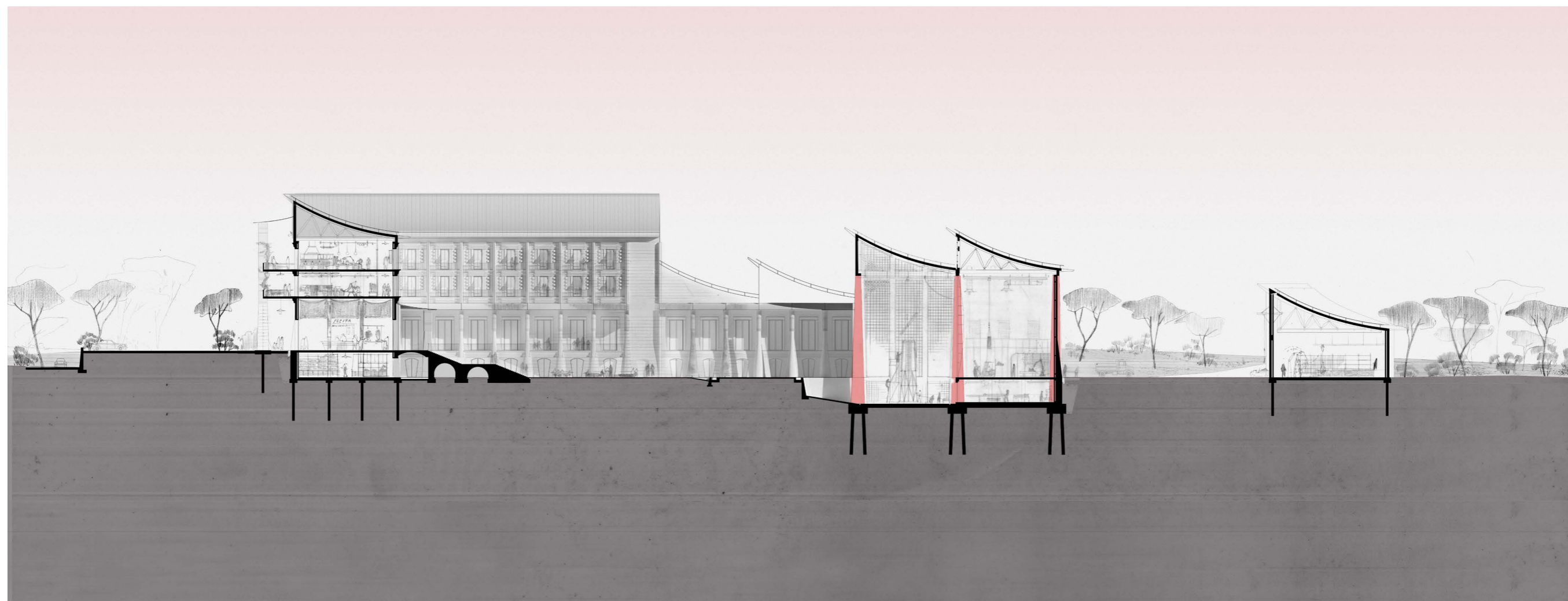


# (UN)COMMON THREADS

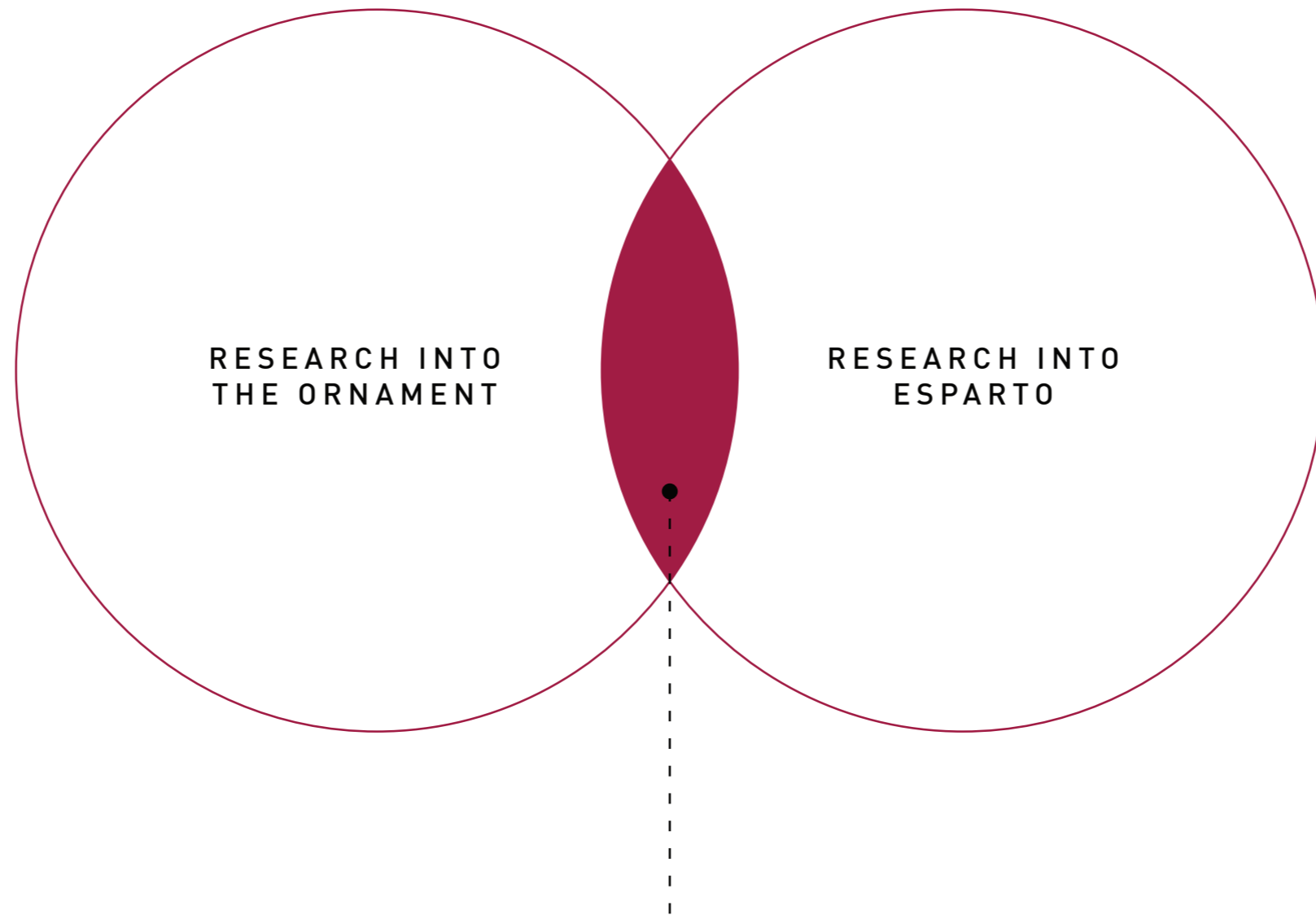


P5 PRESENTATION

JAMES VAN CALOEN

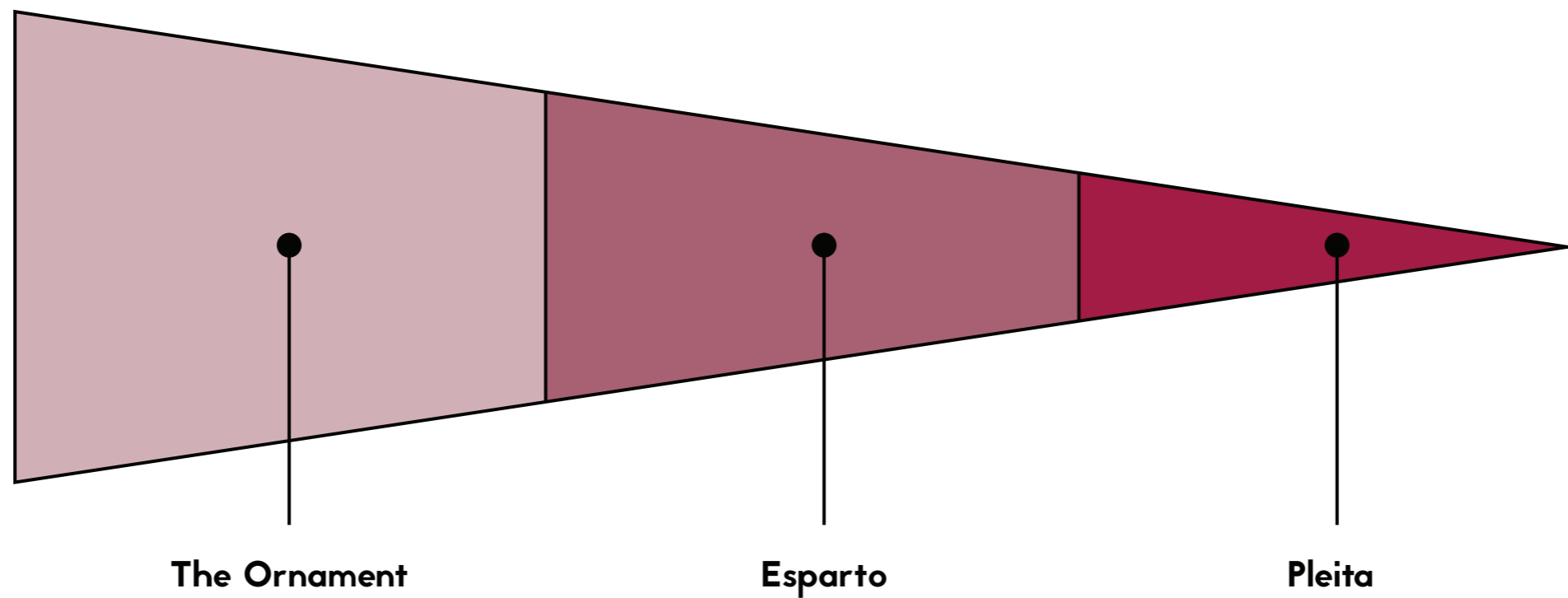
26.06.24

CROSSOVERS 23/24



***THE DESIGN***

A PRODUCTION AND RESEARCH  
CENTRE FOR  
ESPARTO IN MADRID



**The Ornament**

A RESEARCH INTO  
NEO-PRODUCERS  
AND  
THE ORNAMENT

**Esparto**

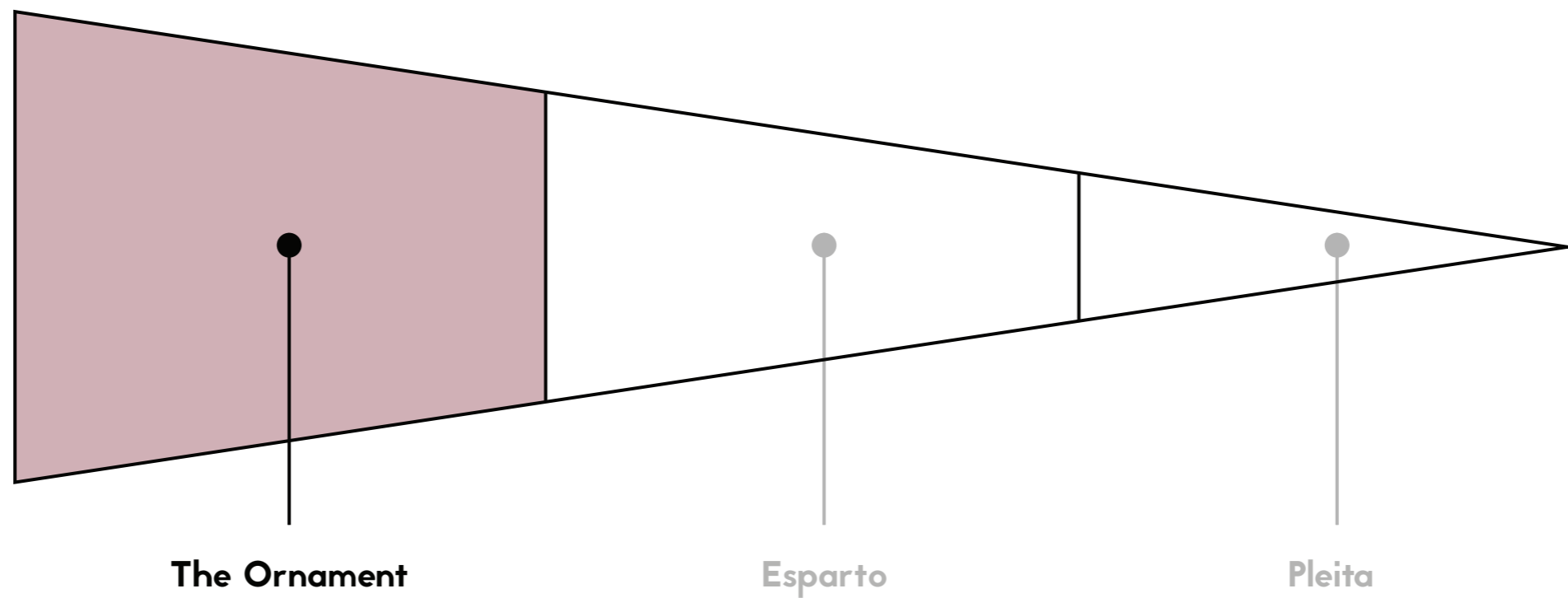
A RESEARCH INTO A  
FIBRE AND ITS  
FIGHT AGAINST  
DESERTIFICATION

**Pleita**

THE RESULTING  
DESIGN

# PART 1

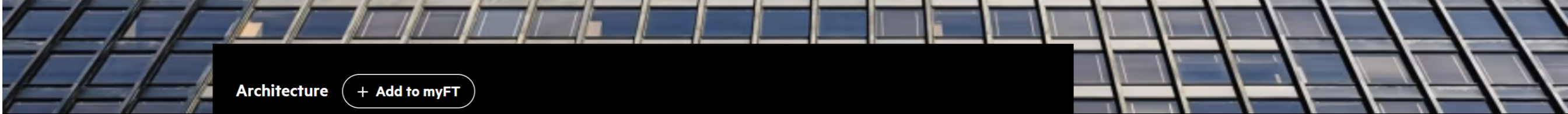
## RESEARCH INTO THE ORNAMENT



A RESEARCH INTO  
NEO-PRODUCERS  
AND  
THE ORNAMENT

A RESEARCH INTO A  
FIBRE AND ITS  
FIGHT AGAINST  
DESERTIFICATION

THE RESULTING  
DESIGN







Architecture [+ Add to myFT](#)

# The joy of boring buildings

Are we in the midst of a 'blandemic'? Do our cities need more Gaudí, as some contend? For the FT's architecture critic, plain and restrained can be beautiful

The Seagram Building, Manhattan, by Mies van der Rohe, 1958 © Shutterstock/JJFarq

  Edwin Heathcote DECEMBER 30 2023  169 

*“I think we’re living through a global “blandemic” in building design.”*

THOMAS HEATHERWICK

IN: THE CULT OF MODERNIST ARCHITECTURE,  
PODCAST, BBC RADIO 4, 2023

***“Decoration: baubles,  
charming entertainment  
for a savage.”***

***- Le Corbusier, In *Decorative Arts of  
Today*, 1925***

## ORNAMENT AS IDENTITY



THE ROYAL ALBERT HALL, 1867-71,  
FRANCIS FOWKE & HENRY Y.D. SCOTT



***“Our desire to decorate  
says something about  
who we are and our  
shared ambition to raise  
above base needs”***

**- Christine Murray, editorial in the  
*Architectural Review*, 2015**

THREATS TO THE ORNAMENT



HIGH COSTS



LABOUR SHORTAGES



NO GUIDING PRINCIPLES FOR THE ORNAMENT'S DESIGN



Design in the making

Buildings

Intelligence

Culture

Learning

Products

Intelligence  
Market analysis

# Industry faces a titanic struggle for skills

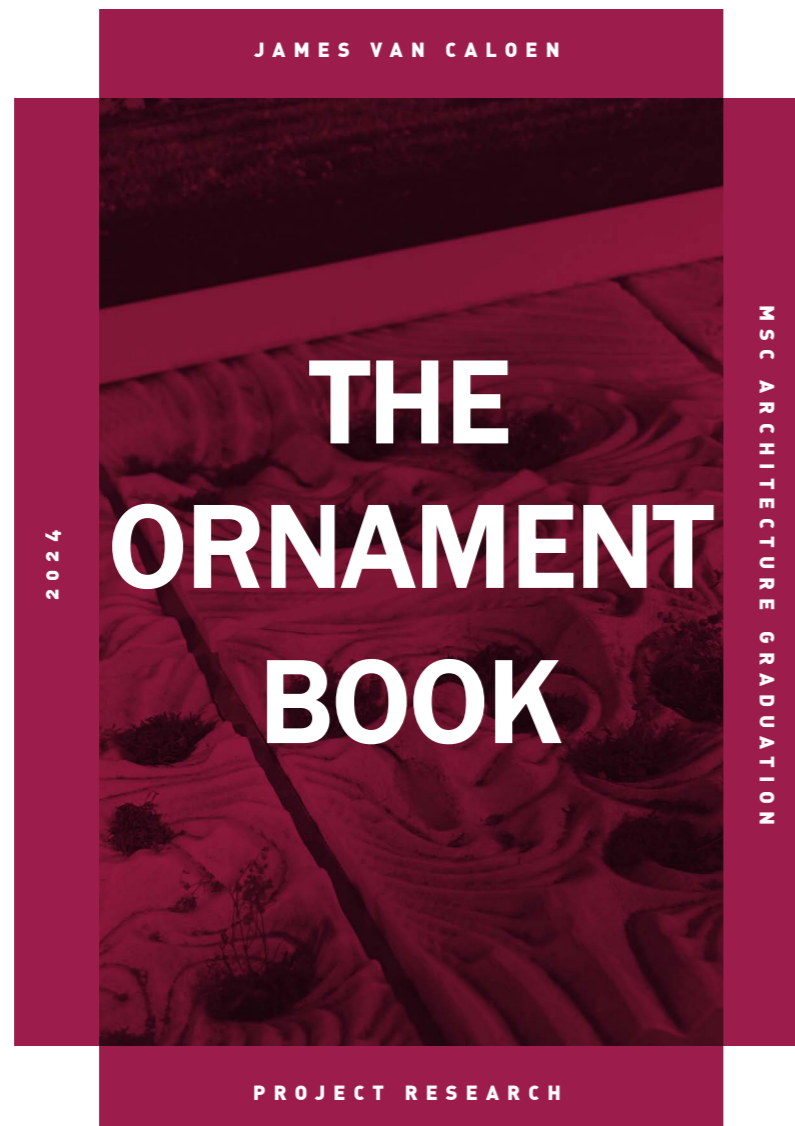
18 June 2021

Words: Brian Green

Construction workers are ageing, returning to the EU and rethinking after furlough, but Build Back Better needs the industry to expand. We're back in skills shortage territory – big time

***How can we bring a viable form of  
ornamentation back into architecture?***

*The focus of the thesis*



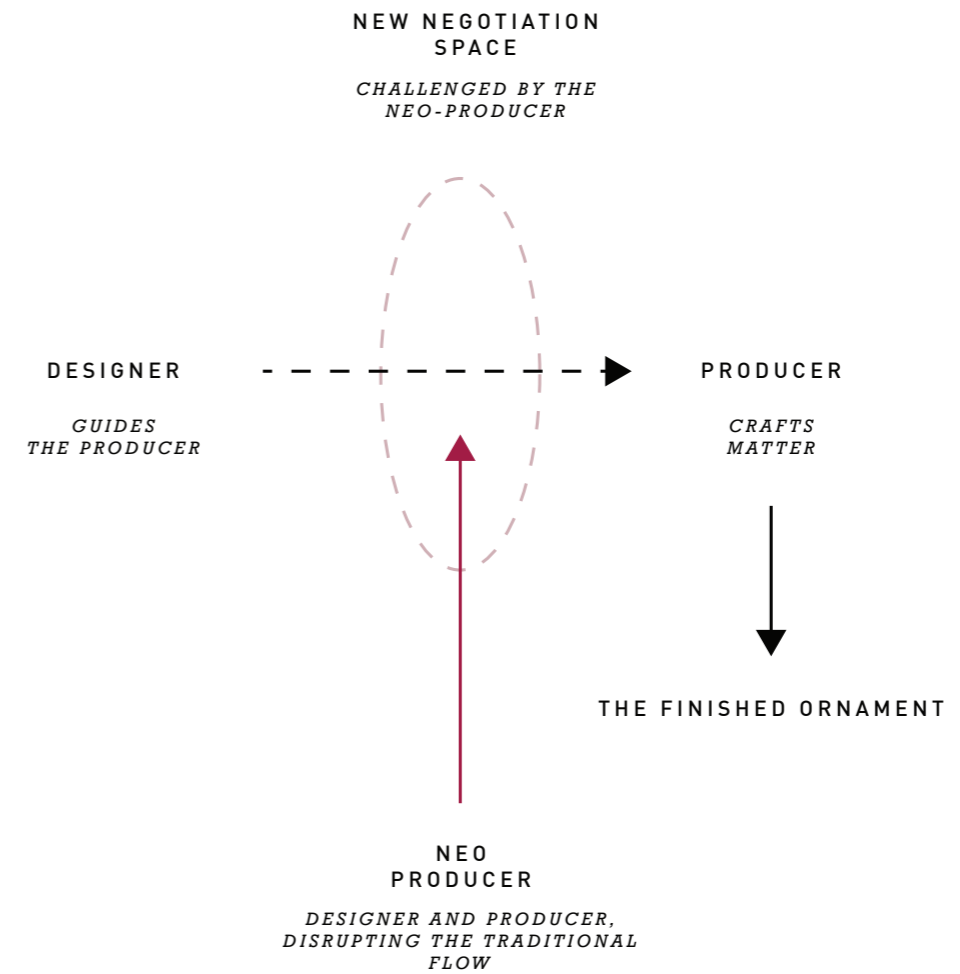
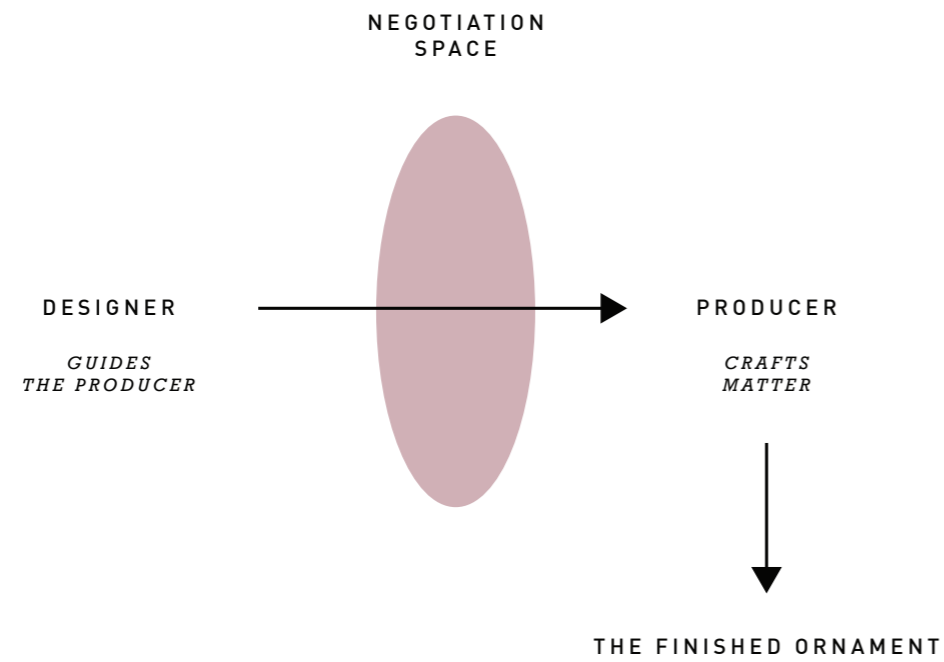
*A RESEARCH INTO THE WESTERN THEORY OF  
THE ORNAMENT*

*8 INTERVIEWS OF ACTORS ACROSS EUROPE*

*+ 100 PAGES OF EDITED TRANSCRIPTS*

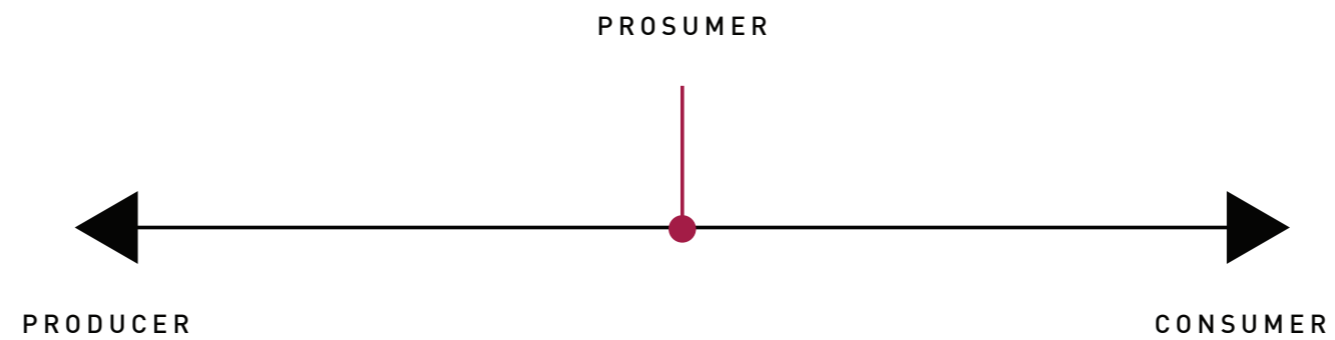
## Conclusions of the thesis

THE NEO-PRODUCER IS THE KEY TO THE  
ORNAMENTAL QUESTION

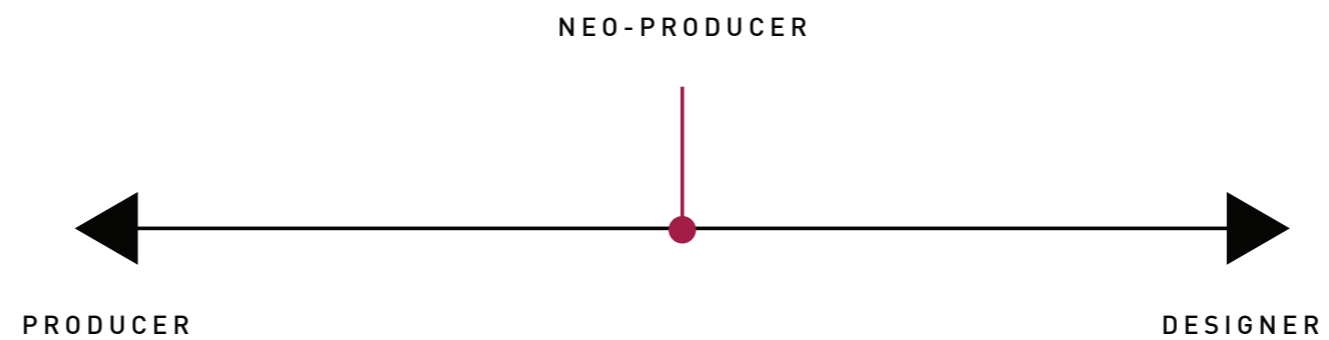


## What are neo-producers?

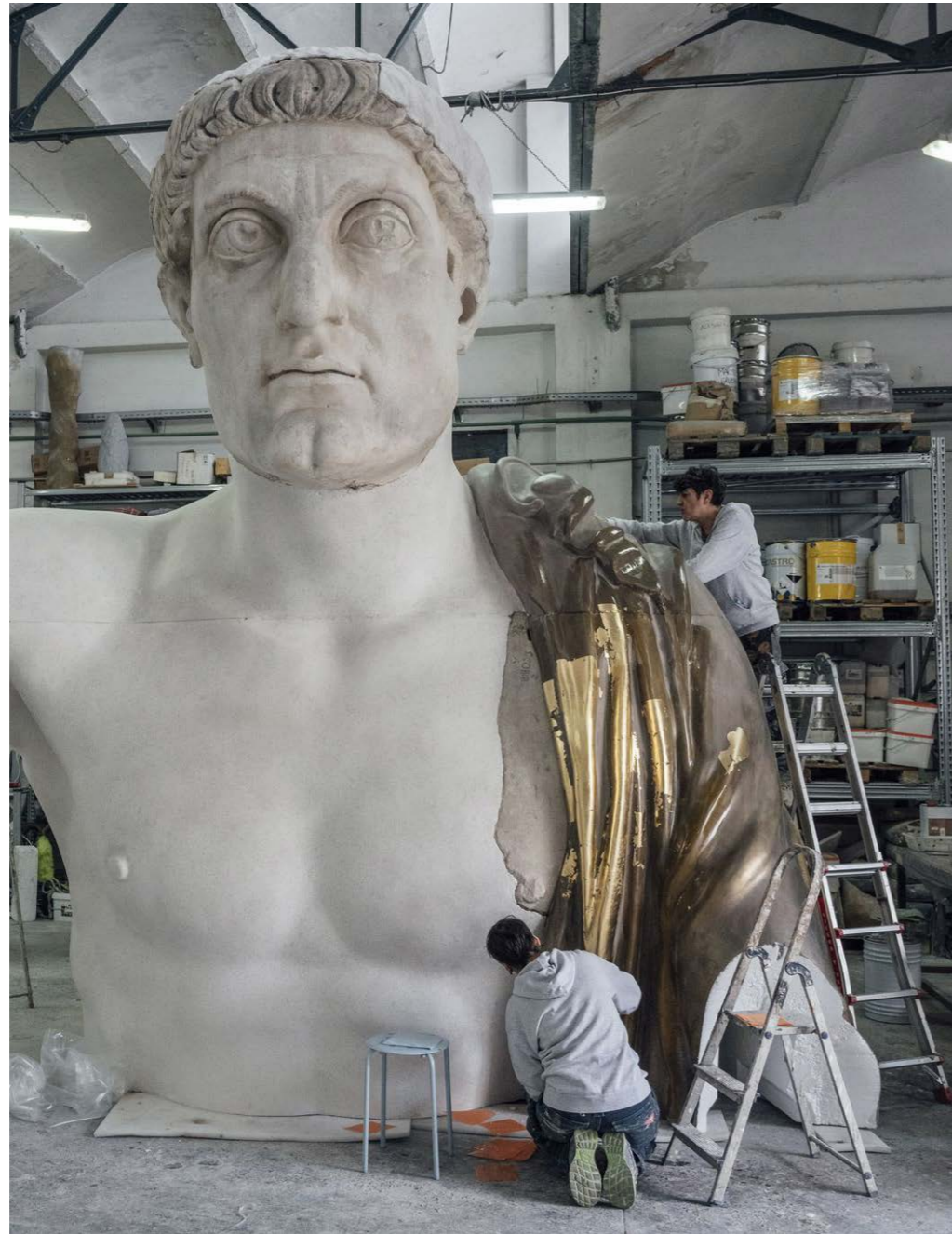
*A new class of craftsmen that master the tools of the digital age.*



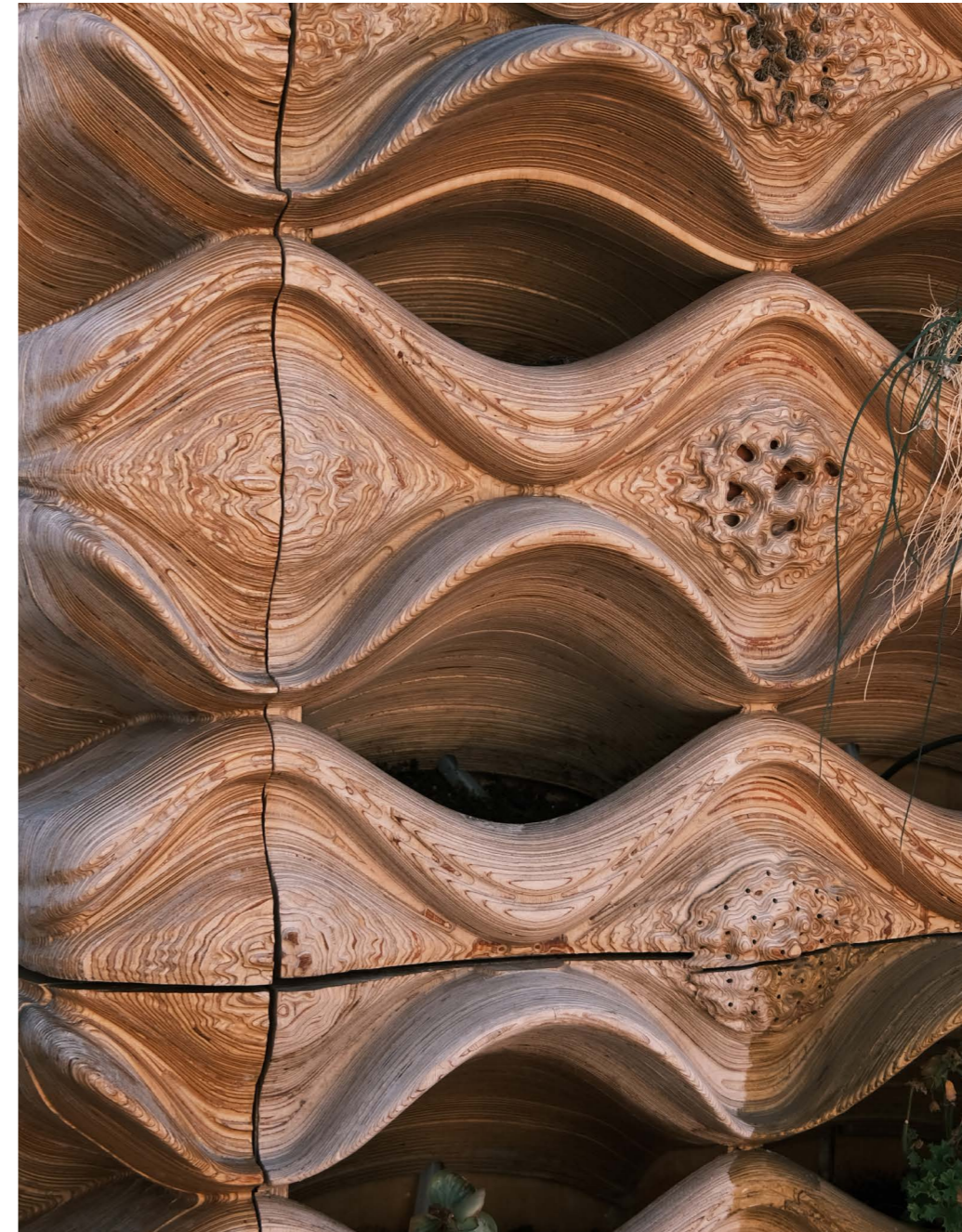
THE CONCEPT OF THE "PROSUMER", CREATED BY ALVIN TOFFLER IN HIS 1980 BOOK "THE THIRD WAVE"



EXAMPLES OF NEO-PRODUCER PRODUCTS



3D PRINTED MOLDS AT FACTUM  
FOUNDATION, MADRID



CNC MILLED FURNITURE AT  
THE POLYTECHNIC OF  
CATALONIA (IAAC)

DEFINING THE NEO-PRODUCER

	ARCHITECT	NEO-PRODUCER	CRAFTSMAN
TOOLS OF THE TRADE	COMPUTER, MODELS, PHYSICAL DRAWINGS	COMPUTER, MACHINES	TRADE-SPECIFIC TOOLS, HAND TOOLS, INCREASING USE OF COMPUTER
FORMAL EDUCATION	HIGHLY EDUCATED (+5 YEARS)	HIGHLY EDUCATED (+5 YEARS, SOMETIMES MORE)	SOMEWHAT EDUCATED TO NO FORMAL TRAINING
MANUAL OR INTELLECTUAL?	INTELLECTUAL	BOTH	MANUAL
TECHNICAL OR ARTISTIC?	ARTISTIC	BOTH	TECHNICAL
GENERALIST OR SPECIALIST?	GENERALIST	SPECIALIST	SPECIALIST
FRAGMENTS / THE WHOLE	THE WHOLE	USUALLY A FRAGMENT	FRAGMENT
ANALOG / DIGITAL	DIGITAL	BOTH	USUALLY ANALOG
DESIGNER / PRODUCER	DESIGNER	BOTH	PRODUCER

*“Around 50% of all our courses are non-accredited [by the RIBA], which tells you an awful lot about where the subject is going.”*

BOB SHEIL,

THEN DIRECTOR OF THE BARTLETT SCHOOL OF  
ARCHITECTURE, UCL  
IN A 2019 INTERVIEW



THE “FABRICATE” CONFERENCE’S OPEN-ACCESS  
PUBLICATION

THE STATE OF CRAFT -  
THROUGH A FEW INTERVIEWS

CRAFTSPEOPLE

INSTITUTIONS

RAFAEL CANTERO DOMINGUEZ -  
PLASTER EXPERT



JORDI DOMENECH BRUNET  
CATALAN VAULTS



JUAN ANDRES  
REBOLLEDO OCAMPO  
BLACKSMITH



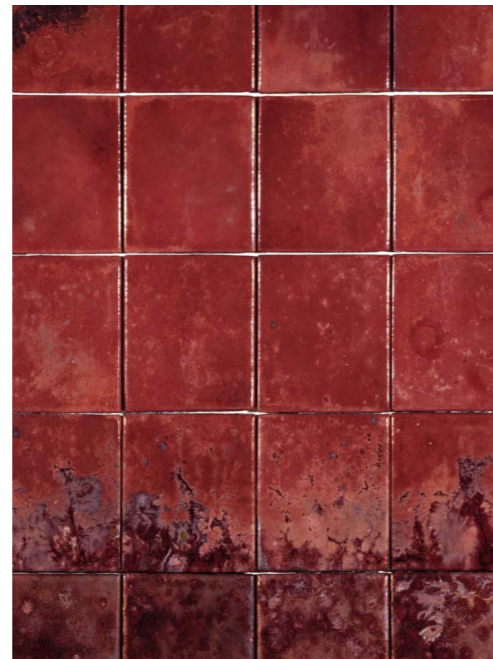
YARA TAYOUN - IAAC



JUAN SANCHEZ  
ESPARTO EXPERT



MARISA DE LUCAS  
- CERAMICIST



NADIA EVERARD  
TABLE RONDE DE L'ARCHITECTURE



CARLOS BAYOD  
- FACTUM ARTE / FOUNDATION





AT JUAN ANDRES  
REBOLLEDO OCAMPO' FORGE



AT THE POLYTECHNIC OF CATALUNYA (IAAC)  
WITH YARA TAYOUN

*Can the Neo-Producer revolution help produce more expressive designs?*

YES

- ▶ REAL POSSIBILITY IT COULD HELP RESOLVE ISSUES OF LABOUR SHORTAGES AND COST
- ▶ IT'S THE BIGGEST CHANGE TO IMPACT THE PROFESSION SINCE THE INDUSTRIAL REVOLUTION AND WILL DISRUPT IT FOR THE BETTER

HOWEVER...

- ▶ MASS PRODUCTION IS STILL MORE EFFECTIVE THAN MOST CUSTOMIZATION AT CREATING AFFORDABLE EXPRESSION
- ▶ MASS CUSTOMIZATION WILL NEVER REPLACE CRAFTSMANSHIP: THE HUMAN ASPECT IS AS PRECIOUS AS EVER.
- ▶ AN ORNAMENTAL RETURN IS CONDITIONED TO THE REESTABLISHING OF AN ORNAMENTAL ECOSYSTEM

### New Trends

IDENTIFIED IN THE THESIS

### Enduring Trends

COSTS

MATERIAL PROPERTIES

TOOLS AND PROCESSES

DESIGNER/ PRODUCER  
AVAILABILITY

GEOMETRY & PROPORTION

RELATION TO HUMAN BODY

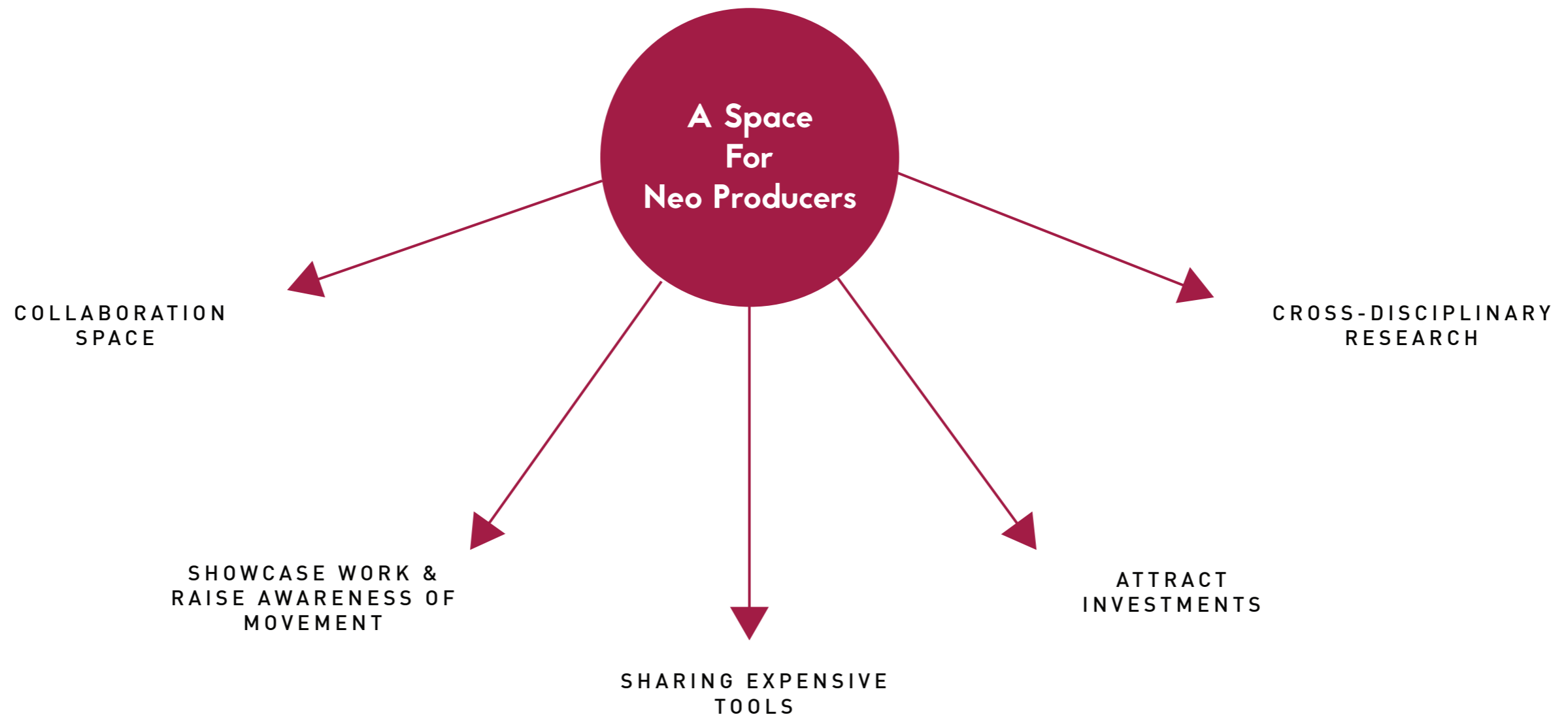
RELATION TO THE  
SUBCONSCIOUS

The  
Neo  
Producer

A New, Expressive  
Architectural Language?

## The Program:

### *PLEITA*



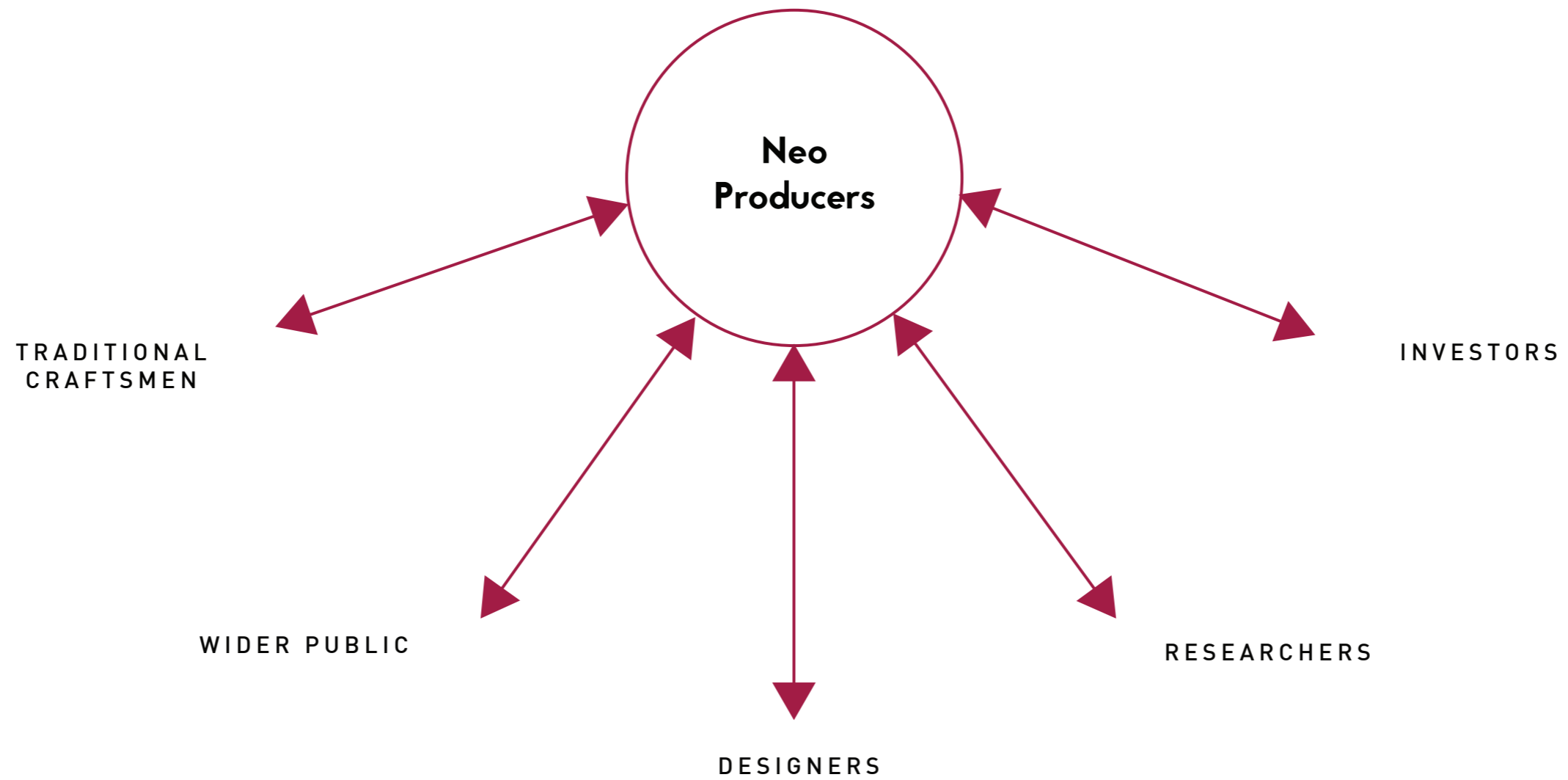
# ***PLEITA***

*(noun, Spanish)*

“SMALL, HAND-WEAVE MADE OF ESPARTO STRANDS”

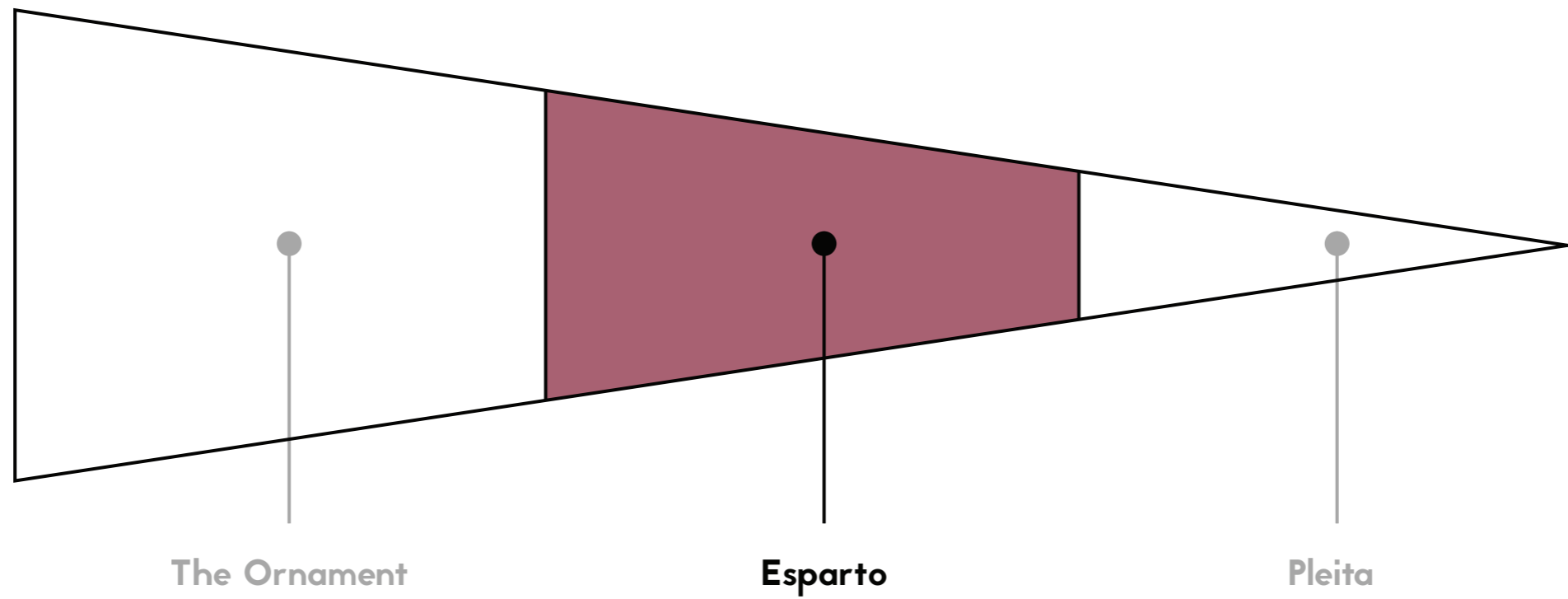


## The Network



## PART 2

### RESEARCH INTO ESPARTO



**The Ornament**

A RESEARCH INTO  
NEO-PRODUCERS  
AND  
THE ORNAMENT

**Esparto**

A RESEARCH INTO A  
FIBRE AND ITS  
FIGHT AGAINST  
DESERTIFICATION

**Pleita**

THE RESULTING  
DESIGN

THE ESPARTERIA OF JUAN SANCHEZ



- LIMITS EROSION
- DRAUGHT TOLERANT
- CREATES ISLANDS OF BIODIVERSITY
- PRESERVES SOIL'S MOISTURE



Pastoral and Agro-Pastoral Systems

CGIAR RESEARCH PROGRAM ON Livestock

CGIAR Research Program on Livestock  
Aims to increase the productivity of livestock agri-food systems in sustainable ways across the developing world.

**Managing rangelands: promoting native grass species**

*Stipa tenacissima*: nurse species to initiate the process of ecosystem restoration

Scientific name:  
*Stipa tenacissima* L.

Common names:  
Esparto, halfa

Gamoun, M, and M Louhaichi. 2017. Review of Managing Rangelands: Promoting Native Grass Species; *Stipa Tenacissima*: Nurse Species to Initiate the Process of Ecosystem Restoration. ICARDA (International Center for Agricultural Research in the Dry Areas), Beirut, Lebanon.

AEET ASOCIACIÓN ESPAÑOLA DE ECOLOGÍA TERRESTRE

Ecosistemas 16 (2): 111-130. Mayo 2007.  
<http://www.revistaecosistemas.net/articulo.asp?id=480>

ecosistemas  
REVISTA CIENTÍFICA Y TÉCNICA DE ECOLOGÍA Y MEDIO AMBIENTE  
[www.revistaecosistemas.net](http://www.revistaecosistemas.net)

**Ecología del esparto (*Stipa tenacissima* L.) y los espartales de la Península Ibérica**

F.T. Maestre<sup>1</sup>, D.A. Ramírez<sup>2</sup>, J. Cortina<sup>3</sup>

(1) Área de Biodiversidad y Conservación, Departamento de Biología y Geología, ESCET, Universidad Rey Juan Carlos, C/ Tulipán s/n, 28933 Móstoles, España.  
(2) Laboratorio de Ecología de Procesos, Departamento de Biología, Universidad Nacional Agraria La Molina, Ap. 465, Lima, Perú.-Departament d' Ecologia e Institut Multidisciplinar per a l'Estudi del Medi, Universitat d' Alacant, Ap. 99, 03080 Alicante, España.  
(3) Departament d' Ecologia e Institut Multidisciplinar per a l'Estudi del Medi, Universitat d' Alacant, Ap. 99, 03080 Alicante, España.

> Recibido el 22 de febrero de 2007, aceptado el 22 de febrero de 2007.

Maestre, Fernando T, David A Ramírez, and Jordi Cortina. 2007. "Ecología Del Esparto (*Stipa Tenacissima* L.) Y Los Espartales de La Península Ibérica." DOAJ (DOAJ: Directory of Open Access Journals), January.



TYPICAL ESPARTO LANDSCAPE, MURCIA



# Farmer vs. sand: Spain's fight against desertification

If climate change models are correct, much of the country's fertile land could transform into desert.

90%

Land at "high" or "very high" risk of desertification in the regions of Murcia and Valencia

Ministry of Agriculture, Fisheries and Food, National Action Programme to Combat Desertification, 2008, p. 137

37%

Land at "high" or "very high" risk of desertification at a national level

Ministry of Agriculture, Fisheries and Food, National Action Programme to Combat Desertification, 2008, p. 137


## Esparto Uses

1946

40'000 t	Bags
35'000 t	Paper
30'000 t	Ropes
15'000 t	Consumer Goods

### COMPLETE ESPARTO RANGE



 NATURAL ESPARTO (STIPA TENACISSIMA) RANGE

 MAIN SITE IN MADRID

 MURCIA, CENTRE OF THE ESPARTO INDUSTRY

### *Esparto Production*

1969

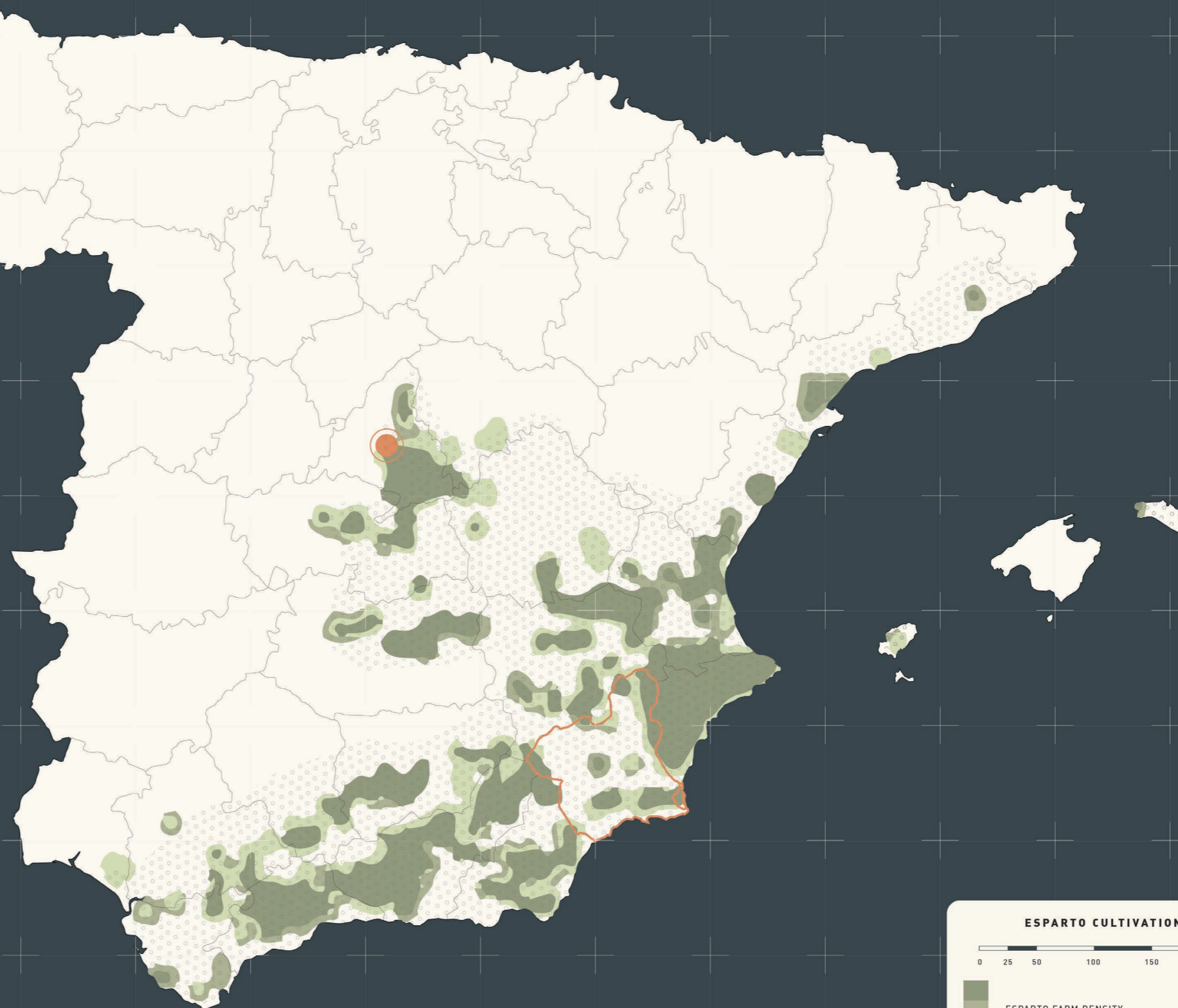
2021

*40'757 t*

*89 t*

*684'000 ha*

*400'000 ha*



#### ESPARTO CULTIVATION IN SPAIN

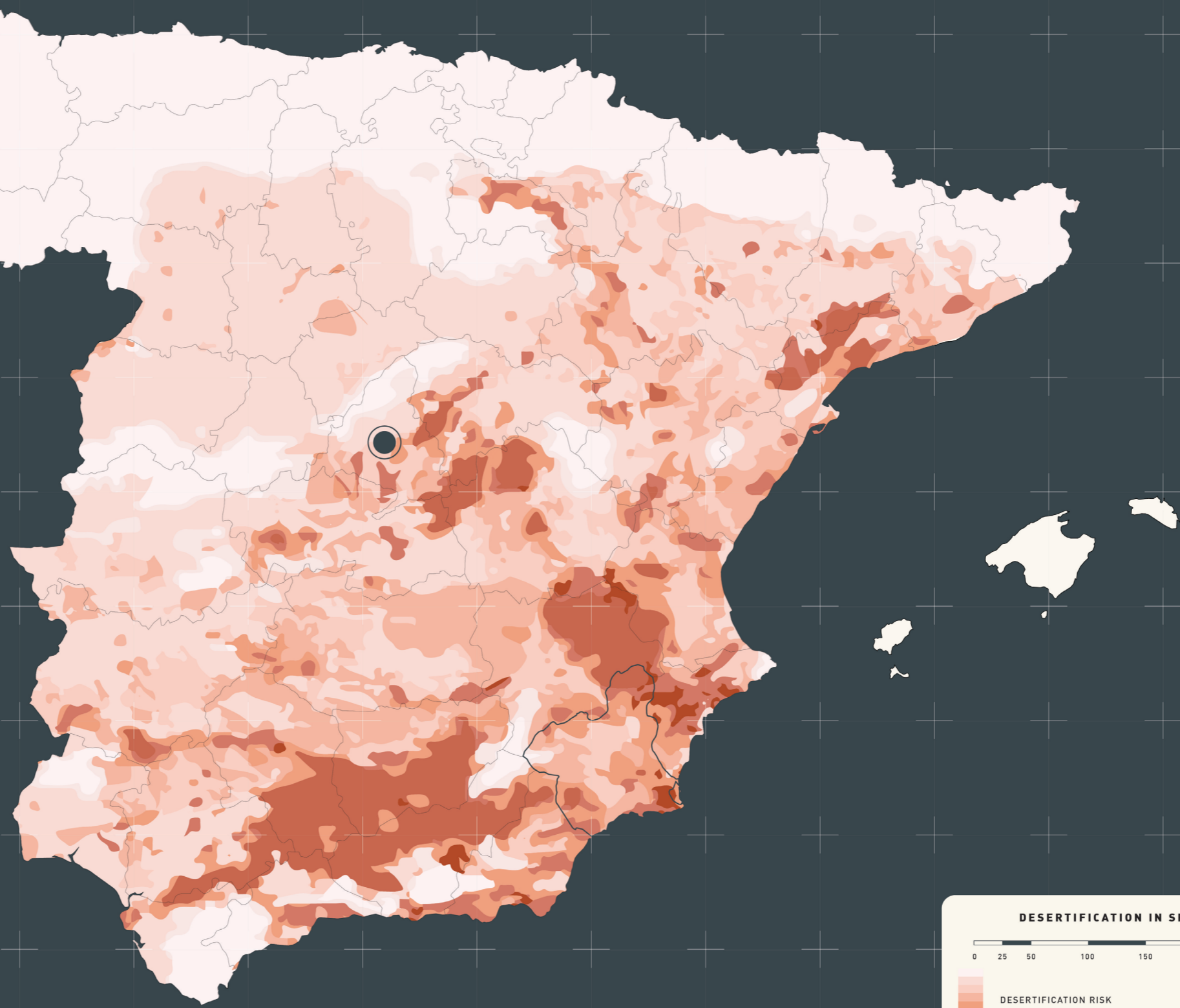
0 25 50 100 150 200km

N

-  ESPARTO FARM DENSITY
-  NATURAL ESPARTO (STIPA TENACISSIMA) RANGE
-  MAIN SITE IN MADRID
-  MURCIA, CENTRE OF THE ESPARTO INDUSTRY

74%

*Percentage of land at risk of desertification in Spain*



**DESERTIFICATION IN SPAIN**

0 25 50 100 150 200km

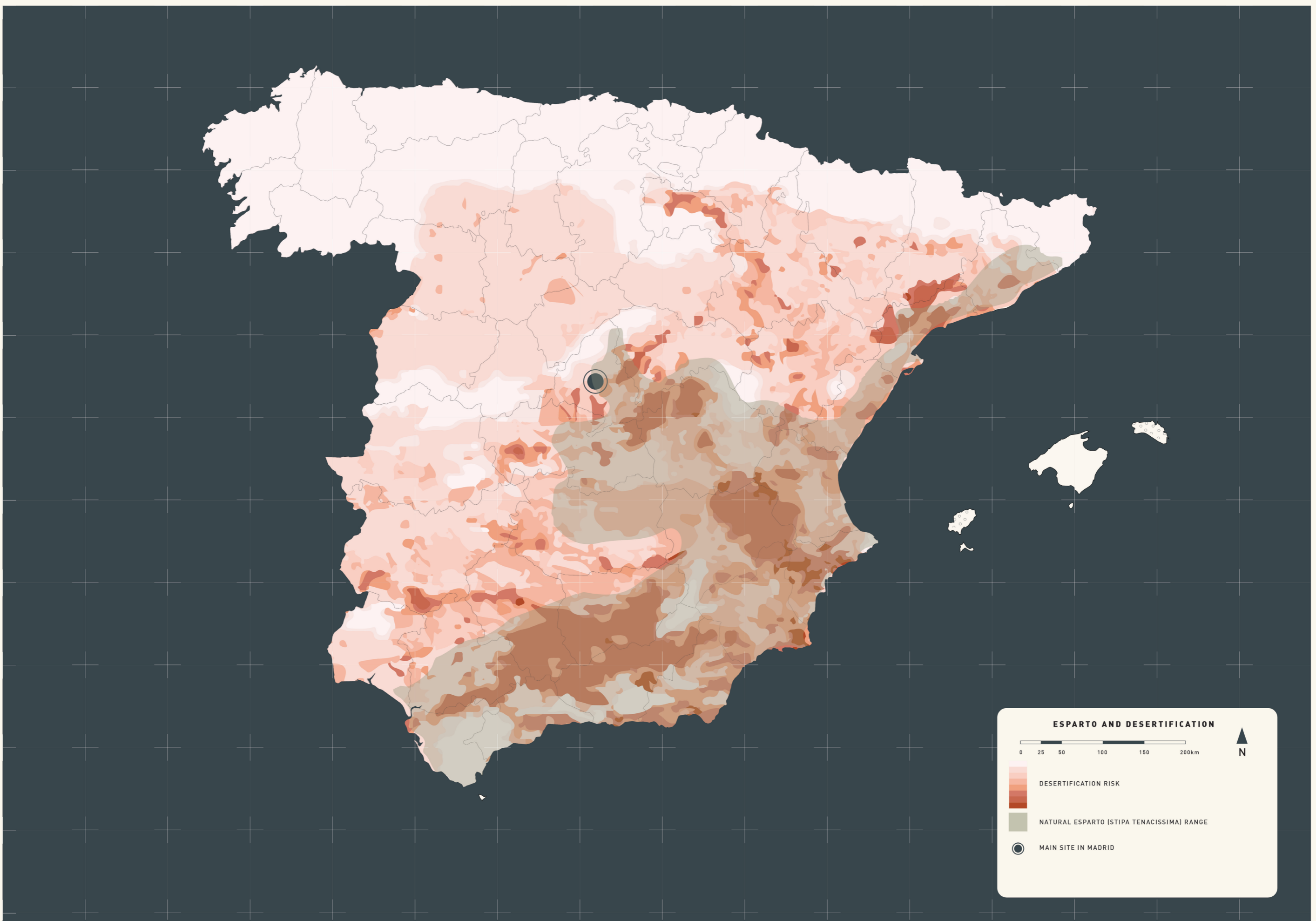
N

DESERTIFICATION RISK

NATURAL ESPARTO (STIPA TENACISSIMA) RANGE

MAIN SITE IN MADRID

MURCIA, CENTRE OF THE ESPARTO INDUSTRY



**ESPARTO AND DESERTIFICATION**

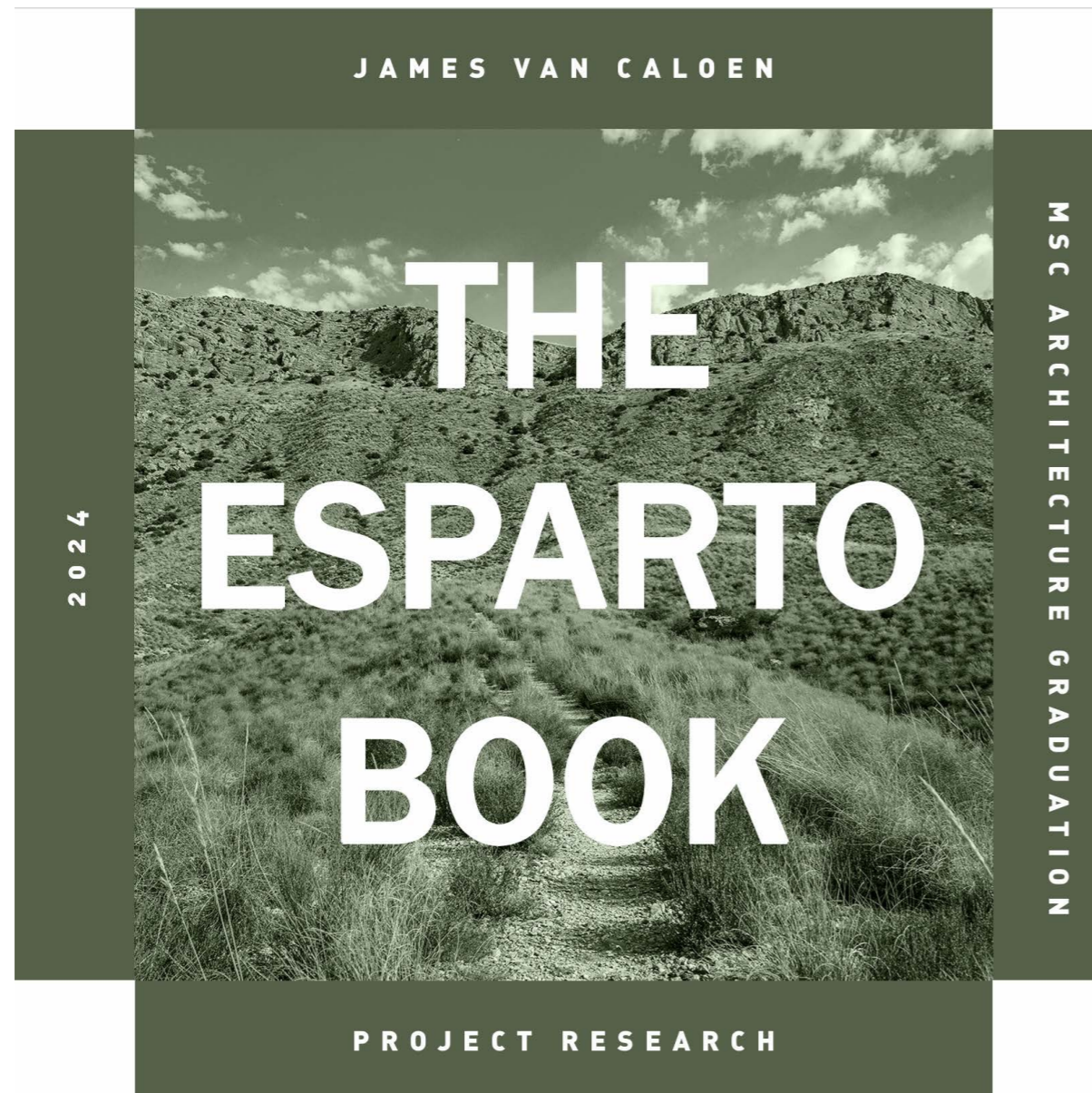
0 25 50 100 150 200km

N

DESERTIFICATION RISK

NATURAL ESPARTO (STIPA TENACISSIMA) RANGE

MAIN SITE IN MADRID



THE ESPARTO BOOKLET

## CHAPTERS

<b>INTRODUCTION</b>	<b>4</b>
<b>1 BOTANICAL DESCRIPTION</b> <i>PROFILE OF THE ESPARTO PLANT</i>	<b>11</b>
<b>2 HARVESTING</b> <i>TIMELINE AND HARVESTING METHODS THE MECHANIZATION OF THE PROCESS TOOLS OF THE TRADE</i>	<b>23</b>
<b>3 USES</b> <i>TRADITIONAL AND PRESENT USES THE NETWORK OF ESPARTO THE FUTURE OF ESPARTO</i>	<b>47</b>
<b>4 THE ESPARTO RENAISSANCE</b> <i>GOVERNMENT AND INDIVIDUAL INITIATIVES ESPARTO AS INTANGIBLE HERITAGE THE GREEN FIBRE REVOLUTION</i>	<b>57</b>
<b>5 ESPARTO AND ARCHITECTURE</b> <i>DESIGNING WITH ESPARTO MATERIALS, PAST AND PRESENT EXPERIMENTS WITH ESPARTO</i>	<b>65</b>
<b>6 PROJECT RESEARCH</b> <i>MATERIAL TESTS PROJECT DRAWINGS</i>	<b>75</b>

POTENTIAL ESPARTO USES IN ARCHITECTURE



*INSULATION*



*TEXTILES*



*NATURAL POLYMERS*



*LOW COST ECO-MORTAR*



*SOUND ABSORBANT MATERIAL*

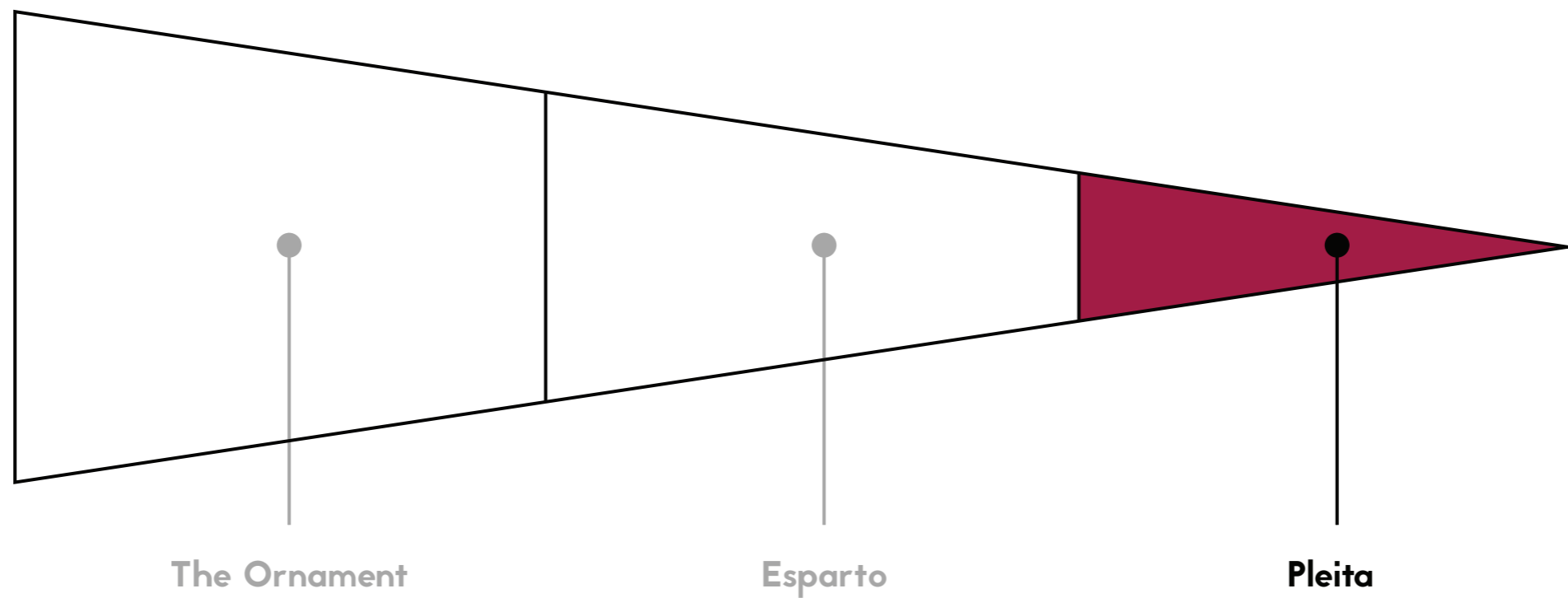


*MIXING AGENT FOR CONCRETE*

A TYPICAL SIGHT IN SOUTHERN SPAIN



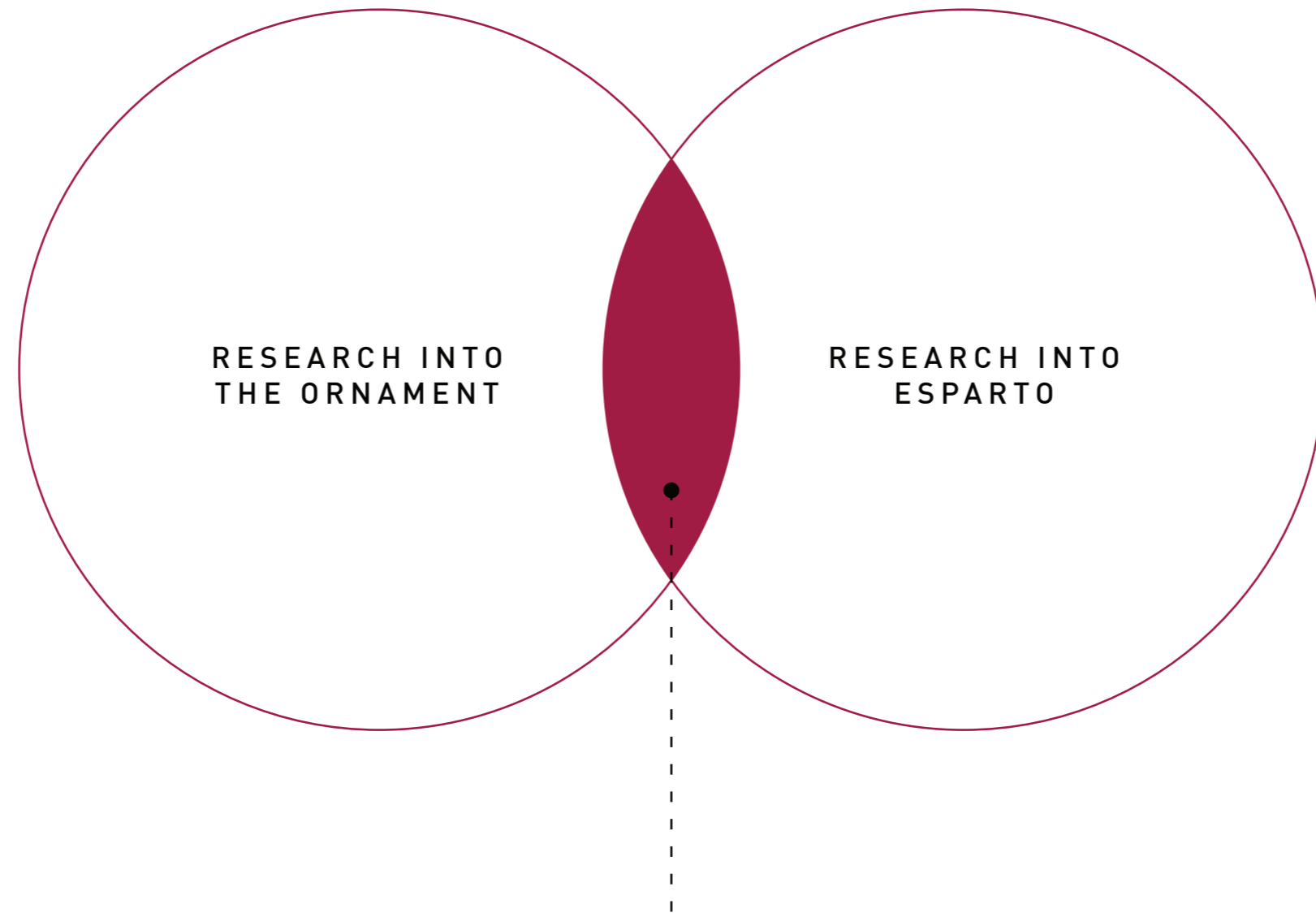
**PART 3**  
**THE DESIGN**



A RESEARCH INTO  
NEO-PRODUCERS  
AND  
THE ORNAMENT

A RESEARCH INTO A  
FIBRE AND ITS  
FIGHT AGAINST  
DESERTIFICATION

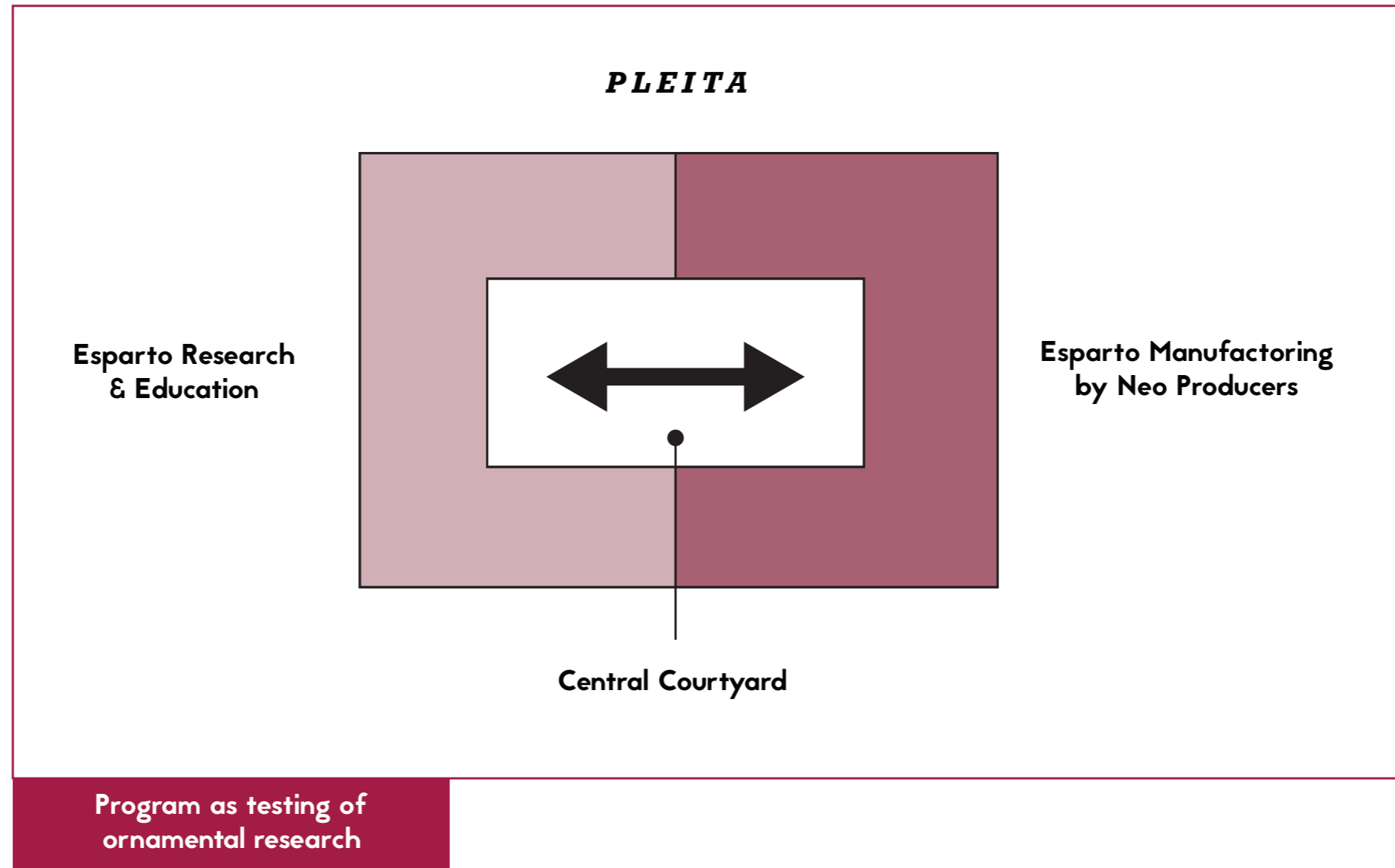
THE RESULTING  
DESIGN



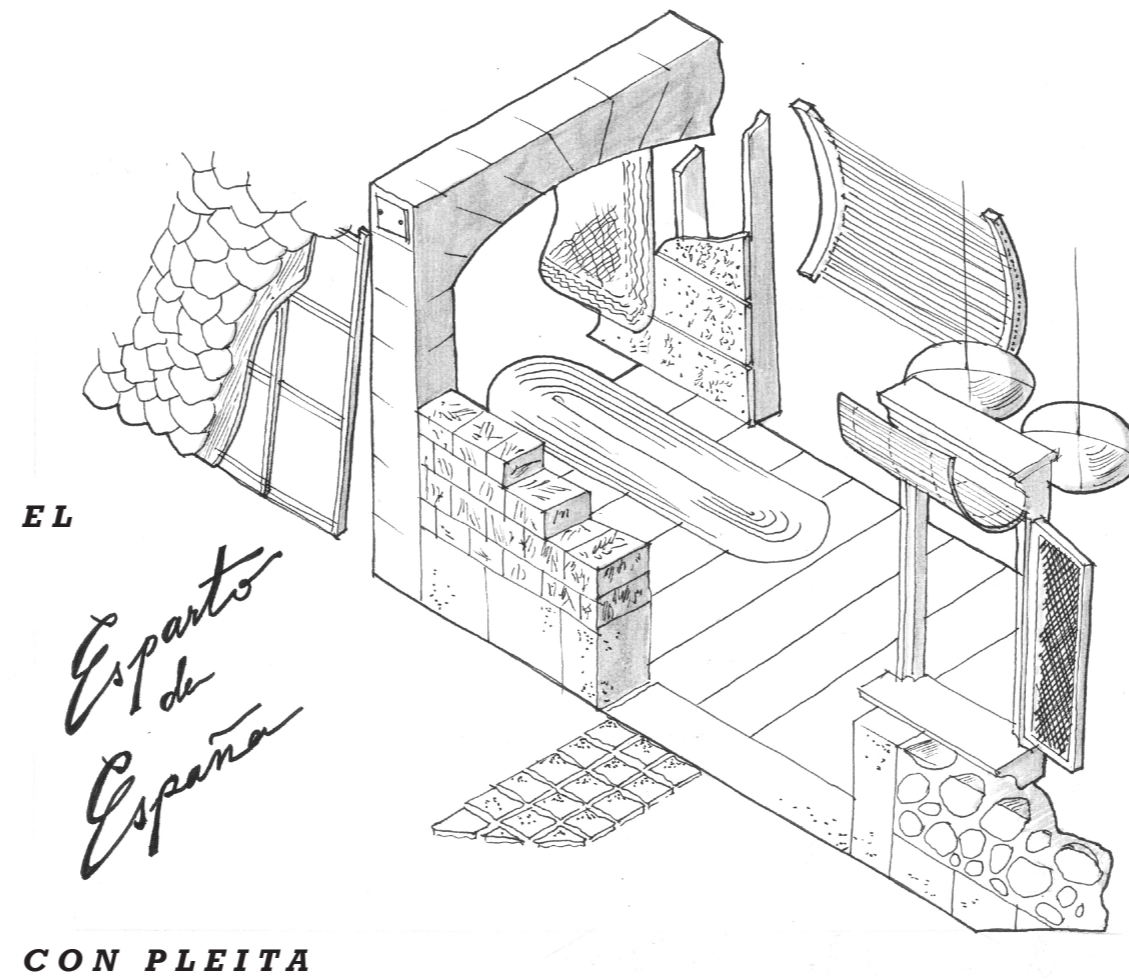
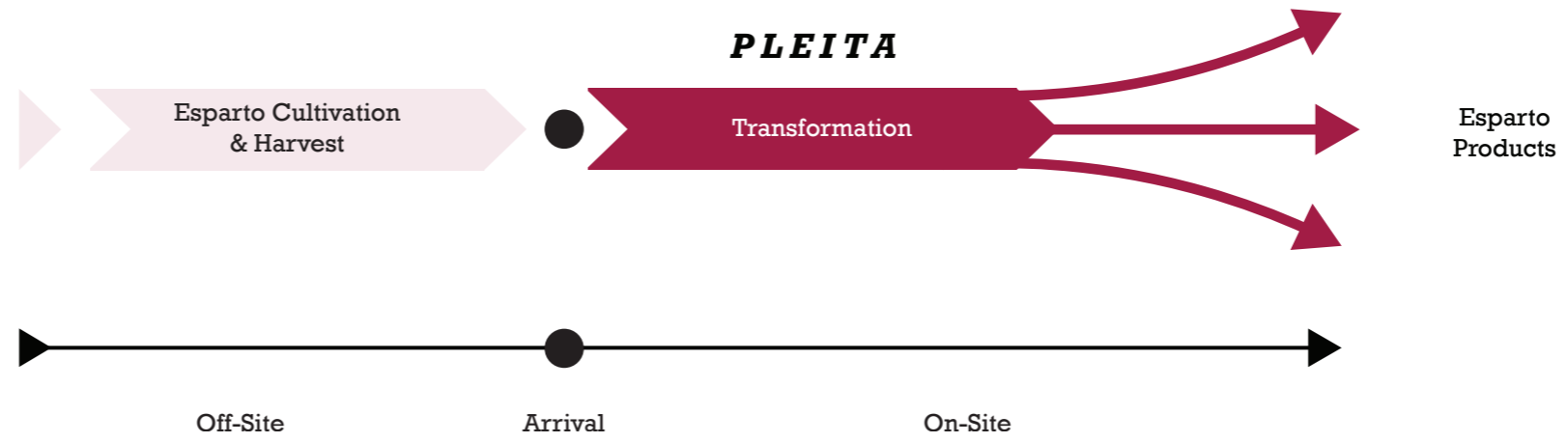
***PLEITA***

A CENTRE FOR  
NEO-PRODUCERS WORKING  
ON ESPARTO

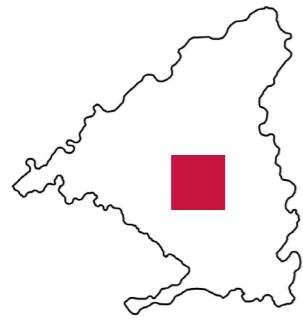
THE PROGRAM



THE PROGRAM



WHERE TO PLACE THIS PROGRAM?



TRADITIONAL CRAFTS

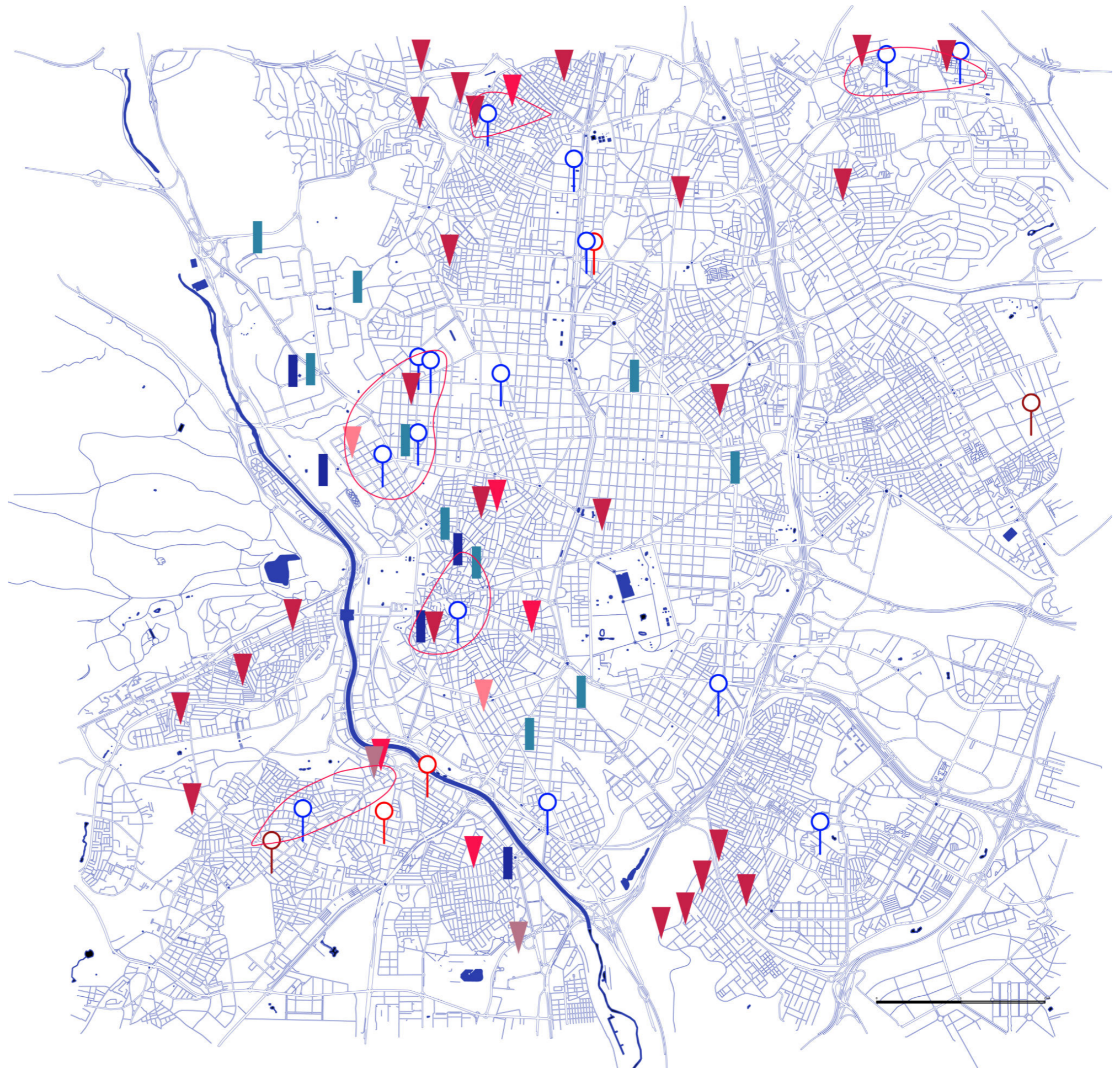
- Mosaiquista
- Metal Working
- Carpenter
- Furniture Making

EMERGING CRAFTS

- 3D printing, Fablab
- Laser Cutting
- CNC Milling

EDUCATION

- Higher Level Education
- Vocational Training, Building Industry



WIDER SITE CONTEXT AND RELATION WITH CAMPUS

QUICK ACCESS TO LOCAL MATERIALS

OPEN SPACES TO EXPERIMENT

THE MAIN NORTH-SOUTH MADRID HIGHWAY

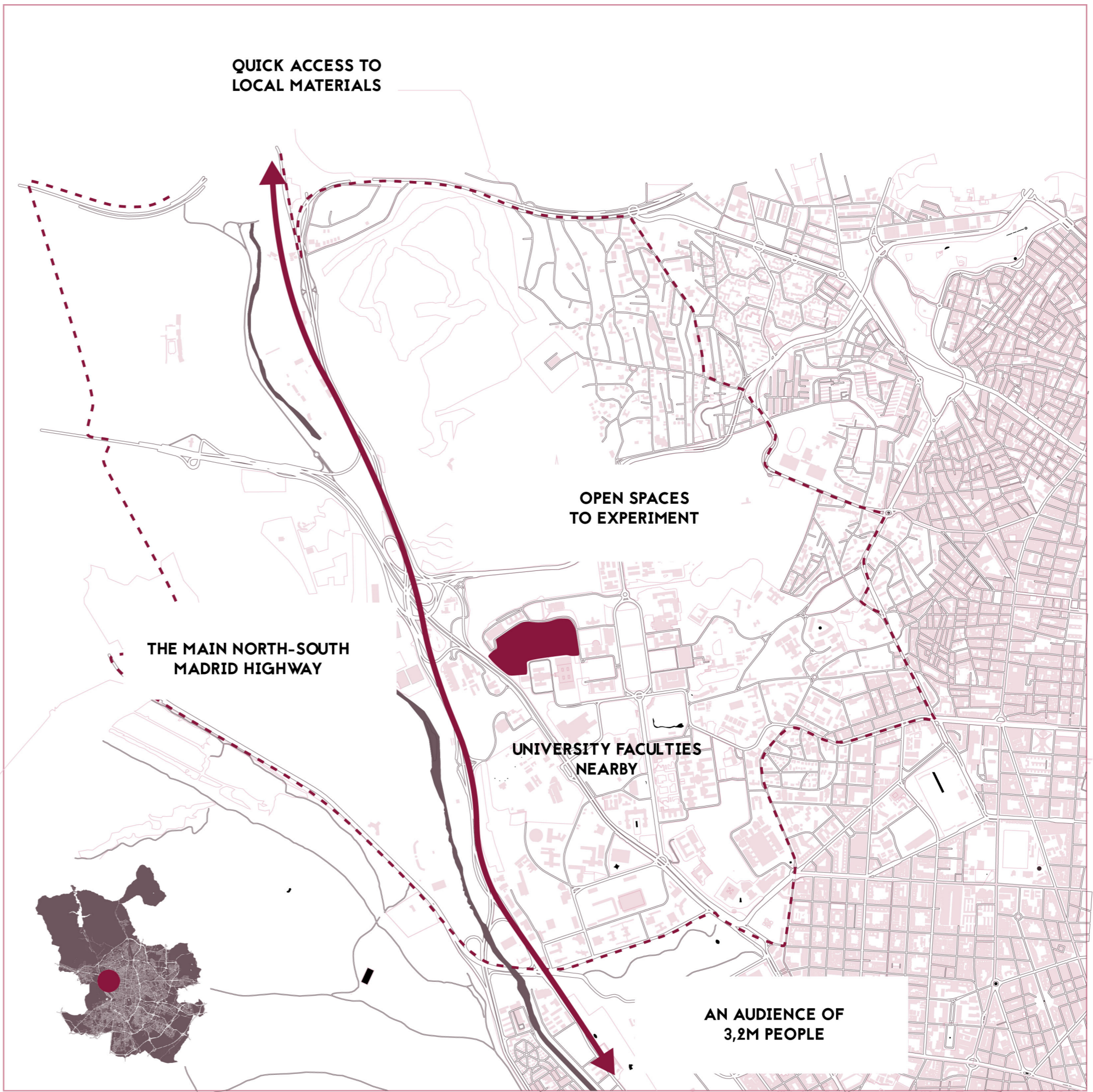
UNIVERSITY FACILITIES NEARBY

AN AUDIENCE OF 3,2M PEOPLE

1:5000 MAP



-  BUILDINGS
-  MAIN HIGHWAY OUT OF MADRID
-  SITE
-  UNIVERSITY CAMPUS



WIDER SITE CONTEXT AND RELATION WITH CAMPUS

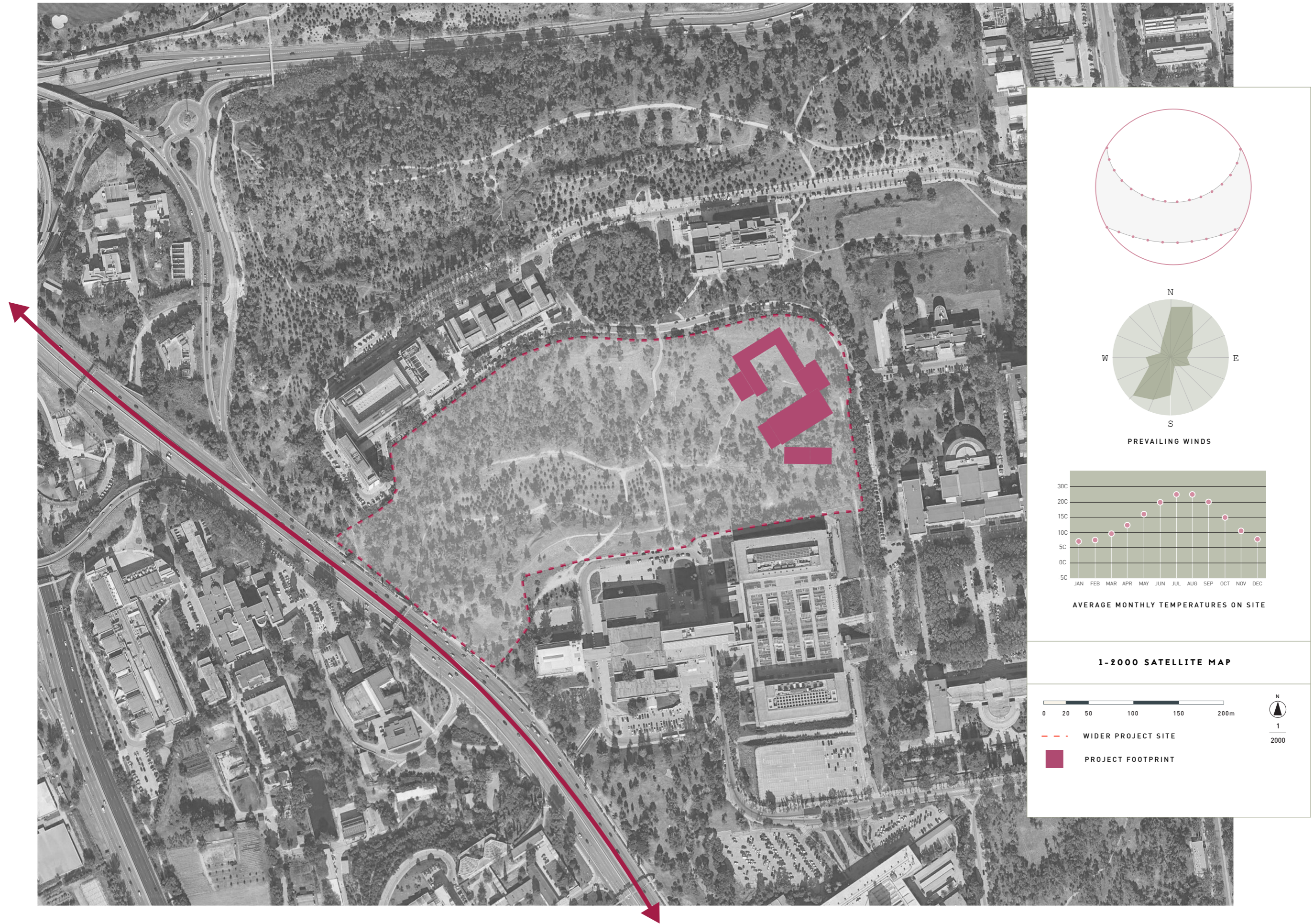
- 1 NATIONAL CULTURAL INSTITUTE
- 2 FACULTY OF CHEMISTRY
- 3 FACULTY OF BIOLOGY
- 4 FACULTY OF ECONOMY AND TOURISM
- 5 FACULTY OF HISTORY AND GEOGRAPHY
- 6 NATIONAL RESEARCH INSTITUTE OF AGRARIAN AND FOOD TECHNOLOGIES
- 7 UPPER TECHNICAL SCHOOL OF AGRICULTURAL ENGINEERS

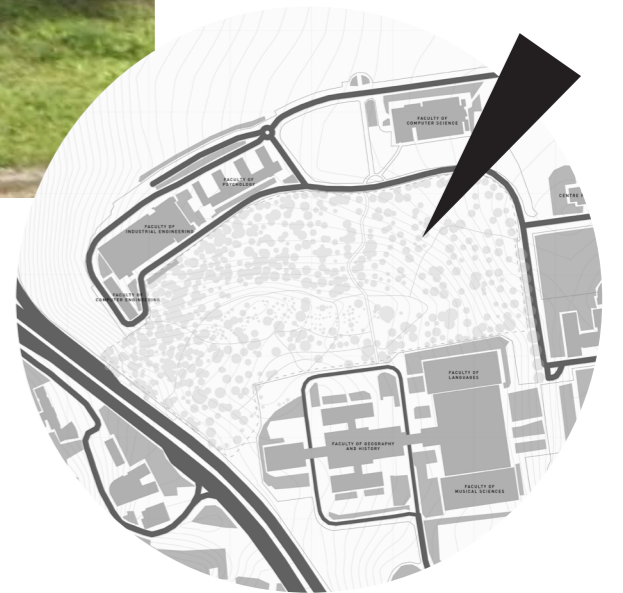
1:5000 MAP

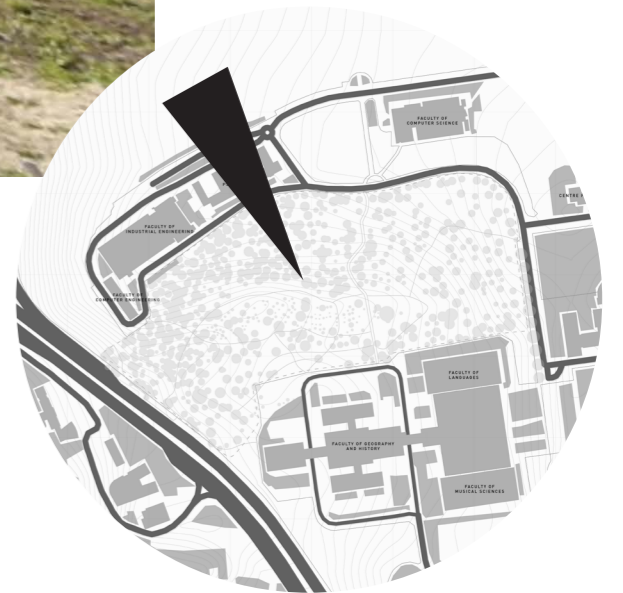


- BUILDINGS
- RELEVANT FACULTIES AND INSTITUTIONS
- SITE
- UNIVERSITY CAMPUS

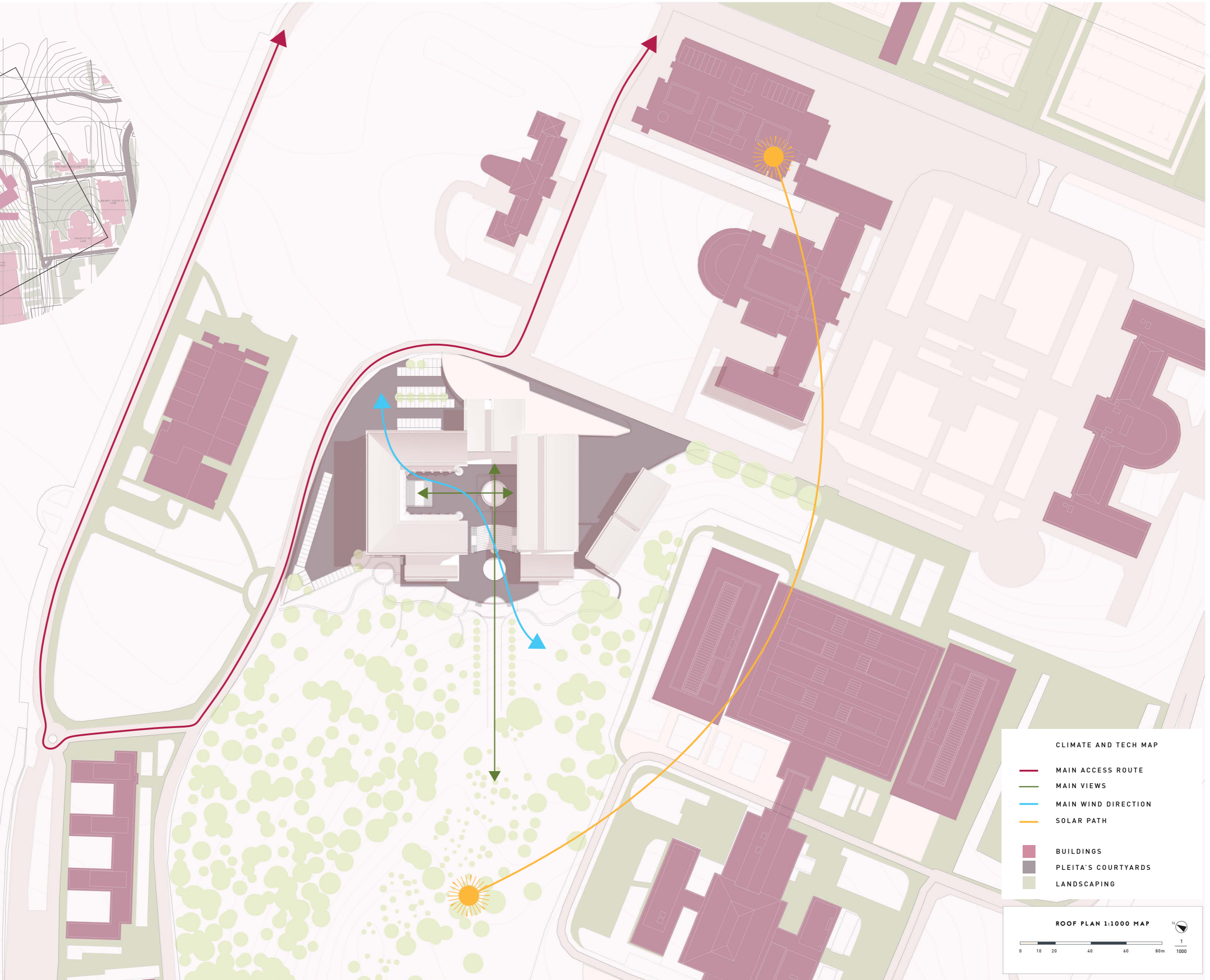












**CLIMATE AND TECH MAP**

- MAIN ACCESS ROUTE
- MAIN VIEWS
- MAIN WIND DIRECTION
- SOLAR PATH

**BUILDINGS**

**PLEITA'S COURTYARDS**

**LANDSCAPING**

**ROOF PLAN 1:1000 MAP**

0 10 20 40 60 80m 1000

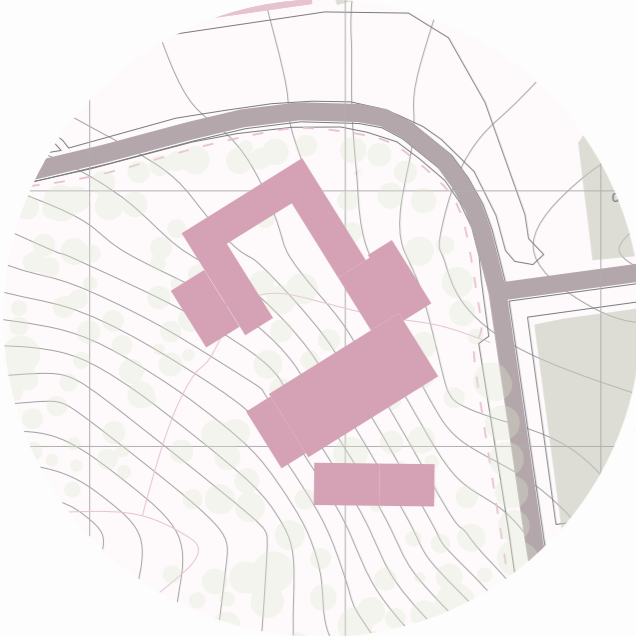
RESEARCH AND EDUCATION :  
PUBLIC AND SEMI-PUBLIC SPACES

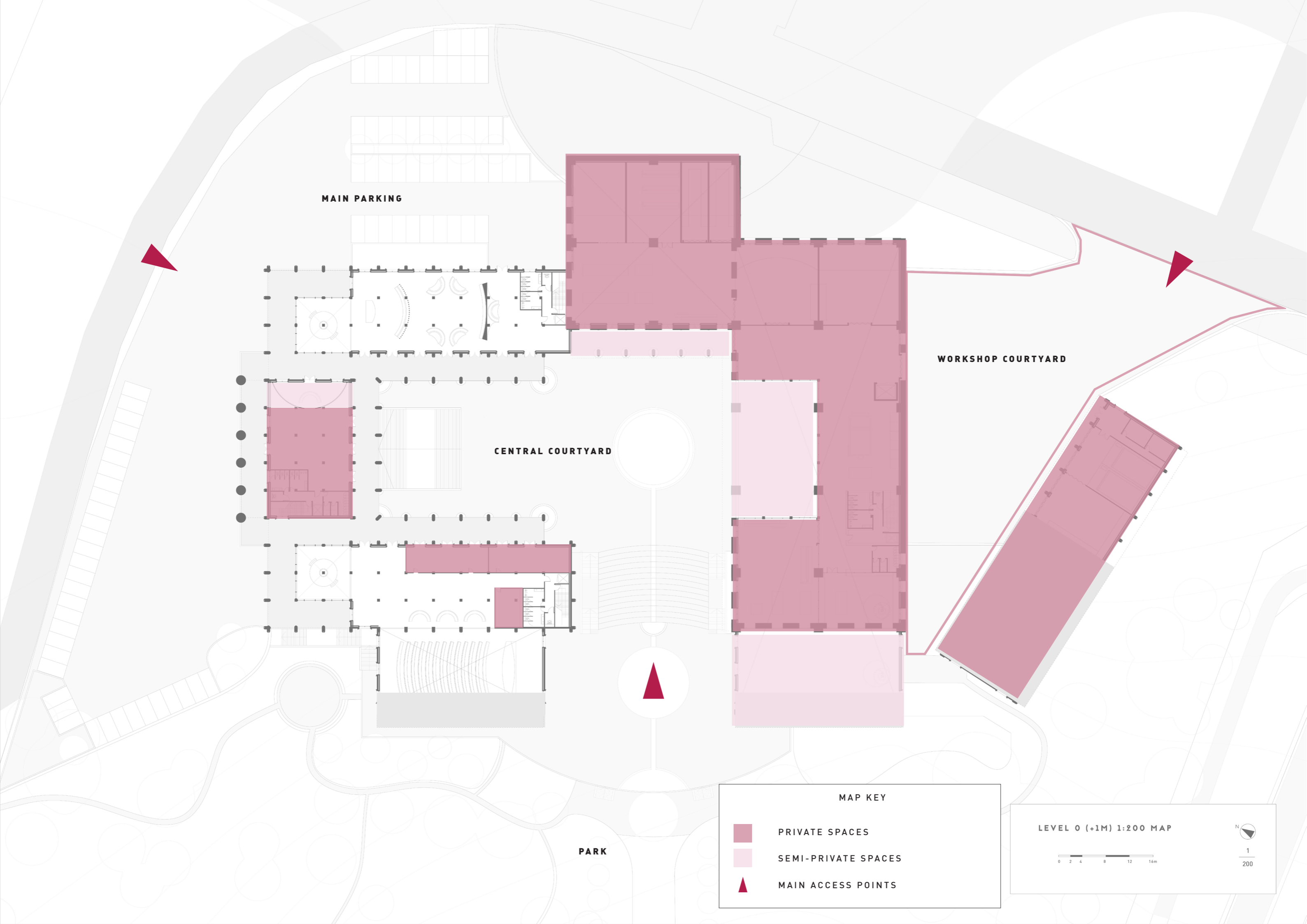
WORKSHOP AND SERVICE AREAS

PUBLIC ACCESS

WORKSHOP ACCESS

PUBLIC ACCESS  
FROM PARC





MAIN PARKING

WORKSHOP COURTYARD

CENTRAL COURTYARD

PARK

**MAP KEY**

- PRIVATE SPACES
- SEMI-PRIVATE SPACES
- MAIN ACCESS POINTS

**LEVEL 0 (+1M) 1:200 MAP**

0 2 4 8 12 16m

N

1/200



MAIN PARKING

TEXTILE WORKSHOP

EDUCATION

WORKSHOP COURTYARD

RECEPTION

CENTRAL COURTYARD

DRY WORKSHOP

WET WORKSHOP

EXHIBITION SPACES

NEO-PRODUCER ATELIERS

AUDITORIUM

PARK

MAP KEY

- PRIVATE SPACES
- SEMI-PRIVATE SPACES
- MAIN ACCESS POINTS

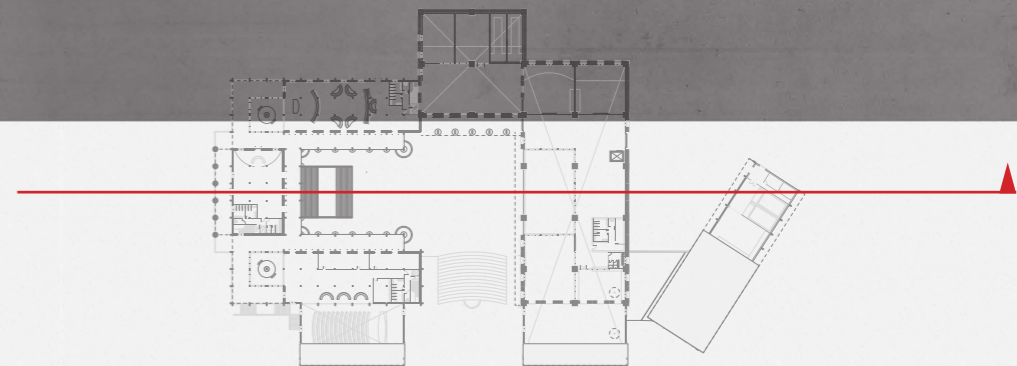
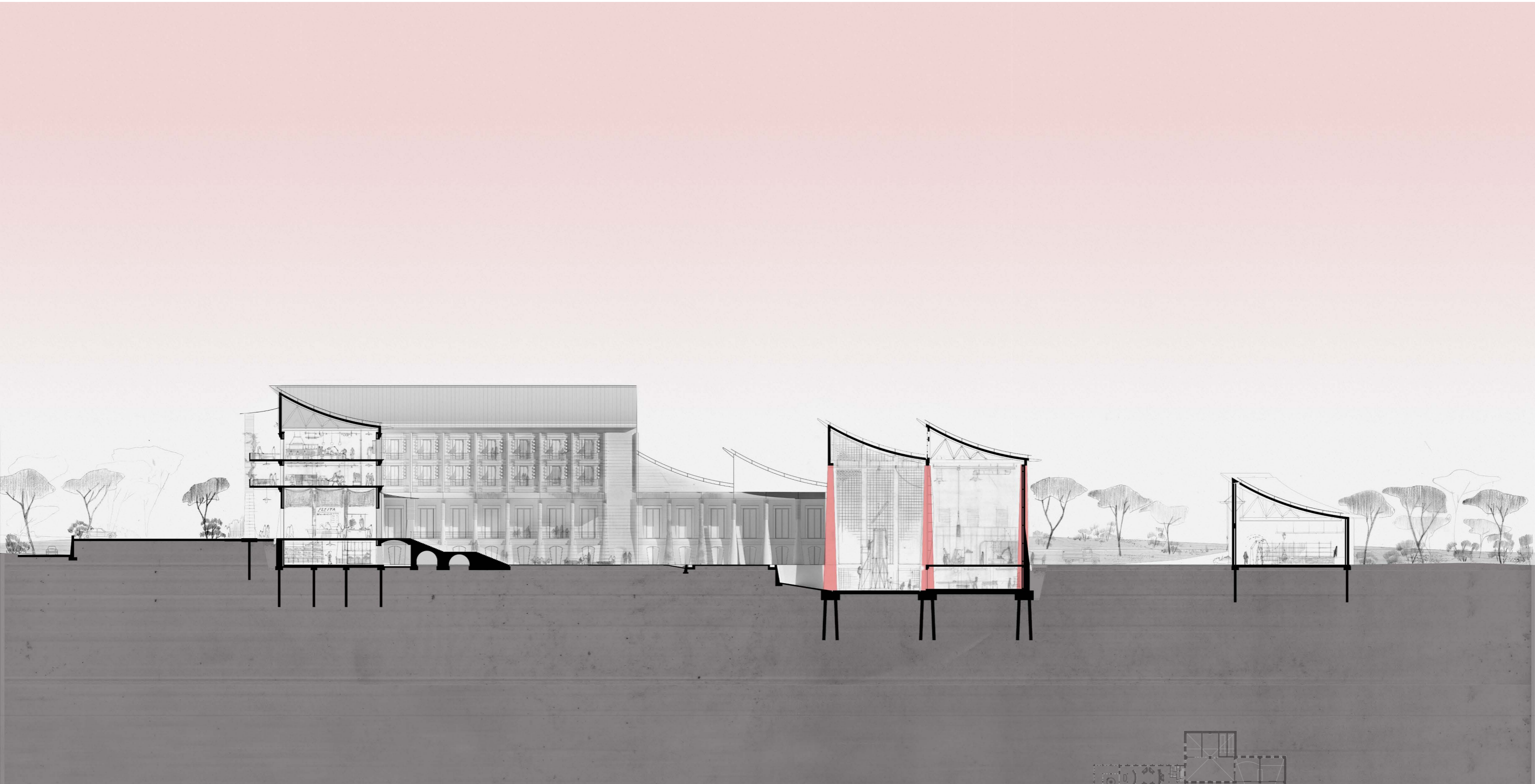
LEVEL 0 (+1M) 1:200 MAP

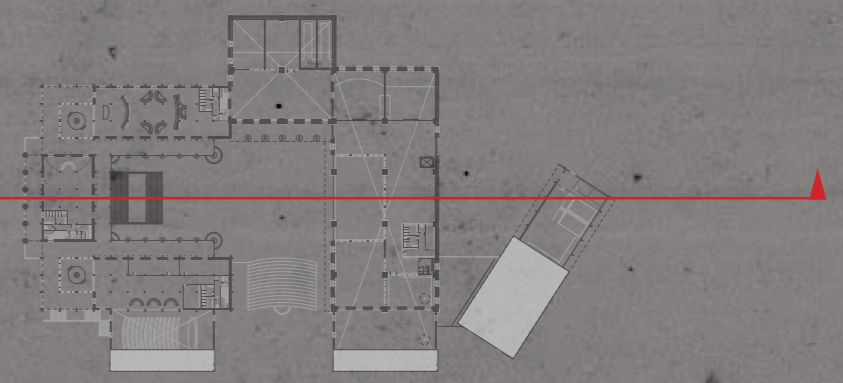
0 2 4 8 12 16m

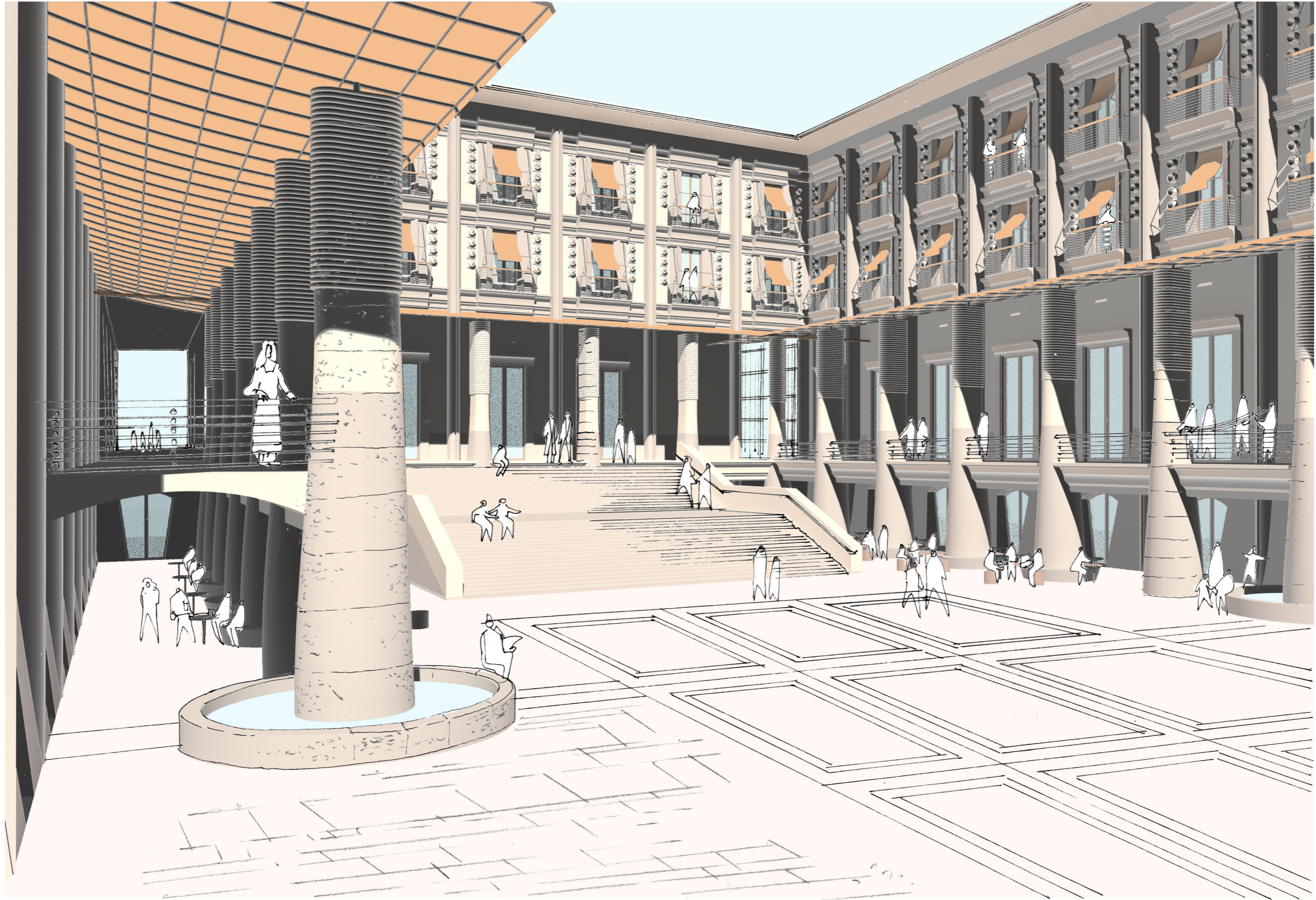
N

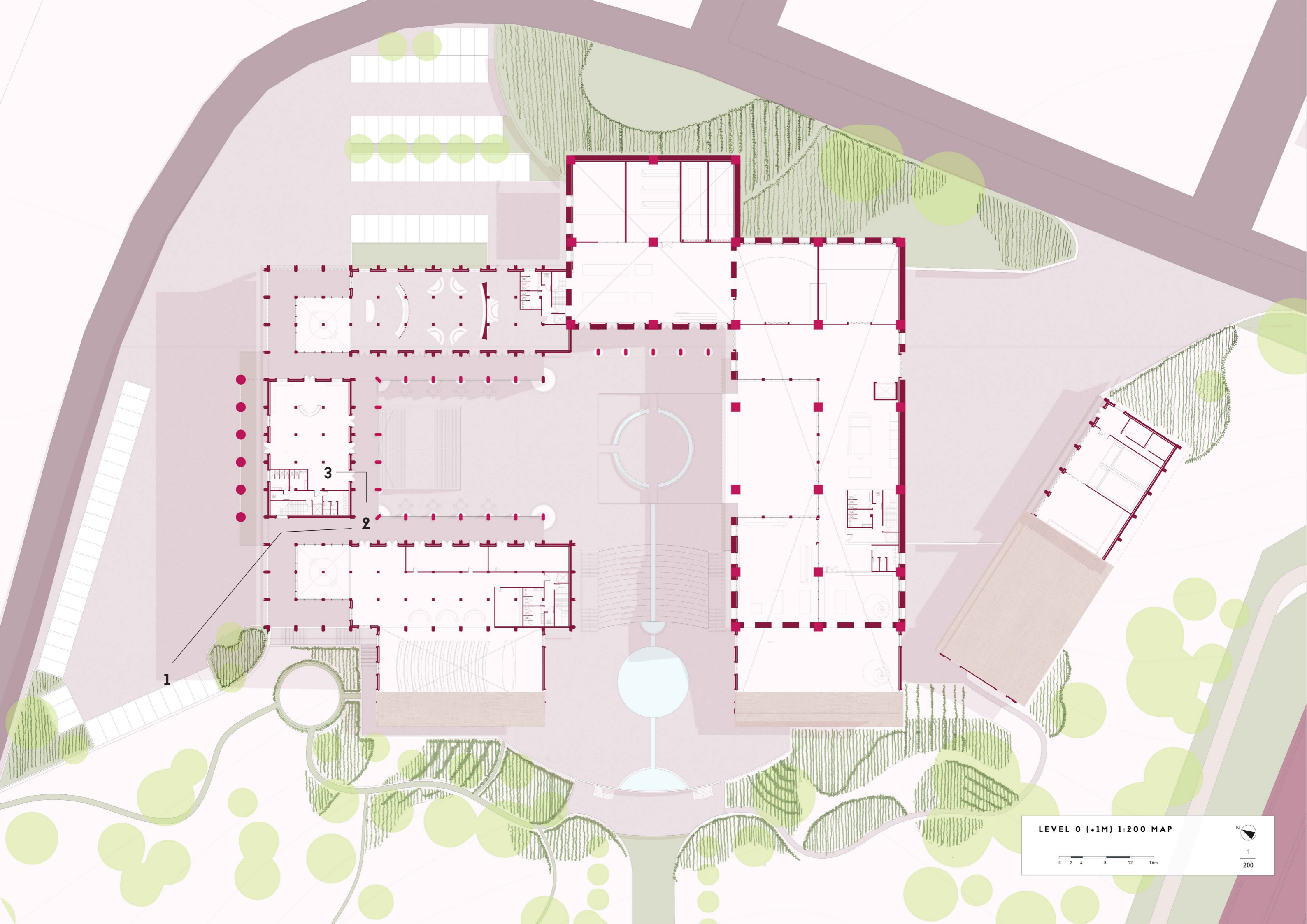
1/200

***A TOUR OF THE BUILDING  
THROUGH THE EYES OF A SCIENTIST***





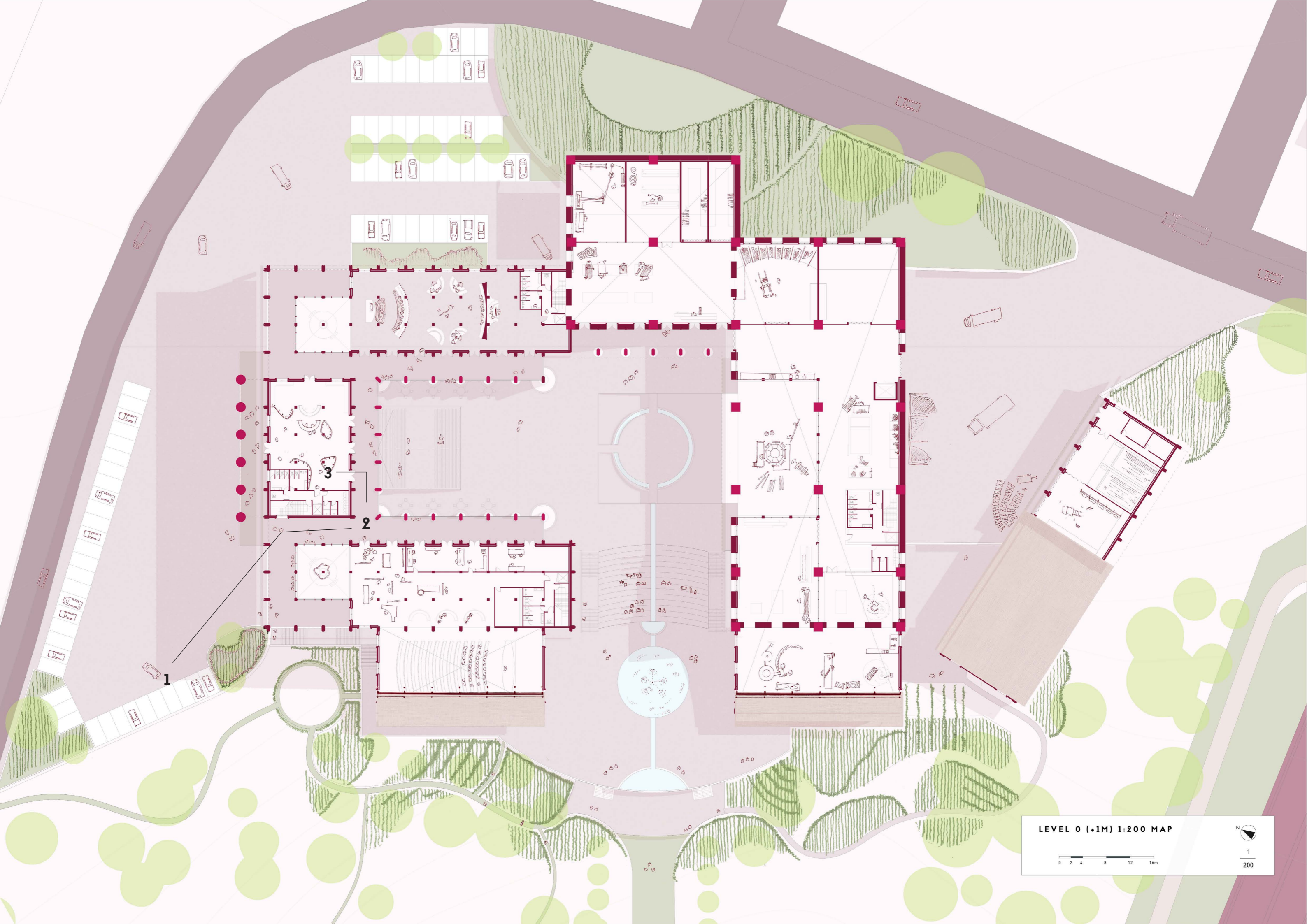




LEVEL 0 (+1M) 1:200 MAP



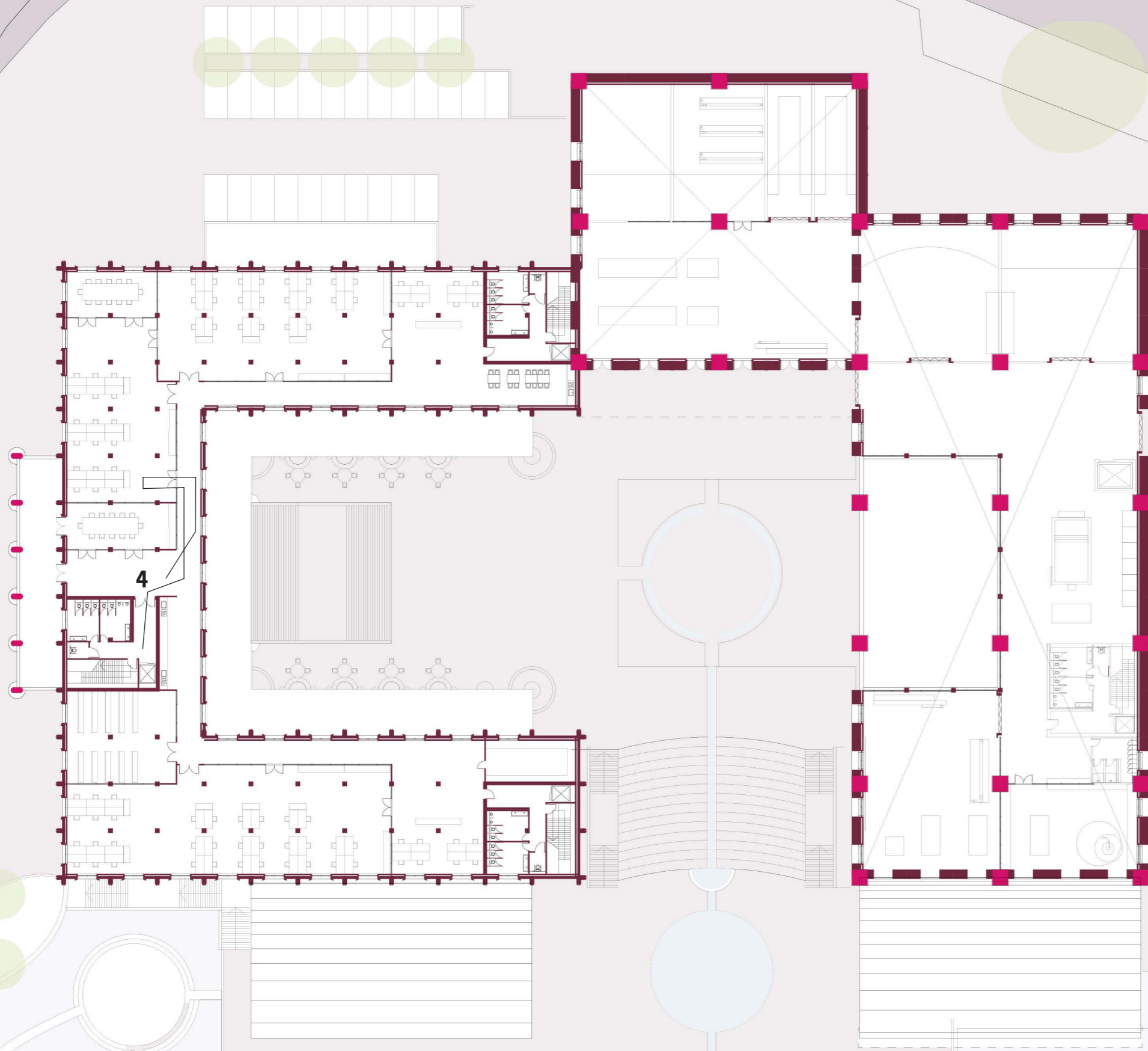
1  
200



LEVEL 0 (+1M) 1:200 MAP



1  
200

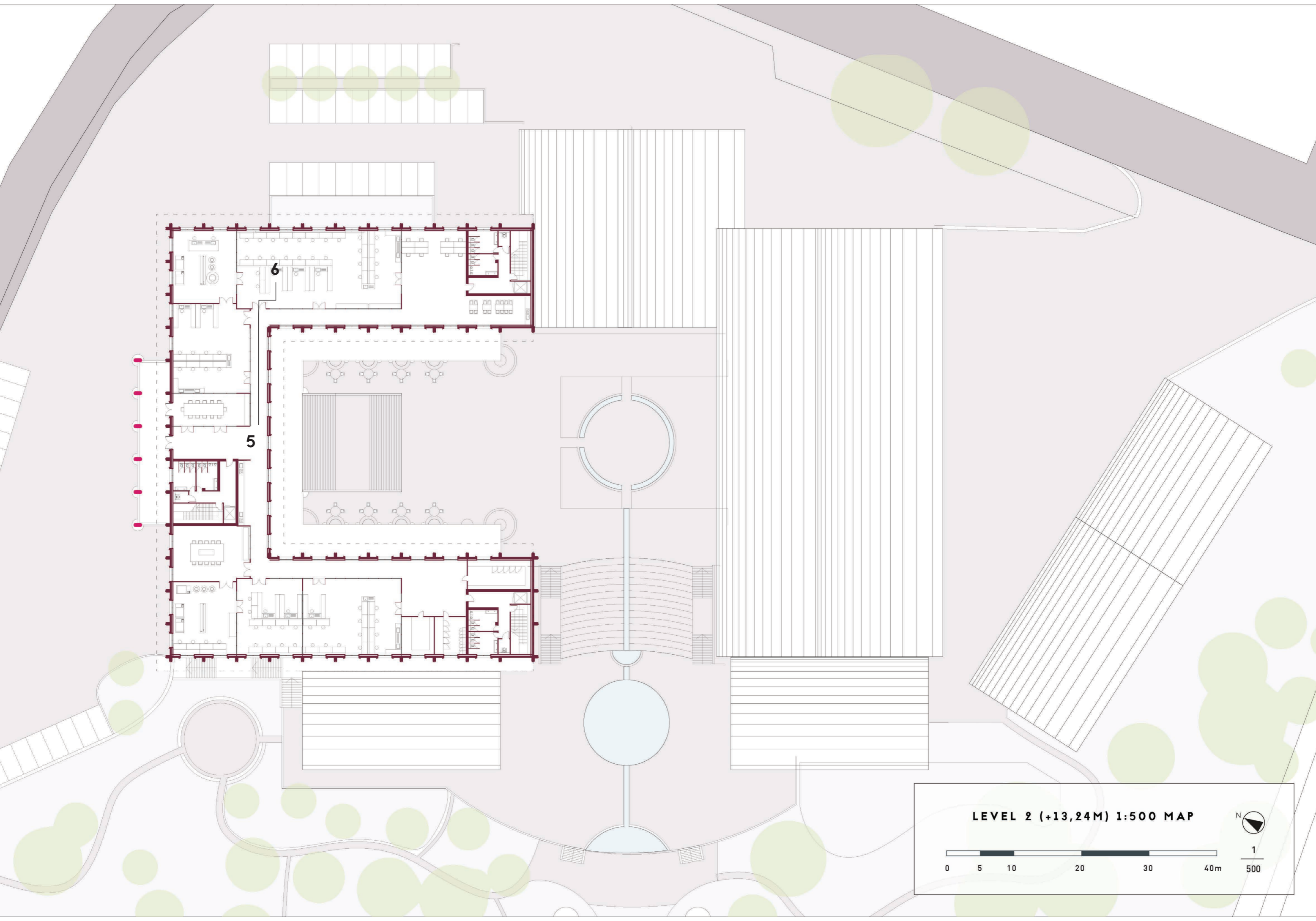


4

LEVEL 1 (+9,16M) 1:500 MAP



1  
500

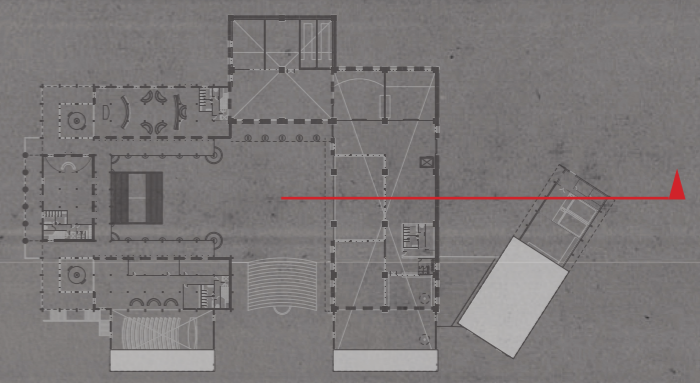
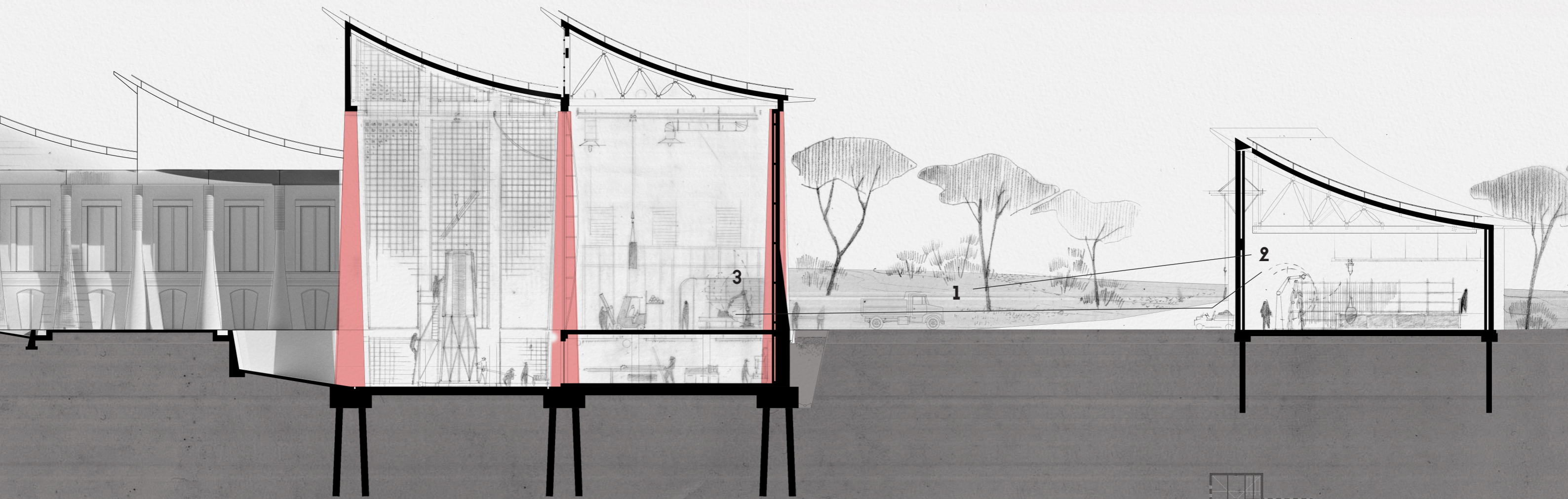


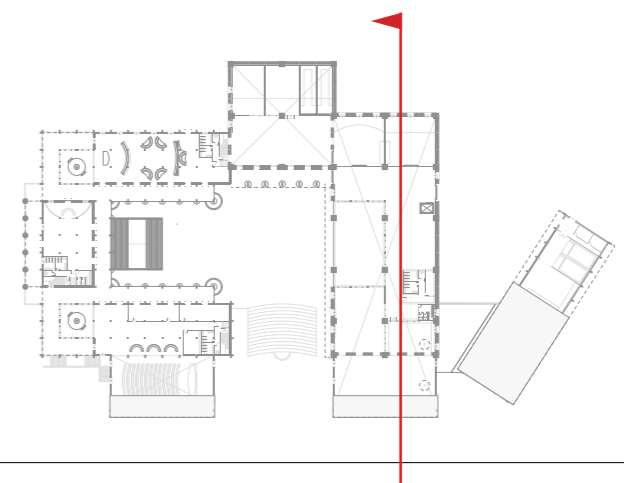
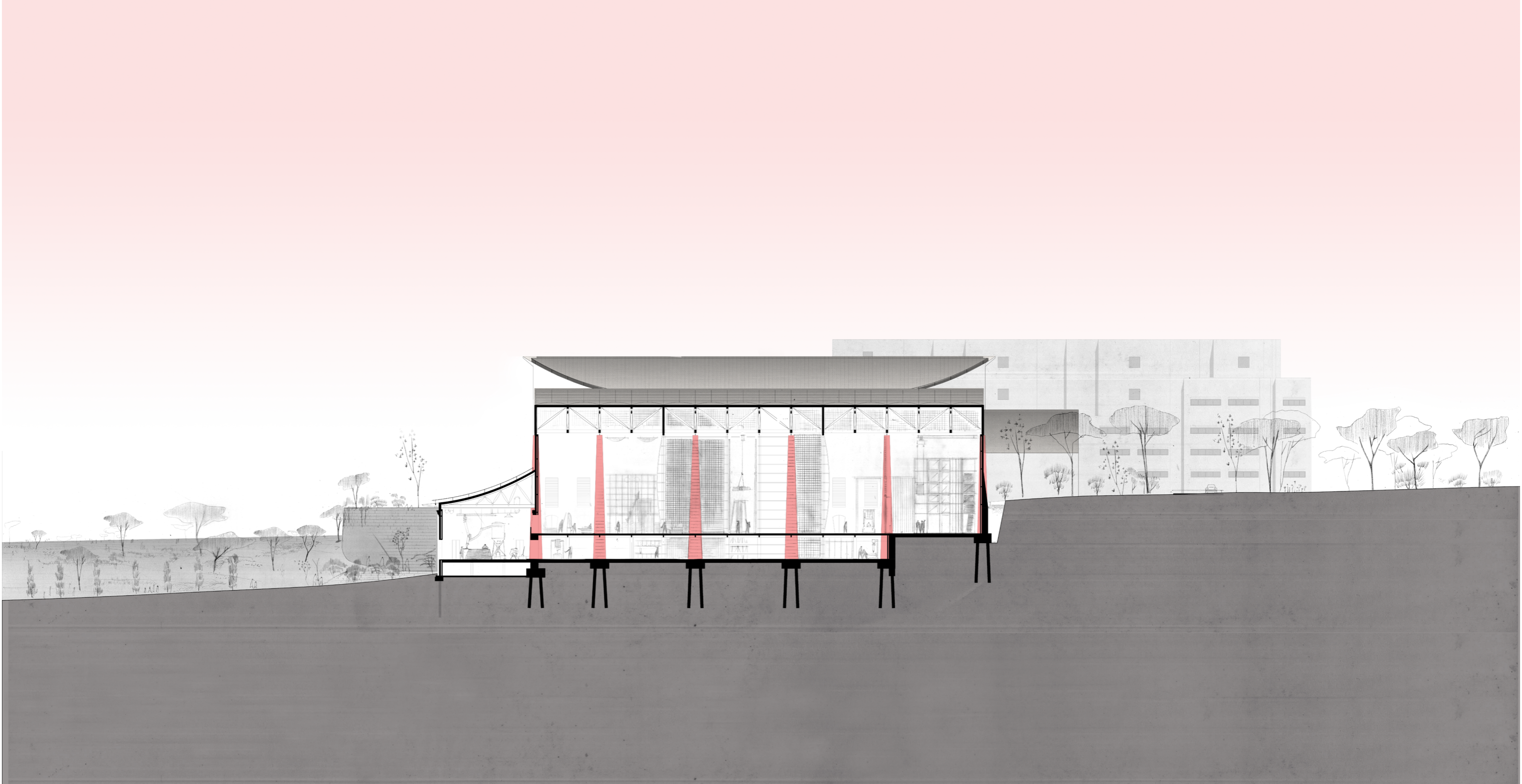
**LEVEL 2 (+13,24M) 1:500 MAP**

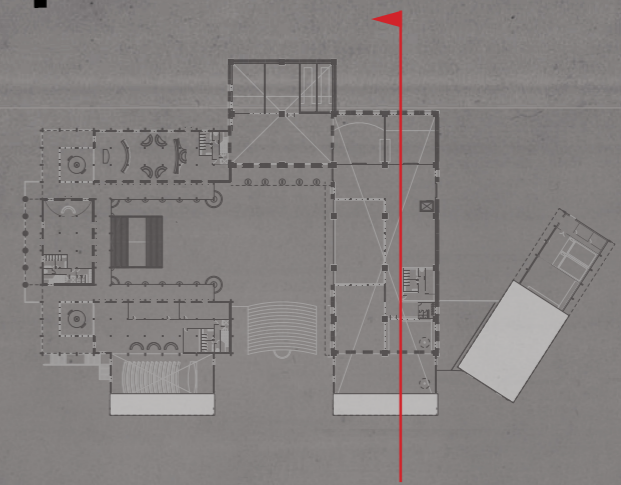
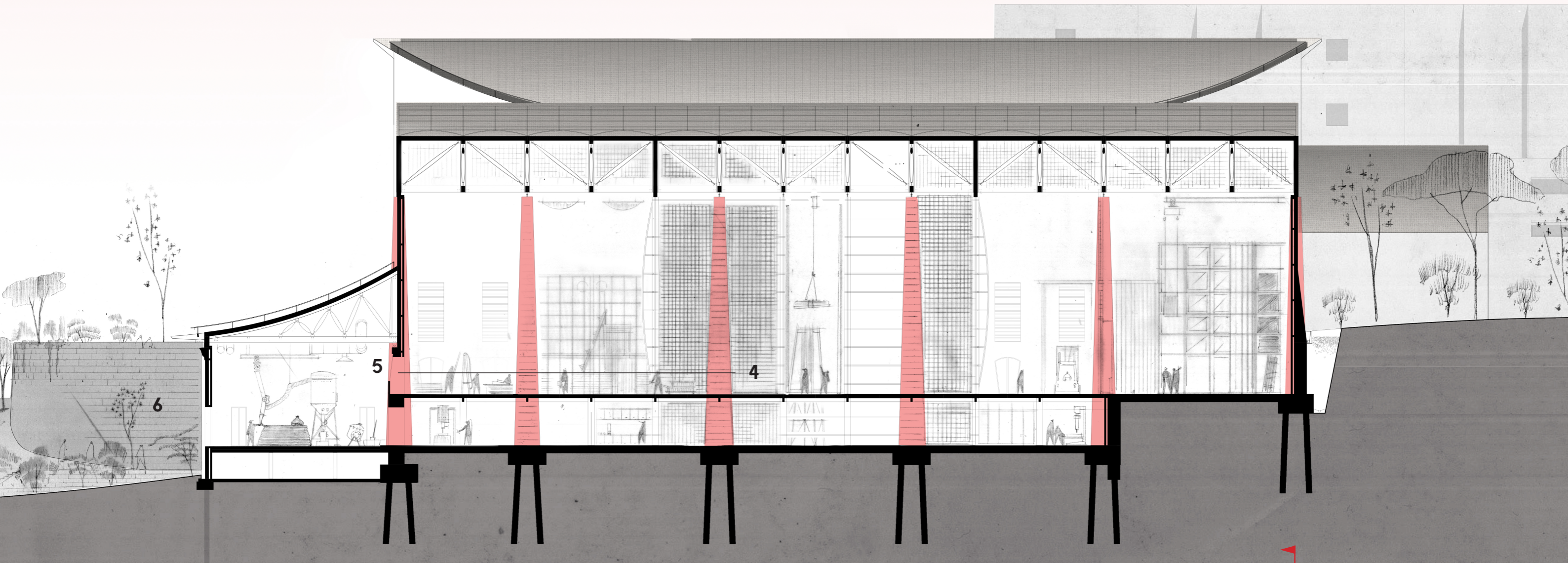


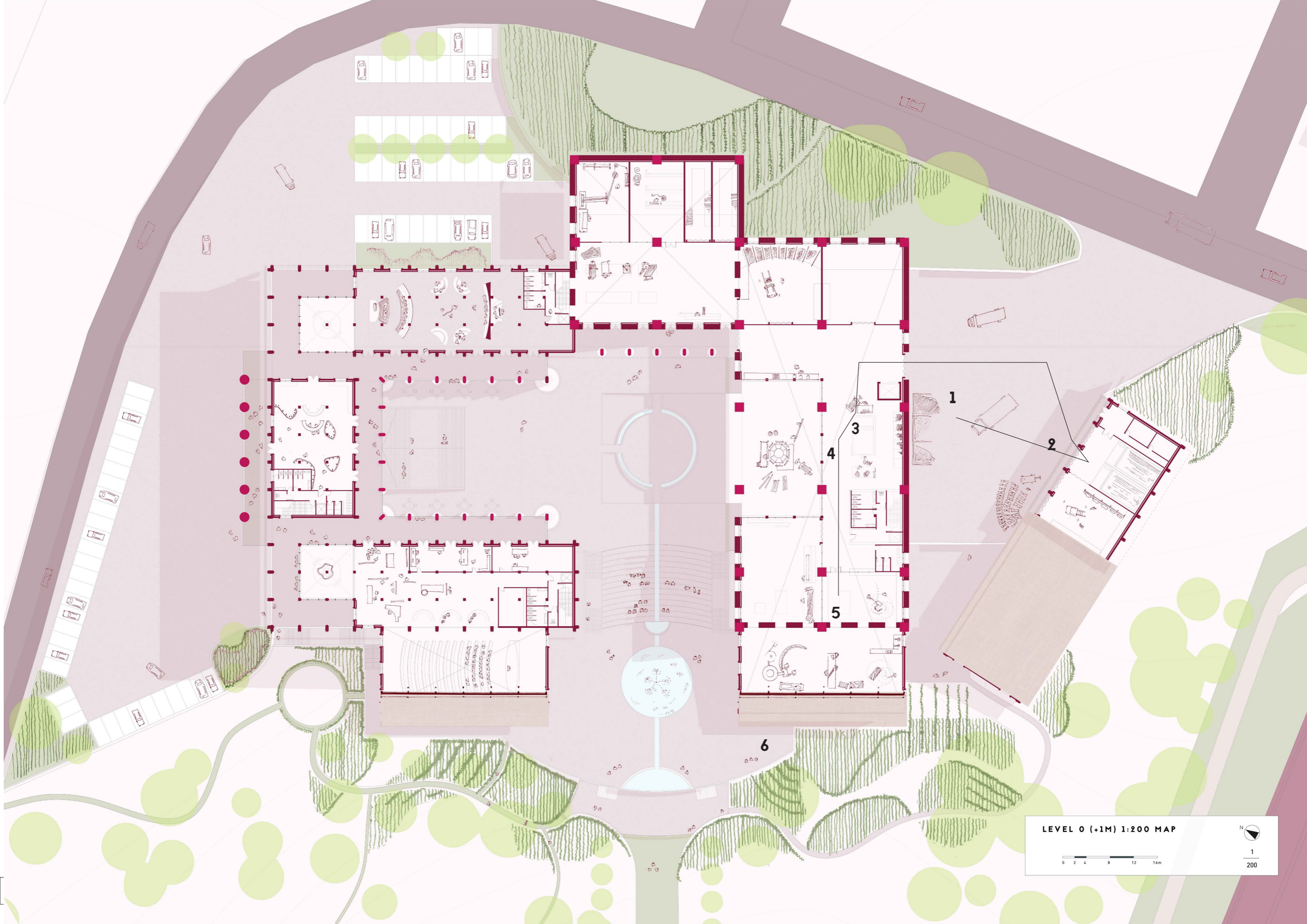
1  
500

**AND NOW THROUGH THE EYES  
OF A NEO-PRODUCER**







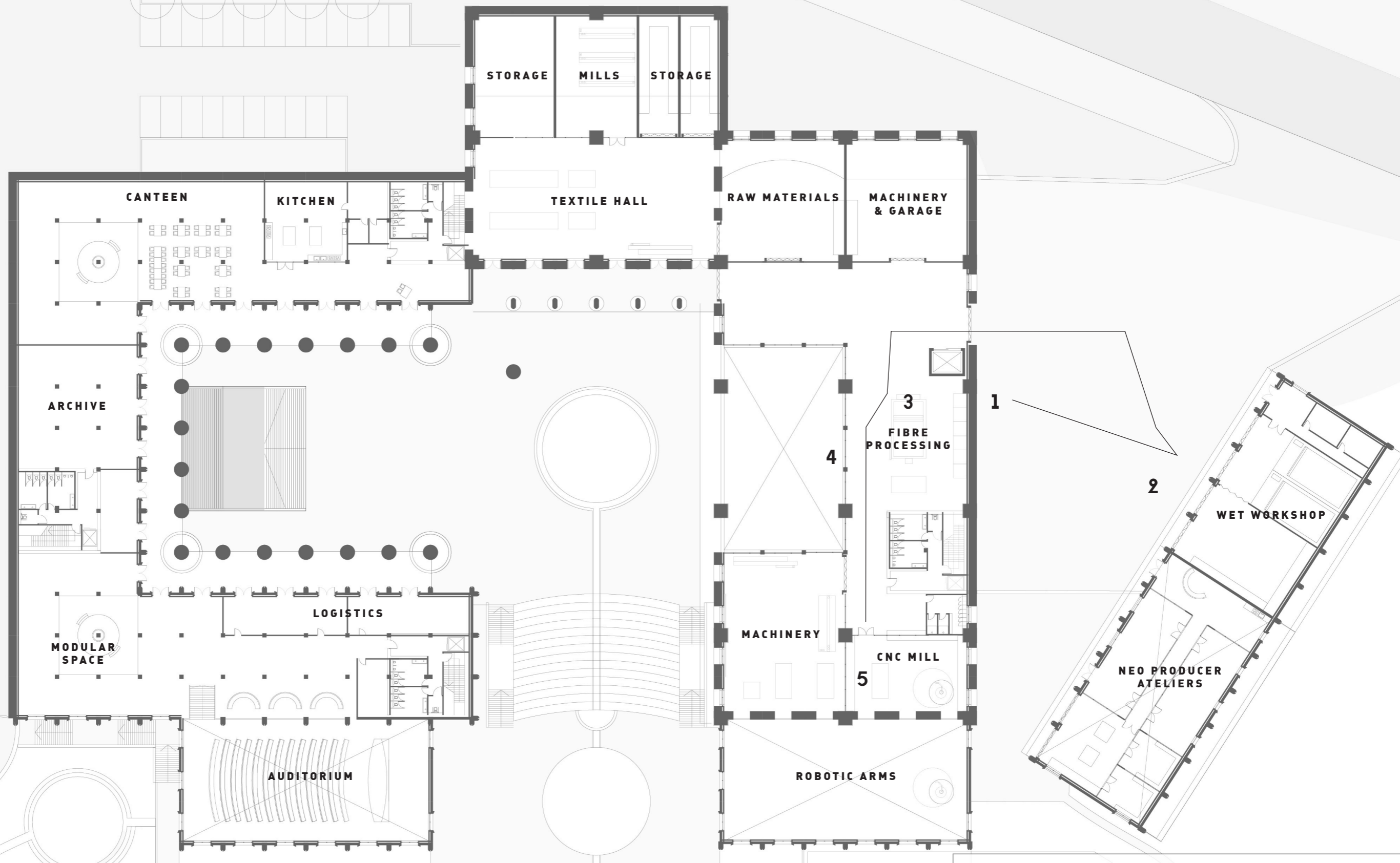


LEVEL 0 (+1M) 1:200 MAP

0 2 4 8 12 16m

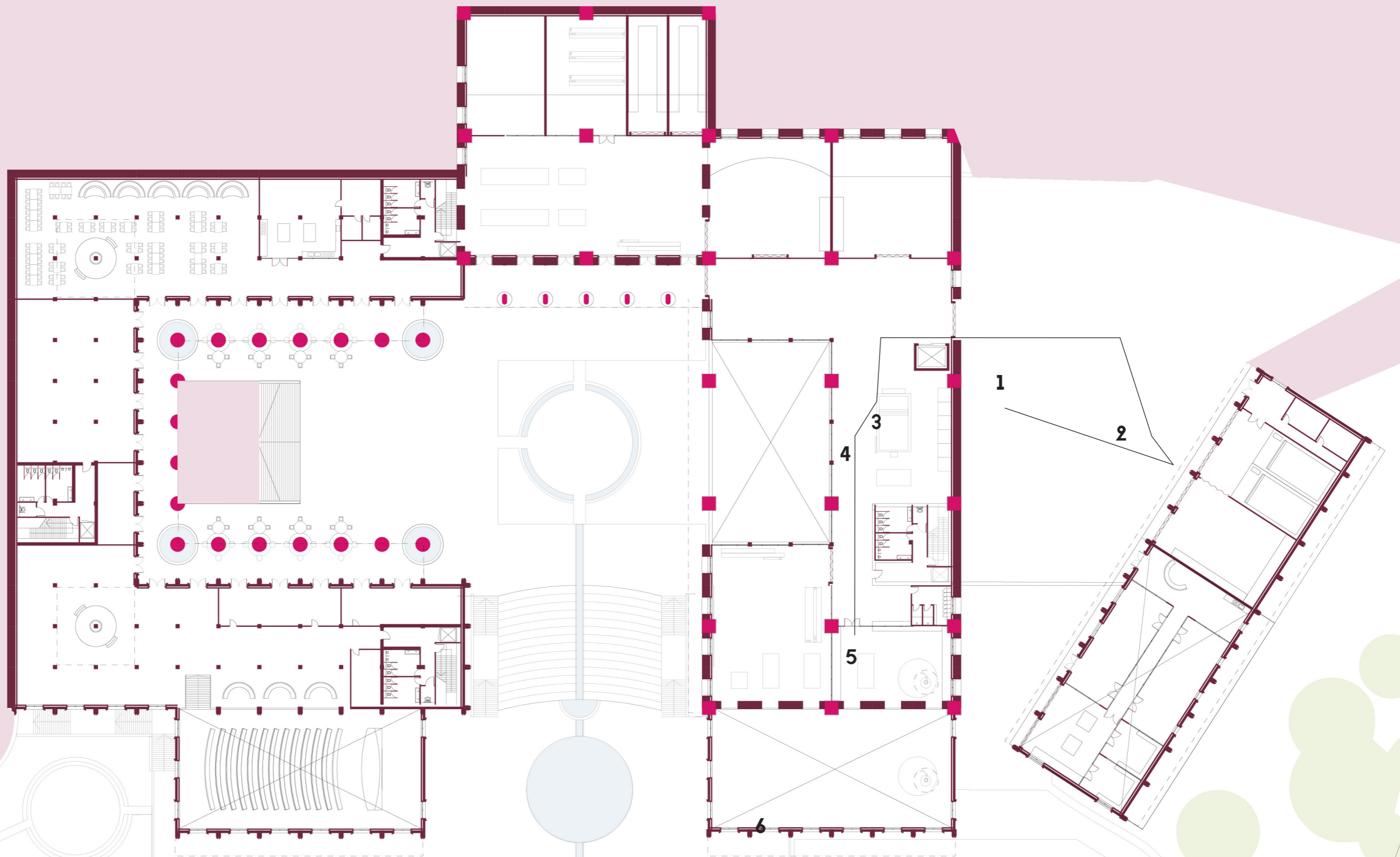


1/200



LEVEL -1 (-3.08M) 1:500 MAP

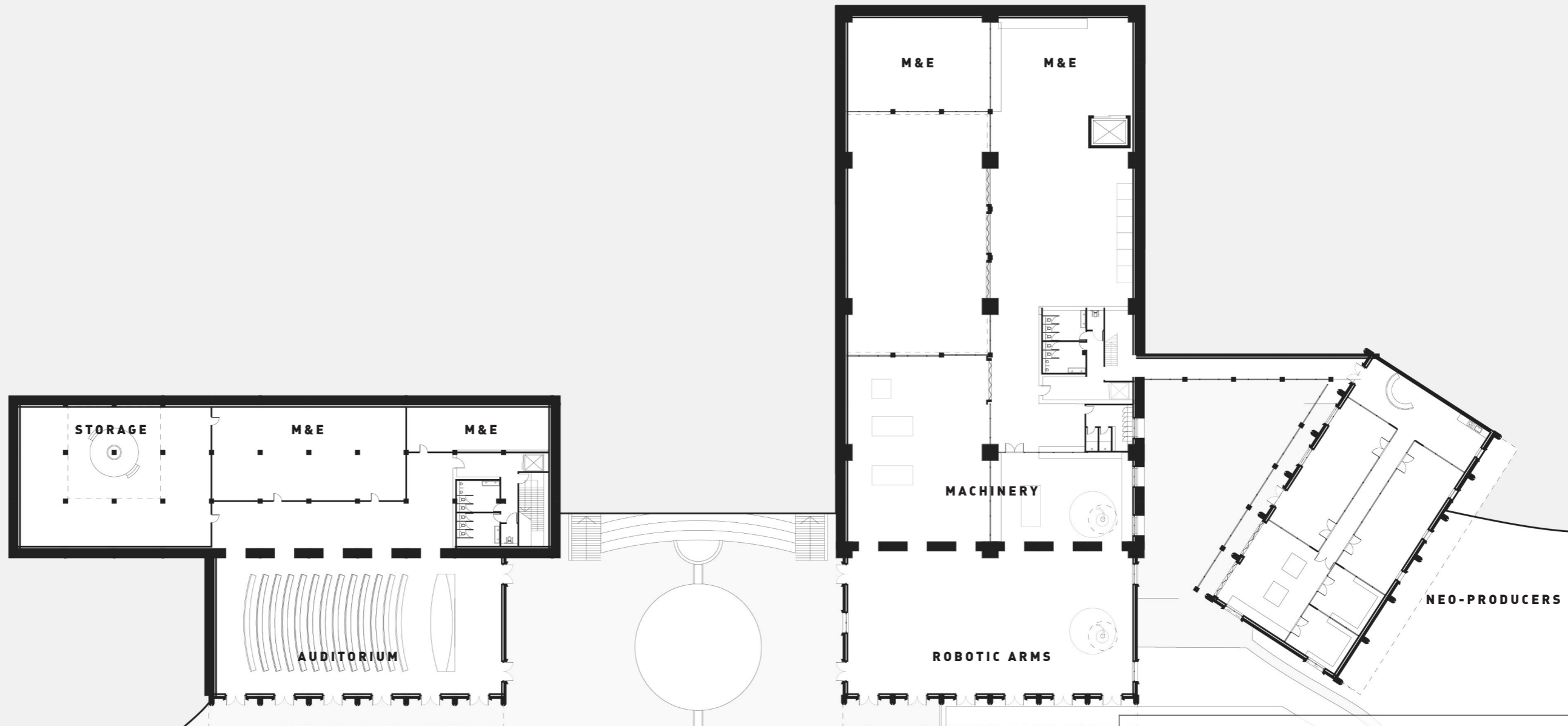




LEVEL -1 (-3.08M) 1:500 MAP

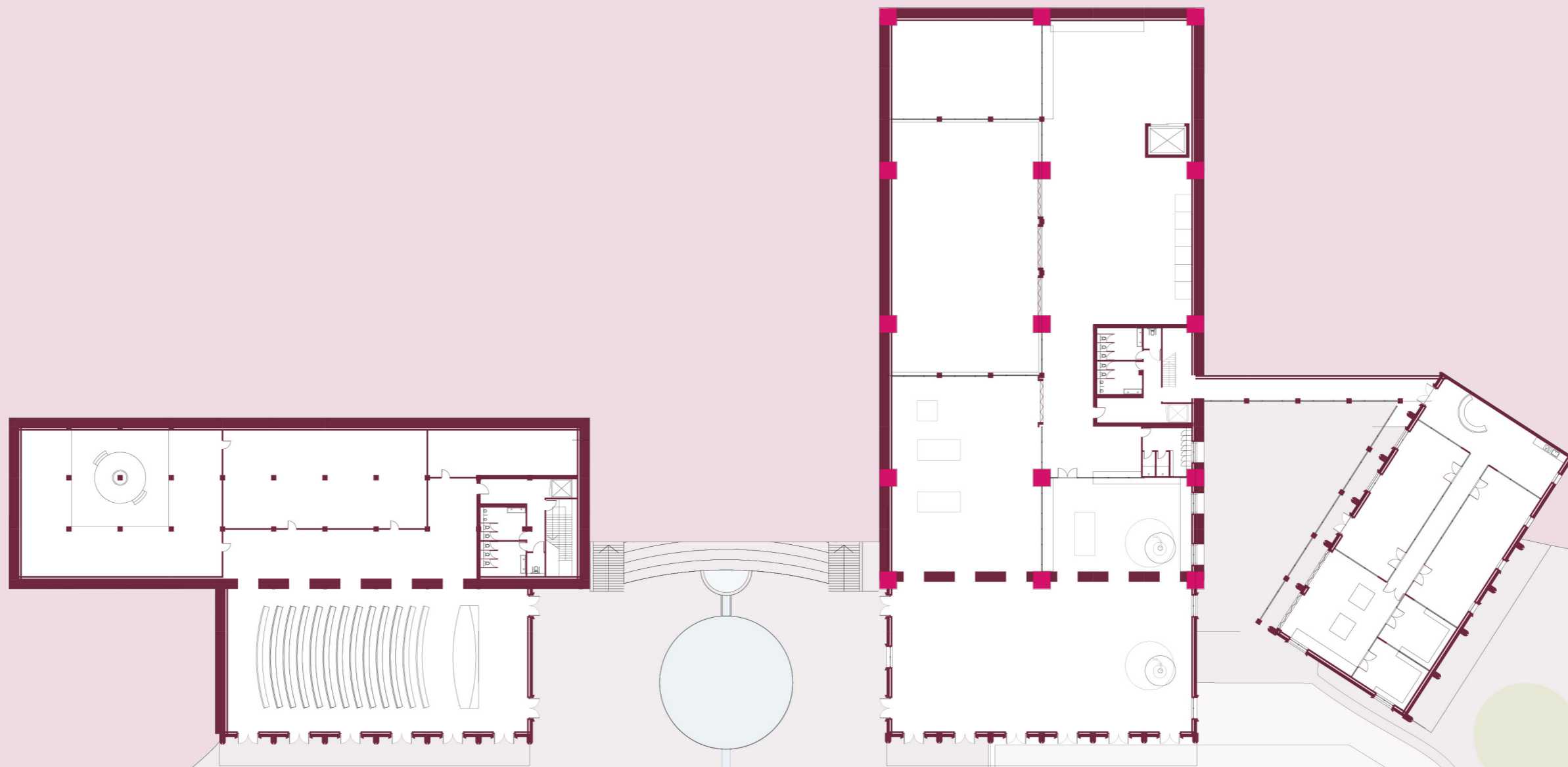


1  
500



LEVEL -2 (-7.16M) 1:500 MAP



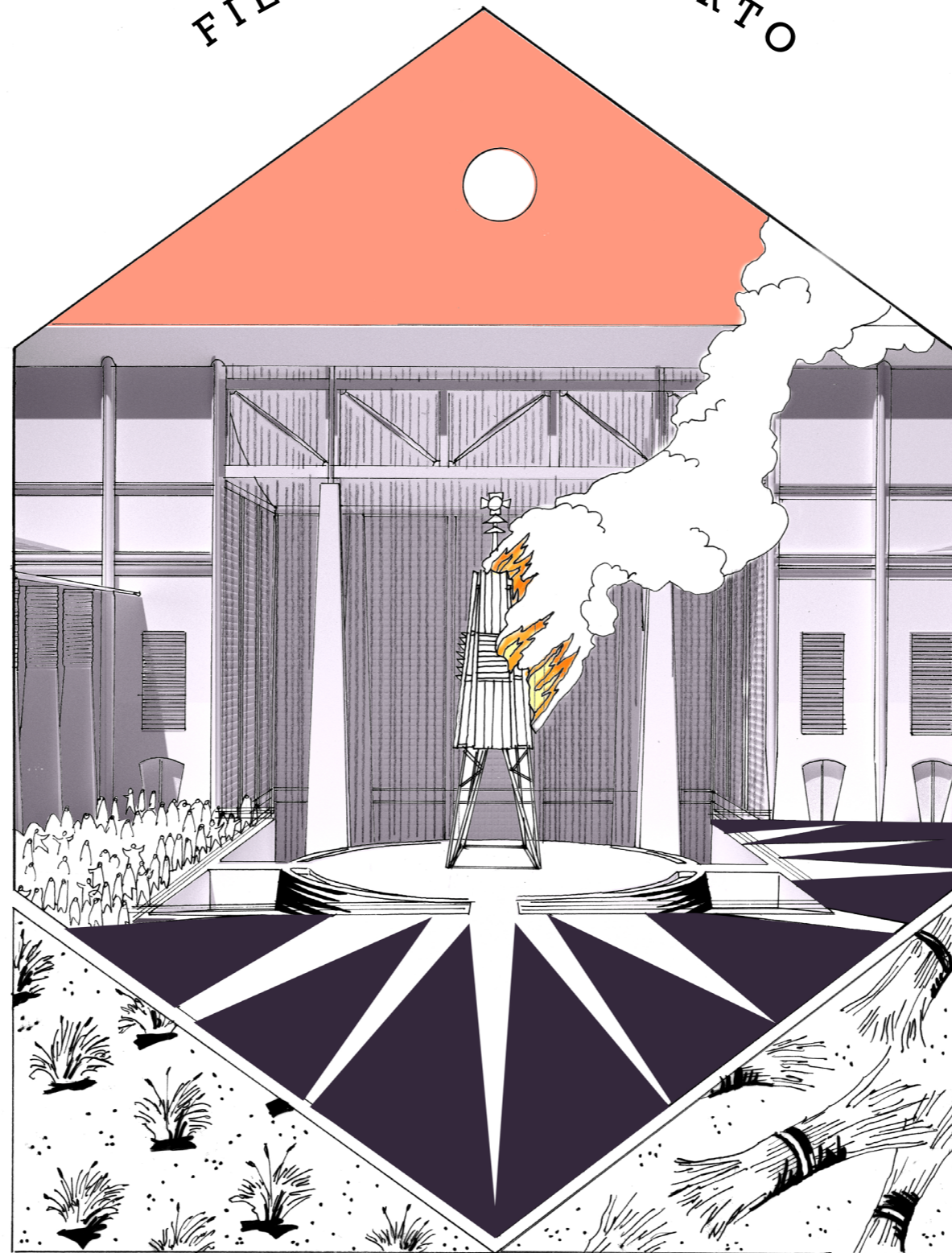


LEVEL -2 (-7.16M) 1:500 MAP



1  
500

FIESTA DEL ESPARTO

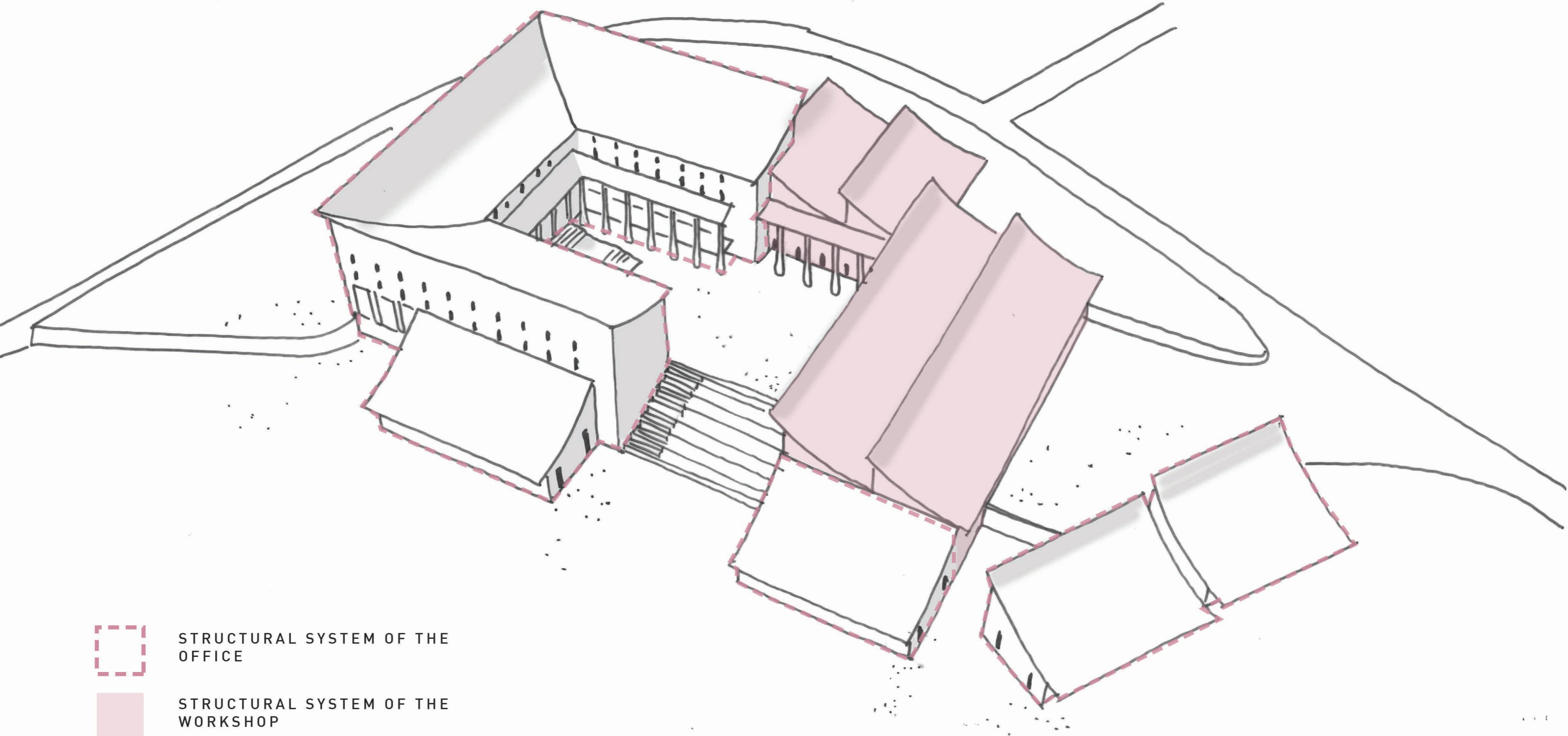


PLEITA

CIUDAD DEL ESPARTO  
MADRID

# ***STRUCTURAL PRINCIPLES***

PLEITA'S TWO STRUCTURAL SYSTEMS

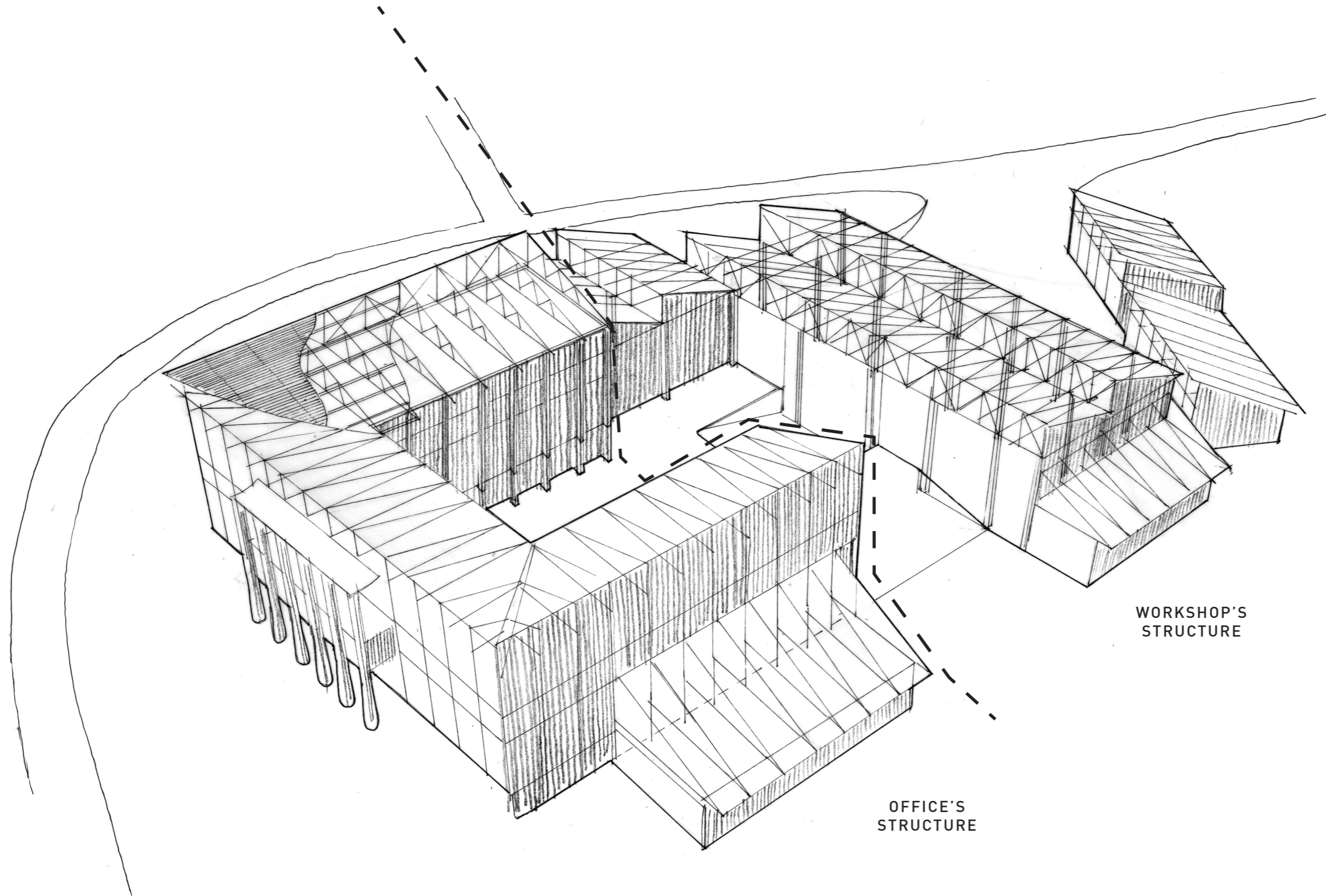


STRUCTURAL SYSTEM OF THE OFFICE

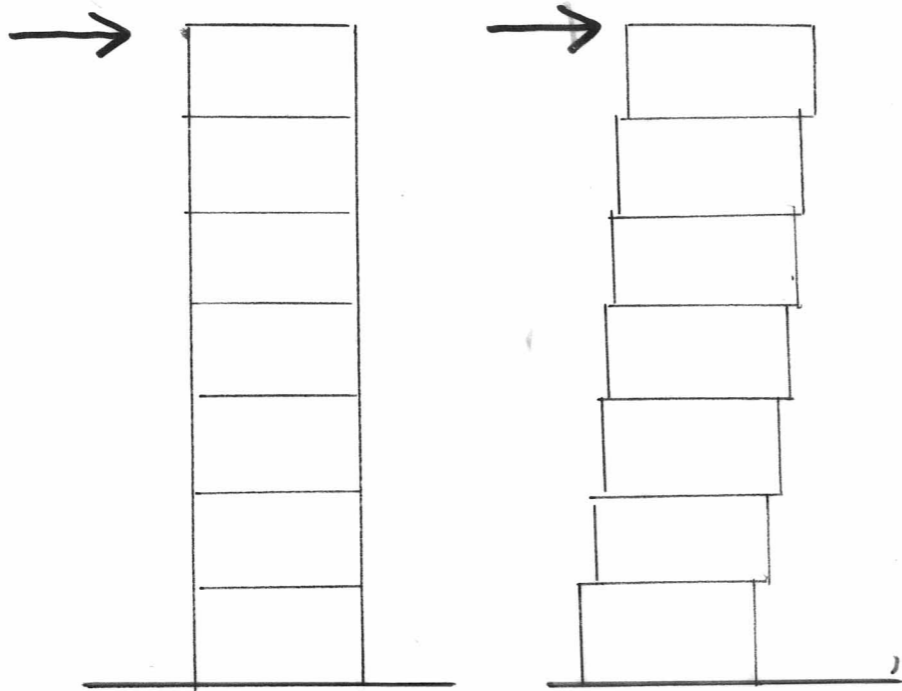


STRUCTURAL SYSTEM OF THE WORKSHOP

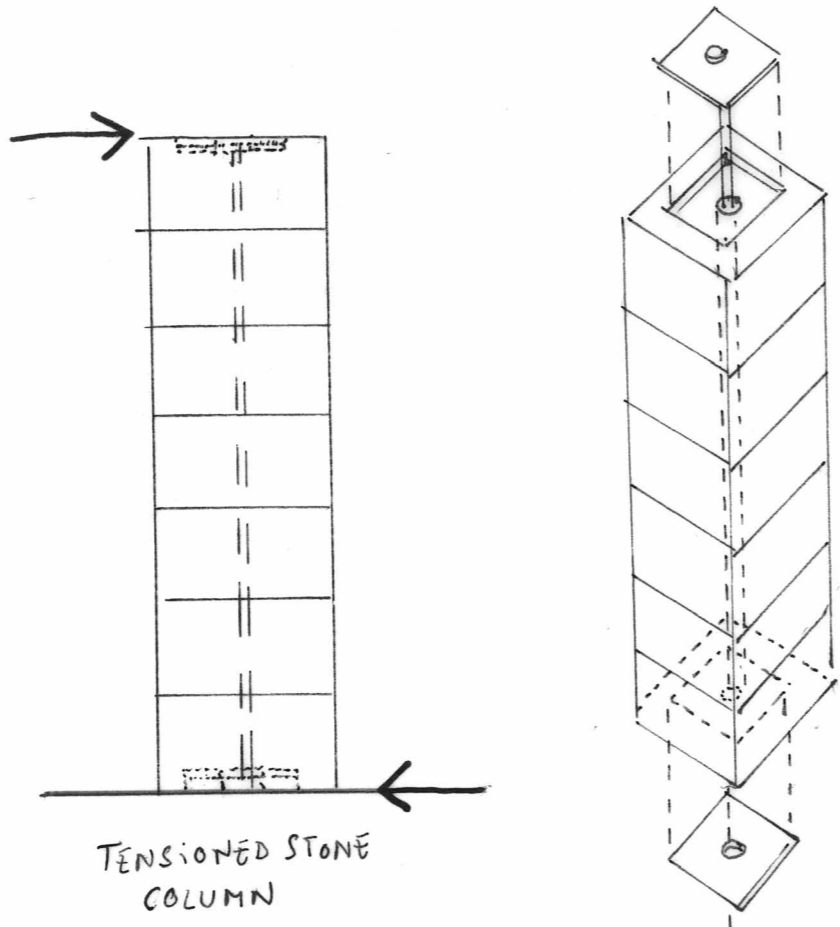
INTRODUCTION TO PLEITA'S STRUCTURE



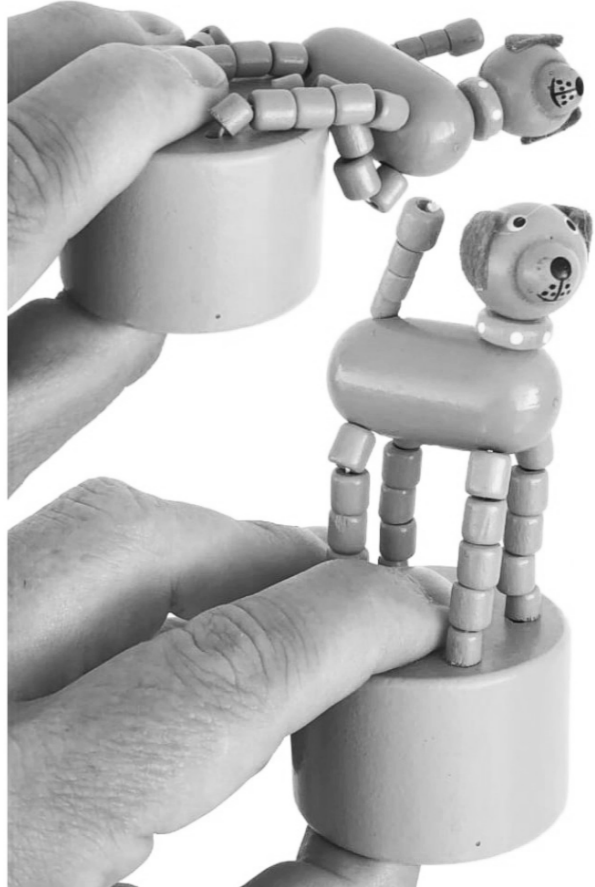
TENSIONED STONE:  
BASE PRINCIPLES



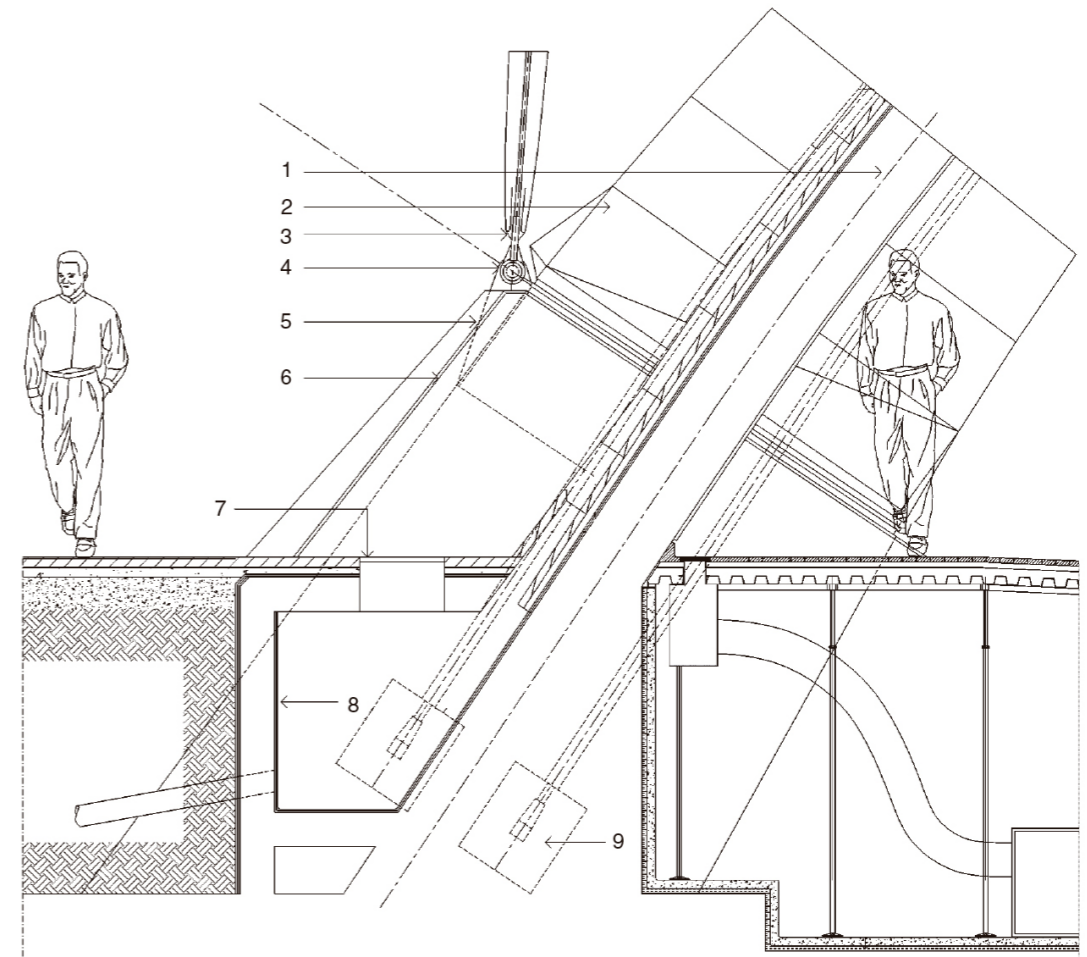
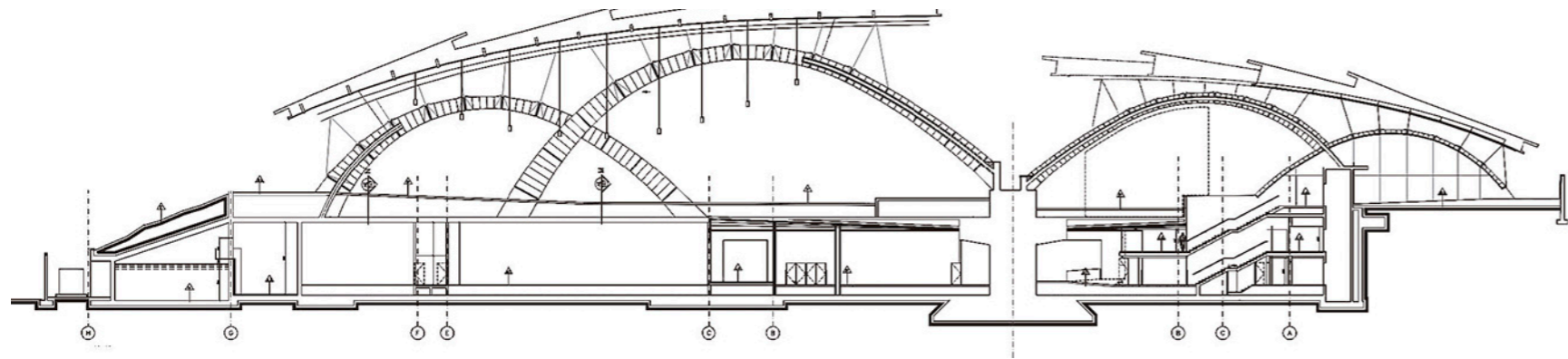
REGULAR STONE  
COLUMN

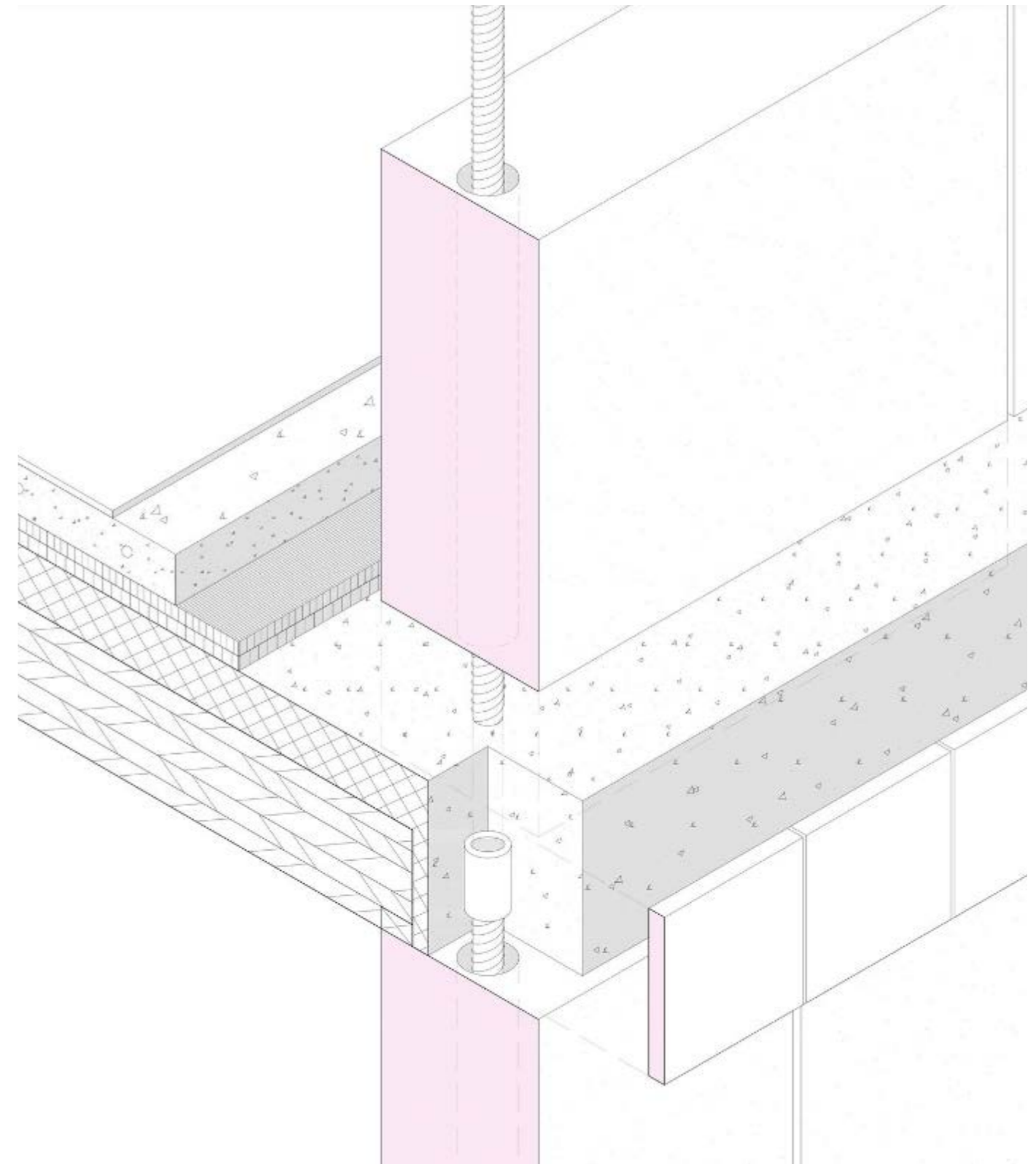


TENSIONED STONE  
COLUMN



PADRE PIO CHURCH, RENZO PIANO BUILDING  
WORKSHOP, 2004



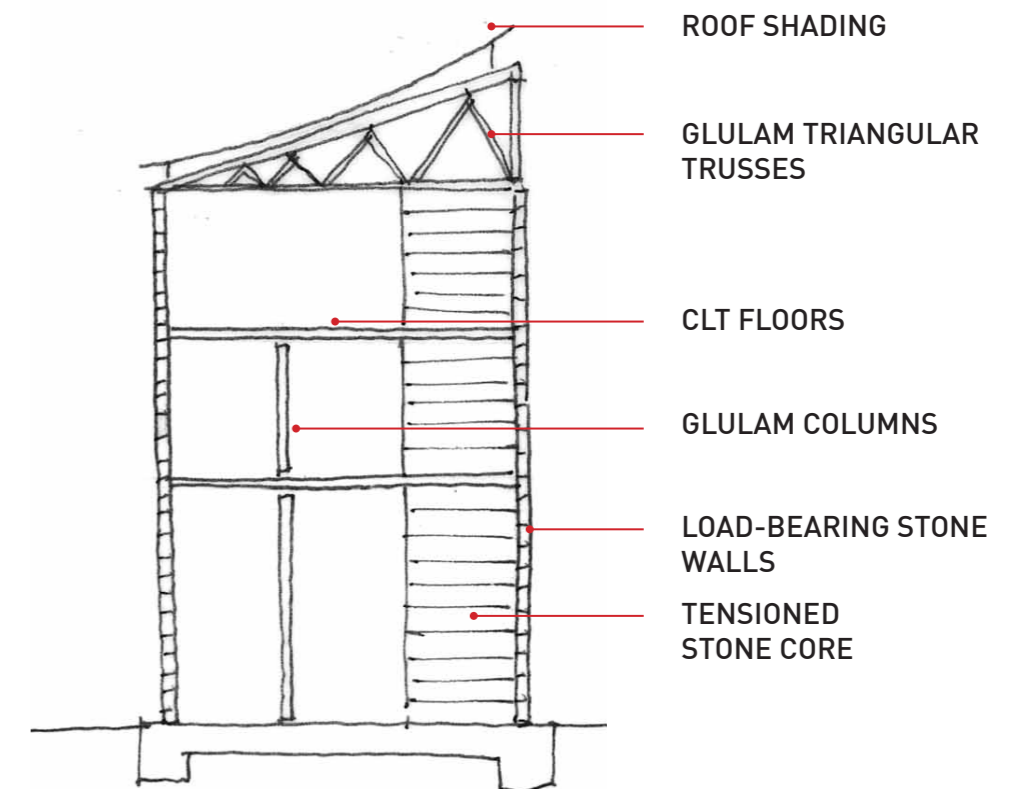
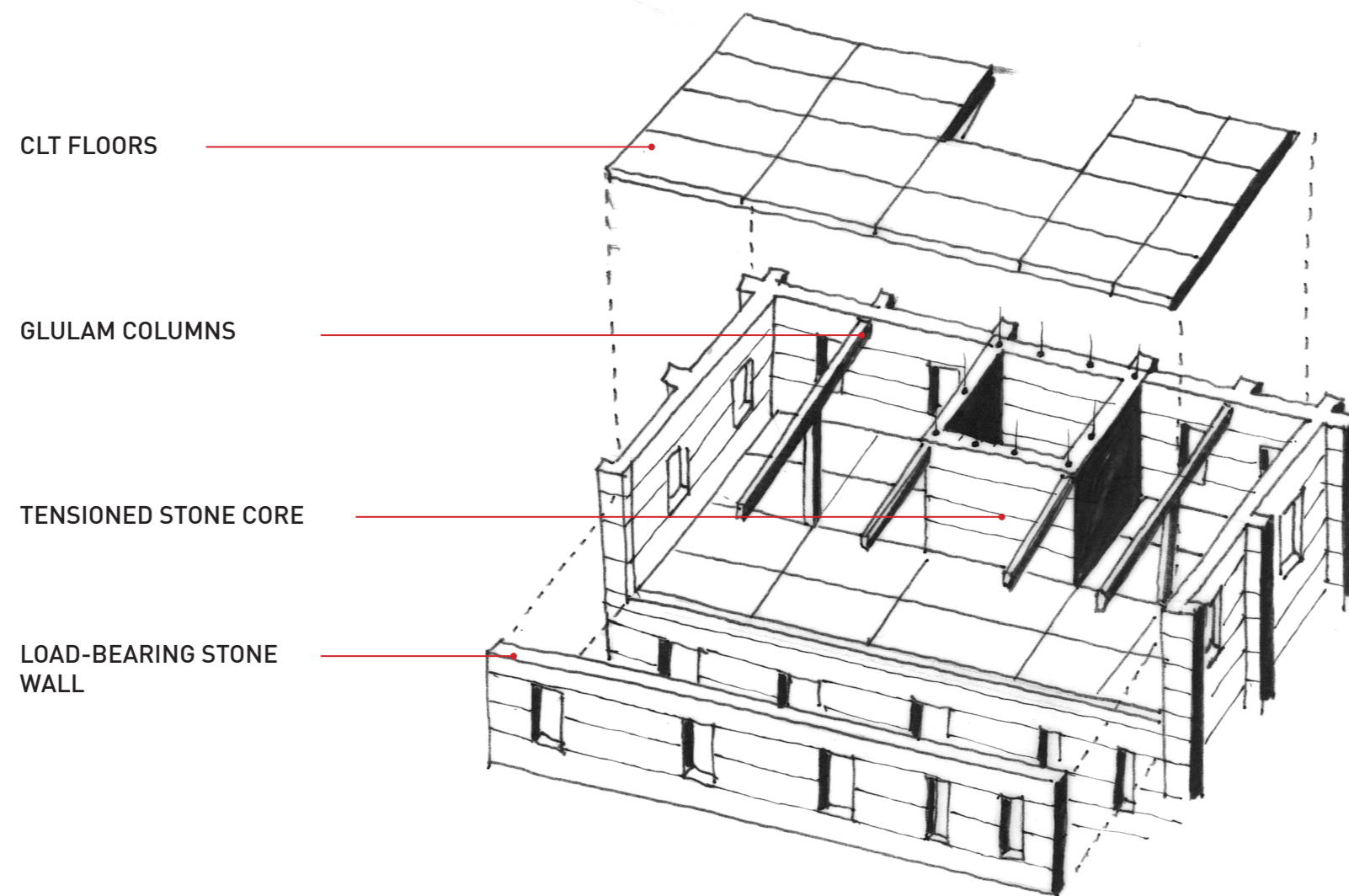


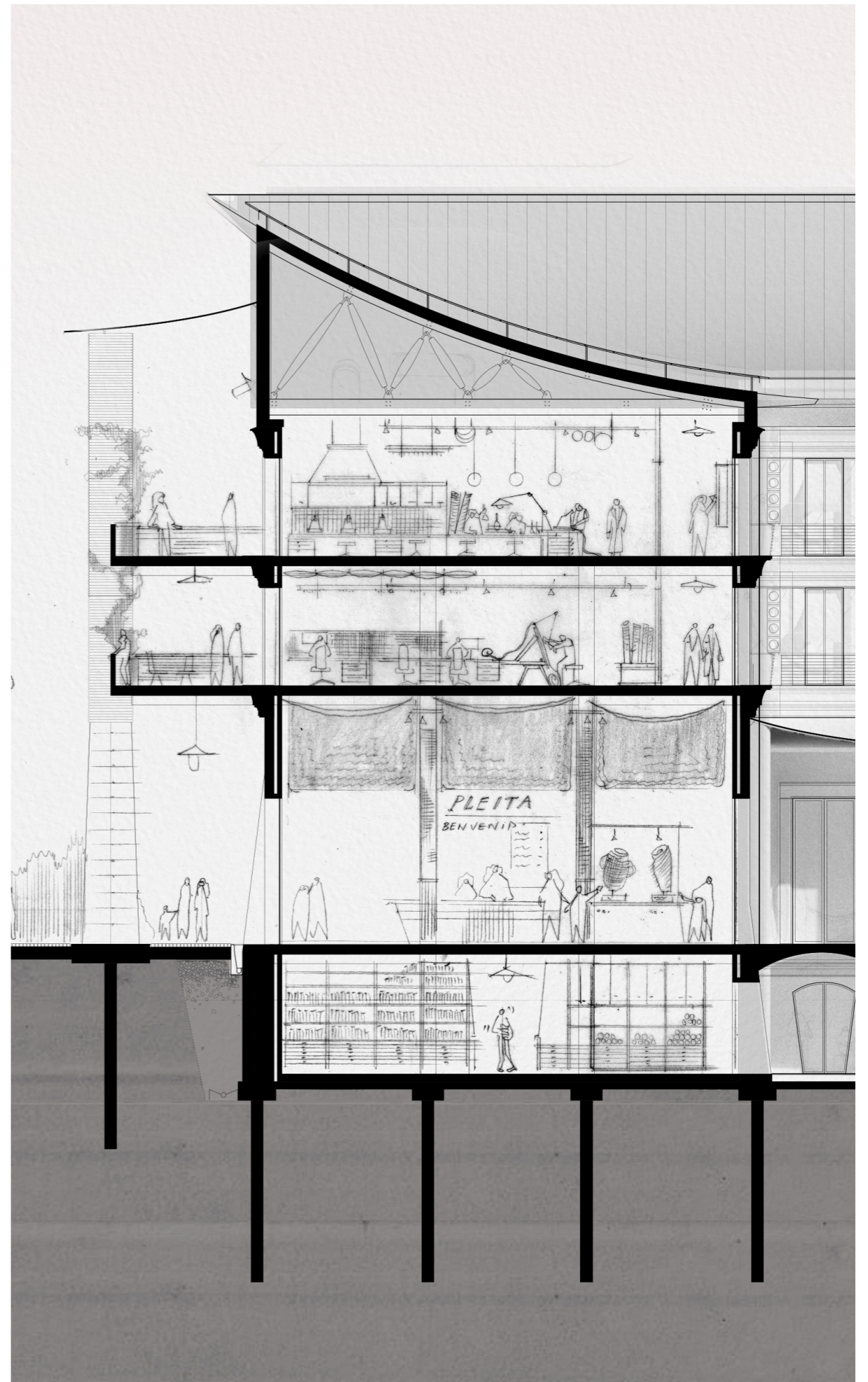
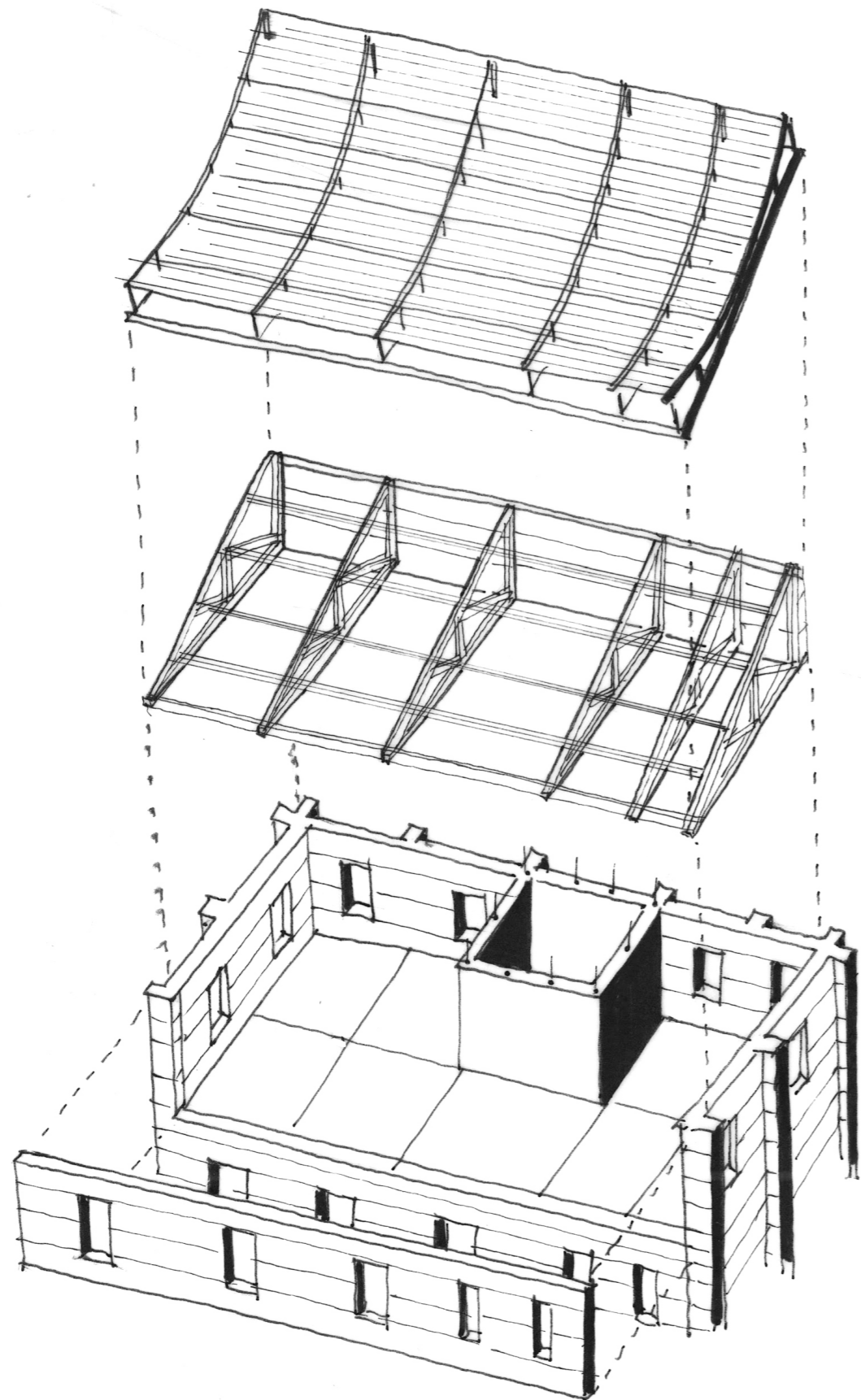
THE TENSIONED STONE CORE  
(THE CONCRETE LIFT CORE IS INDEPENDENT)

LA COULOUVRENIERE RESIDENTIAL BUILDING,  
ATELIER ARCHIPLEIN, GENEVA,  
2021

# 1

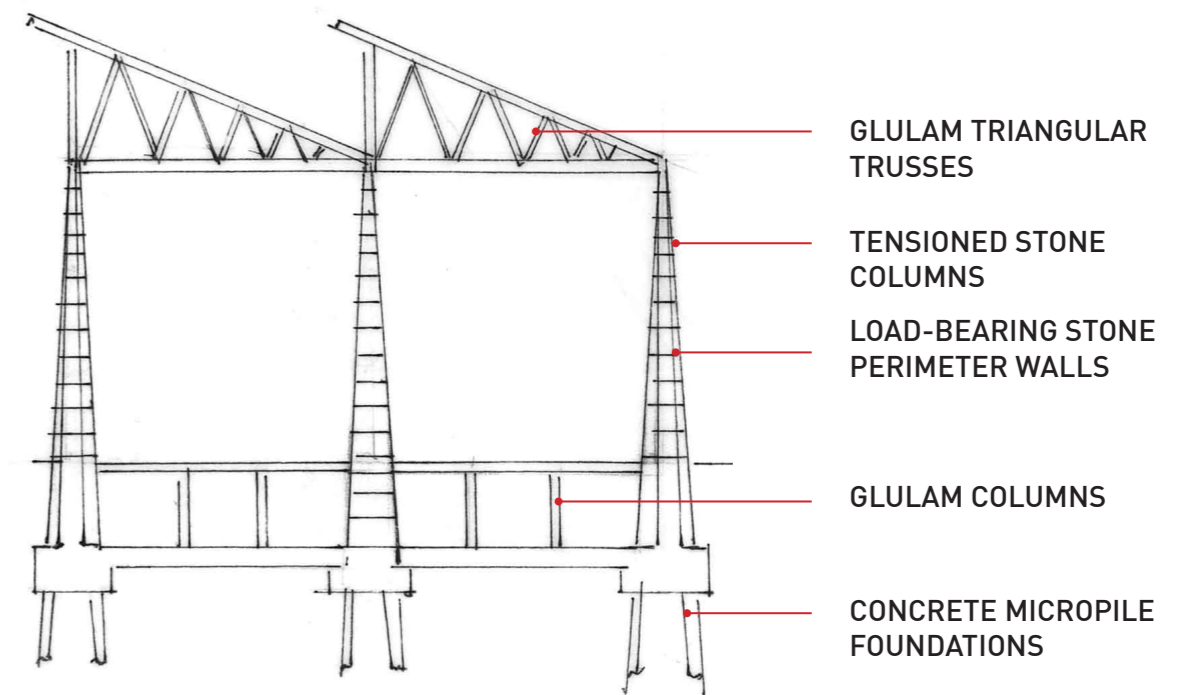
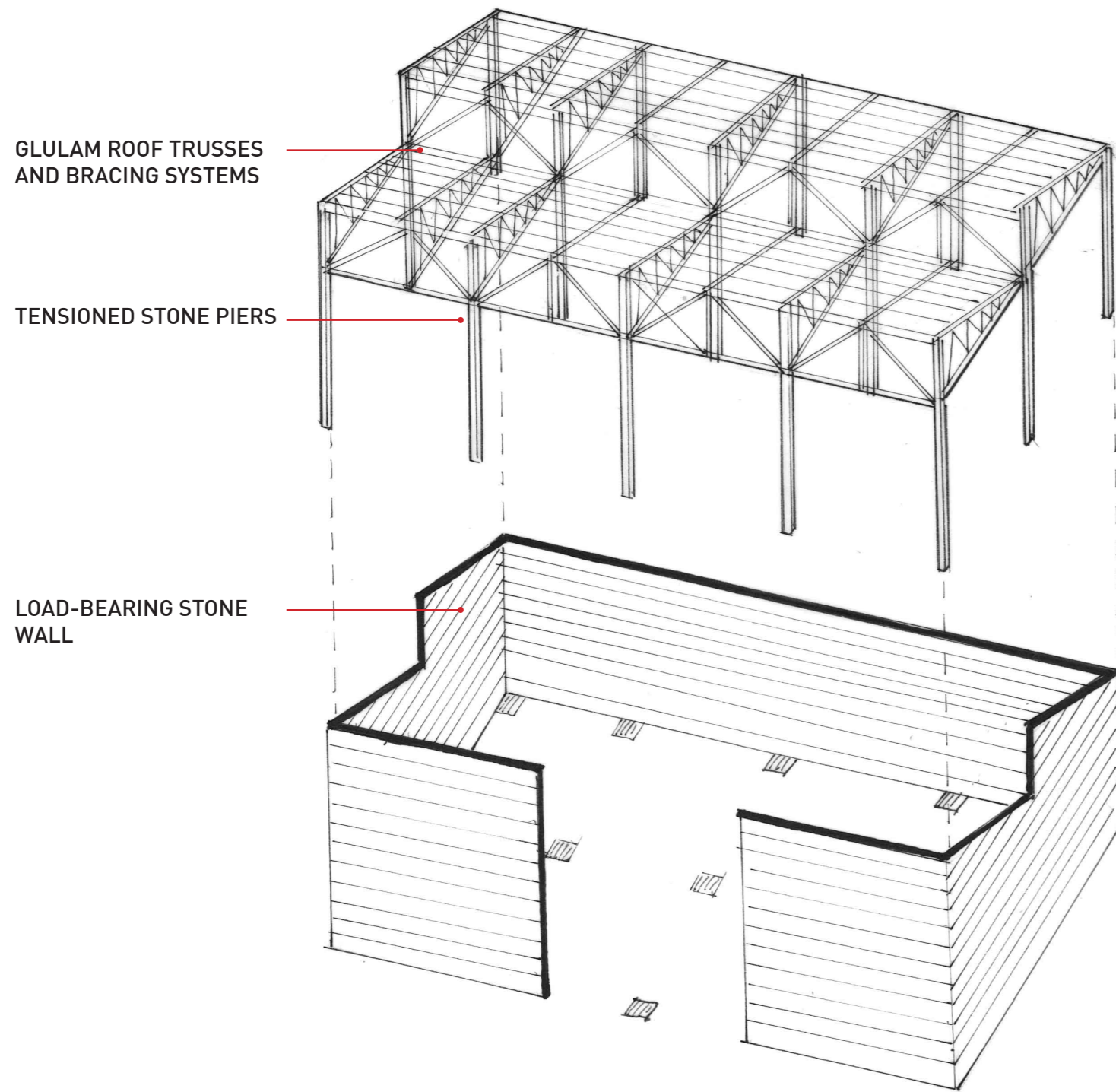
## STRUCTURAL SYSTEM OF THE OFFICE

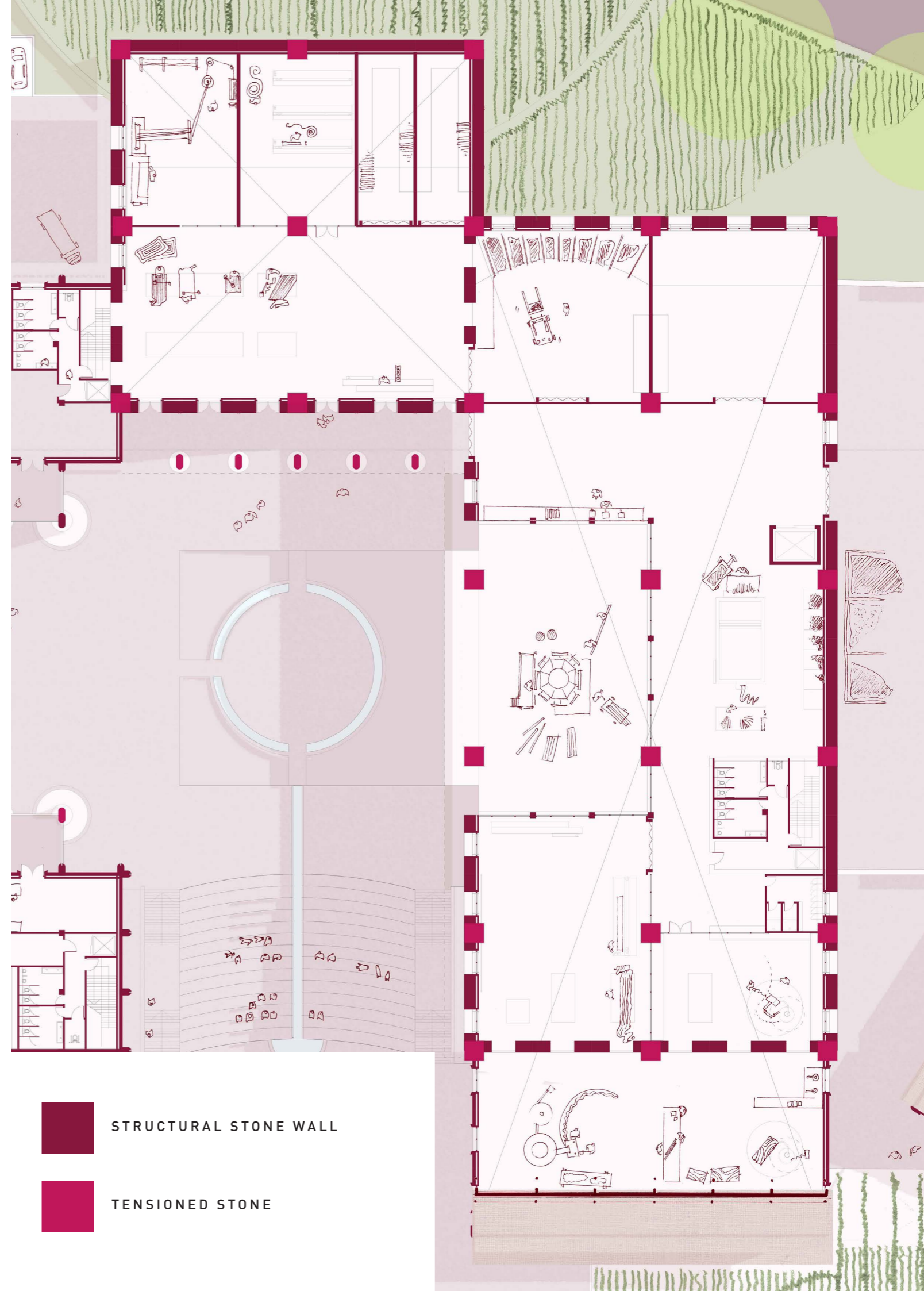
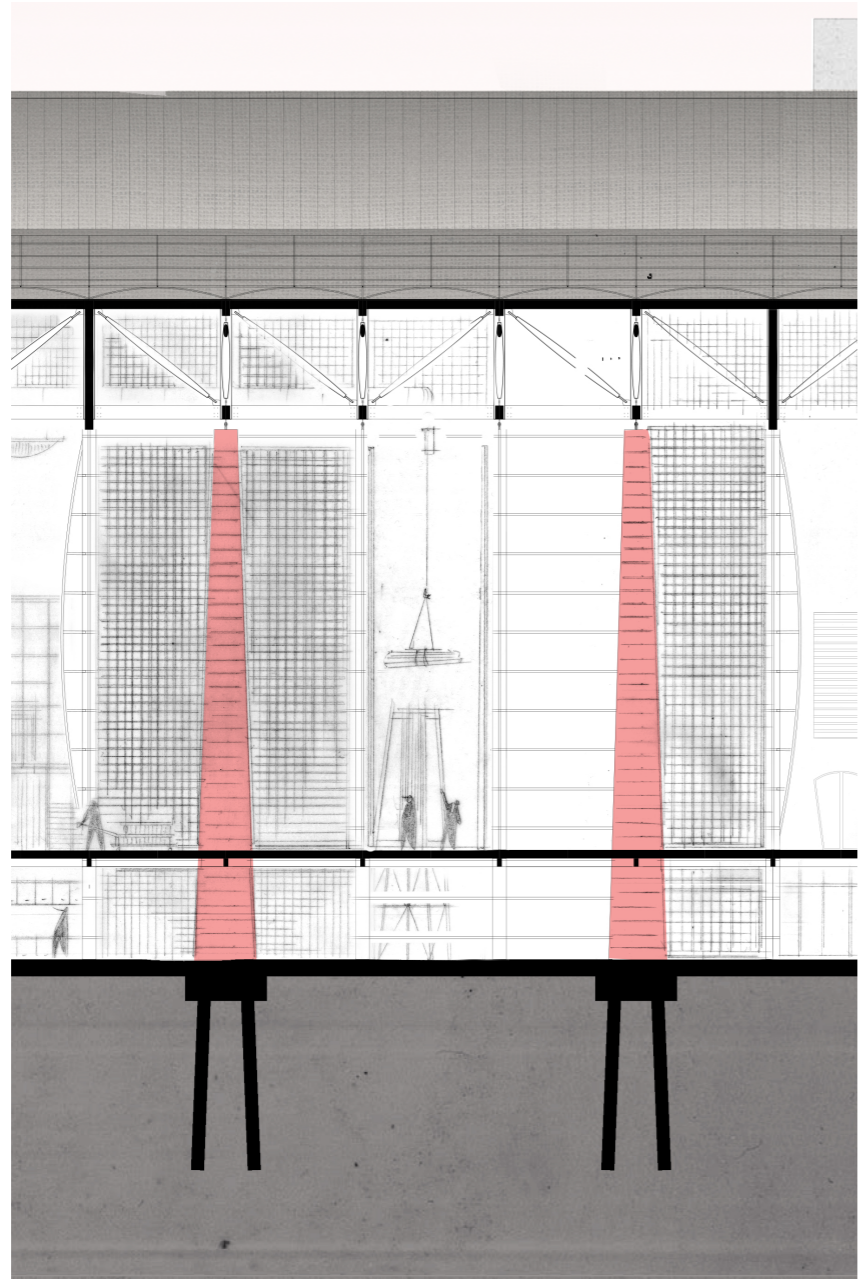








## STRUCTURAL SYSTEM OF THE WORKSHOP





-  STRUCTURAL STONE WALL
-  TENSIONED STONE

***THE ARCHITECTURAL LANGUAGE***

## ITS GUIDING PRINCIPLES

1

*HYPER-LOCAL*

5

*SELECTIVE  
MASS-CUSTOMIZATION*

2

*STANDARDIZE FOR  
MASS-PRODUCTION*

6

*ORDER AND PROPORTION*

3

*FOLLOWING  
MATERIAL PROPERTIES*

7

*OLD MATERIALS,  
NEW TECHNIQUES*

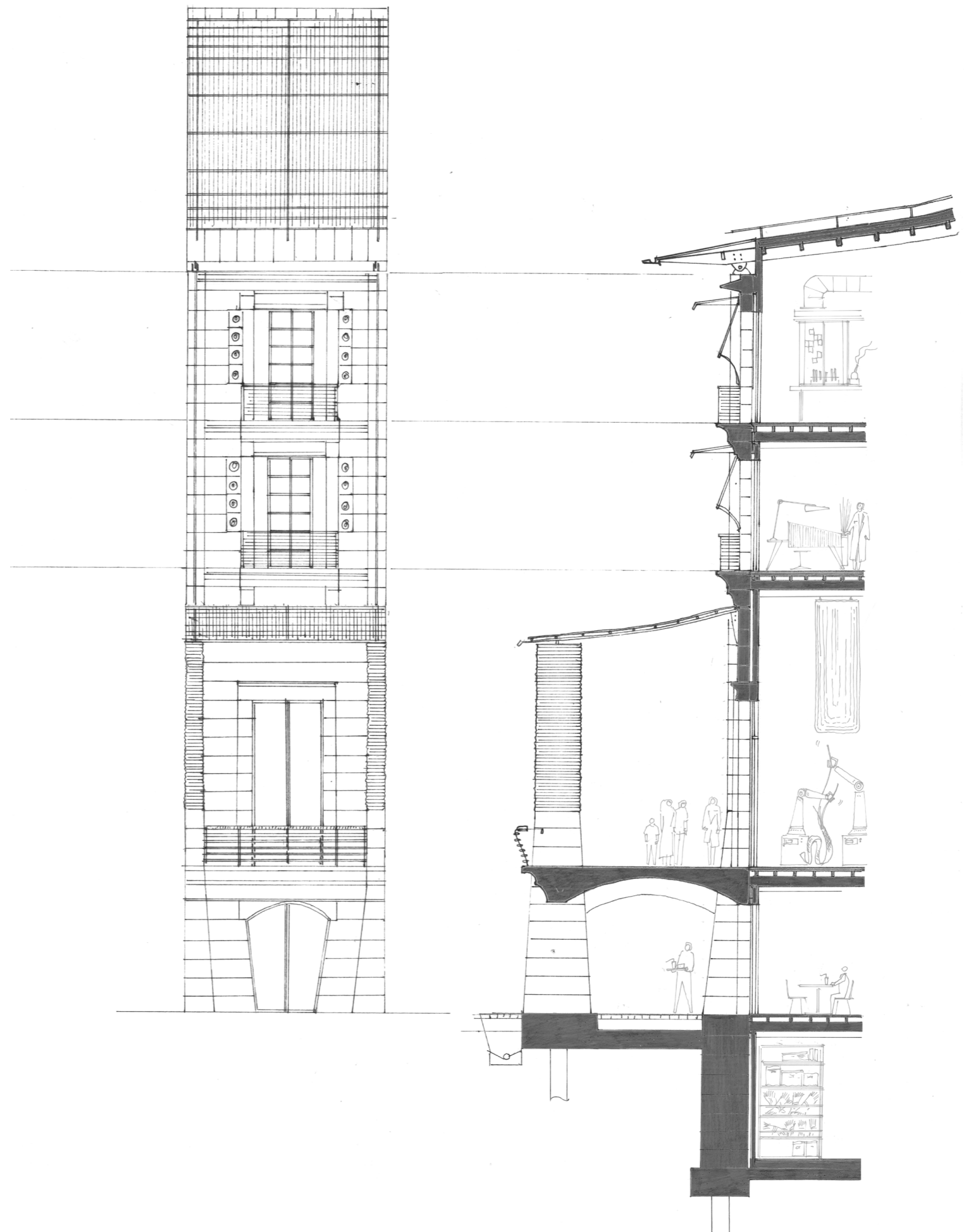
4

*MATERIAL INNOVATION*

1

# HYPER-LOCAL

LOCAL TYPOLOGIES, REINTERPRETED: THE COURTYARD



USE OF LOCAL MATERIALS

LIMESTONE OF COLMENAR



WOVEN ESPARTO



CLT



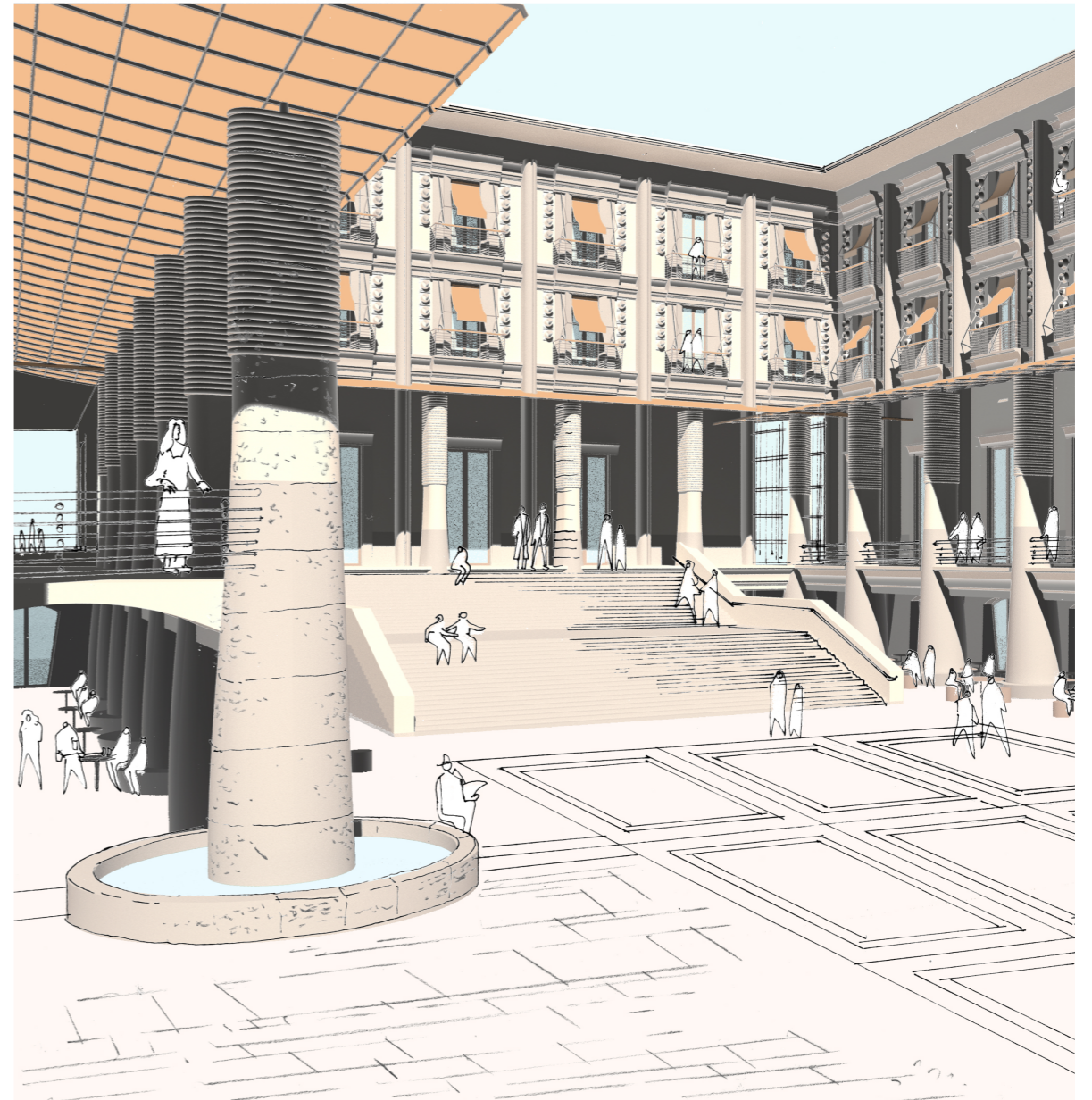
GRANITE OF ALPEDRETE



ESPARTOCRETE



GLULAM





STANDARDIZE FOR  
MASS-PRODUCTION

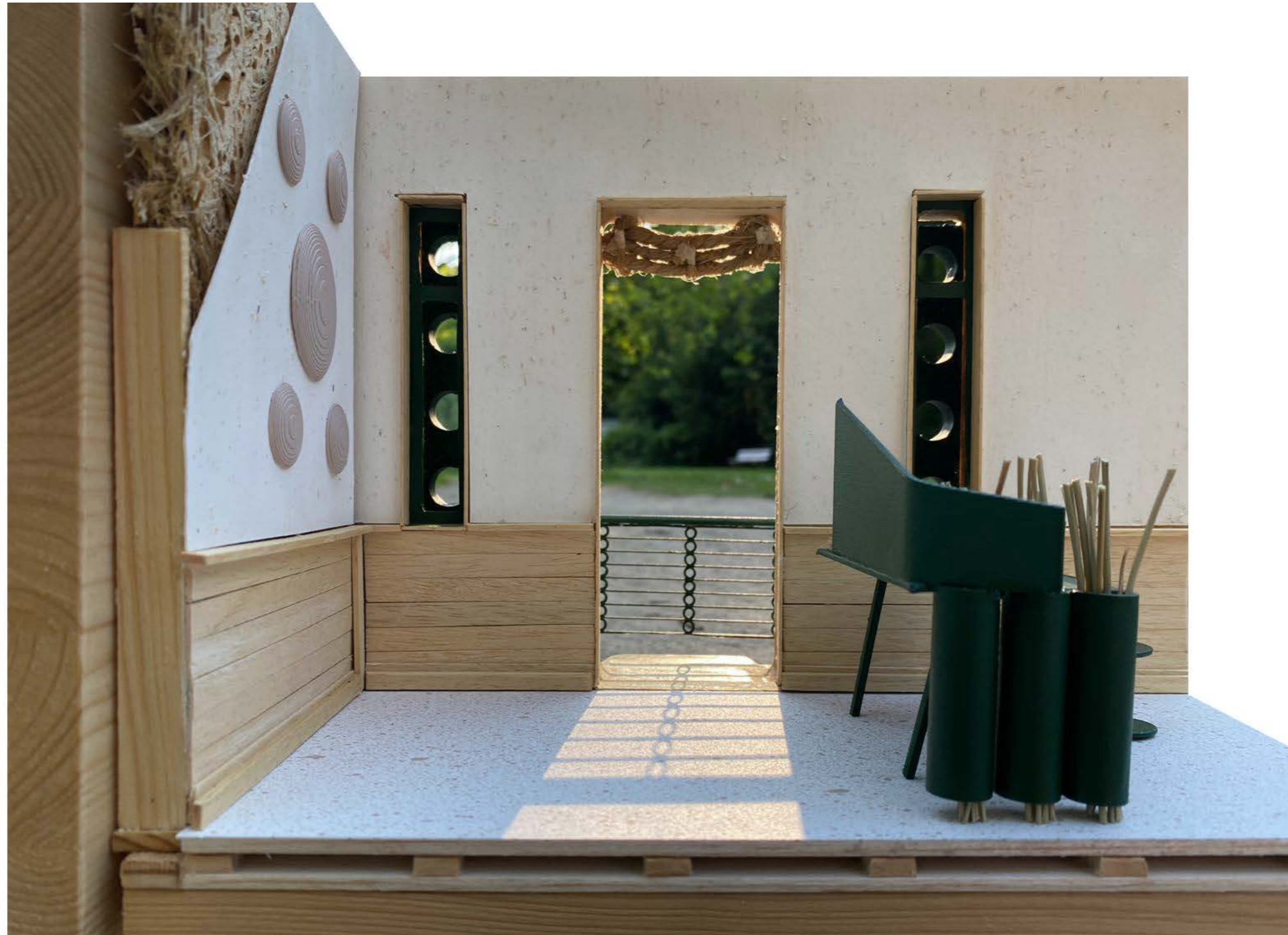
MASS PRODUCED FACADE PARTS



3

## FOLLOWING MATERIAL PROPERTIES

THE WAINSCOTING: RESPECT FOR THE MATERIAL  
AND ITS CHARACTERISTICS



4

MATERIAL INNOVATION

A NEW BUILDING MATERIAL:  
"ESPARTO-CRETE"



WINNING RECIPE:

- 1.5 VOLUME ESPARTO
- 1 VOLUME LIME
- 1.5 VOLUME WATER

5

*SELECTIVE  
MASS-CUSTOMIZATION*

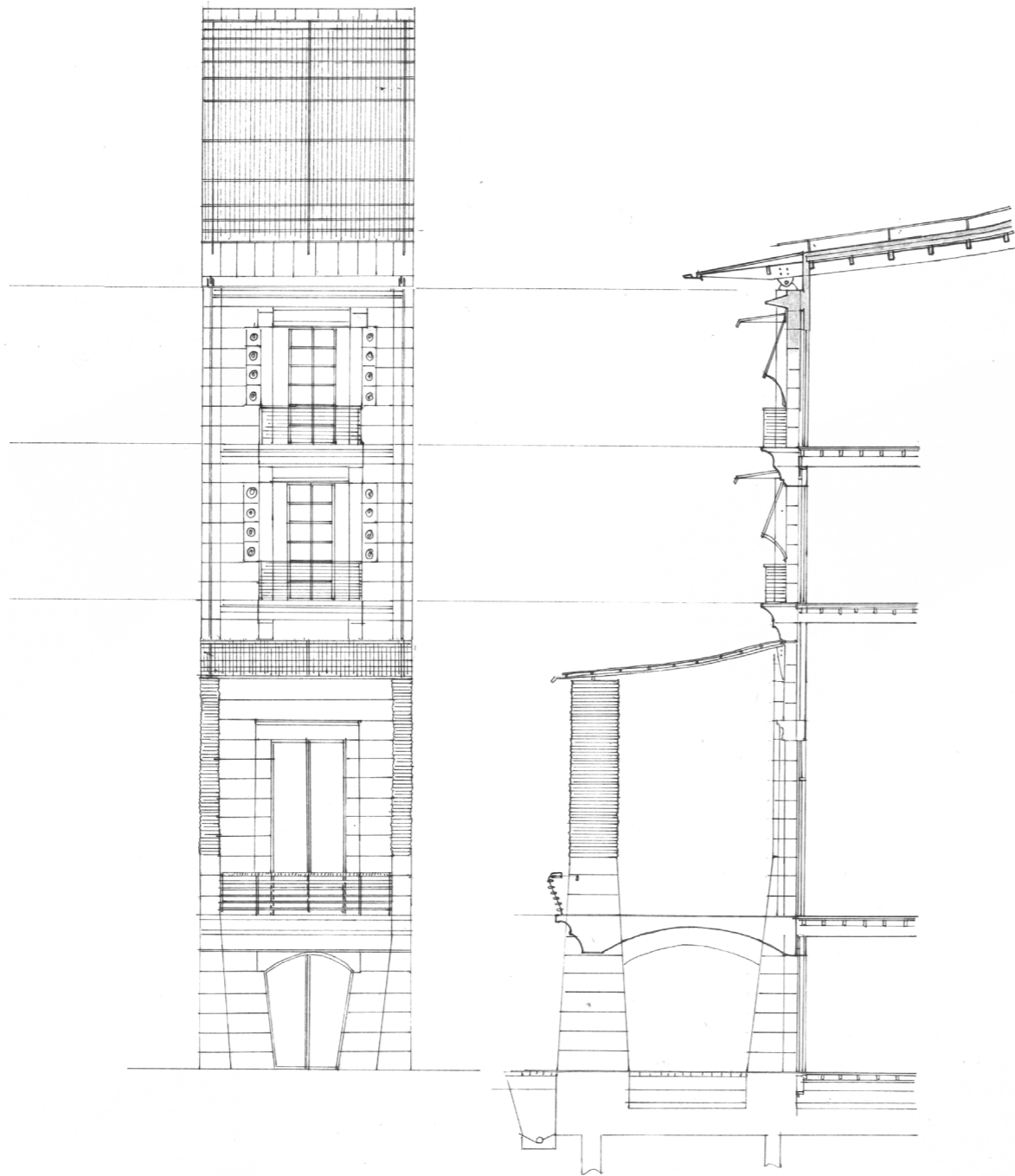
TOUCHES TO IMPROVE DESIGN: 3D PRINTED  
ESPARTO ACOUSTIC DAMPENERS



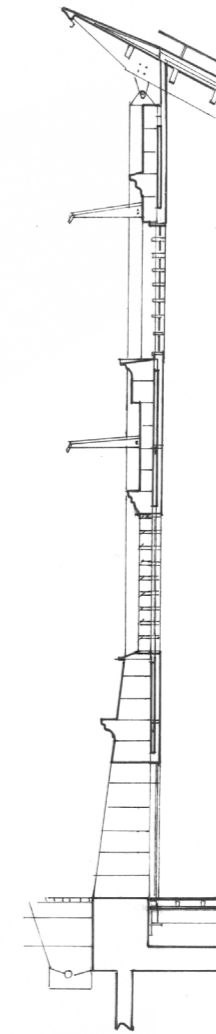
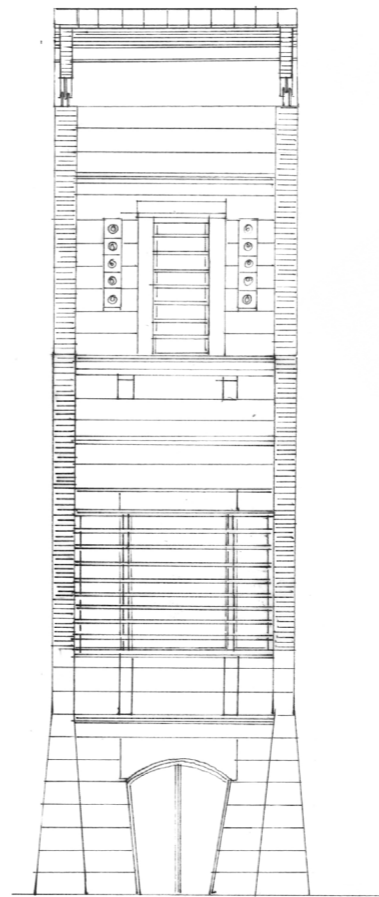
6

ORDER AND PROPORTION

USING THE SAME PROPORTIONS THROUGHOUT TO UNIFY DESIGN



1:50 OFFICE ELEVATION AND SECTION

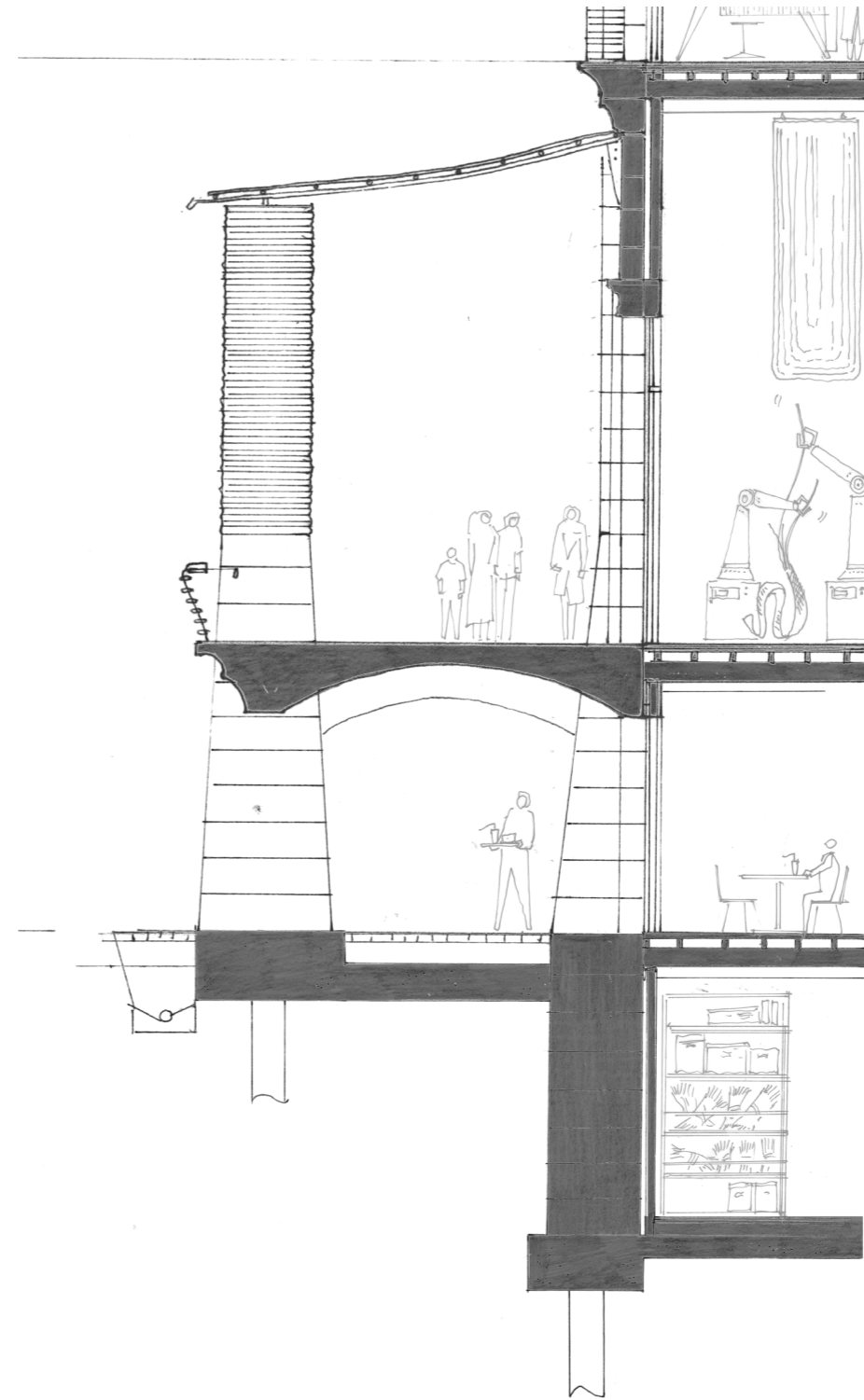
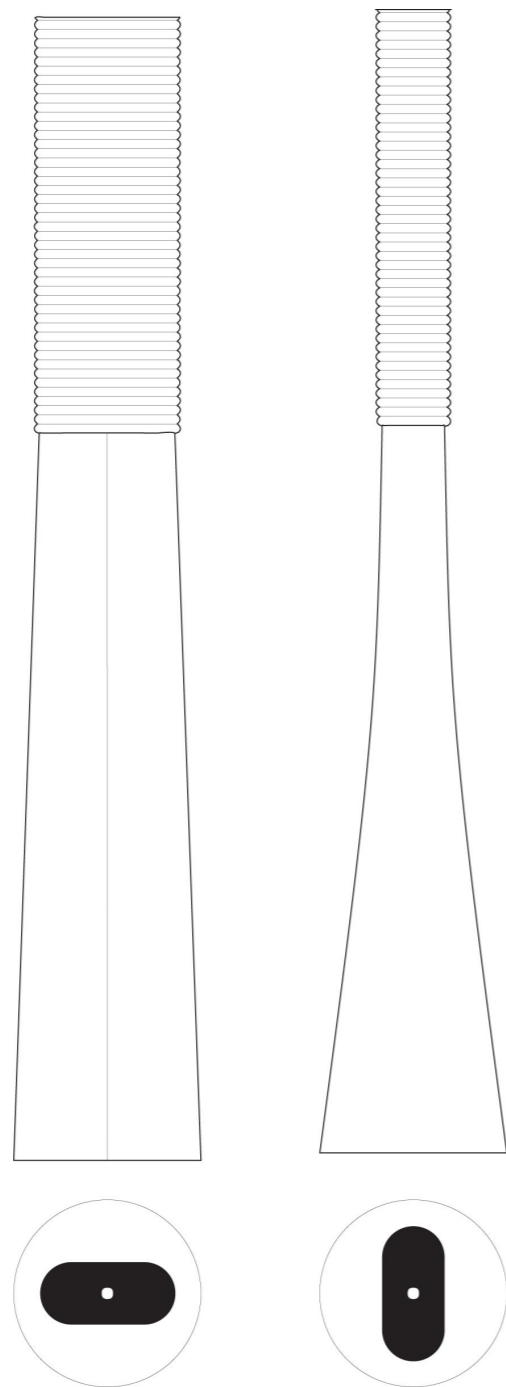


1:50 WORKSHOP ELEVATION AND SECTION

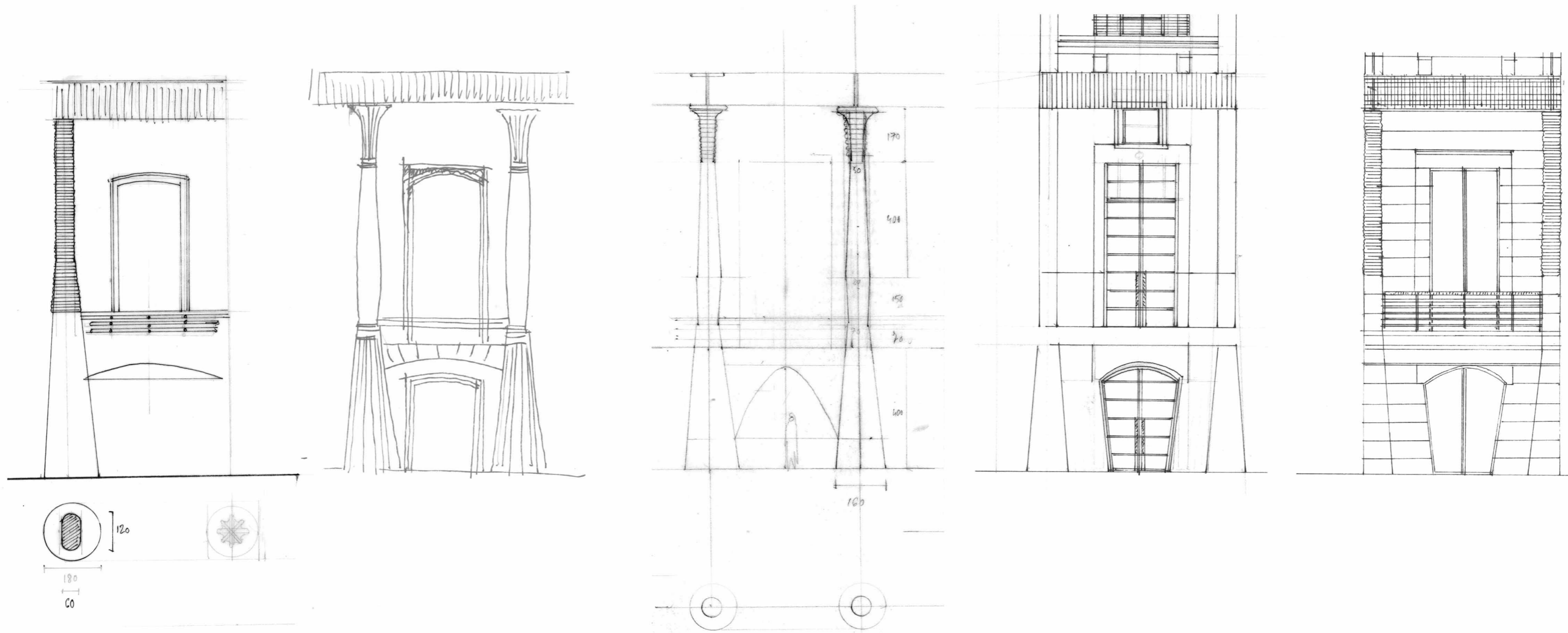
7

OLD MATERIALS,  
NEW TECHNIQUES

TENSIONING AND ROBOTIC MILLING AS A WAY TO  
USE STONE IN NEW APPLICATIONS



# CONCLUSIONS



1

*THE EMERGENCE OF THE  
NEO-PRODUCER*

2

*IDENTIFICATION OF VIABLE DRIVERS  
FOR AN EXPRESSIVE ARCHITECTURE*

3

*ILLUSTRATION OF THESE PRINCIPLES  
THROUGH PLEITA*

