CV- 500

R i o T ú r i a

To restore this ecosystem we must use the tools that the environment provides us with, focusing mainly on the means at our disposal, without excessive machinery that would further affect the site.
One of the main agents capable of modifying this damaged natural environment is waves. It provides a coastal morphodynamics to the beaches that evolve over time.
The graphs shown in figure 4.1 belong to studies carried out using the SMC (Sistema de Modelado Costero) tool, which analyses the different wave processes: asperation, refraction and diffraction. Thus obtaining the graphs that show the directional variation of the waves and the directionality of the winds.
All of this works as a raw tool in dune recovery, by means of wind currents that pour and displace fragments of sand, thus creating the base systems of the biosphere.

Puerto de Valencia
From Valencia 7.500 m
By Car 14 min

Playa dePinedo
From Valencia 8.800 m
By Car 15 min

Playa del Saler
From Valencia 11.800 m
By Car 16 min

Playa de la Garrofera
From Valencia 13.500 m
By Car 17 min

Lago del Pujol
From Valencia 18.600 m
By Car 26 min

Playa de la Malladeta
From Valencia 19.500 m
By Car 28 min

Playa del Recati
From Valencia 20.400 m
By Car 30 min

L a A l b u f e r a

Plot Area


Plot Area. 1956- American flight


Plot Area. 1996


Plot Area. 2006- PNOA


Plot Area. 2016- PNOA

U.01

Nº Plan

North arrow

Drawing scale 1:20000

0 200 500 1000 2000 5000

General notes:

Tutor: Carlos Lacalle Garcia
Cotutor: Agustin Perez Garcia
Student: Pelayo Castaño

TFM

Plan of:

Location

Nature's Lab Centre

2022-23 Group E

FOOTPATHS RELATIONSHIP

MOBILE DUNE

FIX DUNE

ALBUFERA

PUJOL LAKE

MALLADA

MEDITERRANEAN

CV-500

BRIDGE CONNECTION

The Albufera Park has been diminished due to the actions that tried to turn the nature reserve into a tourist attraction, attracting large crowds and turning something that belonged to many into a luxury for a few. Constructions that still remain on the territory testify to the beginning of what could have been and whose visibility through reports made it possible to stop but not eliminate them.

Despite prompt action, some damage has not been repaired, many flora and fauna have been expelled, thus destroying the ecosystems of the area. From the adaptation to the environment a feedback arises thanks to the adaptation of the group of species to this particular environment, so that no matter how small a footprint the human being leaves, it can unbalance the natural environment.

Buildings that are built in a way that is harmful to the environment, that do not respect the place they occupy and whose needs are not compatible with their surroundings. The idea of living in the midst of nature is not at all crazy, it should be something we should be aware of, but to do so we must change some of the habits and customs that the big city has taught us.
Mass tourism destroys every natural environment it encounters. This has not been prepared for it, cities have been created to facilitate the life of people, in which we have secluded ourselves from the hostilities of nature, while when we can take advantage we are the ones who act in a disrespectful way with the environment, mistreating it and then discarding it.

One of the points on which this action is based is respect for the place, the adaptation of the intervention (which will also be in synchrony with it), awareness of the importance of the place and why we must protect and save it. We must also make do with what we have. The site has already been severely damaged and we must deal with elements that may not have been there originally, but whose removal would further damage the environment. These points will try to be reversed, so that what was originally harmful can be an opportunity for improvement.

In relation to what has already been said about tourism, it is already collapsing in on itself. The amount of services offered to citizens is not enough to supply the large masses of people who are asking for more and more. The collapse of the road that connects La Albufera with the city of Valencia is not enough at certain times of the day, especially at dawn and dusk. Limiting the passage would not be enough, it would affect a lot of people and would generate more problems than it wants to solve.
But if this situation is counteracted by creating an activity in relation to the place that diversifies these key times, it could decongest this collapse, thus creating a tourism that is not less hostile, but more distributed. One of the activities proposed here is night sky observation. Due to the low light pollution that the city has, an almost magical aura is generated around the place, which would encourage a lot of people to investigate and fight for the maintenance of what belongs to us.

U.02

Nº Plan

North arrow

Drawing scale 1:1000

0 10 20 50 100 200

General notes:

Tutor: Carlos Lacalle Garcia
Cotutor: Agustín Pérez Garcia
Student: Pelayo Castaño

TFM

Plan of:

Site study

Nature's Lab Centre

2022-23 Group E

"The damaged dune modifies its ecosystem"

"Planting of foundations"

"Sand condensers recover the dune"

"The project emerges from the dune, adapting to it"

"The bridge generates a directionality to the lake over which the volume is created"

"That piece breaks generating a gap"

"By separating the two pieces a space for intermediate use appears...

... in which a third volume is introduced"

"Side parts raise to make them permeable to wind movement".

"Ramp and side platforms complete the building and its relationship to its surroundings".

U.03

Nº Plan

North arrow

Drawing scale 1:500

0 10 20 50 100 200

General notes:

TFM

Plan of:

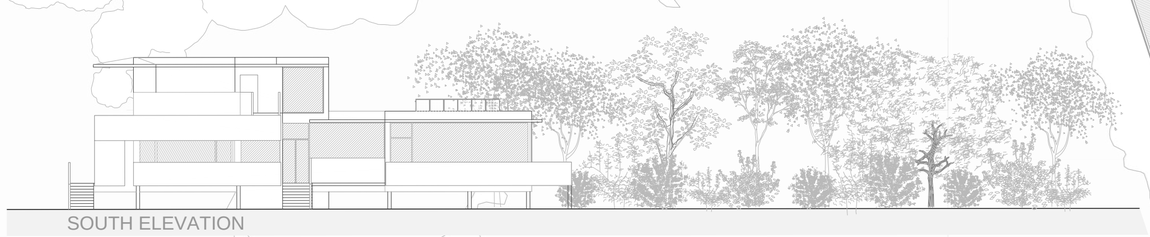
Design concept

Nature's Lab Centre

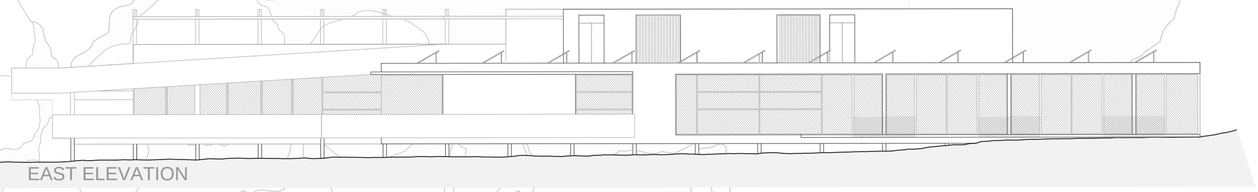
2022-23 Group E

Tutor: Carlos Lacalle Garcia
Coutor: Agustín Perez Garcia
Student: Pelayo Castaño

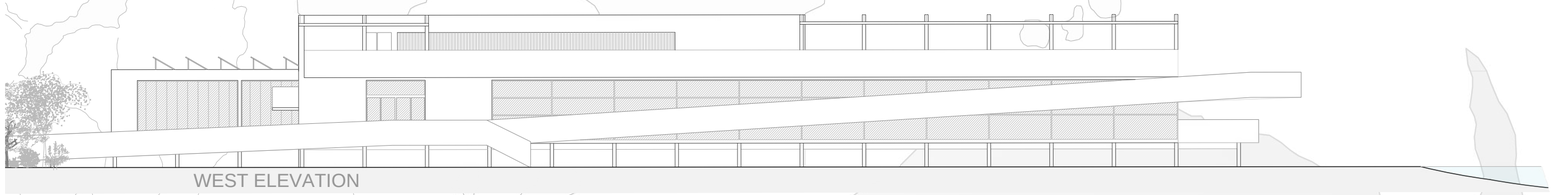
NORTH ELEVATION



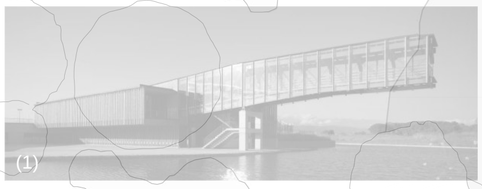
SOUTH ELEVATION



EAST ELEVATION



WEST ELEVATION



(1)

(2)

(1) Salburúa Nature Interpretation Centre

The project takes the directionality it has, adapting it to the environment and creating both internal and external spaces in relation to the landscape.

(2) EVOA - Environmental Interpretation Centre

The relationship with the surroundings as well as the volumes that make up the building served as ideas for its implantation on the plot. There is also another clear reference to the ramp that surrounds the building.

A.01

Nº Plan

North arrow

Drawing scale 1:250

0 5 10 25 50 100

General notes:

Tutor: Carlos Lacalle García
Cotutor: Agustín Perez García
Student: Pelayo Castaño

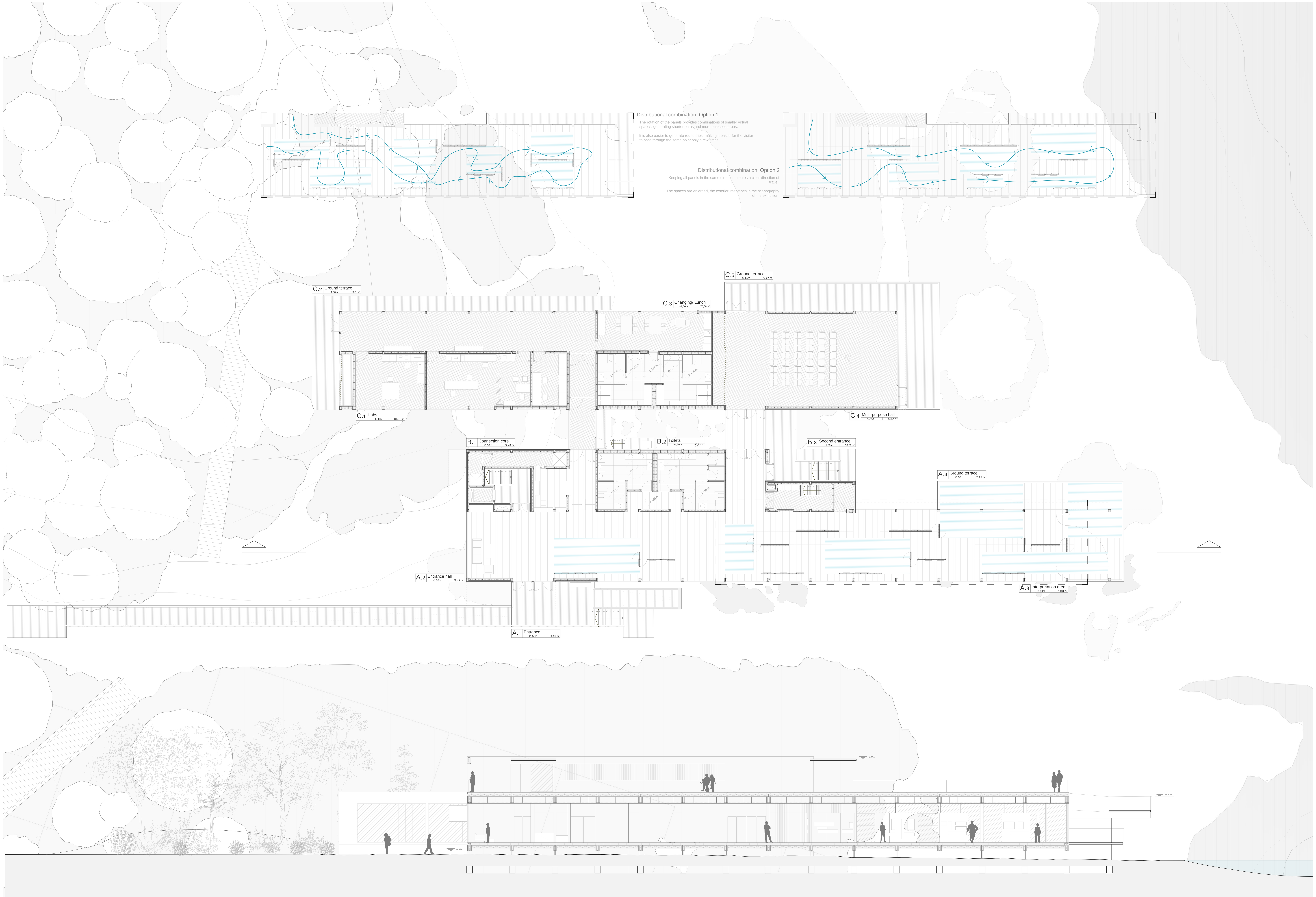
TFM

Plan of:

Site plan

Nature's Lab Centre

2022-23 Group E



A.02

Nº Plan

North arrow

1:100

Drawing scale

0 1 2 5 10 20 50

General notes:

Tutor: Carlos Lacalle García
Cotutor: Agustín Pérez García
Student: Pelayo Castaño

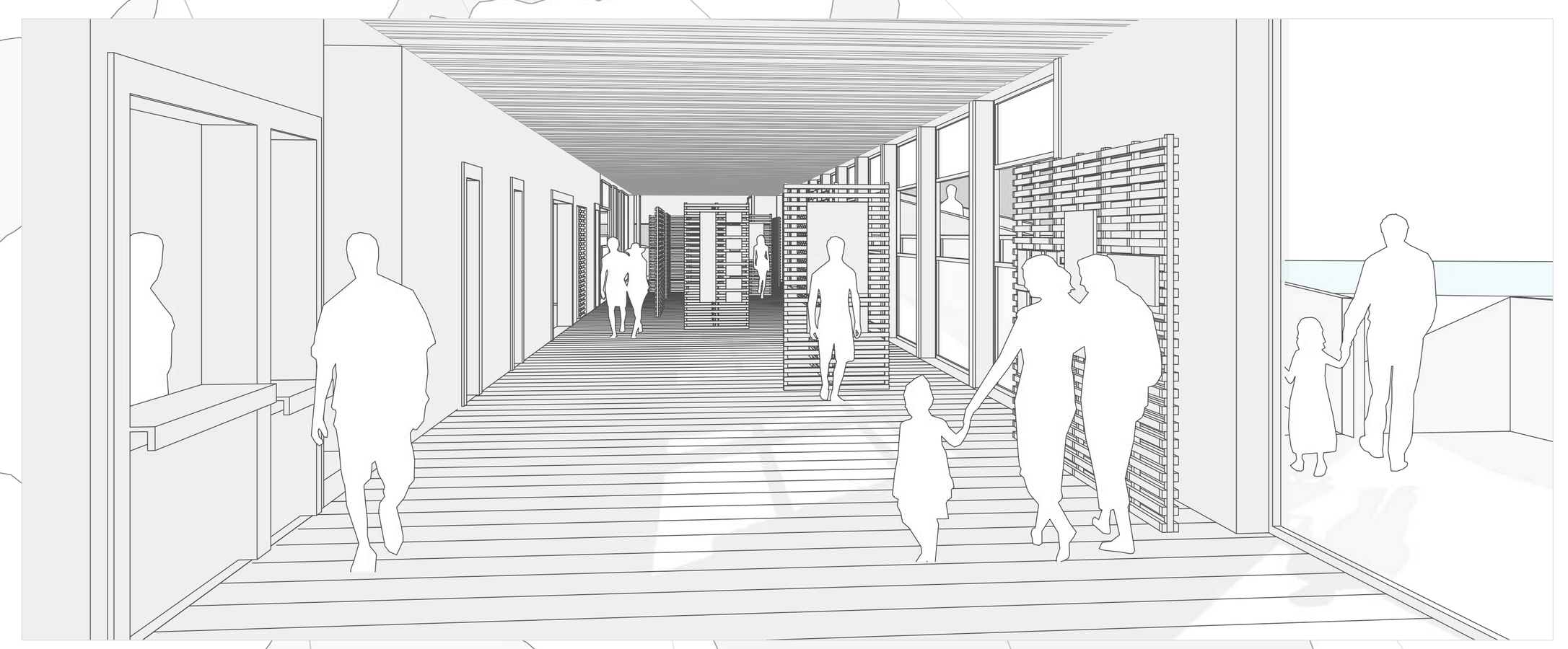
TFM

Plan of:

Base floor

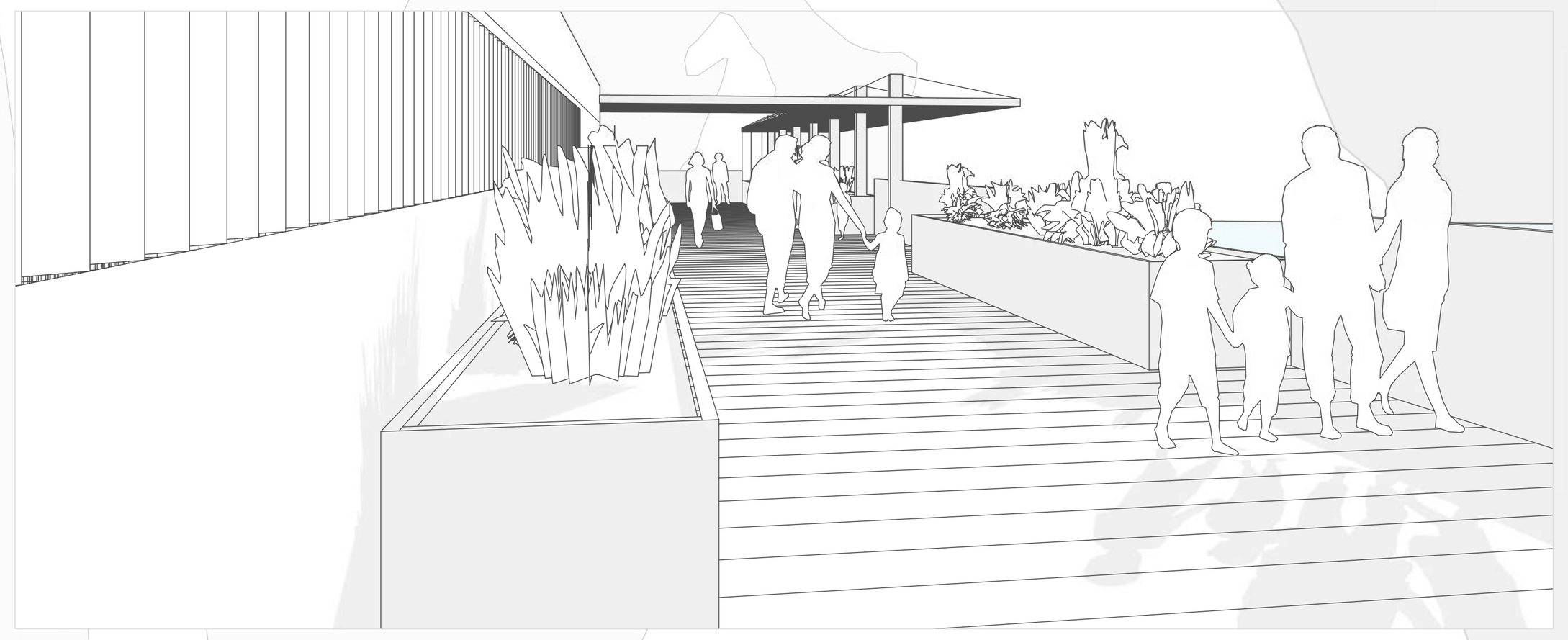
Nature's Lab Centre

2022-23 Group E



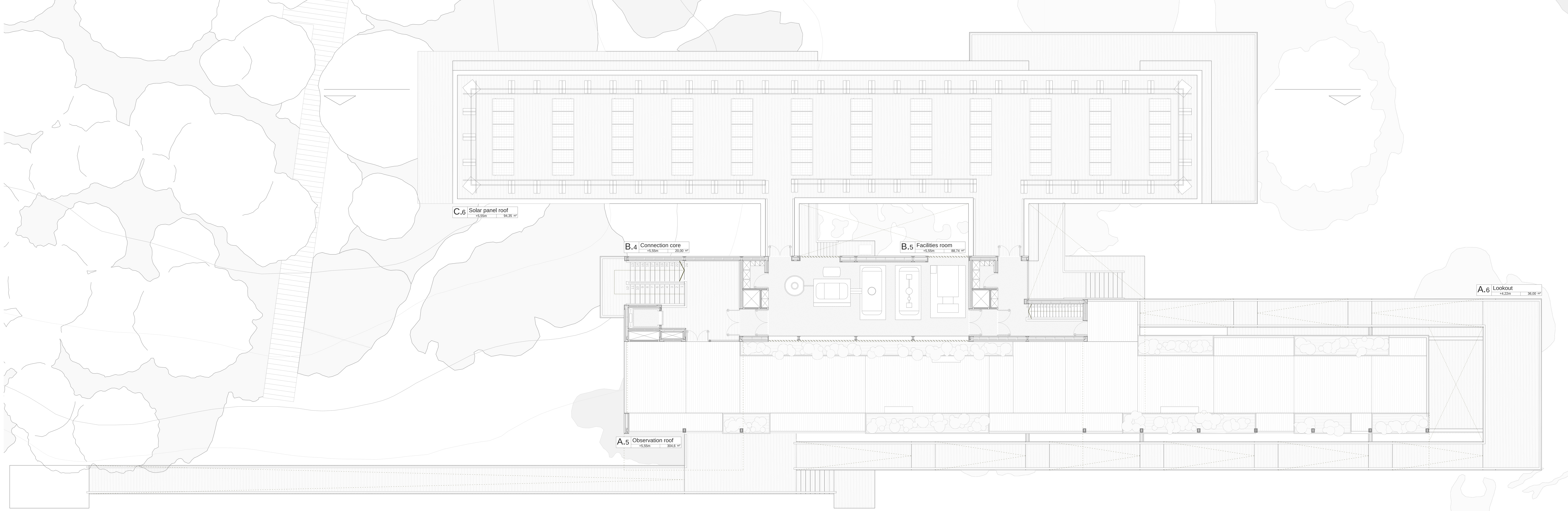
Interior view of the interpretation centre

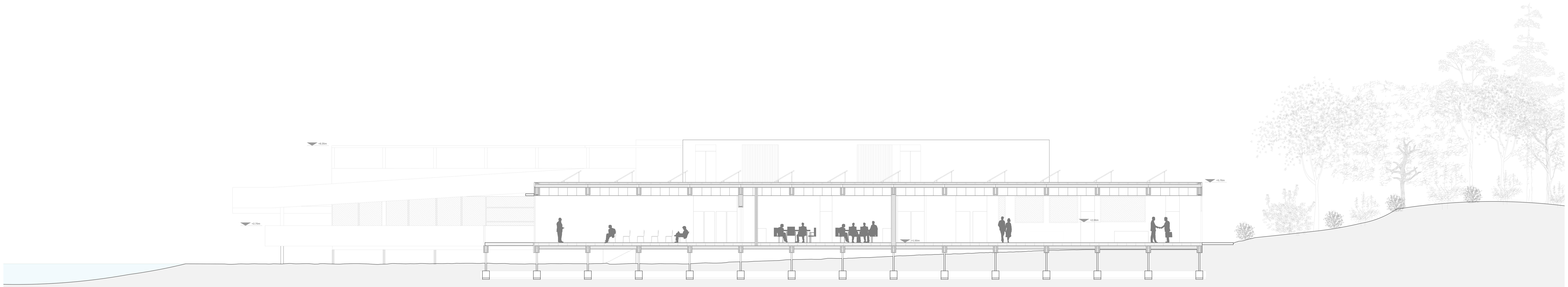
The interior space is configured by the panels, as well as offering a sense of openness towards the environment thanks to the movable frames that surround it.



Exterior view of the roof with endemic planters

Completely in harmony with the surrounding environment, it offers ample views. The planters adapt the space of the building to create the sensation of being in the midst of nature.





A.03

Nº Plan

North arrow

1:100

Drawing scale

0 1 2 5 10 20 50

General notes:

Tutor: Carlos Lacalle García
Cotutor: Agustin Pérez García
Student: Pelayo Castaño González

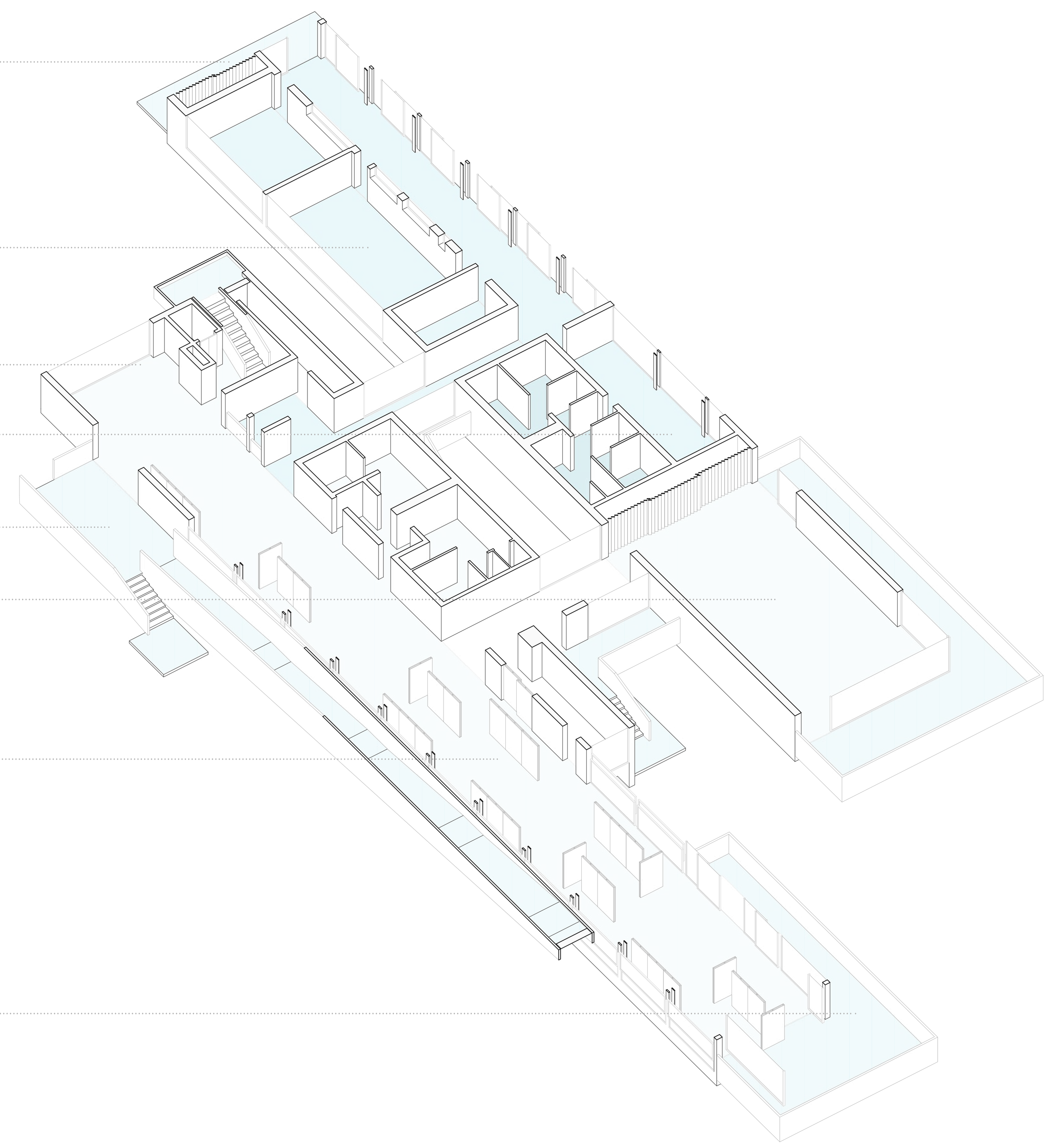
TFM

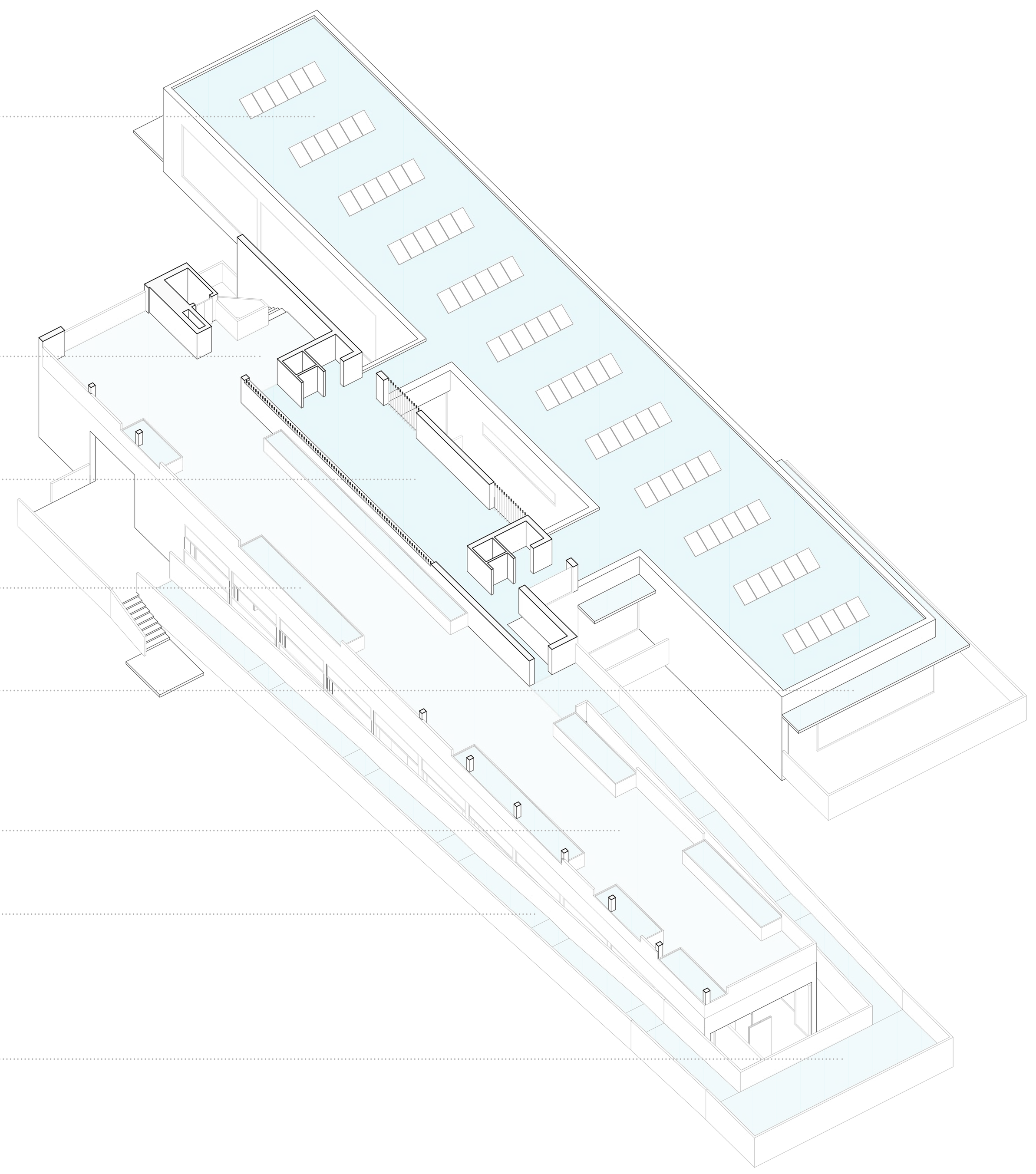
Plan of:

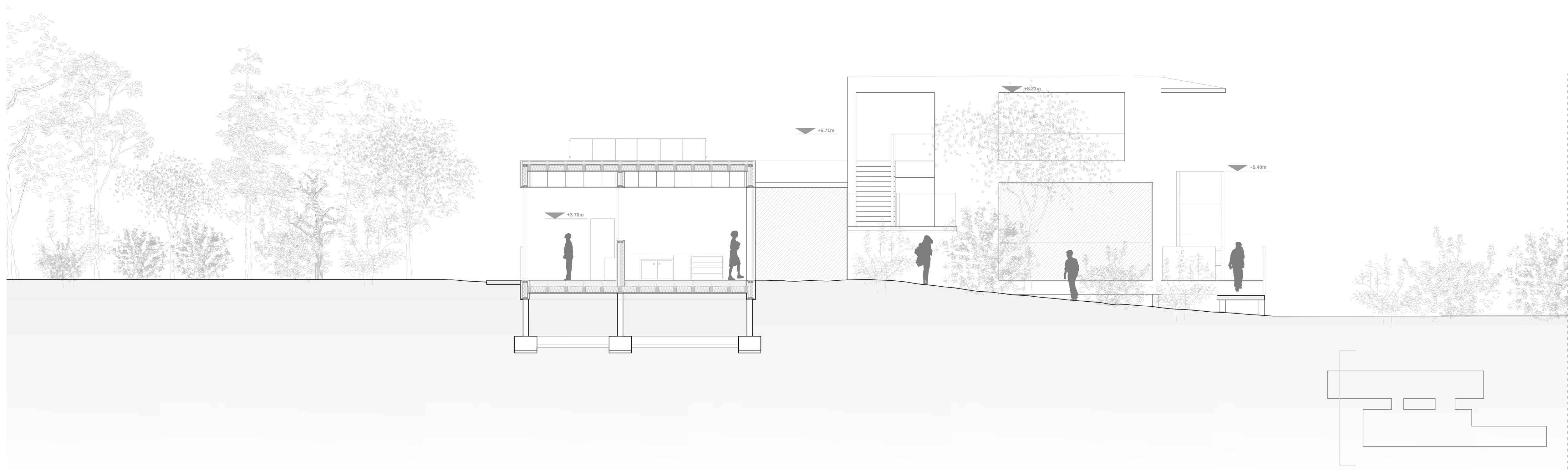
First floor

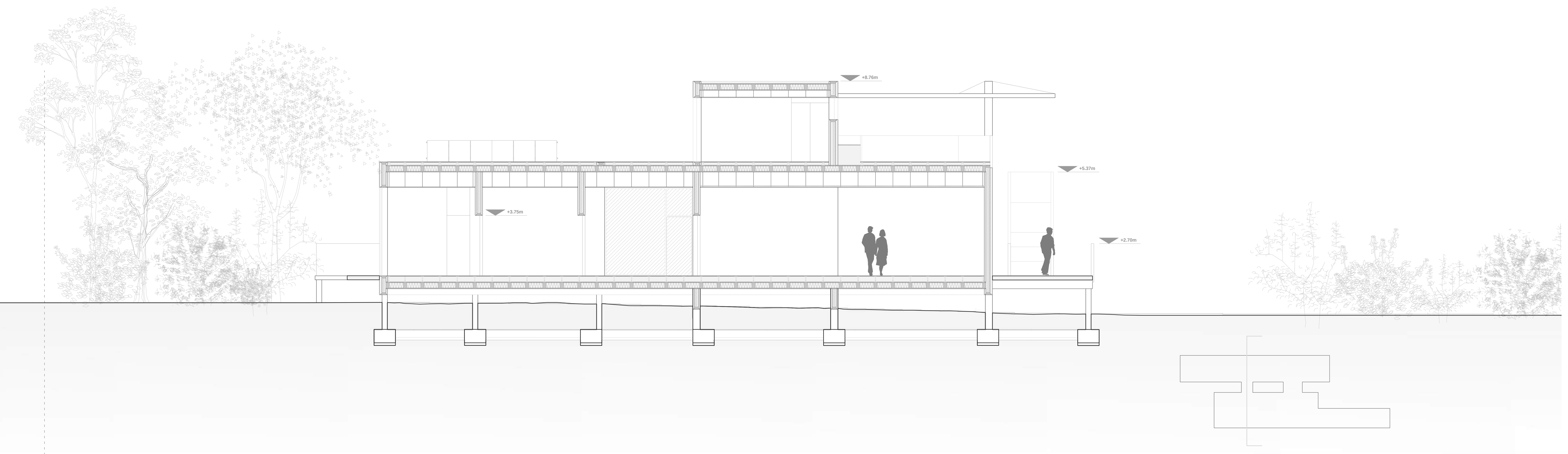
Nature's Lab Centre

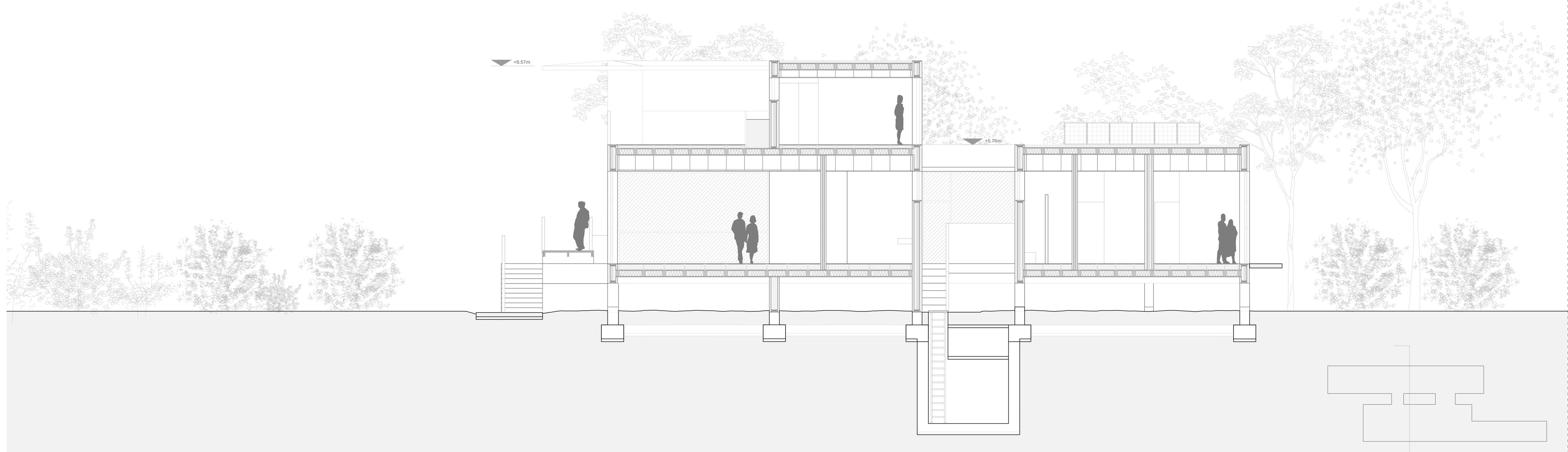
2022-23 Group E

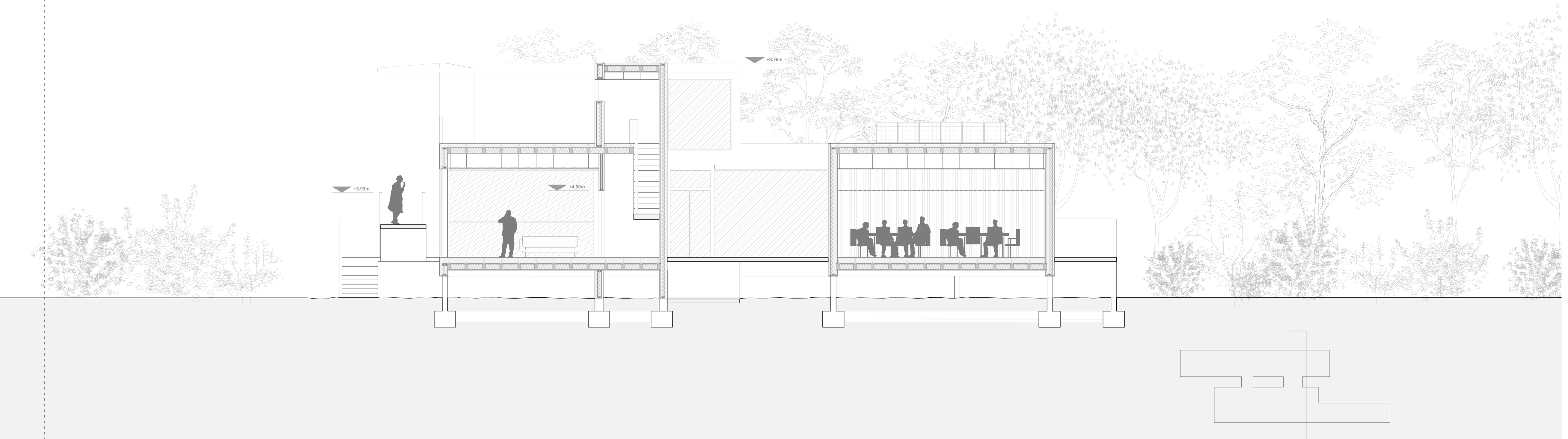












Nº Plan
A.04

North arrow

Drawing scale
1:100

0 1 2 5 10 20 50

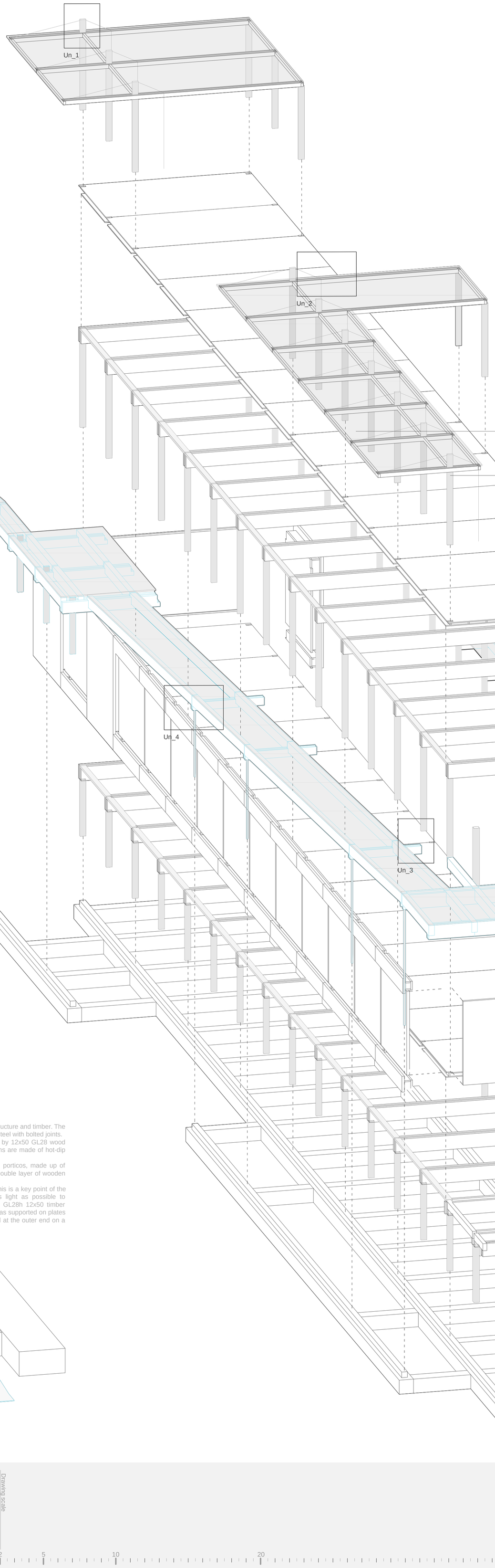
General notes:

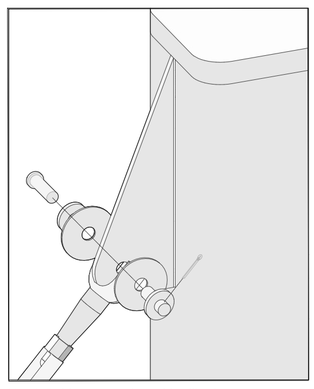
Tutor: Carlos Lacalle García
Cotutor: Agustín Pérez García
Student: Pelayo Castaño

TFM

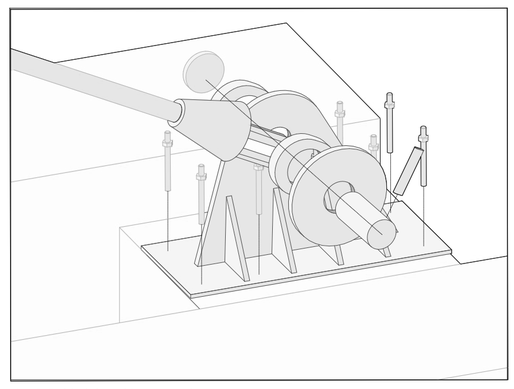
Plan of:
Axonometry & Cross-sections

Nature's Lab Centre 2022-23 Group E

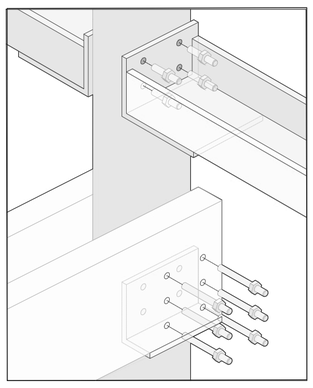




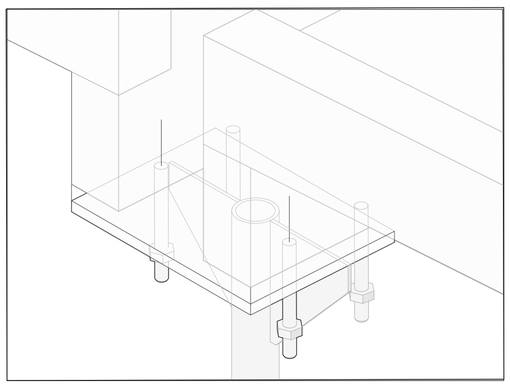
Un_1.Cable connection with pillar in canopy



Un_2.Cable joint with canopy beam



Un_3.Beam-to-column connections



Un_4.Support of ramp beams on bars

Cover finish

Solid wood boards
28x145

Canopy structure

BEAM SECTION
GL28h_7x28
GL28h_7x14

STRAPPING SECTION
GL28h_8x12

SECTION OF BRACES
S275_D-2,5

PILLAR SECTION
S275_200x100x12,5

First floor slab

CLT MIX
EGO CLT-200

Ramp finish

Solid wood boards
28x145

Ground floor structure

BEAM SECTION
GL28h_11x46 GL28h_10x30
GL28h_12x50 GL28h_12x32
GL28h_14x40

STRAPPING SECTION
S275_UPN-200
GL28h_13x23
GL28h_14x25

PILLAR SECTION
S275_200x100x12,5
S275_200x200x10

Ramp structure

BEAM SECTION
GL28h_7x28
GL36h_12x50

STRAPPING SECTION
GL28_13x23

BARS SECTION
S275_CHS-60.3
S275_CHS-84.3

Ground floor slab

CLT MIX
EGO CLT-200

Ground floor enclosures

Wooden slat system
Rastrel_55x35

Mezzanine floor structure

PILLAR SECTION
S275_200x100x12,5
S275_200x200x10

Foundations

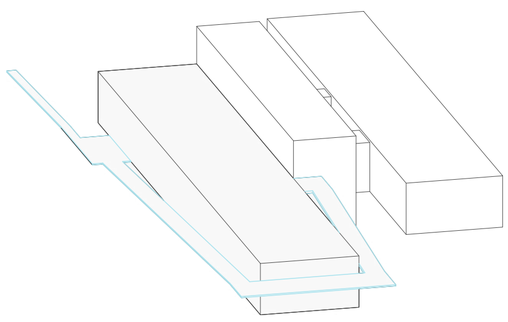
SPREAD FOOTINGS
HA-25/F/20XS1_50x50

FOUNDATION WALLS
HA-25/F/20XS1_20x20

ROSTER BEAMS
HA-25/F/20XS1_50x50

CLEANING CONCRETE
HL-150/B/20_10x50

The gantries would be formed by a combination of metal structure and timber. The RHS 200x100 pillars would be made of hot-dip galvanised steel with bolted joints.
Continuing with the description, the beams will be formed by 12x50 GL28 wood sections in the parts of the span with more light. The beams are made of hot-dip galvanised UPN 200 sections, bolted to the pillars.
The 30 cm high CLT mix floor slabs would rest on these porticos, made up of 10x20cm joists, 20cm rock wool thermal insulation and a double layer of wooden honeycombs on both the lower and upper part of the CLT.
A key point of the project is the structure of the ramp. As this is a key point of the concept on which the design is based, trying to be as light as possible to culminate in the cantilever at the end. For this purpose, GL28h 12x50 timber beams and GL28h 13x23 strapping were used. All of this was supported on plates screwed to the rectangular pillars previously described and at the outer end on a CHS ø60.3 bar.



Nº Plan
E.01

North arrow

Drawing scale
1:70

0 1 2 5 10 20 50

General notes:

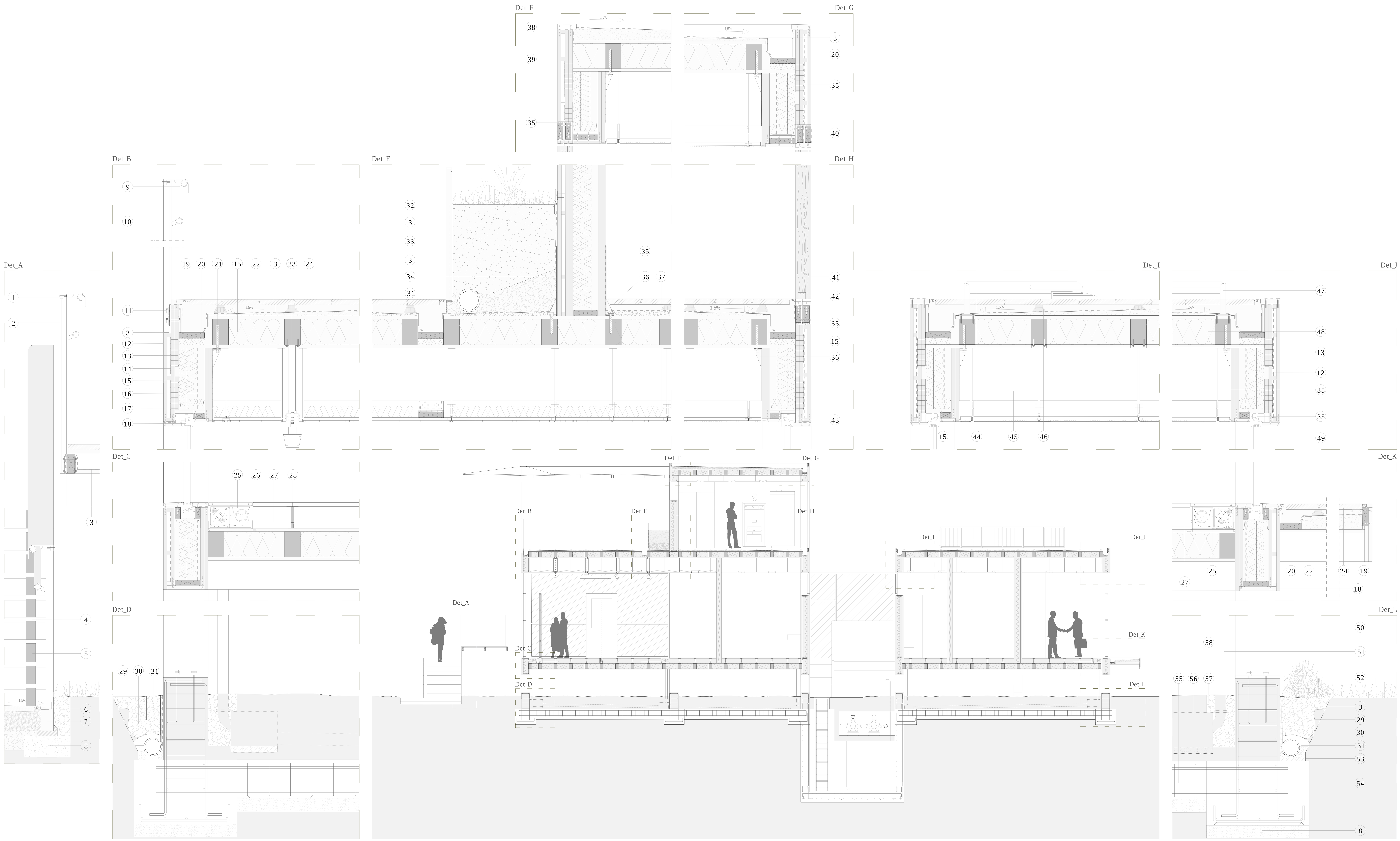
Tutor: Carlos Lacalle García
Cotutor: Agustín Pérez García
Student: Pelayo Castaño

TFM

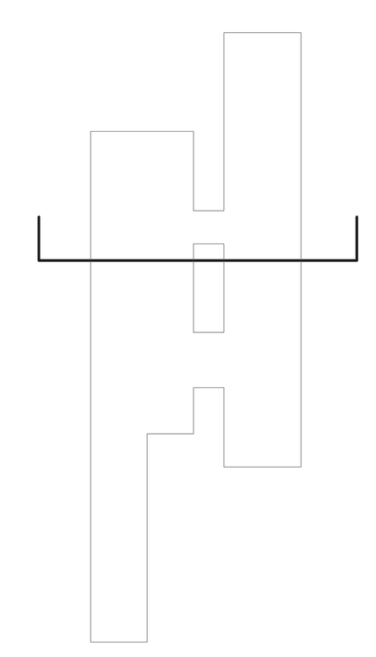
Plan of:
Exploded view

Nature's Lab Centre

2022-23 Group E



1. Straight handrail made of hollow AISI 304 stainless steel tube at a height of 1.20m.
2. Straight handrail, 120 cm high, made of solid 12 mm self-skidding steel profile.
3. Waterproofing, decoupling and water vapour diffusing polyethylene sheet with a ribbed structure and square dovetail cavities, 3 mm thick.
4. Solid wood step made of Scots pine (Pinus sylvestris), 80x30x3.2 cm, formed by continuous slatted board, varnished in the workshop on all sides and edges, with polyurethane varnish.
5. Straight staircase, made of fir wood, with wooden handrail, to save a height between floors.
6. Flooring of rustic stoneware ceramic tiles, 45 x 45 cm.
7. Reinforced concrete dwarf for pillars, made with HA-30/F/20/XS1 concrete manufactured in the plant, with MR cement, and poured with a bucket, and UNE-EN 10080 B 500 S steel.
8. Layer of concrete for cleaning and levelling the bottom of the foundations, 10 cm thick, of HL-150/B/20 concrete, manufactured at the plant and poured from a lorry, at the bottom of the excavation previously carried out.
9. Schlüter-LIPROTEC-LL lighting system, 3.6 m long, consisting of anodised aluminium LED strip housing profile, natural colour, matt finish, Schlüter-LT-LL 2017 AE
10. Straight handrail made of AISI 304 stainless steel hollow tube at a height of 0.90m.
11. Mechanical anchorage with galvanised steel expansion bolt, nut and washer.
12. Cladding system for ventilated façade, consisting of a wooden panel 2600x1250 mm and 12 mm thick.
13. Nail, 4 mm in diameter and 40 mm in length, made of high adherence galvanised steel.
14. Metal piece of UNE-EN 10346 S250GD+Z steel with Z275 protection against corrosion, for the support of the end façade panel.
15. Insulation between uprights in panel cladding, formed by semi-rigid rock wool panel.
16. Vapour barrier with airtightness, made of polyethylene, 0.20 mm thick and 188 g/m², 145 m of equivalent air thickness against water vapour diffusion, according to UNE-EN 1931, air permeability 0.03 m³/h-m² at 50 Pa, Euroclass E reaction to fire according to UNE-EN 13501-1.
17. UPN steel band UNE-EN 10025 S275JR, formed by single pieces of hot-rolled profiles of the UPN series, hot-dip galvanised finish, with screwed joints on site.
18. Pine wood exterior carpentry, for hinged window, consisting of a tilt-and-turn sash and lower fixed panel, opening inwards.
19. Profile for partition joint, for flooring at the same level, coated MDF.
20. Square aluminium gutter, 400 mm long and 0.68 mm thick. Including supports, corners, covers, end caps, connection pieces to downpipes and special pieces.21. Galvanised steel screw, 80 mm long, with washer.
22. Cement mortar CEM II/B-P 32.5 N type M-10, made up on site with 380 kg/m³ of cement.
23. Universal three-phase electrified rail, for 230/400 V voltage and 16 A maximum intensity, made of extruded aluminium profile, 56x32.5x1000 mm.
24. Outdoor decking, made of solid wood boards, Swedish pine, 30x100x1600/2400 mm, slip resistance class 3, according to CTE DB SU.
25. Floor fan coil with casing, two-pipe system, total nominal cooling capacity of 1.65 kW.
26. Accessible raised floor, consisting of 600x600 mm panels, with high-density chipboard core, 650 kg/m³, and 30 mm thick, with steel sheet on the underside and linoleum finish on top, with 18 mm PVC edging around the perimeter, protecting the live edge of the flooring.
27. Interior plumbing installation made with cross-linked polyethylene pipe (PE-X), for the hot and cold water network connecting the private branch.
28. Adjustable pedestals for heights up to 150 mm, made of zinc-plated steel with anti-vibration joint head, fixed to the support with glue; classification 2/2/A/2, according to UNE-EN 12825 and Euroclass Bfl S1 reaction to fire, according to UNE-EN 13501-1.
29. Non-woven geotextile composed of polypropylene fibres joined by needle-punching.
30. Unclassified filtering gravel backfill to facilitate drainage of rainwater, in order to avoid puddling and hydrostatic overpumping.
31. Double-walled PVC slotted pipe, corrugated on the outside and smooth on the inside.
32. Prismatic Corten steel planter, capacity 550 litres.
33. Screened topsoil backfill.
34. Backfill of crushed gravel.
35. Self-adhesive, elastic and watertight closed-cell neoprene strip, 10 mm thick and 30 mm wide.
36. Support substructure composed of vertical anchoring system, made of AW 6063 T5 black lacquered aluminium, adjustable in the vertical and horizontal axes, consisting of: vertical L-shaped profiles made of extruded 6063 aluminium alloy with T-5 heat treatment.
37. False ceiling with wooden frieze finish, with top layer of insulation and openings to allow the passage of lighting rails.
38. Wooden perimeter trim piece screwed to the façade finish.
39. Rastrel of 42x27 mm section, of Pinus pinaster pine wood (Pinus pinaster), autoclave-treated, with class of use 2, according to UNE-EN 335, brushed finish, with humidity lower than 20%.
40. Sawn wood of Scots pine (Pinus sylvestris) from Spain for beams, 3.6 m long, section 125x200 mm, resistance class C18 according to UNE-EN 338 and UNE-EN 1912, structural quality MEG according to UNE 56544.
41. Fixed latticework made up of fixed slats of red cedar wood, 200 mm wide, with fungicide treatment and painted finish for outdoor use, placed in vertical position.
42. L-pillar foot for circular abutment, made of S235JR steel, with Z275 corrosion protection, 100 mm diameter mm in the area to be connected to the abutment, 20 mm diameter bolt and 200 mm length at the bottom connection.
43. Continuous false ceiling type Danoline® Belgravia D145, metal structure (12.5+27+27), with EI90 fire resistance, consisting of a laminated plasterboard A / UNE-EN 520 - 1200.
44. Perimeter protection railing for floor slabs, with hinged safety guardrails.
45. Homogeneous glued-laminated timber beam of spruce (Picea abies).
46. Adjustable support model SP "PEYGRAN", made of polypropylene, with added mineral load, black in colour, with 1000 kg mechanical compression capacity, and circular base, for heights between 37 and 50 mm.
47. Tilting handrail base, made of steel S235JR, with Z275 corrosion protection and 100x100 mm handrail in the lower connection, forming an articulated support made of steel S235JR, with Z275 corrosion protection.
48. Counter-laminated timber panel (CLT), lightened, with insulation incorporated, with an average surface area greater than 6 m², 240 mm thick, consisting of five layers: two layers of wooden boards on each side, joined together by means of wooden uprights, 60x140 mm cross-section, glued with urea-formaldehyde-free adhesive, with successive layers perpendicular to each other and transversal arrangement of the boards in the outer layers, surface finish unseen quality on both sides and a layer of thermo-acoustic insulation between the uprights.
49. Triple glazing, consisting of 4 mm PLANITHERM XN exterior glass, with a low thermal emissivity layer incorporated on the interior face, two dehydrated chambers filled with argon gas with aluminium spacer profile and double perimeter sealing, fixed on the joinery with wedging by means of perimeter and lateral support shims, cold sealed with silicone.
50. Hollow rectangular pillars in UNE-EN 10025 S275JR steel, formed by single pieces of hot-rolled rectangular series profiles, hot-dip galvanised finish, with screwed joints on site.
51. External downpipe of the rainwater drainage network, made of PVC, series B, 110 mm diameter, glued joint with adhesive.
52. S275JR steel anchor plate in flat profile, 250x250 mm and 12 mm thick, with 4 welded bolts, made of corrugated steel UNE-EN 10080 B 500 S.HM-20/B/20/X0 concrete, manufactured in the plant.
53. Reinforced concrete strip footing foundation, made in previous excavation, with HA-30/F/20/XS1 concrete manufactured at the plant, with MR cement, and poured from truck, and UNE-EN 10080 B 500 S steel, with an approximate amount of 100 kg/m³.
54. Steel in rebar, UNE-EN 10080 B 500 S, supplied on site in unprocessed bars.
55. Reinforced concrete tie beam, made with HA-30/F/20/XS1 concrete manufactured in the plant, with MR cement, and poured from truck, and UNE-EN 10080 B 500 S steel, with an approximate amount of 60 kg/m³.
56. Manhole, prefabricated in polypropylene, accessible, interior dimensions 40x40x40 cm.
57. Drainage trench with a minimum slope of 0.50%, for groundwater collection.
58. Polyurethane enamel



C.01

N° Plan

North arrow

1:50

Drawing scale

General notes:

Tutor: Carlos Lacalle García
Cotutor: Agustín Pérez García
Student: Pelayo Castaño

TFM

Plan of:

Constructive section

Nature's Lab Centre

2022-23 Group E