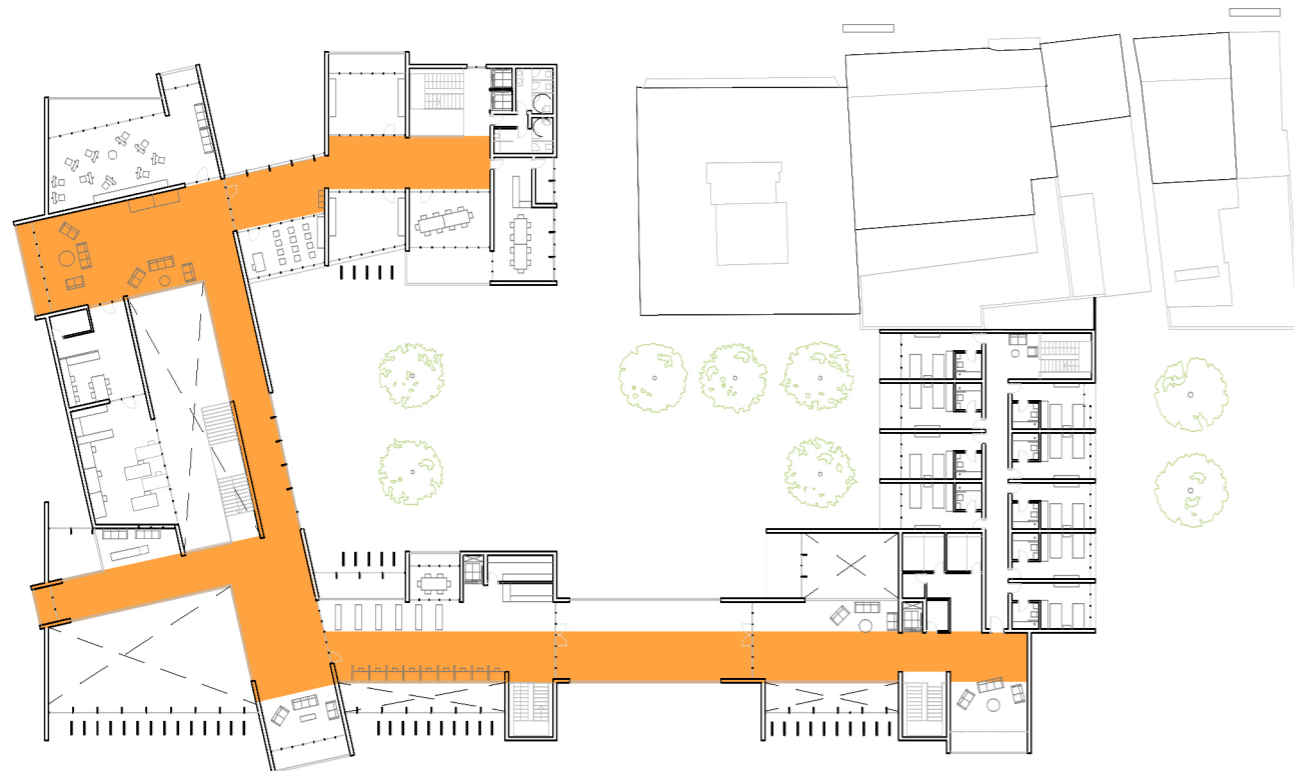


- 1 The main shape is chosen, surrounding the central courtyard
- 2 The plot is opened up, and the pathway is introduced, with the main direction chosen towards the sea
- 3 Same directions are chosen inside the building
- 4 Horizontal and vertical connections are introduced, stitching the building together
- 5 Viewpoints are introduced in the areas where geometry is drastically changed, offering views towards the point of interest in- and around Pinedo
All the viewpoints are designed to have an inclined roof, which is inspired by inclined roofs of barracas.
- 6 Two floors are connected vertically through the series of double-height spaces and staircases.

Interior communication

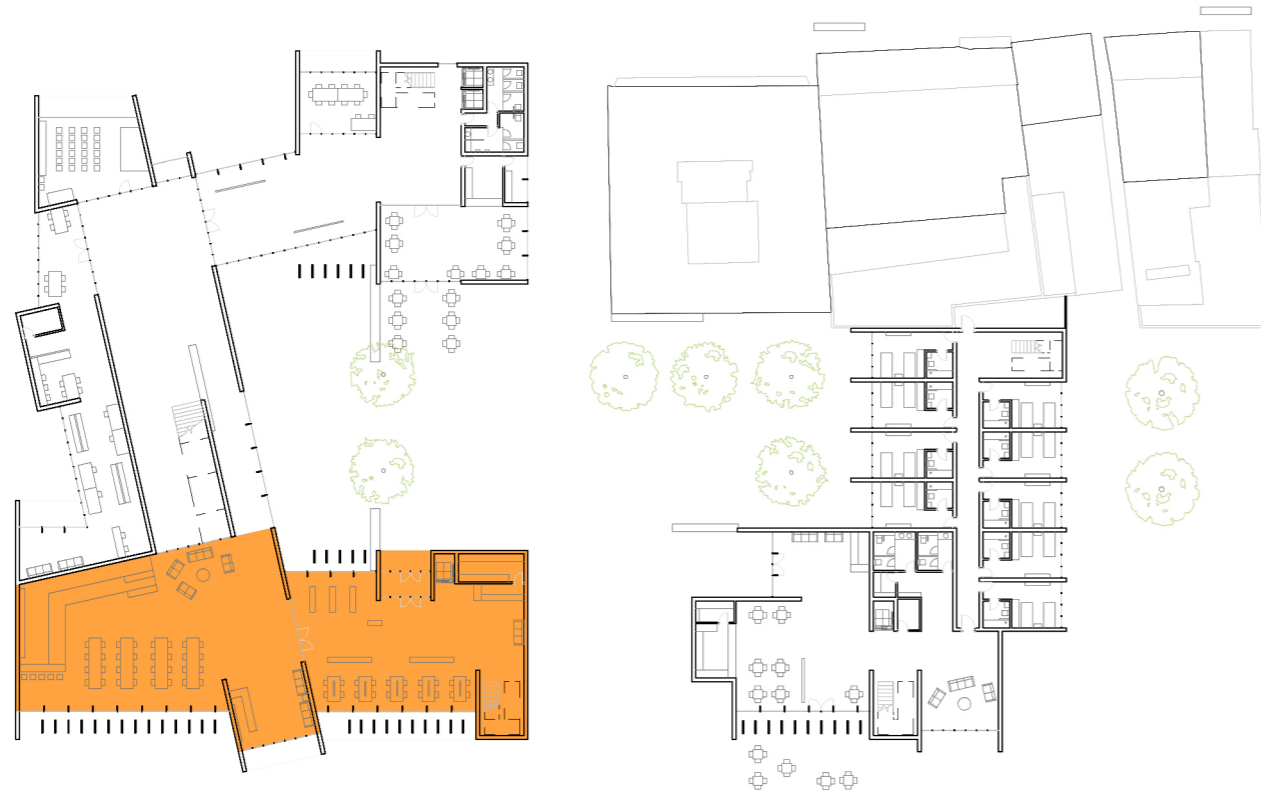


Interior hallway with views towards the sea



The inside of the building is designed around big common halls. Central hall is open to both floors and connects them together through a wide staircase. The main objective of this staircase is to create fluid interior space and dynamic flow through the building. It is designed to allow direct access, from the entrance to the main hall to the viewpoint with views towards the sea. Central area invites the user to rest for a moment and admire the relation of the architecture and surrounding landscape, before directing them to their destination.

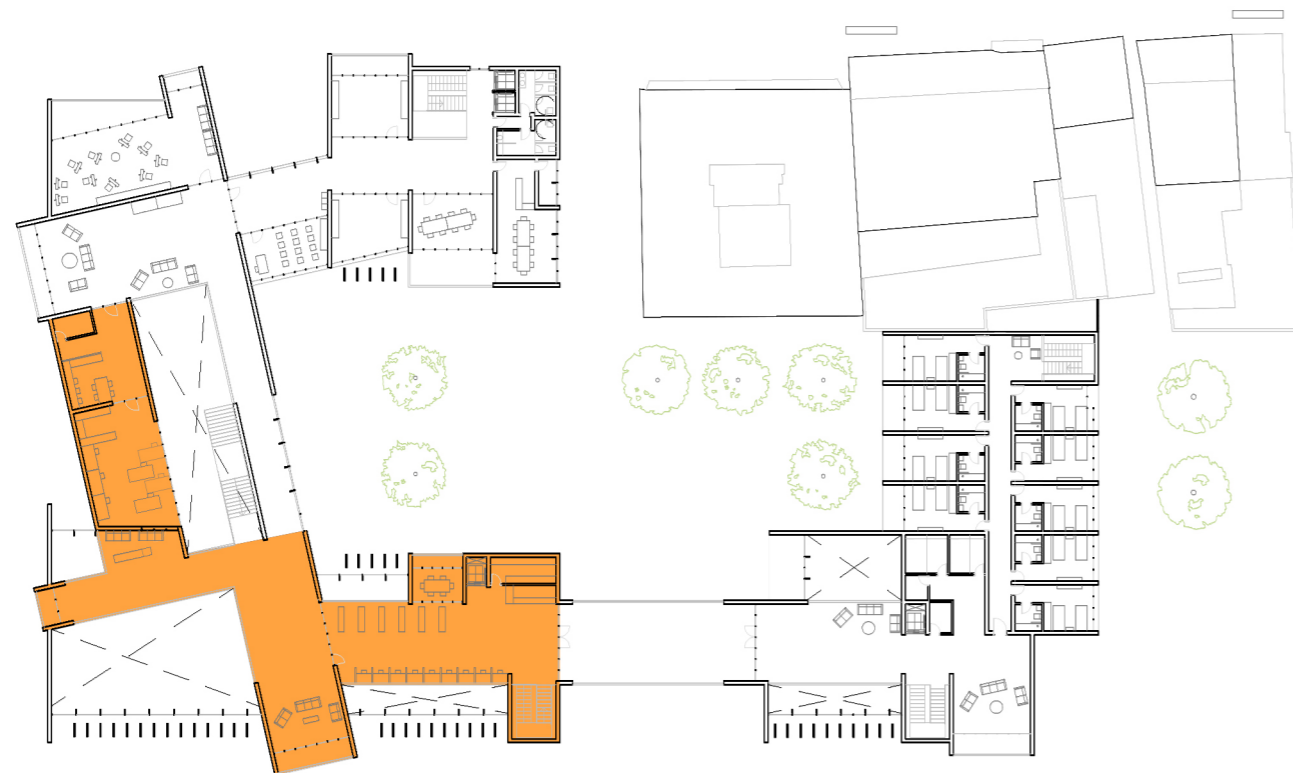
Library



Interior of the library

Program:

- Common area
- Reception
- Main reading hall
- Consultation area
- Shelves area
- Study area
- Computer study area
- Silent study room
- Group study room
- Reading area
- Storage
- Restrooms



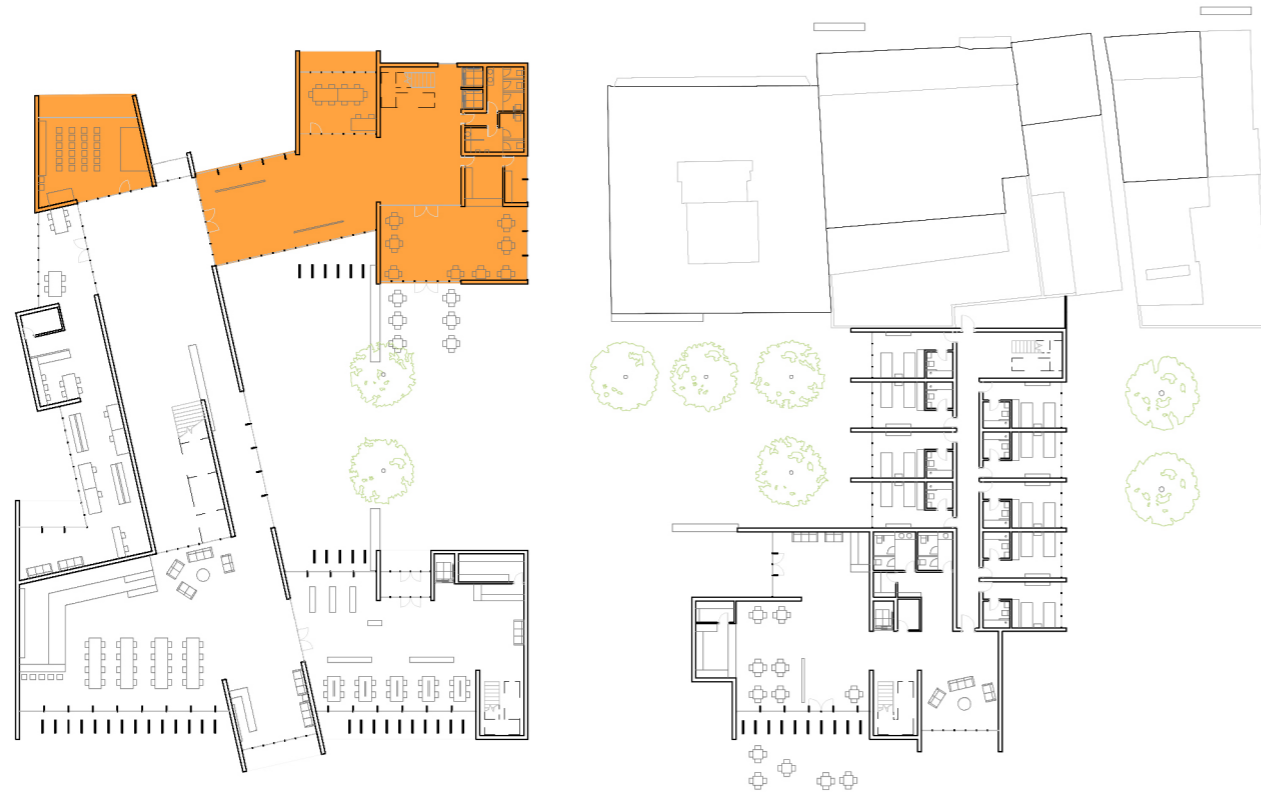
Main point of interest of a library is a big central hall. It is connected to both ground and first floors, and has plenty of space to read, study and socialize.

Apart from the numerous study rooms, there is also a storage room which ensures the books are protected from the direct sunlight and excessive moisture.

Community center

Program

- Exhibition area
- Common hall
- Workshop 1
- Workshop 2
- Workshop 3
- Language room
- Art room
- Music room
- Offices
- Cafe
- Restrooms
- Investigation offices:
- Reception
- Coworking area
- Hall for meetings
- Kitchen and rest area
- Restroom



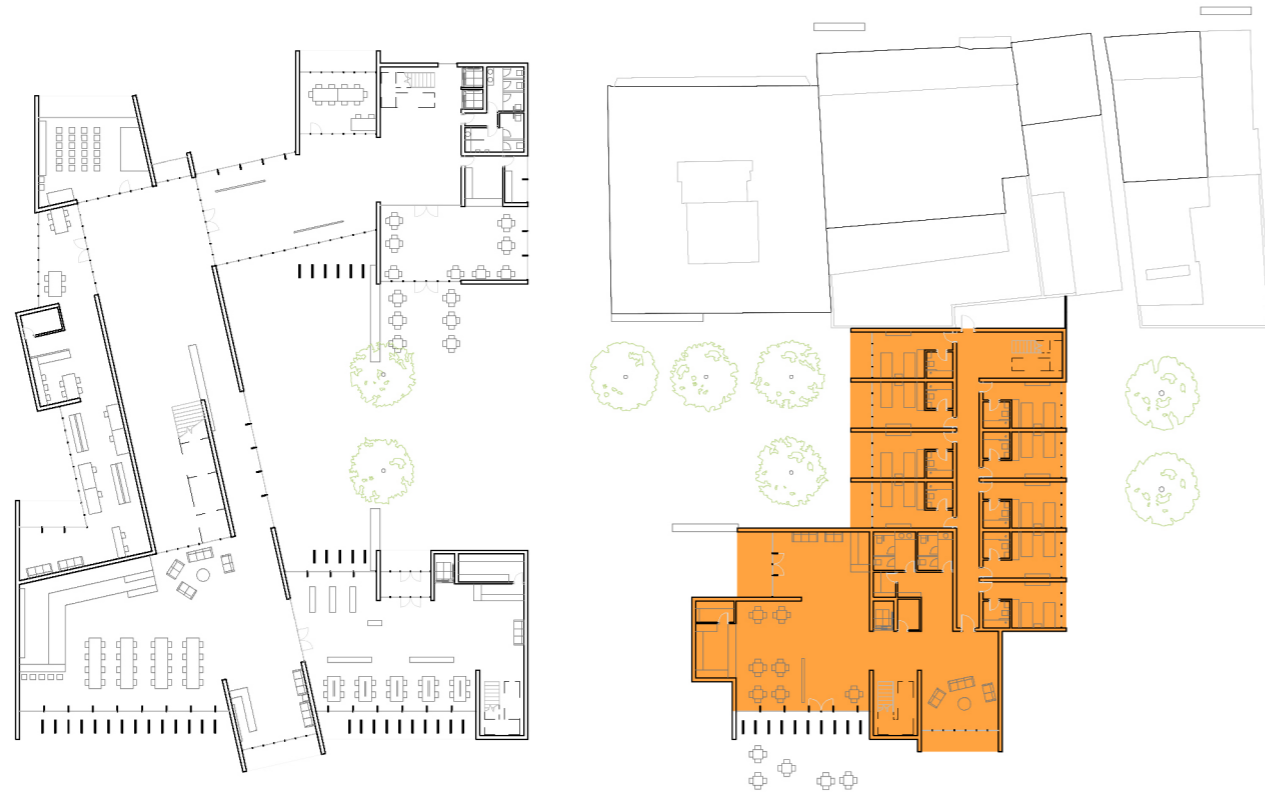
It offers a wide variety of activities for the locals. Various groups of interest are present here.

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Hotel



Rest area of the hotel

Program

- Reception hall
- Common room
- Guest rooms
- Rest / observation area
- Viewpoint
- Cafeteria
- Restrooms



Exterior of the hotel

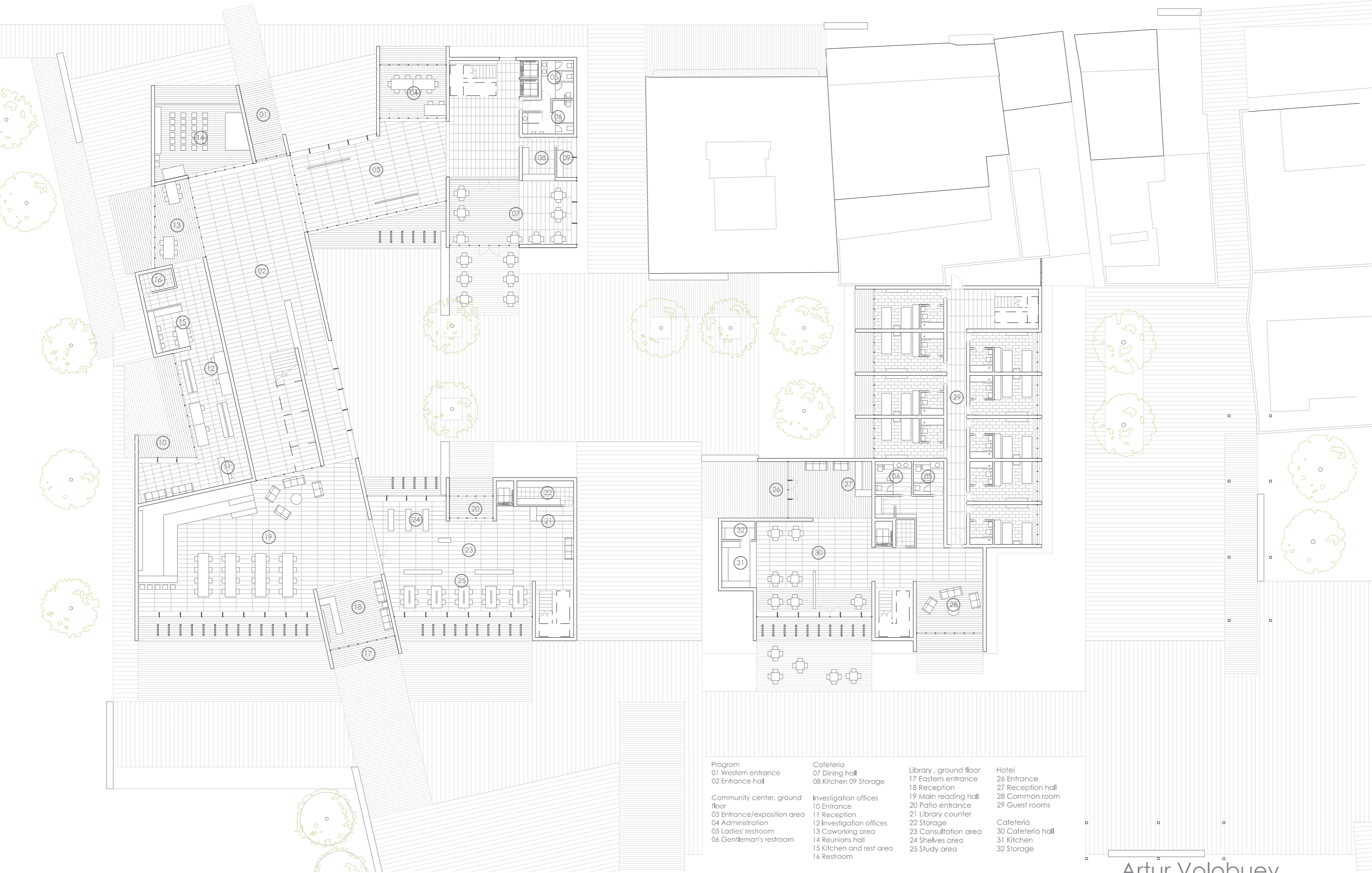
Has plenty of rooms for guests of the town, common areas to rest in, that provide views towards the sea.

3.Project

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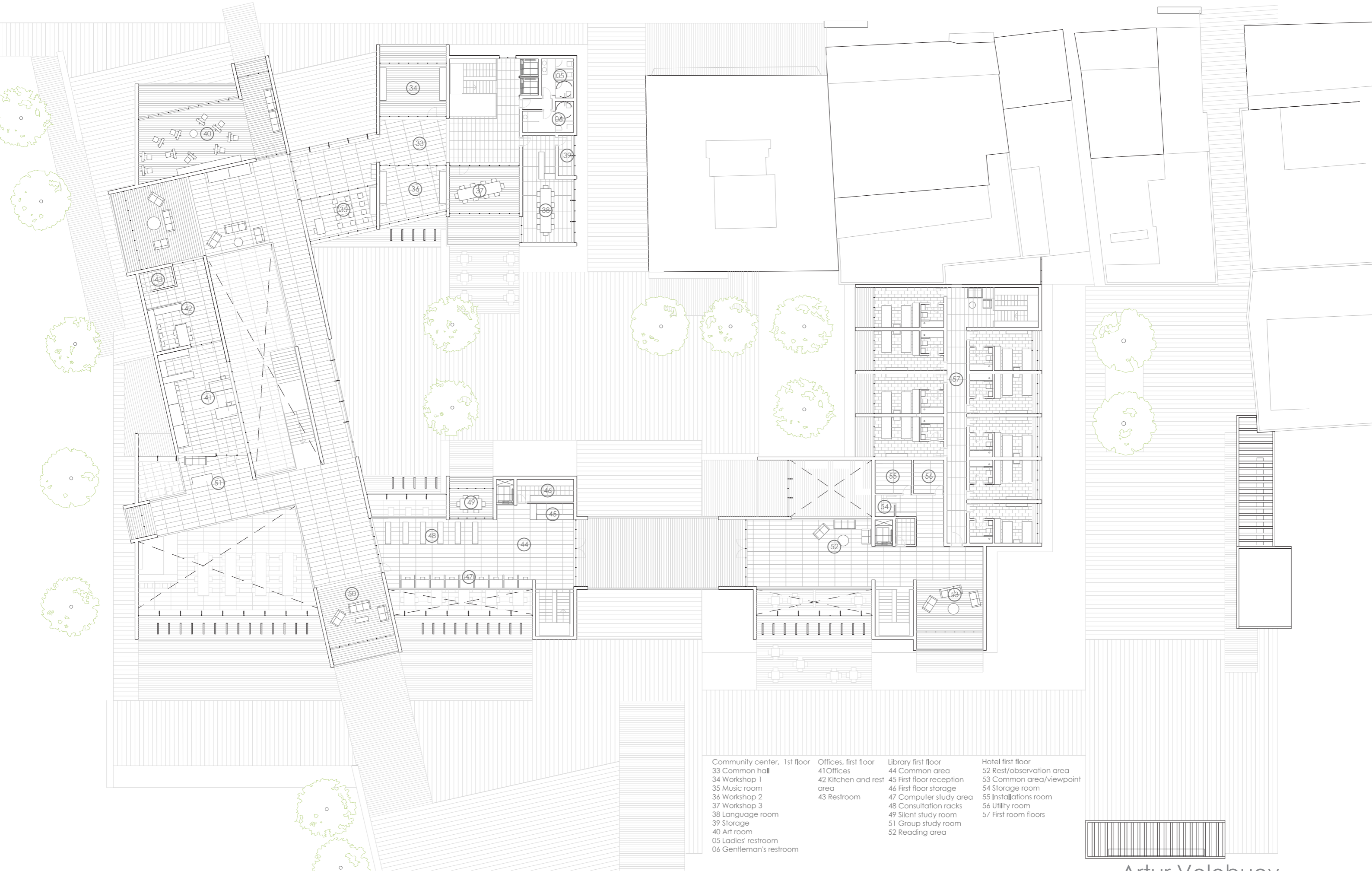


- | | | | |
|--------------------------------|--------------------------|-----------------------|-------------------|
| Program | Cafeteria | Library, ground floor | Hotel |
| 01 Western entrance | 07 Dining hall | 17 Eastern entrance | 26 Entrance |
| 02 Entrance hall | 08 Kitchen 09 Storage | 18 Reception | 27 Reception hall |
| Community center, ground floor | Investigation offices | 19 Main reading hall | 28 Common room |
| 03 Entrance/exposition area | 10 Entrance | 20 Patio entrance | 29 Guest rooms |
| 04 Administration | 11 Reception | 21 Library counter | |
| 05 Ladies' restroom | 12 Investigation offices | 22 Storage | Cafeteria |
| 06 Gentleman's restroom | 13 Coworking area | 23 Consultation area | 30 Cafeteria hall |
| | 14 Reunions hall | 24 Shelves area | 31 Kitchen |
| | 15 Kitchen and rest area | 25 Study area | 32 Storage |
| | 16 Restroom | | |

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- | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|
| Community center, 1st floor | Offices, first floor | Library first floor | Hotel first floor |
| 33 Common hall | 41 Offices | 44 Common area | 52 Rest/observation area |
| 34 Workshop 1 | 42 Kitchen and rest area | 45 First floor reception | 53 Common area/viewpoint |
| 35 Music room | 43 Restroom | 46 First floor storage | 54 Storage room |
| 36 Workshop 2 | | 47 Computer study area | 55 Installations room |
| 37 Workshop 3 | | 48 Consultation racks | 56 Utility room |
| 38 Language room | | 49 Silent study room | 57 First room floors |
| 39 Storage | | 51 Group study room | |
| 40 Art room | | 52 Reading area | |
| 05 Ladies' restroom | | | |
| 06 Gentleman's restroom | | | |



Artur Volobuev

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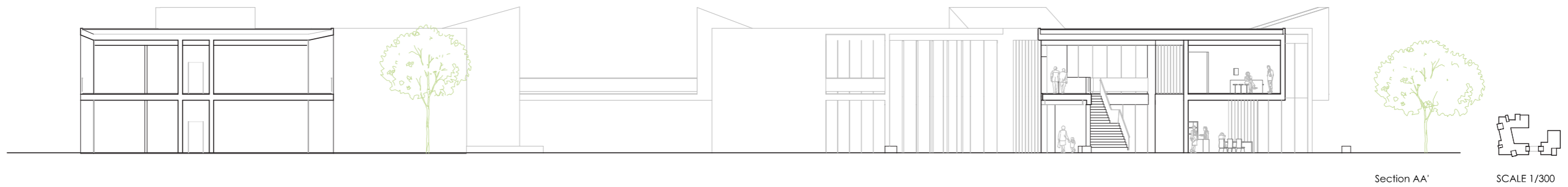
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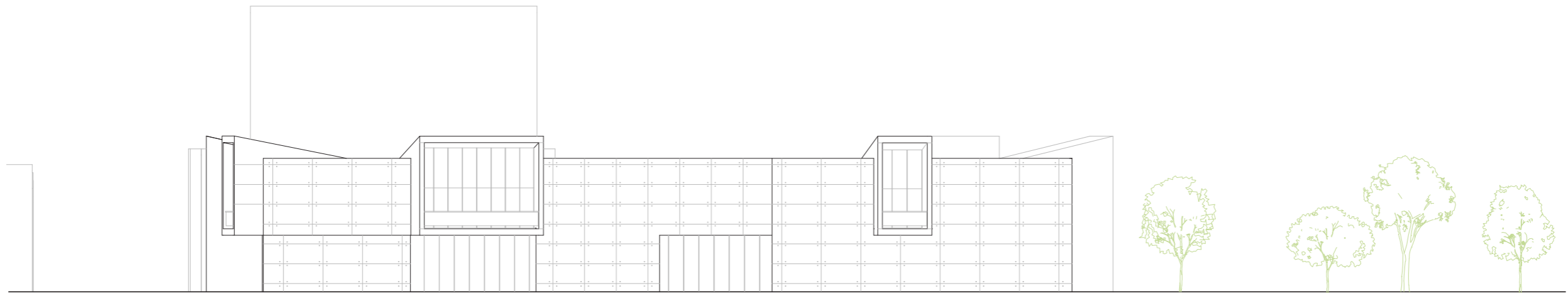
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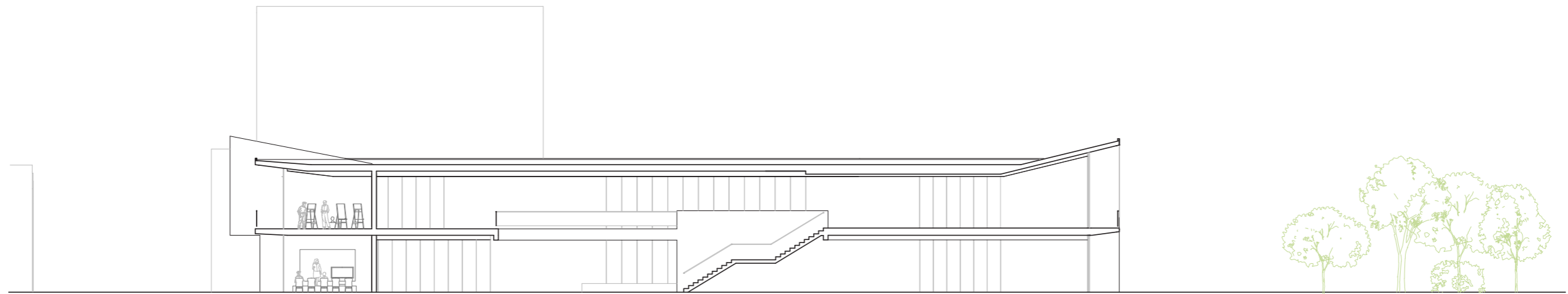
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Southern facade

SCALE 1/300



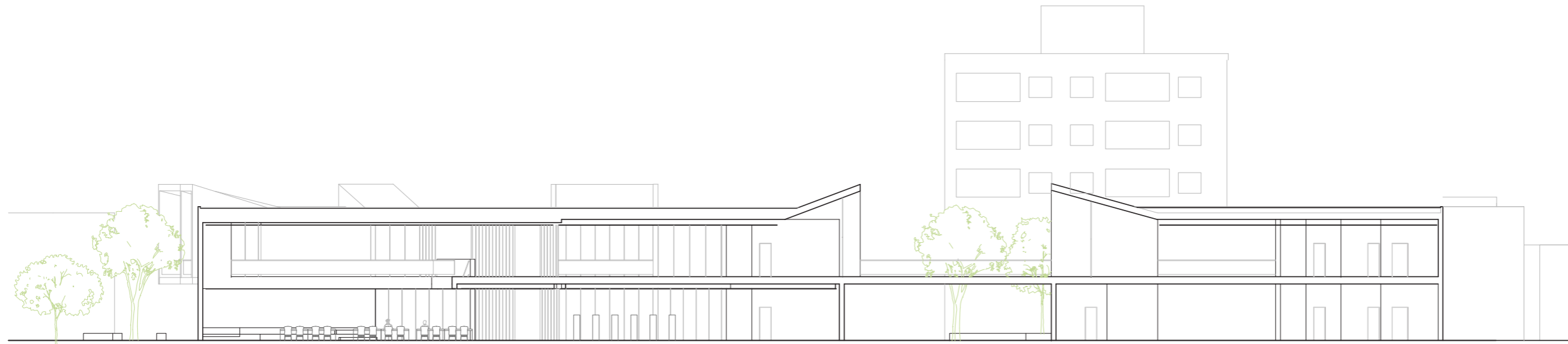
Section BB'

SCALE 1/300

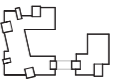
Escalas

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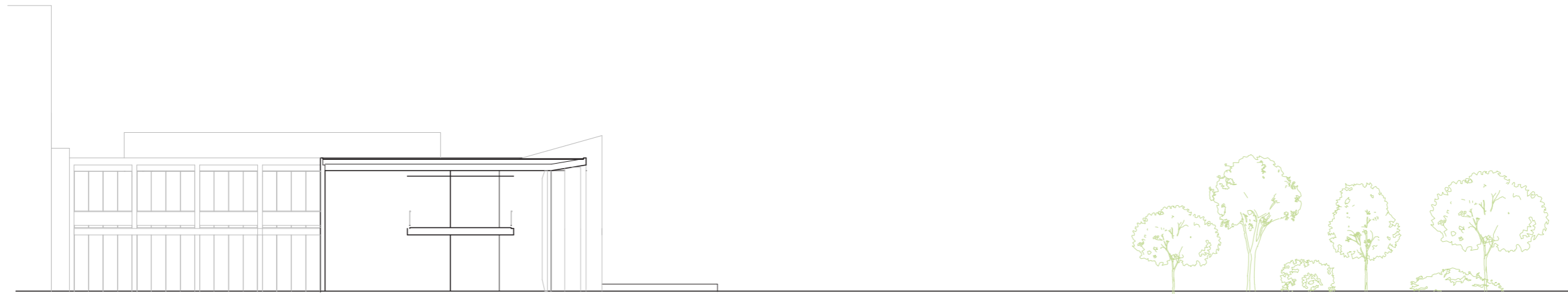
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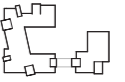
Section CC'



SCALE 1/300

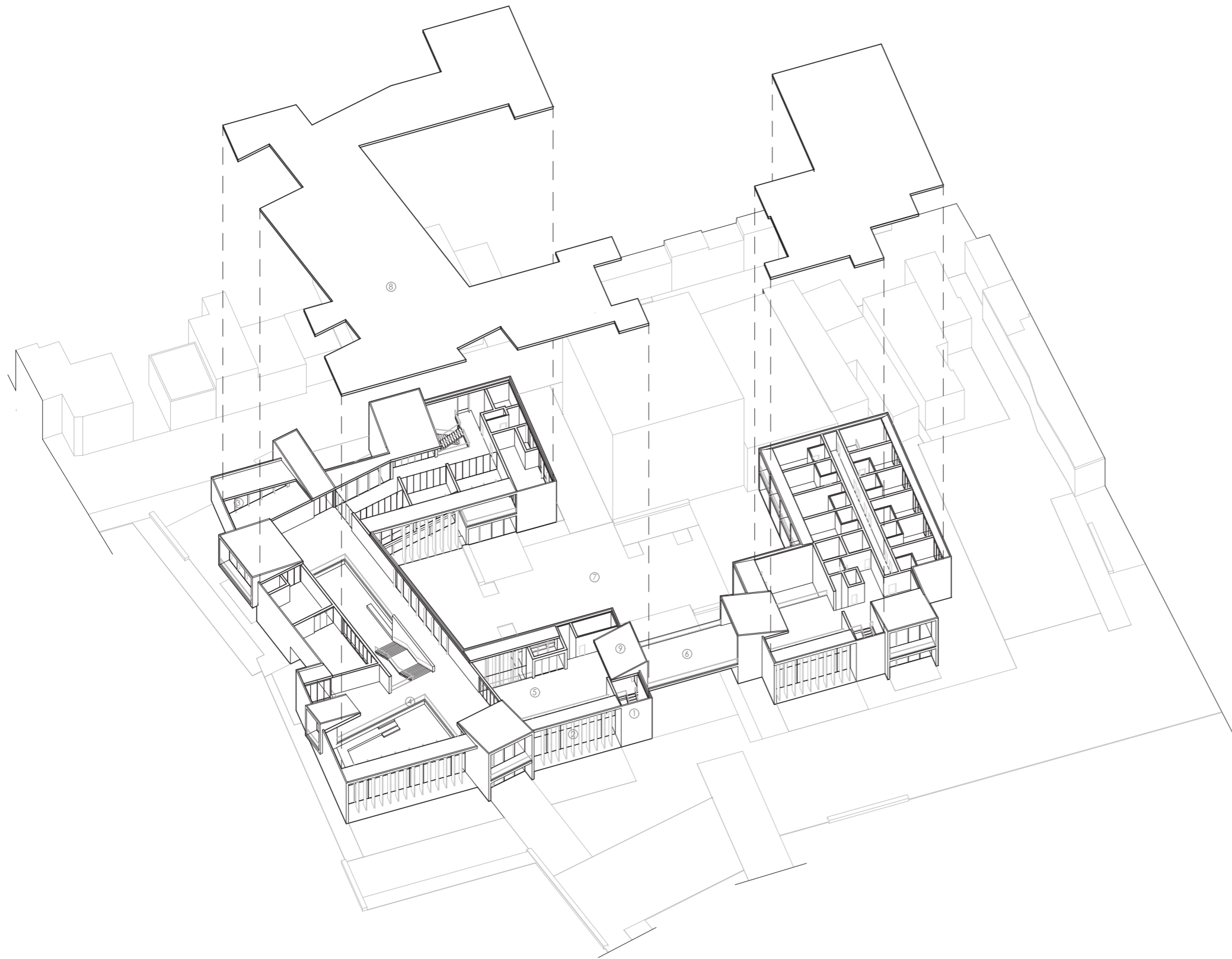


Section DD'



SCALE 1/300

Materiality



1 Reinforced concrete



2 CLT(cross-laminated timber)
solar protection brise-soleil



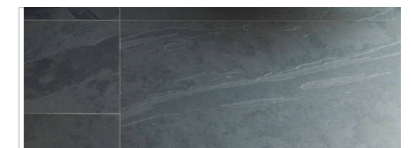
3 Aluminium curtain wall
carpentry with CLT mullions



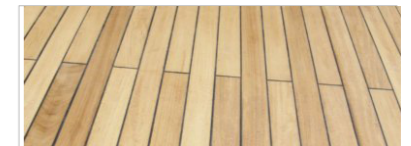
4 Glass balustrade with inox steel
railing



5 Interior stone flooring



6 Exterior wood flooring



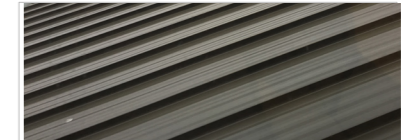
7 Exterior continuous stamped
concrete flooring



8 Flat roof protected with a thin
layer of gravel



9 Inclined roof protected with
corrugated sheet metal

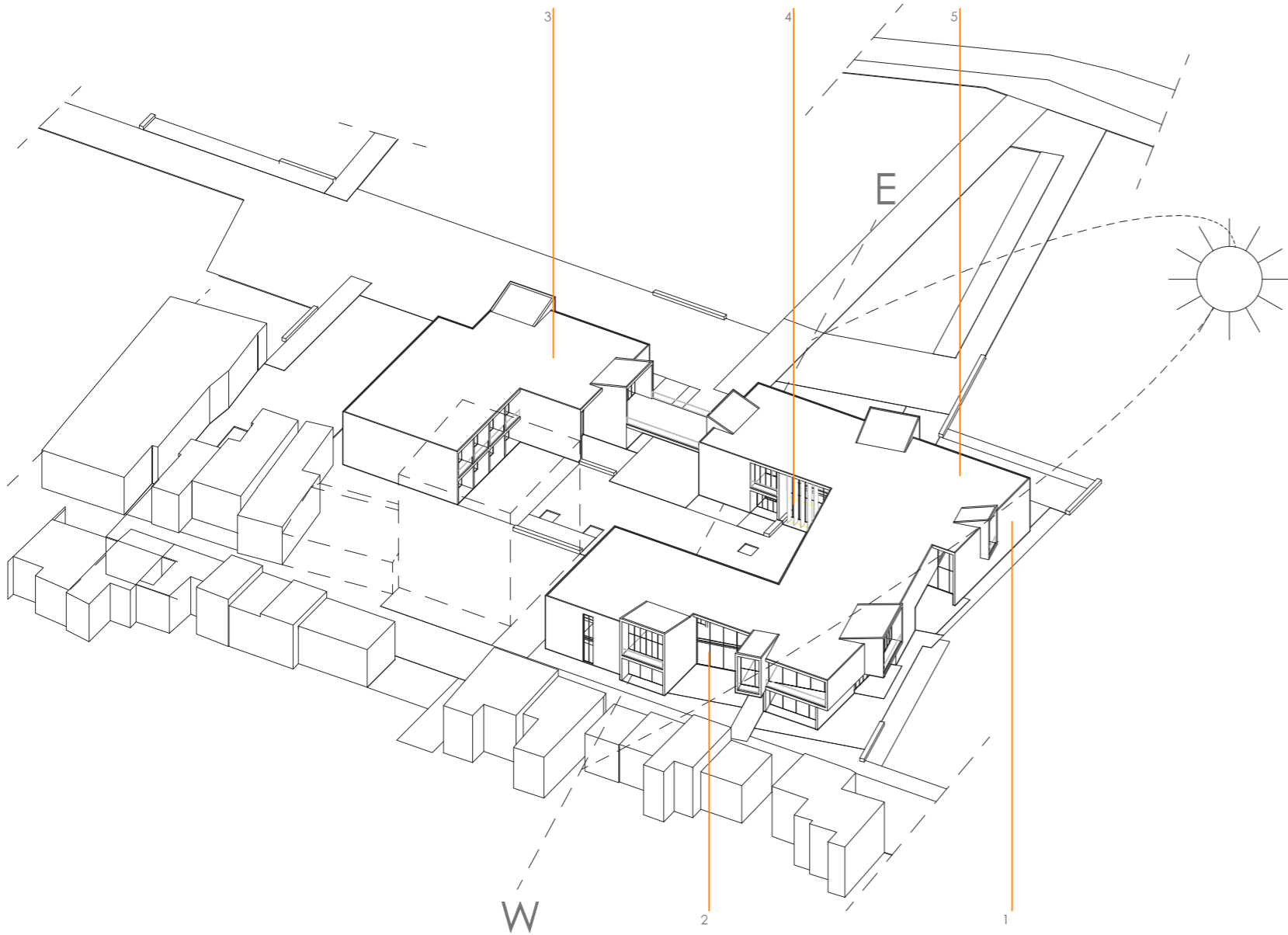


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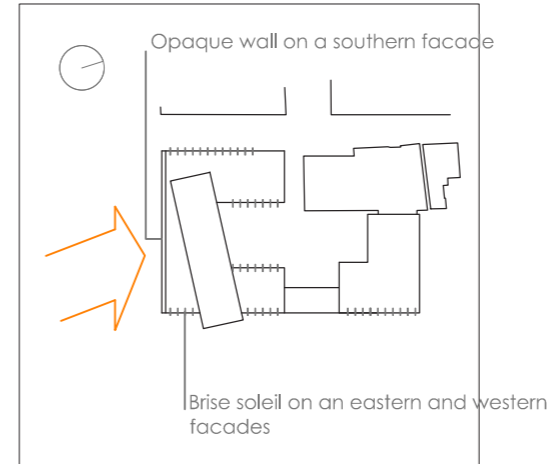
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Energy efficiency

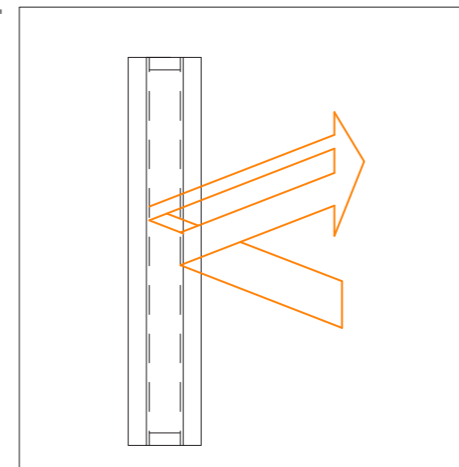


1 Solar protection

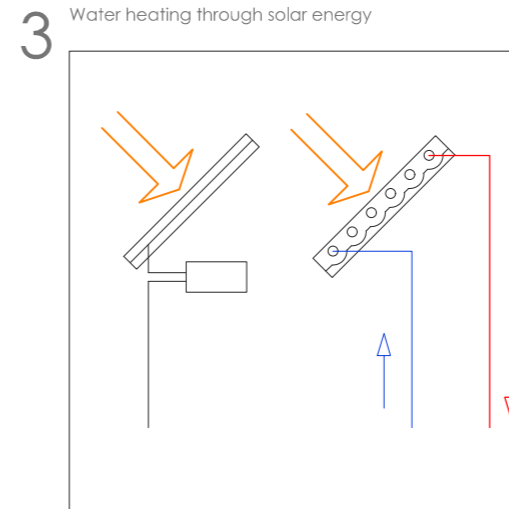
The building is designed to have large glass panes, oriented towards east and west, that are protected from the sun by large composite vertical panels. The south side of the building is kept mostly opaque, with no windows, to prevent it from excessive heat gain.



2 Low emitting glass panes

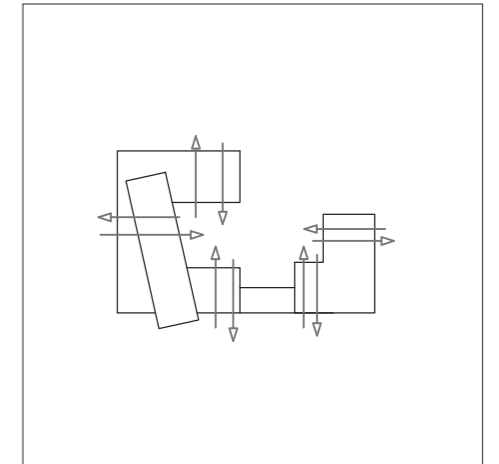


Electricity generation from solar energy
Water heating through solar energy

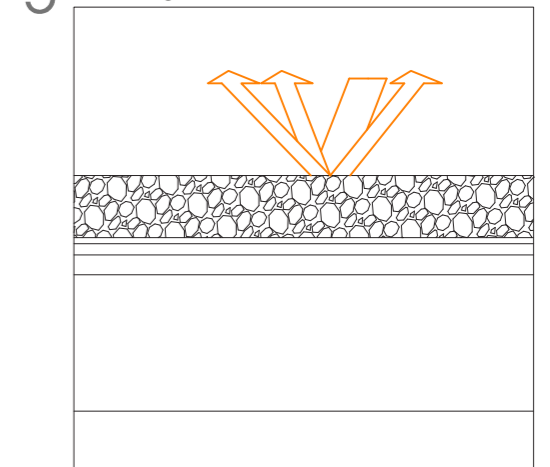


4 Natural ventilation

The building is designed to be relatively narrow (17 meters, at 8.5 meters height), to allow for easy cross-ventilation. Besides, cross-ventilation is facilitated by the close proximity of the sea.



Materials that are used are intended to dissipate extra heat from the sun thus improving energy efficiency of the building

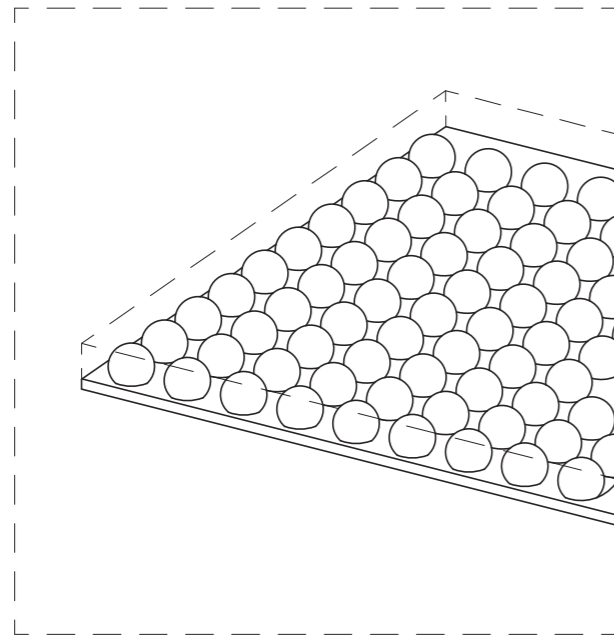


Escalas

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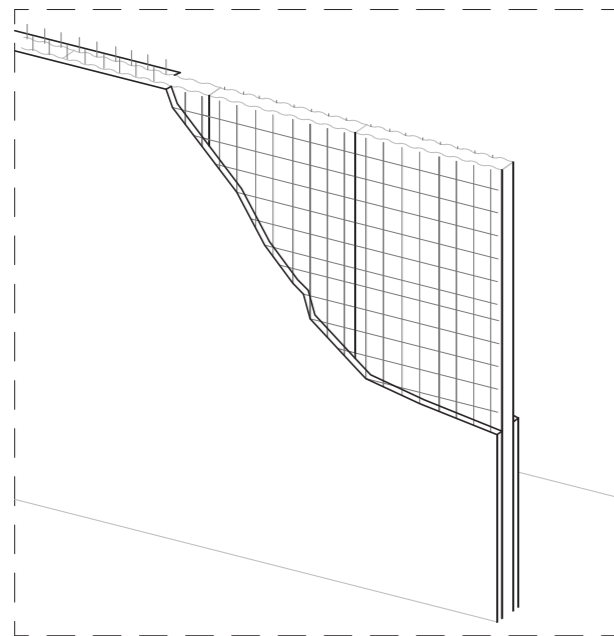
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Structural approach

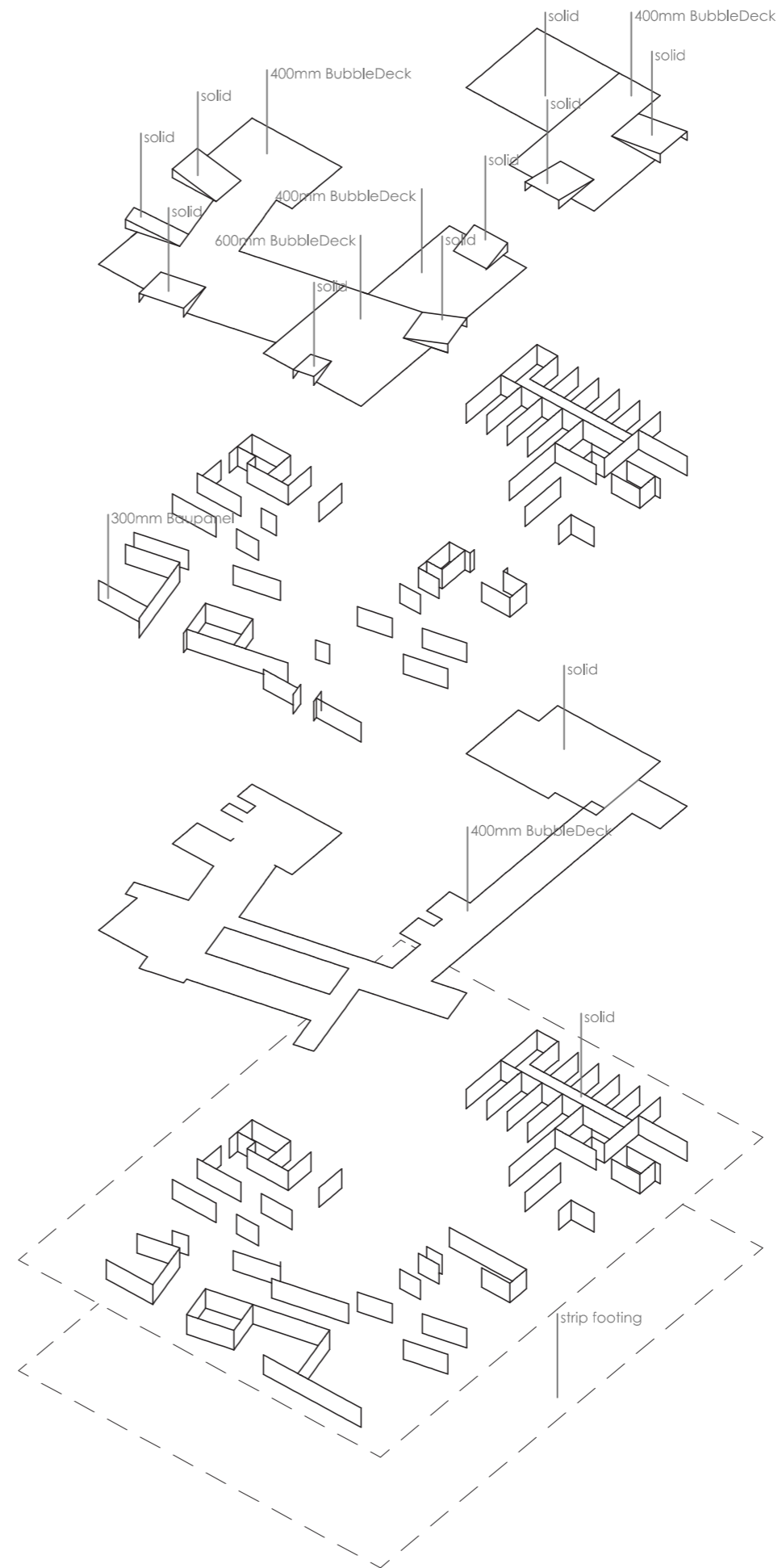


Floor slabs:
Bubble-Deck slab
400mm total thickness
60mm prefabricated slab
320mm bubbles
site-pour concrete
Solid slab
300mm total thickness
rebar reinforcement
site-pour concrete

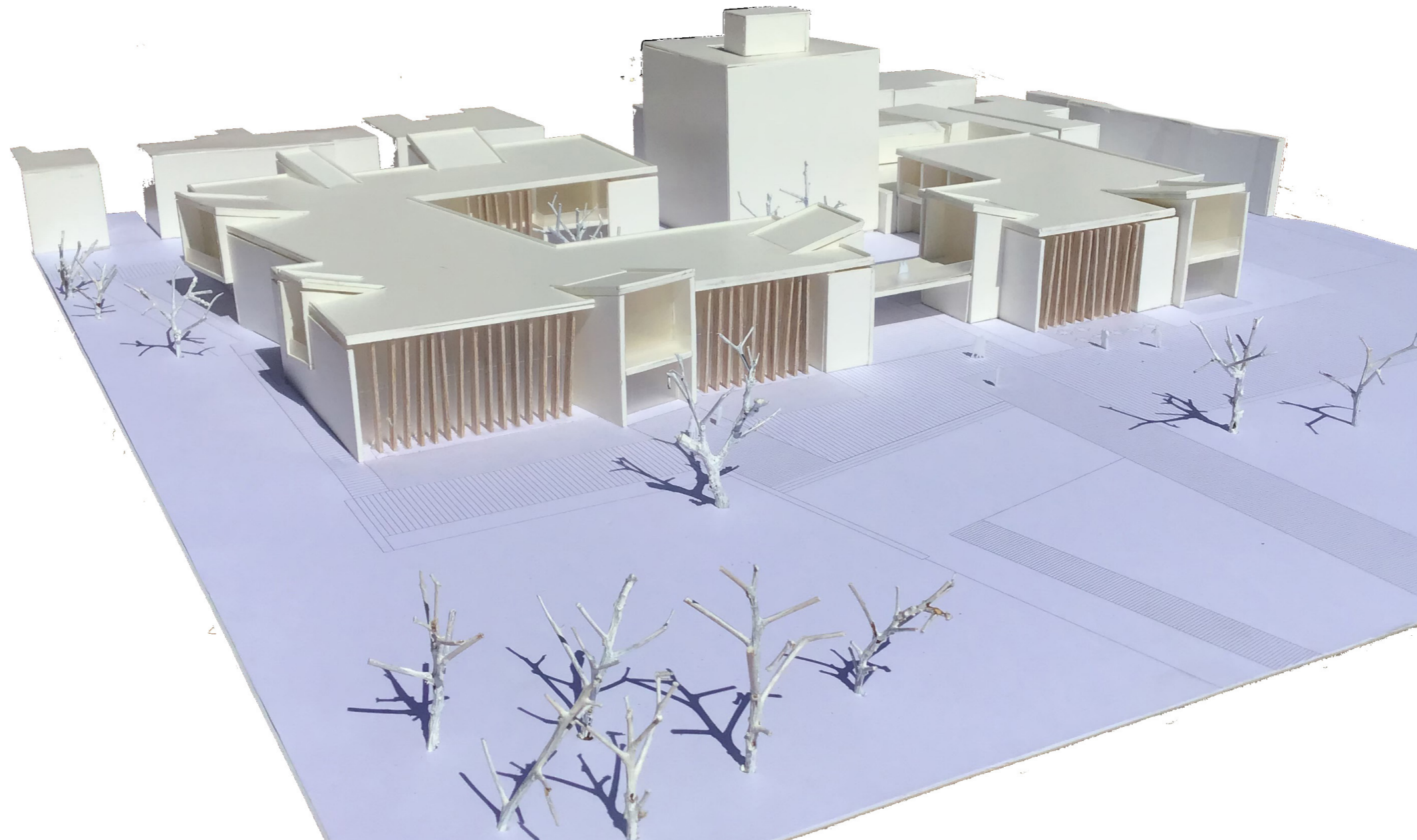
600mm total thickness
80mm prefabricated slab
500mm bubbles
site-pour concrete



Walls:
Baupanel solution wall
300mm total thickness
220mm EXPS core
rebar mesh on both sides
site-pour concrete
Solid wall
300mm total thickness
rebar reinforcement
site-pour concrete



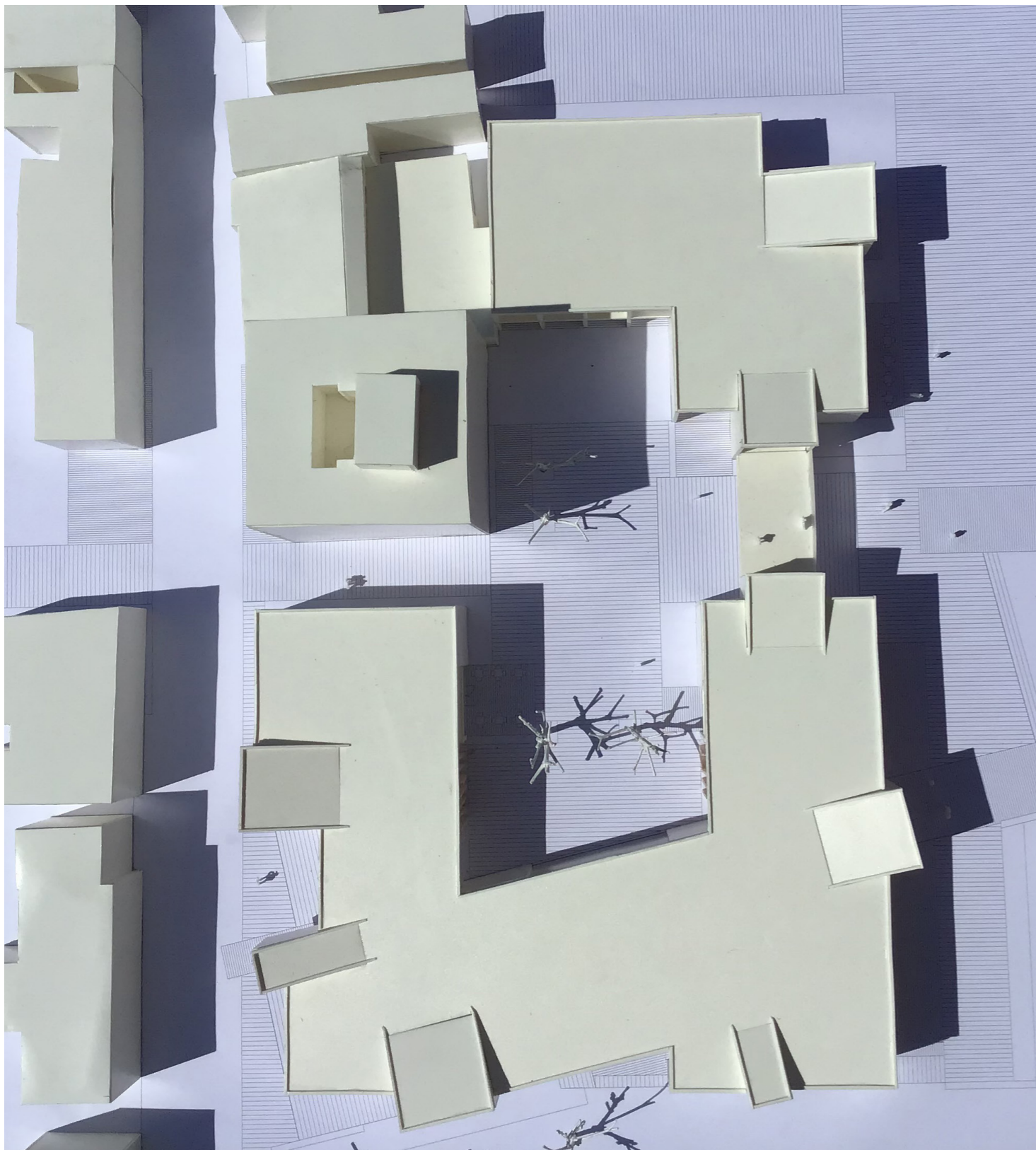
Model



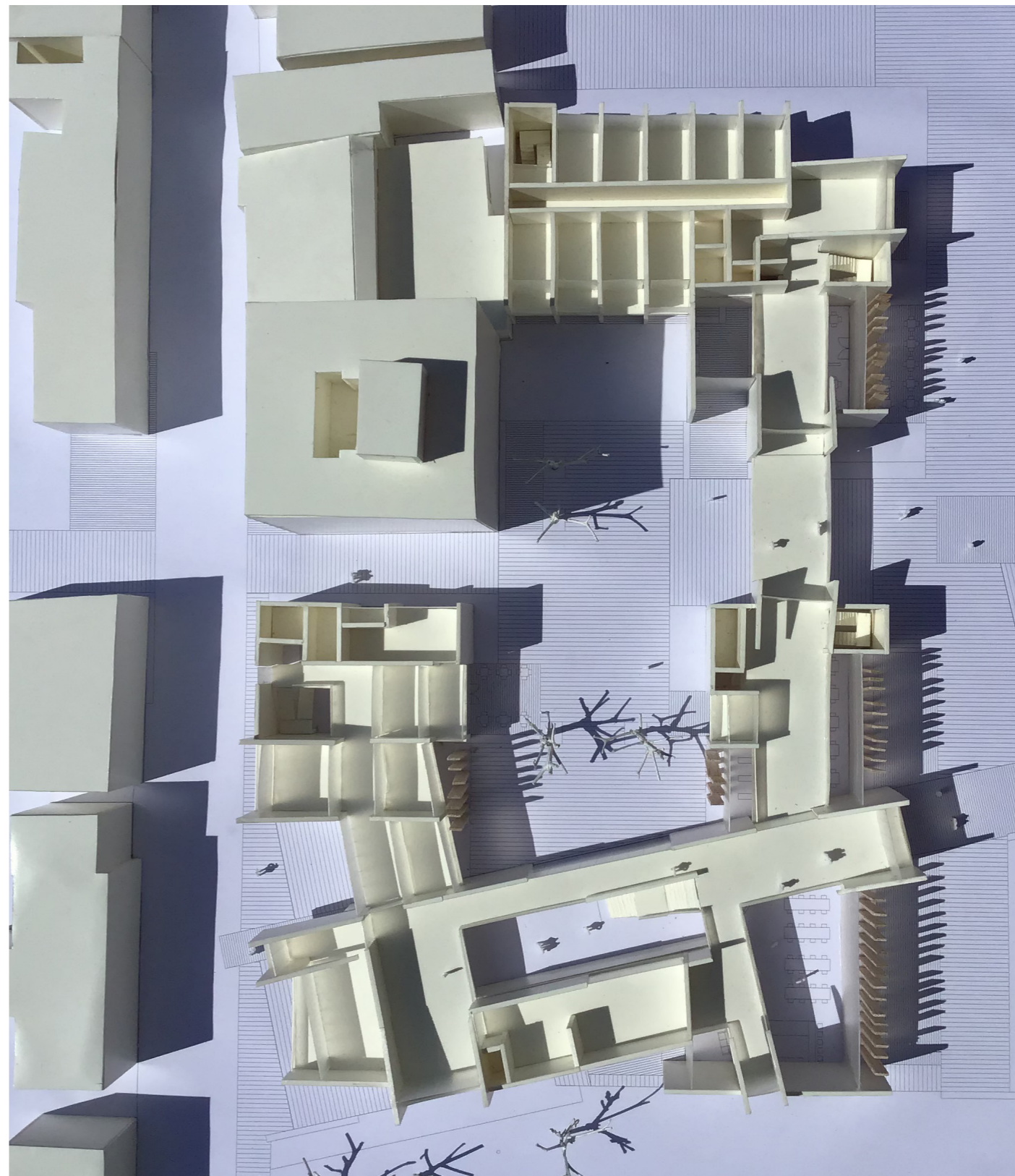
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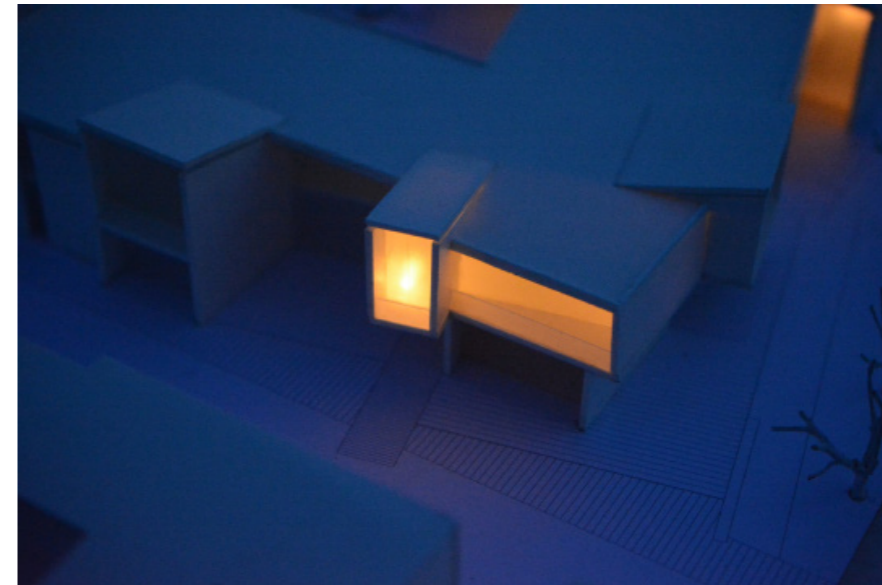
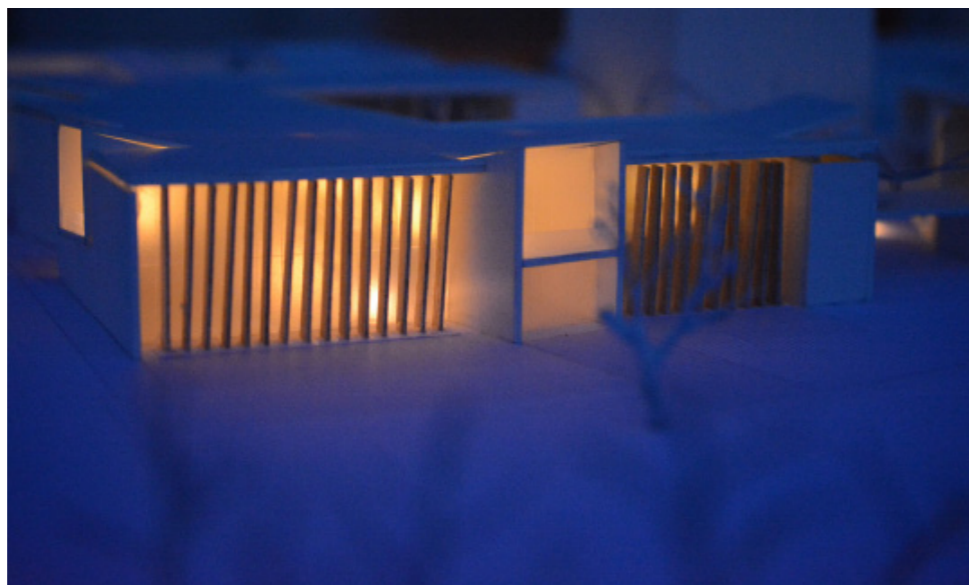


View from the top



View from the top, with roof removed

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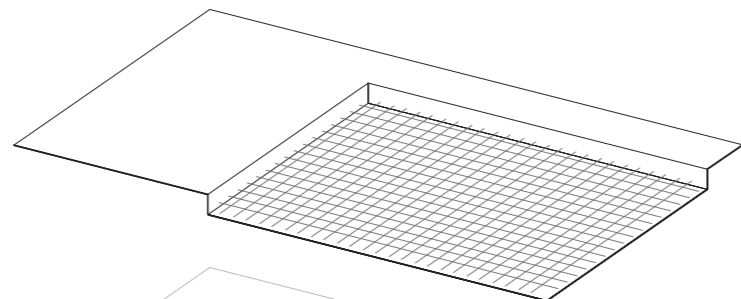
4. Construction

Constructive phases

Construction phases

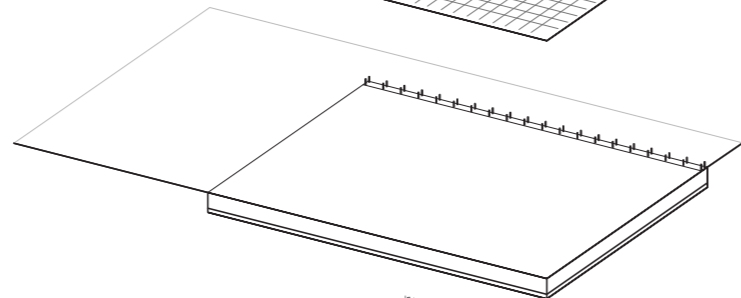
Phase 1

Excavation for the footing is created



Phase 2

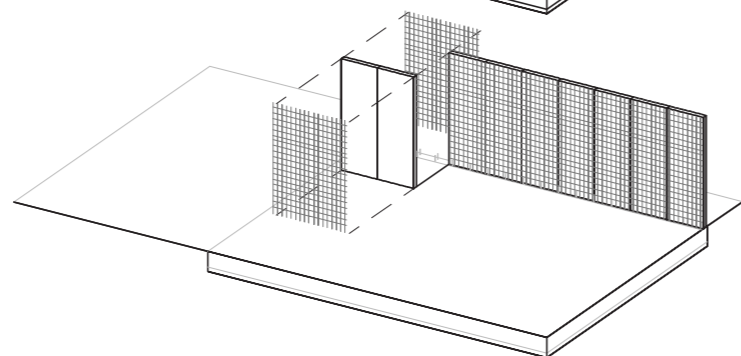
Reinforced concrete for the footing is being set



Phase 3

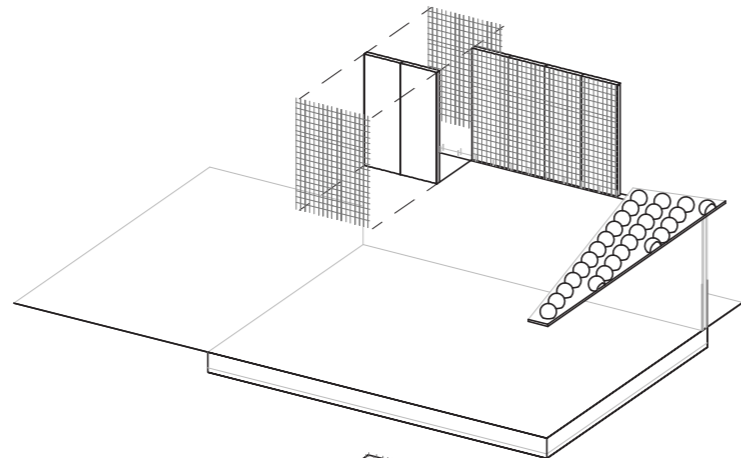
EXPS panels and rebar mesh for the walls of the ground floor are placed **

**at the same time, installations are connected



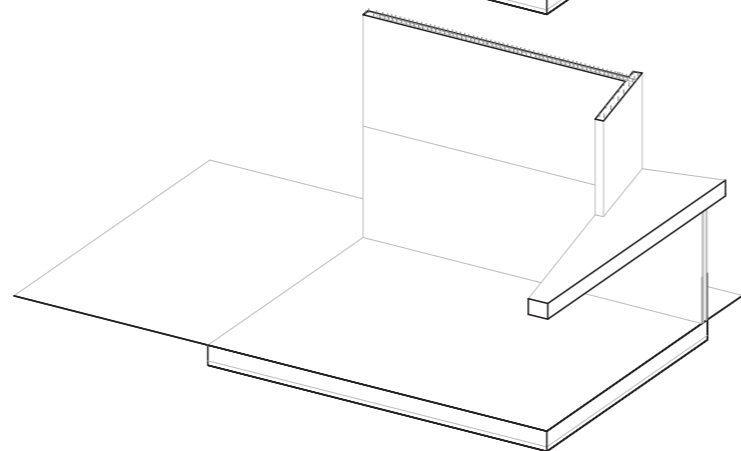
Phase 4

Concrete for the walls of the first floor is set in place



Phase 5

EXPS panels and rebar mesh for the walls of the first floor are placed. Also, prefabricated slab with the elements for the Bubbledeck floor are lifted onto prepared anchors in the walls of the ground floor

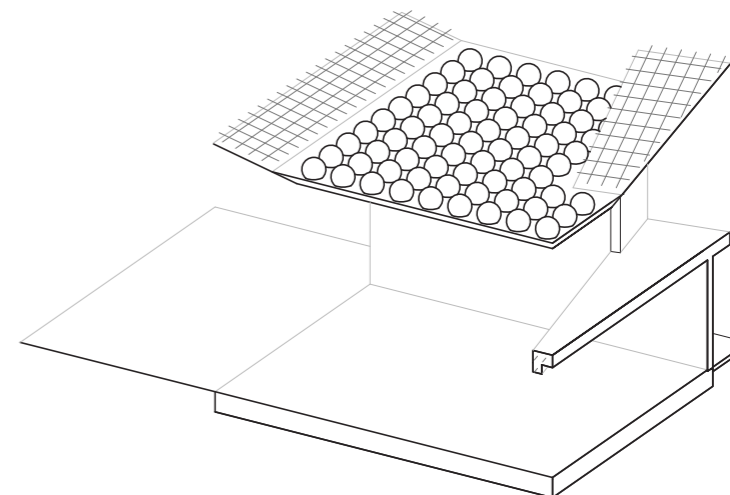


Phase 6

Concrete for the walls and slab of the first floor is set in place

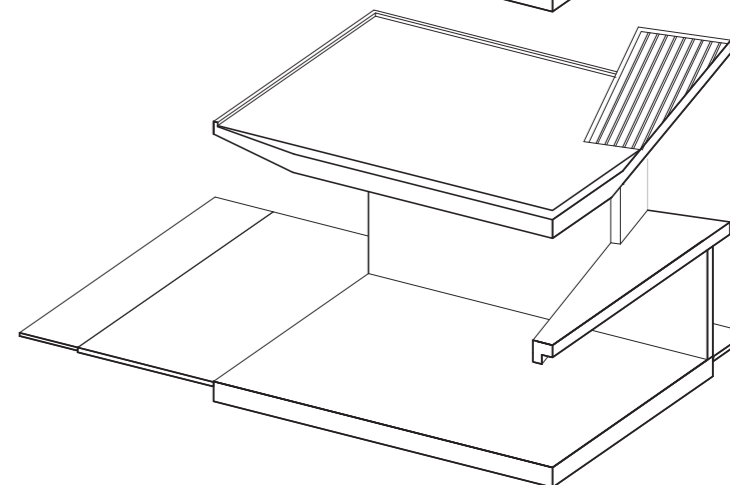
Phase 7

Prefabricated slab with the elements for the Bubbledeck floor and boards for the inclined slabs are put into place



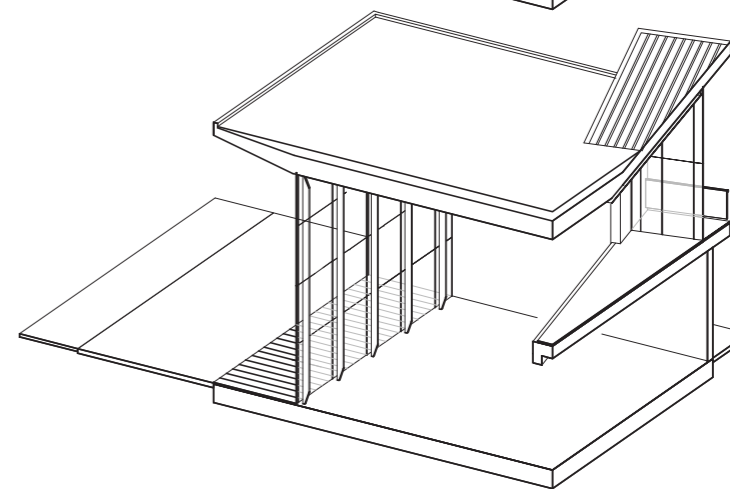
Phase 8

After setting the concrete for the roof, roof insulation, isolation, and protection layers are set in place



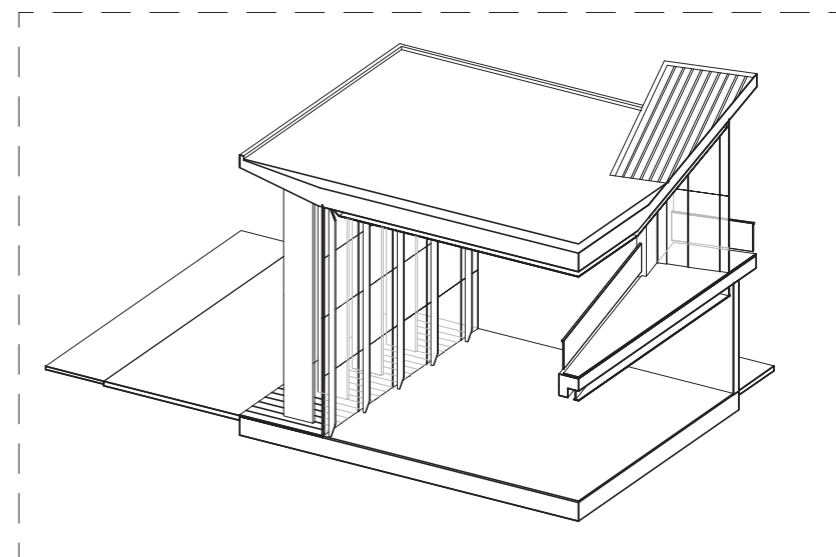
Phase 9

Exterior shell is sealed with curtain wall enclosures

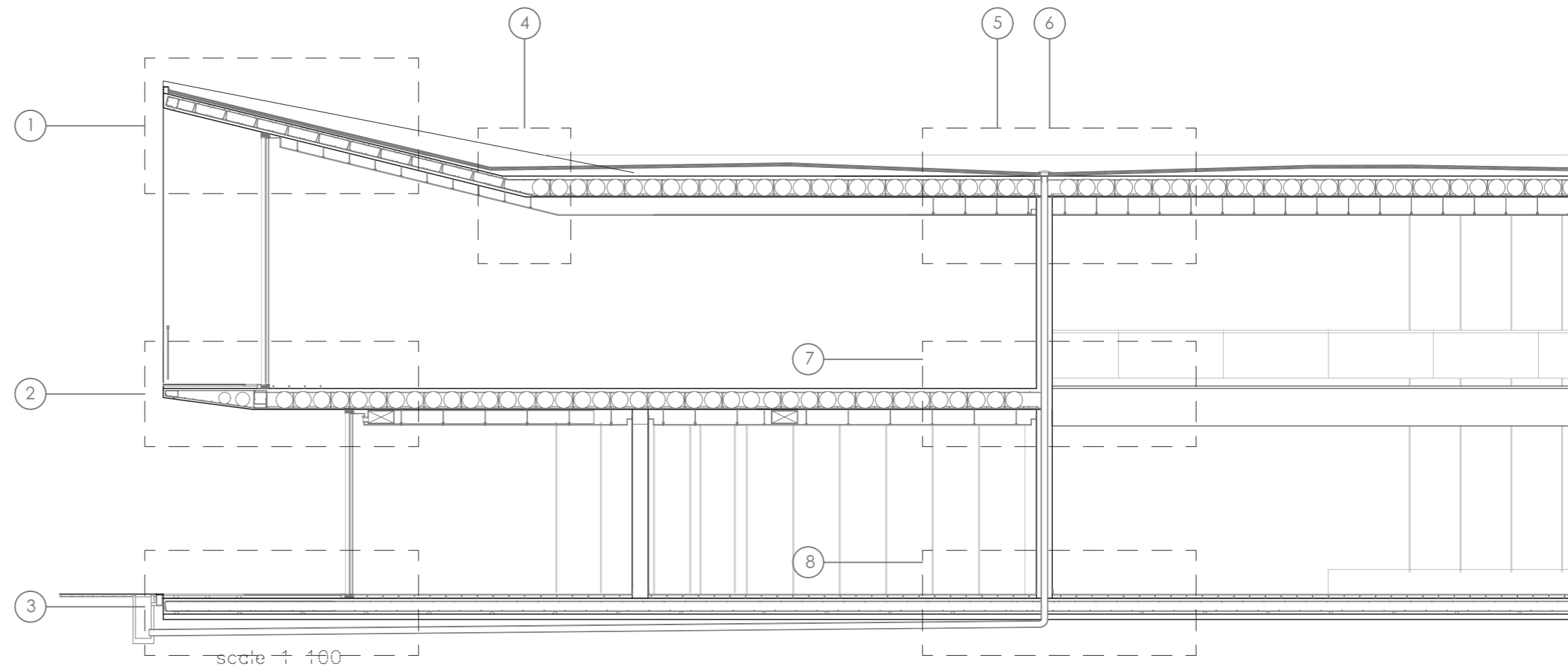


Final phase

Interior and exterior is finished



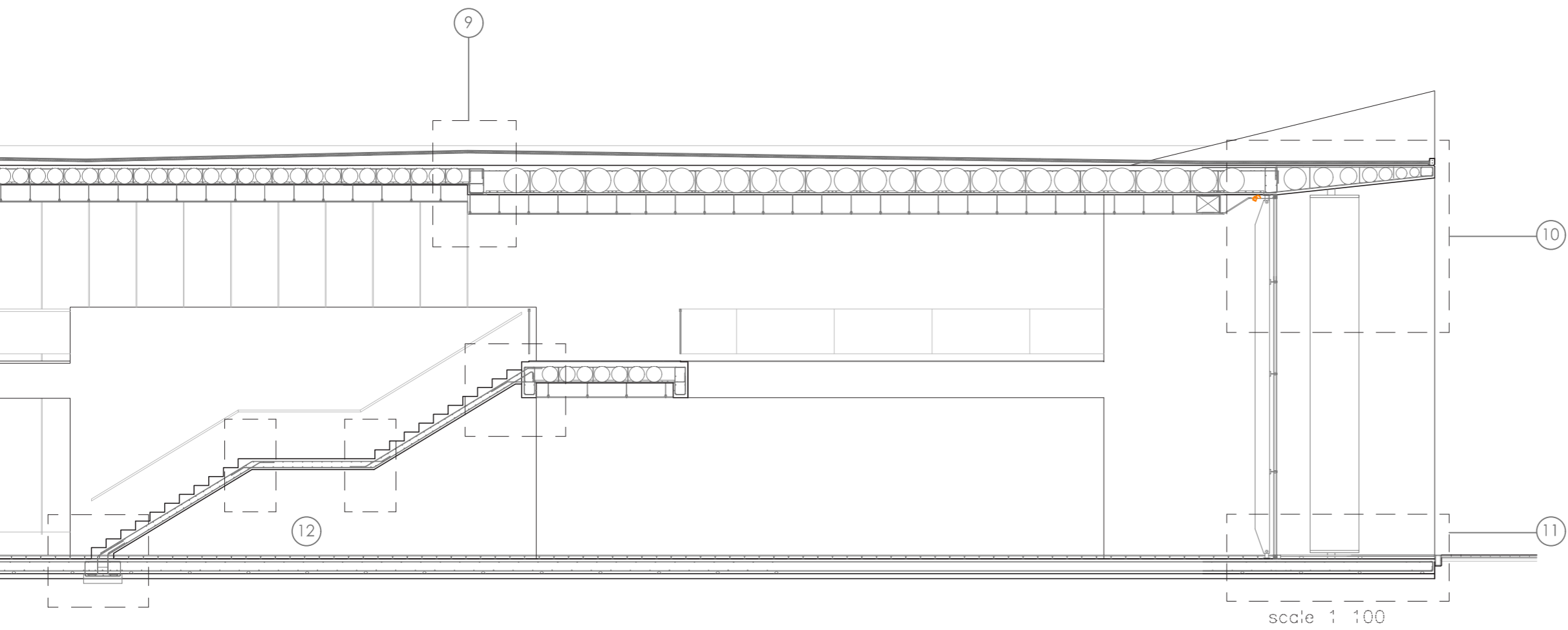
Constructive details



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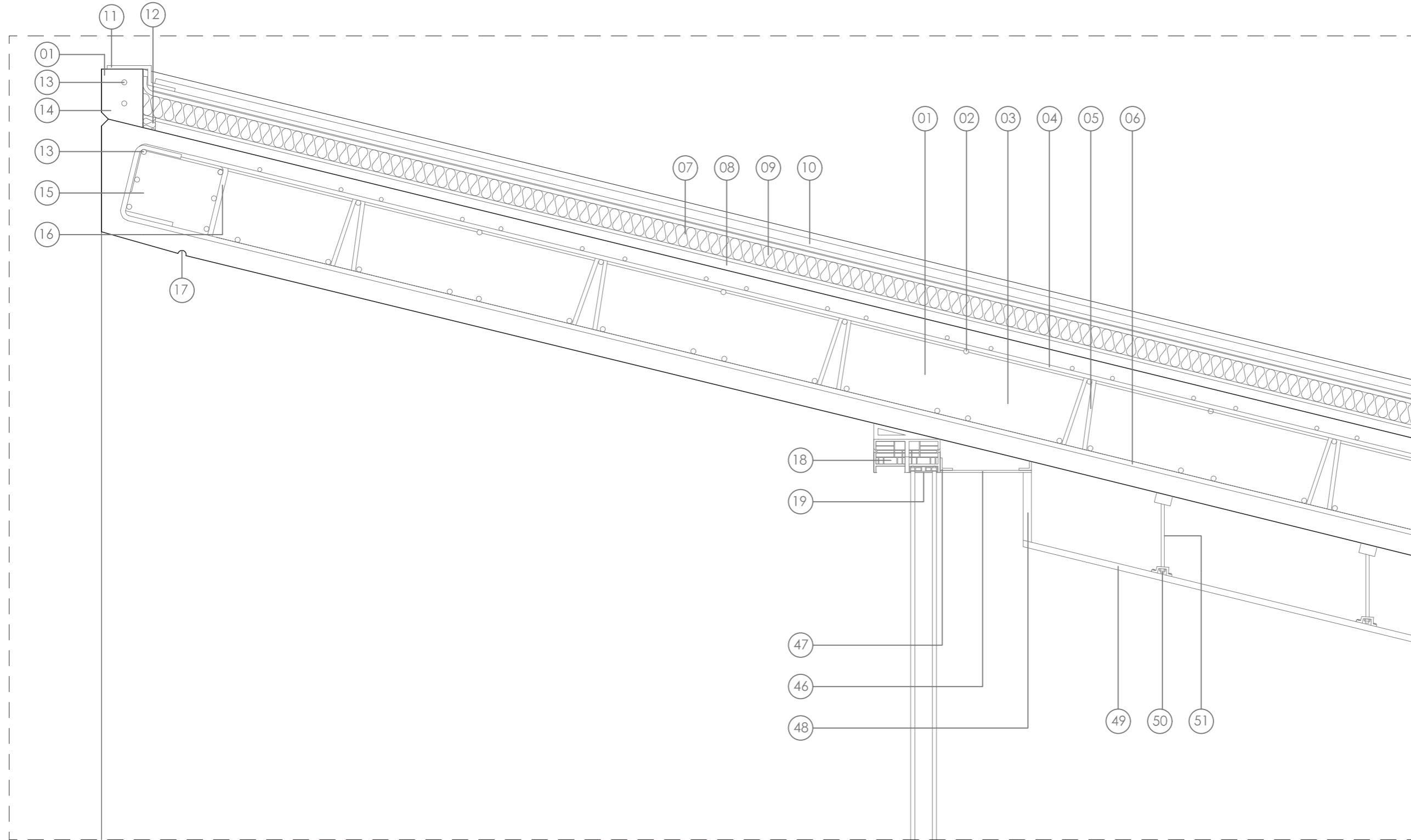
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Sloped roof slab
 01 Sloped slab
 02 Rebar reinforcement Ø16mm, S-275
 03 Concrete HA-25
 04 Rebar mesh Ø6mm, S-275
 05 Separators for tractioned and compressed rebar
 06 Tractioned rebar

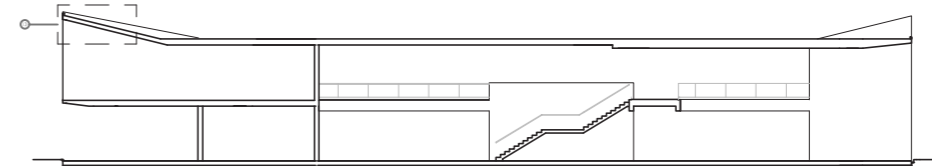
Inclined roof layers
 07 Inclined roof
 08 Leveling concrete
 09 Insulation layer
 10 Steel corrugated sheet protected layer
 11 Steel sheet transition between flat and inclined parts
 12 Compensation foam

Edge of the inclined roof
 13 Edge border
 01 Concrete
 14 Transversal rebar Ø16mm
 15 Edge beam
 16 Beam stirrups
 17 Rain water dripper

Windows(solution for 1 floor span)
 18 Window carpentry
 19 Edge seal

False ceiling
 46 Cover panel
 47 Aluminium L profile
 48 Vertical panel
 49 False ceiling panel
 50 Transversal support
 51 Vertical support

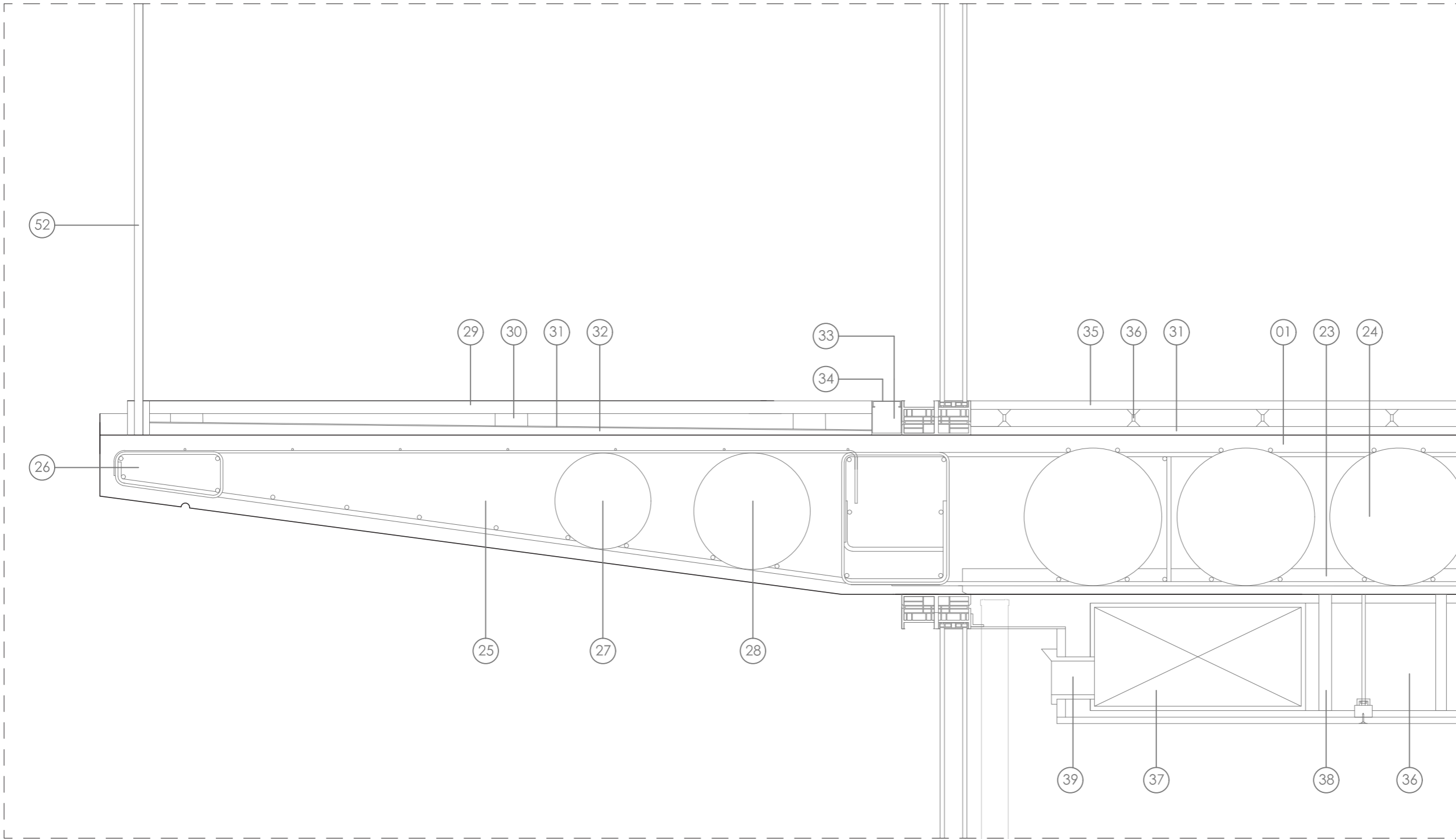
52 Glass balustrade



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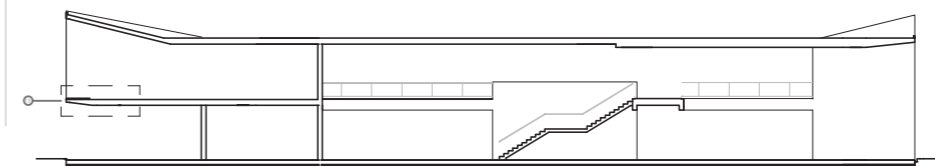
25 Edge of the floor with reduced thickness
26 Edge beam
27 Ø220mm bubble
28 Ø270mm bubble

Interior floor
31 Leveling concrete
35 Floating deck floor
36 Floating floor supports

52 Glass balustrade

Exterior floor
29 Wooden deck floor
30 Wooden deck supports
31 Isolation layer
32 Leveling concrete
33 Gutter
34 Gutter cover

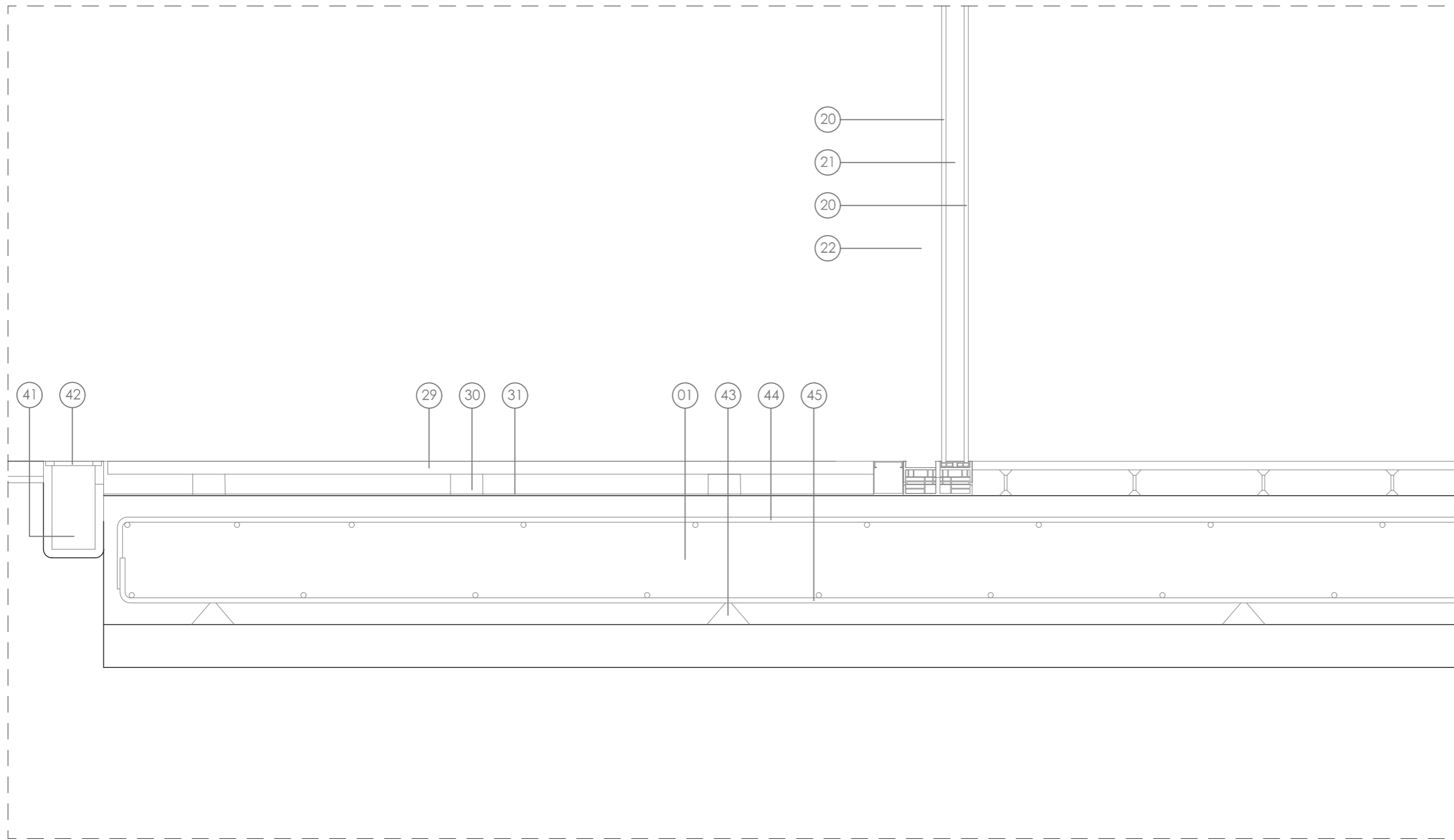
Ventilation channels
37 Ventilation pipe
38 Ventilation vent cross-section
39 Ventilation duct
40 Ventilation vent support



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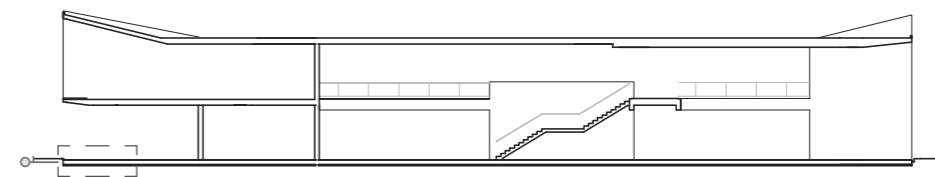


Exterior gutter
41 Exterior gutter
42 Exterior gutter cover

Foundation slab
01 Concrete
43 Separators
44 Rebar mesh for the compressed layer
45 Rebar for the tractioned layer

20 10mm Low-e glazing panel
21 Air chamber
22 Guides for the sliding window

Exterior floor
29 Wooden deck floor
30 Wooden deck supports
31 Water isolation layer to direct rainwater towards the gutter

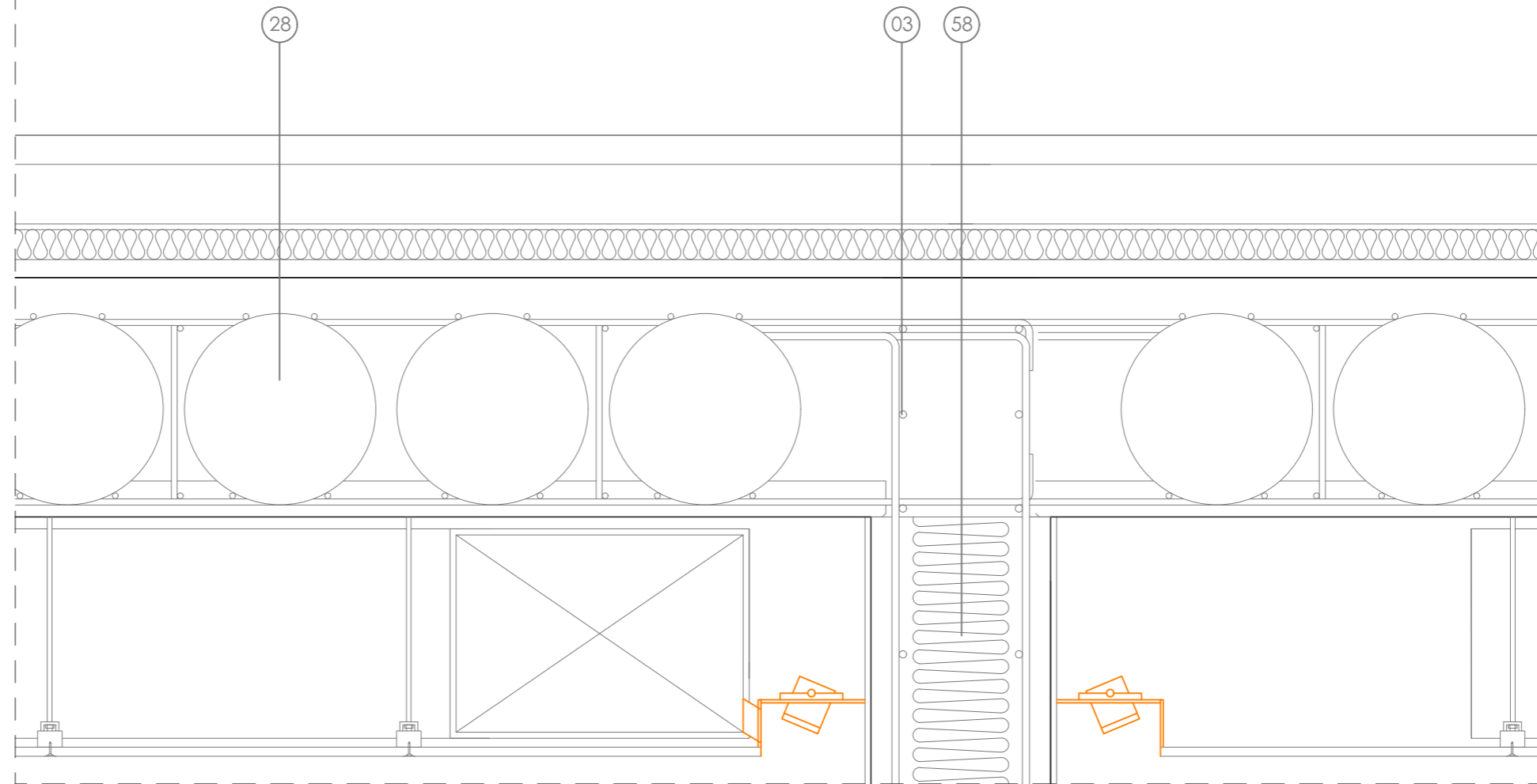
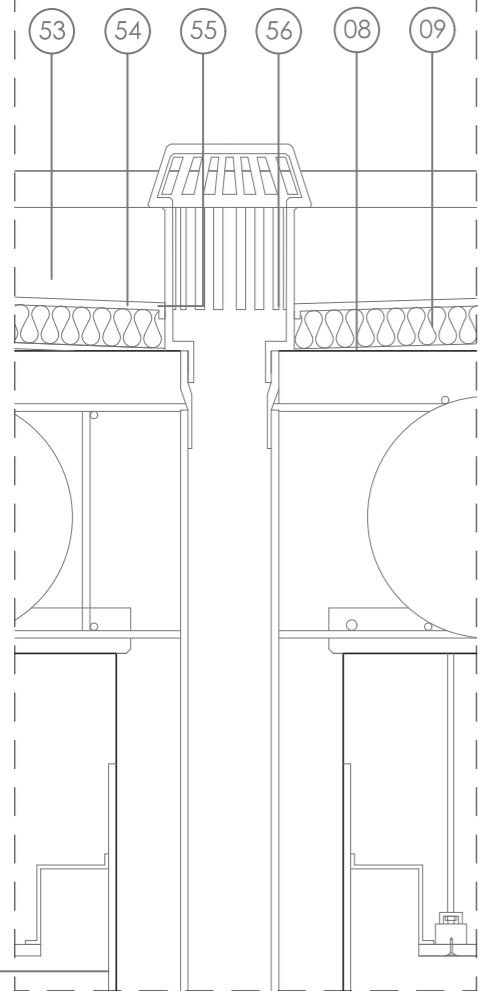


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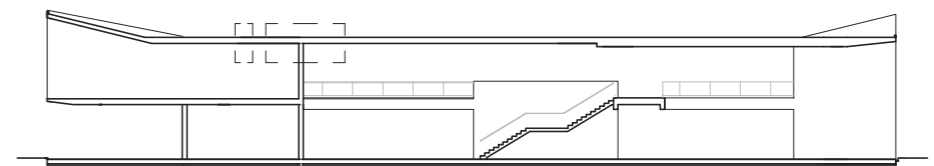
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5



- Flat roof
- 08 Leveling concrete
- 09 Insulation layer
- 53 Gravel protection layer
- 54 Geotextil
- 55 Isolation
- 09 Insulation
- 08 Leveling concrete
- 56 Drain designed for gravel covered flat roofs

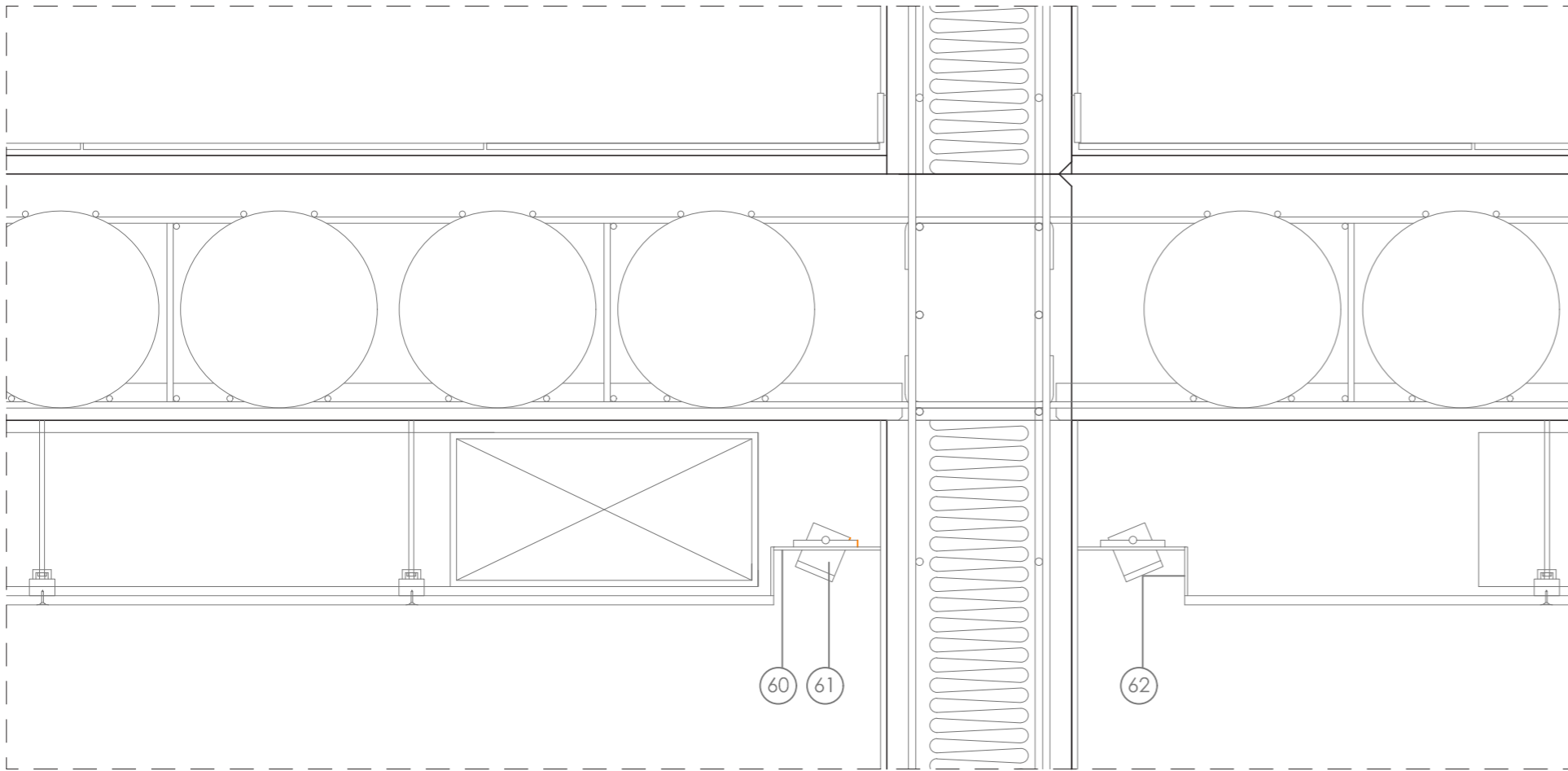
- Walls
- 57 Wall finish
- 58 Rebar mesh
- 59 EXPS foam



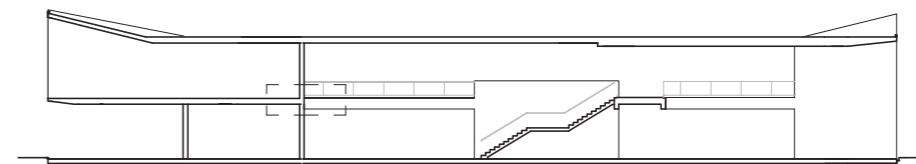
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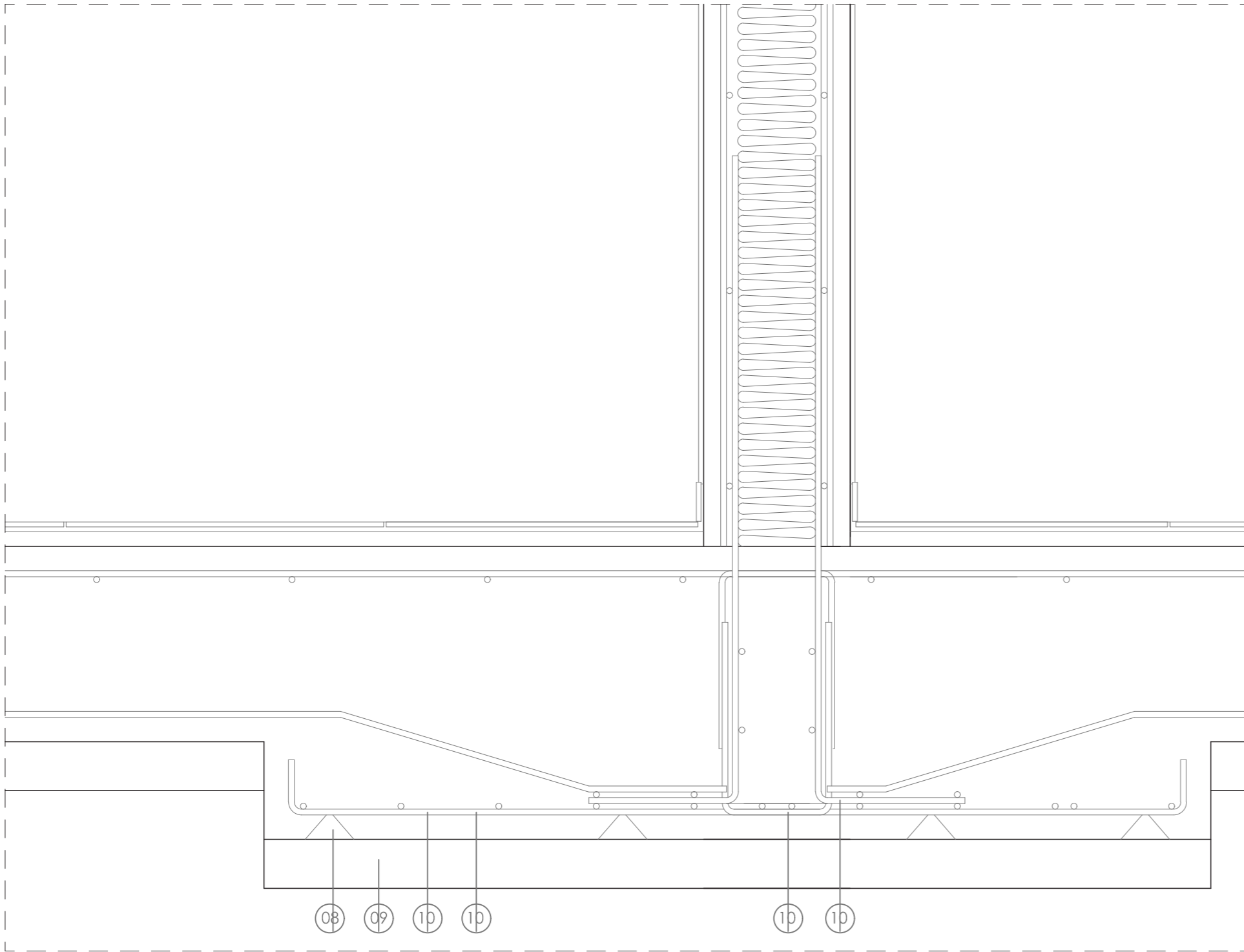
- 60 Horizontal cover
- 61 Directional LED light
- 62 Vertical cover for false ceiling



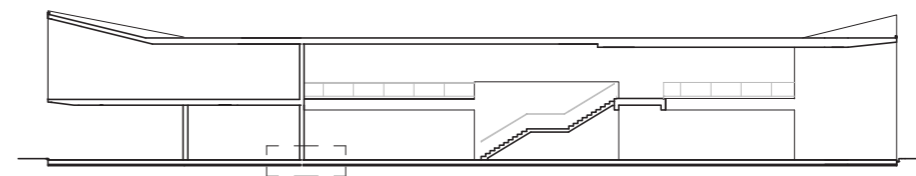
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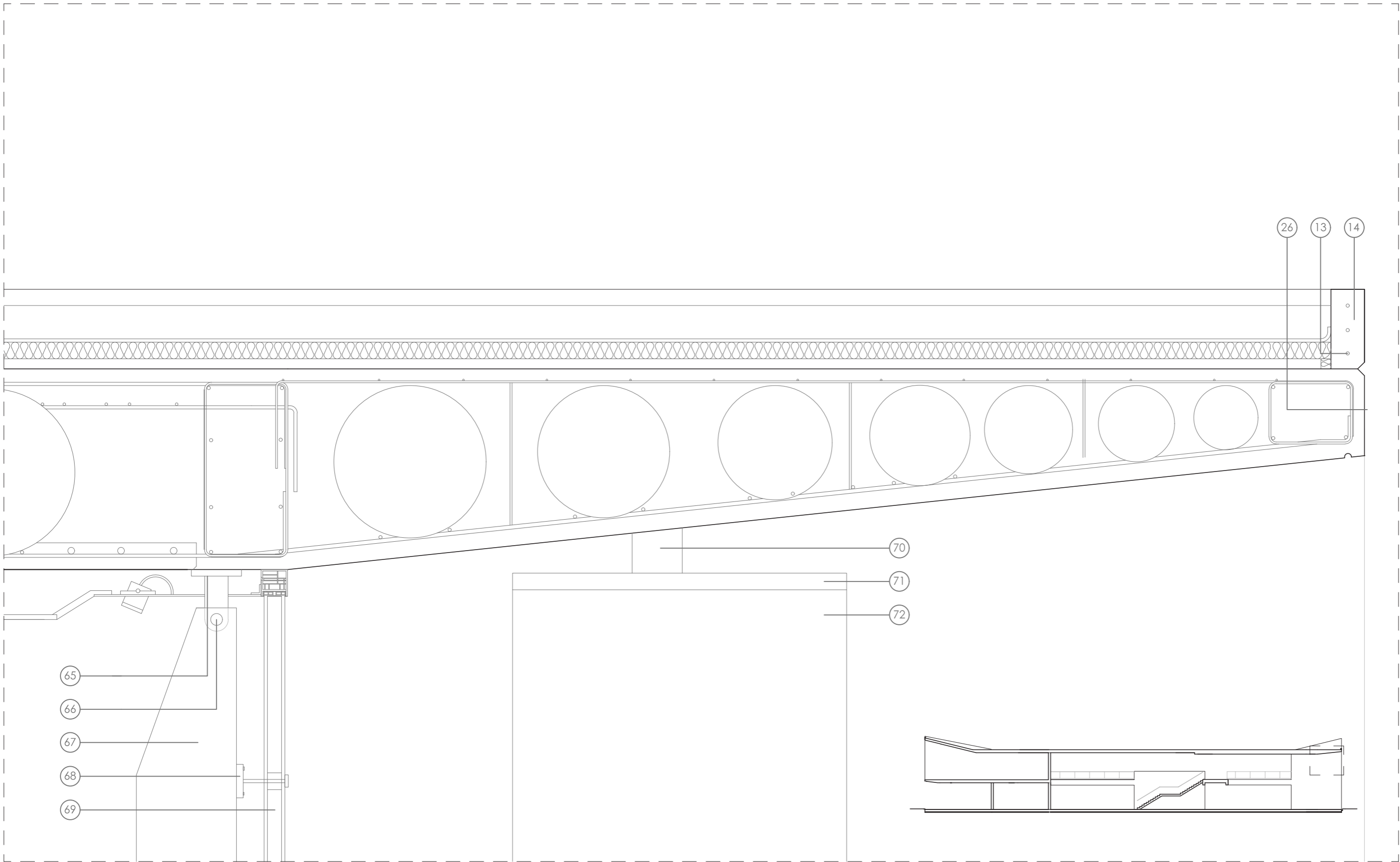
- Strip footing
- 01 Concrete
- 43 Separator
- 61 Concrete sub-base
- 62 Footing reinforcement
- 63 Rebar under the wall
- 64 Rebar connecting footing and the wall



Escalas

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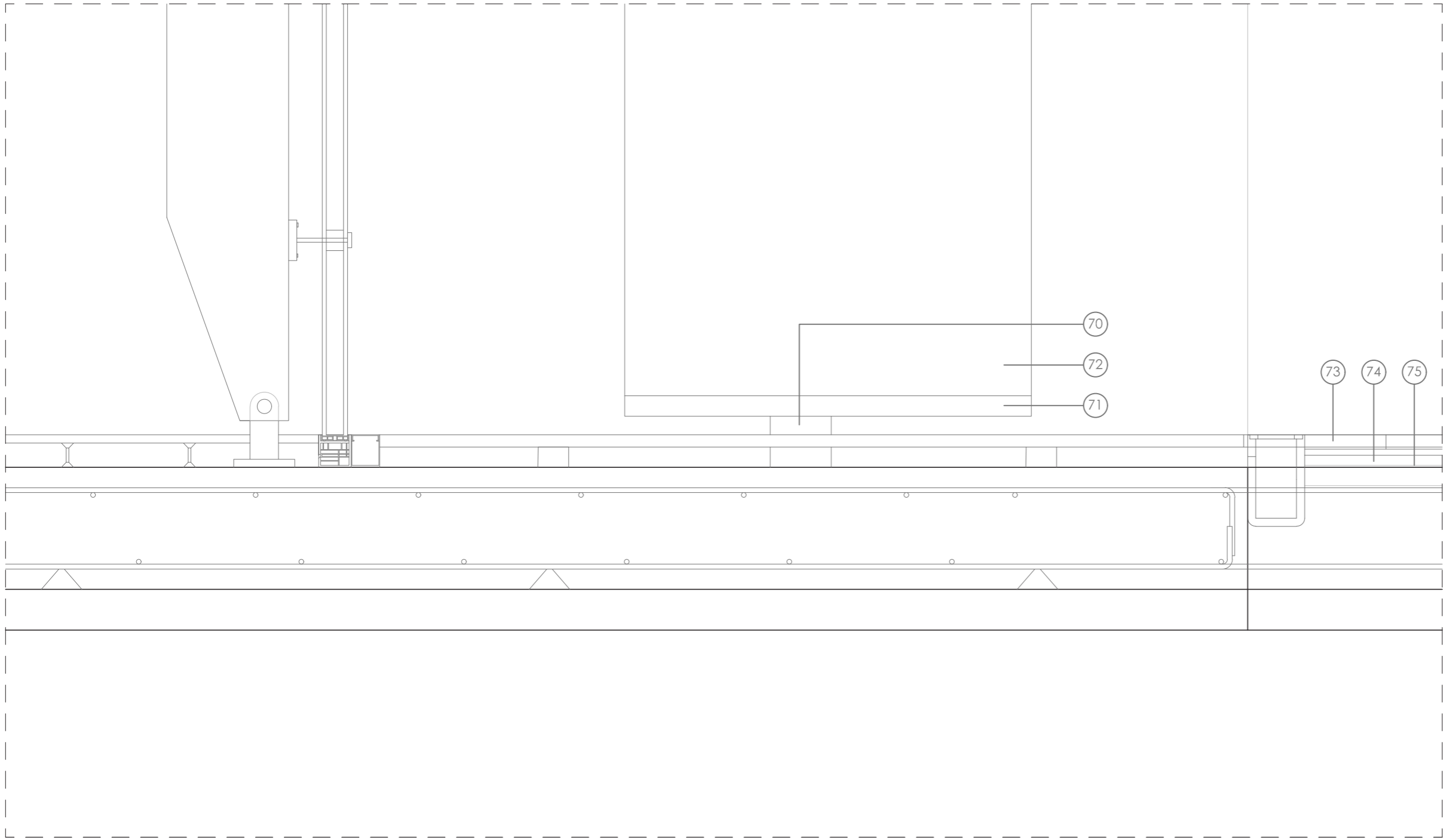
Curtain wall
65 Anchor plate
66 Mullion connector piece with pivot
67 CLT mullion
68 Mechanism attaching the glazing
69 Glazing

Brise soleil
70 Horizontal pivot and anchor for
the brise soleil
71 Fixation plate
72 CLT solar protection

Escalas

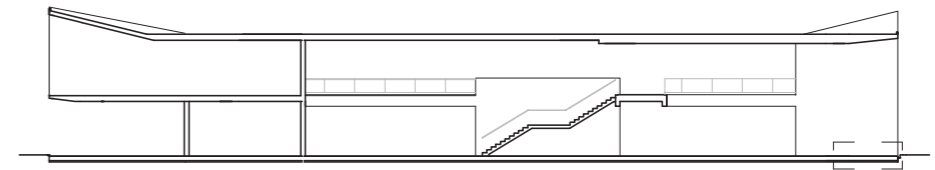
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Brise soleil
70 Horizontal pivot and anchor for the brise soleil
71 Fixation plate
72 CLT solar protection

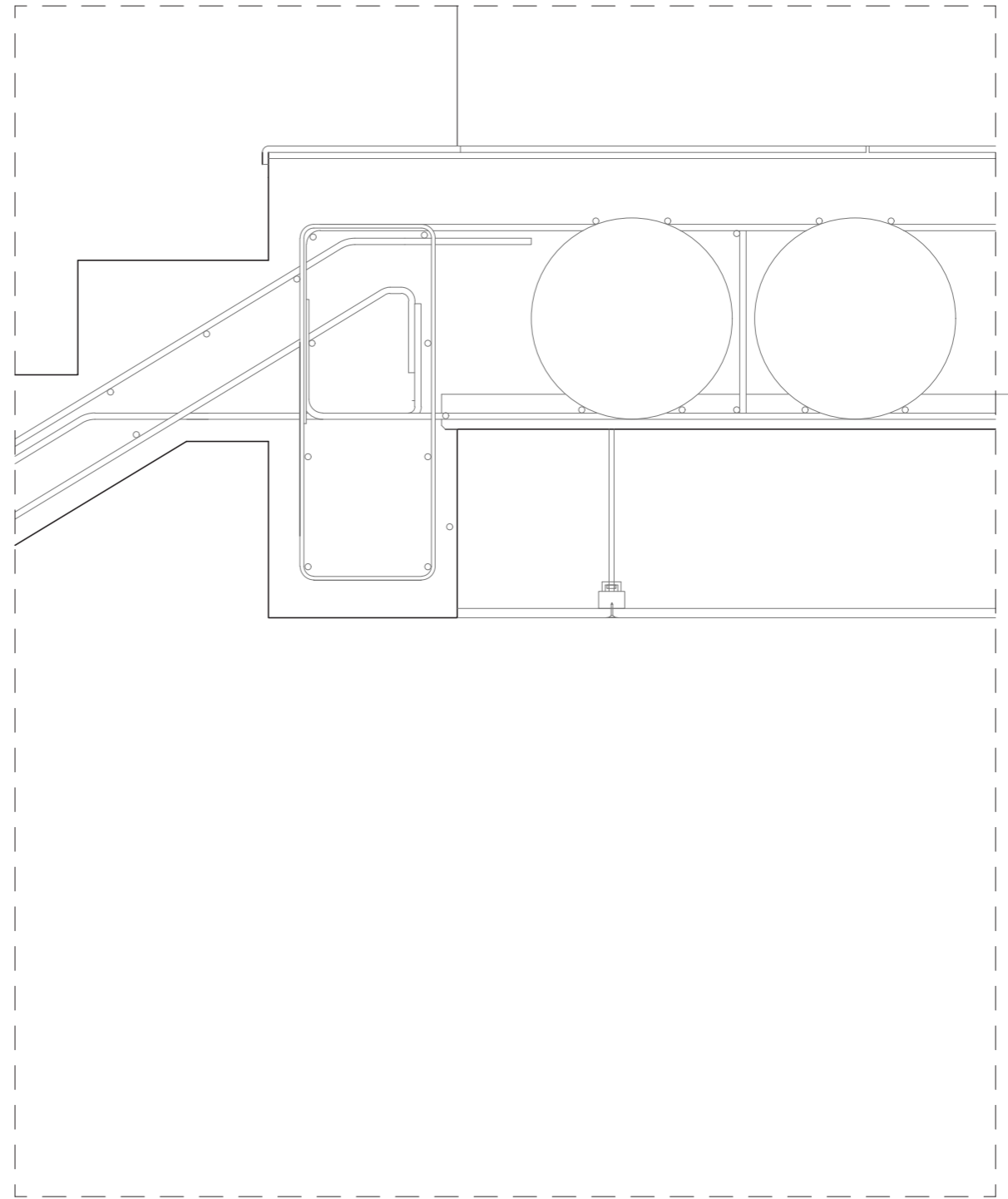
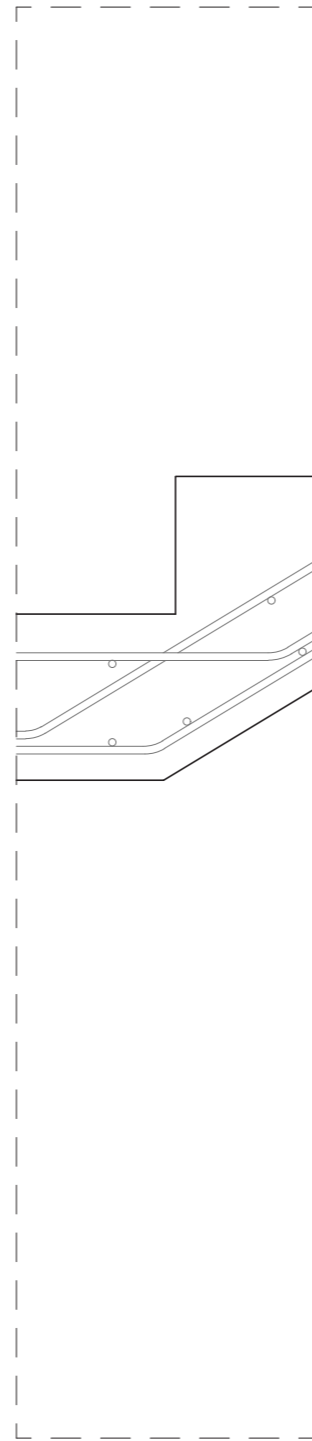
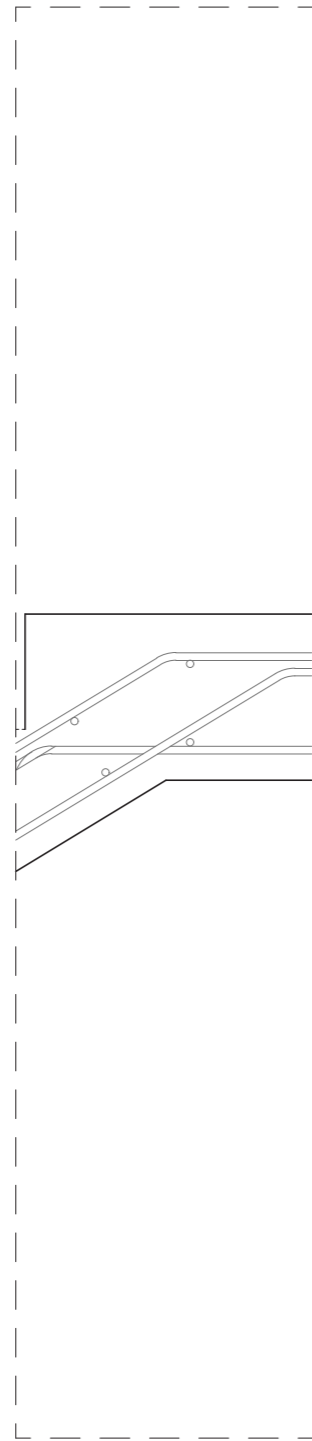
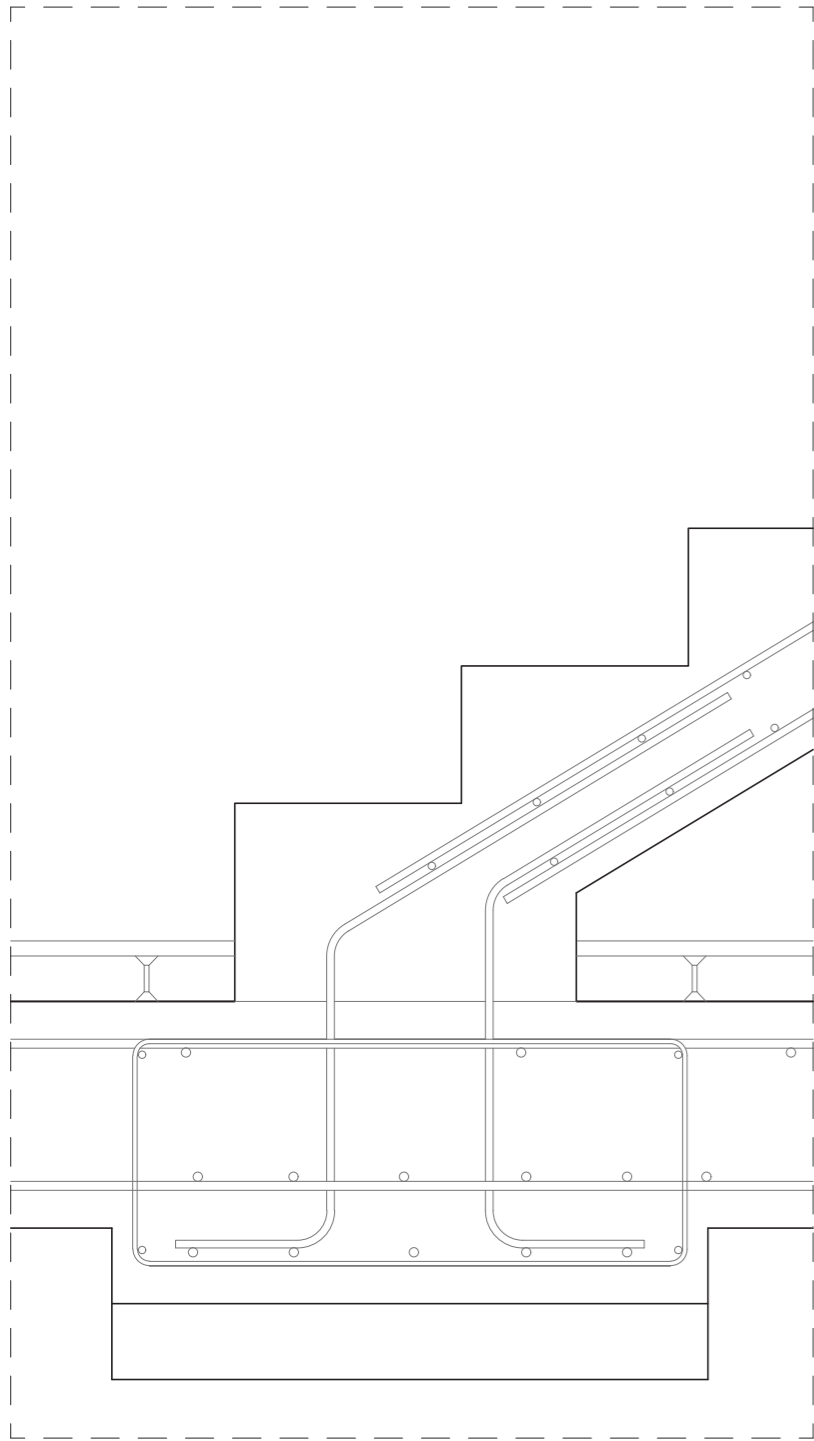
Street pavement
73 Exterior pavement tile
74 Sand sub-base
75 Gravel sub-sub base



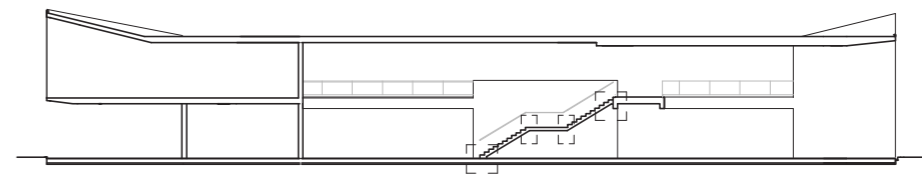
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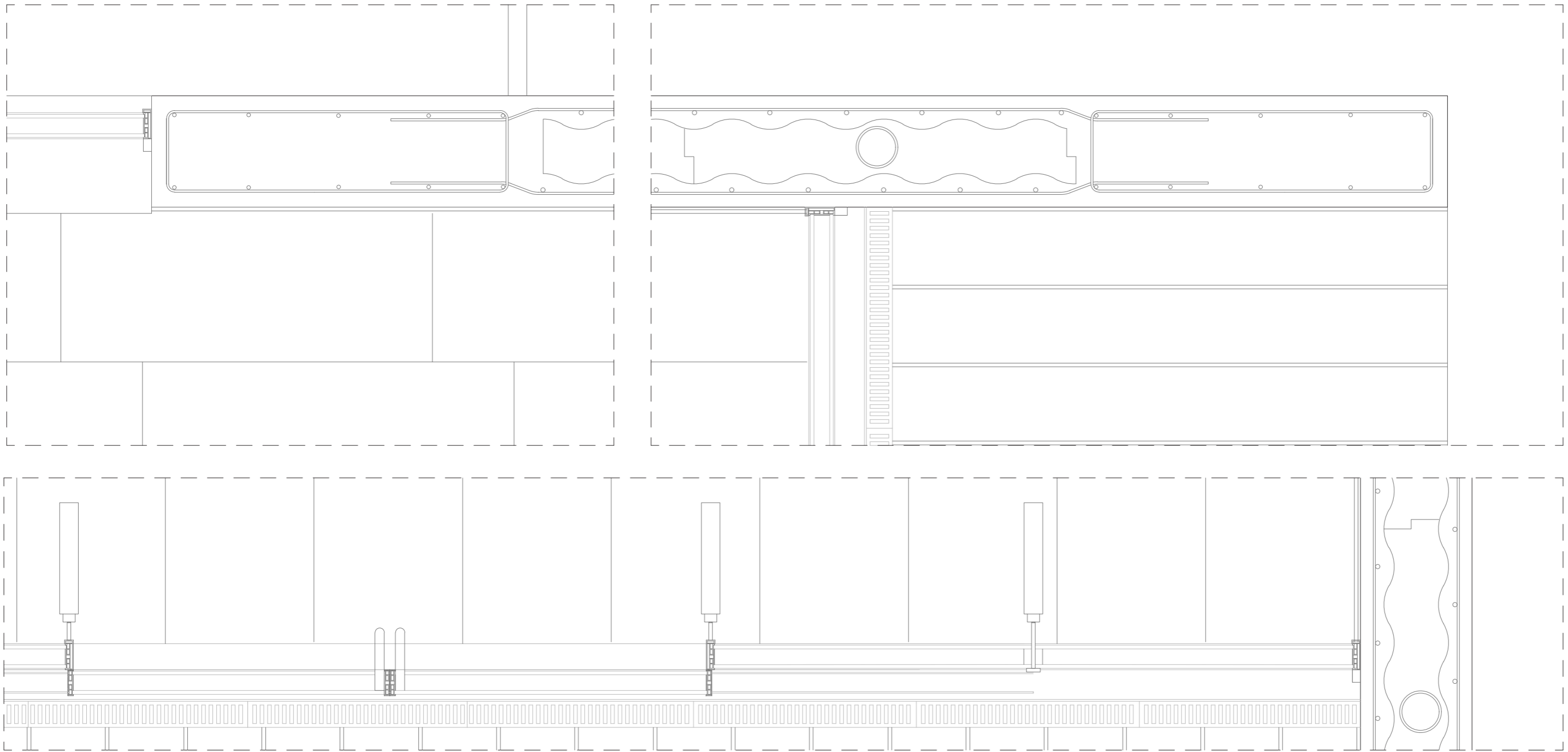
Vertical section of the staircase



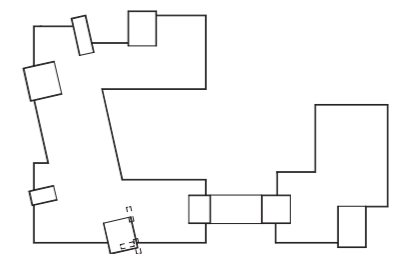
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Floor details



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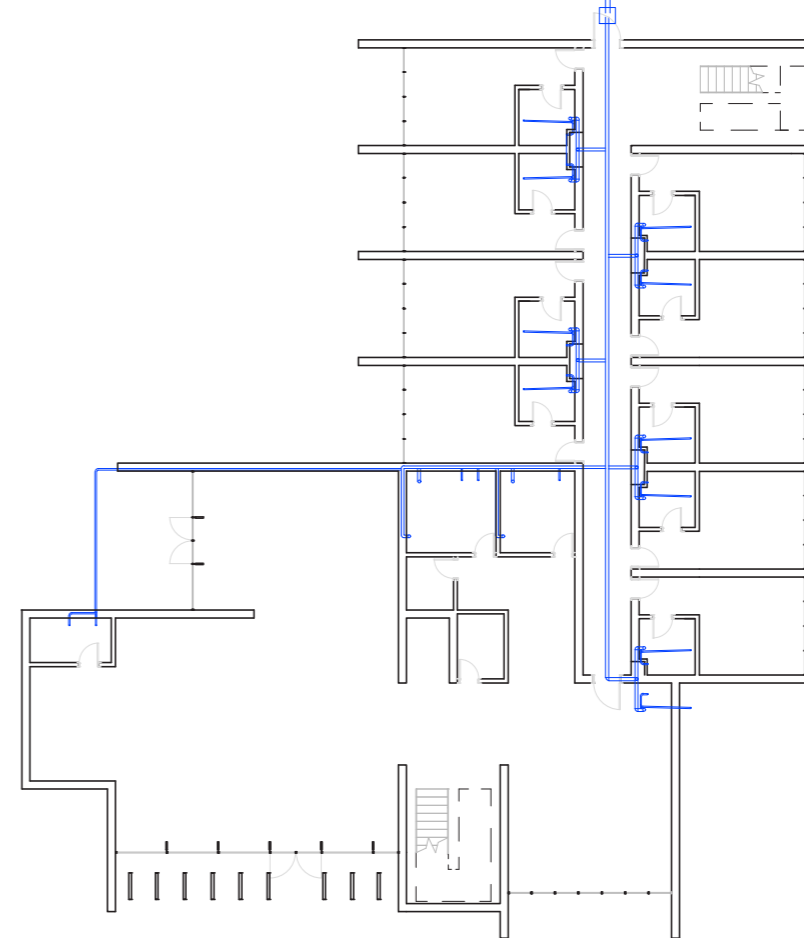
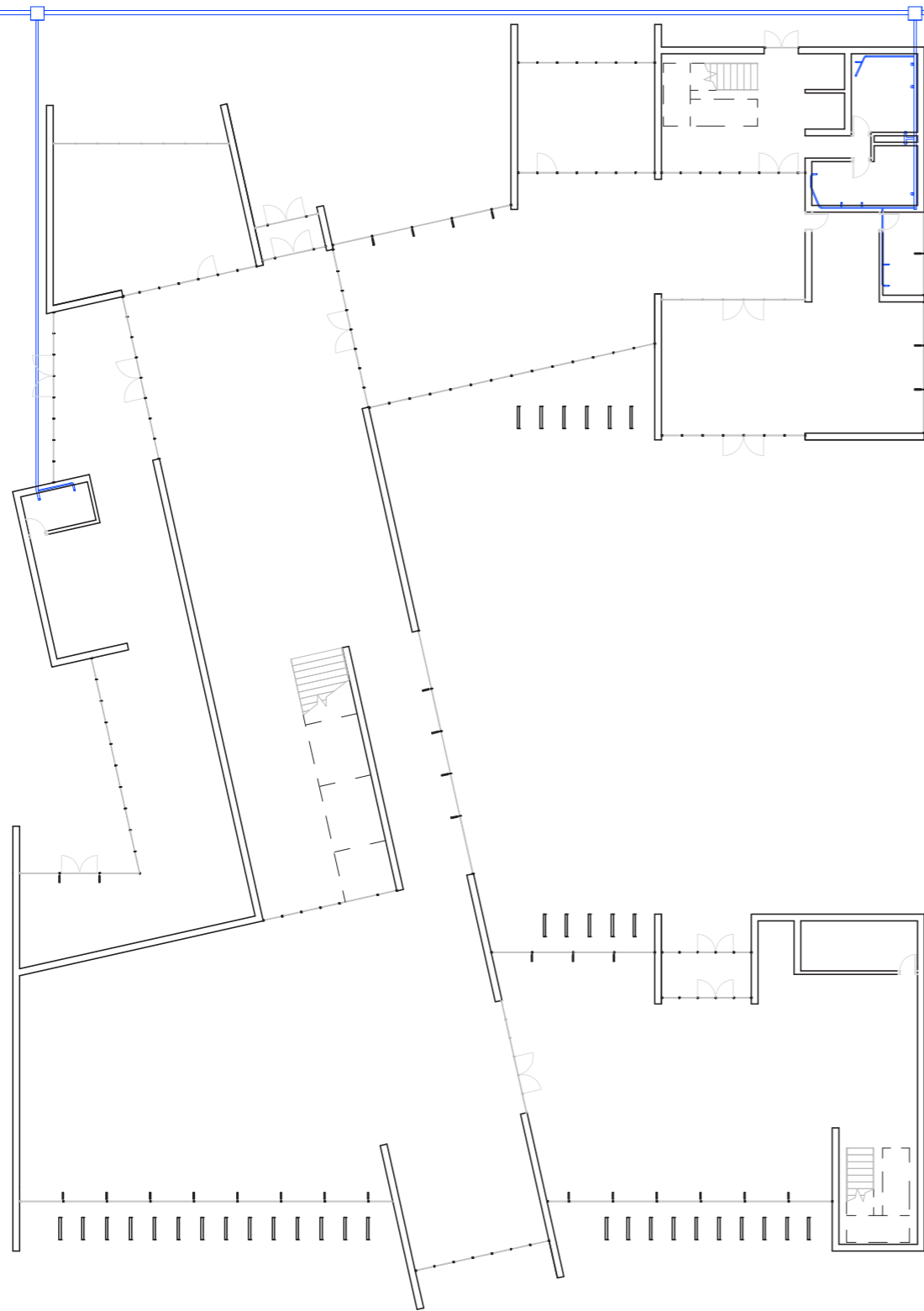
5. Annex 1: Installations

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Library, Cultural Center and a Hostel in Pinedo, Valencia

Facilities and installations Residual water



Residual water evacuation tubes
PVC
Ø110mm for horizontal
Ø90mm for loos
Ø50mm for showers and sinks

Ground floor

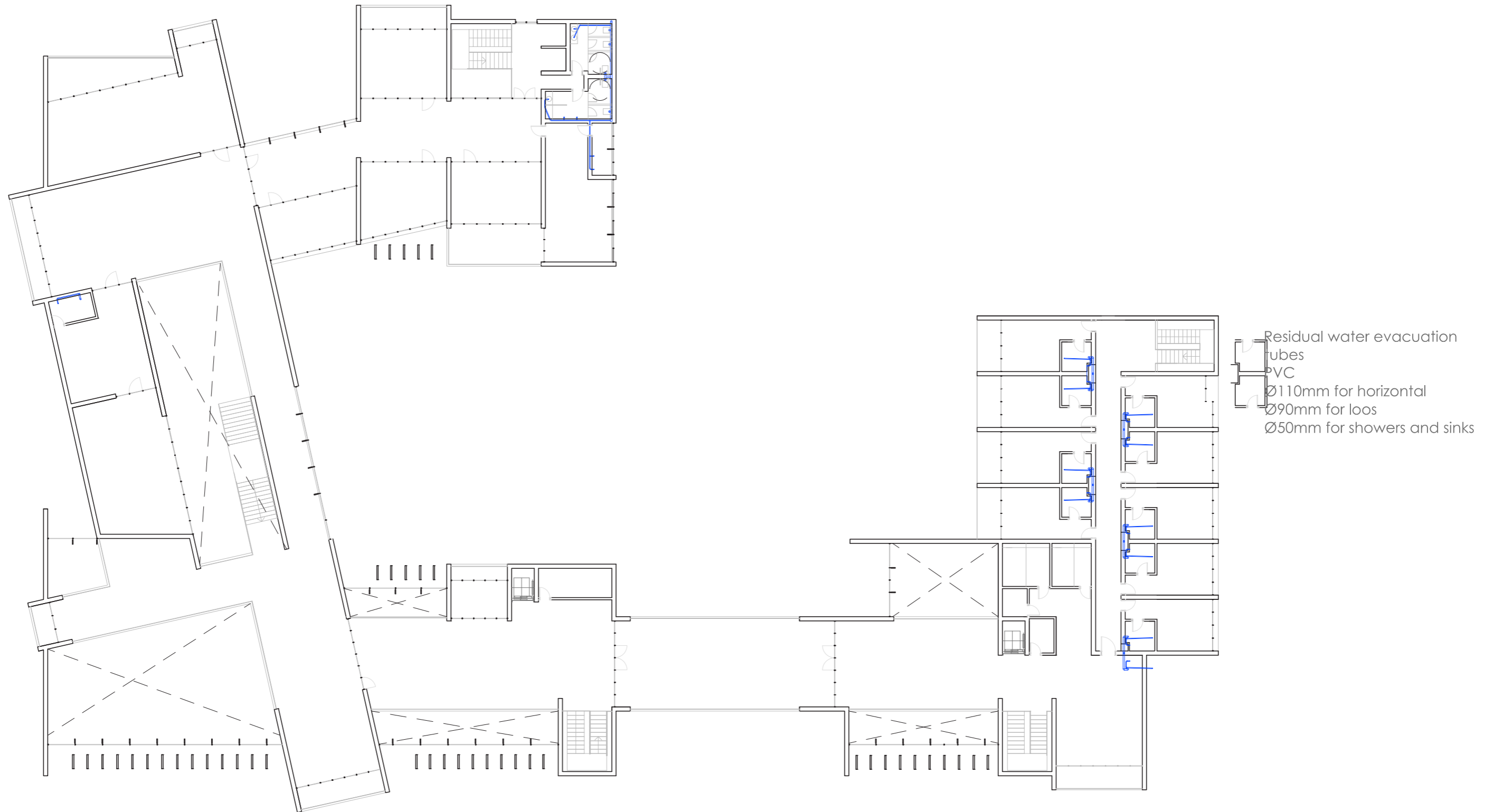
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Residual water



First floor

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Rain water evacuation



Rain water evacuation tubes
material: PVC
Ø220mm
Ø160mm
Ø110mm
Ø90mm

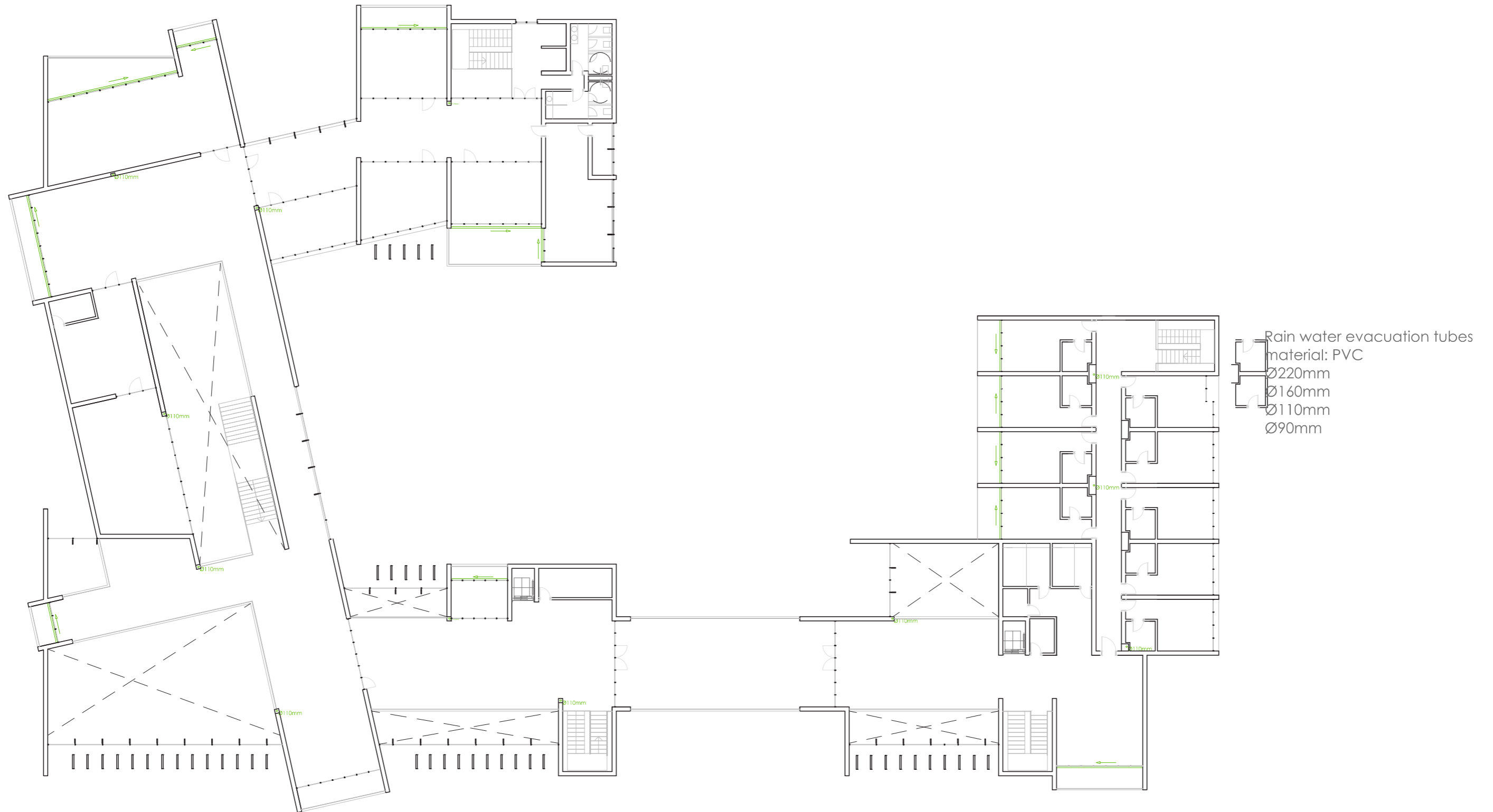
Roof floor

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Rain water evacuation



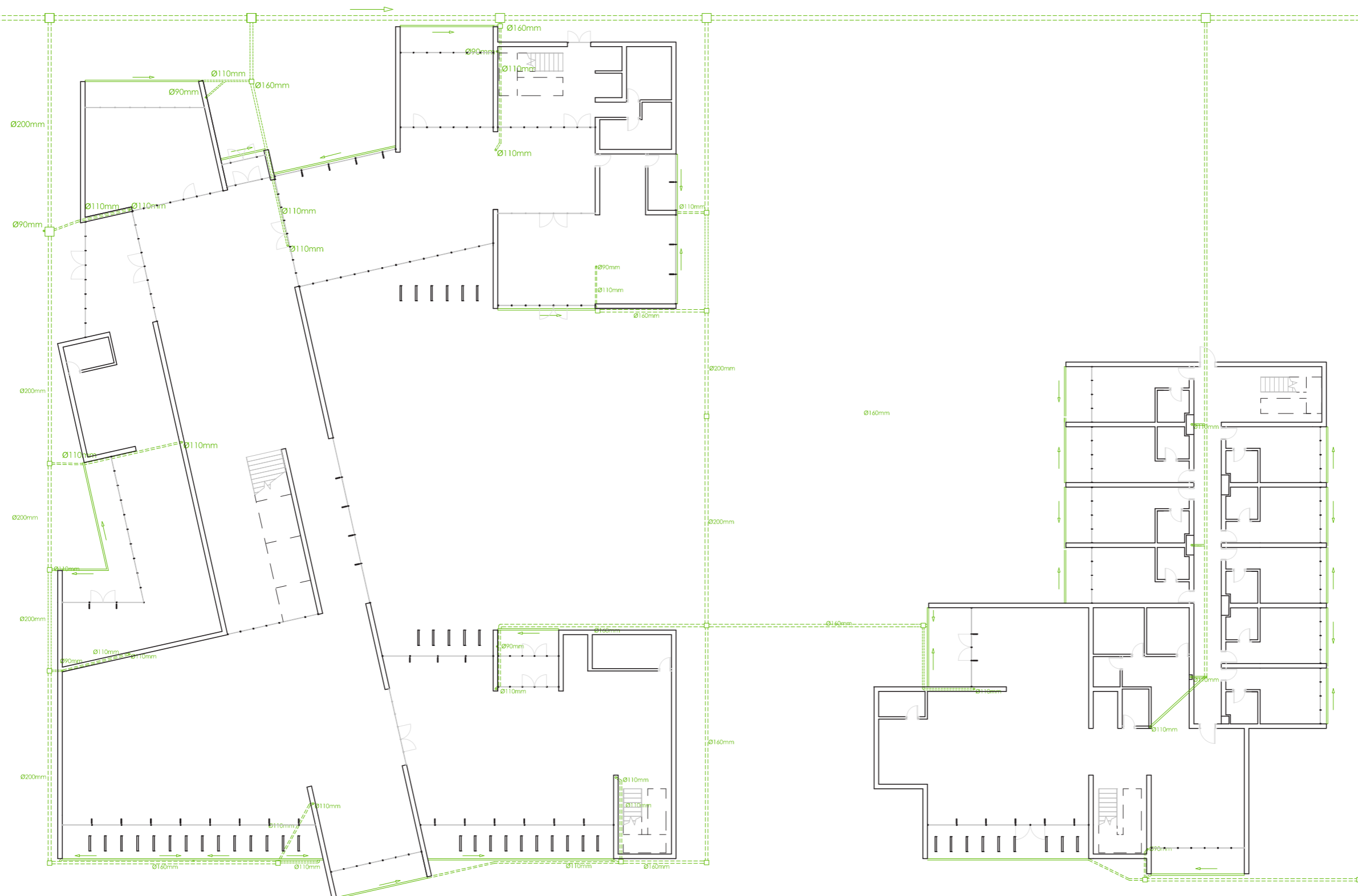
First floor

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Library, Cultural Center and a Hostel in Pinedo, Valencia

Rain water evacuation



Rain water evacuation tubes
material: PVC
Ø220mm
Ø160mm
Ø110mm
Ø90mm

Ground floor

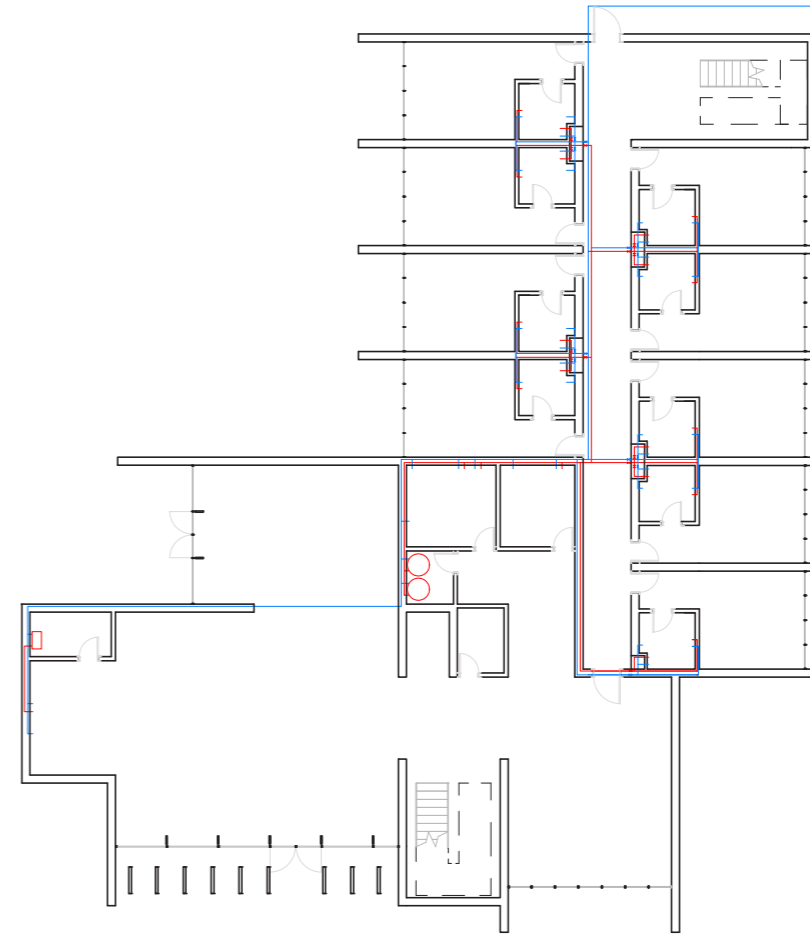
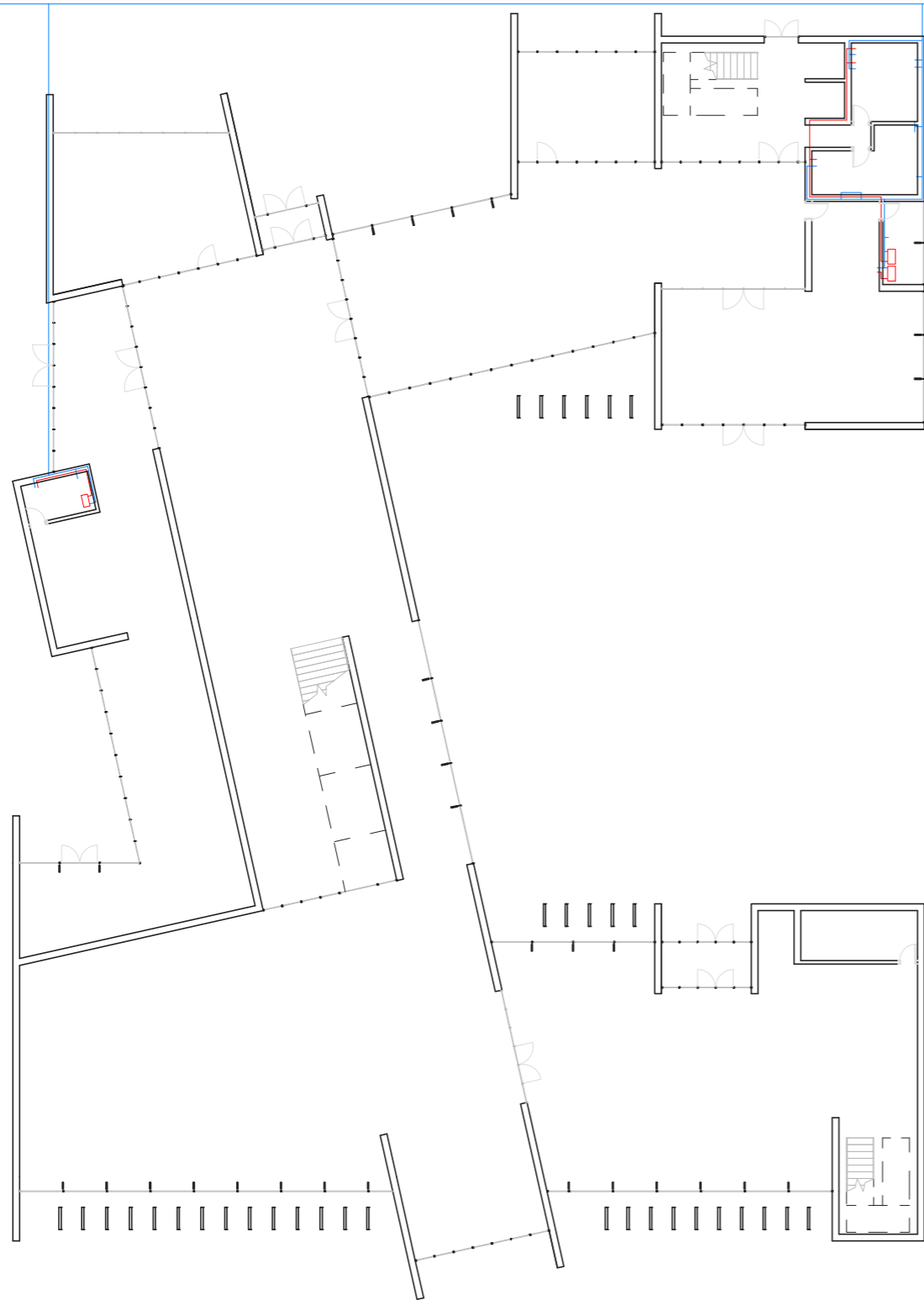
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Hot / cold water



- | Hot water
- | Cold water
- Electric heater
- ⊗ Cutout valve

Ground floor

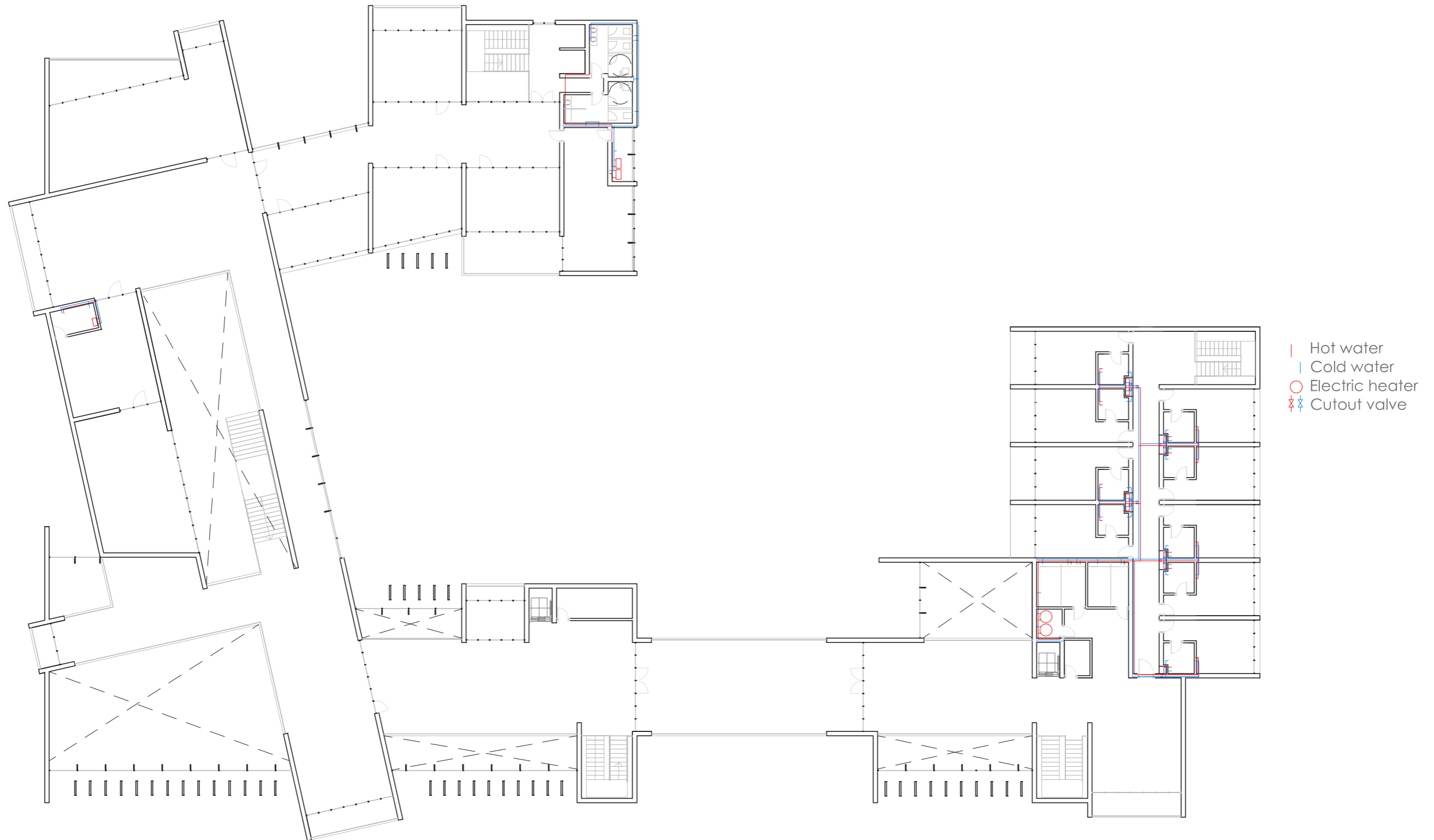
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Escalas

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Hot / cold water



First floor

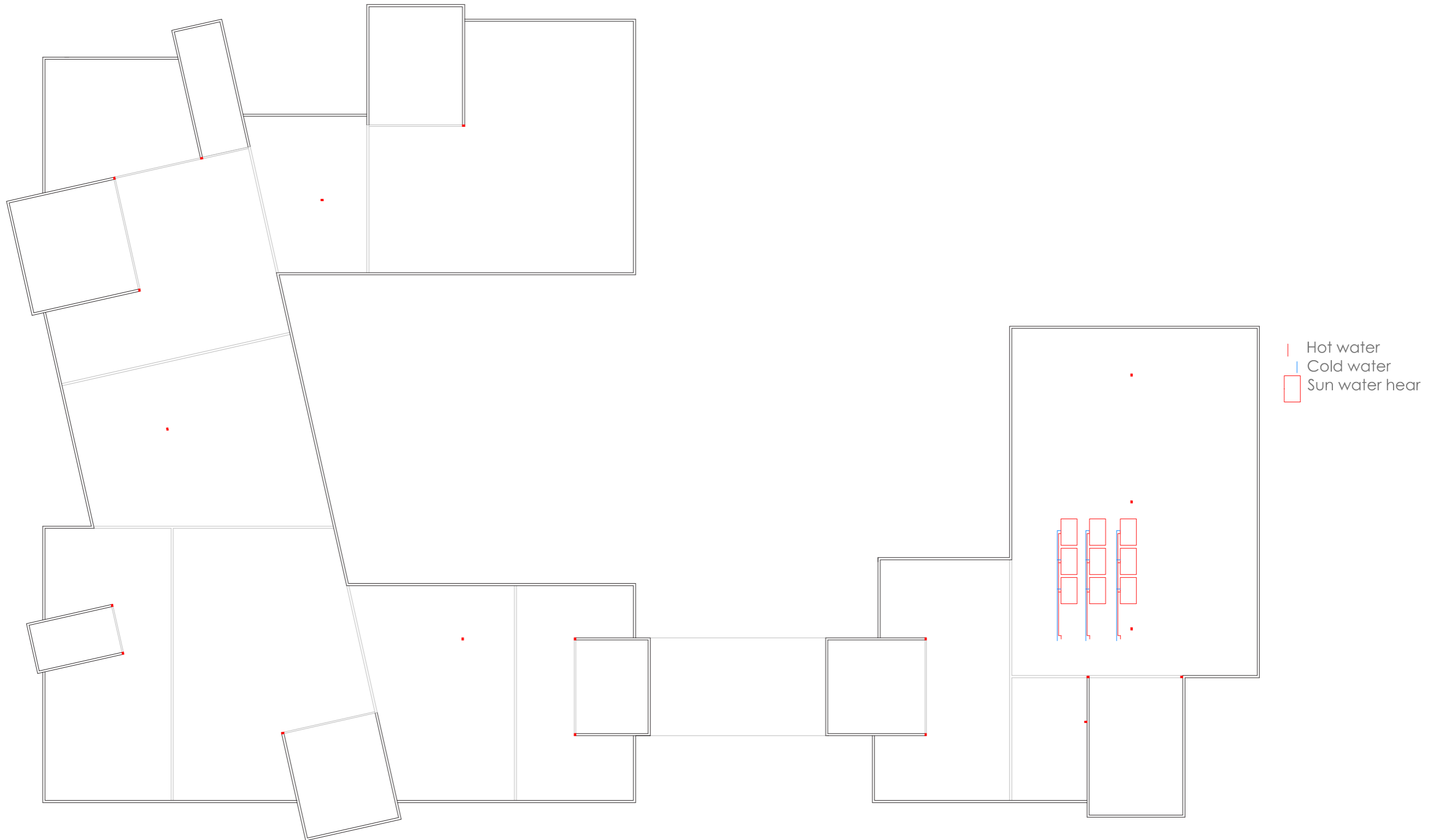
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Escalas

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Hot / cold water



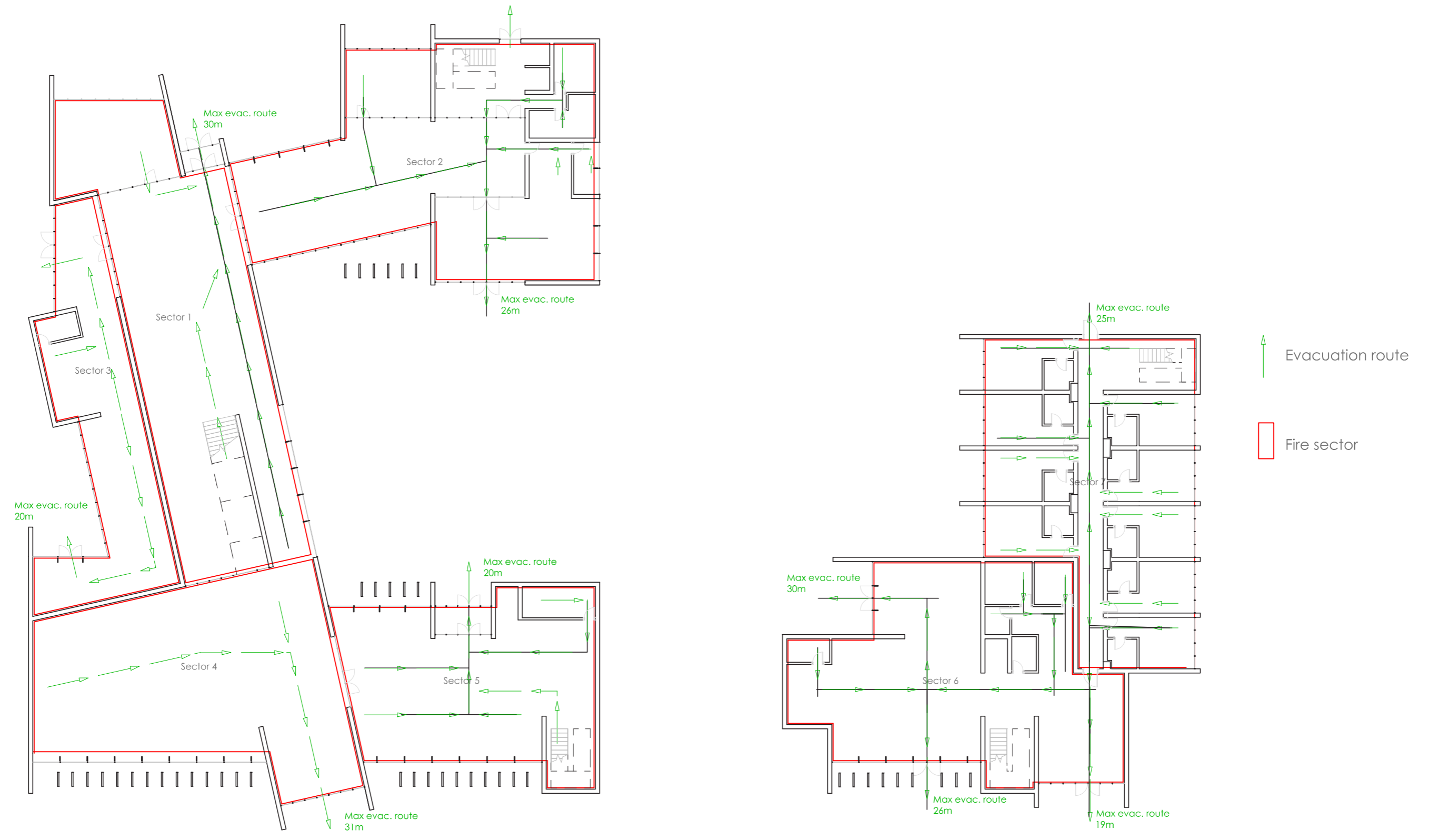
Roof floor

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Library, Cultural Center and a Hostel in Pinedo, Valencia

Fire zones and evacuation routes



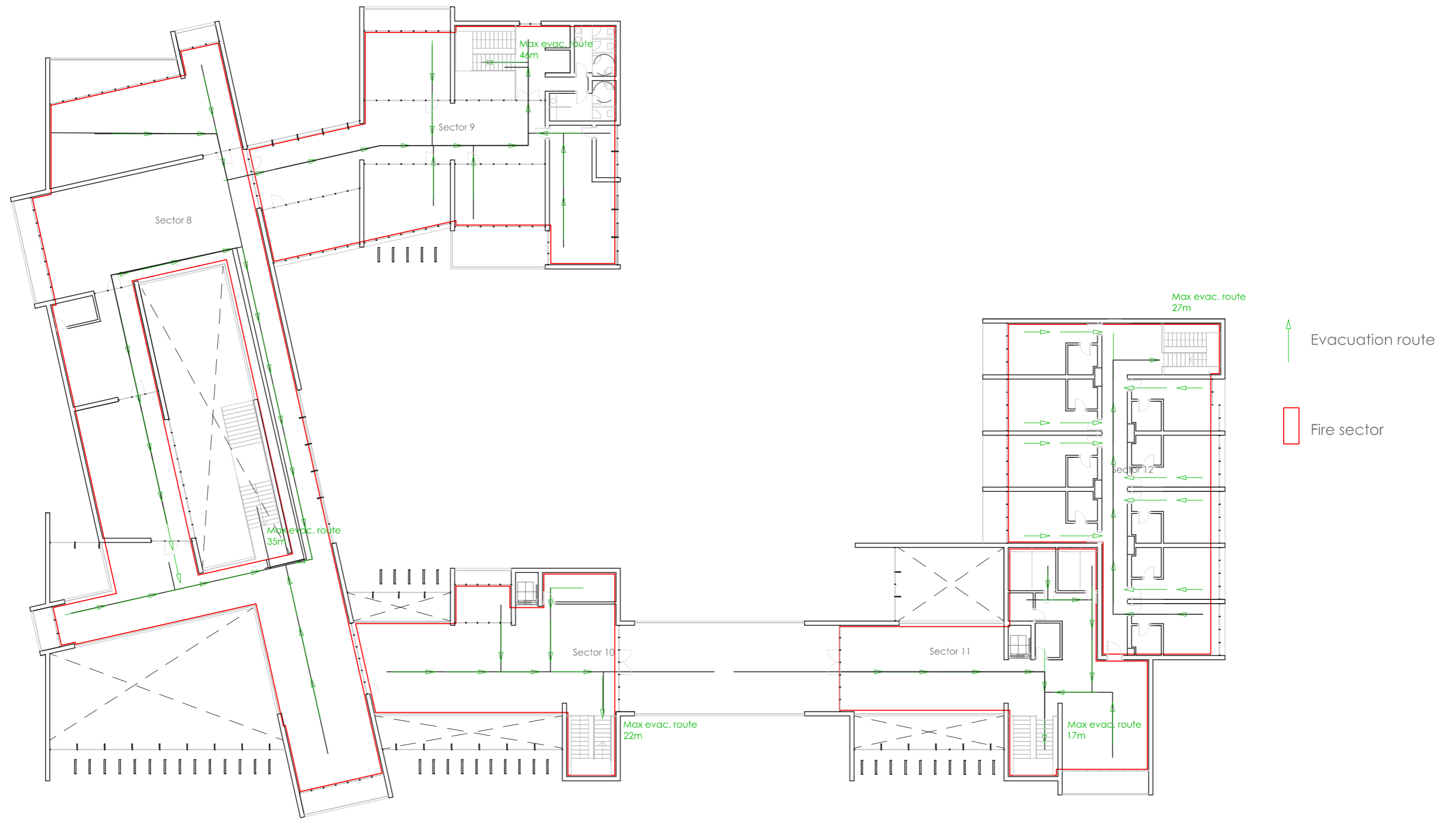
Ground floor

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Library, Cultural Center and a Hostel in Pinedo, Valencia

Fire zones and evacuation routes



First floor

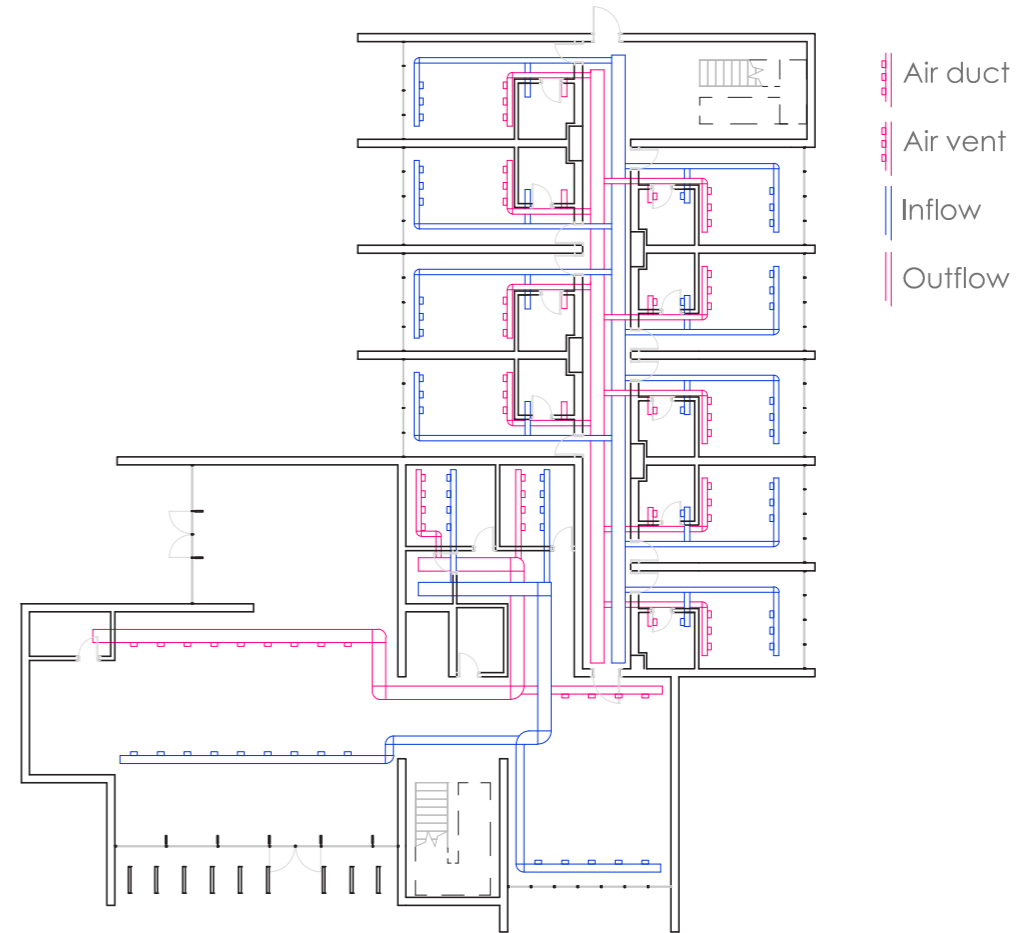
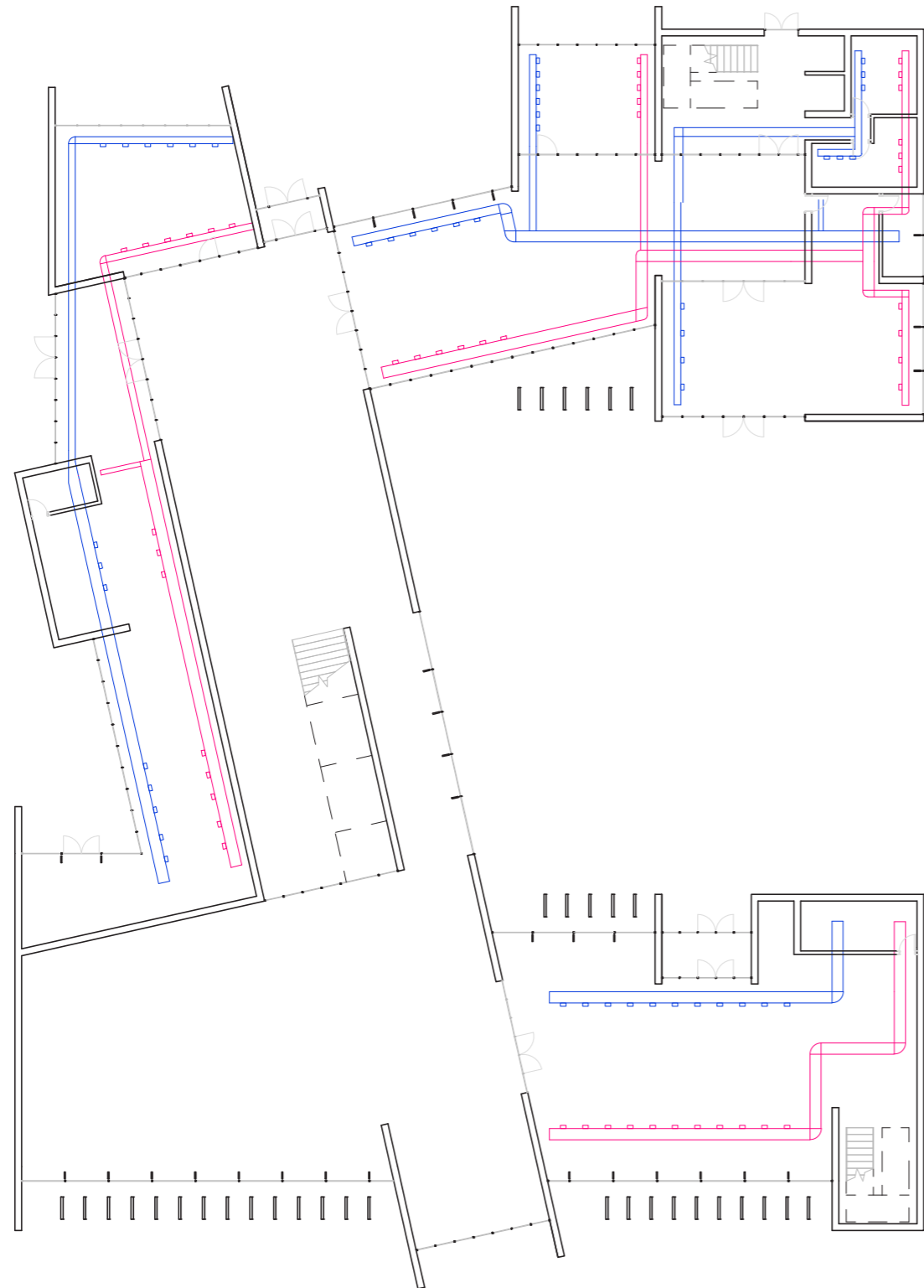
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Ventilation



Ground floor

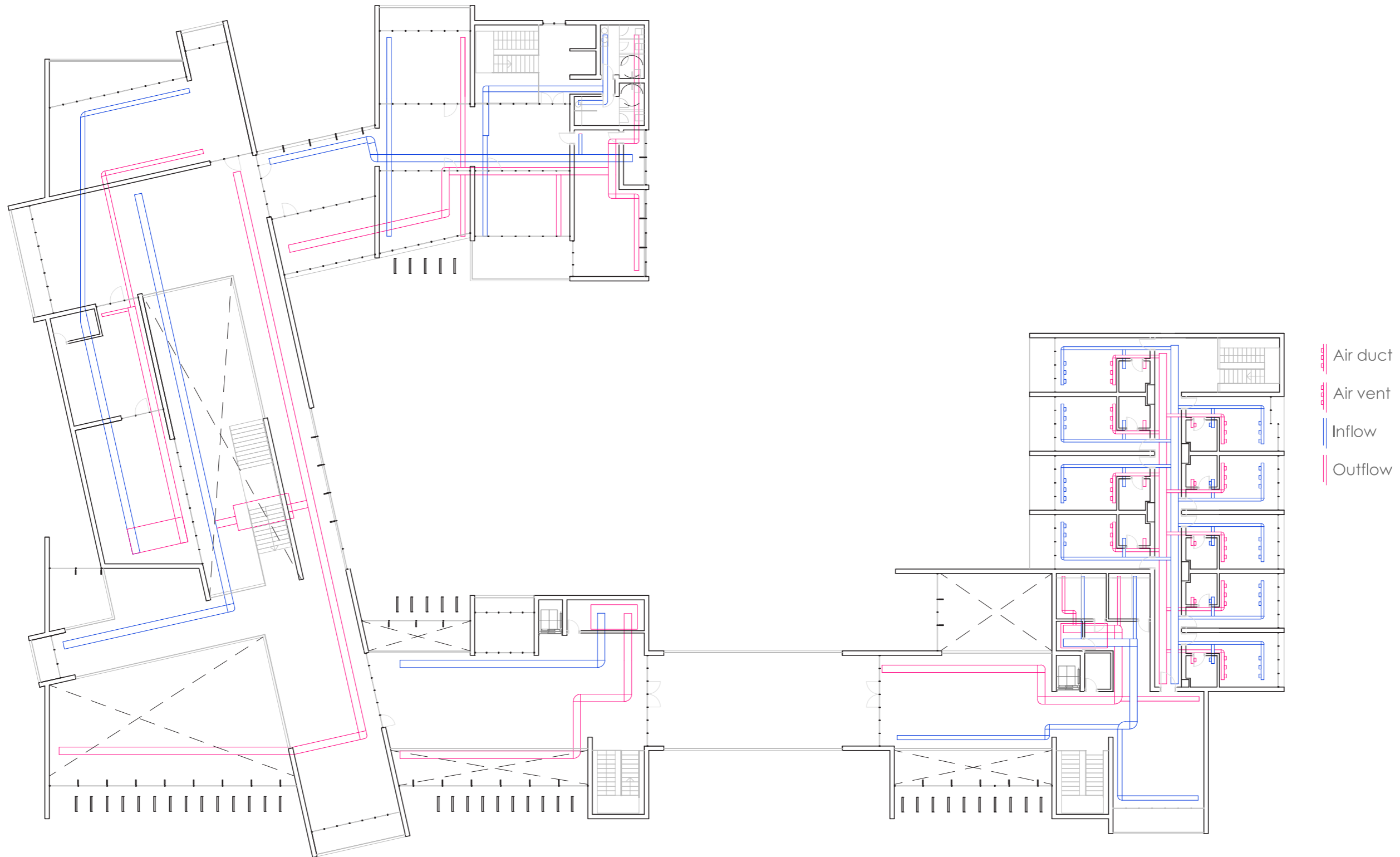
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Escalas

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Library, Cultural Center and a Hostel in Pinedo, Valencia

Ventilation



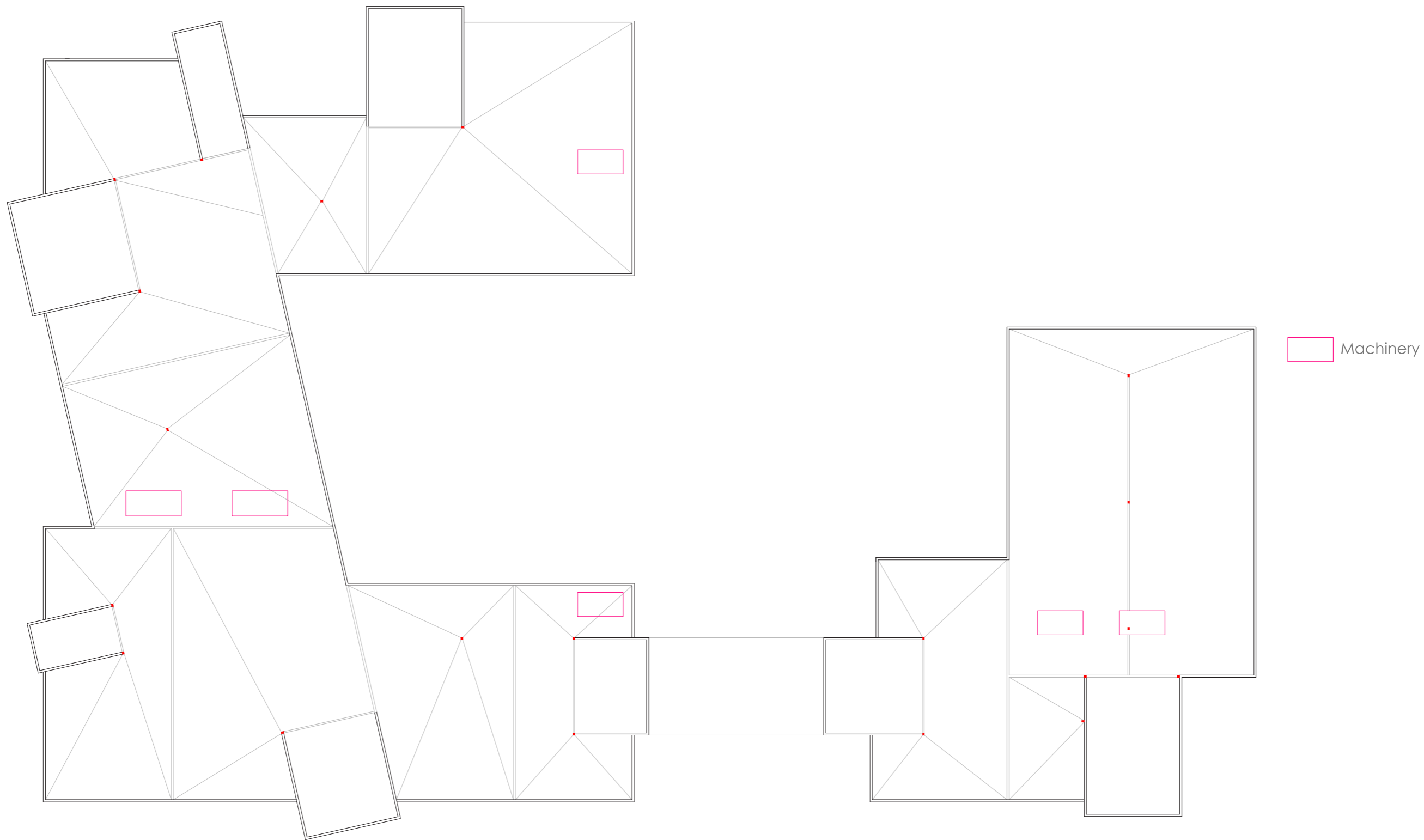
First floor

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Escalas

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Library, Cultural Center and a Hostel in Pinedo, Valencia



Roof floor

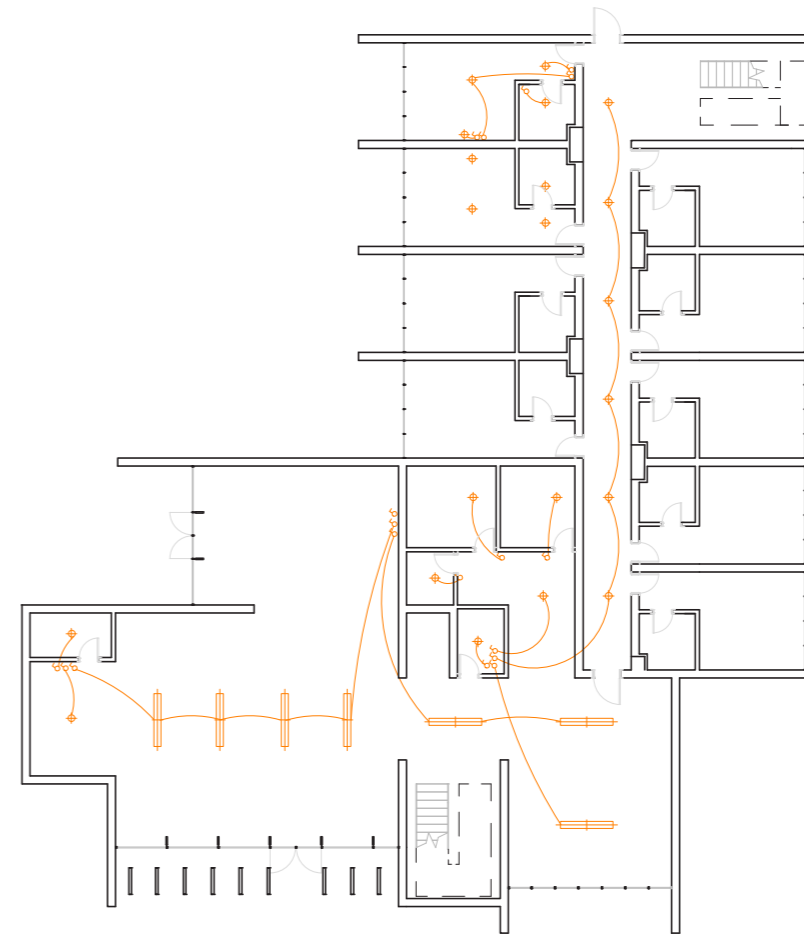
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Escalas

72/92

Library, Cultural Center and a Hostel in Pinedo, Valencia

Illumination



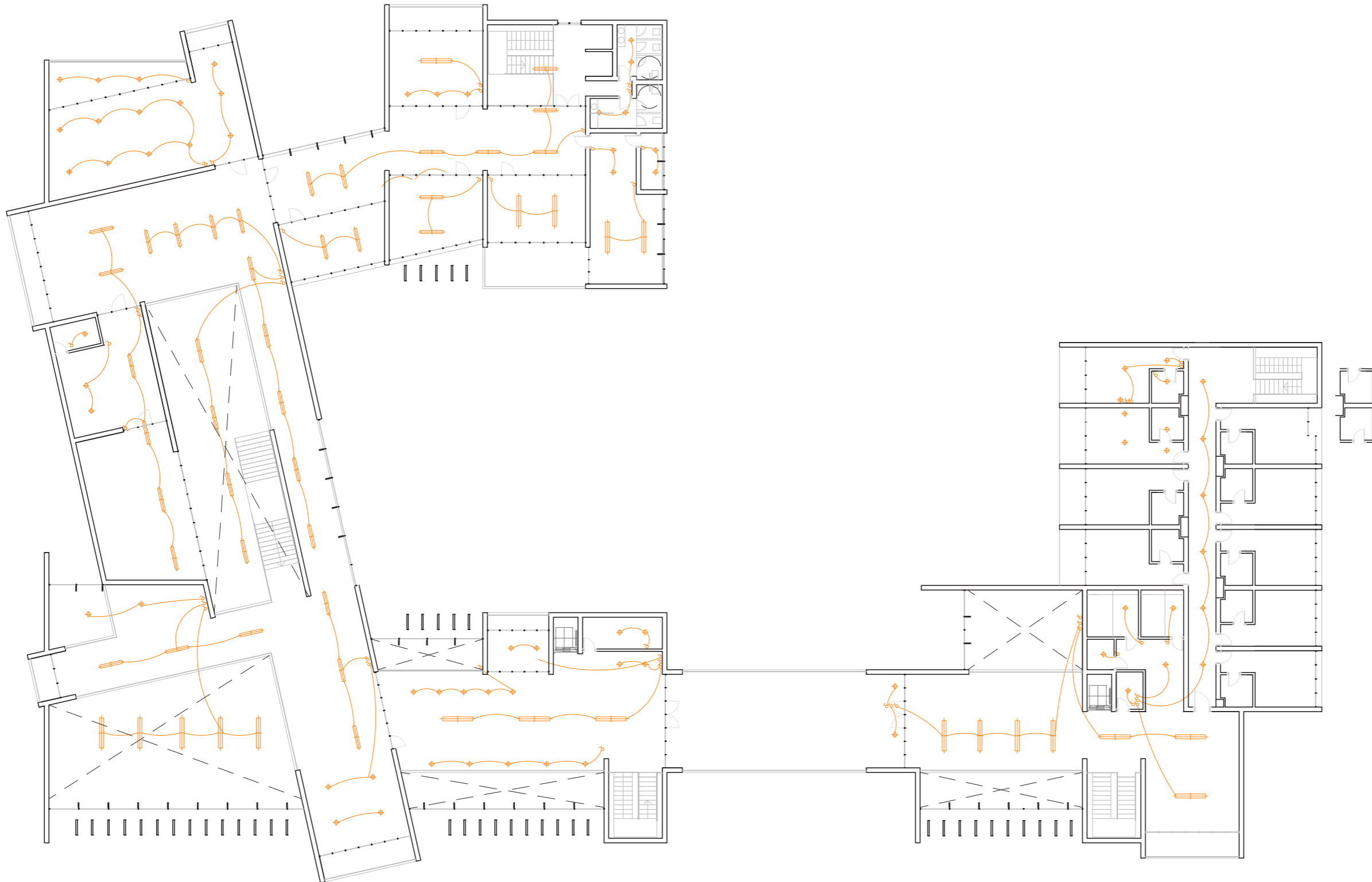
Ground floor

Artur Volobuev

Escalas 73/92

Library, Cultural Center and a Hostel in Pinedo, Valencia

Illumination



6. Annex 2: Structural approach of the project

Structural approach of the building

Building consists of two parts. One is 1535m², other one is 685m²
Both of them have 2 floors above ground, and 0 subterranean floors

Self loads

Flat roof, with level formation	1.5kN/m ²
Floors, ceramic floor, 5cm, with mortar	1 kN/m ²
Separation walls	1 kN/m ²

Slabs:

Bubble deck slab
40cm thick slab: 6.4kN/m ²
60cm thick slab: 9.8kN/m ²
Ground level slab
30 cm:7.5kN/m ²

Wall 7.2kN/m²

Glazing 2.52kN/ml(for 3.6m height)*

*In some cases glazing is self-supporting in 7.2m height and rests upon ground floor slab

Partitions: 1kN/ linear meter

Building 1(area 1535m²)

(per floor)

Walls: 1733 linear meters, 3.6 meters high, total weight: 6168kN, distributed weight:4kN/m²

Glazing:121 linear meters, 3.6 meters high, total weight: 304kN, distributed weight:0.2kN/m²

Building 2(area 685m²)

(per floor)

Walls: 214 linear meters, 3.6 meters high, total weight: 5546kN, distributed weight:8.1kN/m²

Glazing:57 linear meters, 3.6 meters high, total weight: 304kN, distributed weight:0.2kN/m²

Use overloads

Administrative areas	3 kN/m ²
Zones with tables and chairs	3 kN/m ²
Vestibules	5kN/m ²
Roofs, accessible for conservation	1kN/m ²
Evacuation routes	5kN/m ²

Snow loads: 0.2kN/m²

Loads of the building

Self loads		Area	Weight, kN
Slab 40 cm	6.4kN		3786 24230.4 kN
Slab 60 cm	9.8kN		272 2665.6 kN
Floors	1kN		4038 4038 kN
Partitions	1kN		4038 4038 kN
Roof	1.5kN		2246 3369 kN
		Length	
Walls	7.2kN		1947 14018.4 kN
Glazing	2.52kN		178 448.56 kN
		Area	
Imposed	2kN		628 1256 kN
	3kN		1065 3195 kN
	5kN		2345 11725 kN
	1kN		2246 2246 kN
Snow		0.2	2246 449.2 kN
		Total	Self 52807.96 kN
			Imposed 18422 kN
		Per area	32.00 kN

Building height in storeys and number of subterranean floors, according to the resistance of the floor.

According to the calculus, the weight of one floor of the building is approximately 16kN/m². (6kN slab+1kN floor+1kN partitions+5kN imposed load+3kN distributed load of the support walls).

Resistance of the terrain is 100kN/m² as shown by the Geoweb, so the maximum level of floors of the construction that can be projected is 6.

Chosen height of the building for the project is 2 storeys, (ground floor +1), approximate weight is 32 kN/m². This

Structure of the building is concrete slab with load-bearing concrete walls, so the chosen type of foundation is strip footing under the walls, there is no need for special foundations.

There is no subterranean floor, thus the water pressure does not influence the loads and does not need to be calculated.

Foundation justified

Foundation proposition: Surface foundation, Strip footings under the walls

Floor resistance 100kN/m²(Geoweb)

Building weight distributed: 32kN/m²



Pre-calculus of the loads in some points of the building

1. $8.5m(\frac{1}{2} \text{ of the span}) \times (1.5kN \text{ (roof dead load)} + 1(SCU^*) + 9.8kN(\text{slab})) = 104.5kN/lm$

Required width if the footing 1.05m

2. $3 + 6.5(\frac{1}{2} \text{ of the span to each side}) \times (2kN(\text{dead}) + 5(SCU^*) + 6.4kN(\text{slab})) + 9.5x((\frac{1}{2} \text{ of the span to each side}) \times (1.5kN \text{ (roof dead load)} + 1(SCU^*) + 9.8kN(\text{slab}))) = 244kN/lm$

Required width of the footing 2.5m

3. $1.5 + 6.5(\frac{1}{2} \text{ of the span to each side}) \times (2kN(\text{dead}) + 5(SCU^*) + 6.4kN(\text{slab})) + 1.5x((\frac{1}{2} \text{ of the span to each side}) \times (1.5kN \text{ (roof dead load)} + 1(SCU^*) + 9.8kN(\text{slab}))) = 118kN/lm$

Required width of the footing 1.2m

*SCU(Sobrecarga de Uso-spanish abbreviation for Imposed load)

As can be seen by the pre-calculations, strip footings seem to have sufficient support for the building and won't require any special foundations.

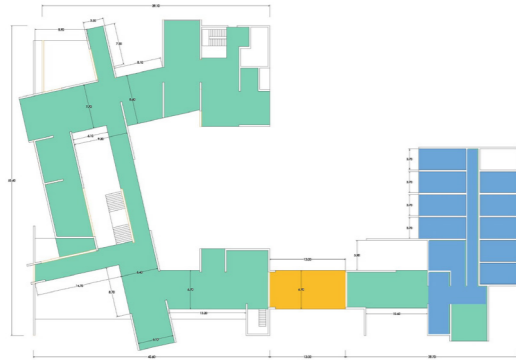
Load is evenly distributed and average width of the the footing is within reasonable size

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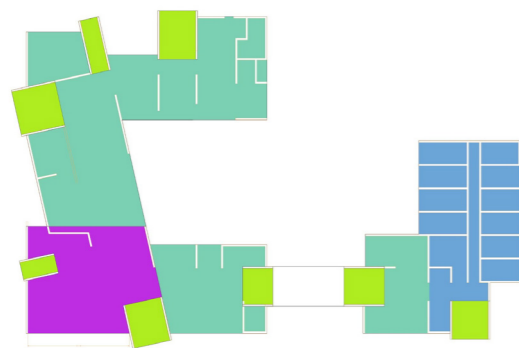
Slab types in the building

Building has following types of a slab, per floor



Floor 1

- 40cm Bubbledeck slab with reduced weight
- 40 cm Bubbledeck slab, reinforced with IPE profile
- 20 cm joist slab



Floor 2

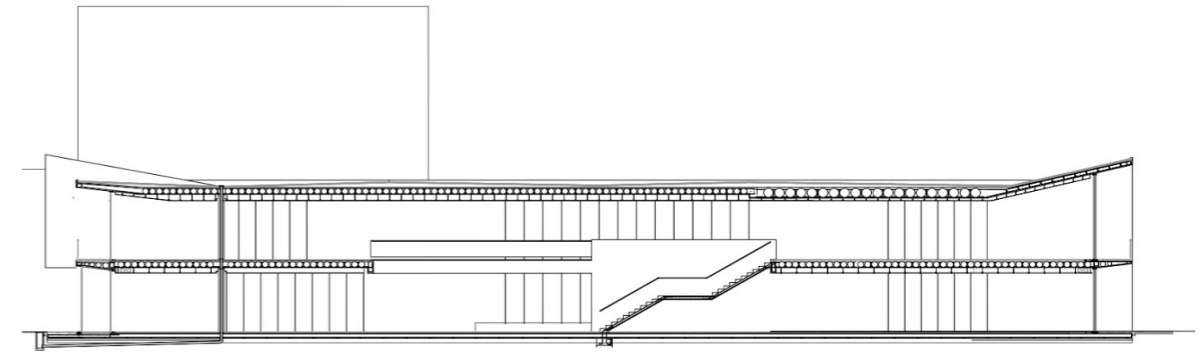
- 40cm Bubbledeck slab with reduced weight
- 60 cm Bubbledeck slab
- 20 cm joist slab
- 30 cm reinforced concrete slab, inclined

Bubbledeck slab is chosen in the parts of the building where the load is transmitted in two directions, 60 cm thickness is for part with span of 17m, 40 cm thickness is for the rest of the spans. Span of 13 meters in the passageway that connects two buildings is 40cm thick only, but is reinforced internally with IPE profiles between bubbles.

20 cm joist floor is chosen for the part of the hostel as the span of the roof is only 3.7 meters.

30 cm slab is put into the inclined roof parts as it is required to have narrower profile than the main slab

Section, and heights



7.1 Main cross section

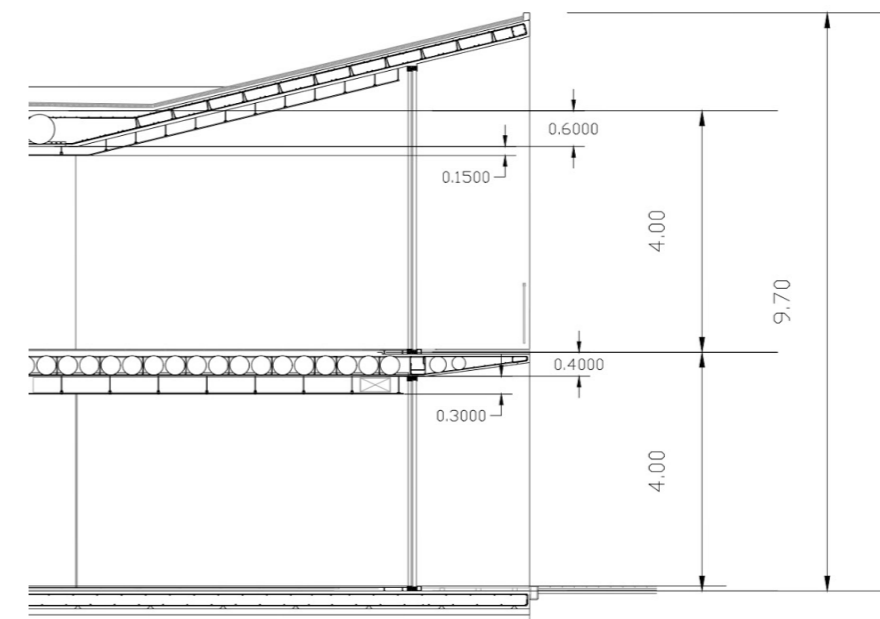
Building consists of 2 floors, each floor height is 4 meters slab-to-slab.

1 floor slab thickness: 75 cm total

(5cm floor+40cm slab+30 cm space for installations)

2 floor slab thickness: 75 cm total

(either 40cm slab+35cm space for installations or 60cm slab+15 cm space for installations)



7.2 Detailed heights within the section

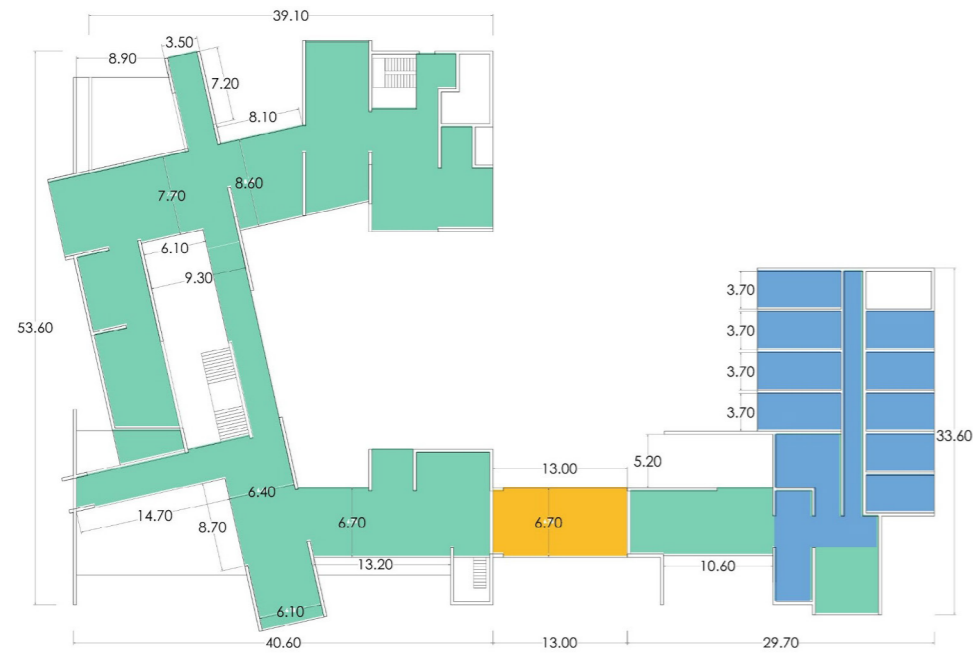
Escalas ^{78/92} Library, Cultural Center and a Hostel in Pinedo, Valencia

Slab type boundaries

Main building overall is 53.6m x 40,3m

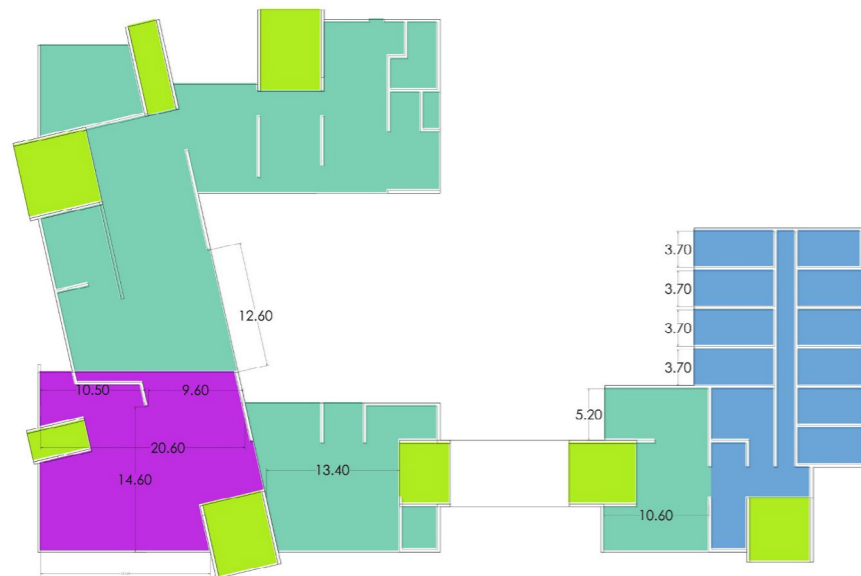
Secondary building is 33.6m x 29.7m

Floor 1



8.1 Floor 1

40cm Bubbledeck slab with reduced weight
 40 cm Bubbledeck slab, reinforced with IPE profile
 20 cm joist slab



8.2 Floor 2

40cm Bubbledeck slab with reduced weight
 60 cm Bubbledeck slab
 20 cm joist slab
 30 cm reinforced concrete slab, incline

Constructive and structural section of the roof

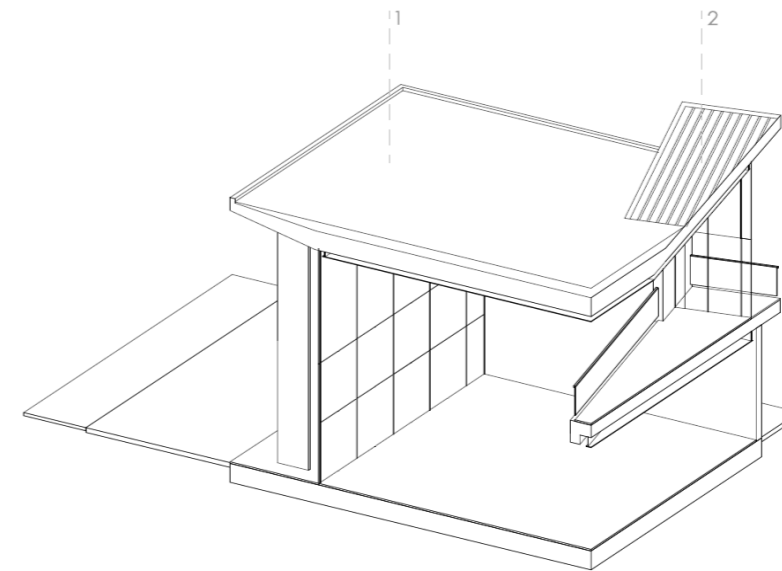
There are two types of the roof in the building-flat roof and inclined roof

1 Flat roof

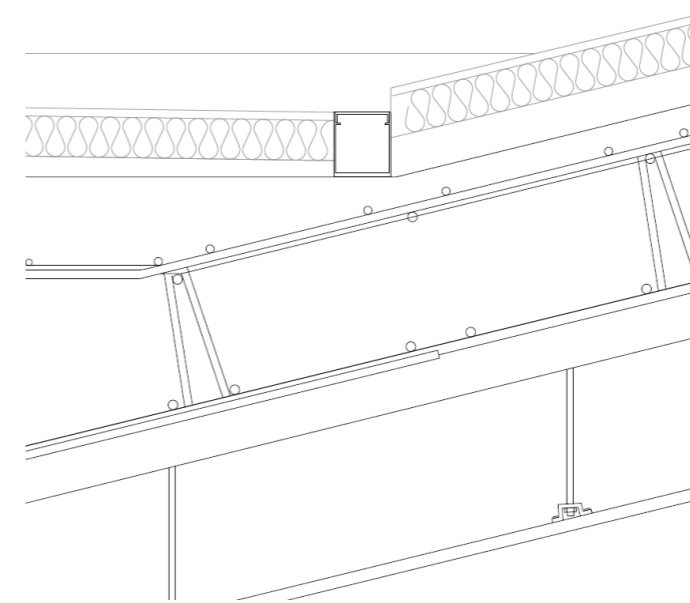
This type of a roof is required to have protection, and it is protected by a 10 cm layer of gravel, additional weight is 1.5kN/m²

2 Inclined roof

This type of roof has the top layer made with a sandwich panel, which has both isolation, insulation and protection layers.



10.1 Axonometric view



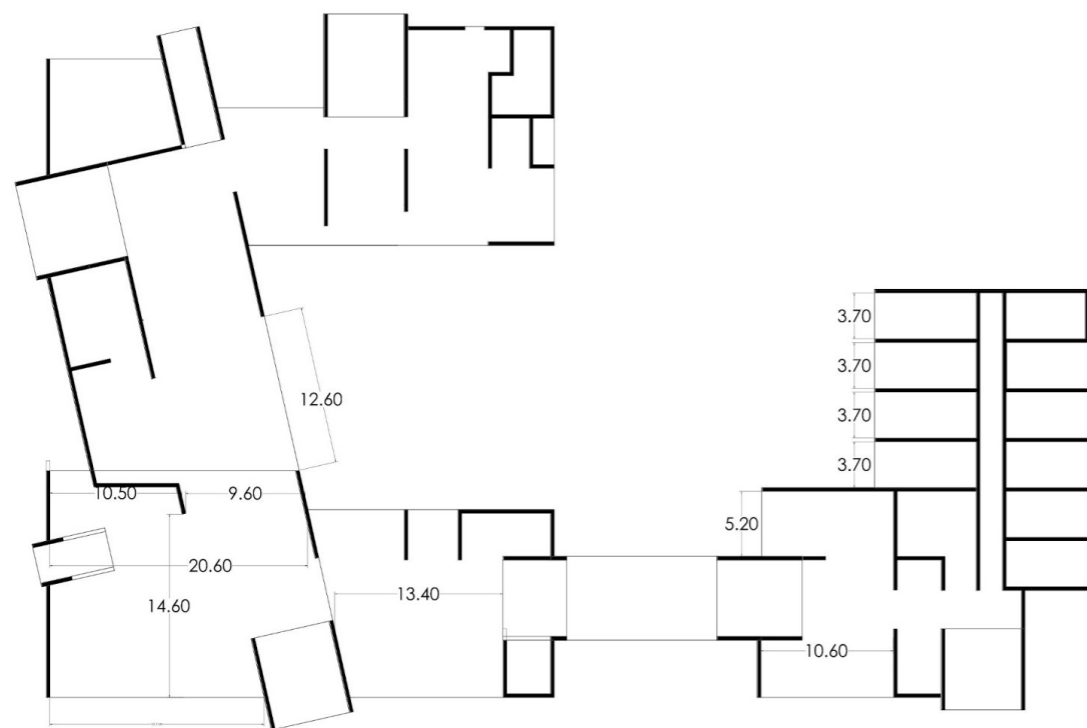
10.2 Cross section

Structural support

The weight of the building is supported by load-bearing walls. Location of the walls



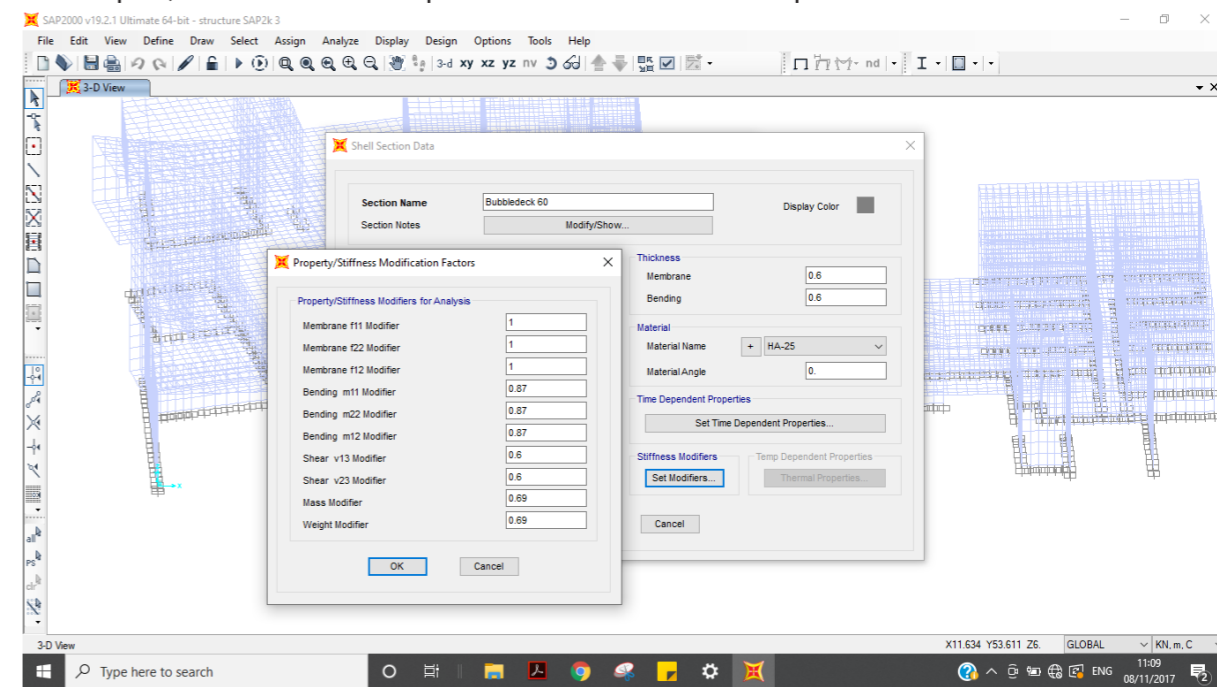
First floor slab with supporting walls(black)



Second floor slab with supporting walls(black)

Structural model adjustments

Structural model is adjusted to the reduced weight and stiffness of the bubbledeck slab. It is 31% lighter, but in exchange it is 40% less resistant to shear stresses, thus it has to be solid in critical areas. Regarding resistance to bending forces, it is only 13% weaker than it's solid counterpart, therefore it makes perfect sense in a structural point of view to use it



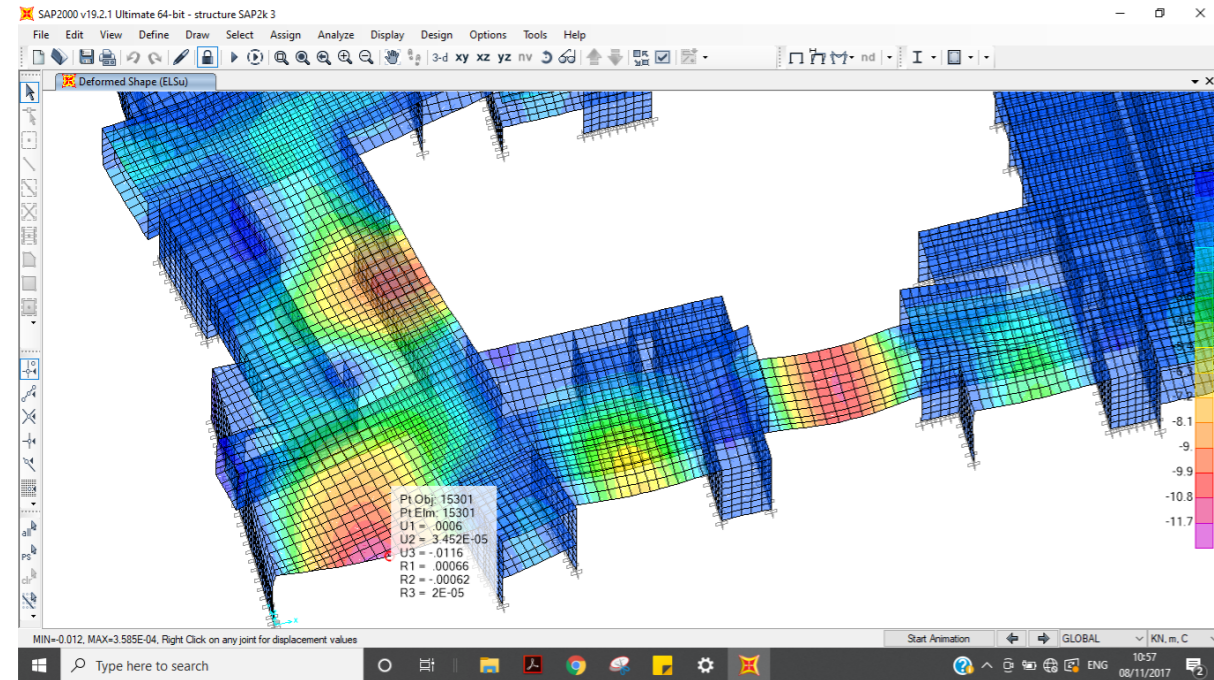
Deformed model.

After all the adjustments the structure is pre-calculated to Ultimate Service States and three most critical points are identified, which are, as follows:

Middle part of a slab with the biggest span.

Deformation: 0.0116m, it is chosen to apply coefficient of uncertainty of 3 due to possible shortcomings in a model, which results in a maximum deformation of 0.0348m

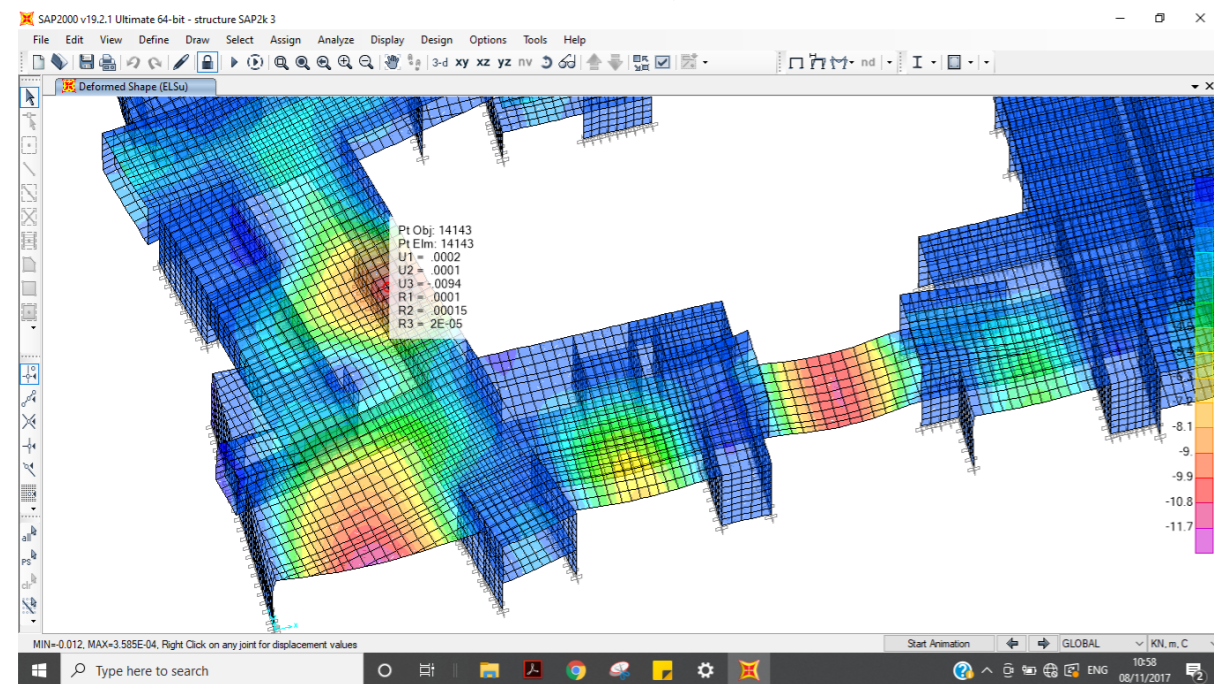
Maximum allowed deformation is L/300 which is 17/300=0.0567m, which is admissible



Middle part of floor covering main staircase

Deformation: 0.0094m, it is chosen to apply coefficient of uncertainty of 3 due to possible shortcomings in a model, which results in a maximum deformation of 0.0292m

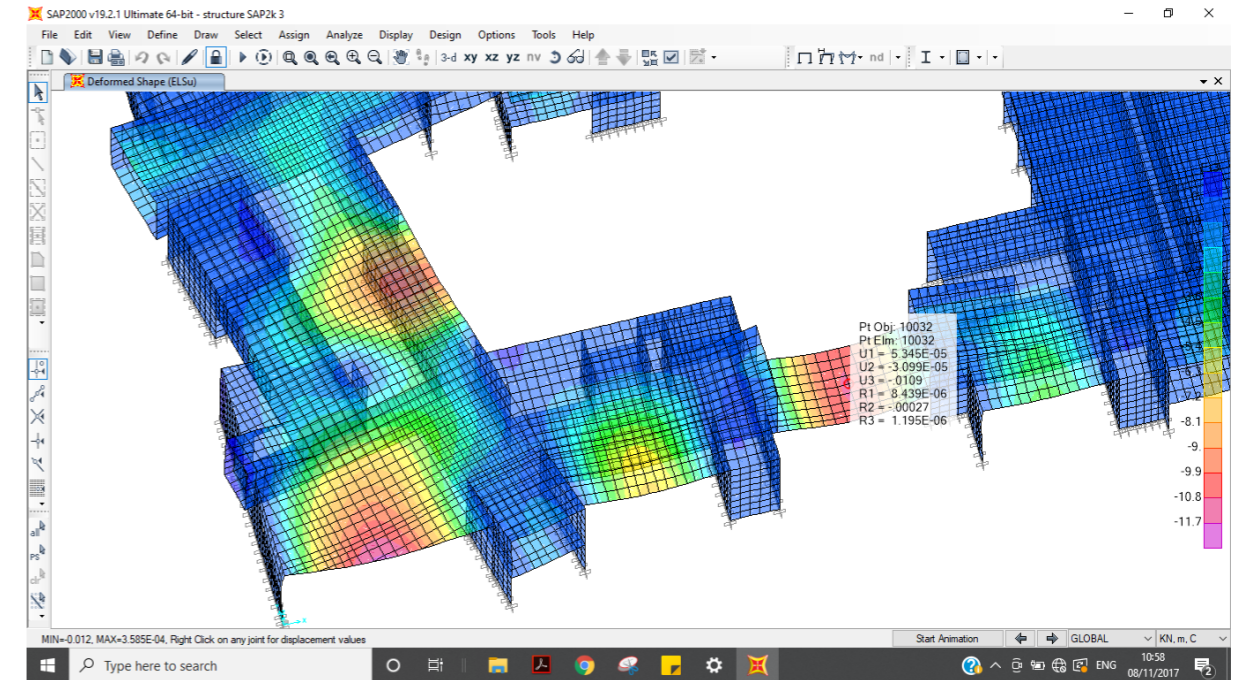
Maximum allowed deformation is L/300 which is 14/300=0.0467m, which is admissible



Middle part of bridge

Deformation: 0.0109m, it is chosen to apply coefficient of uncertainty of 3 due to possible shortcomings in a model, which results in a maximum deformation of 0.0327m

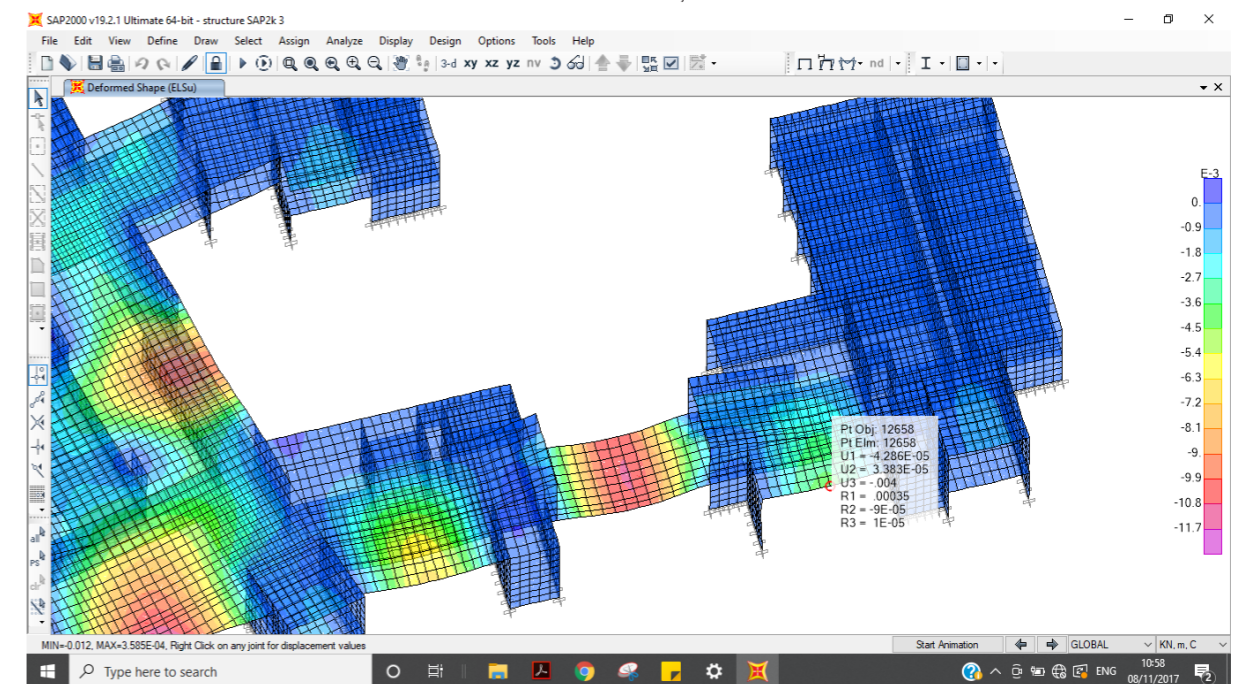
Maximum allowed deformation is L/300 which is 12/300=0.04m, which is admissible



Edge of a slab that covers main hall of a hotel

Deformation: 0.004m, it is chosen to apply coefficient of uncertainty of 3 due to possible shortcomings in a model, which results in a maximum deformation of 0.012m

Maximum allowed deformation is L/300 which is 10/300=0.0333m, which is admissible



7. Annex 3: Constructive project

1. DESCRIPTIVE MEMORY

- 1.1 Identification and objectives of the project
- 1.2 Conditions of the immediate environment
 - 1.2.1 Existing urban services
 - 1.2.2. Conditions of the plot and the adjacent buildings
- 1.3 Project description
 - 1.3.1 General description of the building, needs program, characteristic use of the building and other intended uses, relationship with the environment.
 - 1.3.2. Applicable legal framework at state, regional and local level.
 - 1.3.3. Compliance with urban regulations, municipal ordinances and other regulations.
 - 1.3.4 Description of the shape of the building, volume, useful and built surfaces, accesses and evacuation.
 - 1.3.5. General description of the parameters that determine the technical forecasts to be considered in the project.
 - 1.3.5.1. Structural system
 - 1.3.5.2. Interior compartments system
 - 1.3.5.3 Enclosure
 - 1.3.5.4. Materials, used in facing/finishing
 - 1.3.5.5. Environmental conditioning system
 - 1.3.5.6. Installation systems
- 1.4. Building features
 - 1.4.1. Benefits resulting from compliance with the basic requirements of the CTE
 - 1.4.2 Performance in relation to the functional requirements of the building
 - 1.4.3 Building use limitations

2. CONSTRUCTIVE MEMORY

- 2.1. Building support
- 2.2. Structural system
 - 2.2.1. Foundation
 - 2.2.2. Containment structure
 - 2.2.3. Vertical load bearing structure
 - 2.2.4. Horizontal structure
- 2.3. Enclosure system
 - 2.3.1 Base slabs
 - 2.3.2 Facades
 - 2.3.2.1 Openings in the facades
 - 2.3.3 Exterior
 - 2.3.4 Vertical compartments
- 2.5 Finishing systems:
- 2.6. Conditioning systems and facilities:
 - 2.6.1 Transport systems: lifts
 - 2.6.2. Protection against moisture
 - 2.6.3. Solid waste disposal
 - 2.6.4. Plumbing
 - 2.6.5. Water evacuation
 - 2.6.6. Thermal installations of the building
 - 2.6.7. Ventilation
 - 2.6.8. Fuel supply
 - 2.6.9. Electricity
 - 2.6.10. Telecommunications
 - 2.6.11. Fire protection
 - 2.6.12. Lightning rods

1. DESCRIPTIVE MEMORY

1.1 Identification and objectives of the project

Project aims to create public building in service of the town of Pinedo, consisting of a hotel, community center, and a library

1.2 Conditions of the immediate environment

The access and roads are in good condition.

The streets near the site chosen for the project are c/Muntanyars and Travesia Pinedo al Mar.

C/Muntanyars has restricted traffic only accessible to emergency services and local habitants, and all the necessary precautions for the safety of pedestrians are taken, such as limiting maximum speed of cars to 20 km/h is put in place.

Travesia Pinedo al Mar has no restrictions on the movement of road traffic.

In the area where the site is located there is no limitation of working hours apart from those regulated by current legislation.

1.2.1 Existing urban services

The site where the building is to be built currently has the following urban services:

- Aerial electrical connection to the facade
- Drinking water supply
- Public sanitation network
- Public rain drainage network
- Fibre optic cables for the internet

1.2.2. Conditions of the plot and the adjacent buildings

Topography where the building sits is completely flat, close to the sea, at around 4 meters above sea level. Well-preserved homes are observed. The sidewalks and roads are in good condition.

Data from the site:

The plot is located on Calle Muntanyars 19, in the town of Pinedo, in the province of Valencia

Currently the site has a pre-existing building, which is in a poor state. It will be integrated into the project, and as a part of the integration, it will be completely reworked.

The current plot has an area of 4375 m². According to the geotechnical study via Geoweb, the site has a medium-high load-bearing capacity of 100 KN/m², with the presence of a water table.

Taking into account the characteristics of the projected building, surface foundation is recommended by means of strip footings of 1 m depth.

1.3 Project description

1.3.1 General description of the building, needs program, characteristic use of the building and other intended uses, relationship with the environment.

General description of the building: The projected building corresponds to a building of public use, of cultural type, composed of two floor plans, destined to be a library, cultural center and a hotel.

Program:

Library:

Common area
Reception
Main reading hall
Consultation area
Shelves area
Study area
Computer study area
Silent study room
Group study room
Reading area
Storage
Restrooms

Investigation offices:

Reception
Coworking area
Hall for meetings
Kitchen and rest area
Restroom

Hotel:

Reception hall
Common room
Guest rooms
Rest / observation area
Viewpoint
Cafeteria
Restrooms

Community center:

Exhibition area
Common hall
Workshop 1
Workshop 2
Workshop 3
Language room
Art room
Music room
Offices
Cafe
Restrooms

The characteristic use of the building is public - cultural and of the temporary residence.

Relationship with the environment. Building type differs from the surroundings, but it is related to the urban environment and to a newly restored portion of a natural park through a series of squares, according to the current building code.

1.3.2. Applicable legal framework at state, regional and local level.

This project complies with the Technical Building Code, satisfying the basic requirements for each of the basic requirements of 'Structural safety', 'Safety in case of fire', 'Safety of use and accessibility', 'Hygiene, health and protection of the environment', 'Protection against noise' and 'Saving of energy and thermal insulation', established in the article 3 of the Law 38/1999, of 5 November, of Ordenación of the Edificación.

The project has chosen to adopt the technical solutions and procedures proposed in the CTE Basic Documents, the use of which is sufficient to accredit compliance with the basic requirements imposed in the CTE.

Basic CTE requirements not applicable in this project:

Basic requirement SUA 5: Security against the risk caused by situations of high occupation. The conditions established in DB SUA 5 apply to the stands of stadiums, sports halls, meeting centers, other buildings for cultural use, etc. planned for more than 3000 standing spectators. Maximum occupation of the building is less than that, therefore, for this project, it is not applicable.

Compliance with other specific regulations:

State

ICT: Regulation regulating common telecommunications infrastructures for access to telecommunications services inside buildings

RITE: Regulation of thermal installations in buildings (RITE)

REBT: Low Voltage Electrical Regulations and Supplementary Technical Instructions (ITC) BT 01 to BT 51

RULE: Technical regulations for the distribution and use of gaseous fuels and their supplementary technical instructions ICG 01 to ICG 11

RIPCI: Fire Protection Facilities Regulation (RIPCI)

RCD: Production and management of construction and demolition waste

R.D. 235/13 Basic procedure for the certification of the energy efficiency of buildings

Autonomous

DC-09: Design and quality conditions in buildings

Local

PGOU: General Urban Plan for Valencia

1.3.3. Compliance with urban regulations, municipal ordinances and other regulations.

Urban discipline rules:

Categorization, classification and soil regime

- Land classification: Urban - Residential

- Application planning: P.G.O.U. of Valencia

Basic and Sectoral Regulations of application

- Other application plans: There is no complementary planning.

1.3.4 Description of the shape of the building, volume, useful and built surfaces, accesses and evacuation.

Description of the shape of the building:

The projected building corresponds to the typology of a singular building for public-cultural use, located in an urban nucleus, composed of 2 floors above the ground.

Shape

The shape of the building is the result of the optimization of the buildable area allowed in compliance with urban planning regulations.

Access

Accesses are as follows:

1 through the western facade located of C / Muntanyars.

2 through the southern facade located on a street created by the project

2 through the eastern facade located on a path created by the project

3 through the open interior yard created by the project

Evacuation

All existing exits can be used for evacuation from the building, as well as 2 additional exits for fire safety.

1.3.5. General description of the parameters that determine the technical forecasts to be considered in the project.

1.3.5.1. Structural system

Foundation

For dimensions of footings, the actions due to the loads transmitted by the vertical bearing elements in relation to the contact pressure with the ground and their own weight are taken into account.

Land containment

No land containment is done on this project.

Vertical load bearing structure

The vertical bearing elements are dimensioned with the forces originated by the slab that they support. In this case, they are Baupanel-type walls, with the thickness of 30cm. The loads and hypotheses are considered so that the demands derived from the checks against the ultimate limit states and service are fulfilled.

Horizontal supporting structure

Horizontal slab chosen is a BubbleDecks solution. The loads acting on it are evaluated and appropriate thickness is chosen, as seen in the constructive details.

Calculation of bases and methods used

In the calculation of the structure corresponding to the project, calculation methods accepted by current regulations are used. The calculation procedure consists of establishing the loads, defining the structural elements (transversal dimensions, heights, spans, arrangements, etc.) necessary to support these loads, setting the calculation hypotheses for the subsequent verification of the corresponding states.

1.3.5.1.6. Materials

Materials that will be used in this project have the following characteristics:

Concretes							
Placement	Type	fck (N/mm ²)	C	TM (mm)	CE	C. mín. (kg)	a/c
Footings	HA-25/B/20/IIa	25	Soft	20	IIa	275	0,60
Slab	HA-25/B/20/IIa	25	Soft	20	IIa	275	0,60

Key:
fck: Resistance
C: Consistency
TM: Max size of the grain
CE: Ambient exposure
C. mín.: Minimum amount of the cement
a/c: max relation water/cement

Steel for the rebar		
Position	Type of steel	Elastic limit(N/mm ²)
Footings	UNE-EN 10080 B 500 S	500
Slabs	UNE-EN 10080 B 500 S	500

1.3.5.2. Interior compartments system

Vertical partitions

Self-supporting laminated plasterboard partition

Formed by 2x10 mm thick laminated gypsum boards, on each side of a 70 mm wide metal structure with 70 mm thick mineral wool insulation at core. Vertical supports separated by 600 mm. Total width of the finished partition is 110 mm. Assembly according to UNE 102.040 IN.

Baupanel wall

Partition formed by a load-bearing wall with 200mm thick EXPS foam core, covered by 50mm cof concrete on each side

1.3.5.3 Enclosure

Facades:

Baupanel wall

50mm concrete on both sides

200mm EXPS foam

Thickness 30cm

Curtain wall:

Exterior aluminium carpentry with a thermal bridge gap.

Double low-E glazing, 10mm+40mm+10mm

CLT mullions

Inox steel anchors and hardware

Carpentry:

Exterior aluminium carpentry

Fixed: 1000x3400 mm, 70x70 mm frame section

Hinged: 1000x3400 mm, 70x70 mm frame section

Glazing: LOW.S "CONTROL GLASS ACOUSTIC AND SOLAR"

1.3.5.4. Materials, used in facing/finishing

Exterior

- Facade to the street: concrete

- Exterior floors: printed concrete

- Terraces floor: Wooden deck

- Roof: Gravel

Interiors

- Floor: Stoneware with stone finish
- Walls: Plaster
- Ceiling: Continuous suspended ceiling, laminated plasterboard

Kitchen:

- Floor: Stoneware
- Walls :Ceramic tiles
- Ceiling: Continuous suspended ceiling

Toilets:

- Floor: Stoneware
- Walls: Ceramic tiles
- Ceiling: Continuous suspended ceiling

1.3.5.5. Environmental conditioning system

In this project, the materials and construction systems have been chosen so that they guarantee the conditions of hygiene, health and protection of the environment, reaching acceptable conditions of health in the interior environment of the building and having the means so that they are not deteriorate the environment in its immediate surroundings, with proper management of the waste generated by the use in the project.

In section 3 'Compliance with the CTE', point 3.4 'Health' of the execution project report, the criteria, justification and parameters established in the Basic Document HS (Health) are detailed.

1.3.5.6. Installation systems

External services to the building necessary for its correct operation:

Water supply

There is a water supply connection suitable for human consumption. The supply company provides the corresponding pressure and flow data.

Sewage

There is a municipal sewage network available for connection on a C/Muntanyars

Power supply

There is an electrical supply with sufficient power to forecast the total load of the projected building.

Internet connection and telephone lines

There is an access to the optical fibres, offered by the main operators.

Telecommunications

The necessary external infrastructure is available for access to the telecommunication services regulated by the current regulations.

Waste collection

The municipality has a garbage collection system.

1.4. Building features

1.4.1. Benefits resulting from compliance with the basic requirements of the CTE

Building fulfills requirements related to safety, according to Structural safety code (DB SE)

- Resist all actions and influences that may take place during construction and use, with an appropriate durability in relation to maintenance costs, for an adequate degree of safety.

- Avoid unacceptable deformations, limiting to an acceptable level the probability of dynamic behavior and unacceptable degradations or anomalies.

- Keep in good condition for its intended use, taking into account its estimated use period and cost, for an acceptable probability.

Fire safety (DB SI)

- The means of evacuation and the appropriate equipment and facilities have been provided to make it possible to control and extinguish the fire.

- The building has easy access to the fire services. The exterior space immediately next to the building fulfills the sufficient conditions for the intervention of the extinguishing services.

- Access from the outside is guaranteed.

- Incompatibility of uses is not produced.

- The supporting structure of the building has been dimensioned so that it can maintain its resistance to fire for the necessary time, so that the previous features can be met. All structural elements are fire resistant for a time equal to or longer than that of the highest resistance fire sector.

- No type of material has been projected that, due to its low resistance to fire, combustibility or toxicity, could harm the safety of the building or that of its occupants.

Safety of use and accessibility (DB SUA)

- The projected floors are suitable to ensure that people do not slip, stumble or their mobility is hindered, thus limiting the risk of users falling.

- The openings have been designed with the characteristics and dimensions that limit the risk of falls, at the same time that the cleaning of the exterior glazing in safety conditions is fulfilled.

- The fixed or moving elements of the building have been designed to limit the risk of users being impaled or trapped.
- Adequate illumination has been designed in the indoor and outdoor circulation areas, to limit the risk for users in case of an electric failure or in case of emergency
- The design of the building facilitates the movement of people to limit the risk of crushing caused by situations with high occupancy.
- In parking or vehicle transit areas, an adequate design has been made to limit the risk caused by moving vehicles.
- The sizing of the lightning protection facilities has been carried out in accordance with the Basic Document SUA 8 Safety against the risk caused by the action of lightning.
- Access to the building and its premises has been designed to allow people with reduced mobility and communication to circulate through the building according to Basic Document SUA 9 Accessibility and in the specific regulations.

Sanitation (DB HS)

- In this project, the means have been provided to prevent water penetration or, where appropriate, allow its evacuation without causing damage, in order to limit the risk of inadequate presence of water or humidity inside the buildings and in its enclosures as a consequence of water from atmospheric precipitation, runoff, the ground or condensation.
- The building has spaces and means to extract the ordinary waste generated in accordance with the public collection system in such a way as to facilitate the proper separation at source of said waste, the selective collection of said waste and its subsequent management .
- Means have been provided so that the interiors can be adequately ventilated, eliminating the pollutants that are produced regularly during normal use, with a sufficient flow of outside air and with sufficient extraction and expulsion of the air stained by the pollutants.
- Adequate means have been provided to supply the intended hygienic equipment with water suitable for consumption in a sustainable way, with sufficient flow rates for its operation, without altering the properties of suitability for consumption, and prevent backflow that may contaminate the network, also having means that allow the saving and control of water consumption.
- The hot water production system, equipped with storage systems and the terminal points of use, have such characteristics that they prevent the development of pathogenic germs.

- The projected building has the appropriate means to extract the wastewater generated with or without atmospheric precipitation and runoff.

Noise protection (DB HR)

- The construction elements that make up the enclosures in this project have adequate acoustic characteristics to reduce the transmission of airborne noise, impact noise and noise of vibrations of the building's own facilities, as well as to limit reverberant noise.

Energy saving and thermal insulation (DB HE)

- The building has an envelope with characteristics such that it adequately limits the energy demand necessary to achieve thermal well-being based on the local climate, season change , and the use of the building. Its insulation and thermal capacity, air permeability and exposure to solar radiation, reduces the risk of surface and interstitial condensation moisture that can damage their characteristics and properly treats thermal bridges to limit heat losses or gains and avoid hygrothermal problems in them.
- The building has the appropriate thermal installations designed to provide the thermal well-being of its occupants, regulating the performance of the installations and their equipment.
- The building has illumination adequate to the needs of its users and at the same time energy efficient with a control system that allows adjusting the use to the real occupation of the area, as well as a regulation system that optimizes the use of natural light, in areas that allow it.
- For the hot water demand, the incorporation of low-temperature solar energy capture, storage and utilization systems, adapted to the global solar radiation of its location and to the hot water demand of the building, has been foreseen.

1.4.2 Performance in relation to the functional requirements of the building

Use

- In the building, the optimization of circulation routes has been prioritized, so that the program is accomplished in a more efficient manner.
- The surfaces and dimensions of the spaces are adjusted to market requirements, meeting the minimums established by the current habitability standards.

Access to the telecommunications

- The building has been designed in such a way as to guarantee telecommunication services (in accordance with Royal -Law 1/1998, of February 27,

on Common Telecommunication Infrastructures), as well as telephone and audiovisual services.

1.4.3 Building use limitations

Limitations of the use of the building as a whole

- The building can only be used for the uses foreseen in the project.
- The dedication of any of its dependencies to a use other than the projected one will require a reform project and change of use that will be the subject of a new license.
- This change of use will be possible as long as the new destination does not alter the conditions of the rest of the building or undermine its initial benefits in terms of structure, facilities, etc.

Limitations of use of building areas

Those that fail to comply with the precautions, prescriptions and prohibitions of use referred to the premises of the property, contained in the Building Use and Maintenance Manual.

Limitations of use of the installations

Those that fail to comply with the precautions, prescriptions and prohibitions of use of their facilities, contained in the Building Use and Maintenance Manual.

2. CONSTRUCTIVE MEMORY

2.1. Building support

The type of foundations envisaged is described in chapter 1.4 Description of the project of the descriptive report.

The prospecting techniques will be those indicated in Annex C of the Basic Document SE-C.

The Geotechnical Study will include a report drawn up and signed by a competent technician, endorsed by the corresponding Professional Association (according to Section 3.1.6 of the Basic Document SE-C).

2.2. Structural system

2.2.1. Foundation

The foundation is superficial and is solved by the following elements: strip footings under the bearing walls, made with reinforced concrete, whose maximum support stresses do not exceed the admissible stresses of the foundation ground in any of the project situations.

2.2.2. Containment structure

No land containment structures are necessary.

2.2.3. Vertical load bearing structure

The vertical bearing structure is made up with Baupanel system load bearing walls.

2.2.4. Horizontal structure

The horizontal structure is composed of BubbleDeck type slabs.

2.3. Enclosure system

2.3.1 Base slabs

Site-cast 30 cm concrete slab

2.3.2 Facades

30 cm semi-prefabricated Baupanel walls

2.3.2.1 Openings in the facades

Curtain wall solution, aluminium carpentry, 10mm+50mm+10mm low-e glazing, CLT mullions, inox steel hardware

Exterior carpentry, aluminium with a separation of thermal bridge, 10mm+50mm+10mm low-e glazing, 1000x3000mm panels, fixed or hinged.

2.3.3 Exterior

Roof-flat inverted roof, protected with gravel

2.3.4 Vertical compartments

30 cm semi-prefabricated Baupanel walls

11cm double-layer plasterboard with insulation

2.5 Finishing systems:

as described in a chapter 1.4.5.4 Materials, used in facing/finishing

2.6. Conditioning systems and facilities:

2.6.1 Transport systems: lifts

Vertical transport in a building is realized with 3 separate vertical cores, in following order: two of them using double lifts Otis Gen 2 switch, one of them using single lift Otis Gen2 switch.

2.6.2. Protection against moisture

The building is located in the municipality of Pinedo (Valencia), in a class 'E1' environment, being at 4 m elevation. Therefore, it corresponds to a wind zone 'A', with degree of exposure to wind 'V3', and rainfall zone IV.

The constructive solutions used in the building are the following:

Floor slabs: BubbleDeck slab

Facades: Baupanel-type wall

Roofs: Non-accessible inverted flat roof covered with gravel

The objective is that all the elements of the building envelope comply with the Basic Document HS 1 Protection against humidity, justifying, through the corresponding calculations, said compliance.

The foreseeable risk of inadequate presence of water or humidity inside the building or in its enclosures, as a consequence of water from atmospheric precipitation, runoff, ground or condensation, is limited to the minimum prescribed by Basic Document HS 1 Protection against moisture, having all the necessary means to prevent its penetration or, where appropriate, facilitate its evacuation without causing damage.

The design and sizing is based on sections 2 and 3, respectively, of the Basic Document HS 1 Protection against humidity.

2.6.3. Solid waste disposal

The objective is that the storage and transfer of the waste produced by the occupants of the building comply with the Basic Document HS 2 Collection and evacuation of waste, justifying and said compliance.

The building will have the space and means to collect, separate and prepare for extraction of the ordinary waste generated in accordance with the public collection system. The design and sizing is based on section 2 of the Basic Document HS 2 Collection and disposal of waste.

2.6.4. Plumbing

The objective is that the water supply installation complies with the DB HS 4 Water supply, justifying it by the means of the corresponding design.

The building has adequate means for supplying water suitable for consumption to the planned hygienic equipment, in a sustainable way, providing sufficient flow rates for its operation, without altering the properties of suitability for consumption, preventing returns and incorporating means of saving and water control.

The design and sizing is based on sections 3 and 4, respectively, of the DB HS 4 Water supply.

2.6.5. Water evacuation

The building's sanitation network is separated from rainwater, and their independence is guaranteed. The connection between both networks is made by means of the proper interpositions of hydraulic closures, guaranteeing the non-transmission of gases between networks, nor their exit through the points provided for capture.

The objective of the installation is to comply with the basic requirement HS 5 Water evacuation, which specifies the minimum conditions to be met so that mentioned evacuation is carried with guarantees of hygiene, health and protection of the environment.

The building has the appropriate means to extract the wastewater generated in a safe and healthy way, together with the evacuation of rainwater generated by atmospheric precipitation and runoff.

The design and sizing of the building's water evacuation network is carried out based on sections 3 and 4 of BS HS 5 Water evacuation.

2.6.6. Thermal installations of the building

The objective is that the building has adequate thermal facilities to guarantee the well-being and hygiene of people while providing energy efficiency and safety.

The building has thermal installations in accordance with the requirements of well-being and hygiene, energy efficiency and security prescribed in the Regulation of Thermal Installations in Buildings.

The calculation bases for the fulfillment of the basic requirement HE 2 are described in the Regulation of Thermal Installations in Buildings.

2.6.7. Ventilation

The objective is that the ventilation systems meet the requirements of DB HS 3 Indoor Air Quality and are justified through the corresponding calculations.

The building will have adequate means so that its enclosures can be adequately ventilated, eliminating the pollutants that are produced with normal use. The ventilation system is dimensioned to facilitate a sufficient flow of outside air and guarantee the extraction and expulsion of polluted air and prevent interior air from going stale.

The design and sizing is carried out based on sections 3 and 4, respectively, of the DB HS 3 Indoor air quality.

2.6.8. Fuel supply

A gas installation has not been planned in the building.

2.6.9. Electricity

The objective is that all the elements of the electrical installation comply with the requirements of the Electrotechnical Regulations for Low Voltage and Complementary Technical Instructions (ITC) BT01 to BT05.

The electrical installation of the building will be connected to a supply source within the limits of low voltage. In addition to the technical reliability and the economic efficiency achieved, the safety of people and goods is preserved, the normal operation of the installation is ensured and disturbances in other facilities and services are prevented.

Project follows criteria of:

- REBT-2002: Low Voltage Electrotechnical Regulations and Complementary Technical Instructions.
- UNE-HD 60364-5-52: Low voltage electrical installations. Selection and installation of electrical equipment. Pipelines.
- UNE 20-434-90 : Cable designation system.
- UNE 20-435-90 Part 2: Power transport cables insulated with extruded dielectrics for voltages from 1 to 30 kV.
- UNE 20-460-90 Part 4-43: Electrical installations in buildings. Protection against overcurrents.
- UNE 20-460-90 Part 5-54: Electrical installations in buildings. Grounding and protective conductors.
- EN-IEC 60 947-2: 1996: Low voltage switchgear. Automatic switches.
- EN-IEC 60 947-2: 1996 Annex B: Circuit breakers with built-in protection for residual differential current.
- EN-IEC 60 947-3: 1999: Low voltage switchgear. Switches, disconnectors, switch-disconnectors and fuse combinations.
- EN-IEC 60 269-1: Low voltage fuses.
- EN 60 898: Automatic switches for domestic and similar installations for protection against overcurrents.

2.6.10. Telecommunications

Telecommunications infrastructure has been planned in the building.

2.6.11. Fire protection

The conditioning systems and fire protection installations considered are arranged to reduce the risk to the users of the building to suffer from damages derived from a fire of accidental origin, to acceptable limits, as a consequence of the characteristics of the project, construction, use and maintenance of the building.

The risk of fire propagation inside the building is limited by proper sectorization, as well as outside the building, between sectors and to other buildings.

The building has the appropriate equipment and facilities to make it possible to detect, control and extinguish fires, as well as notify the occupants.

On the other hand, the building has adequate means of evacuation. Occupants can leave it or reach a safe place within it in safe conditions. At the same time the intervention of rescue and firefighting teams is made easily accessible.

The supporting structure will maintain its resistance to fire for the time necessary for the above goals to be reached.

The design and dimensioning of fire protection systems is carried out based on the objective parameters and procedures specified in the DB SI, which ensure the satisfaction of the basic requirements and the surpassing of the minimum quality levels of the basic safety requirement in case of fire.

For the fire protection installations contemplated in the building, their design, execution, commissioning and maintenance comply with the provisions of the Fire Protection Installations Regulations, as well as their complementary provisions and other specific applicable regulations.

2.6.12. Lightning rods

The objective is to reduce to acceptable limits the risk of users suffering immediate damage during the use of the building, as a consequence of the characteristics of the project, construction, use and maintenance.

The risk of electrocution and fire is limited by means of the corresponding protection installations against the action of lightning.

The need to install a lightning protection system and the type of installation required are determined based on sections 1 and 2 of the Basic Document SUA 8 Safety against the risk caused by the action of lightning.

The sizing is carried out by applying the method described in section B.1.1.1.3 of annex B of the SUA Basic Document Safety of use for the external system, for the internal system, and sections B.2 and B.3 of the same Basic Document for the ground network.

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