



# The (In)-Between

*Creating Careful Boundaries and Porous Thresholds Between  
Social Housing and the Grajaú Neighbourhood in São Paulo*

P5 Presentation  
06/07/2023

Delft University of Technology Thesis  
Global Housing: Repair and Consolidate São Paulo

Design Mentor: Nelson Mota  
BT Mentor: Frank Schnater  
Research Mentor: Harald Mooij

## Overview

São Paulo  
*The City of Walls*



# Overview

São Paulo  
*The City of Walls*



Problem Statement  
*Spatial Segregation*



# Overview

São Paulo  
*The City of Walls*



Problem Statement  
*Spatial Segregation*



Research Question  
*Porous Thresholds and Careful Boundaries*



# Overview

São Paulo  
*The City of Walls*



Problem Statement  
*Spatial Segregation*



Research Question  
*Porous Thresholds and Careful Boundaries*



Design Hypothesis  
*Hamada Farm*



## Socio-Economic Segregation



Figure :São Paulo Urban Comparison, Source: BOLDARINI ARQUITETOS

## "Paradise" City



Figure: "Paraisópolis (Paradise City)" by Tuca Vieira (2004), Source: <https://www.theguardian.com/cities/2017/nov/29/sao-paulo-injustice-tuca-vieira-inequality-photograph-paraisopolis>

## The Development of Social Housing Policies in Brazil



Figure: "Brazilian Dictatorship" Source: <https://www.bbc.com/news/world-latin-america-26713772>

## Estatuto da Cidade



Figure: Hector Viglecca parque nova bridge (2009) Source: <http://www.vigliecca.com.br/en/projects/parque-novo-santo-amaro-v>

## Comparative Analysis

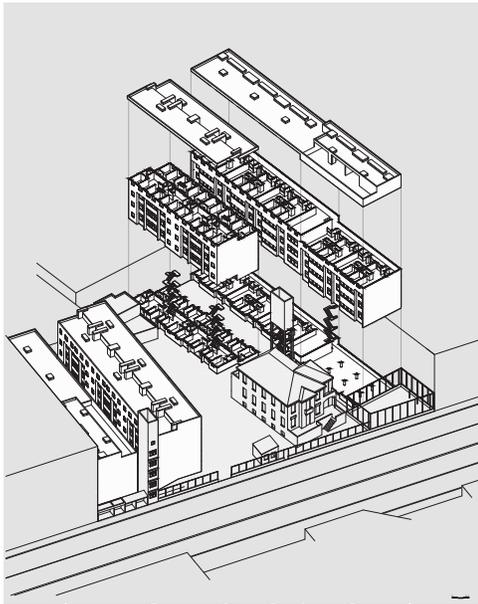


Figure: Casarão Celso Garcia  
Source: Robbert Laan (2022)

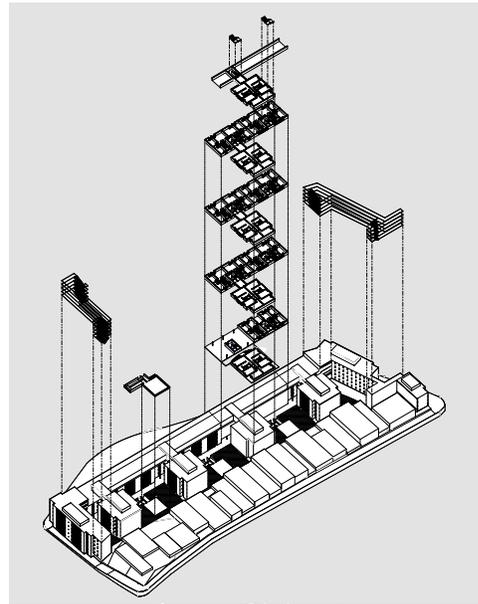


Figure: Gleba A  
Source: Sanette Schreurs (2022)



Figure: Jardim Sao Francisco  
Source: Alexandra Jodłowska (2022)

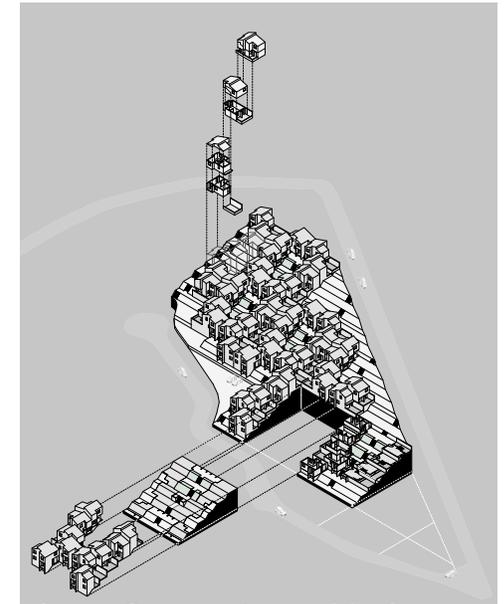


Figure: Comuna Dom Helder Camara  
Source: Angelina Torbica (2022)

## Chácara do Conde



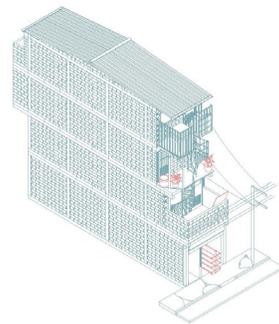
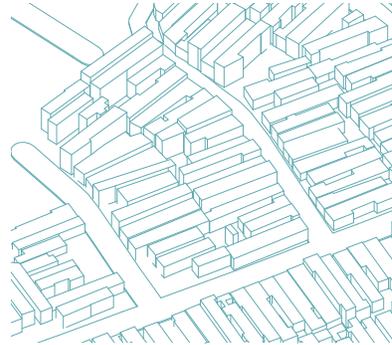
Figure : "Chácara do Conde " (2022) Source: <https://arquiteturajaa.com.br/>

## ZEIS 1 and ZEIS 4



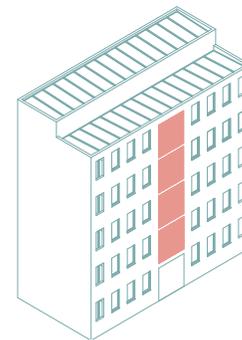
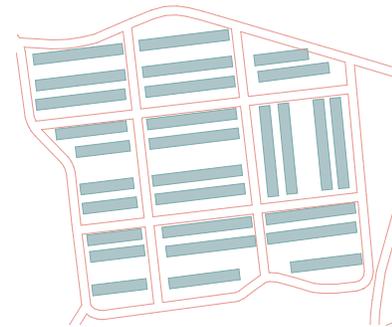
Figures : 'Shapign the Slums' (2022) Source: <https://www.bbc.com/future/article/20121129-shaping-the-slums> ASSOCIADOS - Cantinho Do Ceu Presentation & "Chácara do Conde " (2022) Source: <https://arquiteturajaa.com.br/>

ZEIS 1



*Resilience*

ZEIS 4



*Efficency*

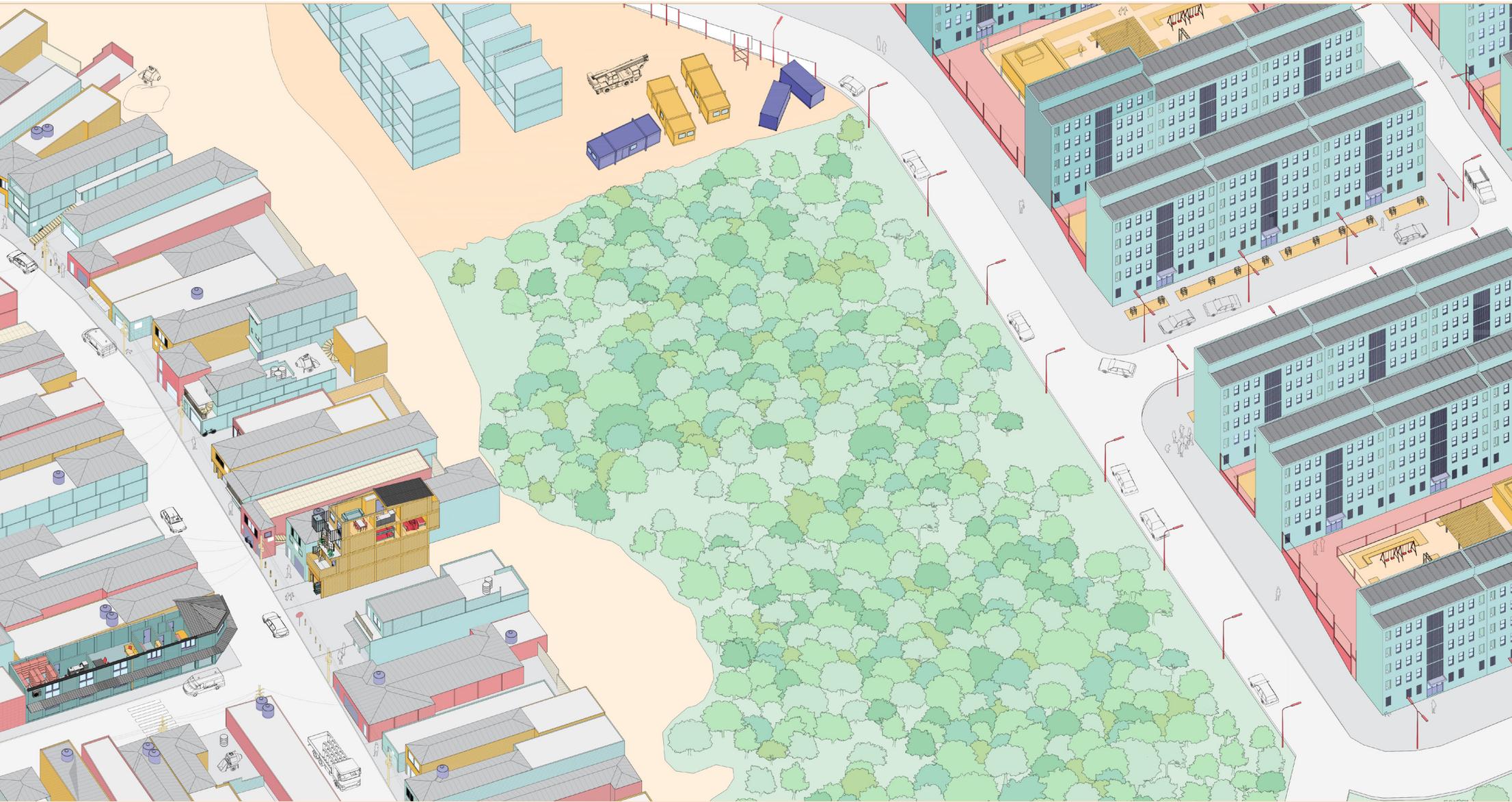


Figure: "Chacara do Conde vs Grajaú" Source: RobbertLaan, HuubFenten and SanetteSchreurs (2023)

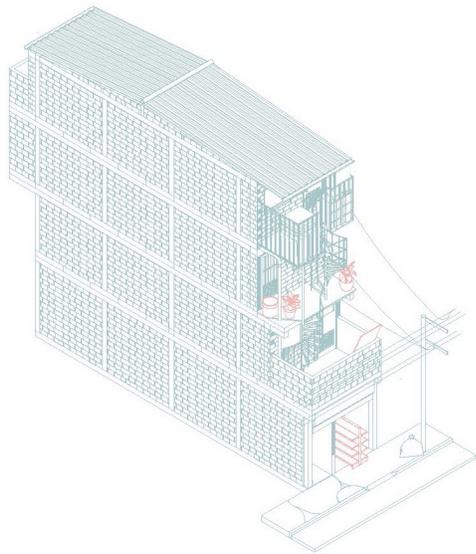
## My House, My Life?



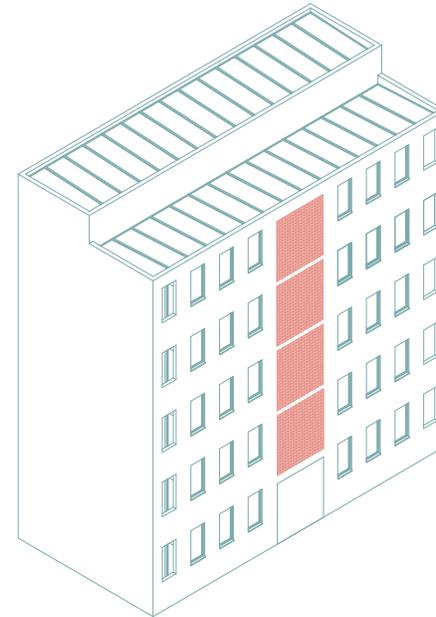
Figure: My House, My Life Project, Source:[https://www.ape11.com.br/wp-content/uploads/2021/08/casa\\_verde\\_amarela\\_03.jpg](https://www.ape11.com.br/wp-content/uploads/2021/08/casa_verde_amarela_03.jpg)

## Problem Statement

How does the current approach towards social housing in *São Paulo* **create**  
**boundaries** that intensify **urban segregation**?



*Resilience*



*Efficiency*



## Carnival on Canvas

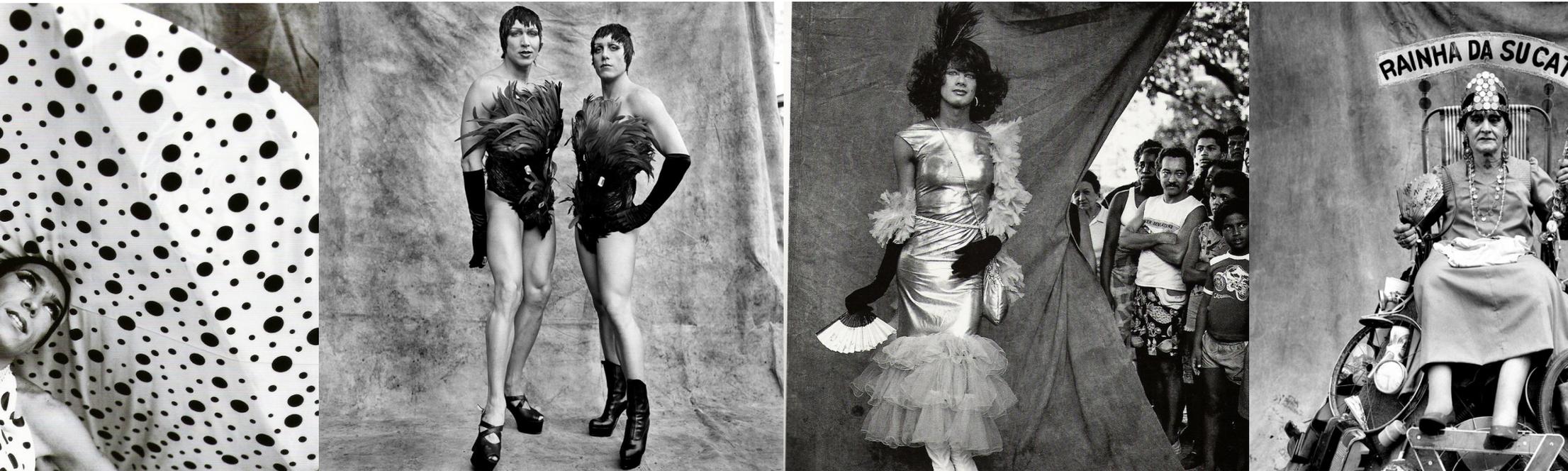


Figure: Carnival on Canvas, Rogerio Reis, Source: <https://www.rogerioreis.com.br/on-canvas>

## Thresholds in Architecture

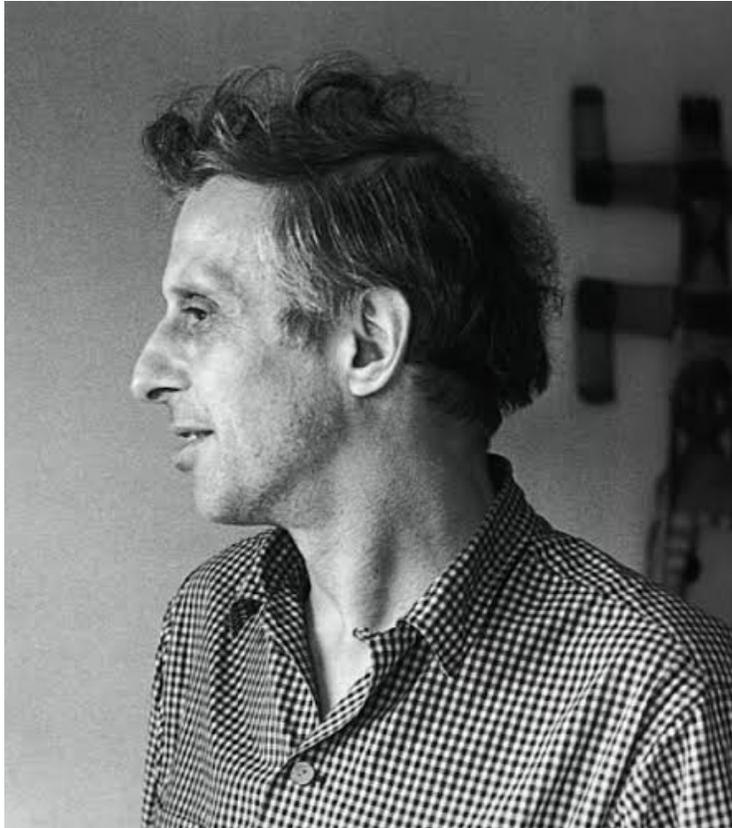


Figure: Aldo van Eyck, Source: <https://goric.com/designer-profile-Aldo-van-Eyck-playground-every-neighborhood/>

“**define in-between spaces**, which induce *simultaneous awareness* of what is significant on either side to provide a neutral space where two opposing polarities could act as a **twin phenomenon (Zwiefalt)**.”

## Research Question

How can **careful boundaries** and **porous thresholds** repair and consolidate the **connection** and **co-existence** between a new *social housing project* and the *Grajaú* neighbourhood?

### Research Question

How can **careful boundaries** and **porous thresholds** repair and consolidate the **connection** and **co-existence** between a new *social housing project* and the *Grajaú* neighbourhood?

### Sub-research Question

How can **careful boundaries** and **porous thresholds** consolidate the **balance** between *efficiency* and *resilience* in a new *social housing project* in *Grajaú*?

## Grajaú, São Paulo

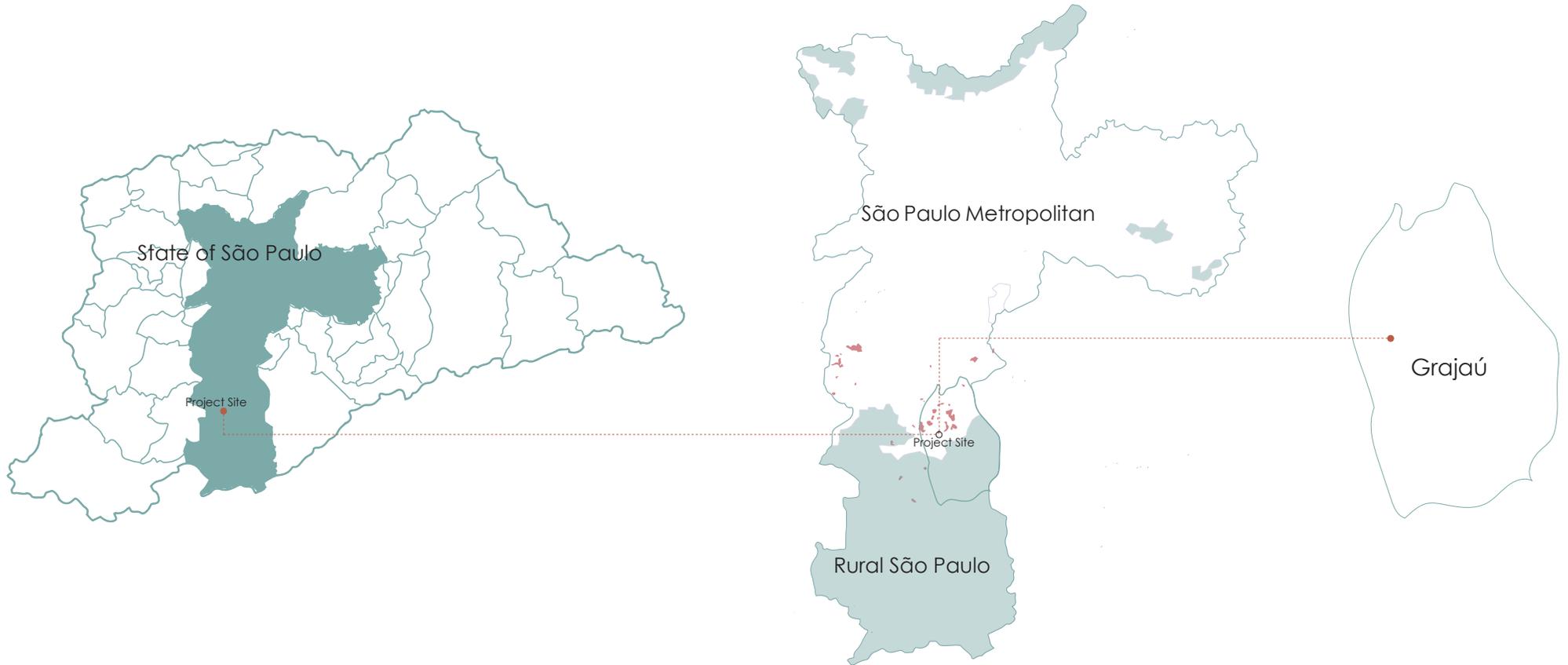
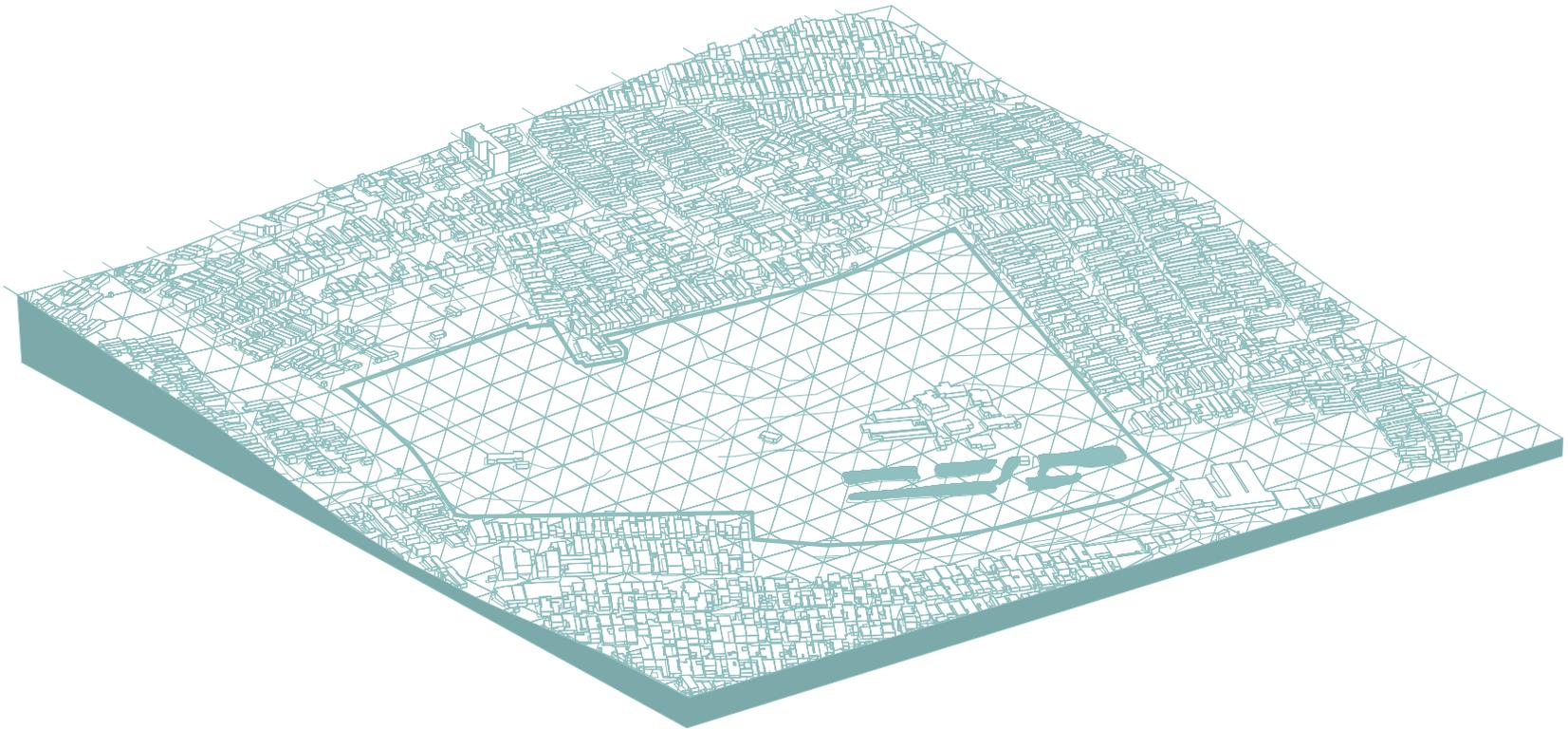


Figure: State of Paulo São to Grajaú Source: Winnie Goldsteen, adapted by author (2023)

# Hamada Farm



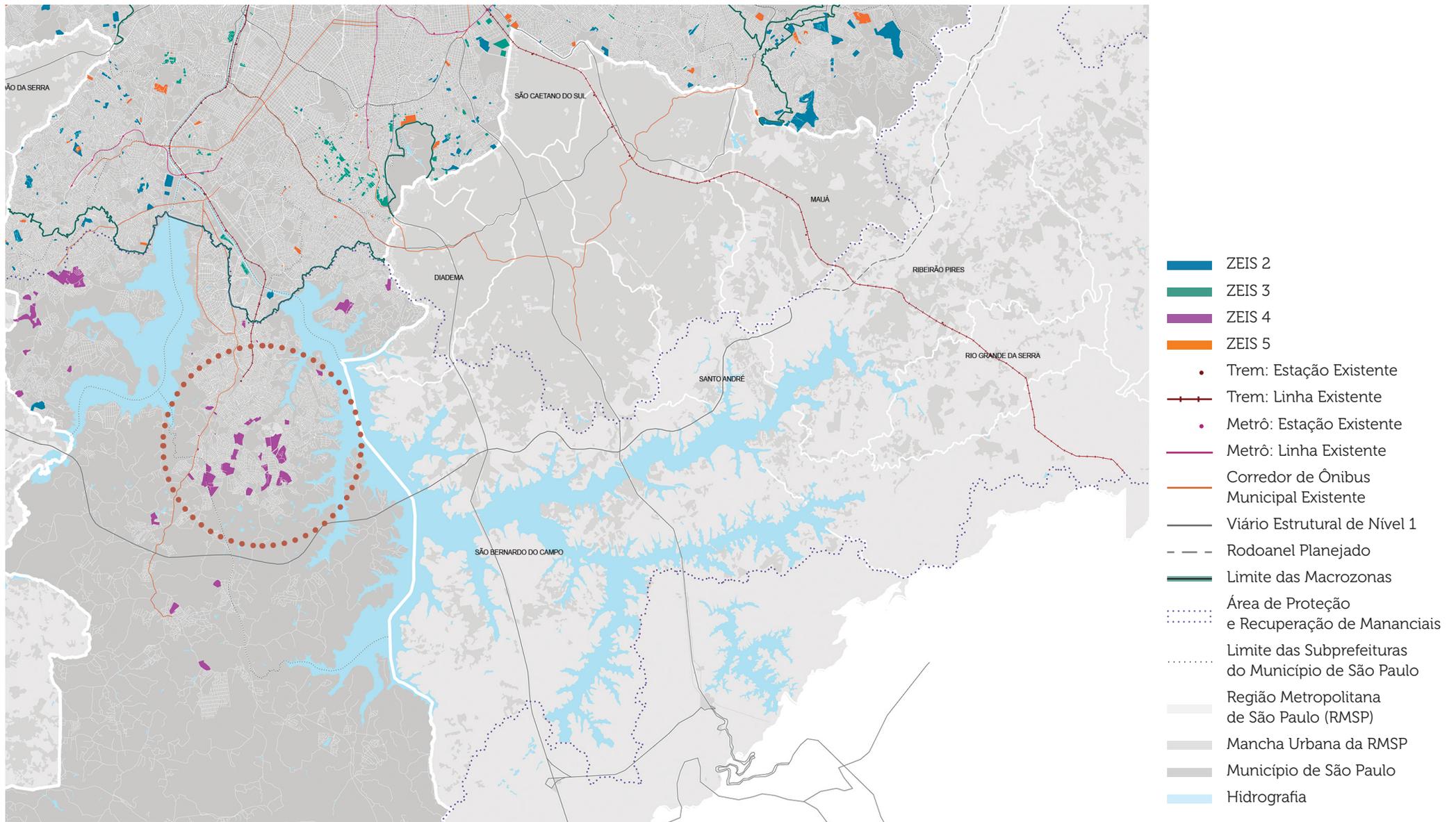
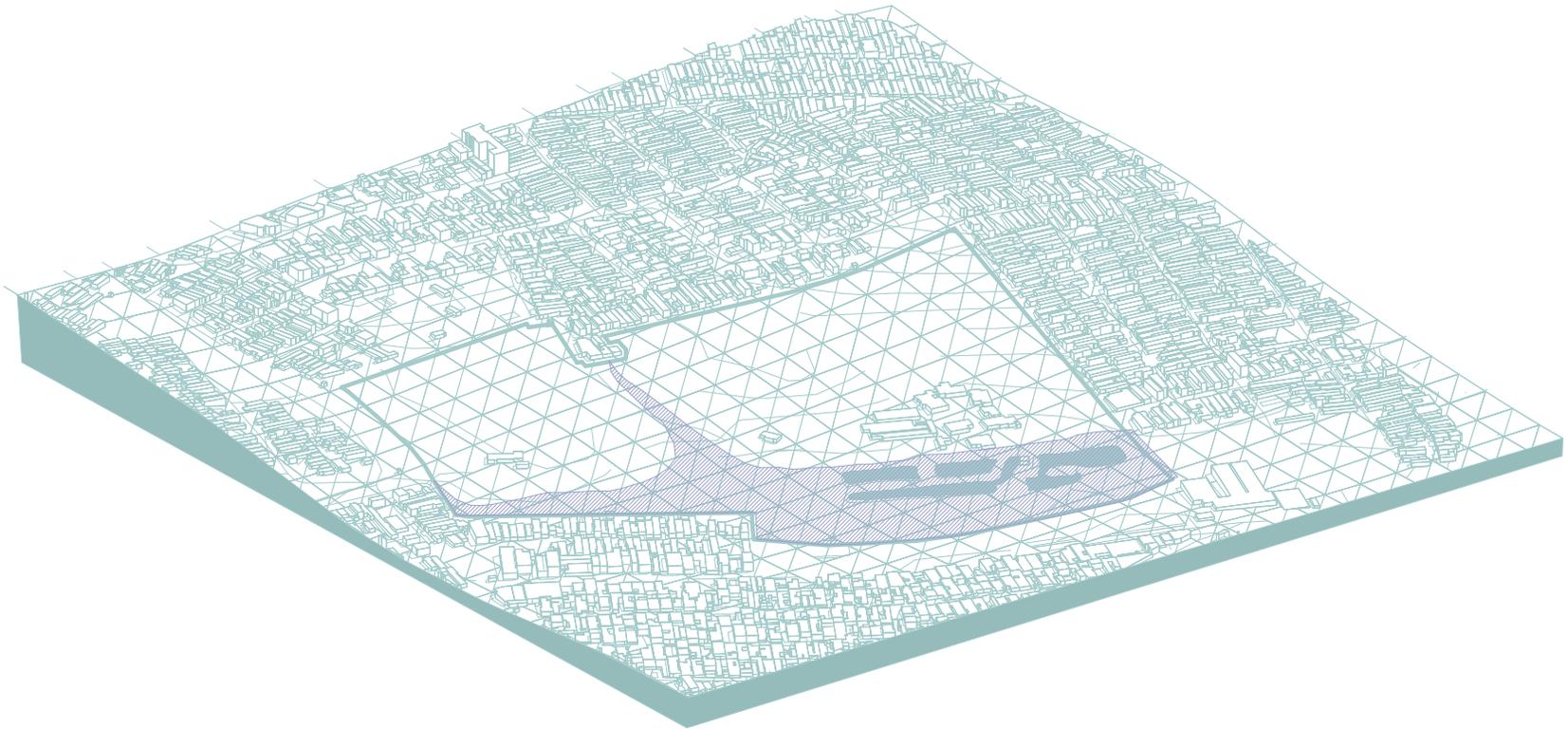


Figure x: 'São Paulo Special Zones of Social Interest 2,3,4 and 5' (2015) Source: <https://gestaourbana.prefeitura.sp.gov.br/wp-content/uploads/2015/01/Plano-Diretor-Estrat%C3%A9gico-Lei-n%C2%BA-16.050-de-31-de-julho-de-2014-Texto-da-lei-ilustrado.pdf>

## Enviromental Recovery Area



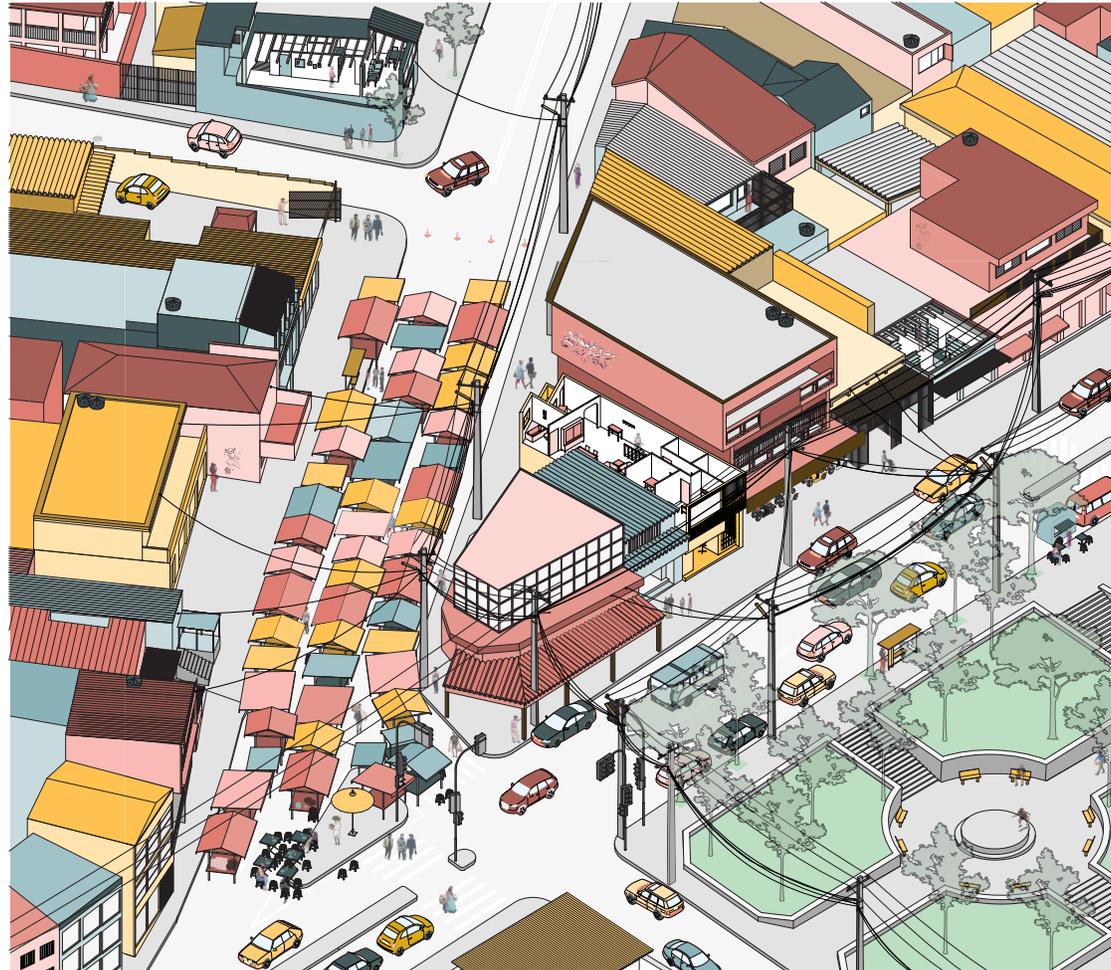
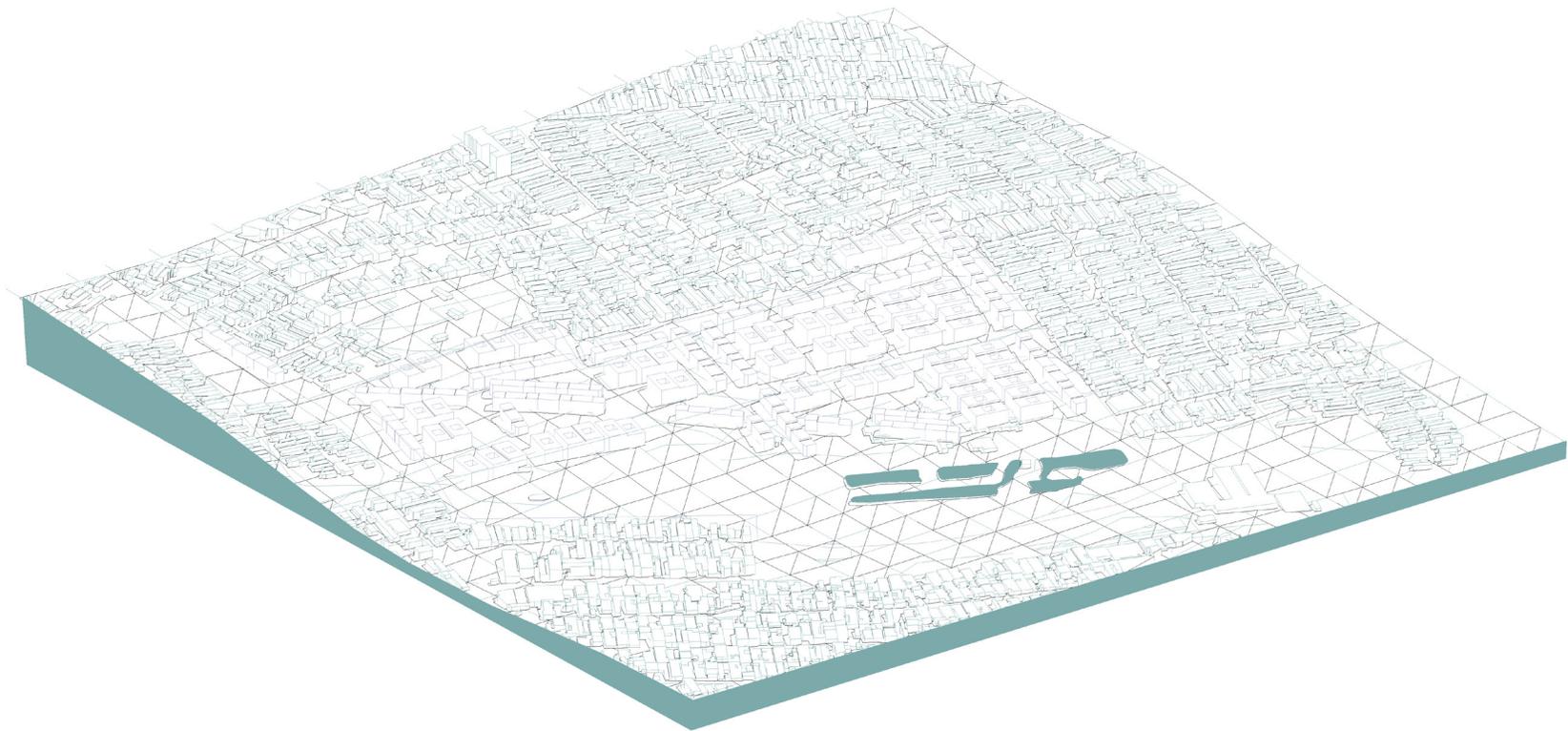


Figure 11: Atmospheric Synthesis, Source: Winnie Goldstein & Genevieve Shymanski (2022)

## Design Hypothesis



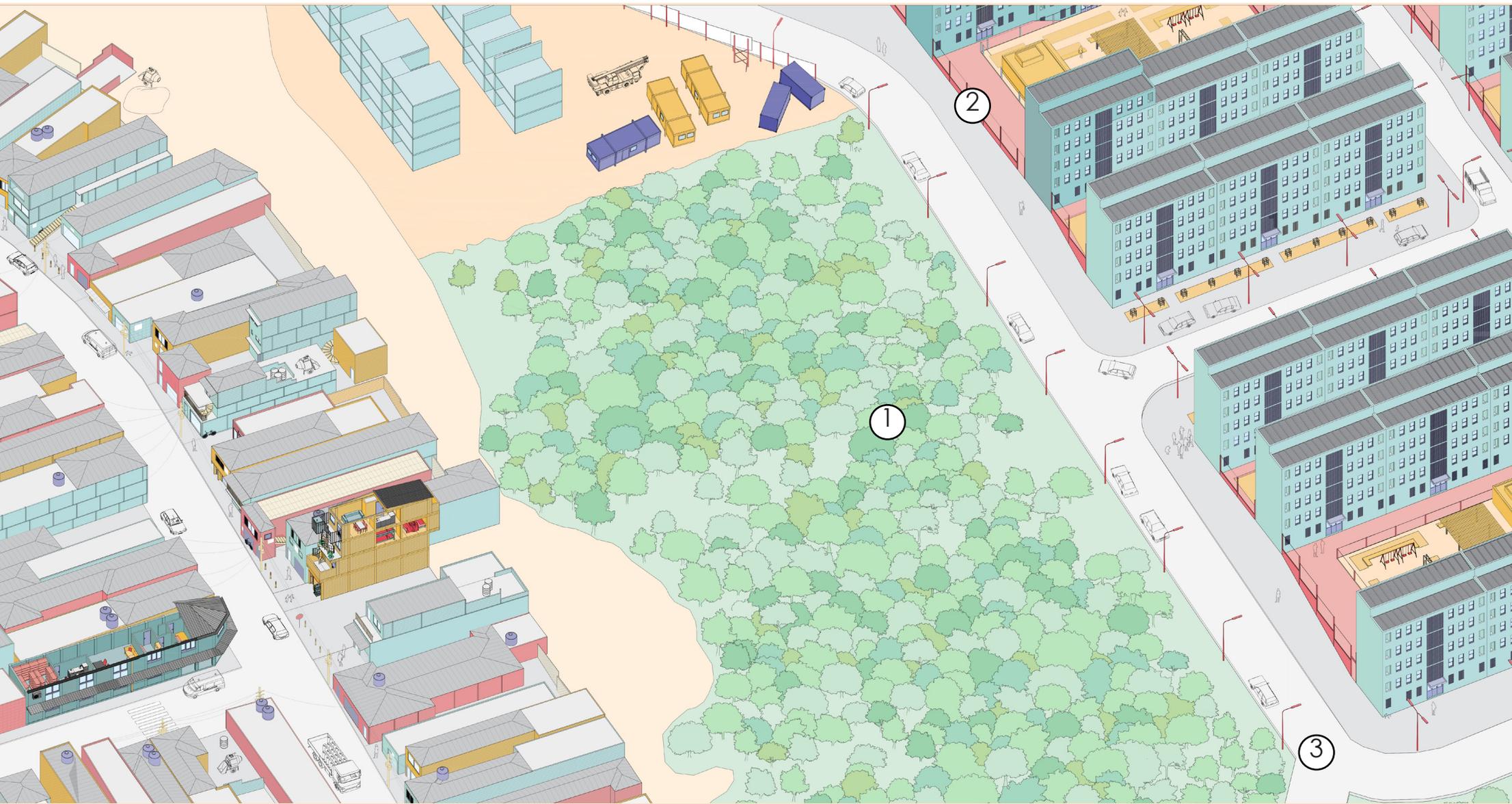


Figure: "Chacara do Conde vs Grajaú" Source: RobbertLaan, HuubFenten and SanetteSchreurs (2023)







# Urban Fabric Study

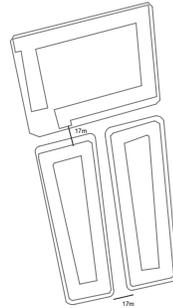
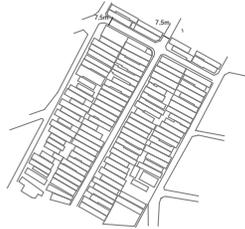
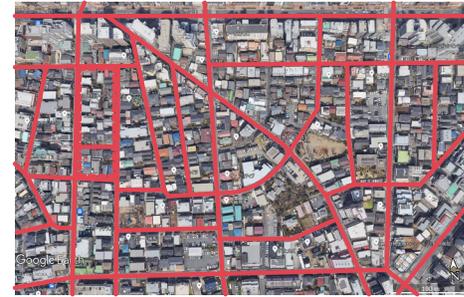
Sao Paulo



Copenhagen



Tokyo

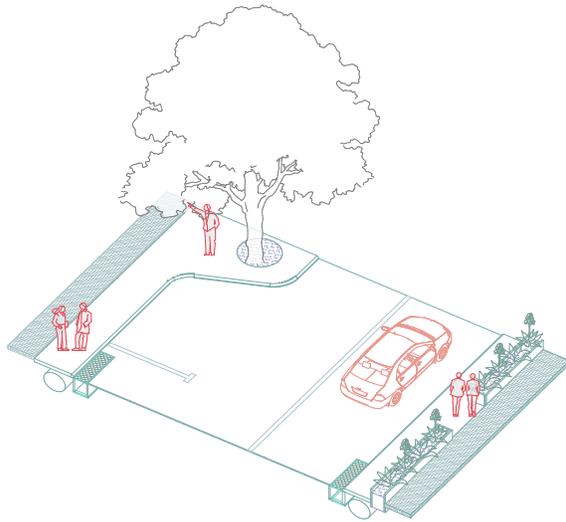


## **Design Principles**

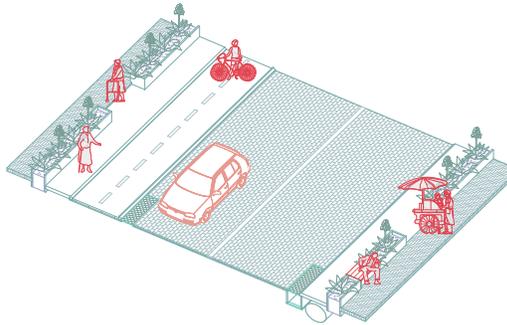
1. Defined Compartmentalization  
*(Compacted Passage Network with Defined Entrances)*
2. Diversity x Density x Proximity  
*(Diverse Clusters with programmed thresholds)*
3. Flexibility  
*(Enables Diversity)*
4. Zoning x Private x Public  
*(Giving ownership to thresholds)*

Car Roads

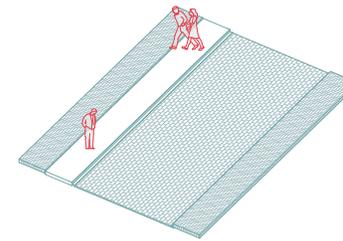
Large



Medium

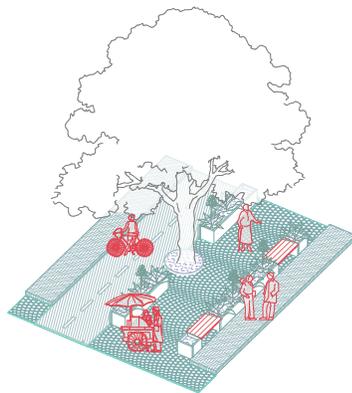


Small

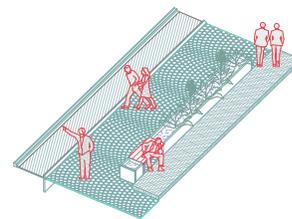


Pedestrian Routes

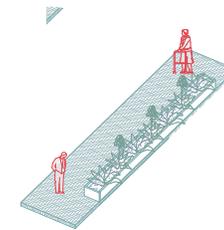
Large



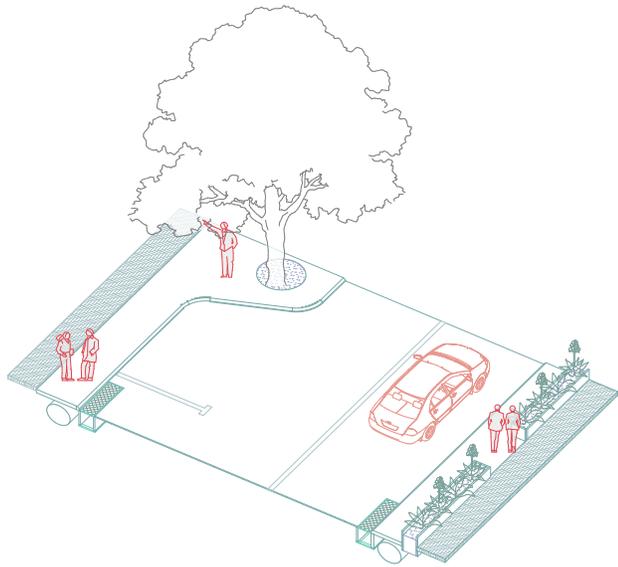
Medium



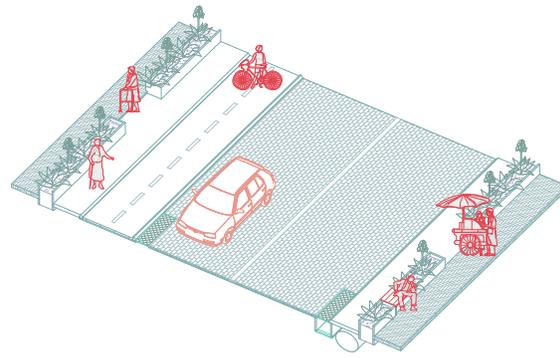
Small



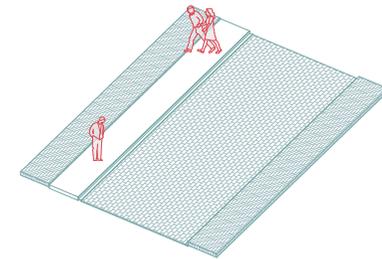
Large



Medium



Small



Temporality Scale

## Large Roads



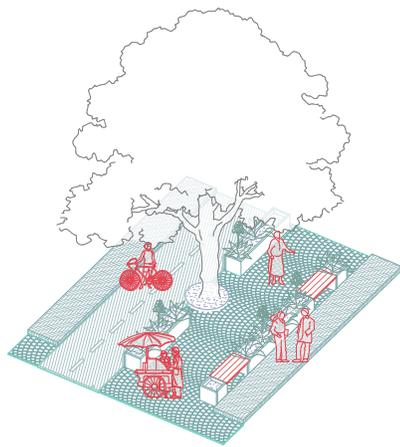
## Medium Roads



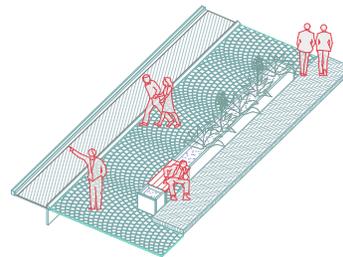
## Small Roads



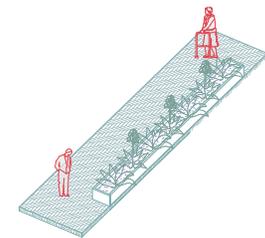
Large



Medium



Small



Temporality Scale

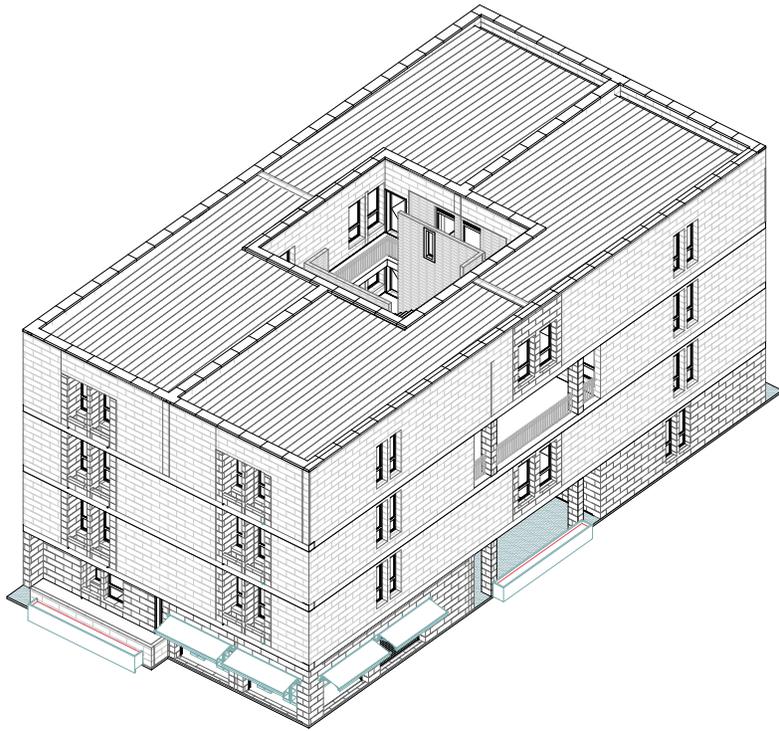
## Large Pedestrian Route



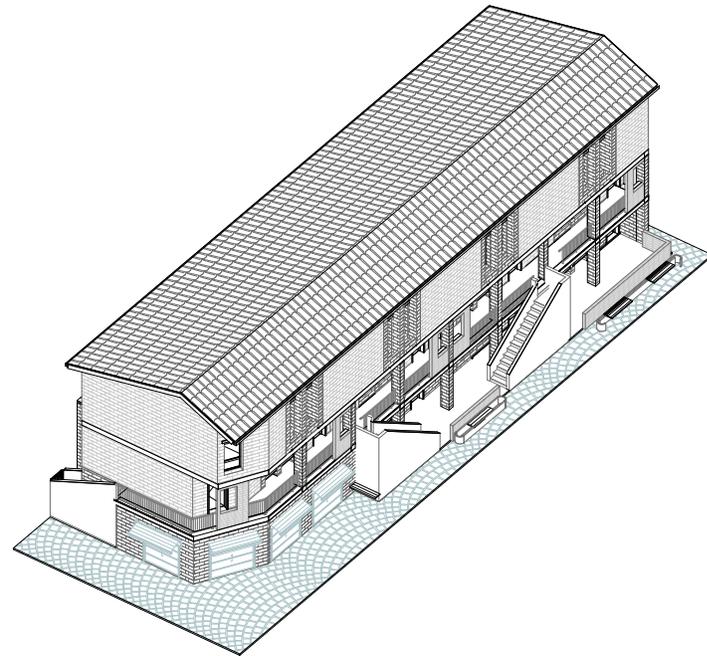
# Medium Pedestrian Route



## Typologies

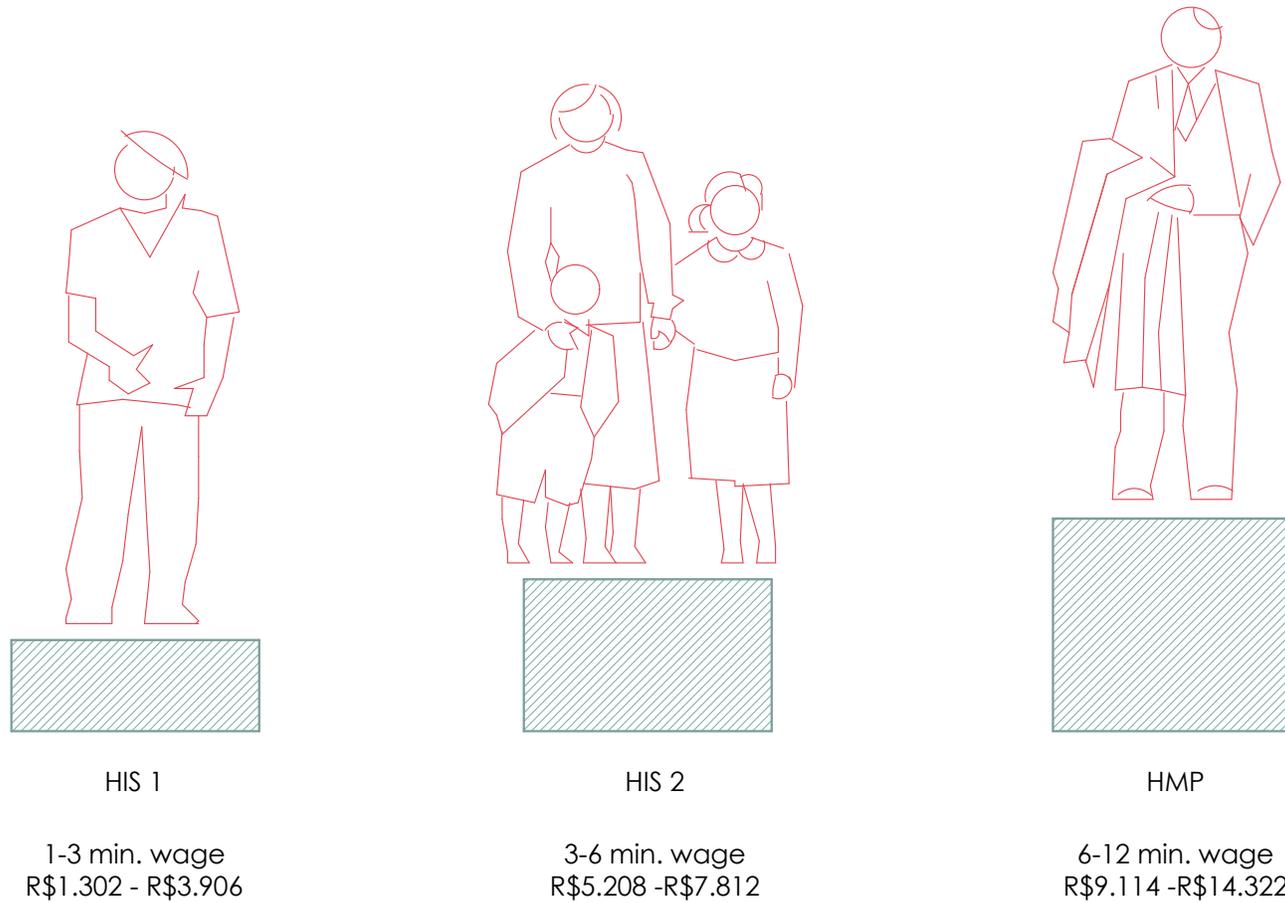


Courtyard Typology

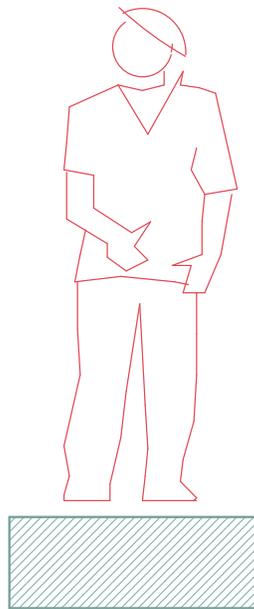


Row House Typology

Socio-Economic Groups

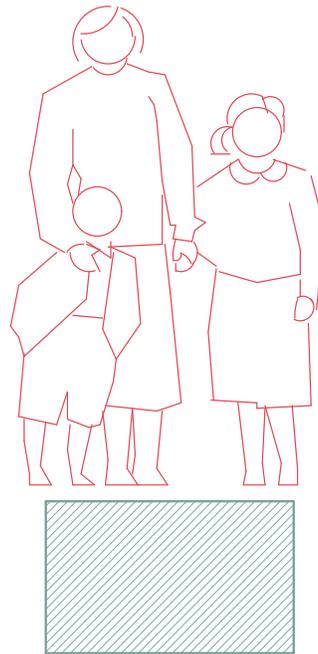


## Socio-Economic Groups



HIS 1

1-3 min. wage  
R\$1.302 - R\$3.906



HIS 2

3-6 min. wage  
R\$5.208 - R\$7.812



HMP

6-12 min. wage  
R\$9.114 - R\$14.322

### 3 Main Stakeholders

Large



Medium



Small

COHAB PPP  
←→





60%

HIS 1 (R\$)

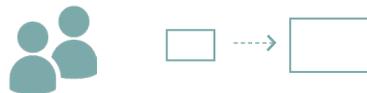
Rent-to-Buy  
(Accomodate)



30%

HIS 1 & 2 (R\$ - R\$\$)

Low Interest Loan  
(Empower)



COHAB PPP  
←→



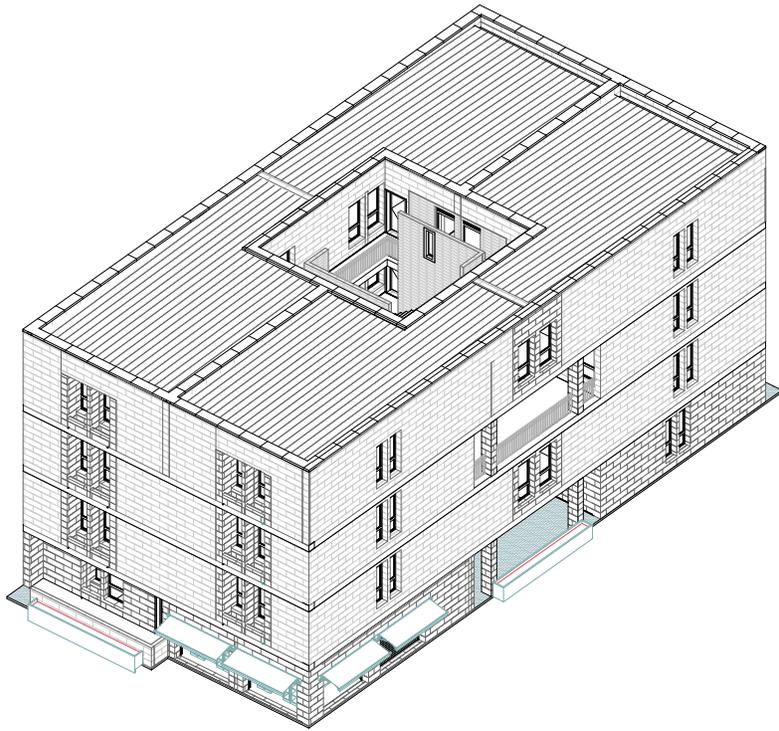
10%

HIS 2 (R\$\$)

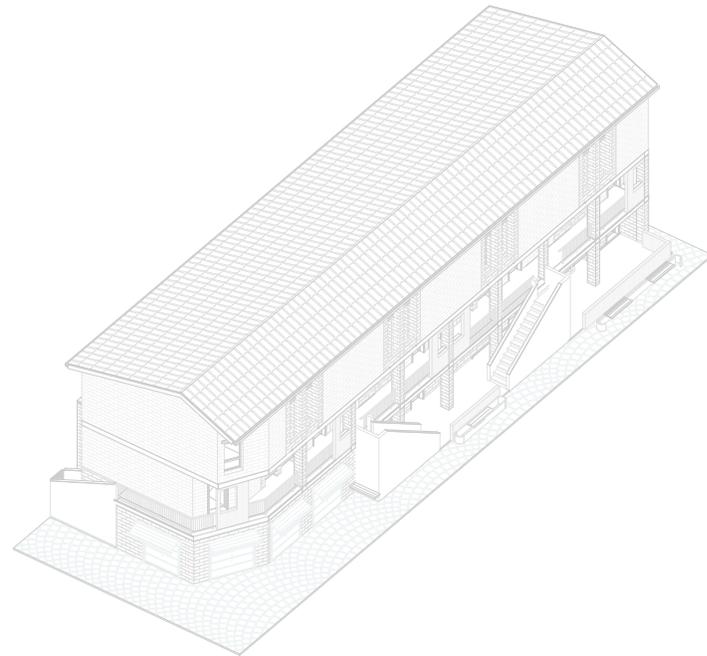
Personal Funds  
(Promote)

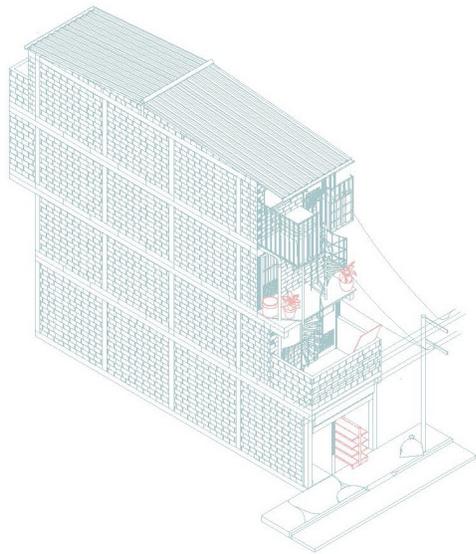


## Courtyard Typology

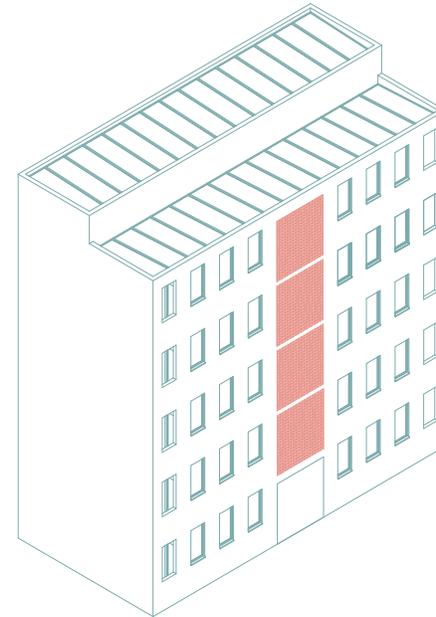


Courtyard Typology



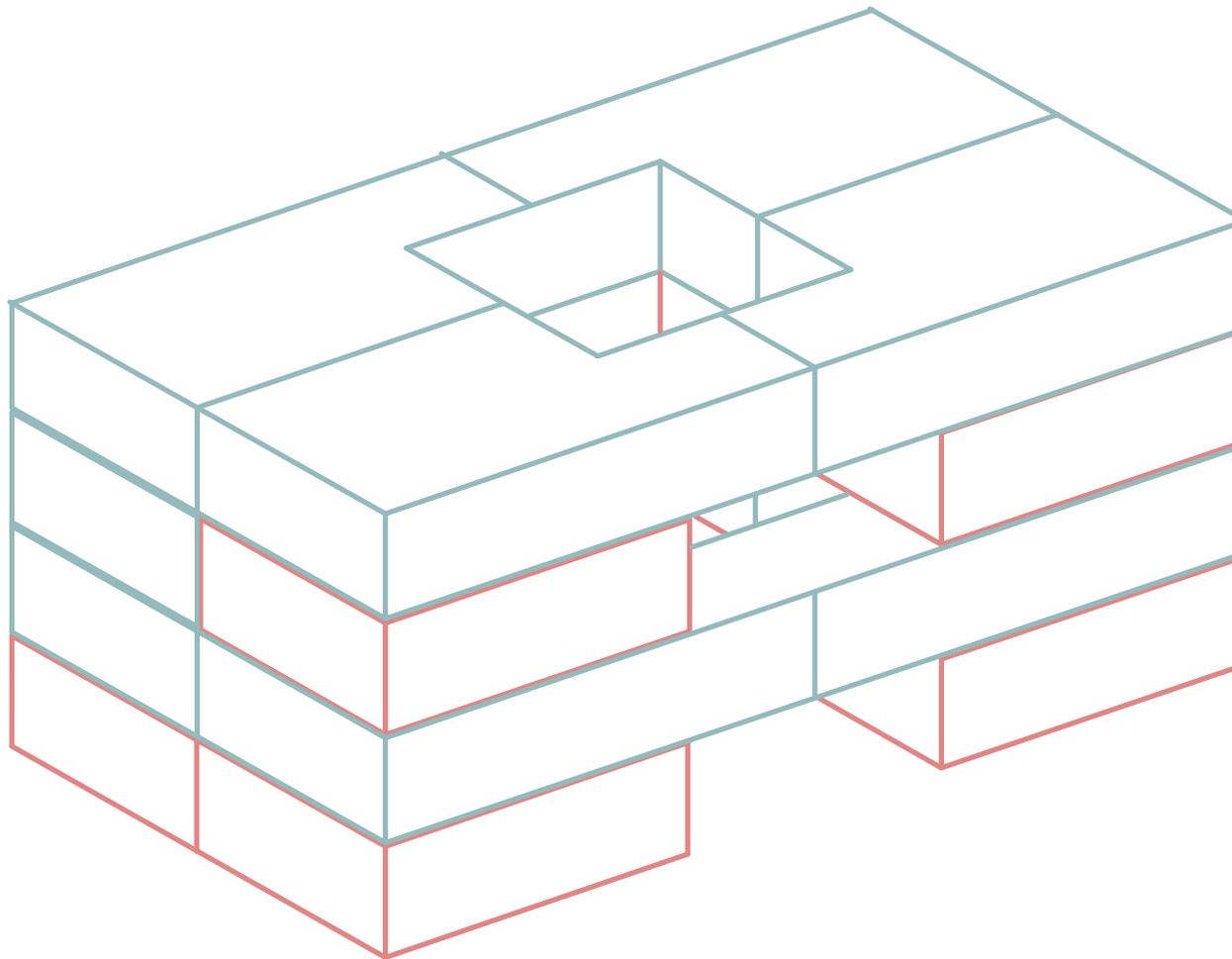


*Resilience*



*Efficiency*

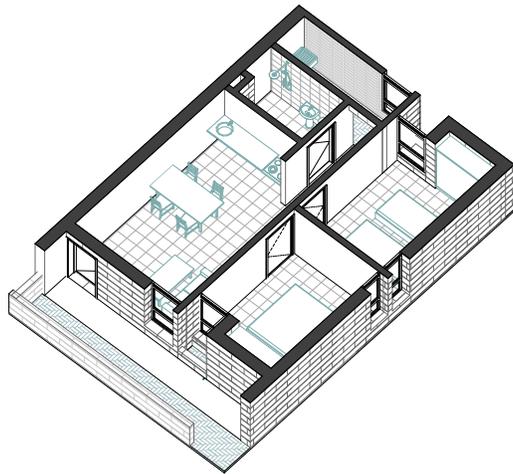




- 2 Bedroom
- 3 Bedroom

## Apartment Types

Ground Floor Apartment

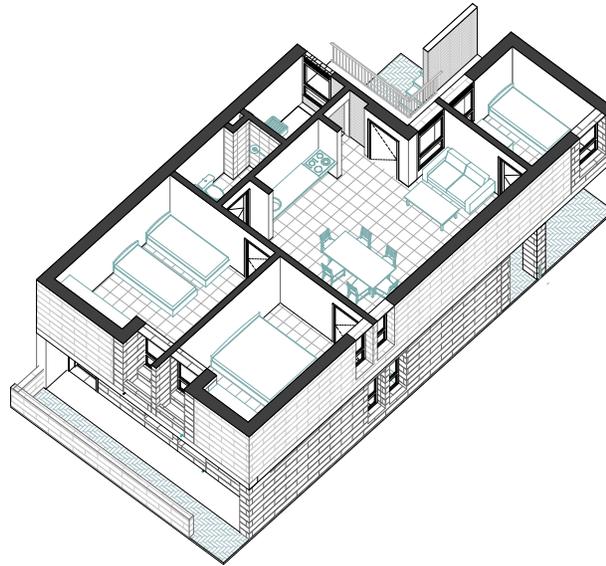


51m<sup>2</sup>

Street Access

HIS 1

Three Bedroom Apartment

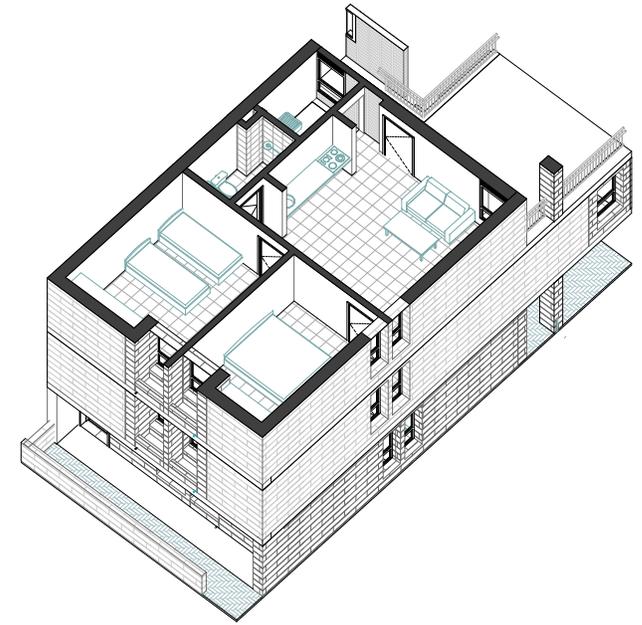


62m<sup>2</sup>

Courtyard Access

HIS 1

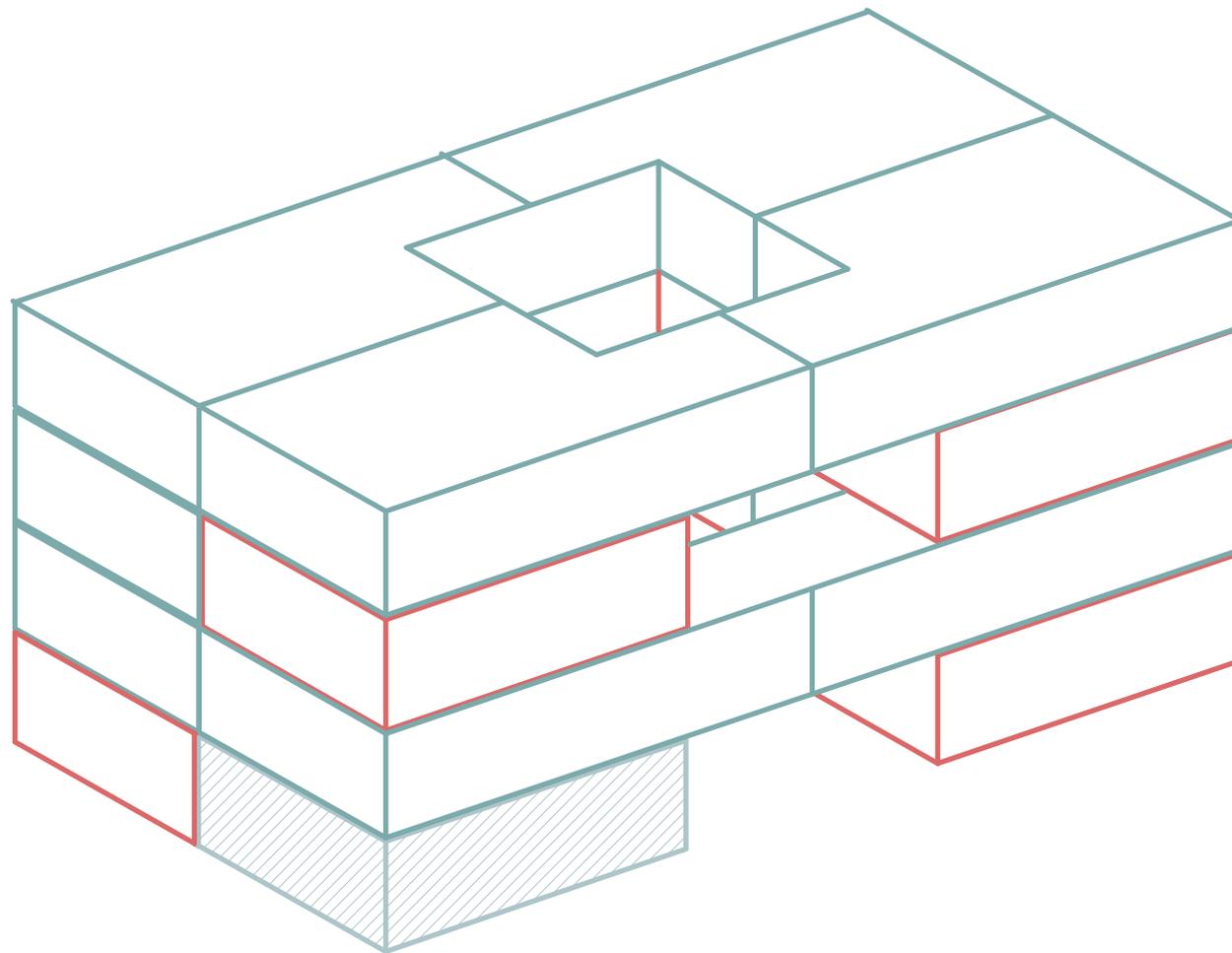
Two Bedroom Apartment



55m<sup>2</sup>

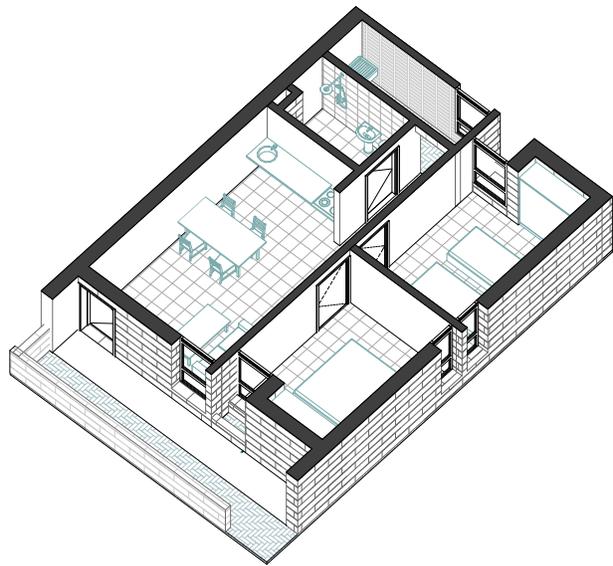
Courtyard Access

HIS 1

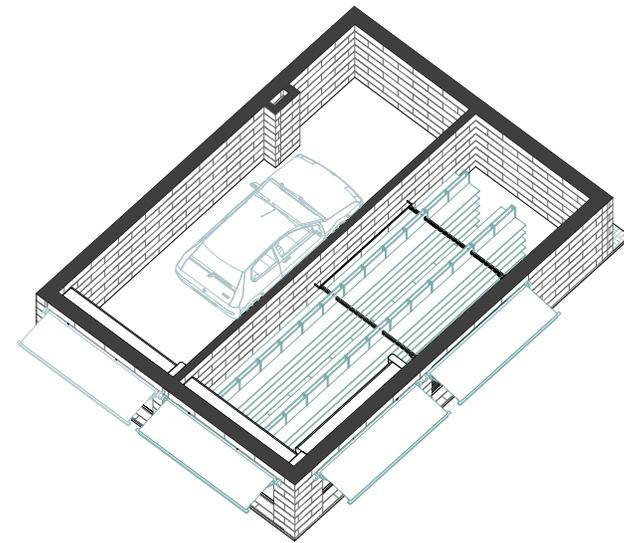


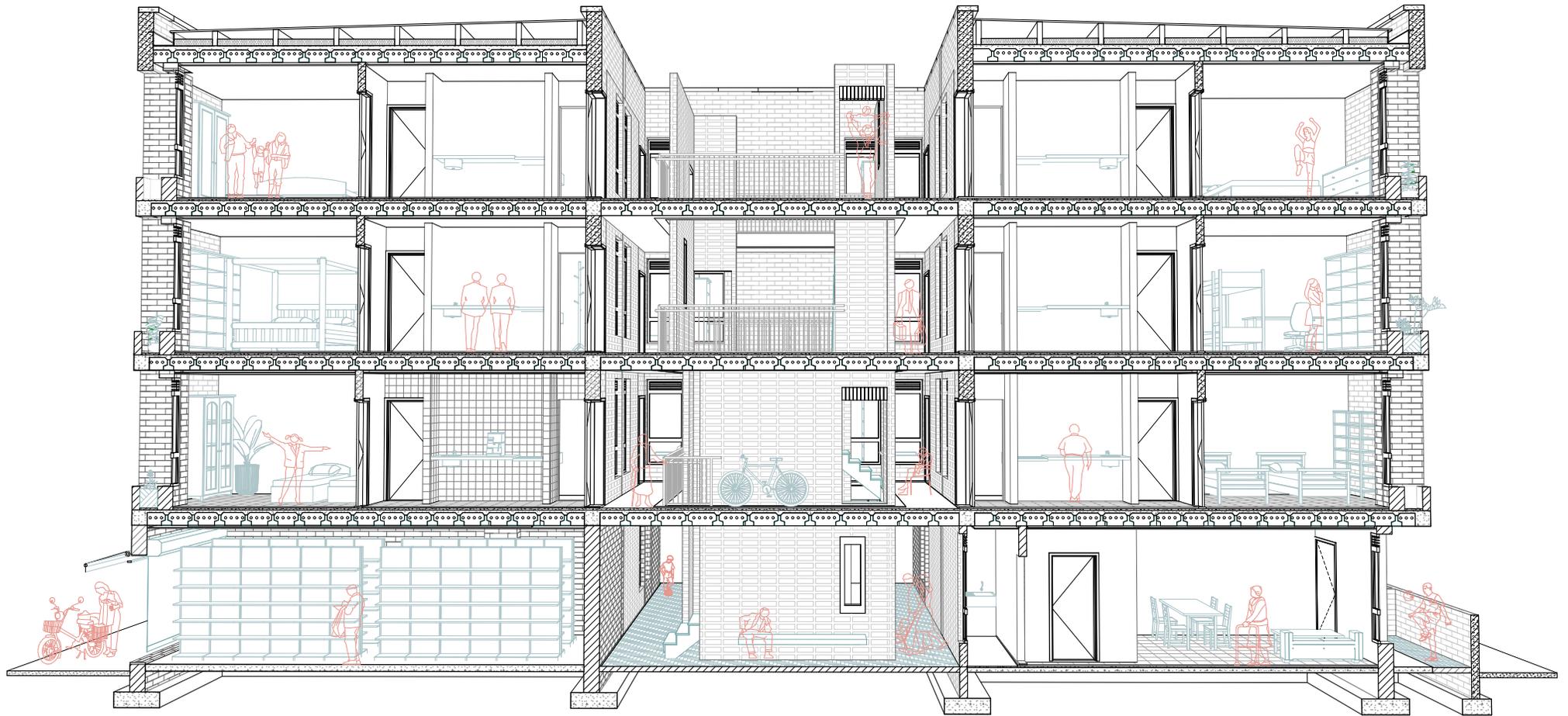
- 2 Bedroom
- 3 Bedroom
- Amenity

*Ground Floor Apartment*

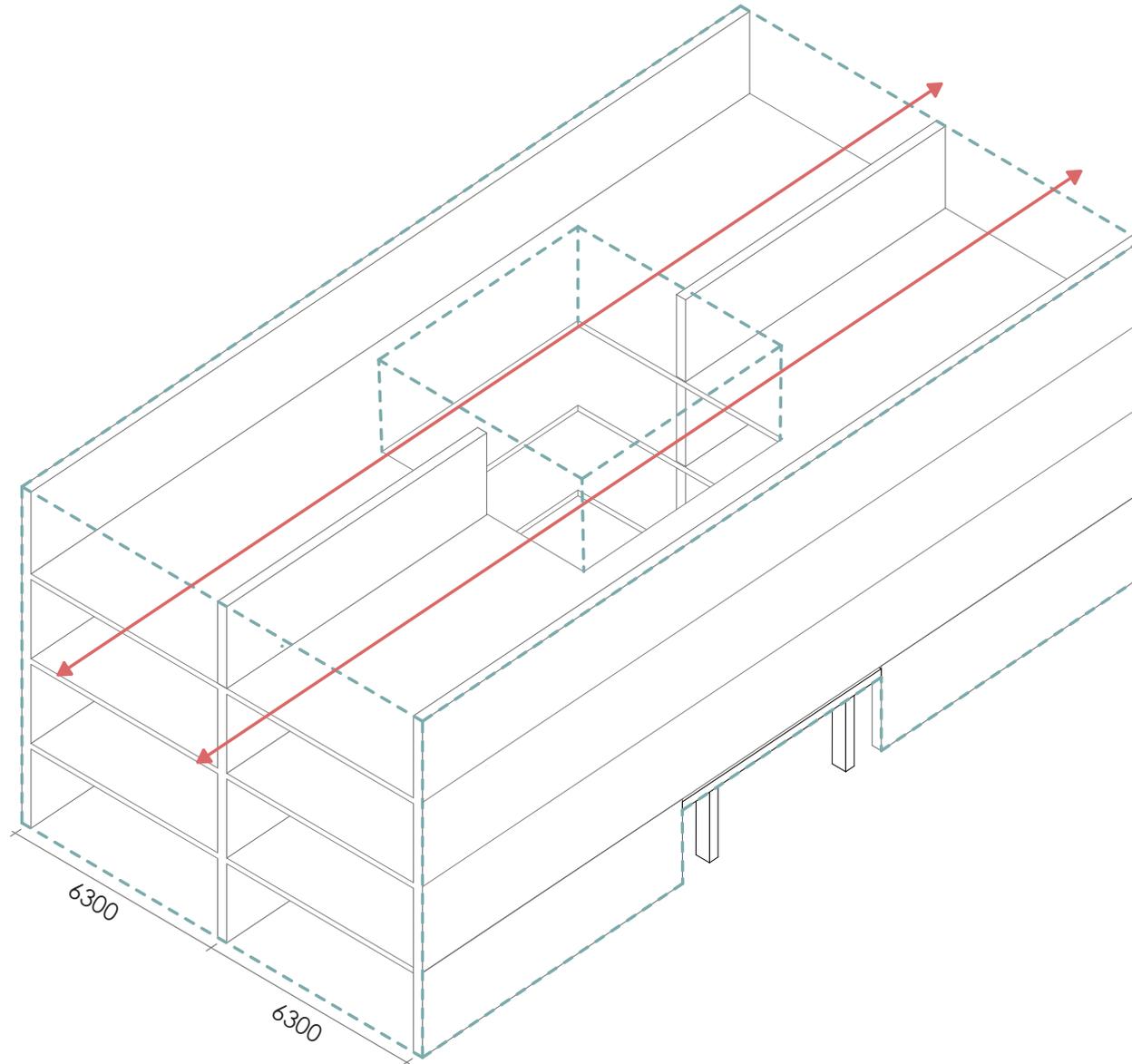


*Garage Space*

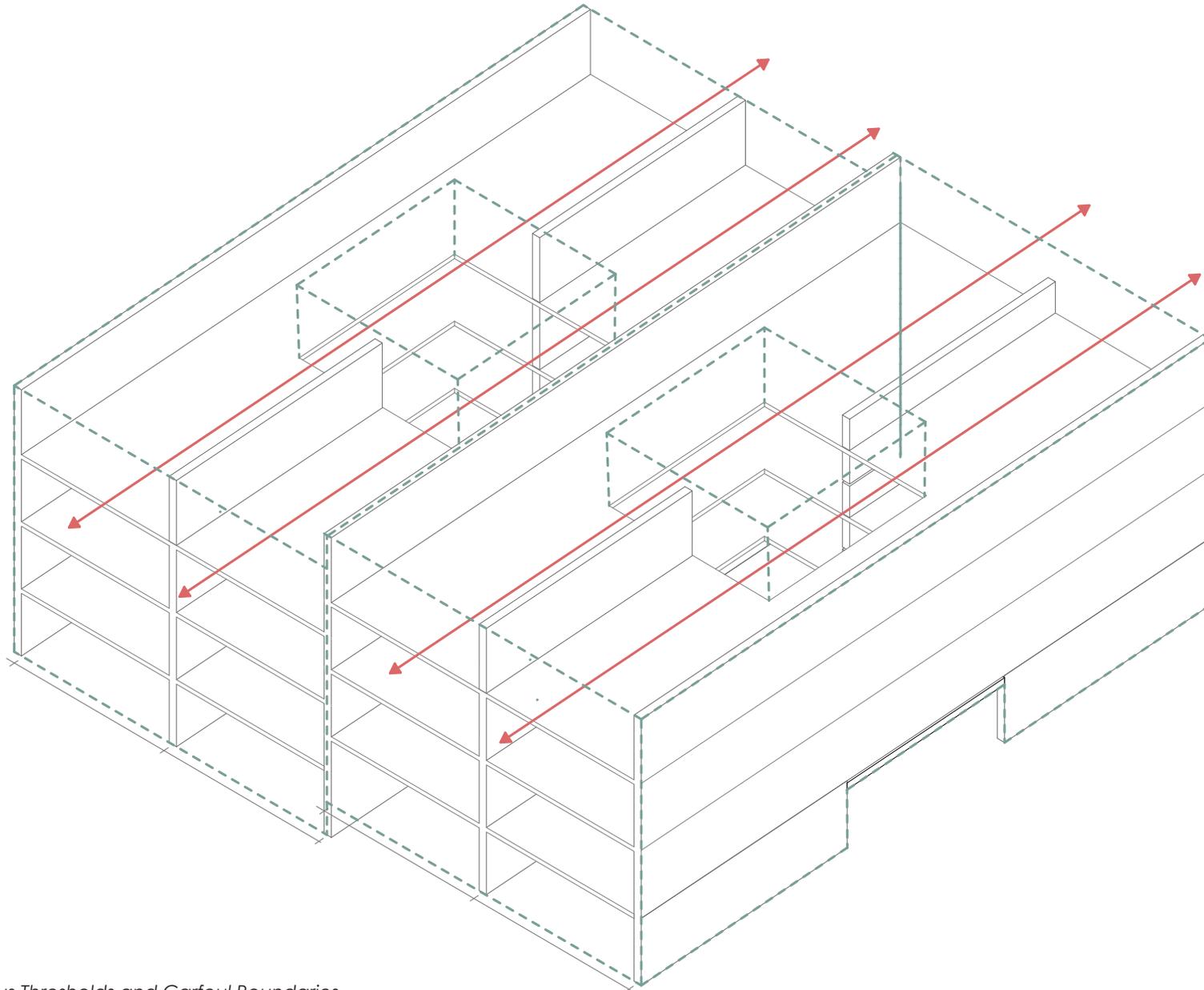


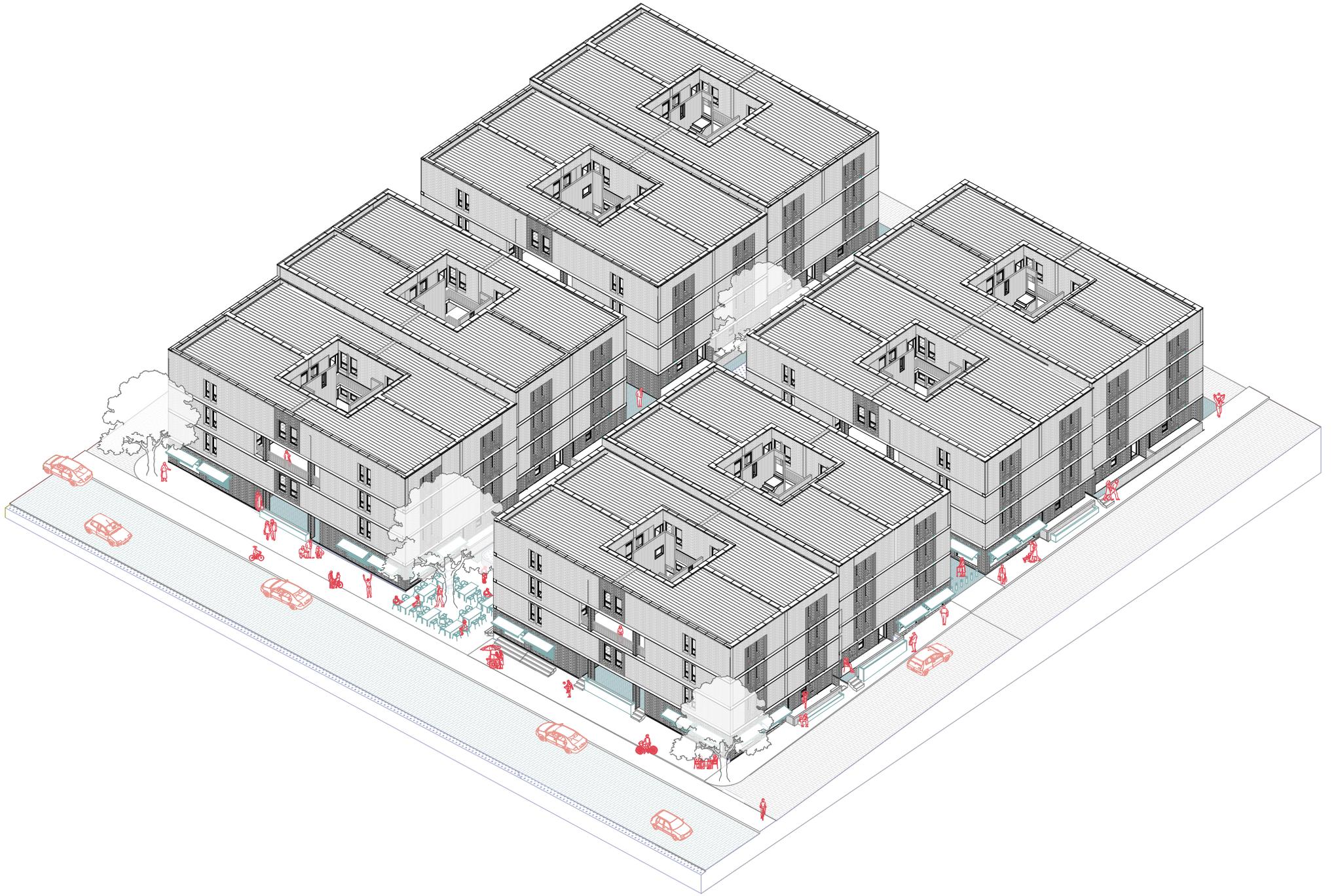


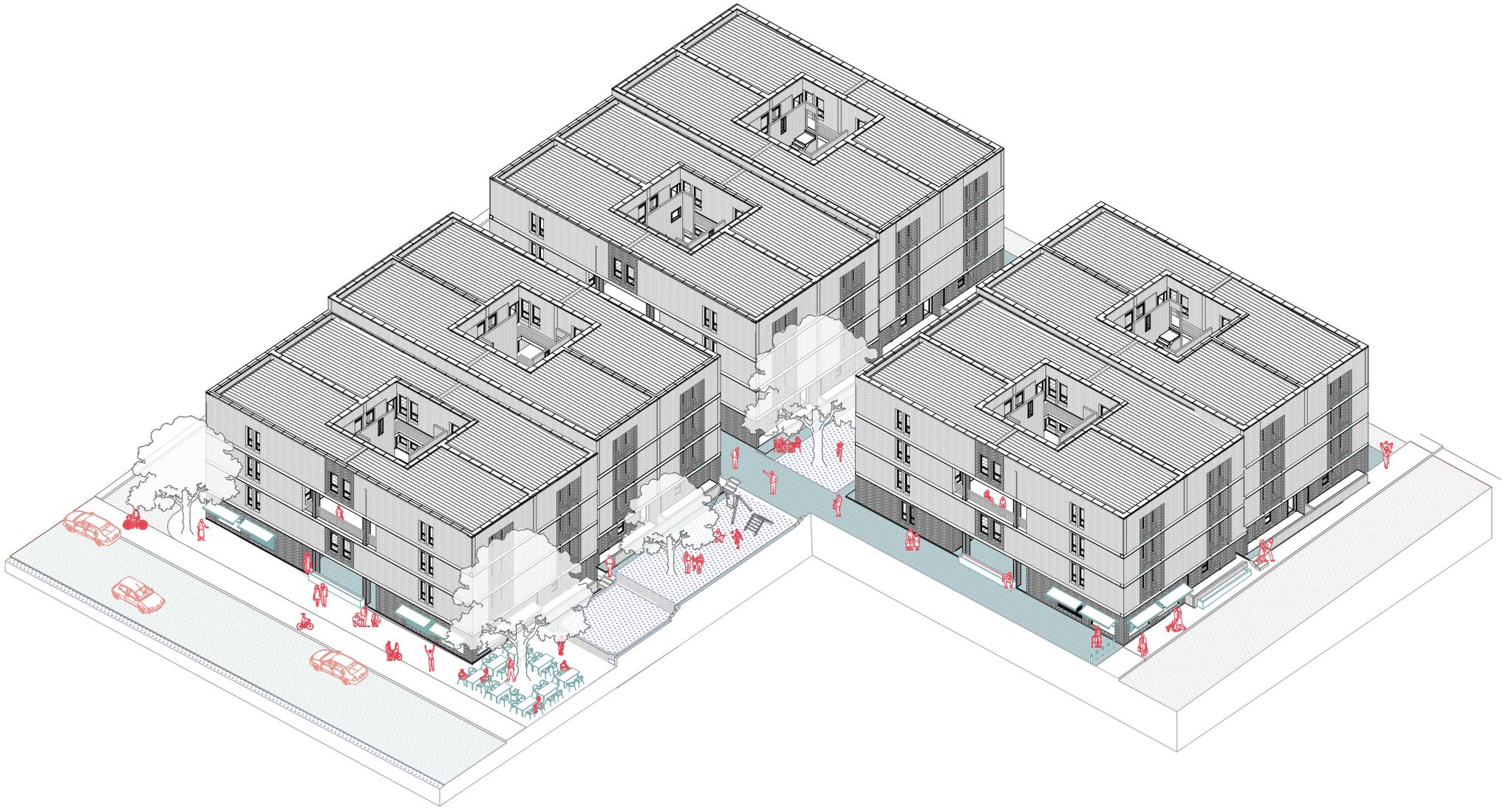
# Structural Diagram

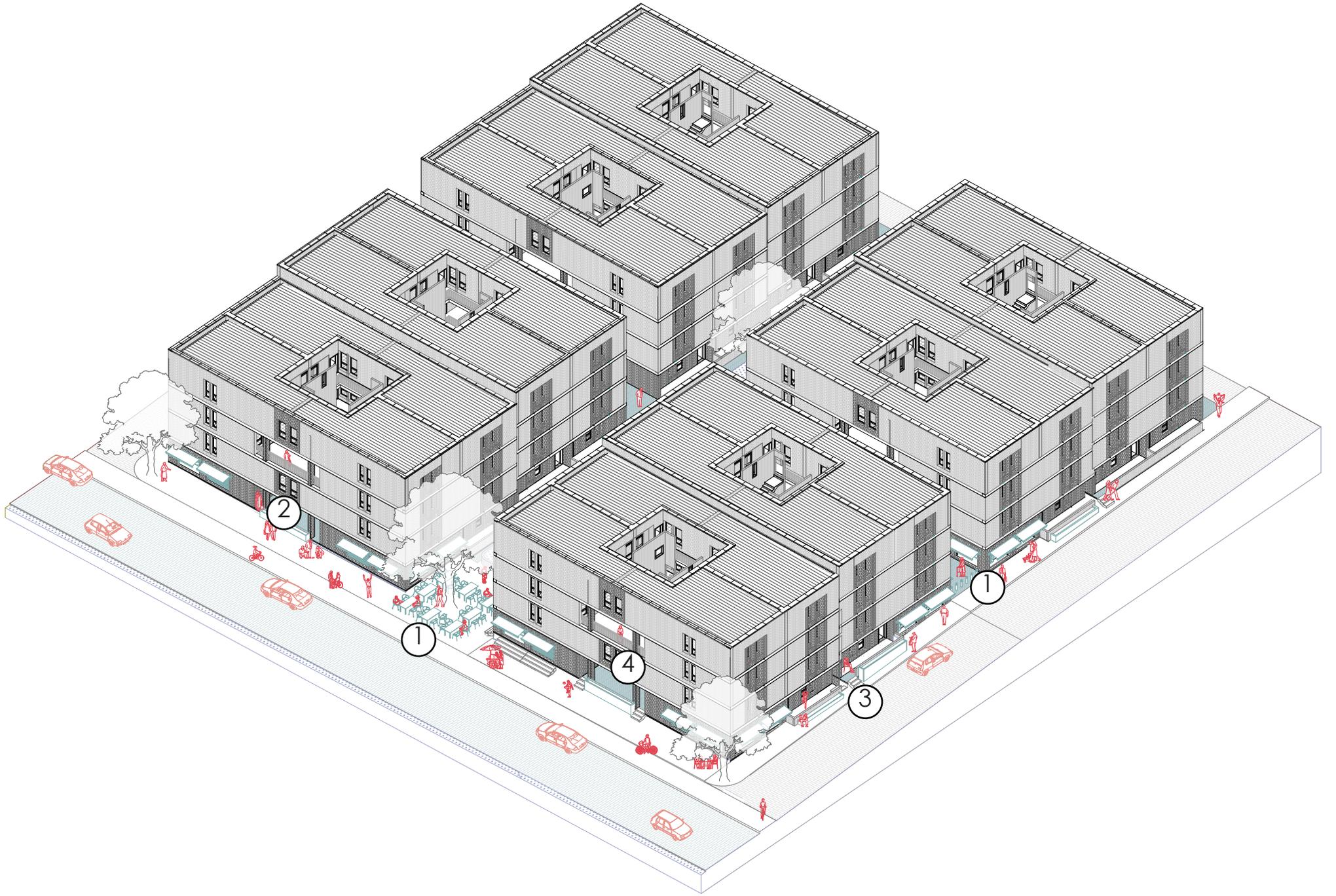


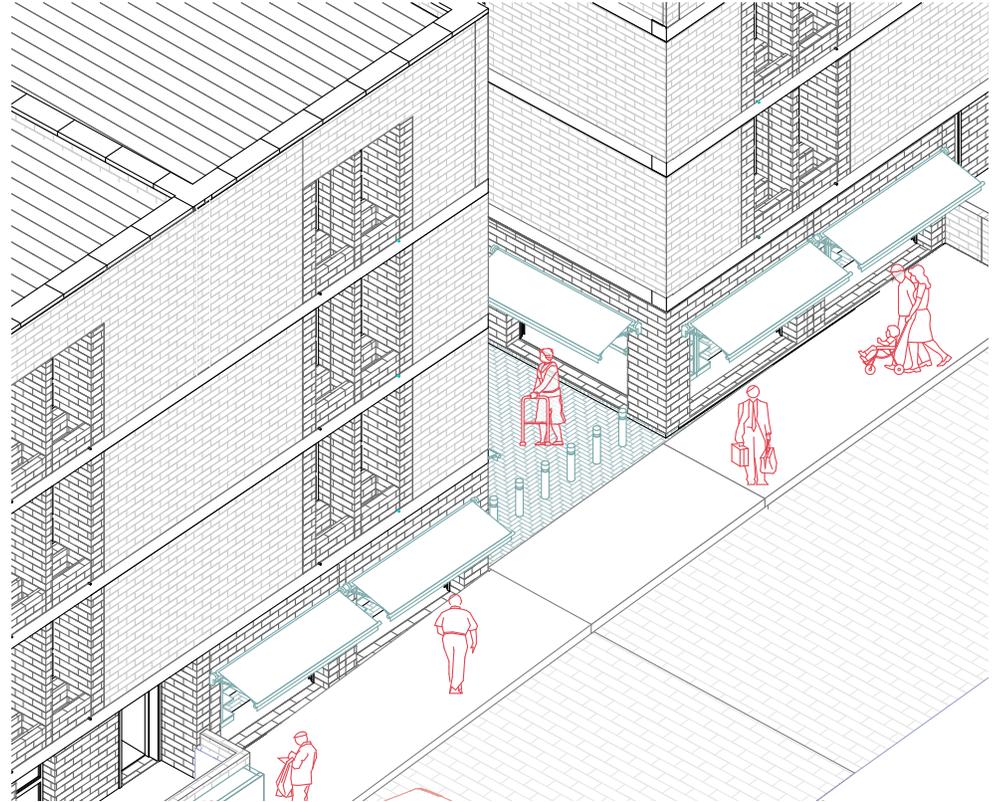
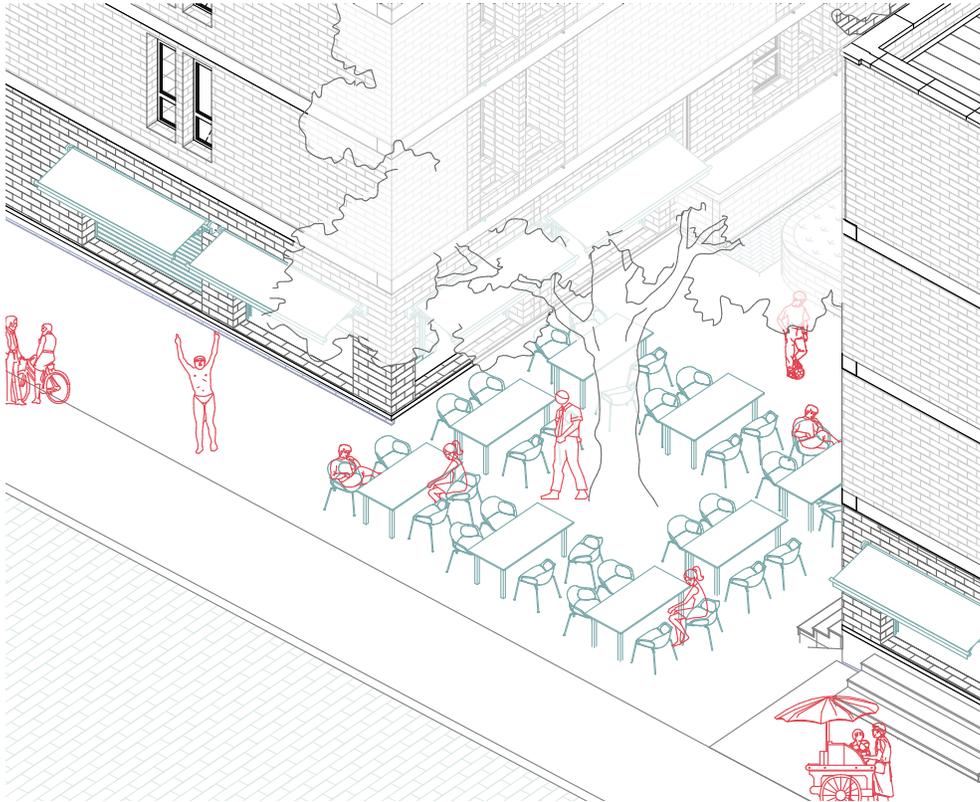
# Structural Diagram

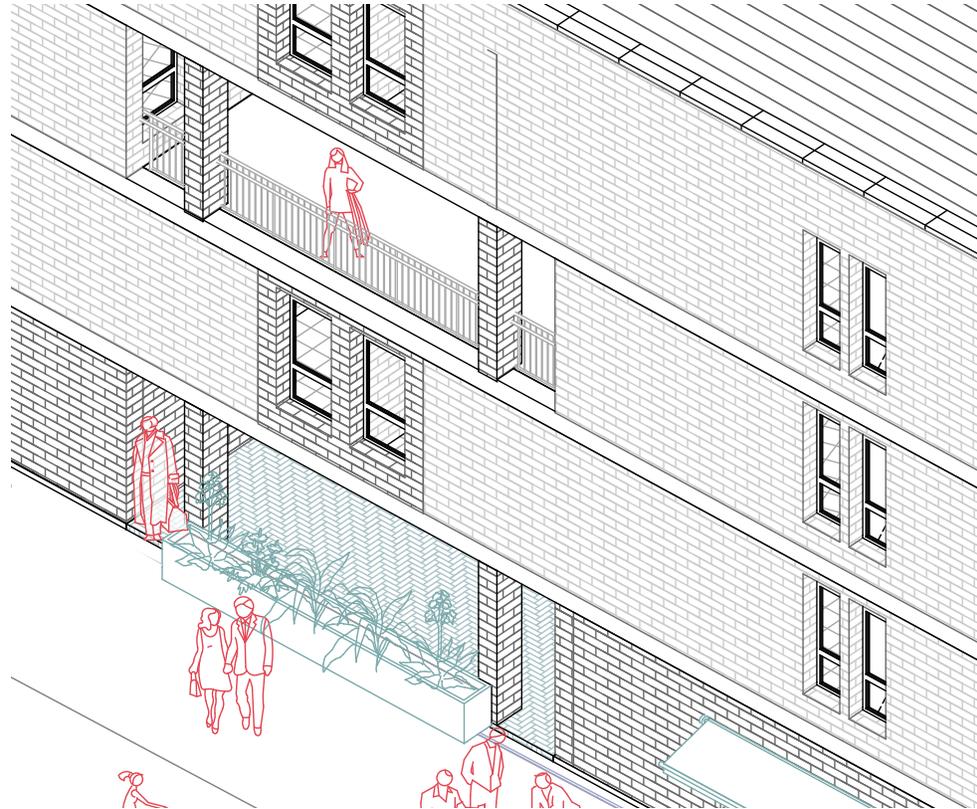


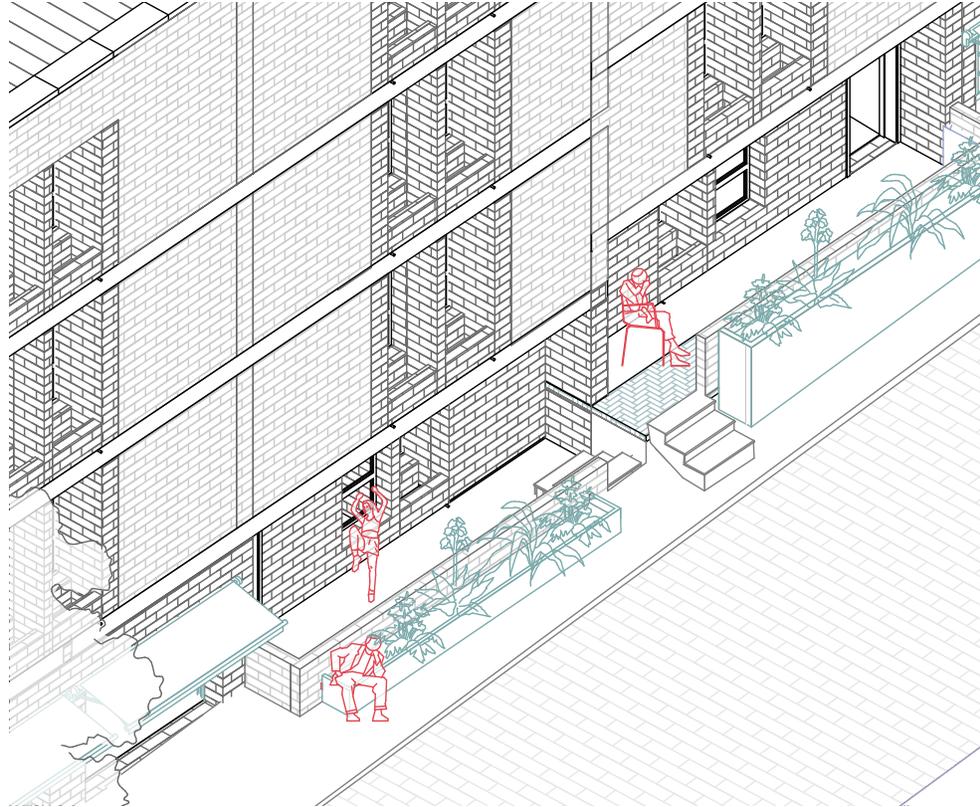


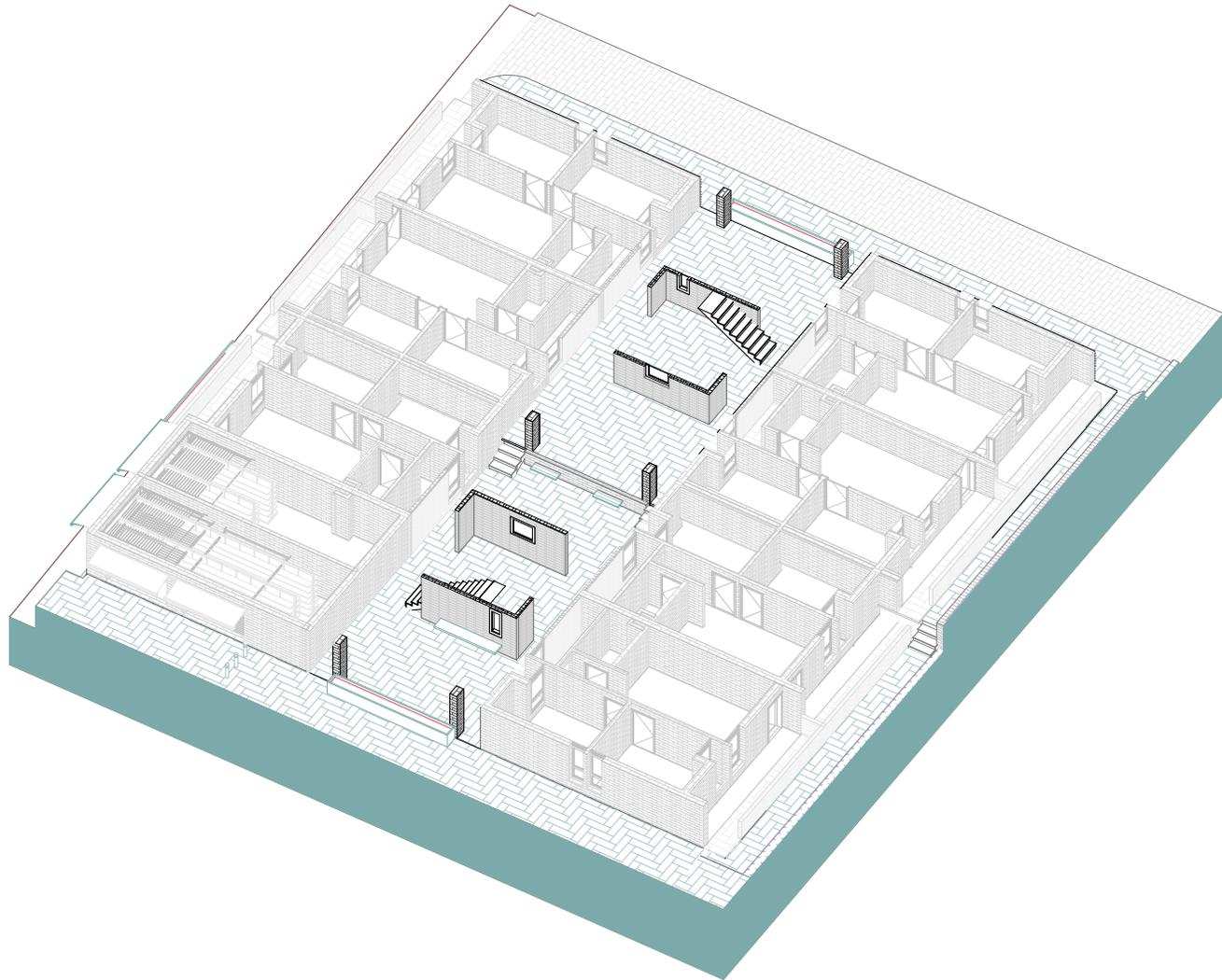




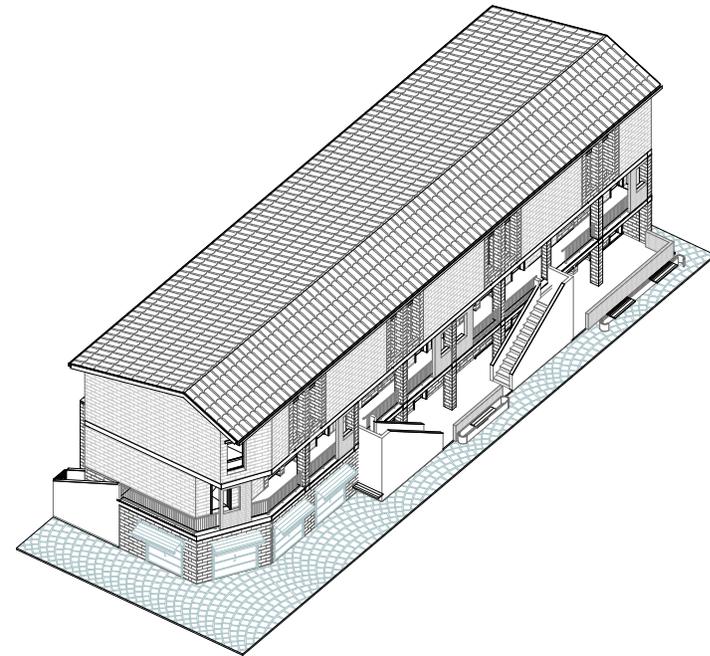
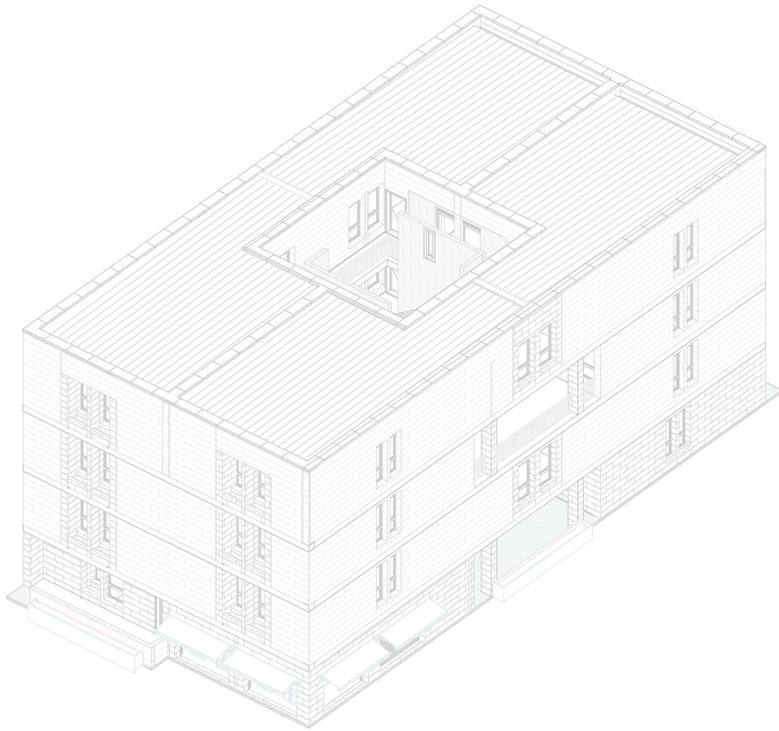




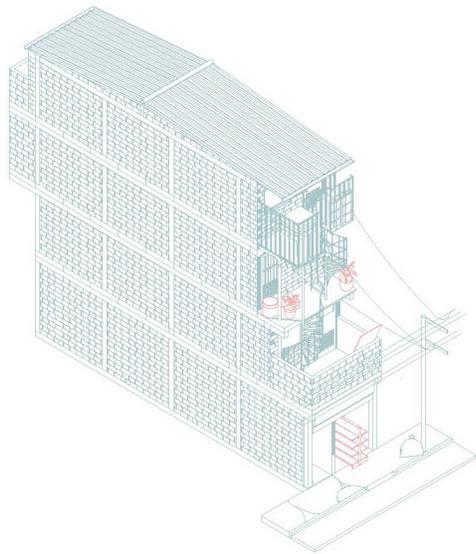




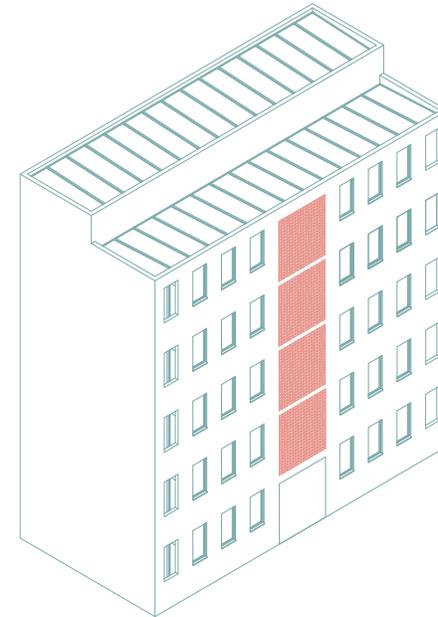
## Rowhouse Typology



Row House Typology

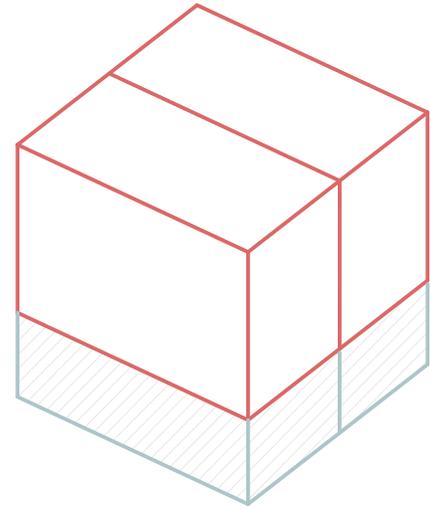
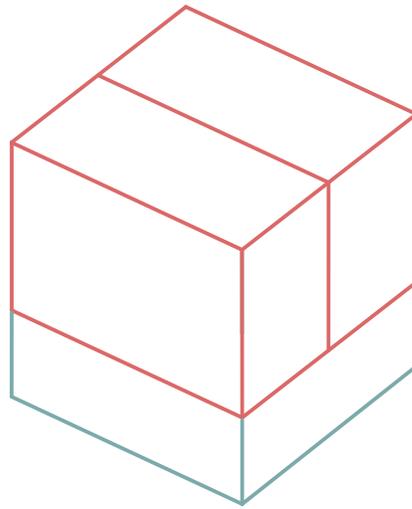
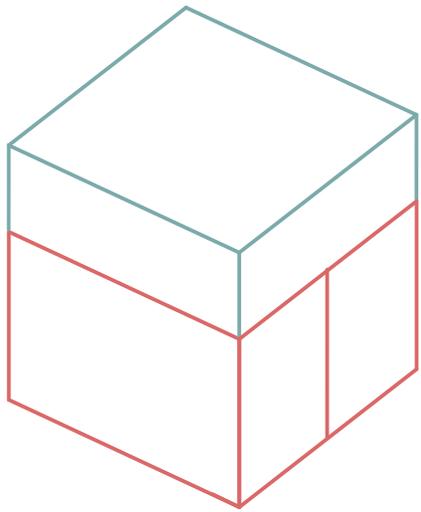


*Resilience*



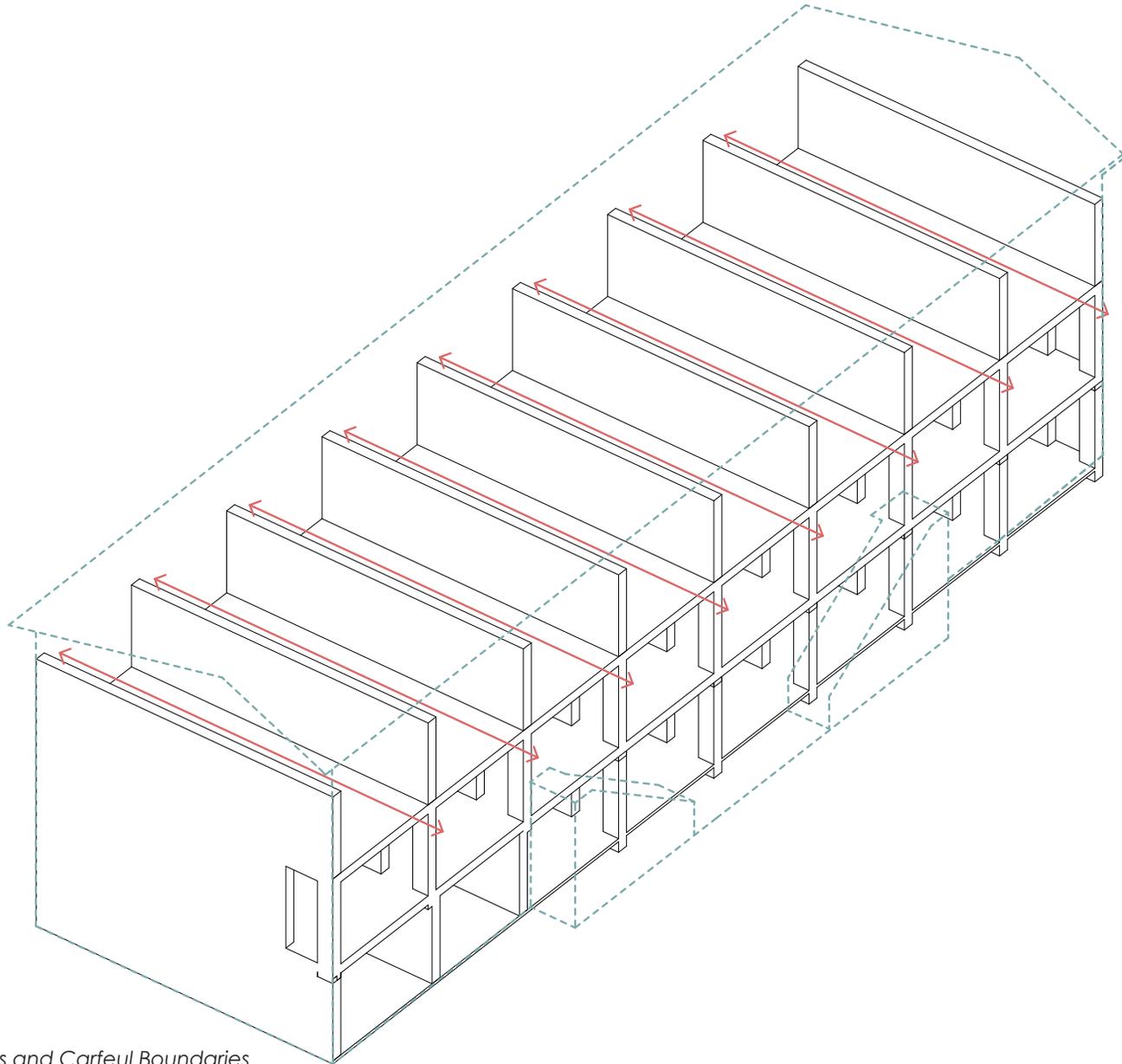
*Efficiency*

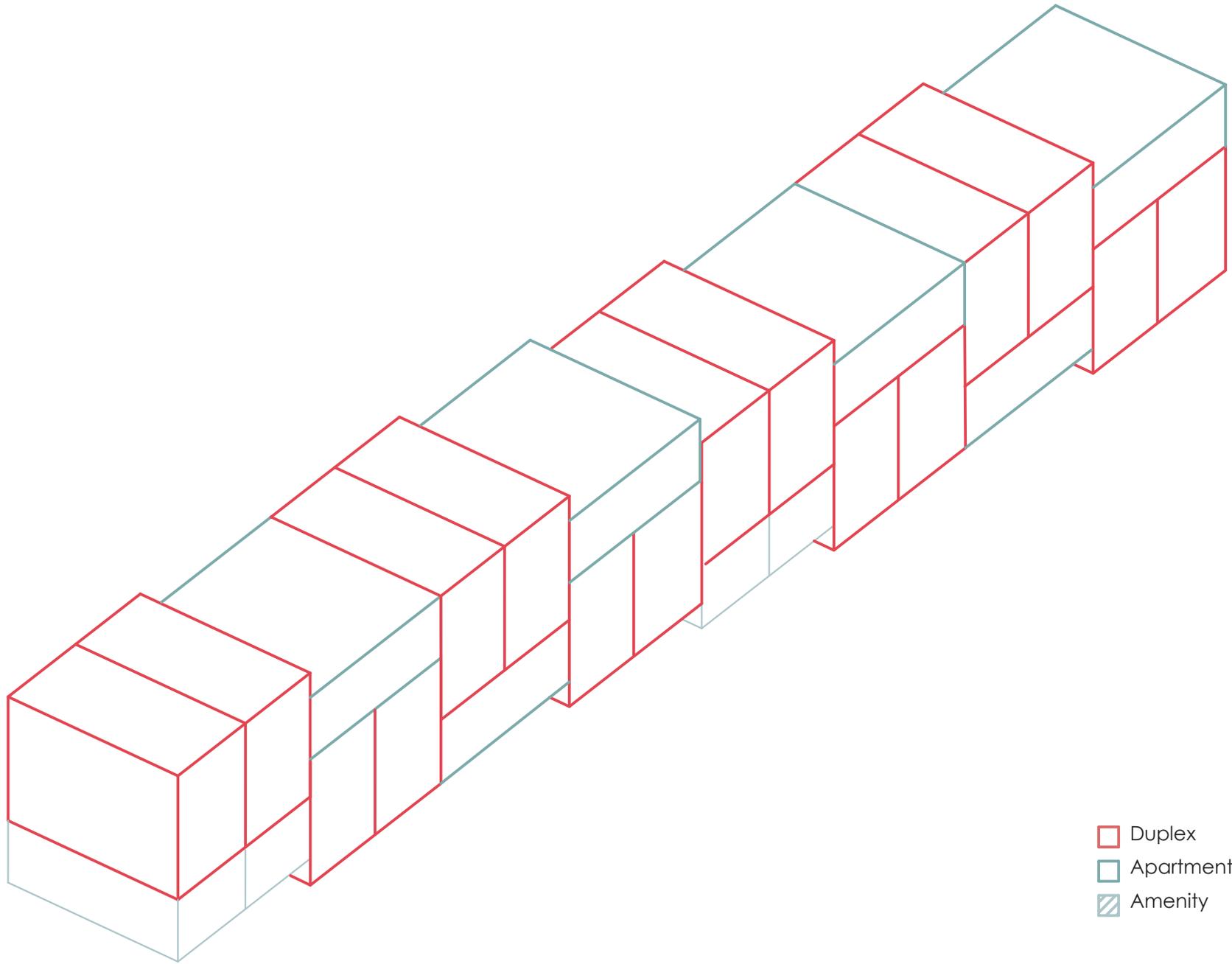


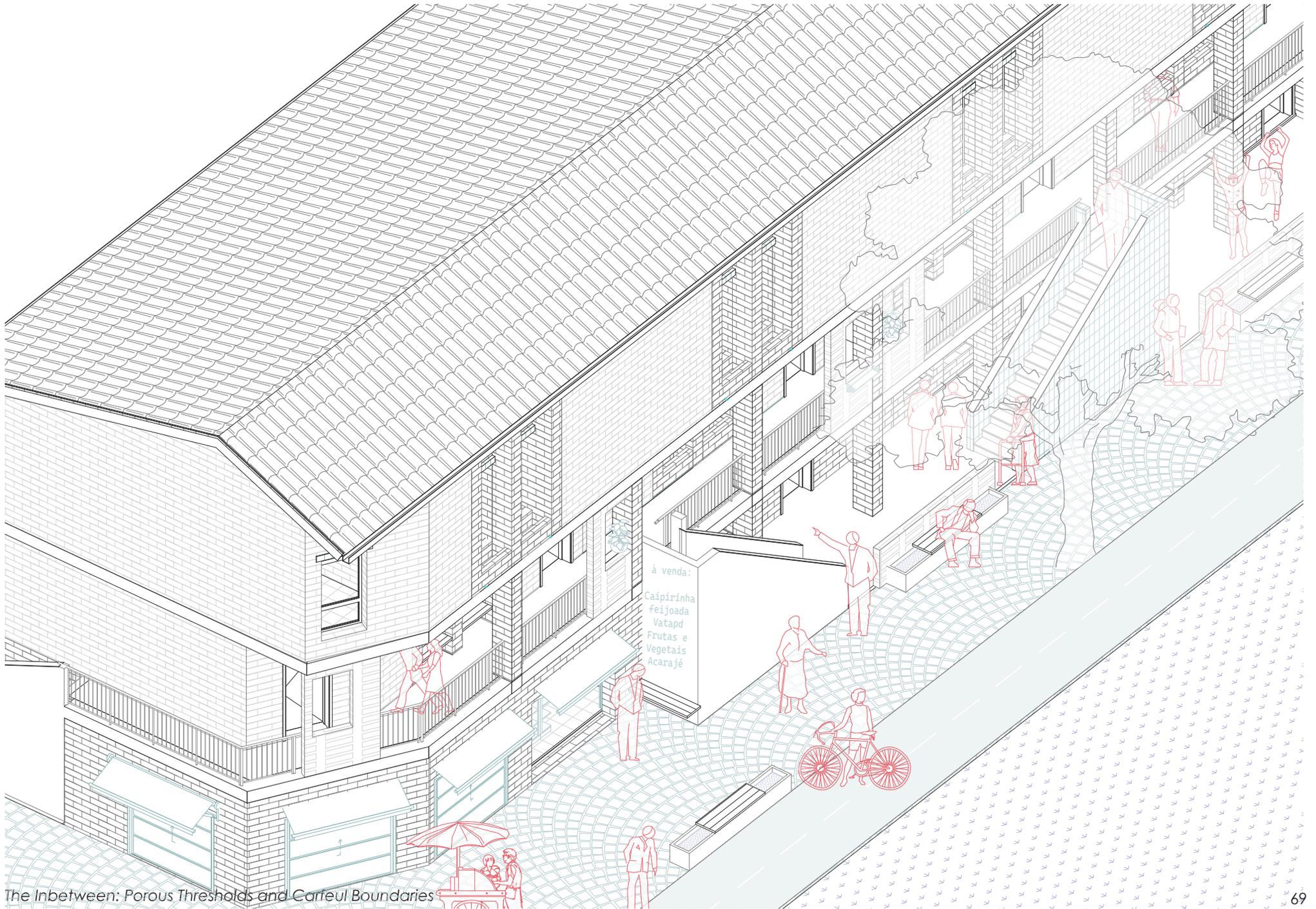


-  Duplex
-  Apartment
-  Amenity

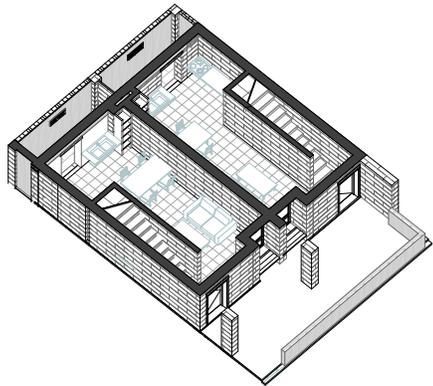
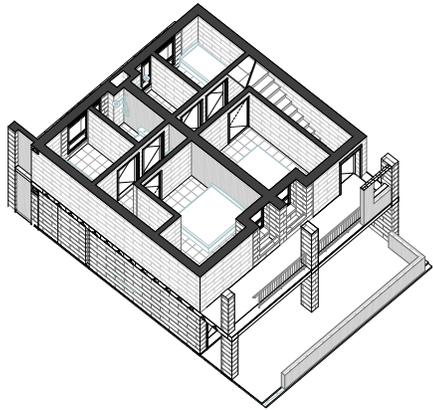
## Structural Diagram







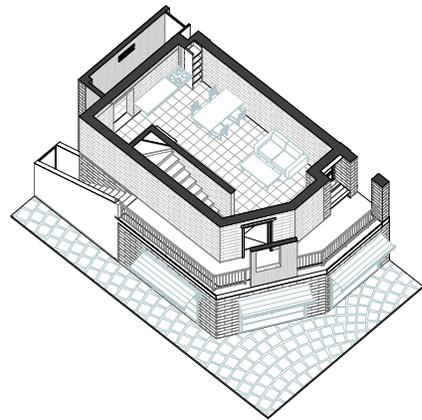
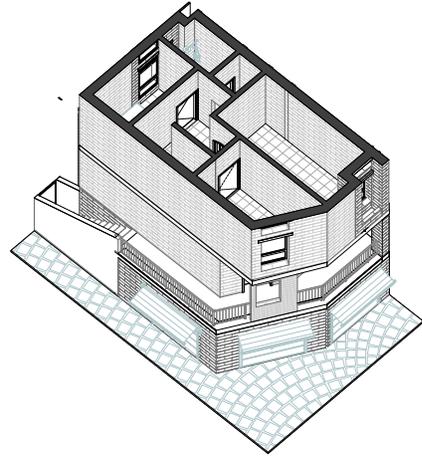
Duplex



51m<sup>2</sup>

Street Access

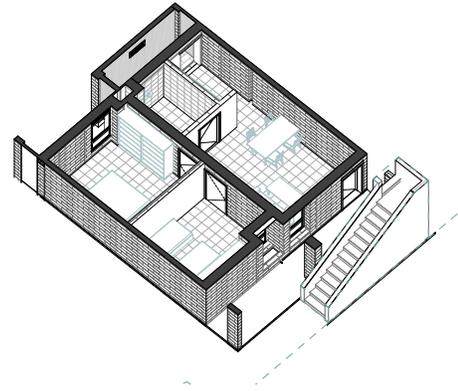
Corner Duplex



51m<sup>2</sup>

Gallery Access

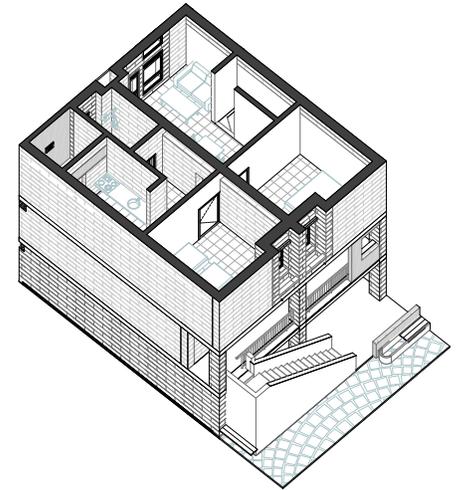
Groundfloor Apartment



51m<sup>2</sup>

Street Access

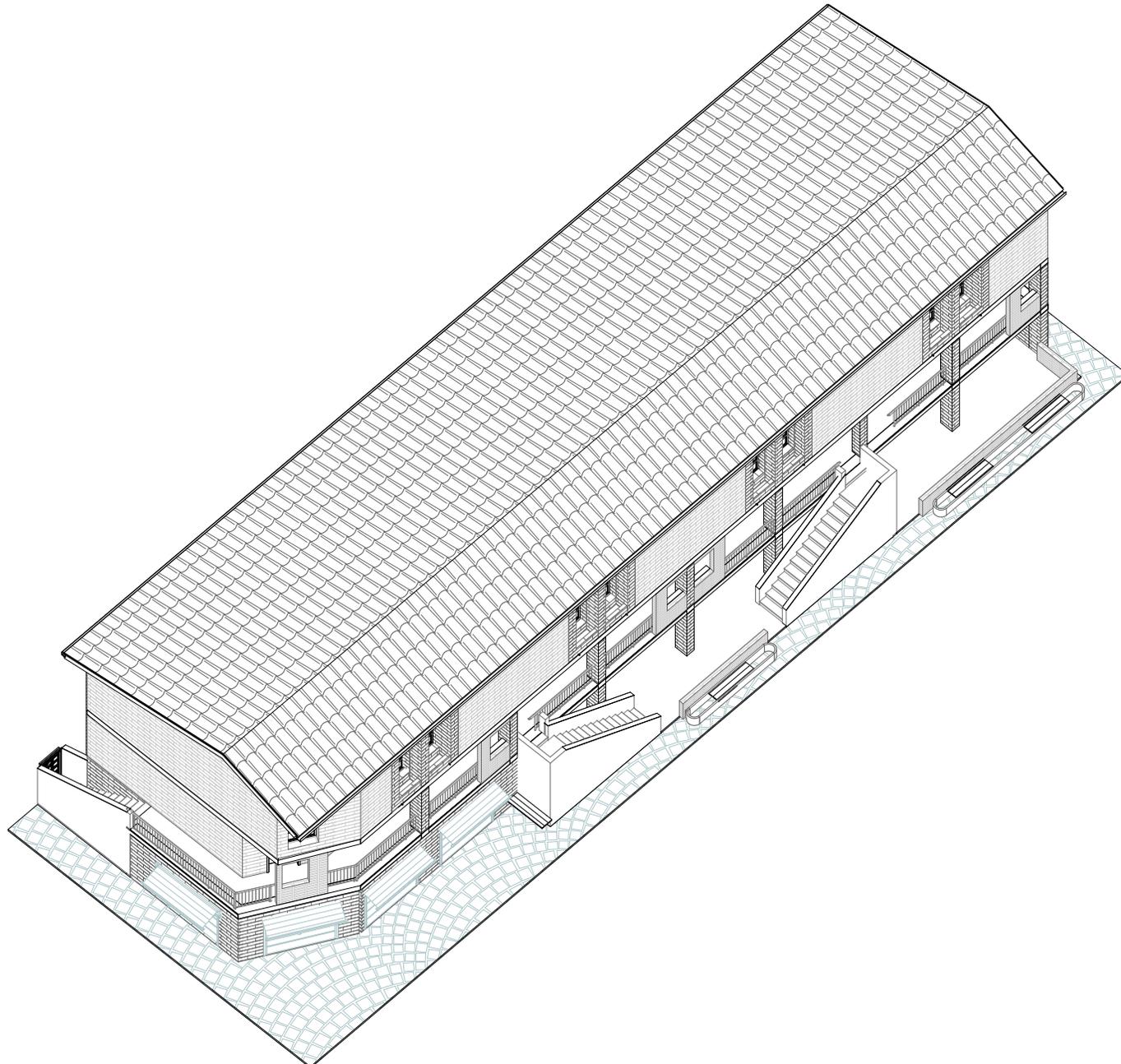
Upper Apartment



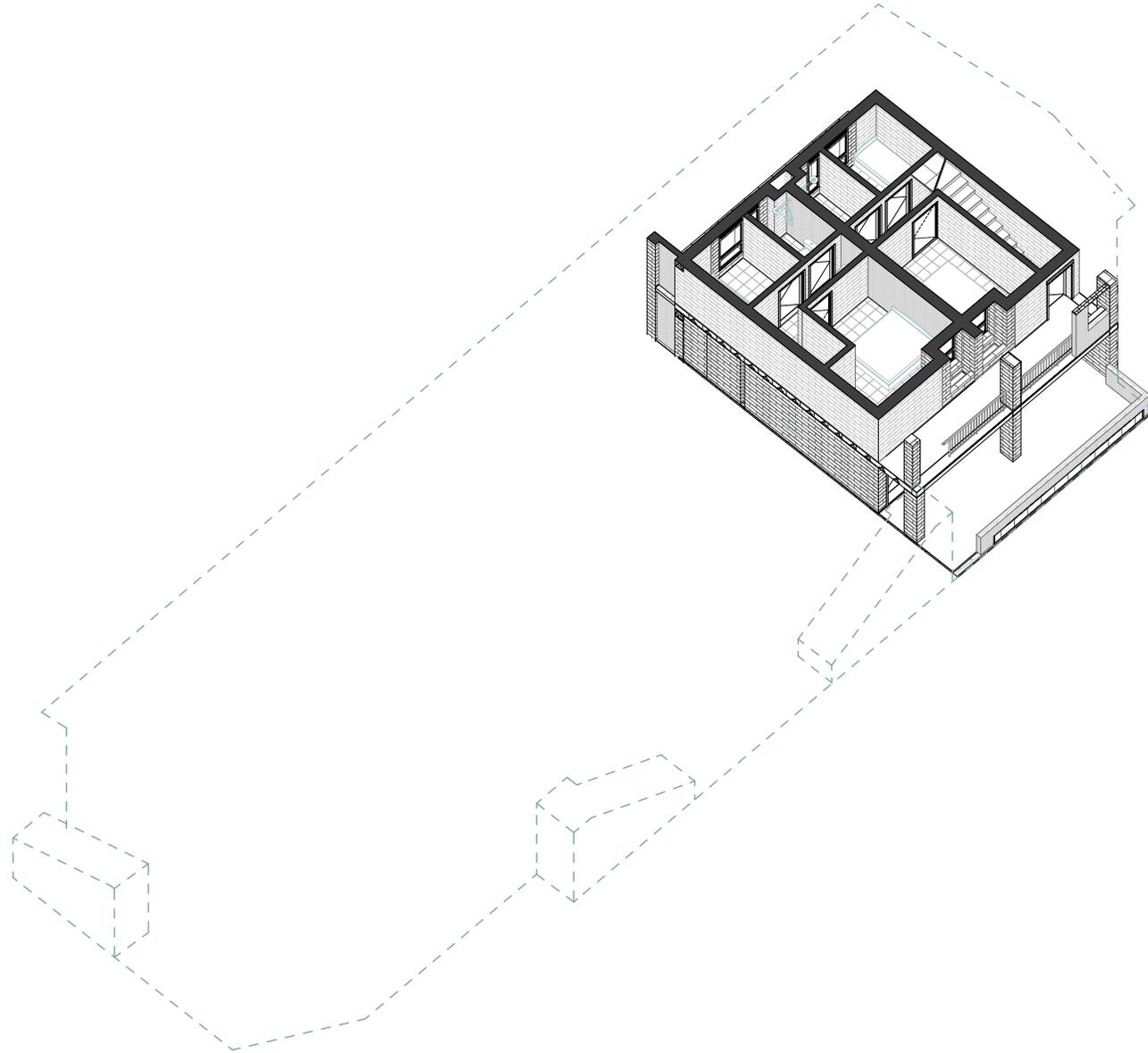
51m<sup>2</sup>

Gallery Access

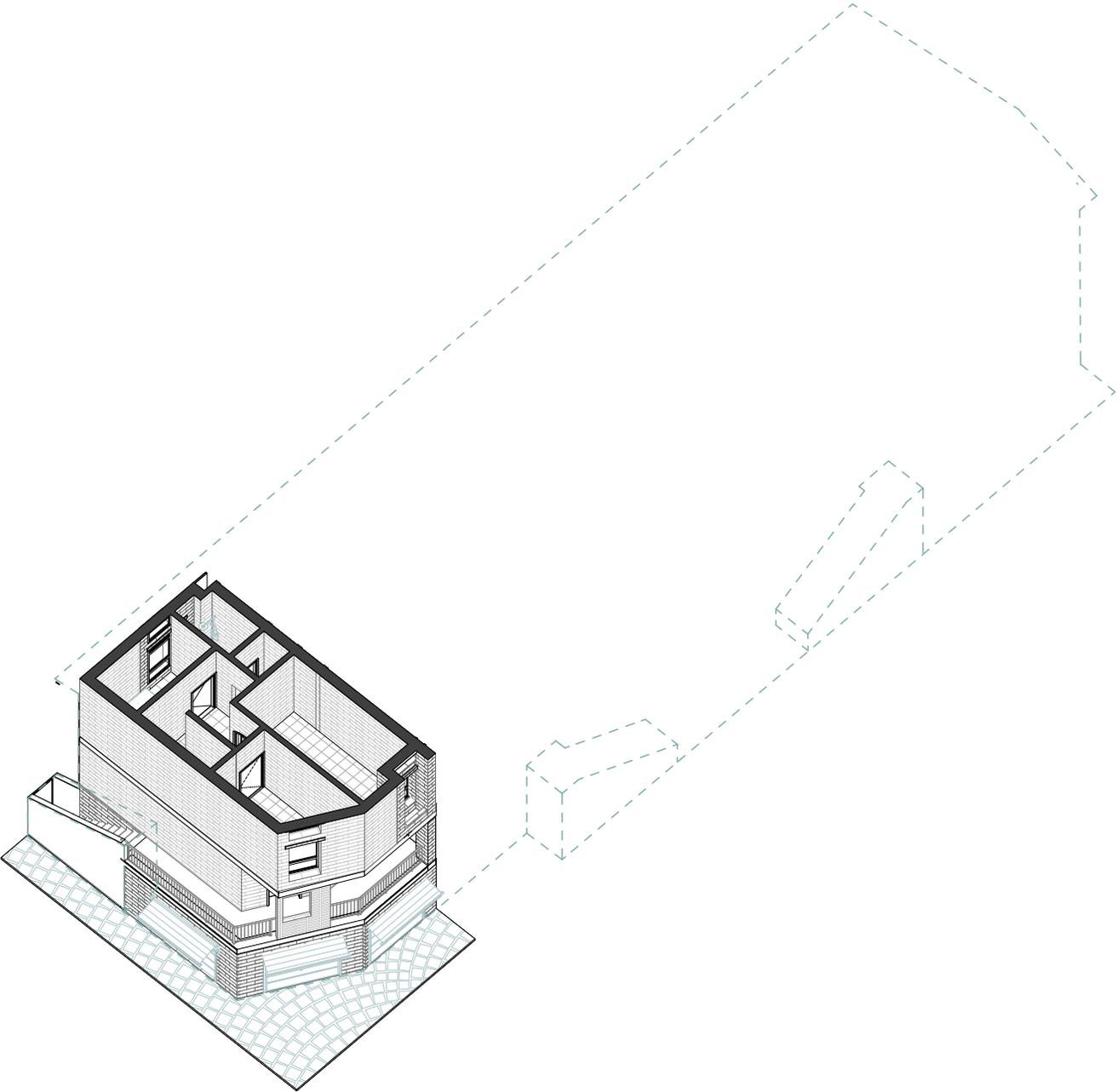
*Duplex*



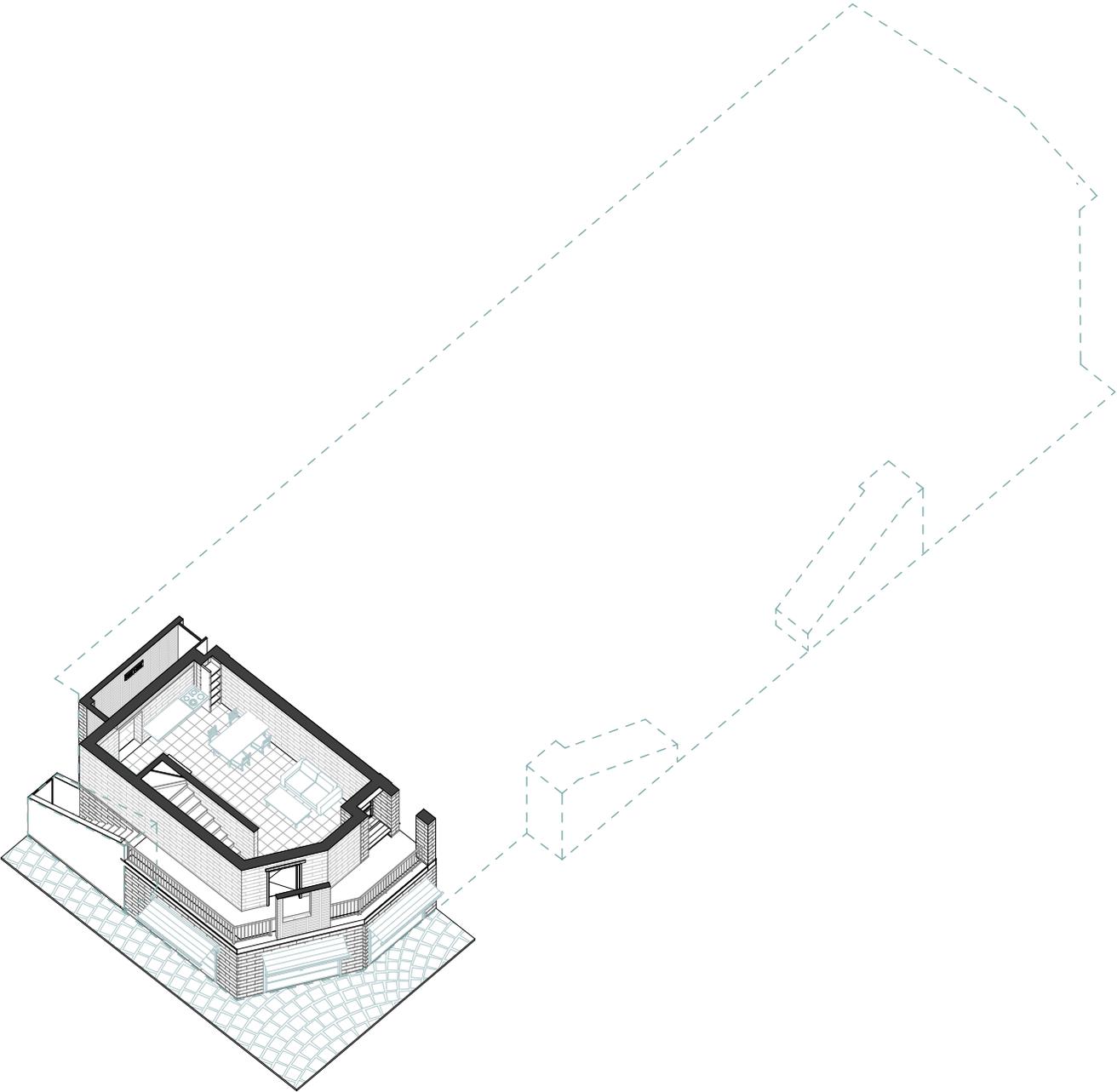
Duplex



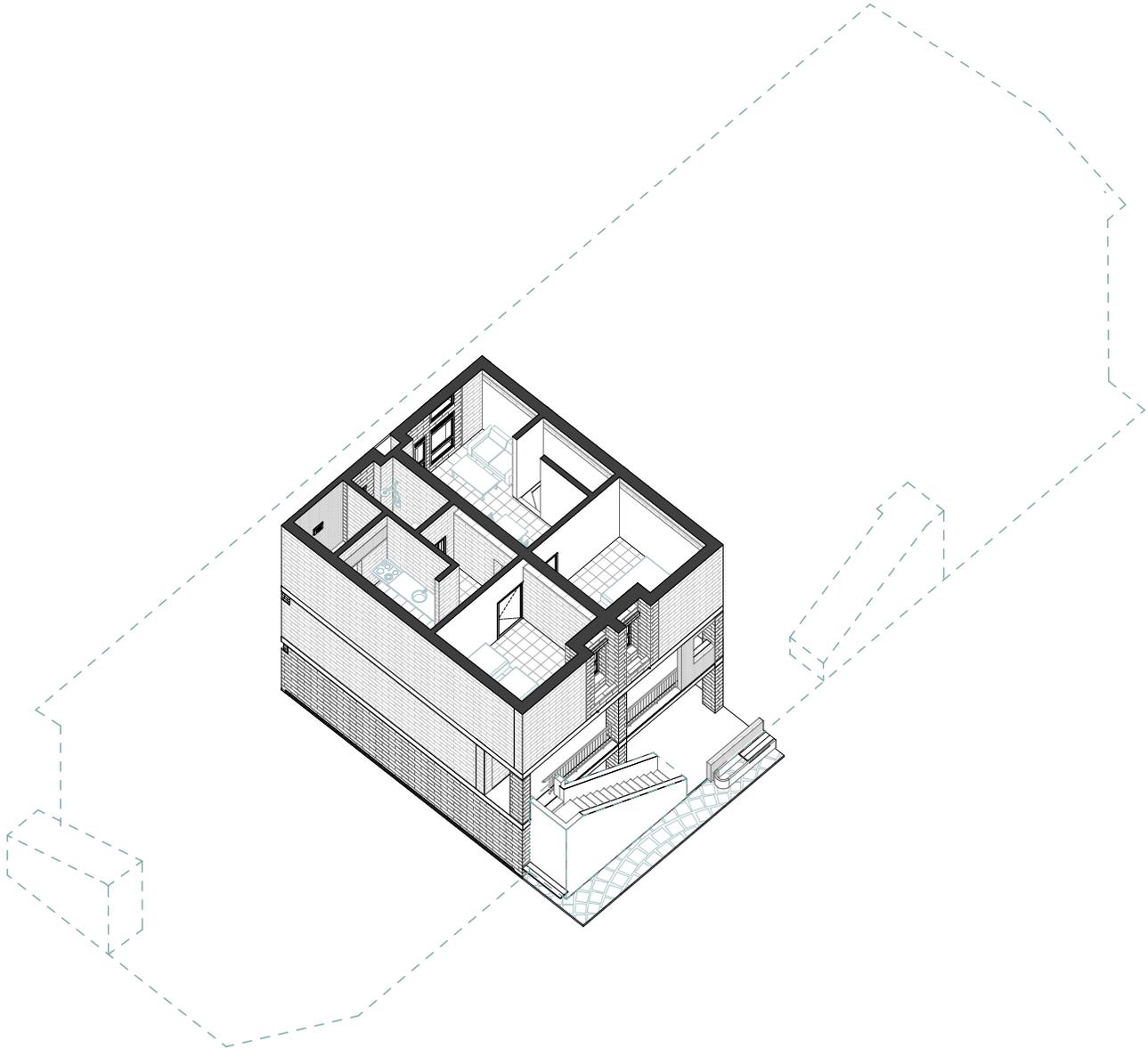
Corner Duplex

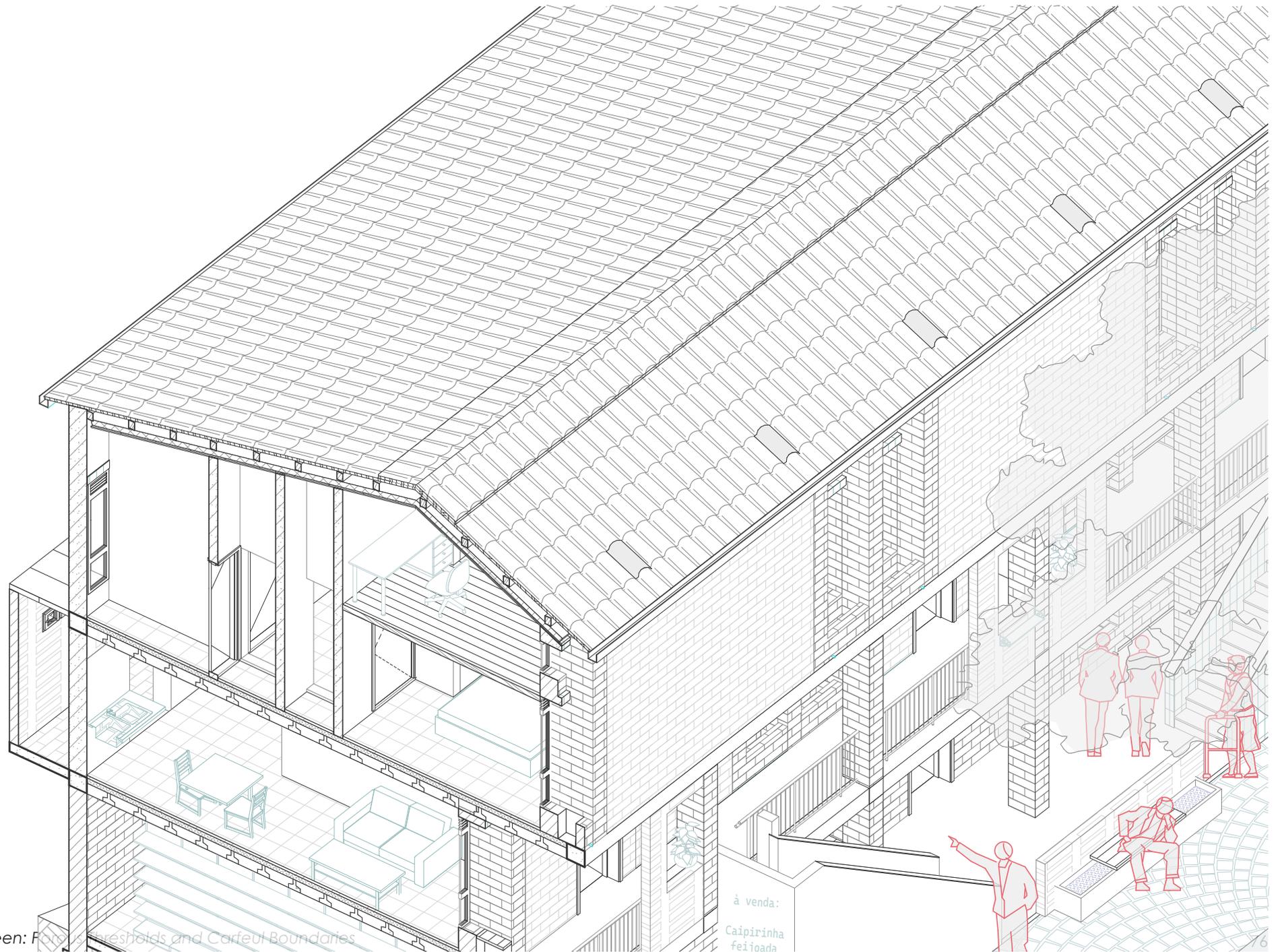


Corner Duplex



Upper Apartment

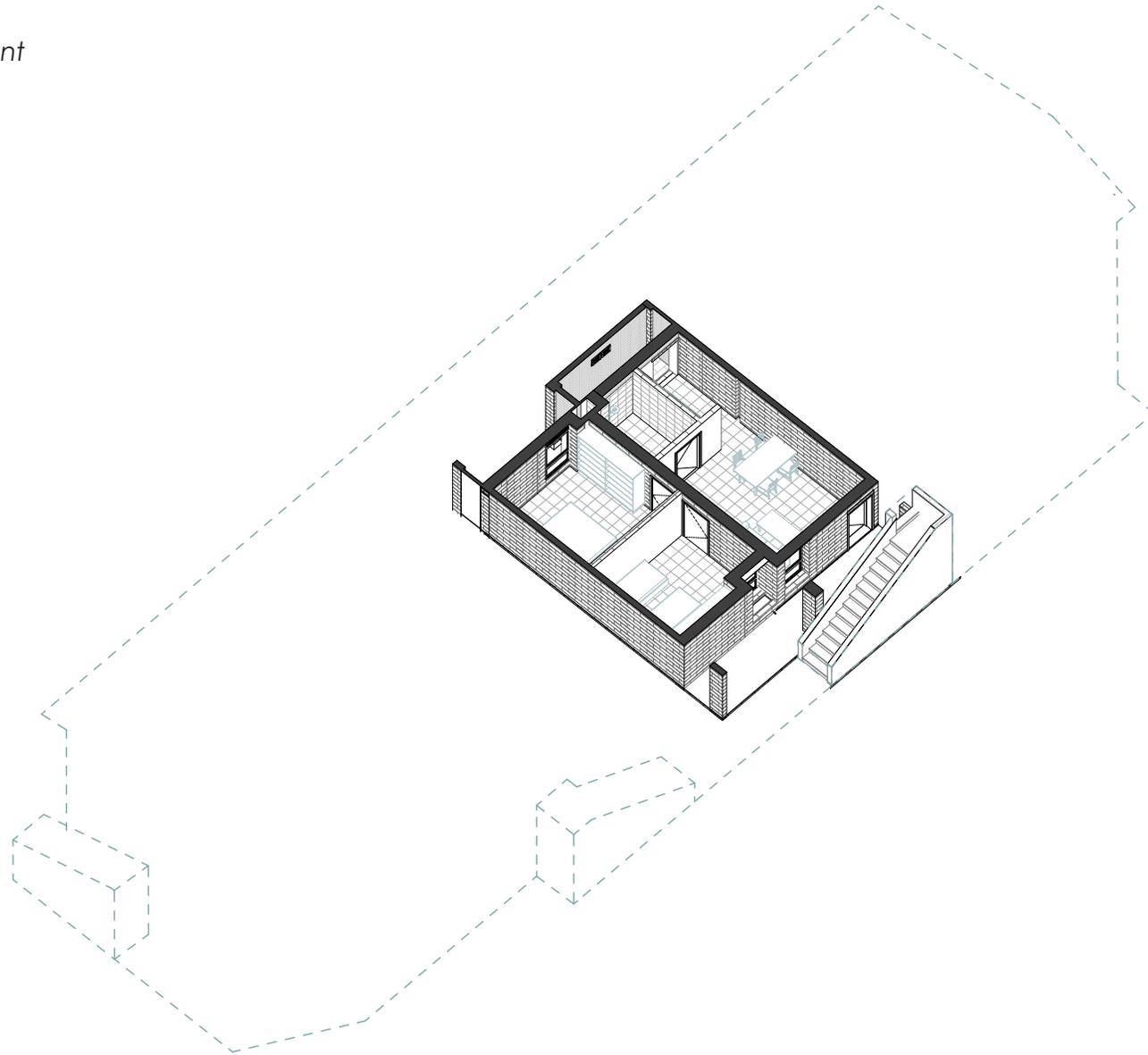




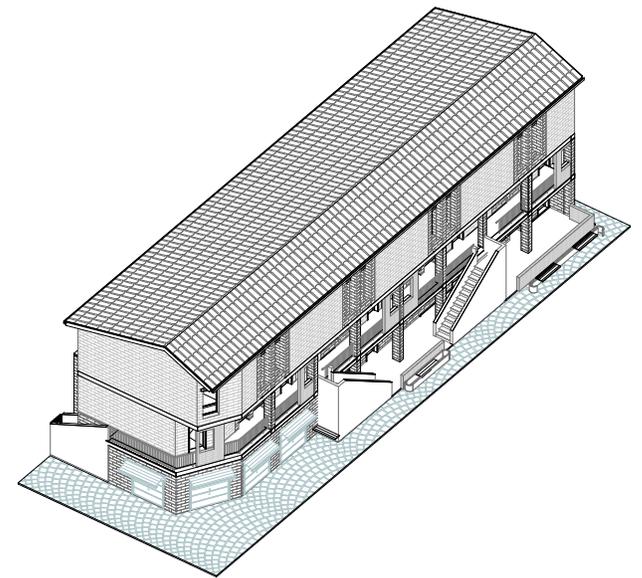
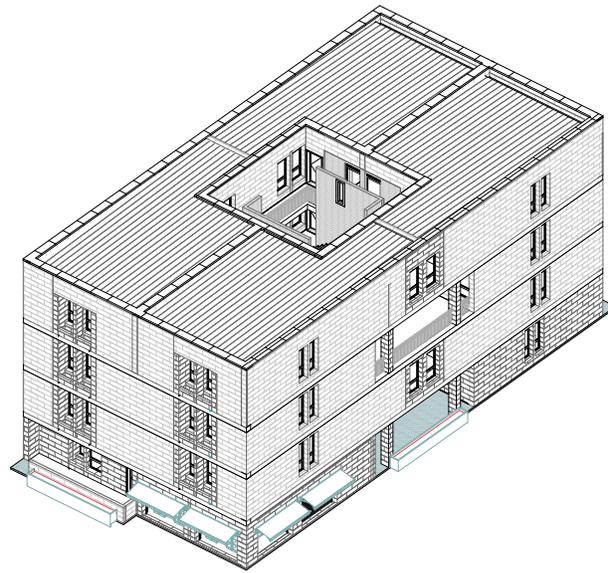
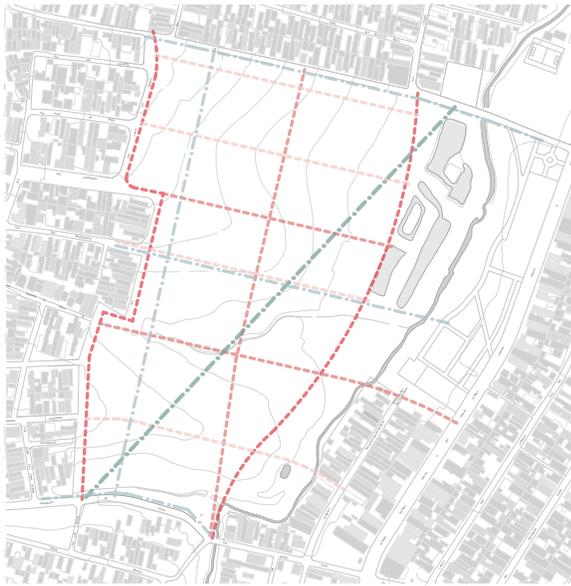
The Inbetween: From thresholds and Careful Boundaries

à venda:  
Caipirinha  
feijoadá

Groundfloor Apartment

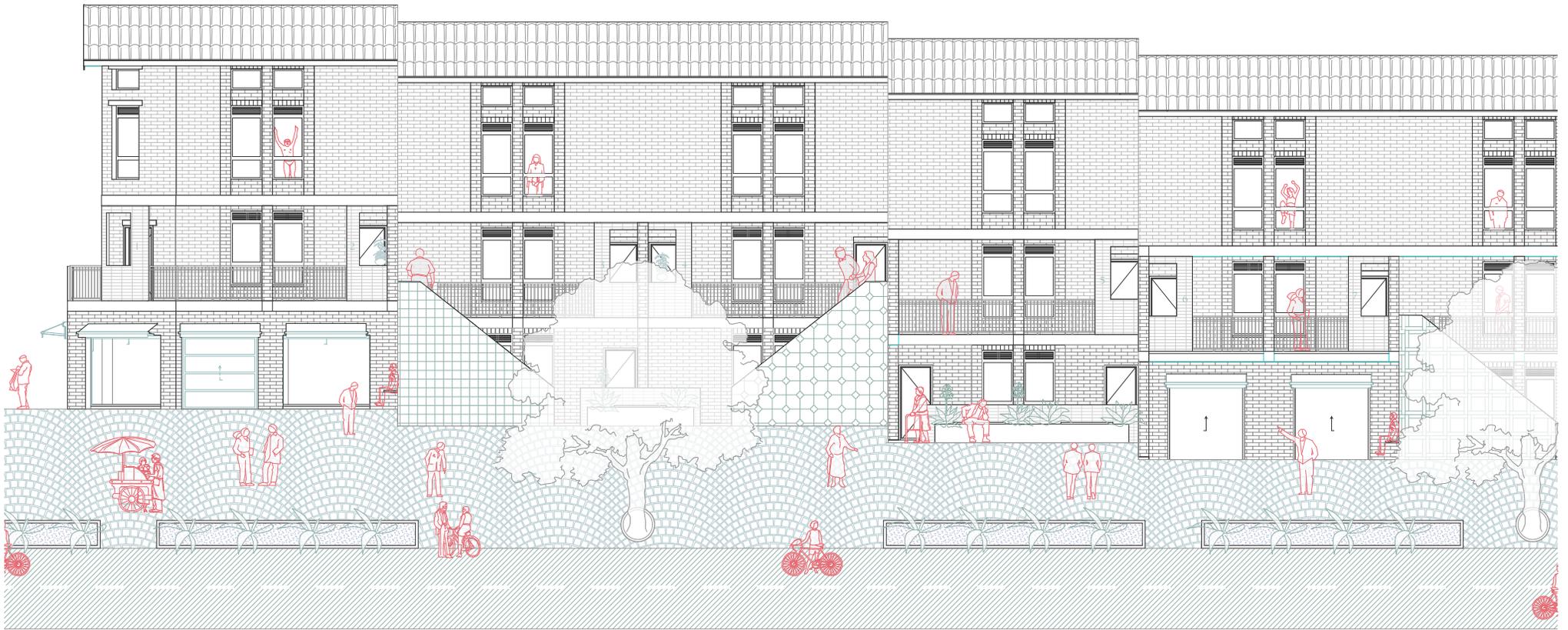


## Three Components





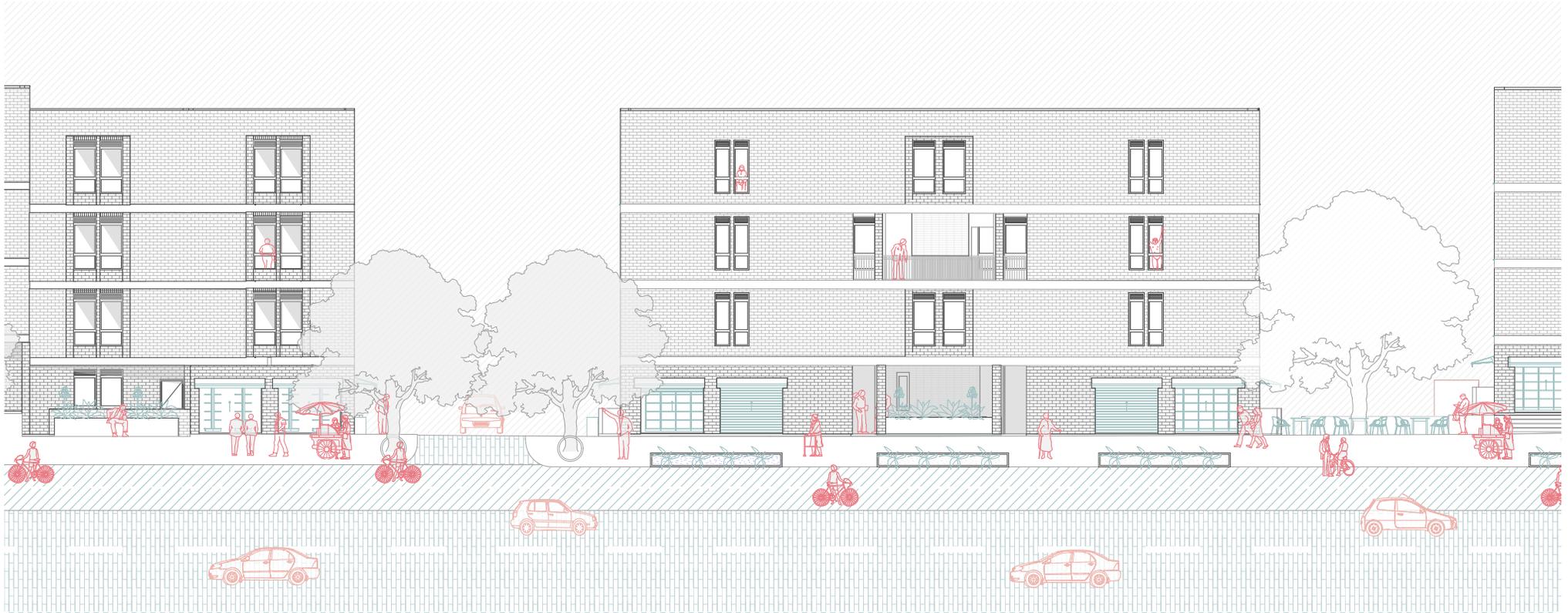


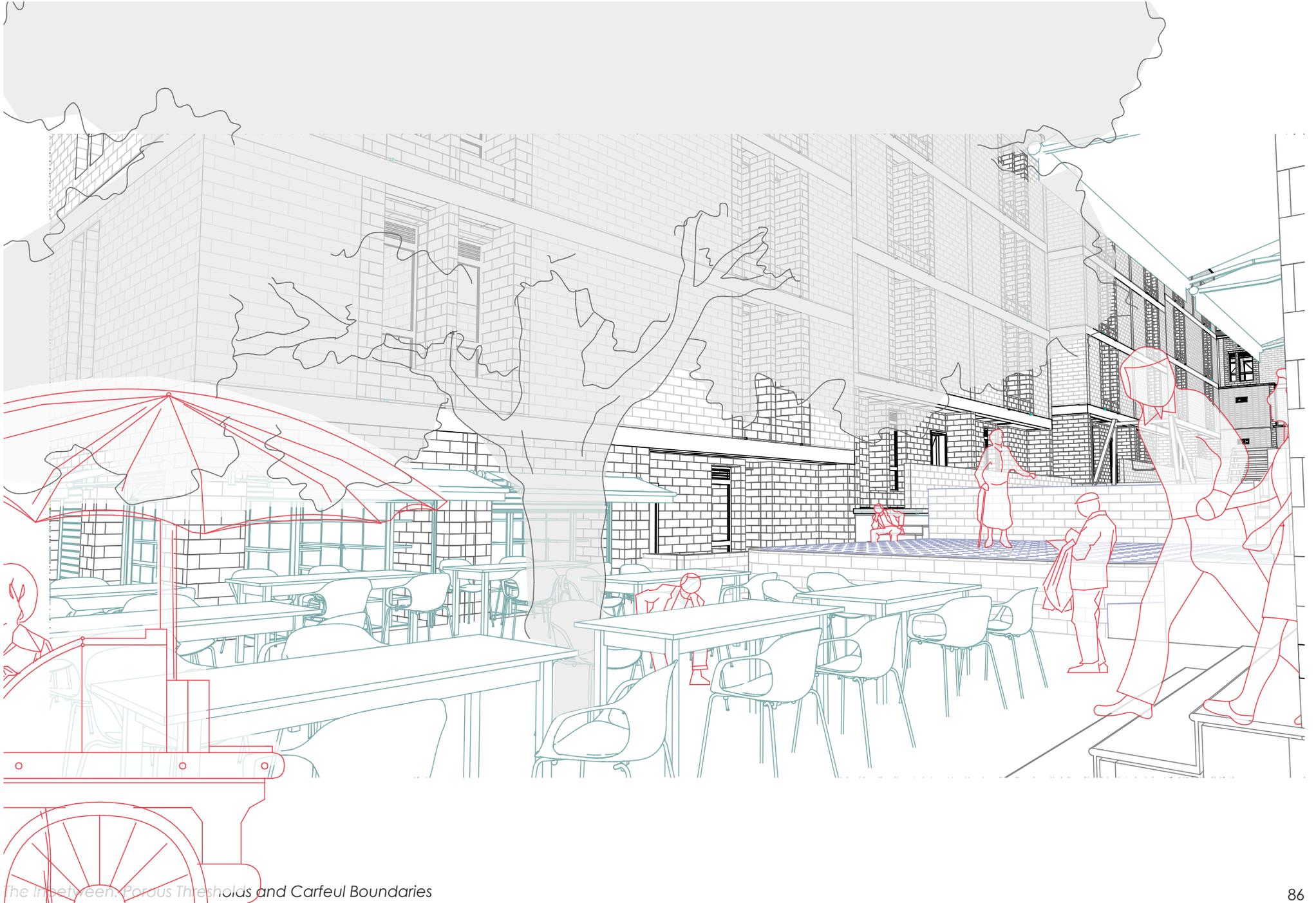












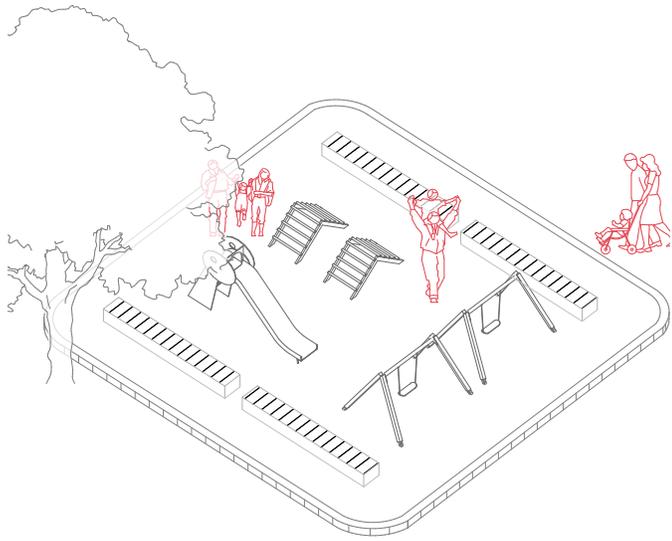




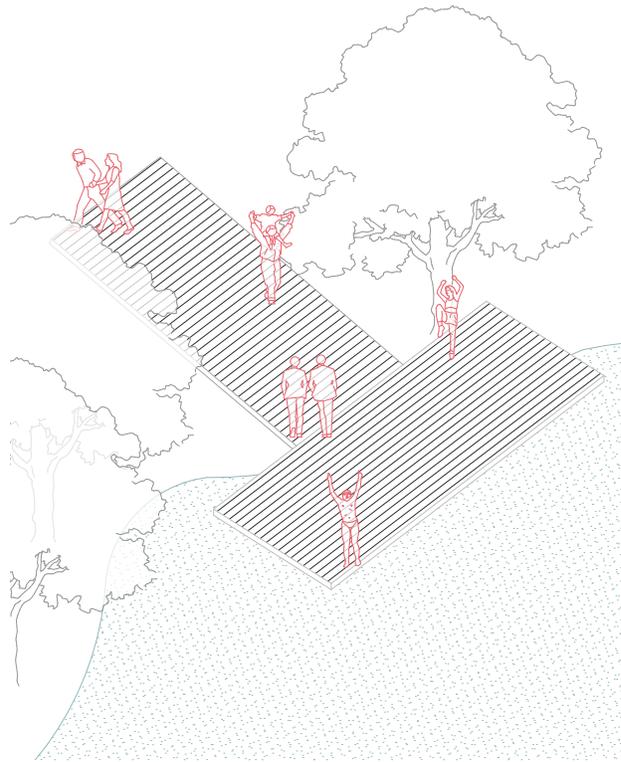
The Inbetween: Porous Thresholds and Careful Boundaries



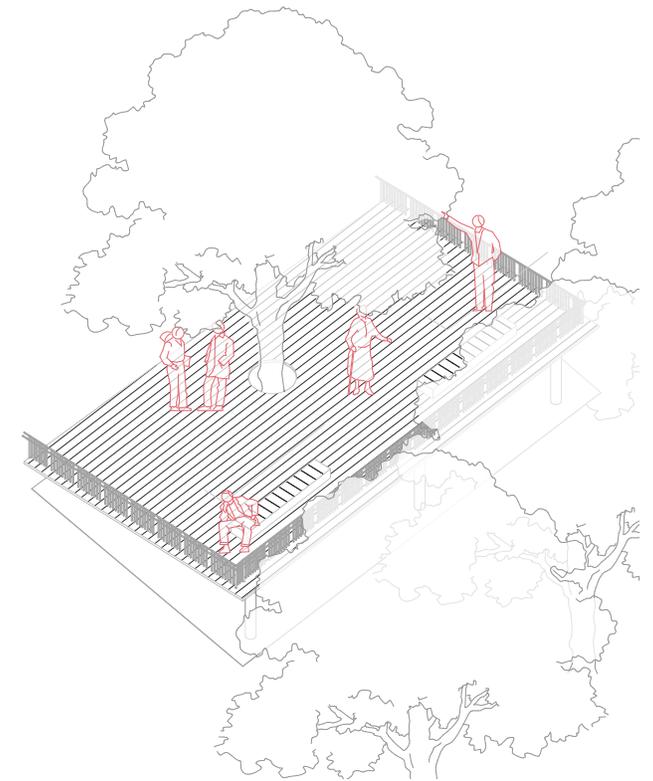
## Linear Park Pavilions



Playground

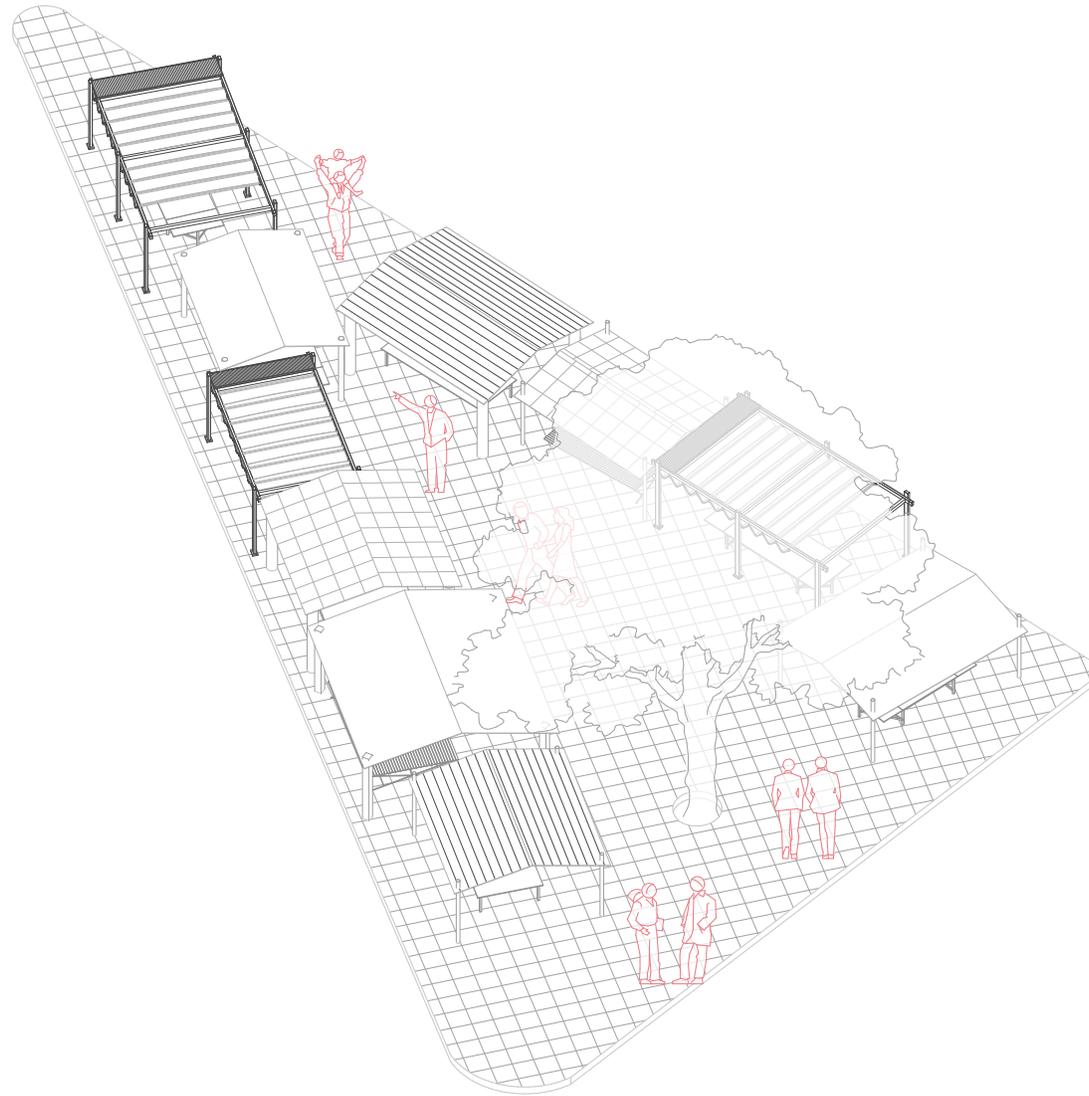


Jette

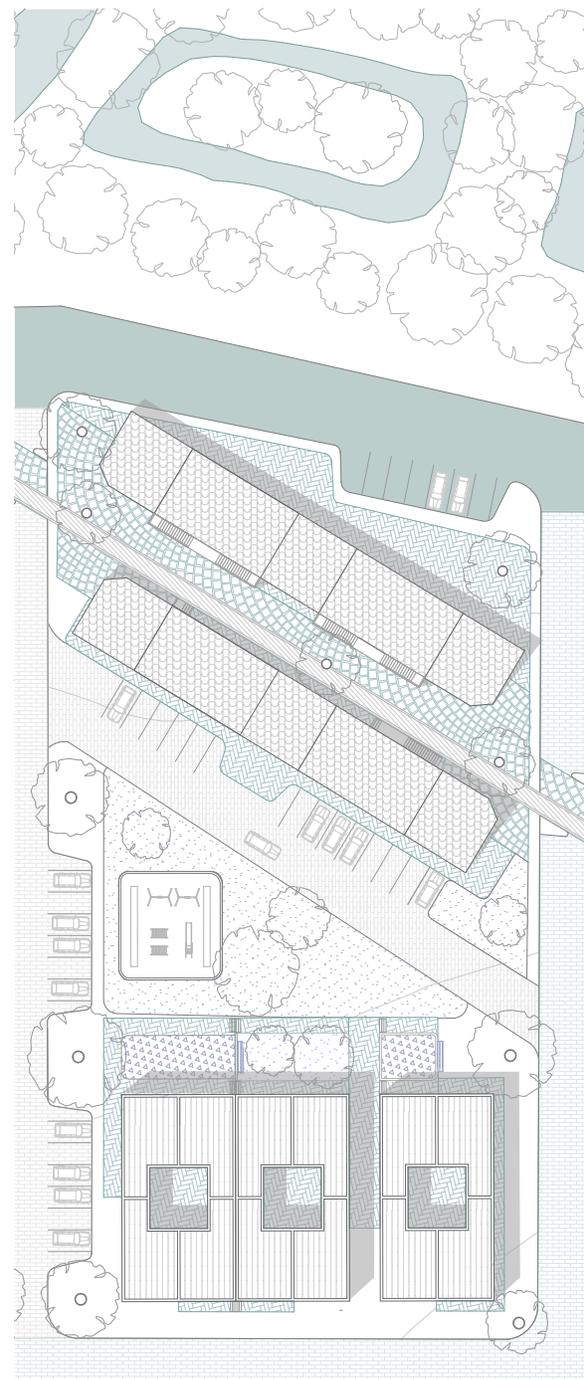
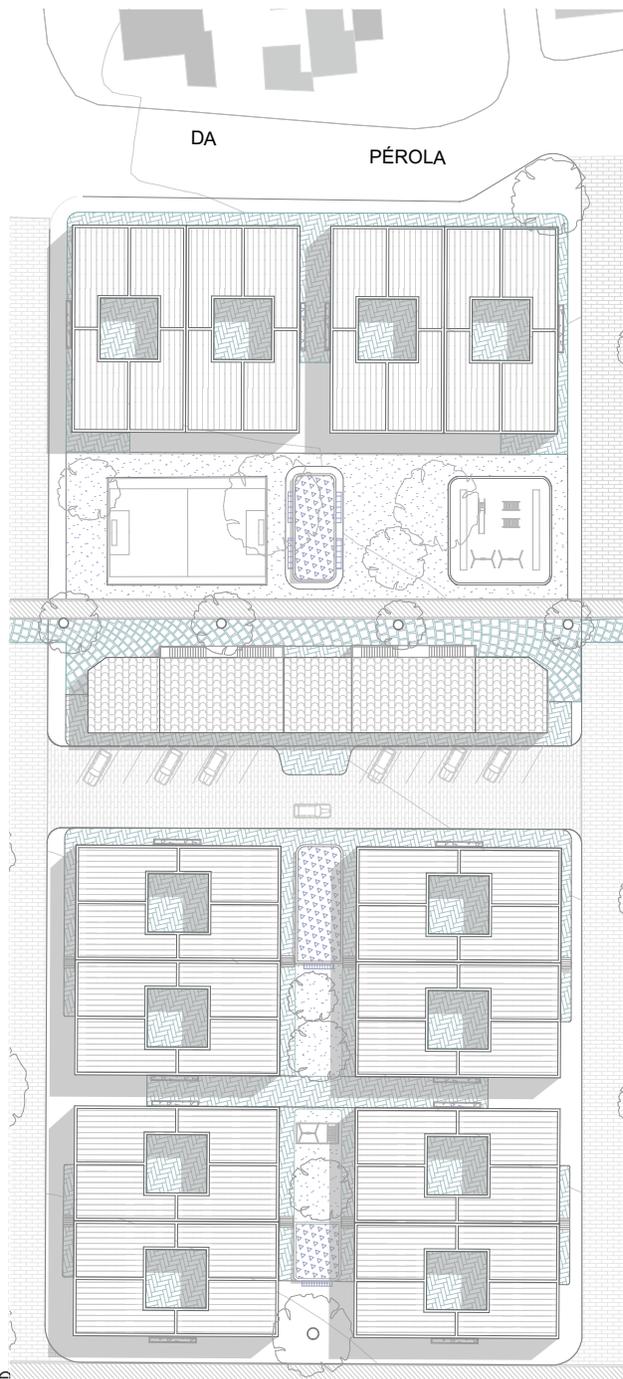


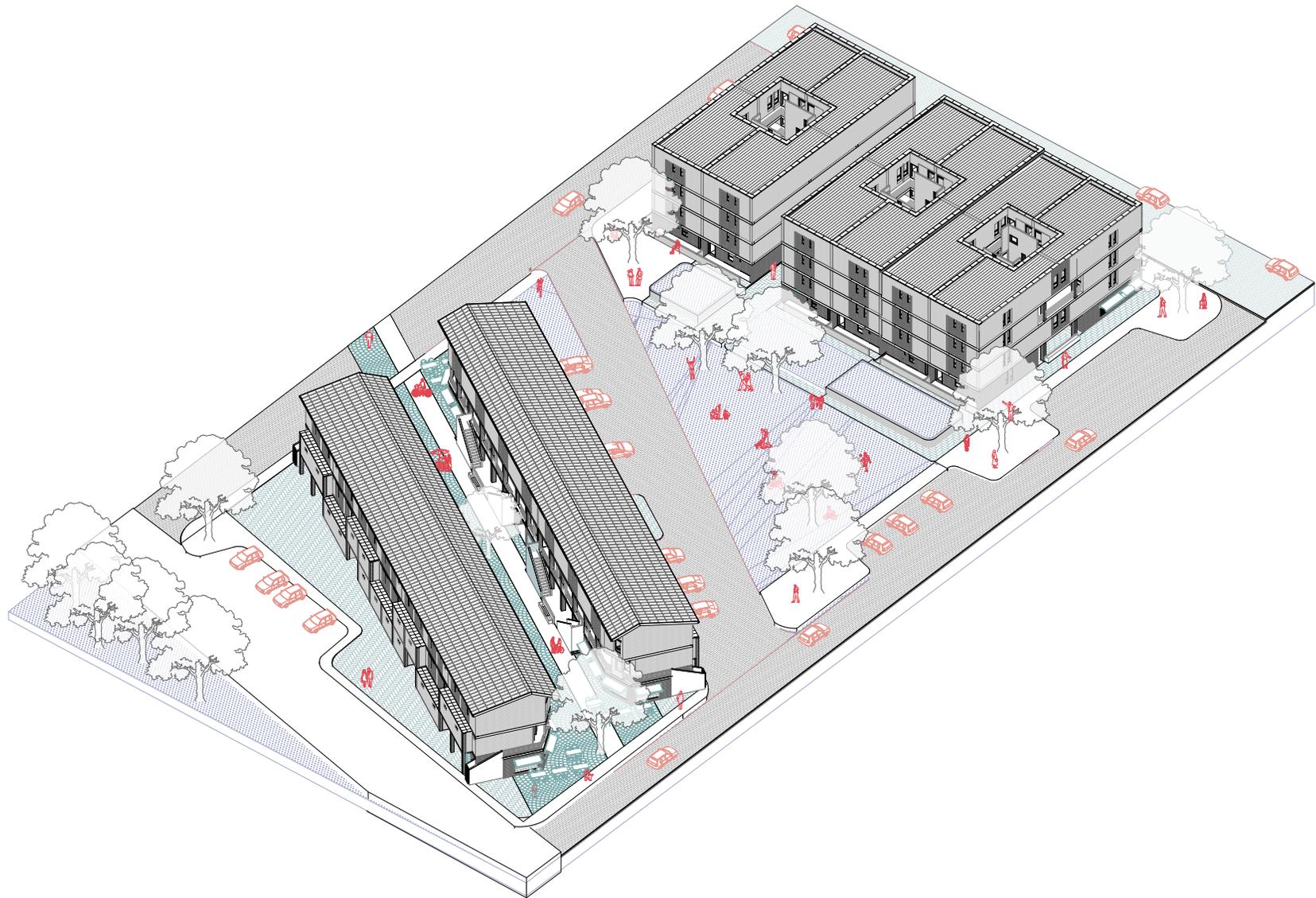
Rest Space

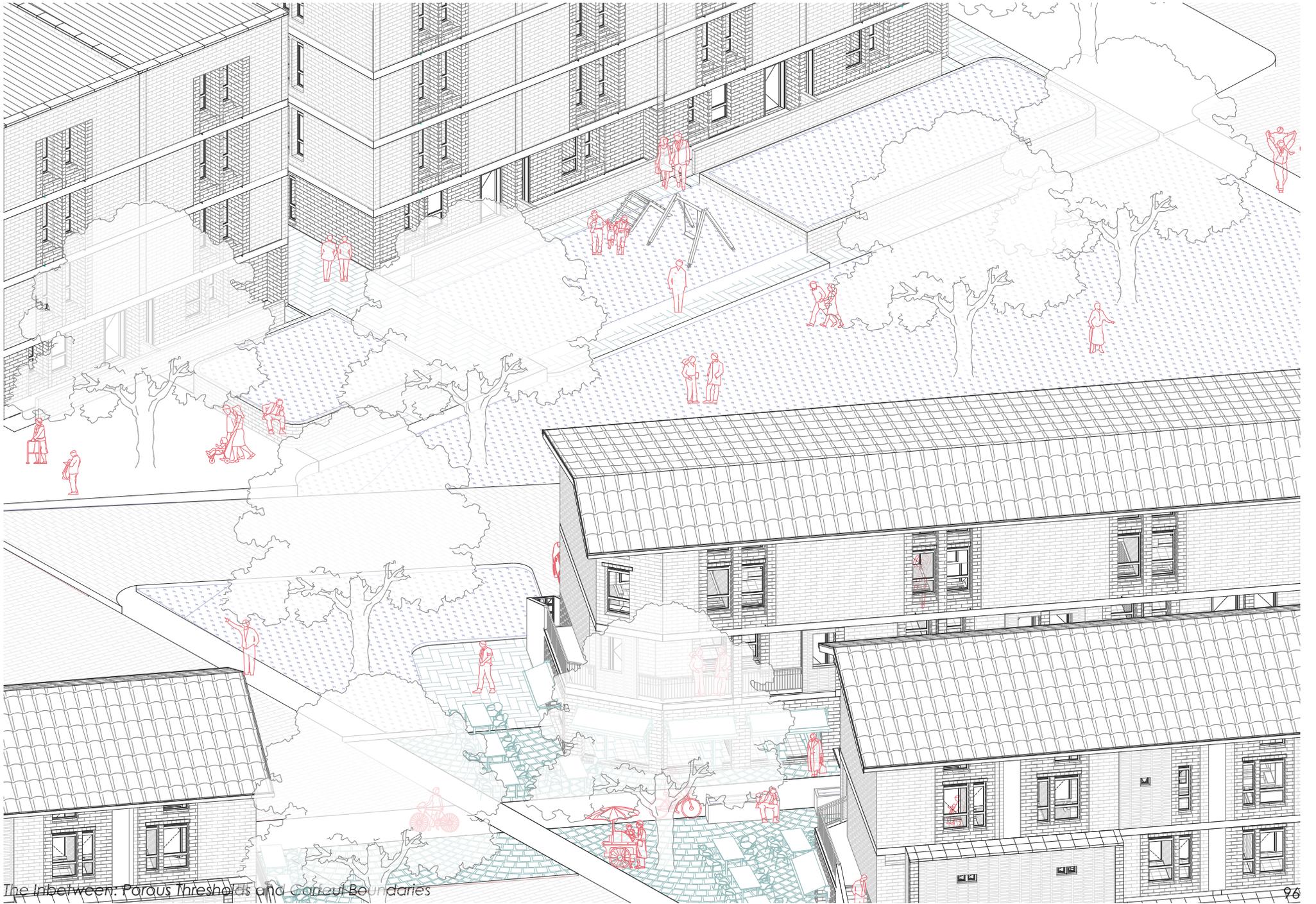




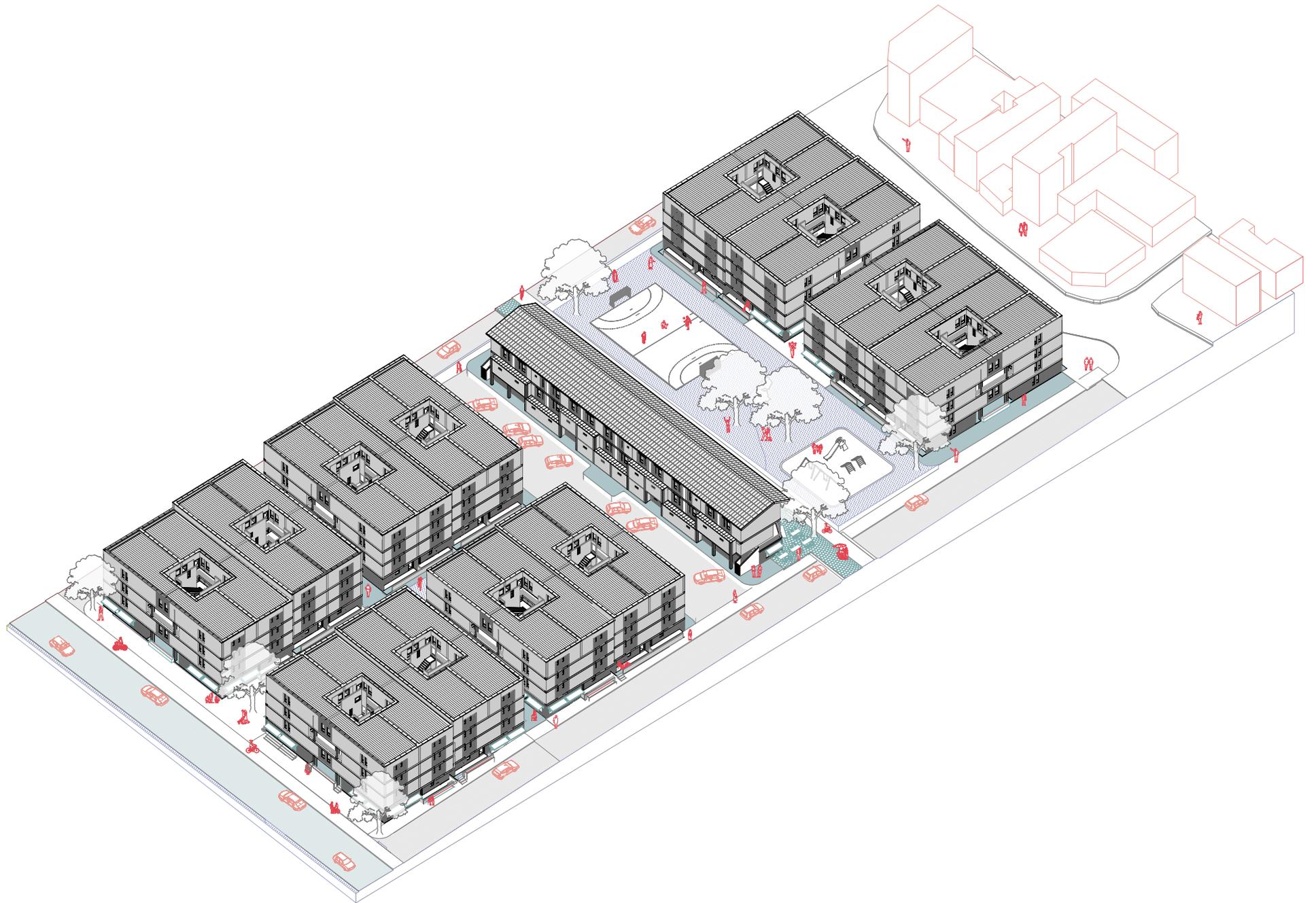


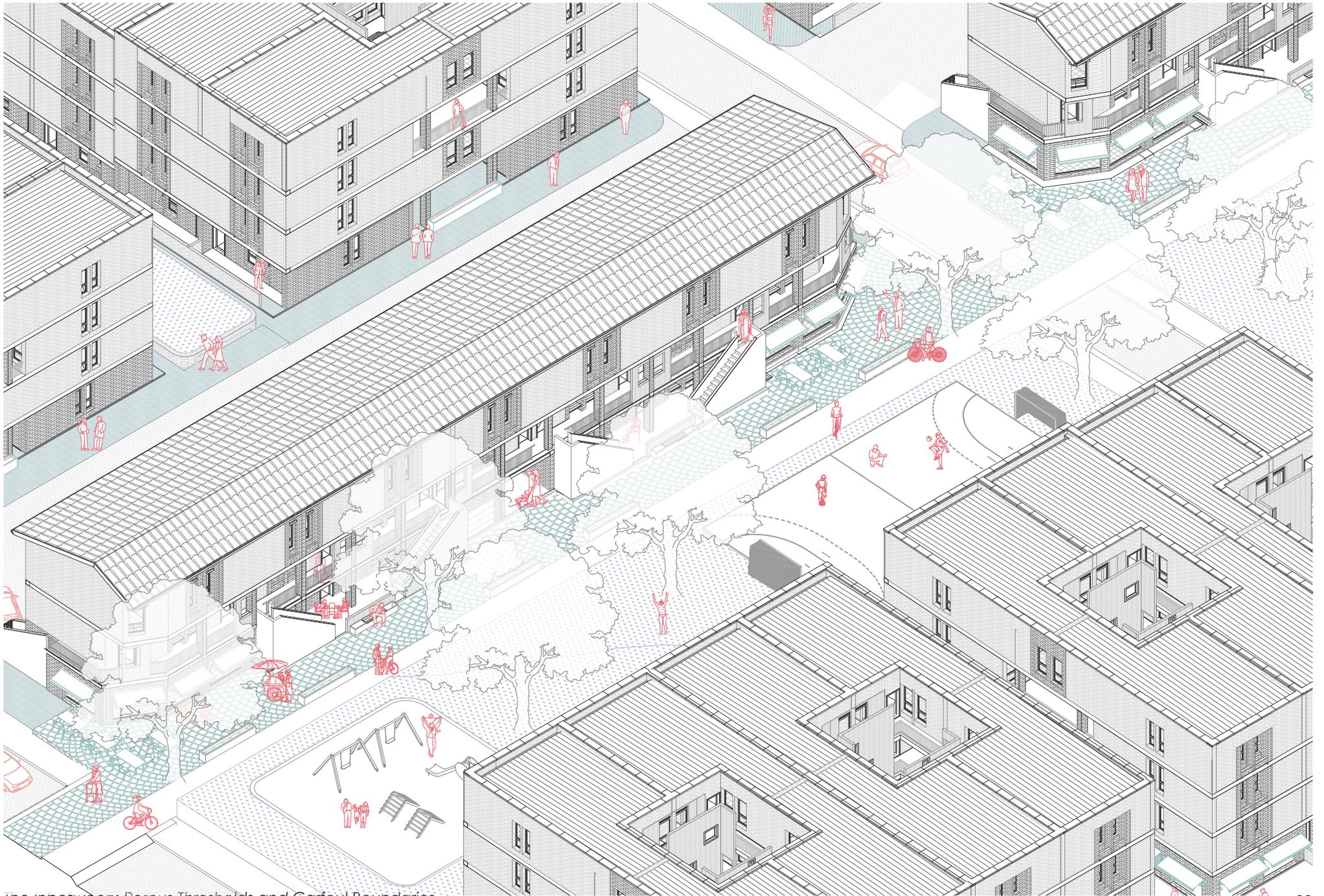






*The Inbetween: Porous Thresholds and Gaps at Boundaries*





*The inbetween: Porous Thresholds and Careful Boundaries*

## Materiality, Circularity and Climate

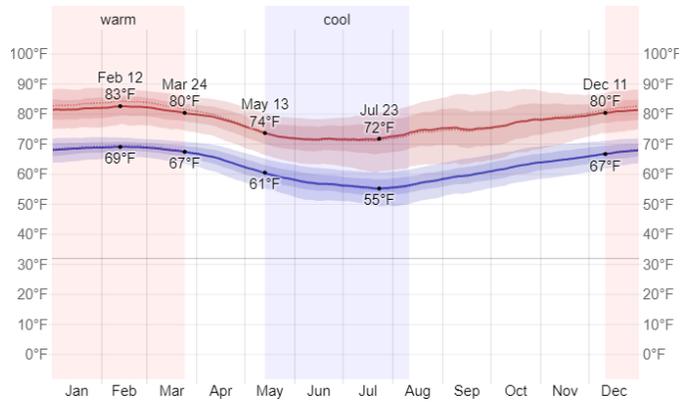


*Ceramic Bricks*  
290x140x90

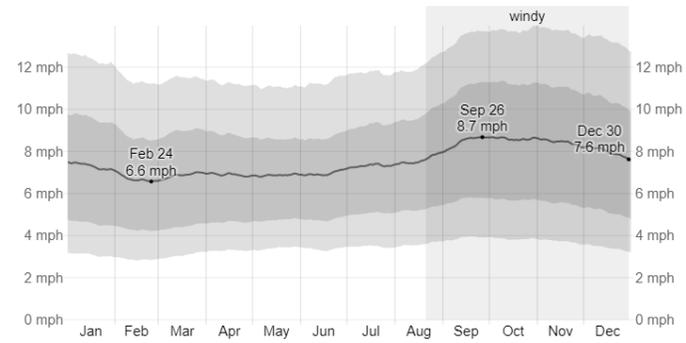


*Compressed Earth Bricks*  
290x140x90

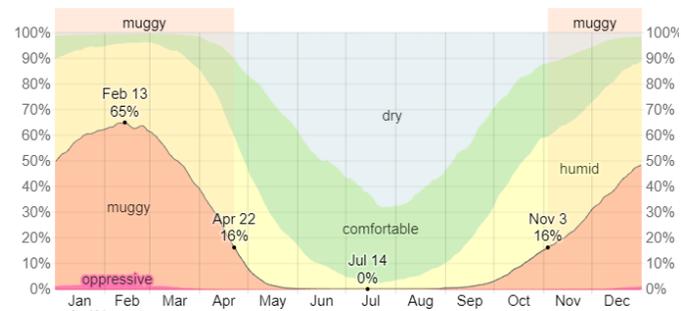
# Climate



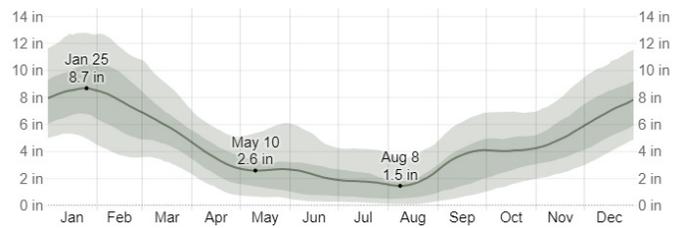
## Temperature



## Rainfall



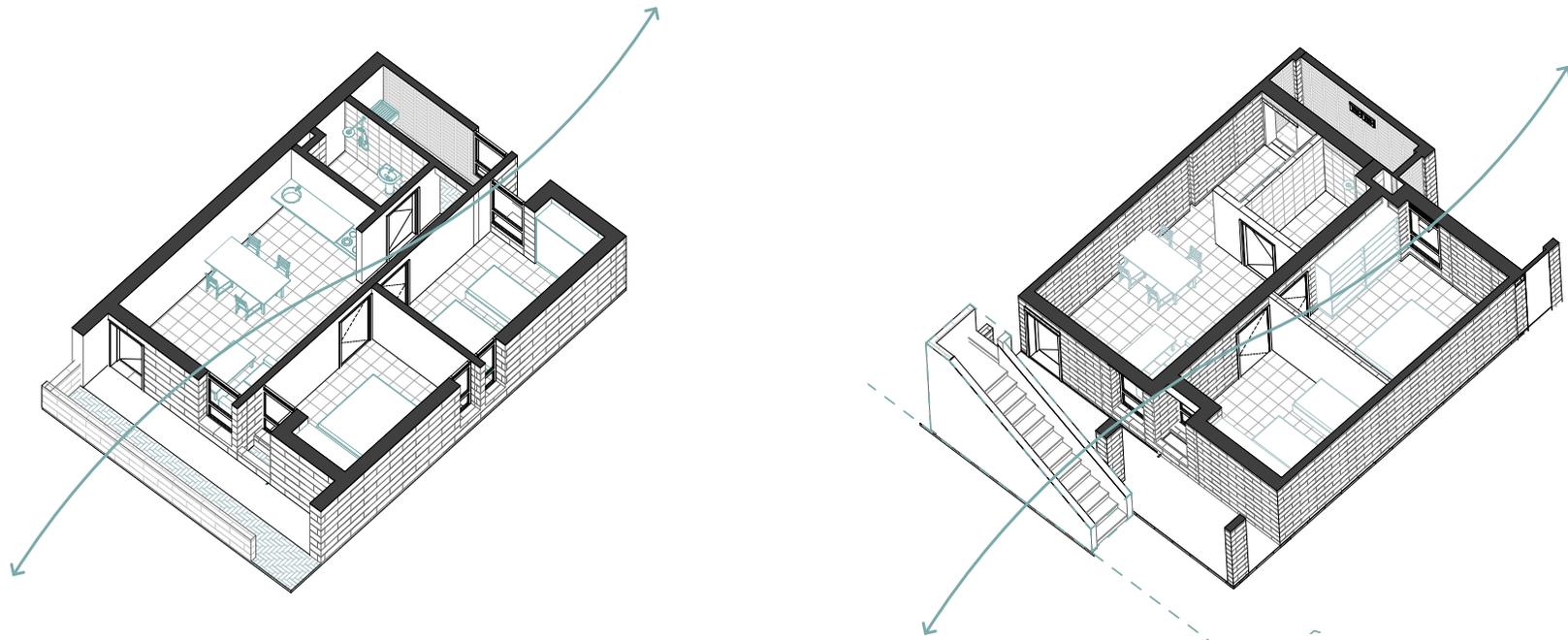
## Humidity



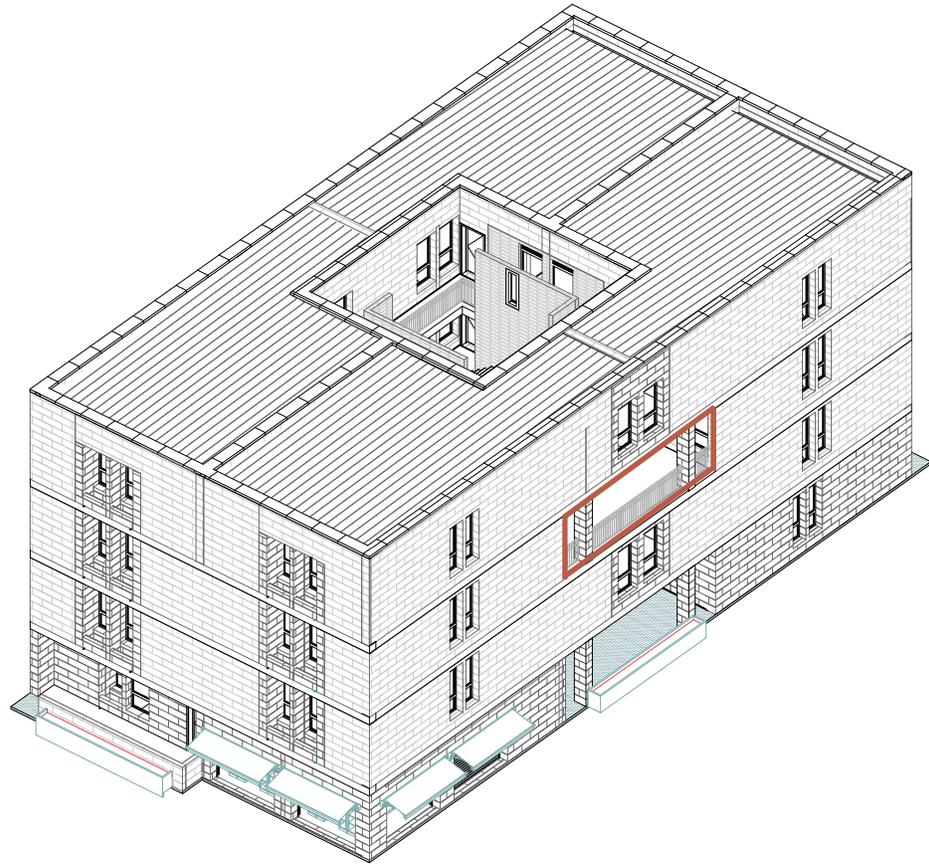
## Wind

Figure: São Paulo Climate Source: <https://weatherspark.com/y/30268/Average-Weather-in-S%C3%A3o-Paulo-Brazil-Year-Round#Figures-Temperature>

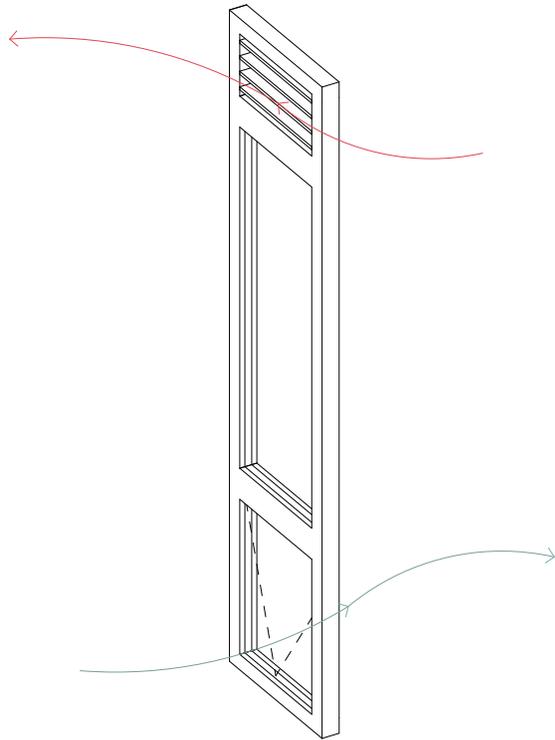
# Ventilation



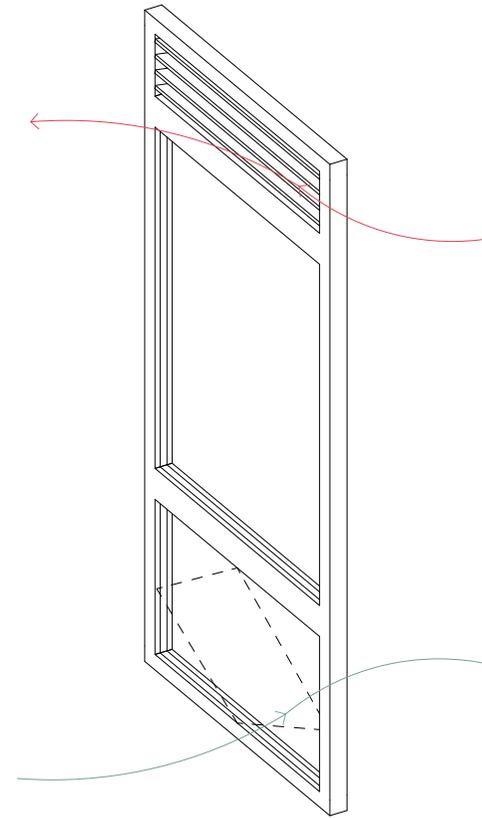
# Ventilation



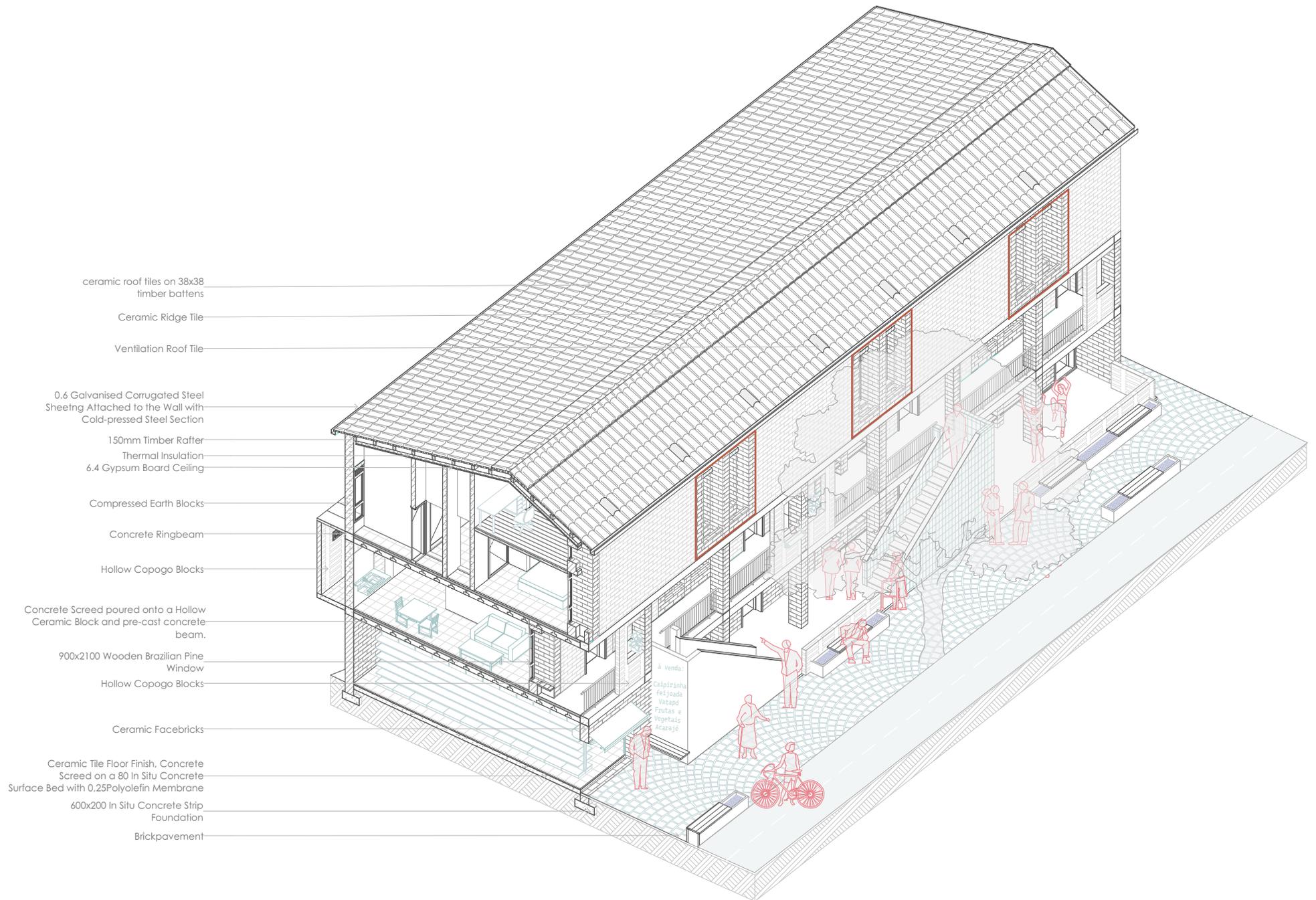
## Window Design



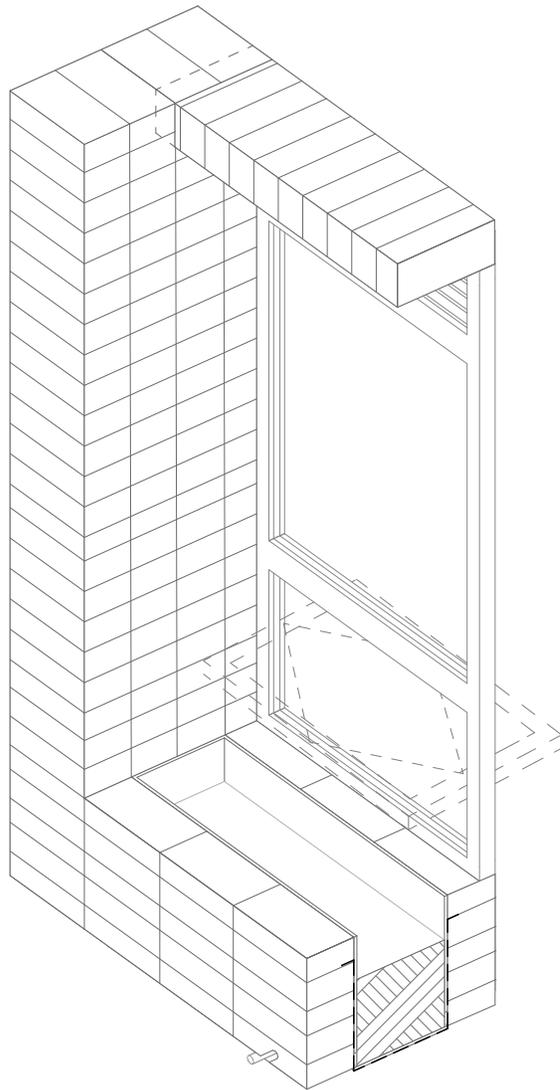
450x2100mm



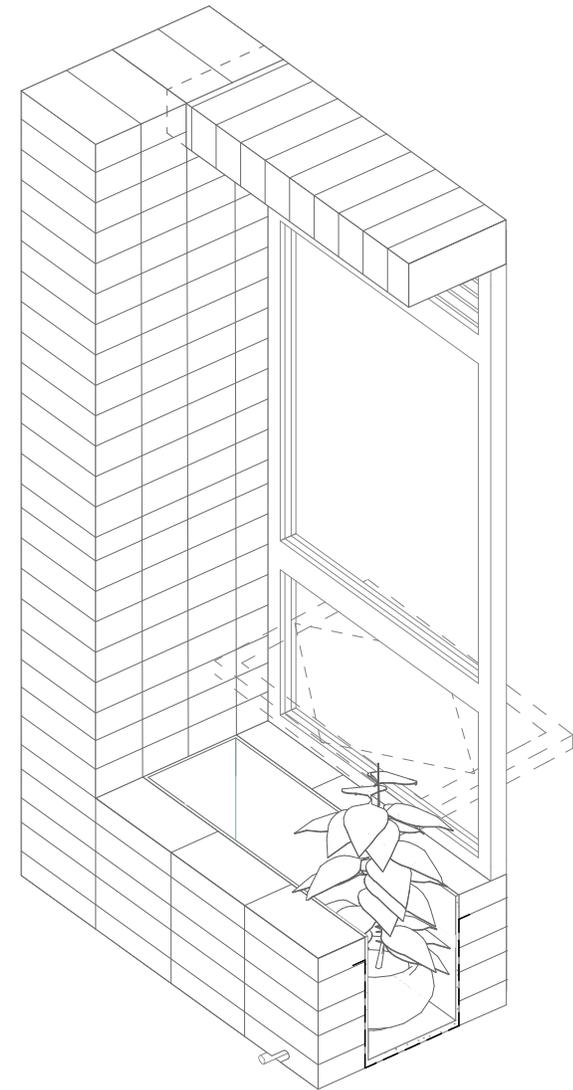
900x2100mm



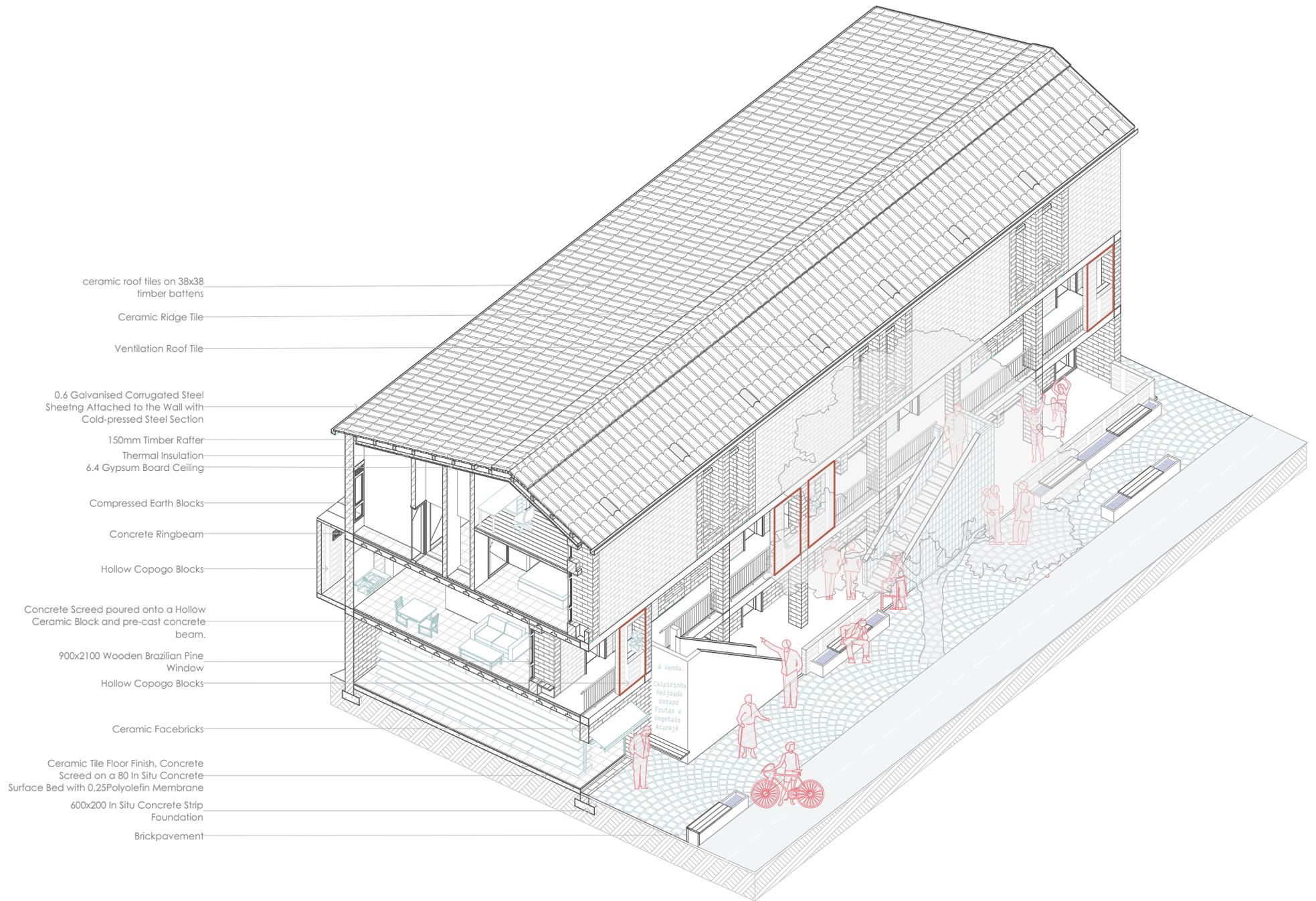
## Sunshading



Ground Floor

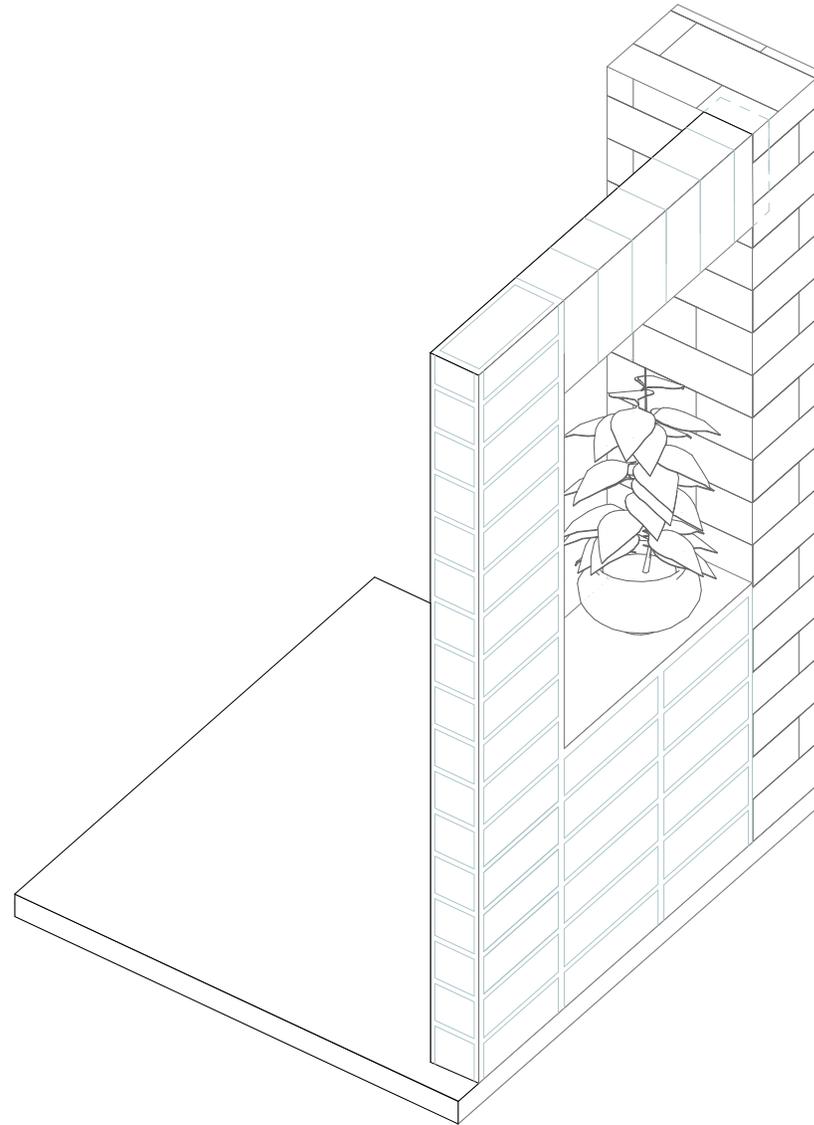


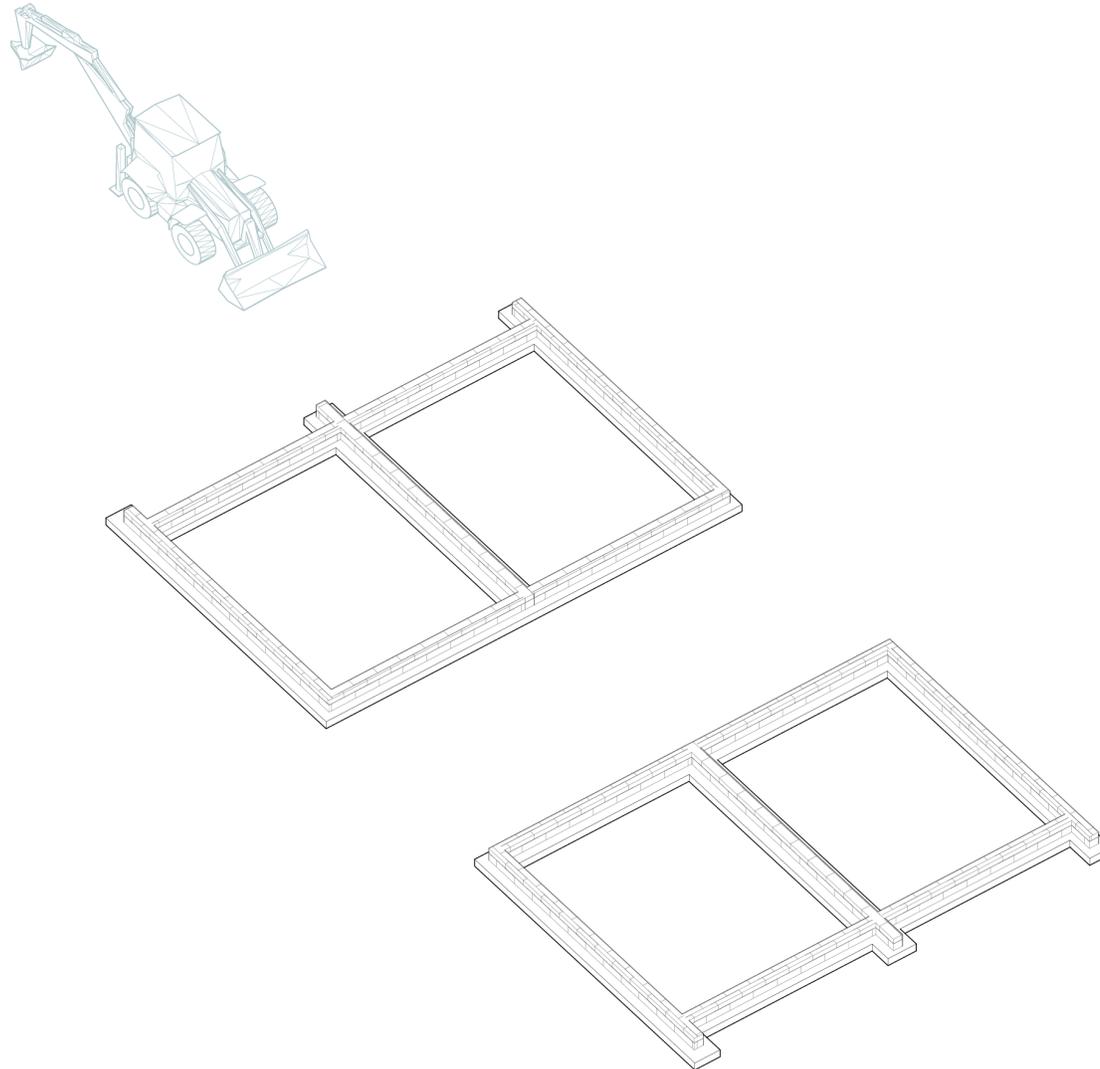
Upper Levels



- ceramic roof tiles on 38x38 timber battens
- Ceramic Ridge Tile
- Ventilation Roof Tile
- 0.6 Galvanised Corrugated Steel Sheeting Attached to the Wall with Cold-pressed Steel Section
- 150mm Timber Rafter
- Thermal Insulation
- 6.4 Gypsum Board Ceiling
- Compressed Earth Blocks
- Concrete Ringbeam
- Hollow Copogo Blocks
- Concrete Screed poured onto a Hollow Ceramic Block and pre-cast concrete beam.
- 900x2100 Wooden Brazilian Pine Window
- Hollow Copogo Blocks
- Ceramic Facebricks
- Ceramic Tile Floor Finish, Concrete Screed on a 80 In Situ Concrete Surface Bed with 0.25Polyolefin Membrane
- 600x200 In Situ Concrete Strip Foundation
- Brickpavement

## Sunshading

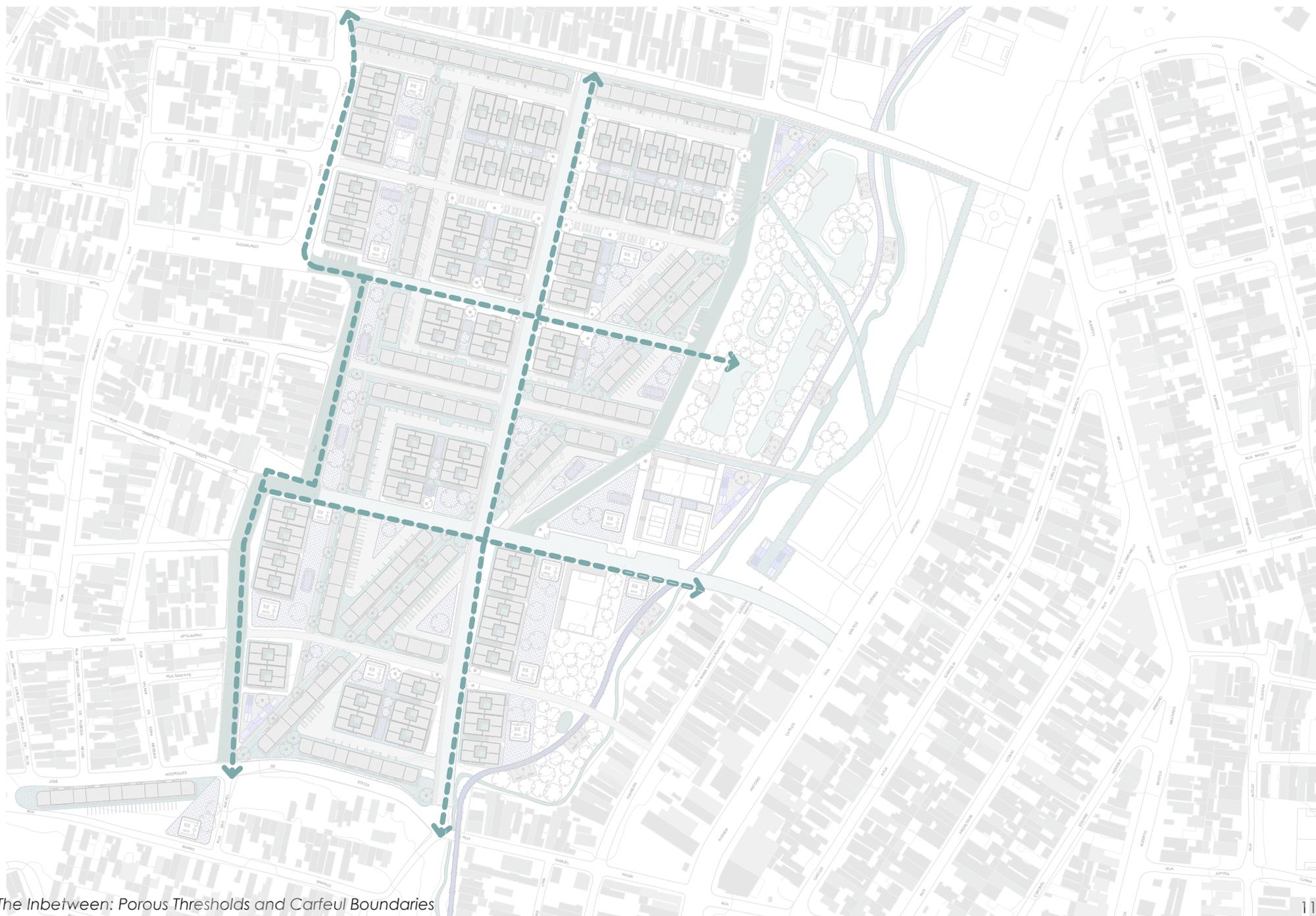












The Inbetween: Porous Thresholds and Careful Boundaries



The Inbetween: Porous Thresholds and Careful Boundaries



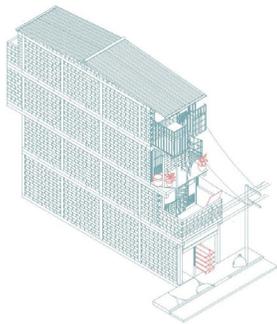
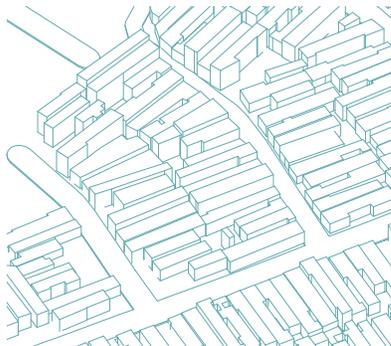






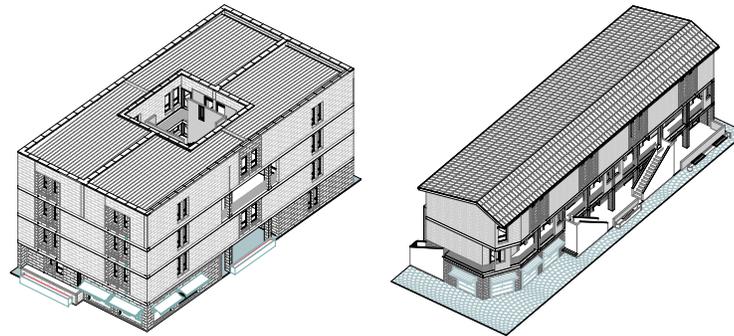
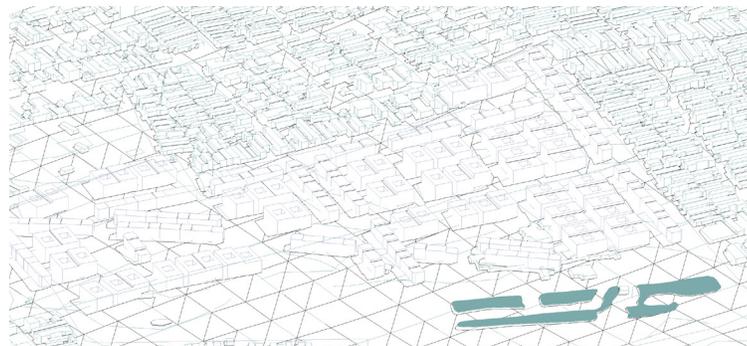


ZEIS 1



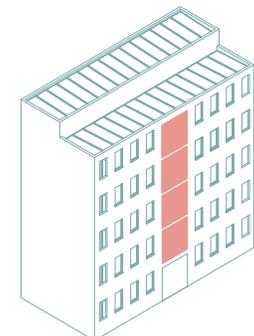
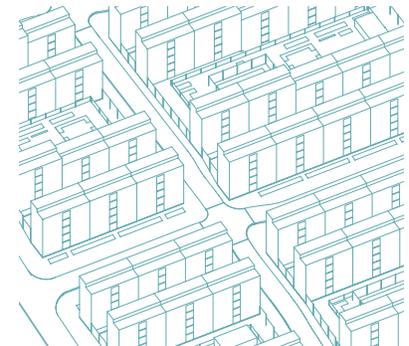
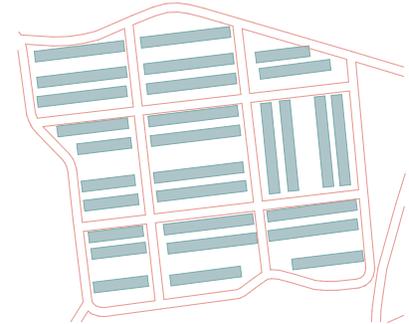
*Resilience*

The In-between



*Resilience and Efficiency*

ZEIS 4



*Efficiency*

## The City of Walls



Figure: "Paraisópolis Housing" by Fabio Knoll (2011), Source: <https://divisare.com/projects/221586-elito-arquitetos-fabio-knoll-paraisopolis-housing>

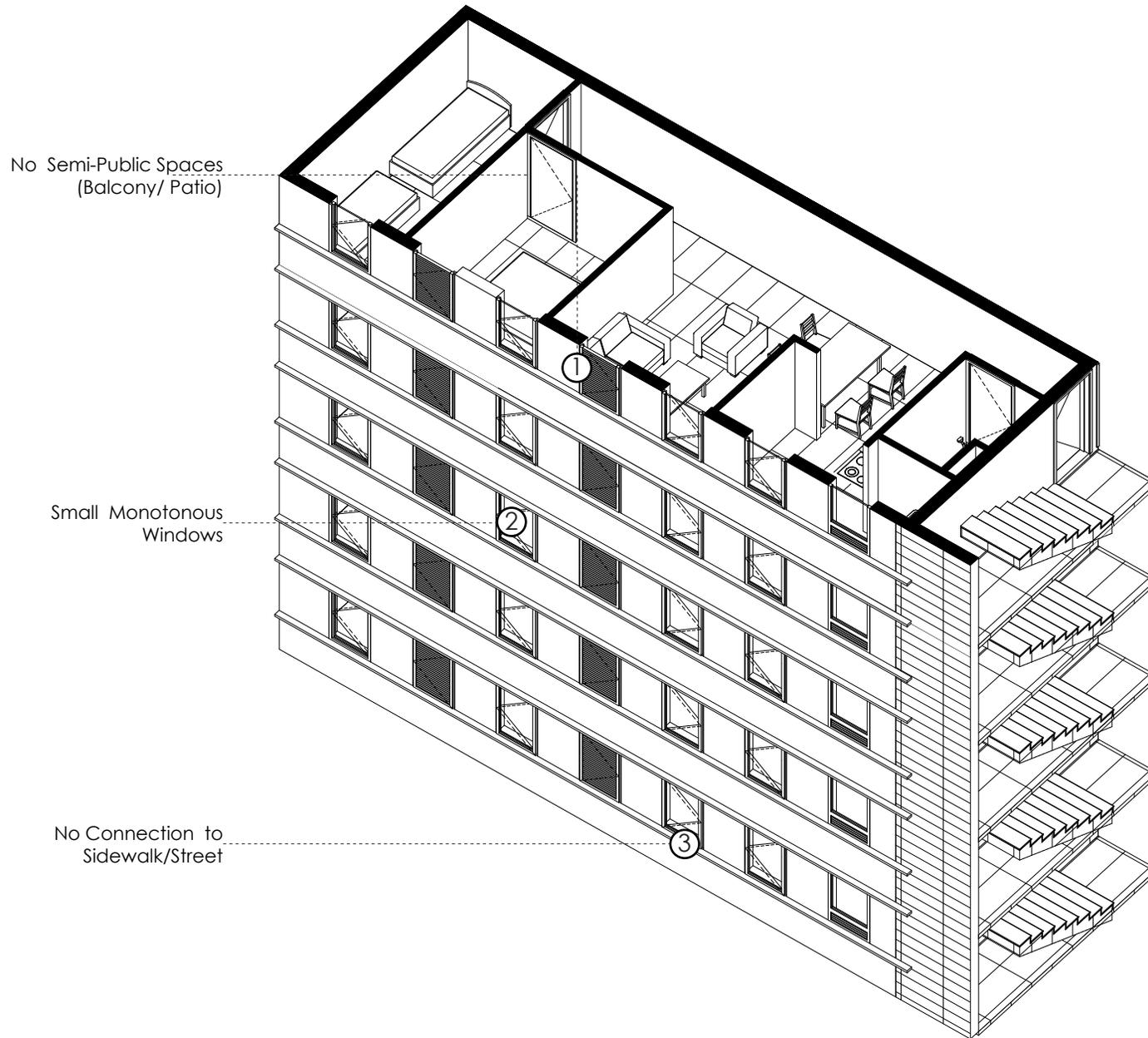
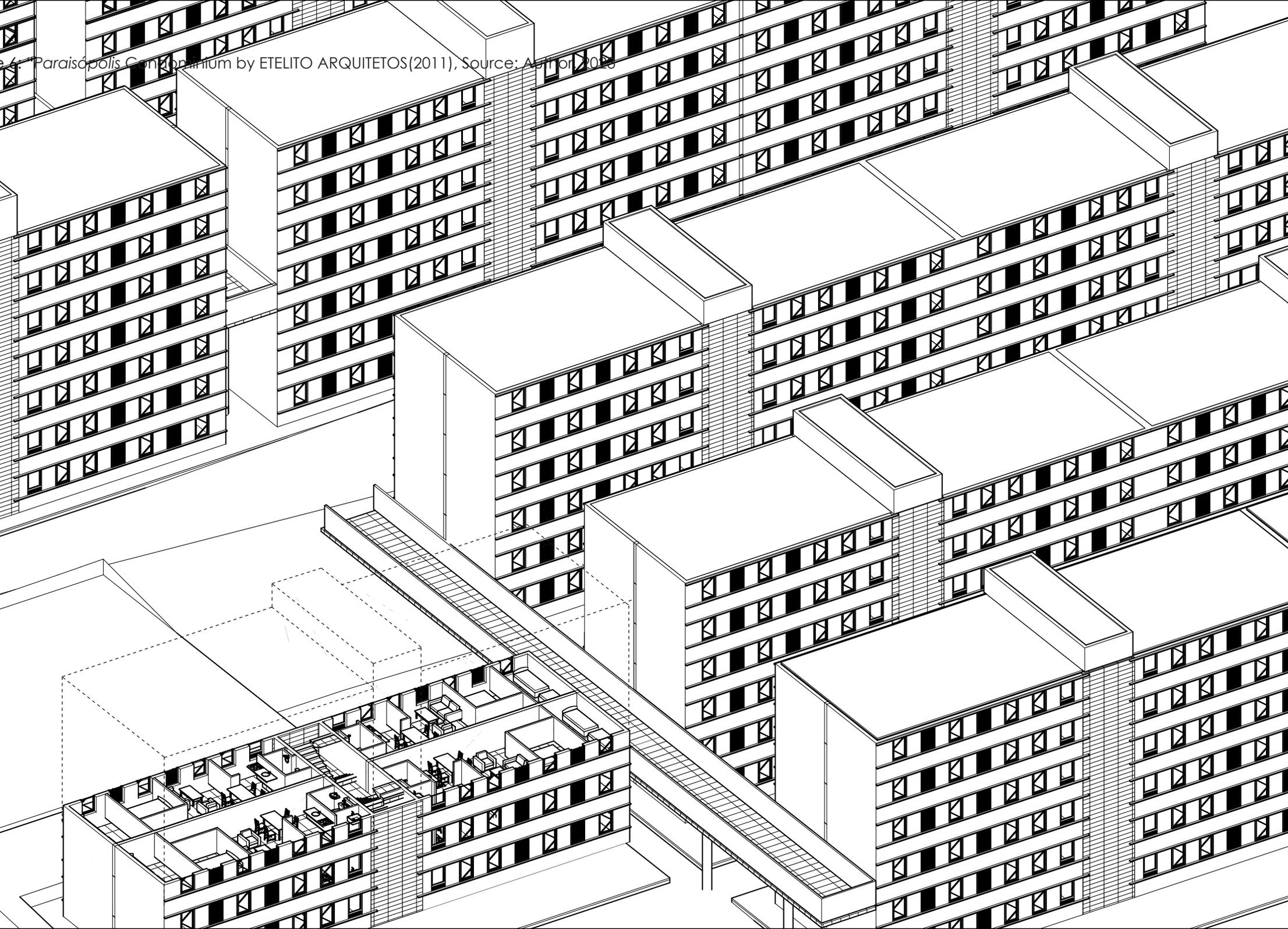
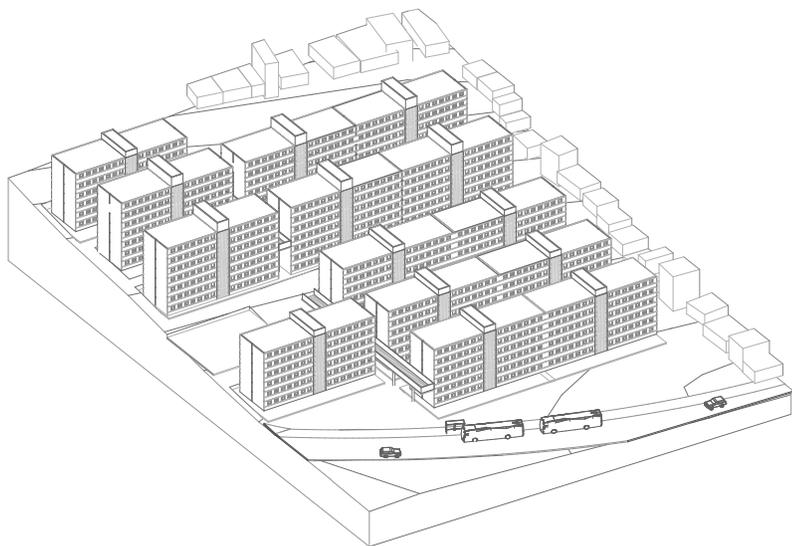


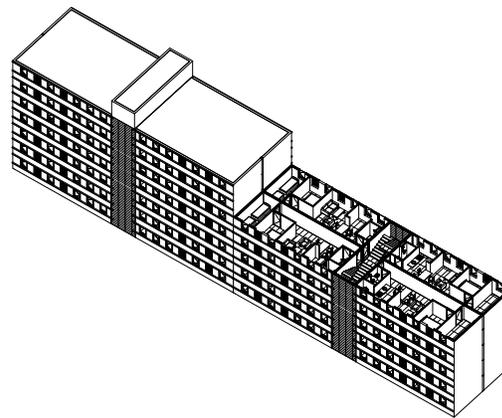
Figure: "Paraisópolis Condominium by ETELITO ARQUITETOS(2011), Source: Author, 2023

Fig. 4. Paraisópolis Condominium by ETELITO ARQUITETOS(2011), Source: Assi, 2013

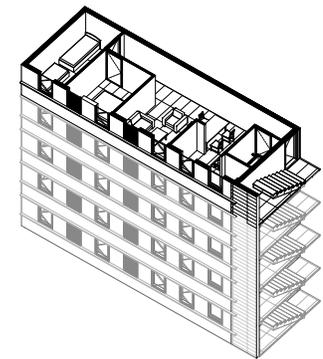




Neighbourhood  
*Large*



Block  
*Medium*



Unit  
*Small*



## 3D OVERVIEW

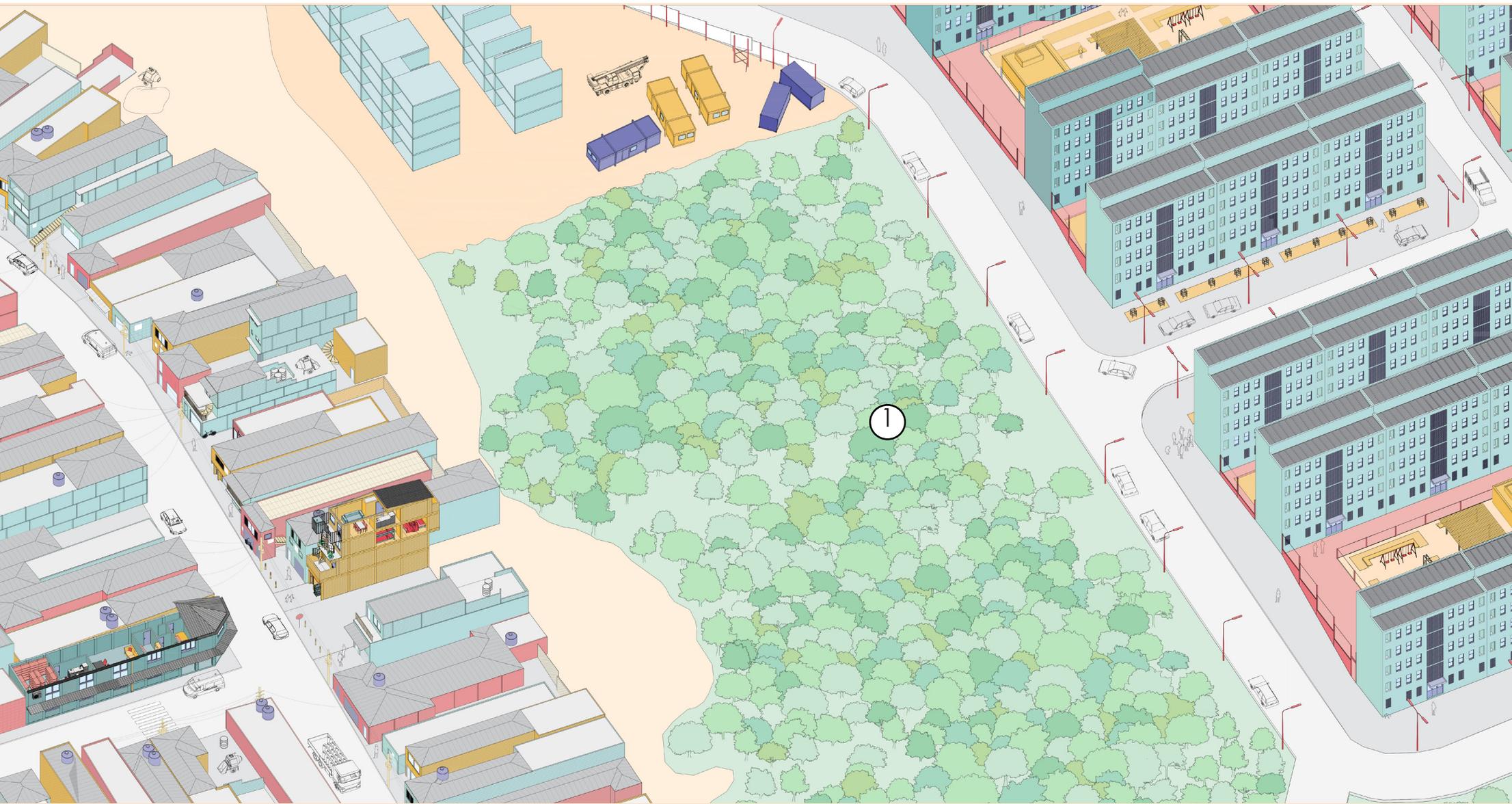


Figure: "Chacara do Conde vs Grajaú" Source: RobbertLaan, HuubFenten and SanetteSchreurs (2023)

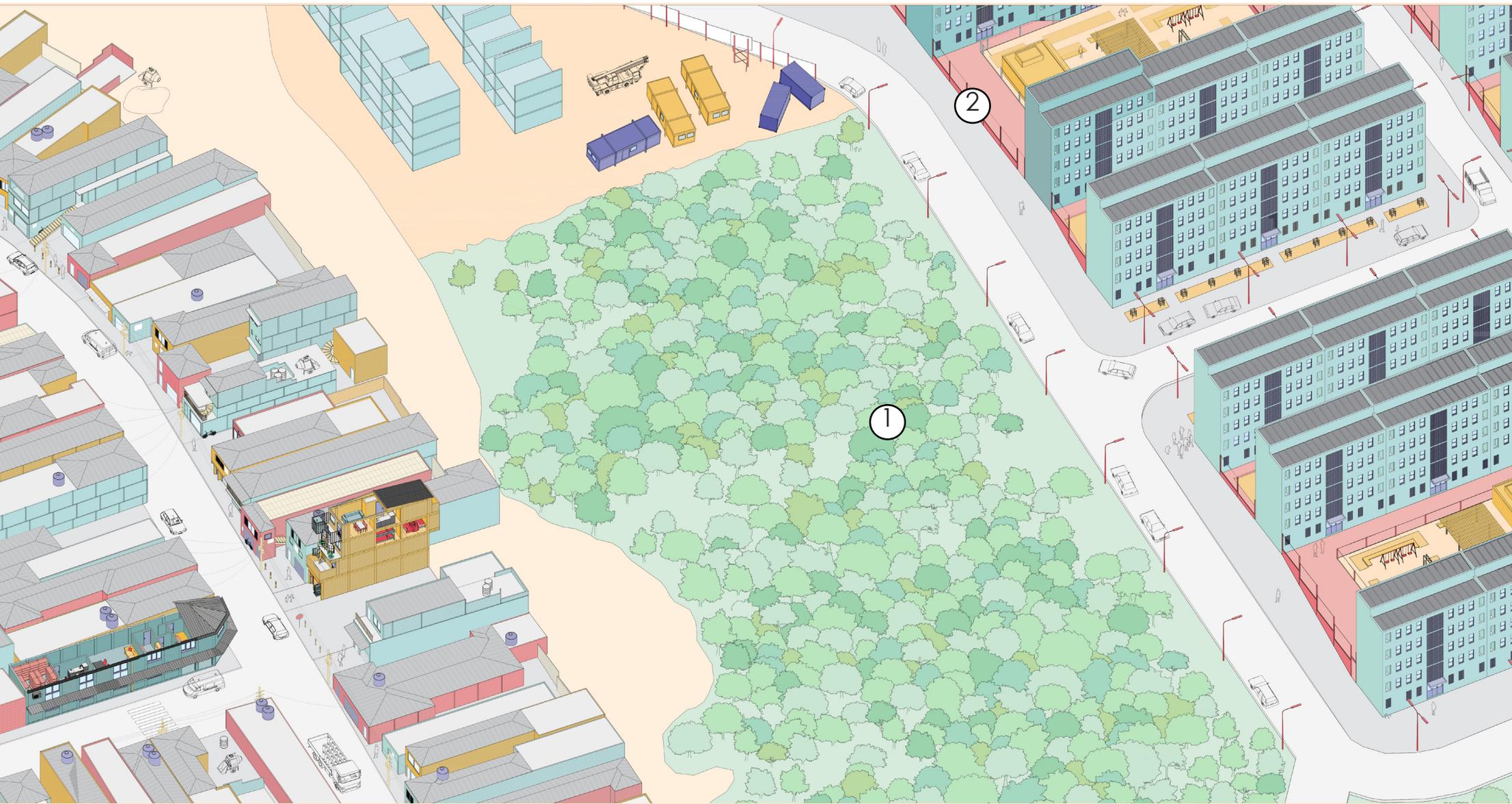


Figure: "Chacara do Conde vs Grajaú" Source: RobbertLaan, HuubFenten and SanetteSchreurs (2023)

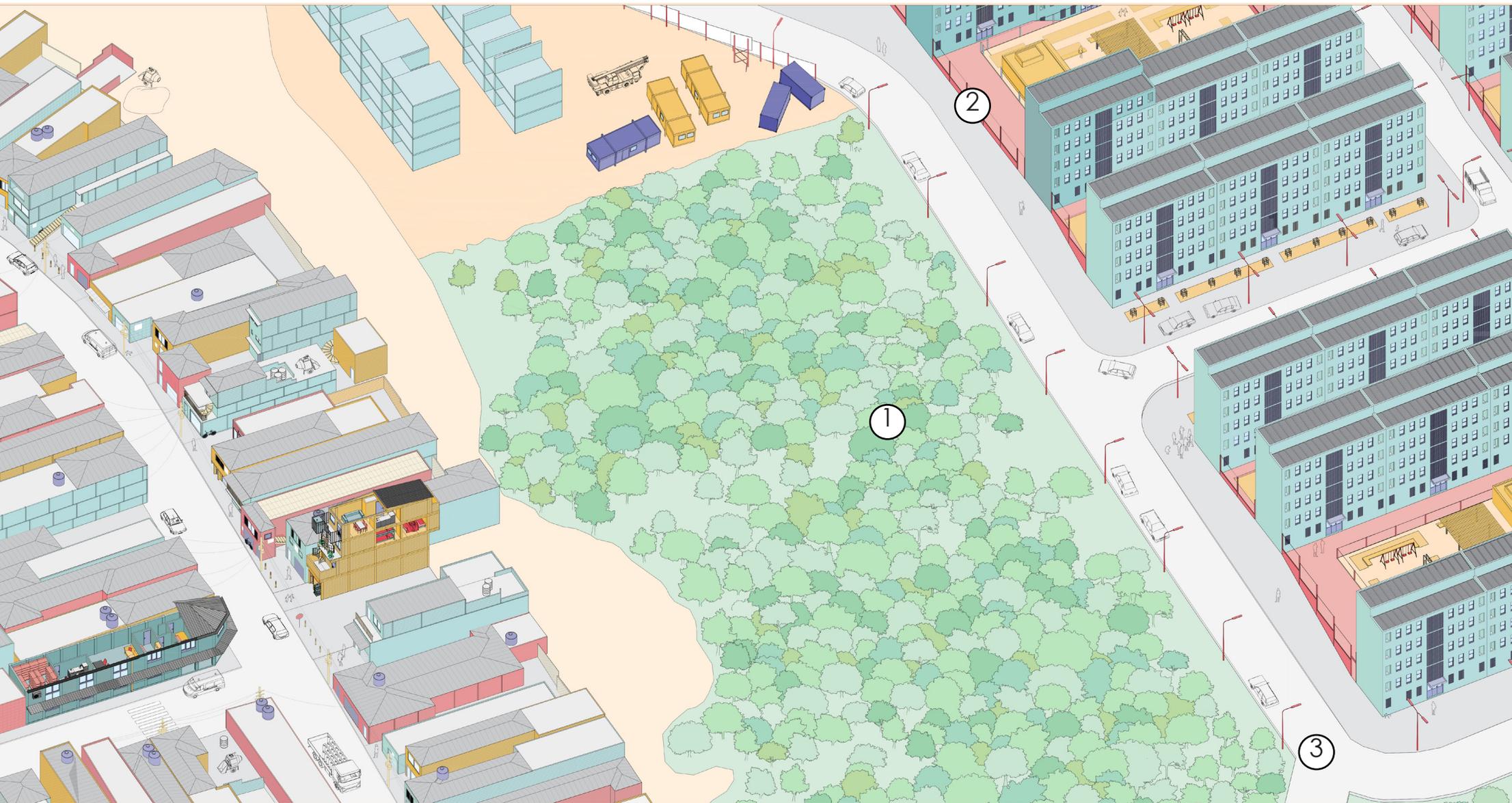
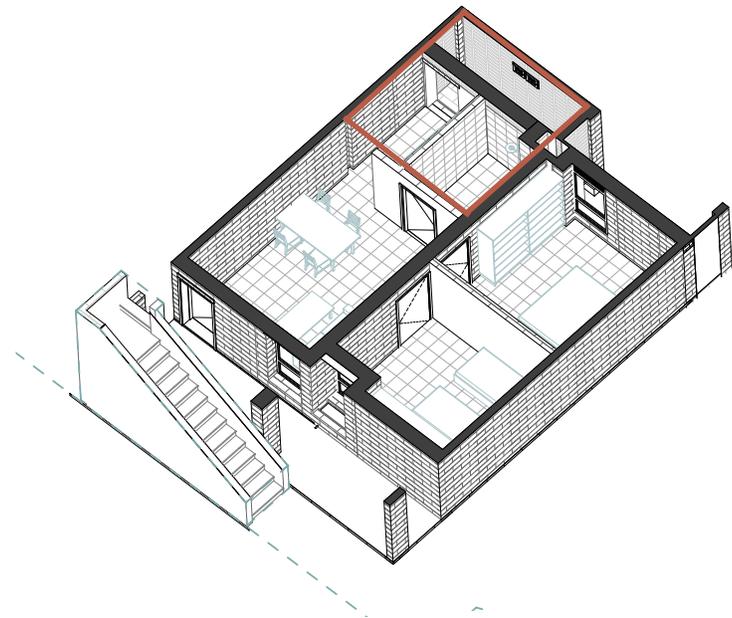
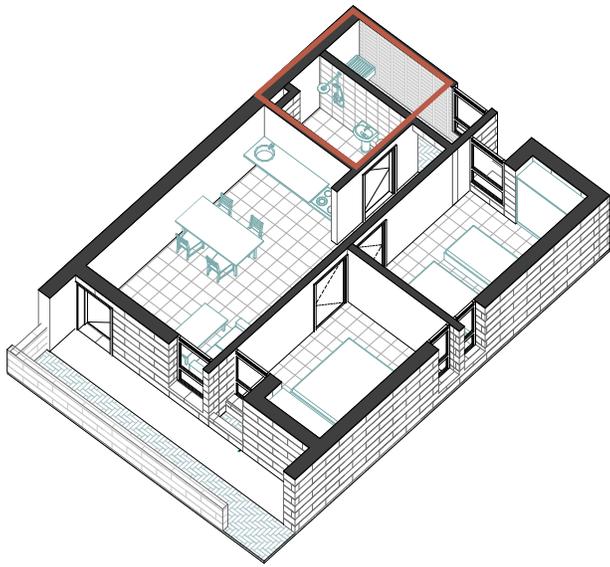


Figure: "Chacara do Conde vs Grajaú" Source: RobbertLaan, HuubFenten and SanetteSchreurs (2023)



Figure: GeoSampa, s.v, "ZEIS 1 and ZEIS 4," accessed January 15, 2023, [https://geosampa.prefeitura.sp.gov.br/PaginasPublicas/\\_SBC.aspx](https://geosampa.prefeitura.sp.gov.br/PaginasPublicas/_SBC.aspx)

## Ventilation of Wet Spaces



## Local Techniques

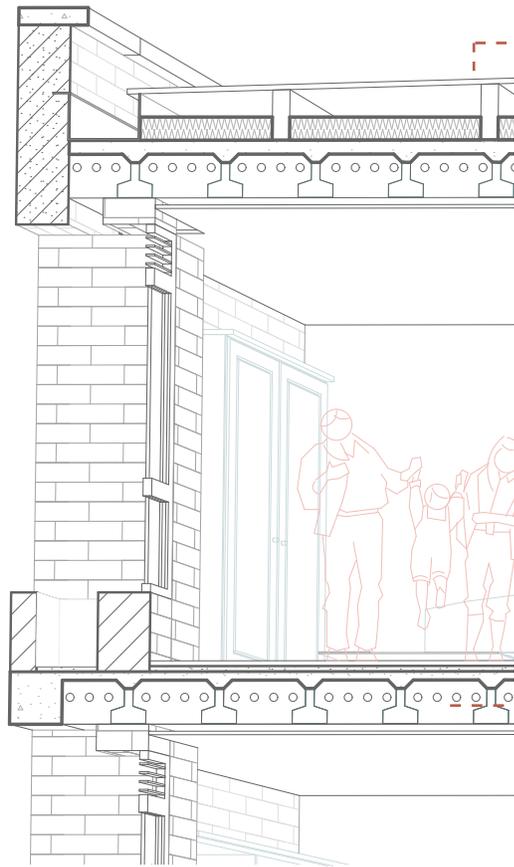


Figure : "Chácara do Conde " (2022) Source: <https://arquiteturajaa.com.br/>



Figure: Hollow Ceramic Block and pre-cast concrete beam floor system. Source: <https://www.archdaily.com/531253/case-study-the-unspoken-rules-of-favela-construction>

## Threshold Magic

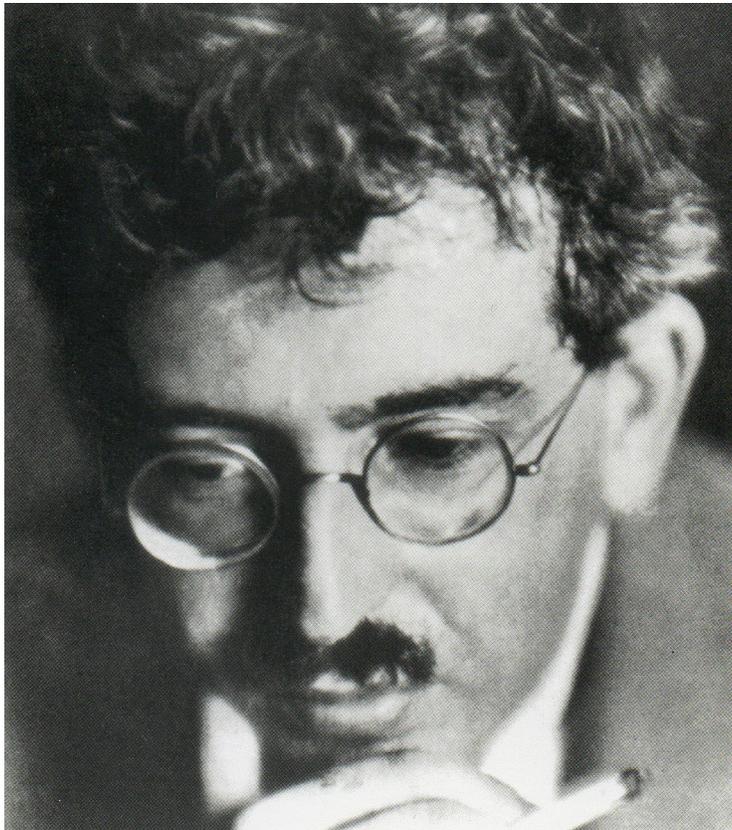


Figure: Walter Benjamin: <https://www.ft.com/content/04f63124-69ea-11e6-ae5b-a7cc5dd5a28c>

Walter Benjamin developed the phrase **der Schwellenzauber (threshold magic)**, where he often tells the reader about the enchanting effect of thresholds. According to Walter Benjamin, the threshold is **a magical zone of transition**. It is an interval between things in space and time. A medium that allows entry and opens the possibility of **being in between two worlds at once**.