Condominum 3.0

Reinventing Addis Ababa's Mass Housing Projects
for the City and it's Low-Income Dwellers

TU Delft
Global Dwelling- Affordable Housing for Sustainable Development in the Global Urban South

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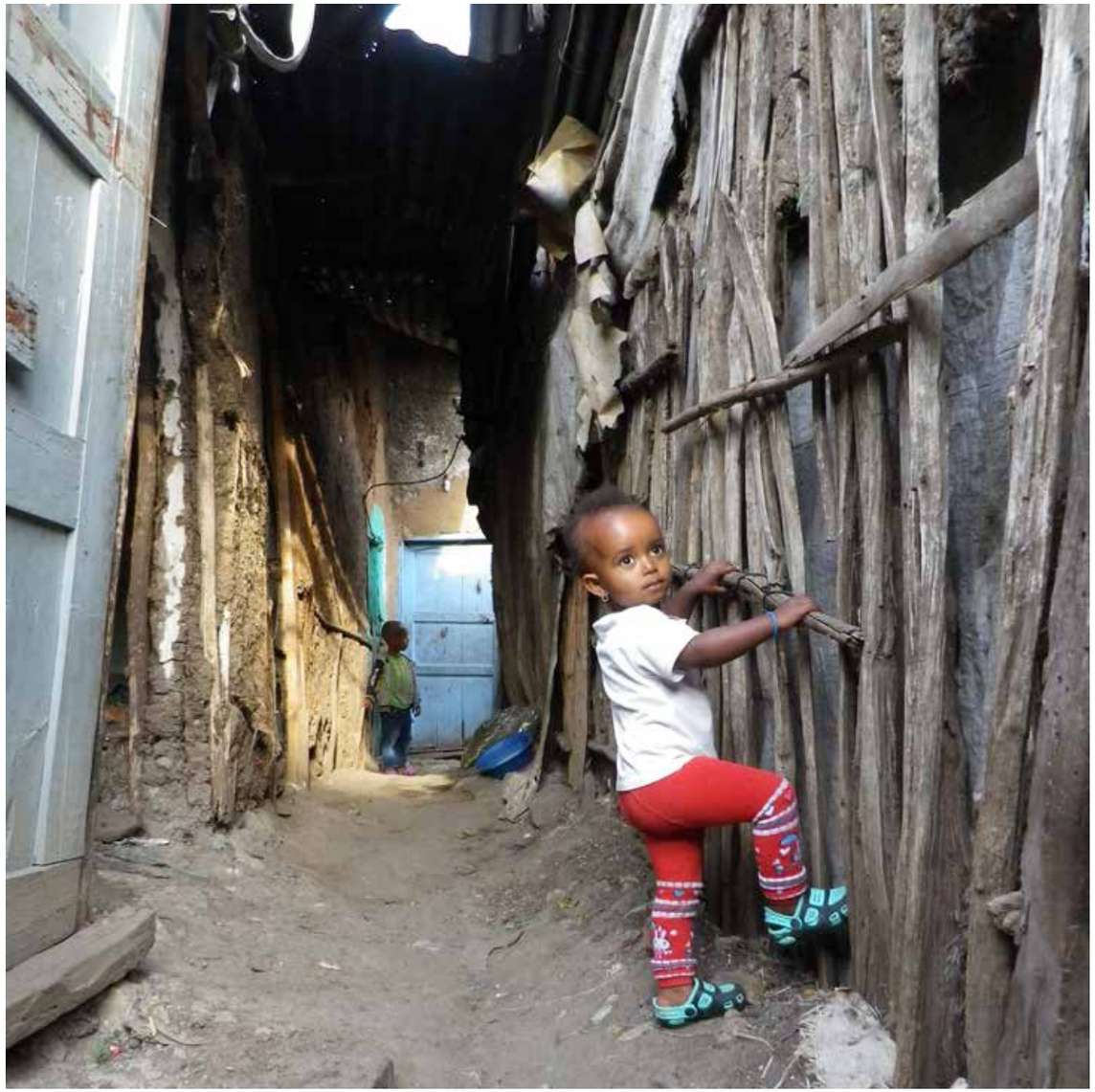
1. Introduction and Problem Statement



The vast amount of informal settlements in the Global Urban South is a pressing issue with mass rural-urban migration resulting in what is estimated by UN_HABITAT as a population of two billion urbanites living in inadequate conditions by the year 2030.

This thesis focusses on alternative methods of combating the affordable housing crisis in Addis Ababa, Ethiopia with a focus on developing convivial communities through an abundantely existing typology.

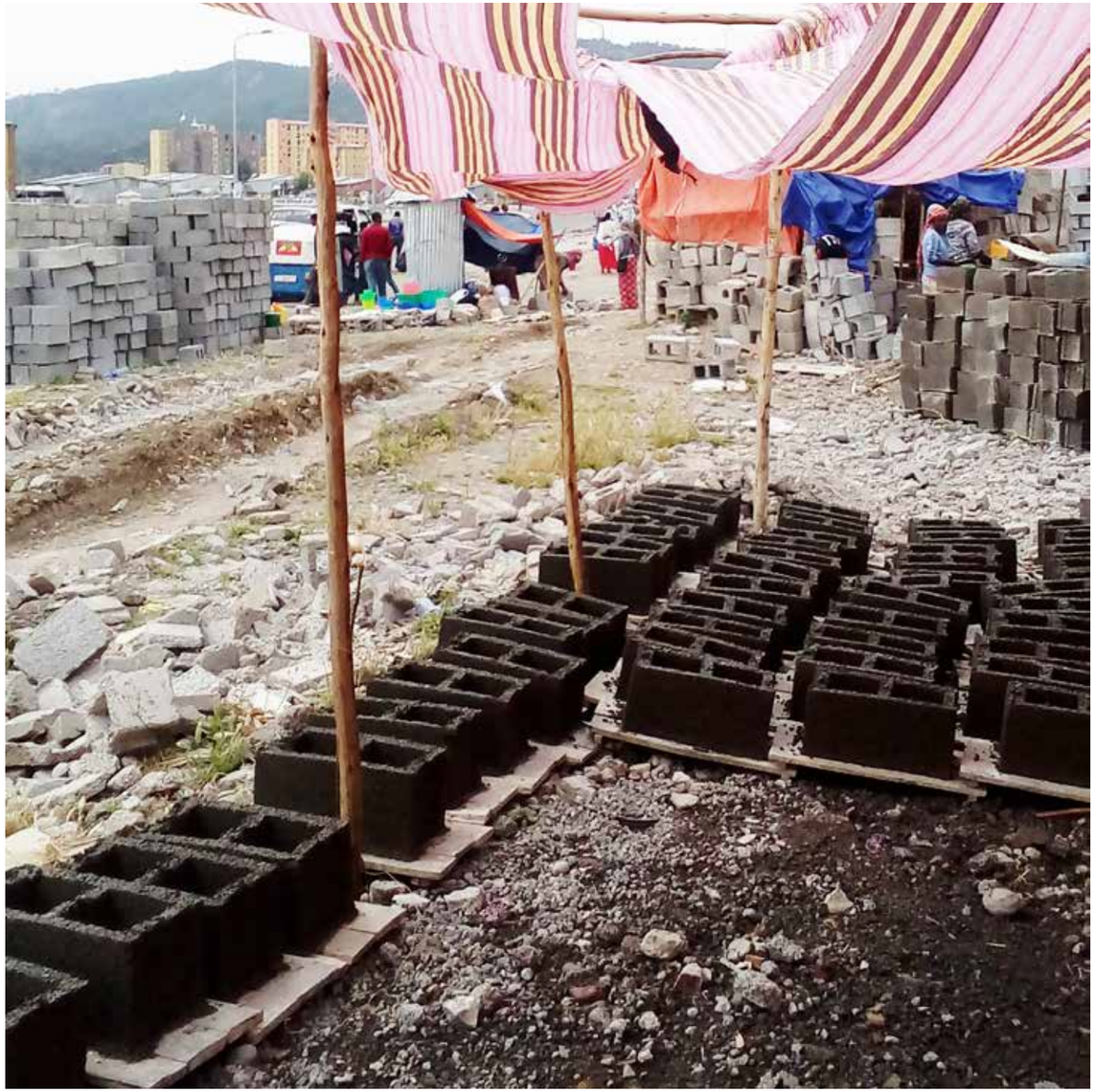
The vast amount of informal settlements in the global urban south is a pressing issue with migration to the city from rural areas increasing significantly. UN-HABITAT has estimated that two billion urbanites will live in inadequate (slum) conditions by the year 2030 and there is a prominent need in the global urban south for new, alternative, sustainable and affordable housing solutions. With numbers of urbanities increasing rapidly, this is a time-sensitive issue. There have been many initiatives to date, whether typically seen as positive or negative, which have focussed on providing new, safe, and healthy housing solutions for this growing slum population in an economical and timely manner. These solutions range from self-help or incremental systems to the more formal social housing delivery system present in the form of mid-rise condominium blocks.

Since the turn of the last century, large areas of informal settlements in the global urban south have been replaced by large areas of mid-rise mass housing at an alarming rate. An example of this is seen in Addis Ababa where as a result of the Grand Housing Programme (GHP) in 2004, vast areas of what was seen as 'dilapidated housing stock' were and continue to be redeveloped in the form of mid-rise condominium blocks. In order to address the extreme housing shortage of an estimated 300,000 dwelling units, the programme sought to build 50,000 housing units per year and over 220,000 units have been built to date. Although this housing stock focussed on supplying low-income housing it was required to be able to pay at least 10 percent of the rent. This actually led to the displacement of the people on the lowest end of the economic spectrum. According to Architecture for Humanity, Zimbabwe's president Robert Mugabe forced slum dwellers of "illegal structures" to tear down their own homes as part of Operation Restore Order in 2005, displacing nearly 600,000 people. This kind of slum-clearance program is condemned by UN-HABITAT who call it "indiscriminate, unjustified, and conducted with indifference to human suffering". Not only do mass housing projects tend to displace the former slum dwellers, but they lack a quality inherent to the pre-existing informal settlements.

In any process of urban development it is important to focus on the incorporation of sustainable development with liveable development. It has been well proven by Charles Montgomery in his book *Happy City,* that development which strives to make people happier, safer and healthier is the same kind of development which proves sustainable. It is important as designers to be sensitive to how our designs effect the users and their environment. In *The Timeless Way of Building*, Christopher Alexander states that "a person is so far formed by his surroundings, that his state of harmony depends entirely on his harmony with his surroundings." Conviviality can be defined as a quality of living together in a friendly, sociable and agreeable manner which is pertinent to the evolution of city living. A sense of conviviality in terms of social and economic structure is present in the informal settlements of Addis Ababa but absent in the areas of newly developed condominium blocks. *Affordable Housing in the Global Urban South* presents an ecosystem model of achieving sustainability in affordable housing through a careful balance of resilience and efficiency where "resilience is the capacity of a system to absorb disturbance and allow for change through re-organization while maintaining the same essential social structure." These two extremes are relatable to the case of Addis Ababa where the sefers represent a system with much resilience but little efficiency and the condominium blocks represent a system of great efficiency but little resilience.

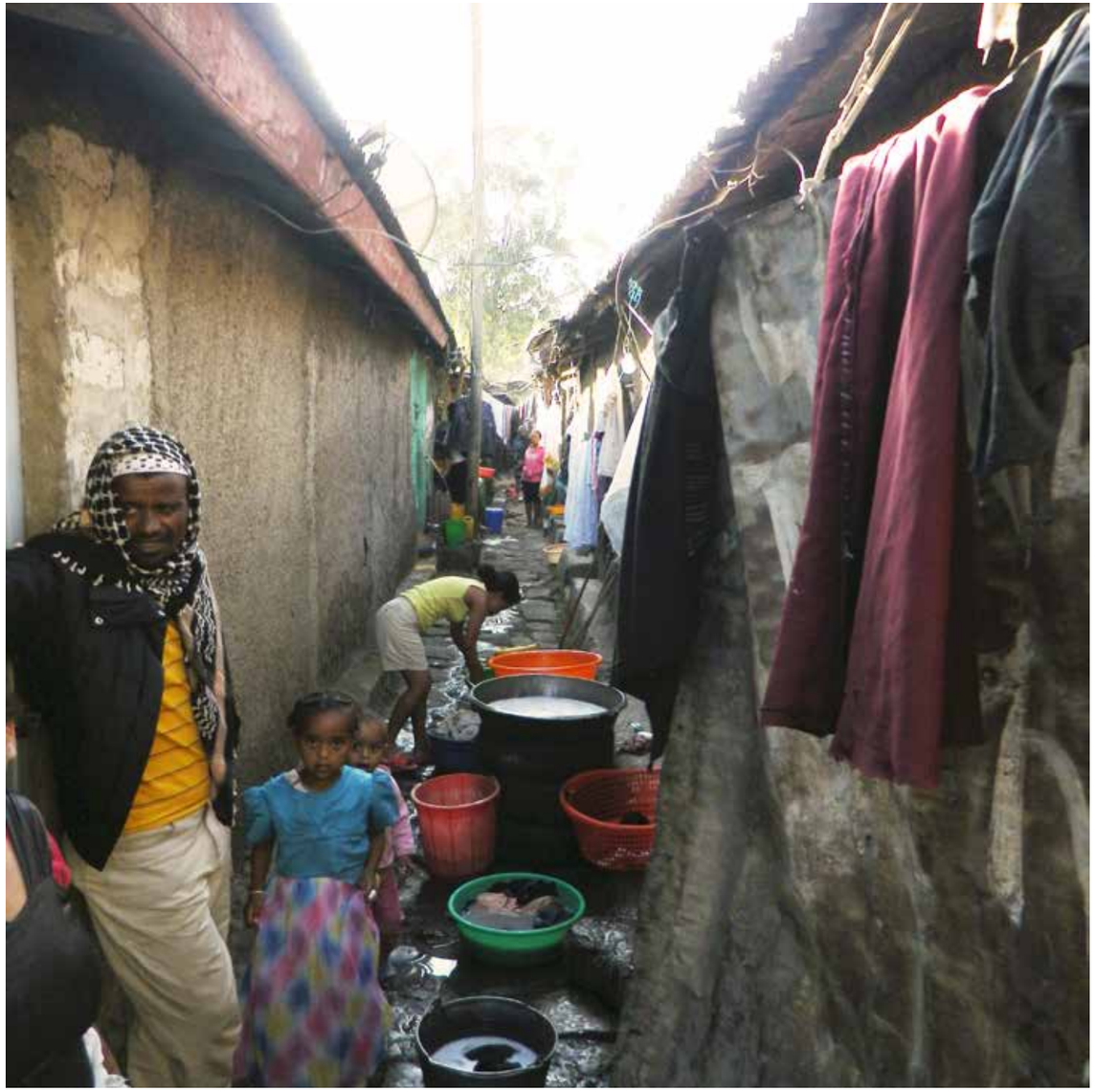
2. Research

Addis Ababa Sefer Communities



Low Cost Housing (LCH) Design for alighter, cheaper and more efficient building model for Addis Ababa - further developed int the Grand Housing Program (GHP)

Addis Ababa Present - Integrated Housing Development Program (IHDP)



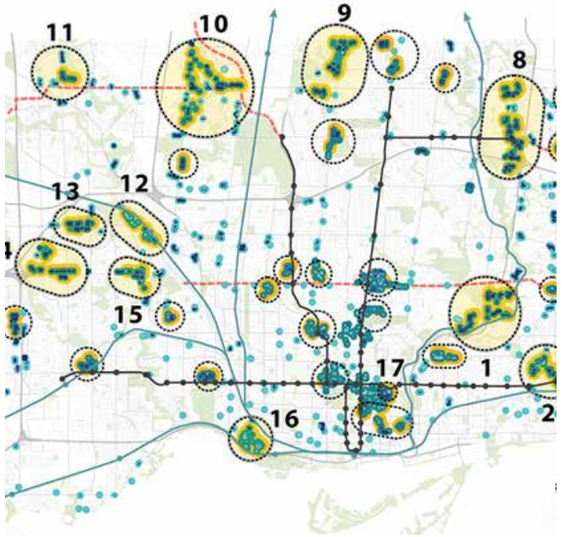
Overcrowded Sefer Neighbourhoods

Small-scale ‘Informal’ Businesses in the Sefers

The odernist social housing development of Pruitt Igoe in St. Louis which after years of neglect and segregation leading to crime and poor conditions was demolished.

There is a strong correlation between the condominium developments of Addis Ababa and the social housing of the modernist movement. This particular history should not be repeated.

Addis Ababa has a chance to learn from the past and follow examples of successful social housing and affordable housing projects such as the St. Lawrence Neighbourhood in Toronto where mixed-use, mixed income levels and a good connection to the cities network has created a desirable community to live in.

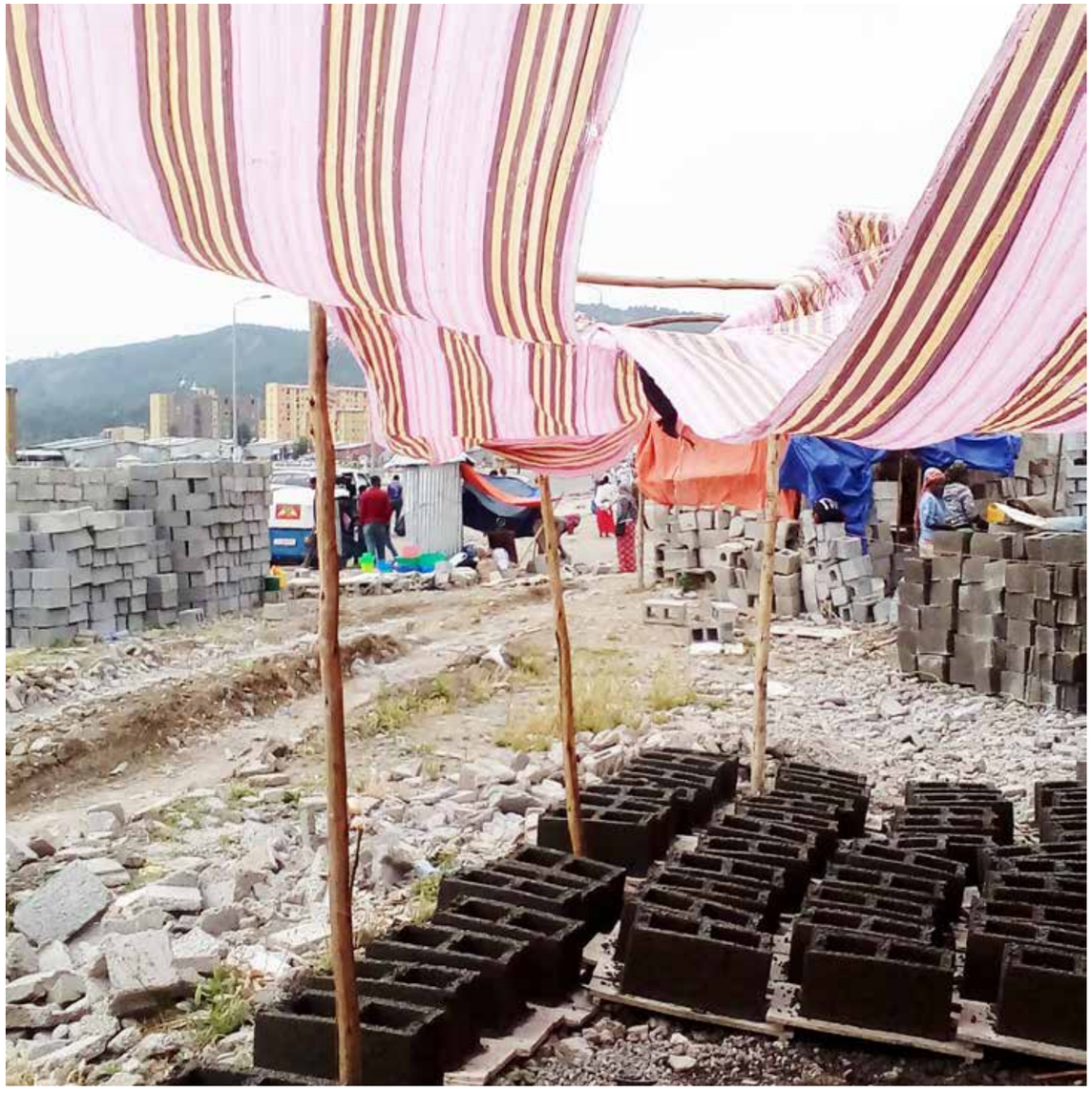


Additionally the western world shows us examples of failed mass housing projects which are currently being redeveloped such as the Tower Renewal program in Toronto which seeks to revitalize the mass stock of tower block neighbouthoods in the city through tactical urbanism.

There is a correlation between these movements of tacticle urbanism in the western world and the informality of the ‘slums’ of the Global Urban South. Here we see how the Tower Renewal program aims to introduce more informal means of income-generation into what was once a convenience store desert.

Much of these desired informal practices can be seen in Addis Ababa’s naturally developed sefer communities. Their inherent socio-economic structures are crucial to the well-being of its inhabitants. Even if made more affordable, this specific form of conviviality is absent in the condominium typology. This resilience of the sefer community is at risk if the community is disrupted though the dispersion or displacement of its inhabitants.

2. Research



On the other hand, there are redeeming qualities in the condominium developments. The dense and affordable concrete housing is time and cost effective, especially now that the system of construction has been tried and tested for over a decade.
The possibility for vibrant active streets in terms of economics and social behavior is present in the condominium blocks but this is only seen in some cases when it is it is inhabited by the

middle class and younger demographics. This is not to say that the reason for its success is the middle income level of the inhabitants and it does not guarantee its long-term success in the event of a change in economic situation. They are generally lacking in a proper mix of income levels including affordable dwelling and income-generating units.

According to Smets in Affordable Housing in the Global Urban South, Sustainable development requires a careful balance of resiliency and efficiency where resilience “is the capacity of a system to absorb disturbance and allow for change through re-organization while maintaining the same essential social structure.” A certain conviviality present in the existing sefer communities in the form of small scale entrepreneurial activity, shared community spaces and close ties is absent in the large stock of condominium developments. The current form of condominium developments are not affordable enough for the poorest inhabitants of the sefers. In general the current state of the condominiums present a backbone of efficiency but require the implementation of resilience through a better and more inclusive design.

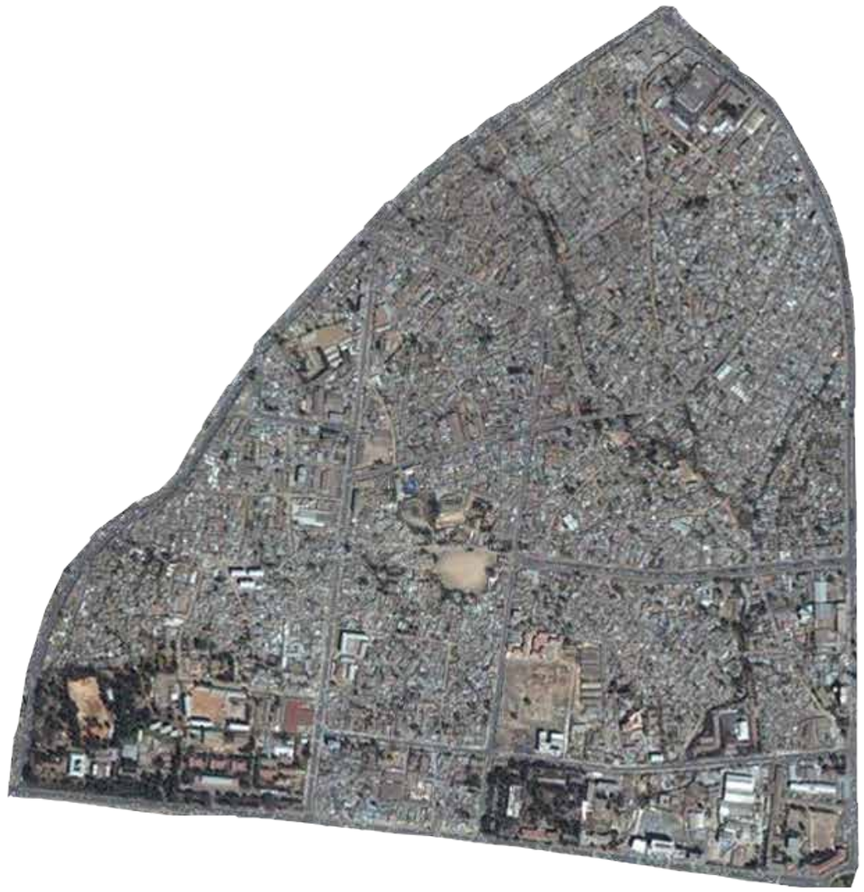
Research Question

If combined, can the resilience of the sefer's social/economic structures and the efficiency of the condominium block's built form render convivial and inclusively affordable communities for Addis Ababa?

How can the Integrated Housing Development Program be altered in order to meet the needs of both low and middle-income inhabitants, creating further density, community conviviality, and economic inclusiveness while minimizing the displacement of citizens from informal settlements allocated for redevelopment?

3. Site Analysis

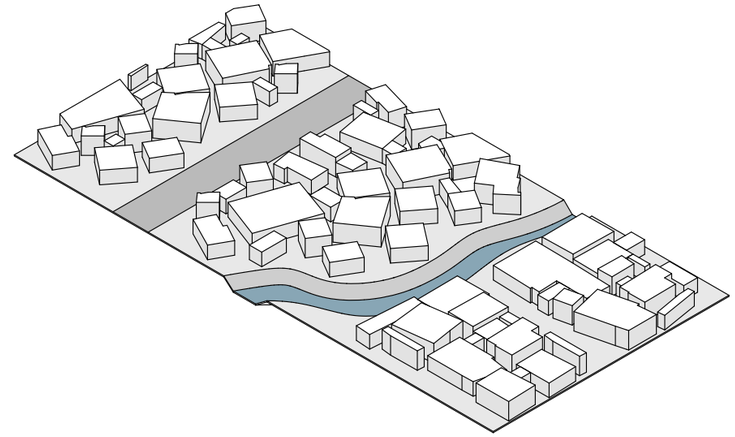
The Geja Sefer is located on the west side of the city center



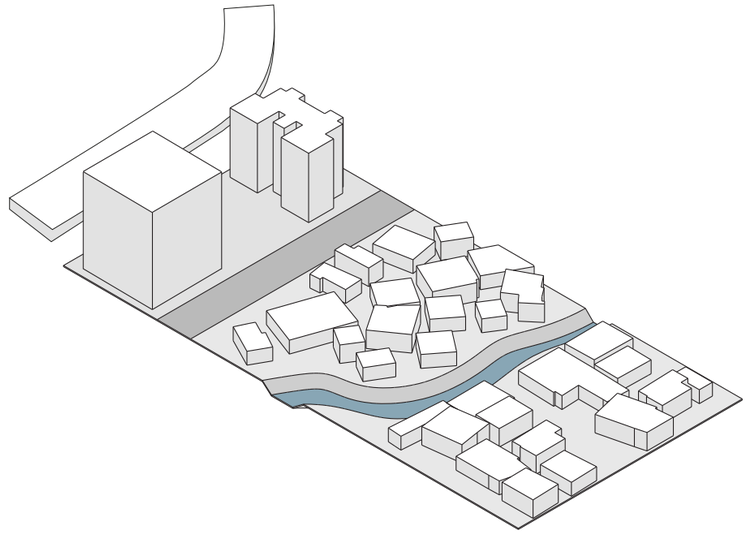
up until 2010 the site was still mostly with informal settlements safe for the EIABA institute and other larger finctions in the south

In 2011 a large portion of the site now known as Lideta was demolished for the development of condominiums which was completed within a year

For these reasons I am focusing on a central site which stretches from the LRT on the west, through the condominium development, the informal settlement area and to the river on the east.



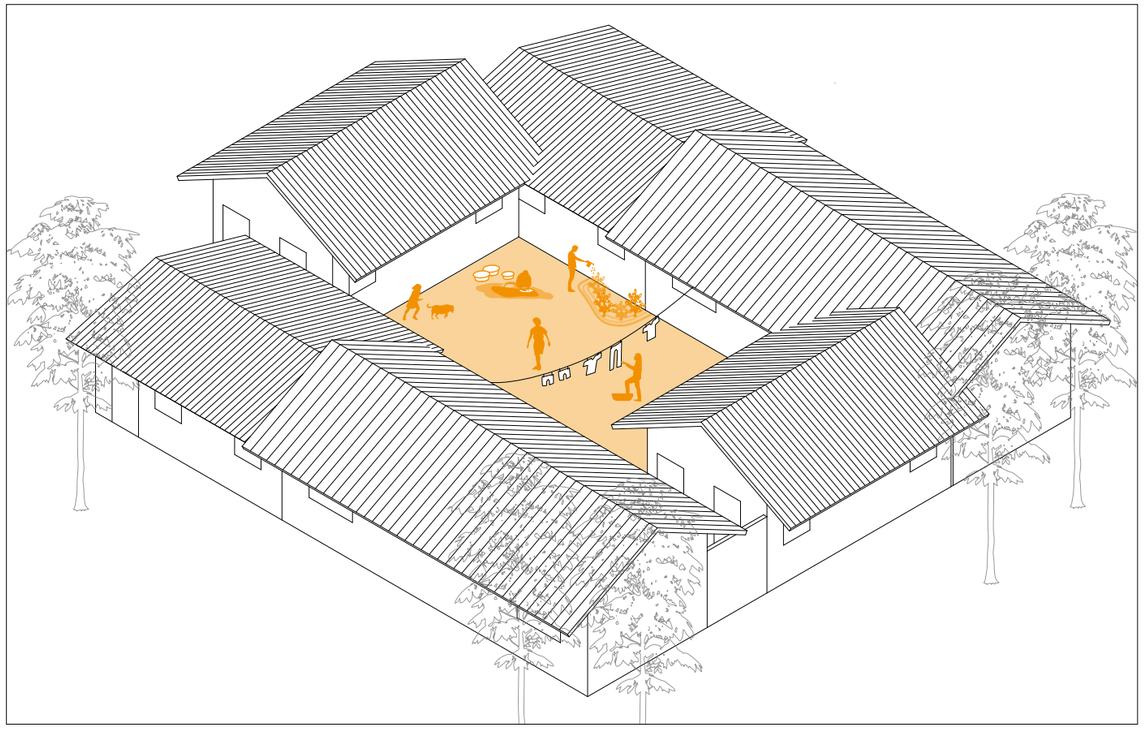
The Site in 1990



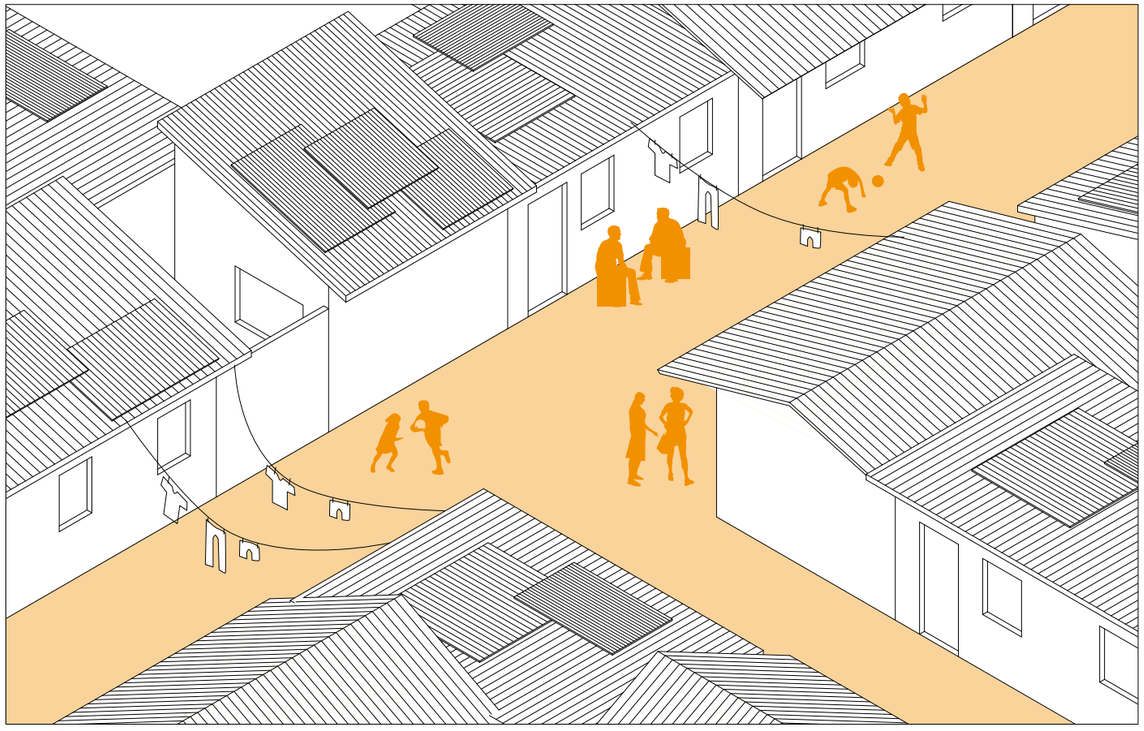
The Site 2011

The area of informal settlements is developed in an organic pattern which follows water flow and topography. By 2011 the area of condominium blocks have completed construction with a ring of commercial buildings. The elevated light-rail system has also been built to the west of the Lideta condominium site. This has a large impact on the areas real estate value

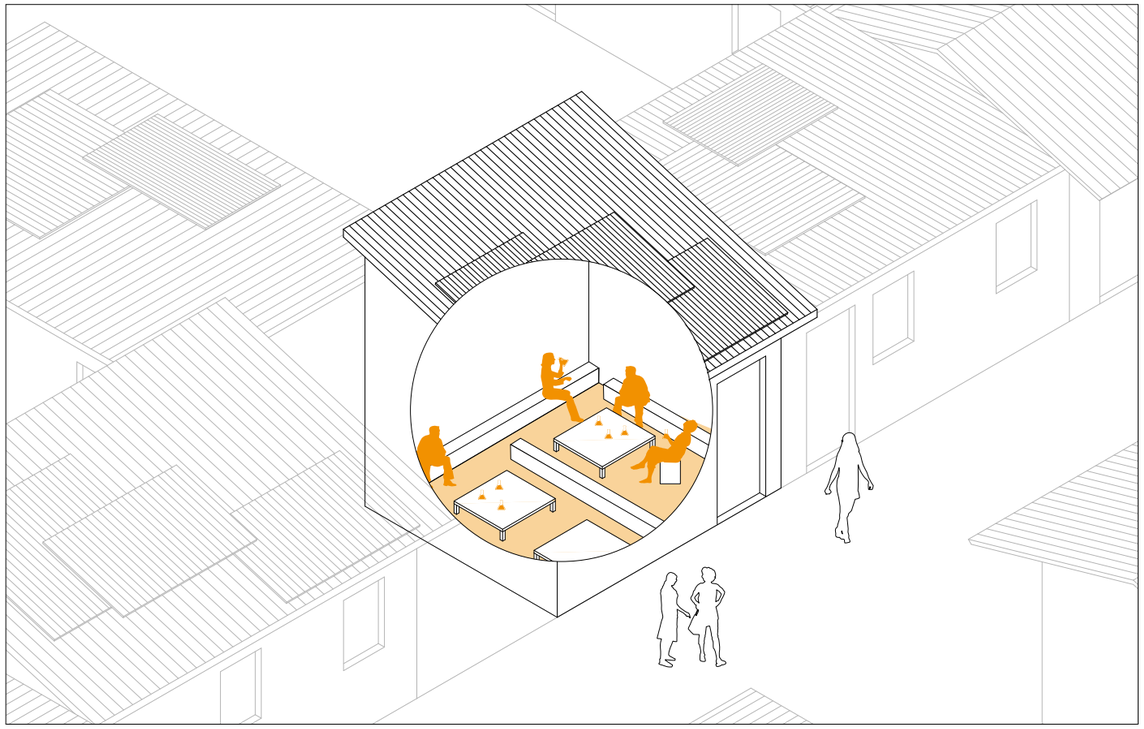
Qualities of the Sefer Side



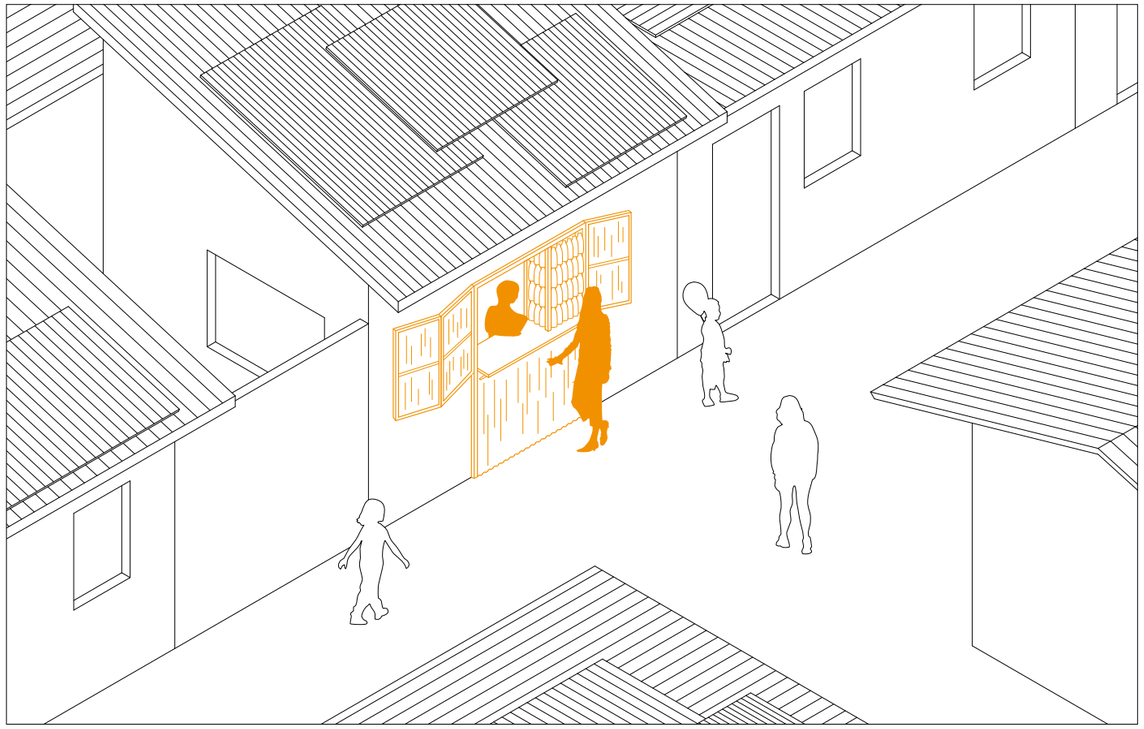
Social Spaces - Compound Courtyard



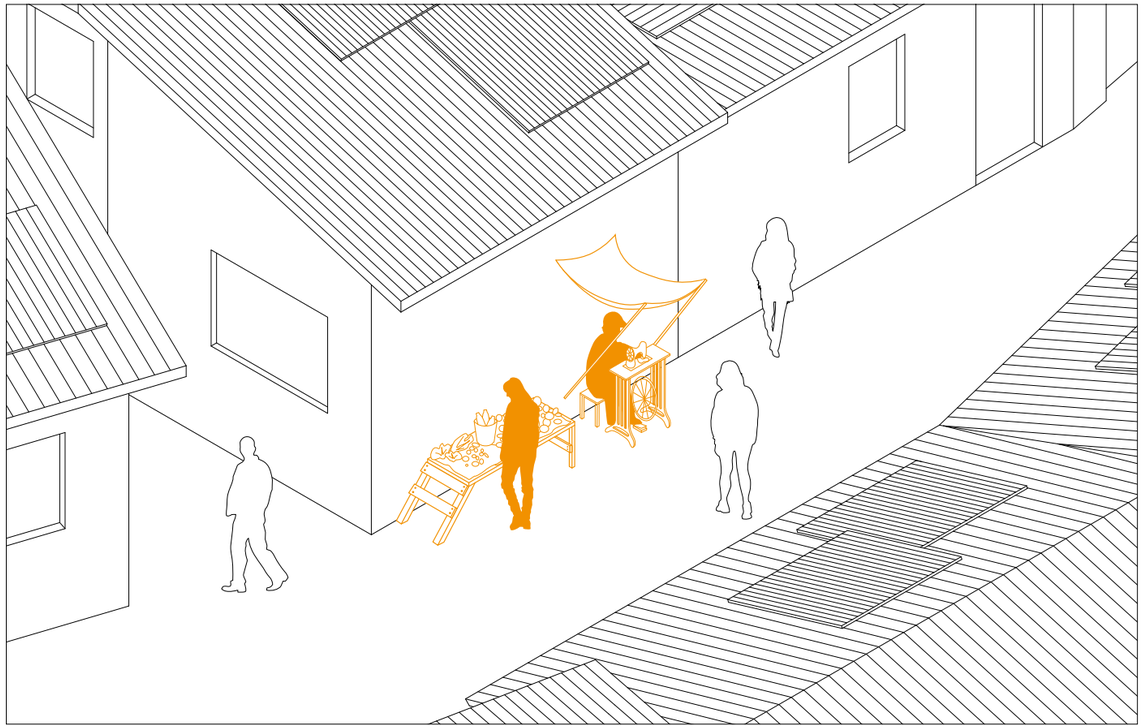
Social Spaces - Inner Streets



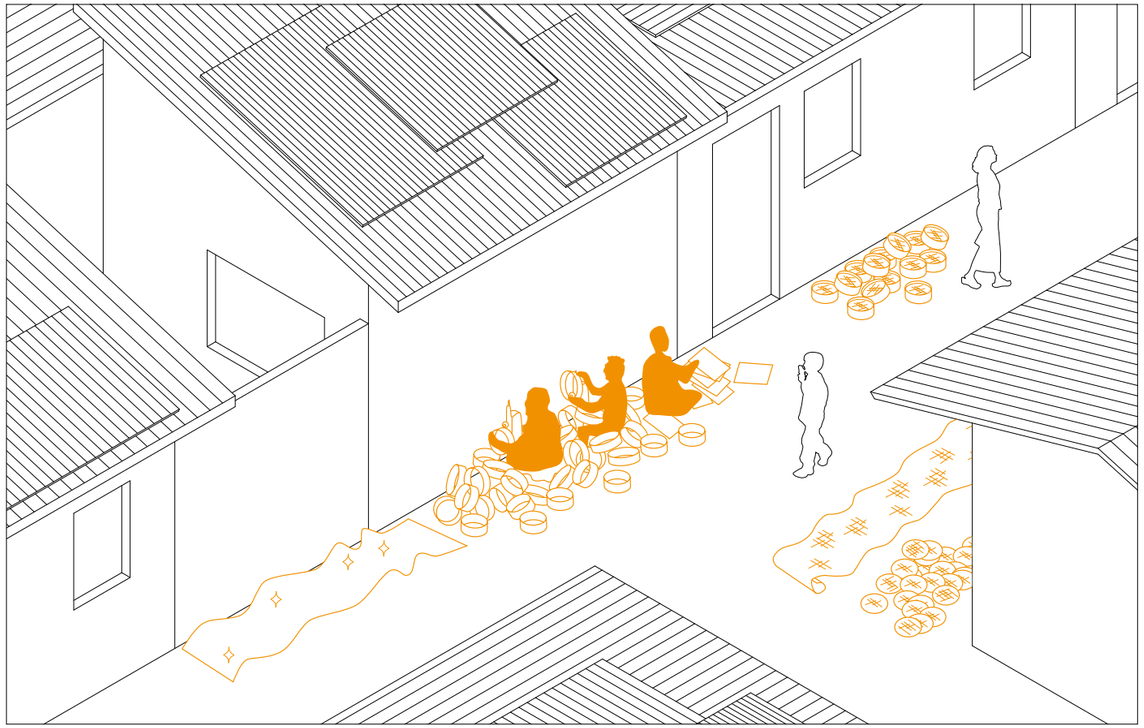
Social Spaces/Income Generation - Tej House



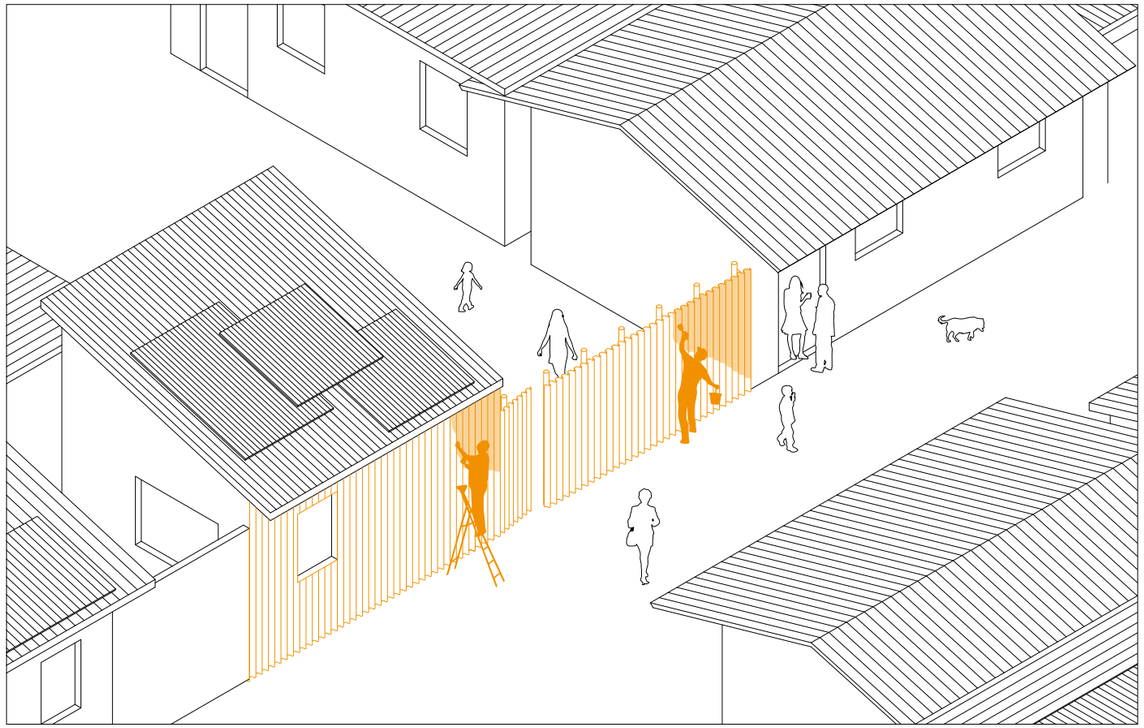
Income Generation - Shop Windows



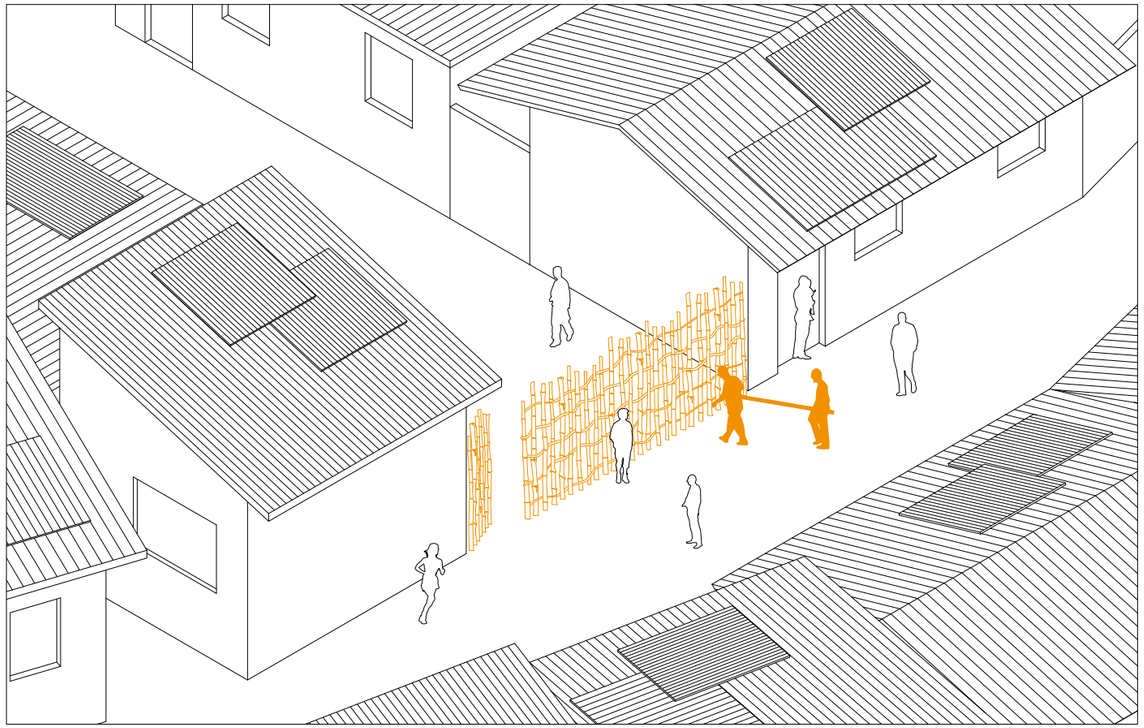
Income Generation - Street Stalls



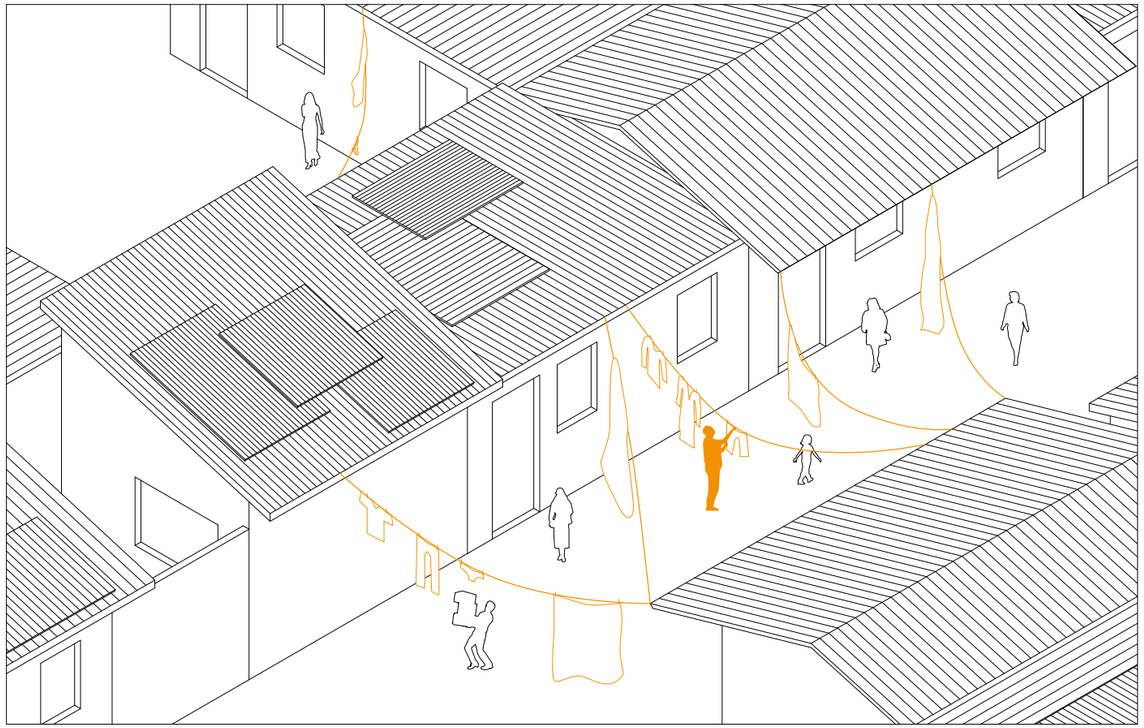
Income Generation - Recycling



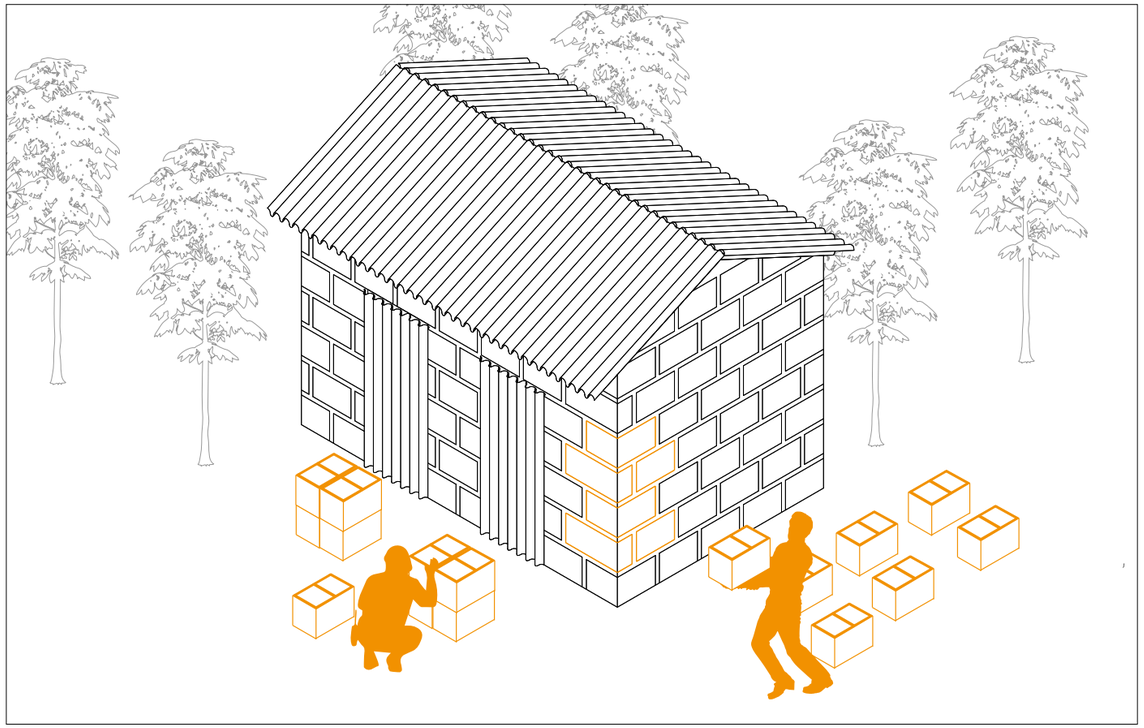
Borders - Corrugated Metal Fencing



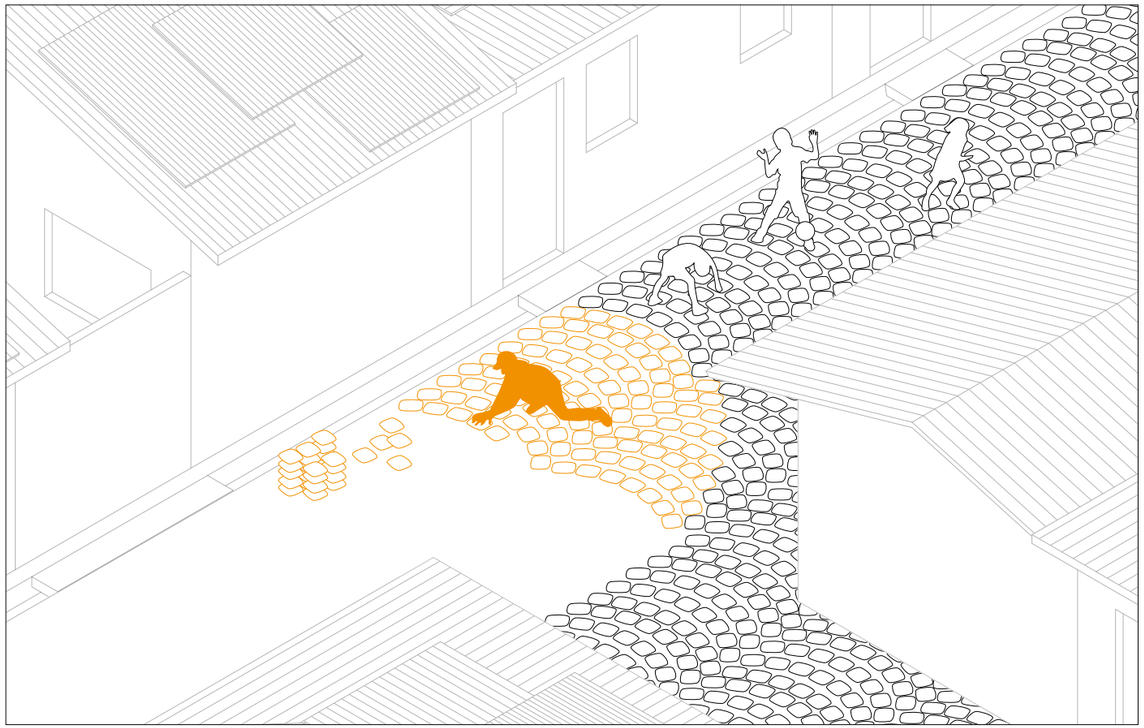
Borders - Bamboo Fences



Borders - Clothes Lines

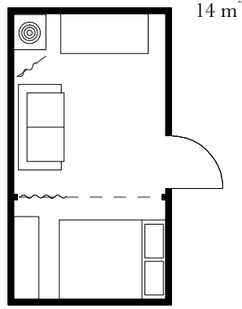


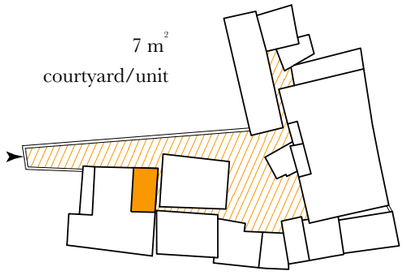
Building Techniques - Concrete Block

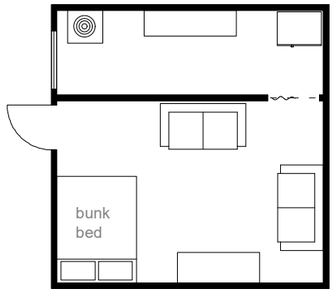


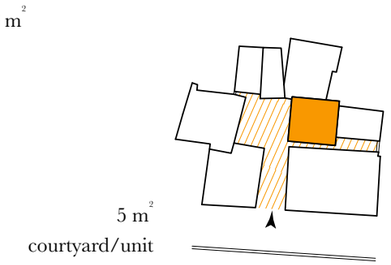
Building Techniques - Stone Paving

The Geja Community









Single Father with Daughter

Community Representative in a compound of 40 families
Average of 5 people [er family

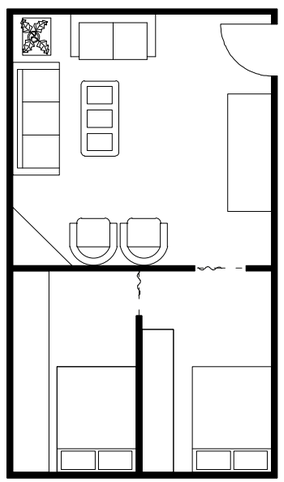
Wants more personal space for families

Yared Abera, metal worker

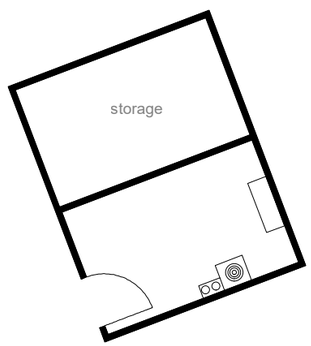
He has a family of three, with two daughters
He likes living in Geja

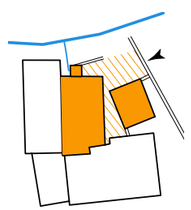
He Welds bunk beds locally but he has a limited space for working

WC



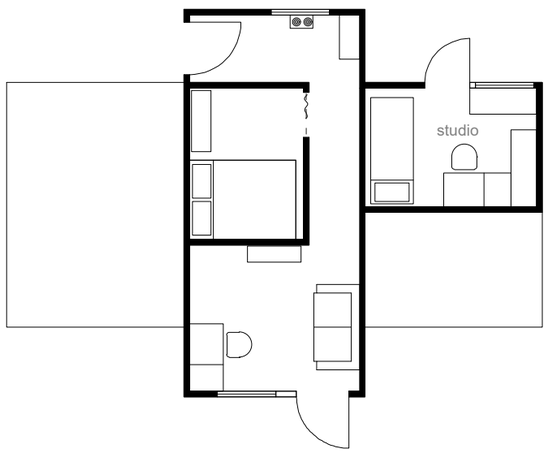
55 m²

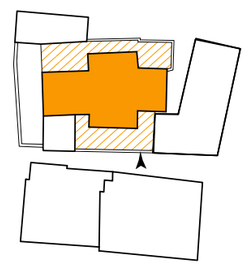




47 m²
courtyard/unit

27 m²



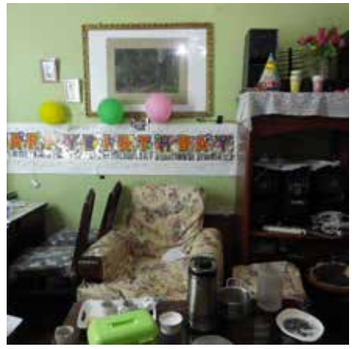


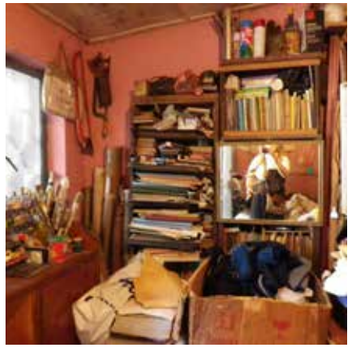
25 m²
courtyard/unit

Assefa, technician, works for the QATAR Embassy

3000 birr rent for five years with wife (works in Black Lion Hospital) and two children (go to Churchill School)
He Welds bunk beds locally but he has a limited space for working.

"the neighbourhood is not safe for a diplomat worker, but it's close to work (Meskel Square)"





Art teacher with a studio in the house

House with fenced entrance

Family of five including one daughter and two sons

GEJA SEFER	UNIT LAYOUT	NO. OF PEOPLE/ AREA PER PERSON	COMPOUNDS	SPATIAL CONDITION	OPEN-TO-SKY SPACE	NO. OF HOMES	OPEN-TO-SKY SPACE PER HOME	ACTIVITIES
A	14 sqm	7 sqm/person	739 sqm	compound courtyard	178 sqm	25 homes	7.12 sqm/home	
B	128 sqm	25.6 sqm/person	165 sqm	private courtyard	36 sqm	3 homes	12 sqm/home	
C	18 sqm	3 sqm/person	414 sqm	alley	84 sqm	12 homes	7 sqm/home	
D	68 sqm	13.6 sqm/person	34 sqm	private courtyard	14 sqm	1 home	14 sqm/home	
E	23 sqm	7.67 sqm/person	368 sqm	compound courtyard	71 sqm	13 homes	5 sqm/home	
F	55 sqm	13.75 sqm/person	102 sqm	private courtyard	47 sqm	1 home	47 sqm/home	
G	35 sqm	5 sqm/person	969 sqm	open-to-street courtyard	348 sqm	10 homes	34.8 sqm/home	
H	27 sqm	5.4 sqm/person	630 sqm	private courtyard	75 sqm	3 homes	25 sqm/home	
I	42 sqm	8.4 sqm/person	477 sqm	private courtyard	201 sqm	10 homes	20.1 sqm/home	
J	17 sqm	4.25 sqm/person	463 sqm	open-to-street courtyard	160 sqm	12 homes	13.3 sqm/home	
	42.7 sqm	9.37 sqm	436 sqm	central / open-to-street / street/ alley	121 sqm	9 homes	18.5 sqm/home	206 units/hectare

Qualities of the Condominium

G+7 (Ground plus seven stories) Condominium in Lideta

G+4 Condominium in Lideta - Leftover Spaces

Retail Locations in G+4 Lideta

Informality in Lideta

Park in Lideta

2006 DESIGNS	UNIT LAYOUT	SPECULATED NO. OF PEOPLE/ AREA PER PERSON	PRIVATE OPEN-TO-SKY SPACE	COMPOUNDS	BLOCKS
A	47 sqm	19.6 sqm/person	2.3 sqm/home	483 sqm	G + 4 G + 3 G + 4
B	52 sqm	10.8 sqm/person	0 sqm/home	64 sqm	5524 sqm
C	34.5 sqm	14.4 sqm/person	0 sqm/home	8 homes	3610 sqm
D	41.7 sqm	12.2 sqm/person	0 sqm/home	8 sqm/home	164 homes
E	22.9 sqm	17.2 sqm/person	0 sqm/home	315 sqm	
F	57.8 sqm	12 sqm/person	4.7 sqm/home	29.3 sqm	22 sqm/home 297 units/hectare
G	36.9 sqm	15.4 sqm/person	0 sqm/home	6 homes 4.9 sqm/home	G + 2 9817 sqm
H	41.8 sqm	17.4 sqm/person	2.3 sqm/home	558 sqm 52.9 sqm	4404 sqm
I	46 sqm	19.2 sqm/person	2.3 sqm/home	10 homes 5.29 sqm/home	168 homes
J	60.6 sqm	12.6 sqm/person	0 sqm/home	14.4 sqm 2 homes 157 sqm 7.2 sqm/home	26 sqm/home 171 units/hectare
	44.1 sqm	15.1 sqm/person	1.16 sqm/home	6.35 sqm/home	24 sqm/home 234 units/hectare

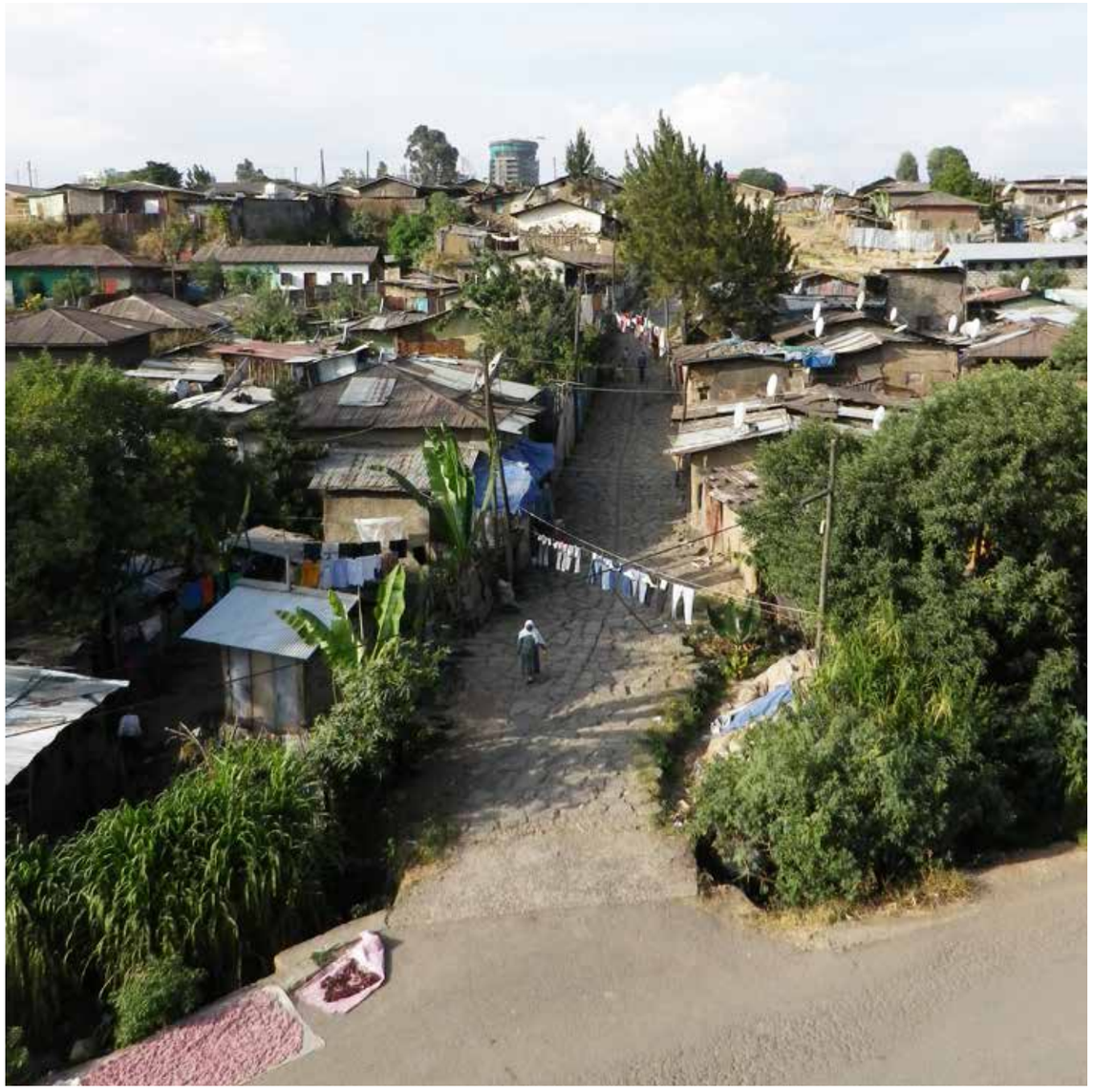
Data collected on the condominium Typology

LIDETA	EST. UNIT LAYOUT	SPECULATED NO. OF PEOPLE/ AREA PER PERSON	PRIVATE OPEN-TO-SKY SPACE	COMPOUNDS	BLOCKS
A	*source: Monica Lelieveld 49 sqm	16.3 sqm/person x2	3 sqm/home	363 sqm	
B	*source: Monica Lelieveld 54 sqm	18 sqm/person	0 sqm/home	32 sqm	G + 4 9084 sqm
C	*source: Monica Lelieveld 34 sqm	25.5 sqm/person	0 sqm/home	5 homes	5159 sqm
D	*source: Monica Lelieveld 88 sqm	22 sqm/person	2.3 sqm/home	6.4 sqm/home	
E	38 sqm	19 sqm/person x2	3 sqm/home	370 sqm	
F	41 sqm	17 sqm/person	0 sqm/home	30 sqm	190 homes
G	78 sqm	19.5 sqm/person	3 sqm/home	6 homes	
H	45 sqm	18.75 sqm/person x2	0 sqm/home	5 sqm/home	
	53.4 sqm	19.1 sqm/person	1.6 sqm/home	5.8 sqm/home	27 sqm/home 200 units/hectare

Data interpreted for the Lideta development

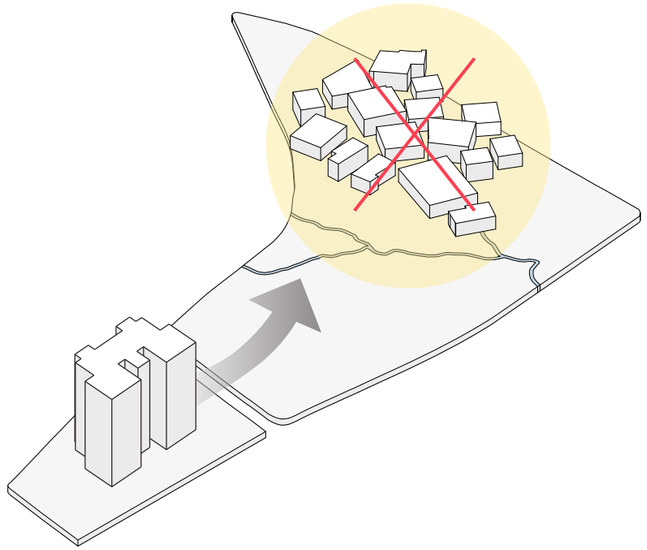
	EST. UNIT LAYOUT	SPECULATED NO. OF PEOPLE/ AREA PER PERSON	PRIVATE OPEN-TO-SKY SPACE	COMPOUNDS	BLOCKS	
GEJA SEFER	42.7 sqm	9.37 sqm	121 sqm	9 homes	18.5 sqm/home	206 units/hectare
CONDOMINIUM AVERAGE	48.8 sqm	17.1 sqm/person	1.4 sqm/home	6.1 sqm/home	25.5 sqm/home	217 units/hectare

Data Summary



The Site in 2010

The Site in 2011



the Sefer is at risk of this same redevelopment

Area: 5.9 hectares
Units: 390
Density: 206 units/hectare

The Site in 2011

Area: 5.9 hectares
Units: 1238
Density: 217 units/hectare

105% increase

If Development Progresses in the Current Manner...

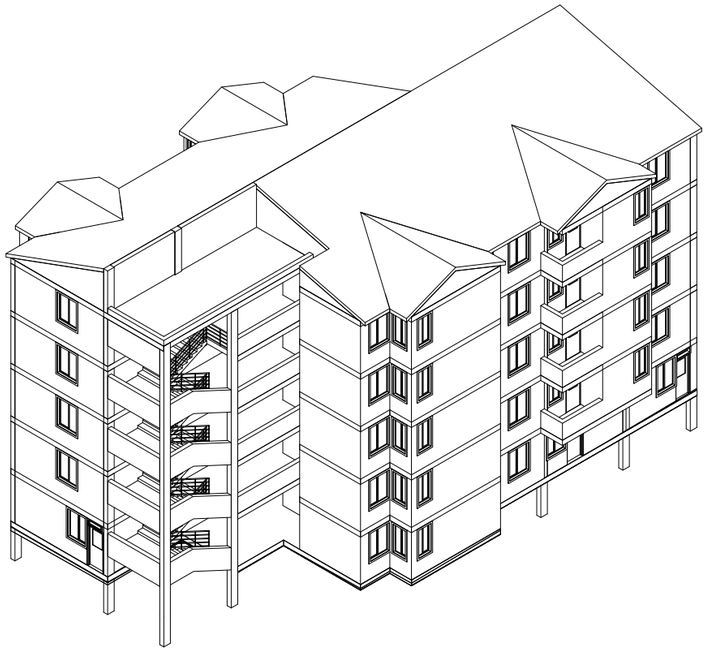
streets

courtyards

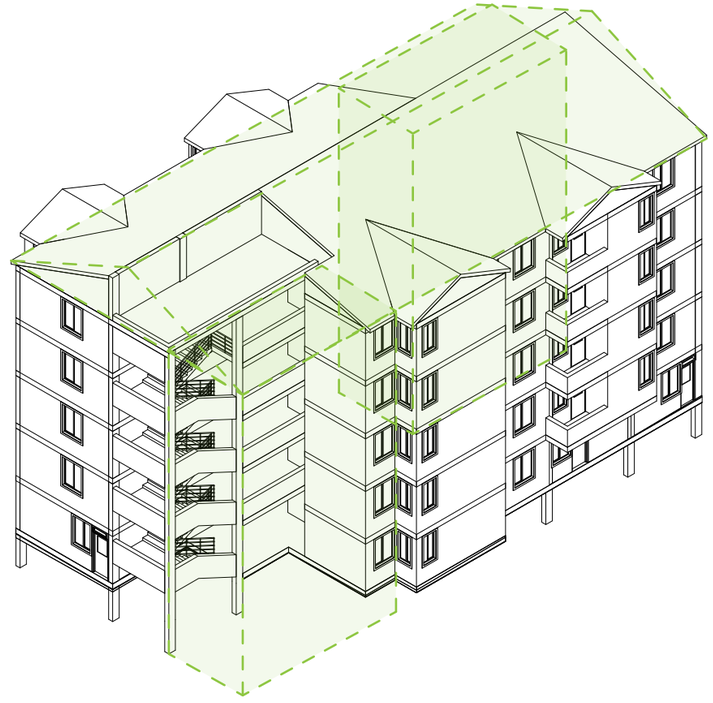
ground plane

Site Issues

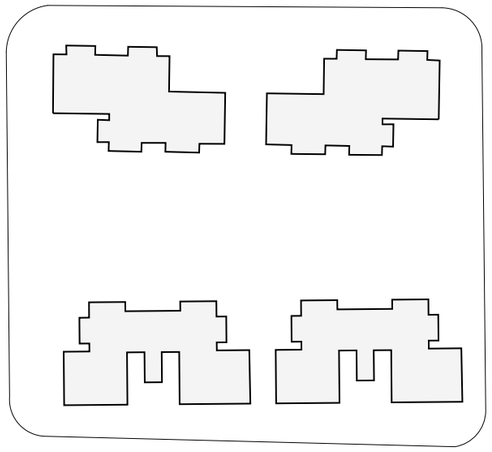
4. Design Statement



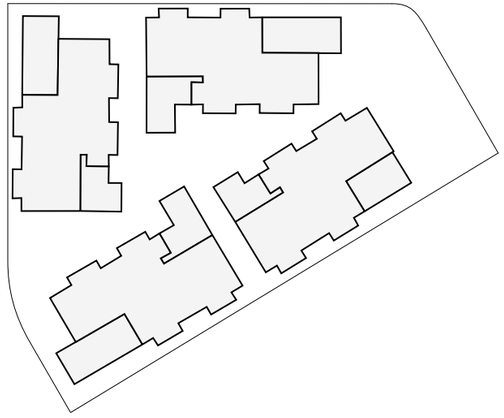
Existing Condominium Typology



Additions



Existing Condominium Block Plan



Site Specific Block Plan

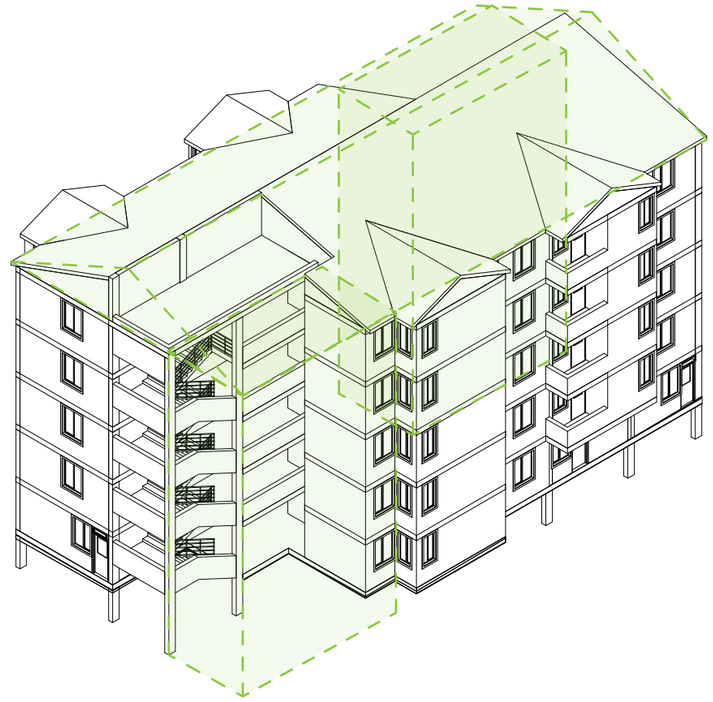
4. Development Phases

Area: 5.9 hectares
Units: 1594
Density: 270 units/hectare

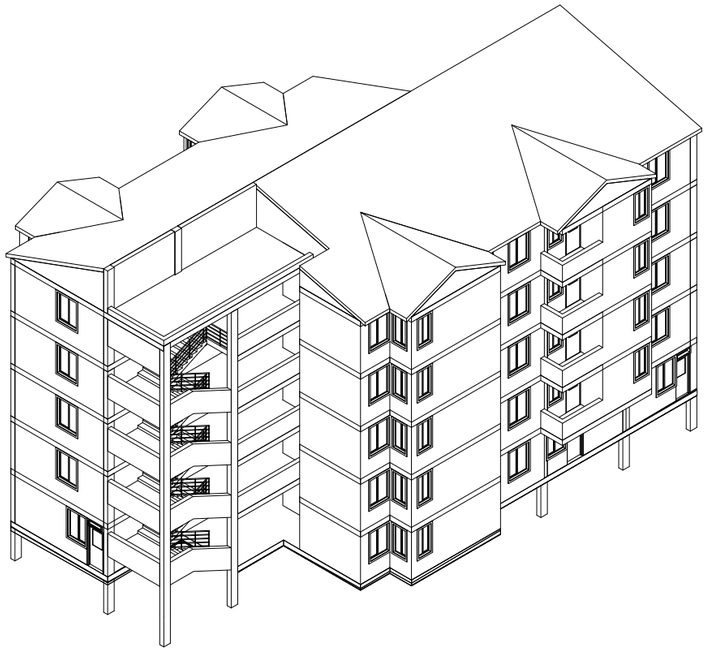
130% increase in density

Condominium 3.0

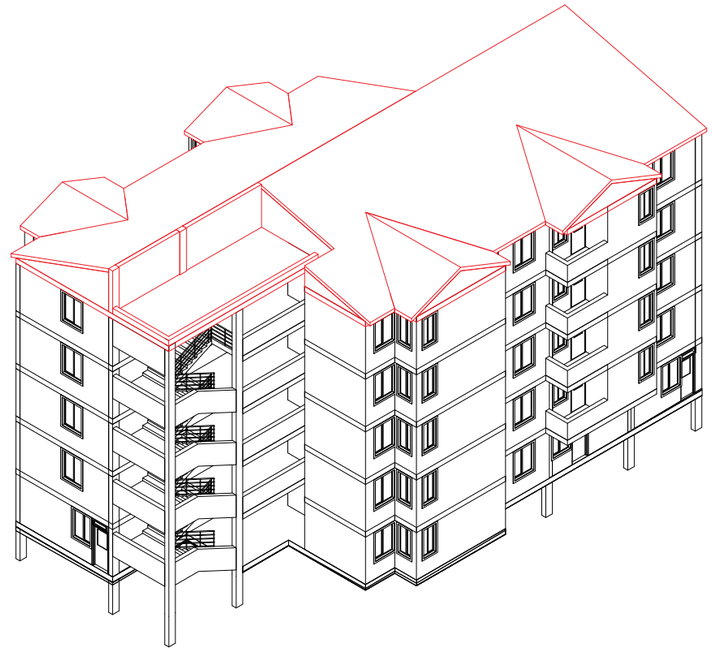
5. Site Design and Building Design



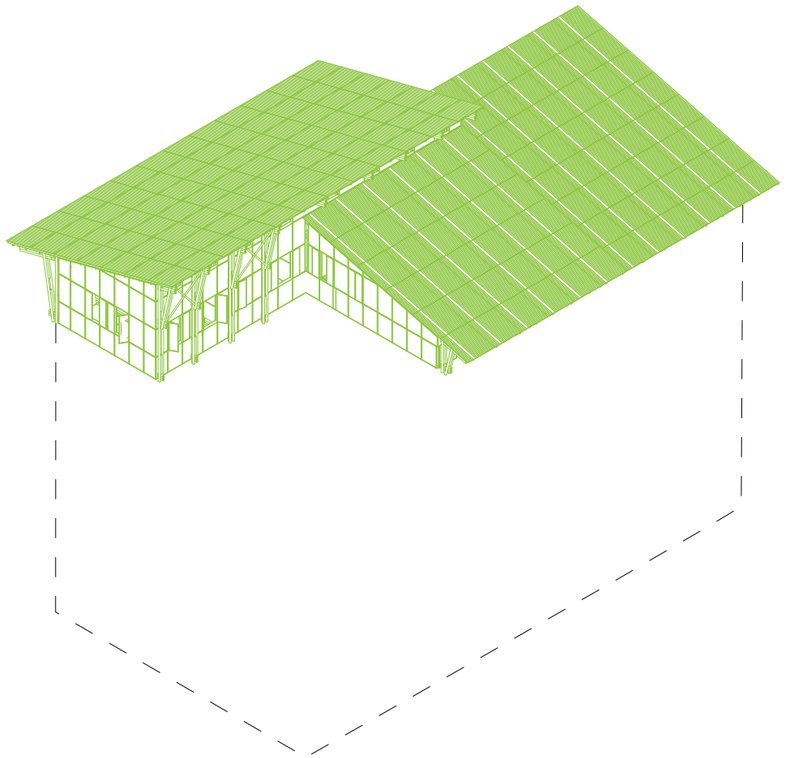
Additions



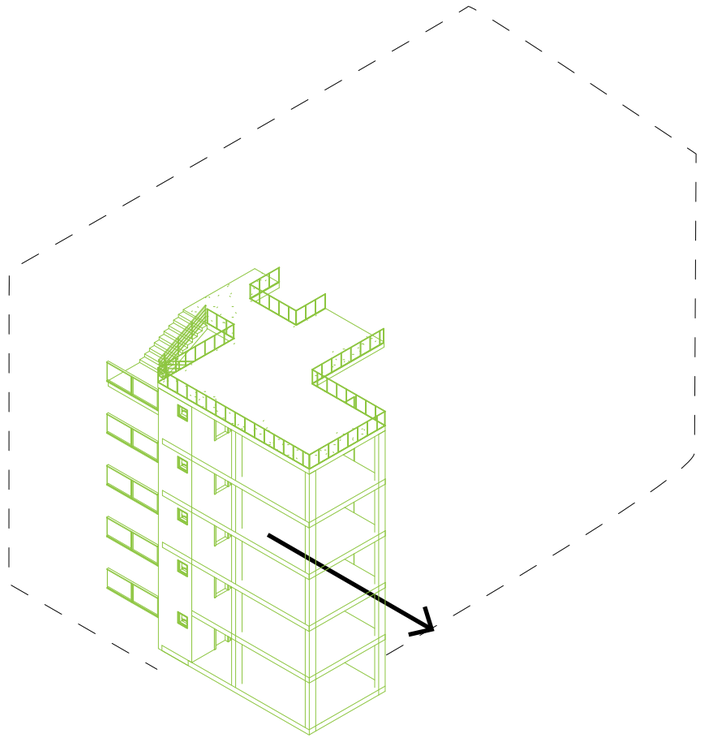
Existing Condominium Typology



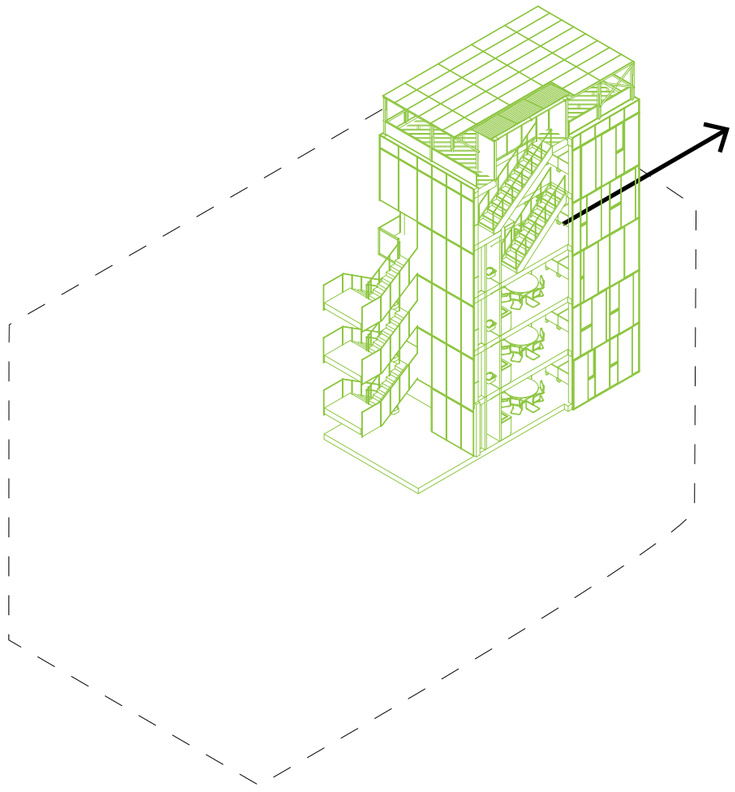
Existing Roof Demolished



Penthouse Roof Addition

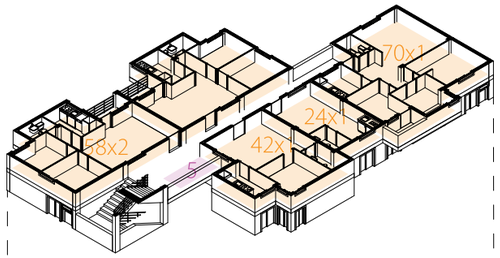


Slab and Service Addition



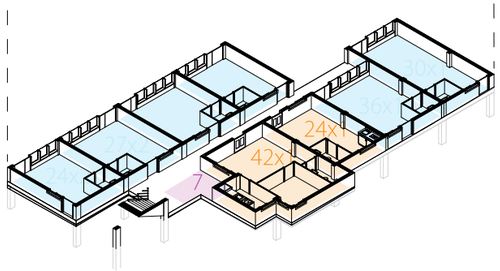
Office Addition

Condominium 3.0



x4 = 1008

=5



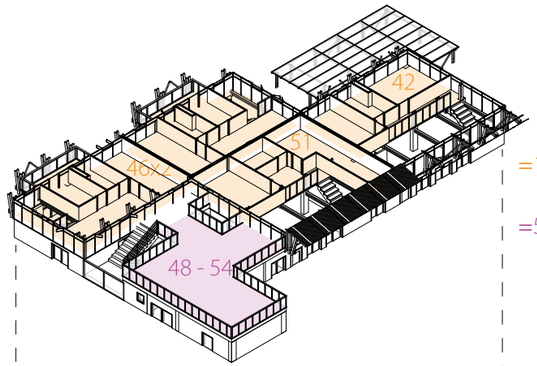
=66

=168

=7

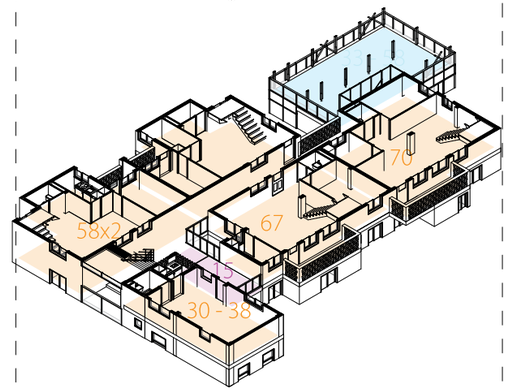
T=1074 residential
T=168 commercial
T=12 communal

Existing Condominium Typology



=185

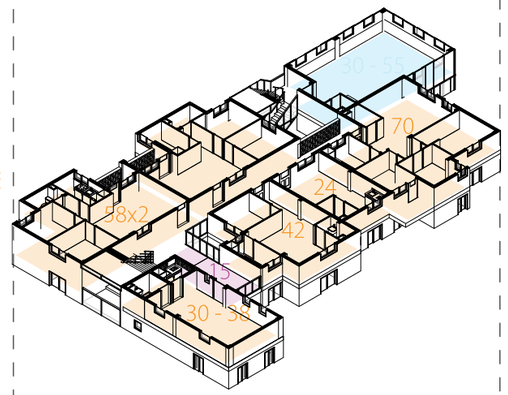
=51



=28

=45

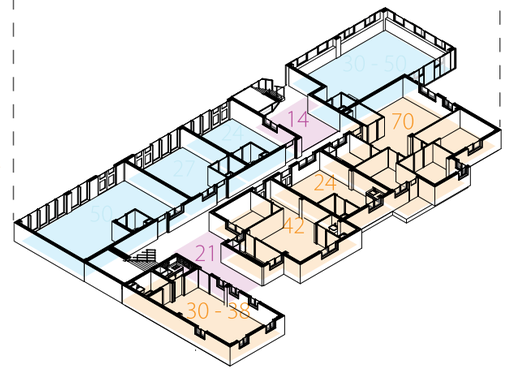
=15



x3 = 858

x3 = 128

x3 = 45



=170

=121

=35

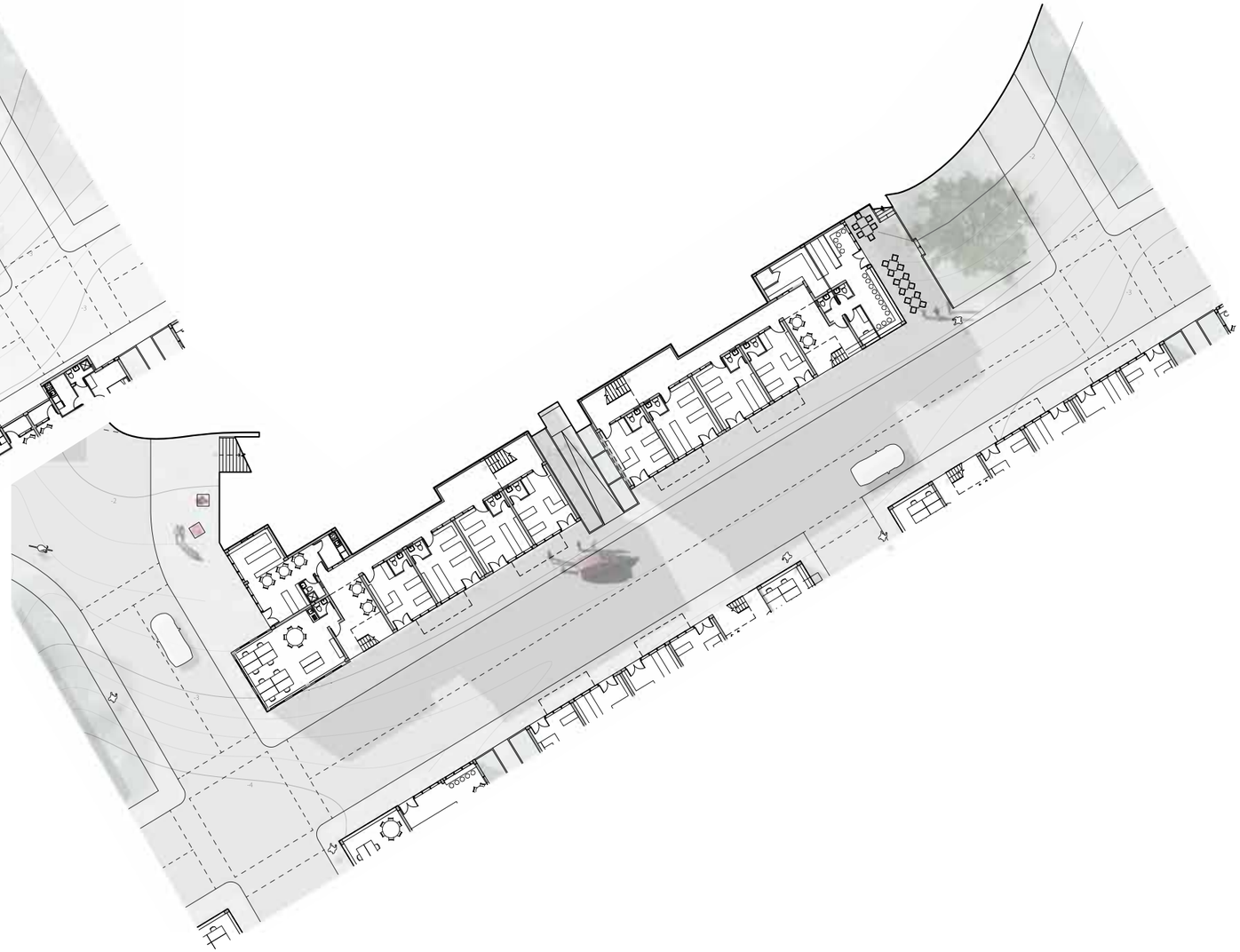
T=1500 140**%** increase
T=294 175**%** increase
T=146 1217**%** increase

Condominium 3.0

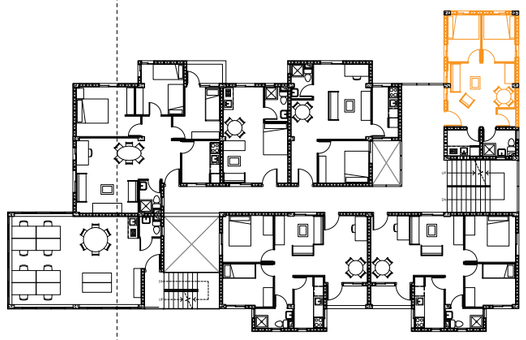
Condominium 3.0 - Comparative Block

Condominium 3.0 - Focus Block

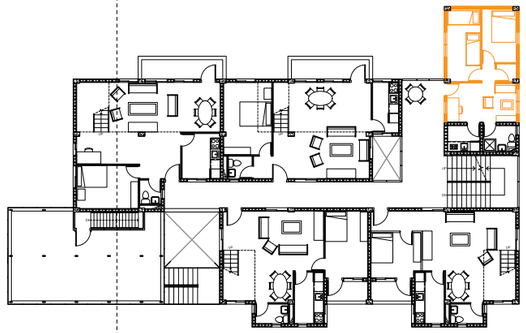
Block Plan Level 0



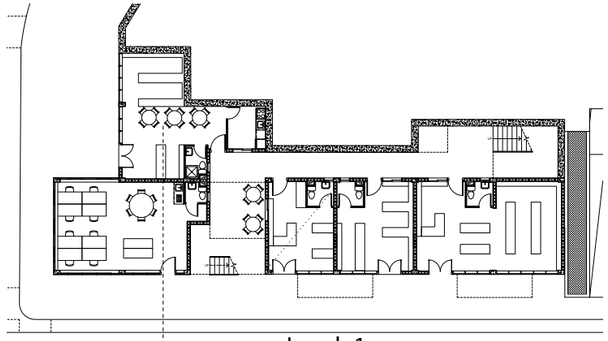
Block Plan Level -1



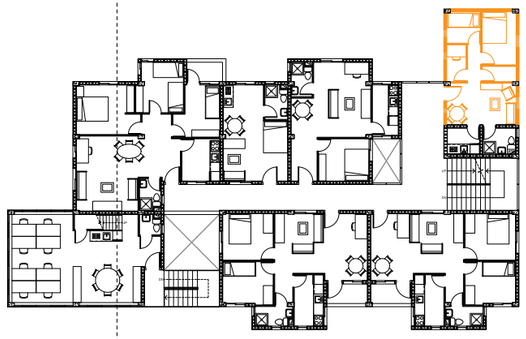
Level 1



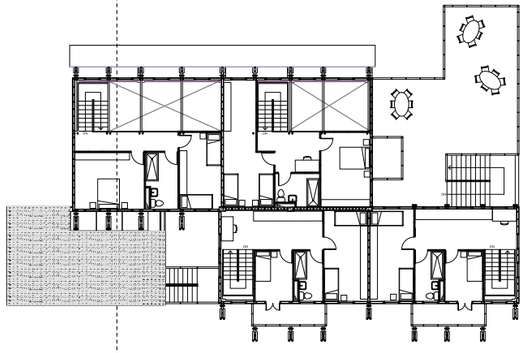
Level 4



Level -1

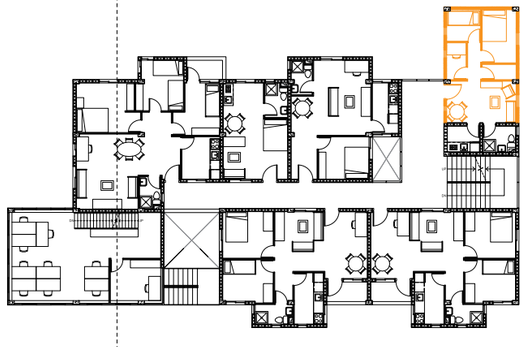


Level 2

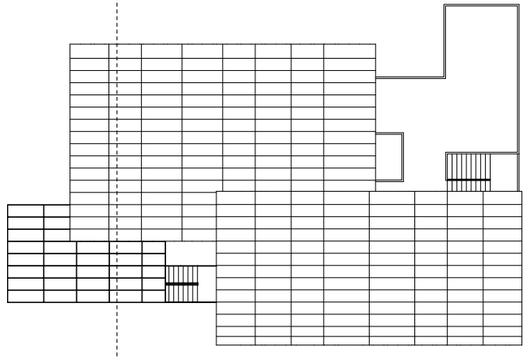


Level 5

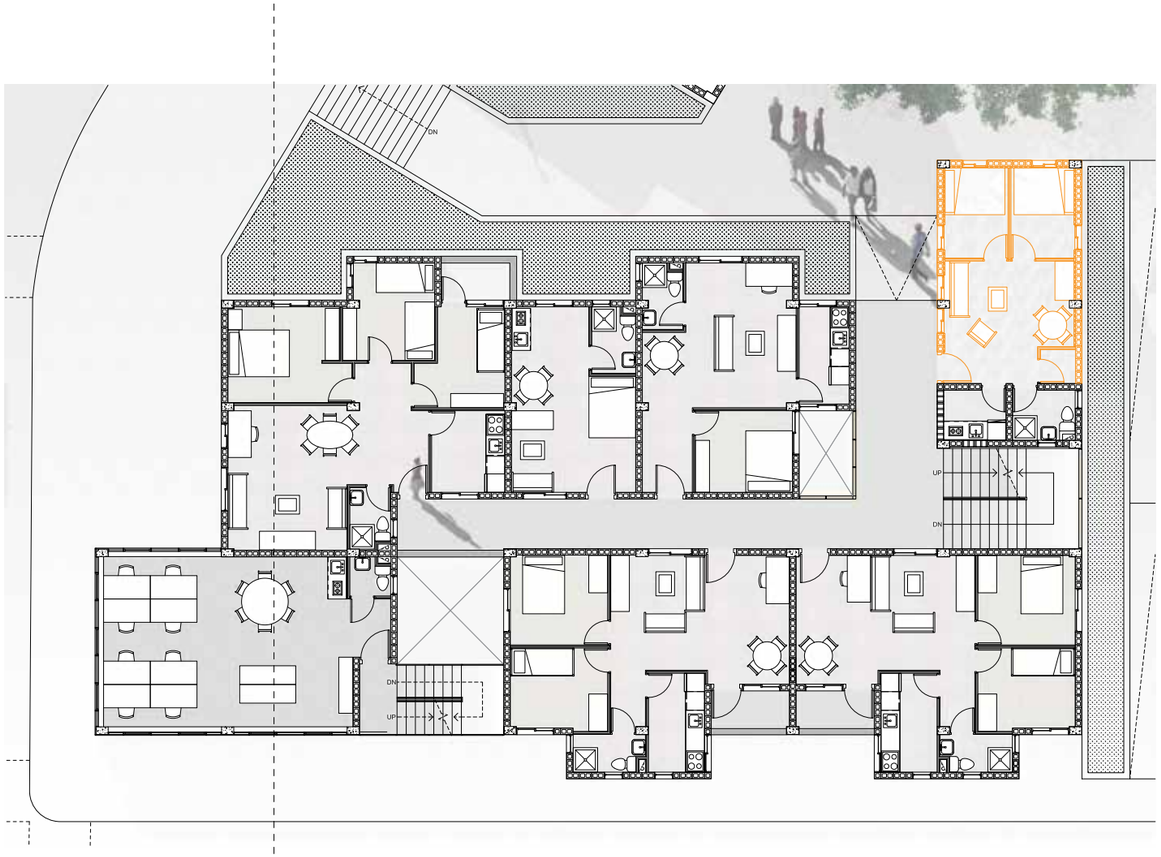
Level 0



Level 3

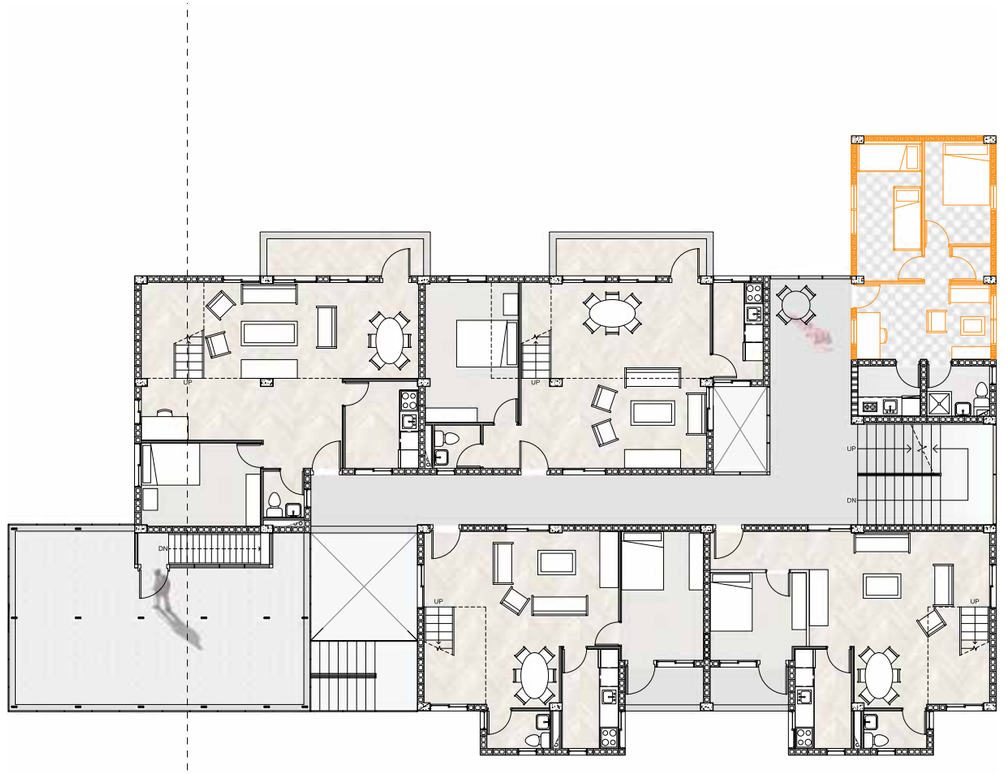


Roof



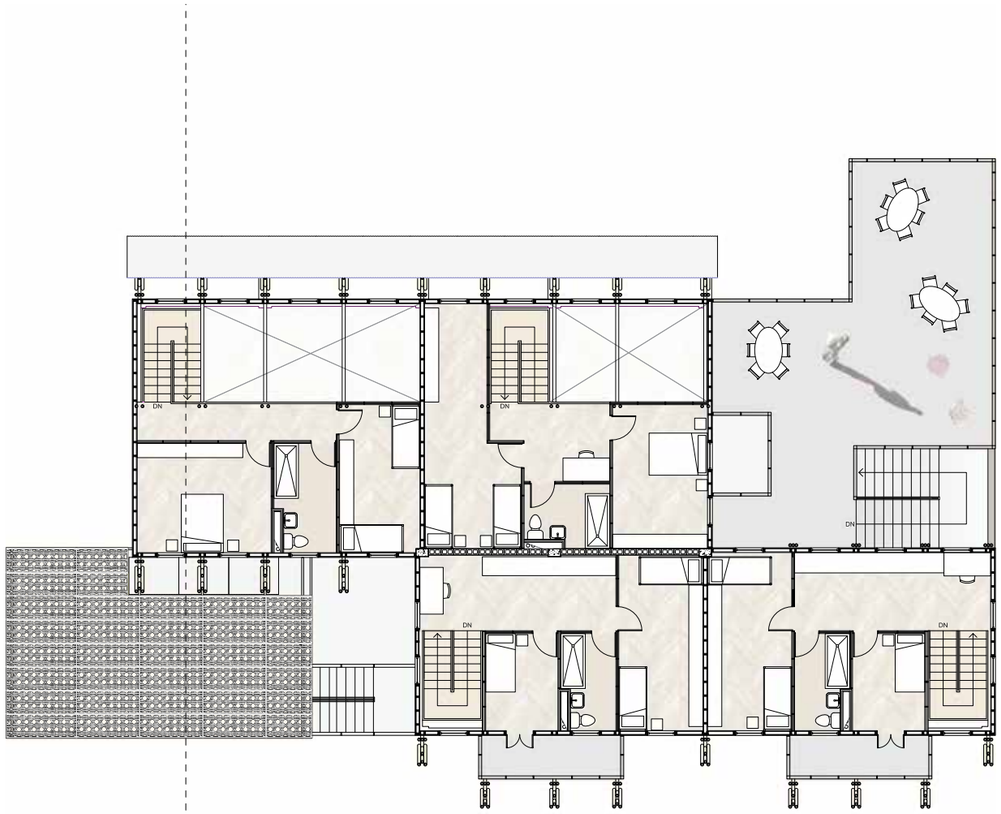
0 2 5m

Level 0 Plan 1:50



0 2 5m

Level 4 Plan 1:50



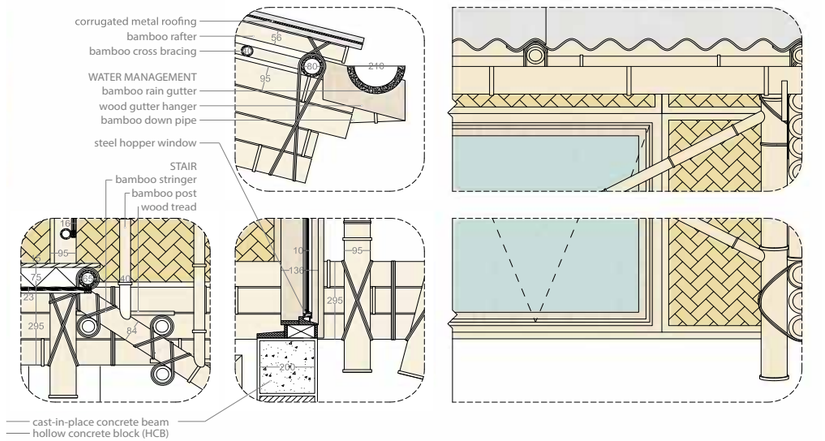
Level 5 Plan 1:50

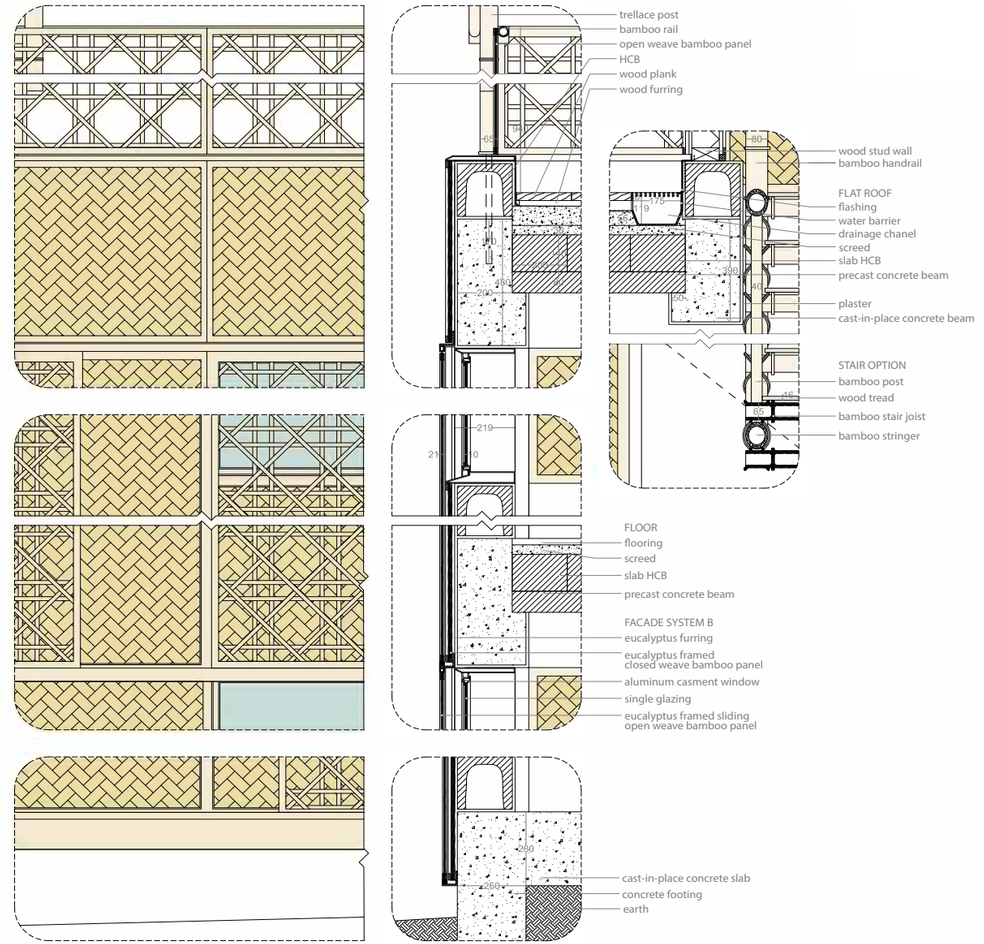
level 5
14.1 m
level 4
11.2 m
level 3
8.4 m
level 2
5.6 m
level 1
2.8 m
level 0
0 m
level -1
-2.8 m

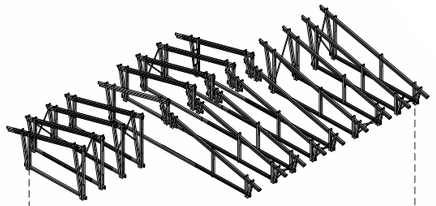
Main Load Bearing Structure

corrugated metal roofing
bamboo rafters
bamboo cross bracing
bamboo ties
wood roof joist
wood stud wall and roof framing
bamboo beam
bamboo column
FACADE SYSTEM A
eucalyptus framed coated closed
weave bamboo panel
ecualyptus furring
rigid insulation between studs
closed weave bamboo panel
wood window head
steel casement window
open weave bamboo shutter
in eucalyptus frame
single glazing
95
130
100
51

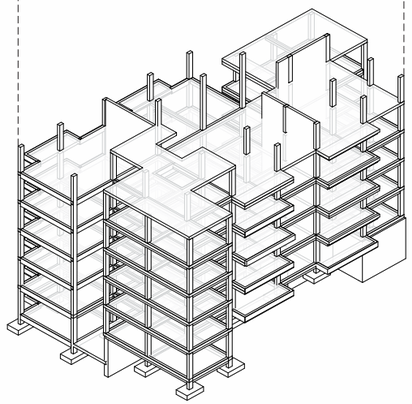
eucalyptus wood plank flooring
bamboo floor joist
closed weave bamboo panel
wood sill
roof flashing
corrugated metal roofing
BAMBOO TRELLIS
open weave bamboo panel
bamboo trellis framing
bamboo rain gutter
18
65
200


corrugated metal roofing
bamboo rafter
bamboo cross bracing
WATER MANAGEMENT
bamboo rain gutter
wood gutter hanger
bamboo down pipe
steel hopper window
STAIR
bamboo stringer
bamboo post
wood tread
cast-in-place concrete beam
hollow concrete block (HCB)


trellace post
bamboo rail
open weave bamboo panel
HCB
wood plank
wood furring
wood stud wall
bamboo handrail
FLAT ROOF
flashing
water barrier
drainage chanel
screed
slab HCB
precast concrete beam
plaster
cast-in-place concrete beam
STAIR OPTION
bamboo post
wood tread
bamboo stair joist
bamboo stringer
FLOOR
flooring
screed
slab HCB
precast concrete beam
FACADE SYSTEM B
eucalyptus furring
eucalyptus framed
closed weave bamboo panel
aluminum casment window
single glazing
eucalyptus framed sliding
open weave bamboo panel
cast-in-place concrete slab
concrete footing
earth

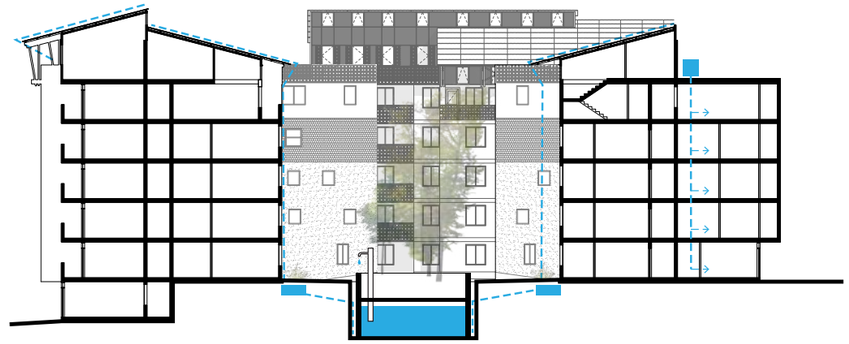


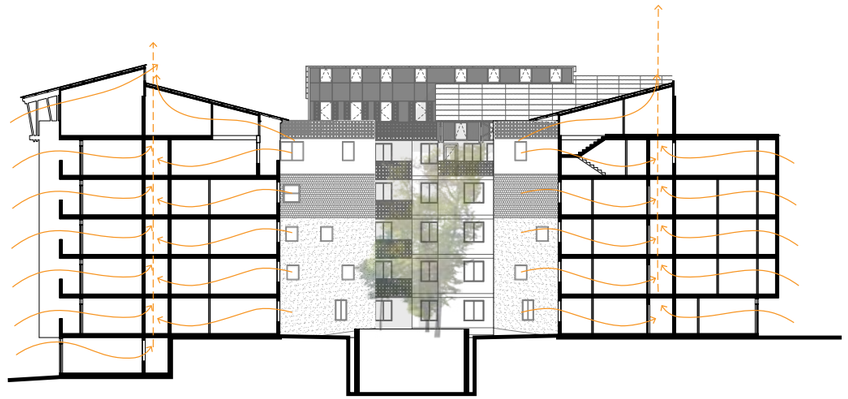
Bamboo Post and Beam Framed Penthouse and Roof



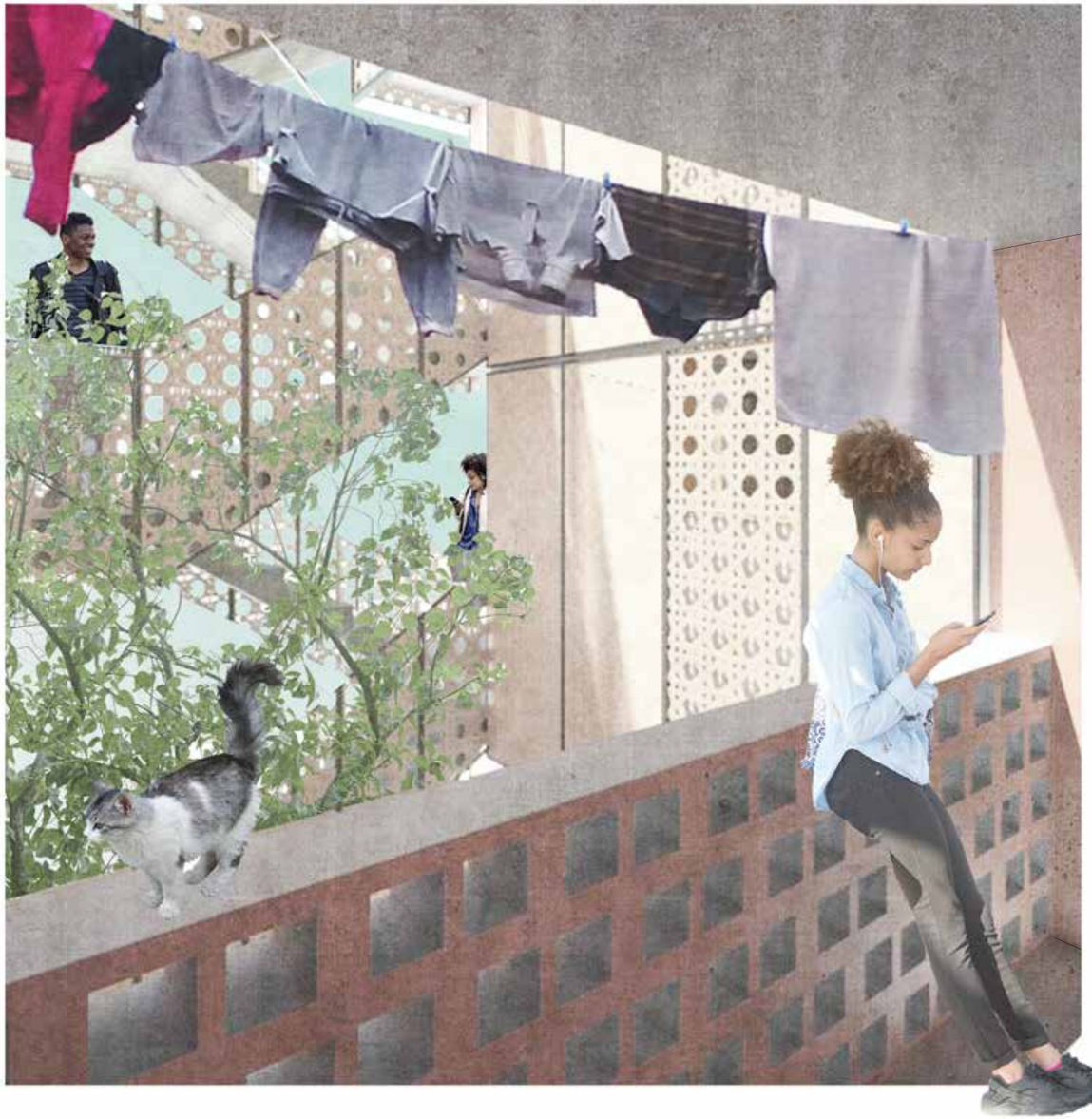
- Cast-in-Place Foundations and Slab
- Exisiting Cast-in-Place Concrete Columns and Beams
- Precast concrete Foor Beams and Slab Hollow Concrete Blocks (HCB)
- HCB Walls

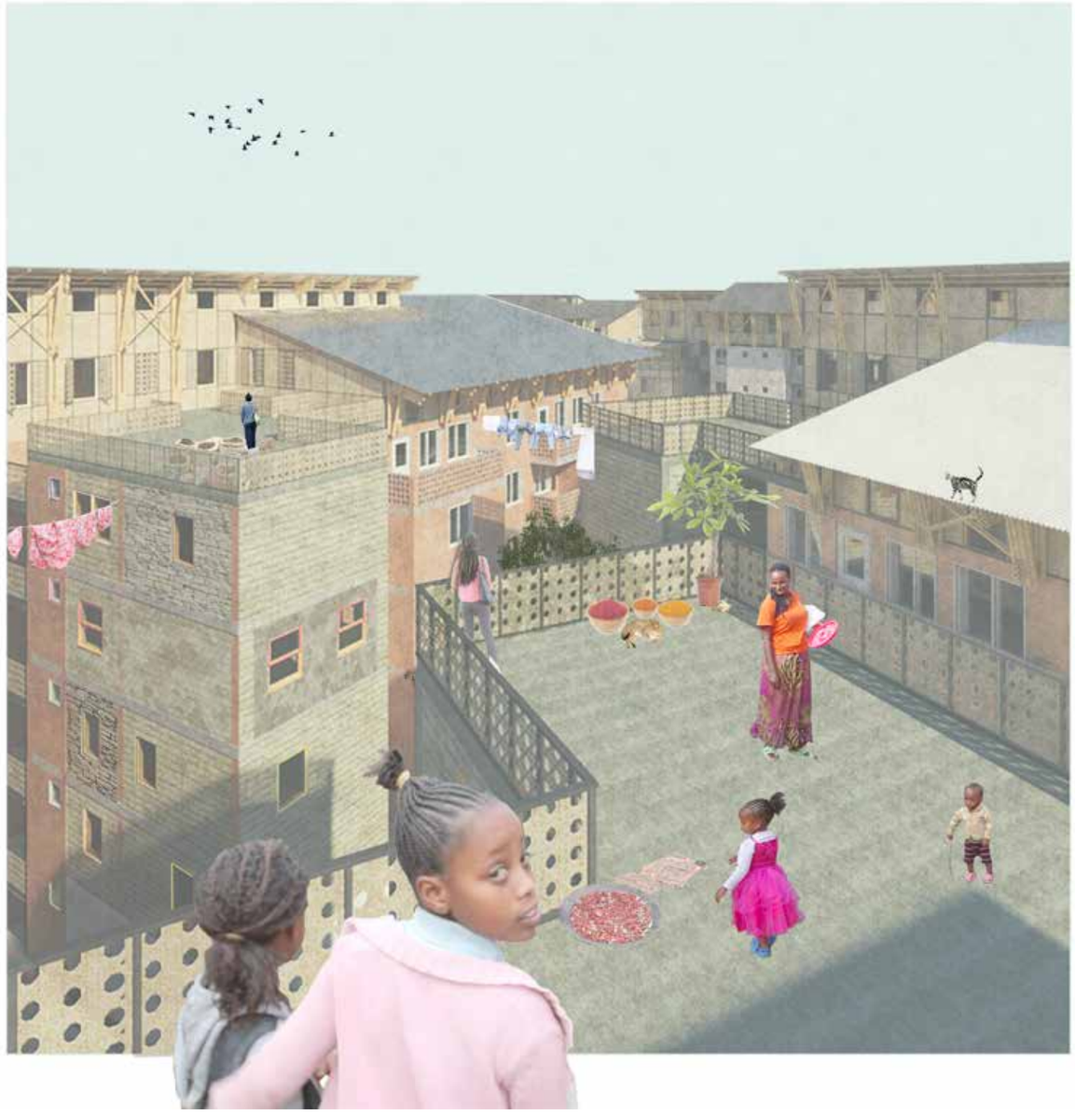
Main Load Bearing Structure

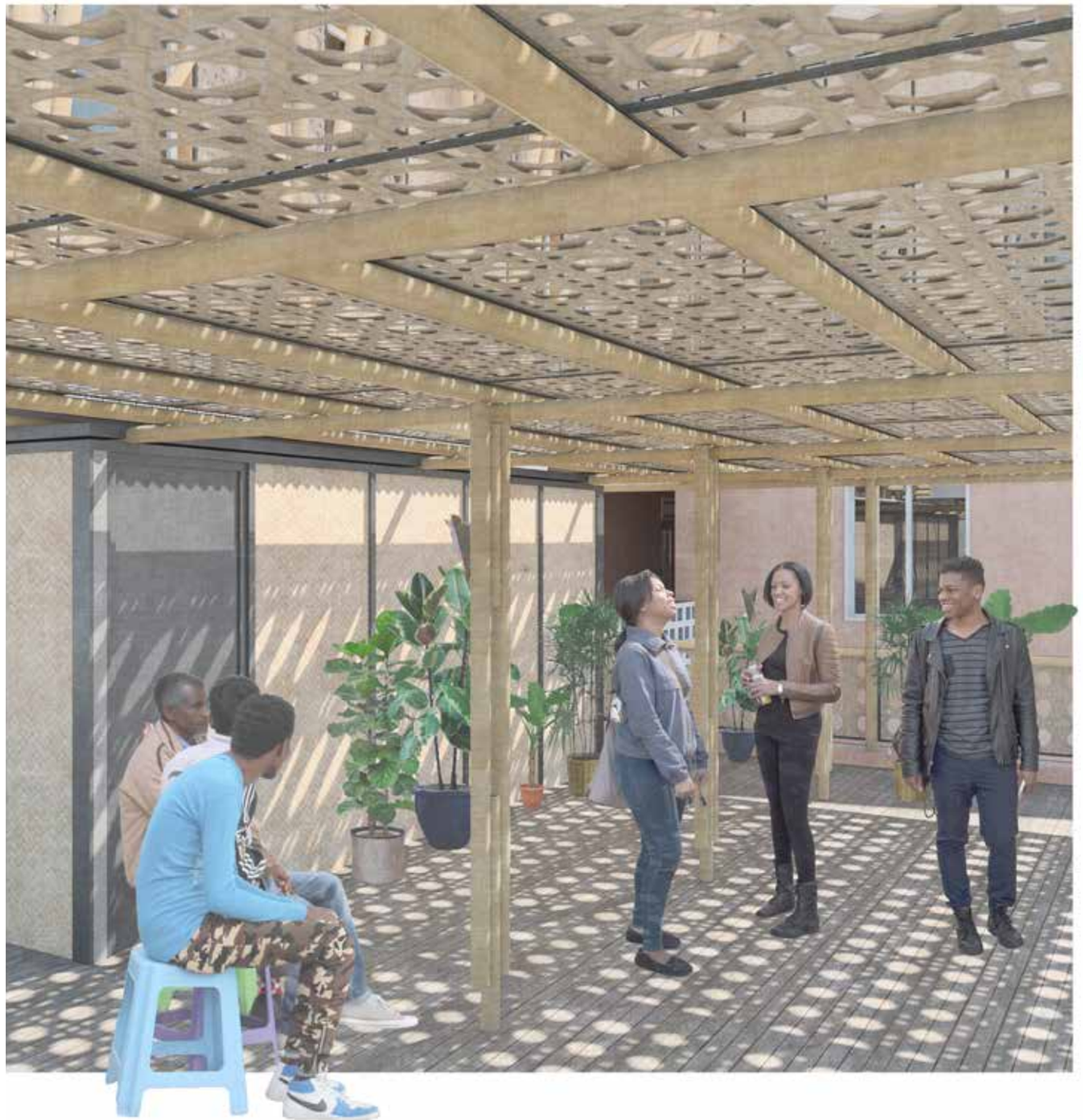


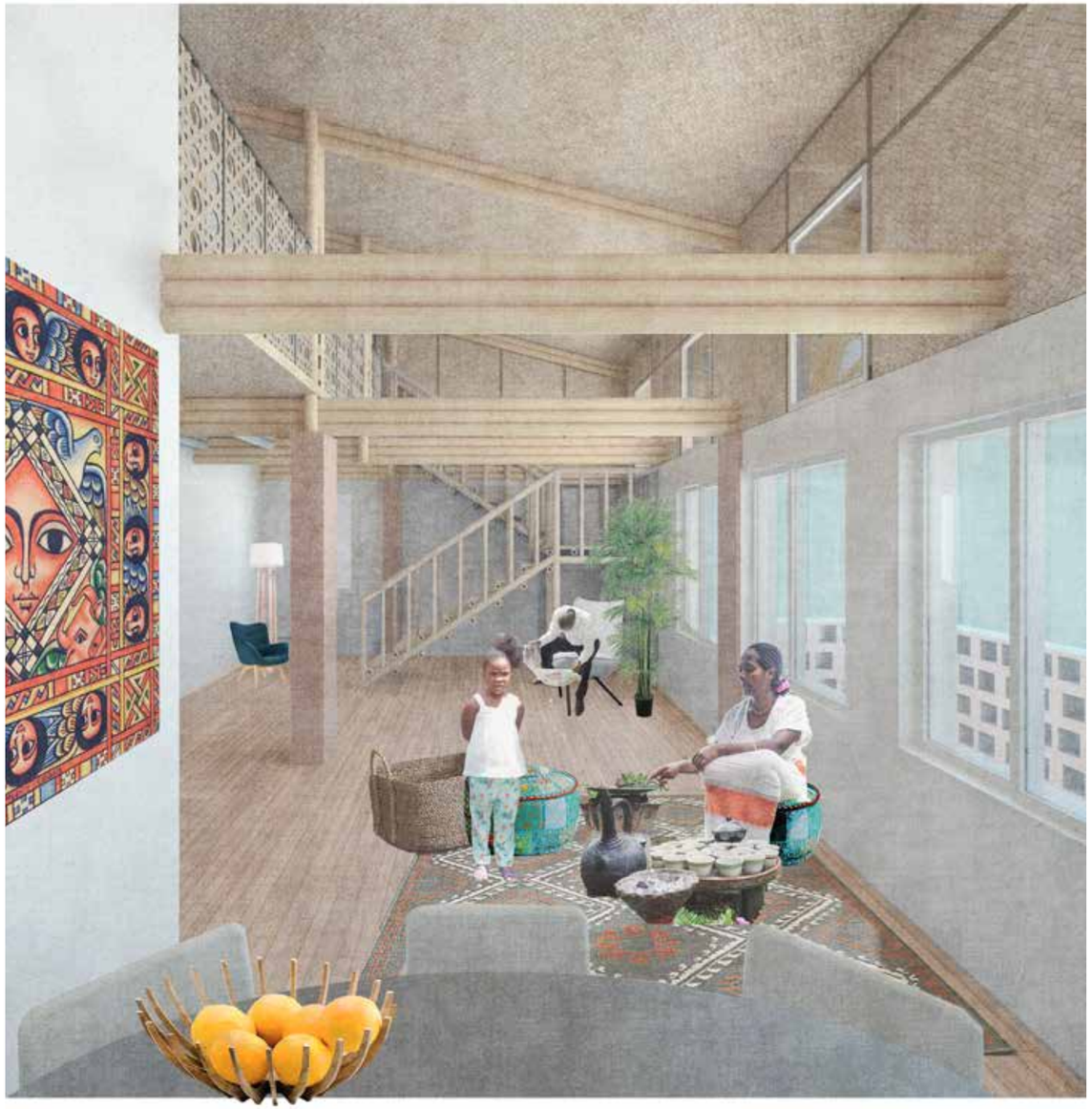


Natural Ventilation









Model of the Existing Condominiums with the Condominium 3.0 Additions

Model of the New Condominium 3.0 Development