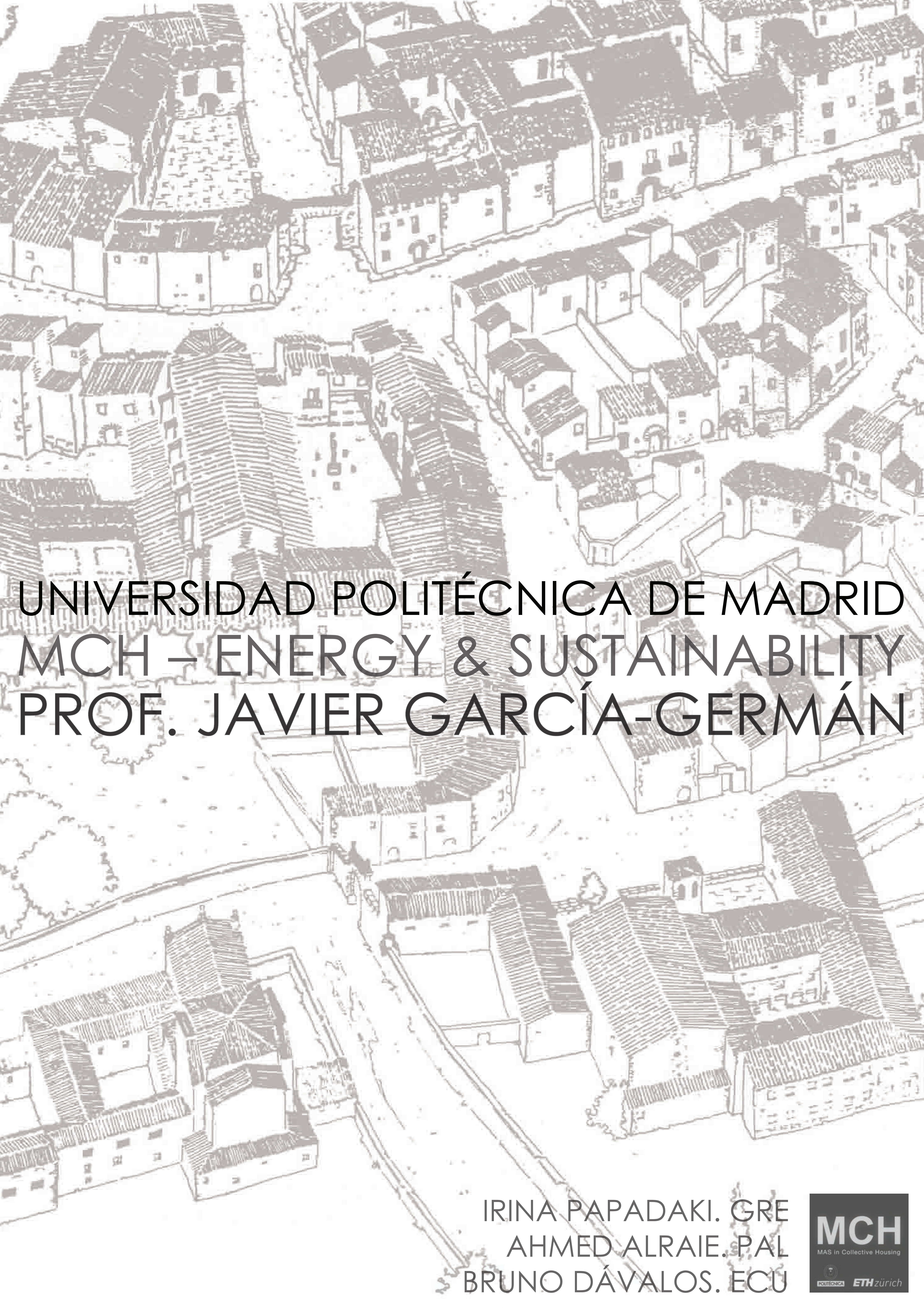




UNIVERSIDAD POLITÉCNICA DE MADRID
MCH – ENERGY & SUSTAINABILITY
PROF. JAVIER GARCÍA-GERMÁN

IRINA PAPADAKI. GRE
AHMED ALRAIE. PAL
BRUNO DÁVALOS. ECU



CLIMATE AND TERRITORIAL ATMOSPHERES

HUESCA | SPAIN

GEOGRAPHICAL INFORMATION

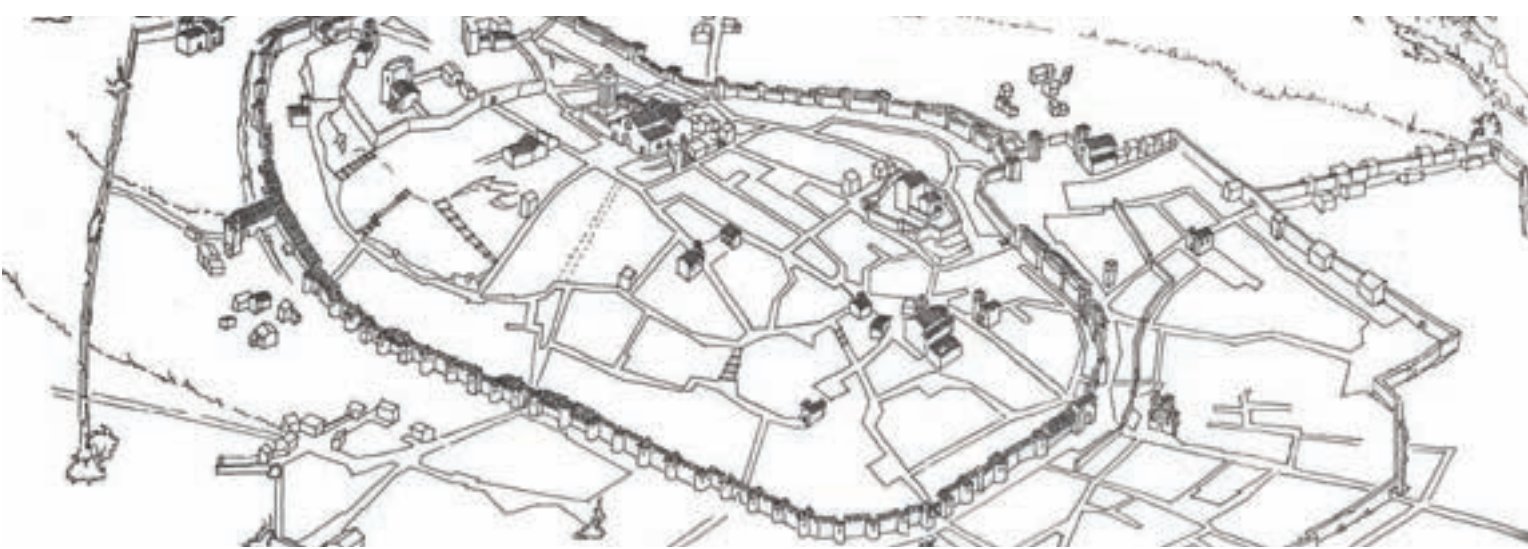
ARAGON

Is an autonomous community in Spain. In **northeastern** Spain, the Aragonese autonomous community comprises three provinces (from north to south): **Huesca**, Zaragoza, and Teruel. Its capital is Zaragoza.



HUESCA

Is a city in north-eastern Spain, within the autonomous community of Aragon. It is also the capital of the Spanish province of the same name and of the comarca of Hoya de Huesca.

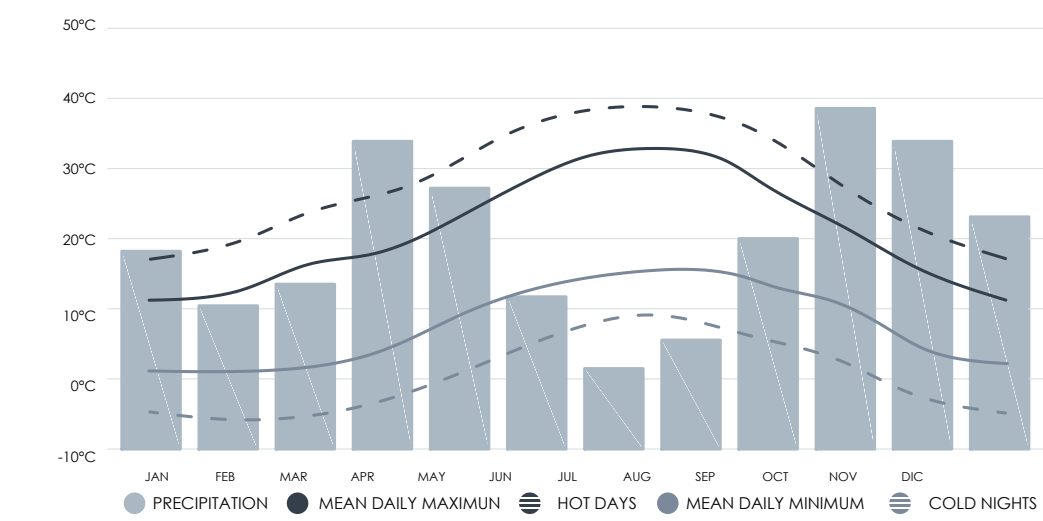


CULTURAL HERITAGE

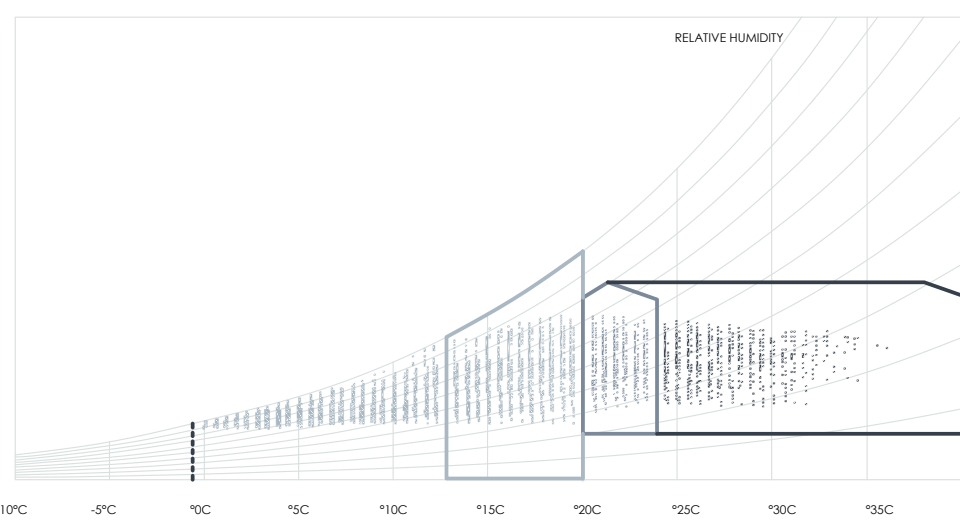
In the fertile county of La Hoya lies Huesca, which has a history going back more than two thousand years. El Coso, on the line of the old medieval walls, marks out an interesting network of streets presided over by the Cathedral.

Almost 2,500 years ago, on the site of modern Huelva, was Bolskan, an Iberian settlement which, in the middle of the 2nd. C. BC., was known as an important mint. A century later, under Roman rule, Osca - the name with which the city was rechristened - became the destination of the exiled praetor Sertorio, who established a senate there as well as the first centre for studies in Aragon that later became the Sertorian University.

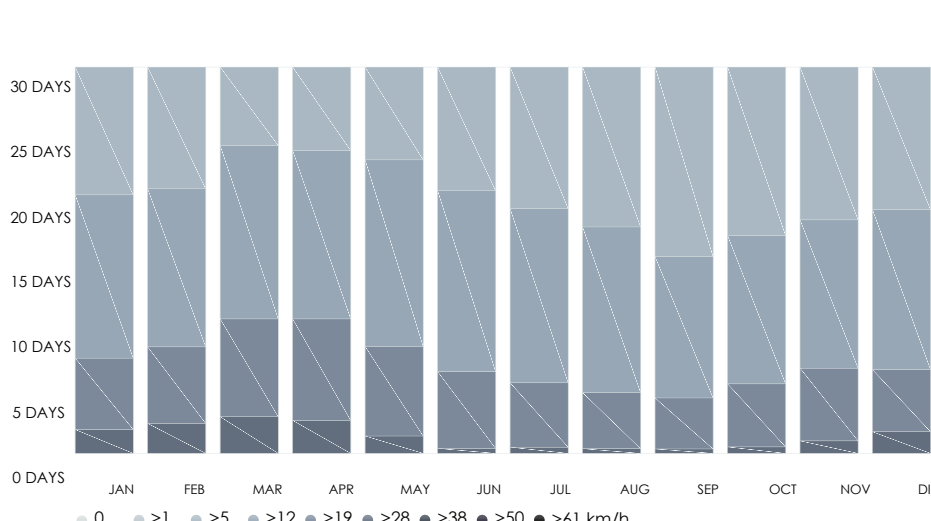
CLIMATE AND SITE DATA



AVG. TEMPERATURE & PRECIPITATION DIAGRAM



PSYCHOMETRIC CHART



WIND DIAGRAM SPEED

DESIGN STRATEGIES:

JANUARY through DECEMBER

- 9.7% 1. Comfort (849 hrs)
- 12.3% 2. High Thermal Mass Night Flushed (1,075 hrs)
- 29.2% 3. Internal Heat Gain (2,554 hrs)
- 22.5% 4. Passive Solar Direct Gain High Mass (1,975 hrs)
- 39.1% 5. Heating, add Humidification if needed (3,426 hrs)

100% Comfortable Hours using Selected Strategies (8,760 out of 8,760 hrs)

HUESCA CLIMATE DATA:

Huesca has a humid subtropical climate with semi-arid influences.

Winters are cool and summers are hot with a minimum of -6 °C and a maximum of 38 °C.

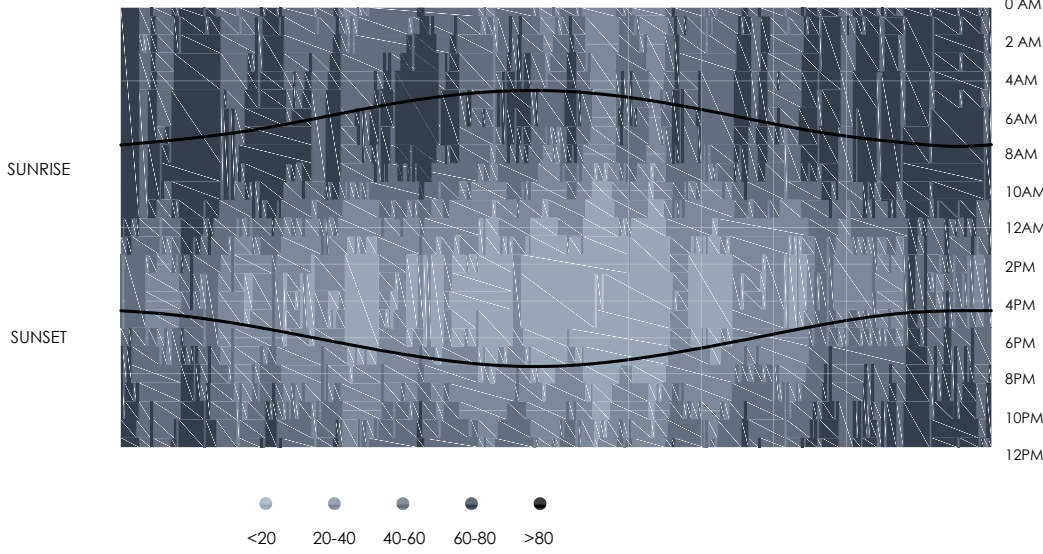
The rainiest seasons are autumn (October) and spring (April).

The temperature of the ground of Huesca depending on the depth and the month is between 5 °C (January) and 22 °C (July).

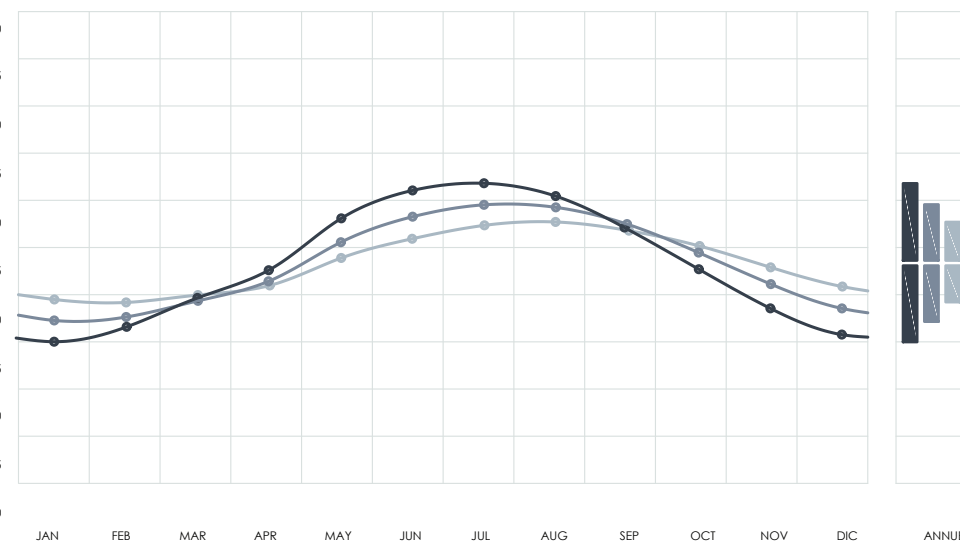
The relative humidity in Huesca is particularly high all year long, except from July and August.

The speed of the wind in Huesca is pretty low and usually has a Northwest direction.

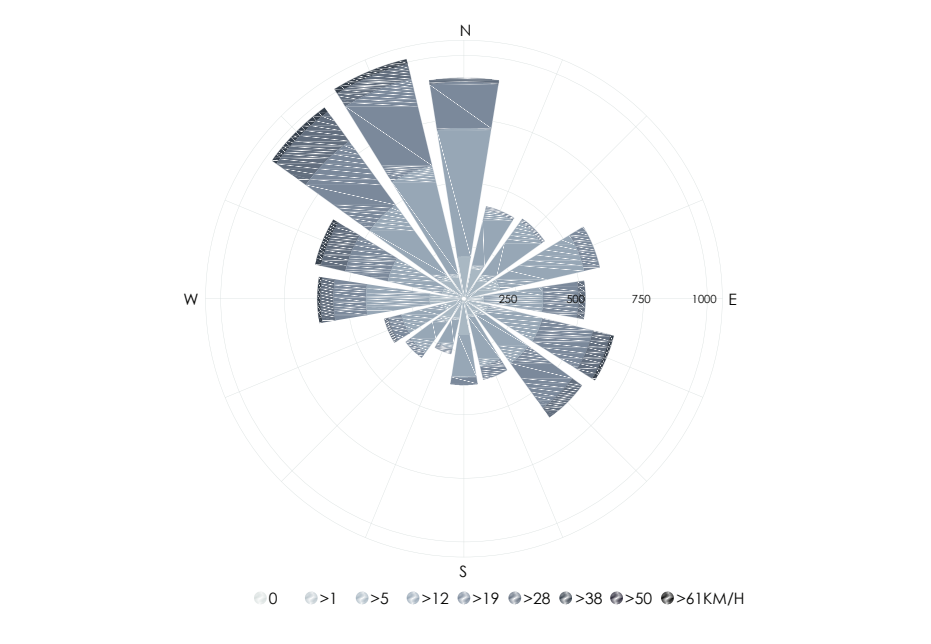
ARAGON



RELATIVE HUMIDITY



GROUND TEMPERATURE

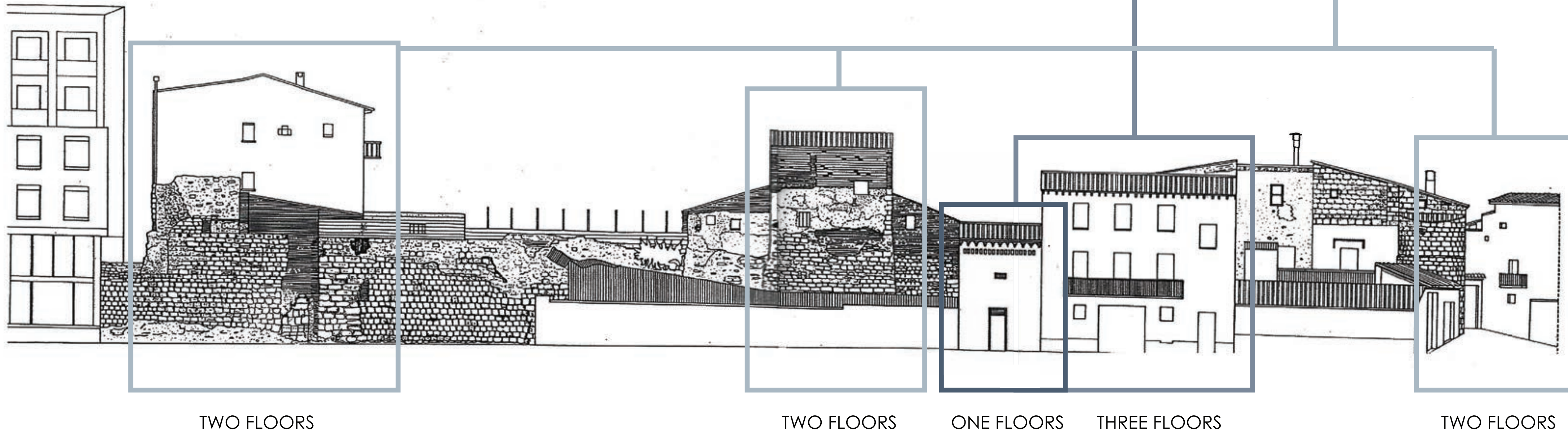


GROUND TEMPERATURE

VERNACULAR & ARCHITECTURE CONTEXT



ACTUAL SITUATION IN THE OLD CITY OF HUESCA



TWO FLOORS

TWO FLOORS

ONE FLOORS

THREE FLOORS

TWO FLOORS

SITE INFORMATION

MOUNTAIN ACTIVITIES



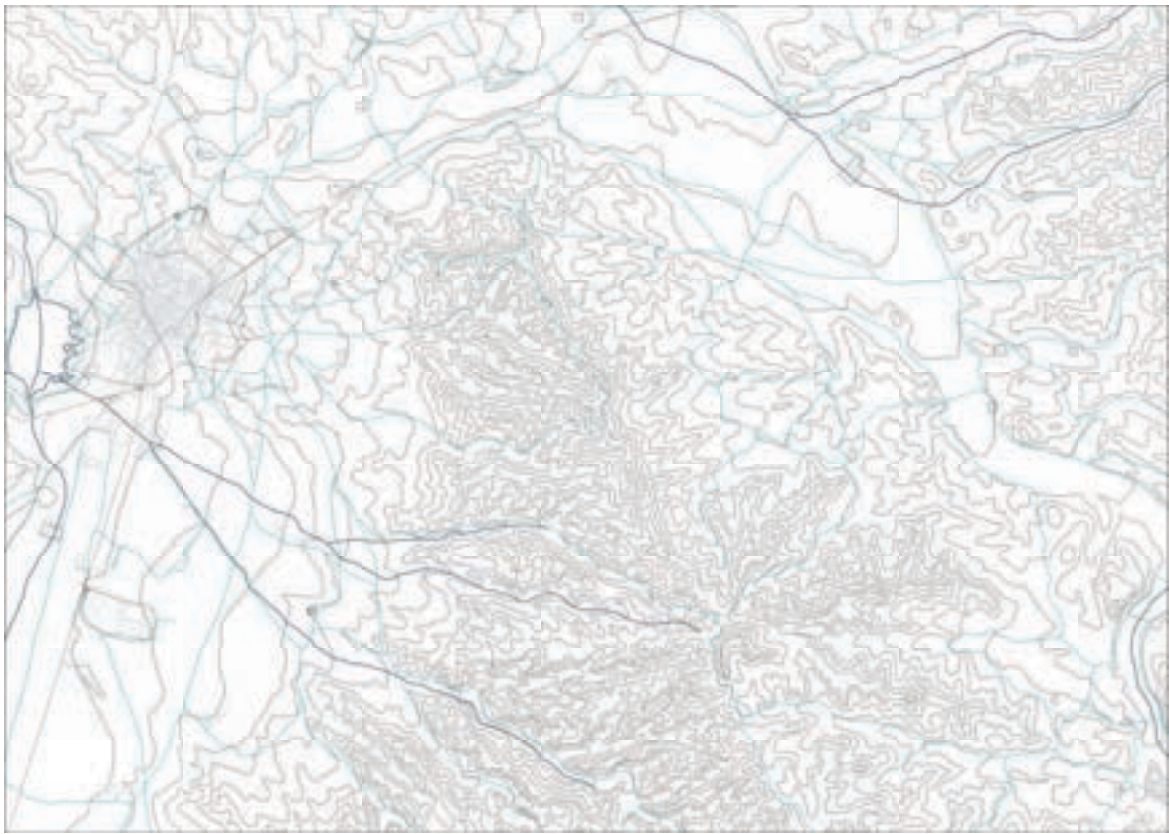
SATELITE IMAGE OF THE SITE

1:10,000



PLANIMETRIC DRAWING OF THE SITE

1:10,000



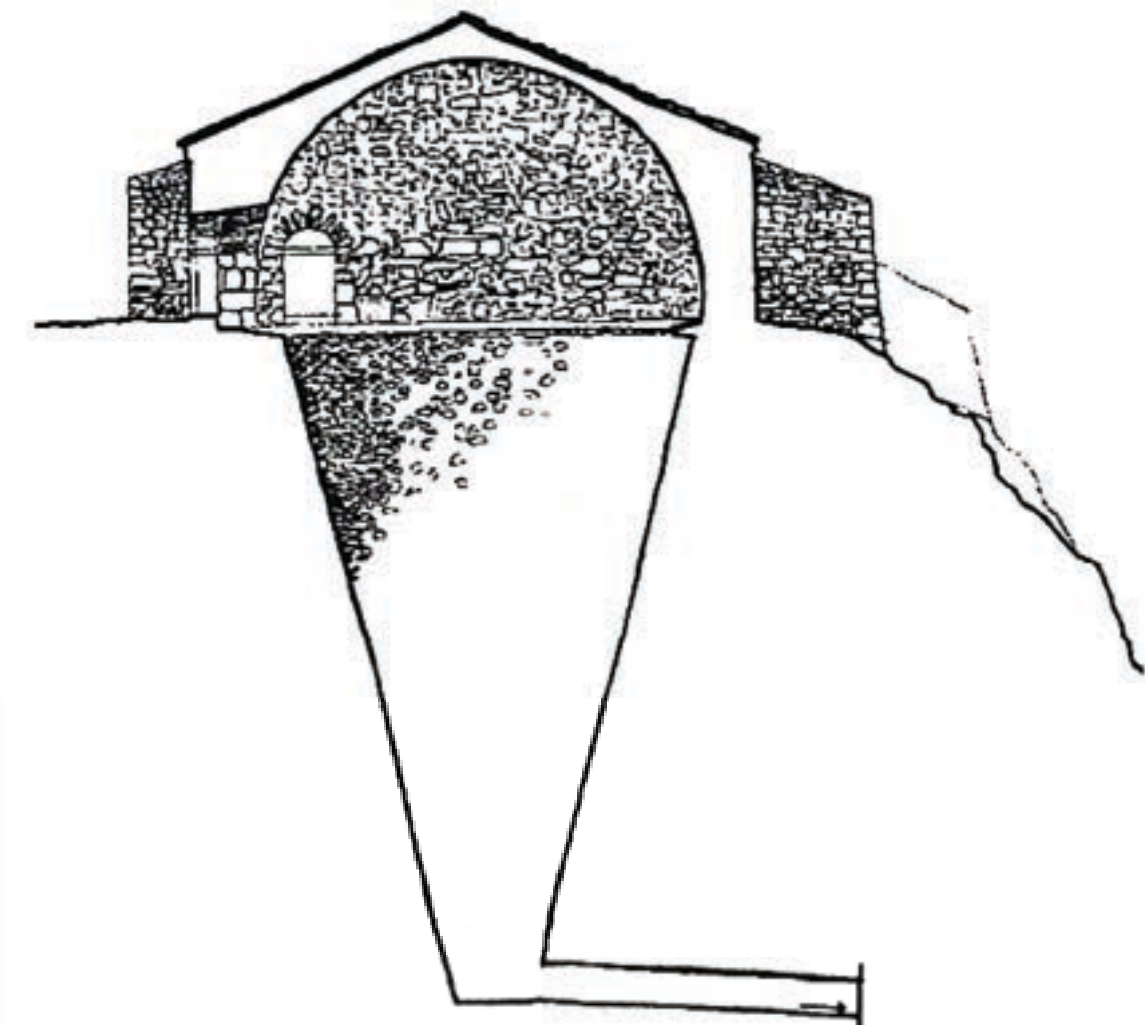
GREEN AREAS AND FIELDS

1:10,000

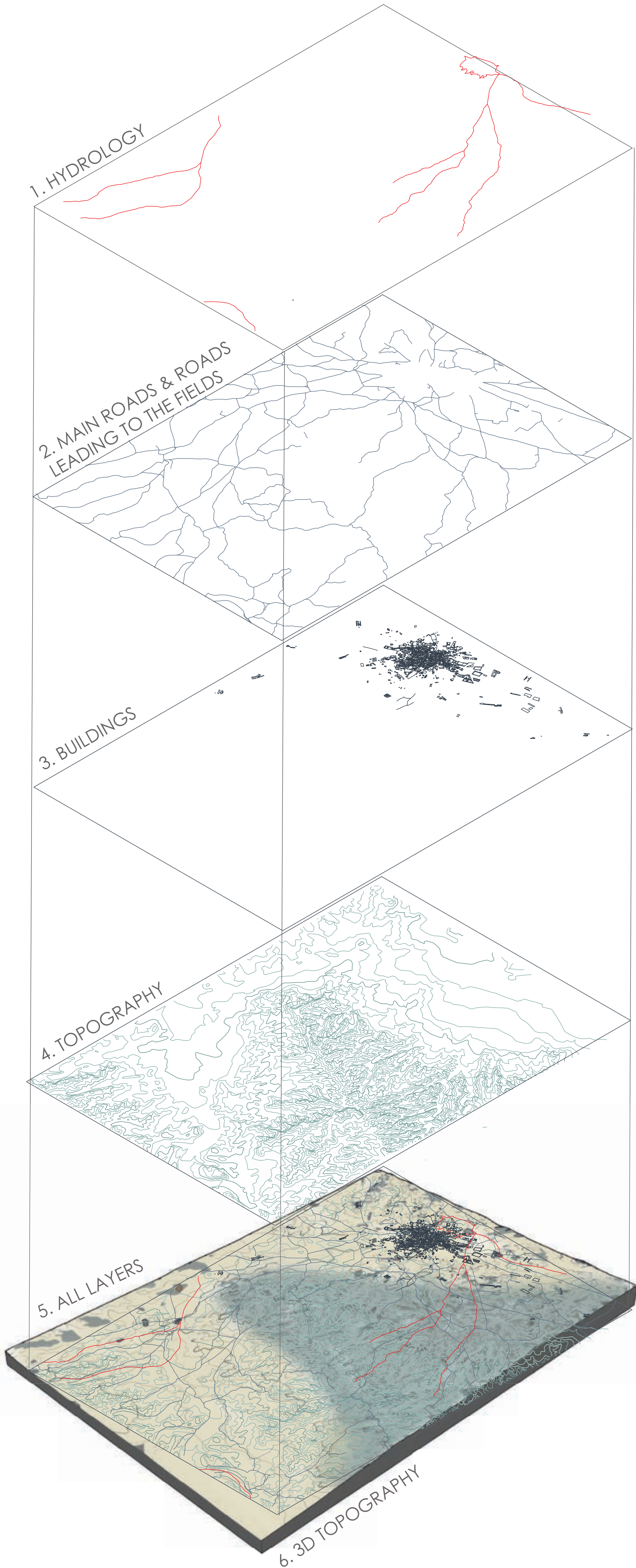


GREEN AREAS

FIELDS



EXPLODED AXONOMETRIC DRAWING



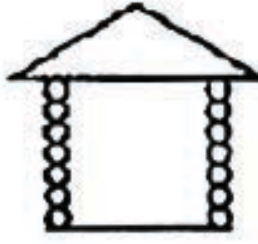
SUMMER

WINTER SUN

ATMOSPHERES I. PHENOMENOLOGICAL ATMOSPHERES
STRATEGIES



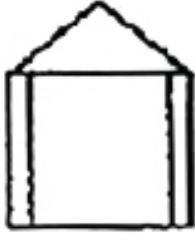
CROSS VENTILATION



INDIGENOUS MATERIALS



RAIN, SUN & SNOW PROTECTION



THERMAL INERTIA



USAGE OF GROUND FLOOR

INTERIOR ACTIVITIES





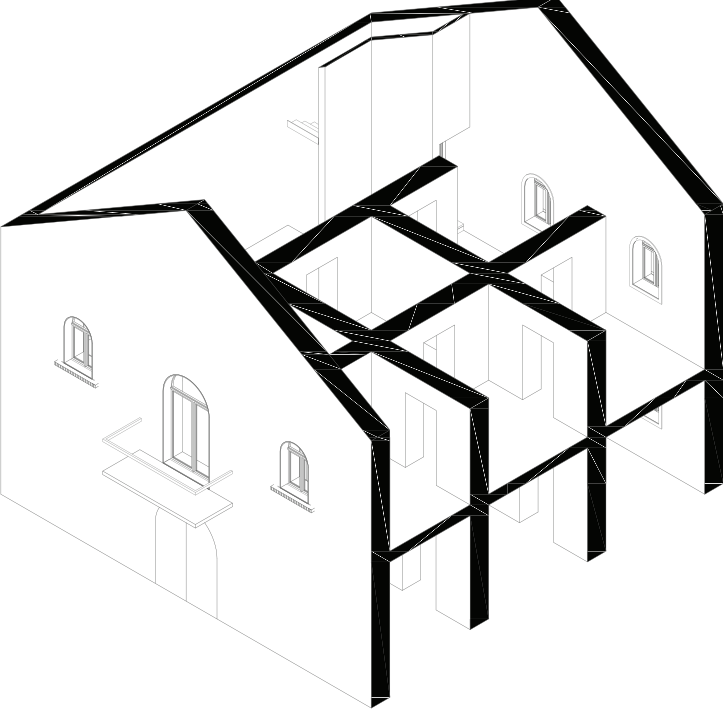




LEGEND

HOT	COLD
-----	------

VERNACULAR HOUSE SECTION



ISOMETRIC



WINTER THERMODYNAMIC ANALYSIS SECTION



SUMMER THERMODYNAMIC ANALYSIS SECTION

LEGEND

HOT	COLD
-----	------

CLIMATE AND TERRITORIAL ATMOSPHERES

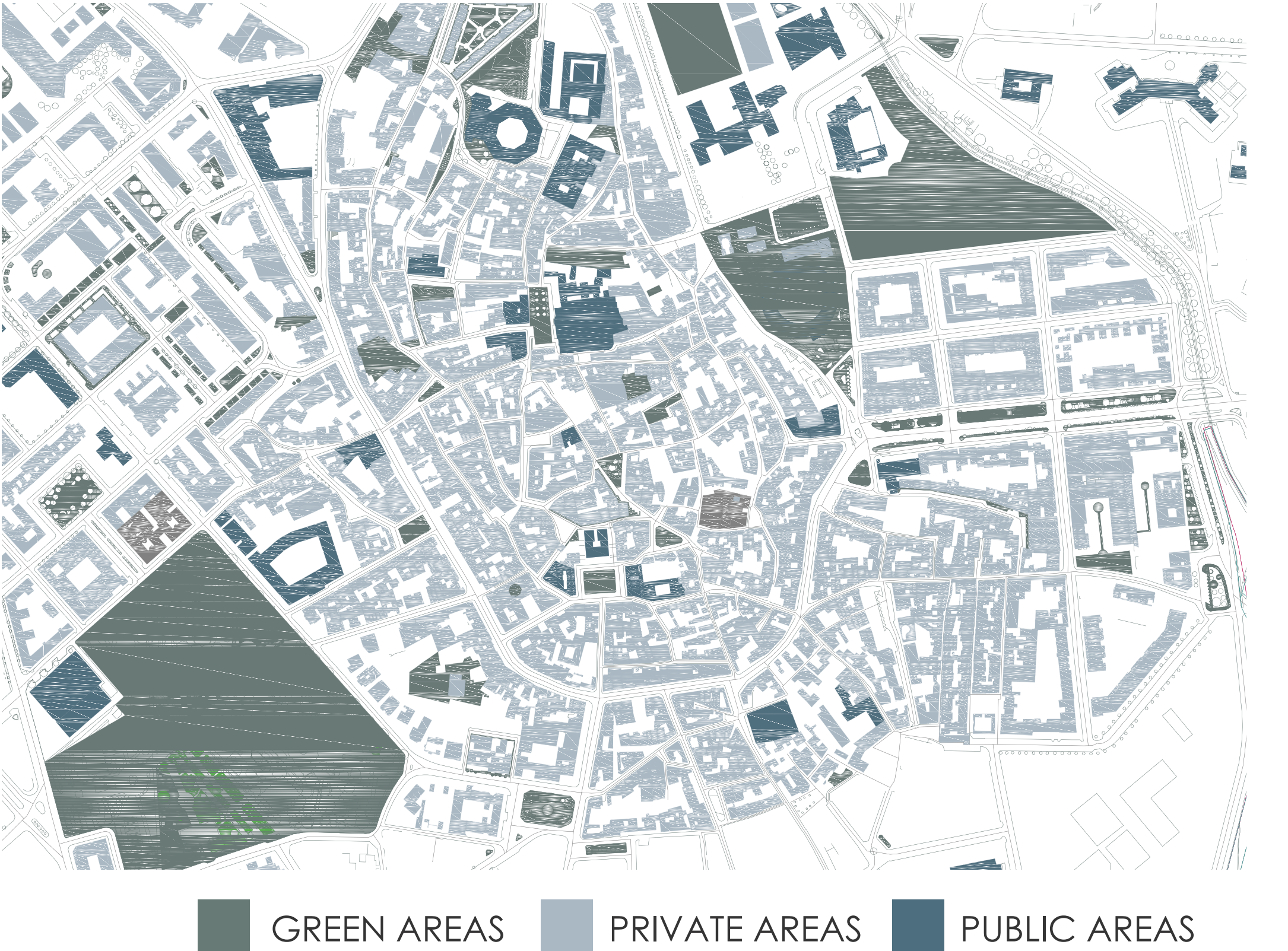
HUESCA | SPAIN

ATMOSPHERES I. PHENOMENOLOGICAL ATMOSPHERES

OUTDOOR ACTIVITIES



USAGE OF SPACES



PUBLIC SPACES - THERMODYNAMIC ANALYSIS



LEGEND

HOT	COLD
-----	------

VERNACULAR MATERIALS



TYPICAL STONE CLAY NATURAL WOOD BRICK STRAW ROOF TILES

CLIMATE AND TERRITORIAL ATMOSPHERES

HUESCA | SPAIN

DESIGN PROCESS



FIRST STAGE



STAGE #2



STAGE #3



STAGE #4



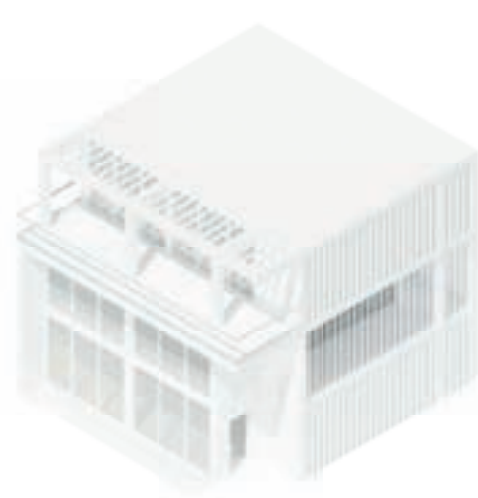
STAGE #5



STAGE #6

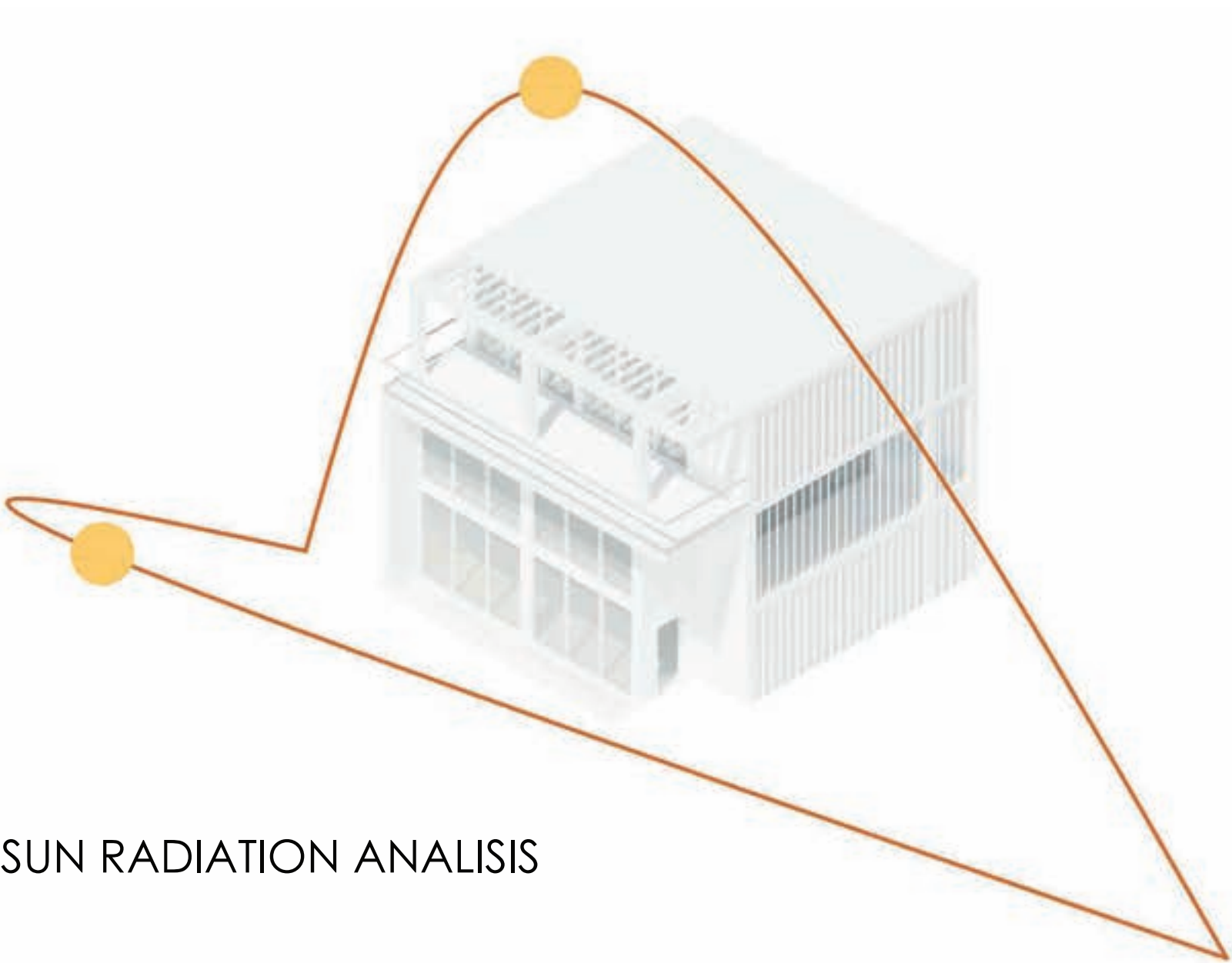


STAGE #7

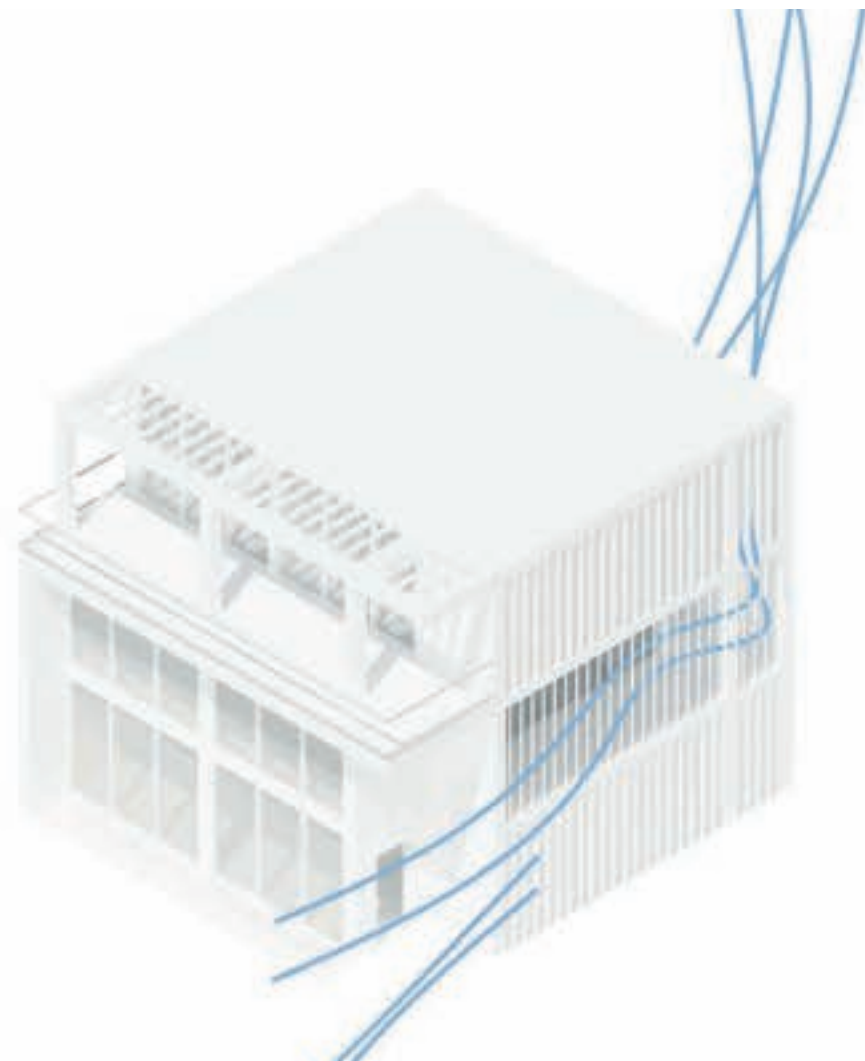


FINAL STAGE

SUN & WIND ANALYSIS DIAGRAMS

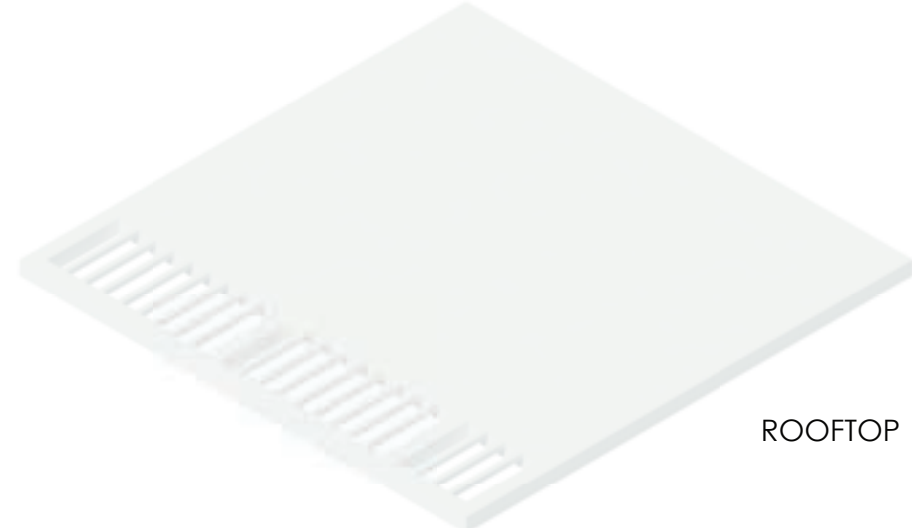


SUN RADIATION ANALYSIS

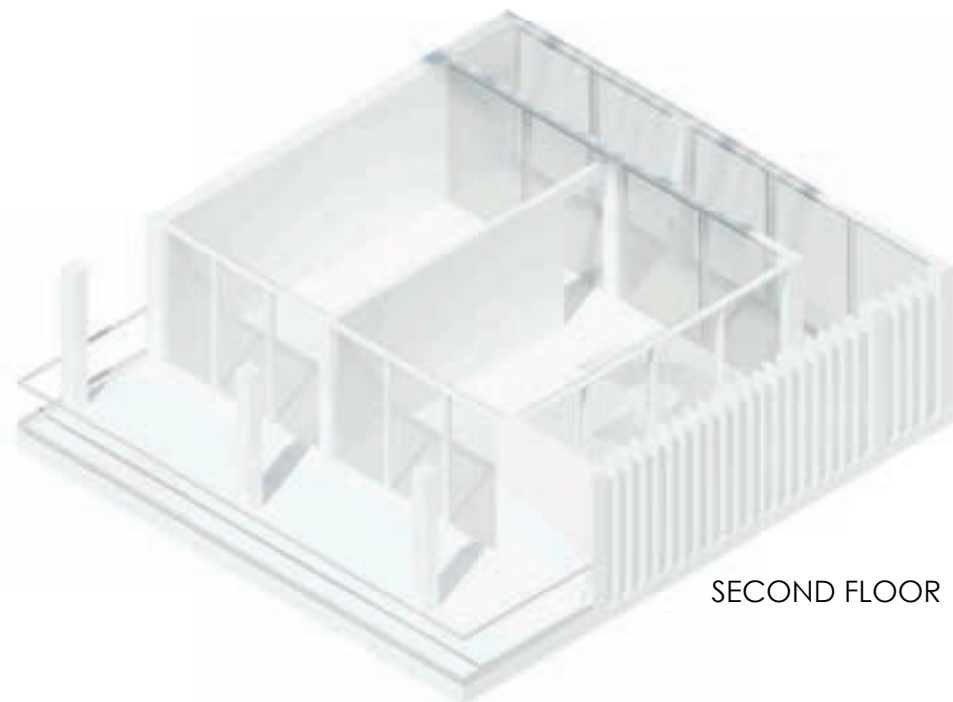


WIND ANALYSIS

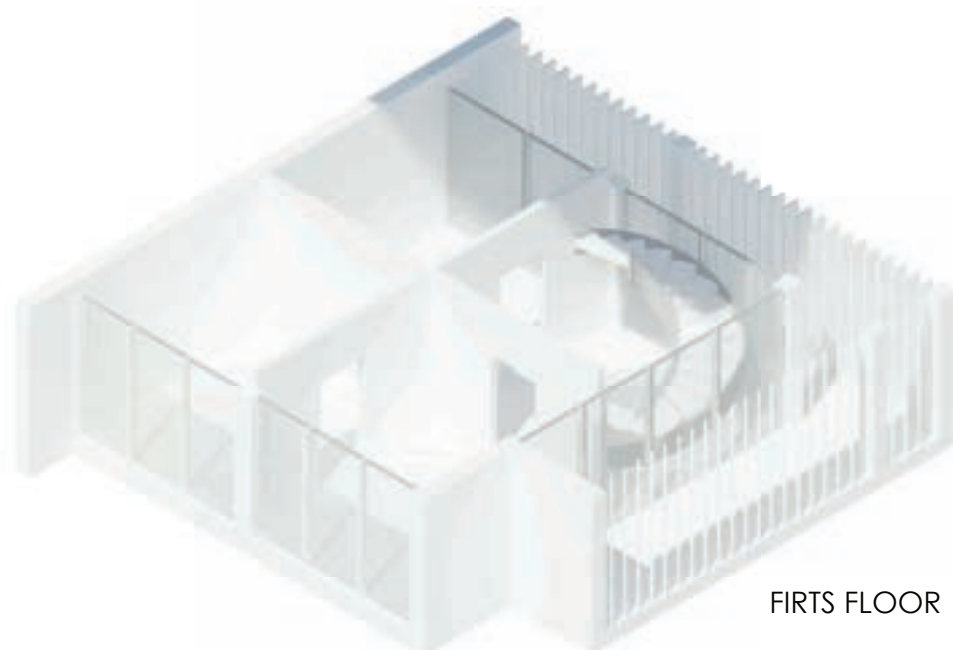
UNIT DEVELOPMENT



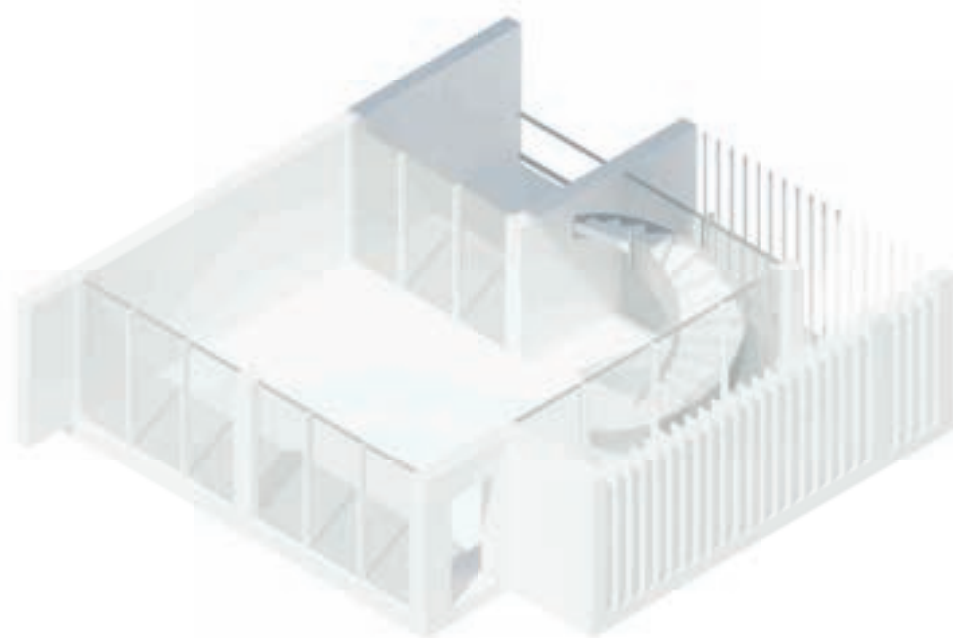
ROOFTOP



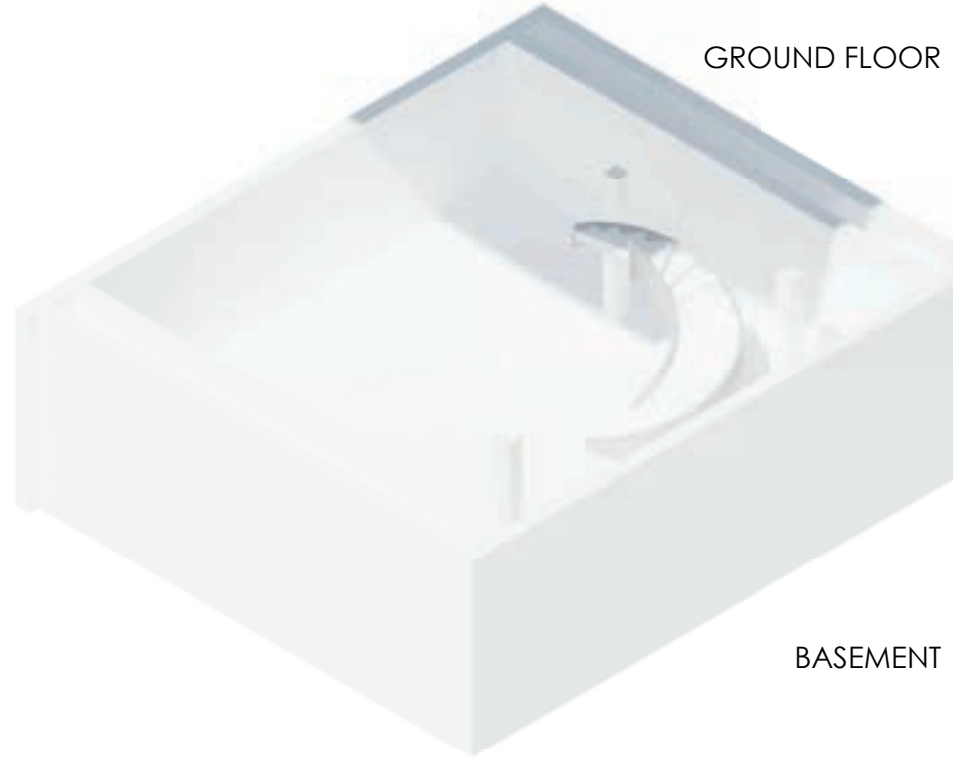
SECOND FLOOR



FIRST FLOOR

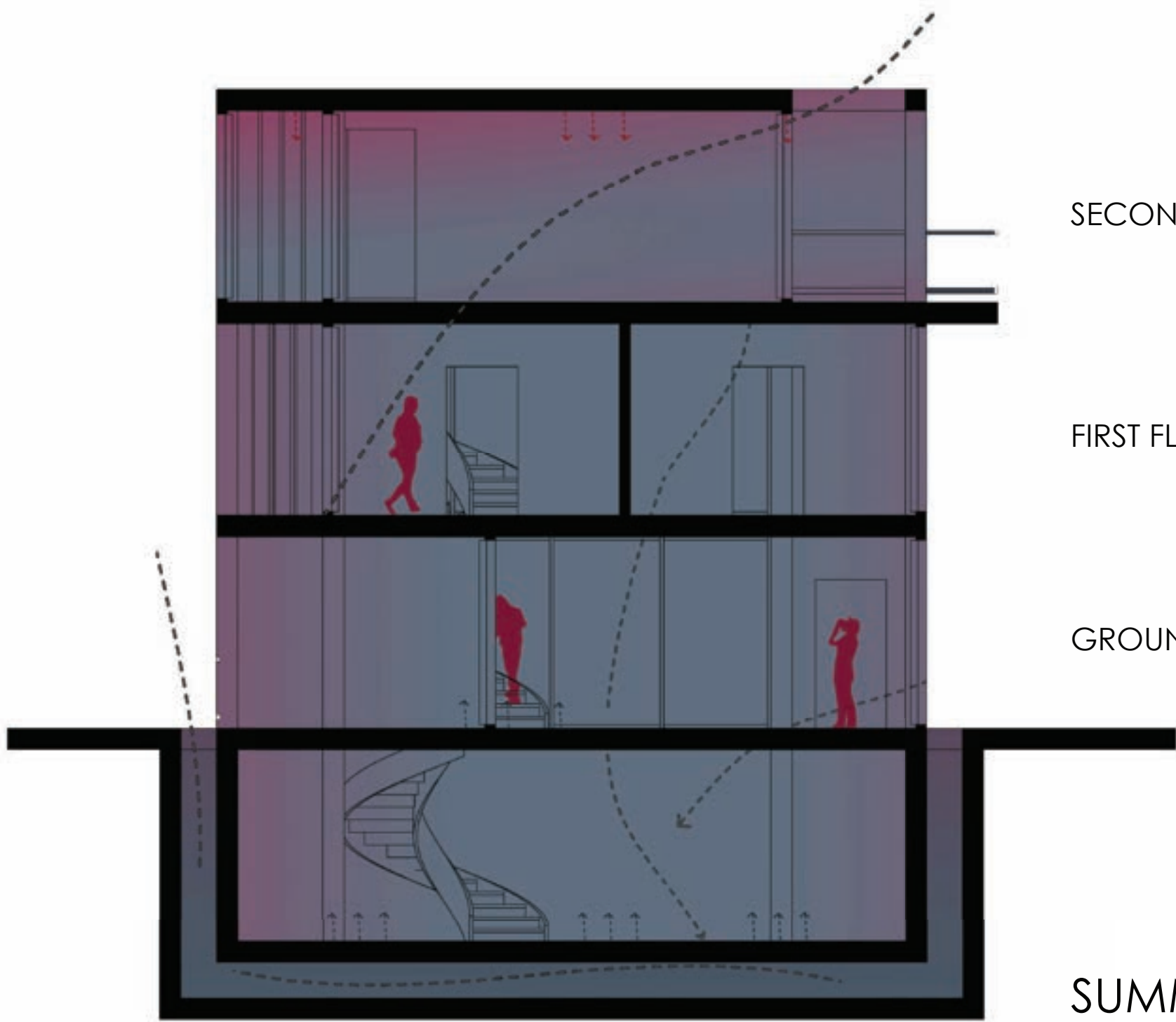


GROUND FLOOR



BASEMENT

THERMODYNAMICAL SECTION ANALYSIS DIAGRAMS

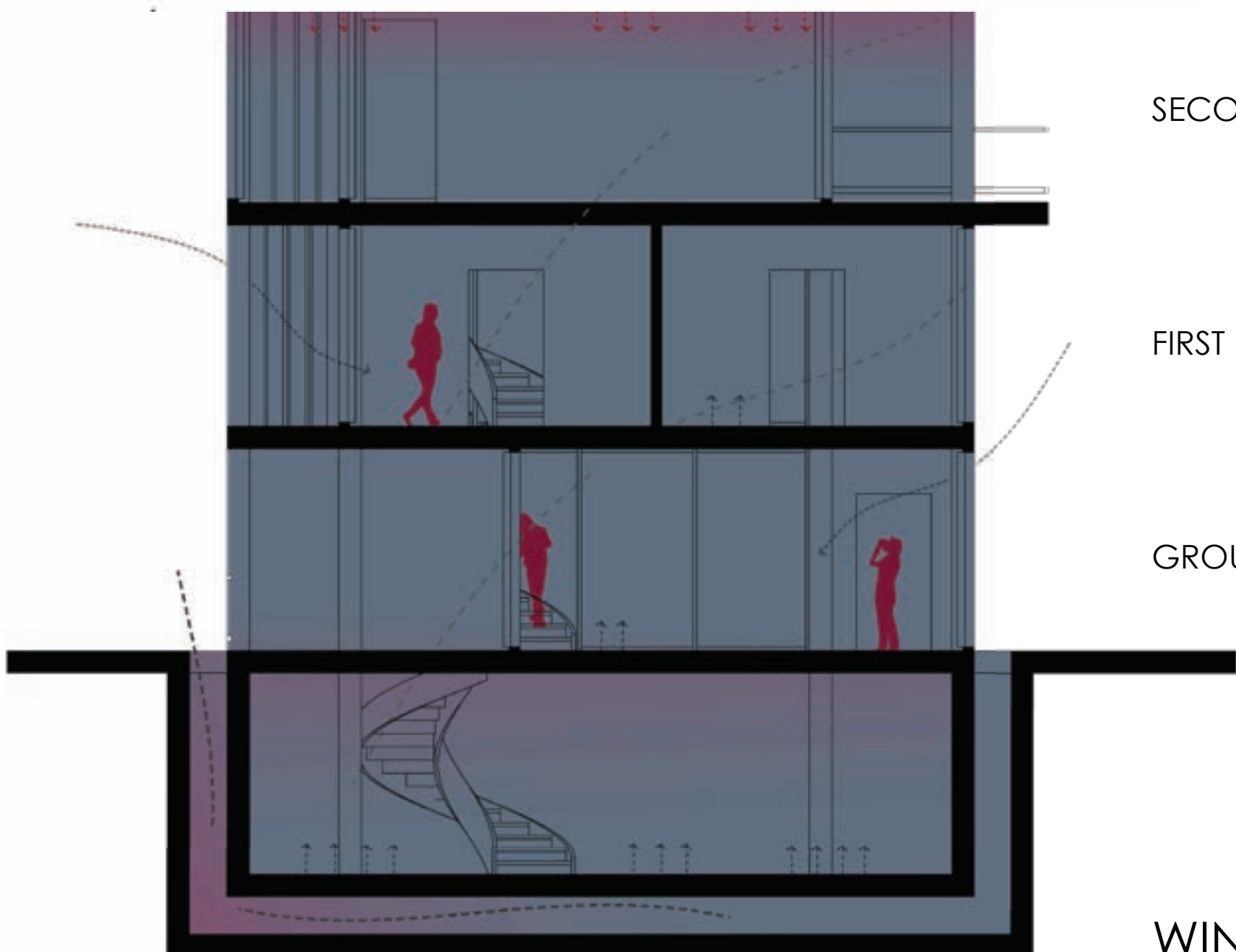


SECOND FLOOR

FIRST FLOOR

GROUND FLOOR

SUMMER THERMODYNAMIC ANALYSIS



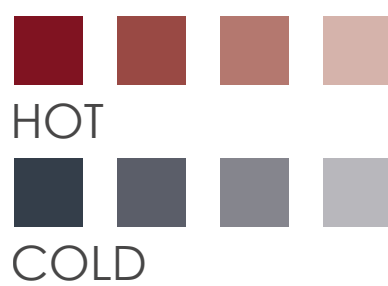
SECOND FLOOR

FIRST FLOOR

GROUND FLOOR

WINTER THERMODYNAMIC ANALYSIS

LEGEND

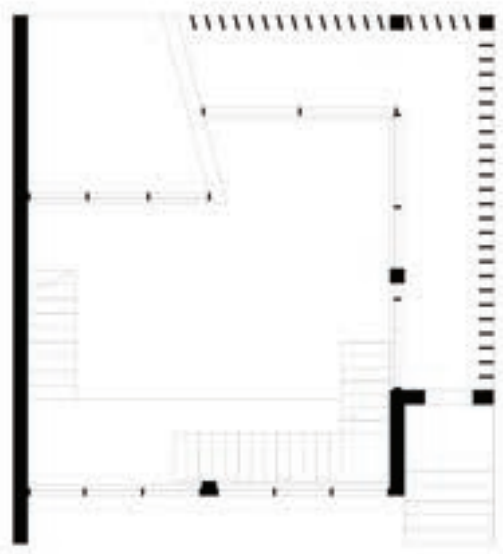


CLIMATE AND TERRITORIAL ATMOSPHERES

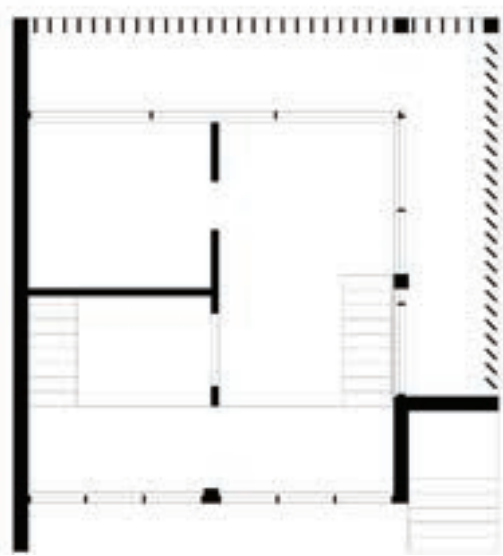
HUESCA | SPAIN

06

PLANS & SECTION



GROUND FLOOR



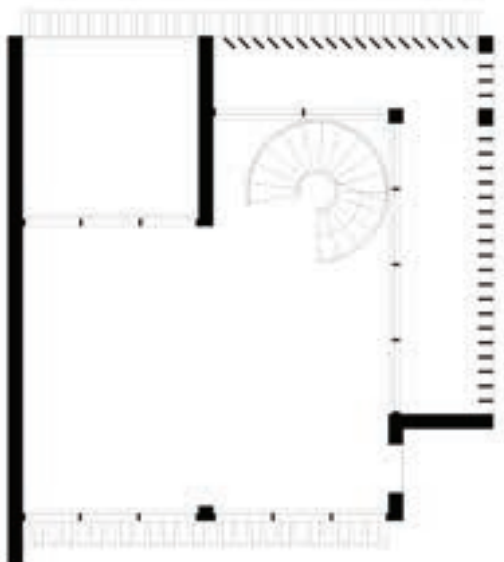
FIRST FLOOR



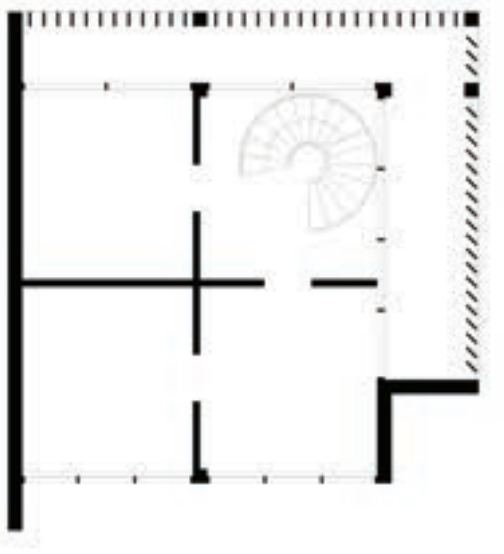
FIRST MODEL SECTION



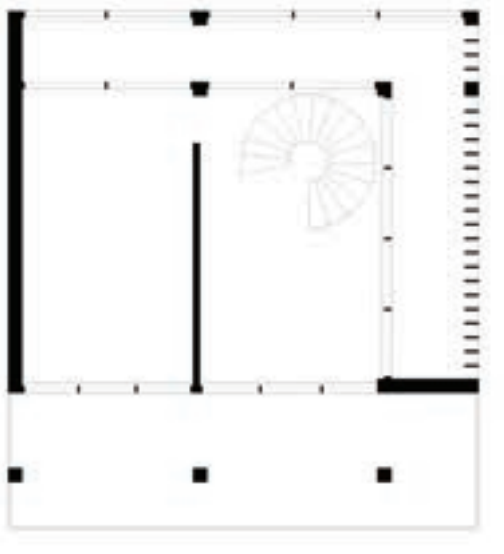
SECOND MODEL SECTION



GROUND FLOOR



FIRST FLOOR



SECOND FLOOR

MATERIALS & COLORS SELECTED



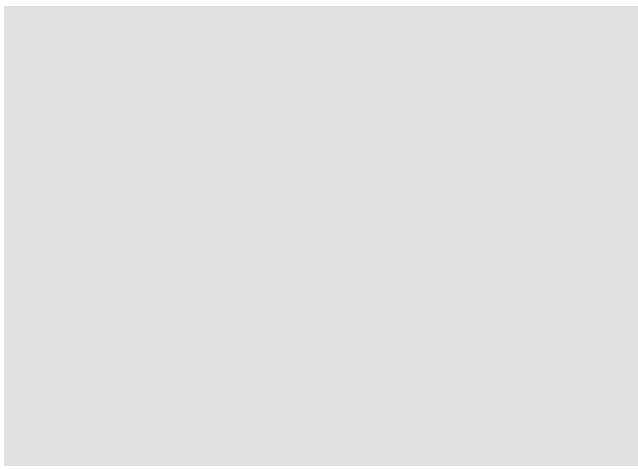
NATURAL WOOD



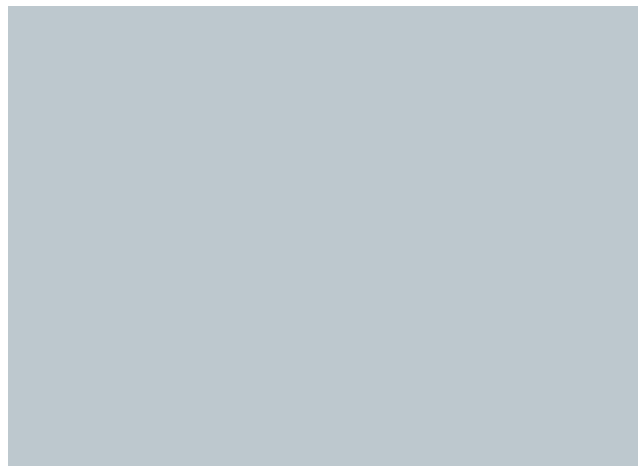
CONCRETE



GYPSUM



WHITE COLOR #E6E7E8

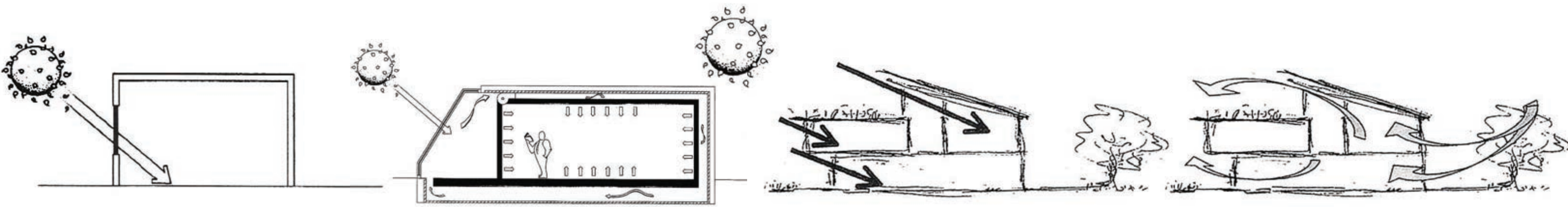


BLUE COLOR #BEC9CF

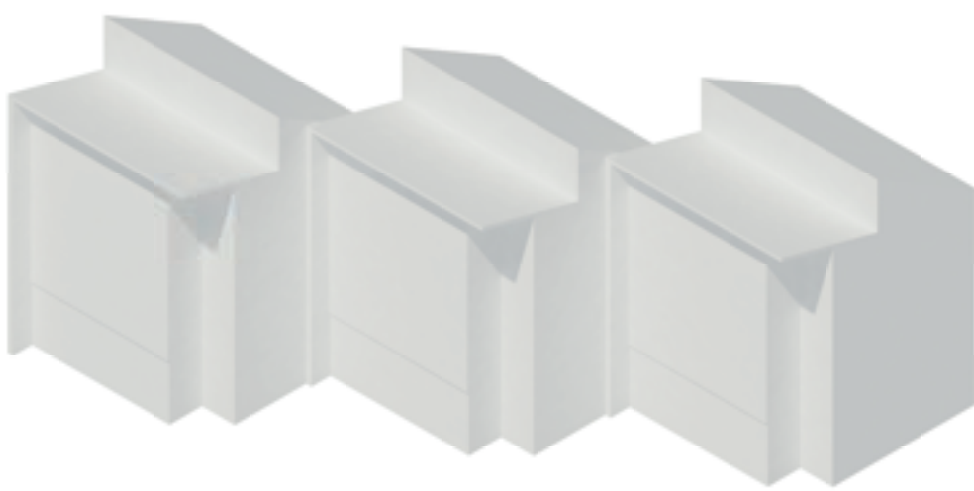


BLACK COLOR #000000

STRATEGIES



HOUSING SCHEME PROPOSAL



TRIAL#1



TRIAL #2



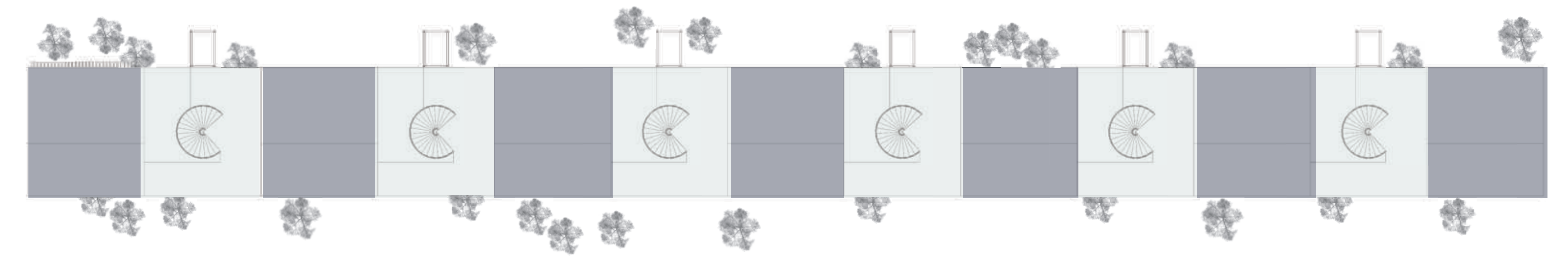
TRIAL #3



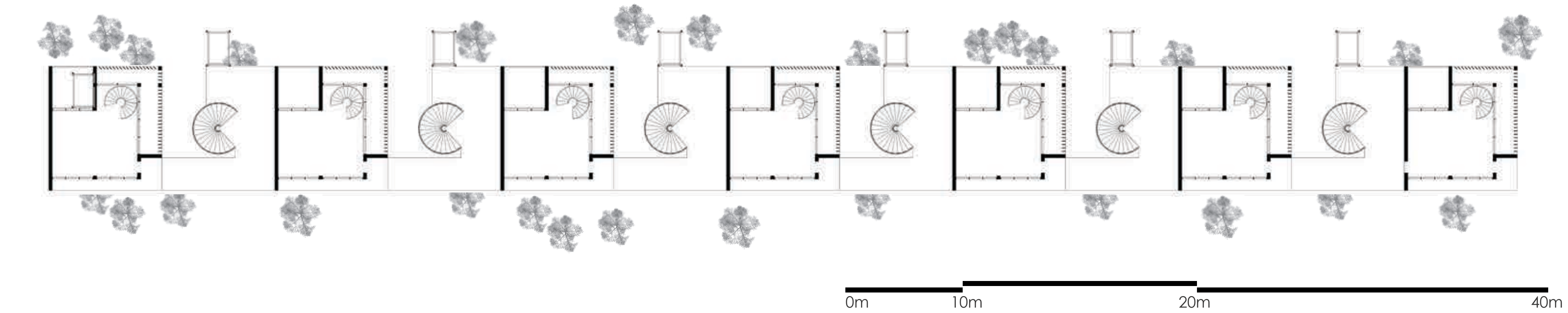
TRIAL #4

20 UNITS PROJECT

TOP VIEW



FLOOR PLAN



SECTION



20 UNITS PROJECT

3D SECTION



3D AXONOMETRIC

