‘A Relief to be relieved’ by relieved Community

A building learning centre

Promoting hurricane-proof building knowledge among communities
A way to optimised and self-efficient disaster relief on Sint Maarten (and beyond)

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Average of hurricanes during time and their strength

every 1 year hurricane season

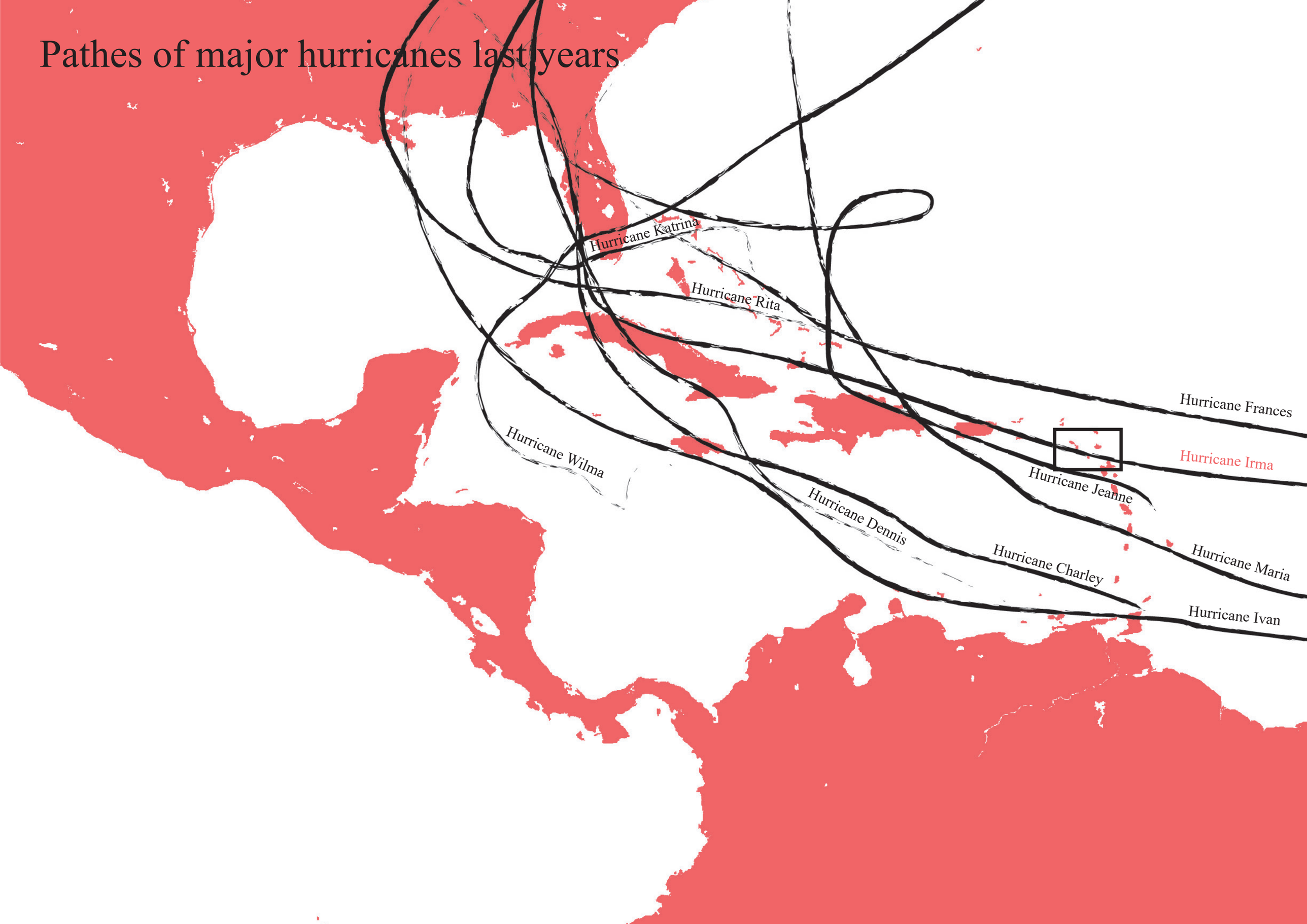
every 6 years major hurricane

every 20 years massive hurricane

20 last years

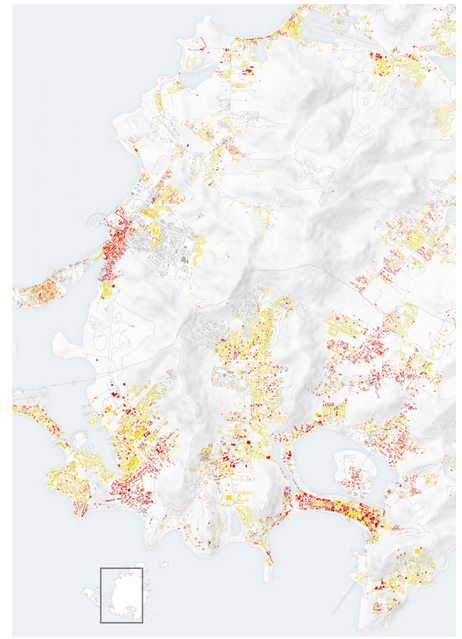
2x more hurricanes

Pathes of major hurricanes last years



Effects of Irma on Sint Maarten_visulas

Lack of a hurricane proof building knowledge and prevention plan



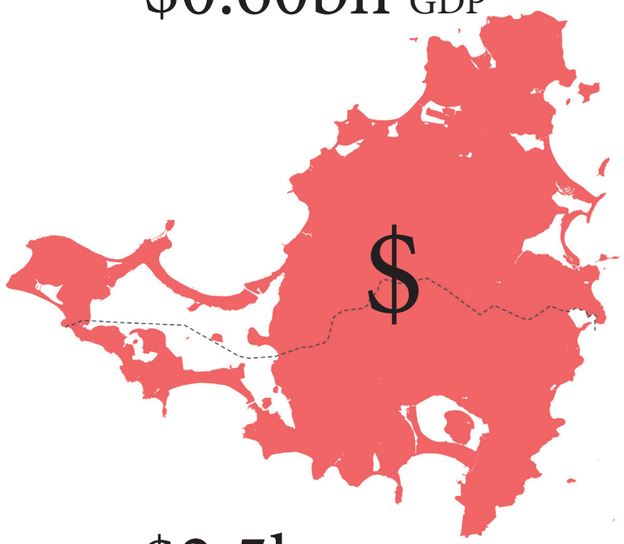
Hurricane happens... what then?

Effects of Irma on Sint Maarten_numbers

Saint Martin

$1.5bn damage

$0.60bn GDP



~ 37 000

98%

Sint Maarten

$2.5bn damage

$1.9bn GDP

~ 33 000

85%

Estimated median damages and losses

People affected

Building damages

Total number

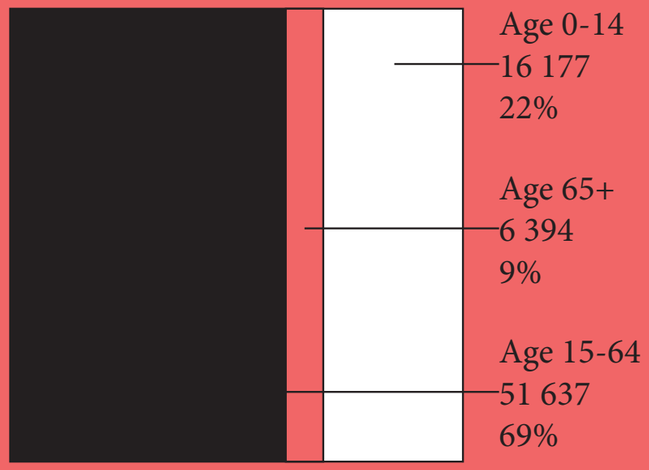
4bn
Damage

74 208
Total population exposed

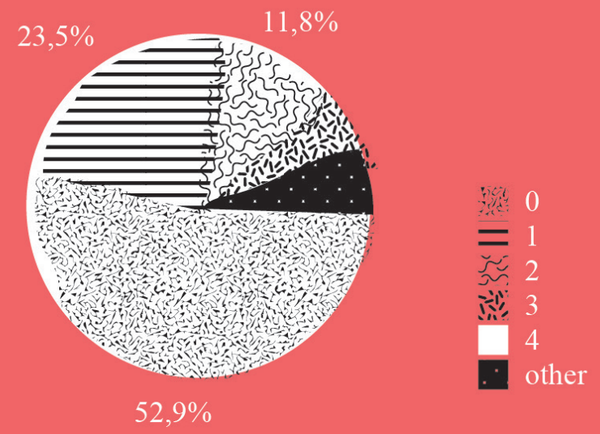
22 666
Total householdes exposed

Difficult living conditions enhanced after Irma

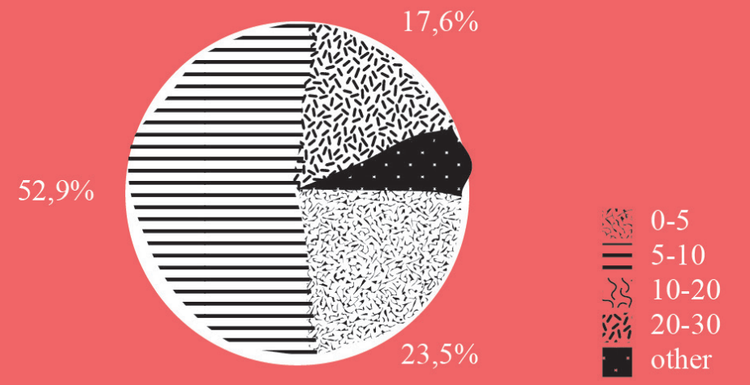
Issues on slow relief and community rebuilidng_Unemployment and Poverty



People affected on Saint Martin island



How many people in your household are unemployed?



How many people do you know in your community that live in povery?

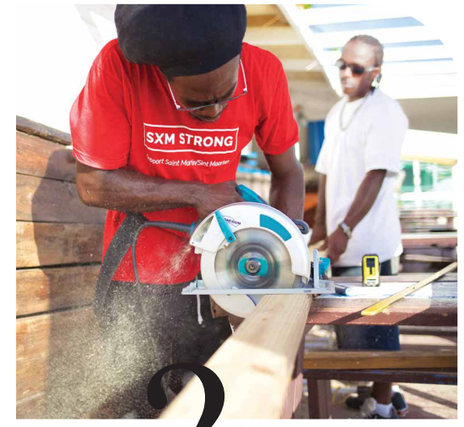
People affected

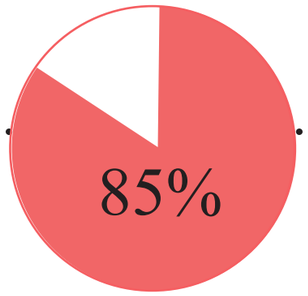
Unemployment

Poverty

Transition_tourism sector v construction sector_new economic development

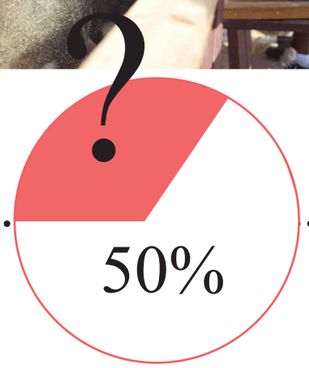
Sint Maarten
National Recovery
and Resilience Plan
A Roadmap to
Building Back Better



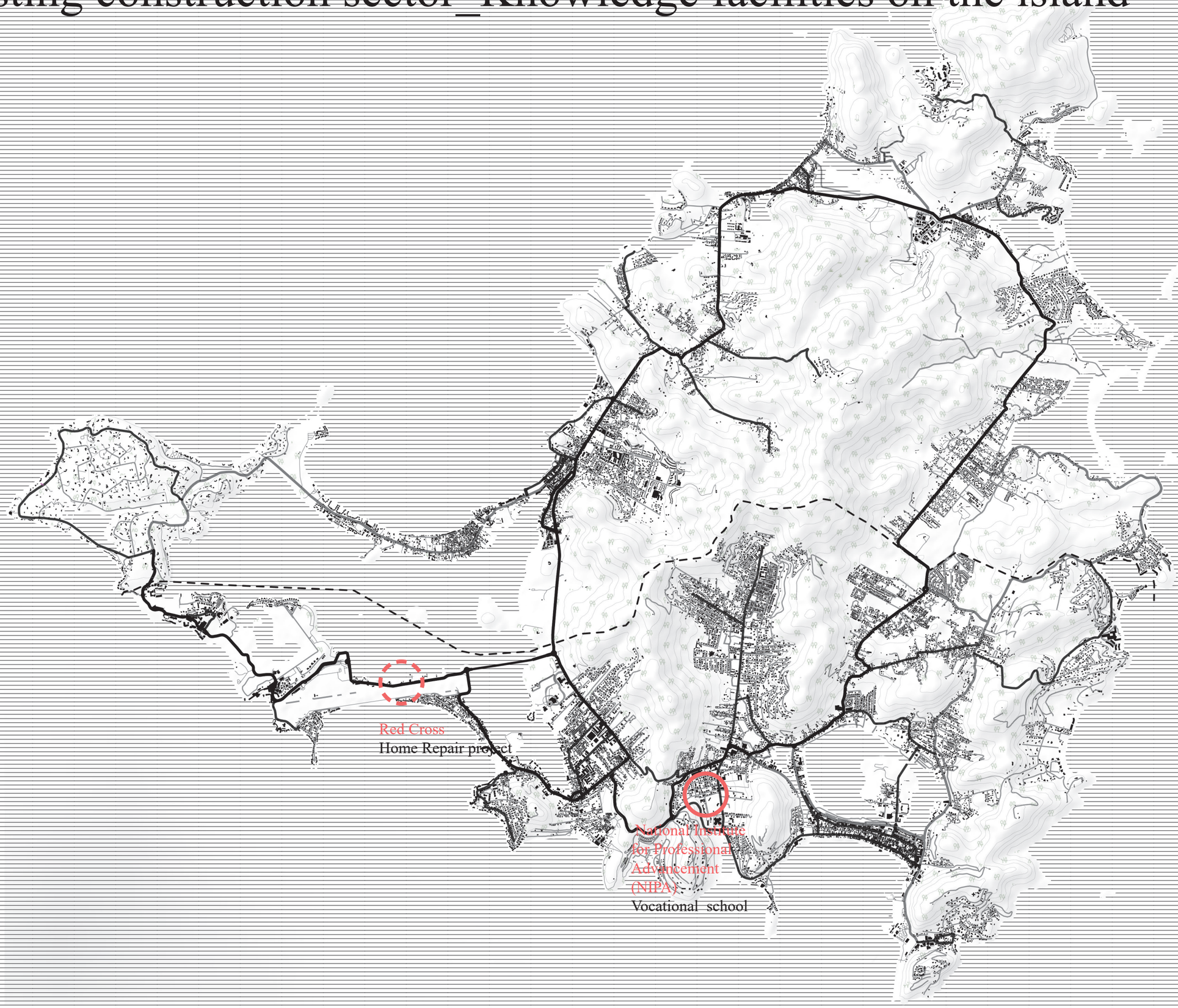


Irma

2019



Existing construction sector_Knowledge facilities on the island



Red Cross v NIPA_relevence in rebuilding community and providing knowledge on hurricane-proof building methodes

Home Repair project

Electrical Installation 2 year learning/ internship

Red Cross_Phases

I_assistance

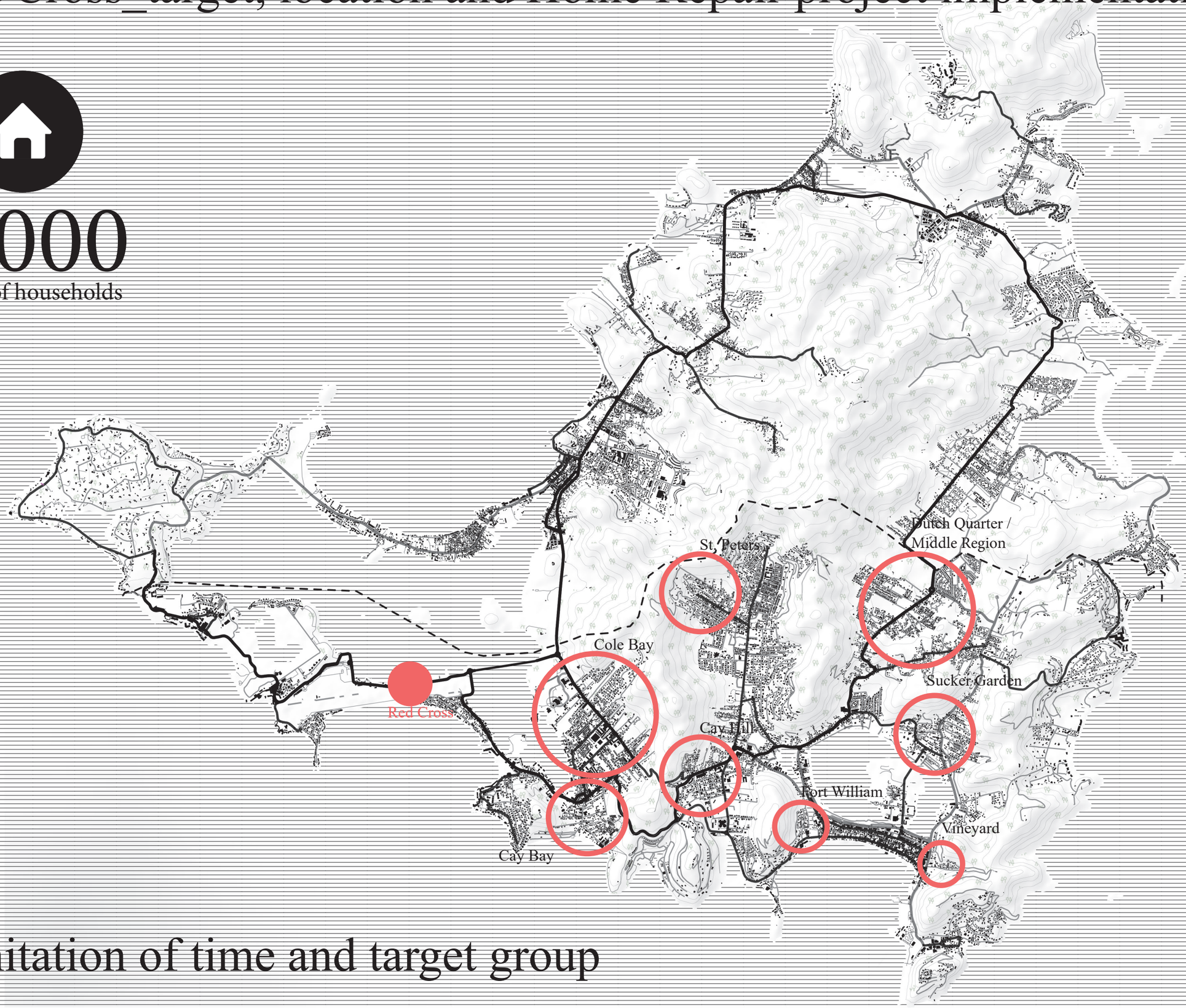
II_technical support

III_knowledge

Red Cross_target, location and Home Repair project implementation area

2 000

Target of households



Limitation of time and target group

Problem statement

Frequent hurricanes

Low hurricaneproof building methods knowledge

Community alienation from relief programme

Monopoly of tourism economy

Poverty

Ambition

Frequent hurricanes	Preparedness against hurricanes
Low hurricaneproof building methods knowledge	Hurricane proof building methods knowledge
Community alienation from relief programme	High community engagement in the relief programme
Monopole of tourism economy	Construction field as economic diversification
Poverty	Empowering local community

Design Question

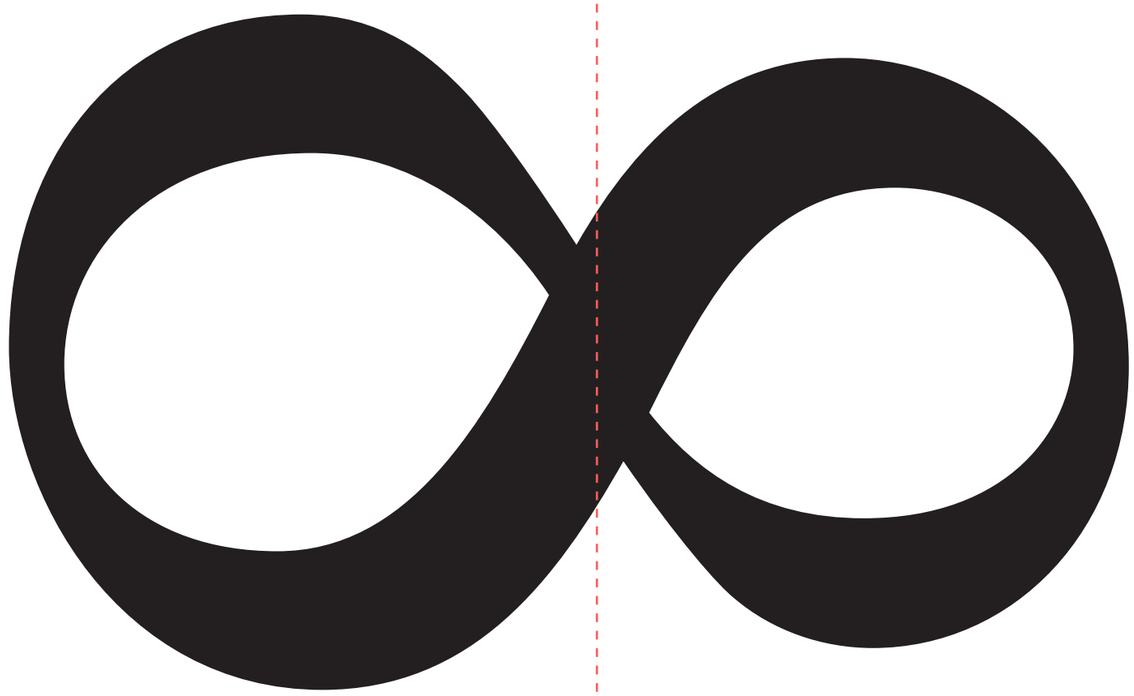
Is it possible to optimize the recovery period after future disasters on Sint Maarten by creating a building learning centre, which creates hurricane-proof building knowledge among locals, to promote self-dependent communities on Sint Maarten?

Thematic research question

What could be learnt from architects in post disaster community based projects?

Definition of resilience

Resilience a range of system responses, especially the ability of a system to:



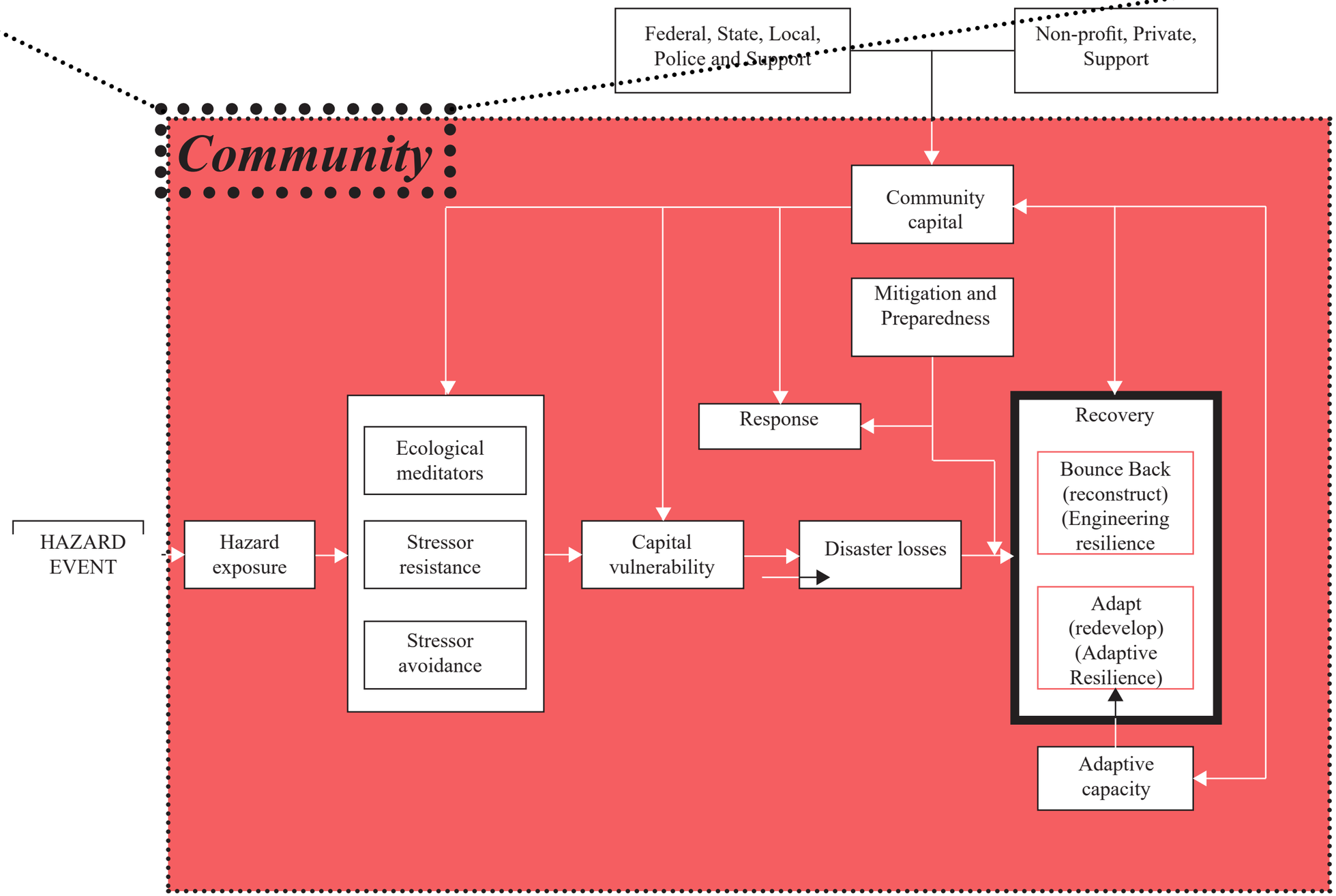
Adapt to new circumstances

Recover following a major disruption

Remain stable in the face of external perturbations and stresses

Meaningful participation of community in adaptive resilience model

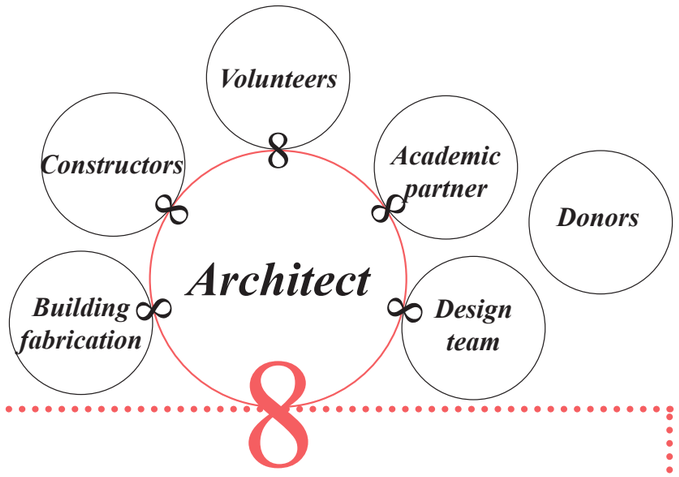
capacity + skills + knowledge = meaningful participation



Case studies within Adaptive resilience framework

Recovery enables social units to:

- reassess their circumstances,
- learn from their disaster experiences, and
- adjust their strategies



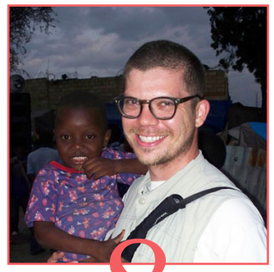
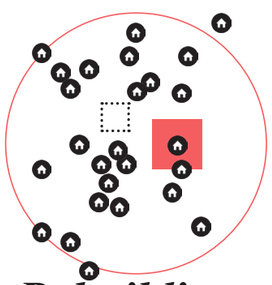
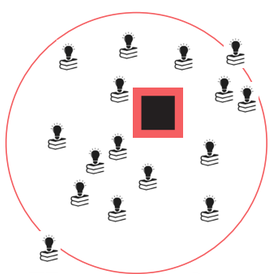
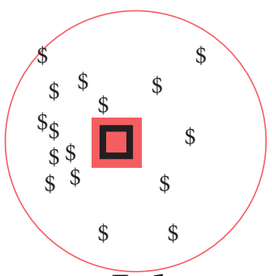
Community

Hazard event

End Client

Post-disater project

3 case studies

	I	II	III
Hazard event	***hurricane Katrina (2005)***	***earthquake (2010)***	***Tohoku earthquake and tsunami (2011)***
Architect			
8	***8***	***8***	***8***
Community	***USA***	***Haiti***	***Japan***
Post-disater project			
Types of response in post-disaster projects	 ***Rebuilding***	 ***Knowledge***	 ***Job***

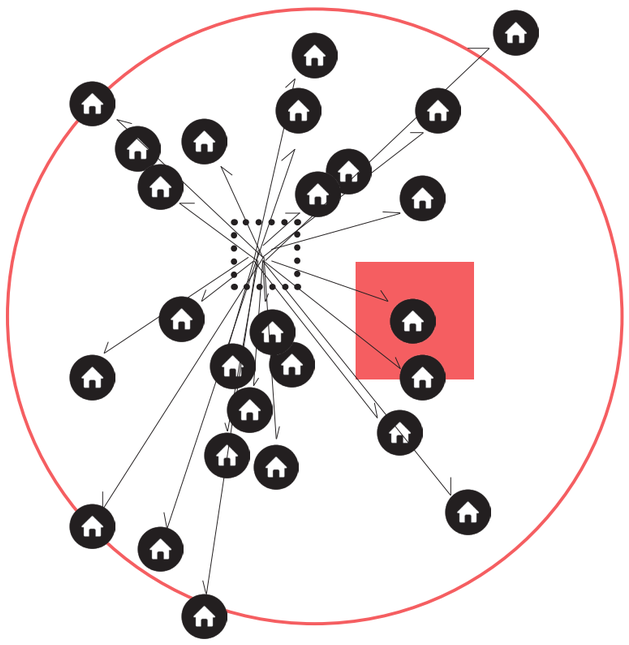
3 case studies within Adaptive resilience framework_Role of the project among the community

I

House reconstruction

Rebuilding

Consultancy for local reconstruction

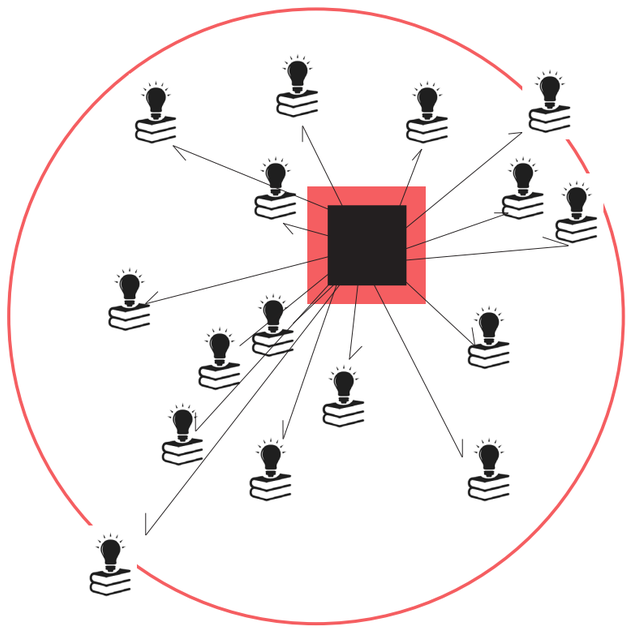


II

School extencion

Knowledge

Driver for creating knowledge

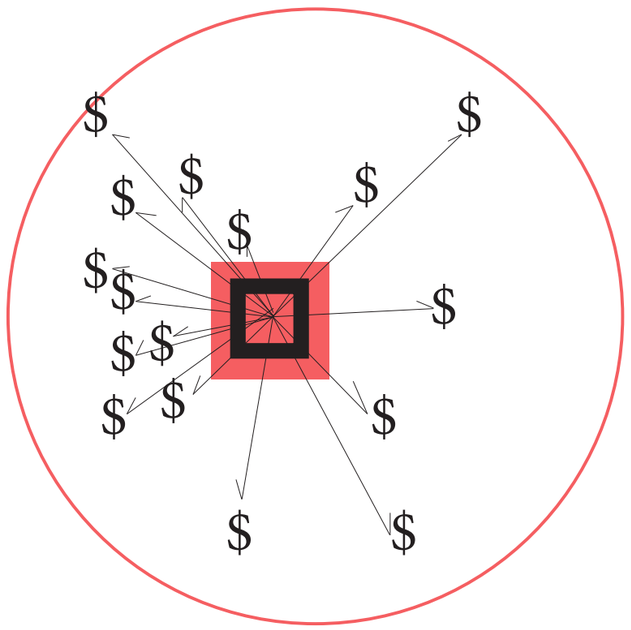


III

Fishermen's workplace and warehouse

Job

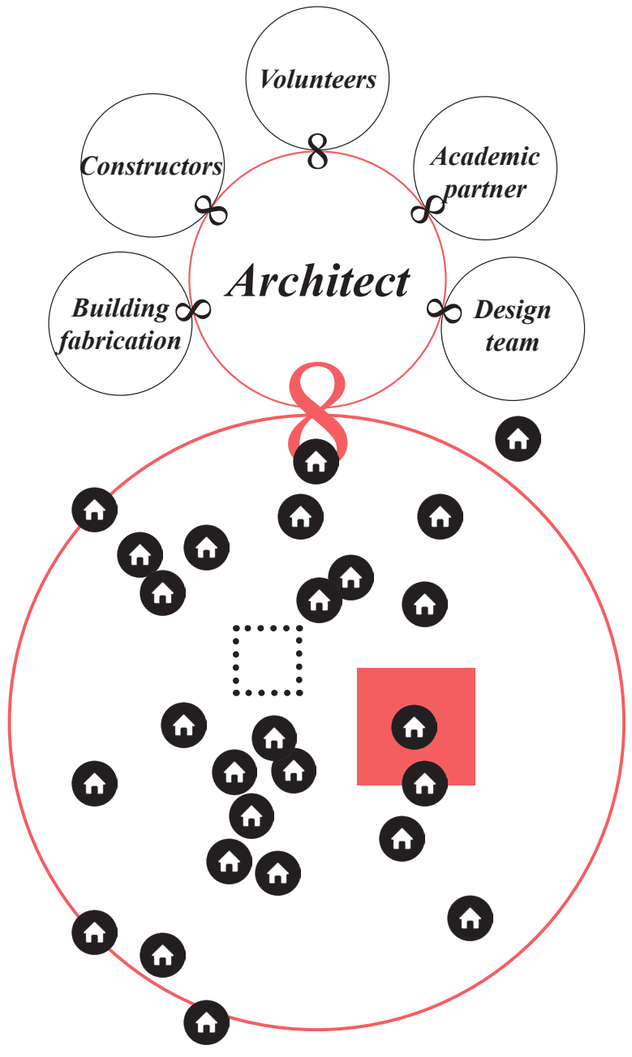
Creating job opportunities



3 case studies within Adaptive resilience framework_Actors

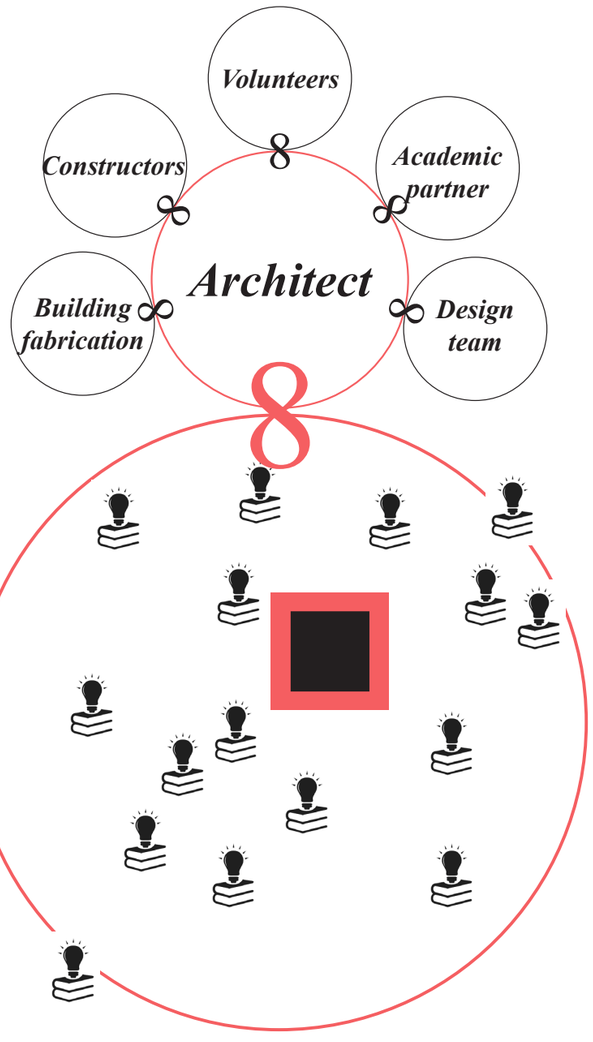
I

House reconstruction



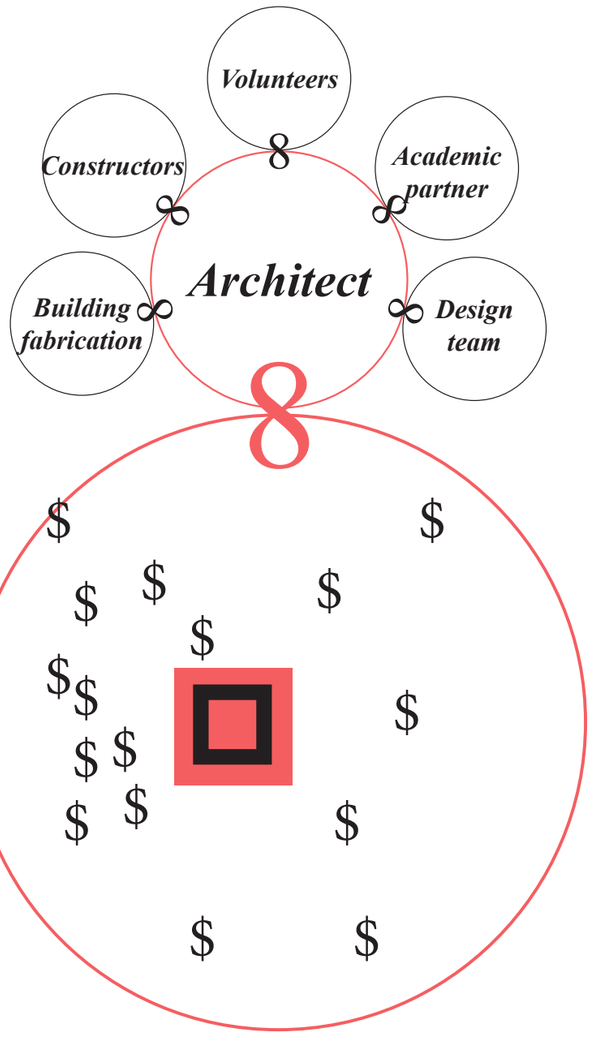
II

School extension



III

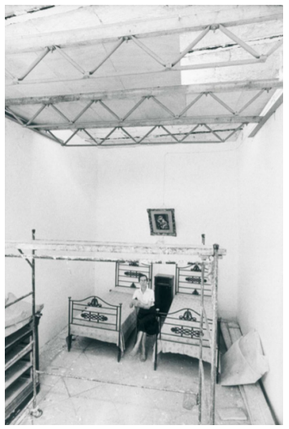
Fishermen's workplace and warehouse



From research to the design...

Renzo Piano_Neighborhood Workshop_UNESCO reconstruction experiment
Otranto, Italy 1979

I + II + III



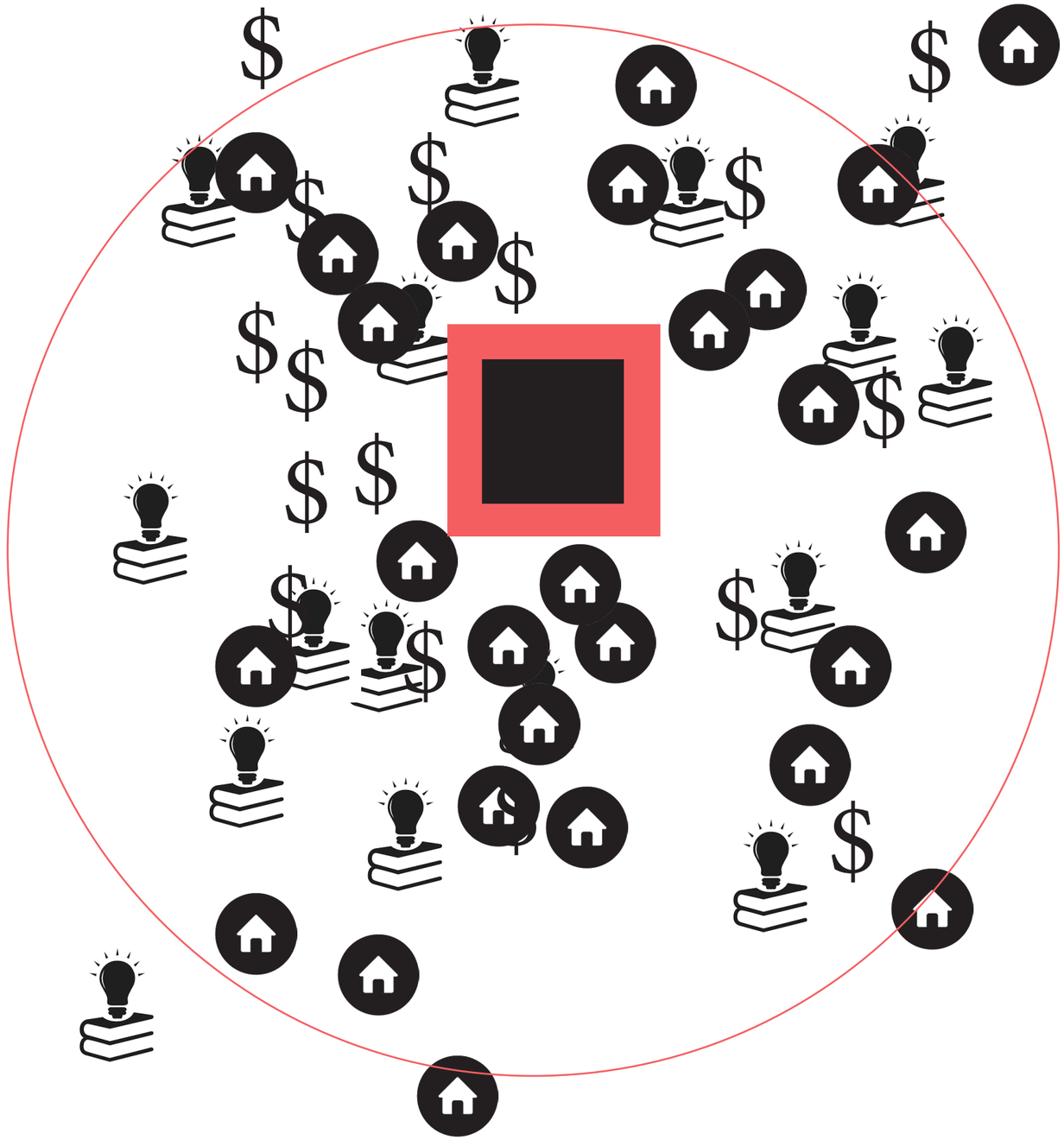
Consultancy for local housing needs

Educational facility on building methods

Enhancing labor capacity

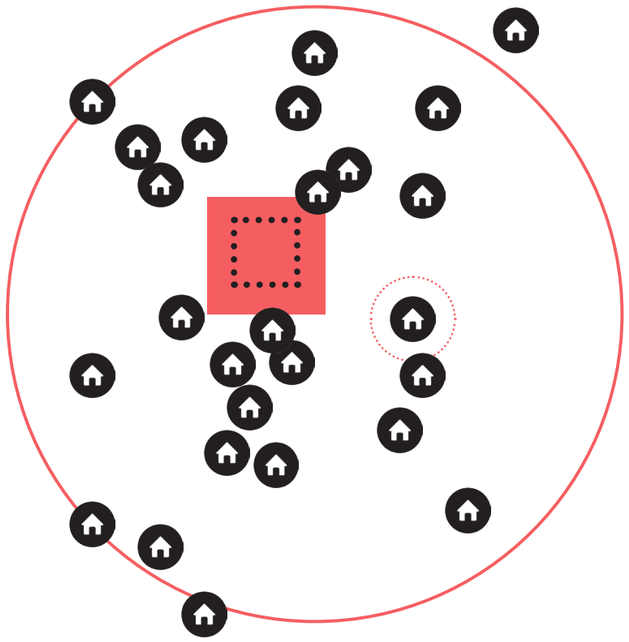
Renzo Piano's Workshop_inspiration for Building Learning Centre on Sint Maarten

I/II/III



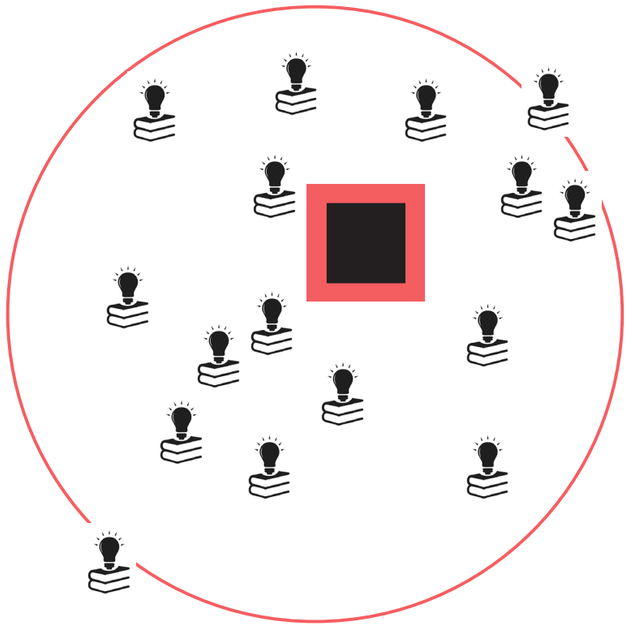
Ambition_the Building Learning Centre on Sint Maarten

I + II + III



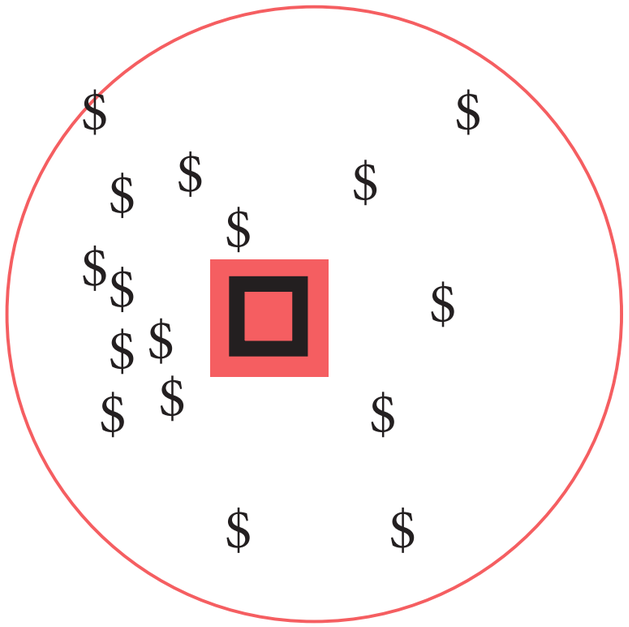
Consultancy for local housing needs

- advising on house reconstruction for locals



Educational facility on building methods

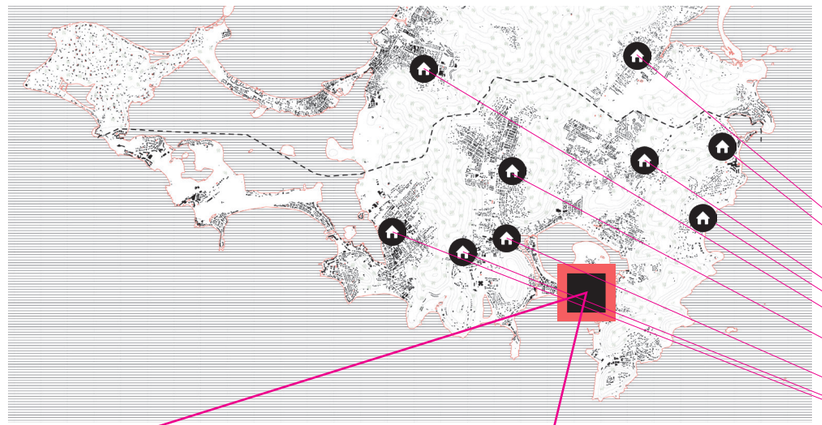
- learning centre on hurricane- proof building methods (theory learning/workshop/ field work)



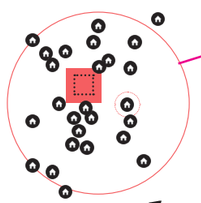
Enhancing locals in construction field

- construction field job certification for empowering locals (treinee's field work)

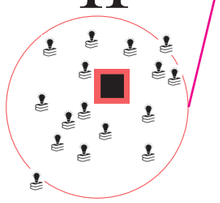
Study program of students_the Building Learning Centre on Sint Maarten

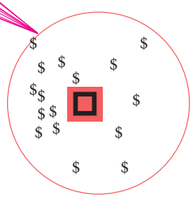


I



II





-consultancy-

-building-

-school-

-traineeship-

-field work-

-consultancy-

-school zone-

-workshop zone-

10 -advisors-

50

-students-

50

part 1

part 2

part 3/4

1 semester

1 semester

2 semesters

2 year program

Program of the building_ Areas of functions

-consultancy-

-school-

-building-

-consultancy-

-school zone-

-workshop zone-

Services 9m2 x2

Lobby/Information
32m2

Administration 9m2 x3

Small meeting room 9m2 x3

Toilets
16m2

Conferance room
16m2 x2

360m2

Auditorium
132m2

Coffee place
225m2

Administration
9m2 x3

Classroom
32m2 x 3

Studio/study space
16m2 x 3

Meeting room
16m2 x 2

Toilets
16m2

575m2

Workshop space
800m2

Equipment
32m2

Magazine
128m2

Open studio
32m2

Administration
9m2 x2

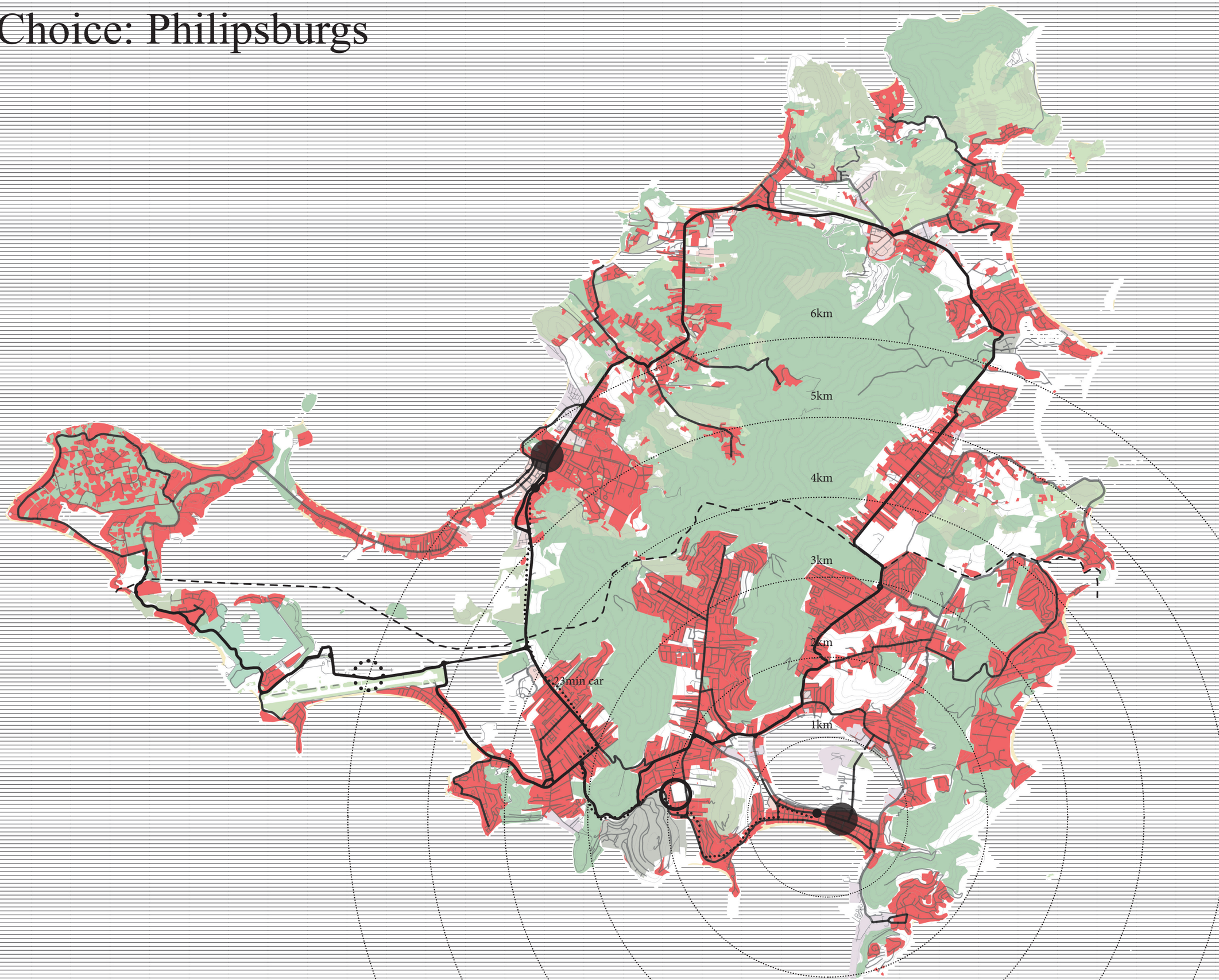
Services
9m2 x2

Toilets
16m2

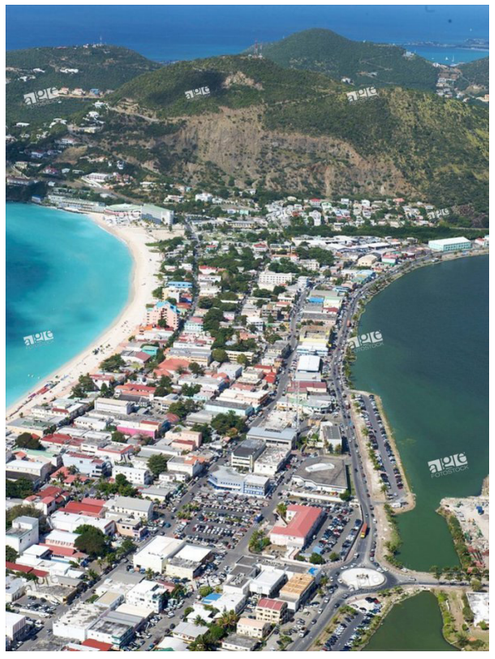
Administration
16m2

1060m2

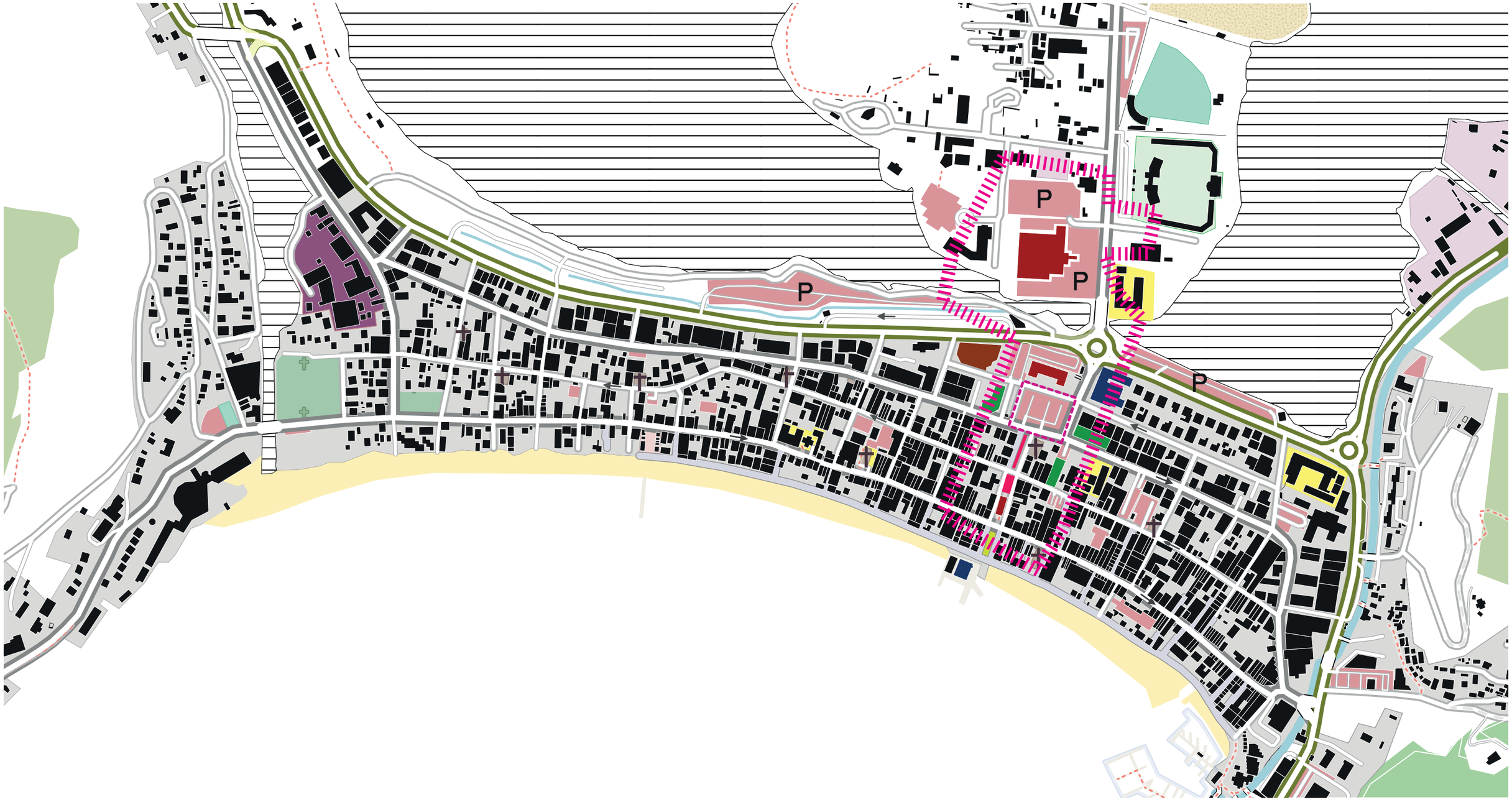
Site Choice: Philipsburgs



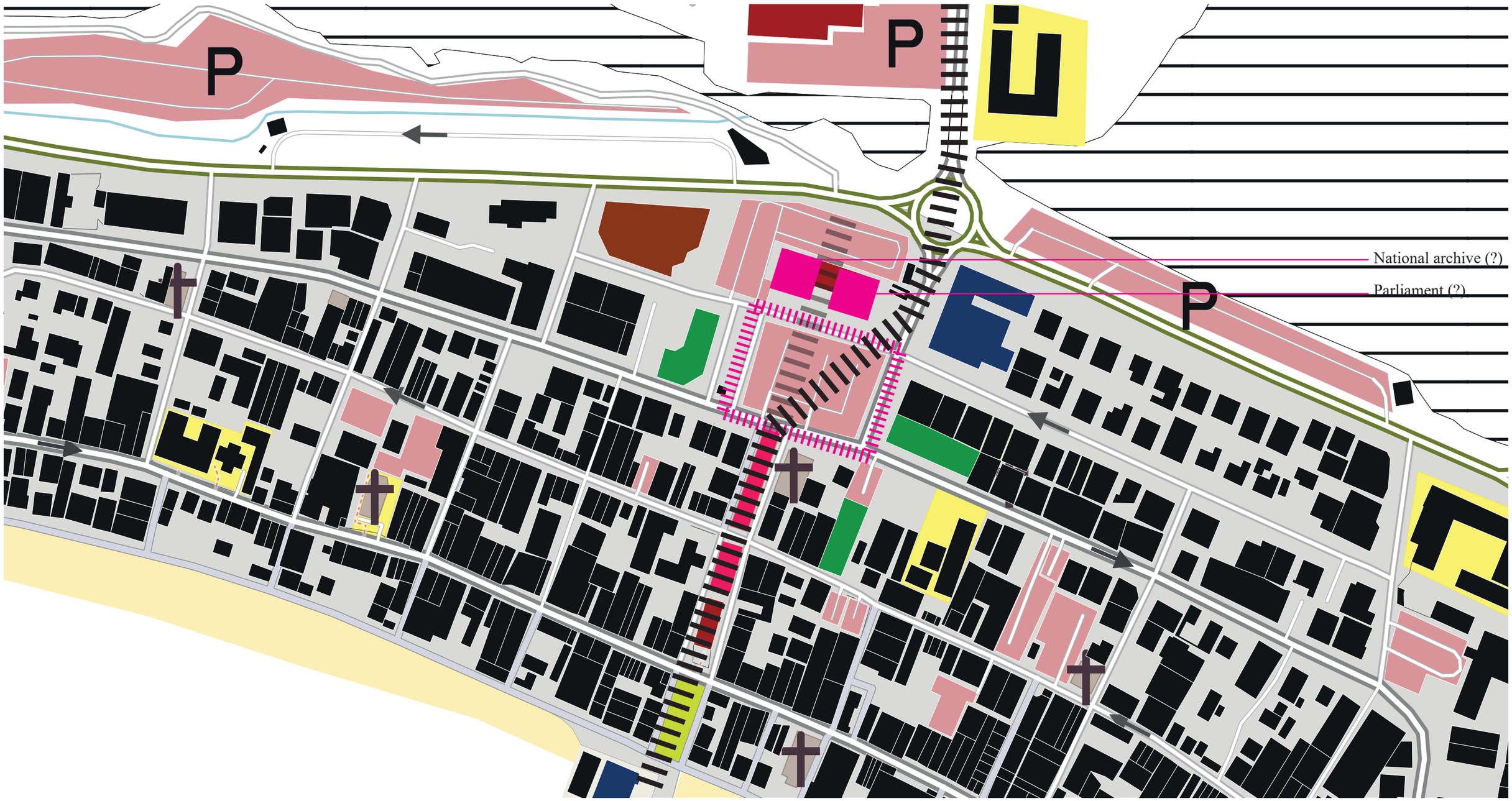
Site_Philipsburg



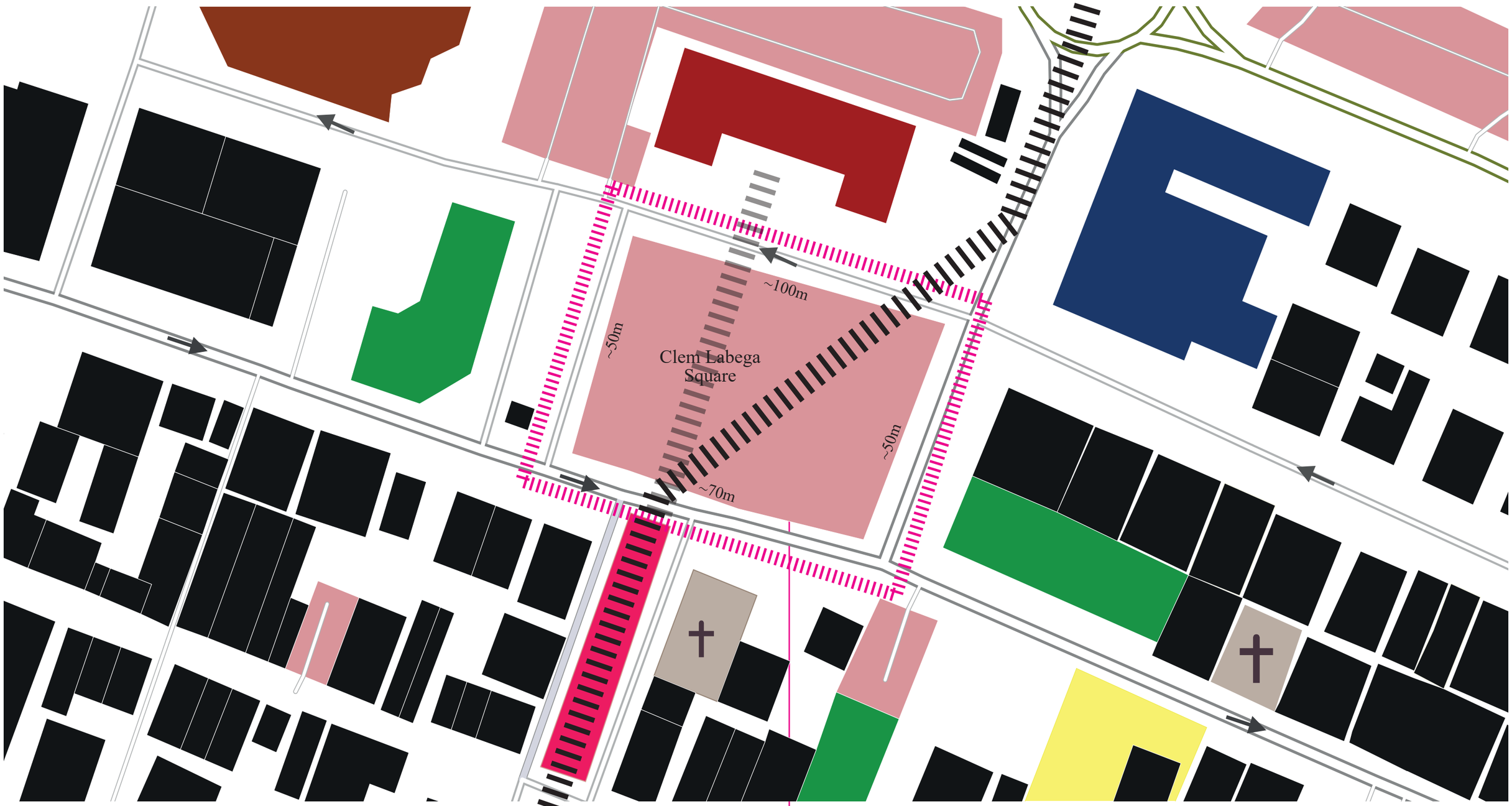
Site_Philipsburg_ Focus on the institutional zone



Site_Planned developments along Central Axis

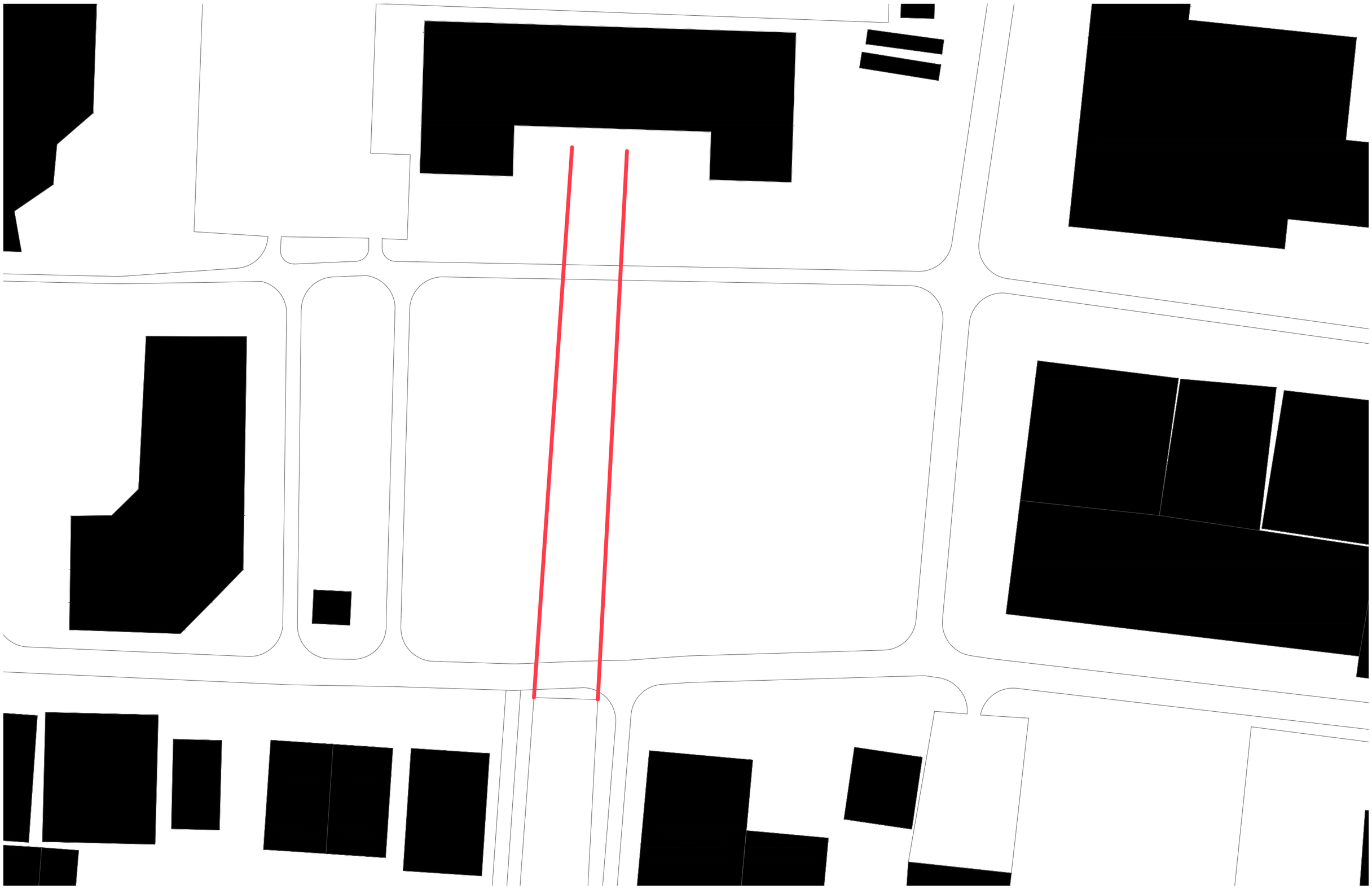


Site_Public Axis within Clem Labega Square

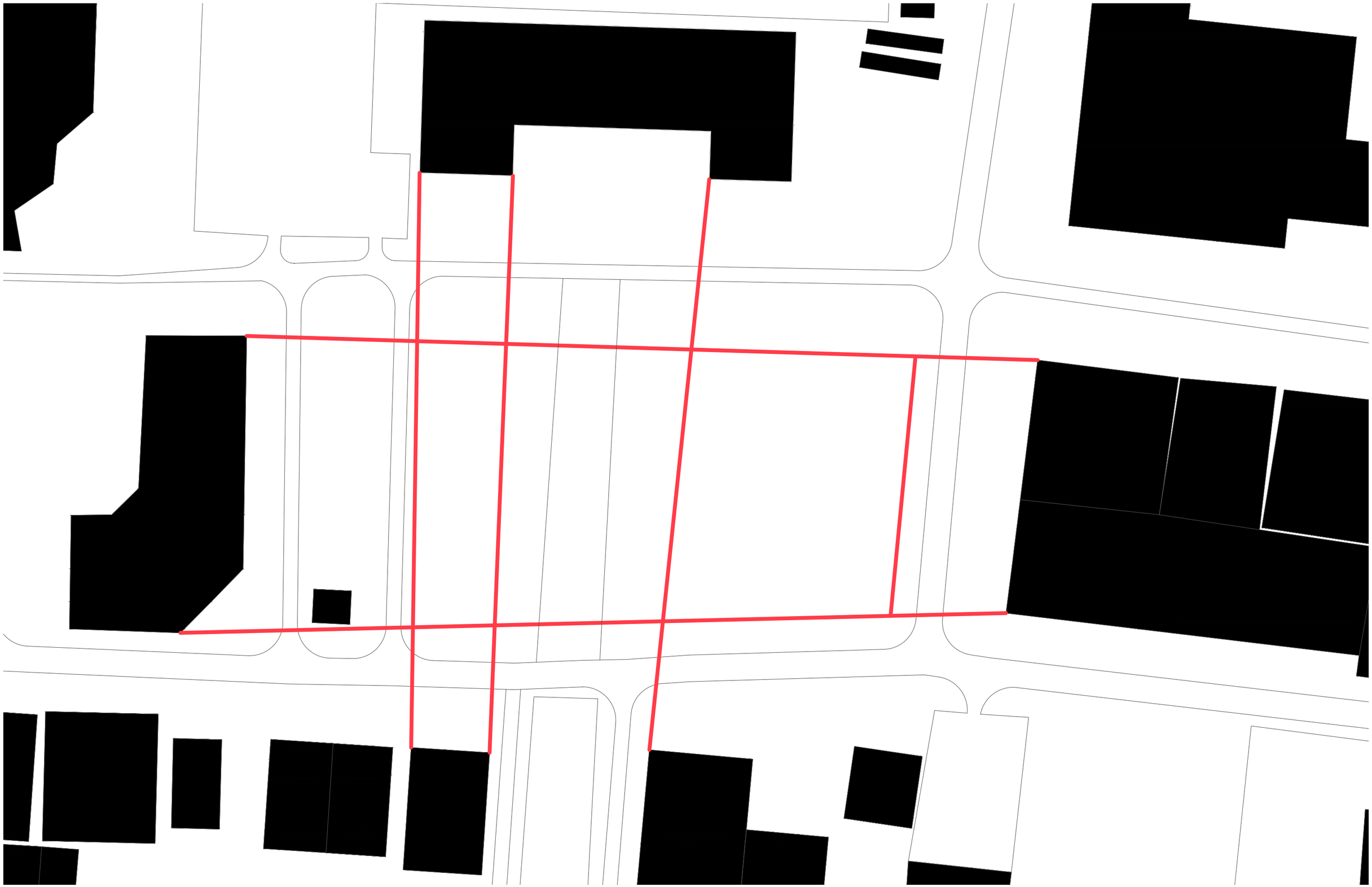


Urban renewal of
Clem Lebega square
(with underground parking)

Context_plot division_extending marketplace



Context_ building zoning

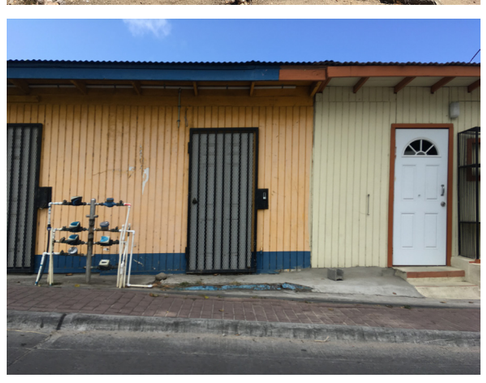


Context_small scale of the buildings/rooms_design for locals

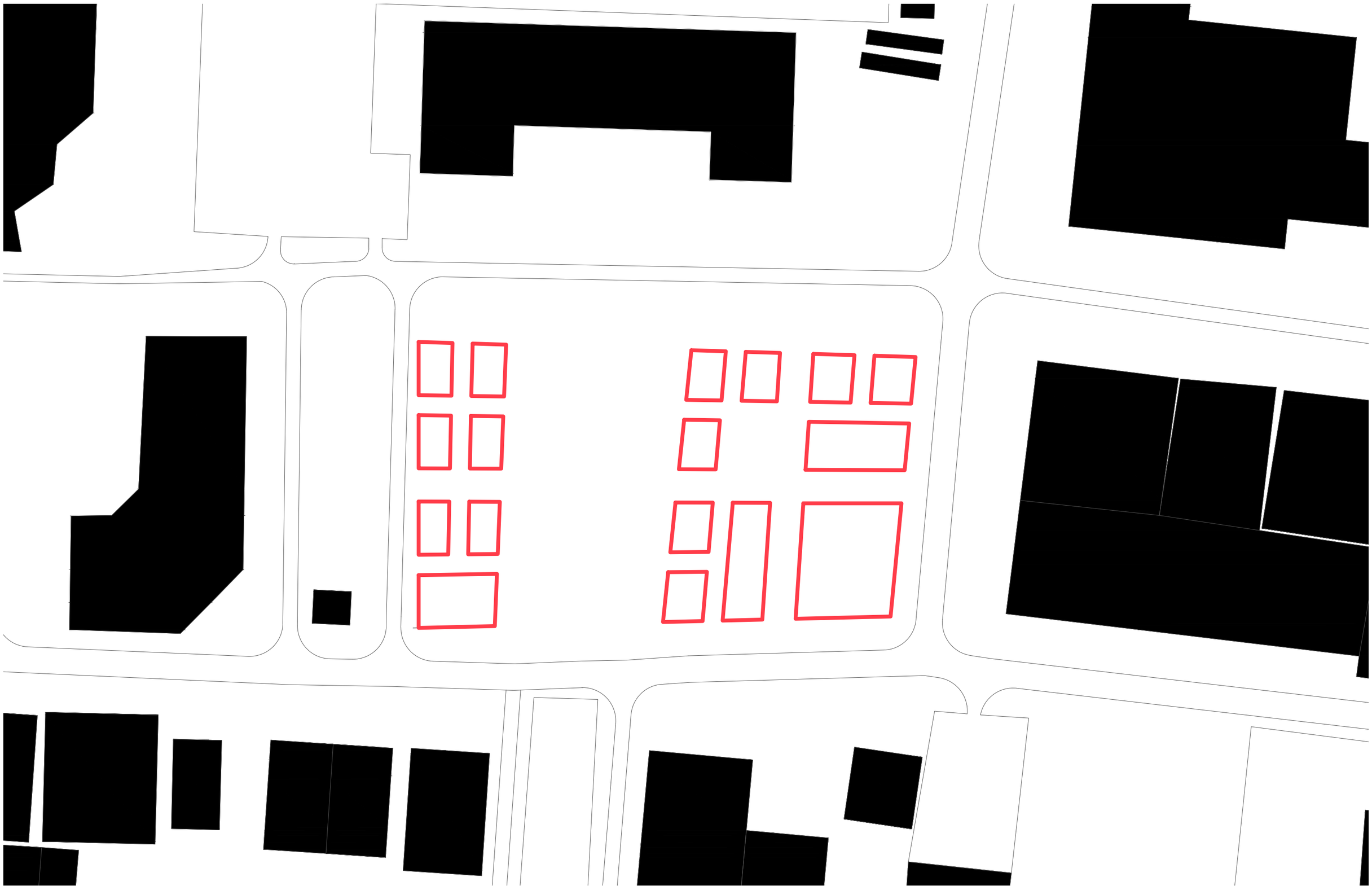




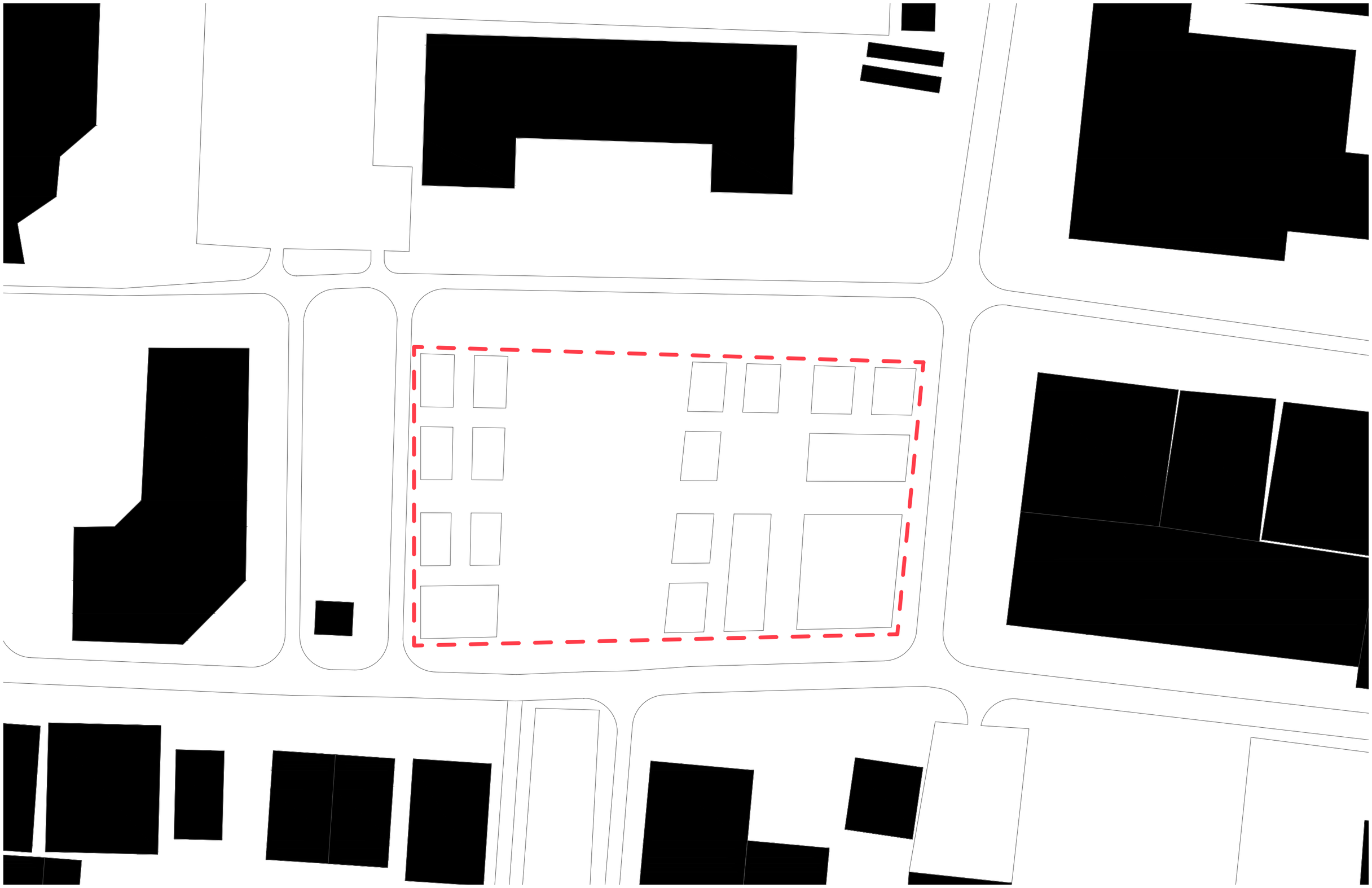




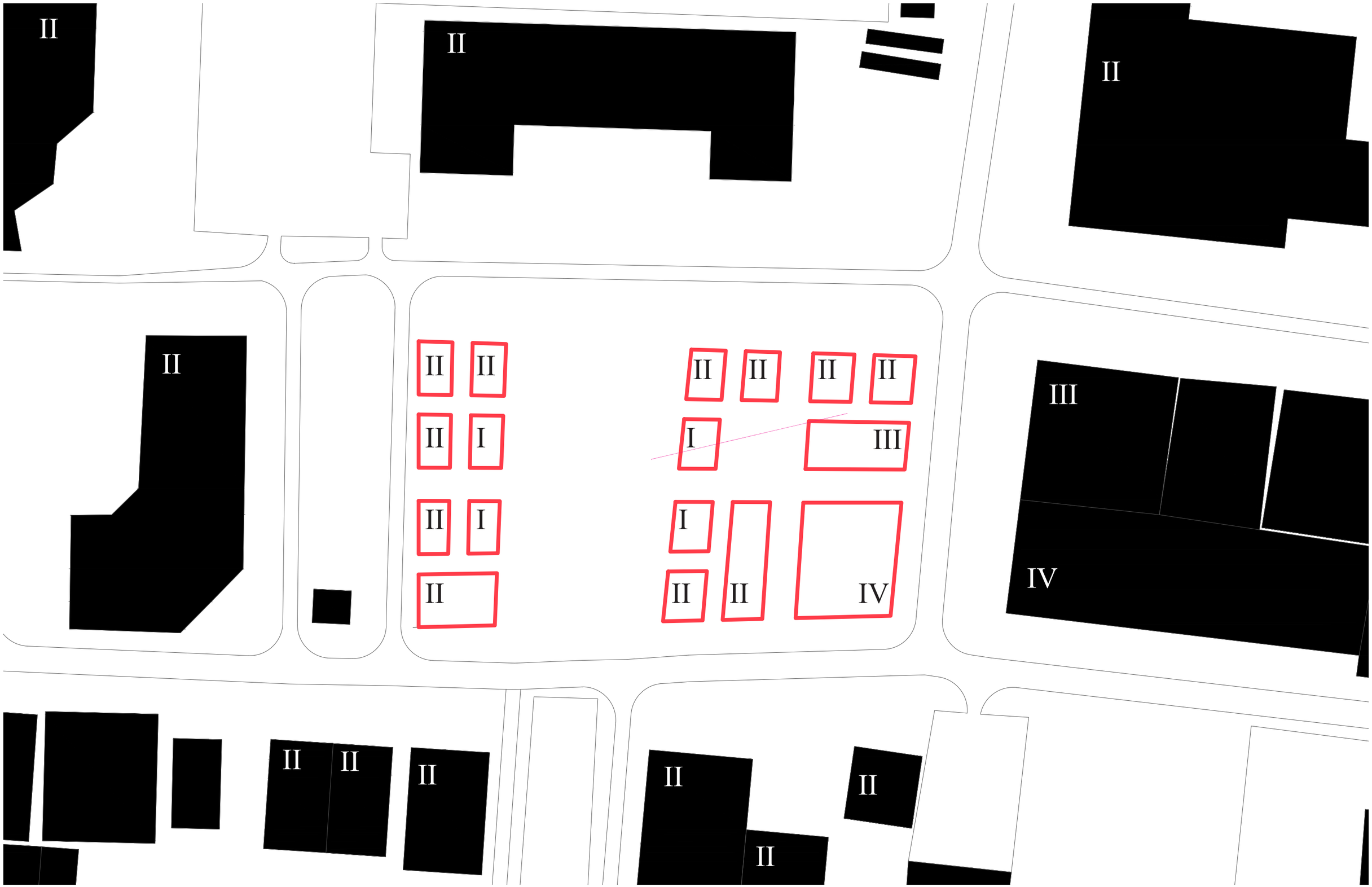

Assemble_size variations due to different functions_additional openings



Assemble_accessibility



Assemble_ gradual voluming_hights



Assemble_elements from the context_roofs

Assemble_elements from the context_porch

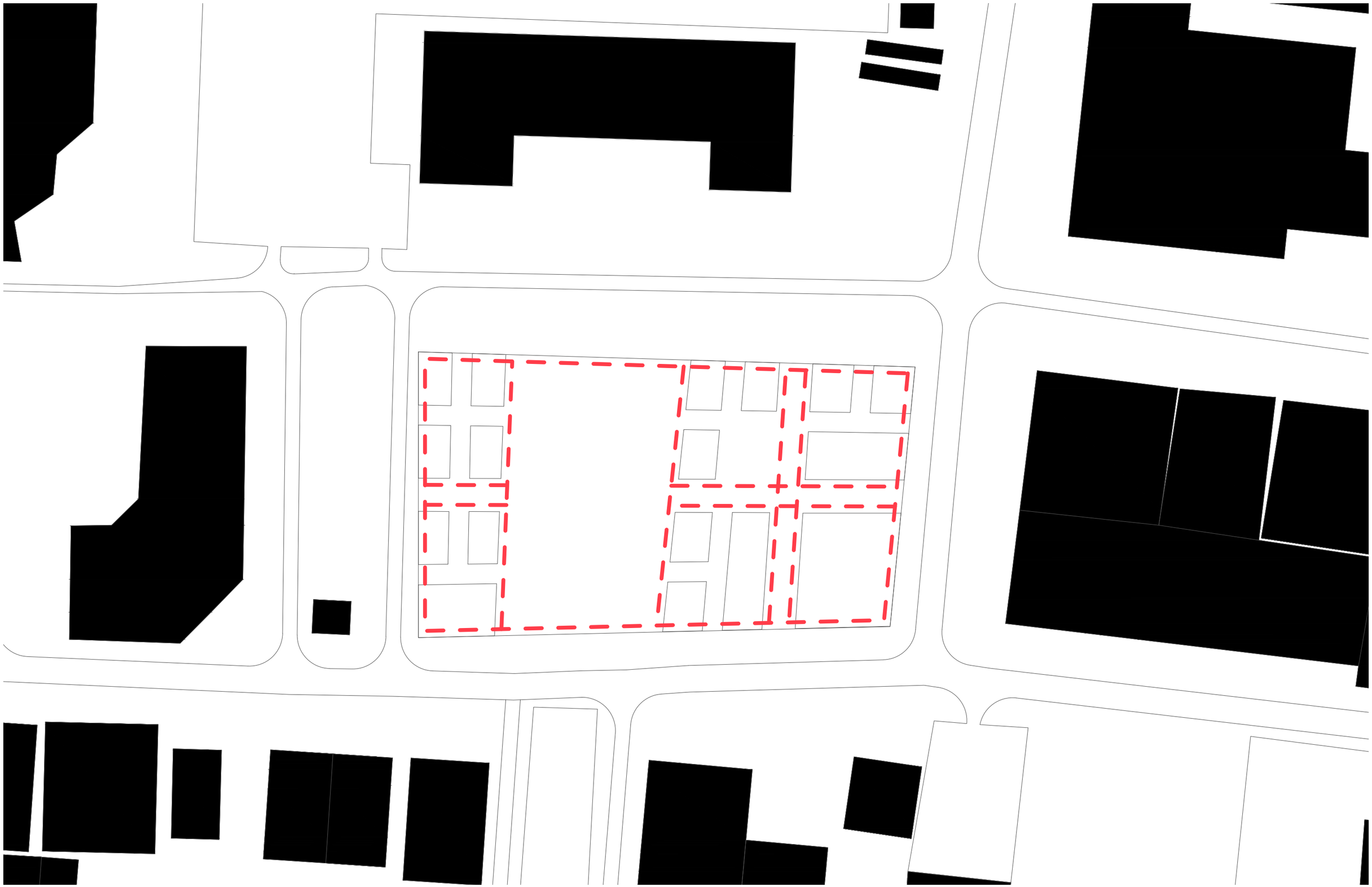




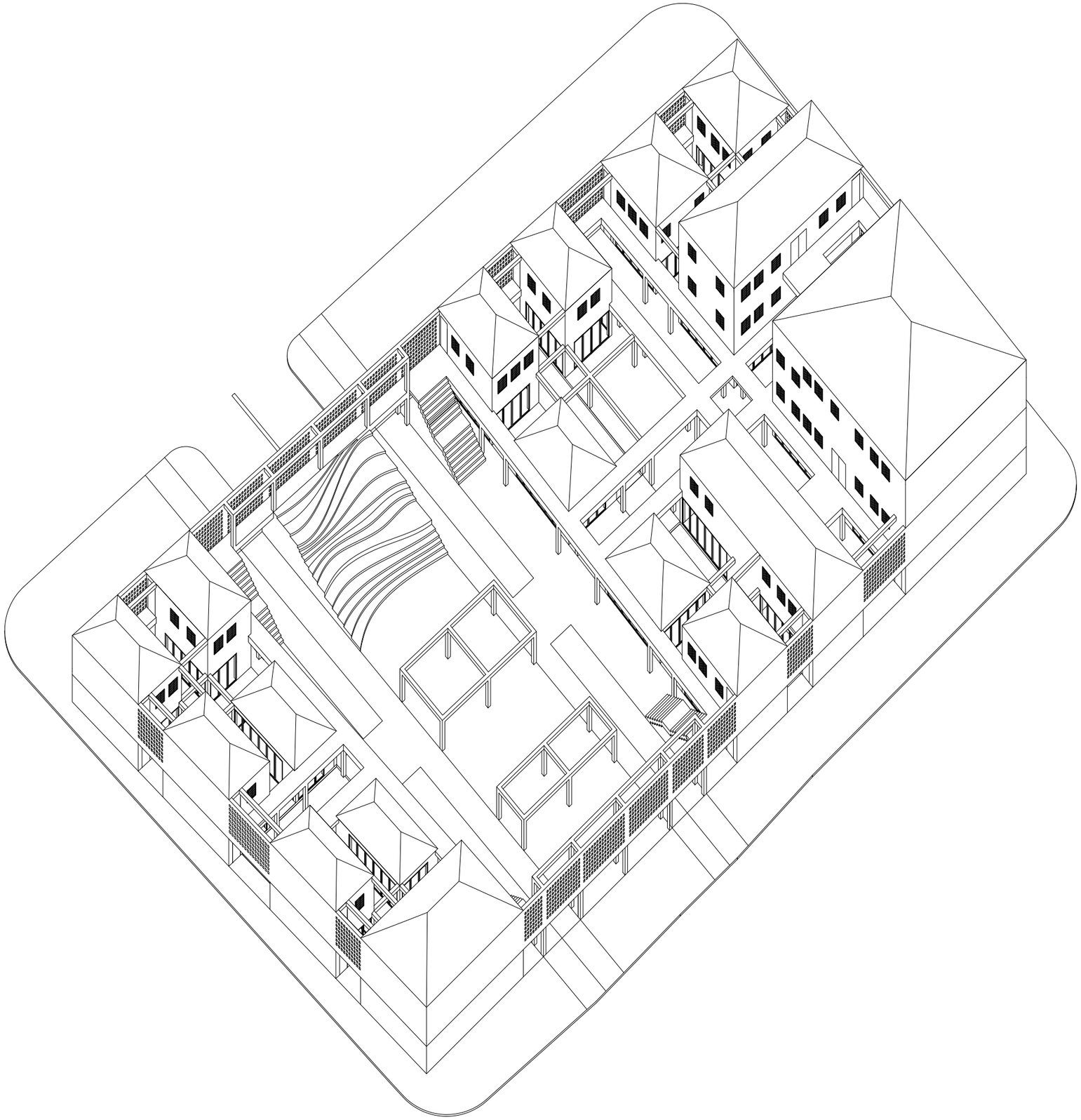



Assemble_elements from the context_ different shedding systems

Assemble_ small scale_ circulation outside_ balconies

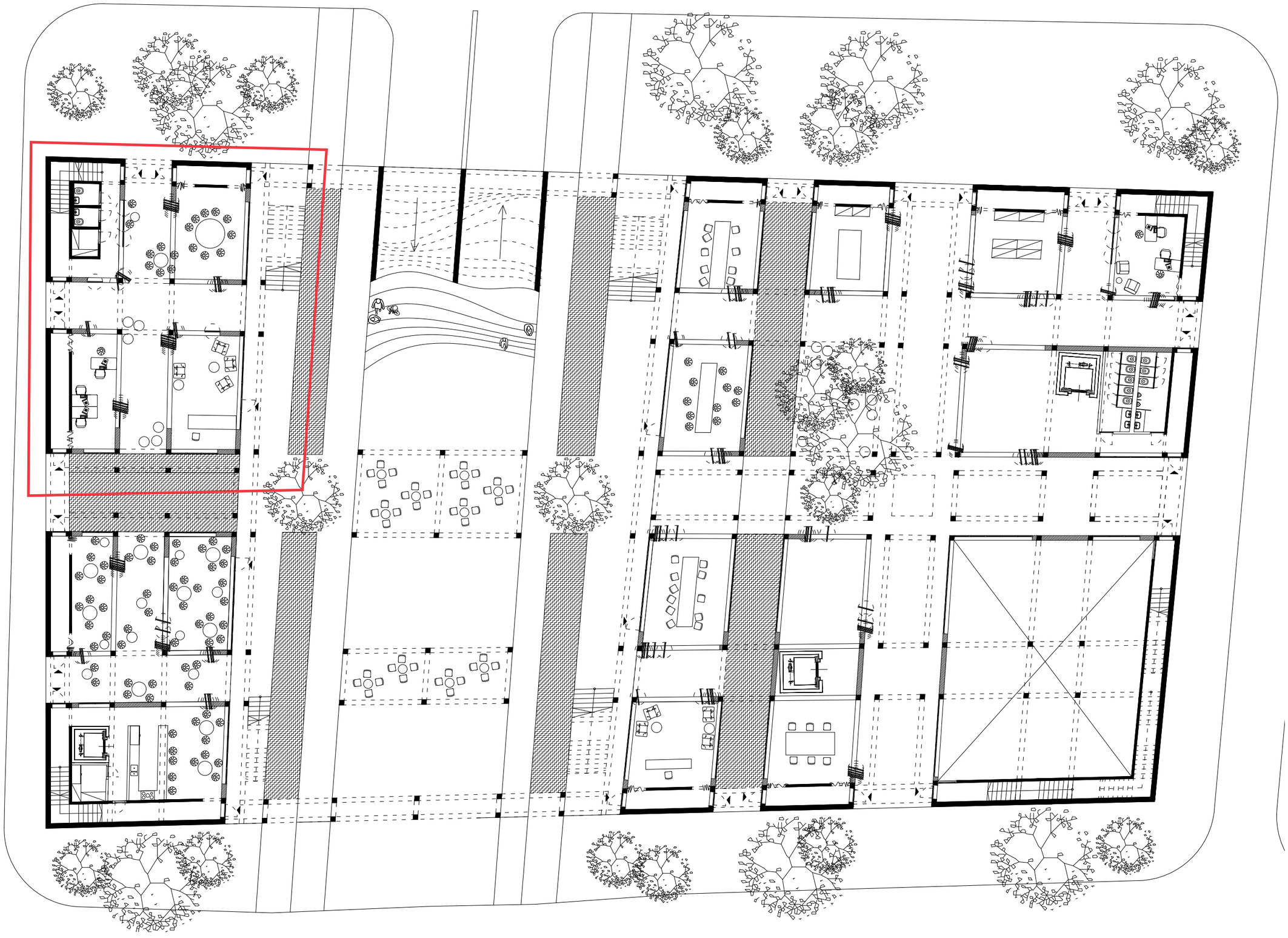


Assemble_axonometric view



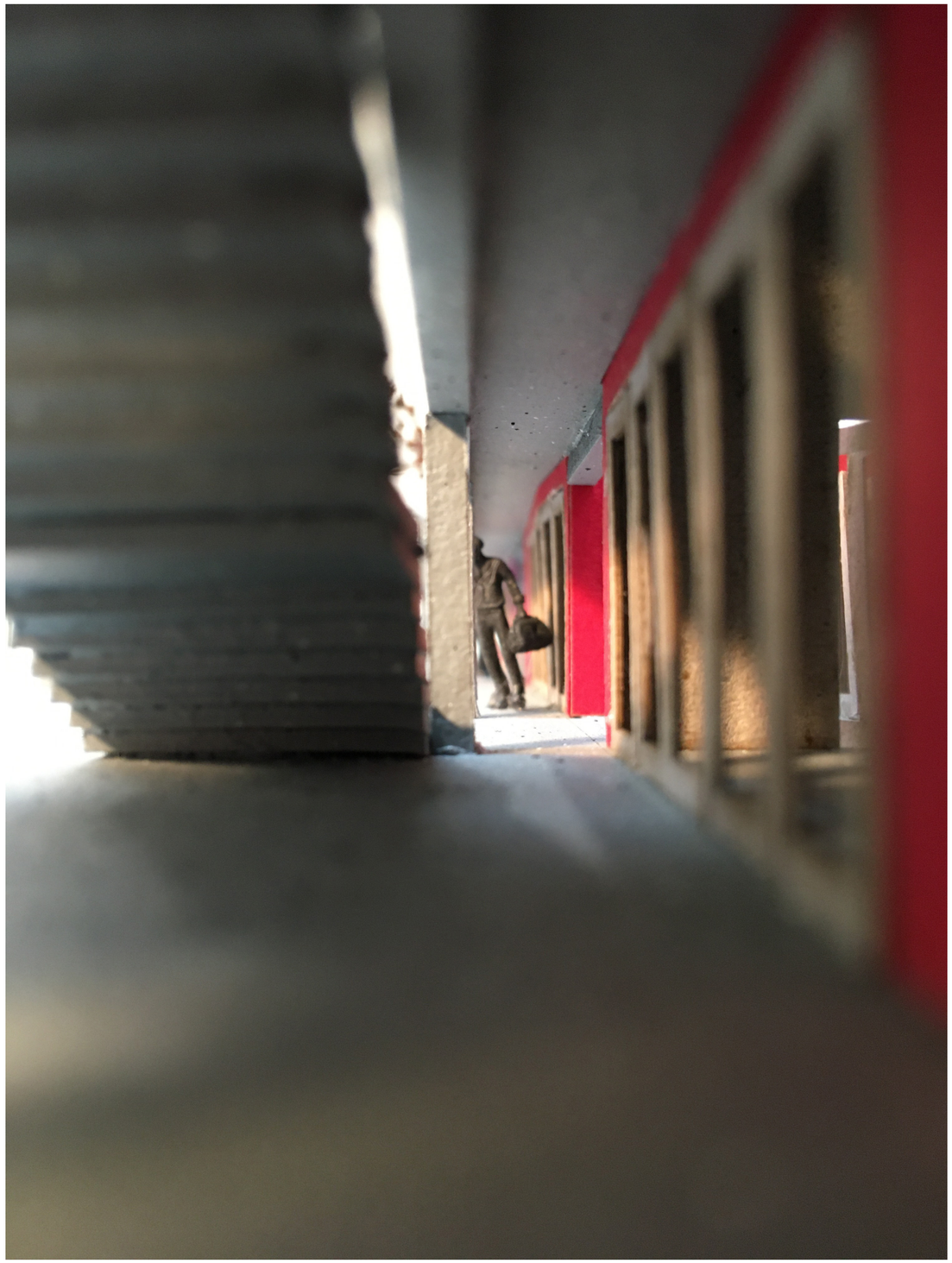
Assemble_programme

Assemble_ground floor_consultancy part



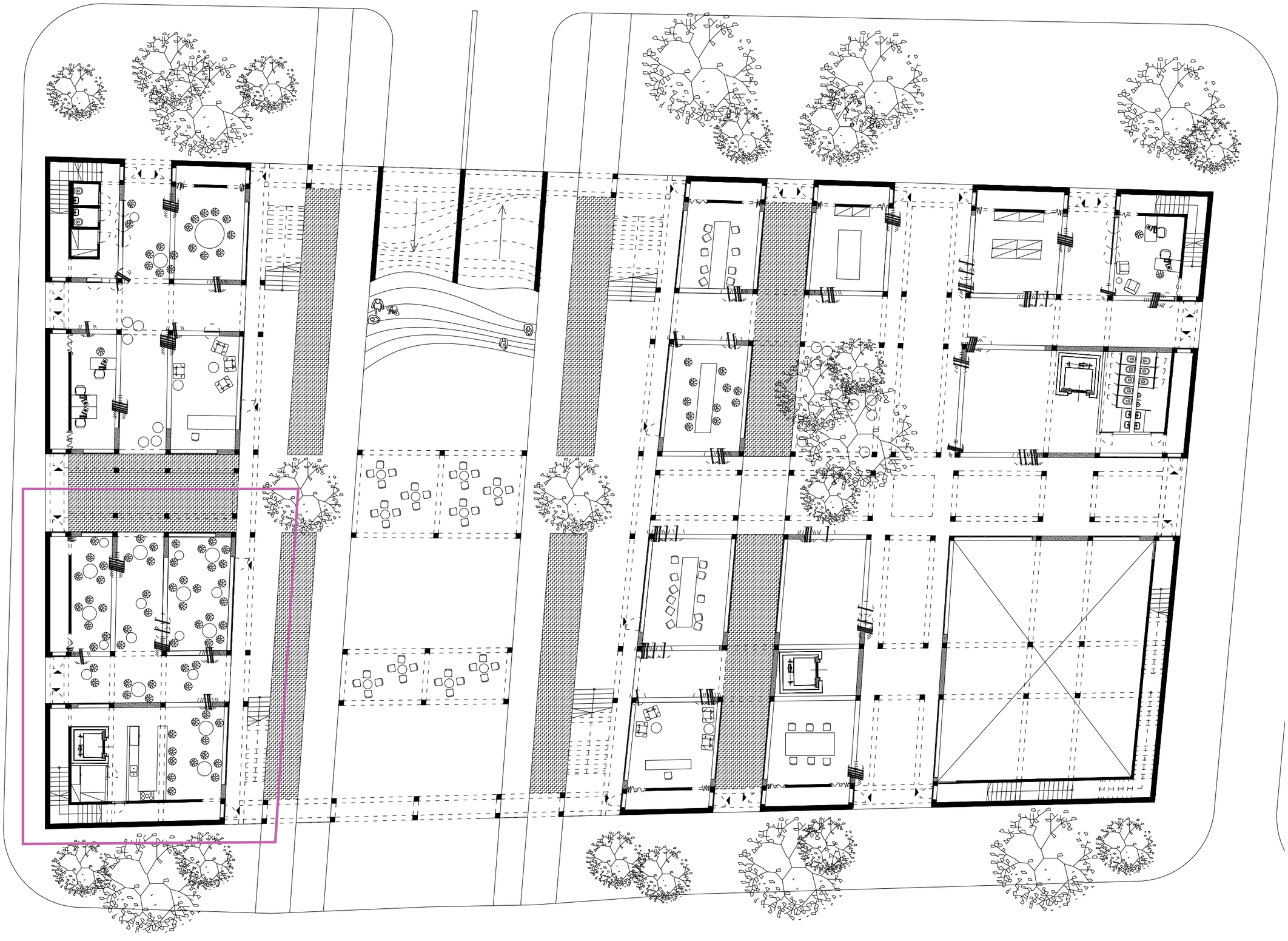
Assemble_consultancy

Assemble_consultancy

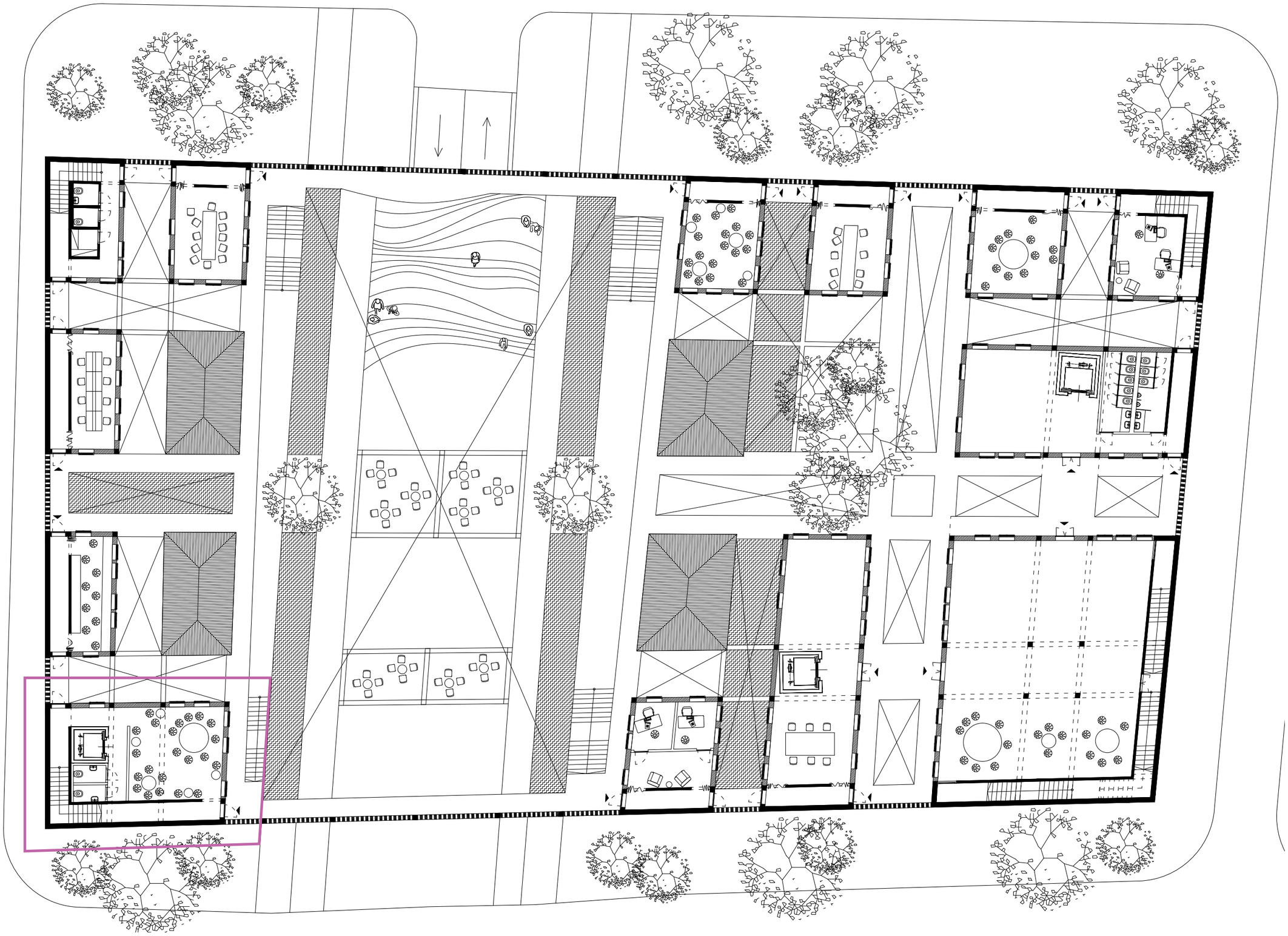


Assemble_consultancy/coffee place

Assemble_ground floor_coffee place



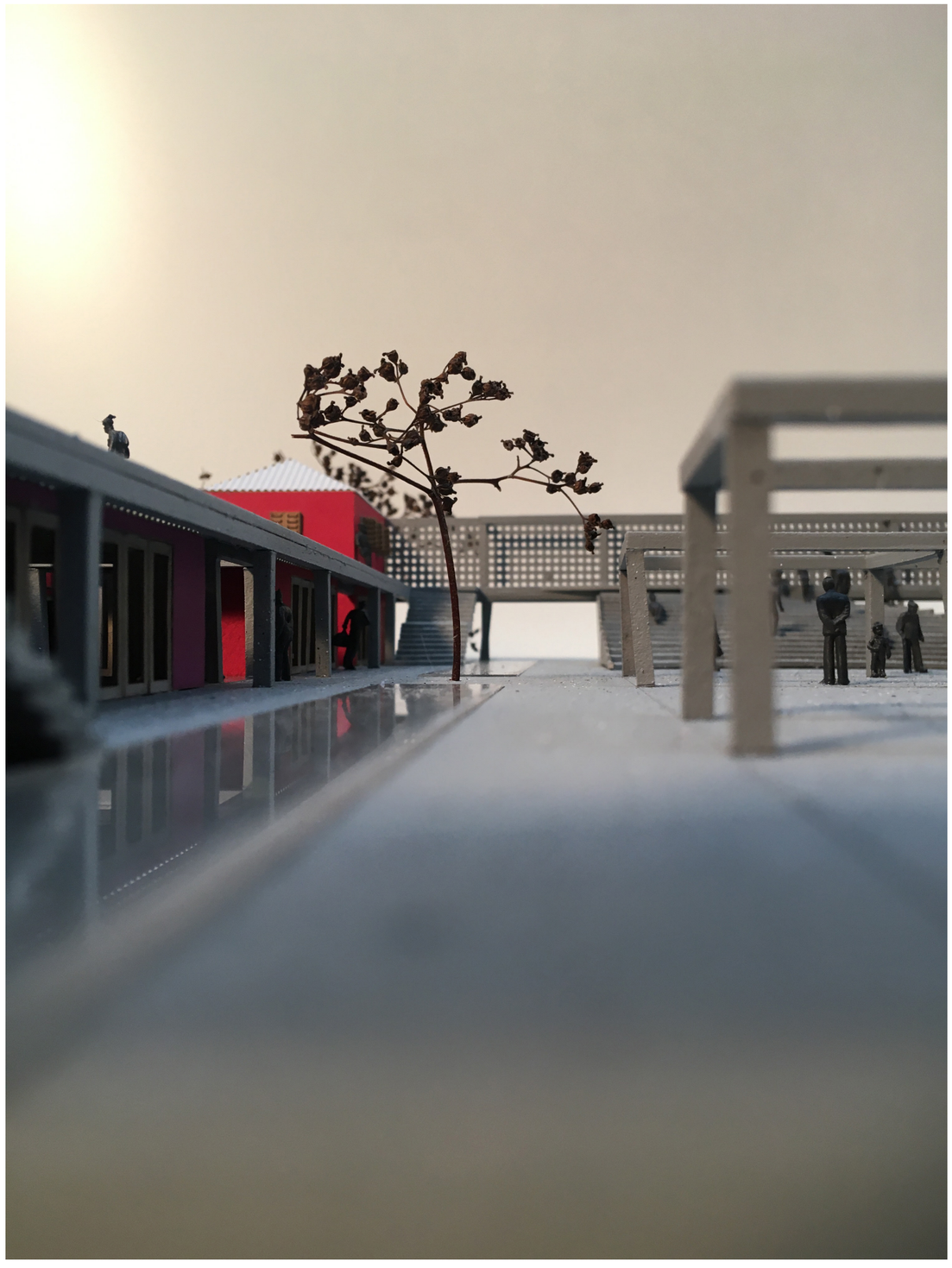
Assemble_1 floor_coffee place



Assemble_coffee place

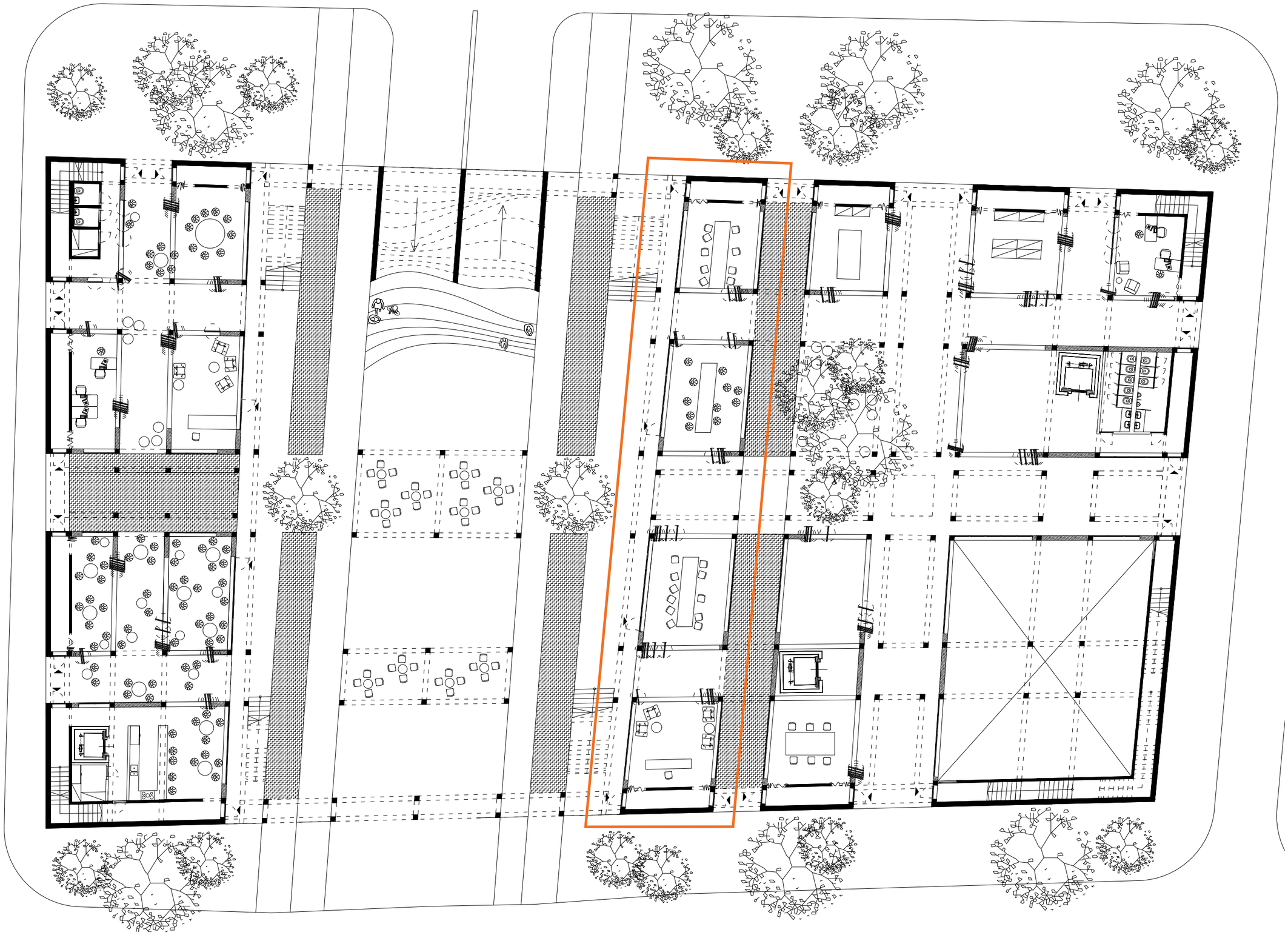
Assemble_coffee place

Assemble_coffee place/square

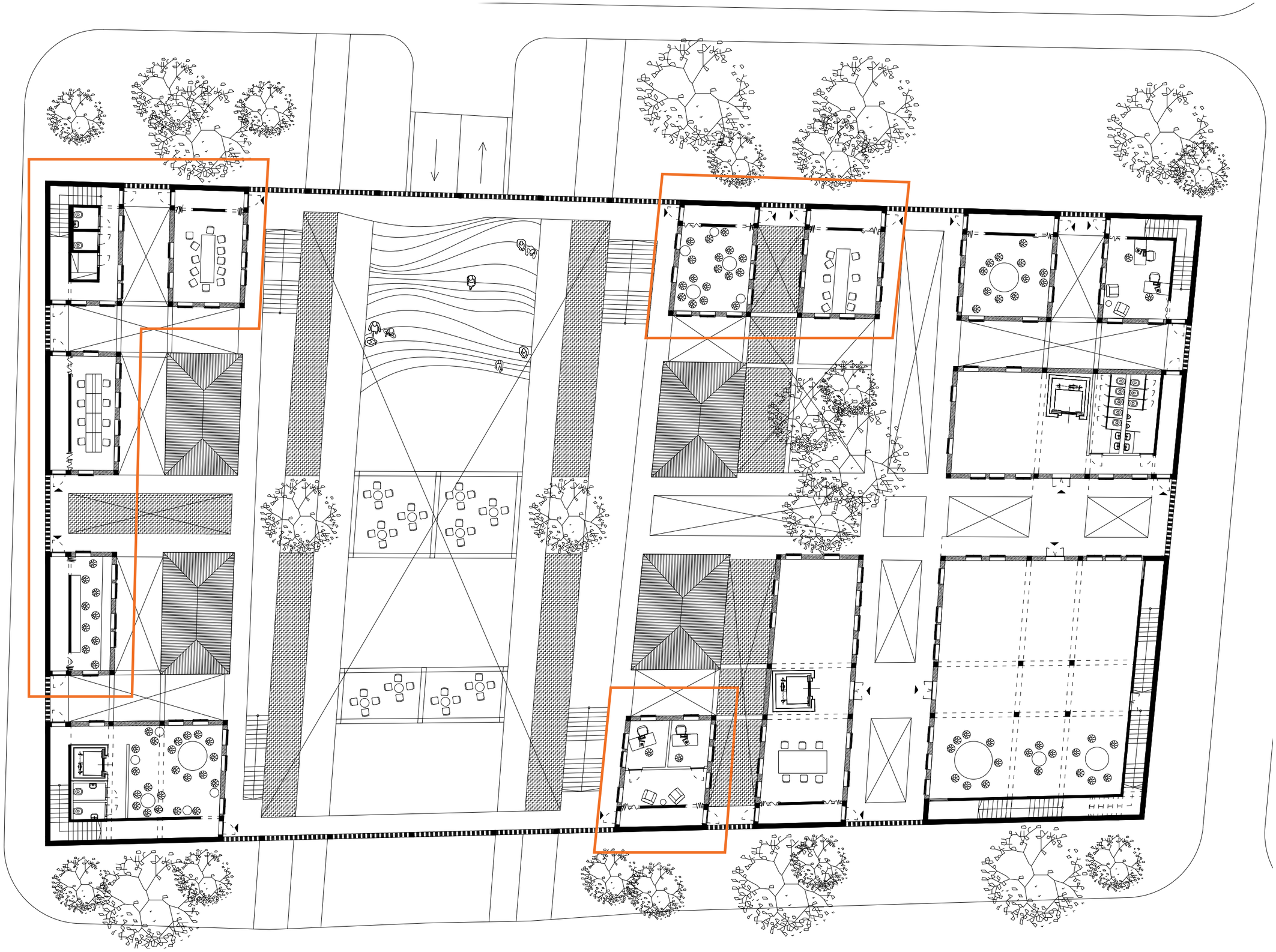


Assemble_coffee place/square

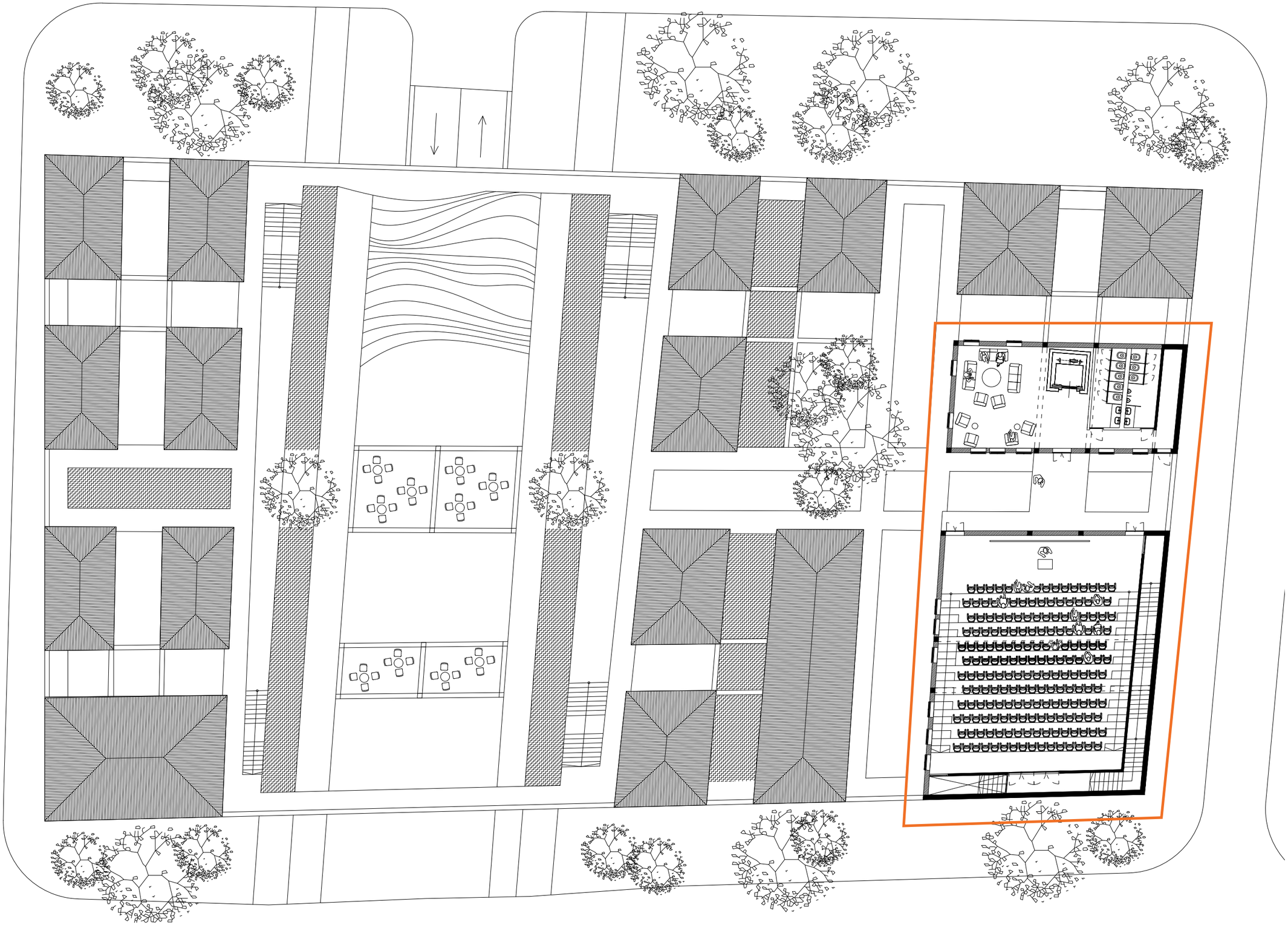
Assemble_ground floor_school part



Assemble_1 floor_school part



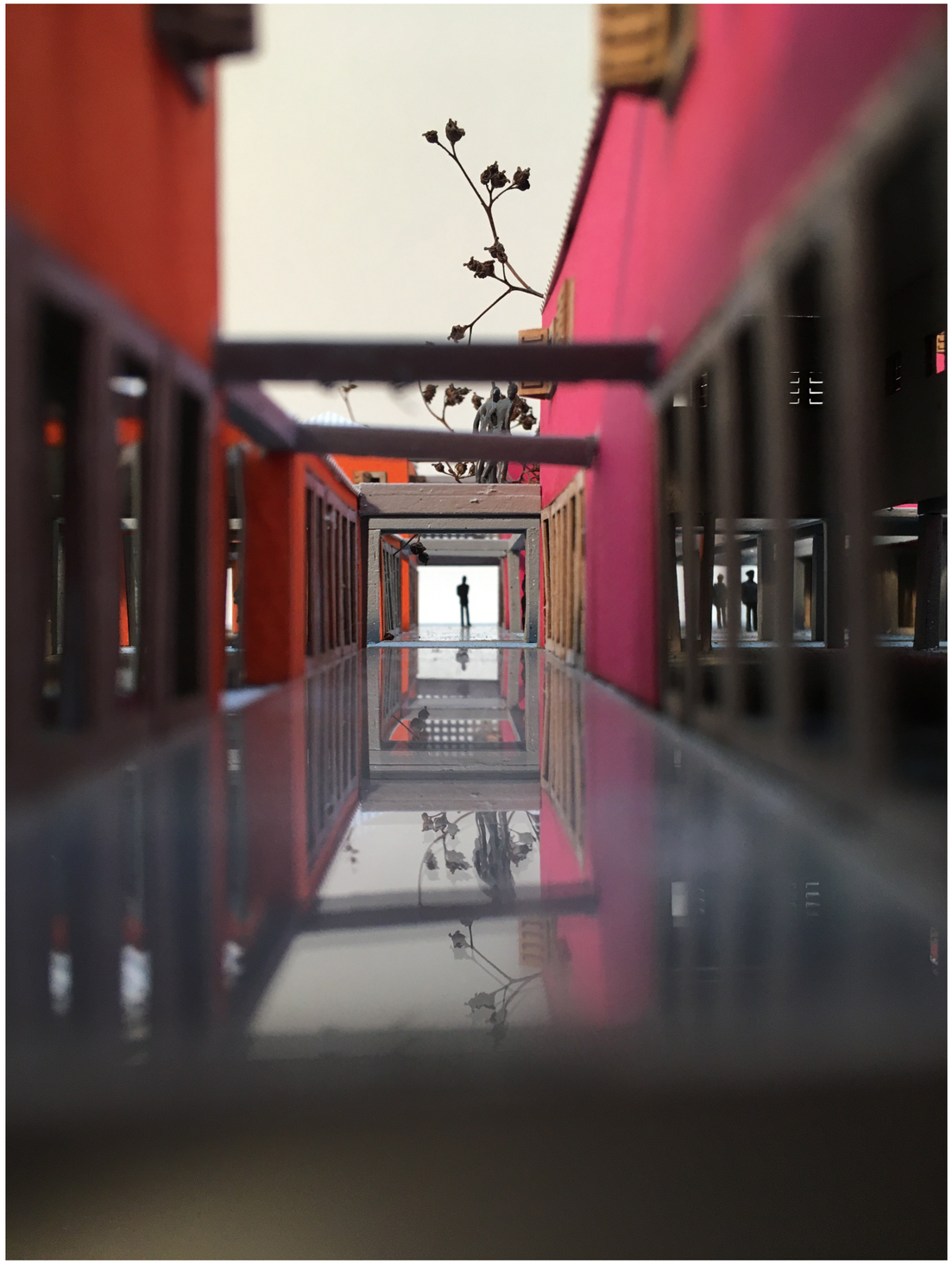
Assemble_2 floor_ school part



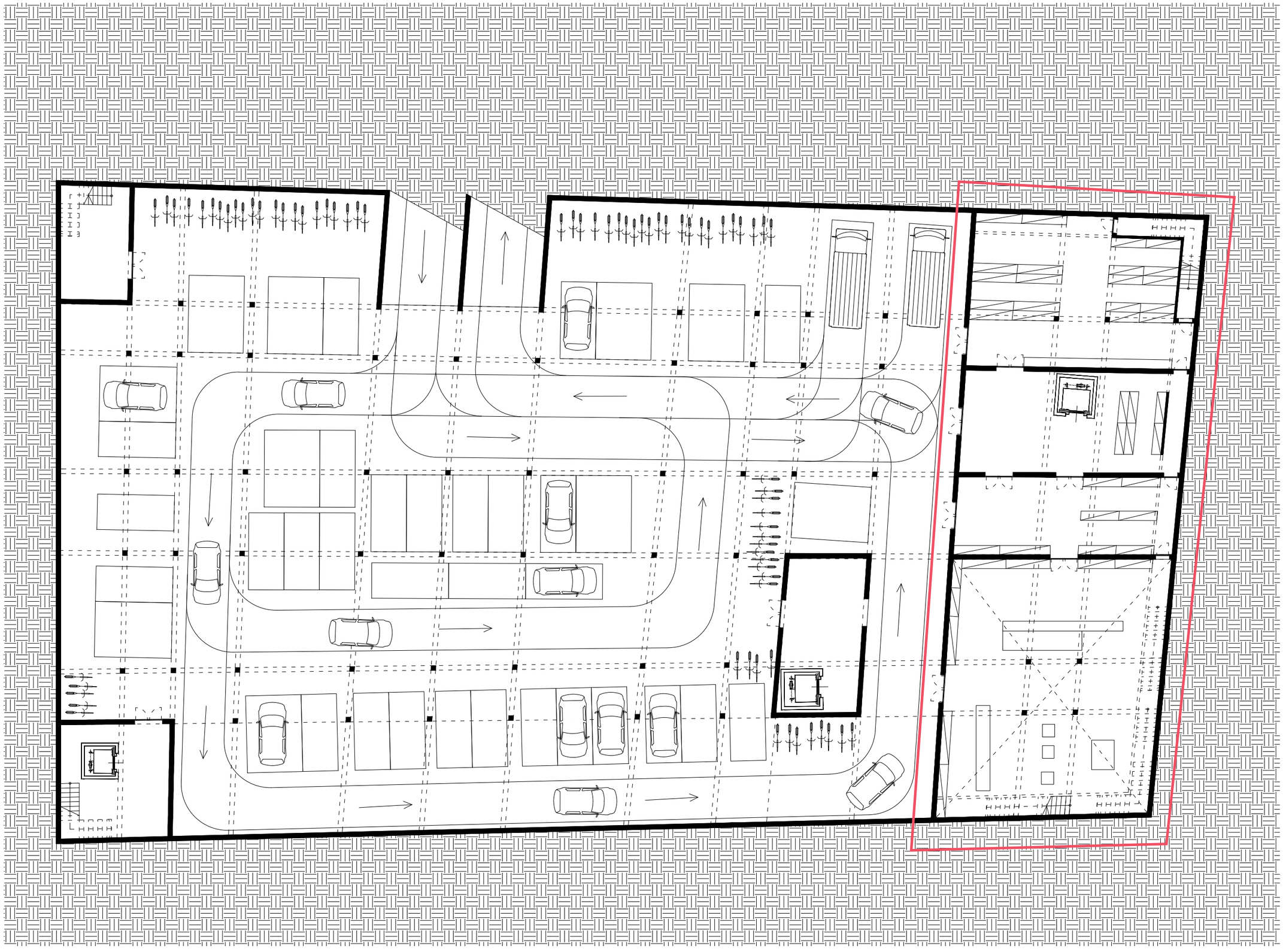
Assemble_school

Assemble_school

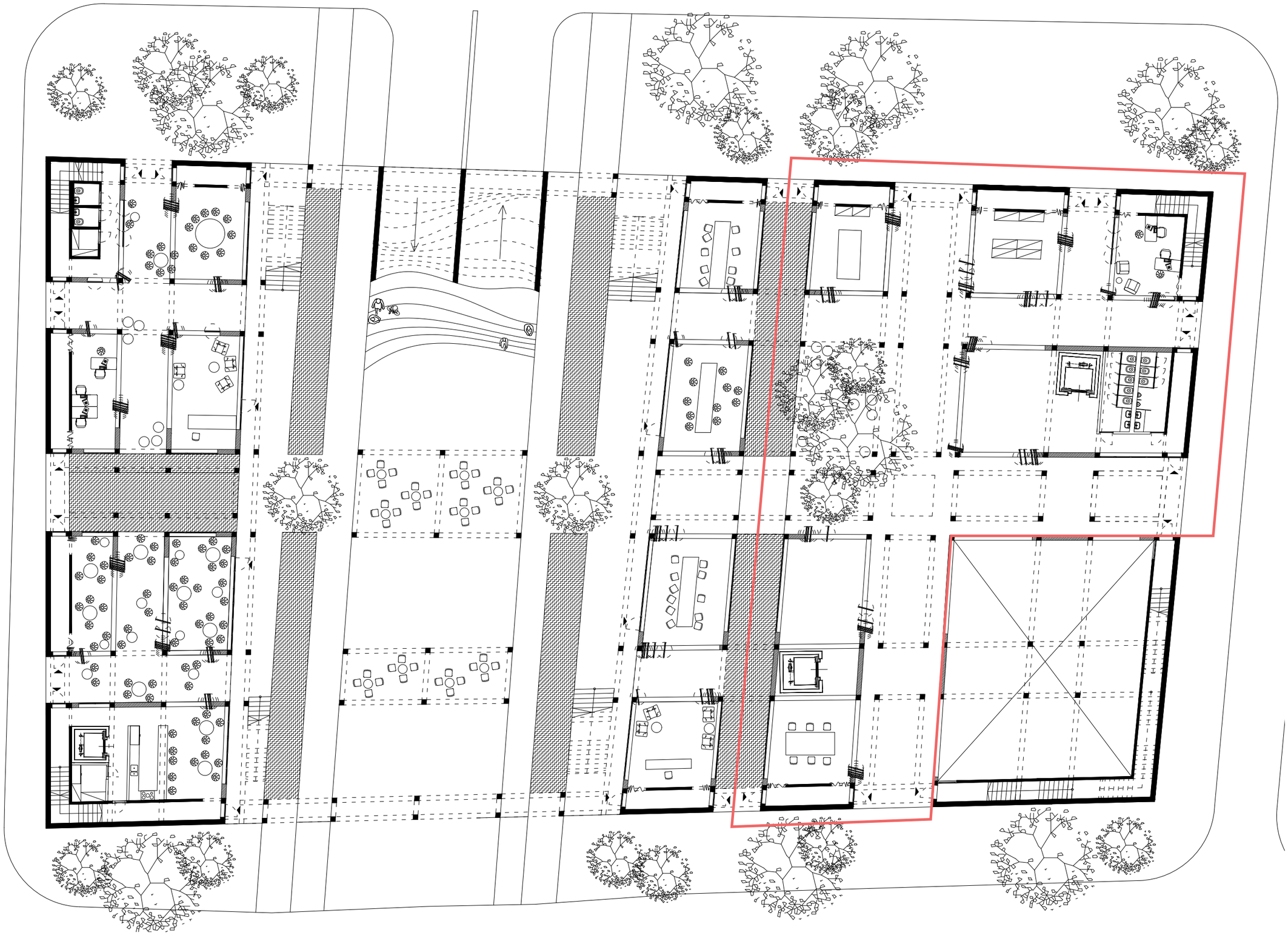
Assemble_school/workshop



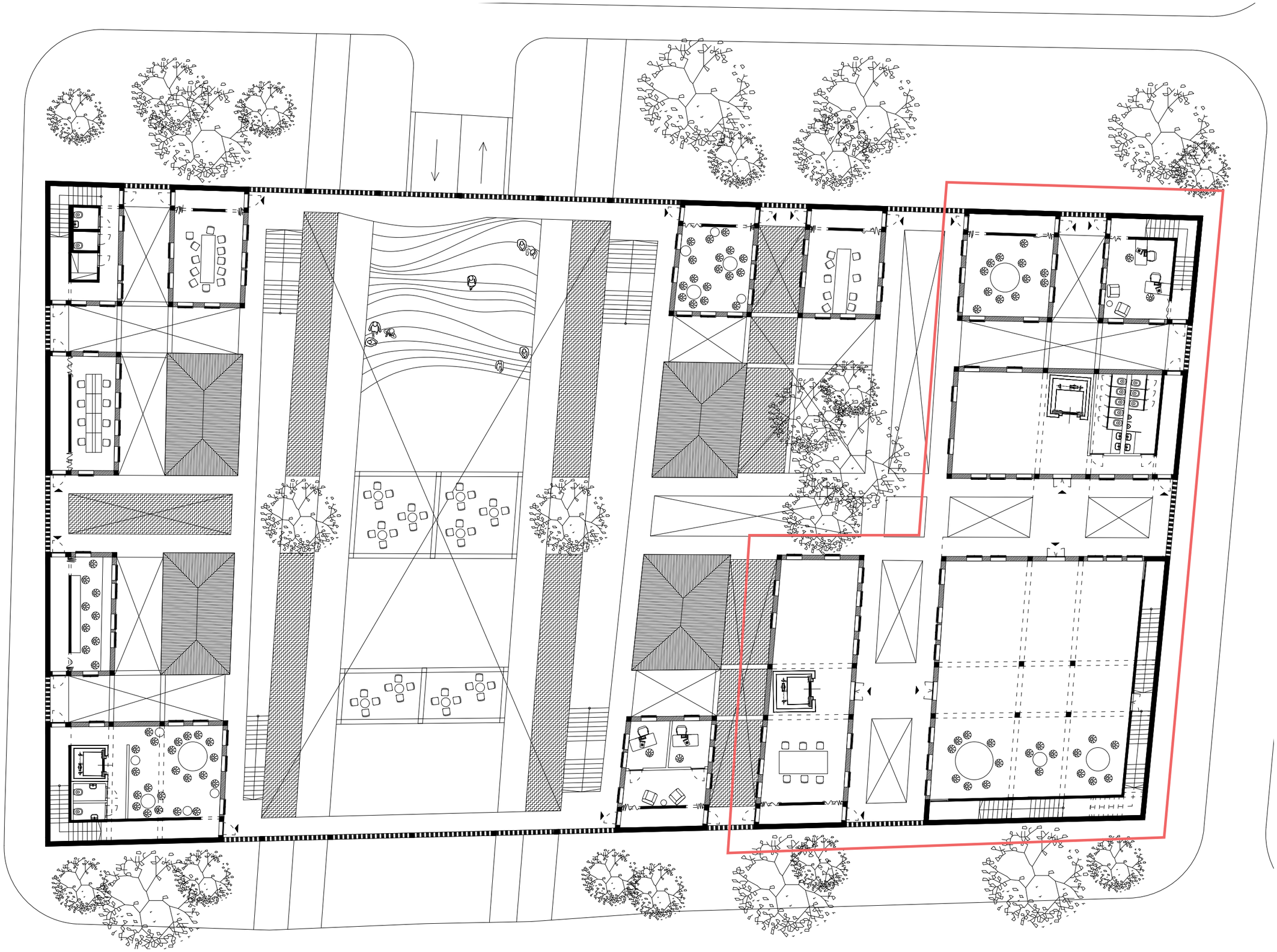
Assemble_-1 floor_workshop



Assemble_ground floor_workshop part



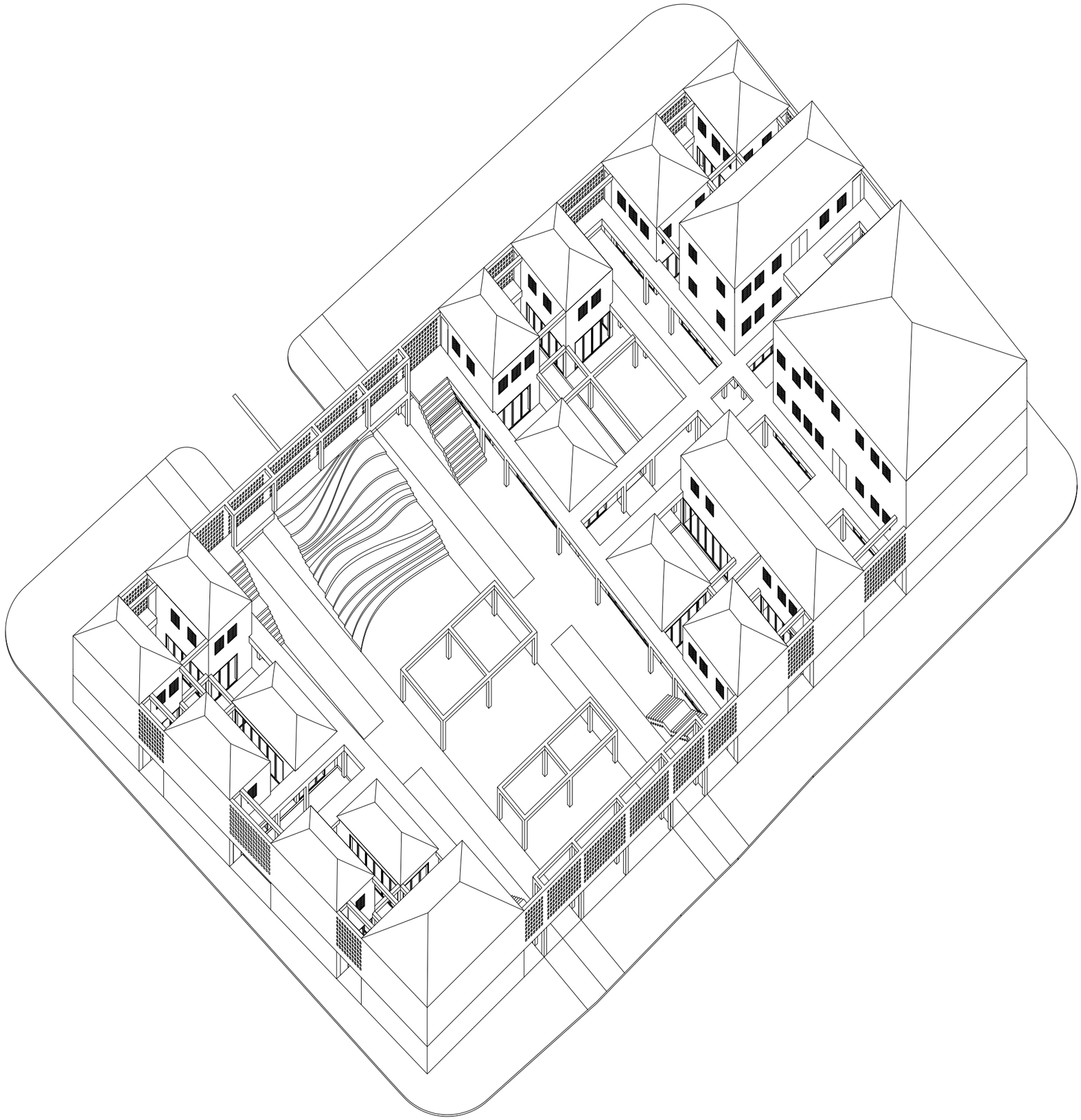
Assemble_1 floor_workshop



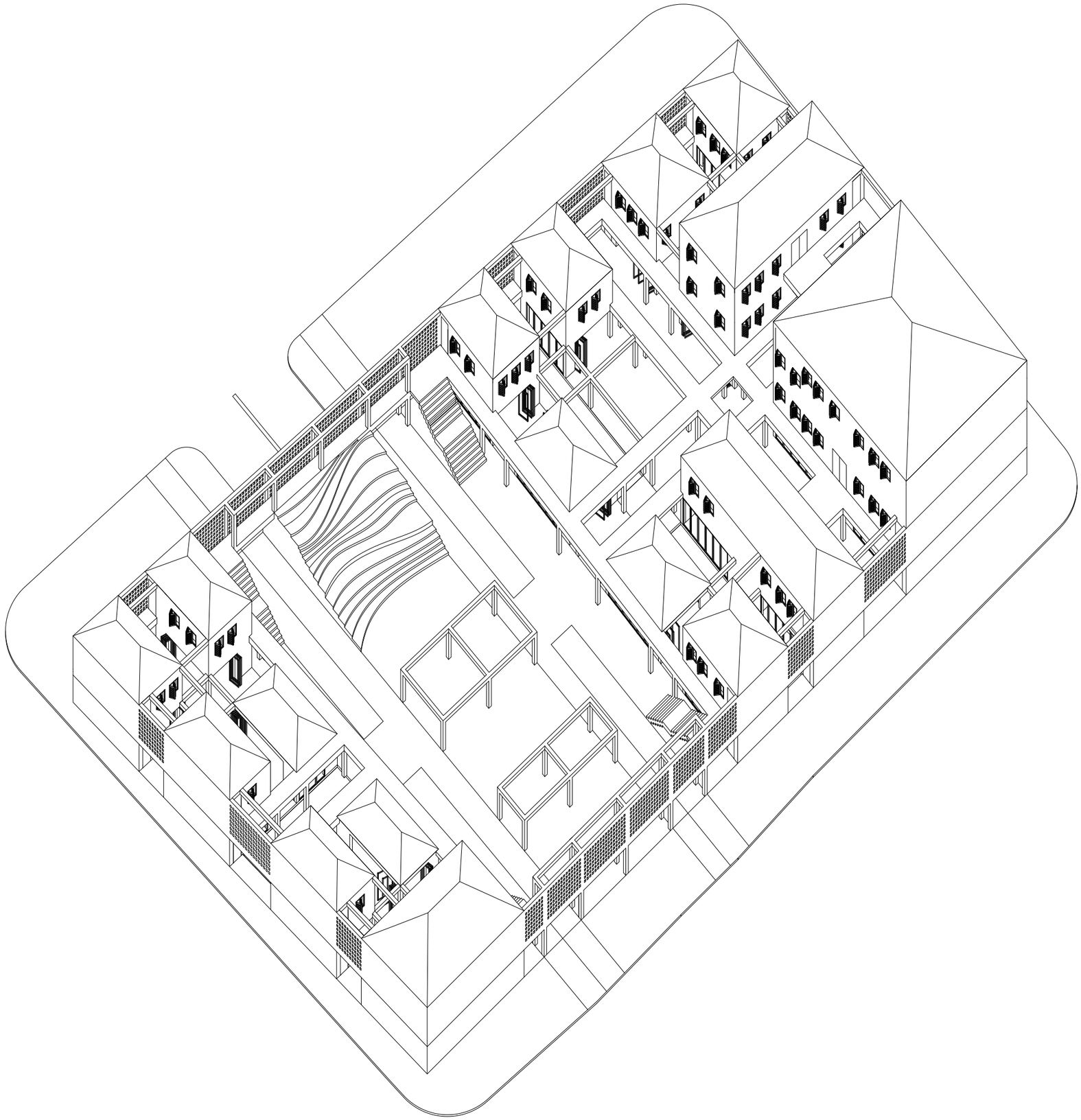
Assemble_workshop

Assemble_workshop

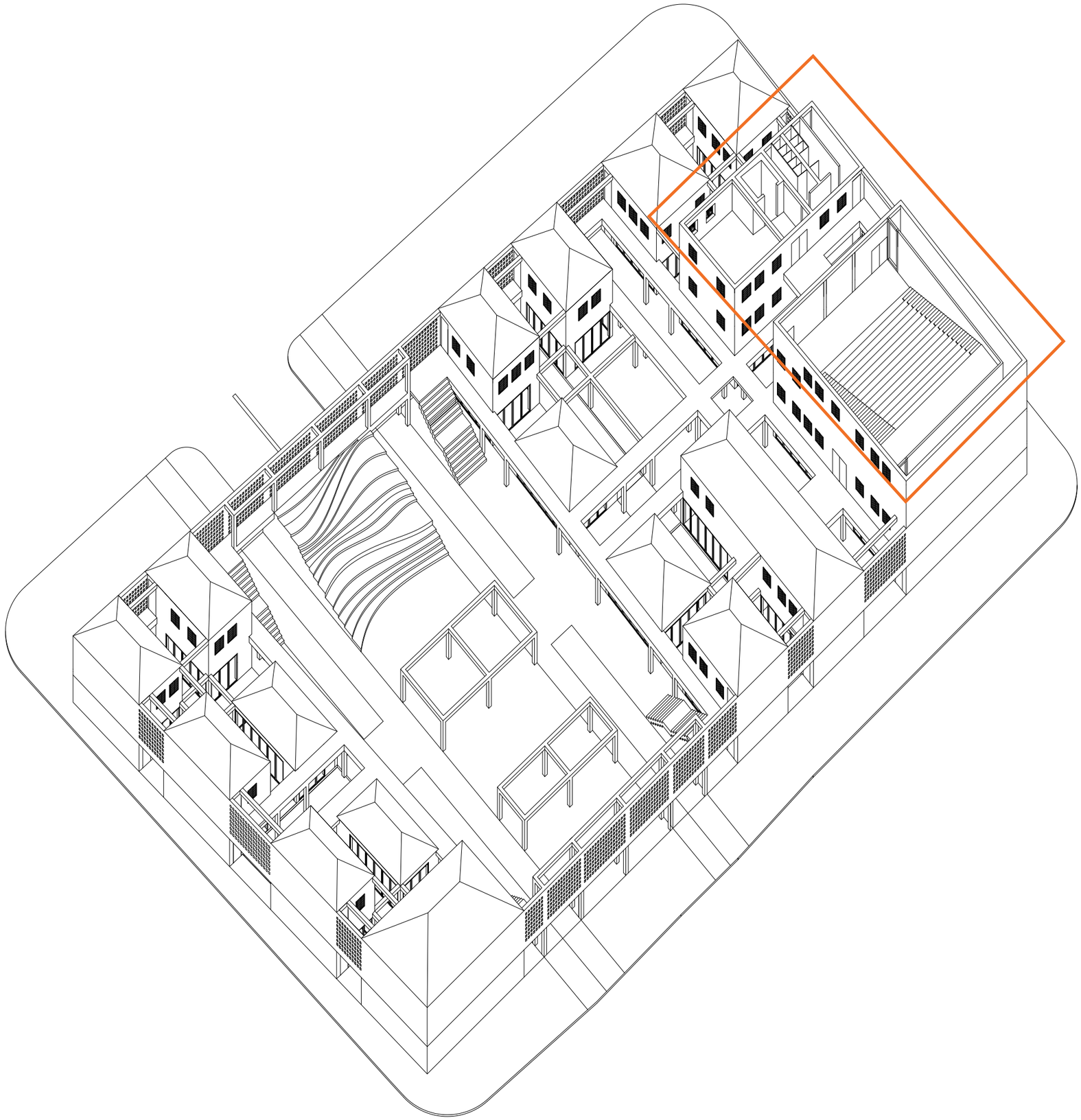
Assemble_axonometric view_ closed



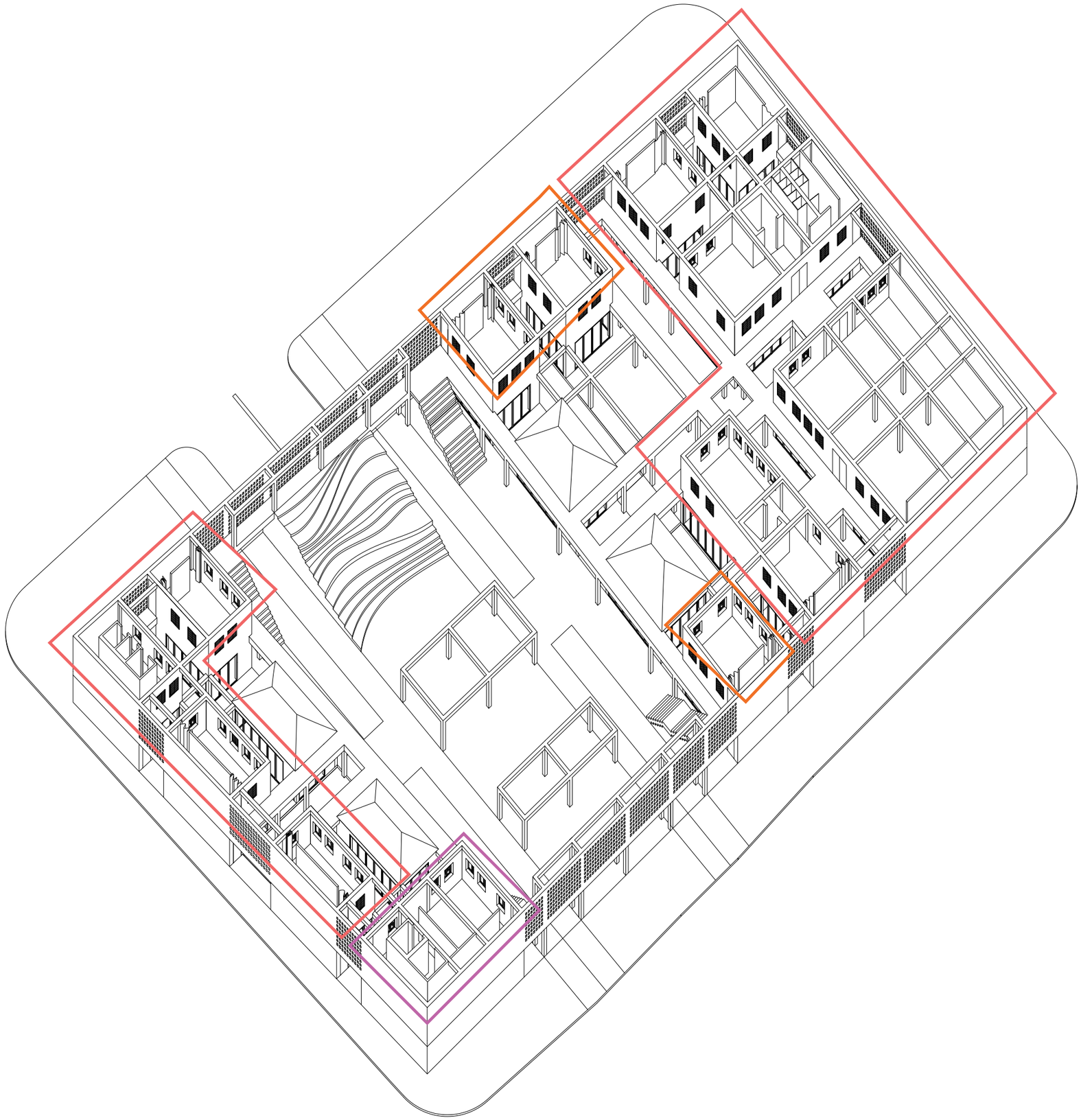
Assemble_axonometric view_ open



Assemble_axonometric view_2 floor

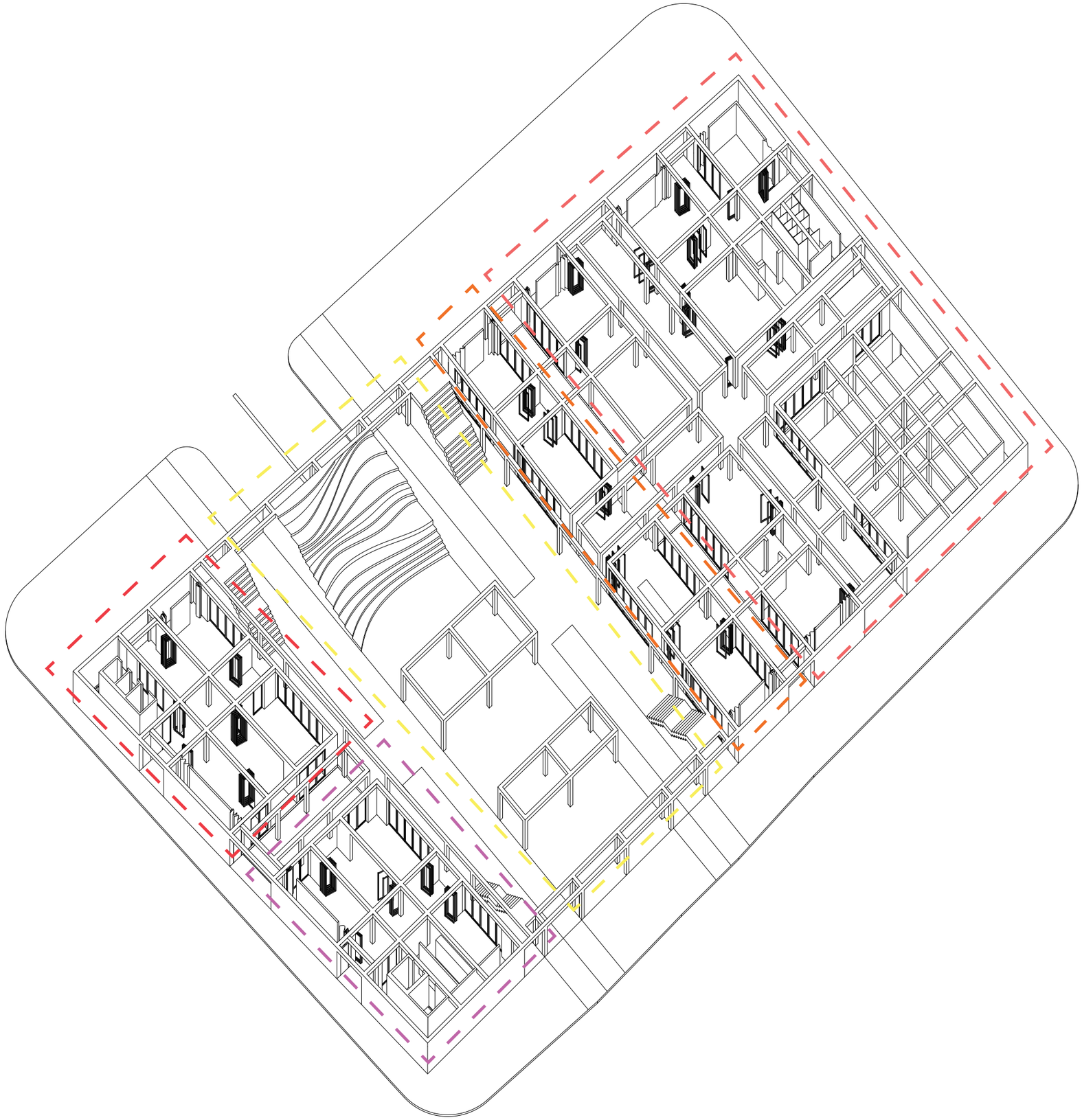


Assemble_axonometric view_1 floor

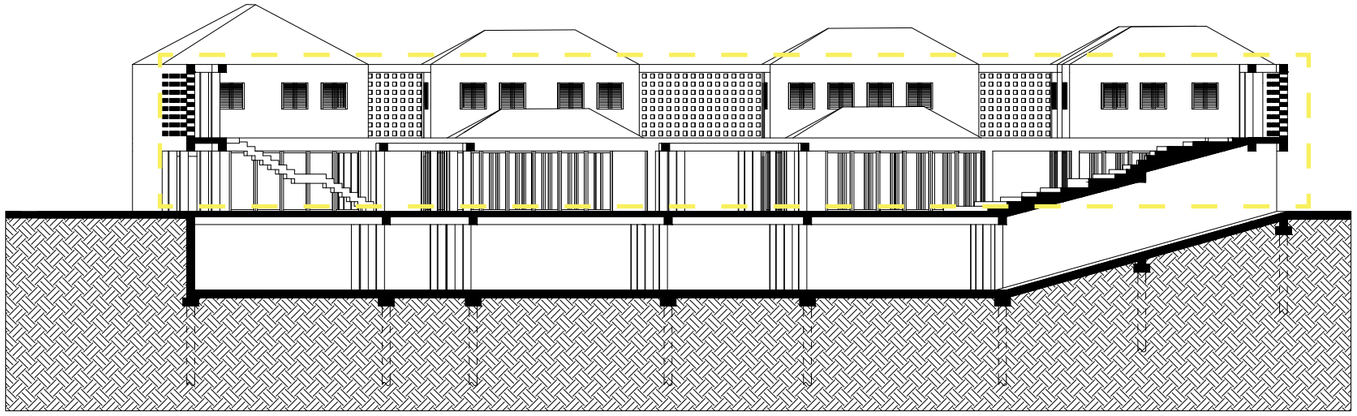


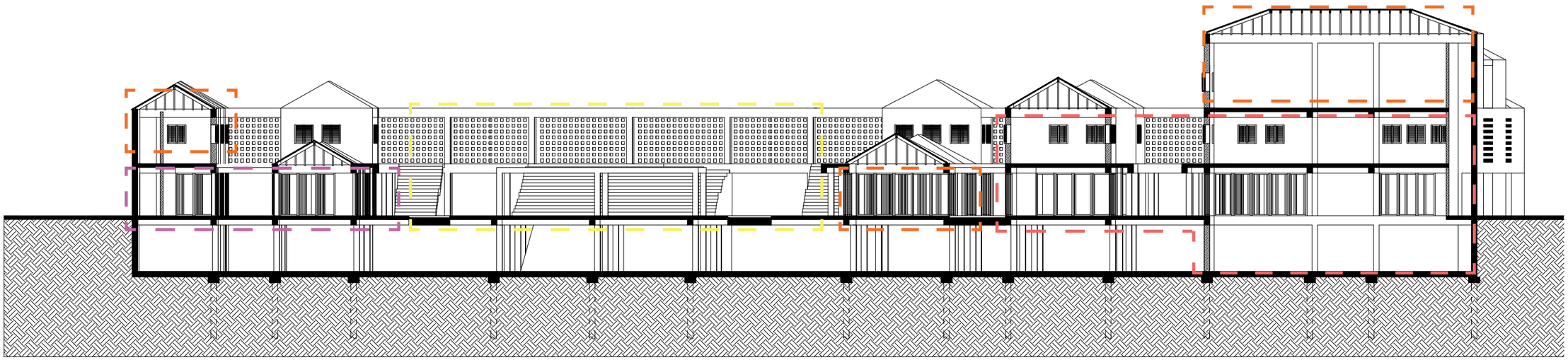
Assemble_axonometric view_ground floor

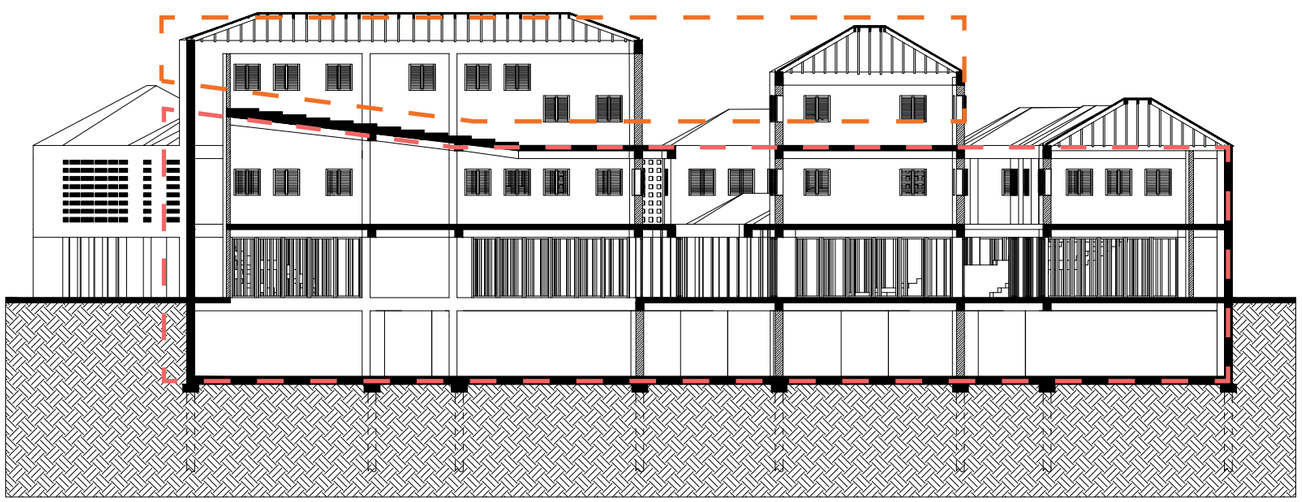
Assemble_axonometric view_flexibilty



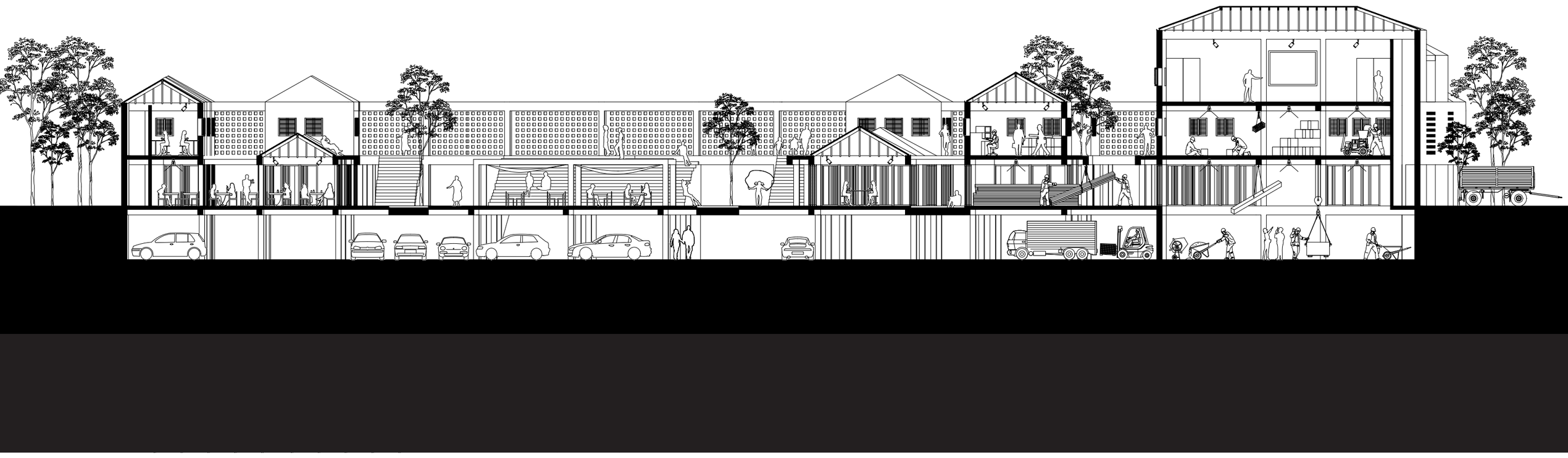
Assemble_section_openness of the ground floor



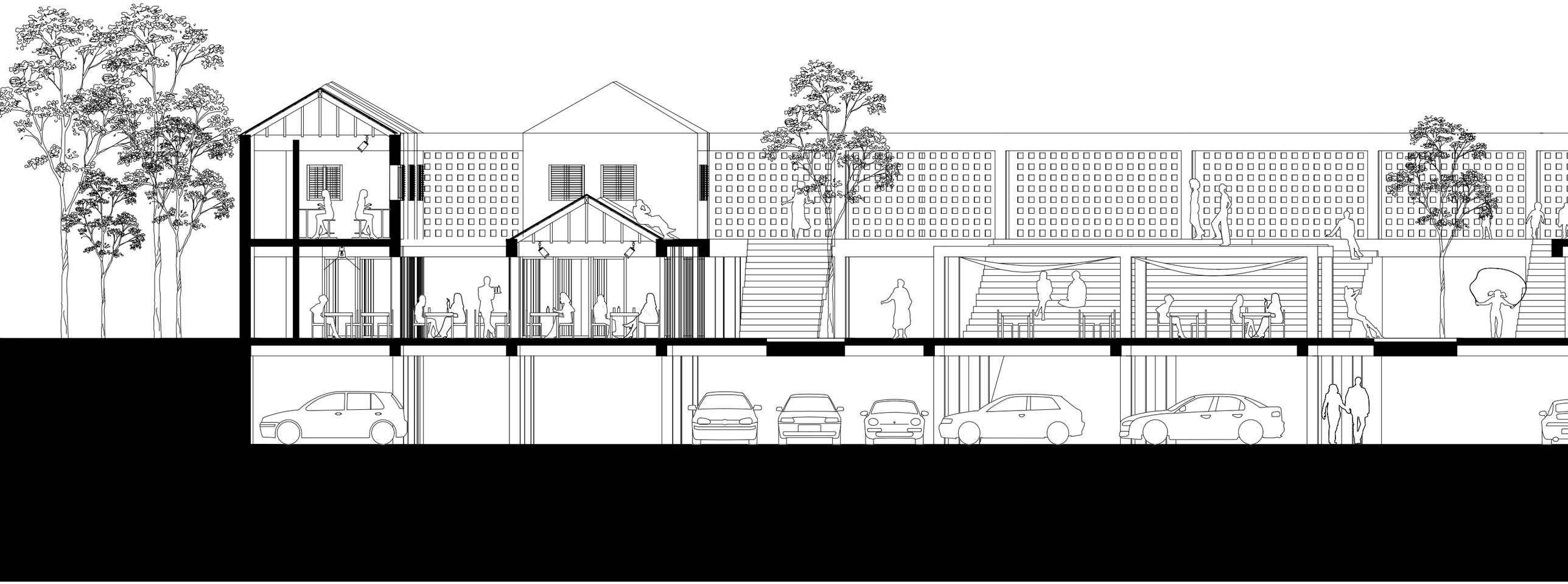




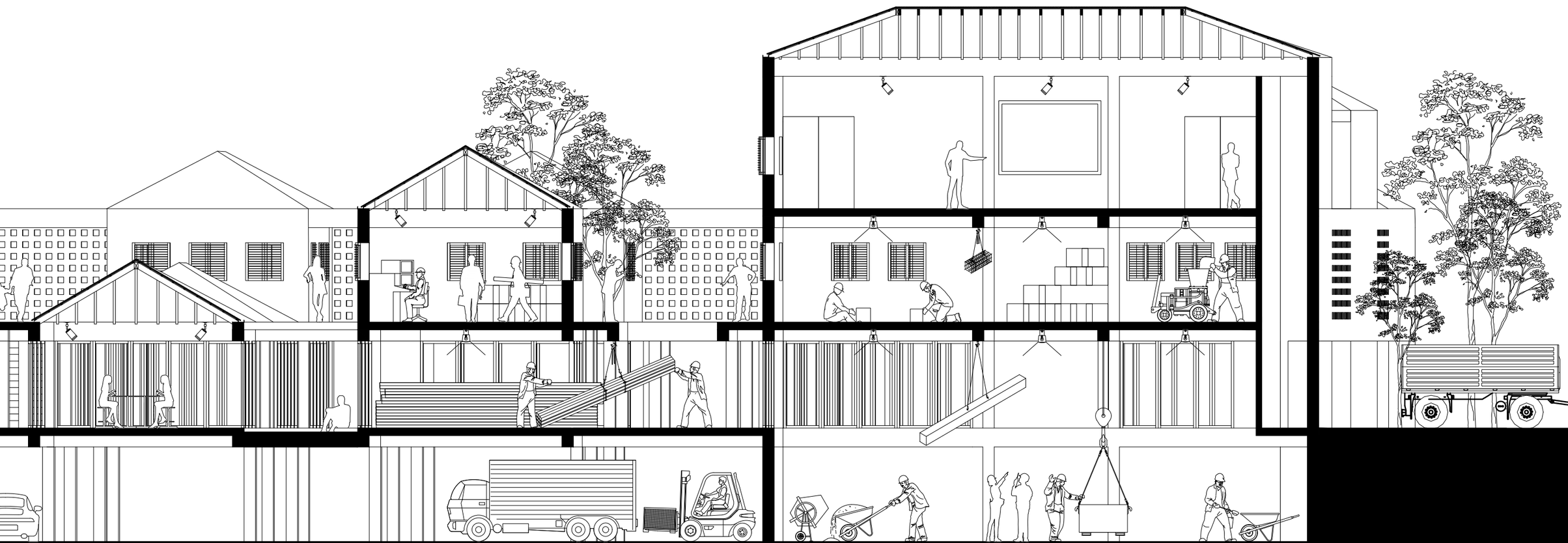
Assemble_section_mix of functions_flexibility



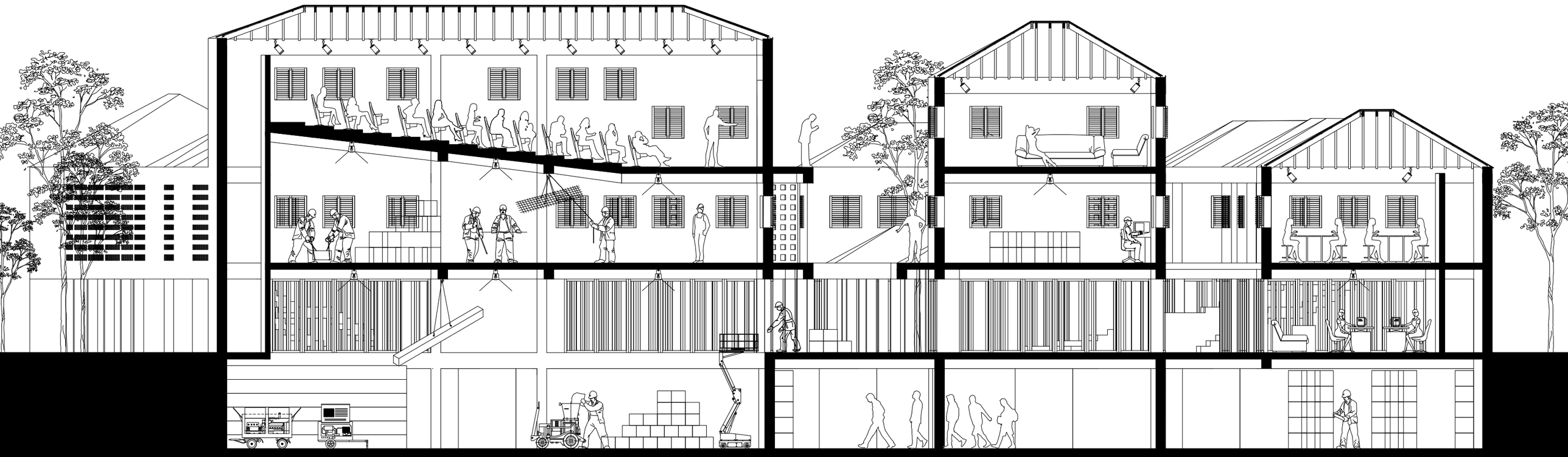
Assemble_section_mix of functions_coffee place/school/square



Assemble_section_mix of functions_school/workshop

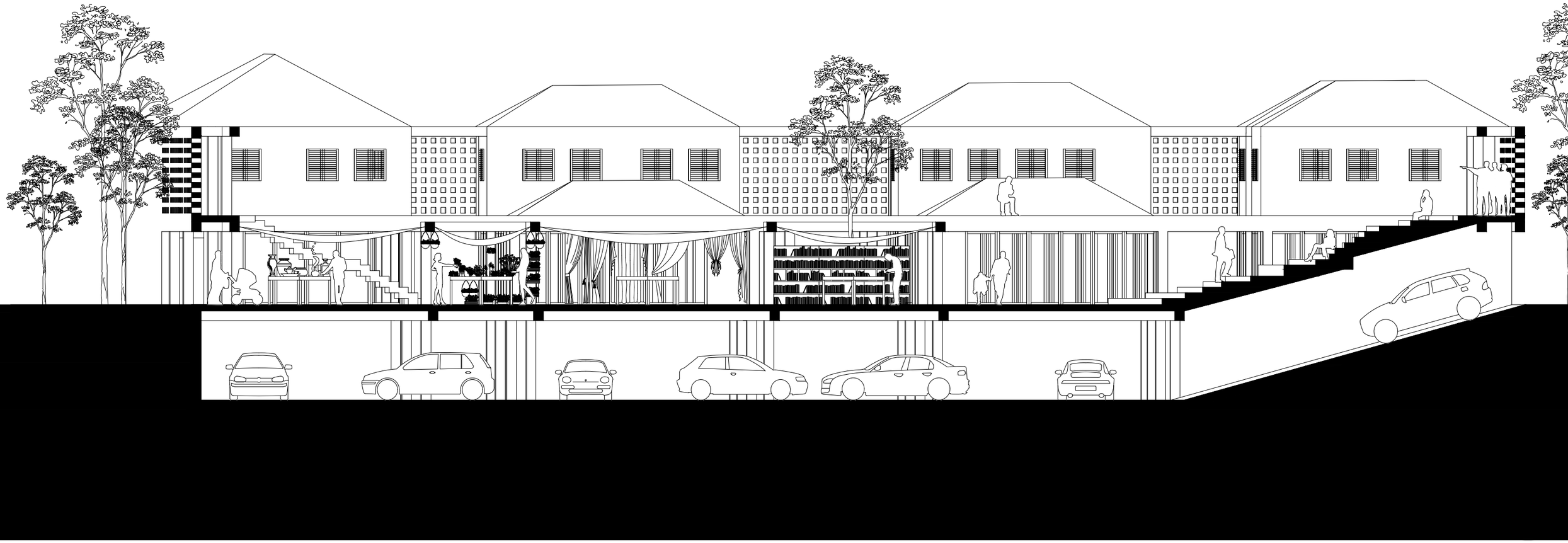


Assemble_section_mix of functions_school/workshop



Assemble_section_mix of functions_square

Assemble_section_mix of functions_square



Assemble_section_mix of functions_square

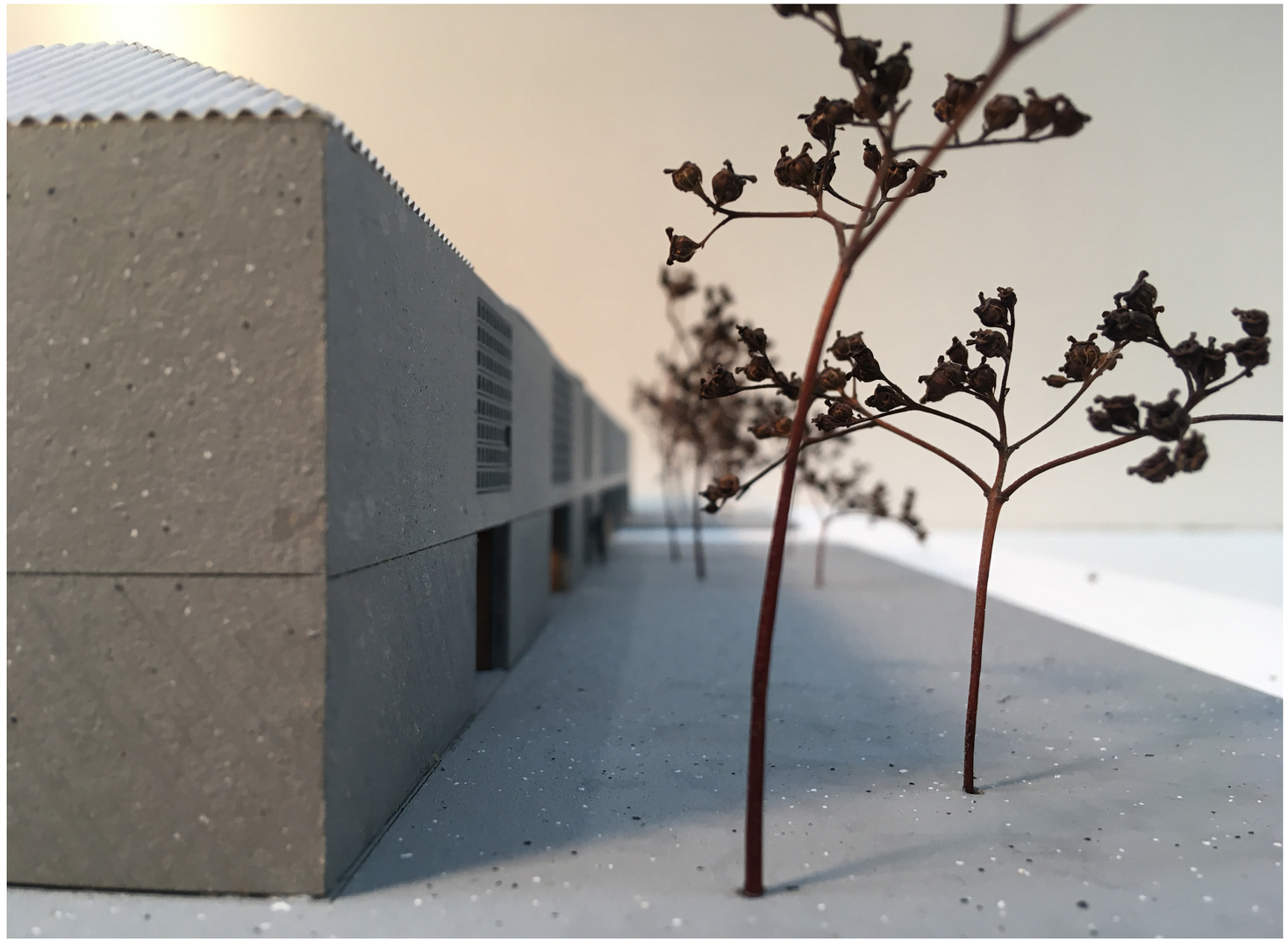
Assemble_section_mix of functions_square

Assemble_section_mix of functions_square

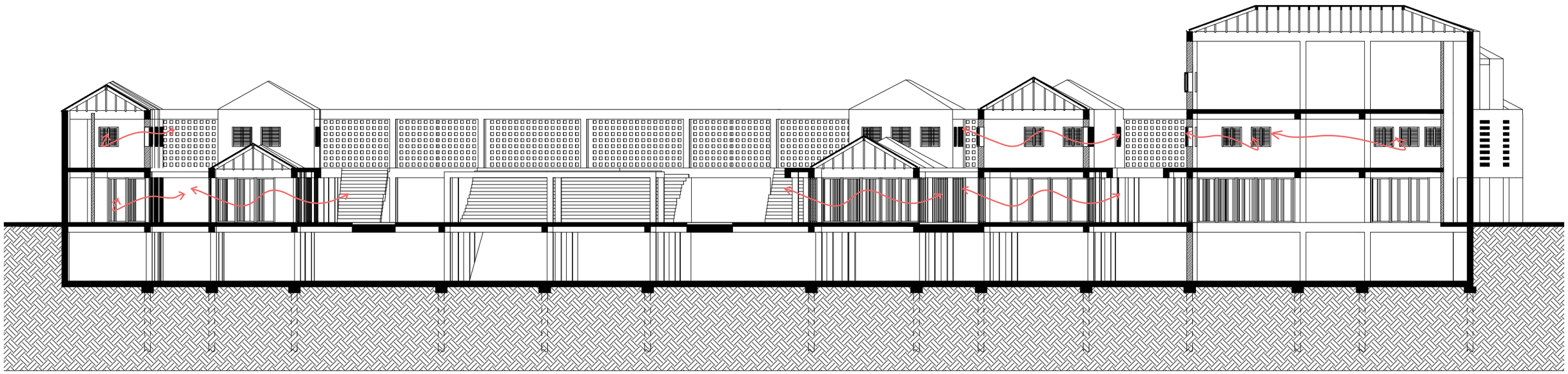
Assemble_wall as functional homogeneity

Assemble_wall as functional homogeneity

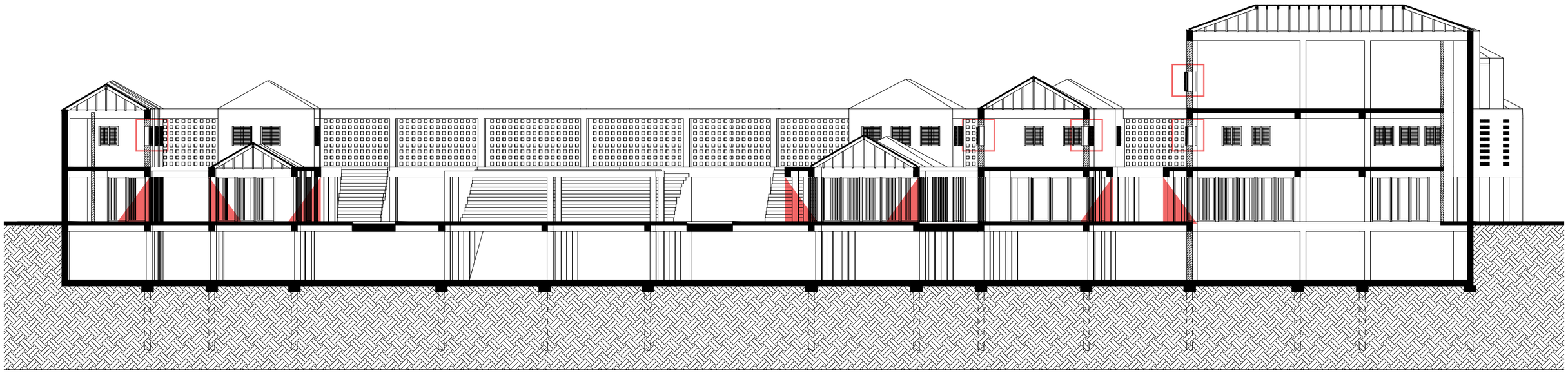
Assemble_wall as functional homogeneity



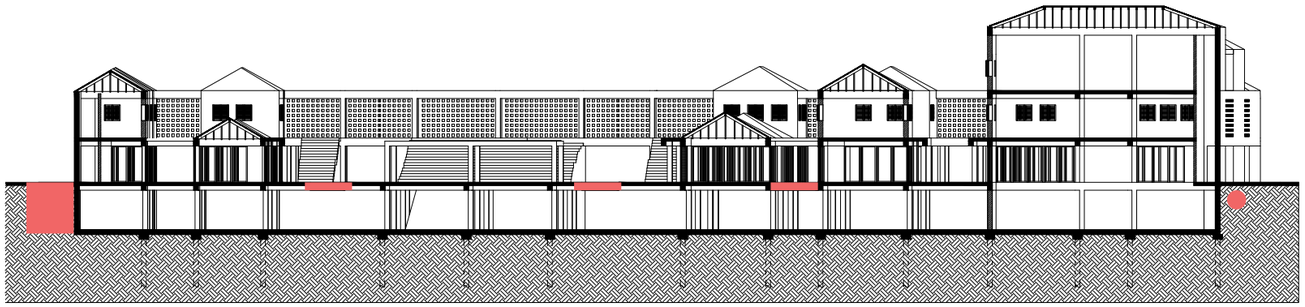
Climate design_natural cross ventilation

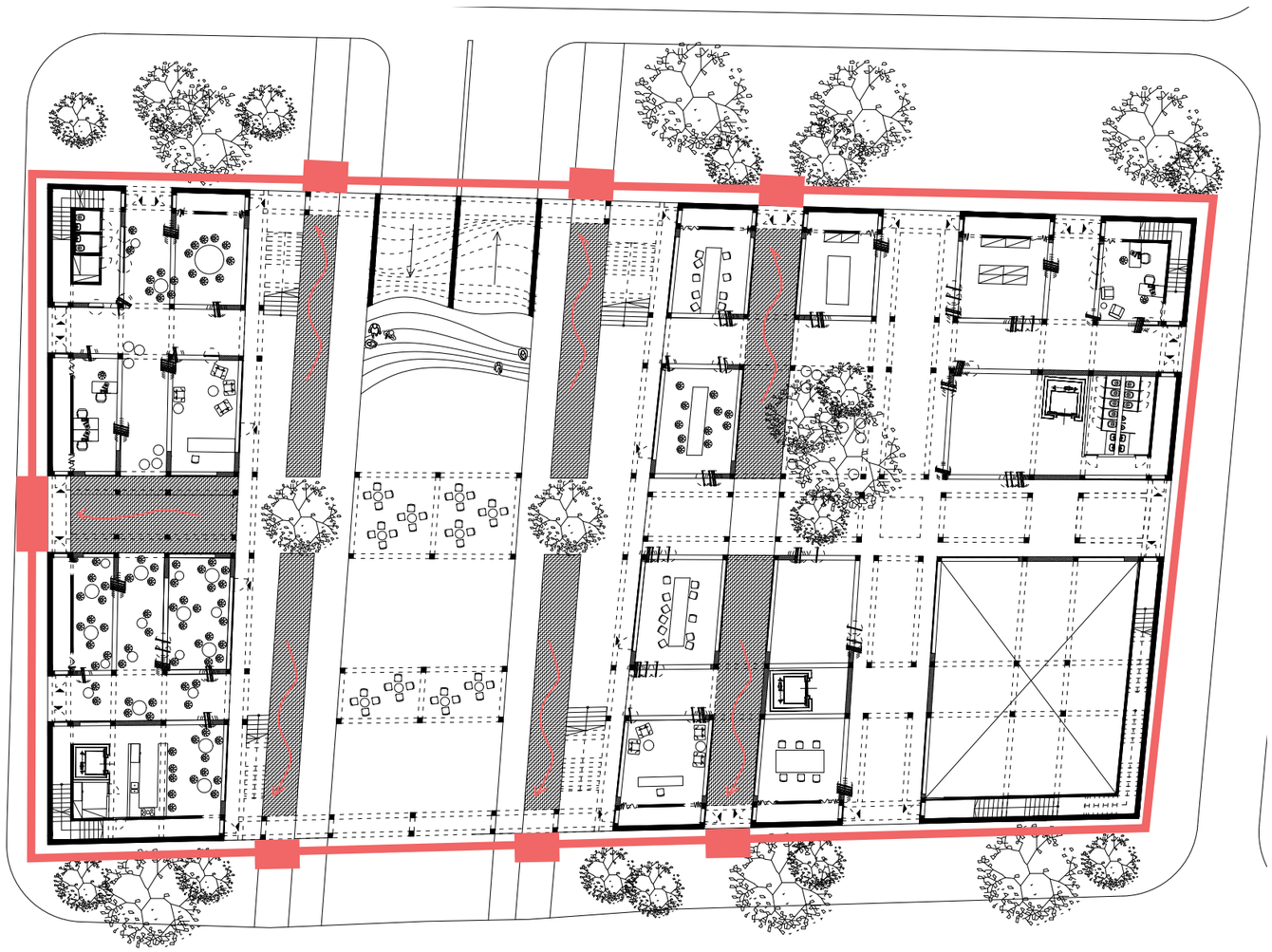


Climate design_shedding elements

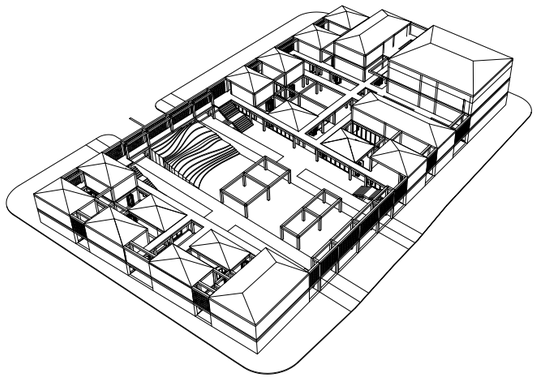


Climate design_water collection

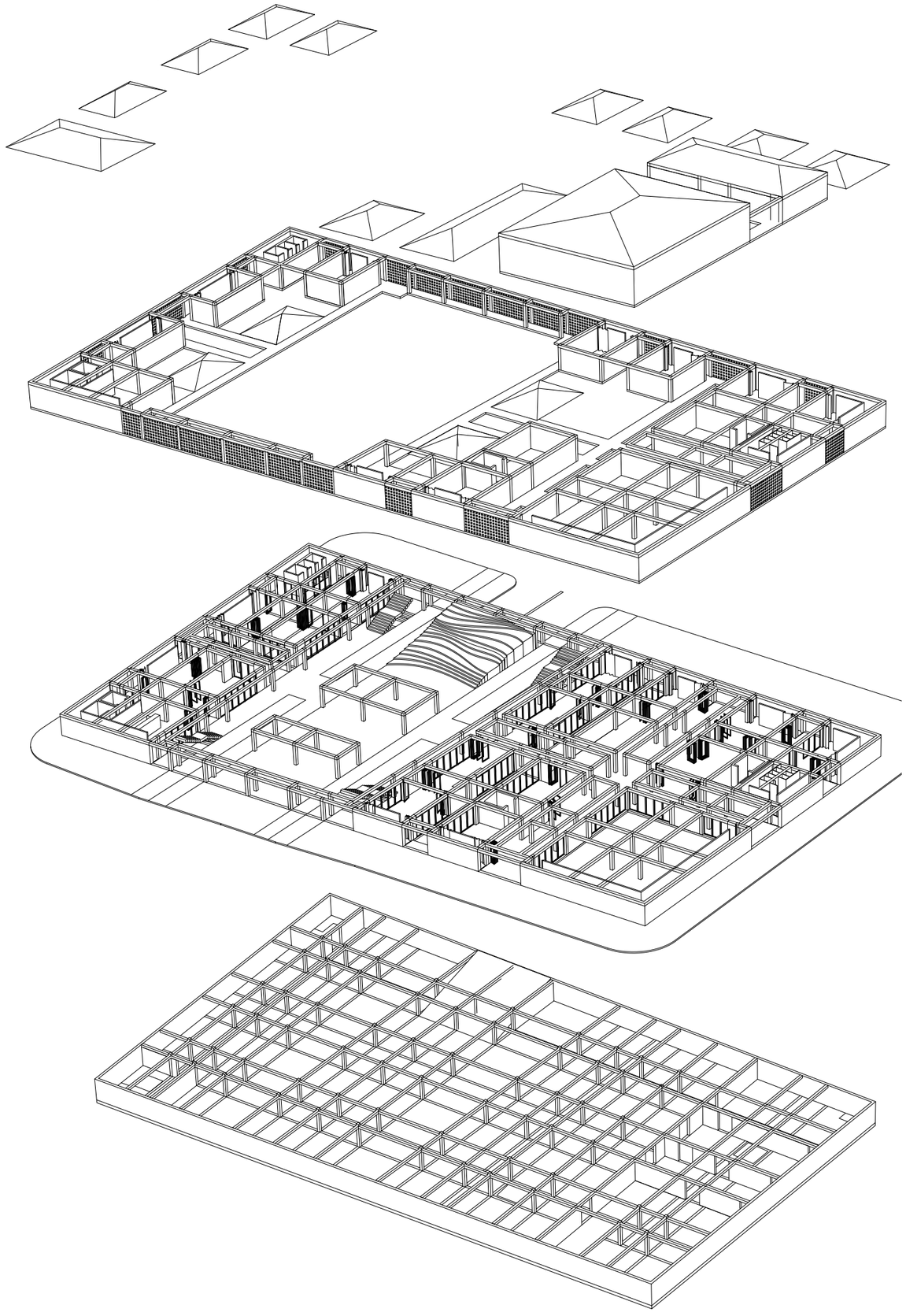




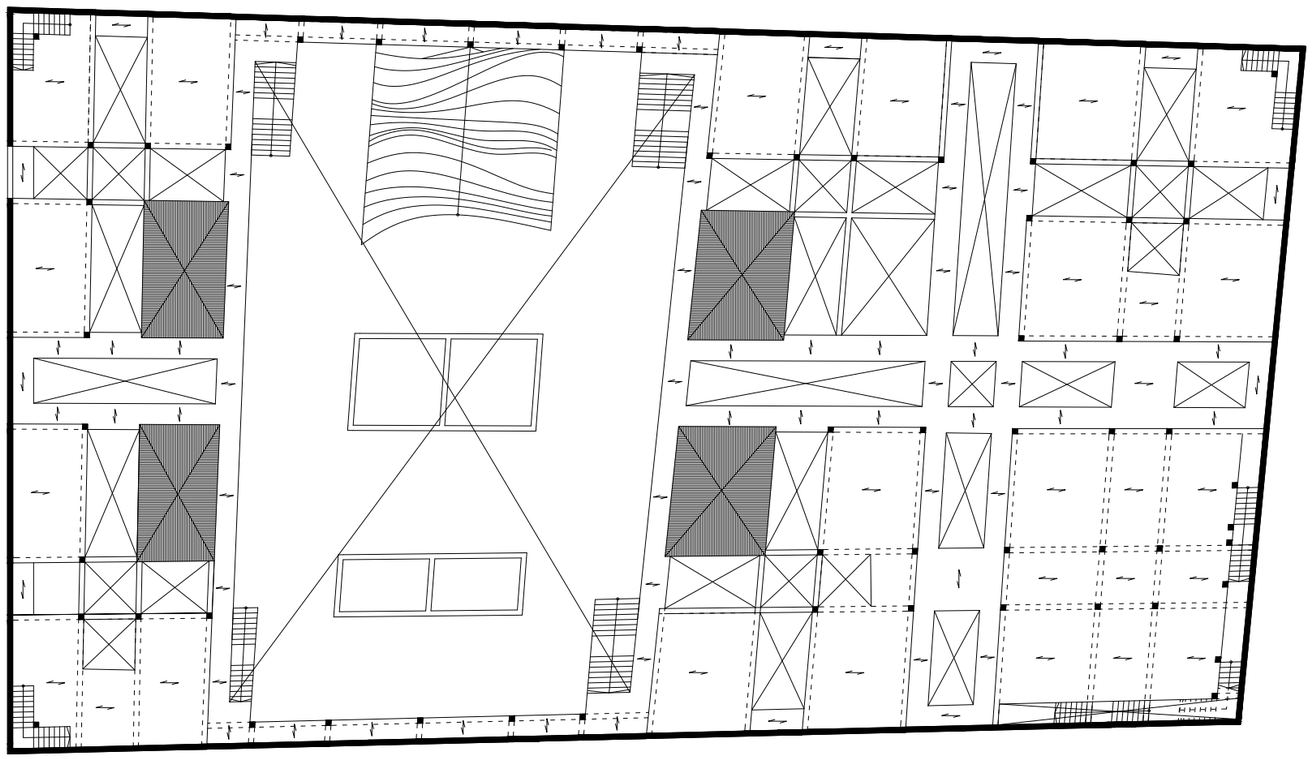
Structural design_concrete as a resource

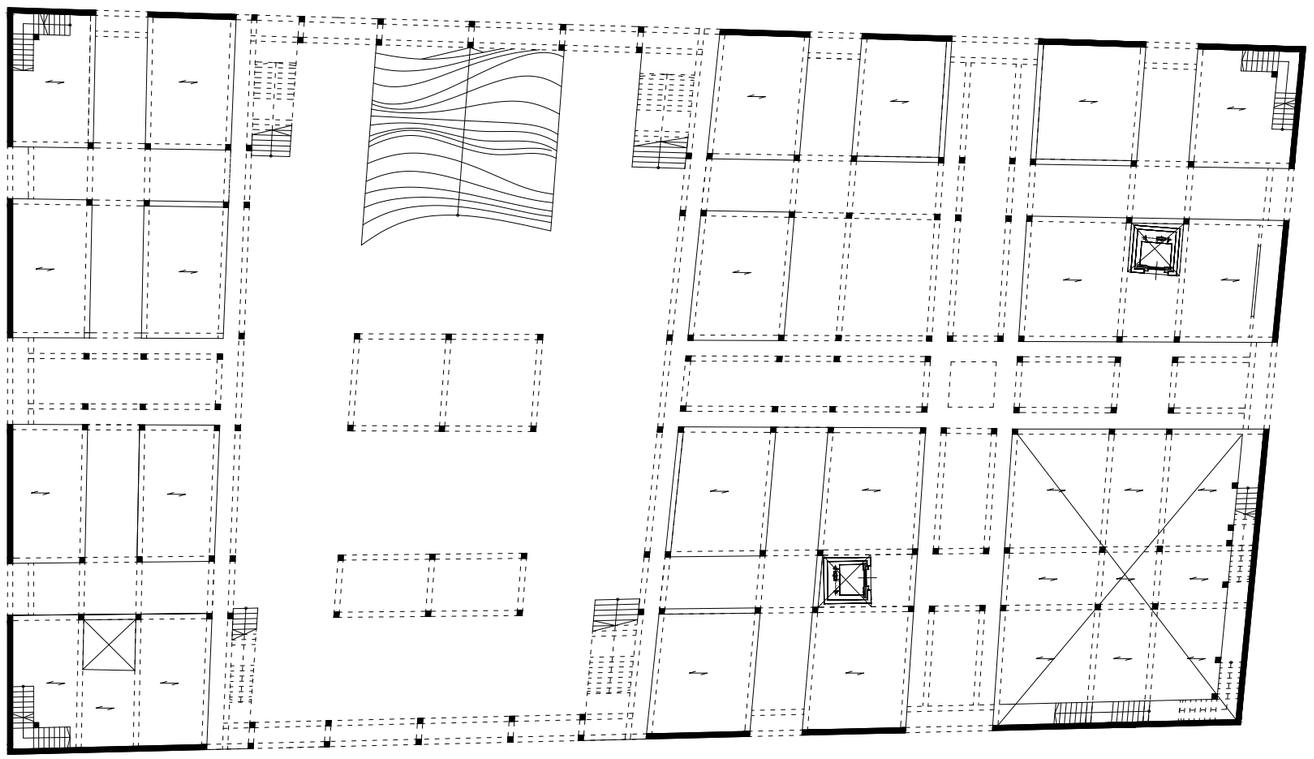


Structural design_flexibility of the structure

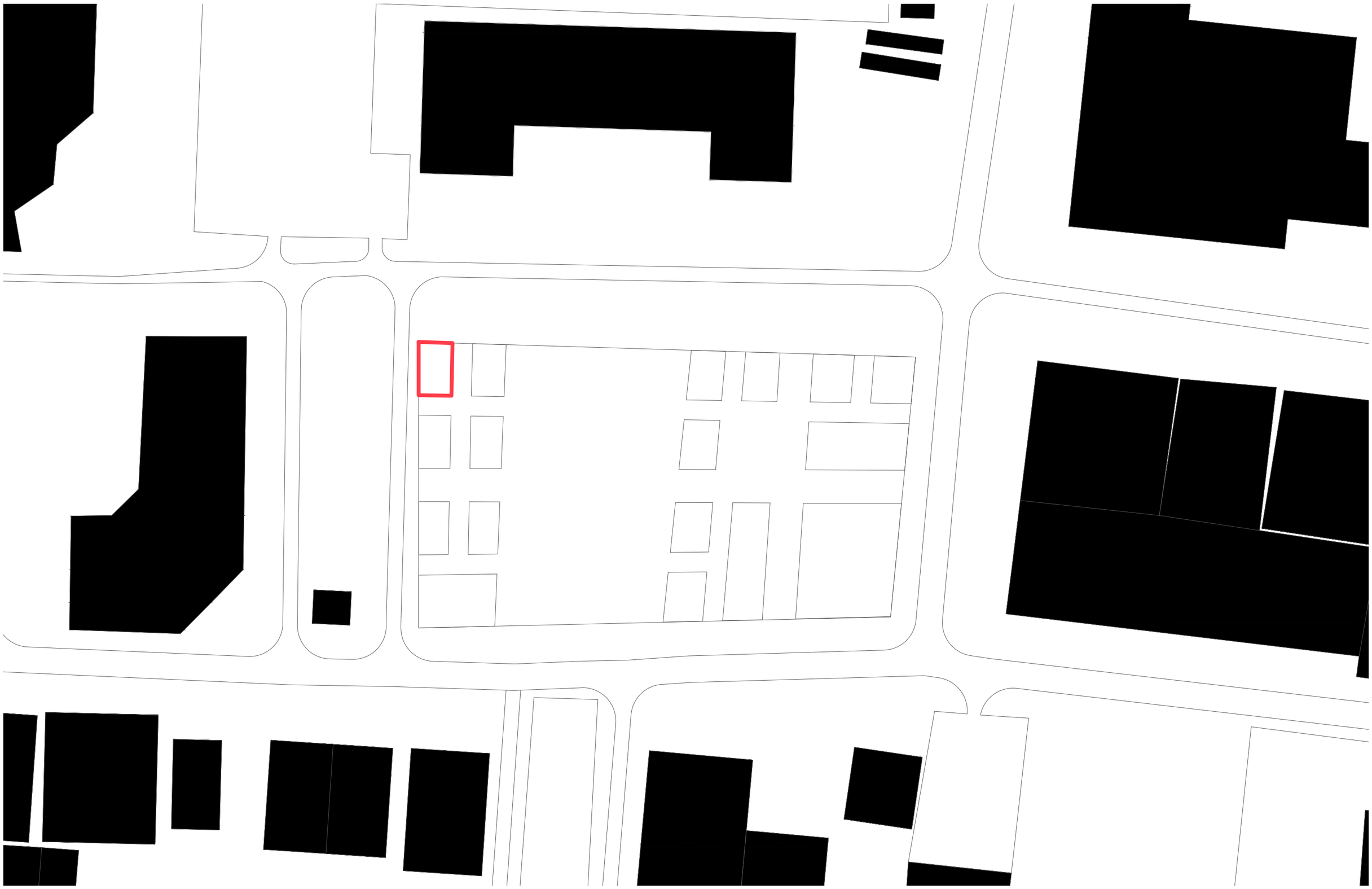


Structural design_concrete slabs and pillars

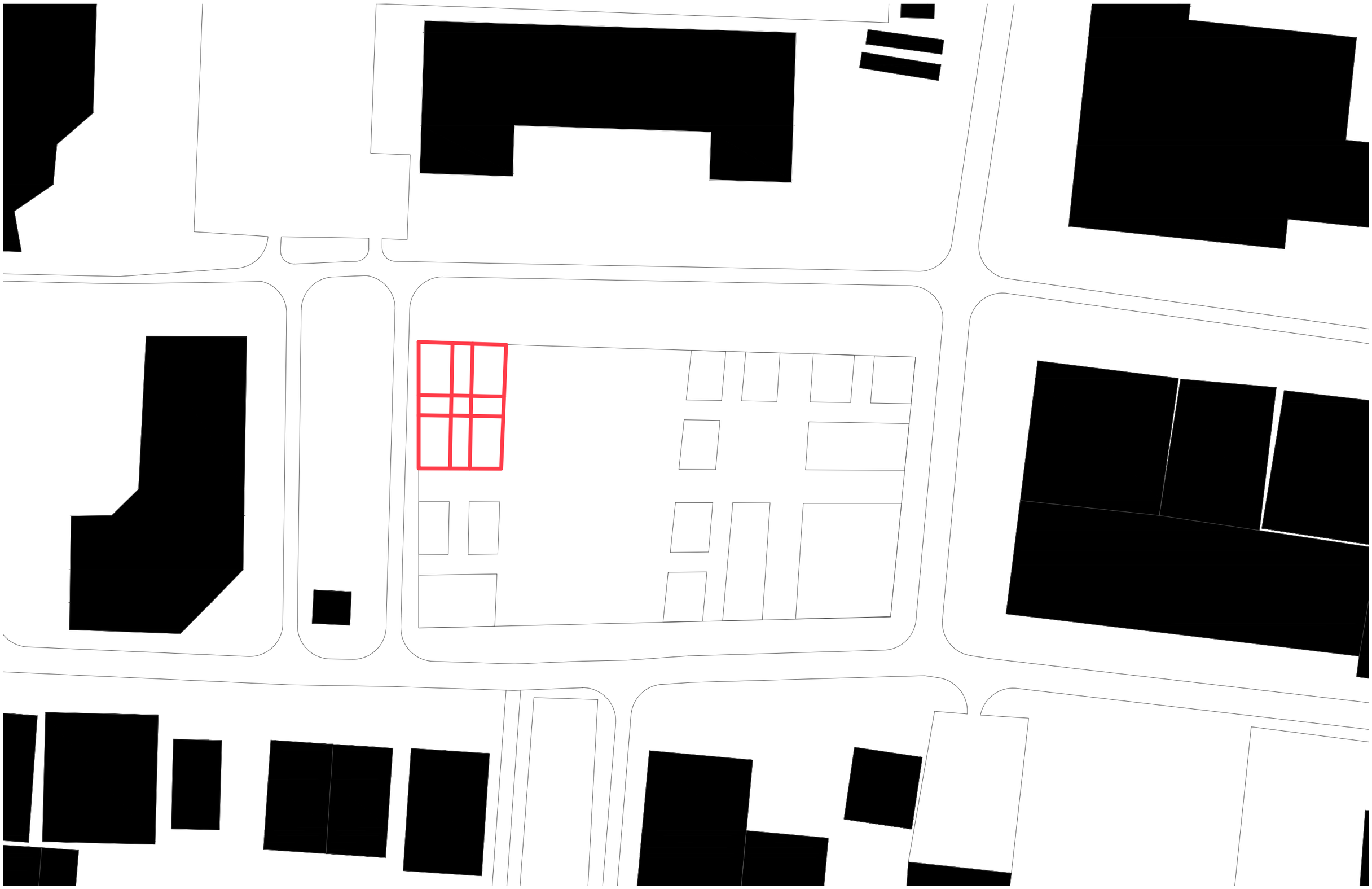




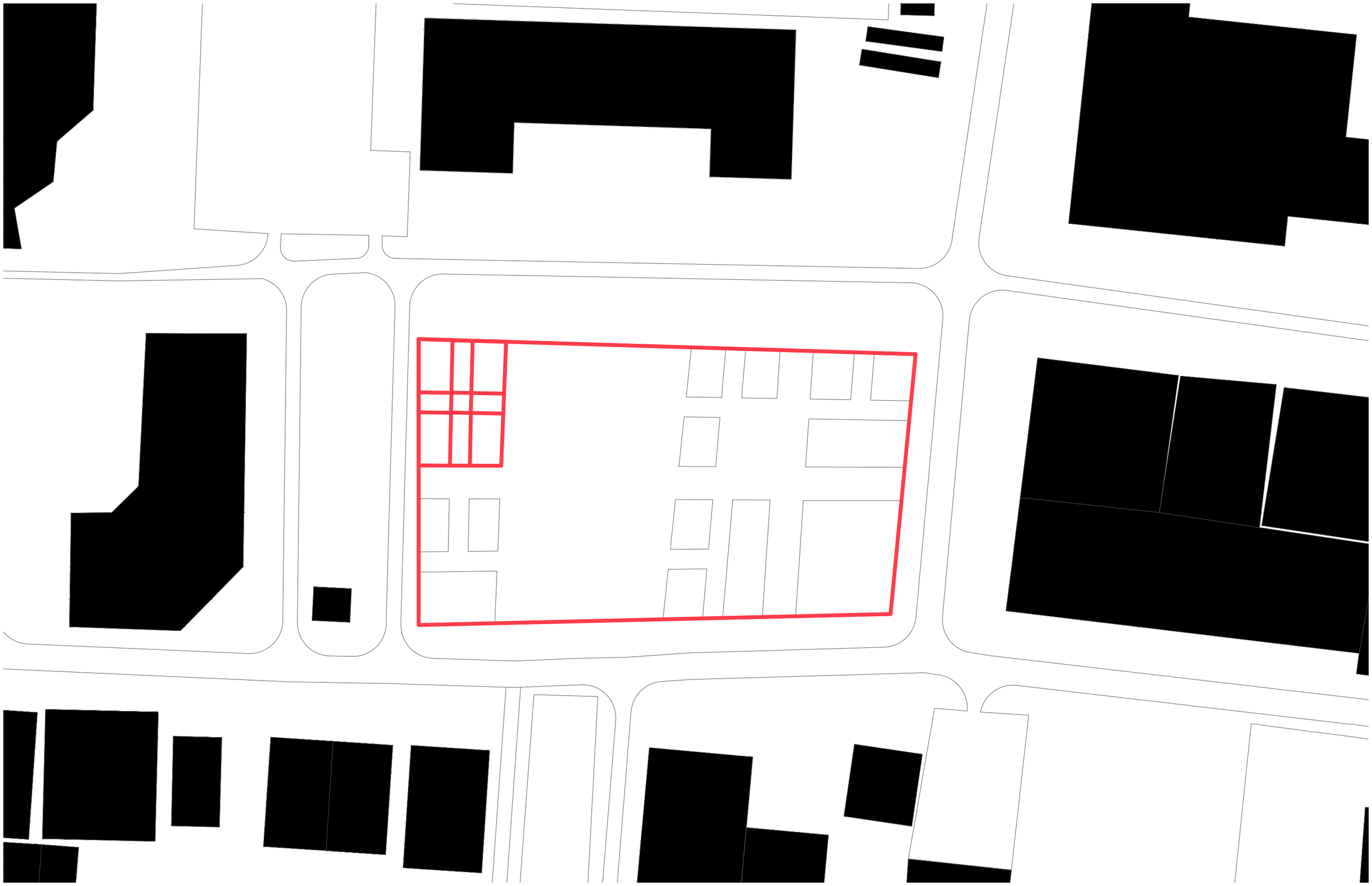
Assemble_visible structure of the building_ring beams_3 scales



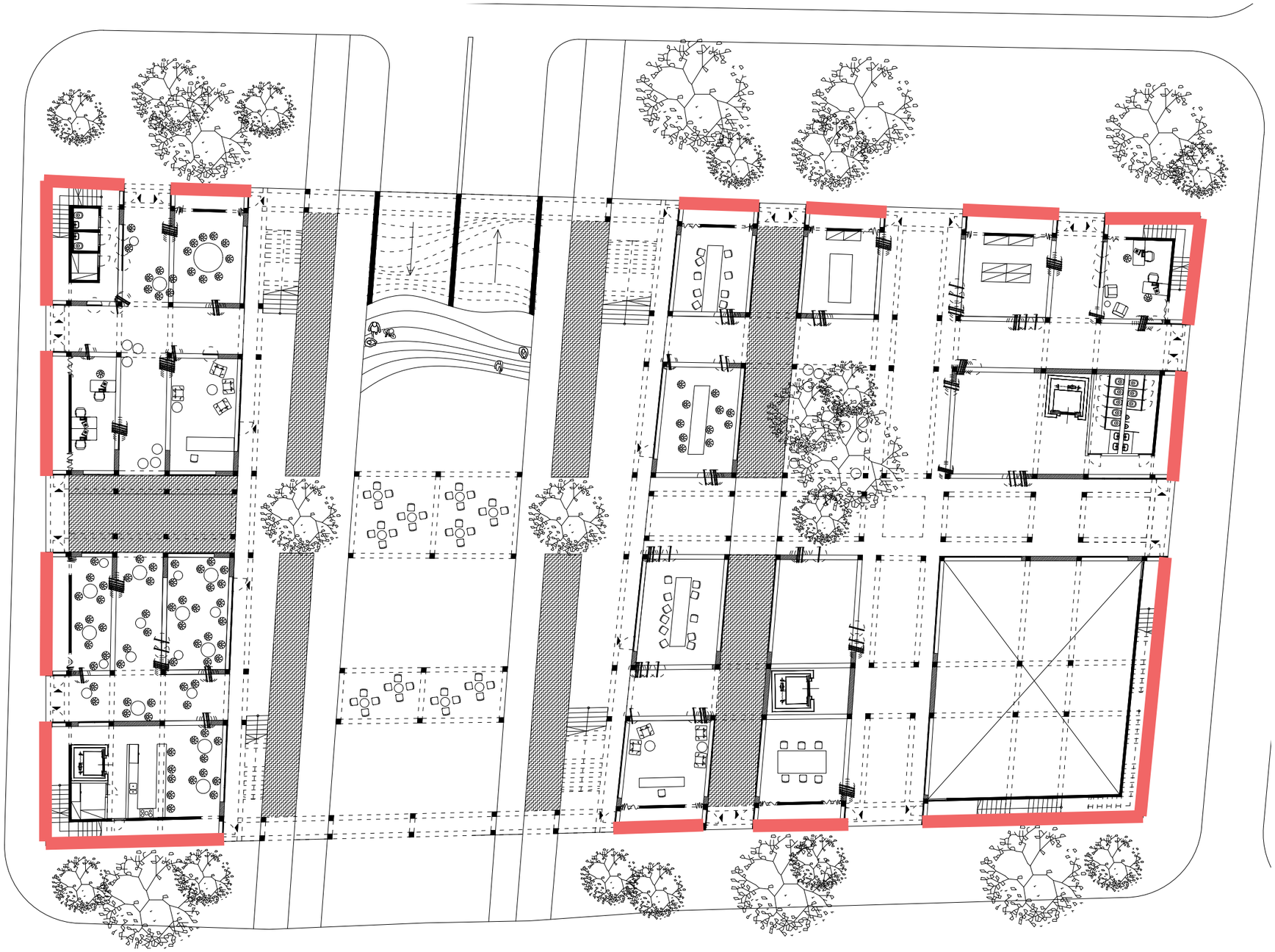
Assemble_visible structure of the building_ring beams_3 scales



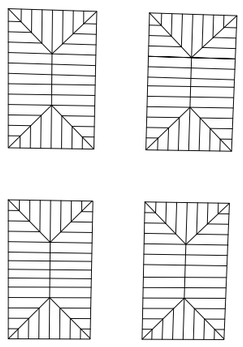
Assemble_visible structure of the building_ring beams_3 scales

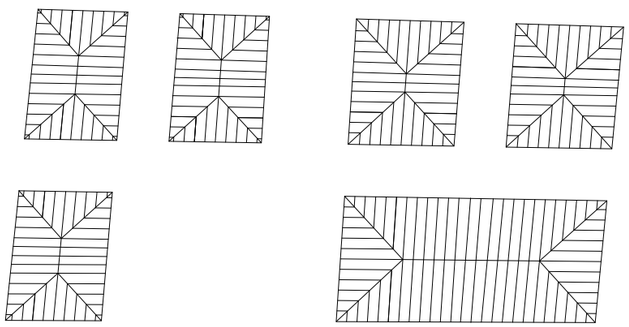


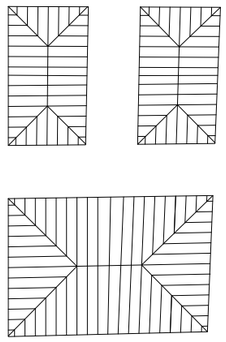
Structural design_shear wall (possible earthquake)

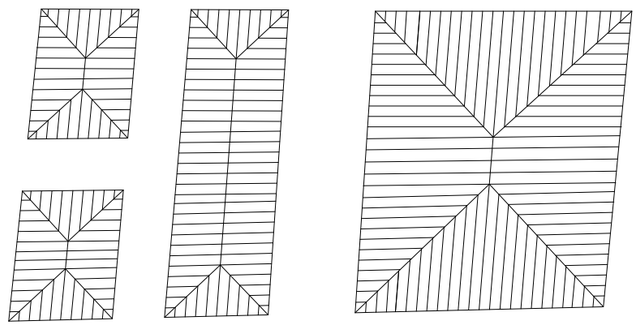


Structural design_wooden hipped roof

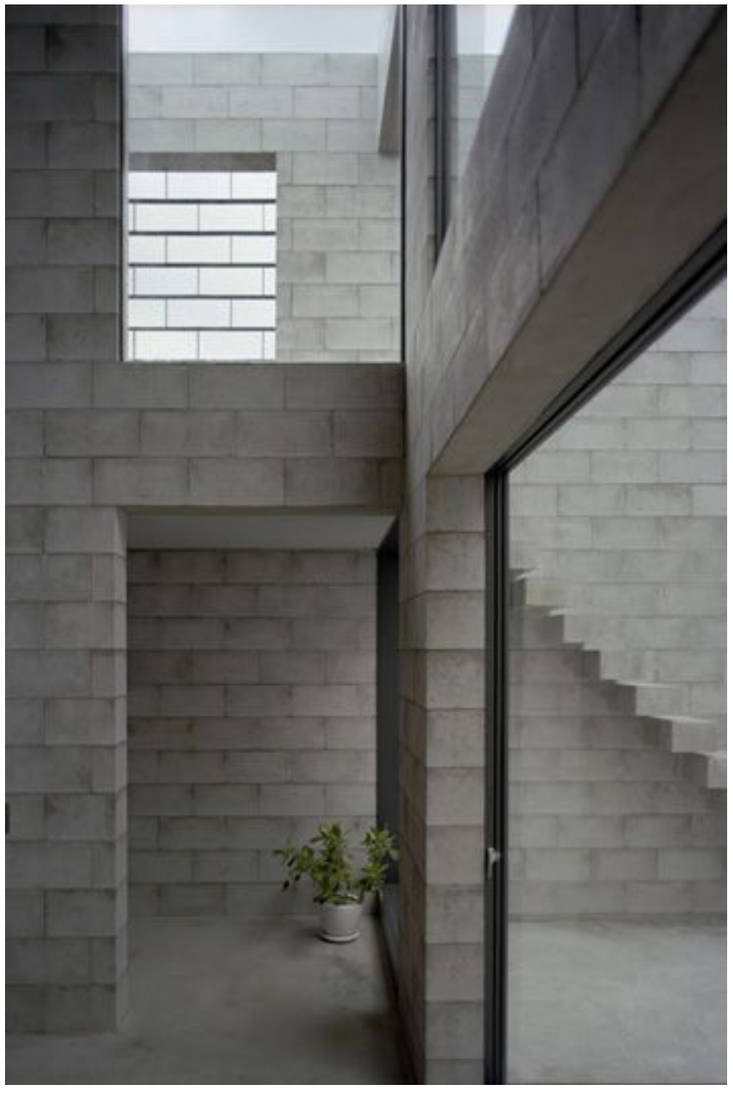








Structural design_materialisation

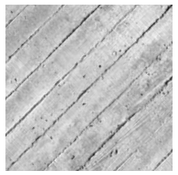


Structural design_materialisation

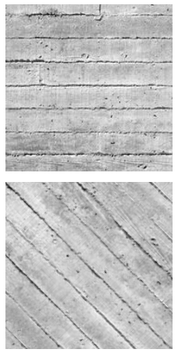
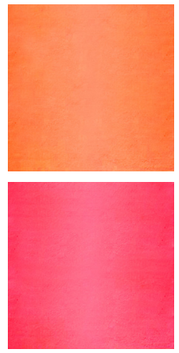
Roof

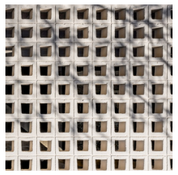
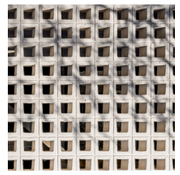





Wall

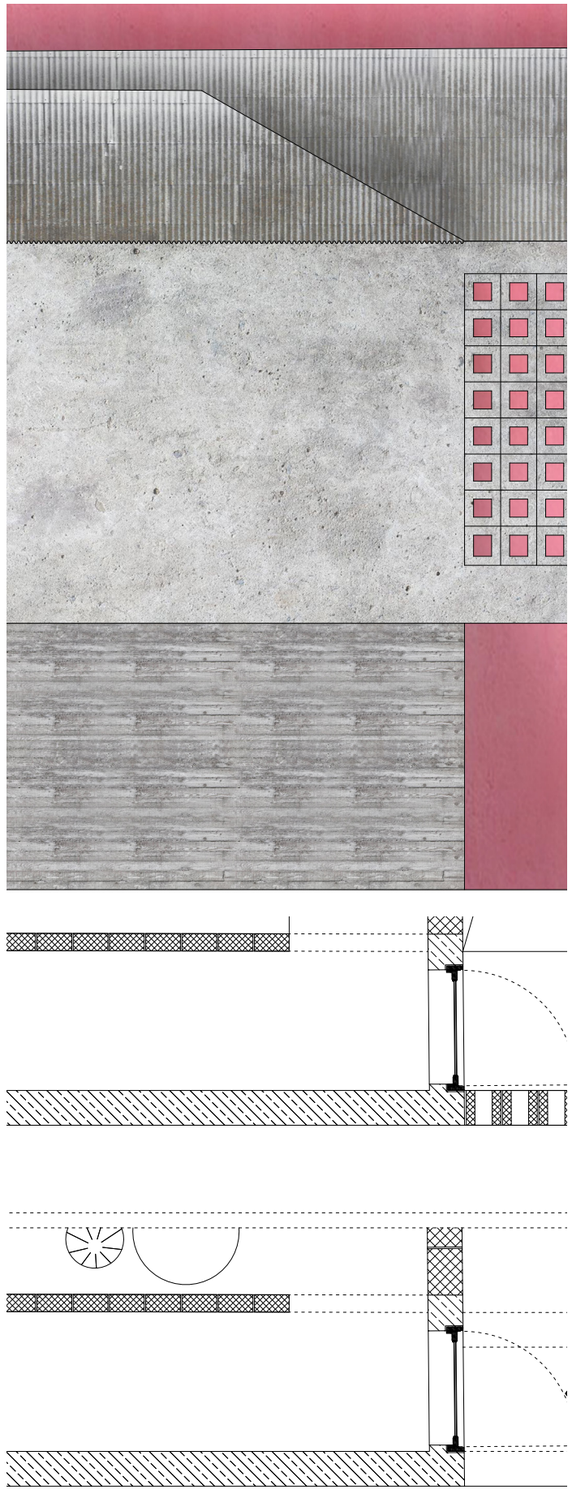



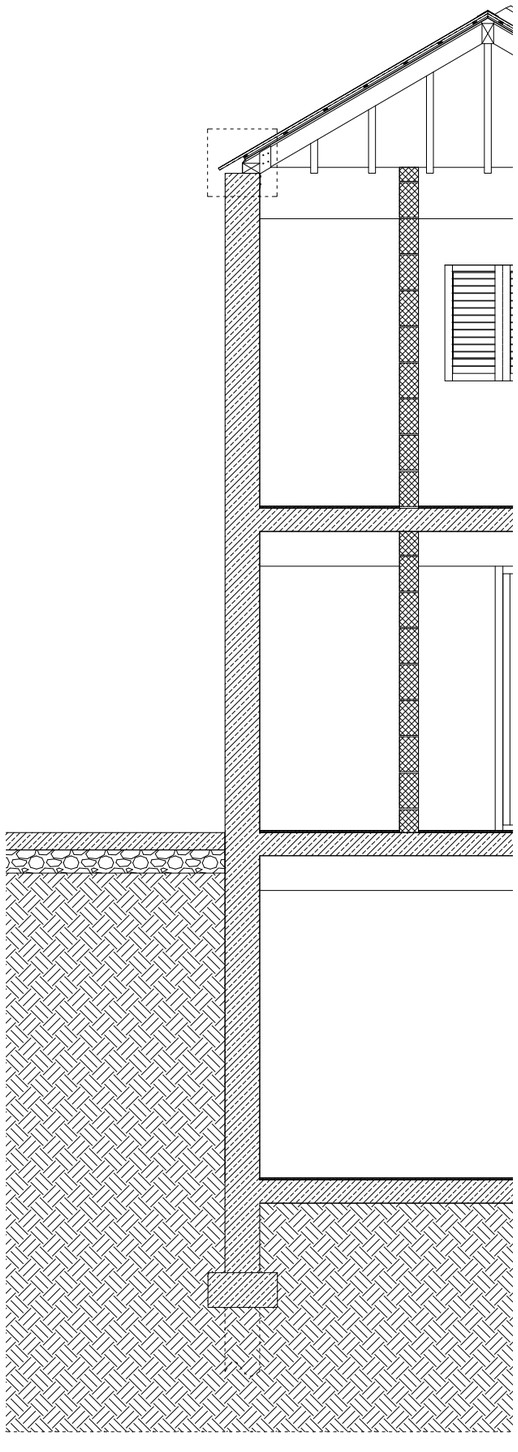




Floor

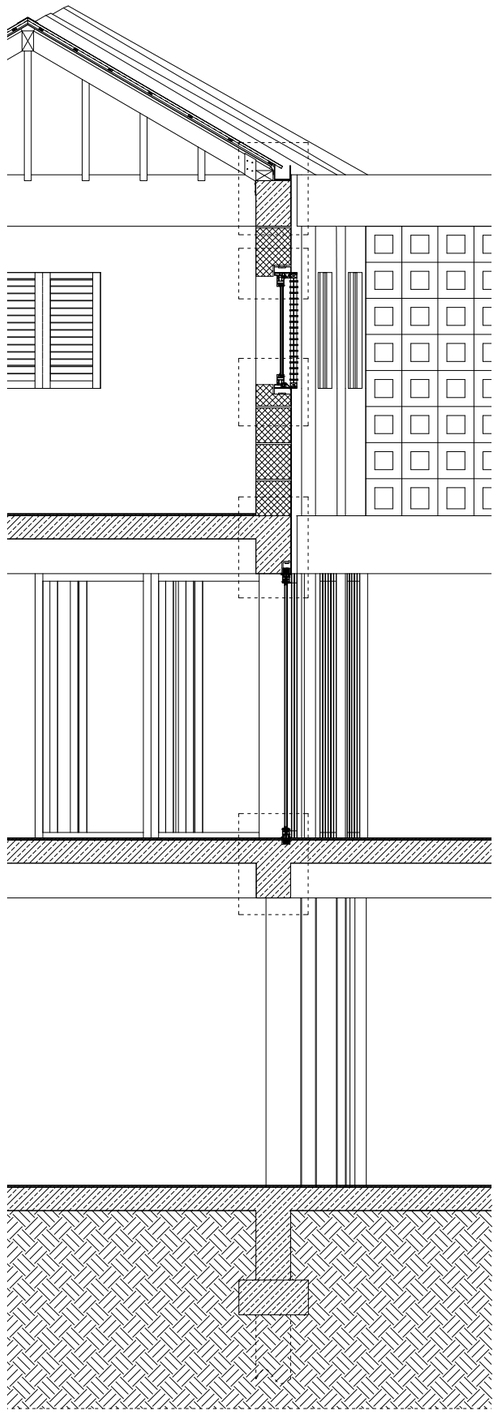



Details_outside wall

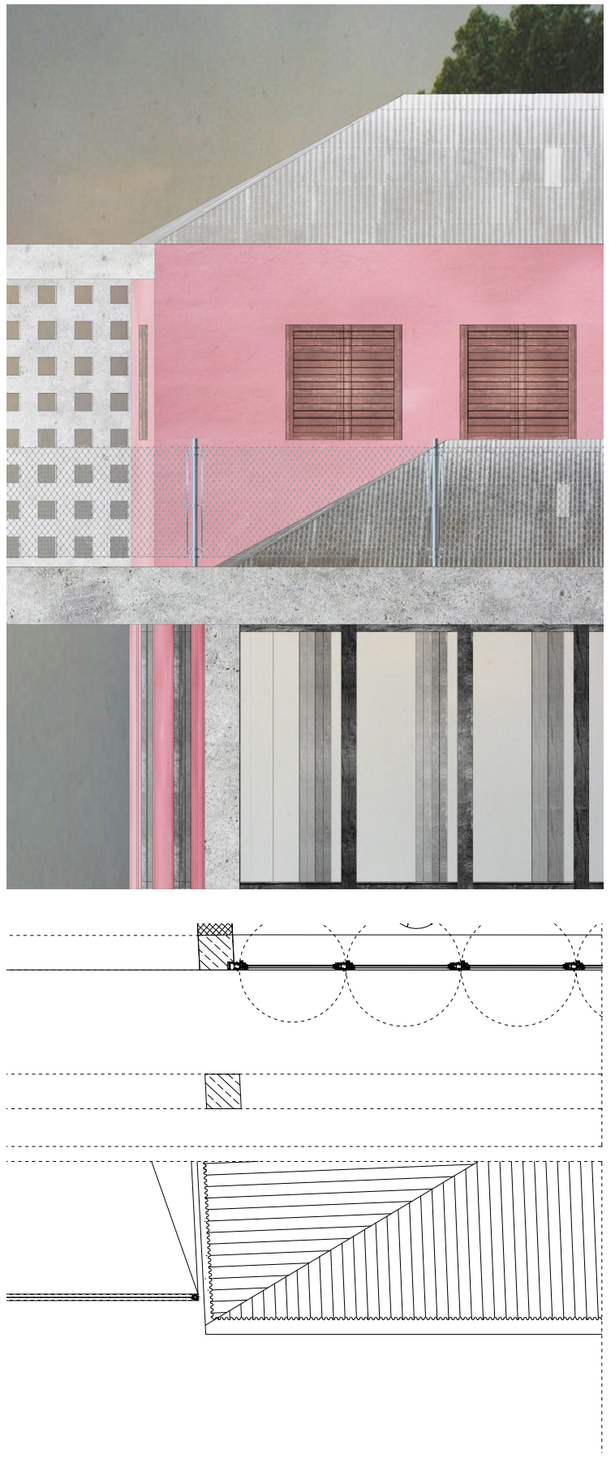


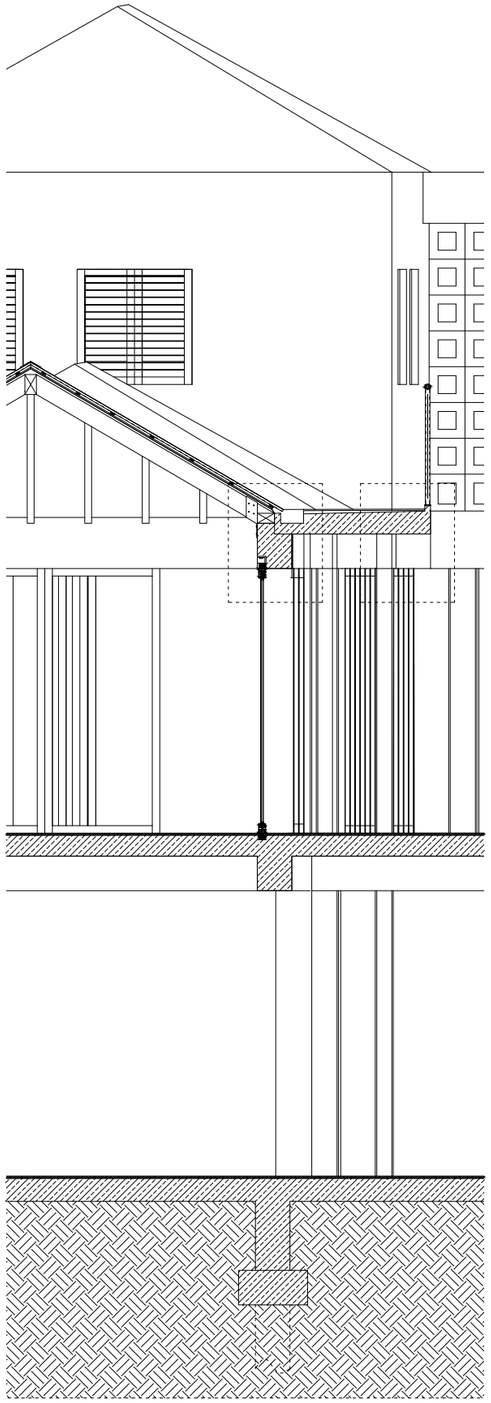


Details_inner wall I

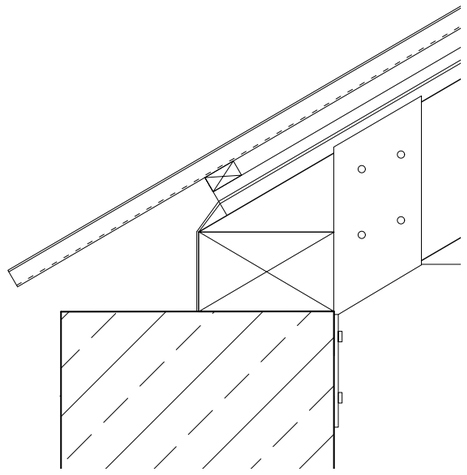


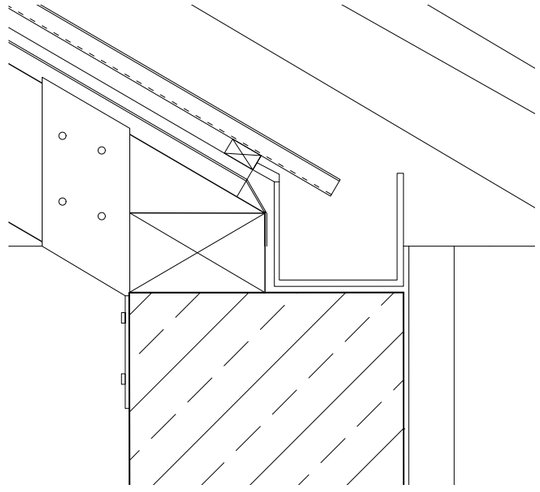
Details_inner wall II

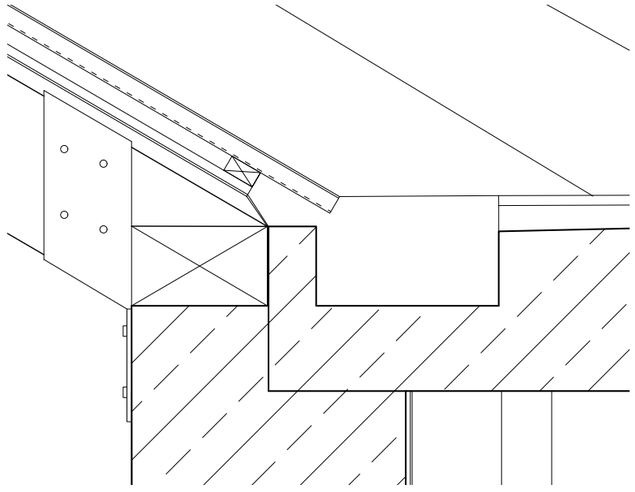


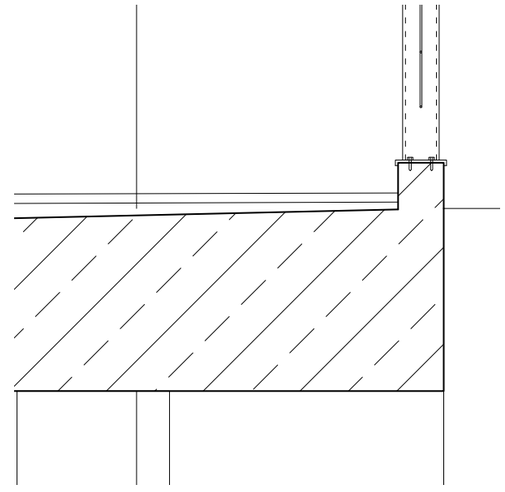


Details_3 types of roof connections

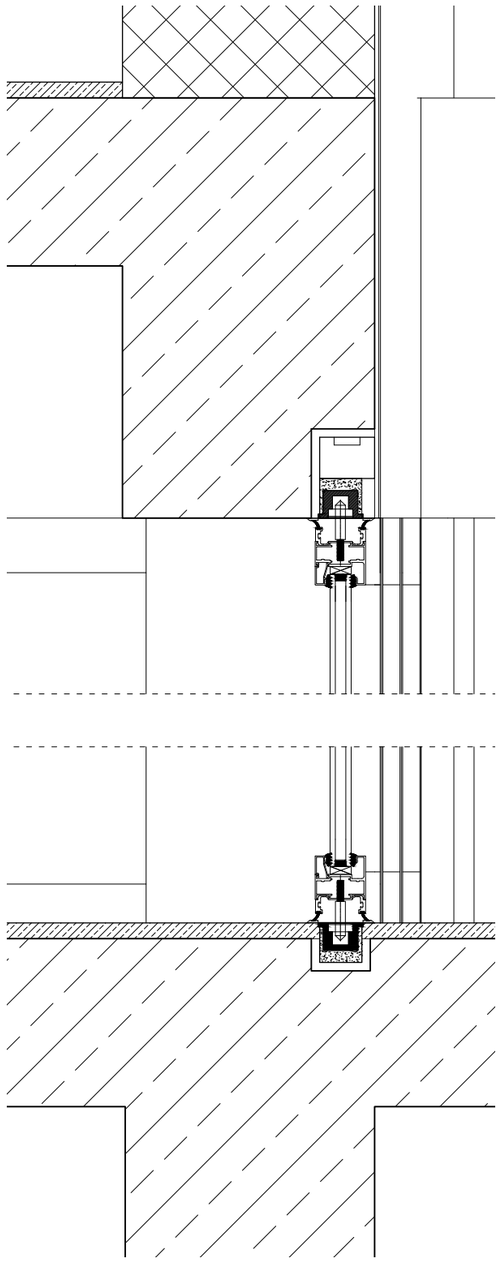


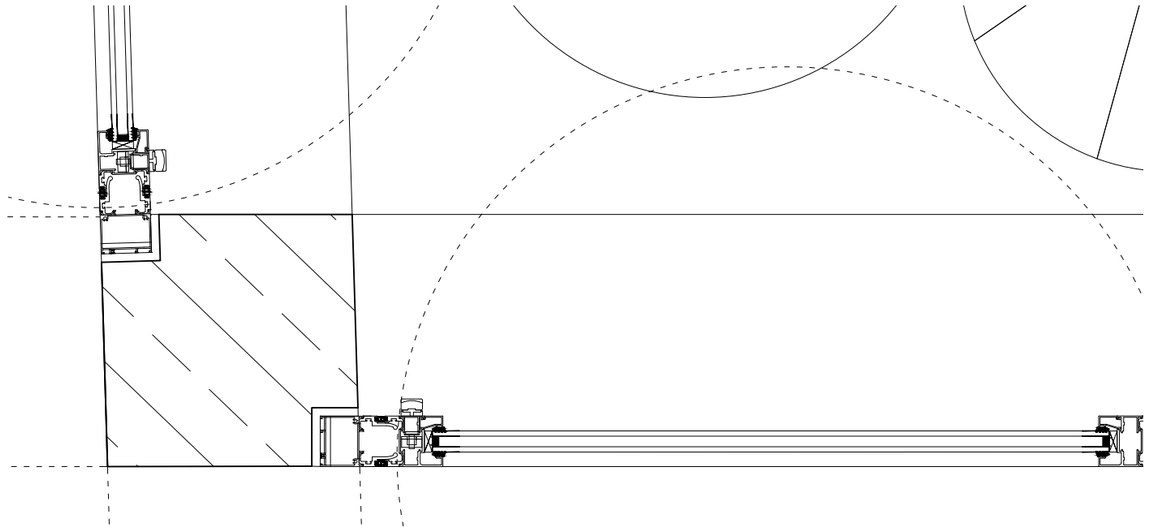




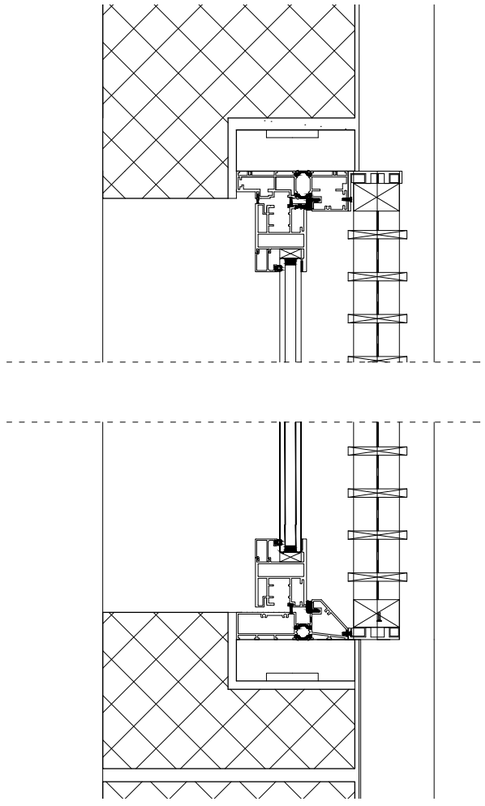


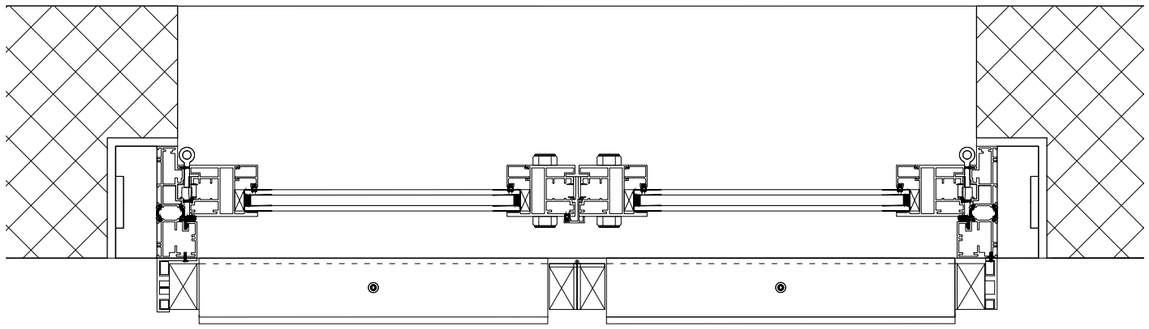
Details_window system I



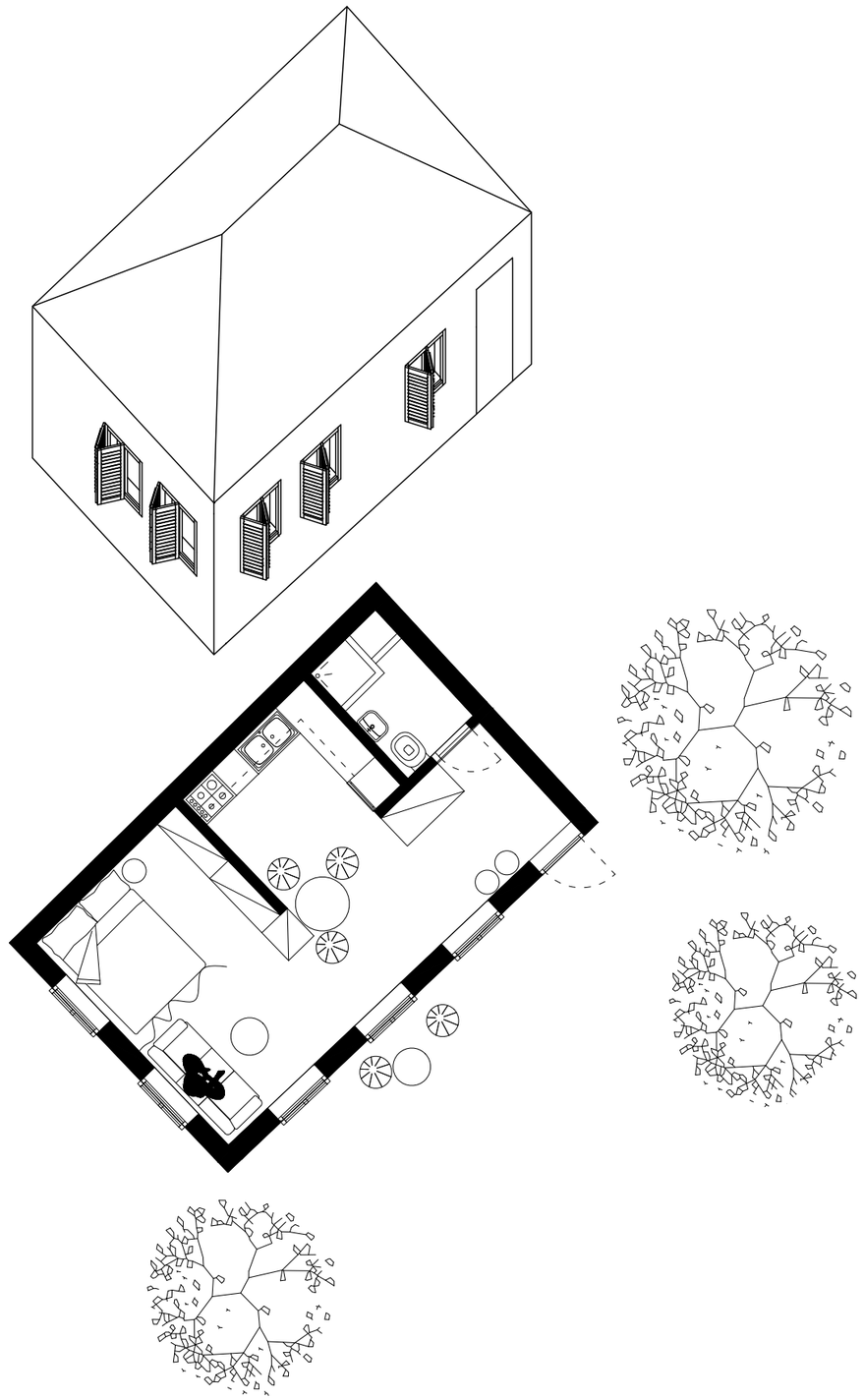


Details_window system II

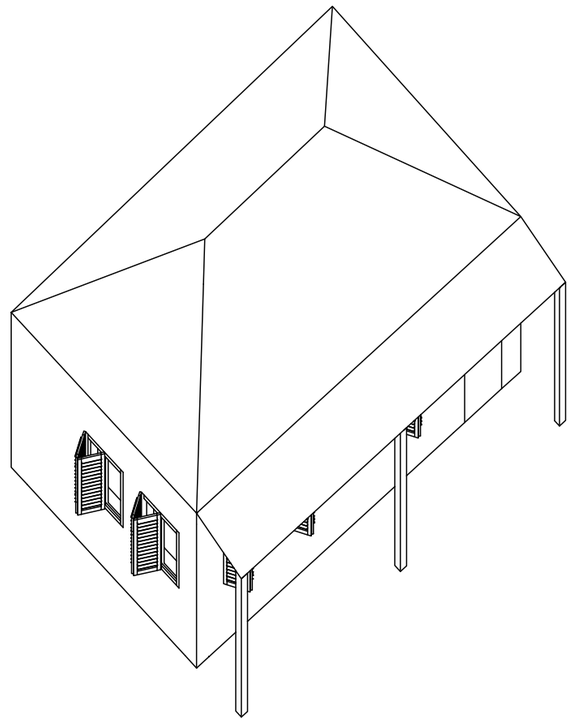




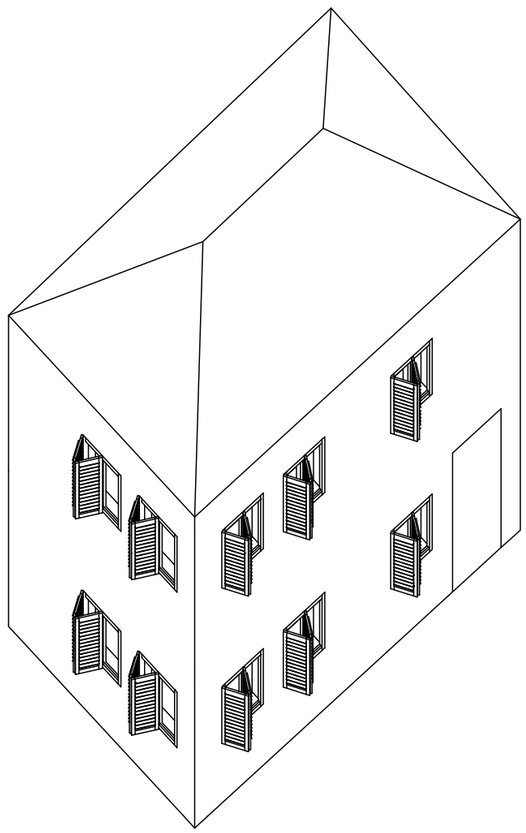
Assemble_school as an exemplary building for housing I



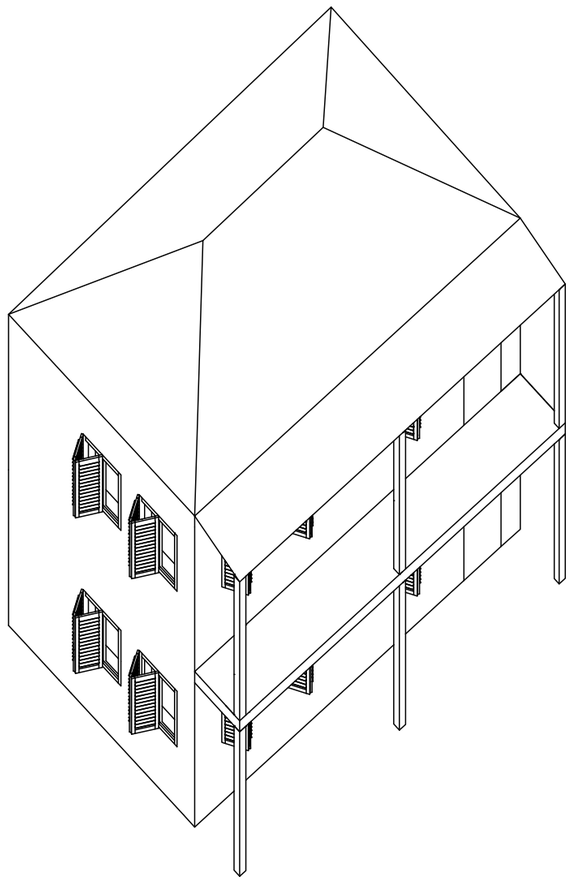
Assemble_school as an exemplary building for housing II



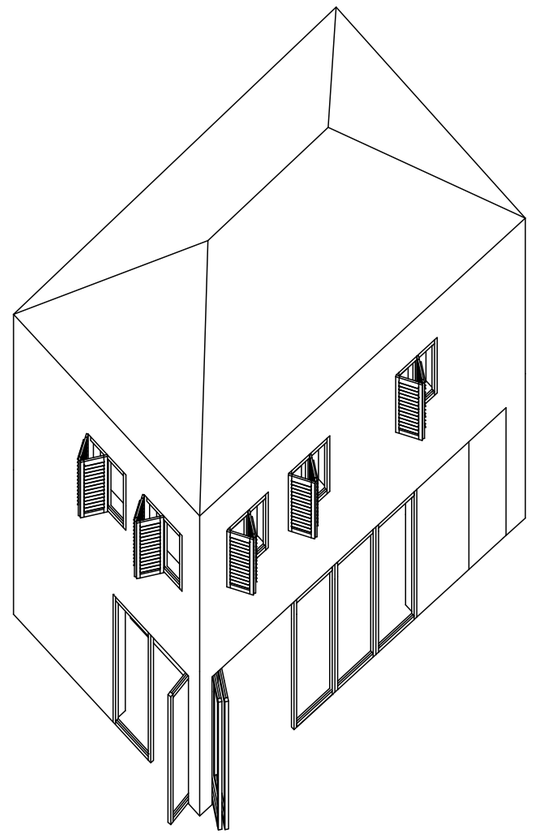
Assemble_school as an exemplary building for housing III



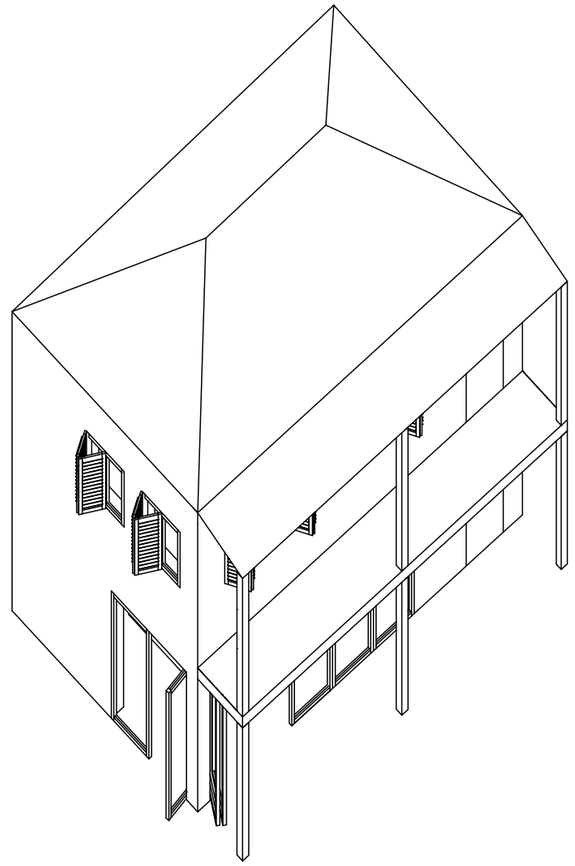
Assemble_school as an exemplary building for housing IV



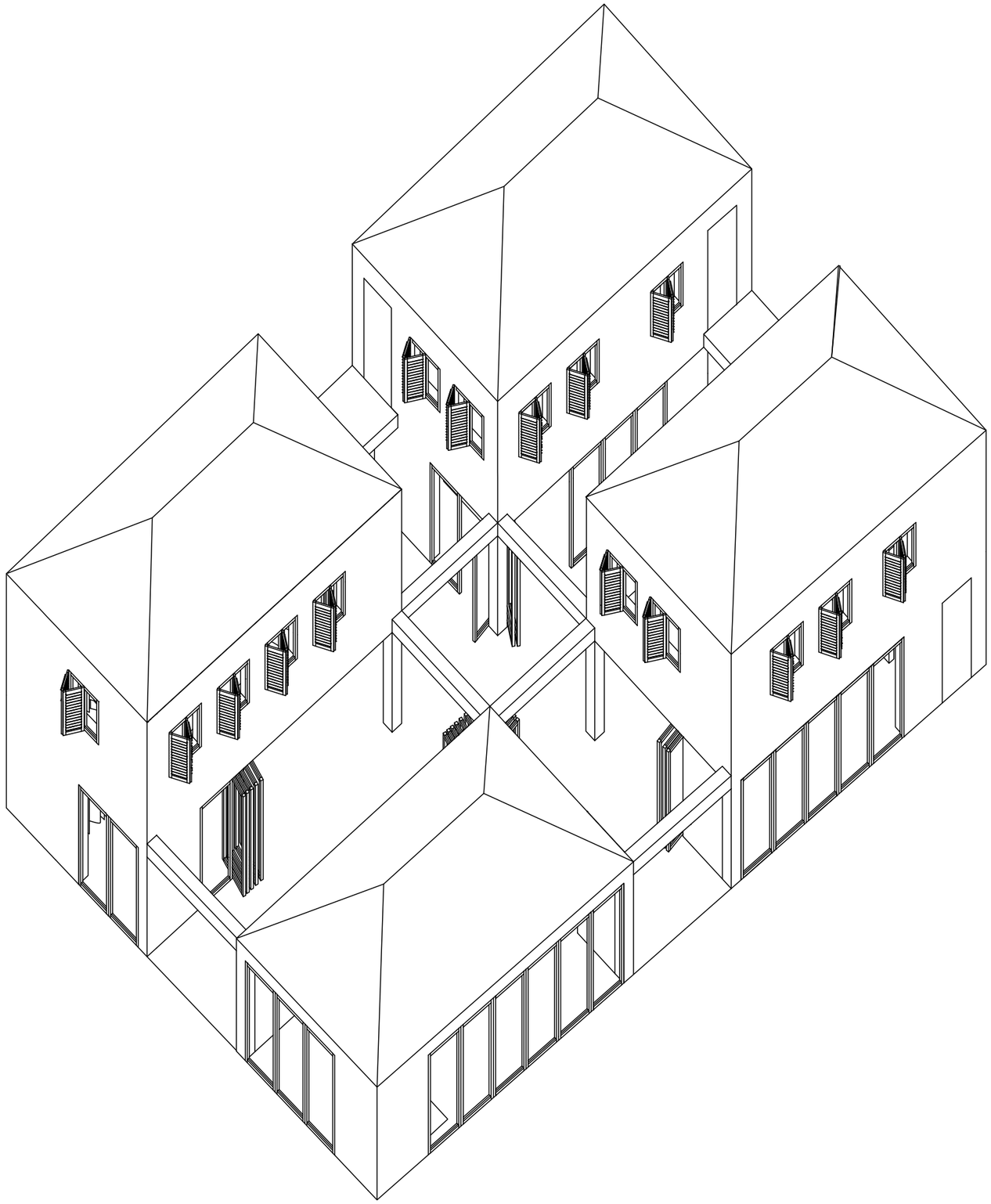
Assemble_school as an exemplary building for housing V



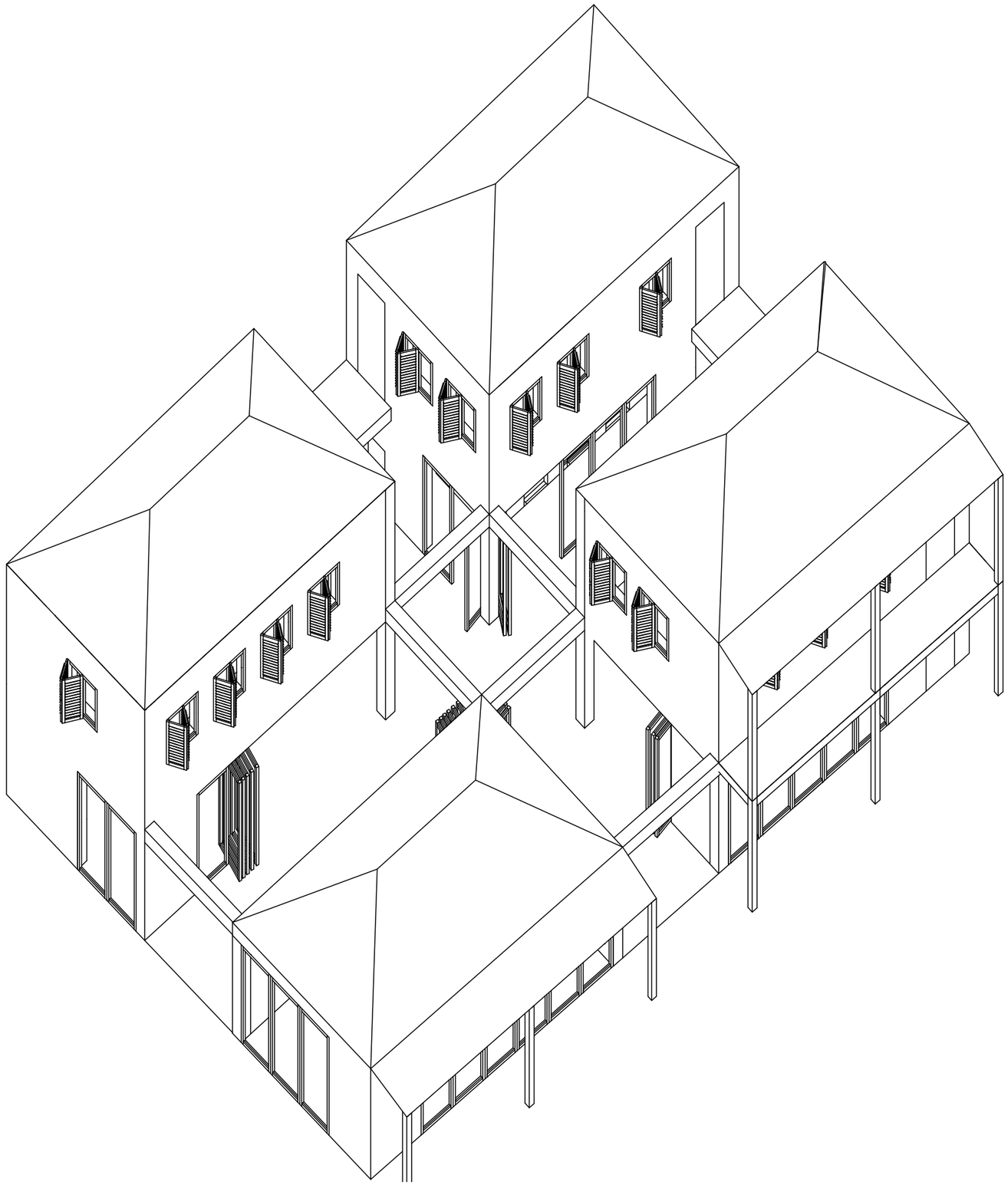
Assemble_school as an exemplary building for housing VI



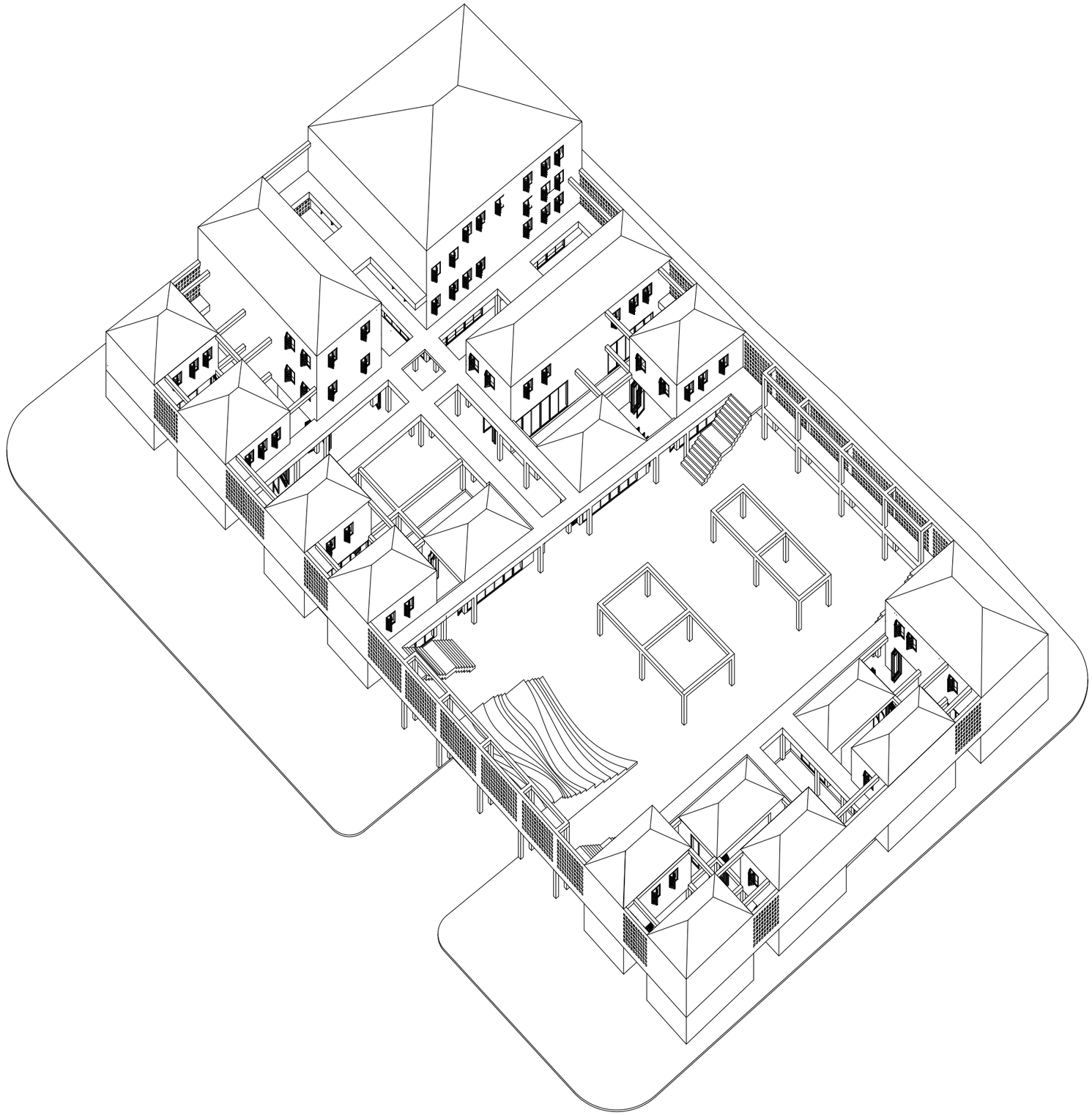
Assemble_school as an exemplary building for housing VII



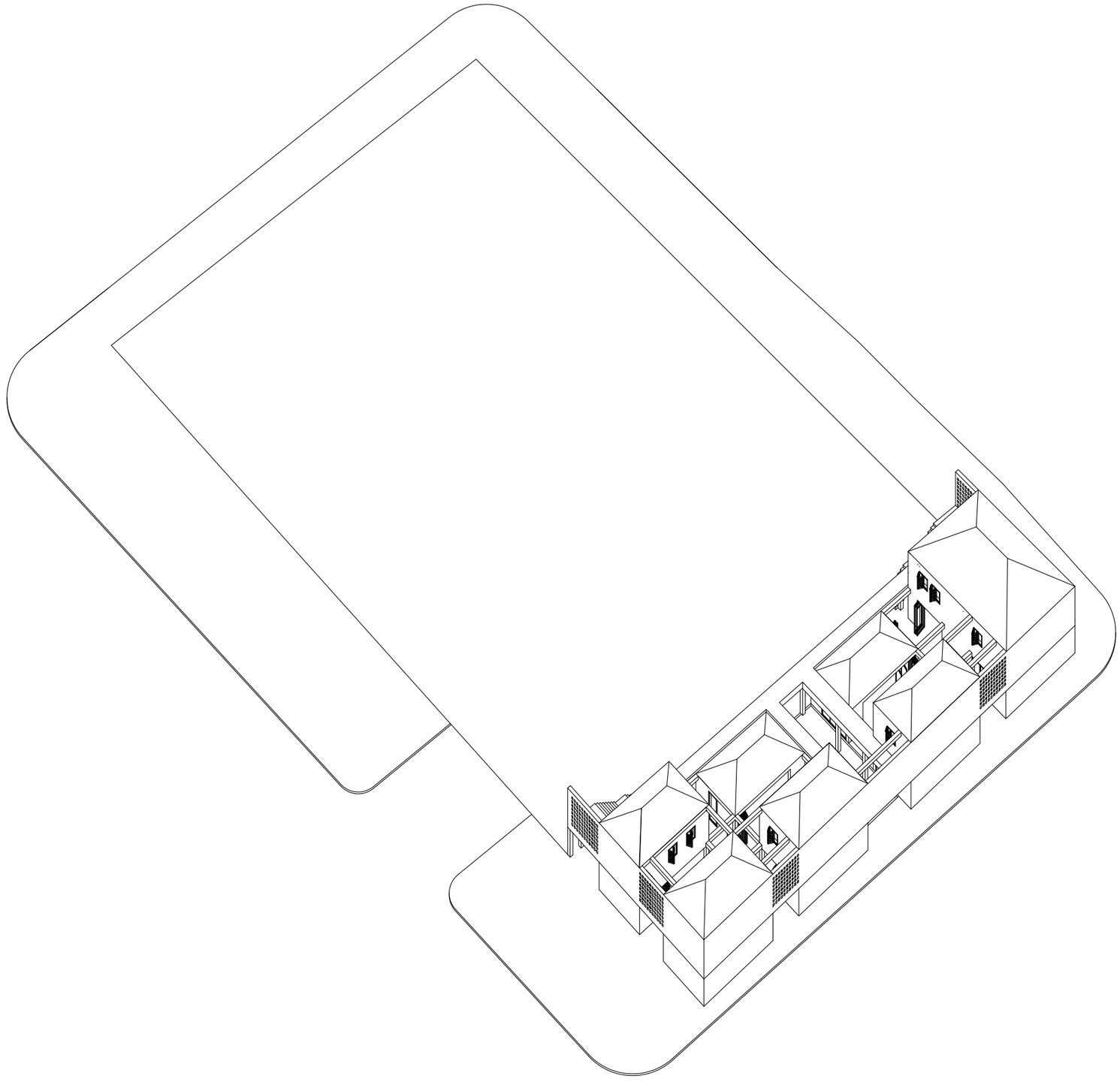
Assemble_school as an exemplary building for housing VIII



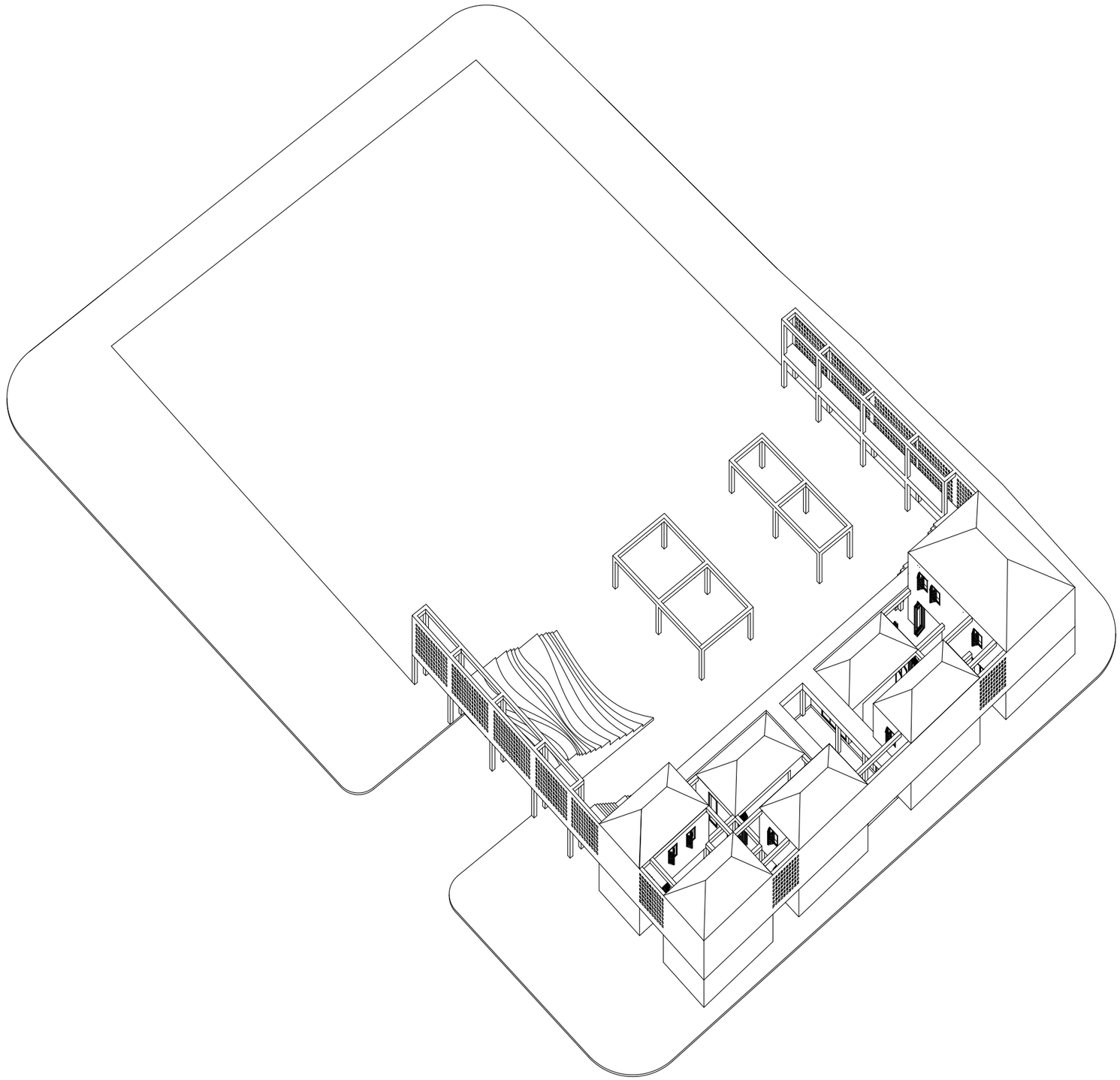
Assemble_posssible housing in the building (upper floors)



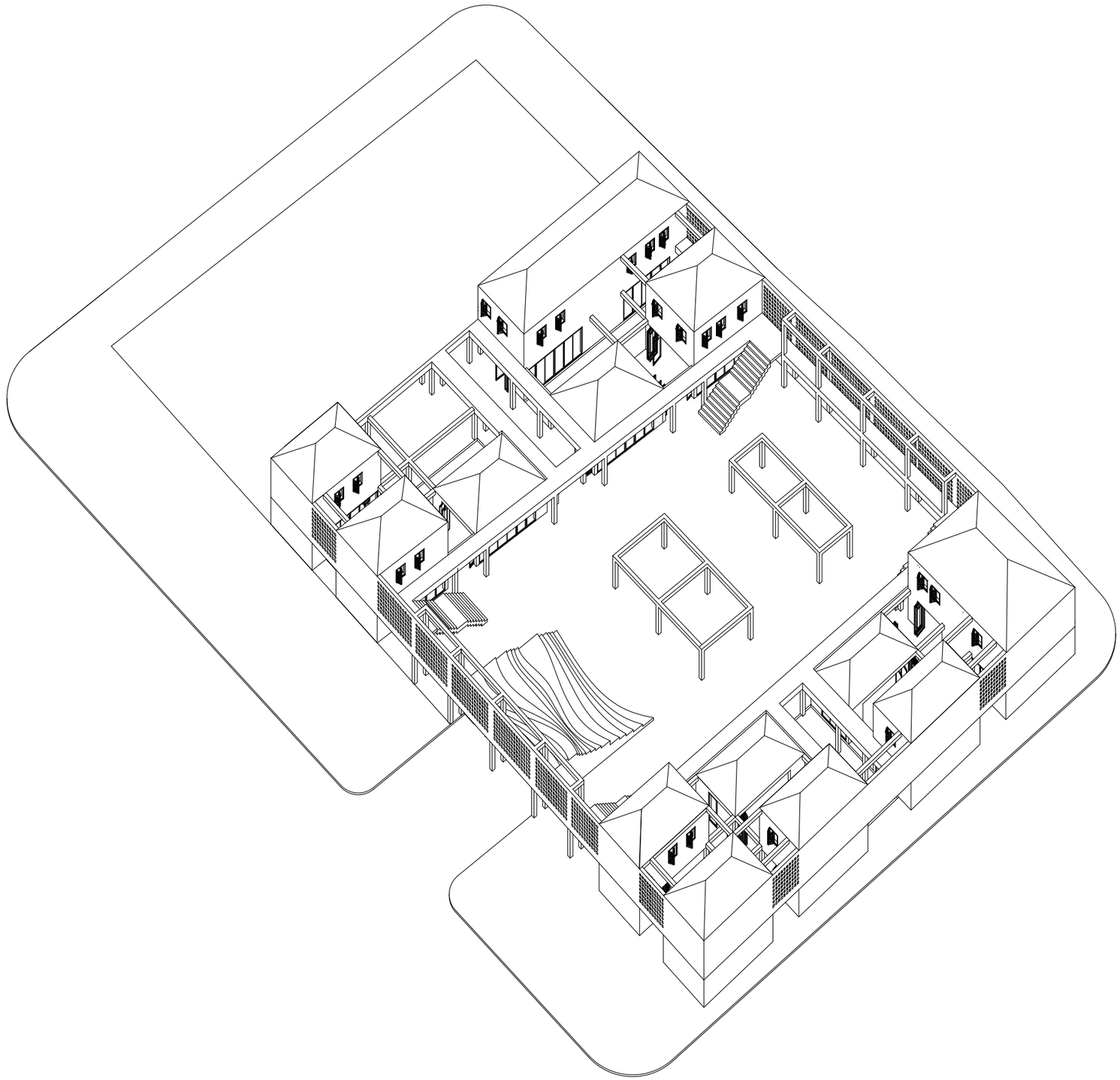
Assemble_development_stage I_ consultancy/coffee place



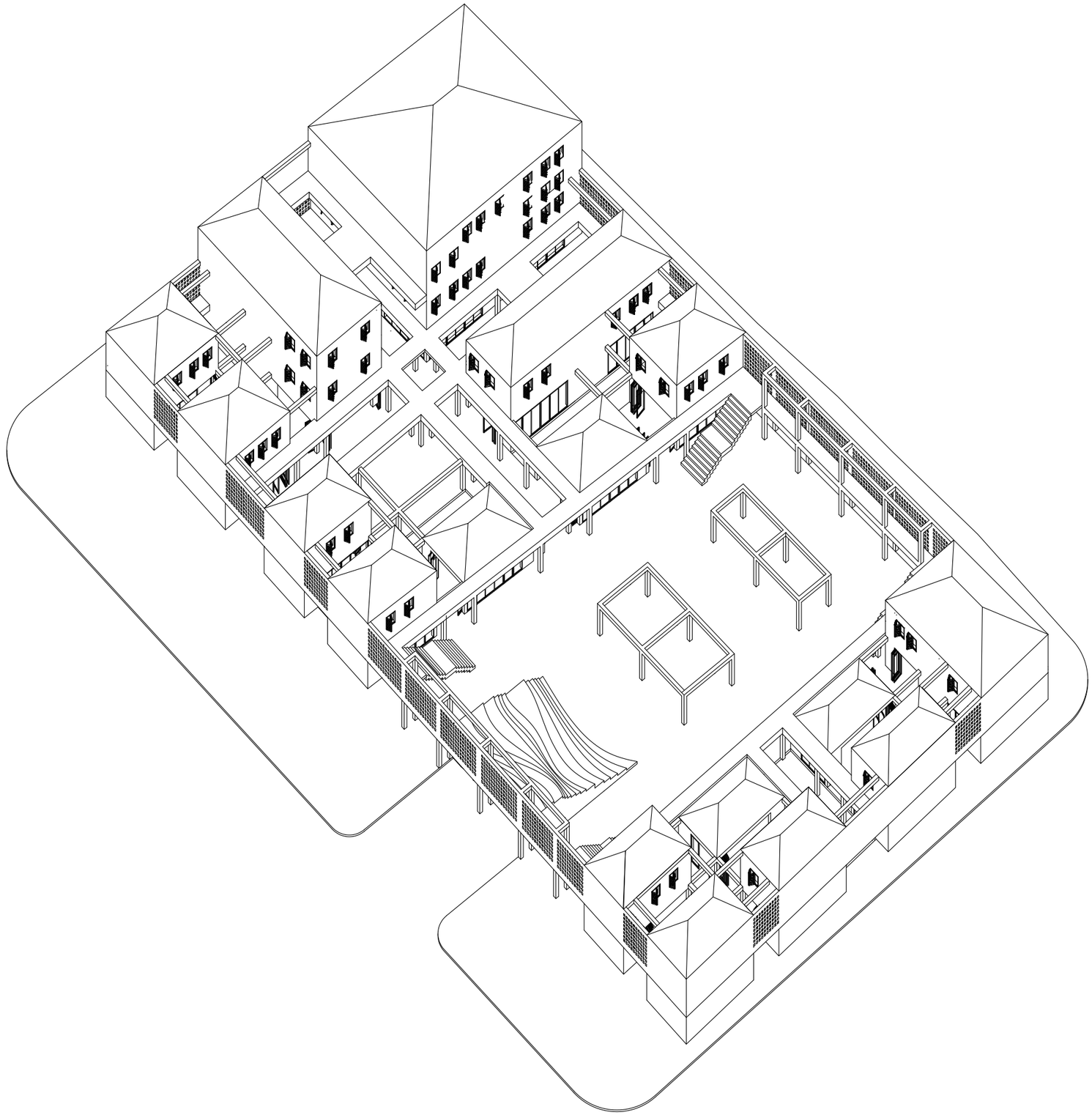
Assemble_development_stage II_market



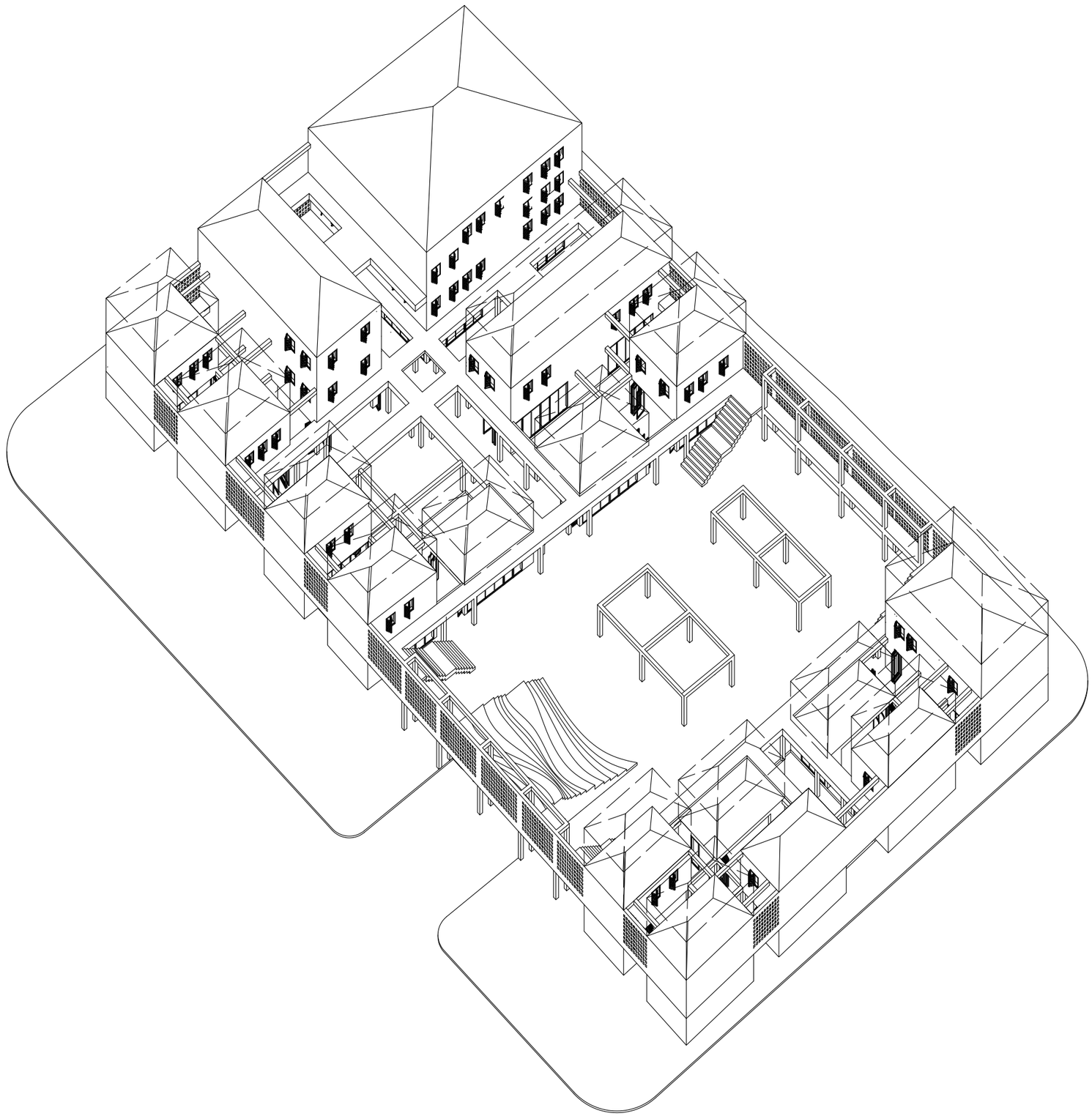
Assemble_development_stage III_school/workshop



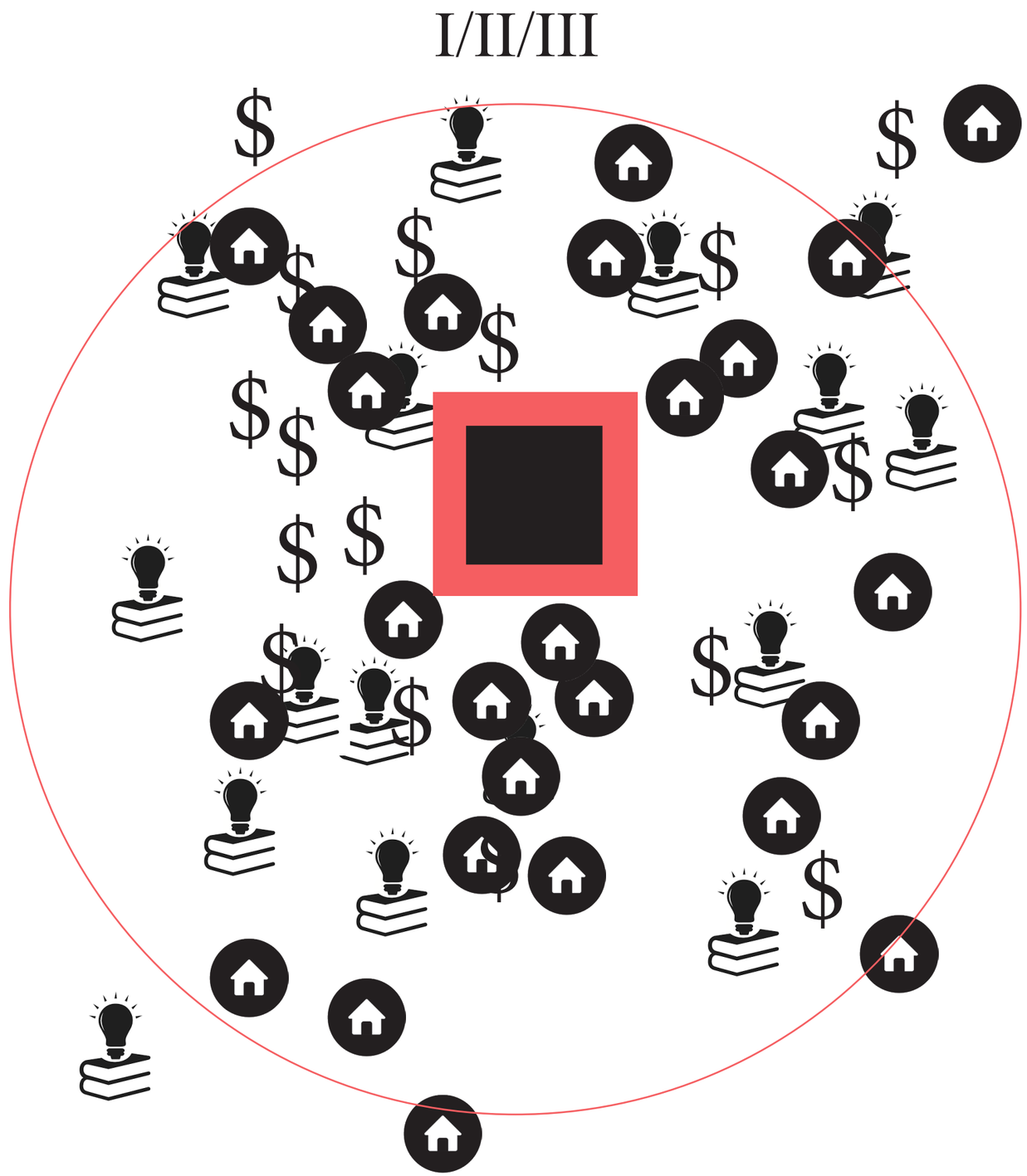
Assemble_development_stage IV_school/workshop



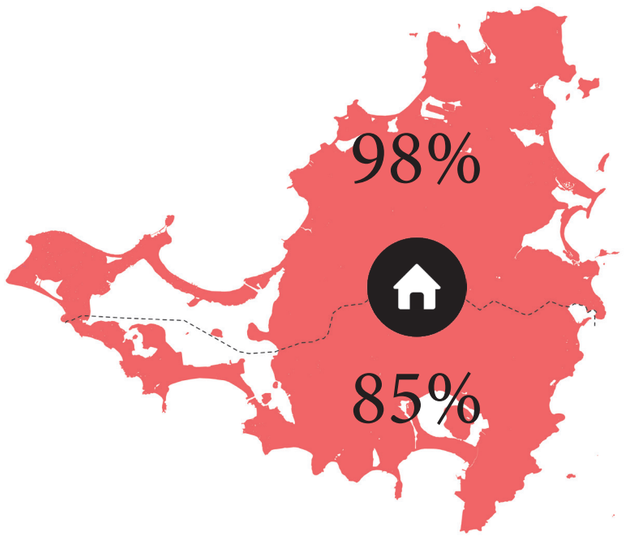
Assemble_development_stage V(?)_maximum capacity



Summing up



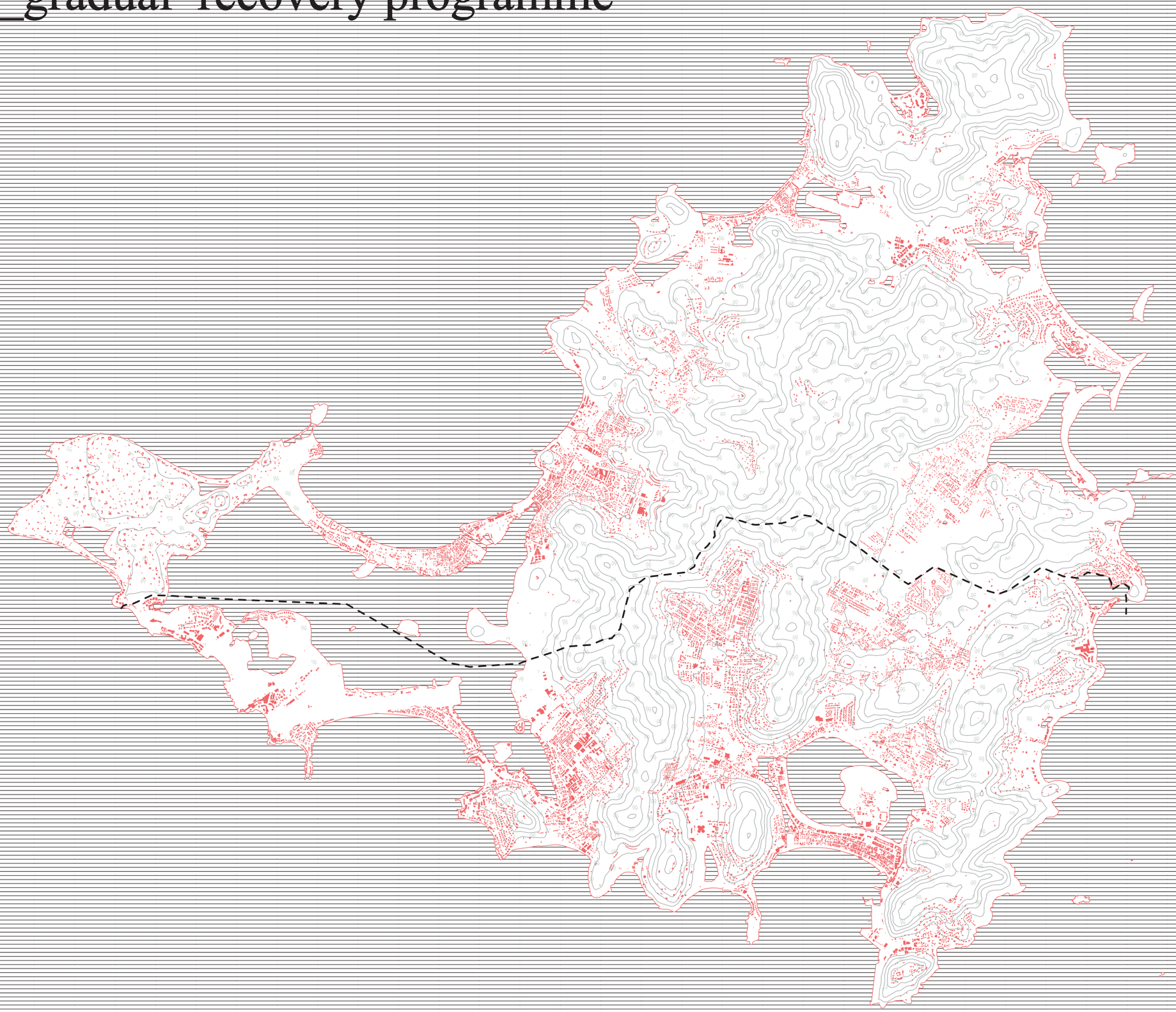
Aim_gradual recovery programme



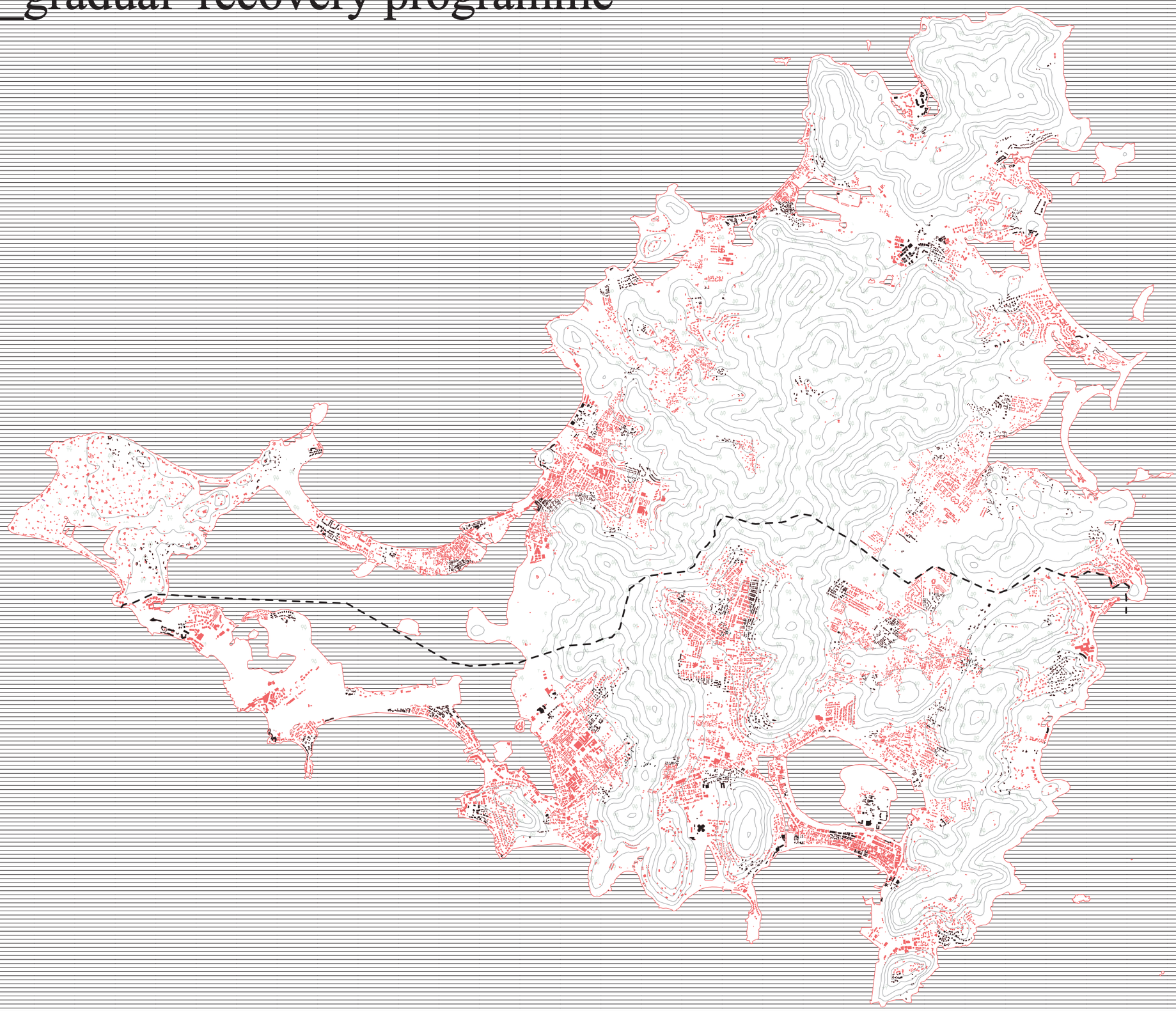
98% 79% 55% 39% 17% 10%

Building damages with every hurricane to come...

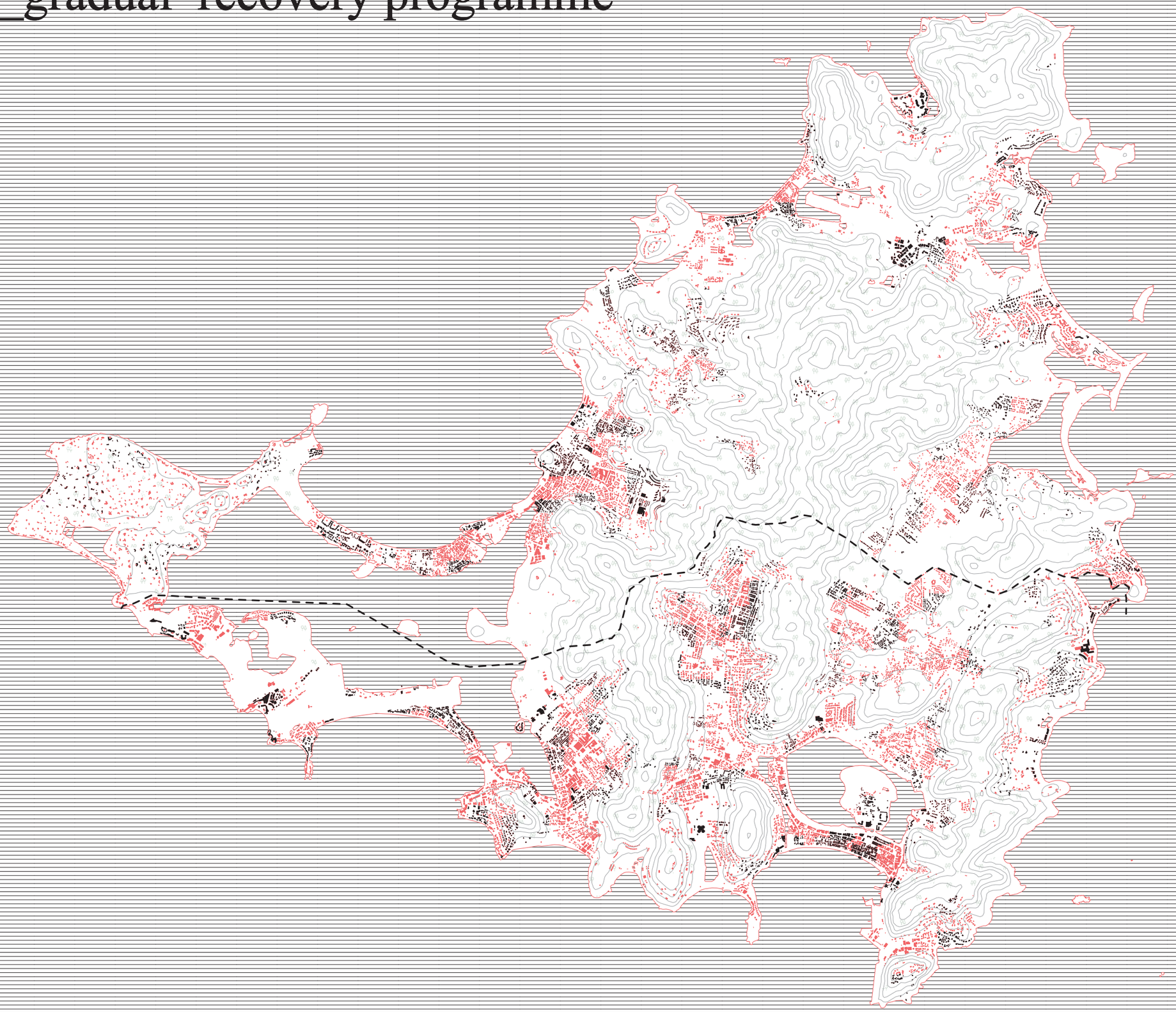
Aim_gradual recovery programme



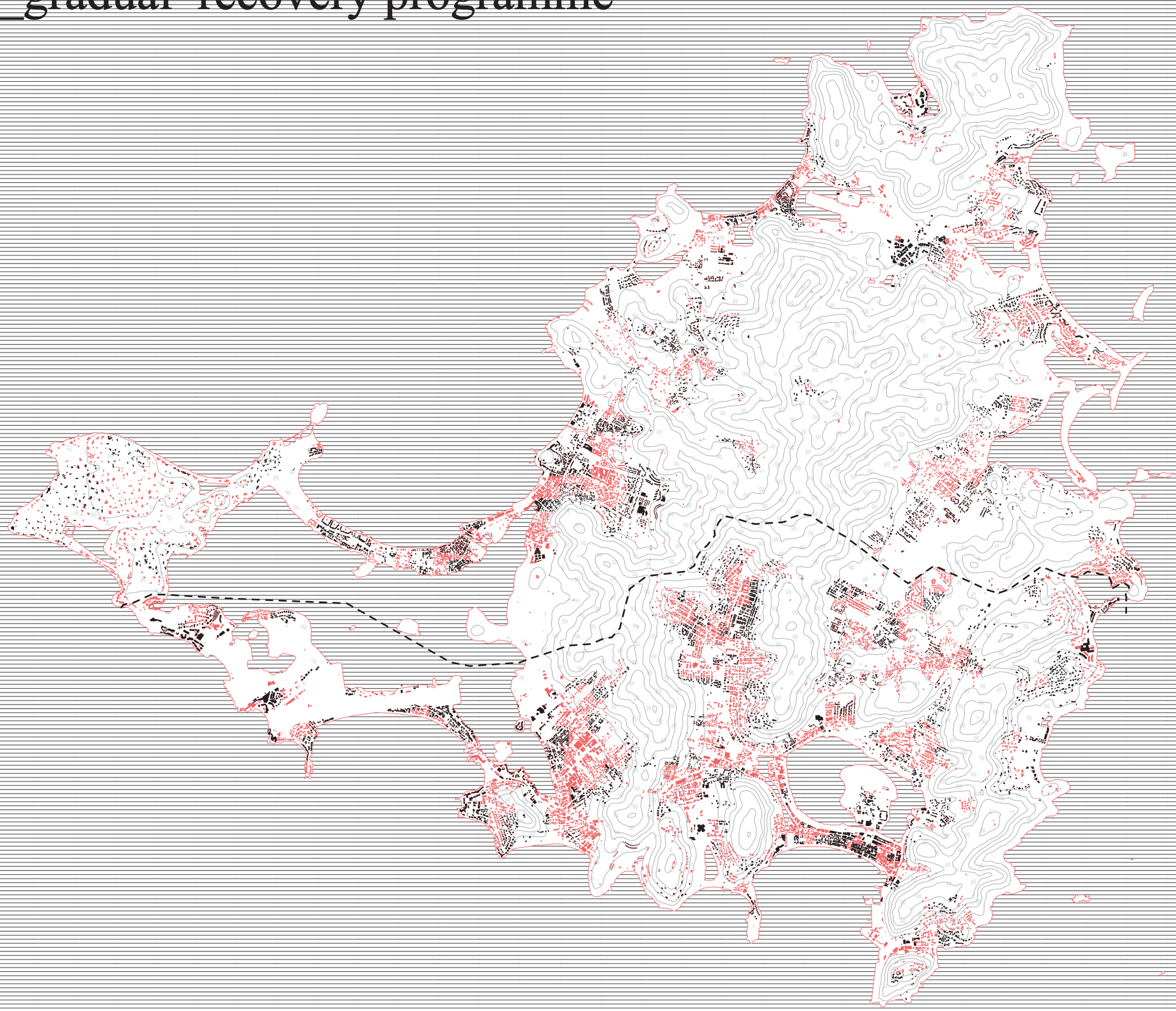
Aim_gradual recovery programme



Aim_gradual recovery programme



Aim_gradual recovery programme



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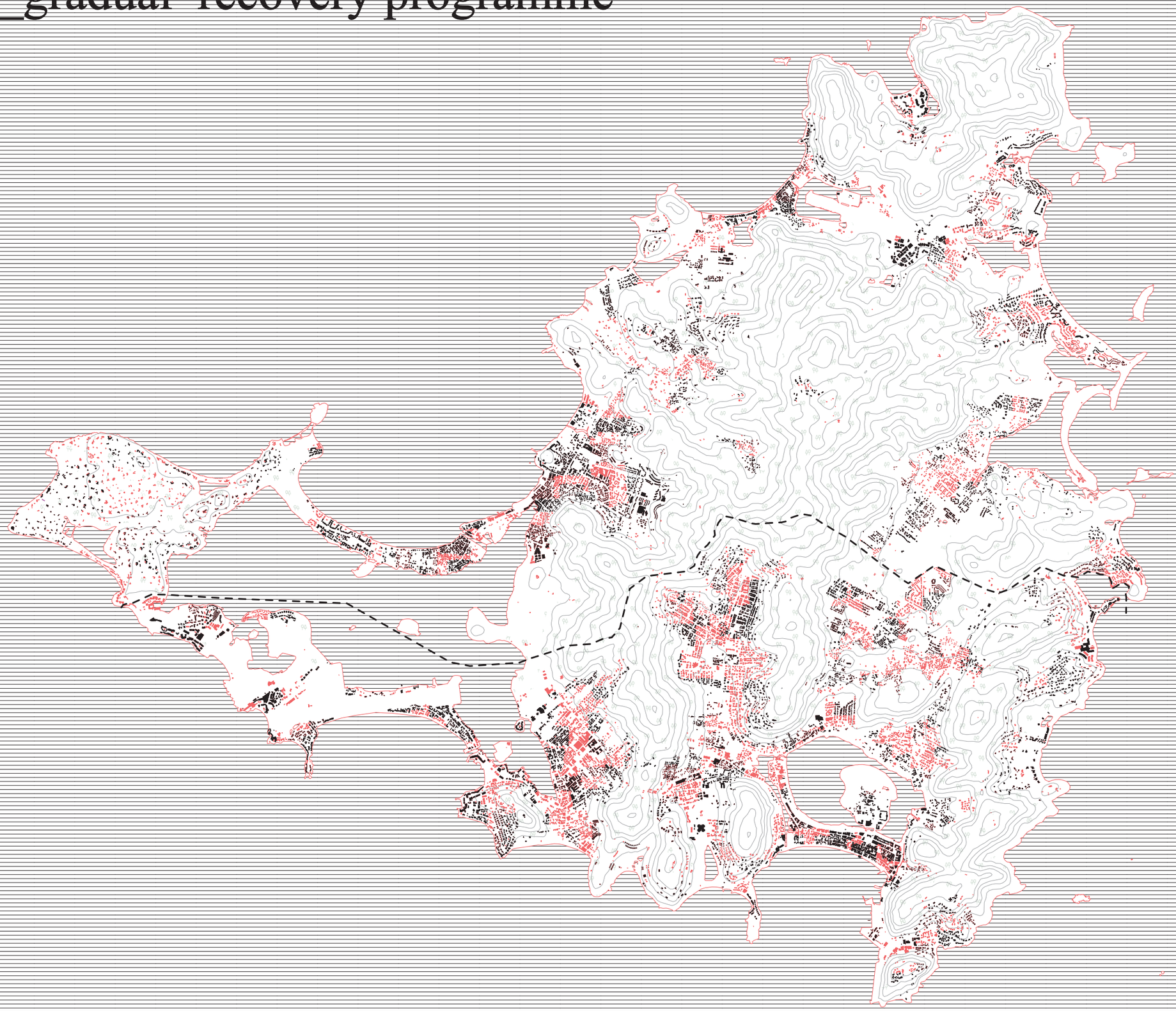
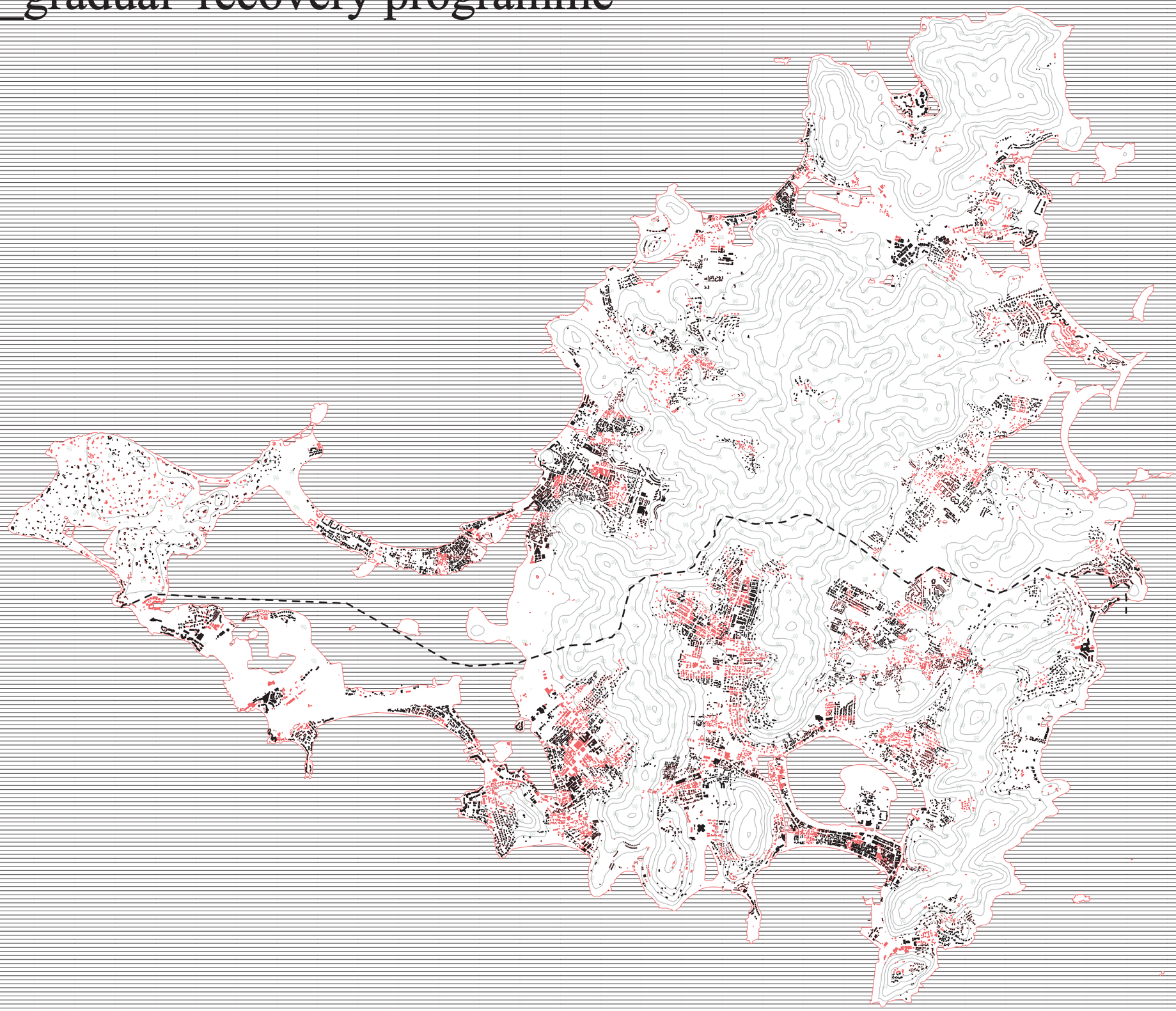
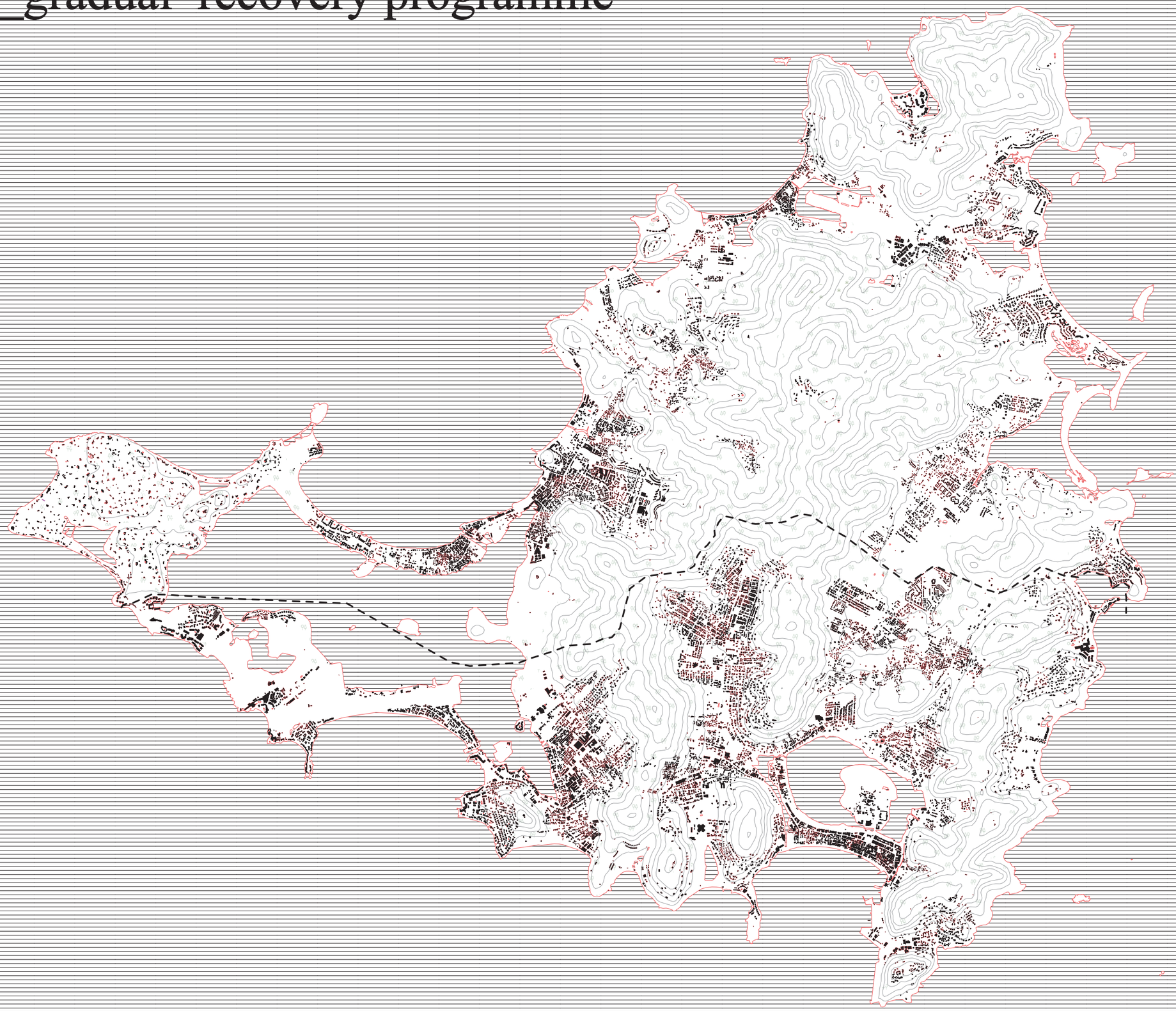


Aim_gradual recovery programme



Aim_gradual recovery programme



Thank you