

# EDUCATION BRIDGING THE GAP

Xingxing Pan | Graduation Presentation



# RESEARCH

## URBAN

SITE  
MASTER PLAN

## ARCHITECTURE

CONCEPT  
PROGRAM

## BUILDING TECHNOLOGY

MATERIALISATION  
STRUCTURE  
CLIMATE DESIGN

# USA

**Population**  
**Area**  
**Density**  
**Capital**  
**Largest City**

318,534,000  
9,826,630 km<sup>2</sup>  
31/km<sup>2</sup>  
Washington, D.C.  
New York City

# International Border

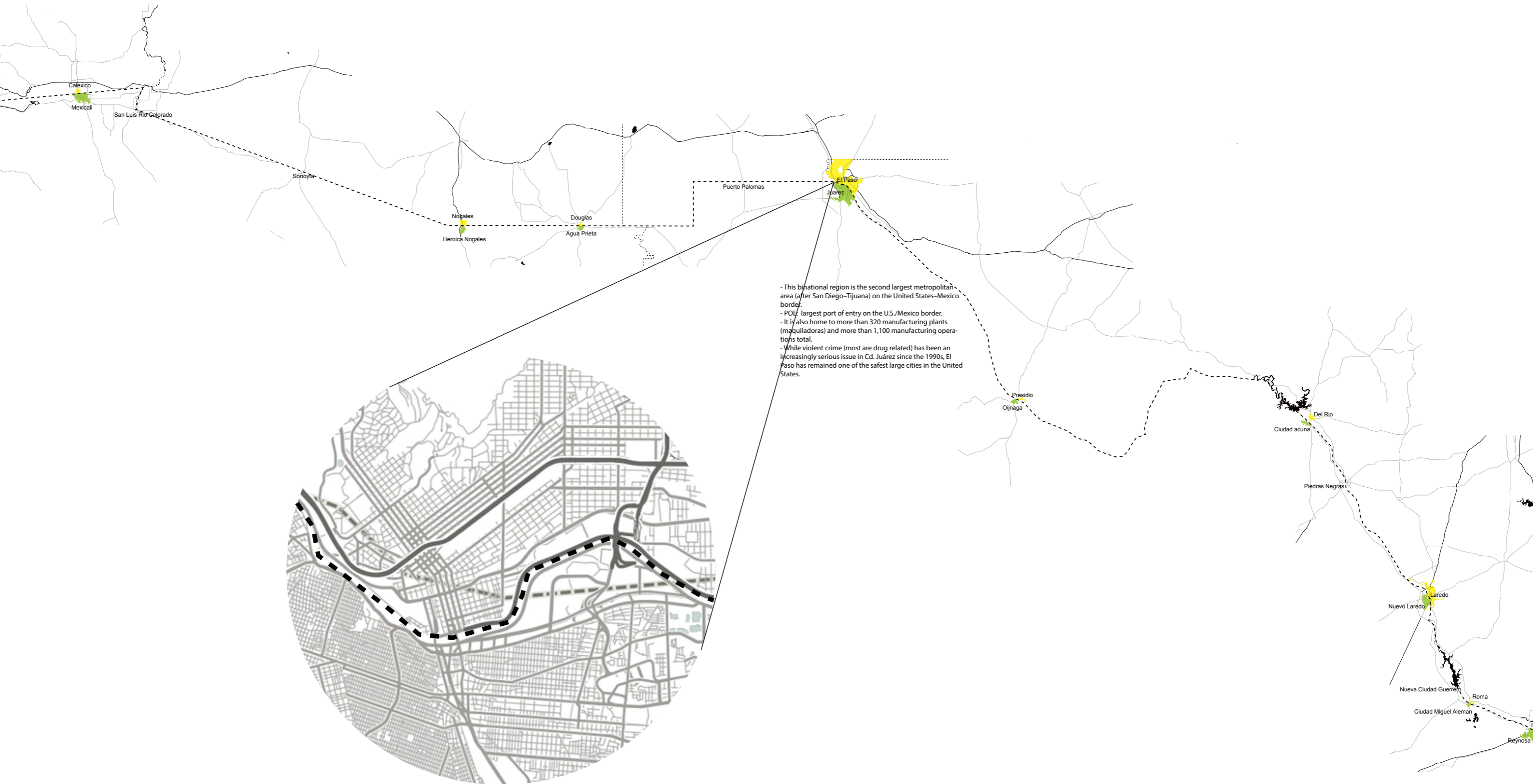
RESEARCH



# MEXICO

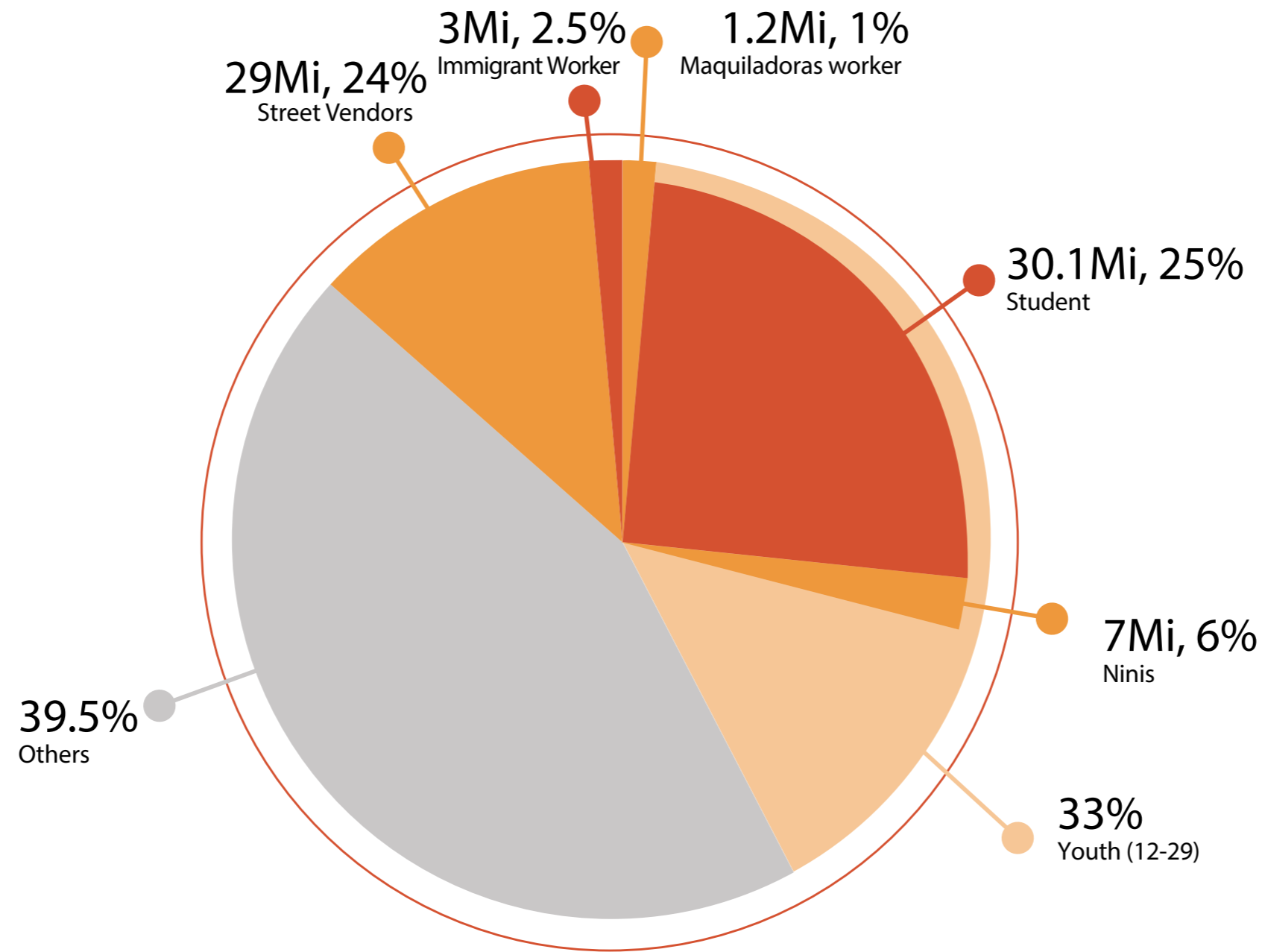
113,724,000  
1,972,550 km<sup>2</sup>  
55/km<sup>2</sup>  
México City  
México City

**Population**  
**Area**  
**Density**  
**Capital**  
**Largest City**





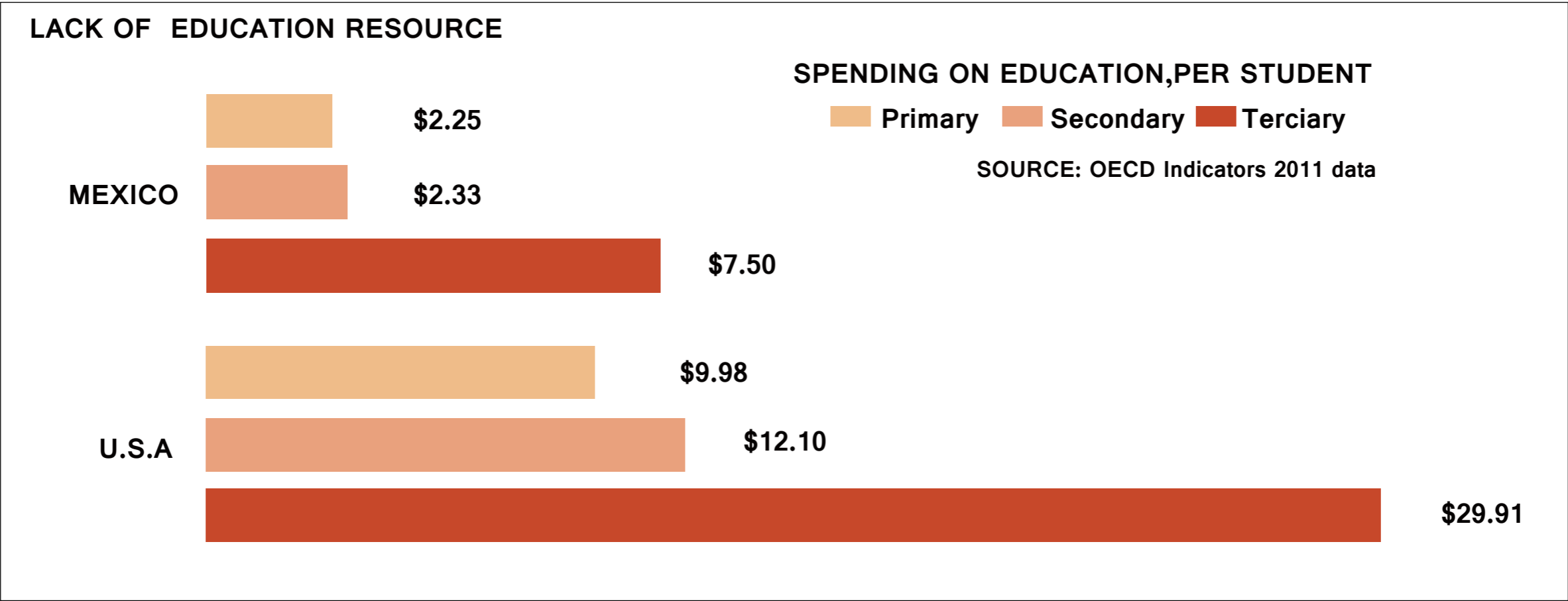
**RESEARCH**



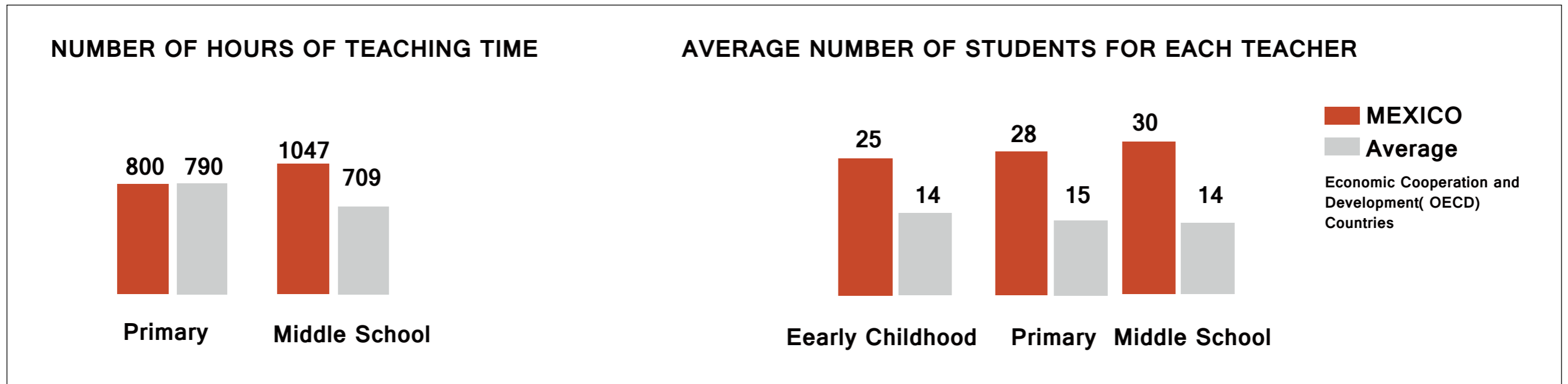
**Mexico Population 2014**

**123,799,215**

Source:  
 CGAP Analysis  
 Mexico's National Institute of Geographic Statistics and Information (INEGI)  
 The National Institute of Educational Evaluation report  
 BBC publishing in 2006  
 Mexicogulfreporter





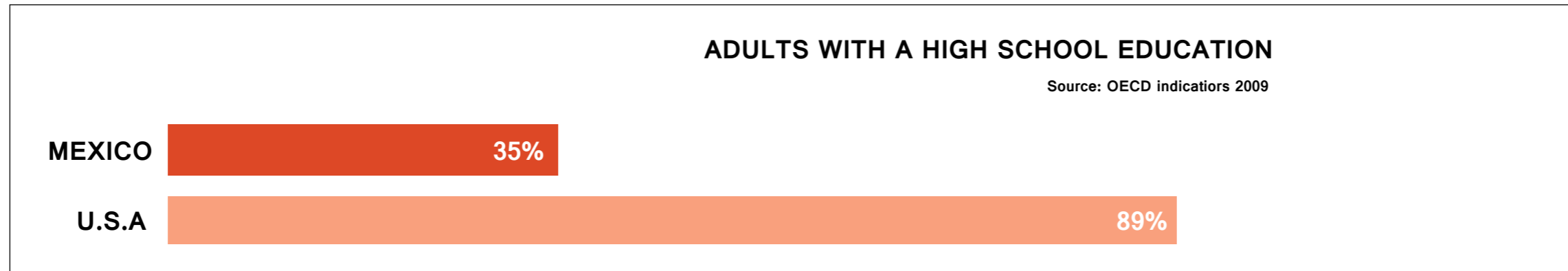


**HIGH DROPOUT RATES IN LEVELS BEYOND PRIMARY**  
**POOR EDUCATION QUALITY**  
**INSUFFICIENT COVERAGE IN LOWER SECONDARY**  
**INSUFFICIENT SCHOOL BUILDINGS AND CLASSROOMS**

School Building

- Morning
- Afternoon
- Evening

SOURCE: Education at a Glance 2013, country note for Mexico, OECD with 2011 data



# DISTRIBUTION

# RESEARCH

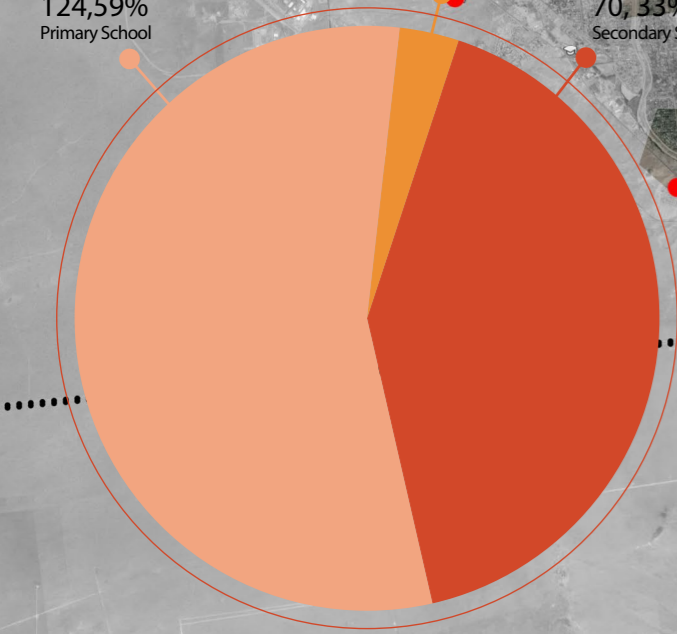
USA

MEXICO

124,59%  
Primary School

14, 6.7%  
Vacational School

70, 33%  
Secondary School



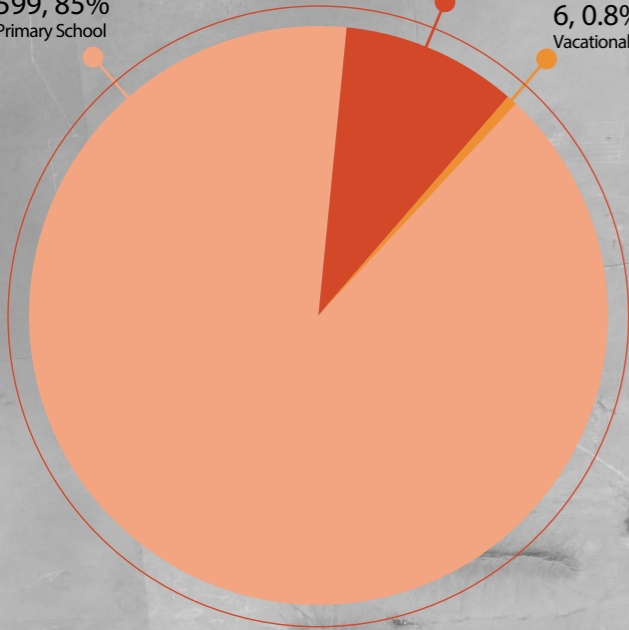
Total Primary School and Secondary School (Public)  
**EL PASO** 208



599, 85%  
Primary School

97, 13%  
Secondary School

6, 0.8%  
Vacational School



Total Primary School and Secondary School (Public)  
**Juarez** 702

# DISTRIBUTION

# RESEARCH

**U.S. STUDENTS ACROSS TO  
MEXICO FOR STUDAY**  
(2014-2015 ACADMEIC YEAR)

**3,370**

**MEXICO STUDENTS ACROSS TO  
U.S. FOR STUDY** (2014-2015 ACADMEIC  
YEAR)

**14,199**

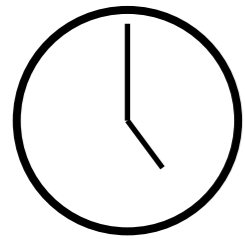




# COMMUTER

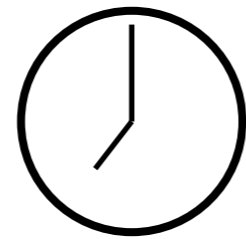
# RESEARCH

## Daily routine of student commuters



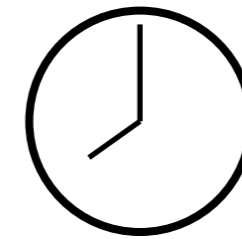
**5-6 am**

Get up and prepare for school, catch a bus to DCL.



**7 am**

Arrived at DCL, join the line and cross the border.

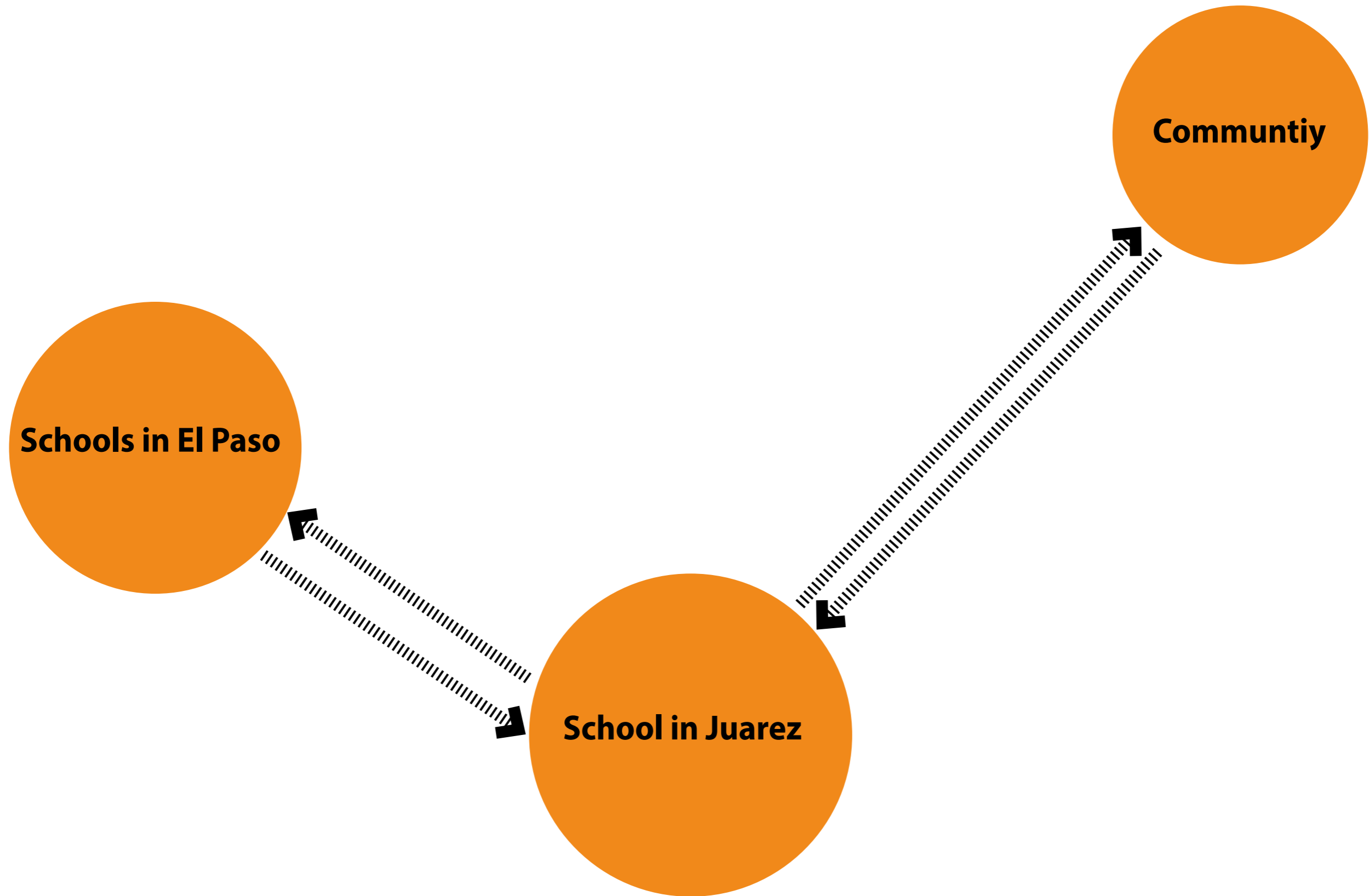


**8 am**

Catch another bus to class, or walk to school nearby.

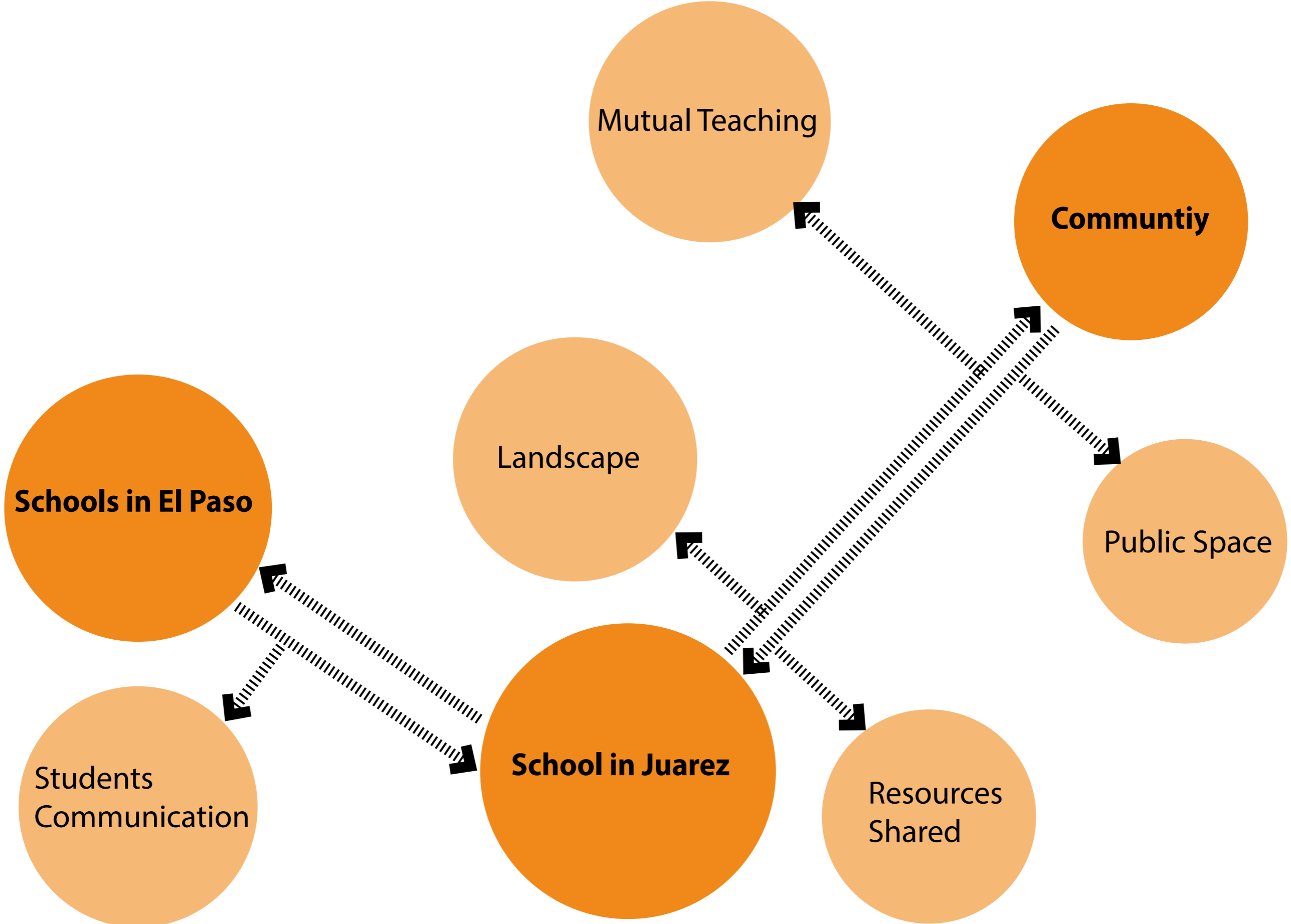


**URBAN**





**PROJECT**



Mutual Teaching

**Communtiy**

**Schools in El Paso**

Landscape

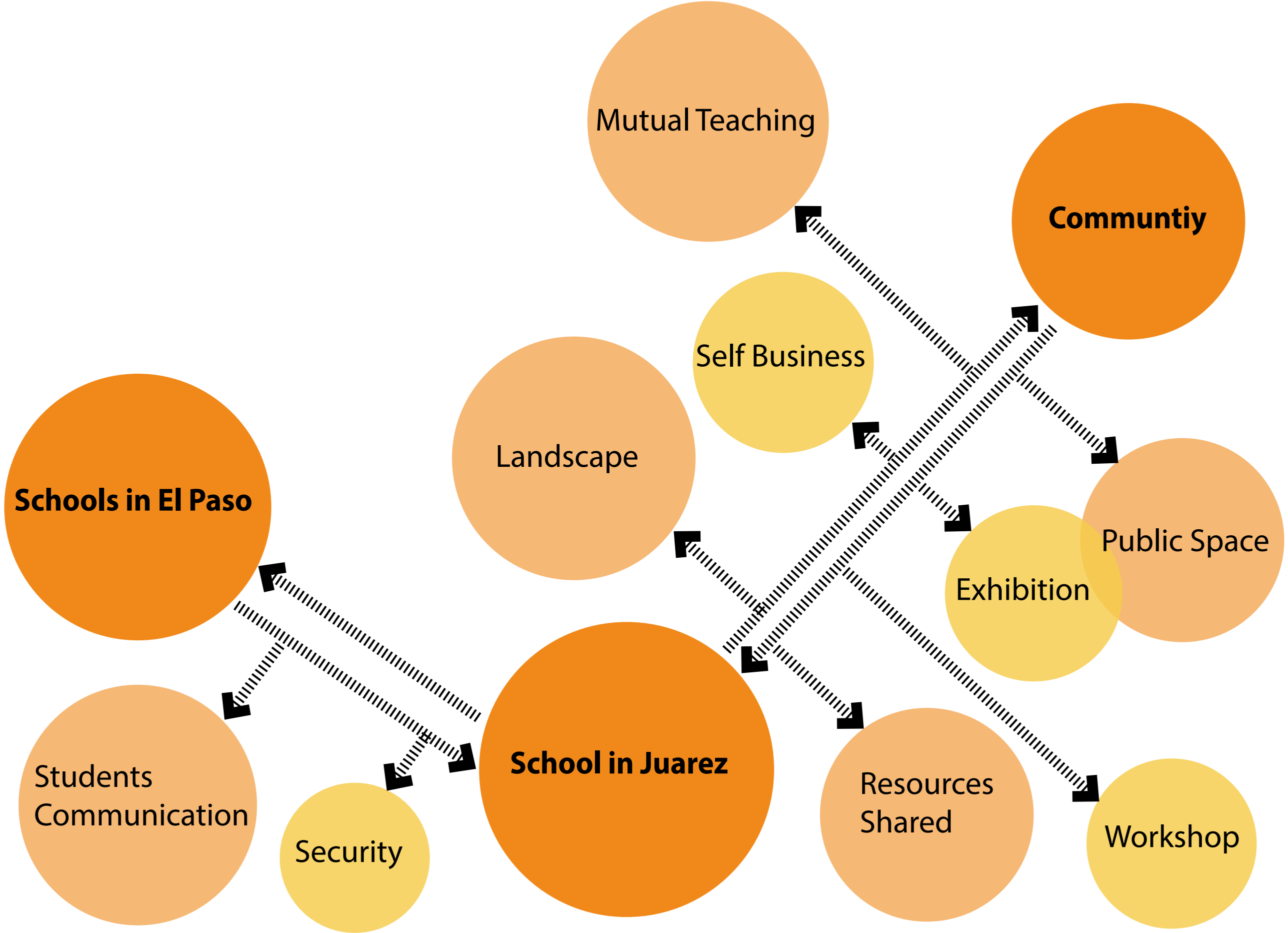
Public Space

**School in Juarez**

Students  
Communication

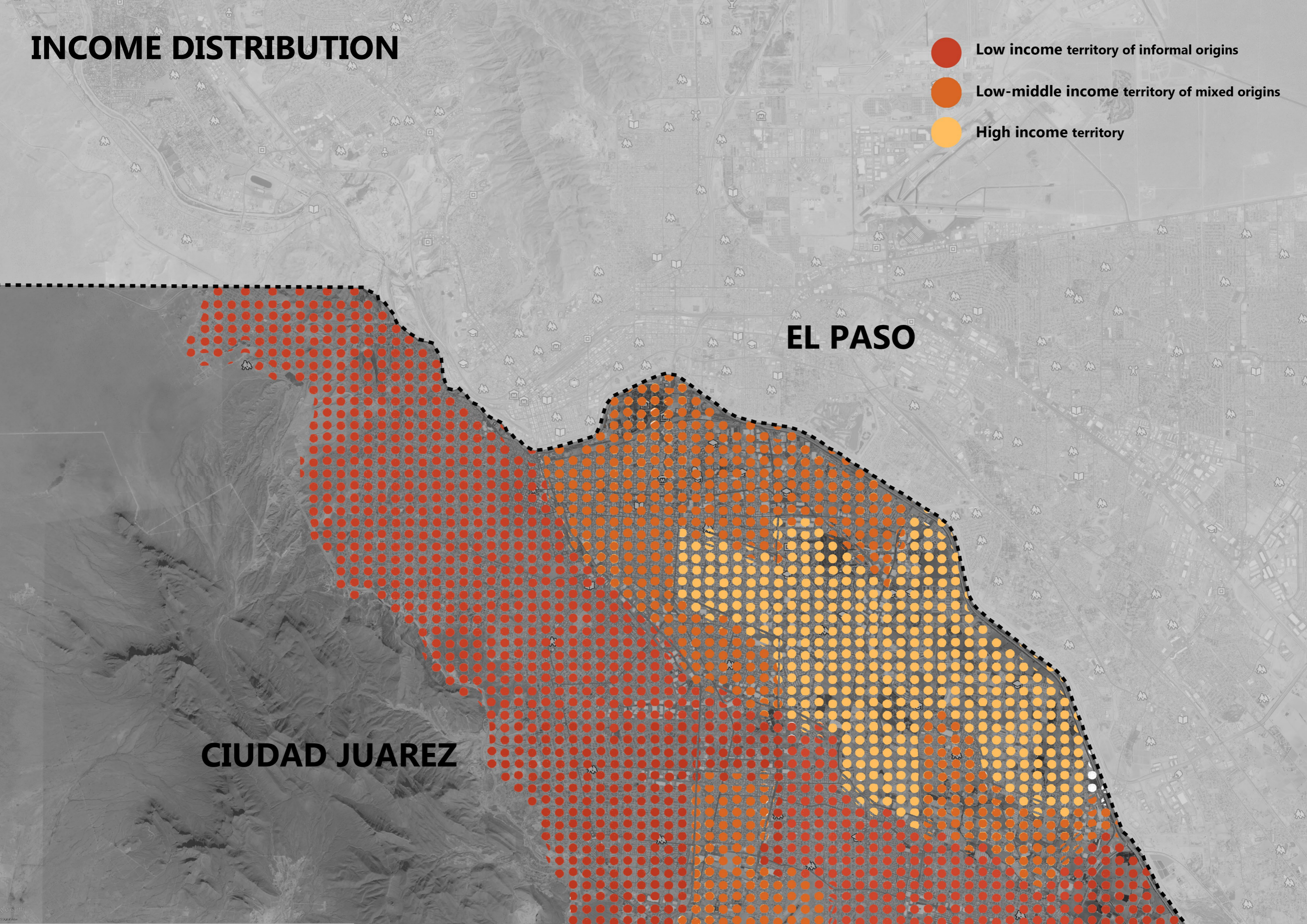
Resources  
Shared

**PROJECT**



# INCOME DISTRIBUTION

- Low income territory of informal origins
- Low-middle income territory of mixed origins
- High income territory

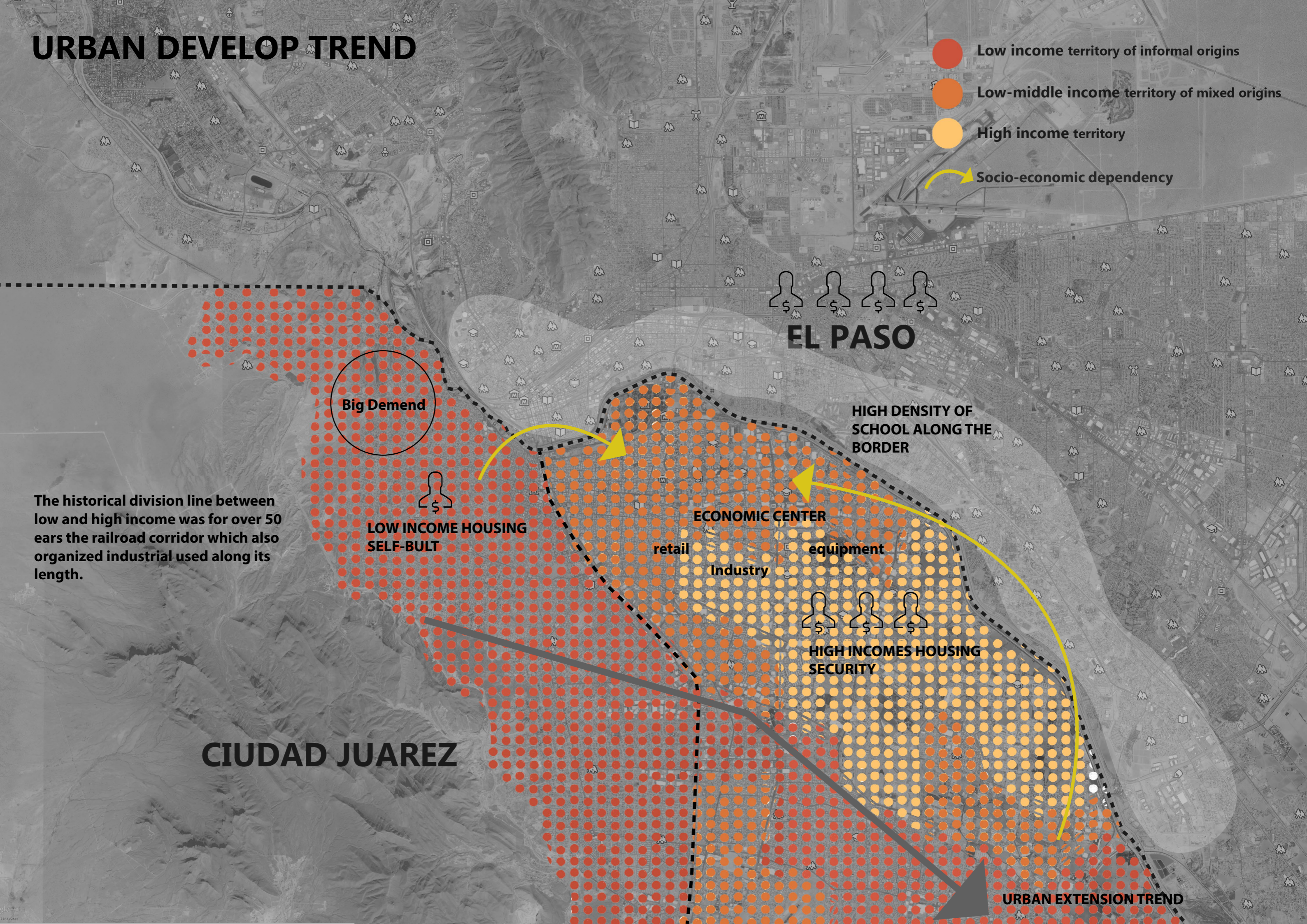


**EL PASO**

**CIUDAD JUAREZ**

# URBAN DEVELOPMENT TREND

- Low income territory of informal origins
- Low-middle income territory of mixed origins
- High income territory
- Socio-economic dependency



EL PASO

Big Demand

HIGH DENSITY OF SCHOOL ALONG THE BORDER

The historical division line between low and high income was for over 50 years the railroad corridor which also organized industrial used along its length.

LOW INCOME HOUSING SELF-BUILT

ECONOMIC CENTER

retail Industry equipment

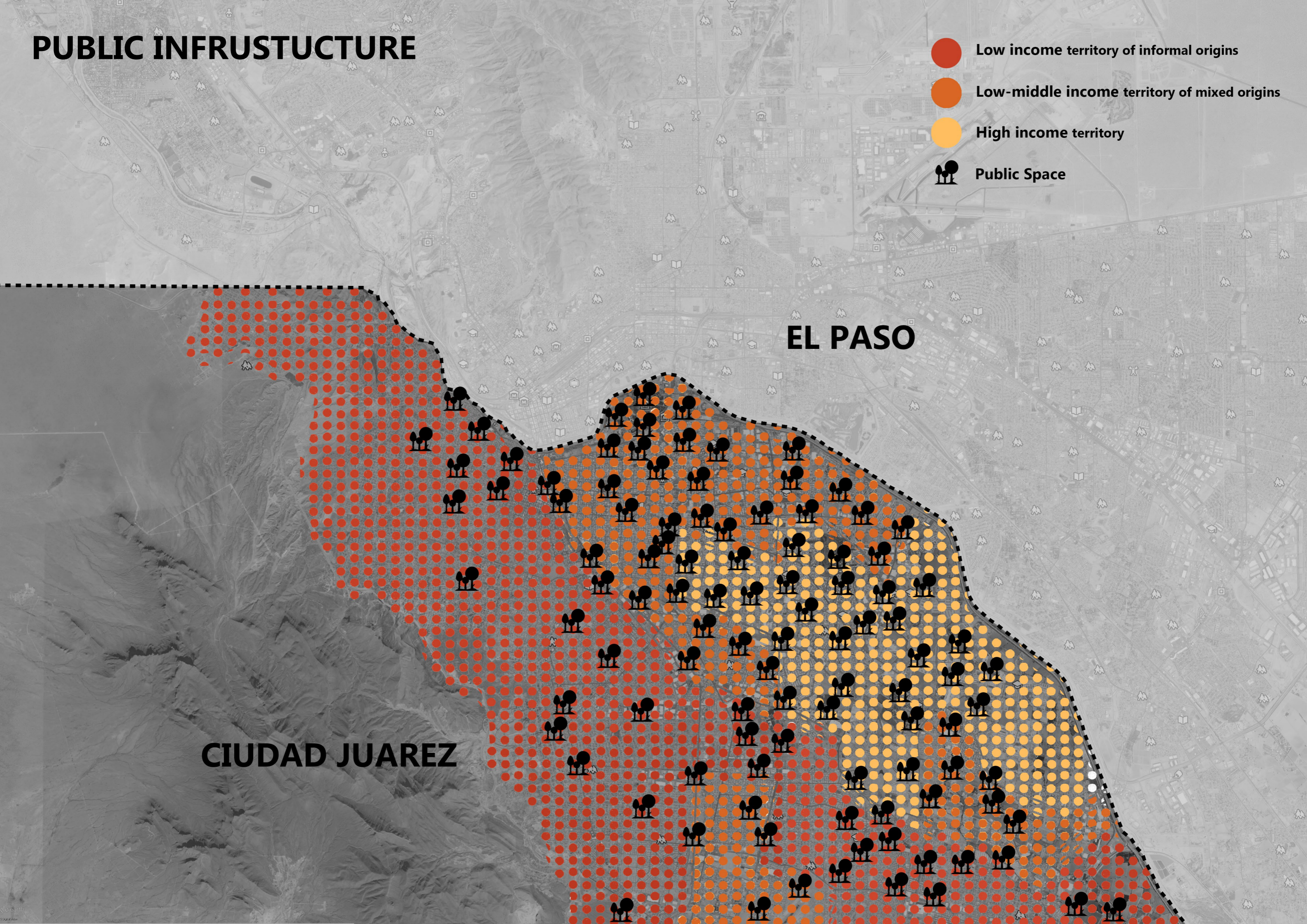
HIGH INCOMES HOUSING SECURITY

CIUDAD JUAREZ

URBAN EXTENSION TREND

# PUBLIC INFRASTRUCTURE

- Low income territory of informal origins
- Low-middle income territory of mixed origins
- High income territory
- 🌳 Public Space



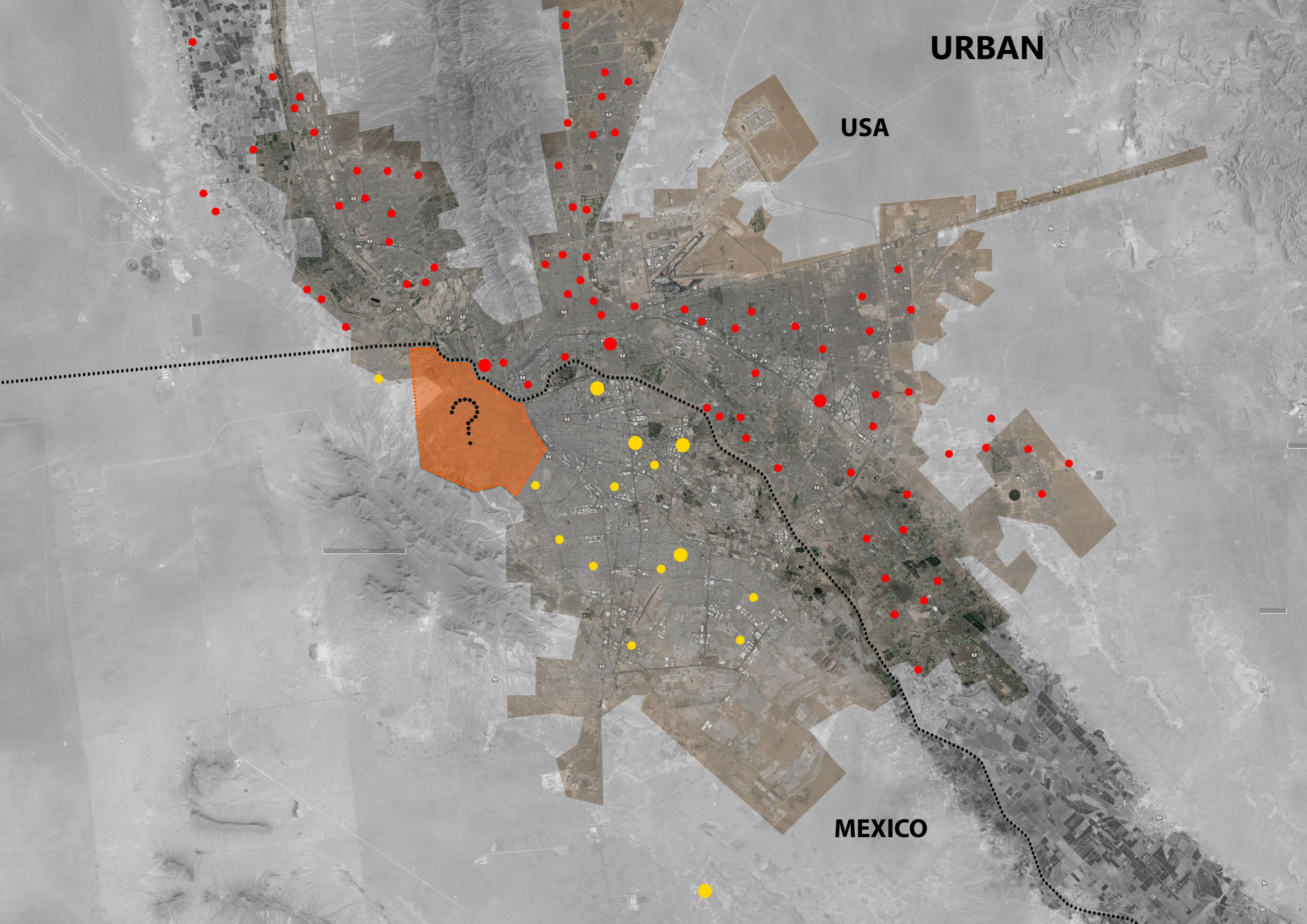
EL PASO

CIUDAD JUAREZ

**URBAN**

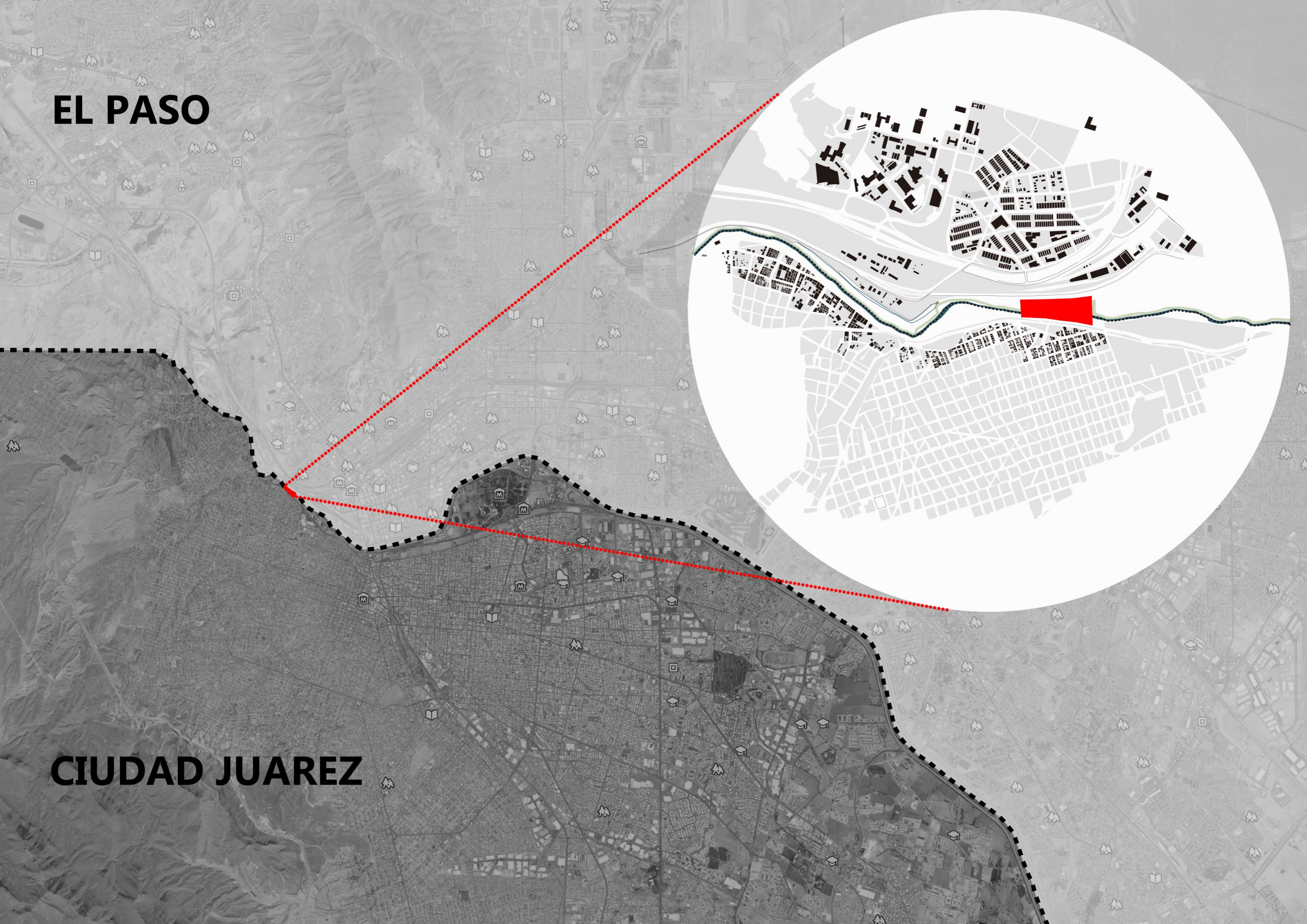
**USA**

**MEXICO**



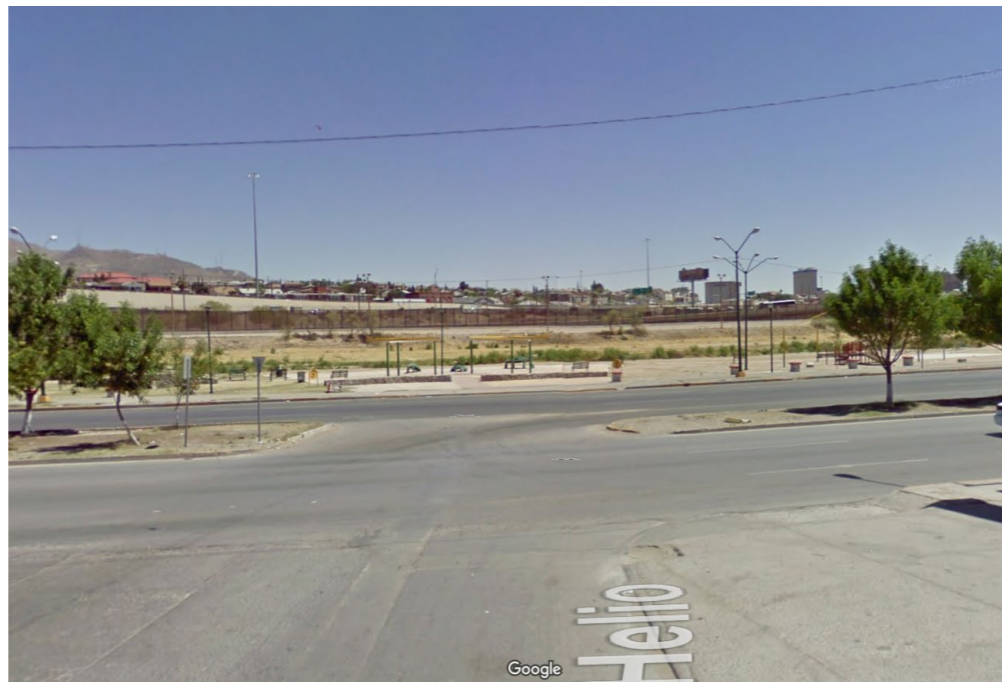
**EL PASO**

**CIUDAD JUAREZ**



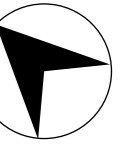
# SITE

site photo



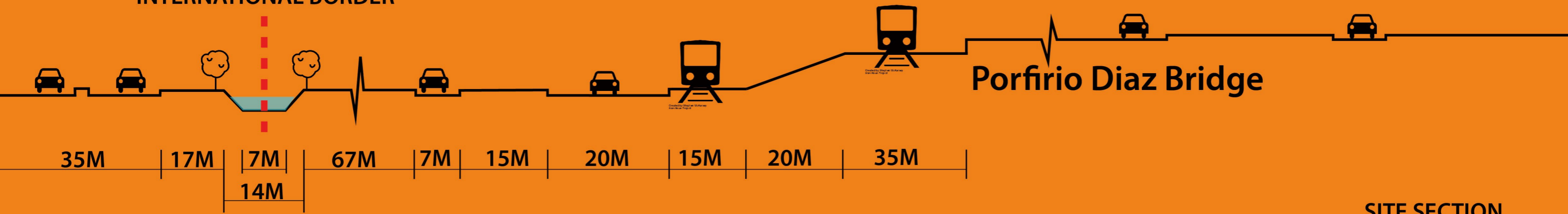


**SITE**  
border condition





INTERNATIONAL BORDER

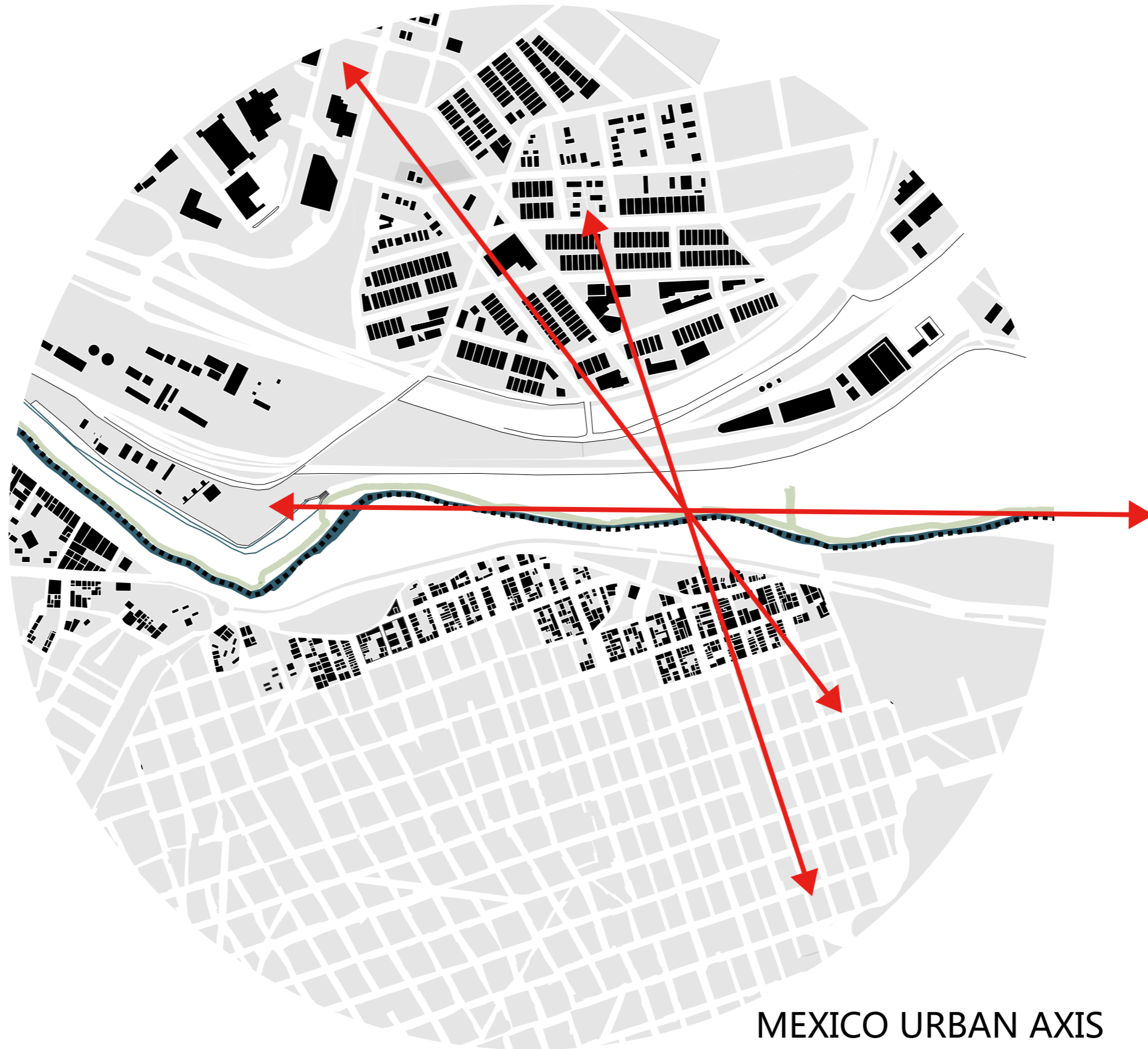


SITE SECTION



**SITE**  
urban axis

USA URBAN AXIS

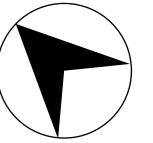


RIVER

MEXICO URBAN AXIS

# SITE

border condition



- TRANSPORTATION
- HOUSING
- SCHOOL CAMPUS
- PARKING LOT
- PARK/PUBLIC PLACE
- SHOPPING CENTER

The University of Texas At El Paso



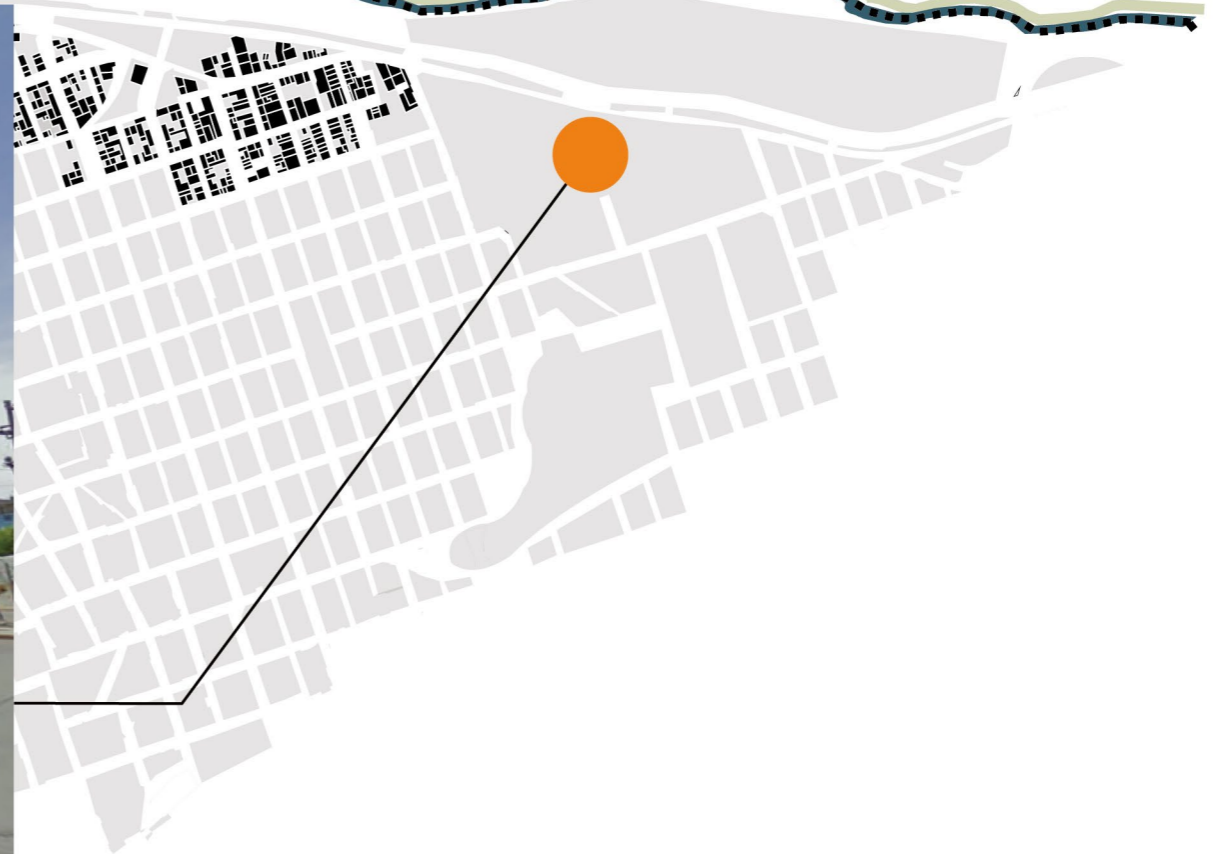
Vilas Elementary School



**SITE**  
border condition



Smart Shopping Mall





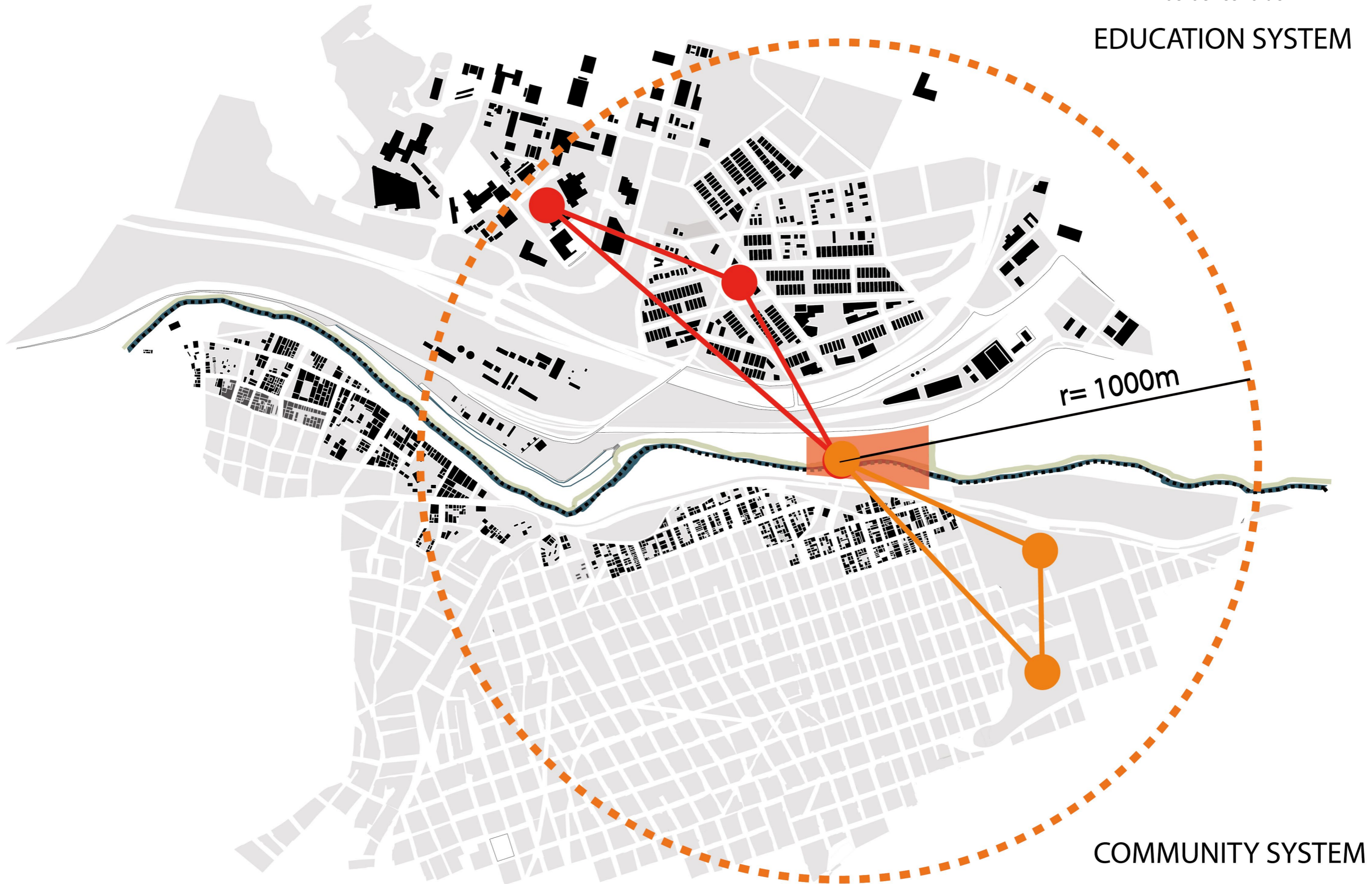
Parque Revolución



# SITE

border condition

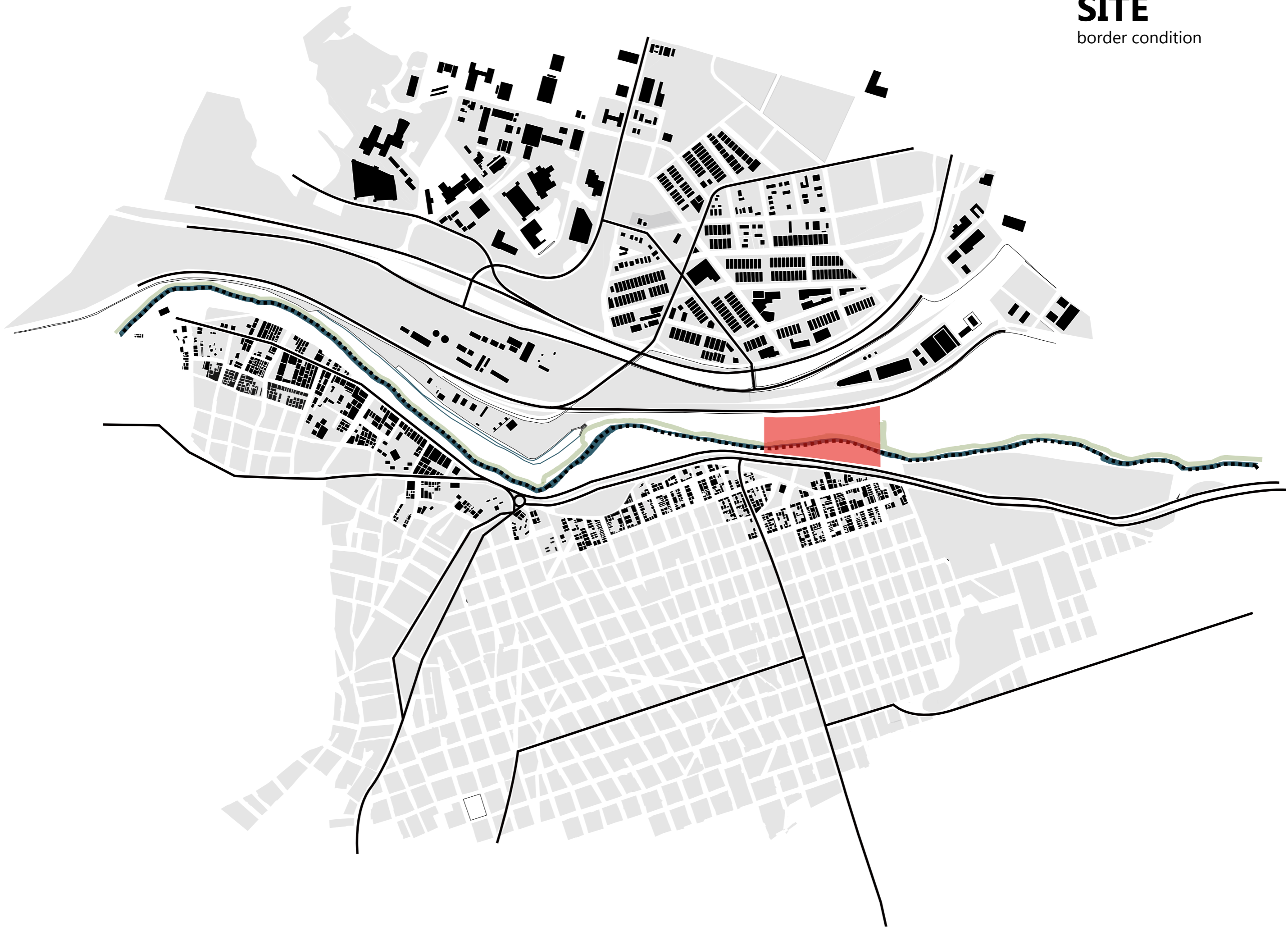
## EDUCATION SYSTEM



## COMMUNITY SYSTEM



**SITE**  
border condition

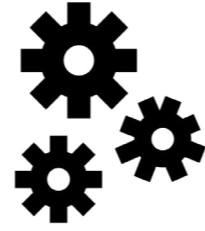


**ARCHITECTURE**

# STRATEGY

different education

System



Schedule



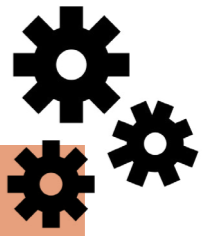
Behavior



Facility

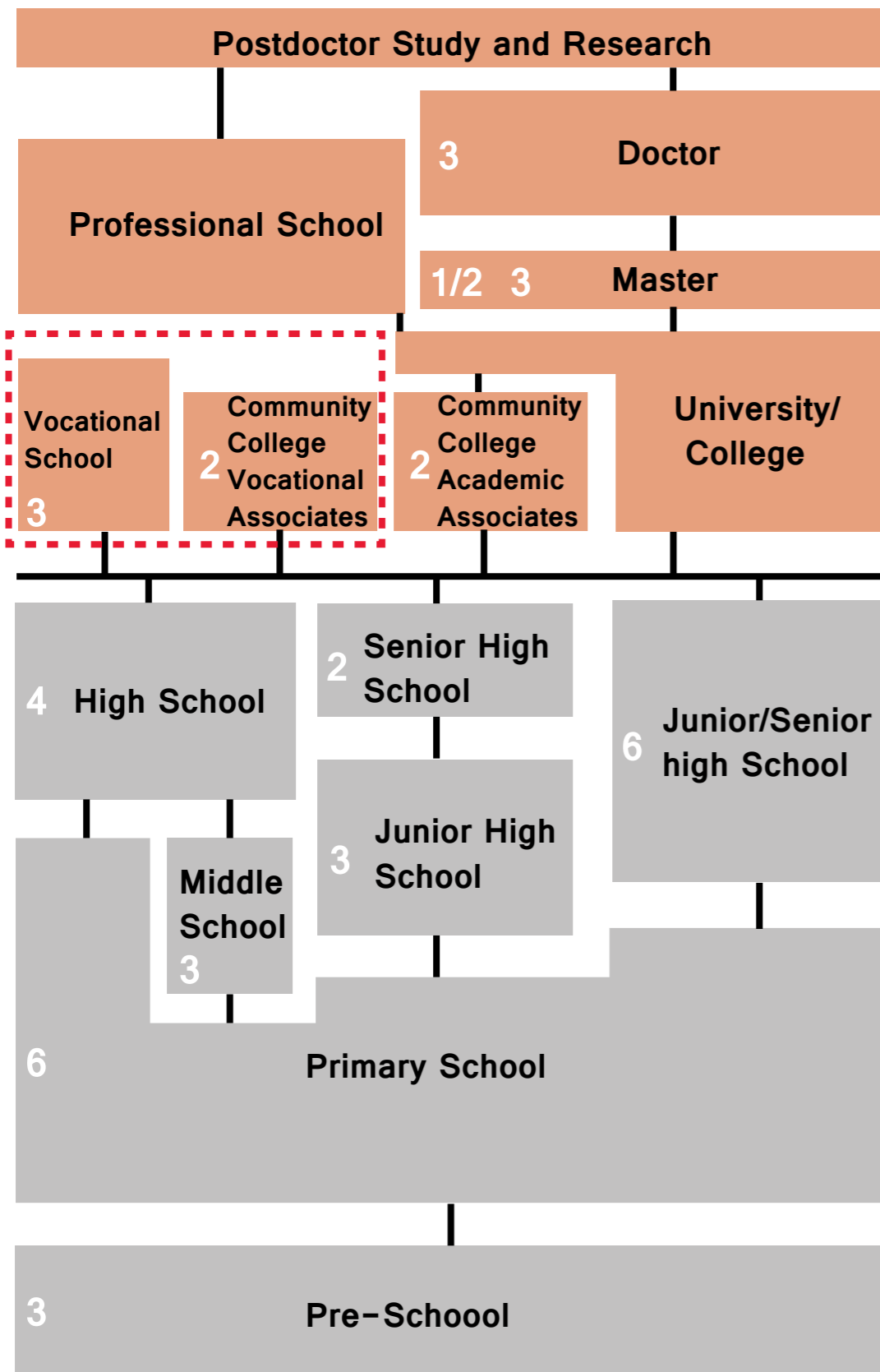
# Different Education

STRATEGY



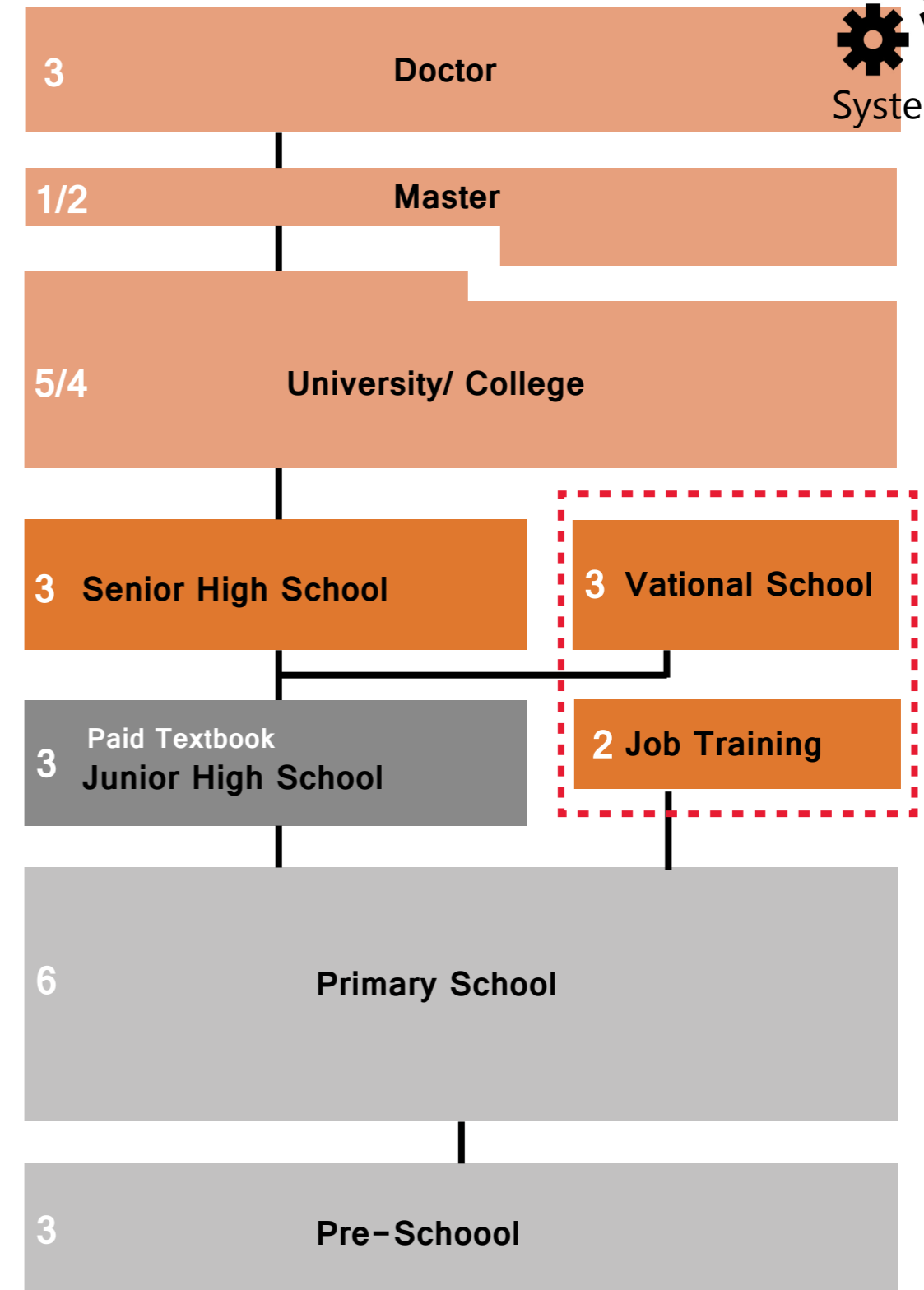
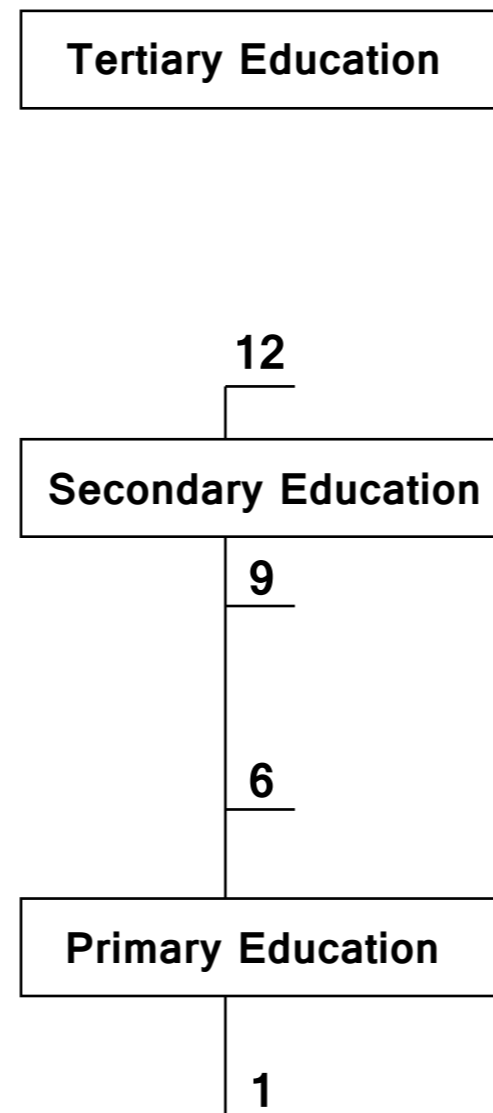
System

## U.S.A Education System



Compulsory / Free Education

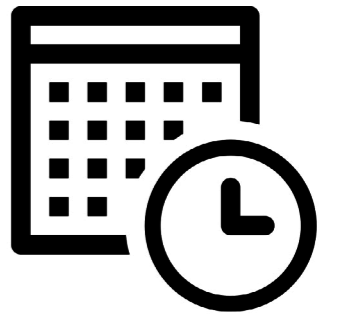
## Mexico Education System



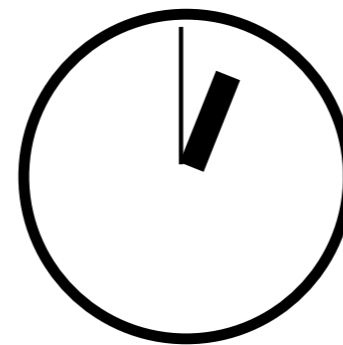
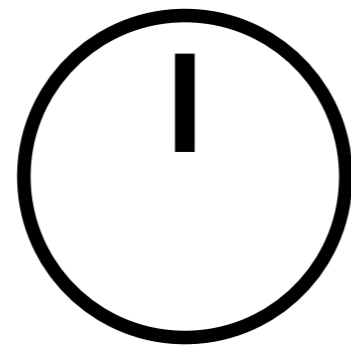
Compulsory / Free Education

# Different Education

STRATEGY

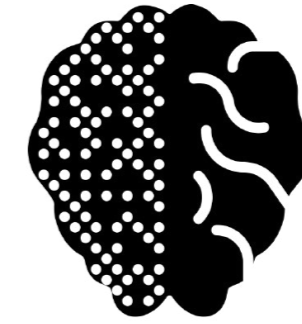


Shedual



# Different Education

STRATEGY



Behavior

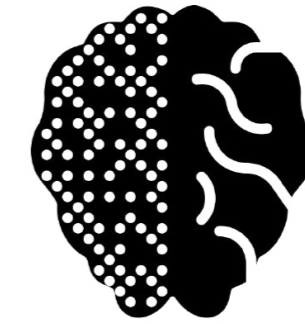


Facility



# Different Education

STRATEGY



Behavior



Facility



Freedom to Express

# Different Education

STRATEGY



Behavior

Facility



Teaching Mode





## Bridging the differences: Cultural background of Mexican students entering U.S. schools

BY [MARY FAITH MOUNT-CORS](#)

Monday, October 20, 2014

The teachers schools do not fit within Mexico's neoliberal economic model

Puebla Directo (October 18, 2014)

Fragment published in Proceso, written by Jose Gil Olmos.

Translated by un vato for Borderland Beat

Helgesen

UW-L Journal of Undergraduate Research XII (2009)

### Mexican Immigrant Challenges in the United States Public School System: A Case Study of Two Schools

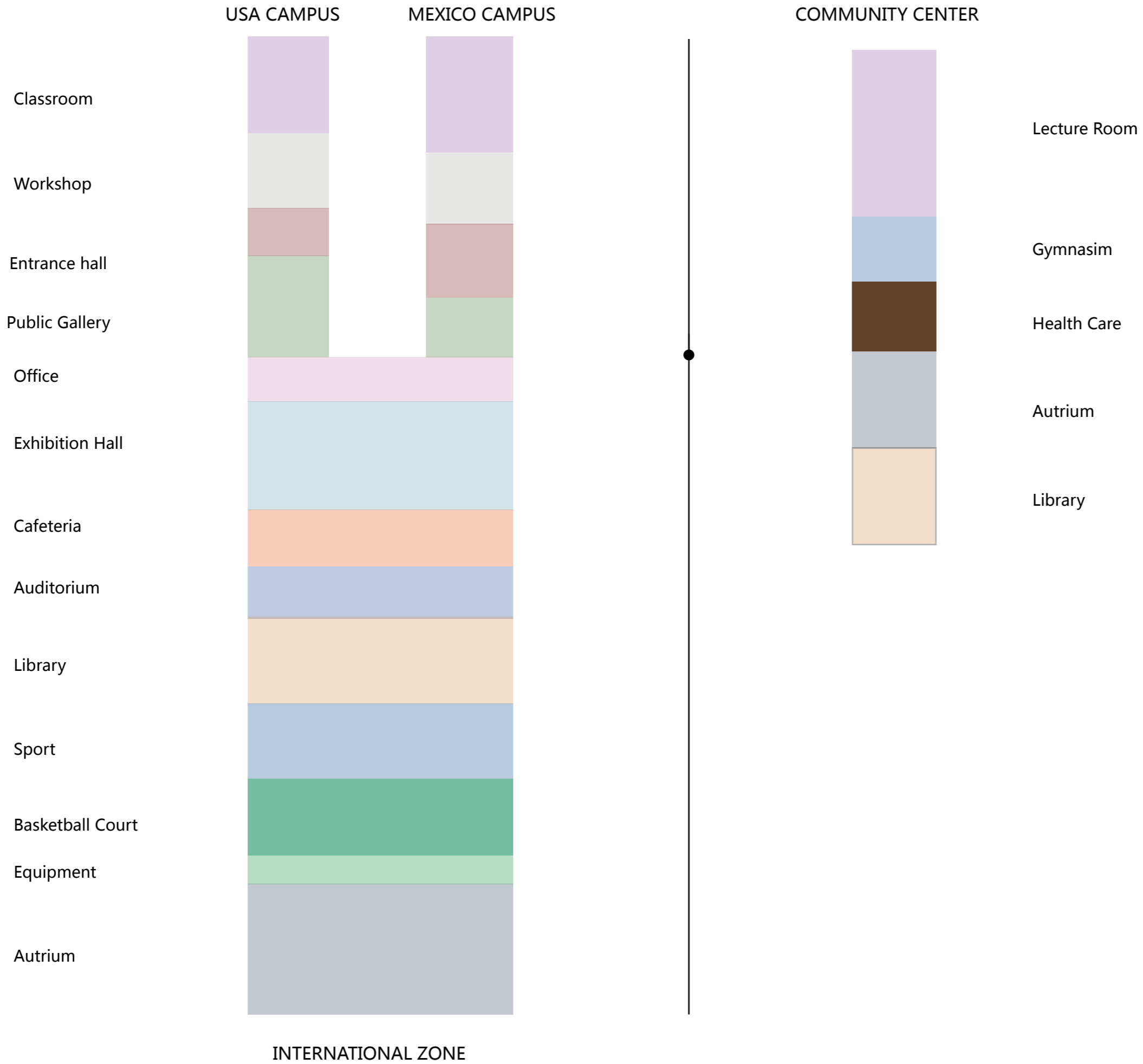


...need, regardless of standards alignment.

## Helping students from rural Mexico feel comfortable in your classroom

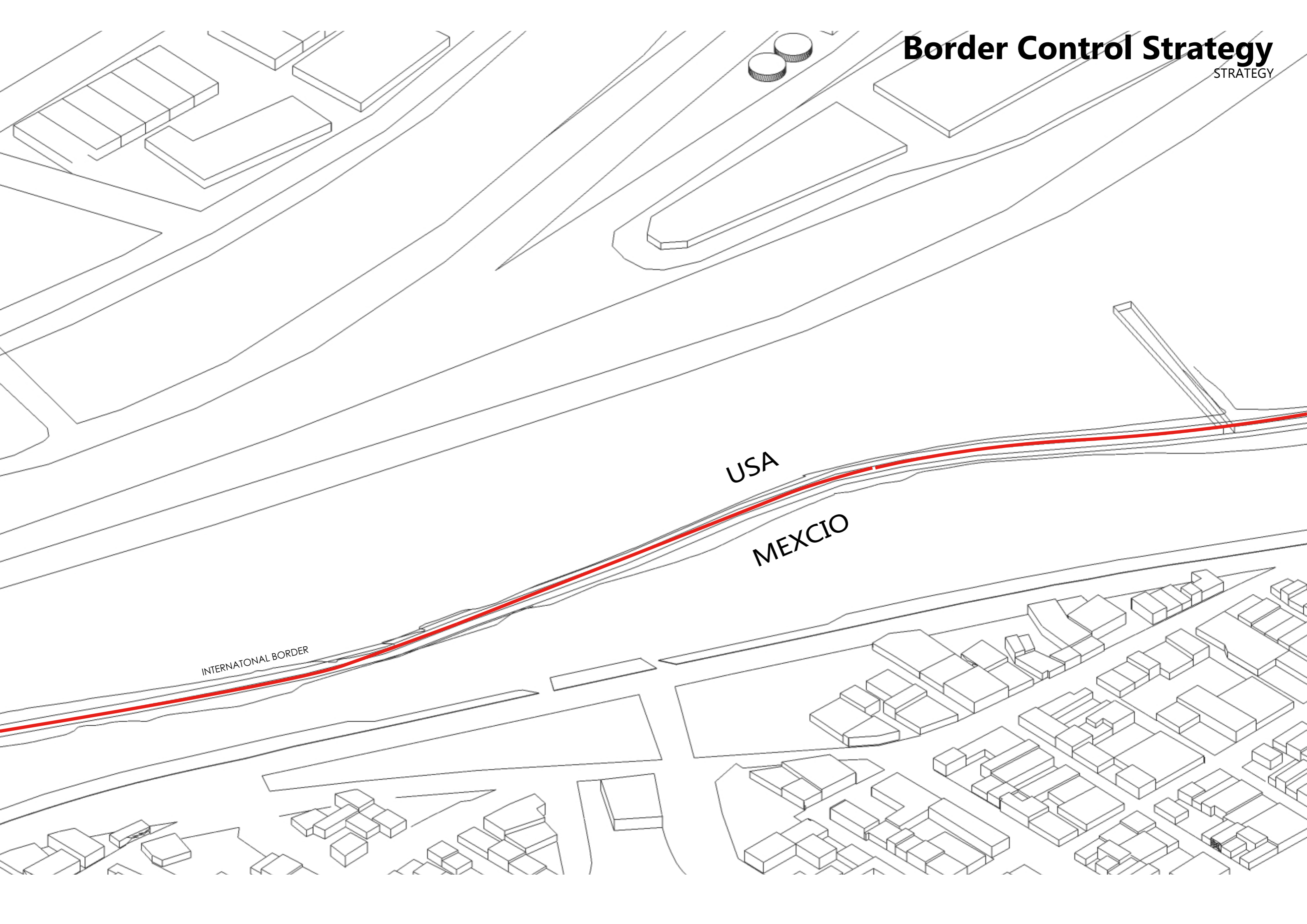
# Program Organization

STRATEGY



# Border Control Strategy

STRATEGY



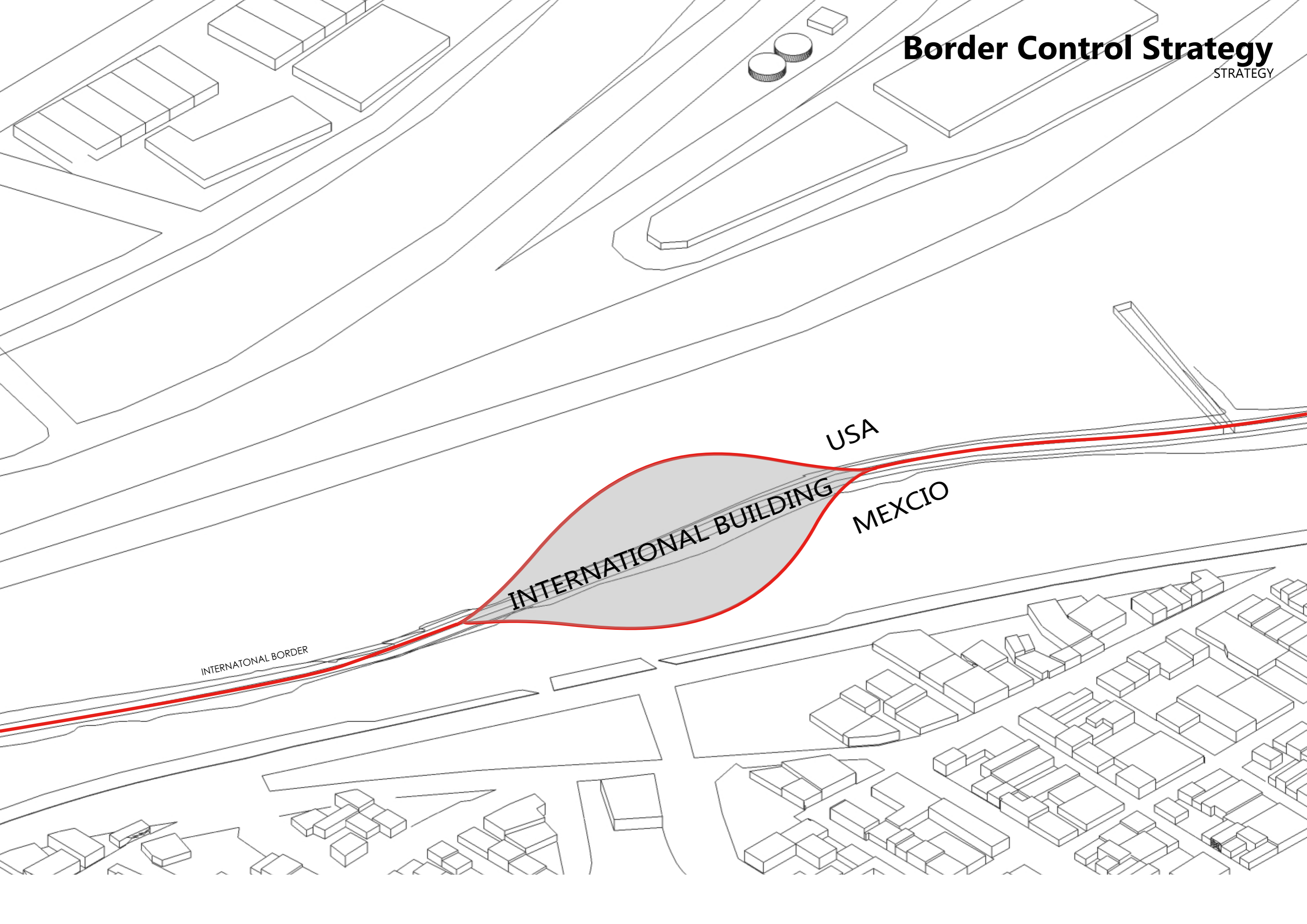
USA

MEXICO

INTERNATIONAL BORDER

# Border Control Strategy

STRATEGY



USA

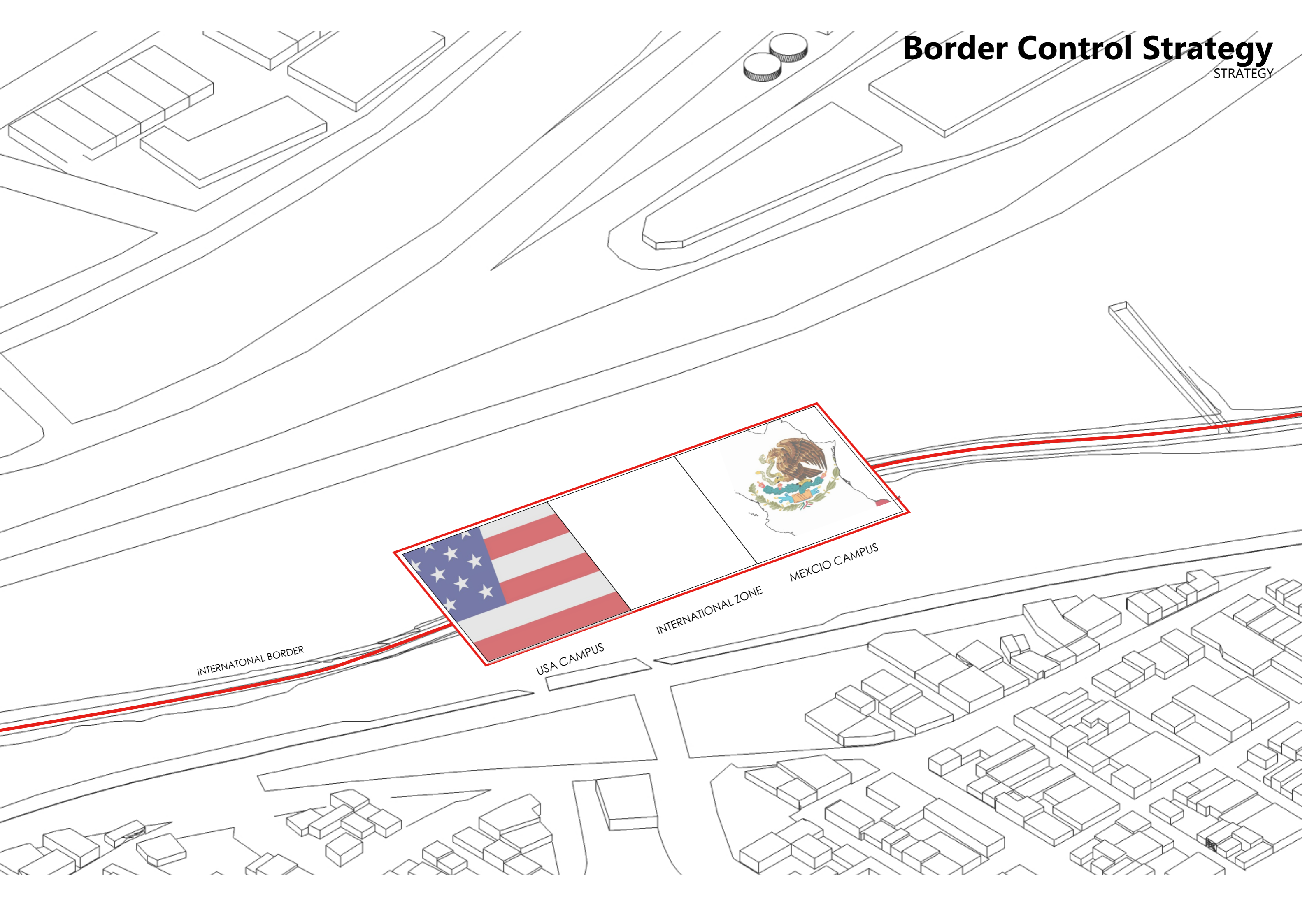
MEXICO

INTERNATIONAL BUILDING

INTERNATIONAL BORDER

# Border Control Strategy

STRATEGY



INTERNATIONAL BORDER

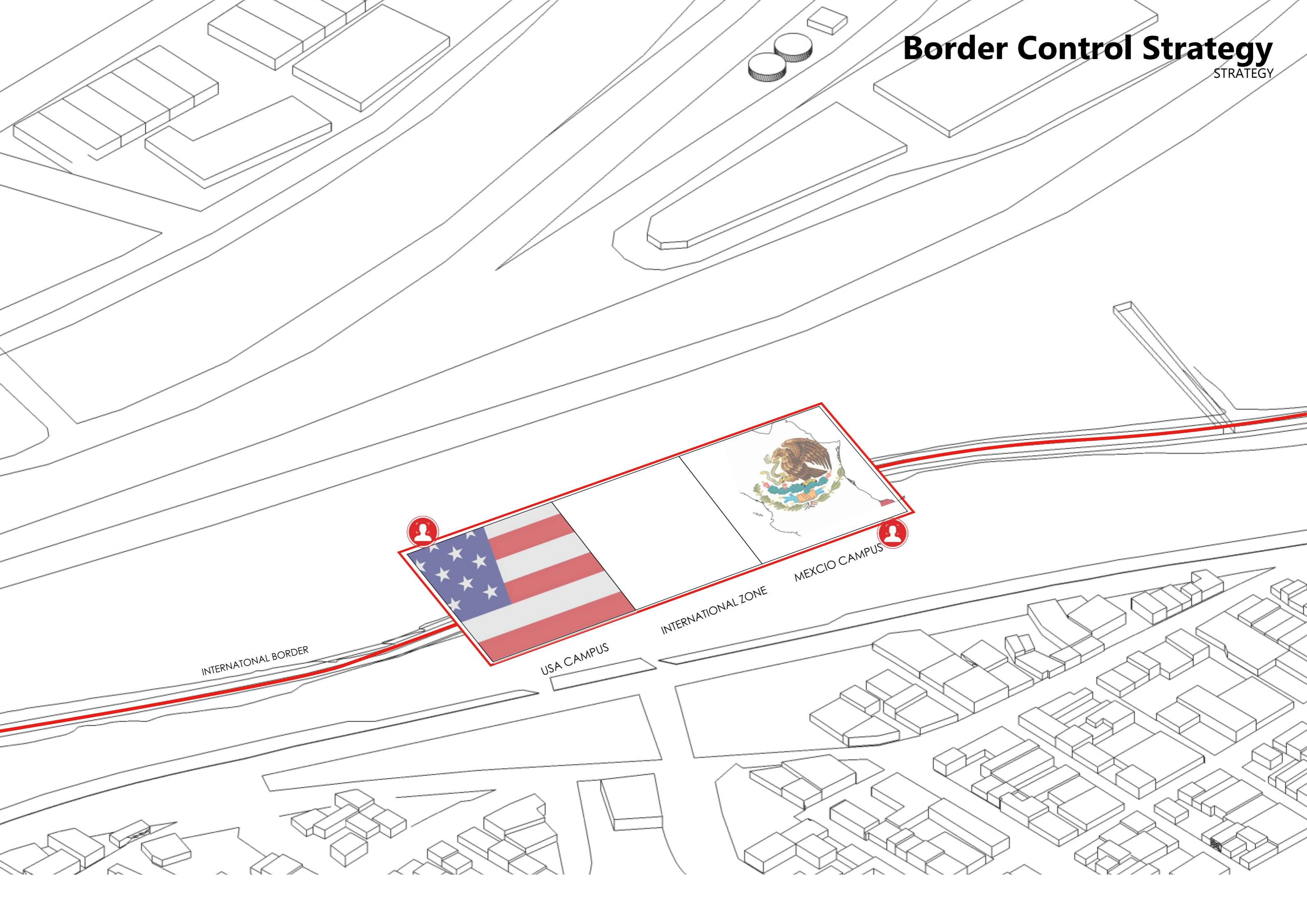
USA CAMPUS

INTERNATIONAL ZONE

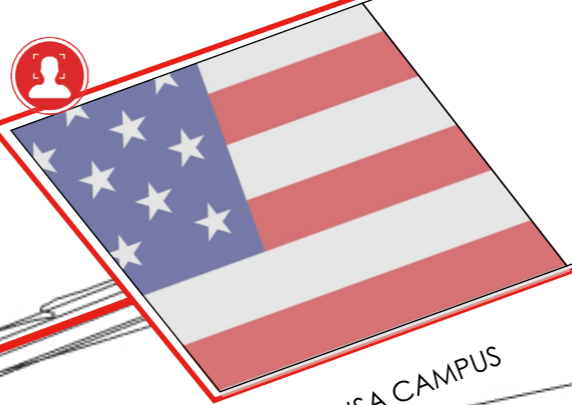
MEXICO CAMPUS

# Border Control Strategy

STRATEGY



INTERNATIONAL BORDER



USA CAMPUS

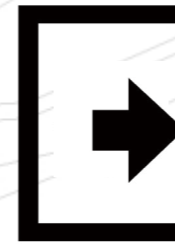
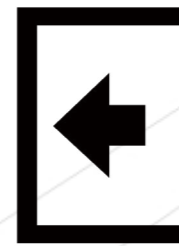
INTERNATIONAL ZONE



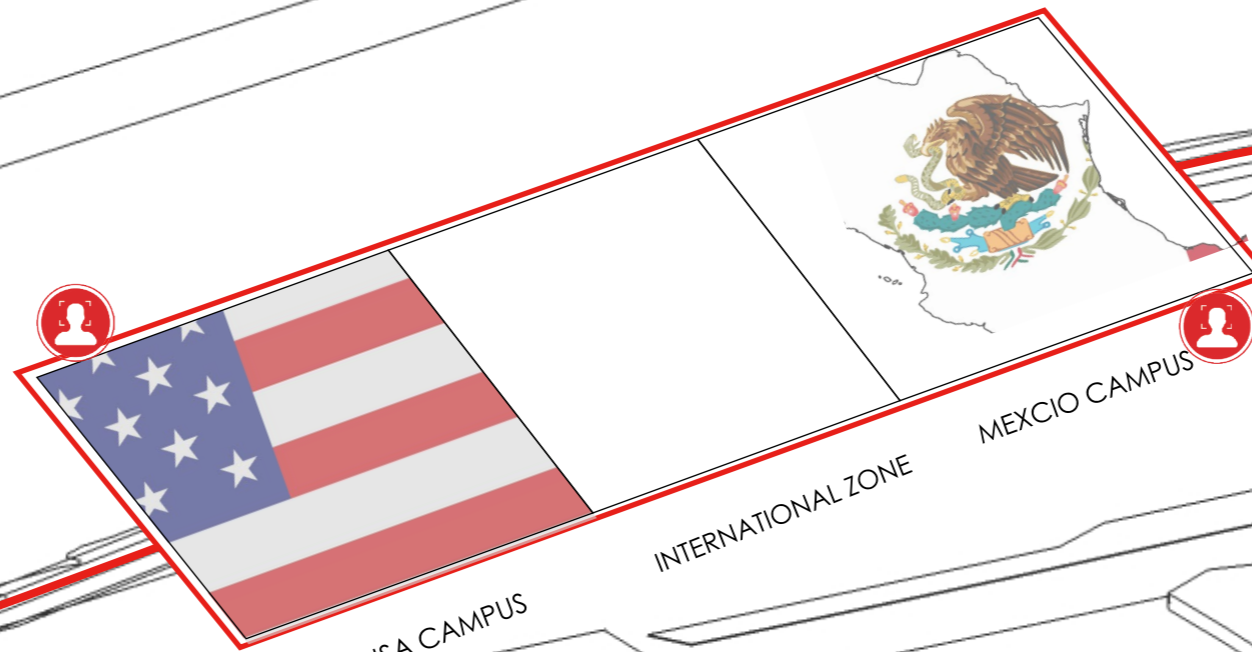
MEXICO CAMPUS

# Border Control Strategy

STRATEGY



INTERNATIONAL BORDER



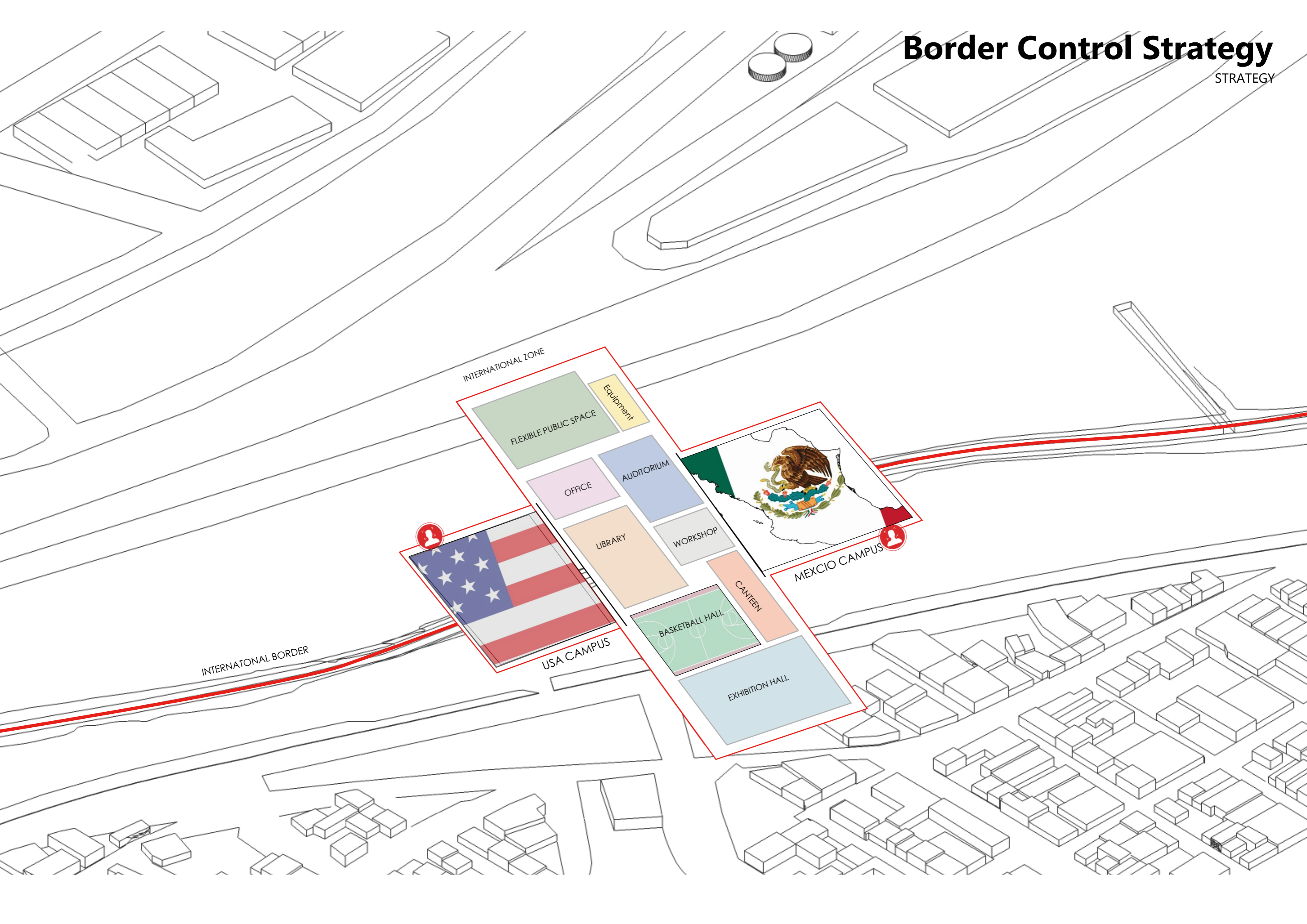
USA CAMPUS

INTERNATIONAL ZONE

MEXICO CAMPUS

# Border Control Strategy

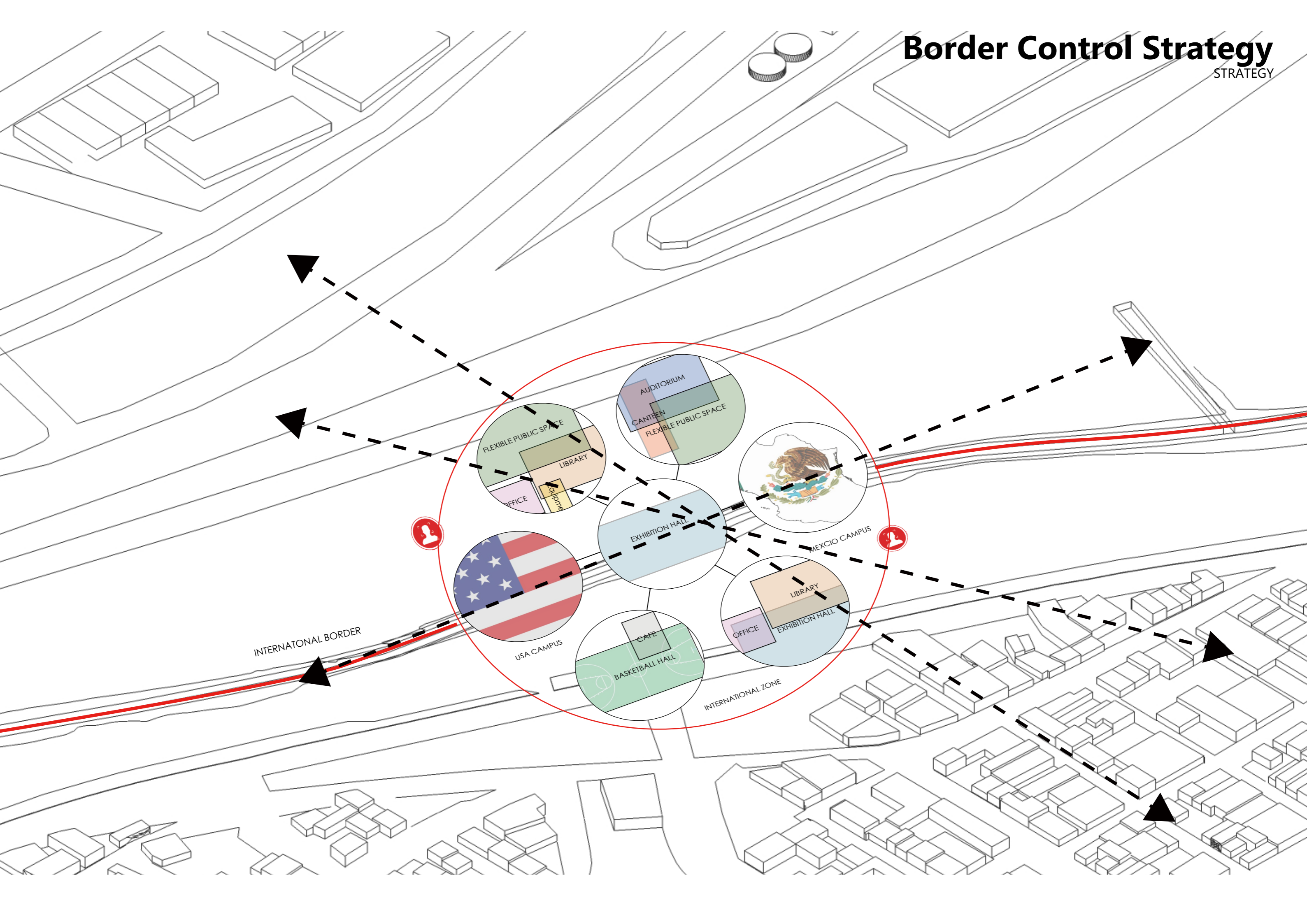
STRATEGY





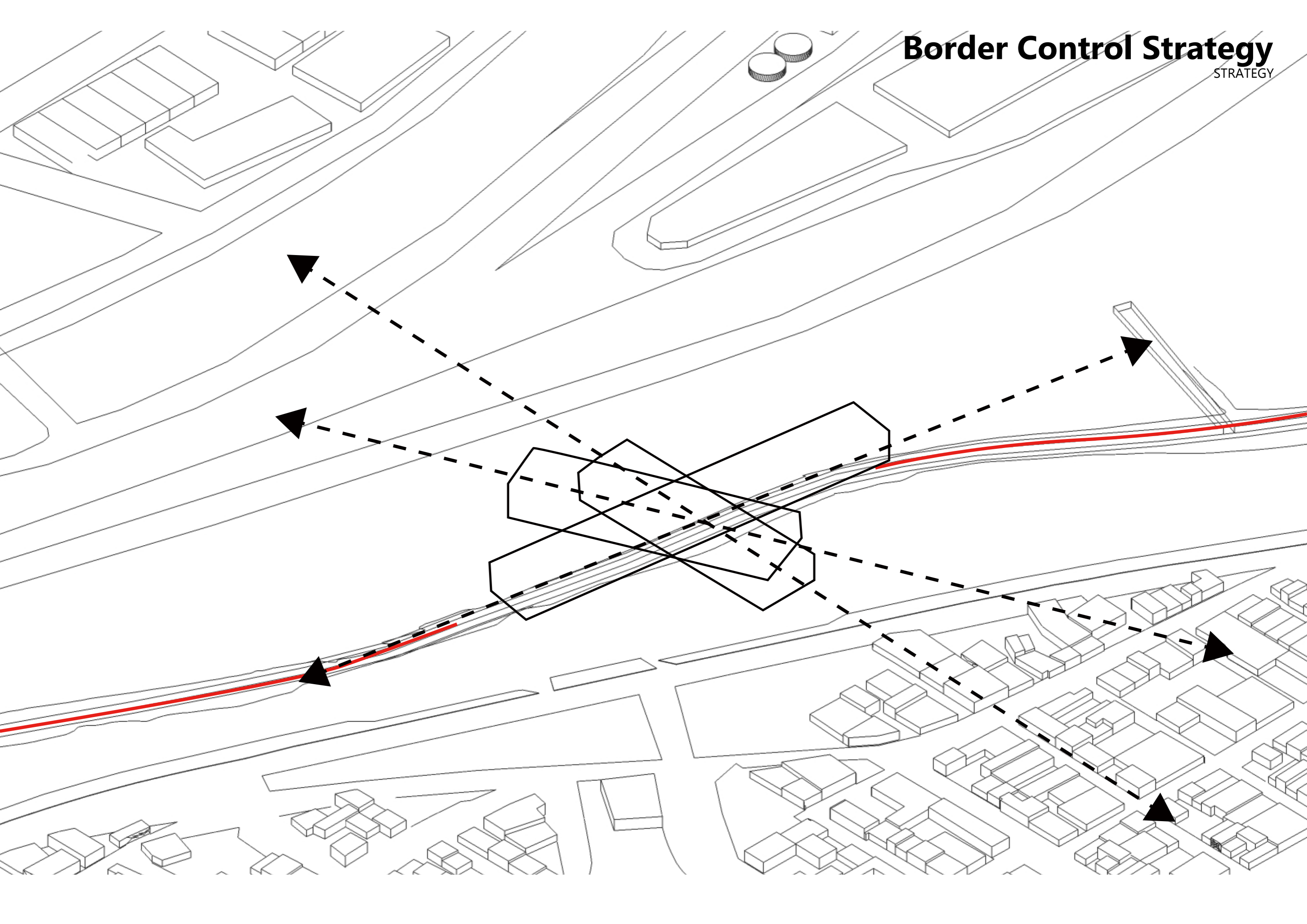
# Border Control Strategy

STRATEGY



# Border Control Strategy

STRATEGY



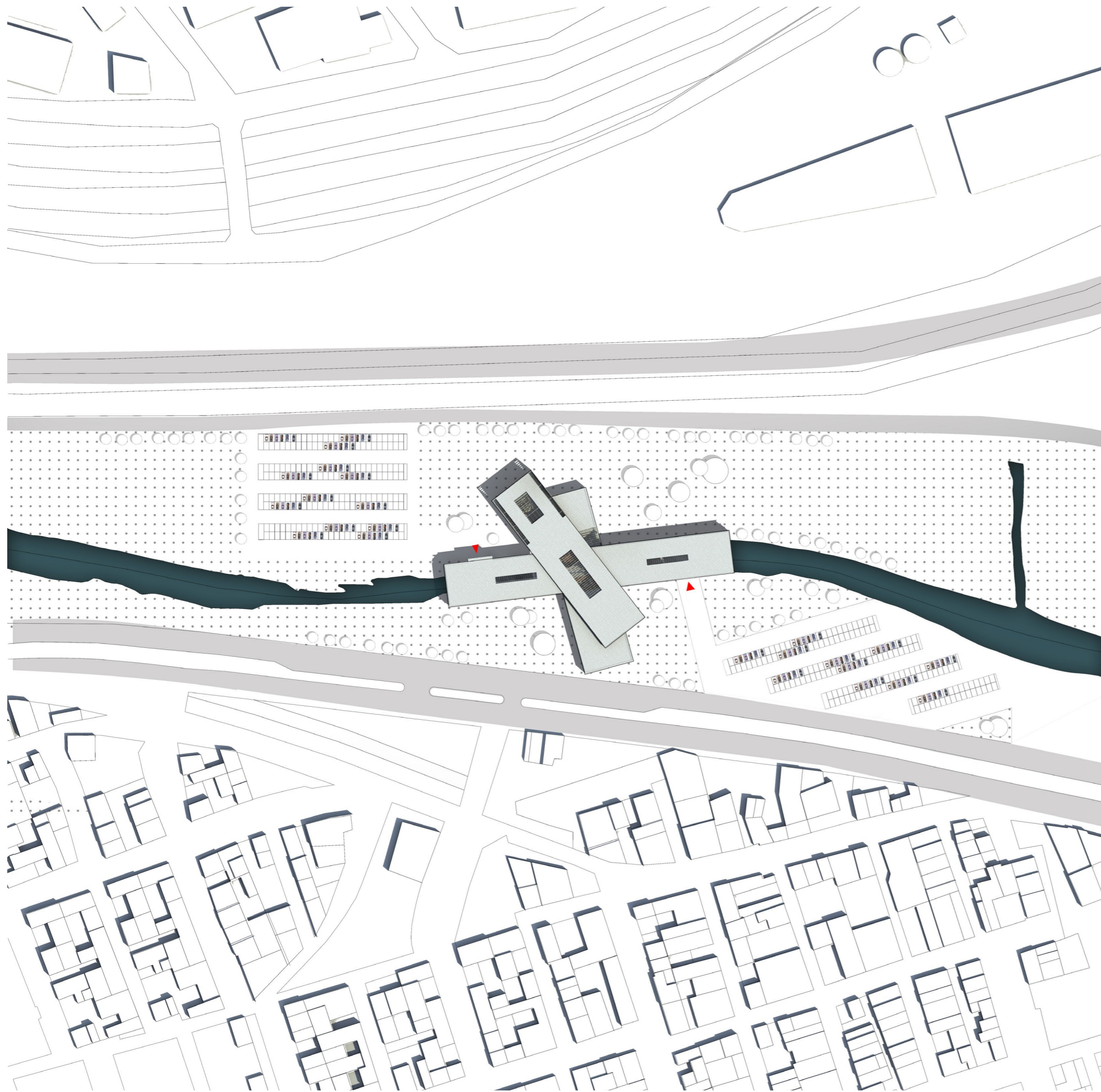
# Urban Axis

SITE PLAN



# Urban Axis

SITE PLAN



# Perspecive from USA Side

SITE PLAN



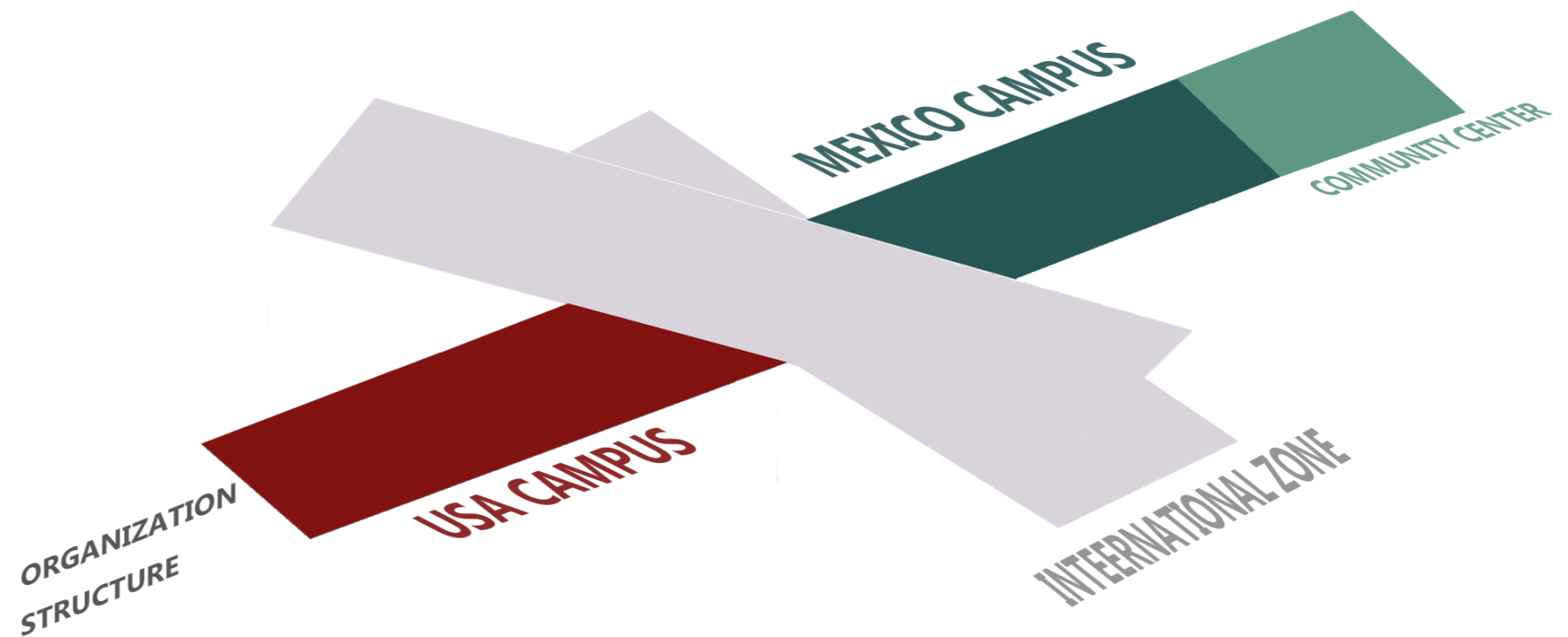
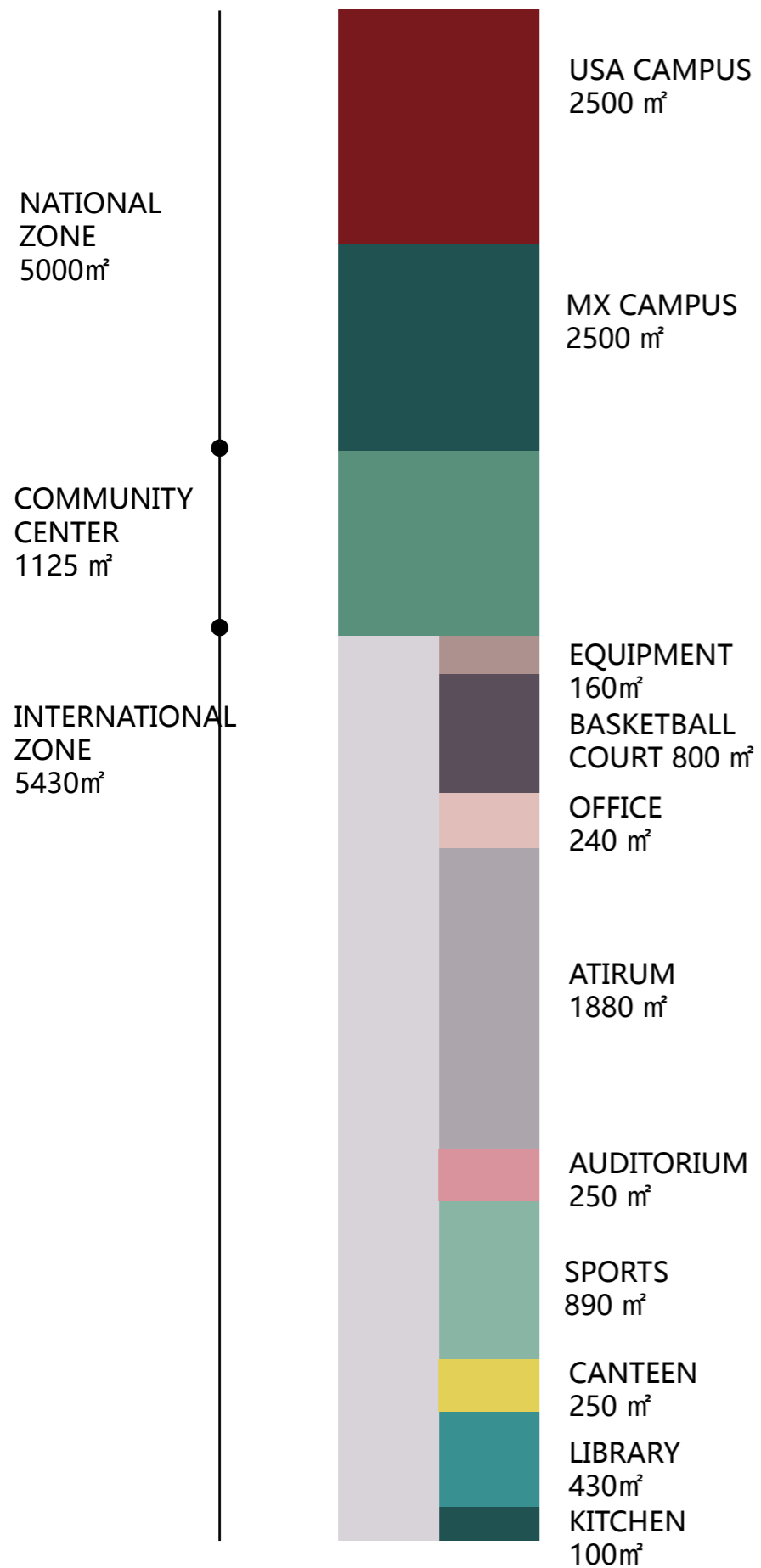
# Perspecive from Mexico Side



# Organization

Program

PROGRAM 11555m<sup>2</sup>



# Organization

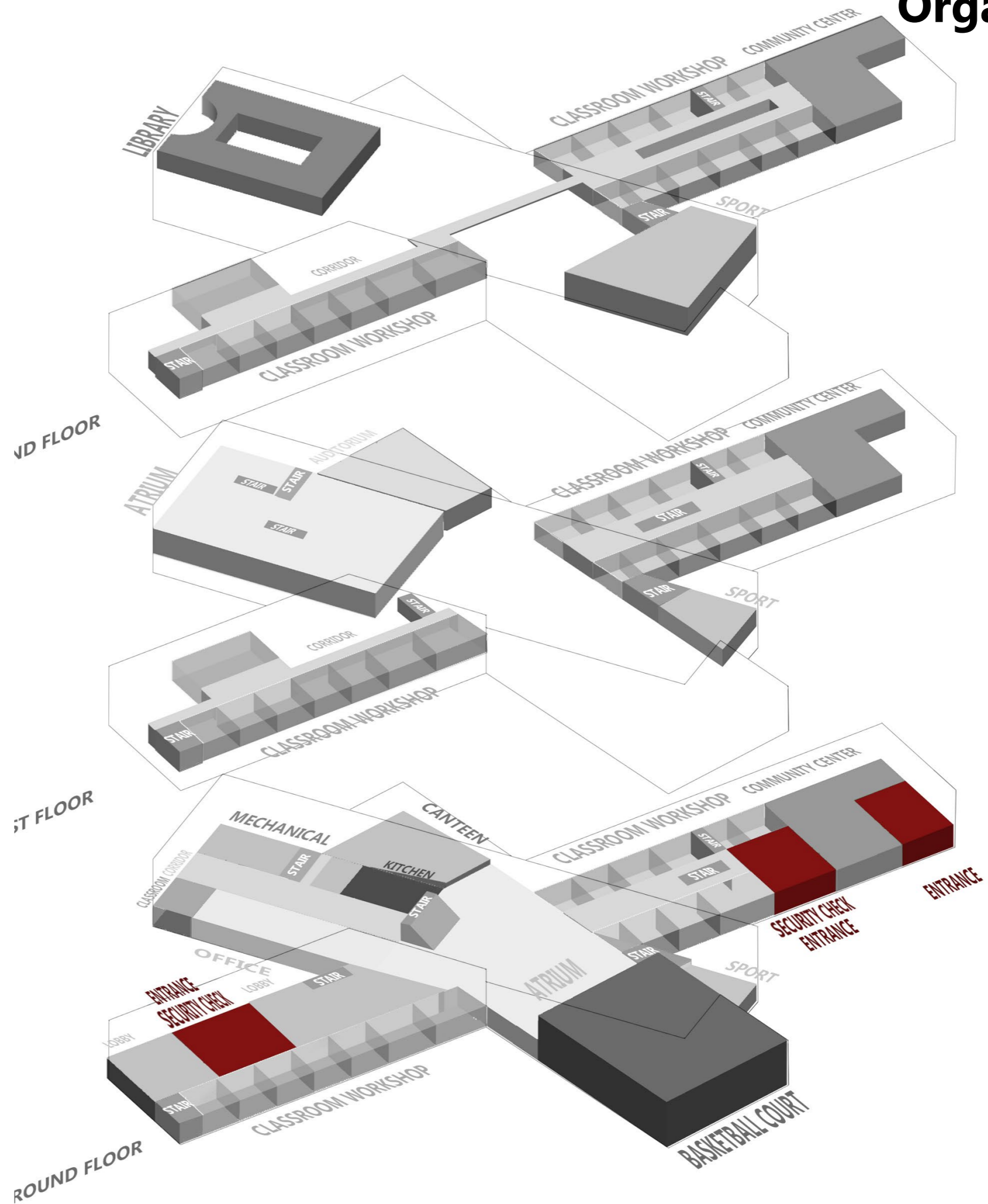
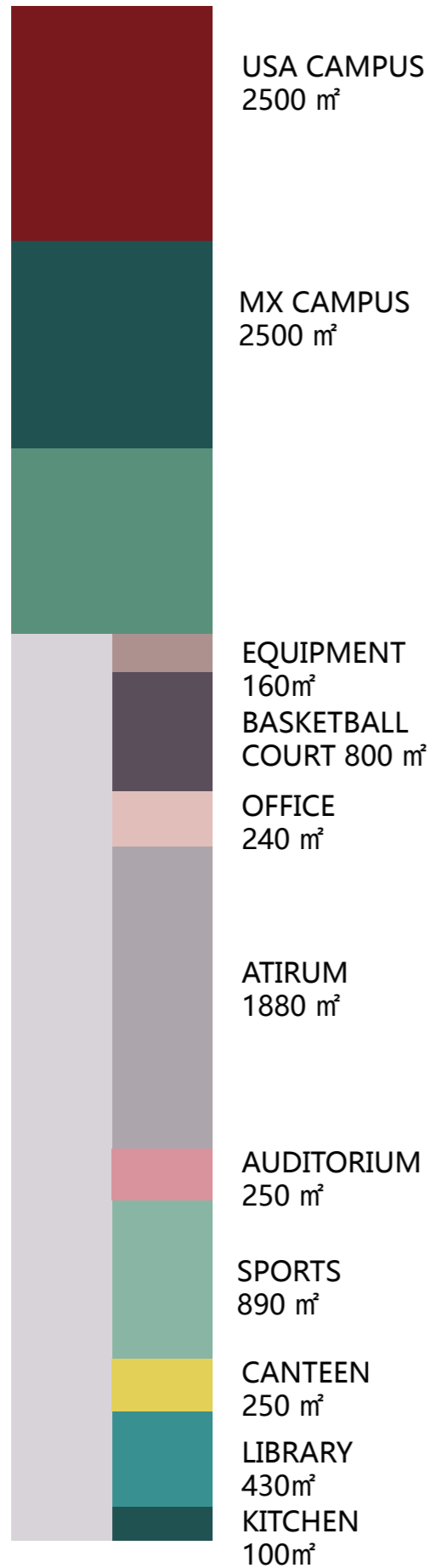
Program

PROGRAM 11555m<sup>2</sup>

NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

INTERNATIONAL ZONE  
5430m<sup>2</sup>





# Organization

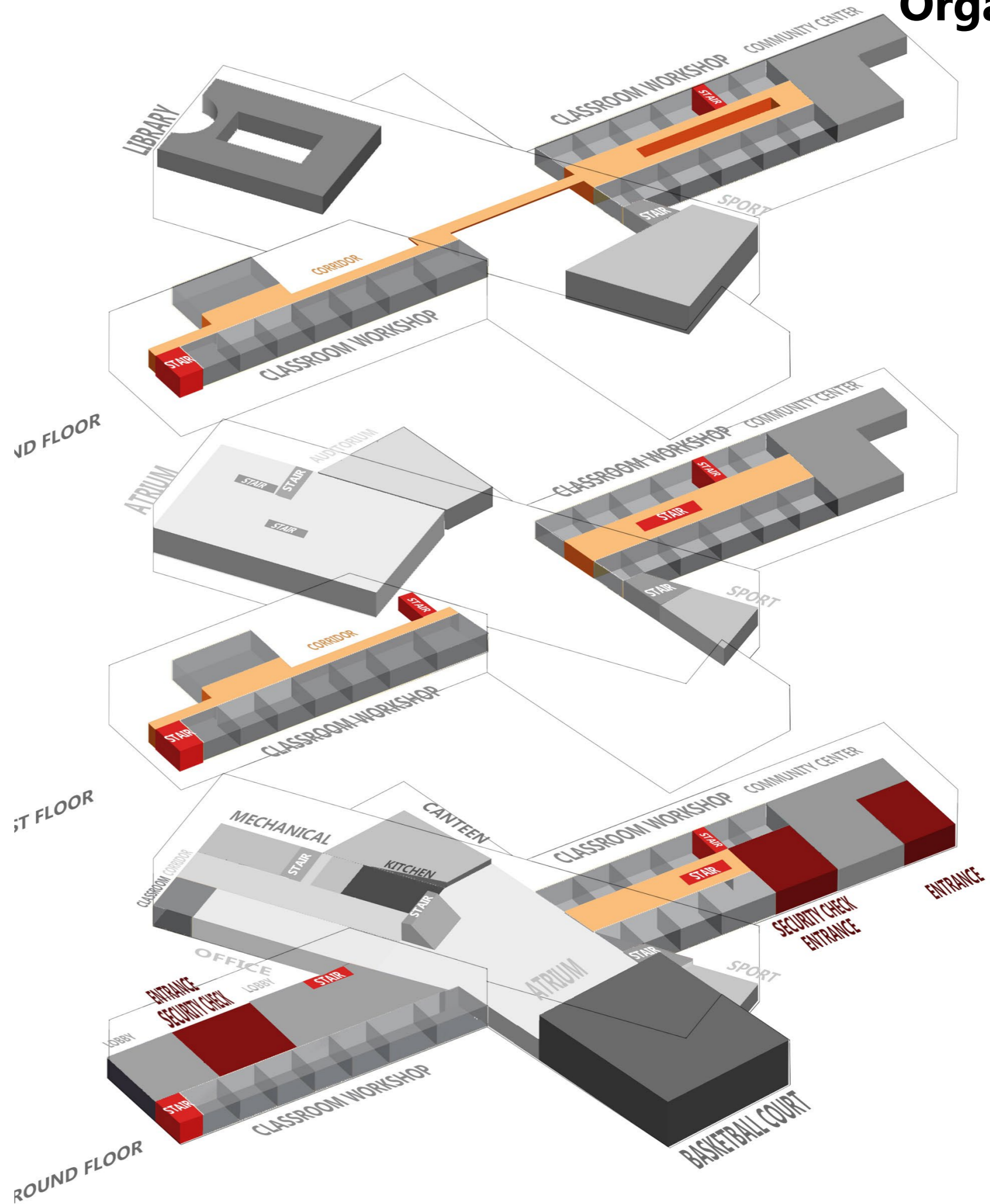
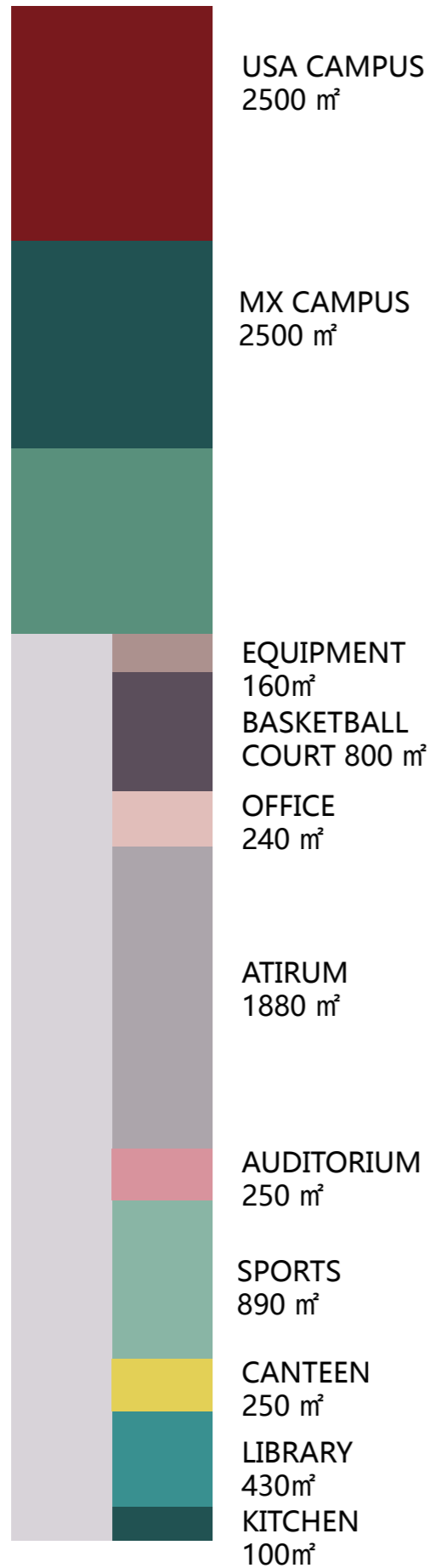
Program

PROGRAM 11555m<sup>2</sup>

NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

INTERNATIONAL ZONE  
5430m<sup>2</sup>



# Organization

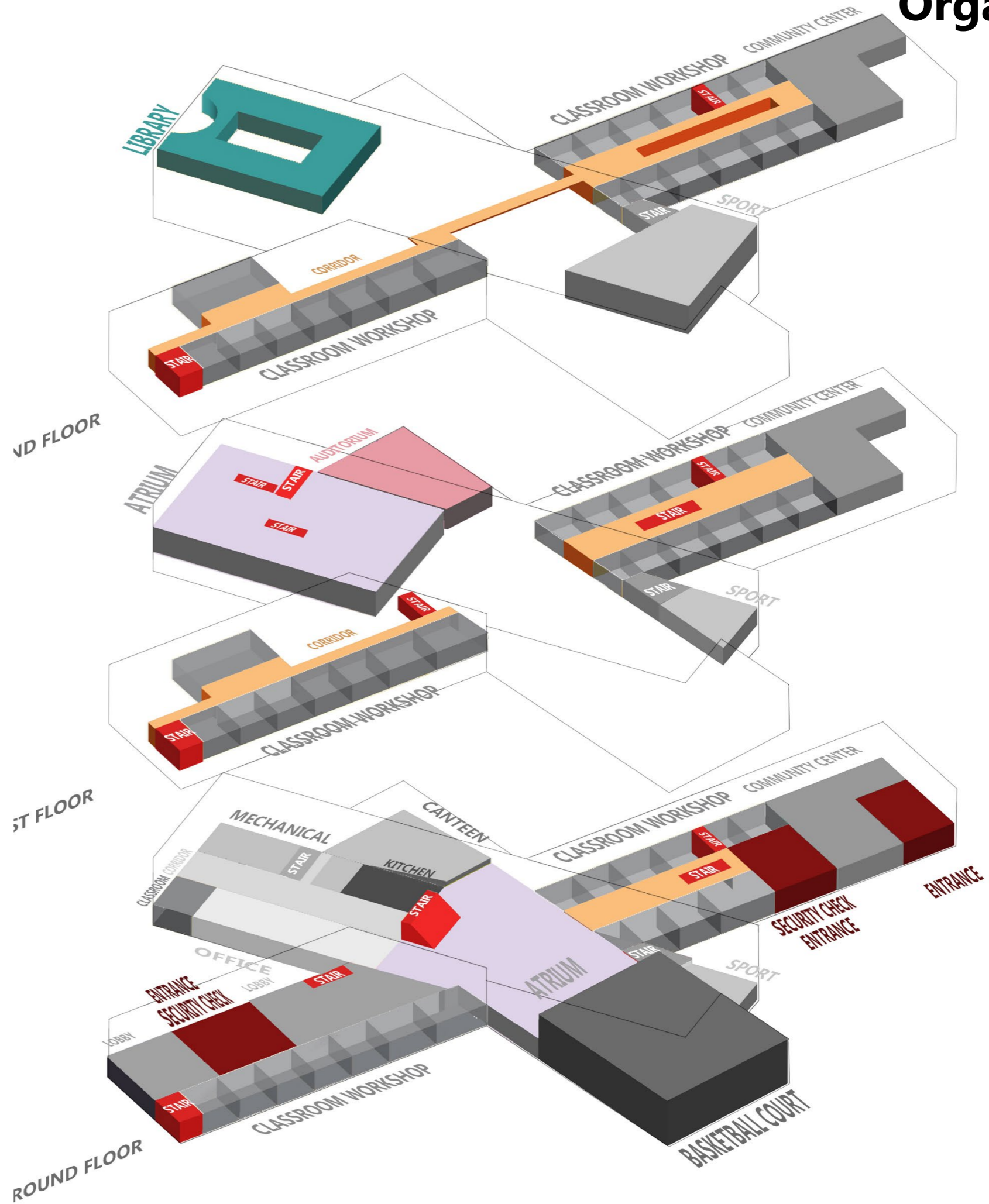
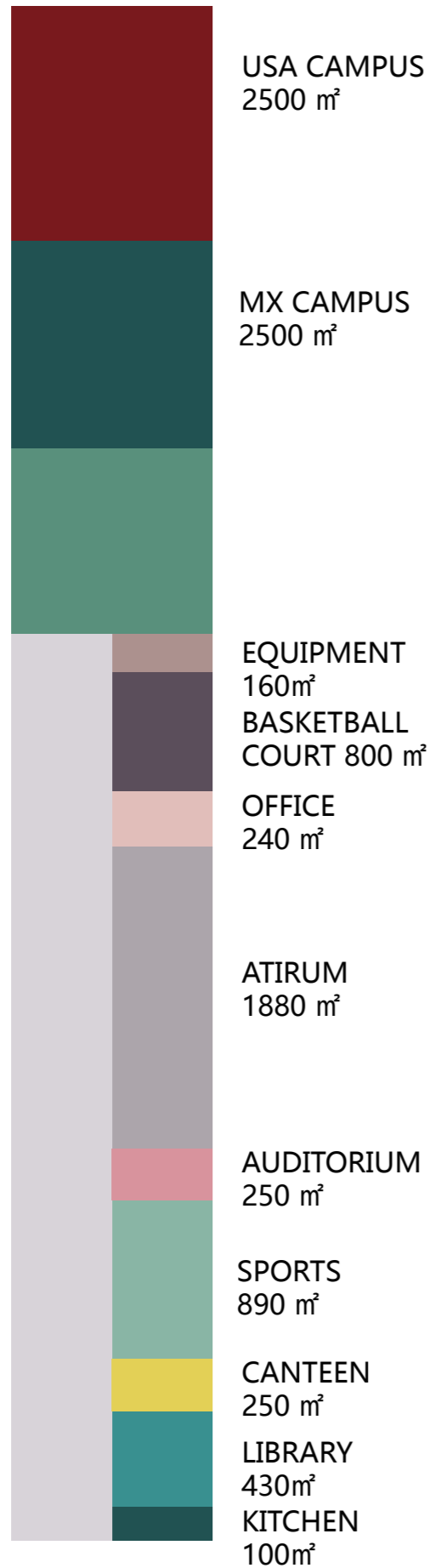
Program

PROGRAM 11555m<sup>2</sup>

NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

INTERNATIONAL ZONE  
5430m<sup>2</sup>



# Organization

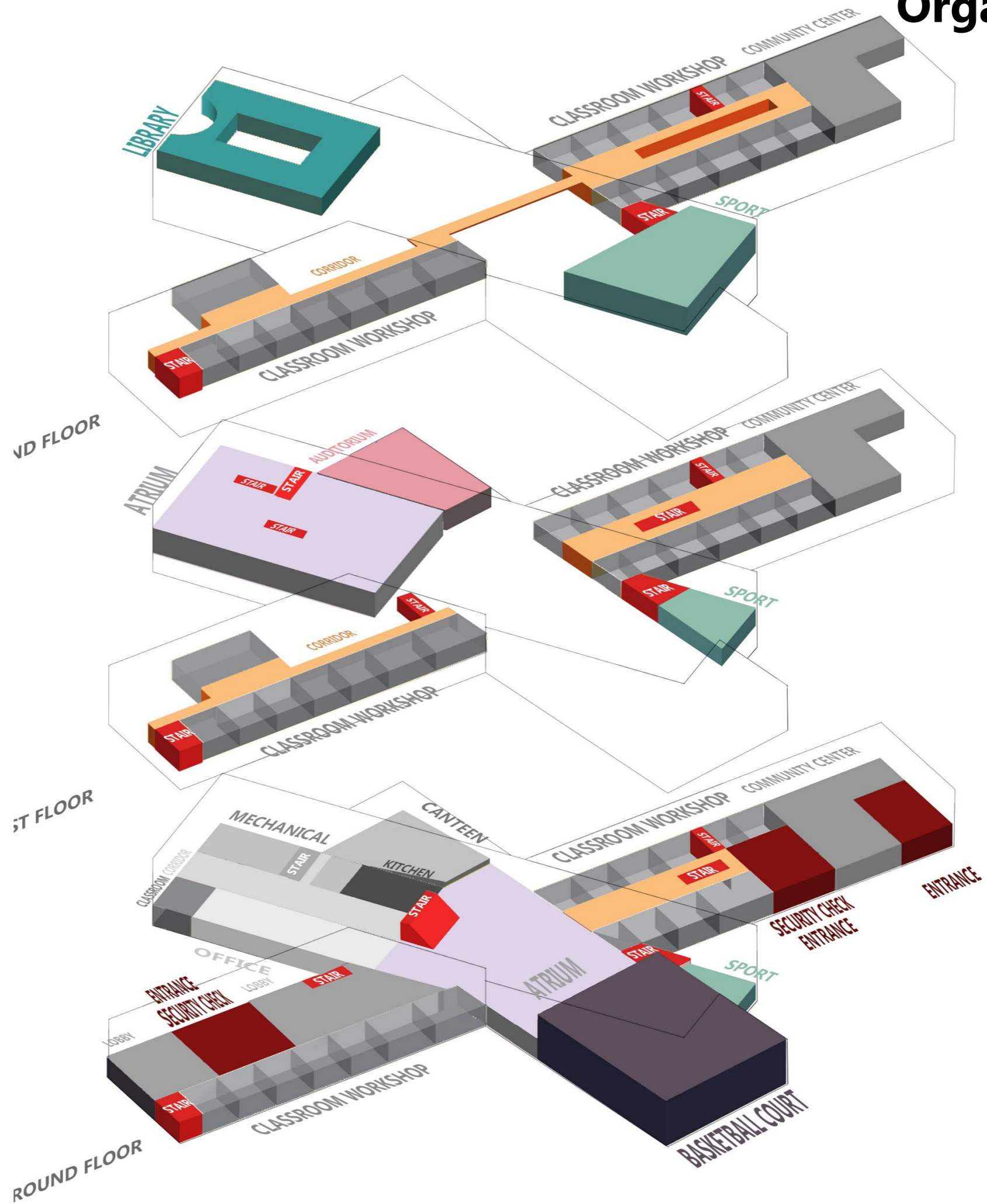
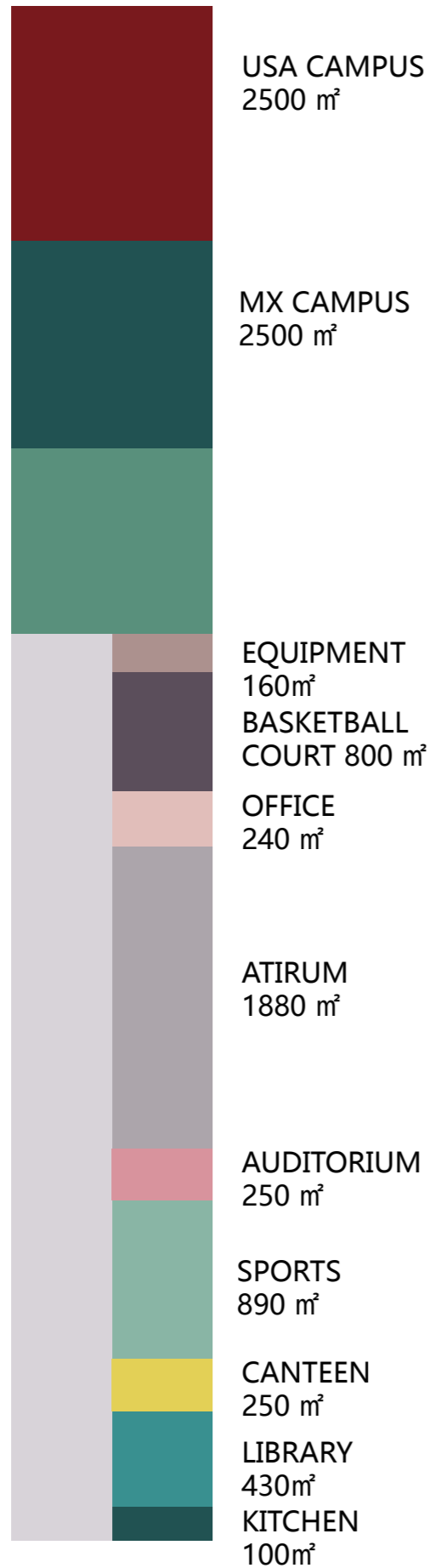
Program

PROGRAM 11555m<sup>2</sup>

NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

INTERNATIONAL ZONE  
5430m<sup>2</sup>



# Organization

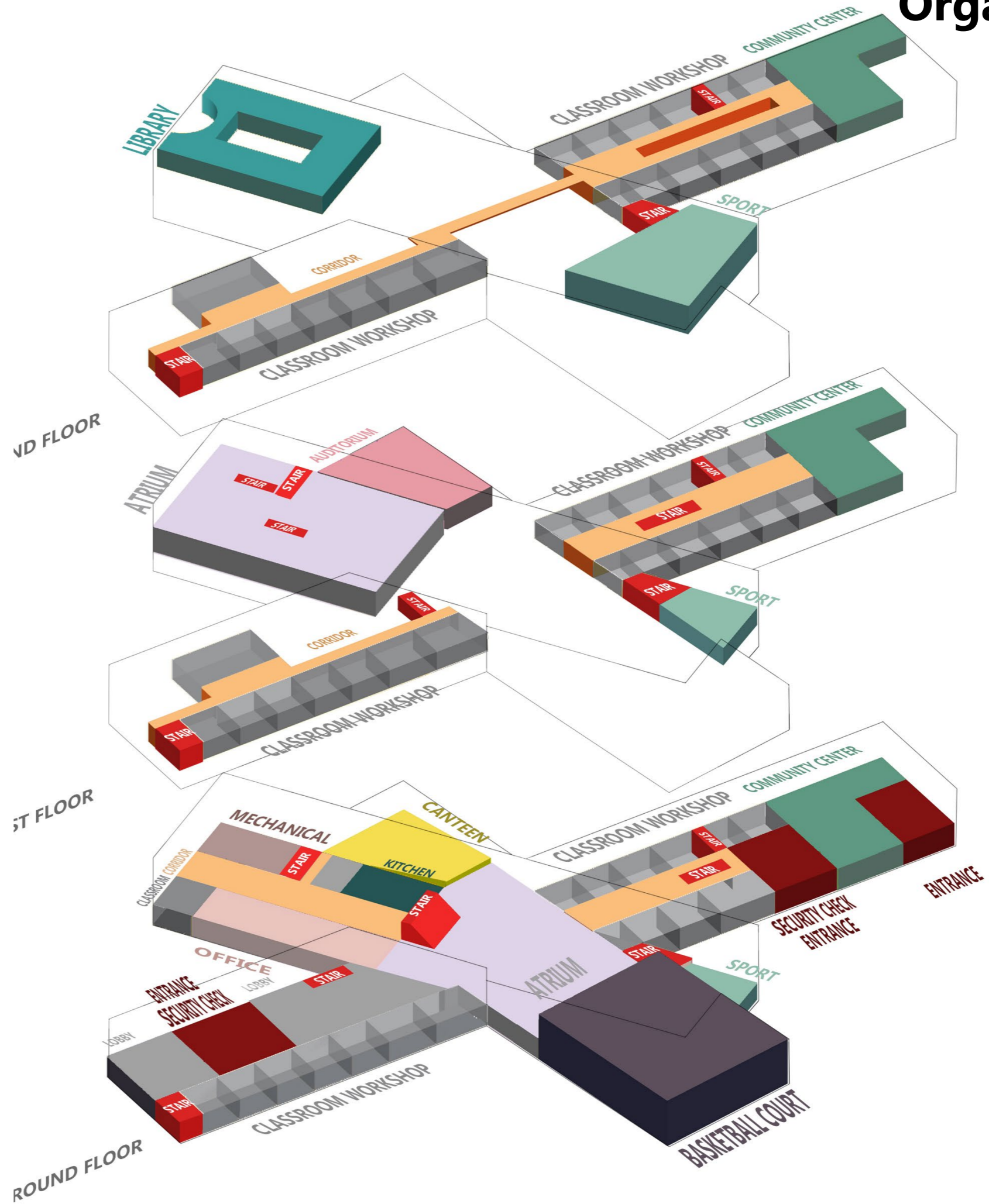
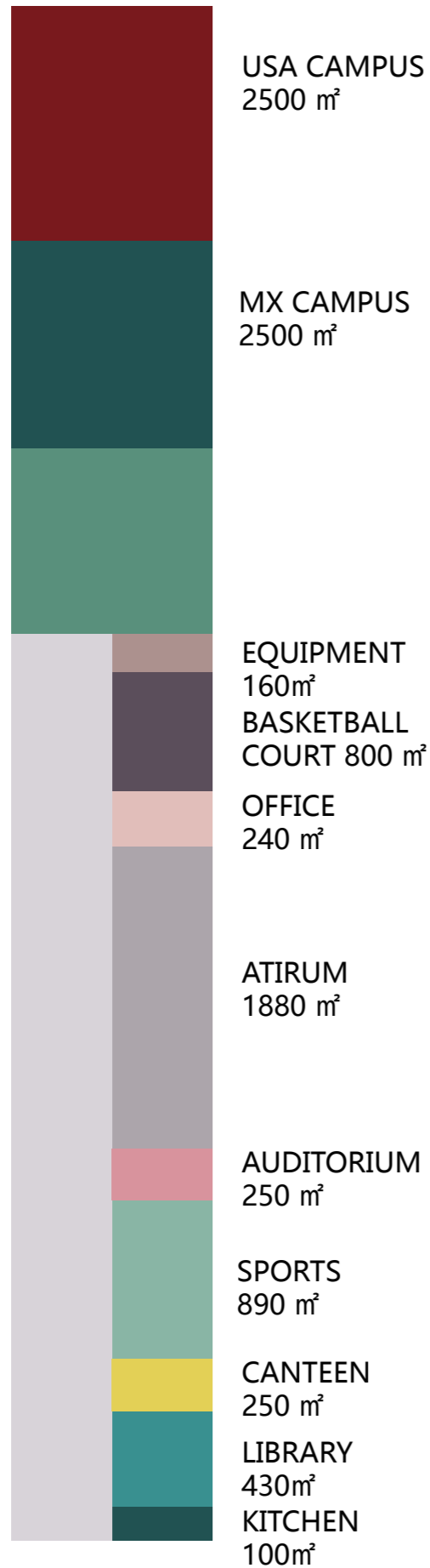
Program

PROGRAM 11555m<sup>2</sup>

NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

INTERNATIONAL ZONE  
5430m<sup>2</sup>



# Organization

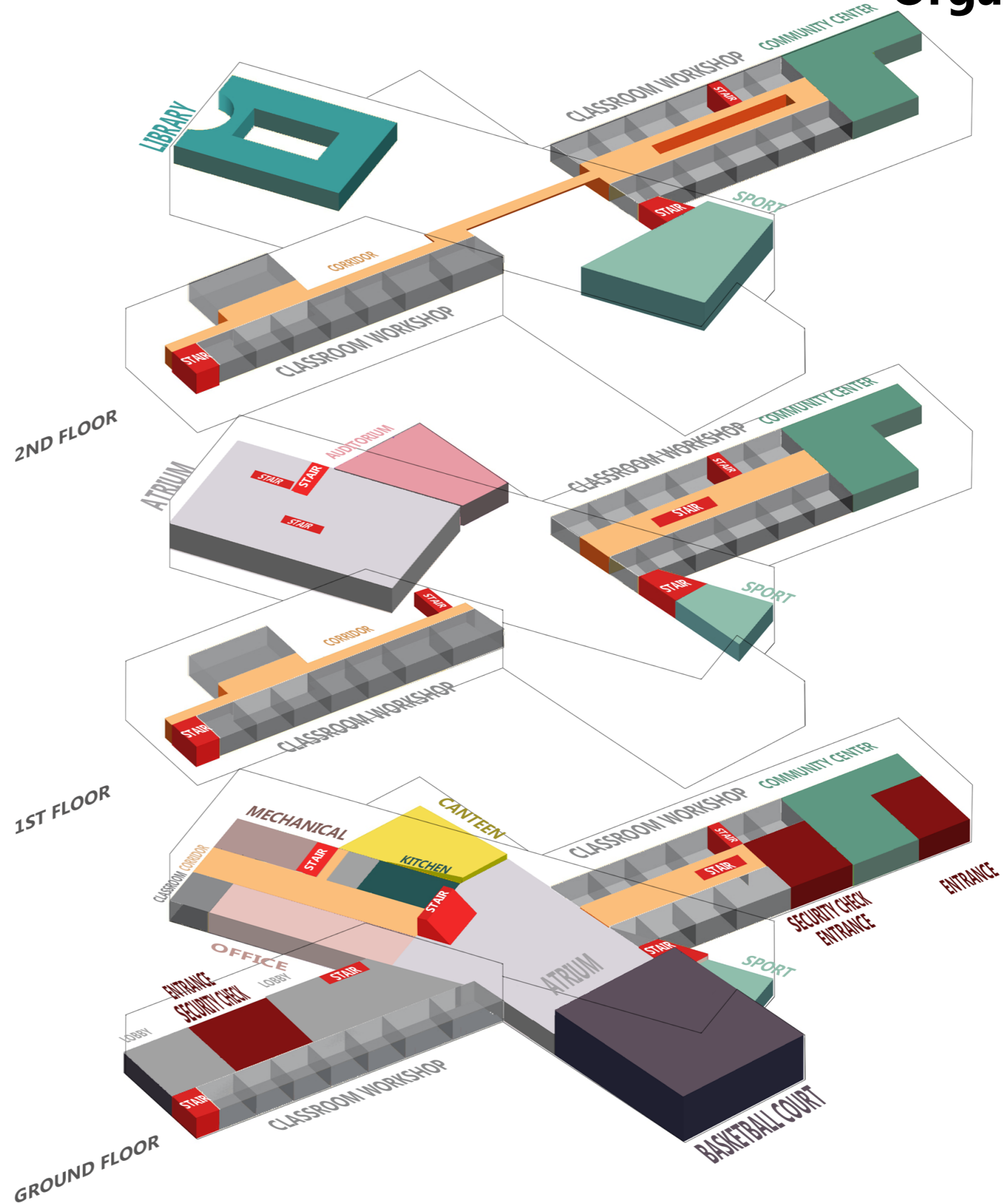
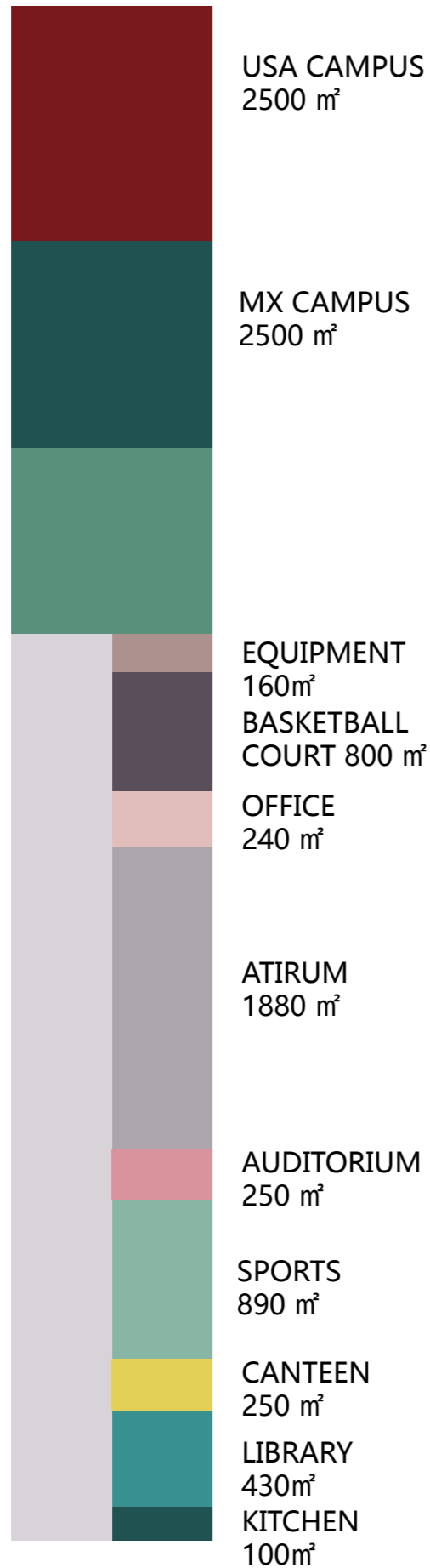
Program

PROGRAM 11555m<sup>2</sup>

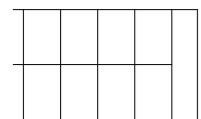
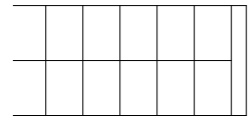
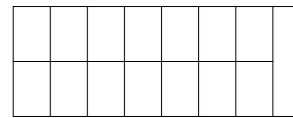
NATIONAL ZONE  
5000m<sup>2</sup>

COMMUNITY CENTER  
1125 m<sup>2</sup>

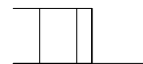
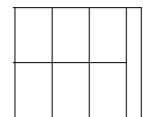
INTERNATIONAL ZONE  
5430m<sup>2</sup>



# Ground Floor

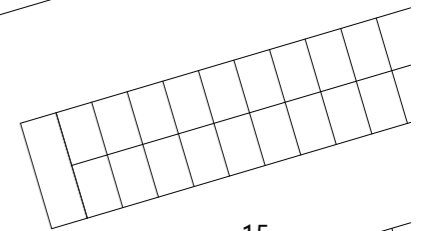


15

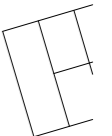


- |                         |                   |
|-------------------------|-------------------|
| 1. CLASSROOM/WORKSHOP   | 9. EQUIPMENT ROOM |
| 2. INTERNATIONAL ATRIUM | 10. MEETING ROOM  |
| 3. BASKETBALL COURT     | 11. ENTRANCE HALL |
| 4. DRESSING ROOM        | 12. CORRIDOR      |
| 5. CANTEEN              | 13. HEALTH CARE   |
| 6. OFFICE               | 14. GYM           |
| 7. COMMON CLASSROOM     | 15. PARKING       |
| 8. KITCHEN              |                   |

GROUND FLOOR PLAN 1:500



15



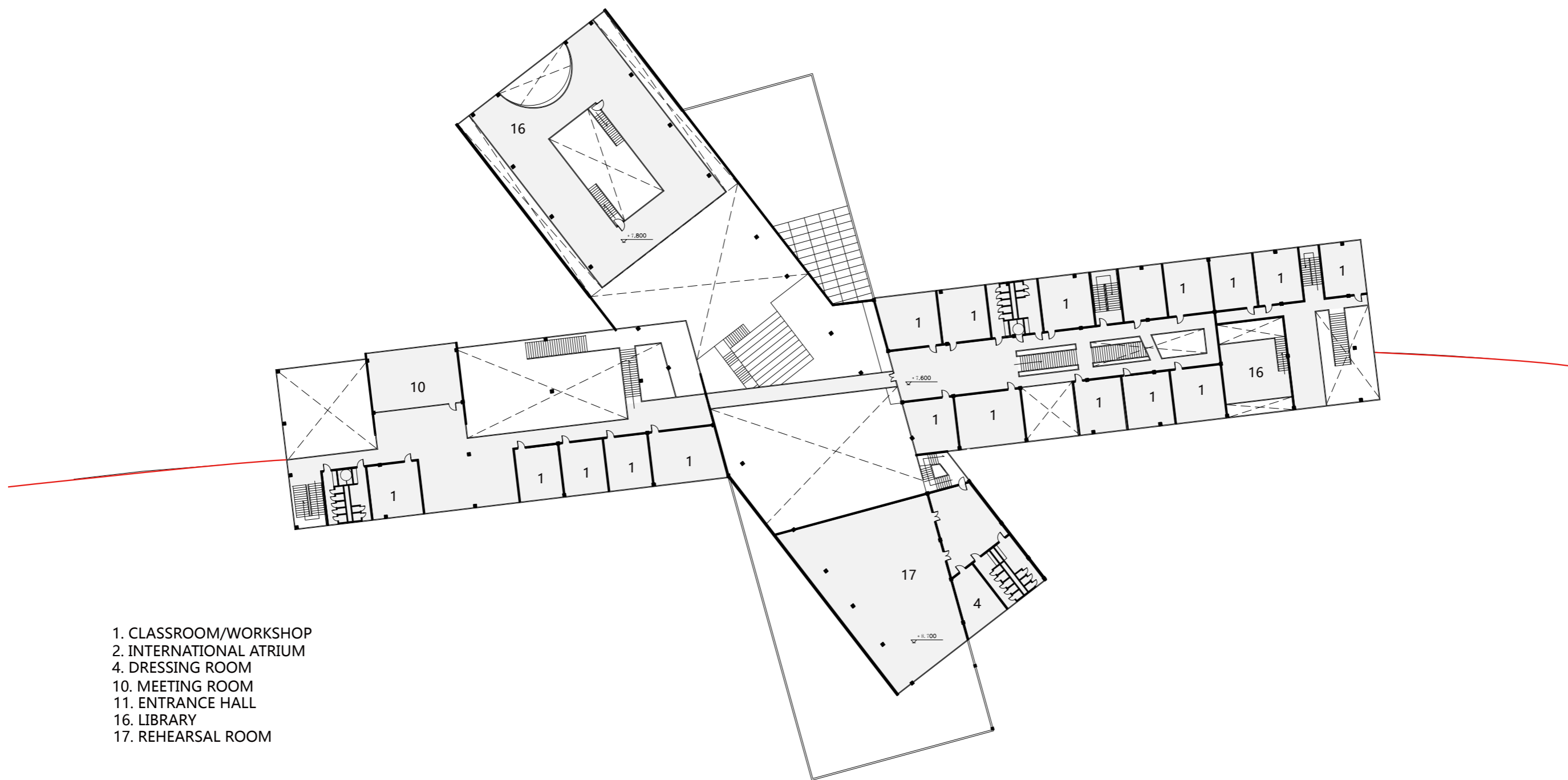
# 1st Floor



- 1. CLASSROOM/WORKSHOP
- 2. INTERNATIONAL ATRIUM
- 4. DRESSING ROOM
- 10. MEETING ROOM
- 11. ENTRANCE HALL
- 16. LIBRARY
- 17. REHEARSAL ROOM
- 18. AUDITORIUM

1ST FLOOR PLAN 1:500

# 2nd Floor



- 1. CLASSROOM/WORKSHOP
- 2. INTERNATIONAL ATRIUM
- 4. DRESSING ROOM
- 10. MEETING ROOM
- 11. ENTRANCE HALL
- 16. LIBRARY
- 17. REHEARSAL ROOM

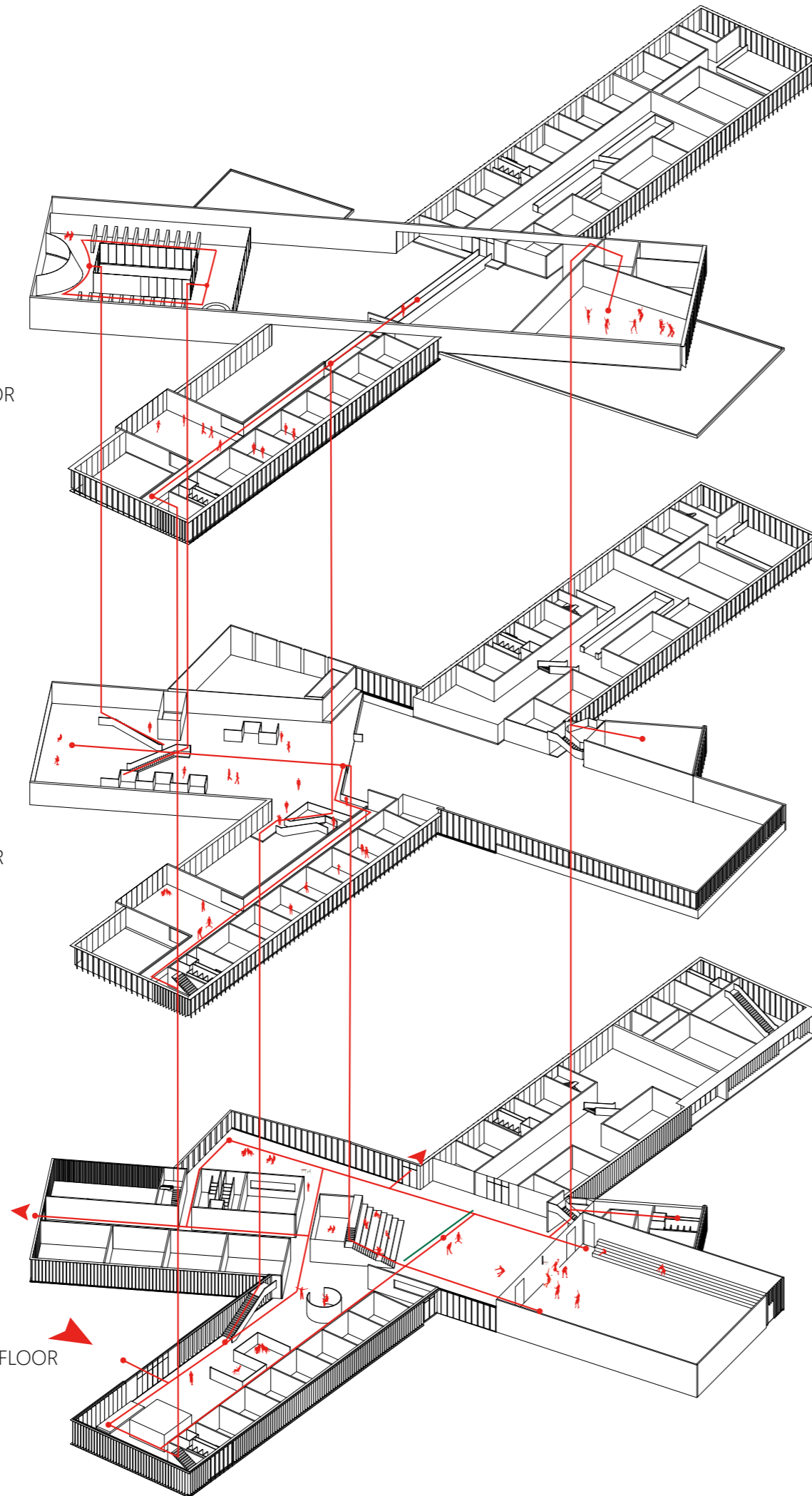
2ND FLOOR PLAN 1:500



2ND FLOOR

1ST FLOOR

GROUND FLOOR



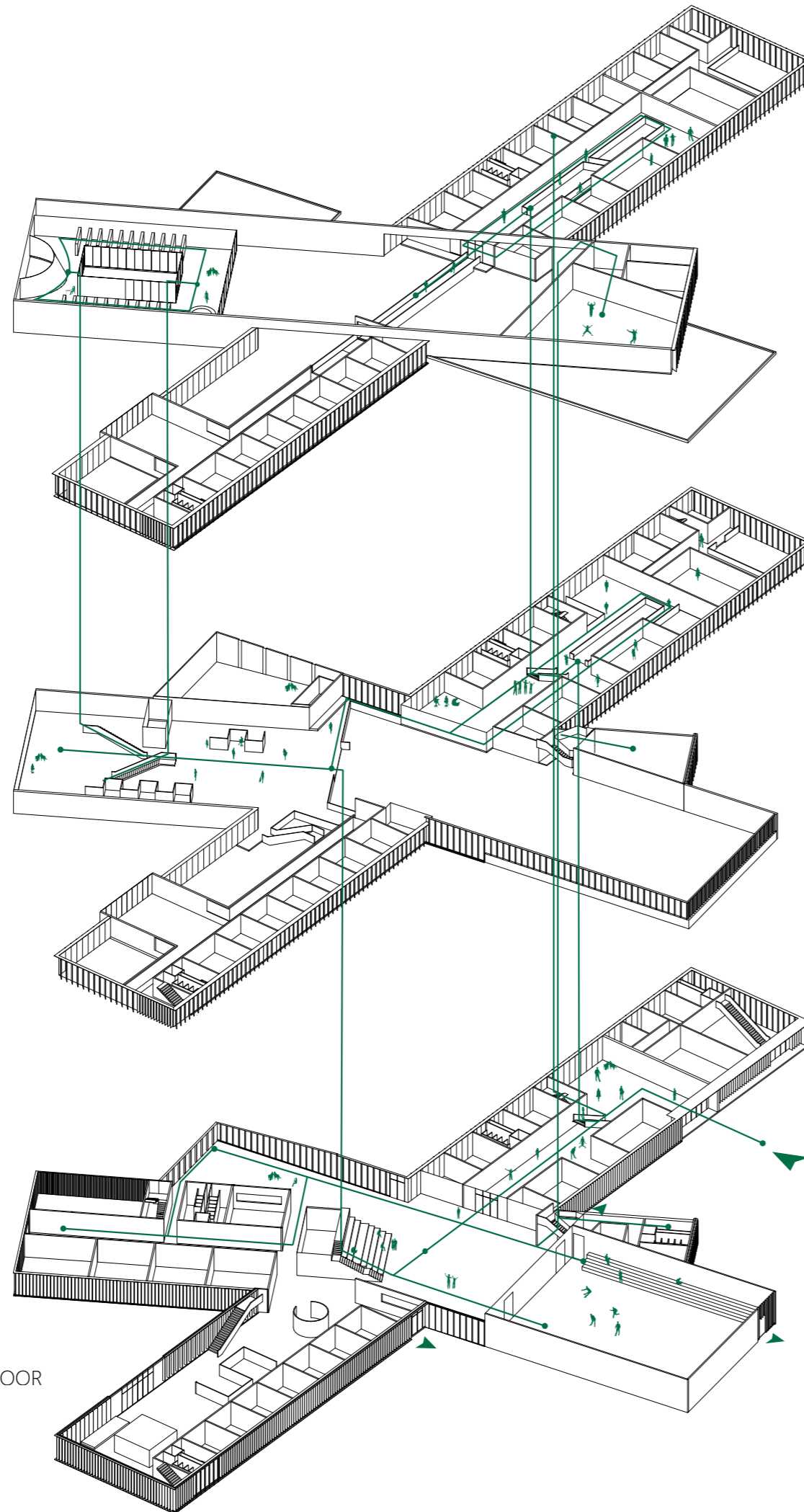
# Mexican Student

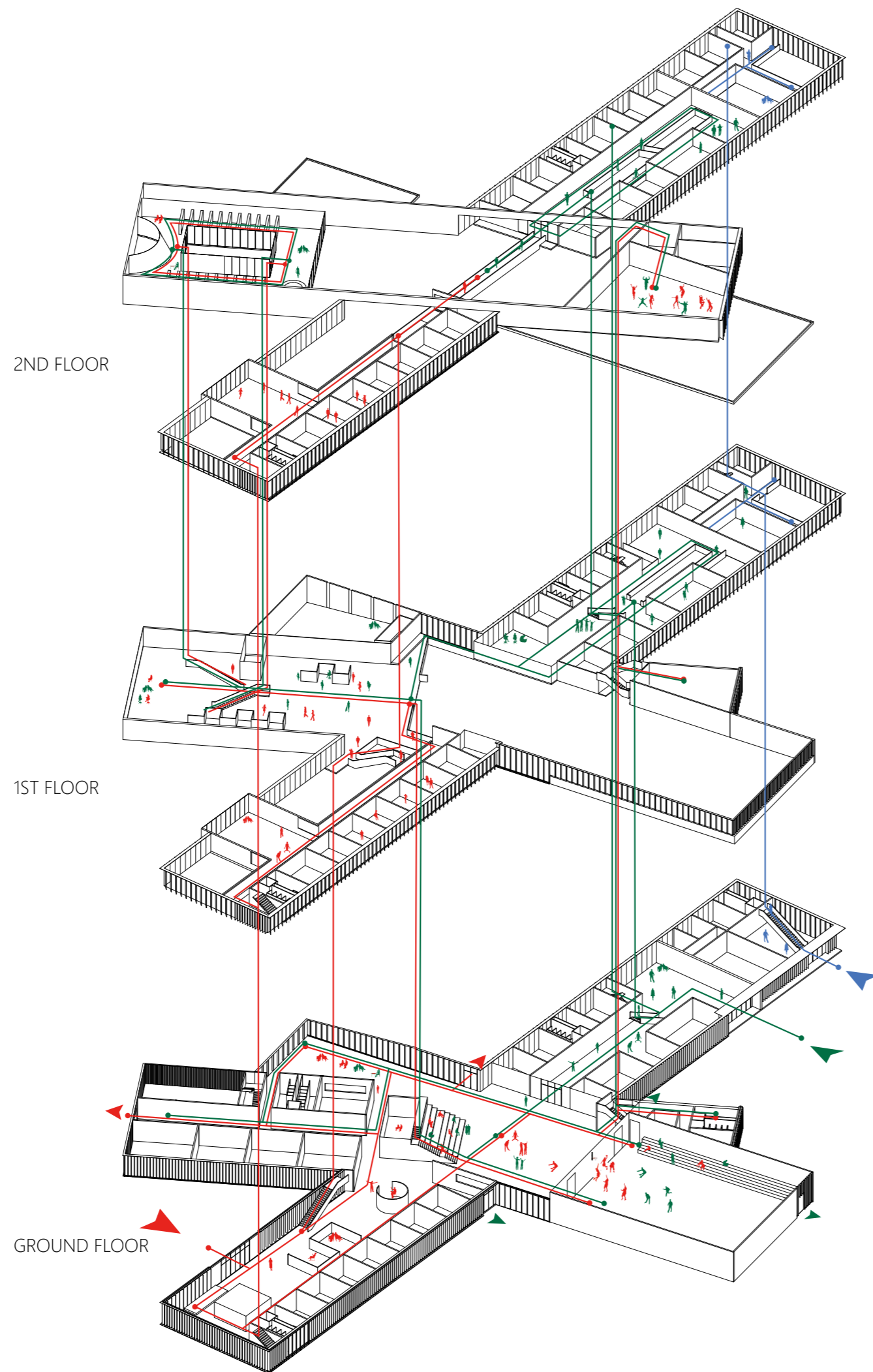
CIRCULATION

2ND FLOOR

1ST FLOOR

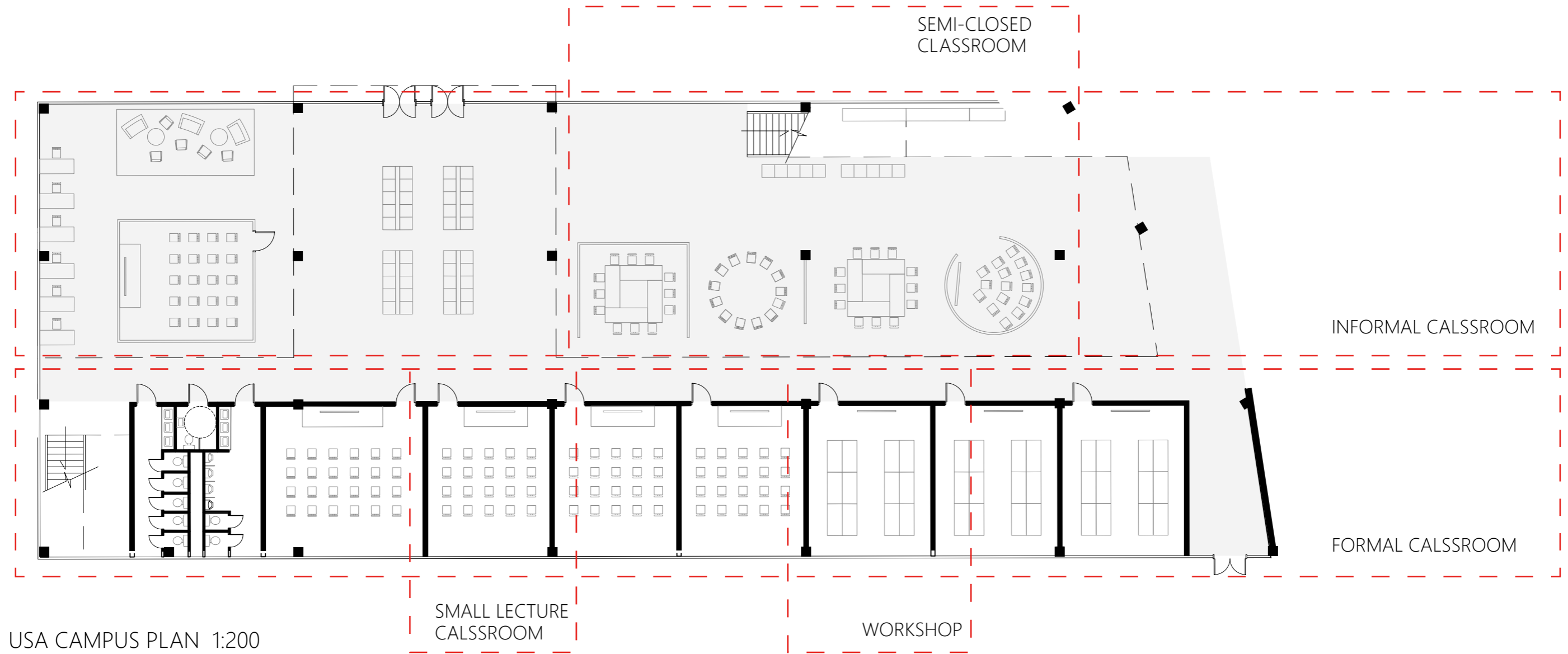
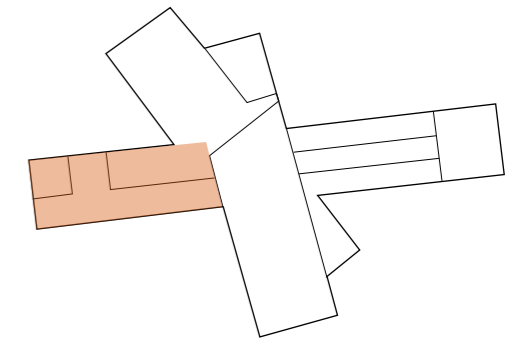
GROUND FLOOR





# USA Campus

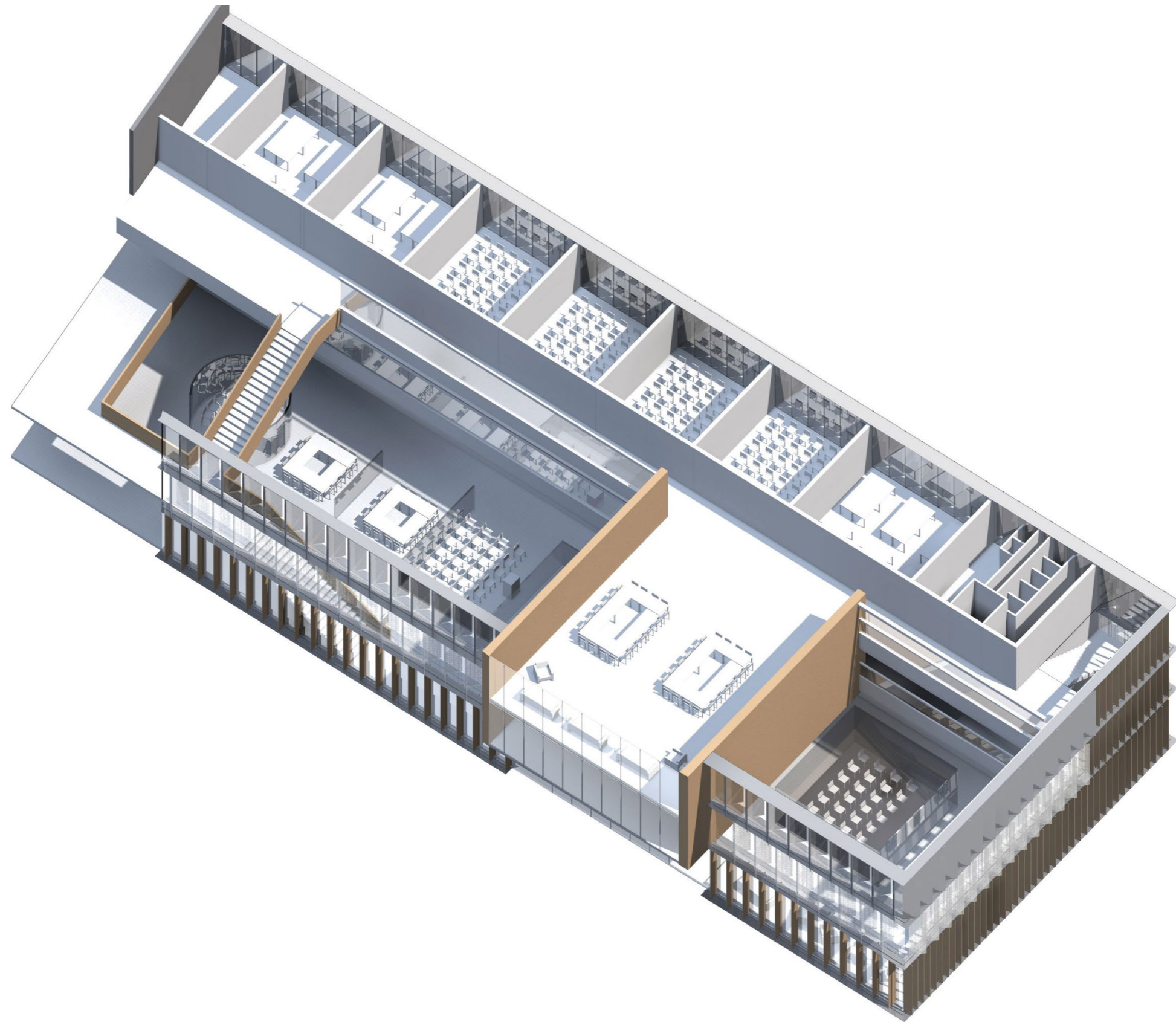
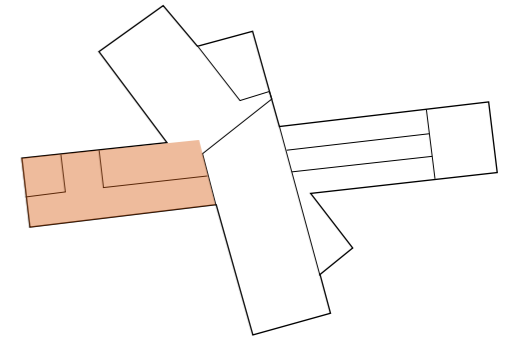
FRAGMENT ANALYSIS



USA CAMPUS PLAN 1:200

# USA Campus

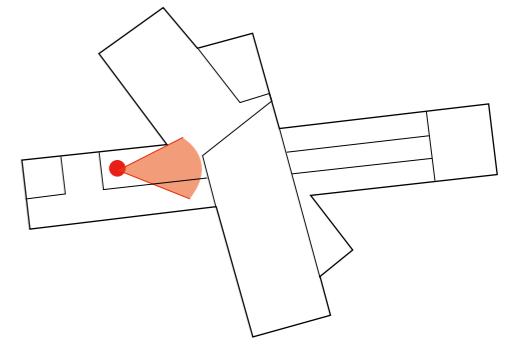
FRAGMENT ANALYSIS





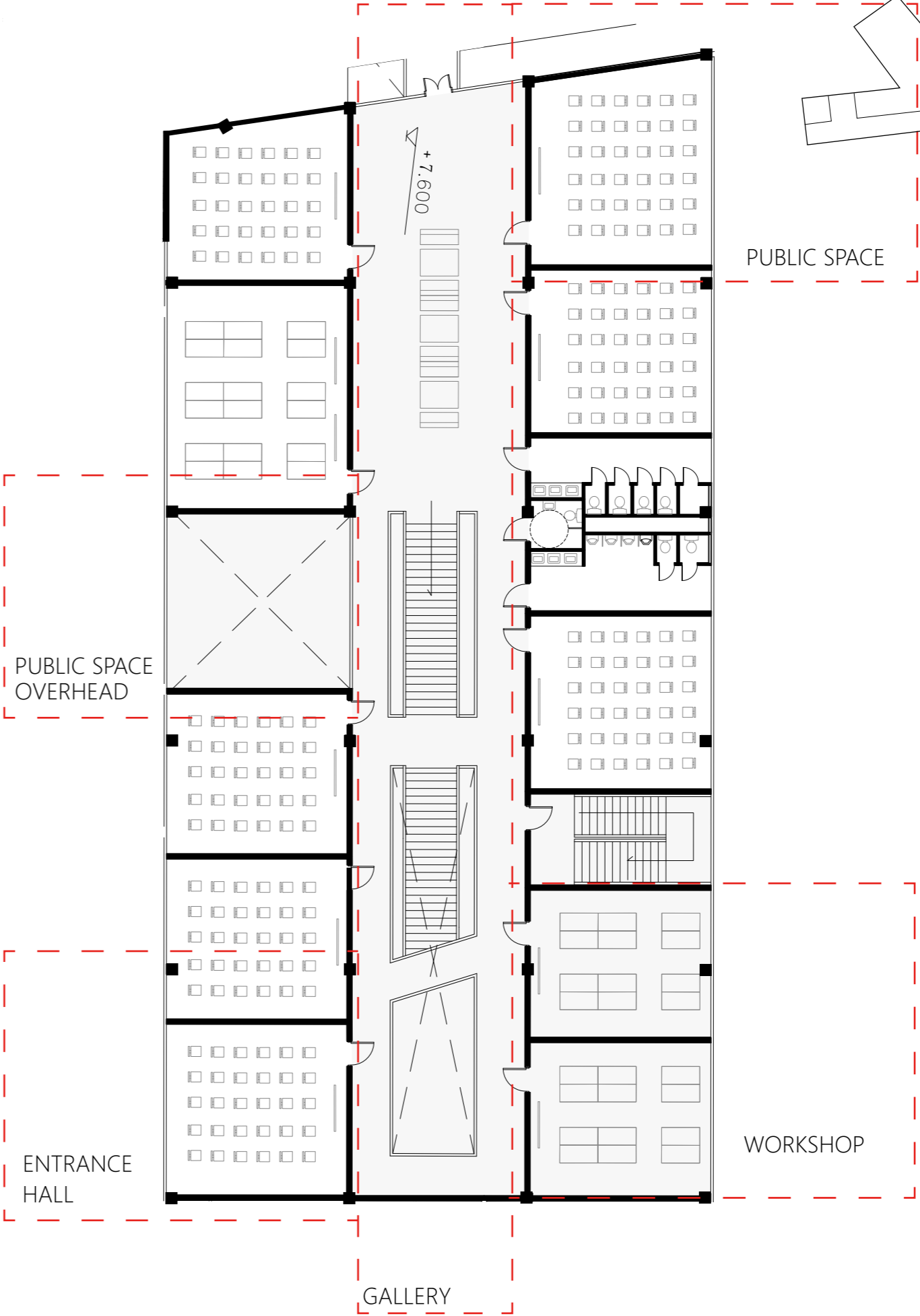
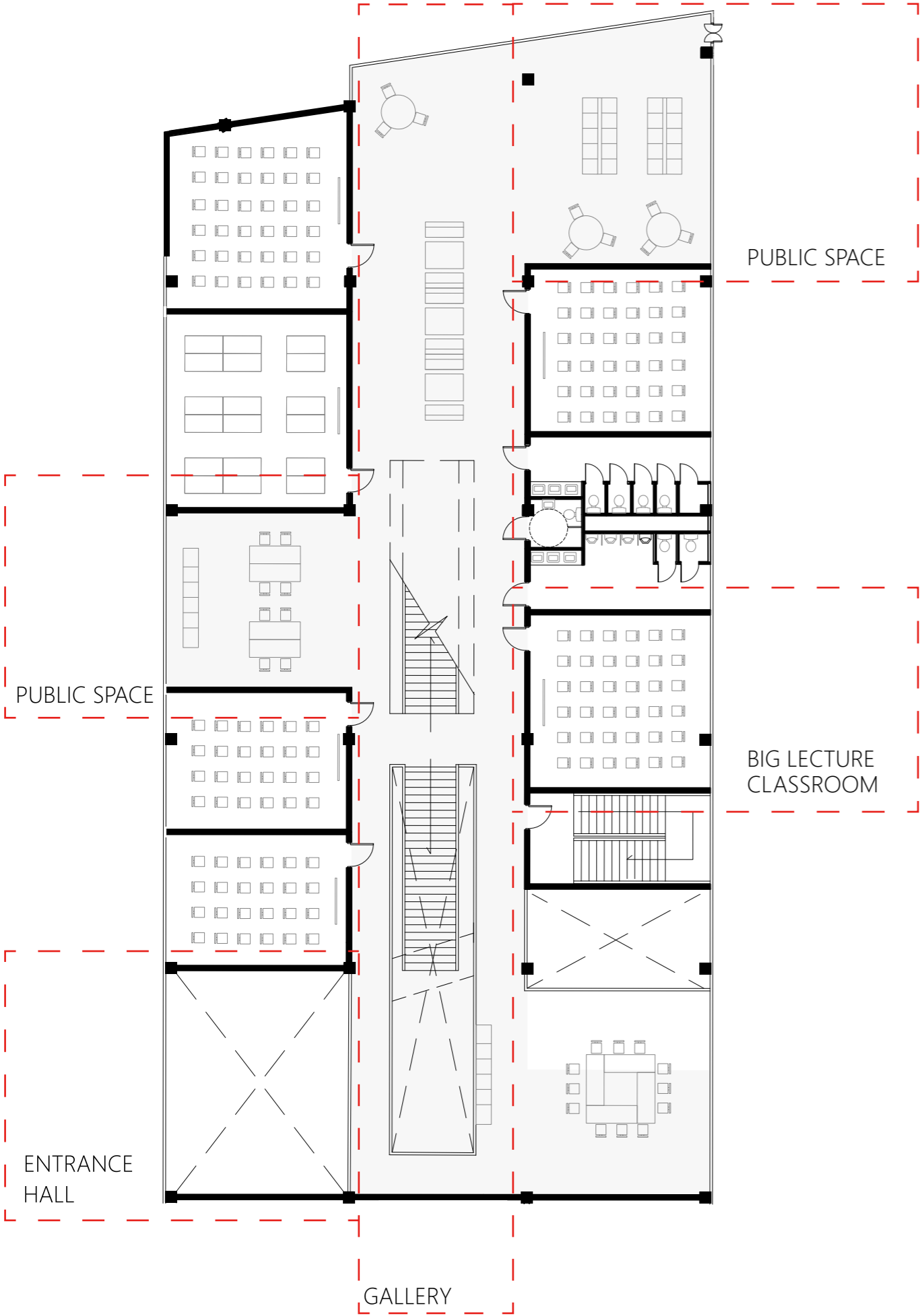
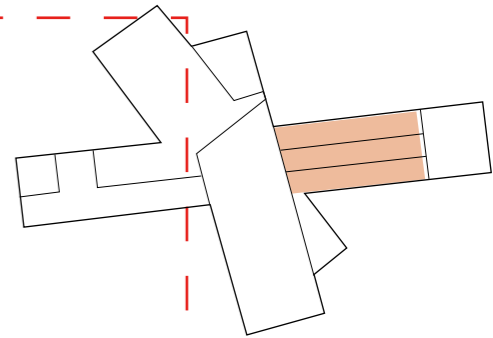
# USA Campus

FRAGMENT ANALYSIS



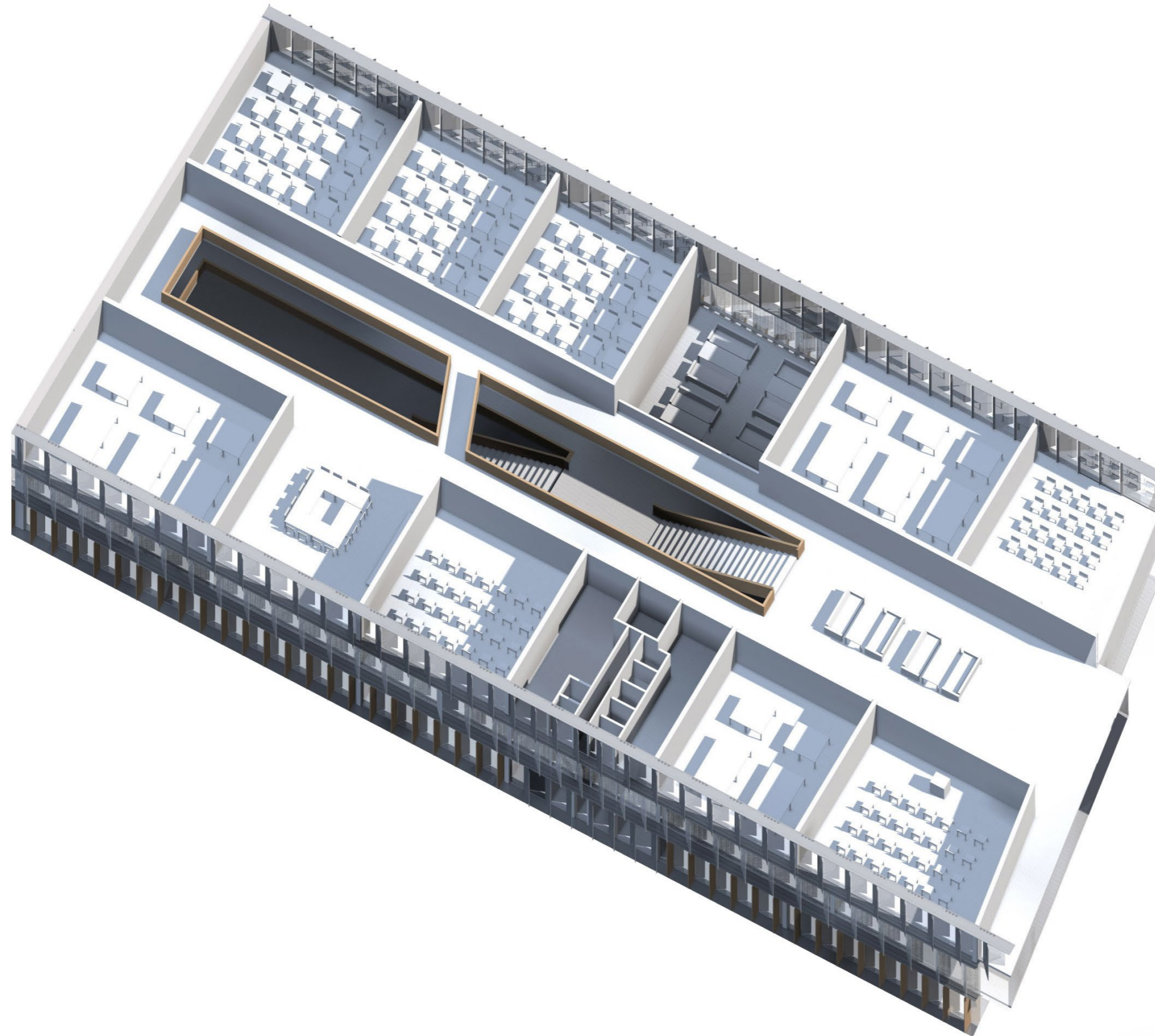
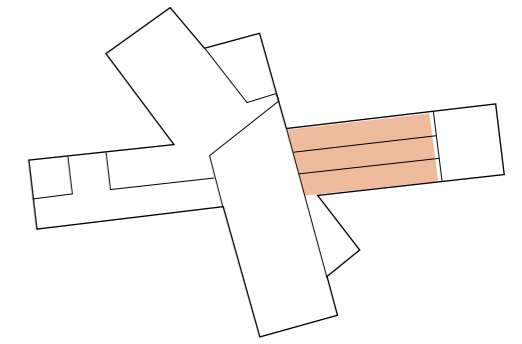
# Mexico Campus

FRAGMENT ANALYSIS



# Mexico Campus

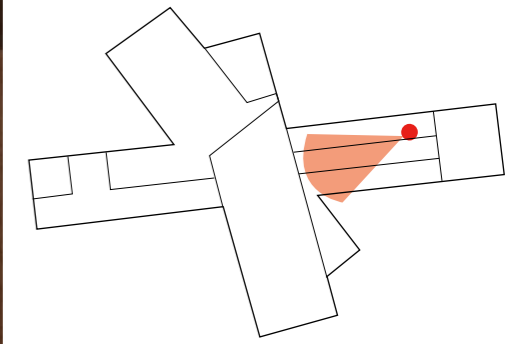
FRAGMENT ANALYSIS





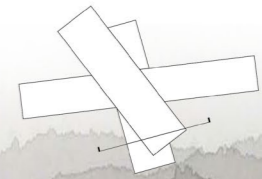
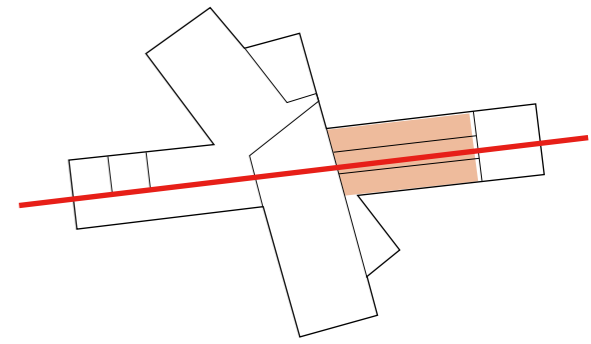
# Mexico Campus

FRAGMENT ANALYSIS



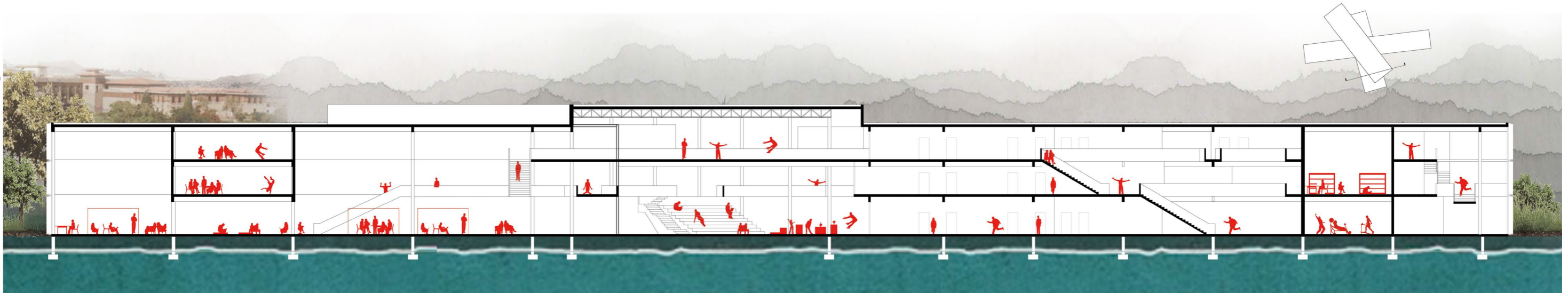
# Campus Life

FRAGMENT ANALYSIS



NC 1 : 200

+12.800  
+11.200  
+7.600  
+4.000  
+0.000



USA CAMPUS

INTERNATIONAL ZONE

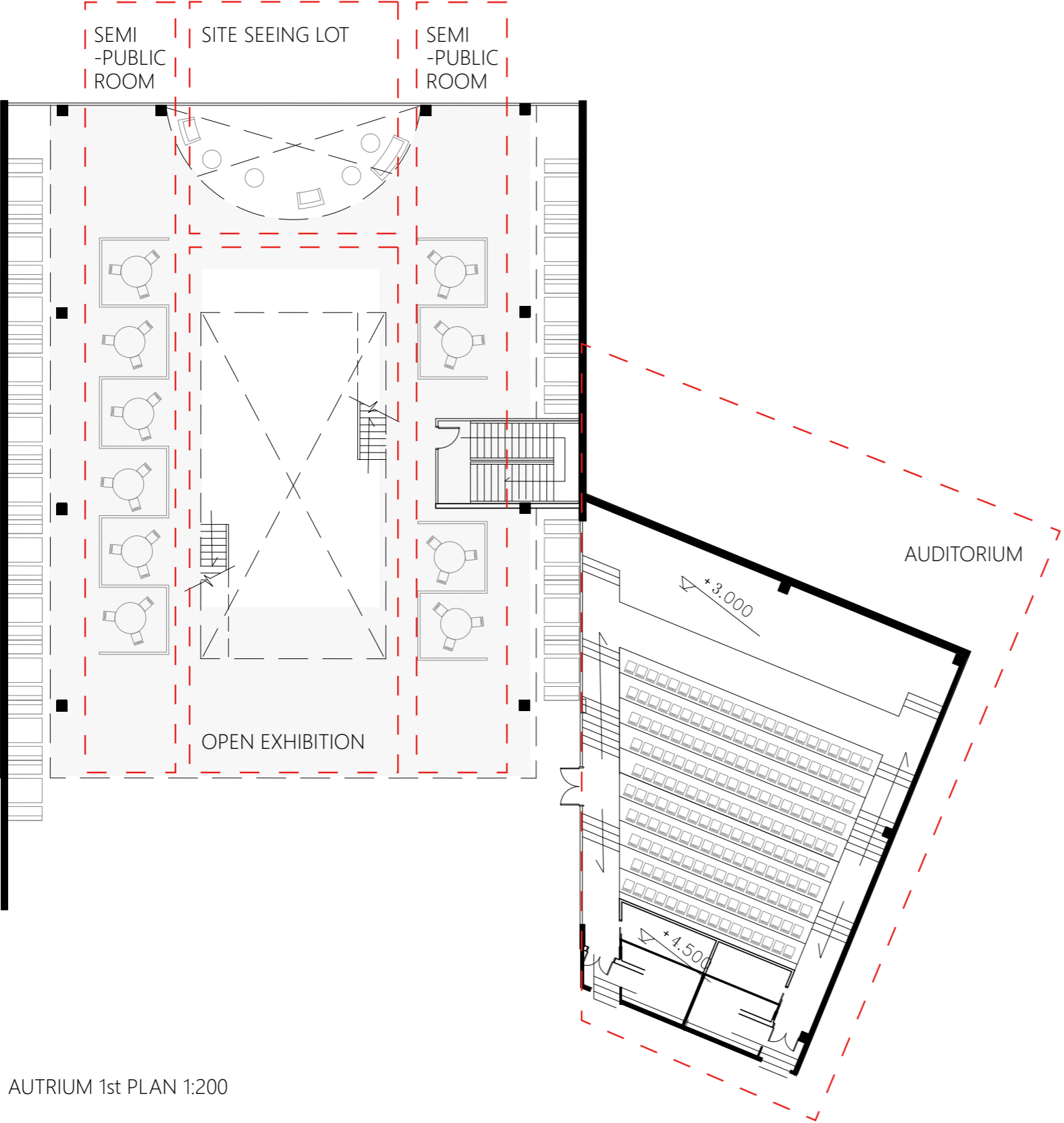
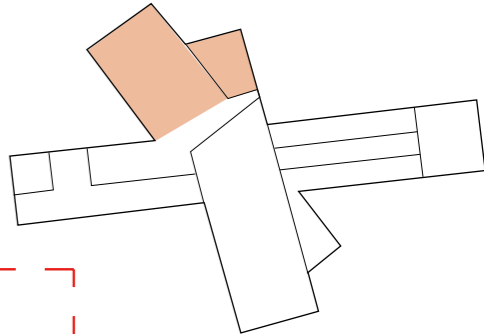
MEXICO CAMPUS

COMMUNITY

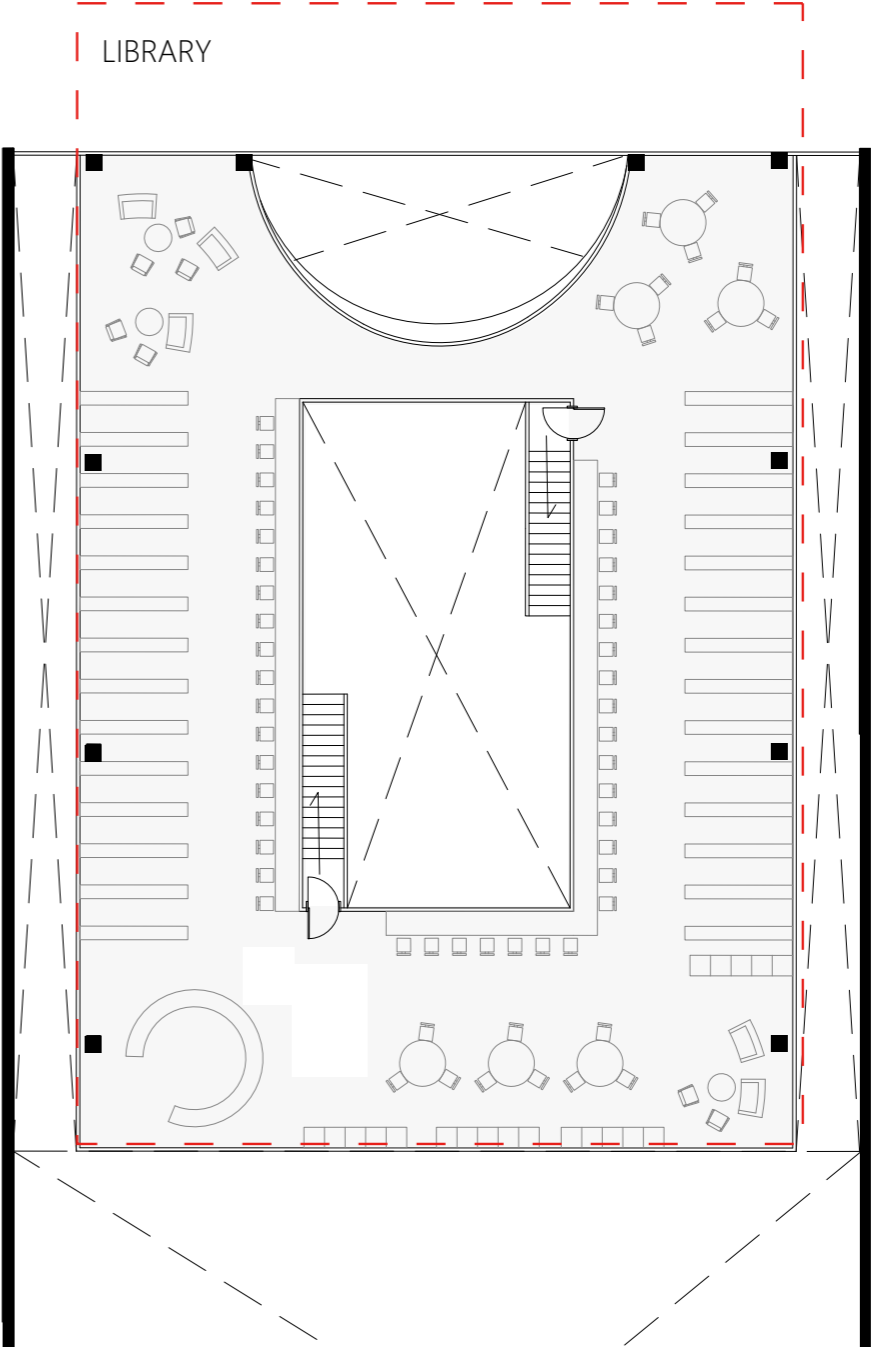


# North Atrium

FRAGMENT ANALYSIS



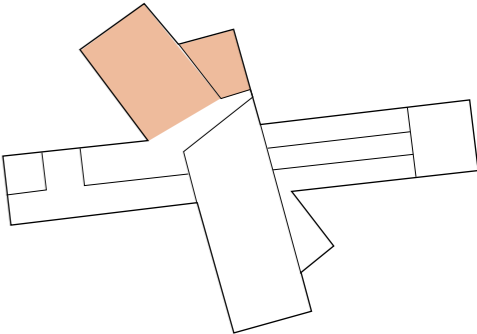
AUTIRUM 1st PLAN 1:200



AUTIRUM 2nd PLAN 1:200

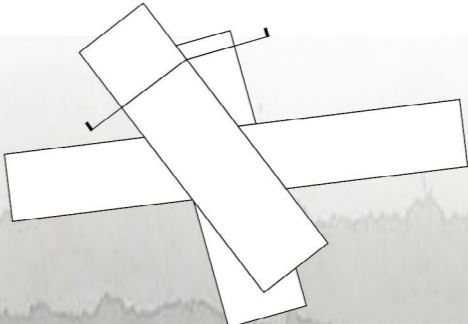
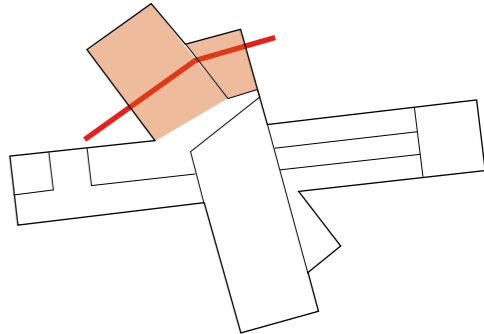
# North Atrium

FRAGMENT ANALYSIS



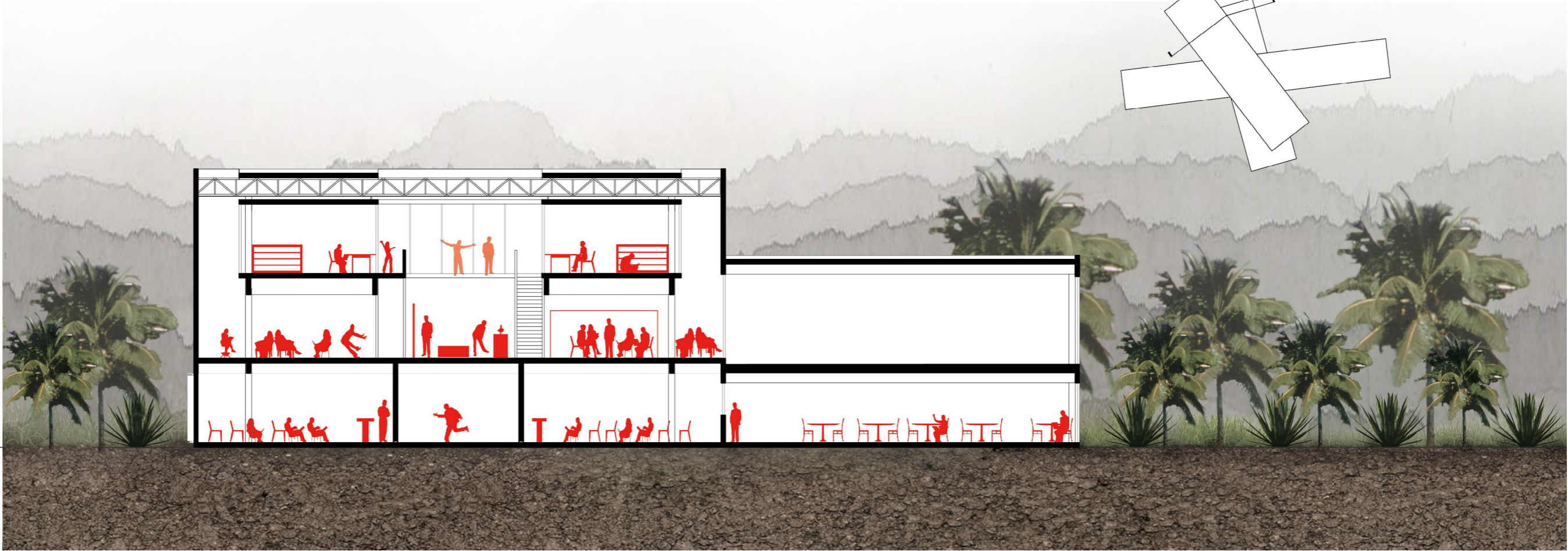
# North Atrium

FRAGMENT ANALYSIS



SECTION B 1

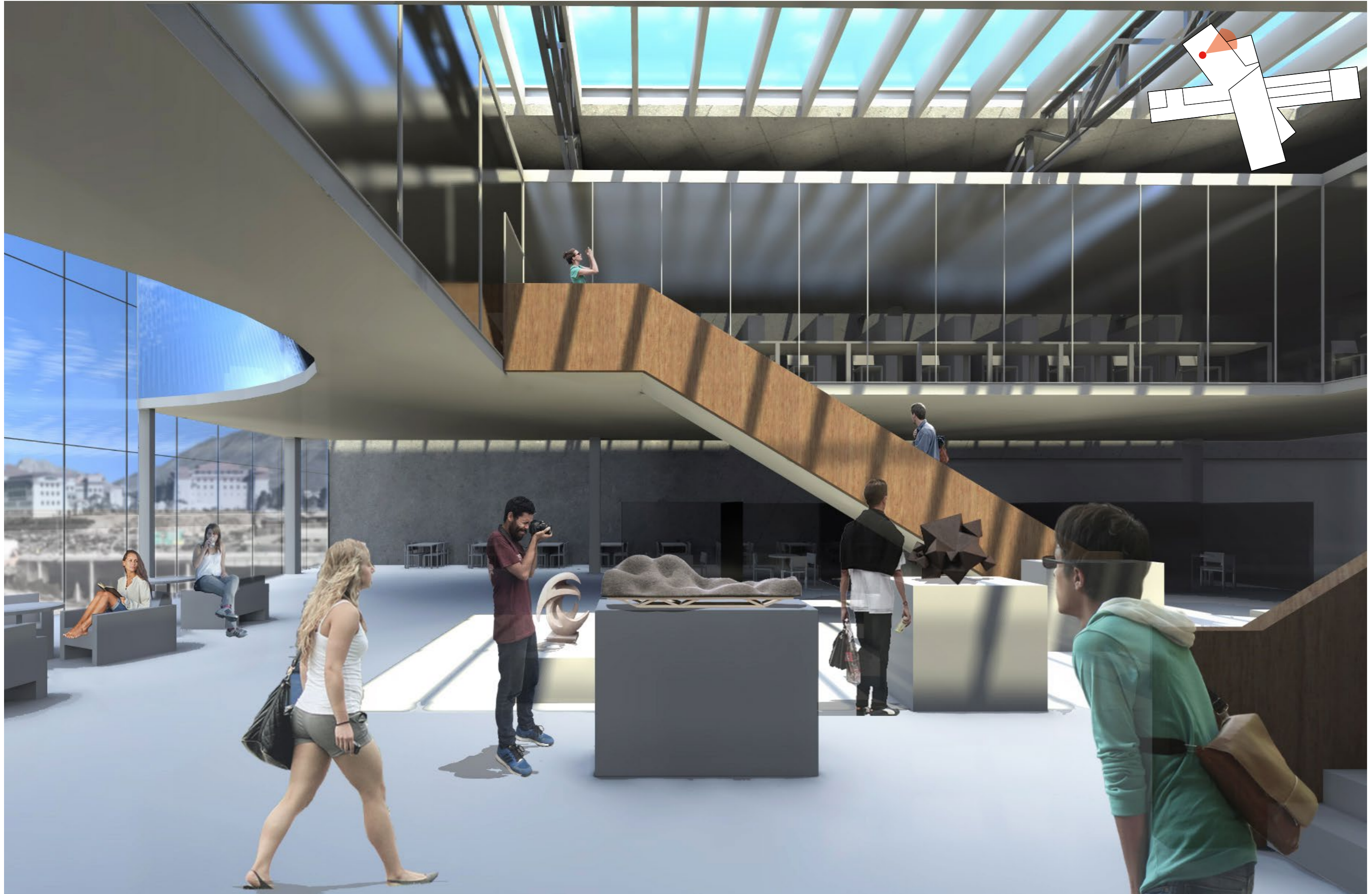
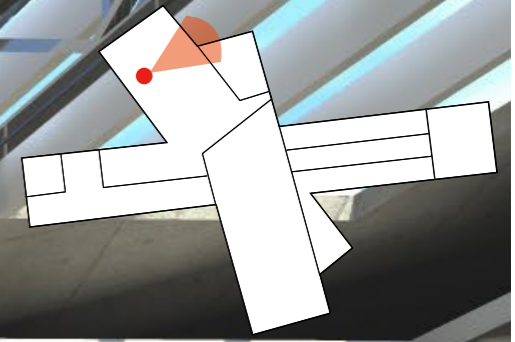
- +12.800
- +11.200
- +8.700
- +8.000
- +4.000
- +0.000
- 0.500





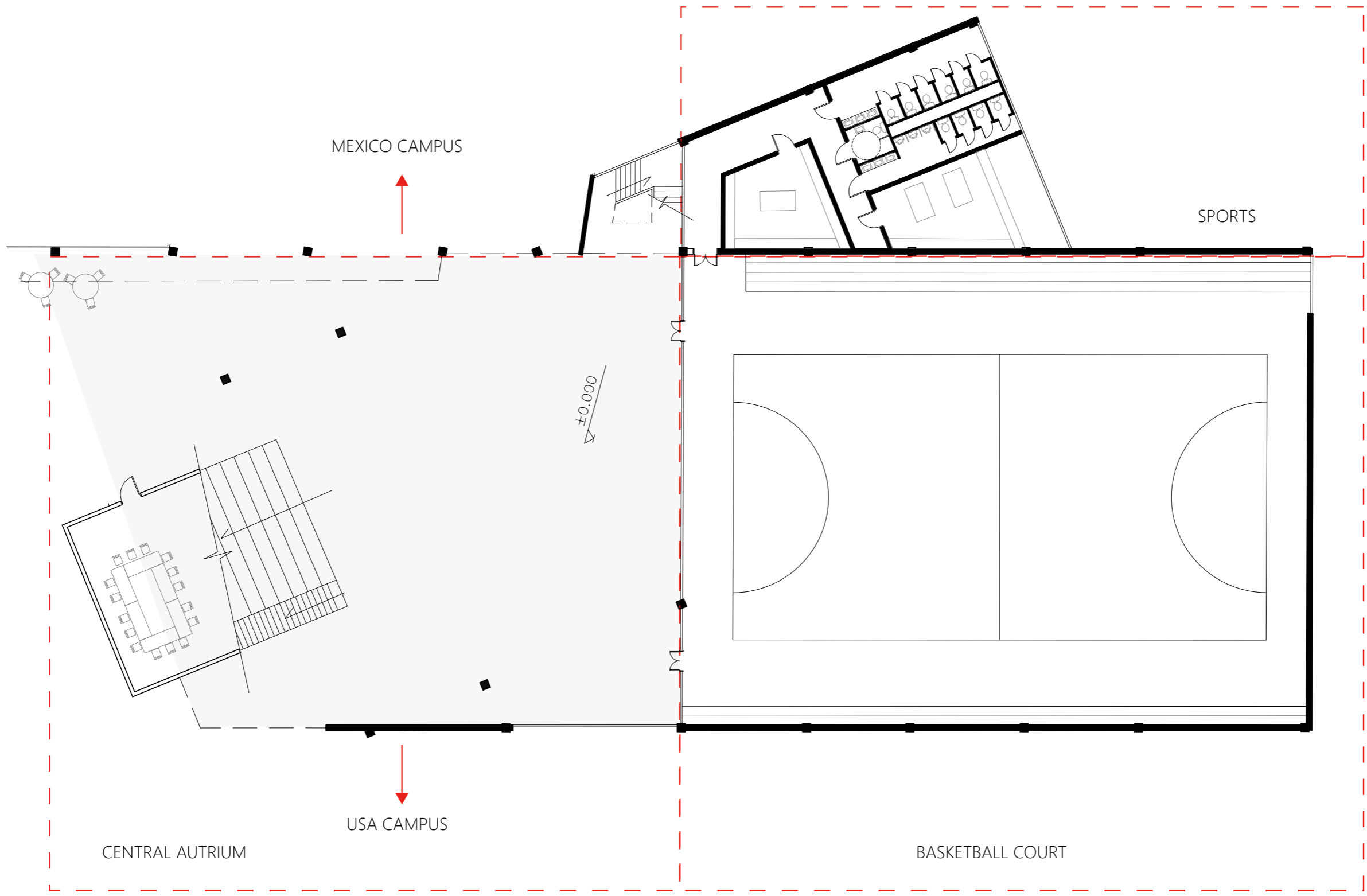
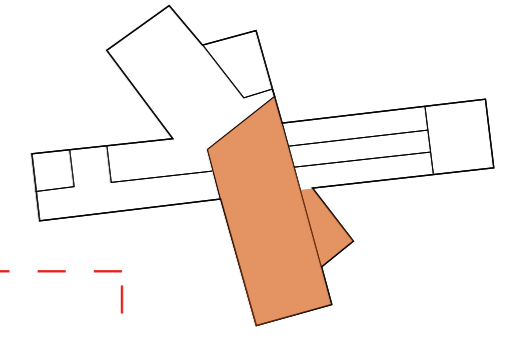
# North Atrium

FRAGMENT ANALYSIS



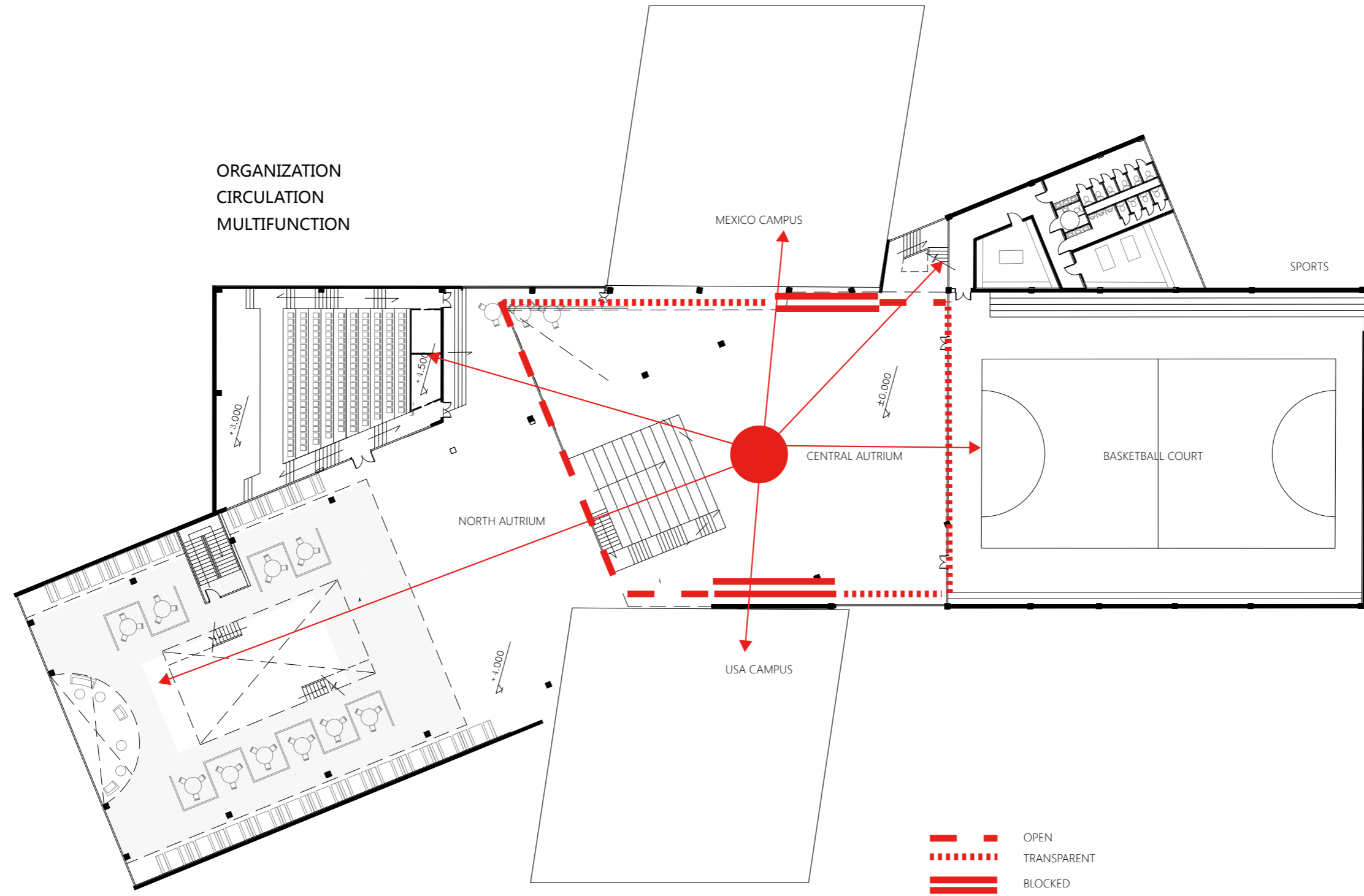
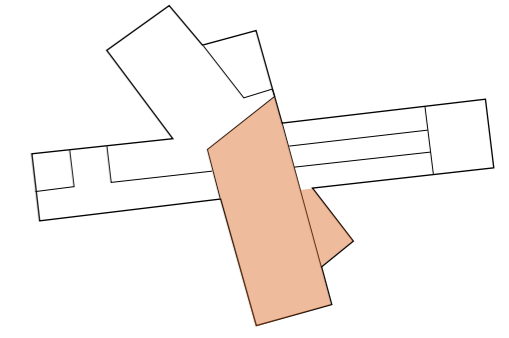
# Central Atrium

FRAGMENT ANALYSIS



# Central Atrium

FRAGMENT ANALYSIS

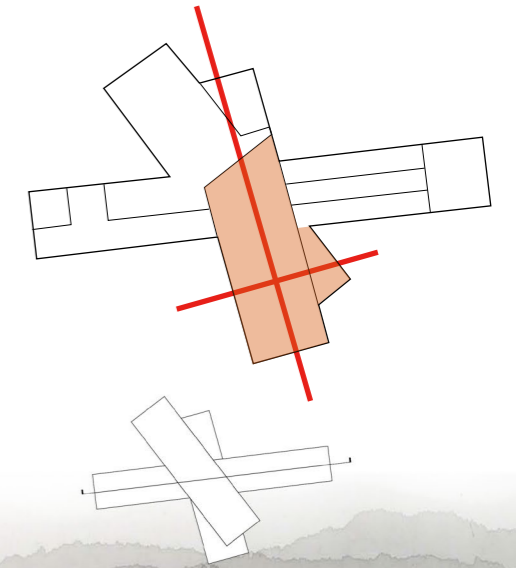


- OPEN
- TRANSPARENT
- BLOCKED



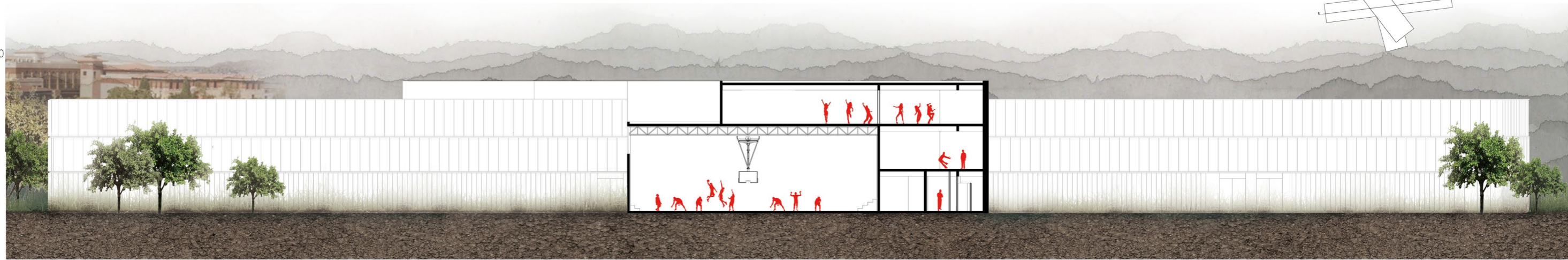
# International Life

FRAGMENT ANALYSIS



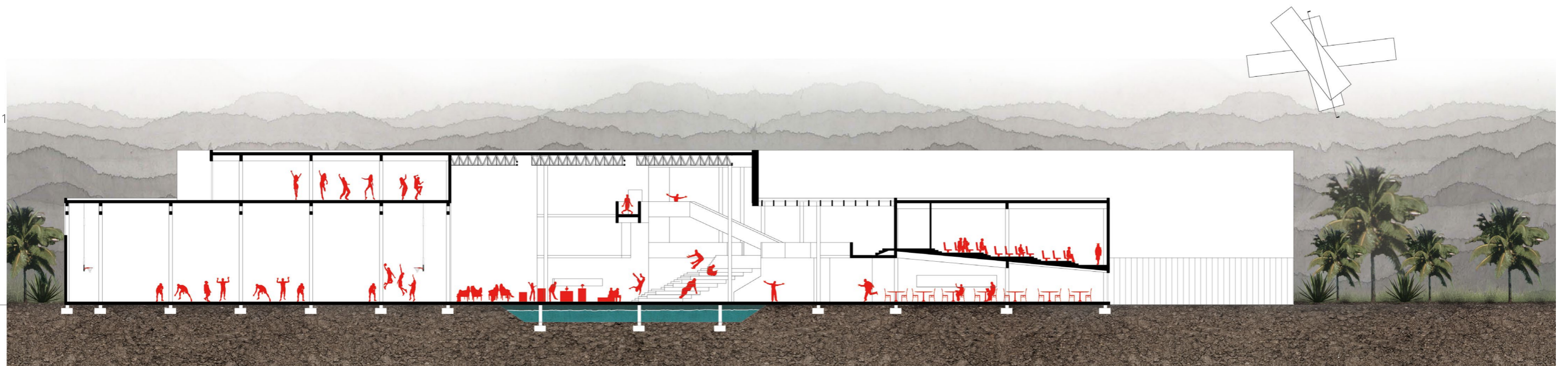
SECTION D 1 : 200

+12.800  
+11.200  
+8.700



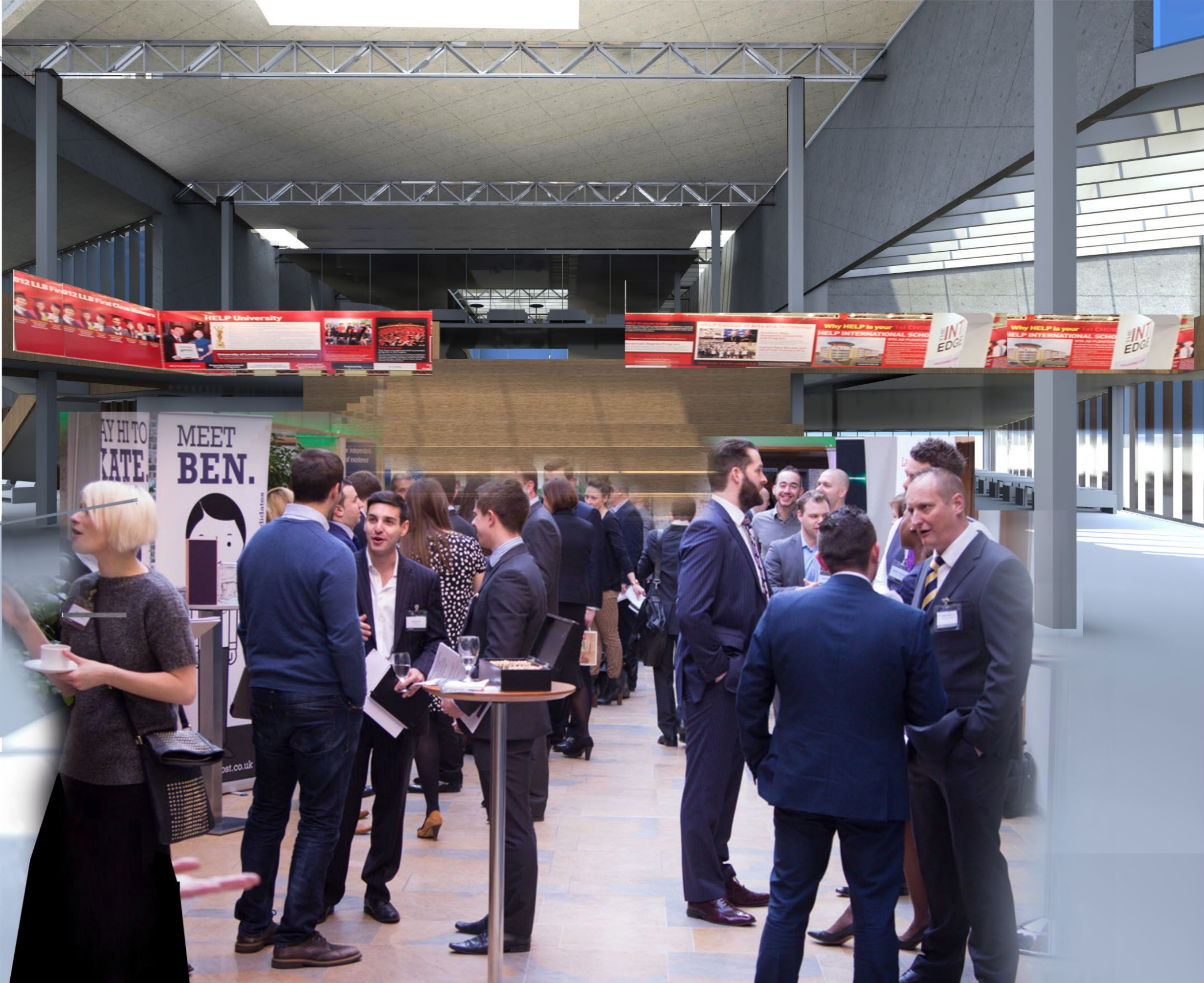
SECTION A 1

+12.800  
+8.700  
+7.600  
+4.600  
+4.000  
+2.800  
+0.000  
-0.500





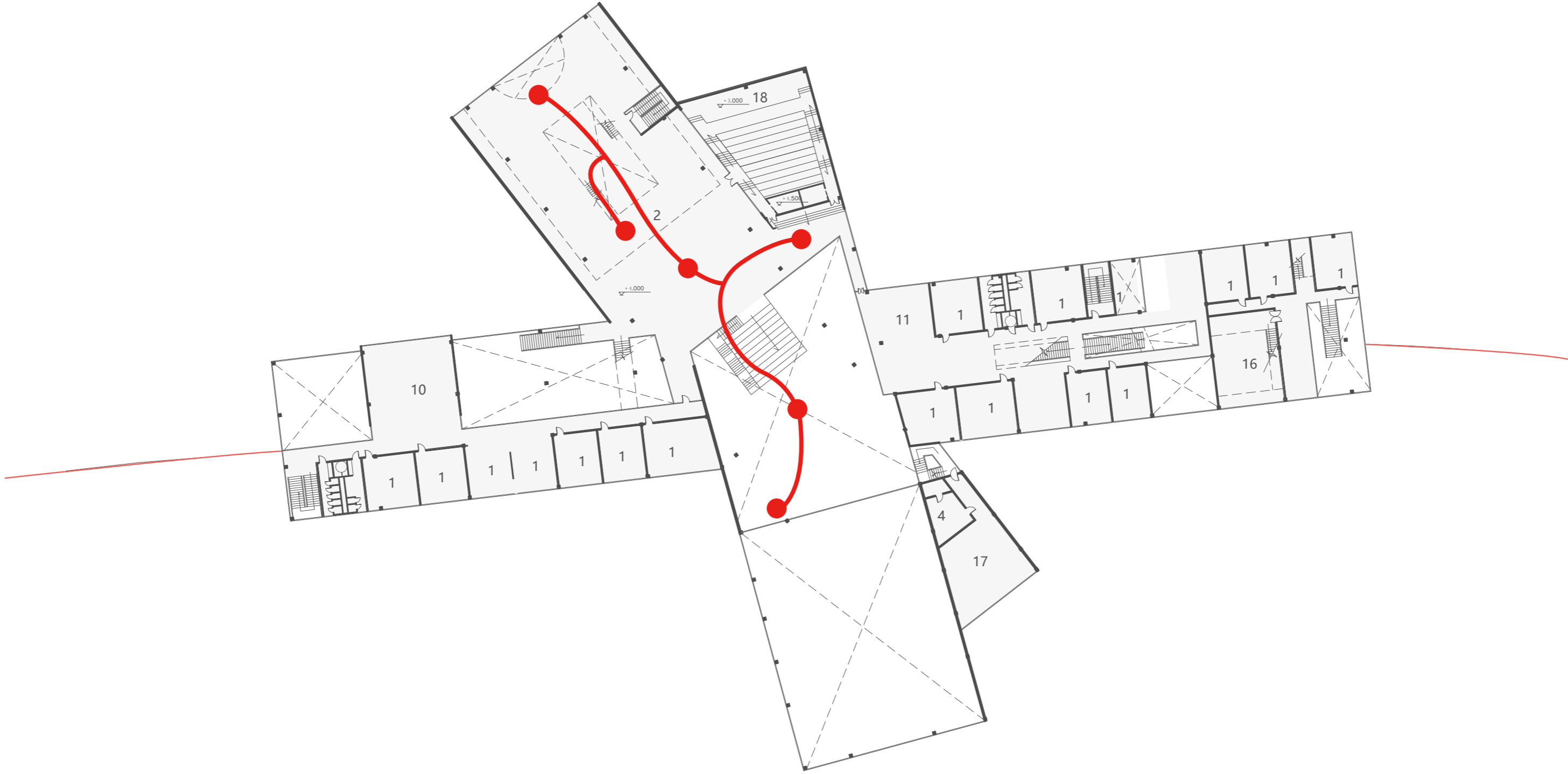






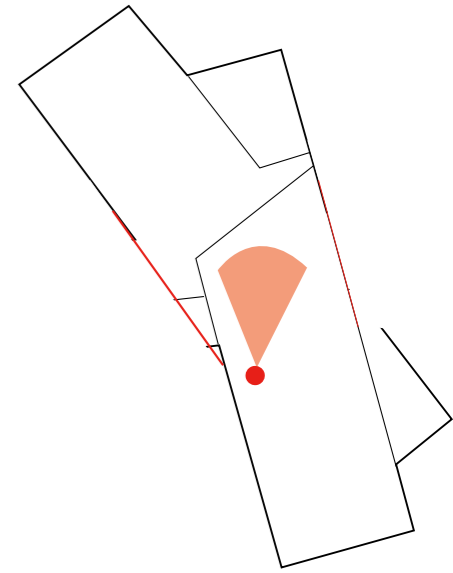
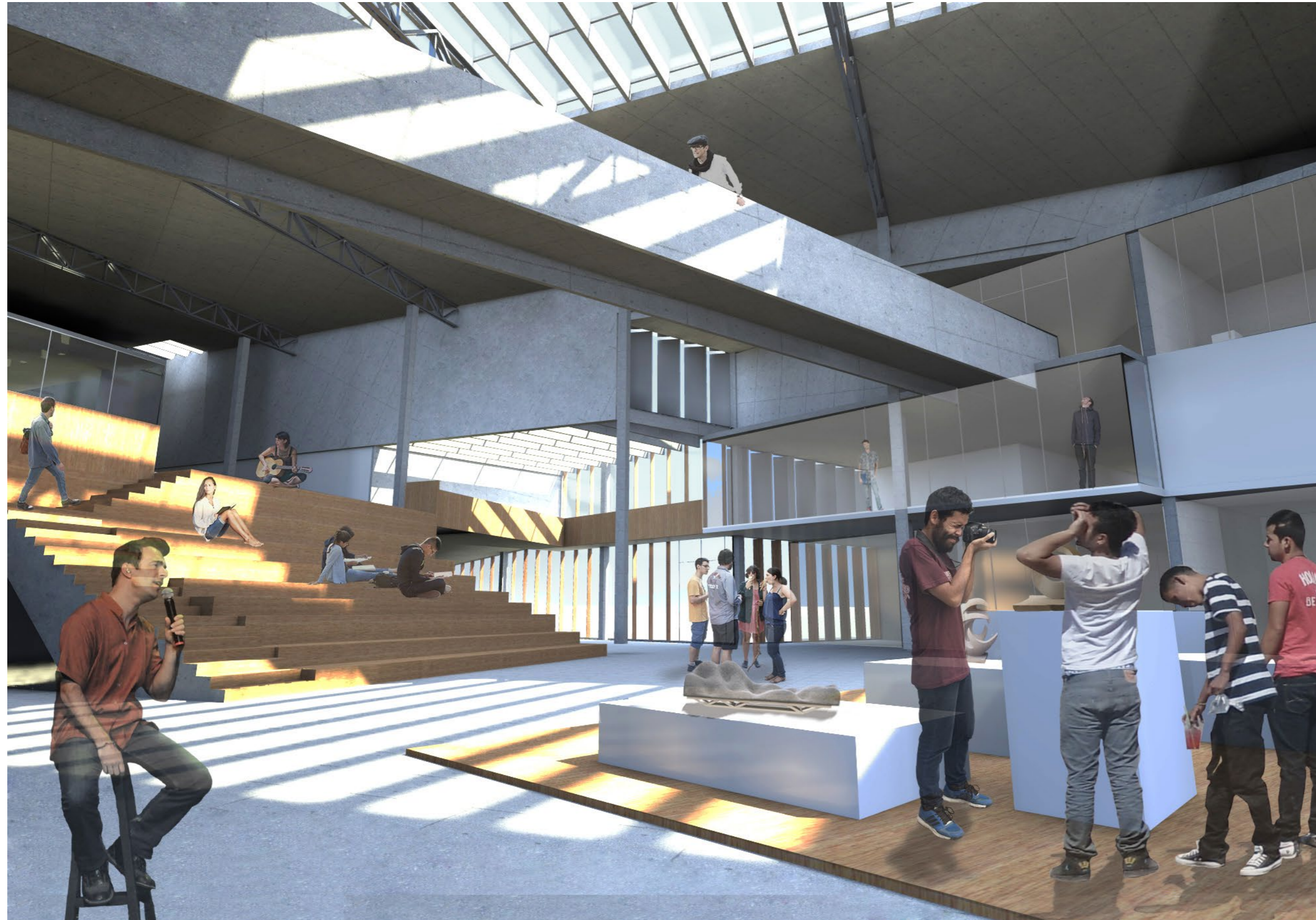
# Interior Impression

FRAGMENT ANALYSIS



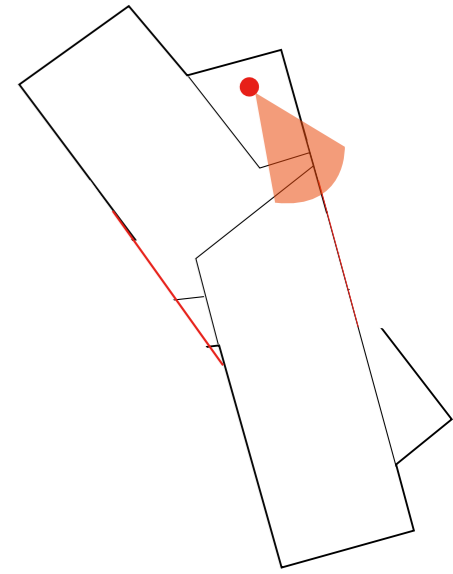
# Interior Impression

FRAGMENT ANALYSIS



# Interior Impression

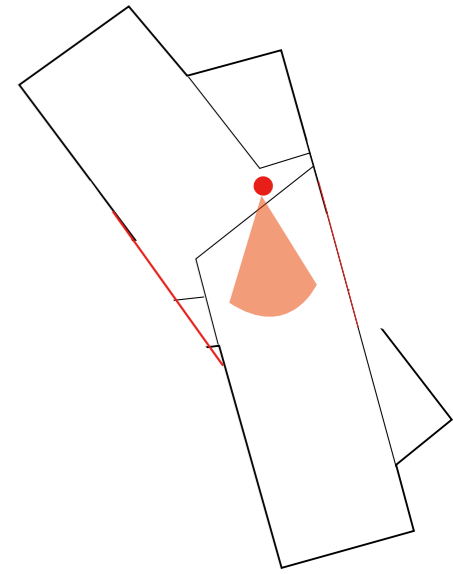
FRAGMENT ANALYSIS





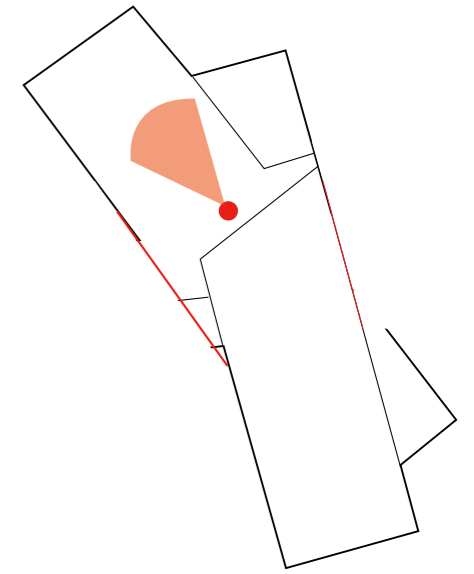
# Interior Impression

FRAGMENT ANALYSIS



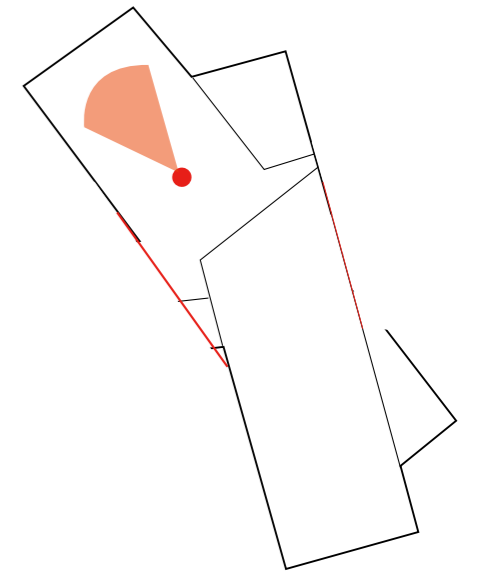
# Interior Impression

FRAGMENT ANALYSIS



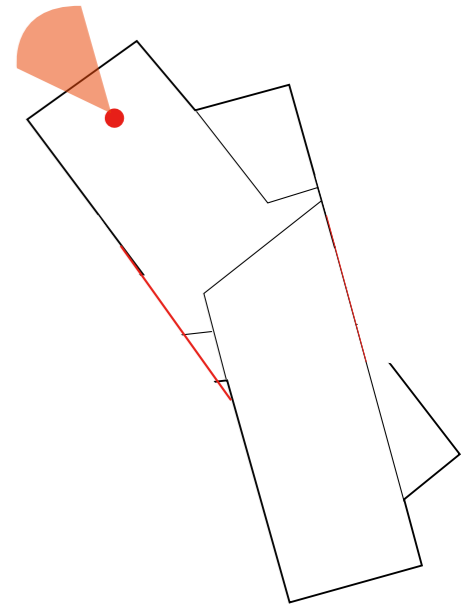
# Interior Impression

FRAGMENT ANALYSIS



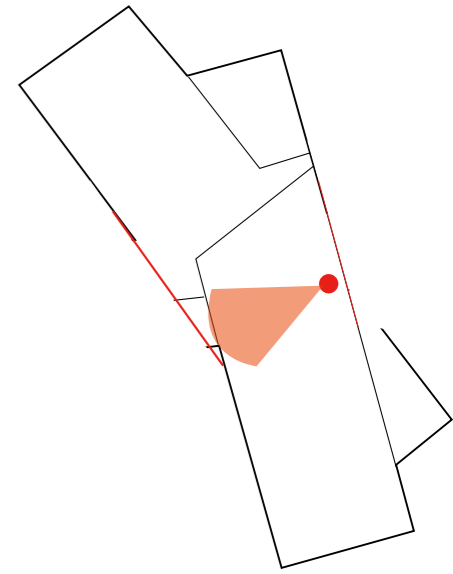
# Interior Impression

FRAGMENT ANALYSIS



# Interior Impression

FRAGMENT ANALYSIS



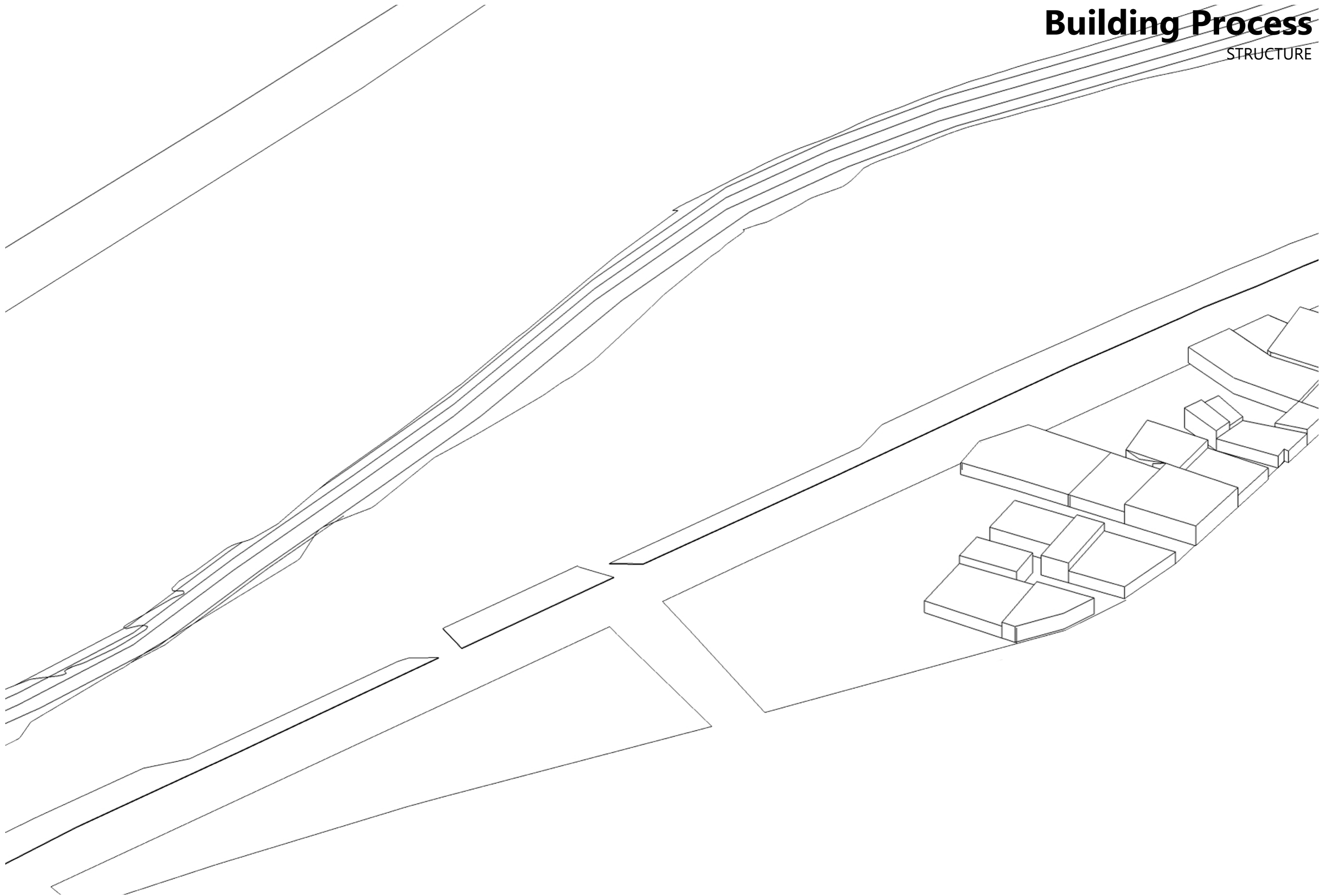
**STRUCTURE**

**CLIMATE**

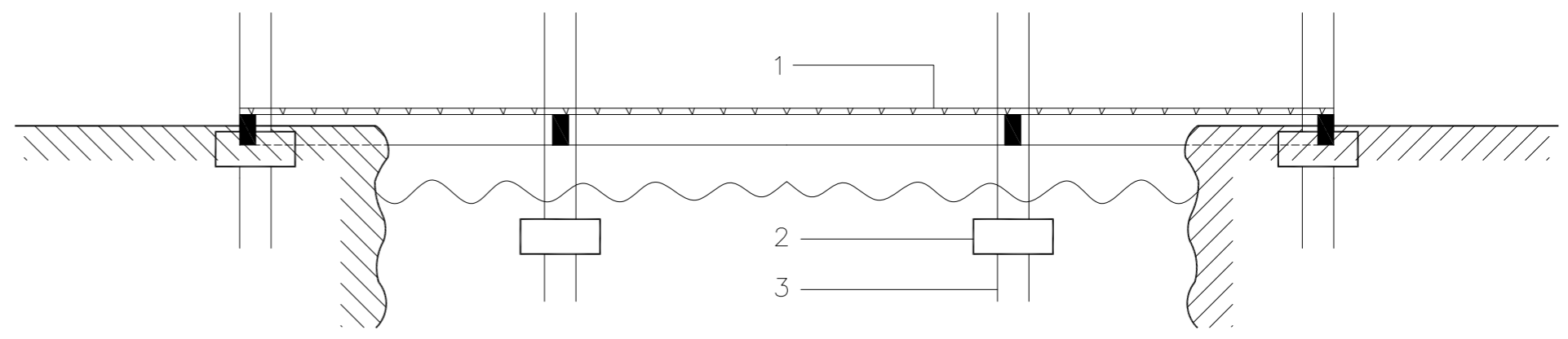
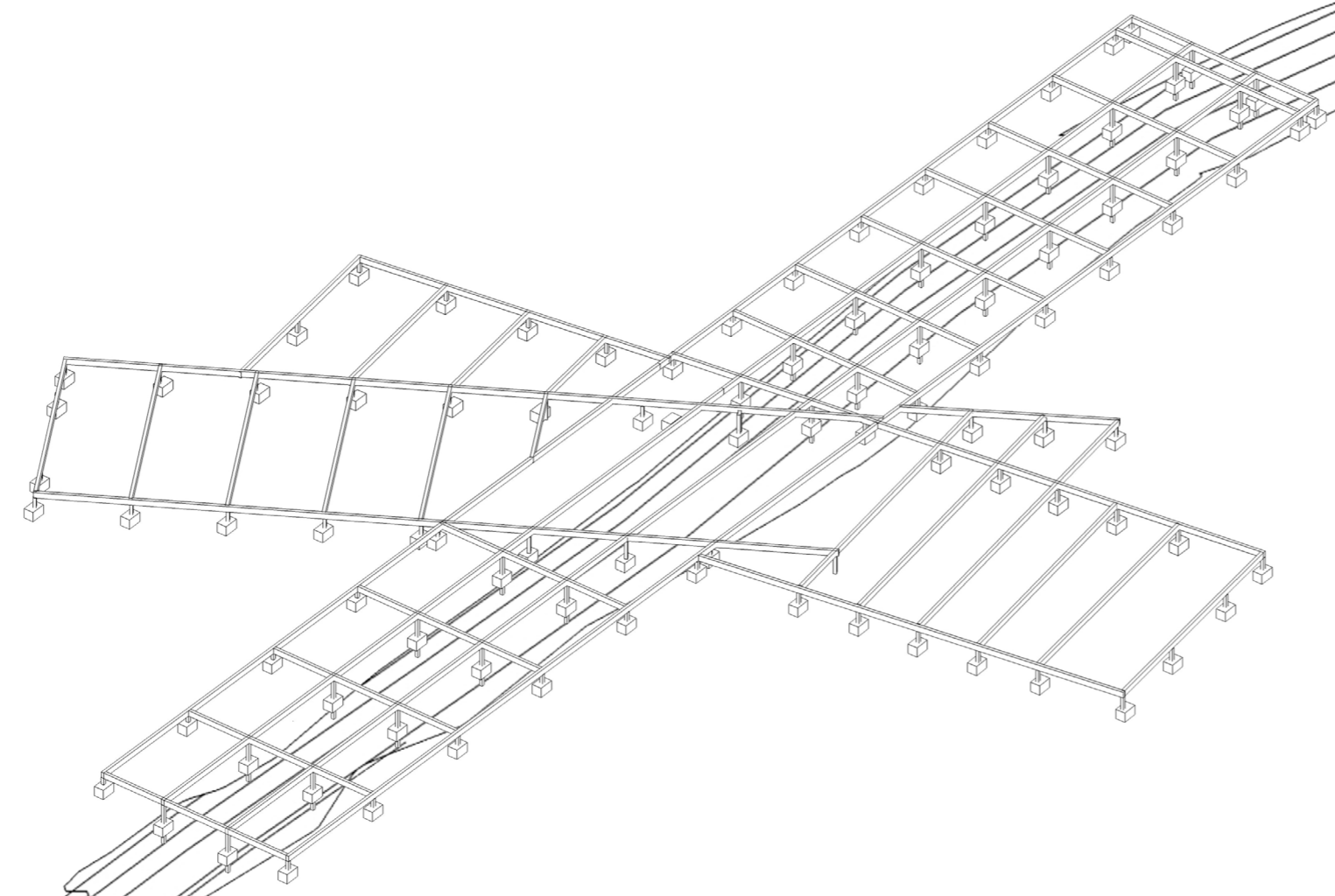
**MATERIAL**

# Building Process

STRUCTURE



# Foundation STRUCTURE

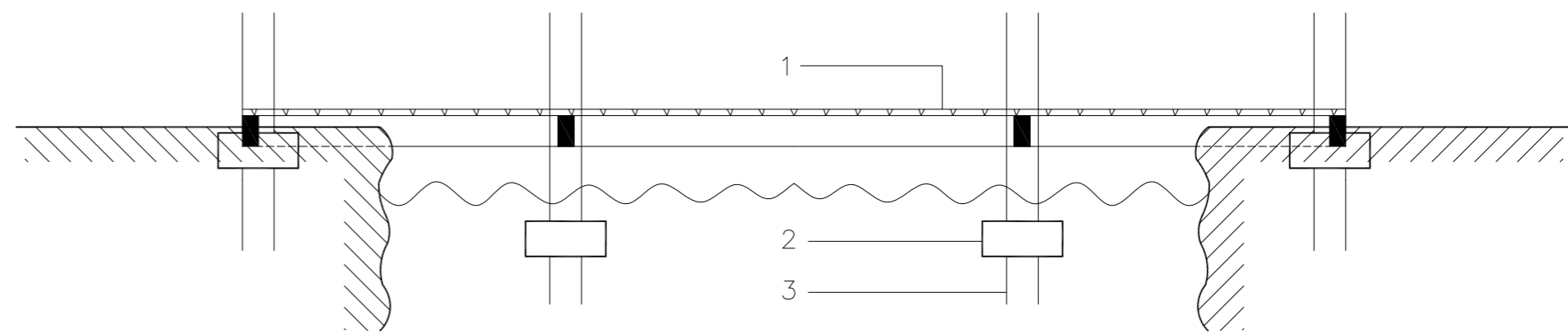
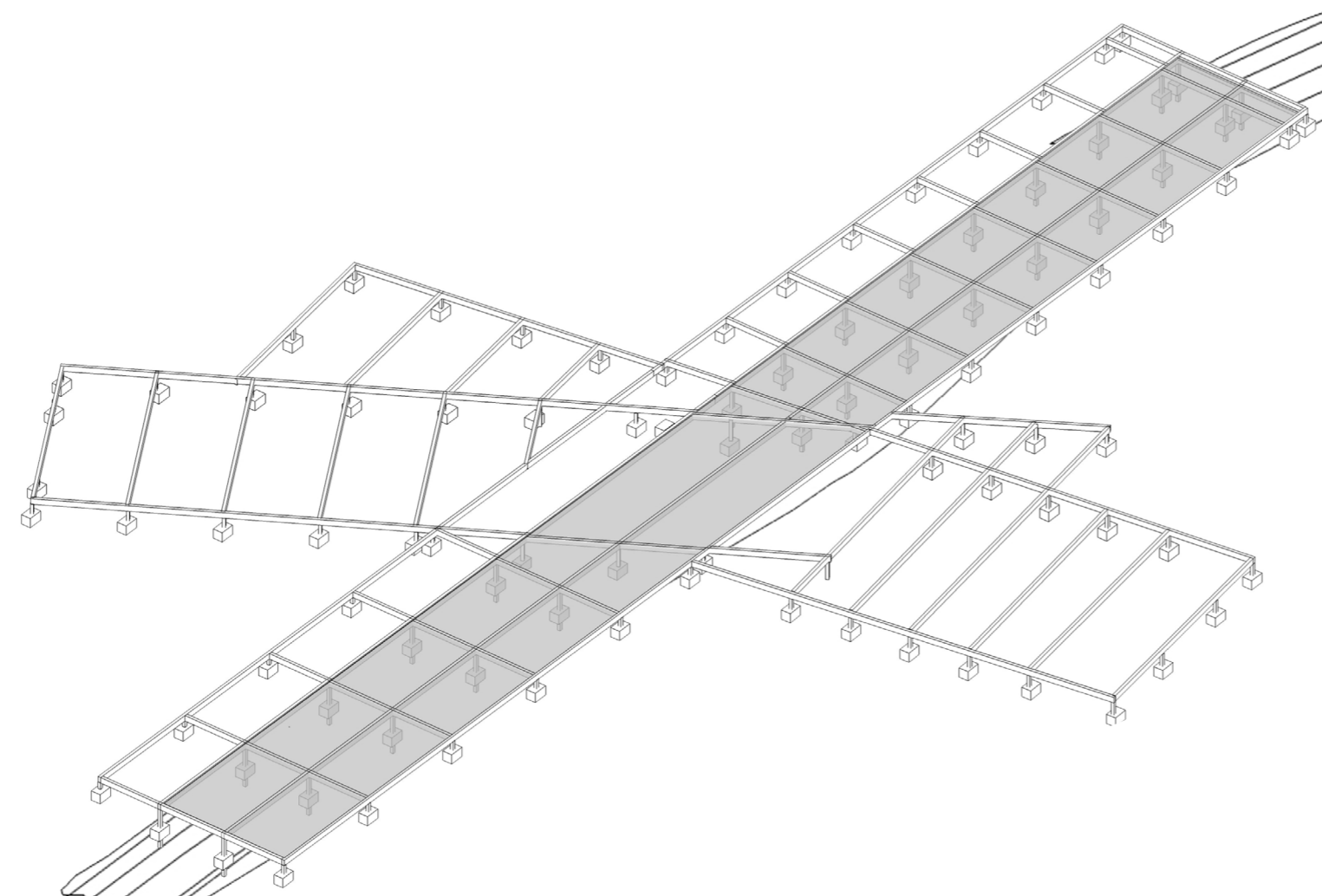


- 1 PREFABRICATED SLAB
- 2 CUSHION CAP
- 3 PILE FOUNDATION



# Floorslab

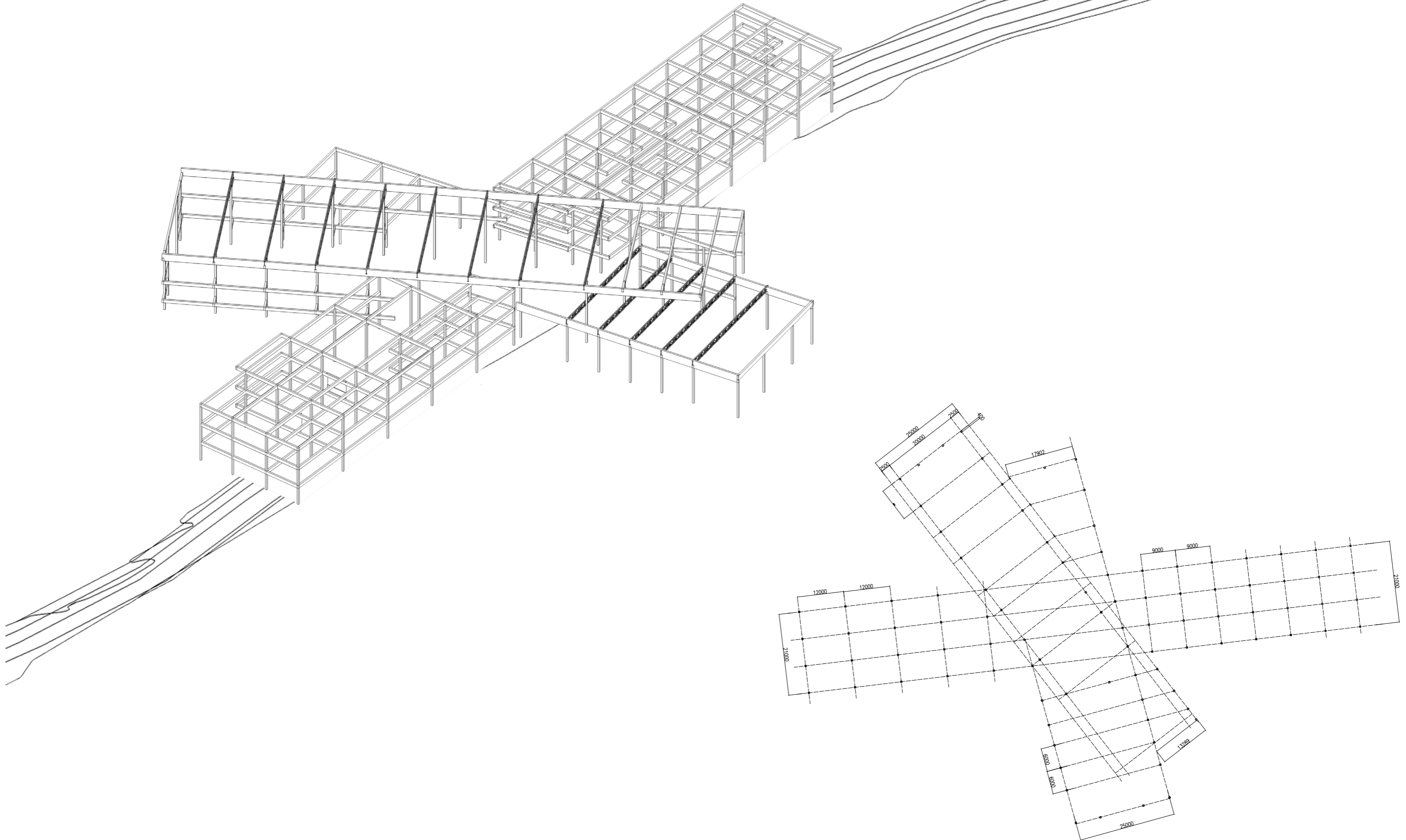
STRUCTURE

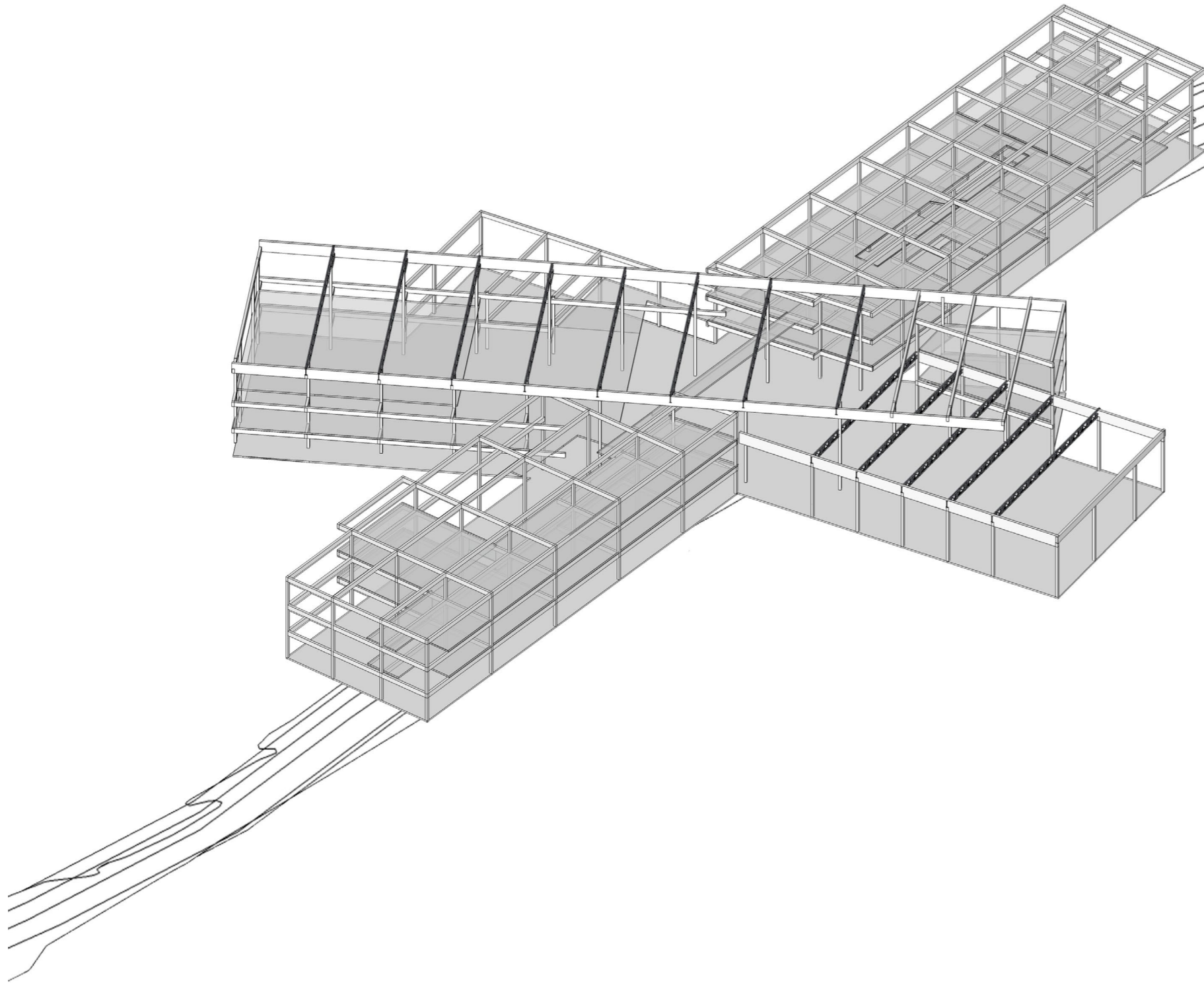


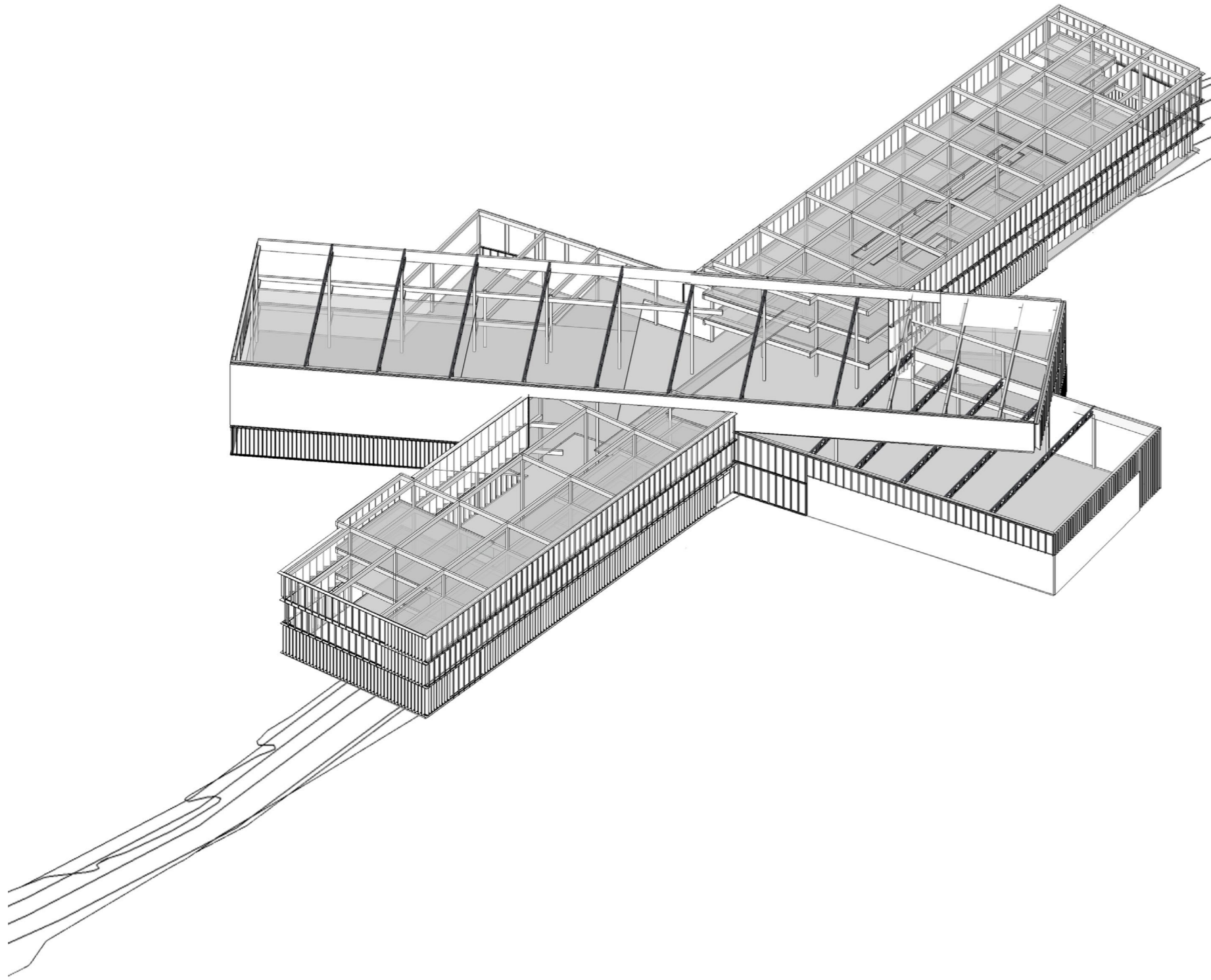
- 1 PREFABRICATED SLAB
- 2 CUSHION CAP
- 3 PILE FOUNDATION

# Column and Beam

STRUCTURE

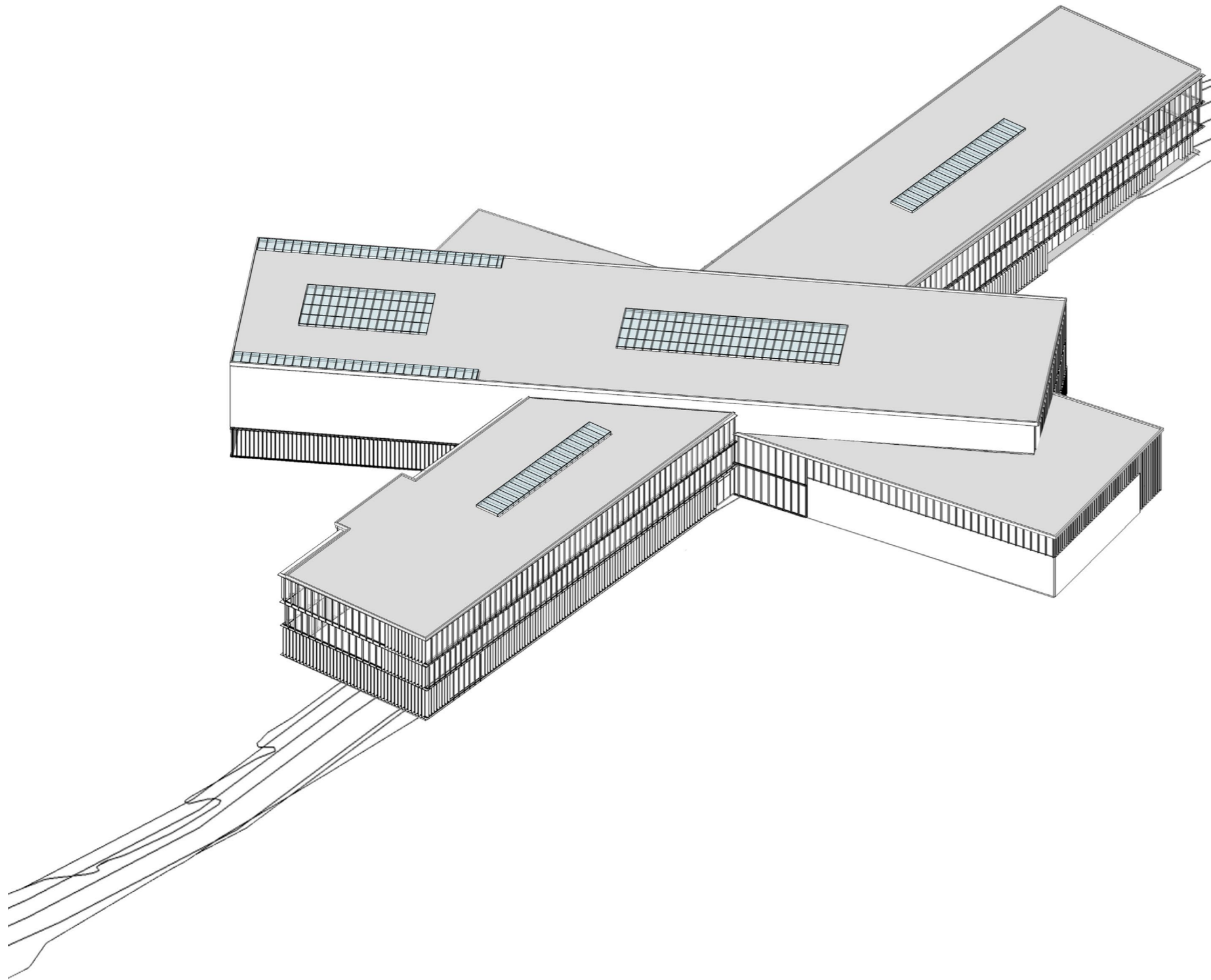






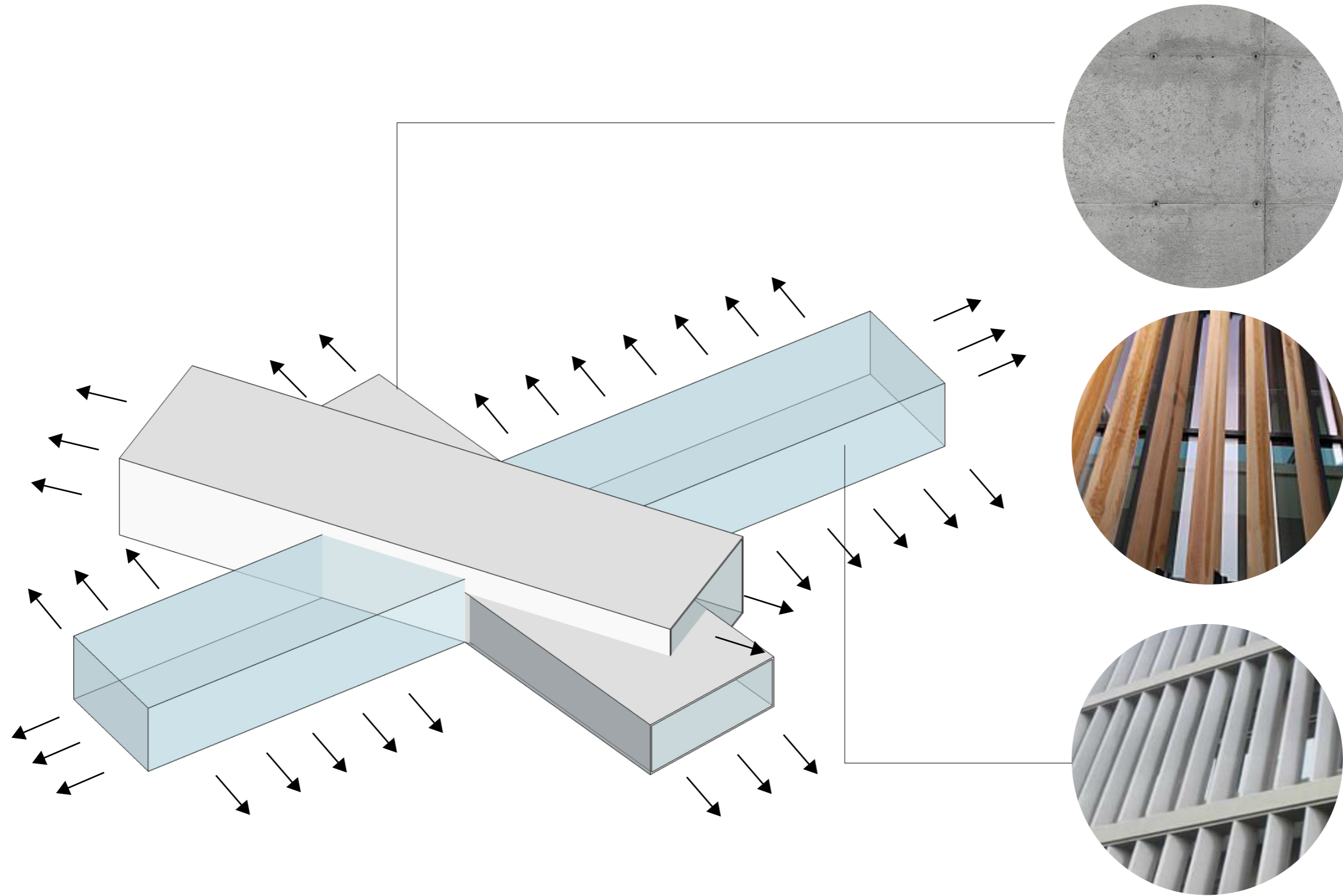
# Roof Plate

STRUCTURE



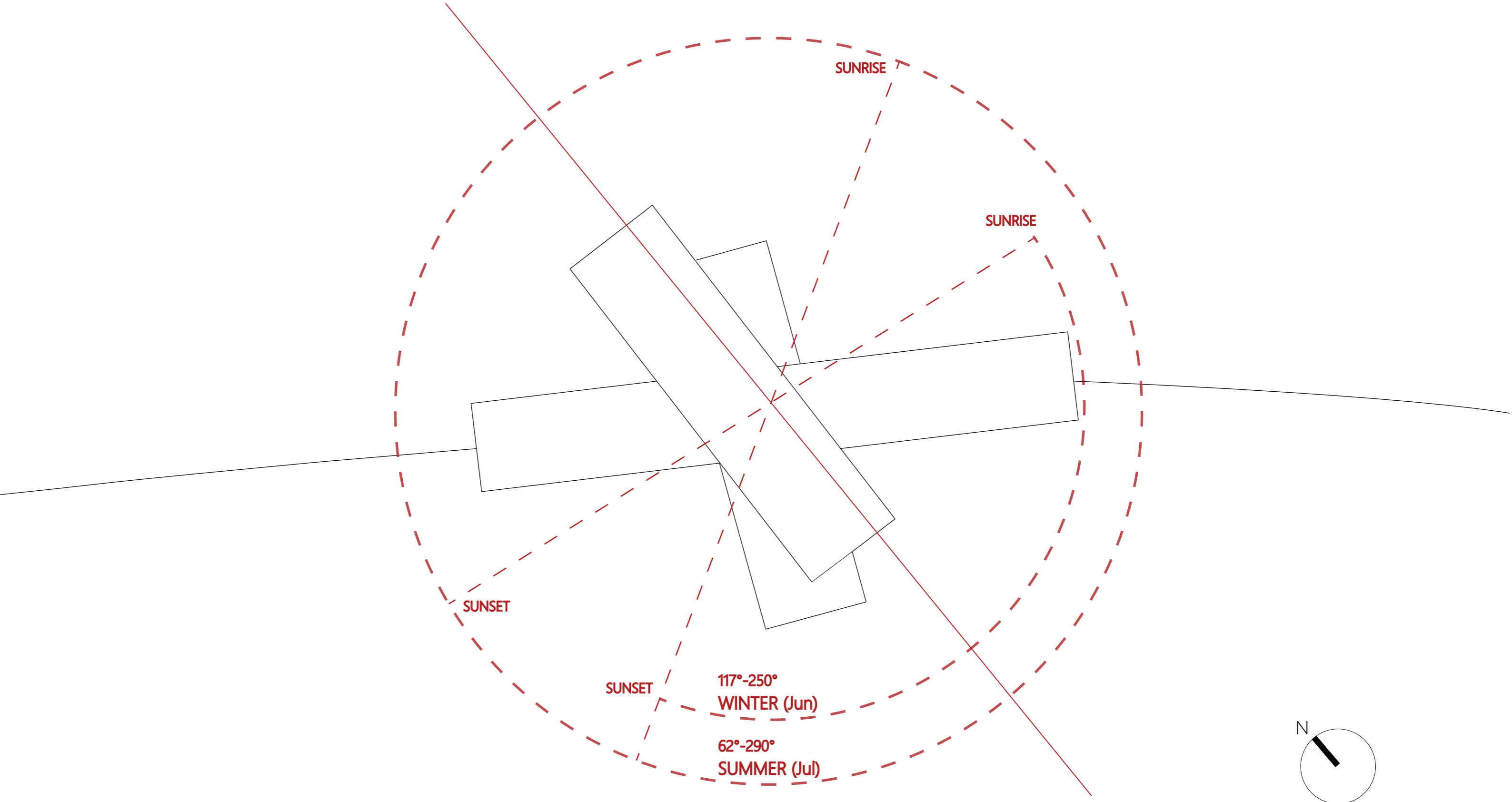
# Two Main Facade

FACADE



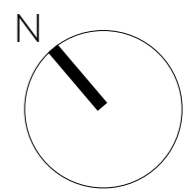
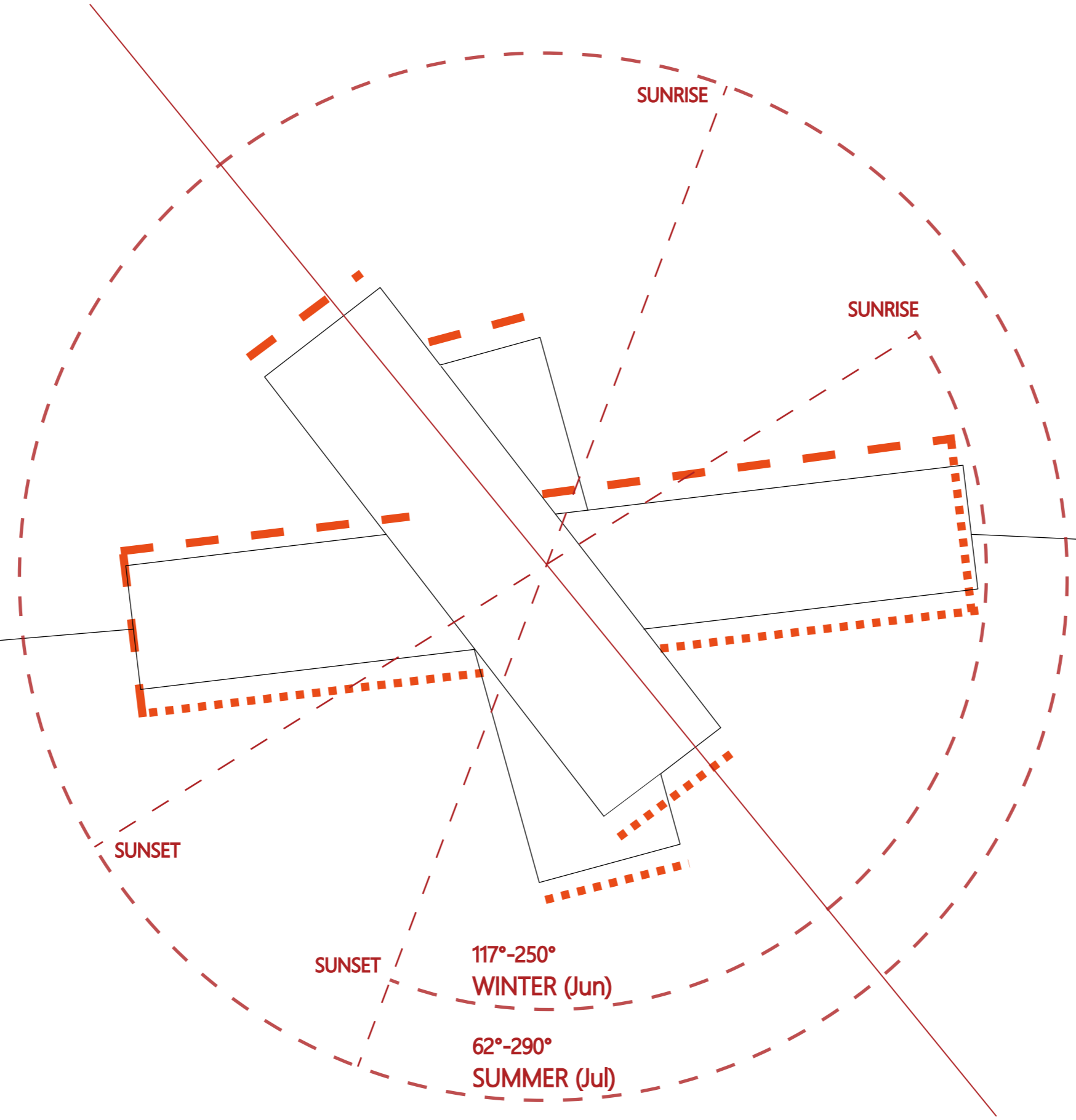
# Orientation

FACADE



# Arrange Strategy

FACADE





# Louver Rythem

FACADE

+12.800  
+11.200  
+8.700



SOUTH ELEVATION

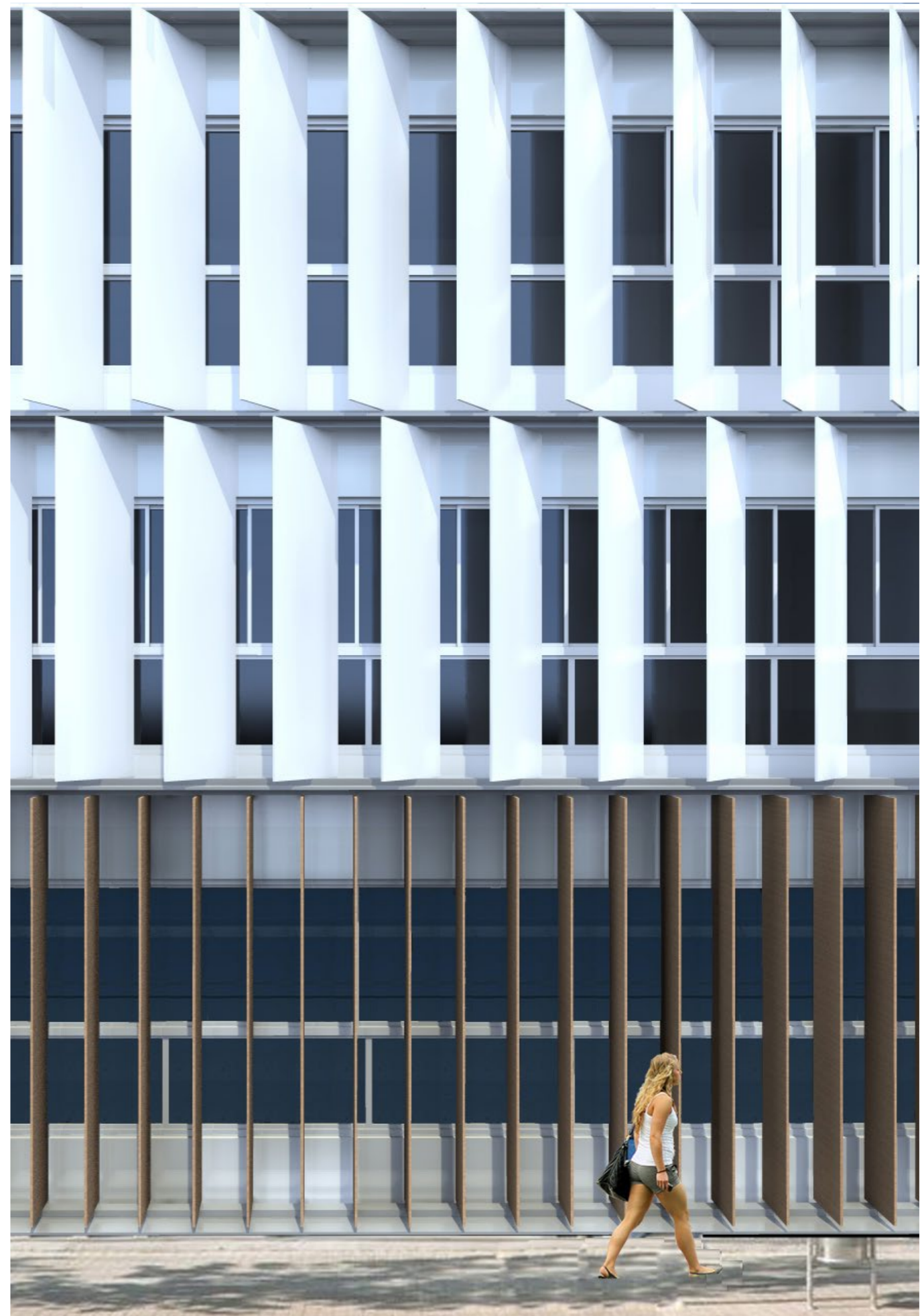
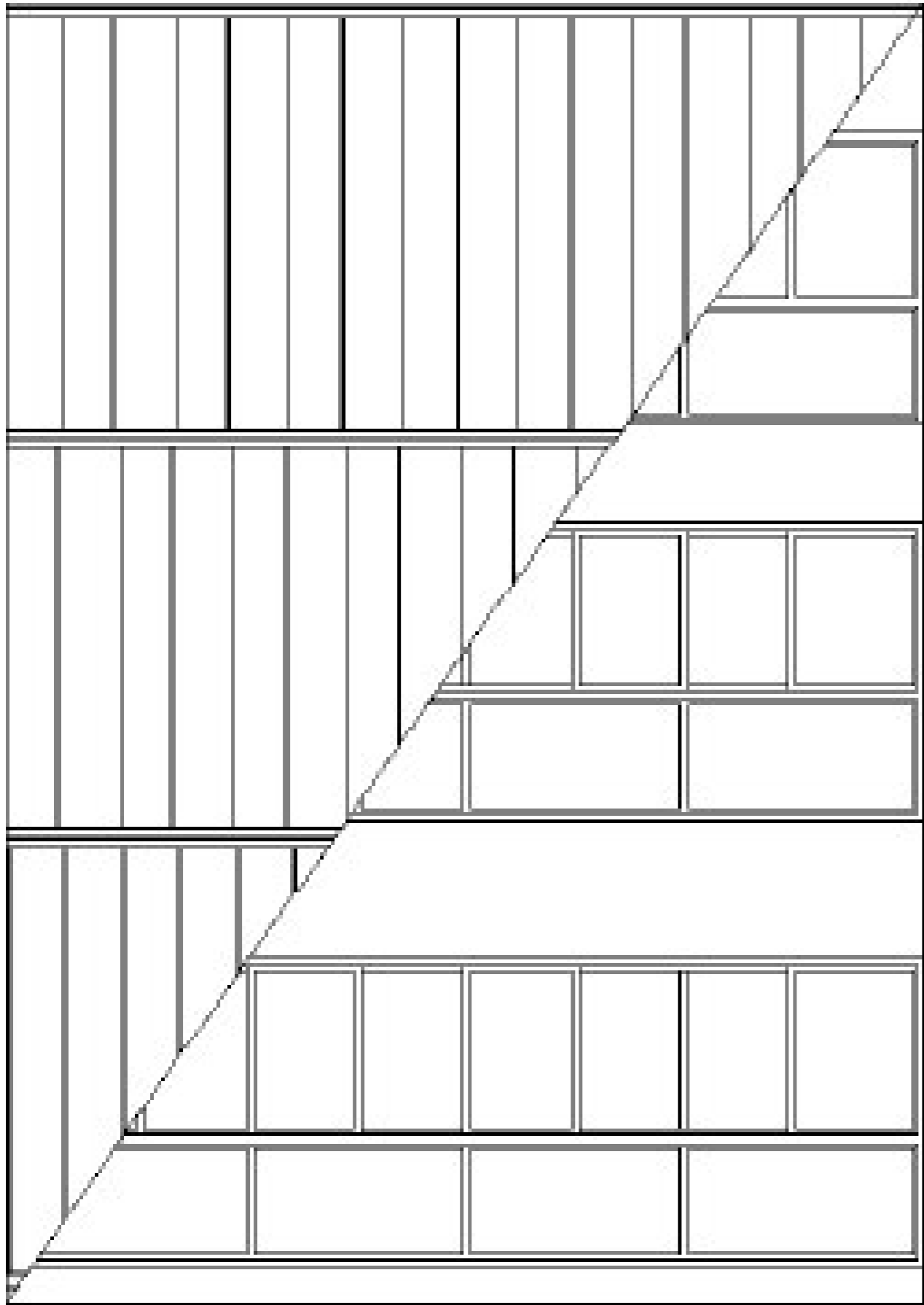
+12.800  
+11.200  
+8.700



NORTH ELEVATION

# Facade Expression

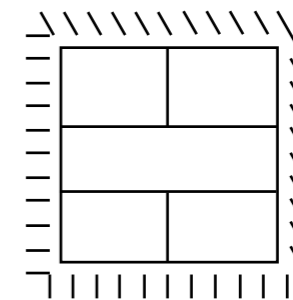
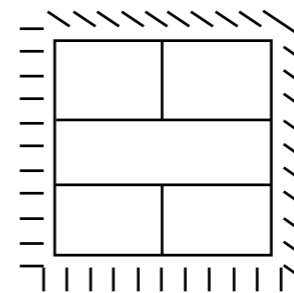
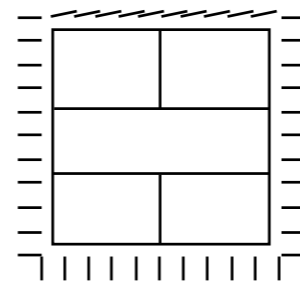
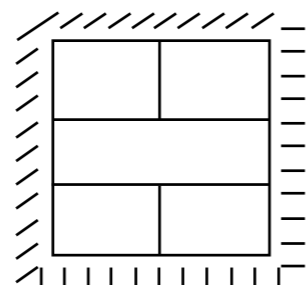
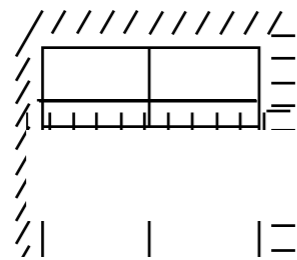
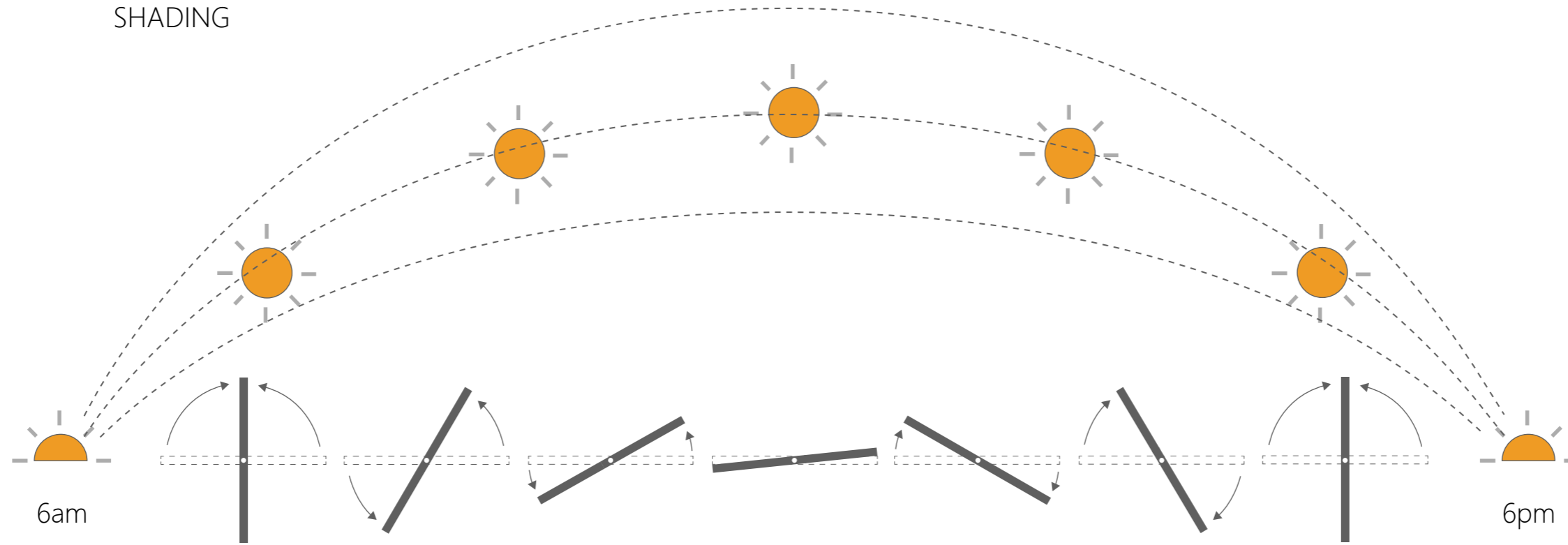
FACADE



# Shading Principle

FACADE

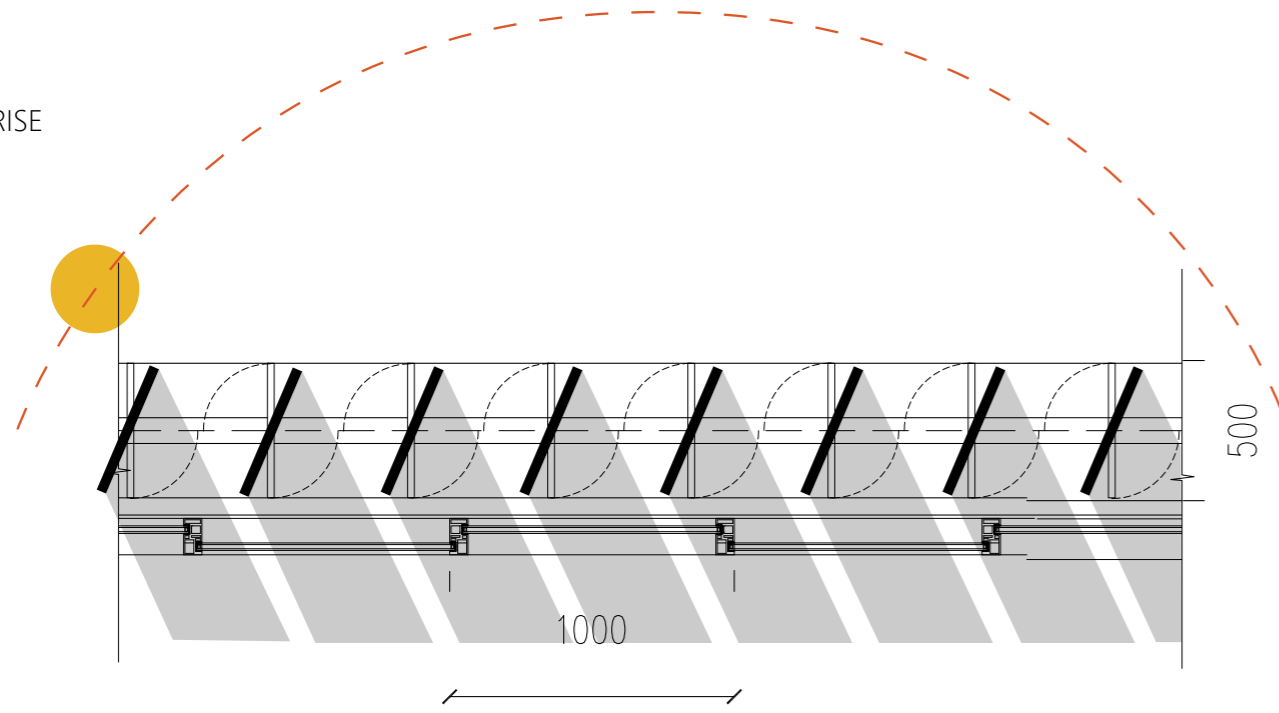
SHADING



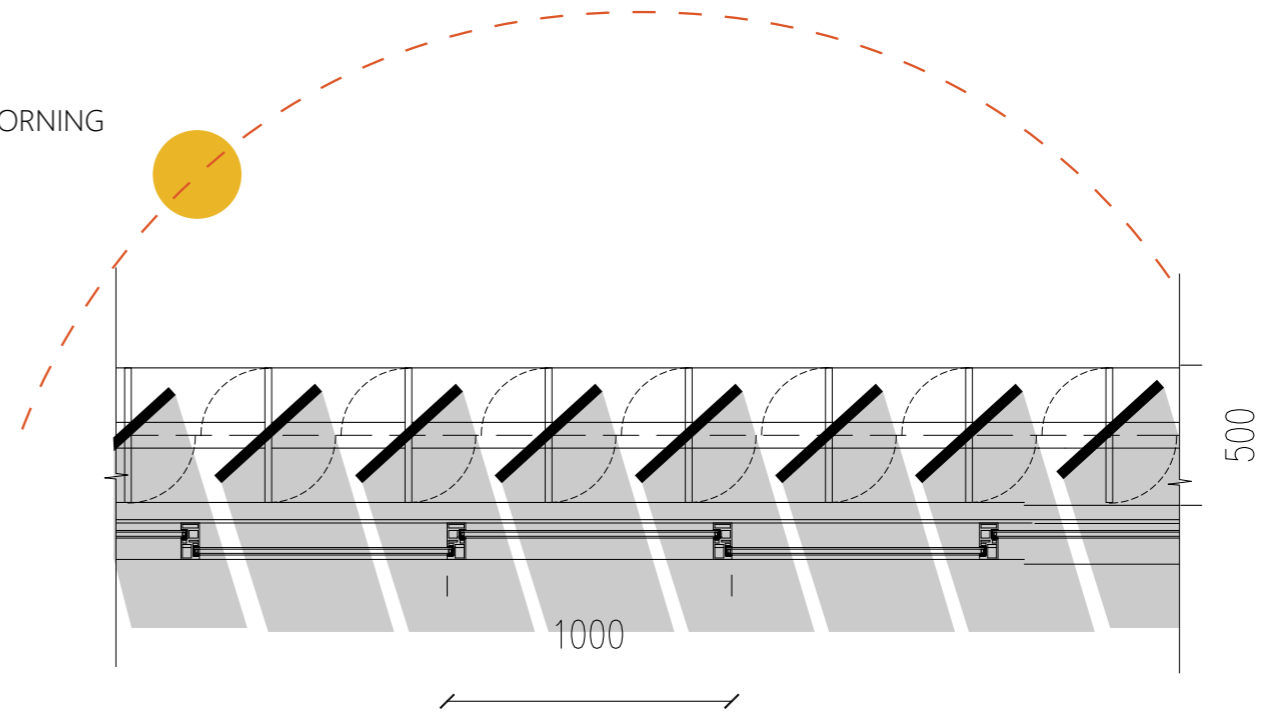
# Shading Principle

FACADE

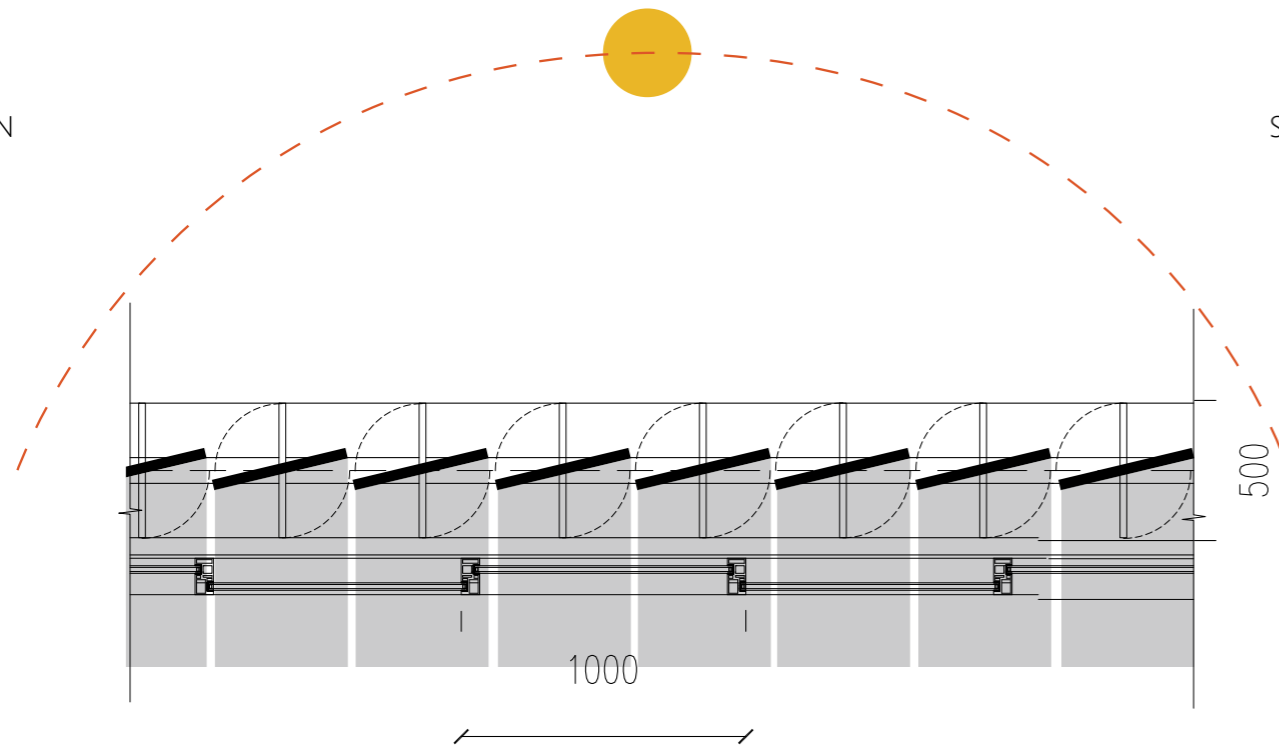
SUN RISE



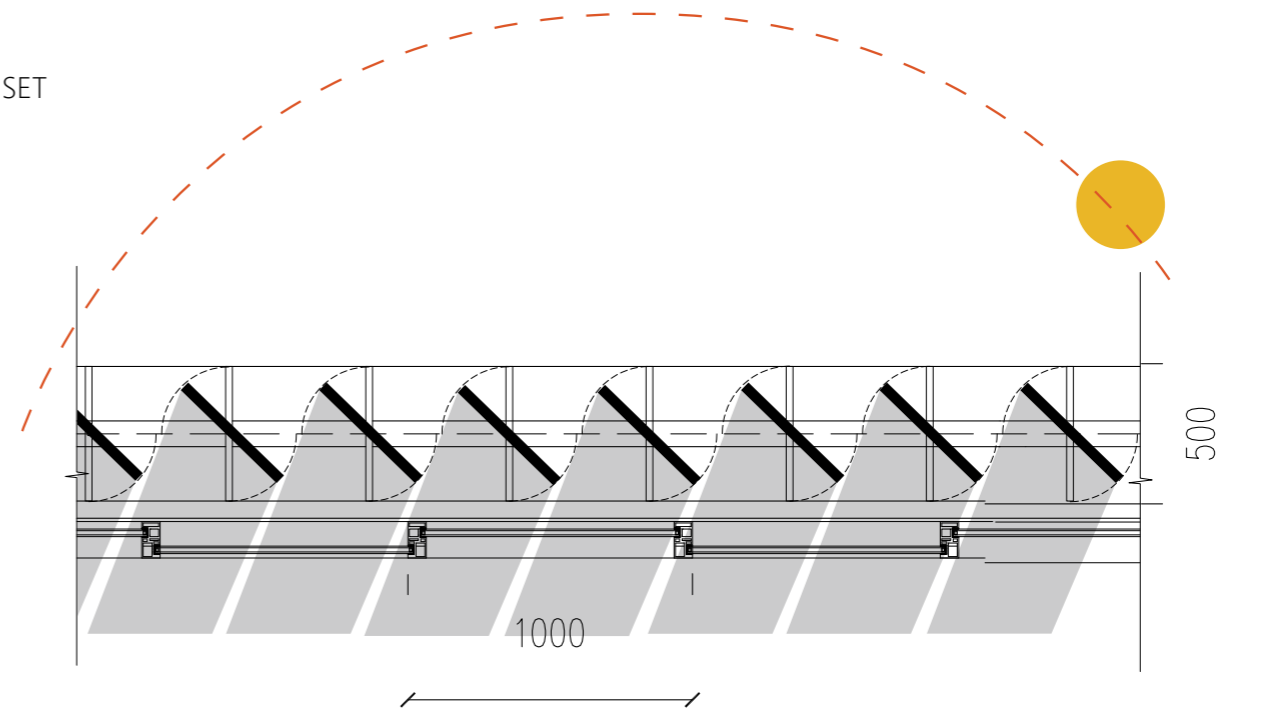
MORNING



NOON

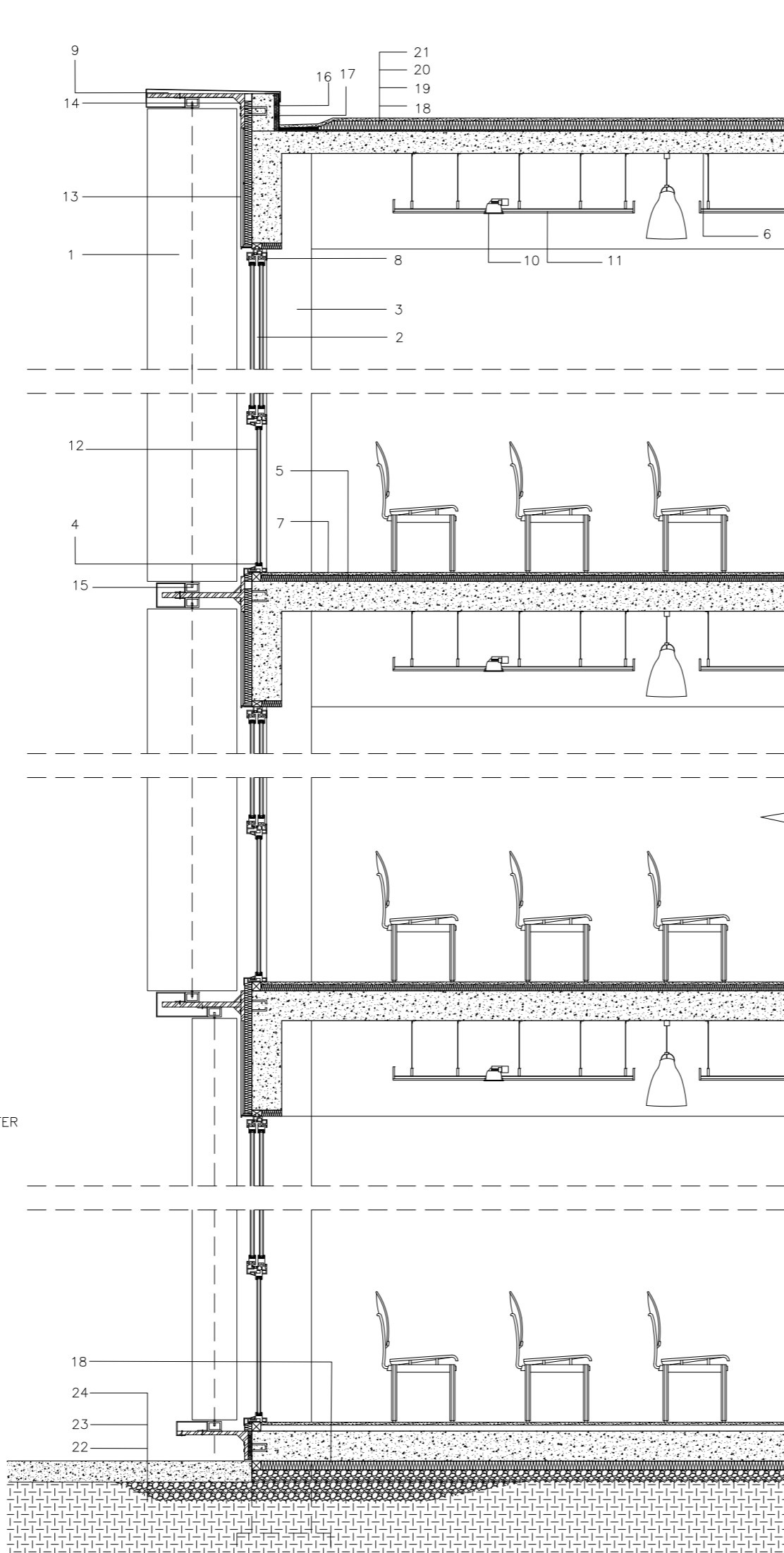


SUN SET



# Detail

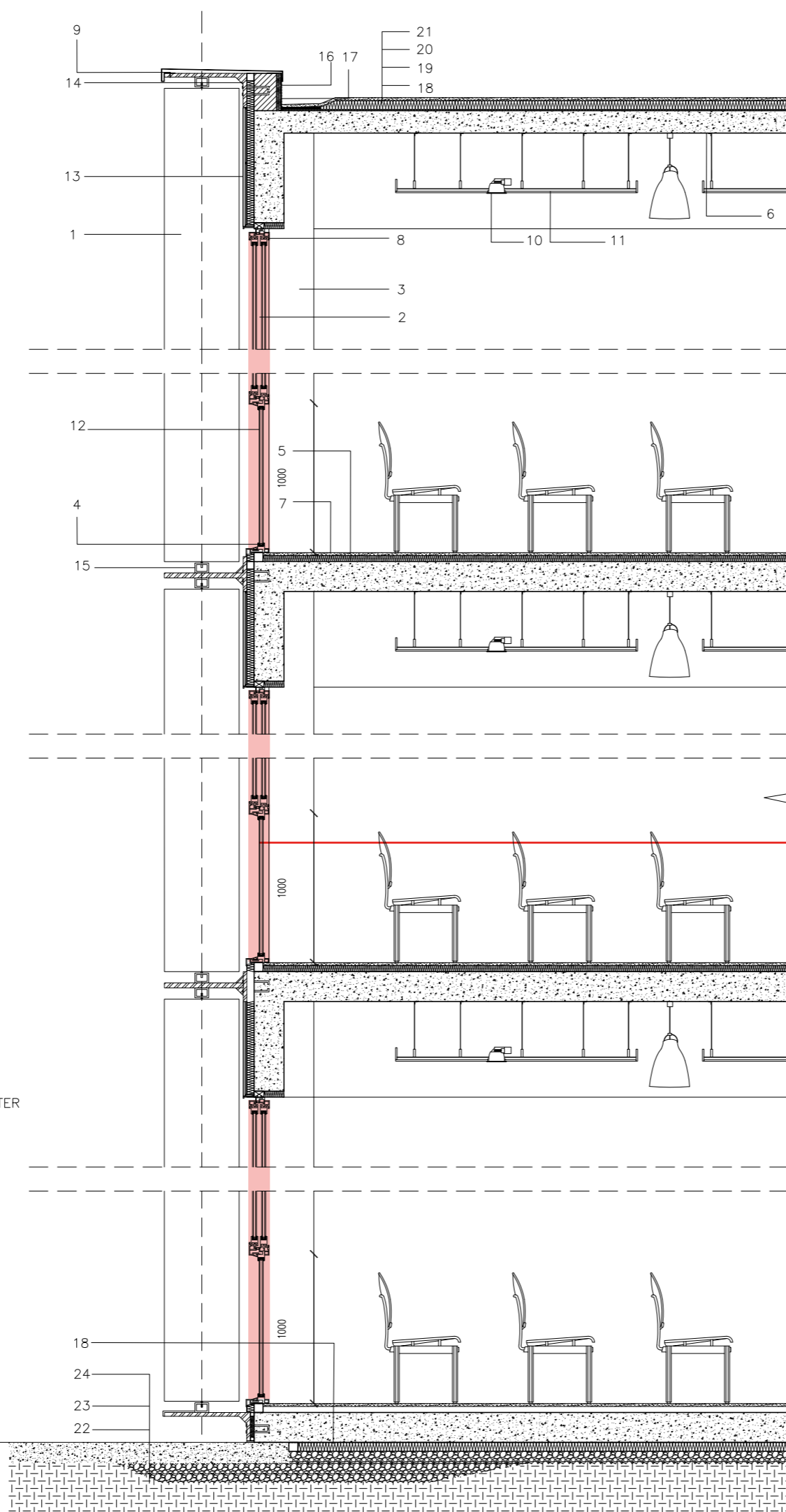
## FACADE



- LOUVER PANEL WITH WHITE PV
- DOUBLE GLAZING GLASS
- COLUMN
- MULLION
- INSULATION 40MM
- STRUCTURAL CONCRETE 200MM
- FLOOR PAVAGE
- ALUMINUM TRELLS
- 2MM ALUMINIUM CAPPING
- TEMPO 190 RECESSED DOWNLIGHTER
- SUSPENDED CEILING
- STALINITE SAFE GLASS
- ALUMINUM PANEL
- STEEL ANGLE
- STEEL SPINDLE
- METAL FALSHING
- RETENTION TEE
- VAPOR BARRIER
- VAPOUR CONTROL LAYER
- INSULATION, MINERAL WOOL
- BUILT-UP ROOFING
- SOIL
- GRANULAR FILL
- FINISHED GRADE

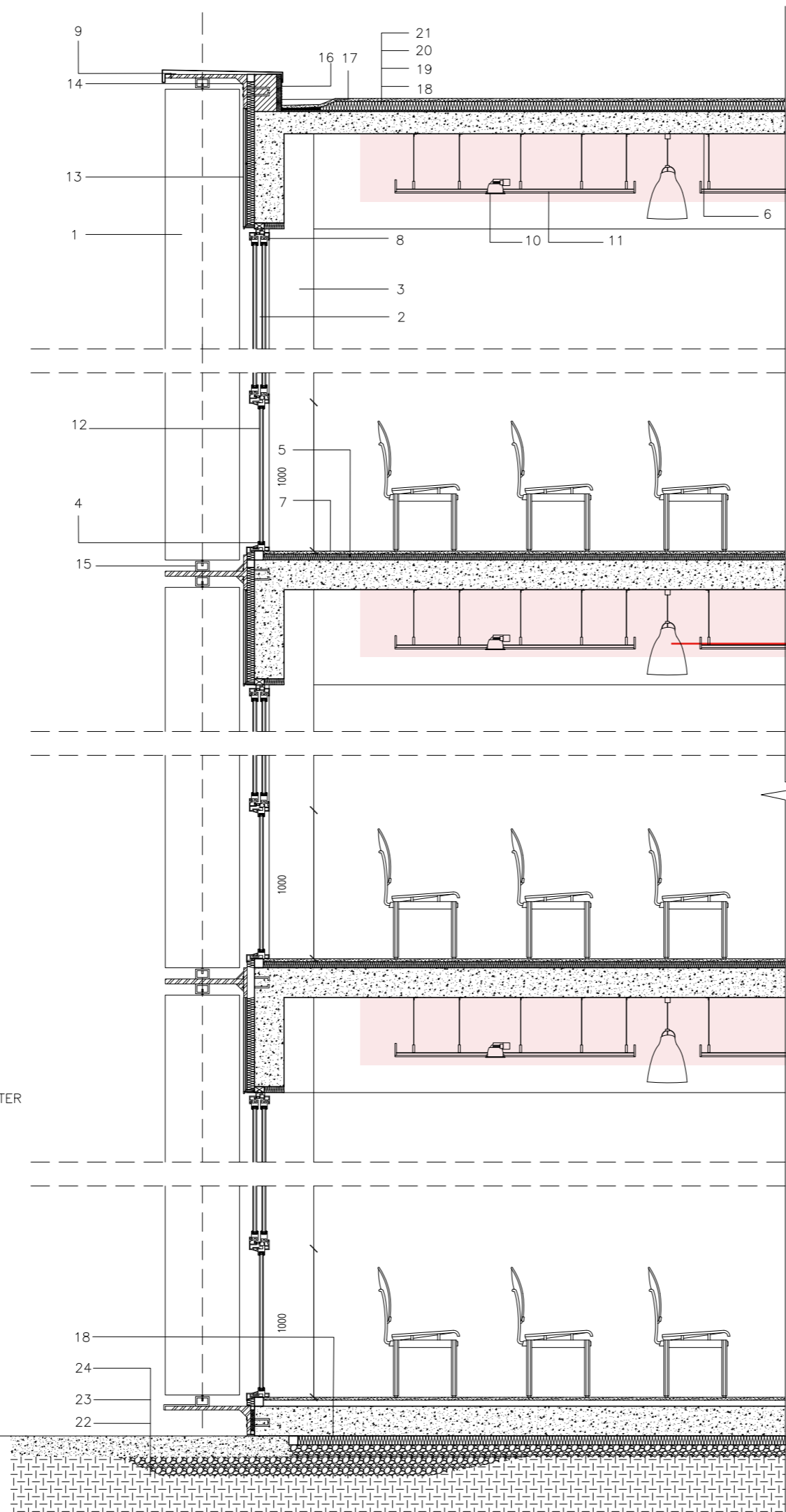
# Detail

FACADE



- 1 LOUVER PANEL WITH WHITE PV
- 2 DOUBLE GLAZING GLASS
- 3 COLUMN
- 4 MULLION
- 5 INSULATION 40MM
- 6 STRUCTURAL CONCRETE 200MM
- 7 FLOOR PAVAGE
- 8 ALUMINUM TRELLS
- 9 2MM ALUMINIUM CAPPING
- 10 TEMPO 190 RECESSED DOWNLIGHTER
- 11 SUSPENDED CEILING
- 12 STALINITE SAFE GLASS
- 13 ALUMINUM PANEL
- 14 STEEL ANGLE
- 15 STEEL SPINDLE
- 16 METAL FALSHING
- 17 RETENTION TEE
- 18 VAPOR BARRIER
- 19 VAPOUR CONTROL LAYER
- 20 INSULATION, MINERAL WOOL
- 21 BUILT-UP ROOFING
- 22 SOIL
- 23 GRANULAR FILL
- 24 FINISHED GRADE

Sliding Window

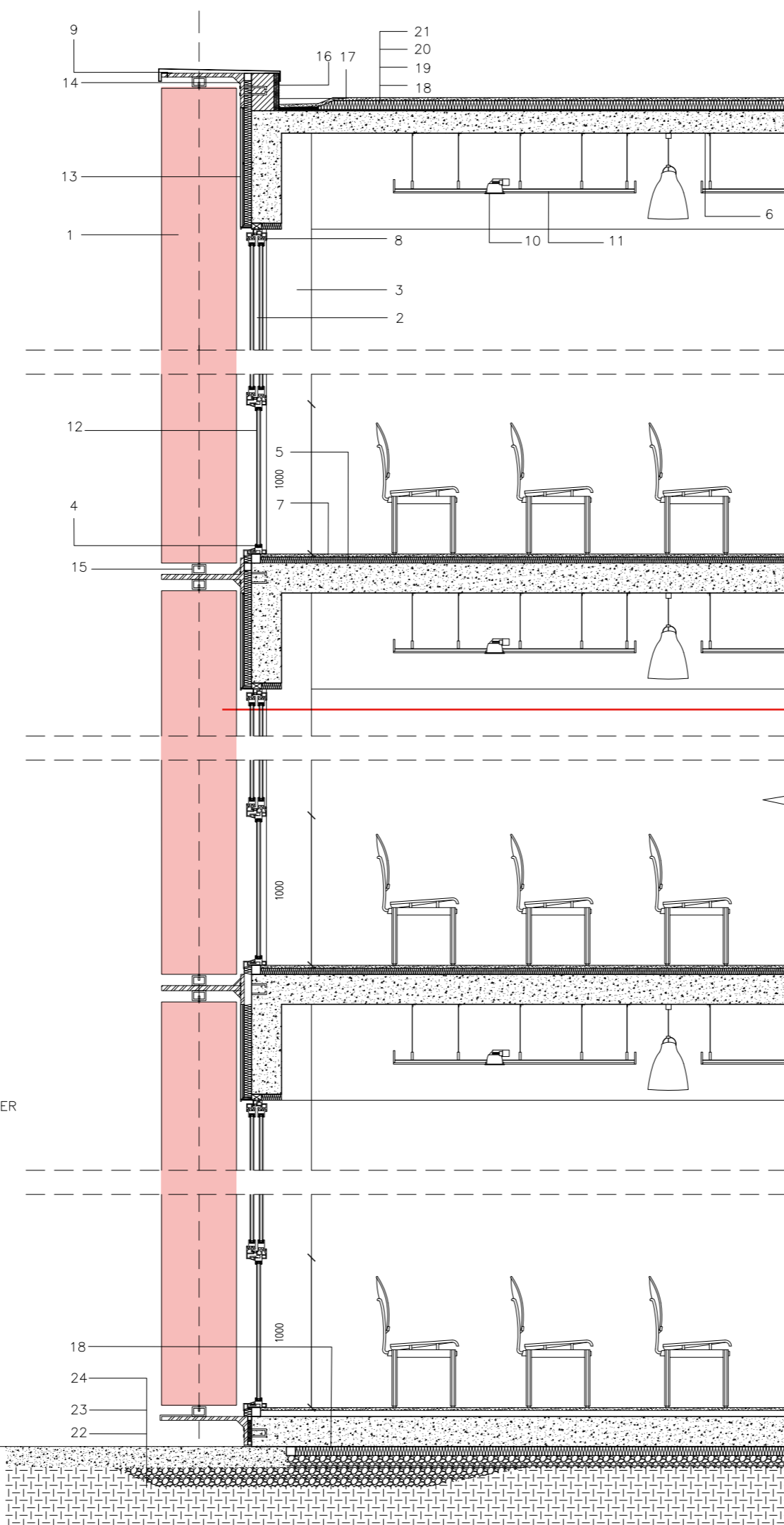


Suspended Ceiling

- 1 LOUVER PANEL WITH WHITE PV
- 2 DOUBLE GLAZING GLASS
- 3 COLUMN
- 4 MULLION
- 5 INSULATION 40MM
- 6 STRUCTURAL CONCRETE 200MM
- 7 FLOOR PAVAGE
- 8 ALUMINUM TRELLIS
- 9 2MM ALUMINIUM CAPPING
- 10 TEMPO 190 RECESSED DOWNLIGHTER
- 11 SUSPENDE CEILING
- 12 STALINITE SAFE GLASS
- 13 ALUMINUM PANEL
- 14 STEEL ANGLE
- 15 STEEL SPINDLE
- 16 METAL FALSHING
- 17 RETENTION TEE
- 18 VAPOR BARRIER
- 19 VAPOUR CONTROL LAYER
- 20 INSULATION, MINERAL WOOL
- 21 BUILT-UP ROOFING
- 22 SOIL
- 23 GRANULAR FILL
- 24 FINISHED GRADE

# Detail

FACADE



- 1 LOUVER PANEL WITH WHITE PV
- 2 DOUBLE GLAZING GLASS
- 3 COLUMN
- 4 MULLION
- 5 INSULATION 40MM
- 6 STRUCTURAL CONCRETE 200MM
- 7 FLOOR PAVAGE
- 8 ALUMINUM TRELLS
- 9 2MM ALUMINIUM CAPPING
- 10 TEMPO 190 RECESSED DOWNLIGHTER
- 11 SUSPENDED CEILING
- 12 STALINITE SAFE GLASS
- 13 ALUMINUM PANEL
- 14 STEEL ANGLE
- 15 STEEL SPINDLE
- 16 METAL FALSHING
- 17 RETENTION TEE
- 18 VAPOR BARRIER
- 19 VAPOUR CONTROL LAYER
- 20 INSULATION, MINERAL WOOL
- 21 BUILT-UP ROOFING
- 22 SOIL
- 23 GRANULAR FILL
- 24 FINISHED GRADE

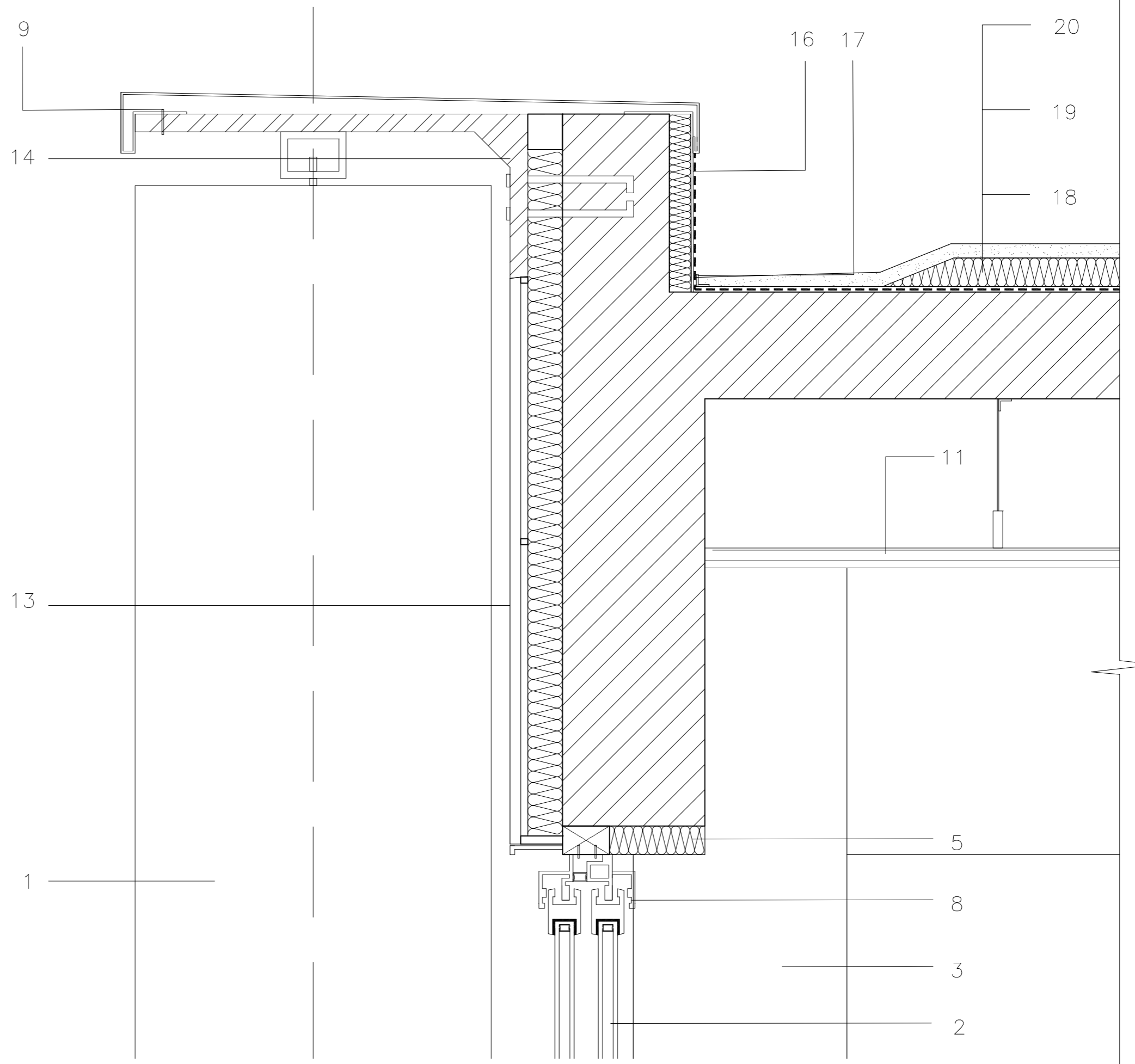
White PV Louver Panel



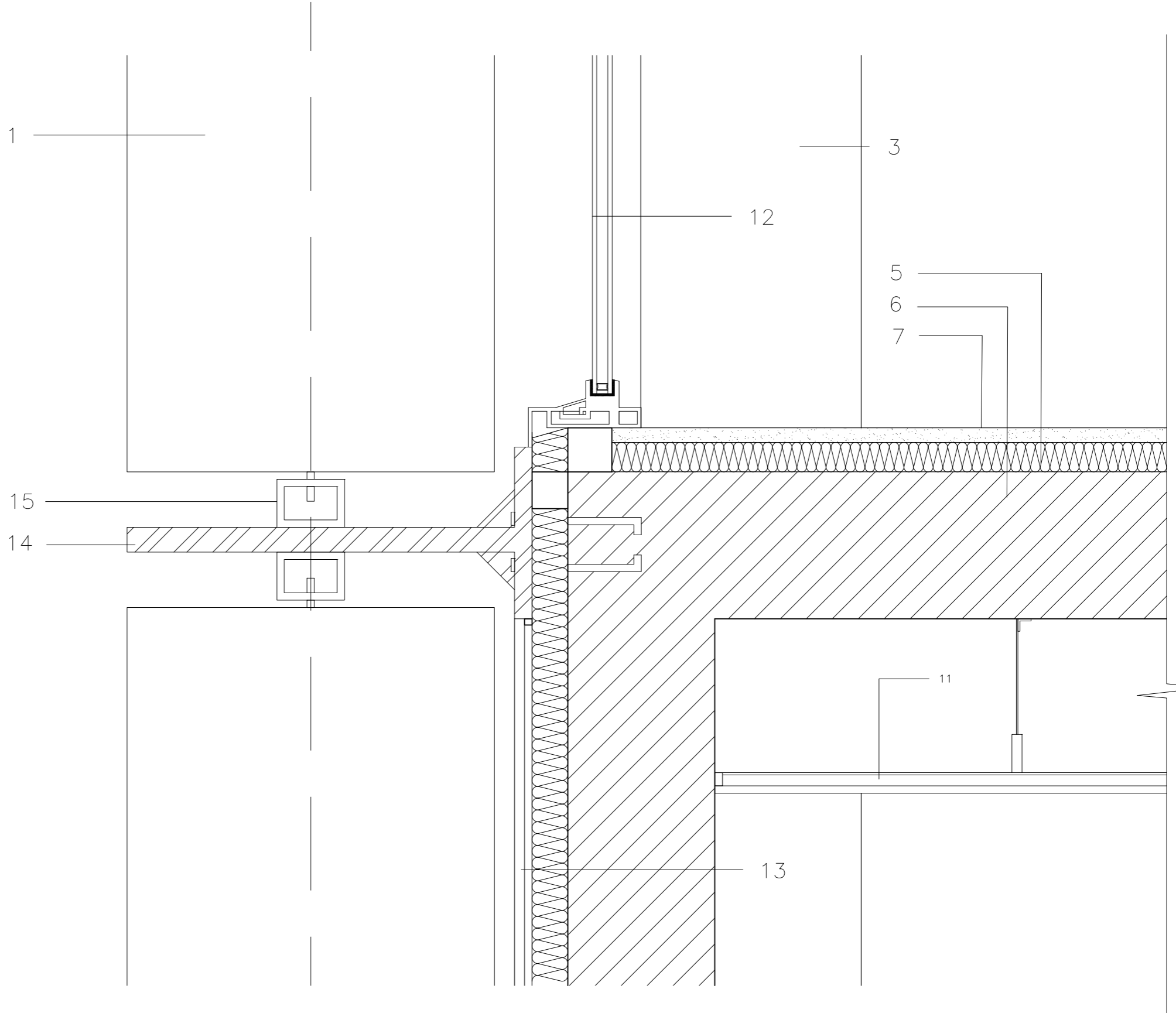


# Detail

FACADE



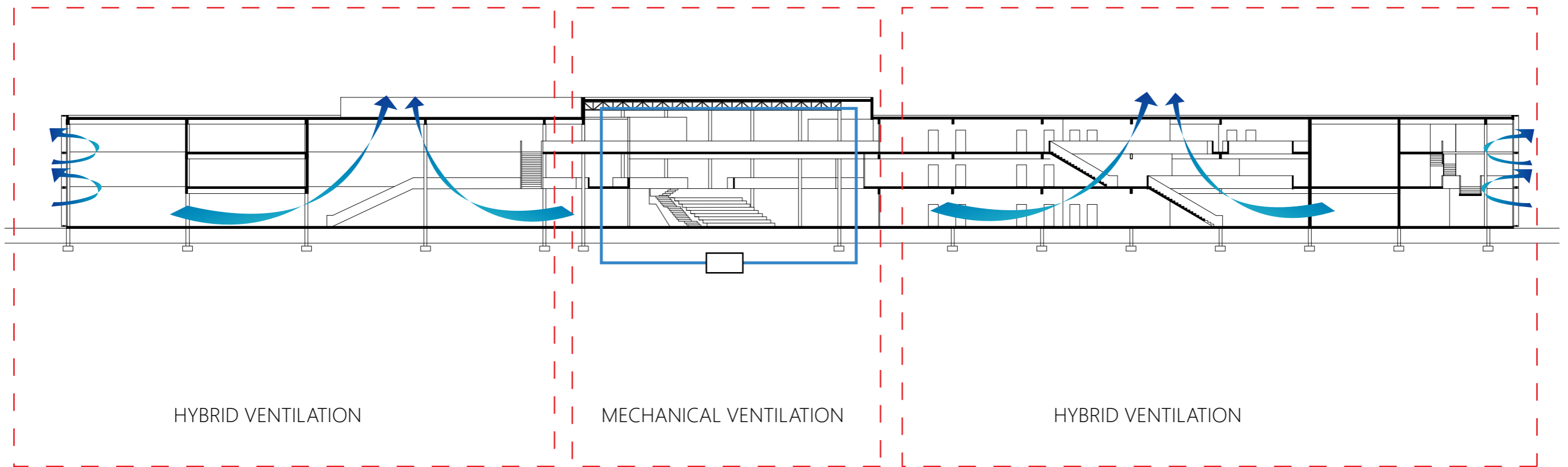
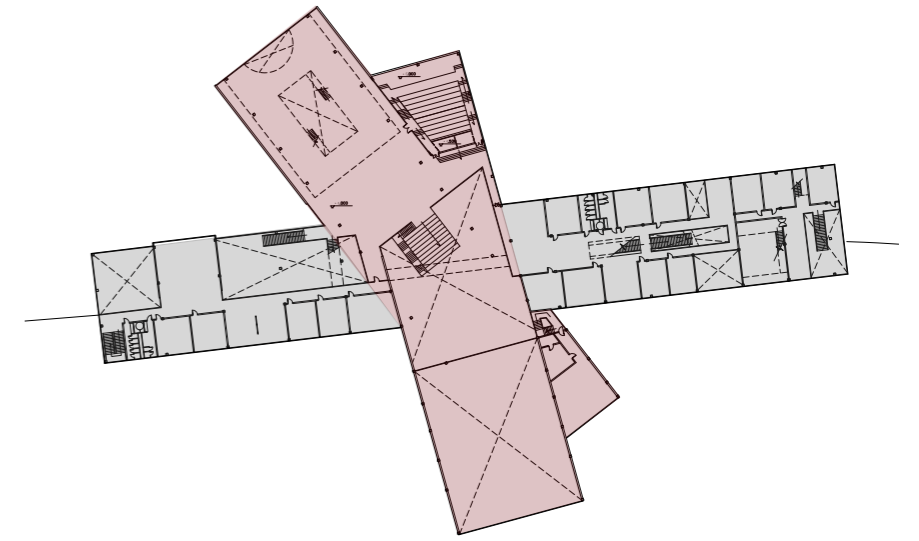
- 1 LOUVER PANEL WITH WHITE PV
- 2 DOUBLE GLAZING GLASS
- 3 COLUMN
- 5 INSULATION 40MM
- 8 ALUMINUM WINDOW FRAME
- 9 2MM ALUMINIUM CAPPING
- 11 SUSPENDED CEILING
- 13 ALUMINUM PANEL
- 14 STEEL ANGLE
- 15 STEEL SPINDLE
- 16 METAL FALSHING
- 17 RETENTION TEE
- 18 VAPOUR CONTROL LAYER
- 19 INSULATION, MINERAL WOOL
- 20 BUILT-UP ROOFING



- 1 LOUVER PANEL WITH WHITE PV
- 3 COLUMN
- 5 INSULATION 40MM
- 6 STRUCTURAL CONCRETE 200MM
- 7 FLOOR PAVAGE
- 8 ALUMINUM WINDOW FRAME
- 11 SUSPENDED CEILING
- 12 STALINITE SAFE GLASS
- 13 ALUMINUM PANEL
- 14 SUPPORTING STEEL BOARD
- 15 STEEL SPINDLE

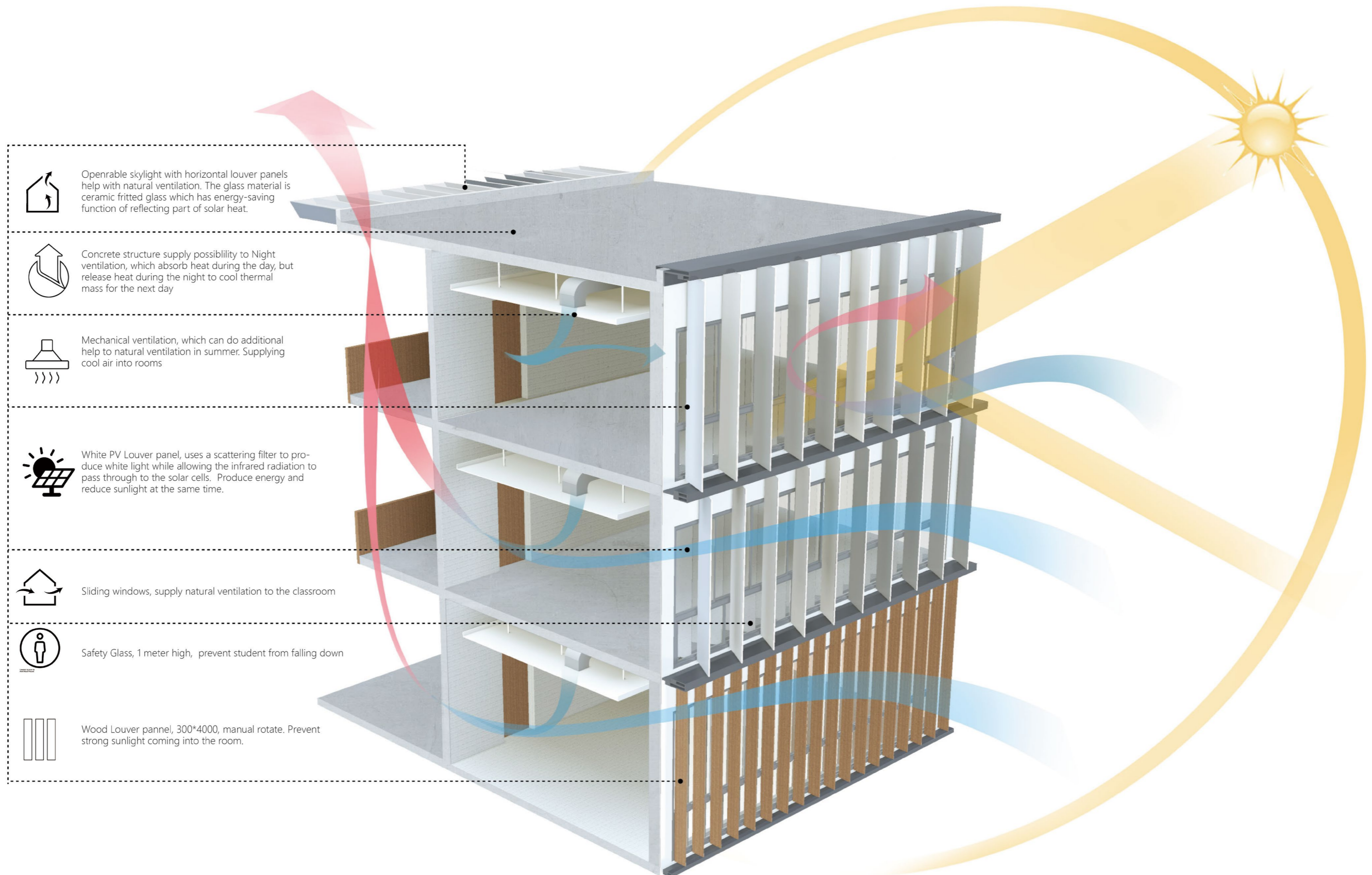
# Climate Zone

CLIMATE



# Hybrid Ventilation

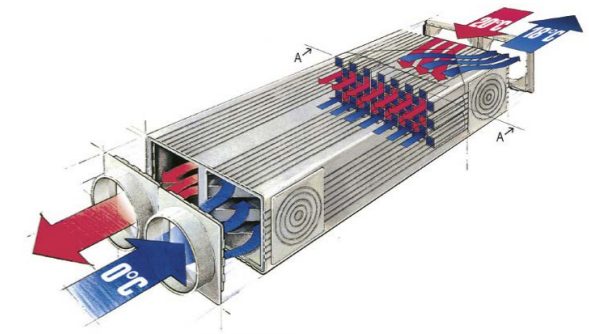
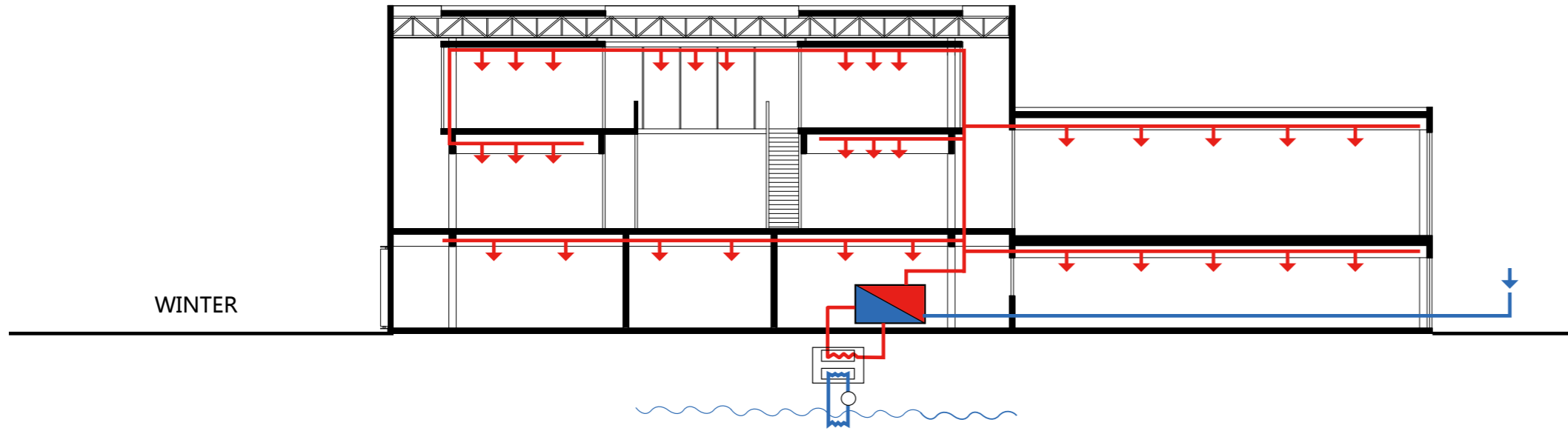
CLIMATE



# Mechanical Ventilation

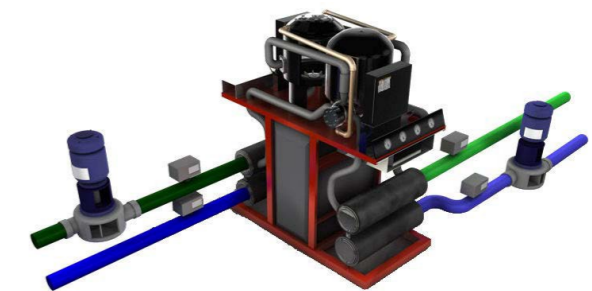
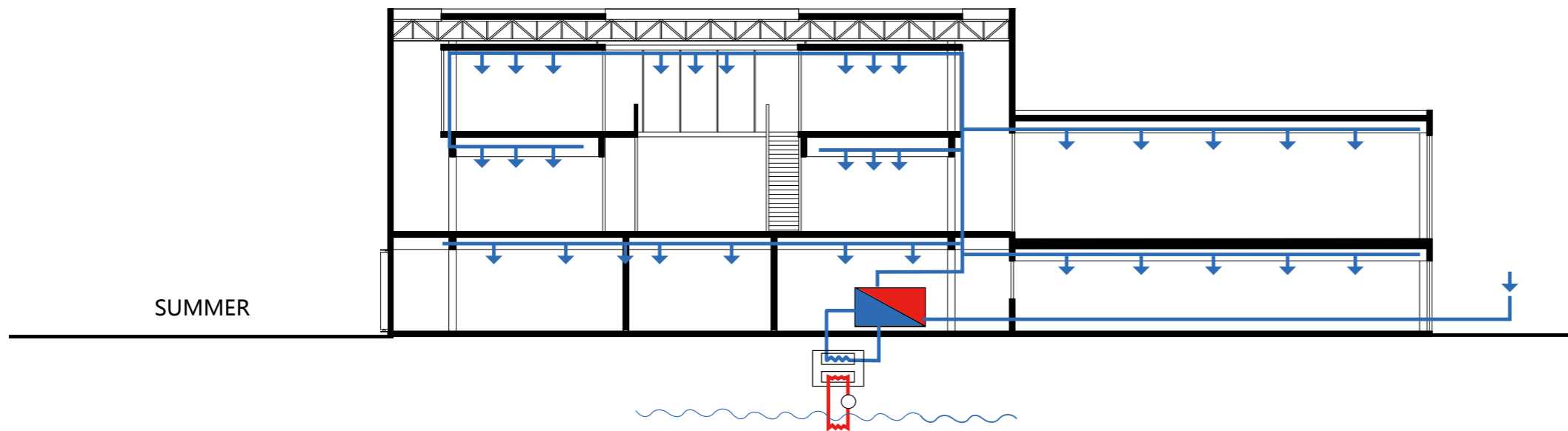
CLIMATE

WINTER



HEAT EXCHANGER

SUMMER

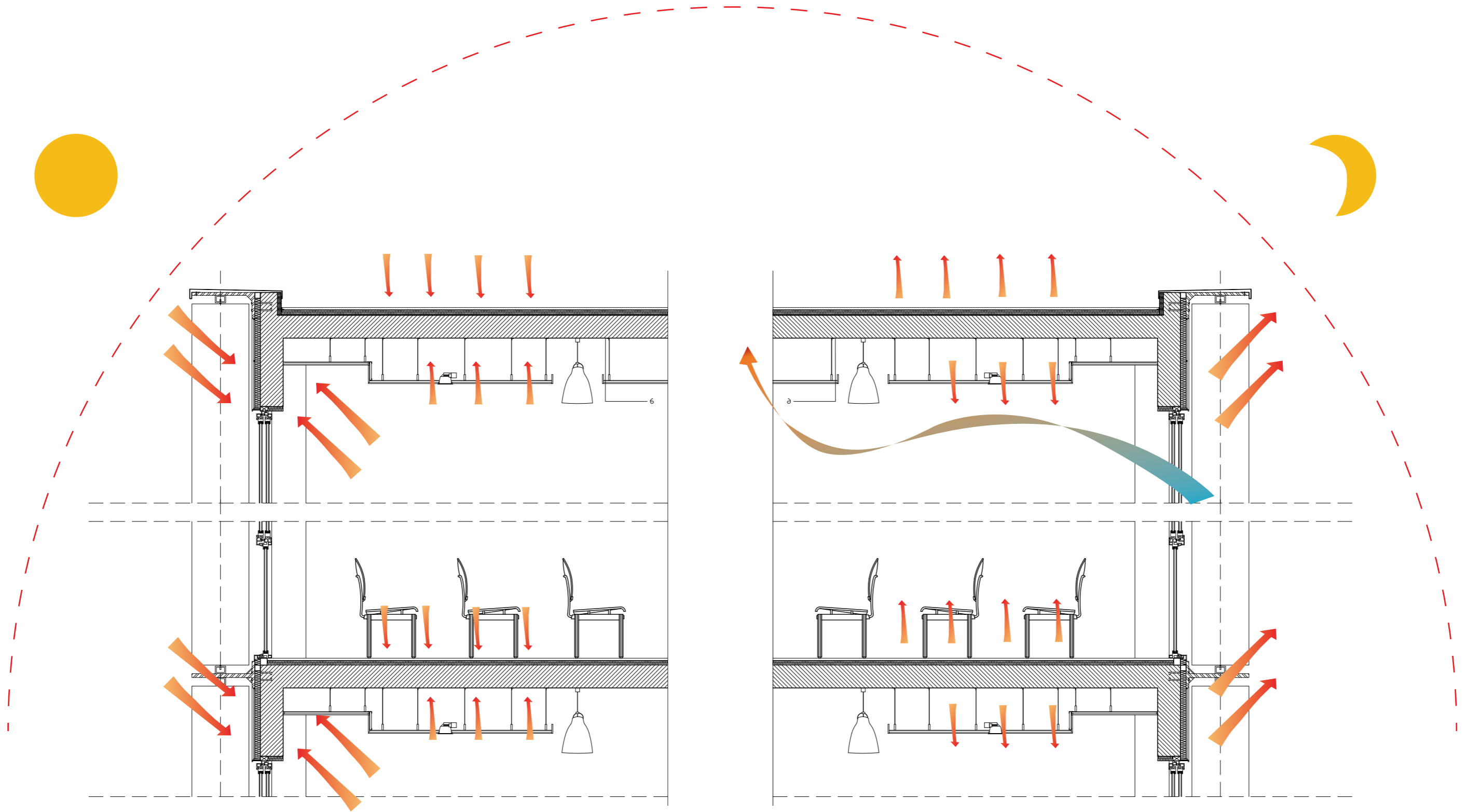


WATER SOURCE HEAT PUMP

# Night Ventilation Strategy

CLIMATE

OVER ALL STRATEGY: NIGHT VENTILATION STRATEGY



CONCRETE ABSORBS HEAT DURING THE DAY

CONCRETE RELEASE HEAT AT NIGHT

**THANK YOU**

