

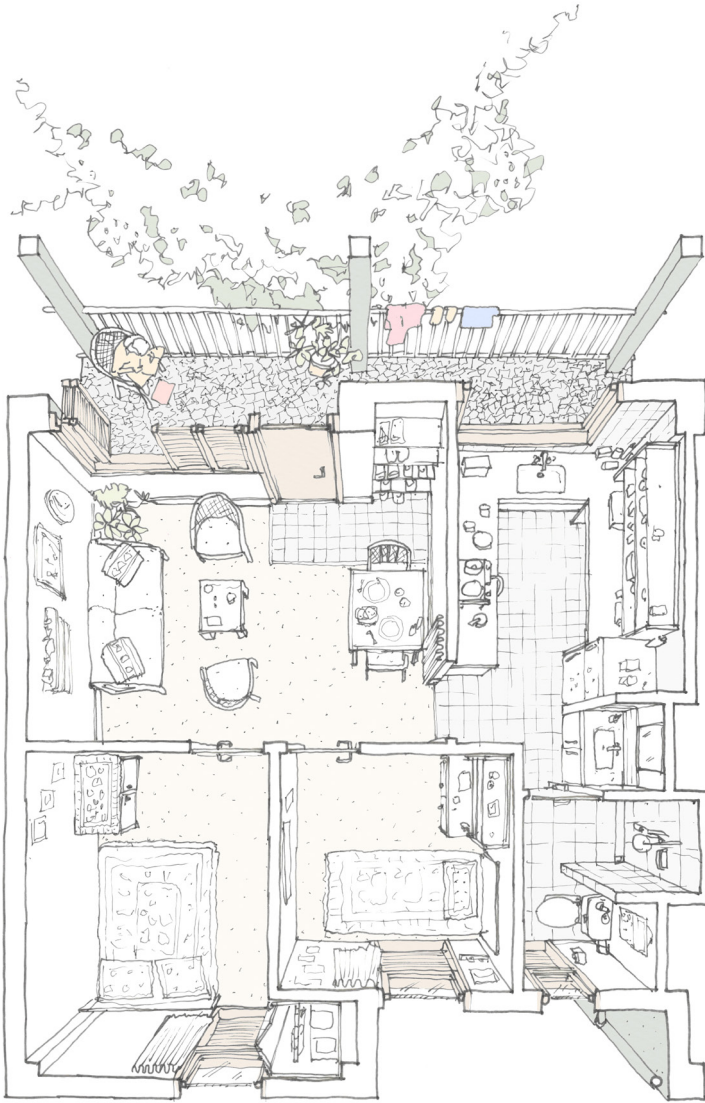
Craig Michael Trompeter

HOUSING FOR COMMUNITY



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Re-imagining co-housing in
the age of Neo-liberalism

Craig Michael Trompeter

TU Delft Graduation project
for 2018/2019 Global Housing
Studio: Mixing Mumbai

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Rahmat Nagar Rd, Nala Sopara, 2018

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INTRODUCTION

Mixing Mumbai: Affordable Housing for Inclusive Development

Studio Introduction

“In the next three decades, the planet’s rate of urbanization will increase at a fast pace, adding 2,5 billion new dwellers to the current urban population. To accommodate this demographic growth, the world needs to tackle the many challenges of sustainable and fair urban development. Right now, urbanization in the Global South happens in mainly unsustainable ways, with approximately 850 million people living in slums in 2014 (1/3 of all urban dwellers).

Rethinking the current systems of affordable housing production is a major challenge that needs urgent actions. The stakeholders involved in housing production, in general, and the architecture discipline, in particular, need a critical evaluation of their processes, methods and strategies to answer some pressing questions. Where will all these new urban dwellers live? More importantly perhaps, how will these new urbanites dwell? What will be the role of disciplines such as urban design and architecture in this process?”¹

Thesis Introduction

This graduation project begins with a question derived from disturbing housing situations which seem to echo from one country to another. Why is it, that while so many luxury apartments in prime locations stay empty, so many people are homeless? Why is it that the people who work the hardest are also the ones who are often unable to find suitable housing? The answers to these questions are inherently political, but the architecture of housing, by nature is political.

This thesis approaches housing design by first considering what different forms of housing mean in terms of how society functions. Does a housing project function to bring people together? or does it fragment and atomise society? Does a housing project suppress or empower people?

The premise for the co-housing project developed in this thesis is that a different theory of social housing is required to begin to solve housing crises in many parts of the world. The key question being: Can the architecture of housing be designed to suit how people live as distinct from how people invest?

¹ Global Housing studio course manual 2018/2019, Introduction. p5.



Virar Rd, Nala Sopara



Mumbai City, 2018

**“The strength of good
design lies in ourselves
and in our ability to
perceive the world with
both emotion and reason”**

Peter Zumthor

LOCATION

N a l a S o p a r a , M u m b a i , I n d i a



India-Mumbai-Nala Sopara

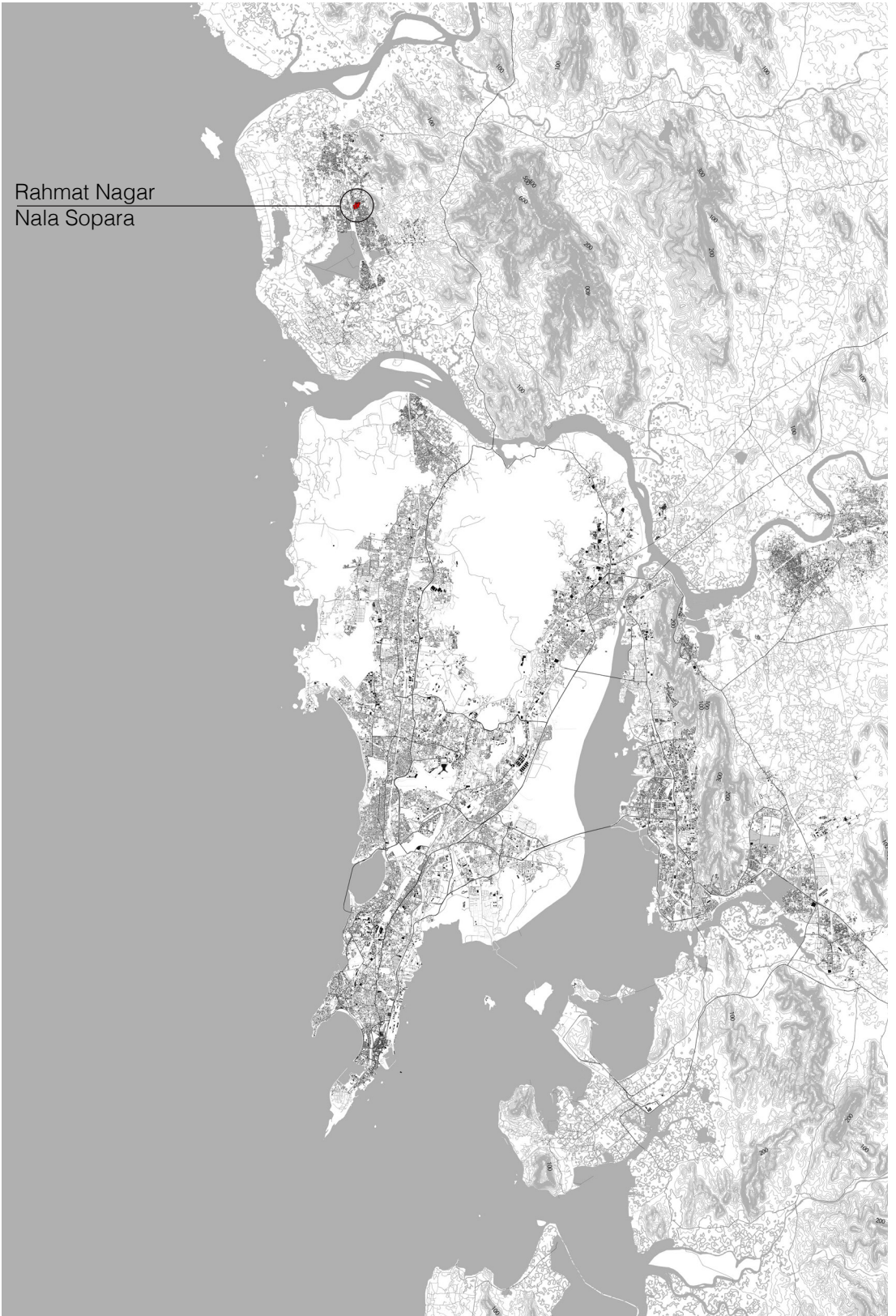
India is one of the most densely populated countries in the world. A uniquely diverse country with a tumultuous history, India is one of many countries in which massive volumes of people are migrating from the villages to the urban centers.

Mumbai is the most populous of India's urban centers. Often called the gateway to India, Mumbai is India's financial capital. The history

and geography of Mumbai is such that people, wealth and business has concentrated towards the southern peninsula. This has increasingly resulted in working class people and new-comers being forced out to the new city periphery.

Nala Sopara is one such suburb which is experiencing explosive and incoherent growth as a result of these processes.

Rahmat Nagar
Nala Sopara



Map of greater Mumbai

PATTERNS OF HABITATION

N a l a S o p a r a , M u m b a i



Medium size Hindu temple

Hindu Temples & Shrines

Rahmat Nagar is home to many religions, but the main religion in the area is Hinduism. This can be seen through the many different temples which are scattered through the area. Typically every community has their own temple. Besides these temples many shrines are also in the area such as the 'tree temples'. There are not many temples in the chawl areas. This is due to people having their own private

prayer area in their homes. Besides Hindu temples there are several mosques, Buddhist shrines and Christian meeting places. The mosques are not separate buildings but are generally a common prayer area on the ground floor of an apartment building. These are often secured and away from the main public areas. Though there were many Christian schools no Churches were built in this area.



Small Hindu shrine



Chawl School

Large Chawl Schools

Educational buildings can be seen all over the area. These buildings can be placed into three different categories: Private schools, Chawl schools, and tutoring rooms. Schools are generally spread out with educational buildings of all sizes typically located within chawl areas. Interesting to see is that more tutoring facilities tend to be located near larger schools.

Chawl schools (image above) are found mostly in the low-rise chawl areas and are normally organized and funded totally by the local residents. They run on a donation-based system, so those who cannot afford it do not have to pay for their children to attend. These are typically smaller facilities with several teaching spaces based around an open courtyard.



Large private school

Large Private School

There were multiple large private schools within Nala Sopara. These are well established, well funded facilities which are closer to what one might expect coming from the west. The buildings are much larger, well maintained, and well staffed. Students who attended are typically high-school age and they wear uniforms. The school depicted above is a five storey gallery style building in an L-shape, and is based around a large open and paved

courtyard. Entry to the courtyard is secured by two guards during school time, and by a large locked gate outside of school hours.

These type of schools appeared to be more exclusive, students tended to arrive by taxi or tuk-tuk, most likely to be from middle-class families.

Interesting to note, this type of school tended to be defined by a religion, either Hindu, Muslim or Christian.

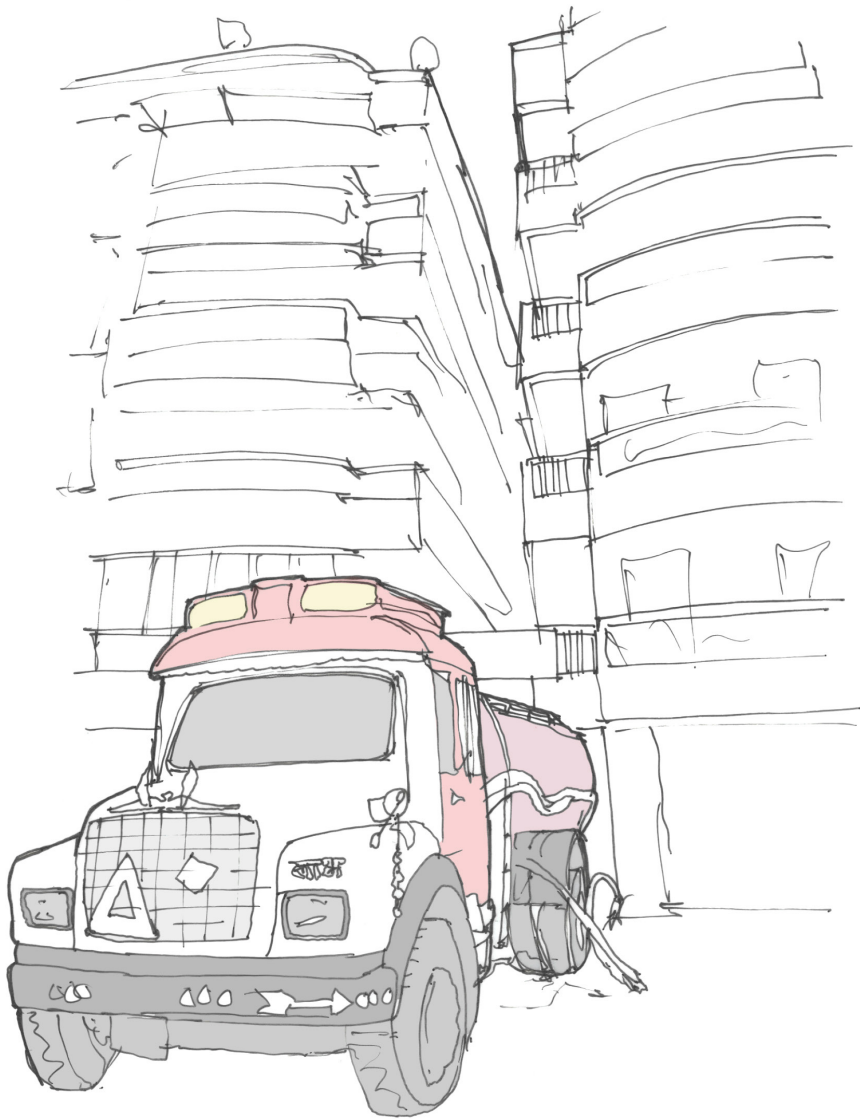


Communal toilet block

Chawl Communal Toilets Water Supply Trucks

The communal toilet blocks can be frequently seen in the baithi chawl areas. The houses in these areas do not have private toilet's as there is no functional sewer connection. They share these toilet with many of their neighbors, and as a result of confused systems of ownership, they are often in a state of disrepair due to lack of maintenance.

Water services are everywhere in Nala Sopara. For the largest part people get their water from water trucks which pump water into a tank, or container. Because there is no plumbing in most areas people have to carry their water to their apartments - often up multiple flights of stairs. The water pumps also supply water to the chawl residents, however most of these are broken.



Water supply truck



Public Hospital

P u b l i c H o s p i t a l

Healthcare facilities can be seen all areas of Nala Sopara. We can distinguish different types of healthcare facilities by their scale and characteristics. We divided them into public hospitals, private hospitals and clinics. The various permutations of healthcare facilities parallel those of educational buildings mentioned earlier. Whenever there is a larger hospital more clinics appear around this larger hospital. The same thing happens with pharmacies. Even though health care is quite

spread out it centers around the largest public hospital.

There was only one government public hospital in Rahmat Nagar. It was multiple storeys tall and setback from the main road. This facility was characterized by large signs, ambulances, an extensive courtyard and an emergency entry court. As a public hospital it was extremely small considering the population of Nala Sopara, maybe one tenth the size that we would expect in the west.



Private Hospital

P r i v a t e H o s p i t a l

Due to insufficient public funding for hospitals in Mumbai, there is a large market for private healthcare facilities. In Nala Sopara these take many forms. Generally private clinics occupy commercial space at the ground level of apartment buildings. These can be single or multiple rooms and include a small waiting space with separate meeting rooms.



Small private clinic

Small Private Clinic

Small private clinics occupy the roller-door commercial spaces at the base of chawl apartments. These are generally a single room, and as such are usually specialist clinics, such as dentists or chiropractors. These (along with other small commercial enterprises) were scattered in clusters, often centered around a hospital or large school.



Communal water pump



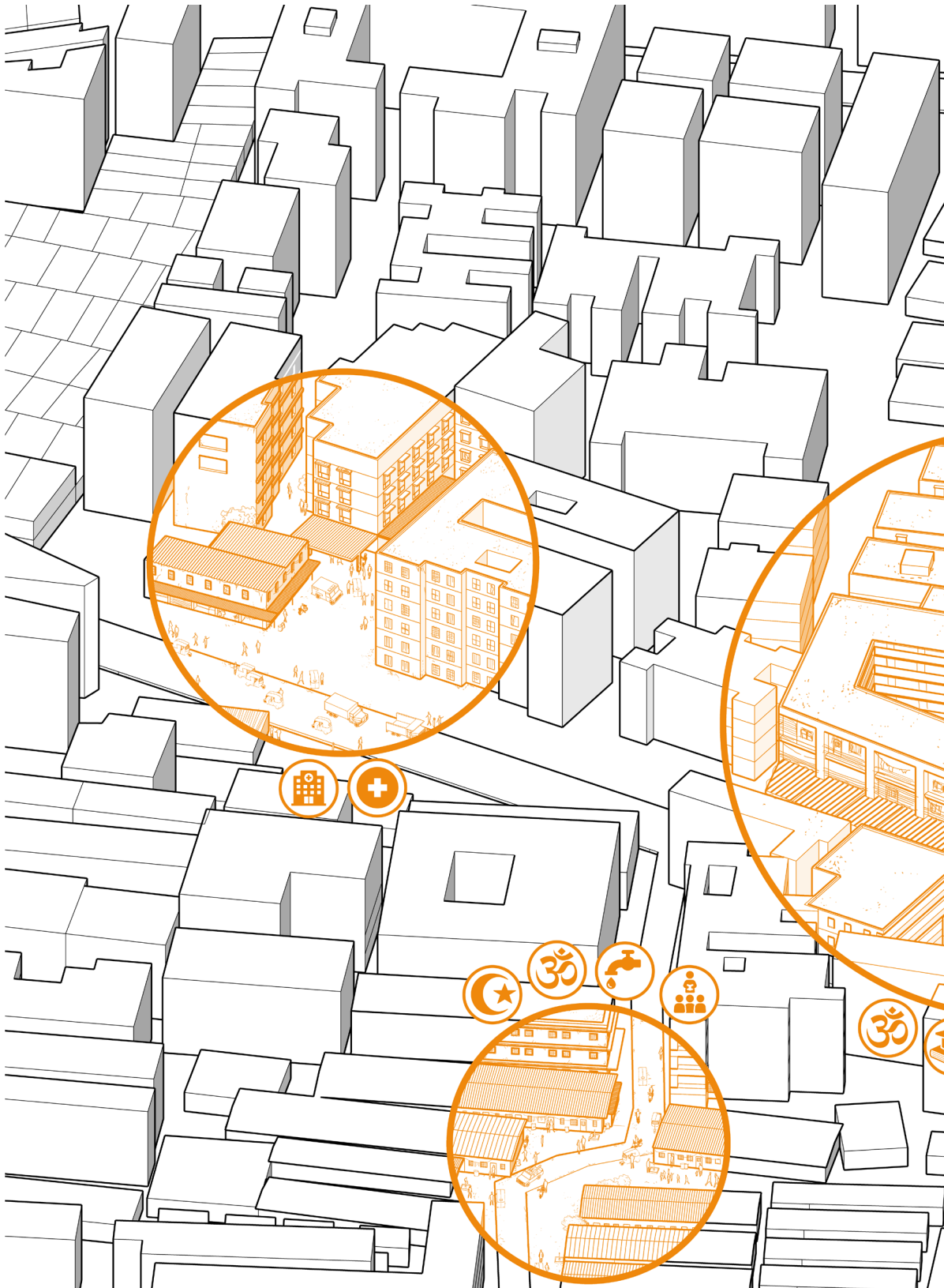
Small private school

Small Private School

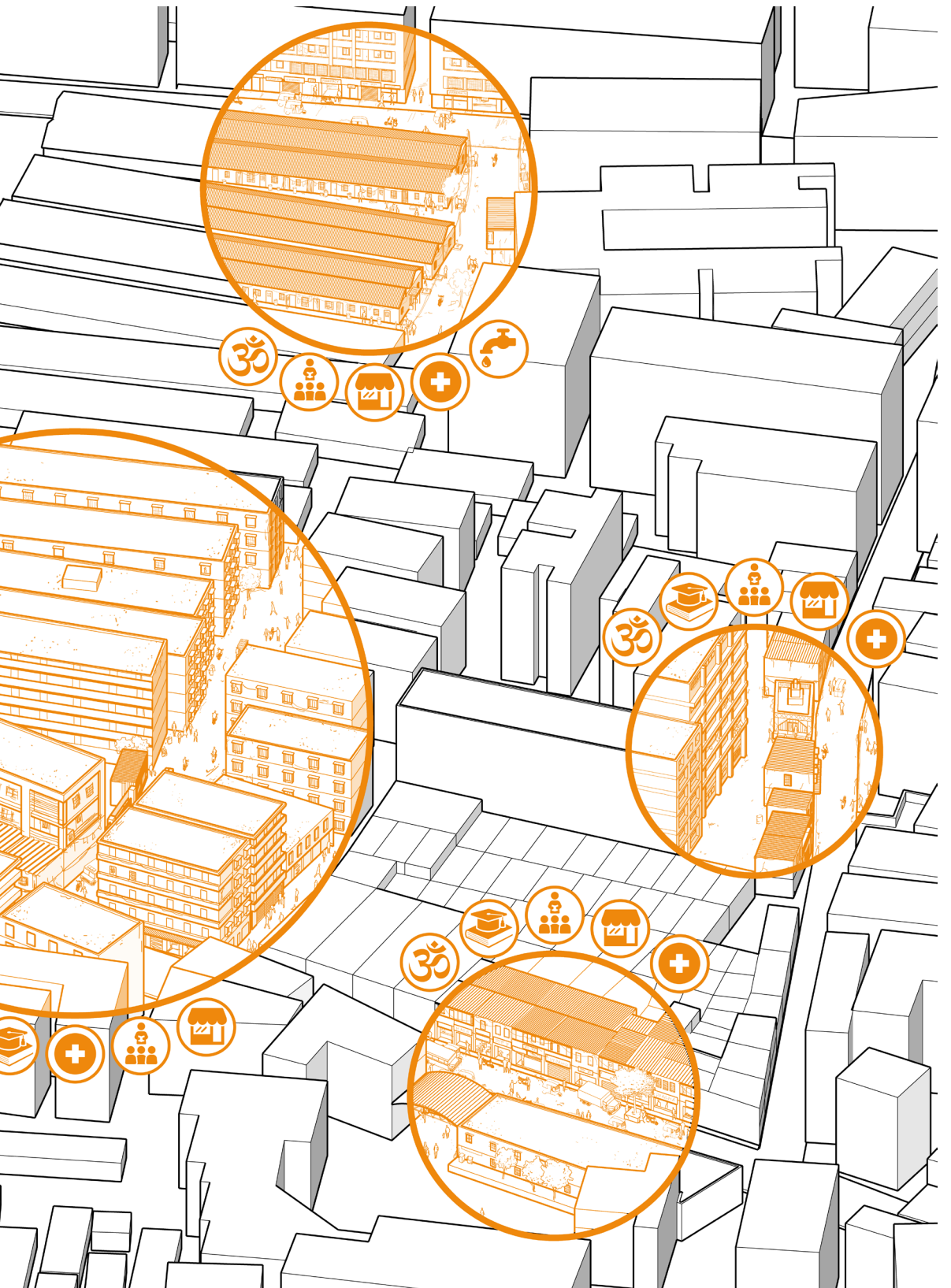
Schools were surrounded by tutoring places. These places consisted of a single room, usually in a single space meant for commercial activity. These schools were generally used as an after-school supplement for English, Math and Science (among other subjects) classes.



Large Hindu Temple



Poster presentation: Clusters of Amenities



RESEARCH QUESTION

M i x i n g M u m b a i

AR3AD035 Tutorial Global Housing

Housing for Community: Re-imagining co-housing in the age of Neo-liberalism
Research Question Essay
Craig M. Trompetter

TU Delft
14/12/2018

Abstract

The main objective behind this project is to explore potential solutions to the housing problem in Mumbai. To achieve this objective, I have developed a structured approach. This will consist of extensive research into the nature of the problem at every level. These 'levels' consist of the meta: Neoliberalism, the structural: Hyper-commodification of housing, and the tangible: the lived experience of those individuals who are embroiled in the extremes of these processes. Another facet of research will be into existing community based housing initiatives, both in India and around the world. The culmination of these inquiries will be the creation of an architectural design brief which will inform the design of a housing model. It is expected that the outcome of this thesis will be the development of an effective design brief template and subsequent housing model, which can better address the housing situation in Mumbai. Beyond Nalasopara and Mumbai, it is intended that the thesis research will also respond to the growing global issue to do with free market housing. This would not be a model per say; but rather, a way of thinking about the core of the problem before addressing individual cultural dimensions.

Problem Statement

Part 1: A global issue

Common thinking regarding what is commonly known as “the housing crisis” is problematic. The term is often vague and based upon a host of misconceptions. In what is widely known as ‘the New Zealand housing crisis’, the effects are either felt or seen. Over the last 10 years, New Zealand society has deteriorated due to rising inequality and falling living standards¹. For most people, house prices rose significantly faster than household incomes. The results are evident to everyone; home ownership is at the lowest point in 66 years² and people who rent or are in search of a first home are being forced to move out of the major cities. Furthermore, growing homelessness is increasingly evident through populations of people living out of cars in unmetered city parking areas³ – a new form of squatter settlement. In looking for someone to blame, foreign investors are singled out. Specifically, the Chinese. Poorly organized housing owner registration systems and the government’s decision to publish a list of new home buyers with an emphasis on “Chinese sounding names”, gave frustrated New Zealanders someone to blame⁴. However, in reality large numbers of Chinese investors are a symptom of the problem, not the cause. The true forces fueling the misery of the many are invisible.

In Mumbai the evidence of inequality is substantially greater. While 480 thousand houses are kept empty⁵ approximately 9 million people are living in slums⁶. Despite the fact that the socio-economic divisions are so blatantly evident in the physical makeup of Mumbai, there is still very little awareness about the nature of the disease that plagues them. The Hindu, a major Indian news organization stated in January 2018 that, “The phenomenon of high vacancy rates is not fully understood, but unclear property rights, weak contract enforcement and low rental yields may be important factors.”⁷ Ignorance on the nature of the problem has been translated into a multitude of affordable housing projects across Mumbai. MHADA housing schemes, SRA projects and PMAY initiatives (known as ‘Housing for All 2022’), are all attempts to solve the affordable housing problem within the existing system that created it⁸. The true forces fueling the misery of the many are invisible.

The 1999 text ‘Profit over People: Neoliberalism and Global Order’ is a seminal work by Noam Chomsky. In this he examines current global economic trends rising

1 Vowles, Jack, Hilde Coffe, and Jennifer Curtin. “The Fall and Rise of Inequality in New Zealand.” In *A Bark But No Bite: Inequality and the 2014 New Zealand General Election*, (Australia: ANU Press, 2017). p.47

2 Eleanor Roy, “‘Stress is huge’: New Zealand’s foreign buyers ban brings home scale of crisis.” *The Guardian*, August 17, 2018.

3 Amore, Kate. *Severe housing deprivation in Aotearoa/New Zealand: 2001-2013*. (University of Otago, Wellington, 2016). p.10-11

4 Hunt, Elle. “New Zealand Labour defends claim that foreign Chinese are buying up houses.” *The Guardian*, July 13, 2015.

5 “Business Line: Mumbai has highest vacant housing inventory.” *The Hindu*, January 29, 2018.

6 Zeeshan Shaikh, “‘Mumbai most populous in county, 41.3% live in slums.’” *The Indian Express*, September 26, 2017.

7 “Business Line: Mumbai has highest vacant housing inventory.”

8 Das, P. K., Gurbir Singh, Kabir Agarwal, and Ritu Dewan. *Chasing The Affordable Dream*. (Mumbai: Bombaykala Books, 2018). p.65-78

from drastic moves made during Margaret Thatcher's and Ronald Reagan's era (1980's). Chomsky provides clarity to the concept of Neoliberalism, an umbrella term used to group political initiatives of privatization, austerity, deregulation and free trade. He states of Neoliberalism: "Instead of citizens, it produces consumers. Instead of communities, it produces shopping malls. The net result is an atomized society of disengaged individuals who feel demoralized and socially powerless"⁹. Beyond the 2008 financial crisis, increased neoliberal policy has exacerbated existing issues. Peter Marcuse and David Madden's book 'In Defense of Housing: The Politics of Crisis', examines the global impact of Neoliberal policy in 2016. Giving definition to the concept of 'Hyper-commodification', they state: "together the interlocking processes of deregulation, financialization, and globalization have meant that housing functions as commodity to a greater extent than ever before"¹⁰. Thus, maintaining and increasing demand for housing is in the interest of all those who have invested in real estate.

The free market economy is not a new idea, the concept of which seems pure. Adam Smith gave us the concept of the 'Invisible hand', the notion that the efforts of the individual to pursue their own self-interest will benefit society more than if their actions were intended to benefit society directly¹¹. Unfortunately, in the 21st century the invisible hand no longer provides. Neo-liberalism has opened Pandora's box, unleashing a host of invisible forces compelling society to turn on itself.

Part 2: The atomization of society

The atomization of society, as mentioned by Noam Chomsky, is the process in which a society is divided into its constituent parts¹². This process is made worse by the commodification of housing and is evident in the standardization of dwelling units. In Auckland, the predominant form of housing is detached houses; commodification and atomization is facilitated through the 'certificate of title system' and standardization led by franchise housing schemes. In Mumbai, the predominant housing type is apartment buildings; commodification and atomization is facilitated through uniformity of all apartment units within all target markets (LIG, MIG, HIG, etc.). These standardized fixed-state dwelling units are not exclusive to the neoliberal era; rather, their proliferation is a natural continuation of real estate investment logic¹³. The result has been a succession in patterns of habitation which are disempowering people and destroying communities. When

9 Noam Chomsky. Profit Over People: Neoliberalism and Global Order. (New York: Seven Stories Press, 1999). p.11

10 David Madden, and Peter Marcuse. In Defense of Housing: The Politics of Crisis. (London: Verso, 2016). p.35

11 Adam Smith, The Wealth of Nations 1723-1790 (New York: Modern Library, 2000).

12 Noam Chomsky. Profit Over People: Neoliberalism and Global Order. (New York: Seven Stories Press, 1999). p.11

13 Clar, Antonio J. Jimenez. "The Real Estate Information: A way to standardization." In 8th European Real Estate Society Conference. ERES: Conference. Alicante, Spain, 2001.

combined with rent systems, rising house prices and social isolation, the division of communities into individual households turns the home into a personal prison. As Chomsky puts it: "The goal is a society in which the basic social unit is you and your television set. If the kid next door is hungry, it's not your problem. If the retired couple next door invested their assets badly and are now starving, that's not your problem either."¹⁴

Part 3: Nalasopara, Mumbai

The Vasai-Virar sub district in Mumbai is at the forefront of the global housing problem. At the north periphery of the city, housing development has been accelerating over the last 20 years. This region in particular has become an exceptionally raw example of the negative effects of Neoliberalism and housing commodification. Typical of much of the development in this region, the area south of Rahmat Nagar Road is a combination of semi-legal and illegal apartment projects which have been constructed around, or in place of pre-existing Baithi chawls. This has resulted in the development of three distinct housing conditions: the 'Baithi chawl enclave', the 'mid-rise chawl labyrinth' and the 'walled apartment building'. The remaining Baithi chawls provide insufficient living conditions; however, they also provide sufficient daylight, personalized expandable homes, and most importantly: an existing community based on common facilities and hardships. In contrast, the 'mid-rise chawls' are characterized by unit apartments, buildings tightly packed together, poorly maintained services and no community facilities. Lastly, the 'walled apartment buildings' are characterized by unit apartments, high standards of construction and maintenance, and a fortified perimeter. The unfortunate reality is that current development patterns in Nalasopara are replacing healthy communities in the Baithi Chawls with an anti-social building fabric of polarized apartment buildings. This building pattern is disintegrating communities and atomizing society. Looking ahead, continued migration and city development is likely to fuel accelerating densification in the Vasai-Virar sub district. Left without intervention, this pattern of urban densification is likely to get worse.

14 Noam Chomsky (2011). "How the World Works", (London: Hamish Hamilton, 2011), p.244

Research Question

Housing separate from market forces

The first, and central research question is:

“Within the context of the Hyper-commodification of housing in Mumbai: how can a new model of affordable co-housing act as a framework to preserve, strengthen, and develop community, while meeting density requirements and universal living standards?”

It is expected that a holistic research approach to the housing situation in Nalasopara will generate the most meaningful results. Co-housing, or community-based housing, has been cited as it has been proven as a means to separate housing from the market economy. The most prominent program being the FUCVAM model developed in Uruguay and its proliferation in Latin America facilitated by the South-South Cooperation¹⁵. Throughout the project a global perspective will be essential in strengthening the research outputs and embedding the thesis within the broader context of the studio. Therefore, a second research question is proposed to act as a broader counterpart to the first:

“How can dwelling design better match how people live rather than how people invest?”

In providing solutions to these questions, it is expected that the research project will add meaningful knowledge to the discussion on affordable housing solutions in the climate of Neoliberalism.

¹⁵ World Habitat Awards. “South-South Cooperation: international transfer of the FUCVAM model of mutual aid housing cooperatives.” World Habitat, 2012.

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Newly built MHADA housing, Mumbai.

“Instead of citizens, it produces consumers. Instead of communities, it produces shopping malls. The net result is an atomized society of disengaged individuals who feel demoralized and socially powerless”

Noam Chomsky

KEY PRECEDENTS

Slum Rehabilitation Association Scheme - Mumbai



Babasaheb Ambedkar Nagar, Mumbai city

SRA was launched in 1996 and was intended to rehouse eligible slum-dwellers free of cost in new buildings.

The builder pays only 25% of ready reckoner rates, gets consent of 70% of slum-dwellers and develops the plot to house the original tenants. In return the builder receives additional construction rights to build luxury apartments. The method of management is interesting, however, the interests of the residents (and of

quality design) are not put at the heart of many of the SRA projects. The result therefore, is often (as is pictured above) inhumane housing - Dwelling units are crammed onto a small site with very little regard for such basics as daylight and ventilation, let alone community development or the connection of dwelling units to the street. Unfortunately the needs of residents are marginalized and are seen merely as an obstacle to profit.

Slum Rehabilitation Association Scheme - Nala Sopara



Rahmat Nagar, Nalasopara

The Nala Sopara project (above) is located immediately adjacent to the thesis project site. Built between 2016 and 2018, the building was constructed in place of 3 rows of baithi chawls. In exchange for a free apartment given to existing resident residents, the building company was able to construct for sale apartments on half of the land (left of image)

The scheme is successful in coordinating affordable rehabilitation housing with open market housing. However, the scheme is again a failure in that the existing residents are treated as dispensable. Just another obstacle to profit. The existing residents interests and of positive urban development needs to be prioritized.

F . A . R . 1 . 0 . Air Rights Planning Principal - New York

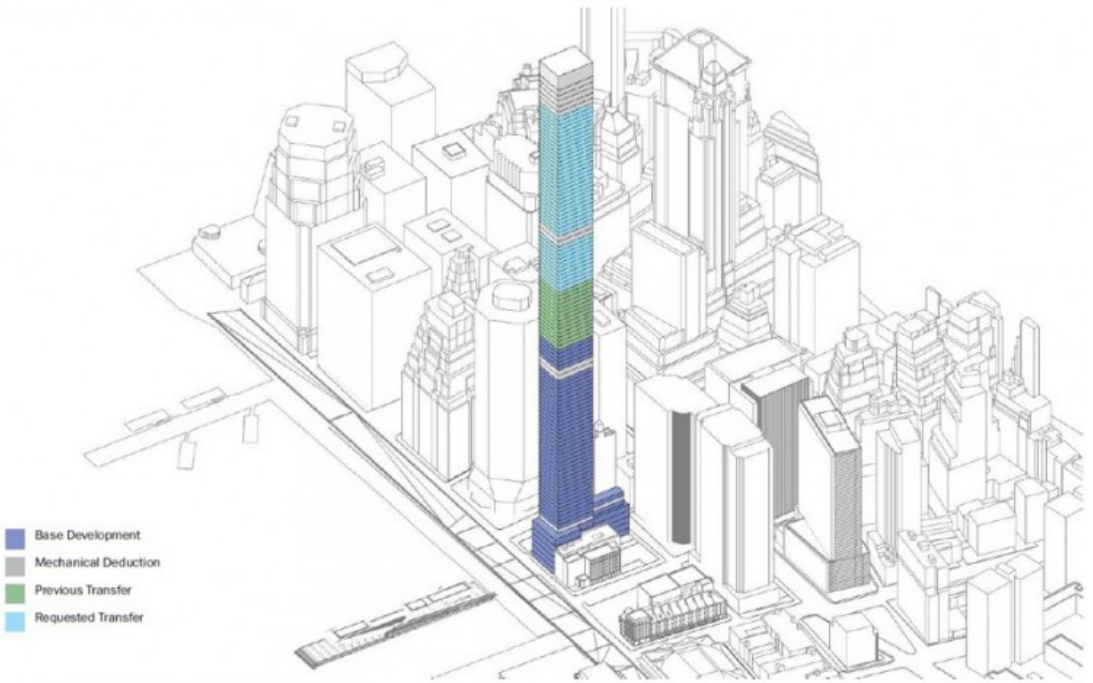


Jean Nouvel Architects design impression, New York City

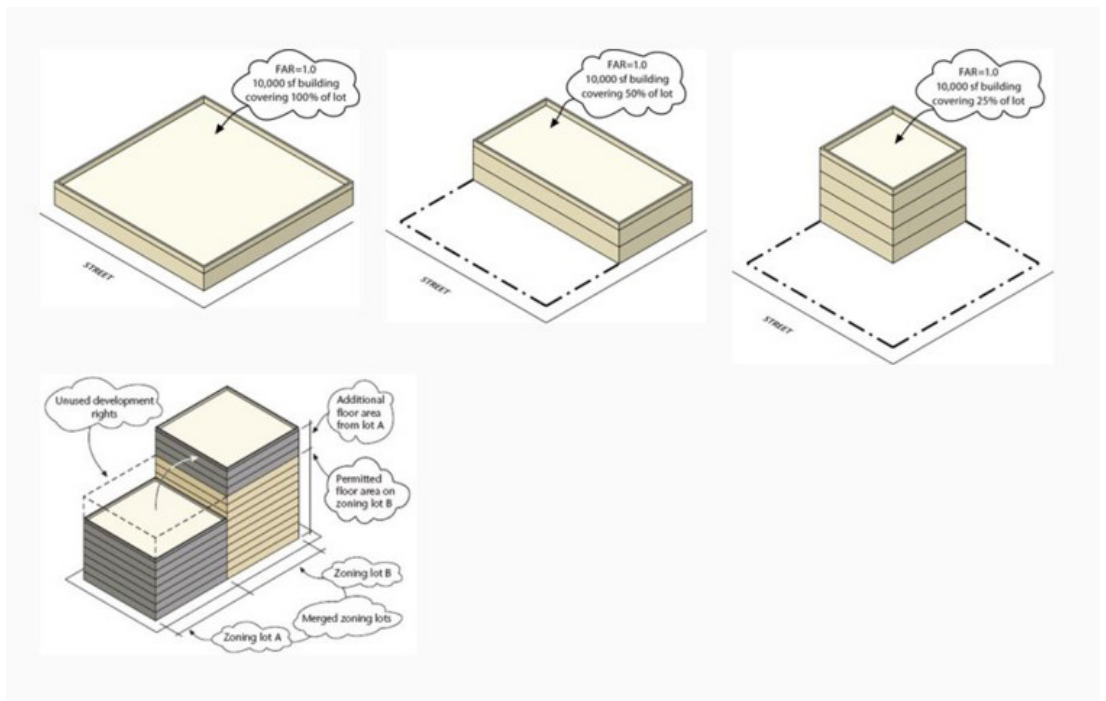
The currency of New York City real estate is development rights, which are endowed based on the floor area ratio – or FAR (FSI). So a block in Brooklyn will permit an FAR of 2. In the absence of any other restrictions, developers have freedom to configure their floor area however they'd like. For a zoning district with an FAR of 2, they can build a two-story structure that covers the full lot, as is typical for commercial and industrial uses, where large floor plans are prized and light and air are not as important. Or, for a residential

district, they could build a four-story building that covers half of the lot – roughly the bulk of a typical 19th century New York townhouse. Especially in higher-density zoning districts (such as in Midtown Manhattan, the Financial District, downtown Brooklyn, and Long Island City), developers can even trade floor area with owners of adjacent (or, in rare cases – for example, involving landmarks – even non-adjacent) parcels of land, turning your FAR into “air rights”.

Reference: opennewyork.city/zoning



FAR planning concept diagrams, New York City



FAR planning concept diagrams, New York City

FUCVAM Model of Cooperative Housing - Uruguay - Latin America



FUCVAM Project. Ref. www.fucvam.org.uy

Cooperative Basic Principals

Solidarity

Creating unity based on common responsibilities and community support to families.

Democratic participation

Active involvement of families and democratic decision-making throughout the planning, design and construction process.

Collective ownership of property.

Providing security for families and avoiding speculation.

Self-management

The cooperative allocates resources and directs all aspects of the project, without intermediaries.

Mutual aid

Joint effort of every beneficiary family in the construction of all homes, each contributing ~21 hours of work per week.

Reference: www.fucvam.org.uy



FUCVAM Project. Ref. www.fucvam.org.uy

Notes from built projects:

The basic principles of the model are universal and can be easily transferred, taking different forms in different contexts.

Poor people are infinitely rich in popular knowledge, in determination and in solidarity. This allows results to be achieved that seem beyond their strength and means.

Once the issue of access to land is resolved, half the battle is won, as people will hold on to it with all their strength.

Experience and studies have shown that the organized social production of housing and habitat leads to much better results in

terms of quality, adequacy, cost and social satisfaction, compared to conventional social housing construction in other countries in Latin America.

Academic knowledge should be combined with popular knowledge, with a practical focus and commitment to the people.

Solidarity that is generated from below, and then develops strong roots, produces better results than a top-down approach.

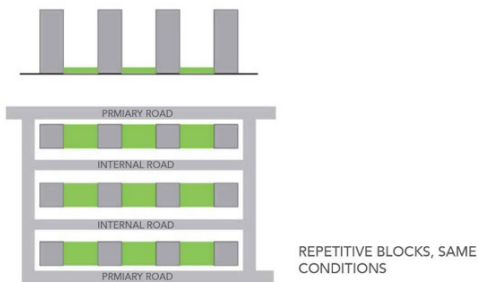
It is important to share not only the benefits and opportunities of the model but also its challenges, as a strong level of commitment will be required from those wishing to adapt and implement the approach.

Mumbai BDD Chawls Redevelopment

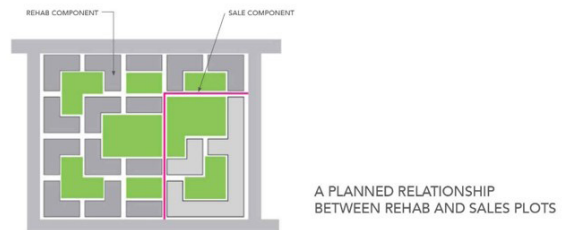
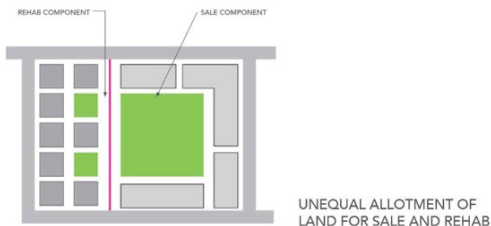
PK Das & Associates

NOTIONS OF EQUITY IN DESIGN

COMMON IDEAS OF EQUITY



PROPOSED CONCEPTS



Concept diagrams. Ref. www.pkdas.com

This project by PK Das and Associates focuses on quality of living conditions - Open space, light, ventilation and access to amenities are available for all and prioritized throughout the design.

The concept is intended to redefining the concept of equity in housing in Mumbai (image above). This concept takes form in the Freedom of Choice from various options as

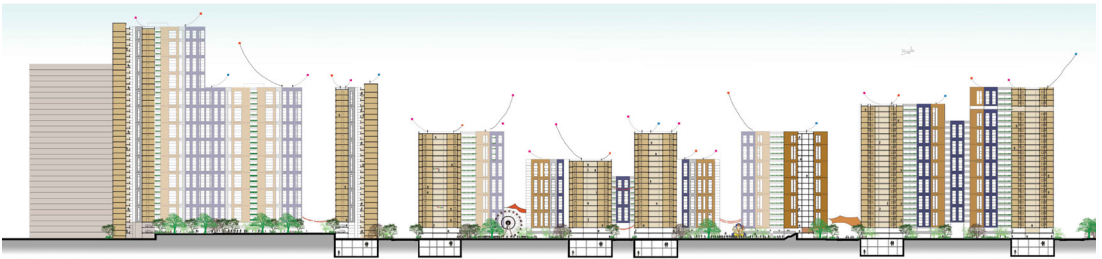
opposed to purely economic regularity.

Cohesion is achieved through a planned relationship between rehabilitation and open market housing. Allotment of land is distributed in a way to better represent the city inhabitants. A failure of the project is that it does not represent the different needs of inhabitants and owners of affordable housing vs. open market housing.



Urban Plan. Ref. www.pkdas.com

SECTIONAL STUDY OF URBAN FORM
WORLD



Urban Plan Section. Ref. www.pkdas.com

SITE ANALYSIS

East Nala Sopara



Rahmat Nagar, Nalasopara, 2018.

The chosen site for this thesis is in the center of the east side of the city of Nala Sopara. The region is a rapidly developing urban environment on the periphery of Mumbai City. This location is a typical example of the extreme, often schizophrenic development patterns currently common in Mumbai. In 2002 this region of Nalasopara was composed mainly of single storey Baithi Chawls.

By 2009 much of the Baithi chawls were replaced by illegal 5 storey chawls. Today (2018), more sections of Baithi chawls have been replaced with 5 storey chawls, as well as the introduction of 10 storey higher end apartment towers. The net result is an incoherent and inconsistent building fabric which does not respect the rich culture of the communities who live there.



2 0 0 2

2 0 0 9



Nala Sopara. Ref. Google Earth



Nala Sopara. Ref. Google Earth

2 0 1 8



Initial site analysis diagram

Typology Analysis

An initial analysis (post Mumbai visit) elucidates in more detail the patterns of development in Nala Sopara. This area of the city is in a state of rapid change, 5 storey handshake chawls and walled apartment buildings are usurping the existing Baithi Chawls which have existed in Nala Sopara for decades. The above analysis diagram shows how the typologies interact. The walled apartment blocks (generally market housing) are more formal, they include open

space and courtyards as part of their design. The Handshake chawls on the other hand are more sporadic, their only design constraint seems to be whatever space is available once the rows of Baithi chawls are demolished. Lastly the Baithi Chawls appear as a kind of stronghold in the city. In this case they are sheltered from the busy streets, resulting in a kind of refuge within the city. Community is clearly visible here and is often vibrant.



Handshake Chawls

The 'Handshake' chawl has a symmetrical structure. The long corridor which connects the main staircase with the housing units is positioned at the outside of the building and connects approximately 12 units to the main staircase. Only the outermost lying housing units make use of the width of the corridor to extend the units and create a more spacious house. Each chawl unit is a deep and narrow

space of 19m² with access to the corridor. The only existing partition is for the toilet and the bathroom, there is no clear division between the living, bedroom and kitchen spaces. Most of the time the space that is closer to the entrance acts as a living space in the day and sleeping space at night.



Rahmat Nagar. Between Handshake Chawls.



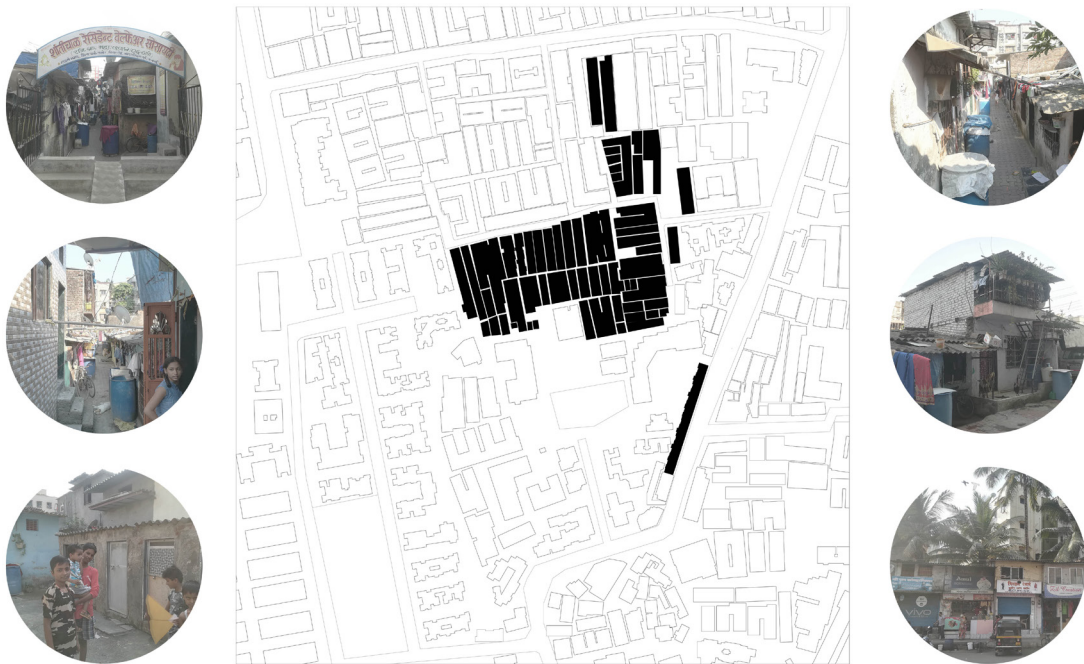
W a l l e d A p a r t m e n t s

The second most common housing type in this part of the city (typical of this region of Mumbai) is the 'walled apartment building'. These buildings are characterized by unit based apartments with high standards for construction and maintenance. The interface between the handshake chawls and these market oriented housing developments is problematic. The perimeters of these sites are

often marked by a 2 meter high concrete or brick wall. These resemble fortifications and are generally constructed with no regard for their neighbors. The result is a disintegrated building fabric of fortified buildings surrounding a claustrophobic labyrinth of 5 story high handshake chawls.



Rahmat Nagar. Newly built 10 storey apartment building



B a i t h i C h a w l H o u s -

The Baithi chawls are single story row houses approximately 6x6m with a shared bathroom block at the end of each set of 3 rows. These were constructed before 2002 to house new arrivals to, or slum dwellers evicted from Mumbai inner city.

Today the Baithi chawls in Nala Sopara are generally a stronghold for communities that have witnessed continued careless development over the last 17 years.

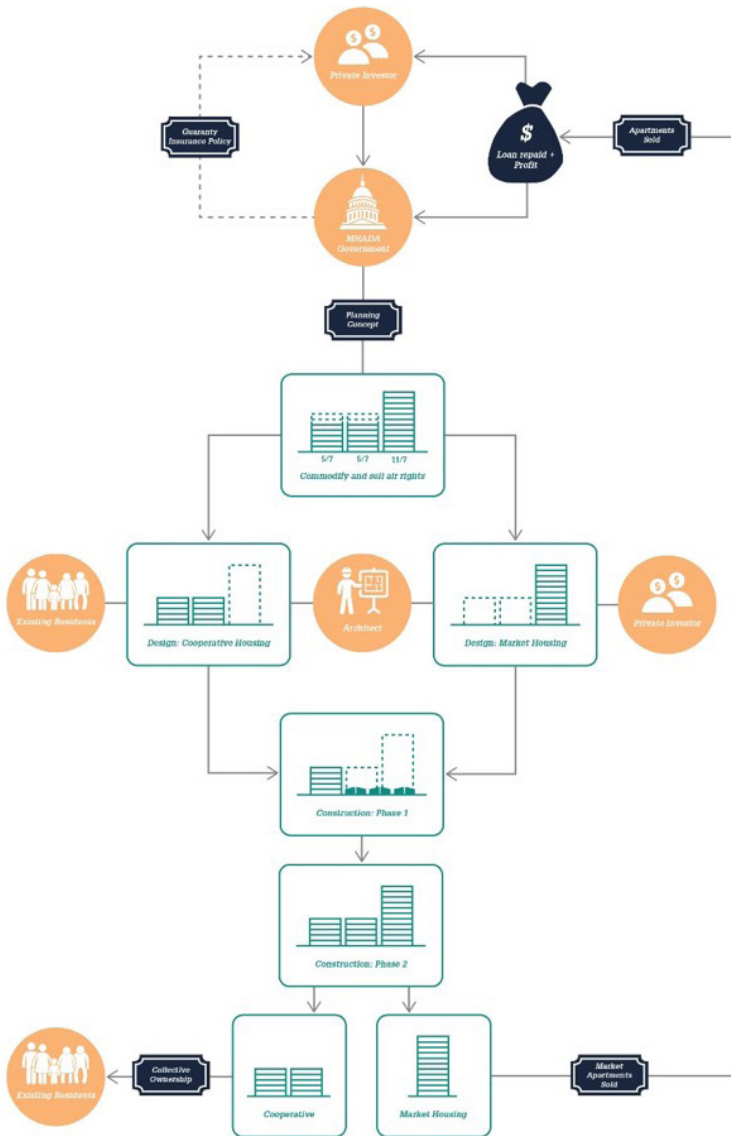
The remaining Baithi Chawls provide insufficient living conditions: they flood during the monsoons, they often do not have basic plumbing or safe electricity connections ; however, they also provide sufficient daylight, personalized expandable homes, and most importantly: an existing community based on common facilities and hardships. This is enough for many residents to reject the offer of handshake chawl development.

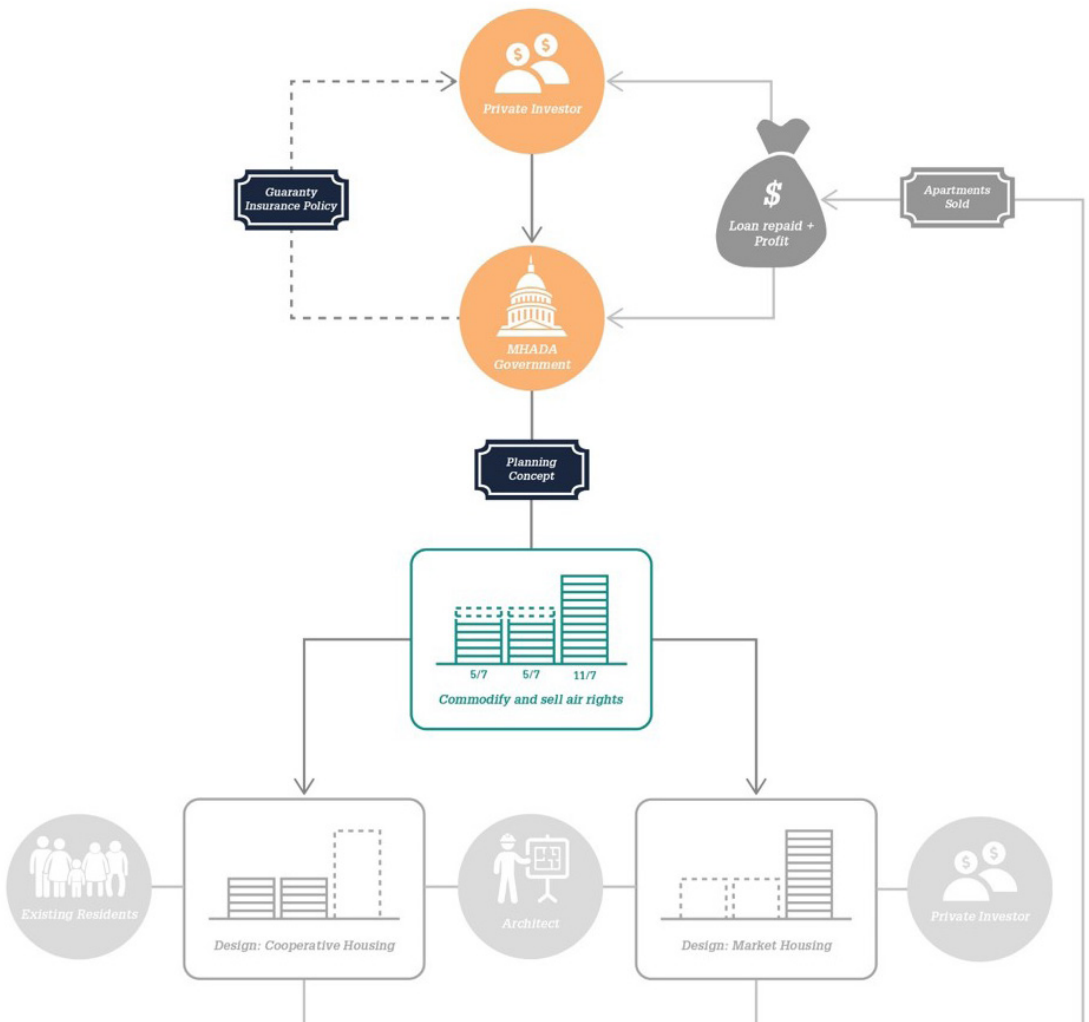


Rahmat Nagar. Between Baithi Chawls.

FEASIBILITY DIAGRAM

C o o r d i n a t i n g I n t e r e s t s



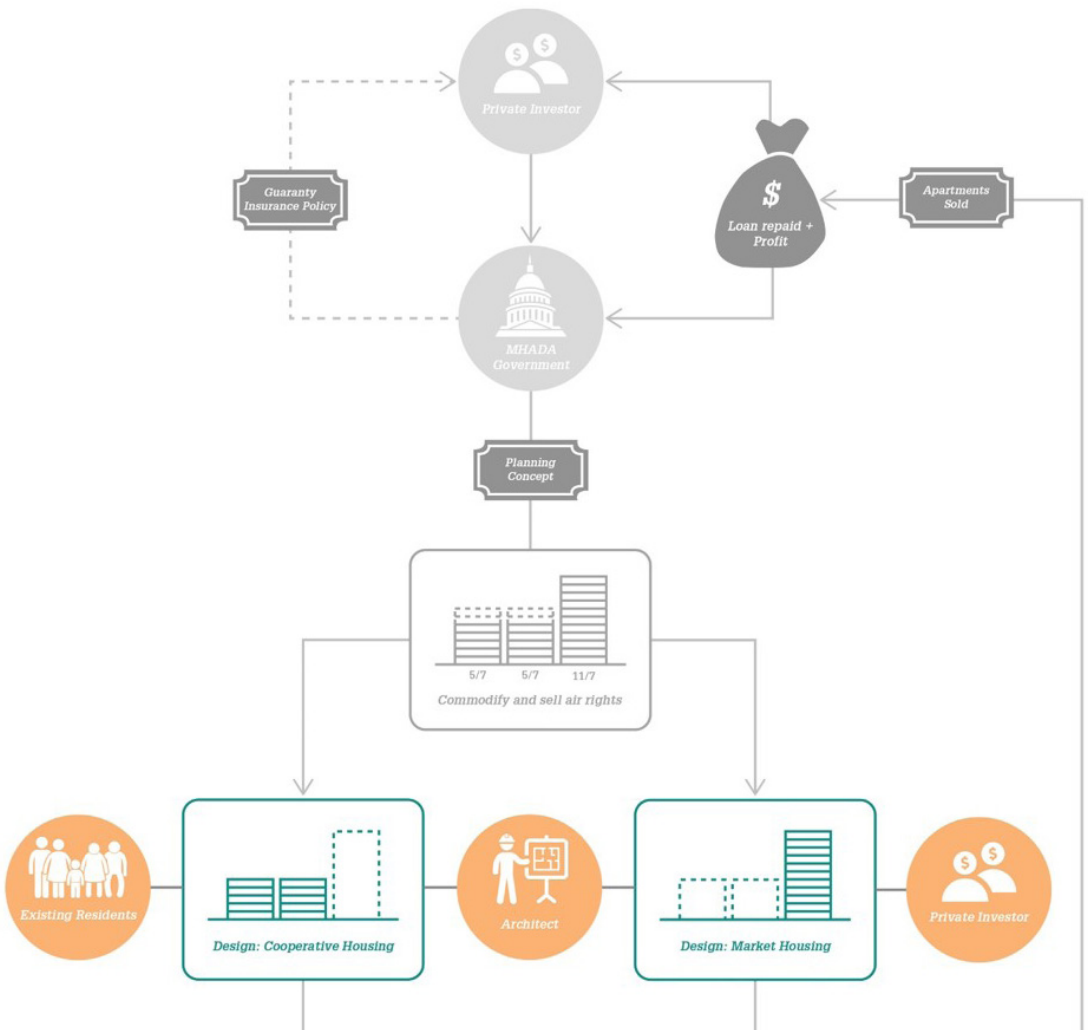


Feasibility Diagram Investment incentive

This diagram is a way of coordinating interests which already exist in the Mumbai housing market in such a way as to channel incentives towards the creation of more humane housing. It is devised so to redefine the hierarchy of influences based on the real needs of the parties involved. Who stands to profit? How can we generate security of tenure for residents? How can we justify an alternative development scheme which is acceptable to politicians?

The first section of the flow-chart shows the initial capital investment from those with money (developers). This is guaranteed by the MHADA government officials.

To convince these parties involved in financing the scheme an initial planning agreement is required. This is the commodification of space and the sale of air rights. This arrangement is organized by the residents and is the first step in the establishment of a cooperative scheme.

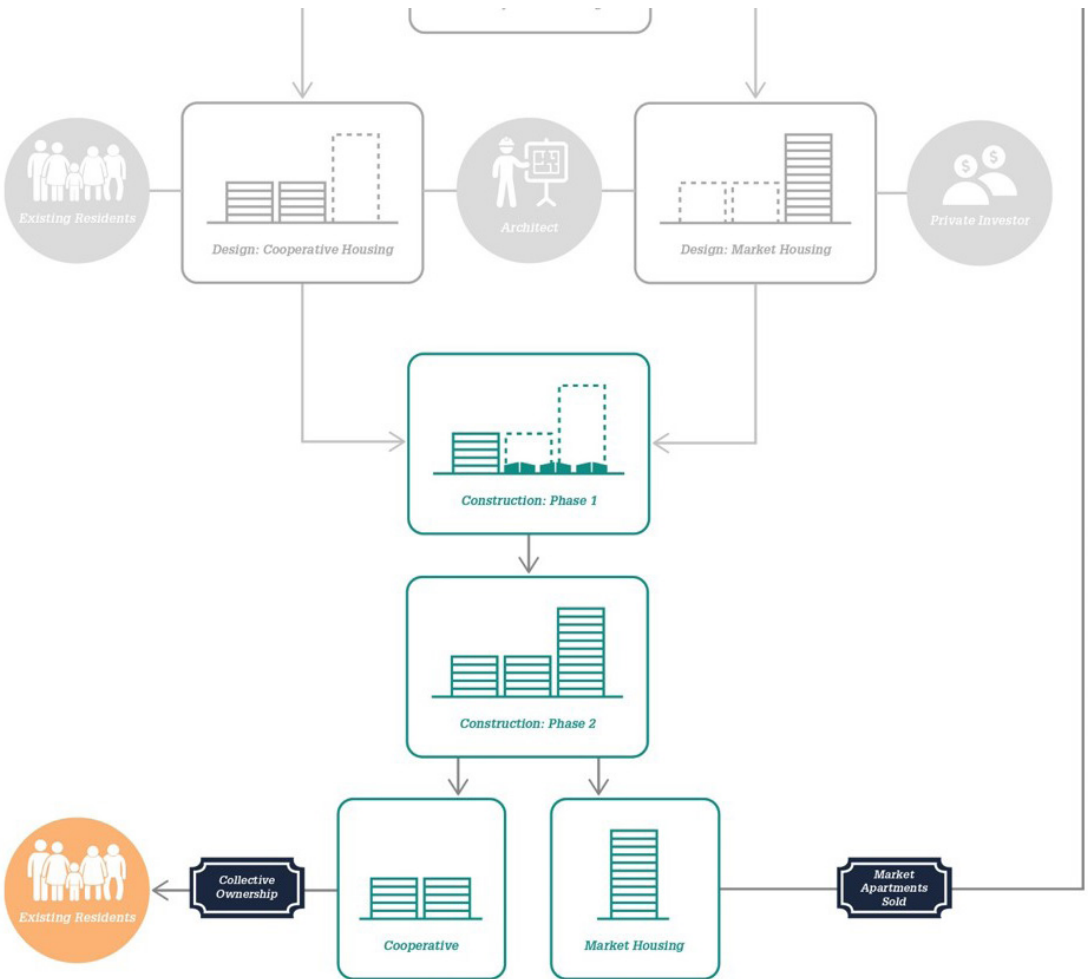


Design & Planning

The second level of the diagram coordinates the design and establishment of ownership. The key strategy here is to insulate the residents from the perversions of property developers while still including their interests as part of a cohesive scheme design.

The existing residents of the Baithi chawls initially owned the land on which their house was constructed. They must be involved as the main protagonists in the development

of an architectural design. Limits must be established, unit designs, hierarchy of space based of residents desires and habits, etc. The key here is that a housing design cannot start in the mind of an architect in some office - the architect must work as an agent, with skills and knowledge, so to cater for the residents real needs. This must be on a case-by-case basic, this thinking will result in a sympathetic and incremental development process.



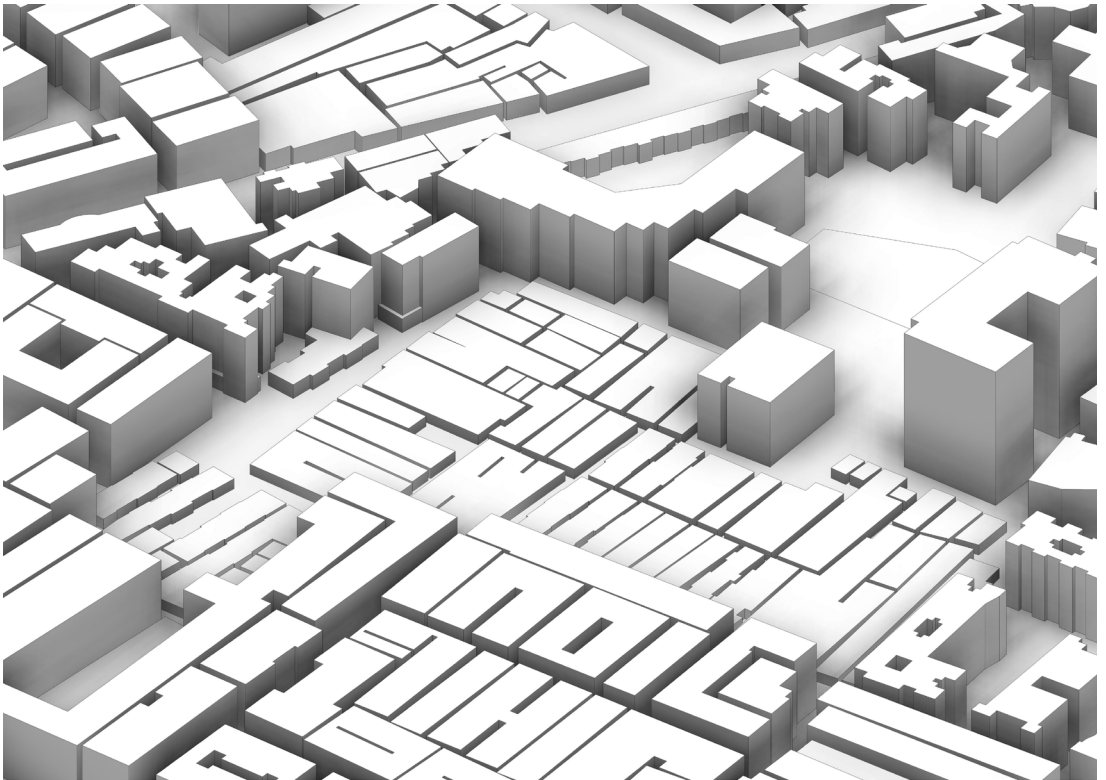
Construction & Ownership

The last level of the diagram shows the construction phase and the division of ownership. The intention here is to diversify ownership while retaining a level of cohesion between the collectively owned cooperative housing and market housing. The cooperative housing is registered in the Indian co-housing society, and is administered democratically by the residents; whereas the market housing is sold or rented by the developer.

With this end result in mind at the design phase, it becomes very important to carefully limit the scale and density of the cooperative building to that of its proposed community - where market housing is simply multiplied apartments, the cooperative is envisioned as community housing which is divided into units around communal spaces. Profit generated by the market apartments sold is used to justify the development scheme.

PLANNING STRATEGY

I n c r e m e n t a l D e v e l o p m e n t

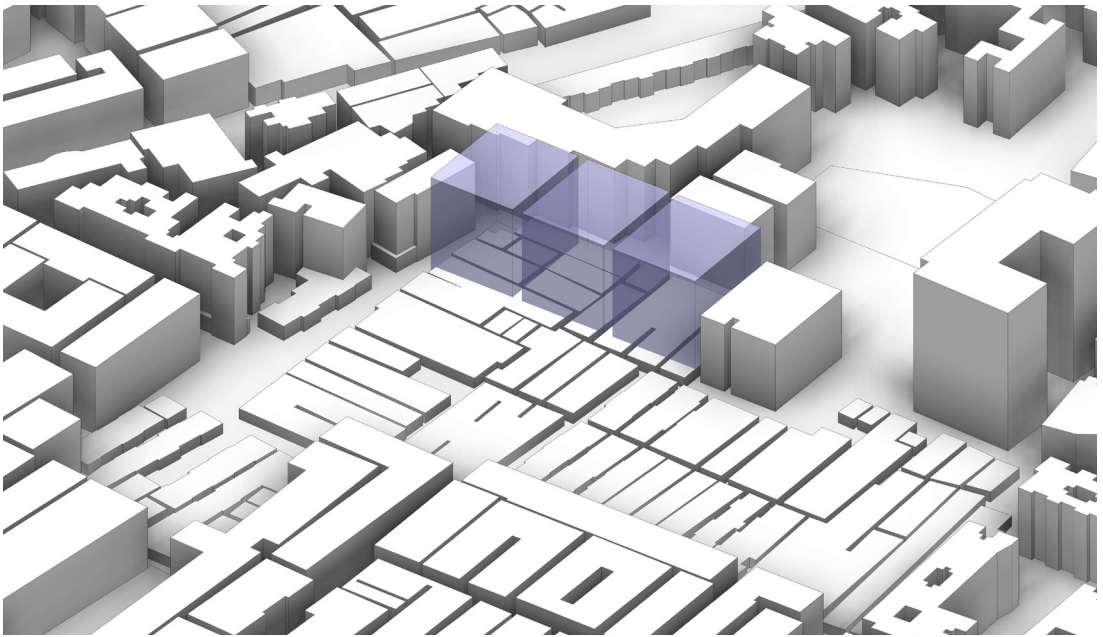


E x i s t i n g S i t e

Project Phasing Strategy

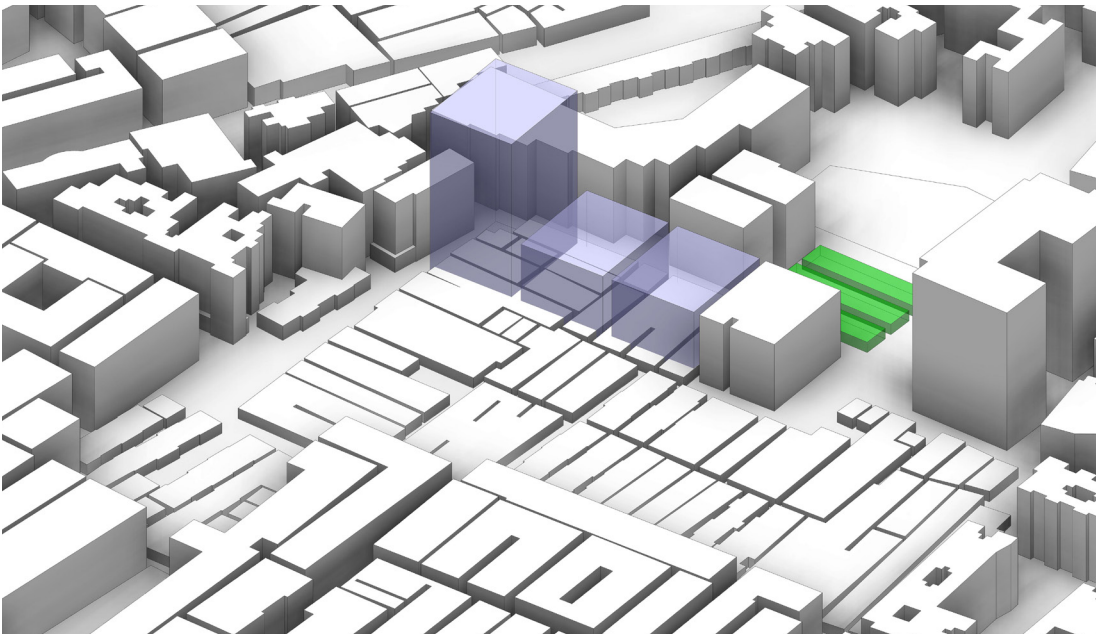
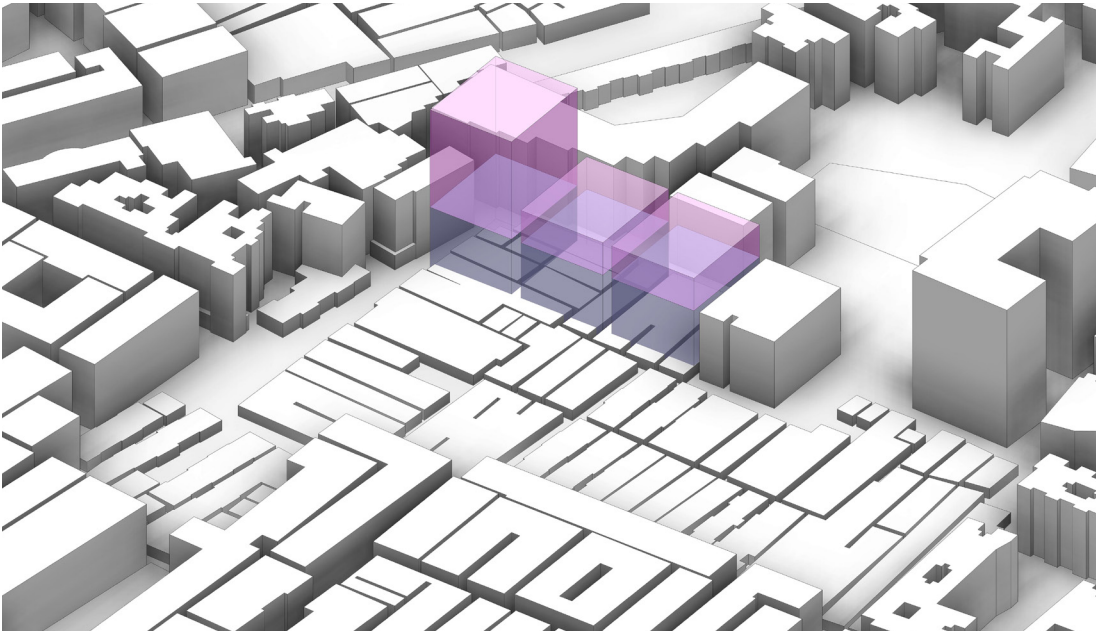
Critical to the viability of the project is a realistic construction phasing strategy. Existing residents are well aware that millions of people are without a home in Mumbai. These residents, although living in below standard housing, will do everything in their power to retain their homes. The master-plan is a typical development scheme for Mumbai, replacing large sections of city with a single set of buildings. This is an inhumane strategy,

especially when residents such as those who occupy the Rahmat Nagar chawls are involved. Here many people live together in small dwellings who are unlikely to be able to find temporary accommodation during the construction of a master plan. Therefore a key component of the design is the incremental development plan. Here a small area of land is reserved for temporary accommodation for displaced residents.



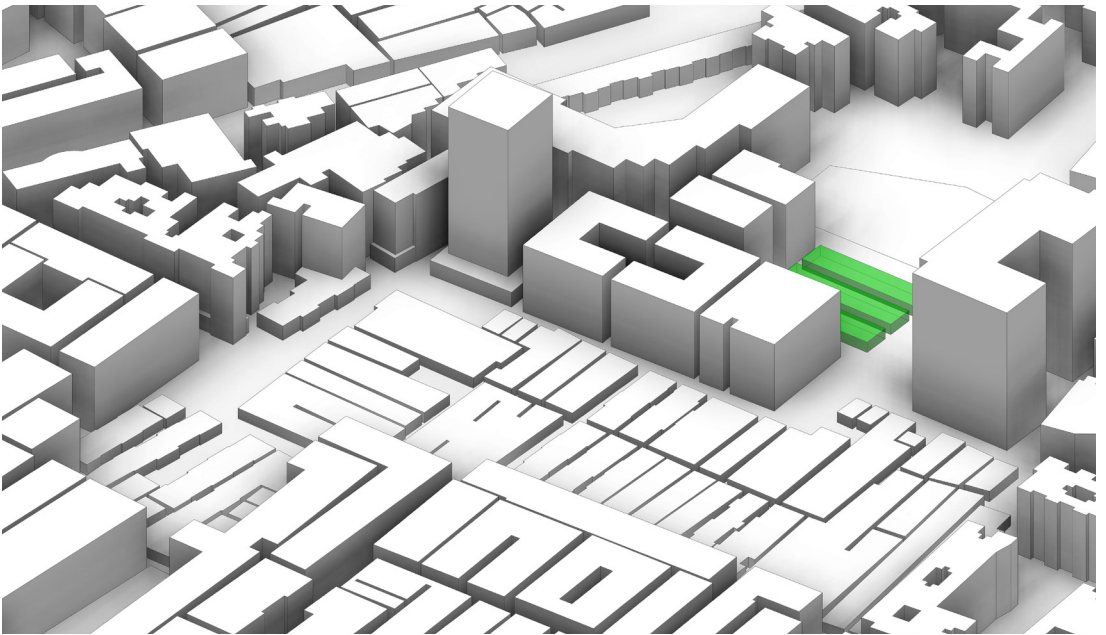
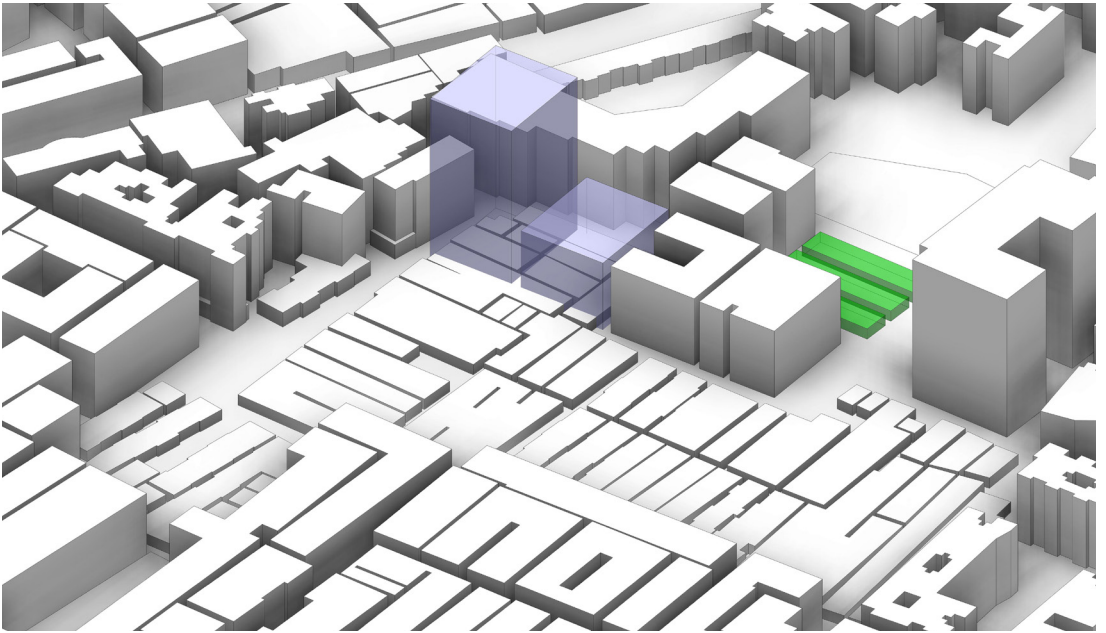
1. The baithi chawl residents are there before the development proceeds, and will be there during and after. Their needs must be prioritized (not to mention, they are the first party that must be persuaded to invest their property). The families will remain on-site, and live near the project site during construction. Their input must not be disregarded or devalued. This is critical as a community housing project is to be successful.

2. Phase 2 is the setting up of plots and height limits. For the purposes of this thesis I have proposed a 7-storey height limit. At this height buildings will be comfortably set amongst existing buildings of a similar scale. The idea here is to commodify space which is transferable.



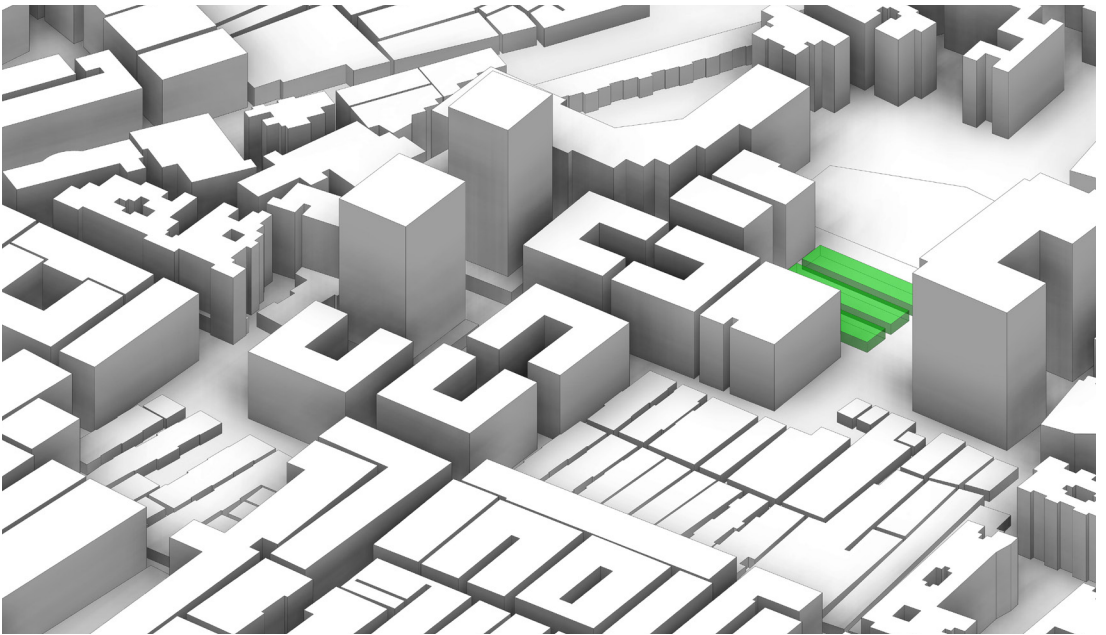
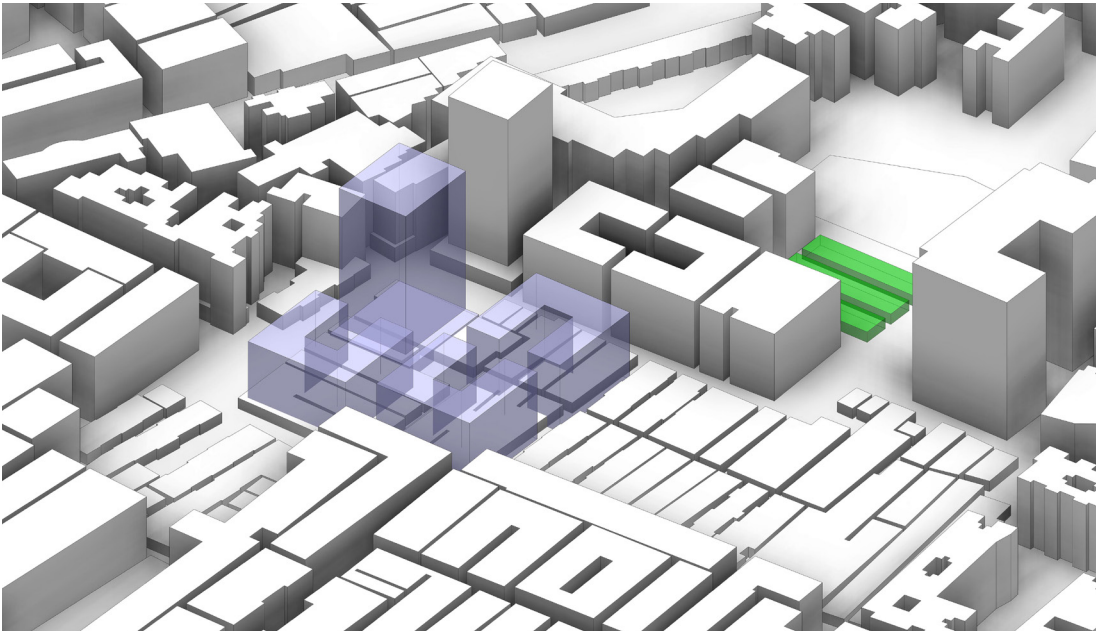
3. If the top two floors of two out of three plots are then transferred to the third it is possible to generate capital.

4. This transfer enables a better allocation of space. Market housing apartments are better suited to taller towers, whereas community housing requires better access to the ground without elevators. At this stage temporary housing should be constructed for the first three rows of baithi chawl residents who will be displaced.



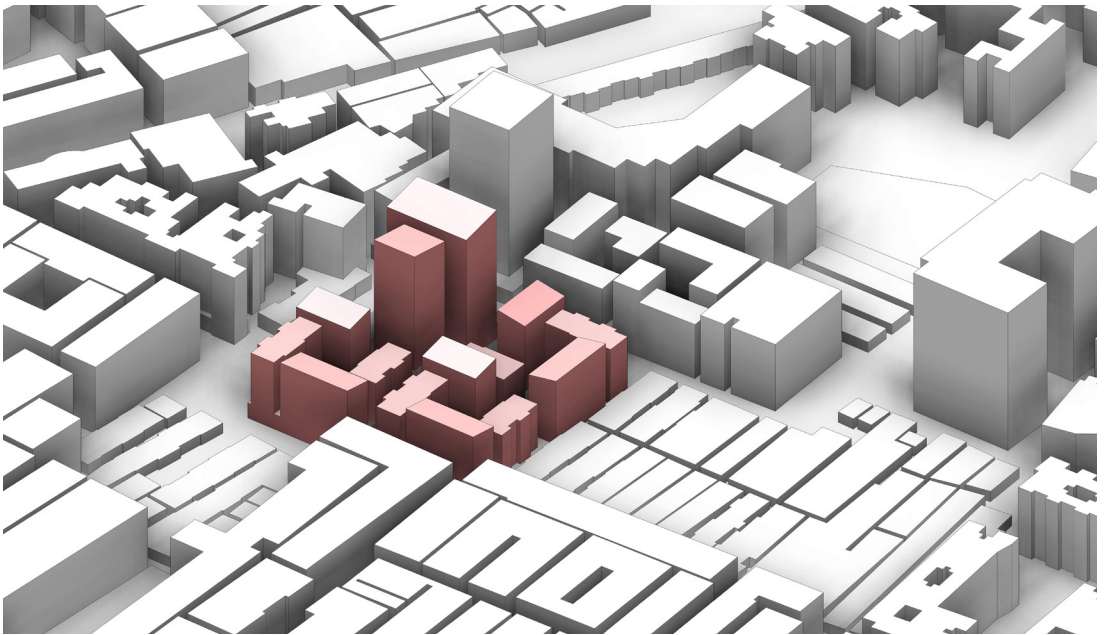
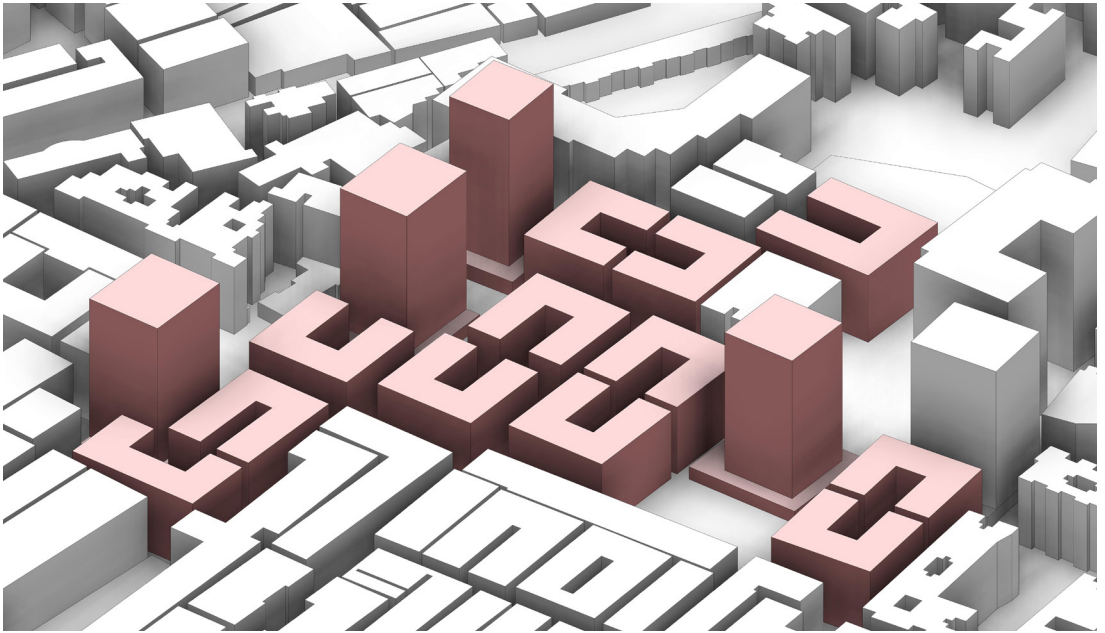
5. The first section of the cooperative housing is constructed. The image above shows only the basic massing of the building and is intended to illustrate how a new building could respect the existing building fabric.

6. After the construction of the first third residents currently in the temporary housing and those in the second three rows of baithi chawls can move into the first cooperative building. After this the residents from the third set of baithi chawls can move into the temporary housing to enable the construction of the last part of the cooperative and the market housing tower.



7. Repeat the planning process for phase two. Again, the planning of each phase should be sympathetic to the existing community arrangements.

8. Construct phase two with a similar method to that of phase one.



9. This incremental development plan can be implemented with a loosely established master plan in mind. The important thing here is to emphasize that there needs to be some balance between regularity and irregularity.

10. For the purposes of this thesis phase two has been chosen to be designed in detail as an example of how this development plan could be coordinated.

The image above shows the next level of massing. It is important to use the architectural design elements in a way to enable cohesion between the cooperative and market housing.



Baithi Chawls
 Handshake Chawls
 Walled Apartments
 Proposed Phase 2

Proposed Urban Plan

The proposed urban plan recognizes existing development patterns in Nala Sopara. It seeks to work with these patterns in creating a sympathetic alternative which is more focused on quality of living for communities.

The above plan shows phase two of the development plan highlighted. This is a key location in Rahmat Nagar as it includes a newly constructed temple and is adjacent to several small roads.



200m 100m 50m 0m

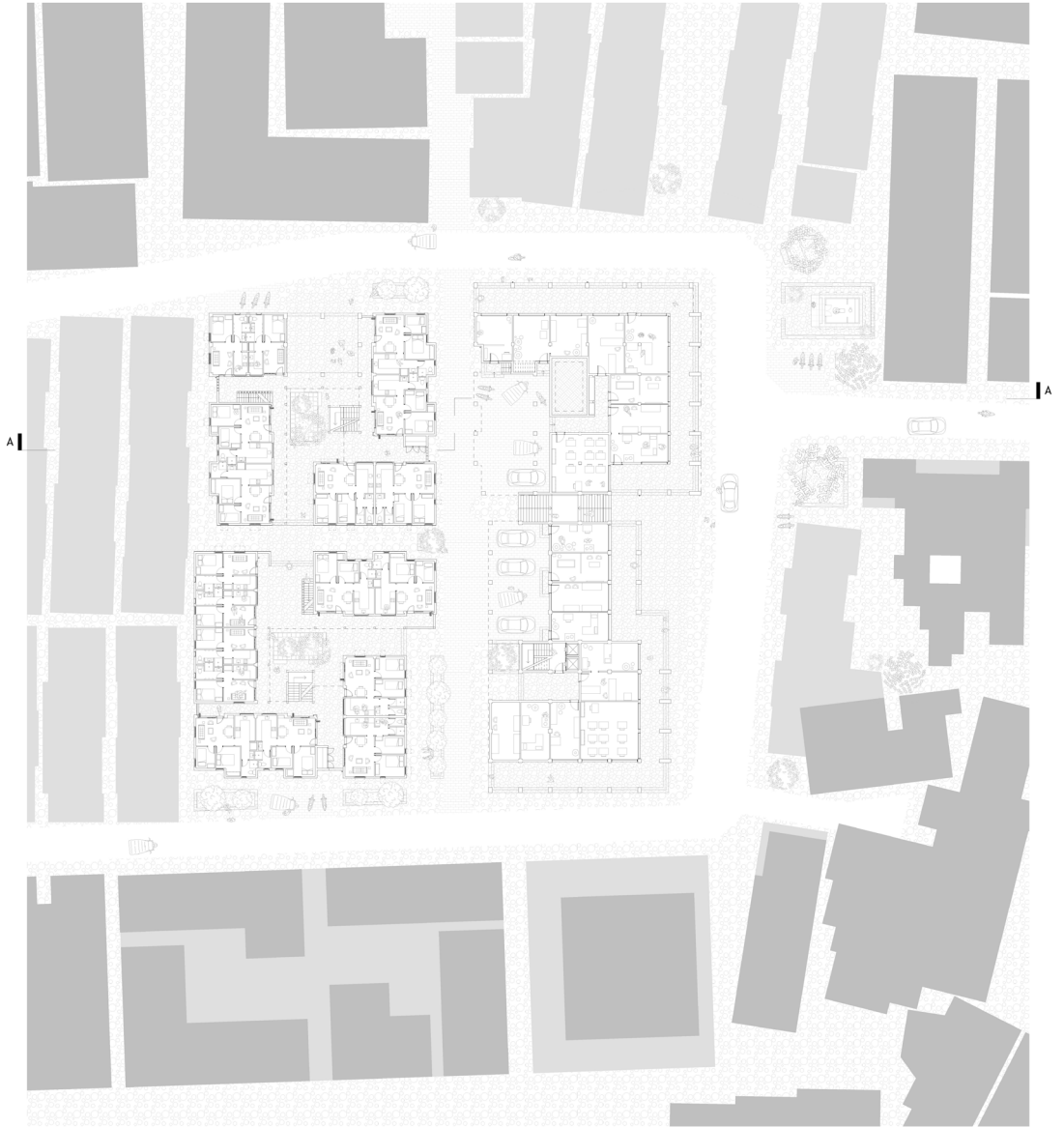


Rahmat Nagar Road

“Nobody should design more than 12 houses at a time.

If you take the greatest surgeon in the world and ask him to operate on 200 people in a day - he'll kill them all”

Hassan Fathy



GROUND FLOOR PLAN
1:200



SECTION A-A
1:200

Proposed urban plan and section

URBAN ARRANGEMENT

Phase 2: Nala Sopara



Existing commercial and amenity buildings

Existing amenities

The site is adjacent several new 5-storey buildings each with several small retrofitted commercial businesses. Also near the site is a medium sized Hindu temple. The proliferation of these facilities in Rahmat Nagar shows that there is some growing demand for small scale commercial activity. In reference to the

diagram on page 26 and 27, the proposal intends to take advantage of the pattern of commercial development where shops, clinics, schools and temples are clustered in locations scattered across Nala Sopara.



Proposed new commercial 'Node'

Proposed amenities

The proposed buildings adjacent the street closest to the busy Virar road are designed to maximize this developing amenity 'node'. A ribbon of multi-purpose commercial spaces are included at ground floor level. This is intended to generate a more subdued commercial street. The roller-door style spaces (typical of Nala Sopara) are set back from the perimeter of the building to create a 3-meter

deep loggia. This space can be appropriated by the adjacent tenants.

There is also a small fold in the perimeter of the building to create a small plaza. This coupled with the steps up to the loggia level is composed in a way to create a vibrant public space between the cooperative and market housing apartment buildings.



Cooperatives proposed without commercial

A l t e r n a t i v e L a y o u t

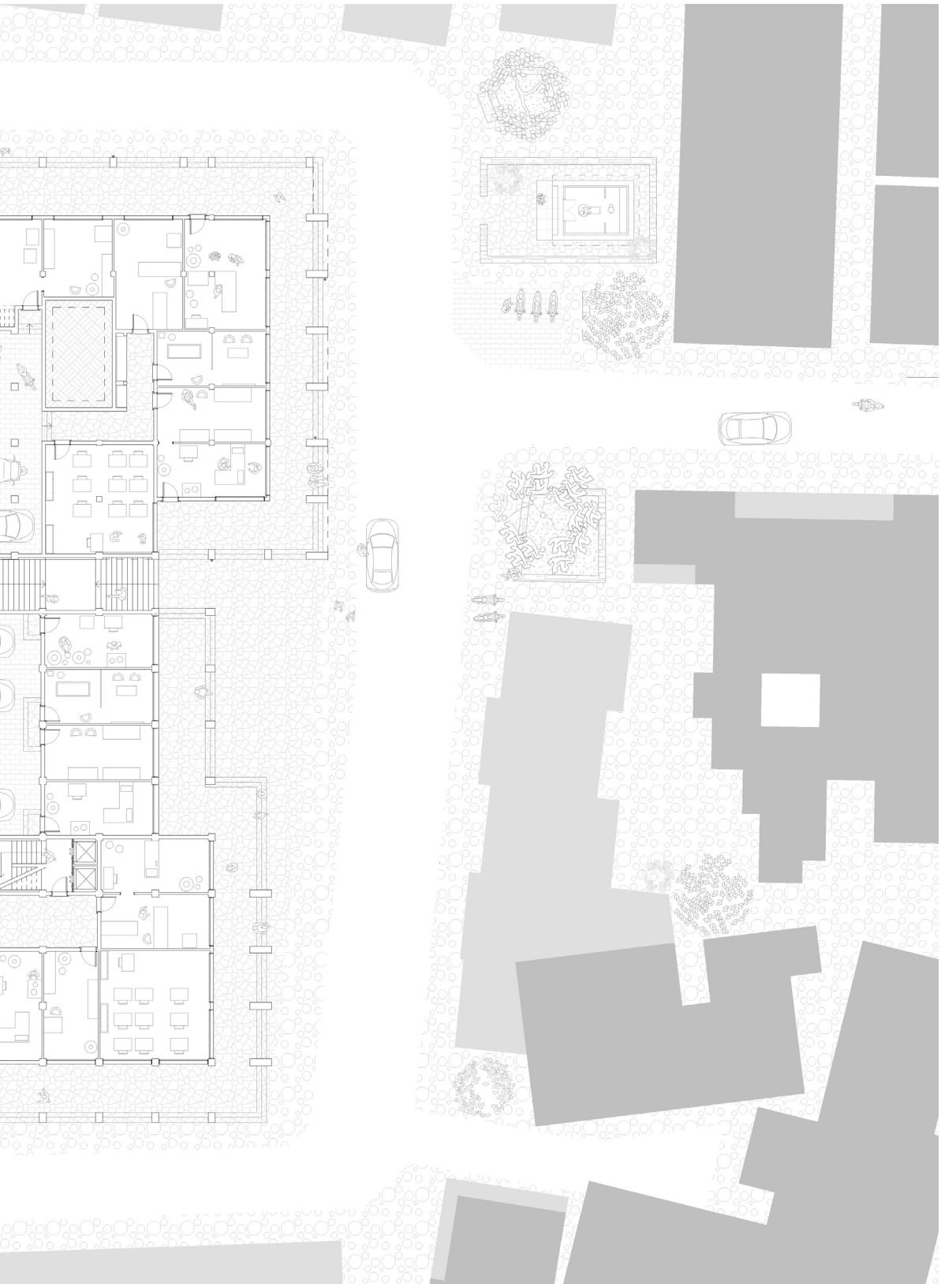
This phase of the development plan includes a pair of buildings which is located away from the intended commercial node. The design of these buildings therefore does not require commercial spaces. In these buildings the courtyard is only 800mm above existing ground level and is open to a covered terrace adjacent the street. This alternative arrangement is intended to provide an

example of how the method of composing the cooperative architecture can produce different outcomes depending on the circumstances of the site and of its residents.

Running vertically between the buildings is a proposed service corridor. This is provided to access the rear of the commercial units and is aligned with an existing street to the north.



Proposed phase 2 Urban Plan



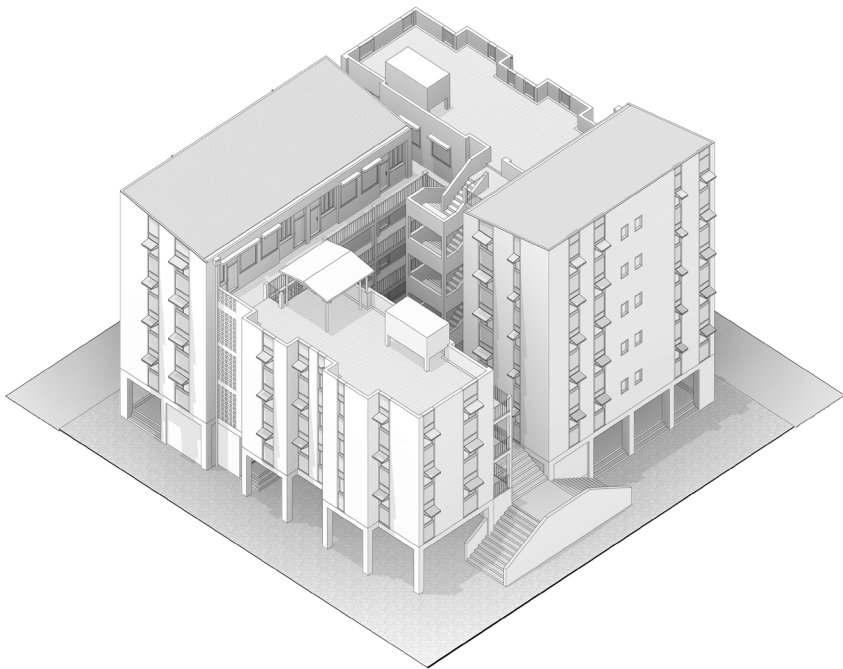


Proposed view of new commercial 'Node'.



COOPERATIVE DESIGN

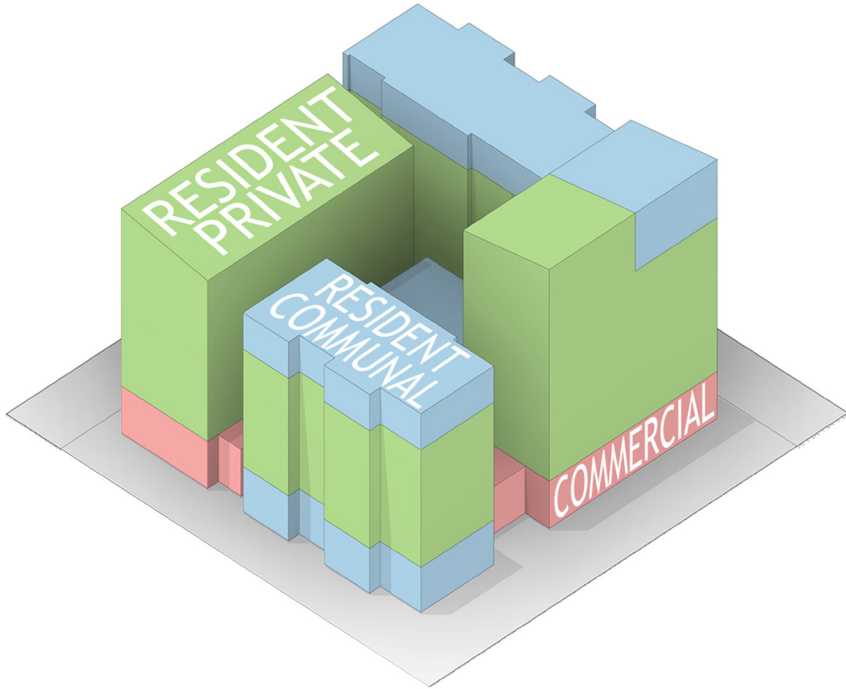
R e - i m a g i n i n g c o - h o u s i n g i n I n d i a



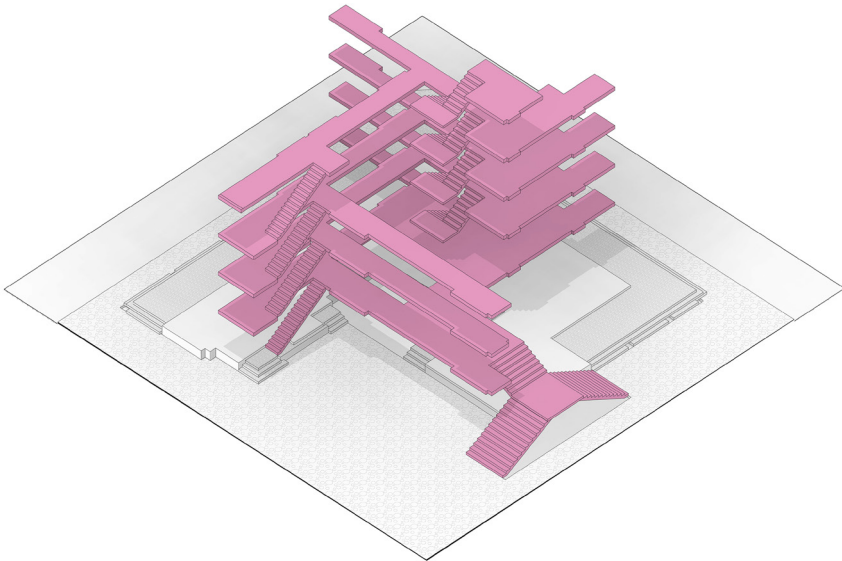
C o o p e r a t i v e B l o c k

The cooperative is a mixed use building with a community courtyard on a raised plinth. The commercial base and loggia is intended to engage with the street and public, while the raised courtyard is intended to provide a basis for a private community. Communal resident space is provided at ground level, courtyard level and roof level. This is intended to create community cohesion. These are located in such a way as to ensure that no single

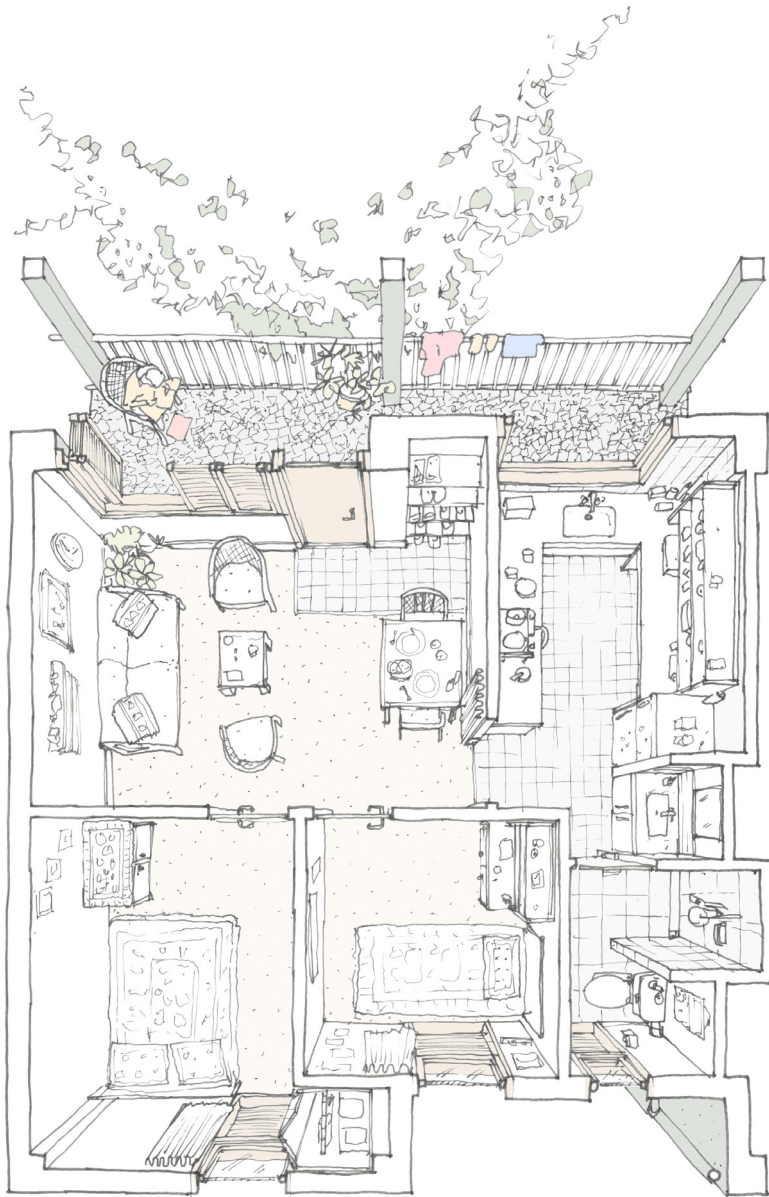
apartment may encroach upon it. The resident circulation is a key component in developing a sense of community. The galleries wrap around the courtyard, while the primary stair projects out from the building. This is to provide the individual with a constant connection to the courtyard and to the other residents. Limited connections to the street is intentional. This is to ensure a level of security and privacy for the resident collective.



P r o g r a m



R e s i d e n t c i r c u l a t i o n

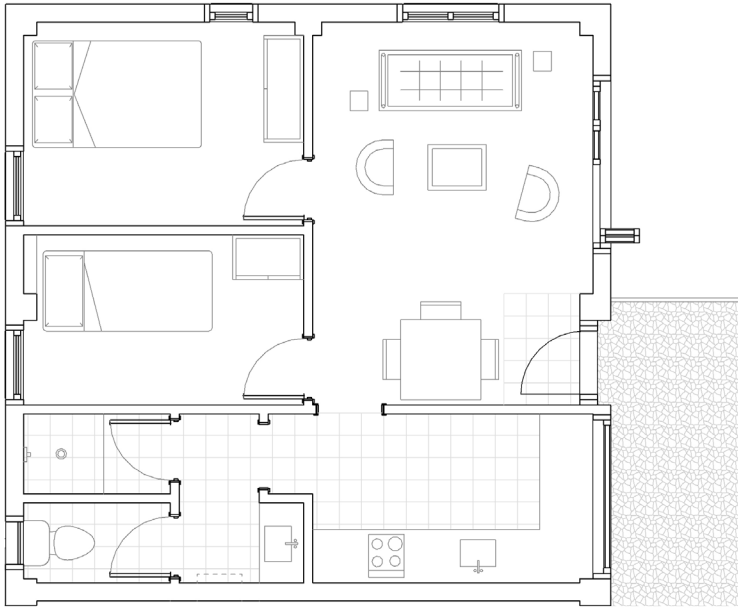


Unit Type A

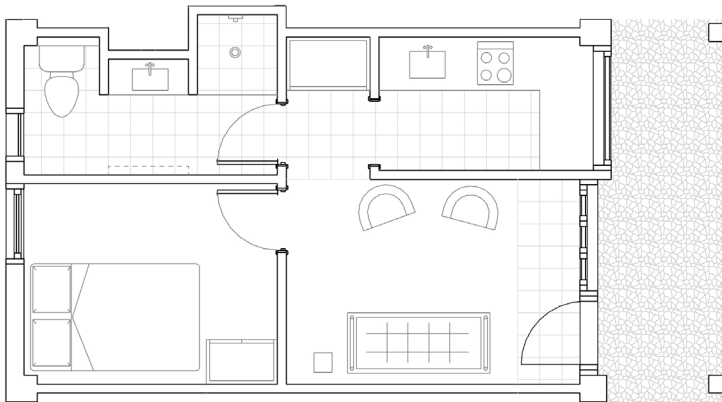
The design of the individual apartment was based on a sensibility developed first from its climate design, and then from the desire to create a community centered housing development. Every unity has a front and a rear facade. This provides an easy means for cross-ventilation, a view of the street, and direct access to the courtyard.

The location of all living and kitchen spaces is towards the courtyard. This is intended

to enable a kind of passive security where residents can keep an eye on each other and have a sense of togetherness, as opposed to isolation. The gallery walkways are often oversized, this is intended to provide a small space for outdoor seating, pot pants or to hang washing. The bathrooms and kitchen are located in a string along a party wall with the stack located on the exterior wall to enable simple plumbing and easy maintenance.

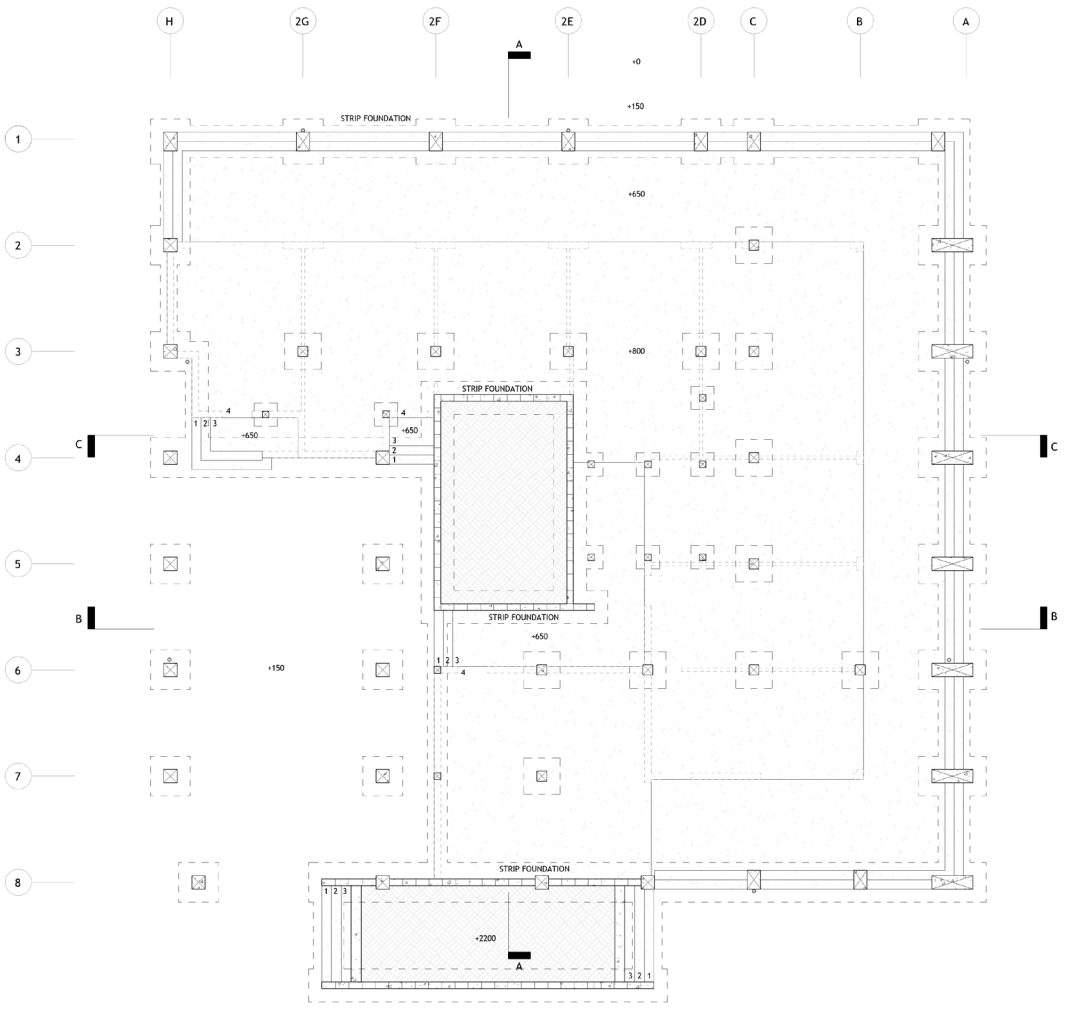


Unit Type B

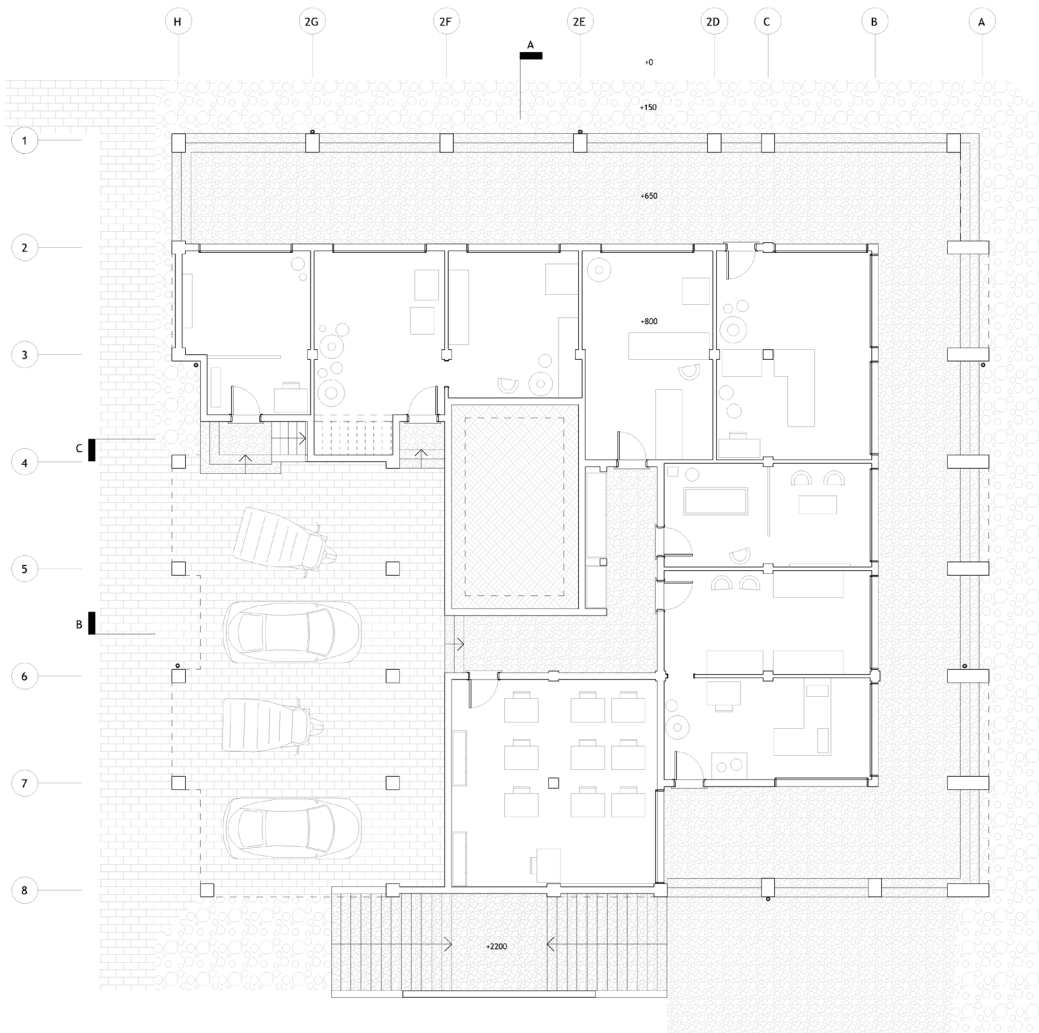


Unit Type C

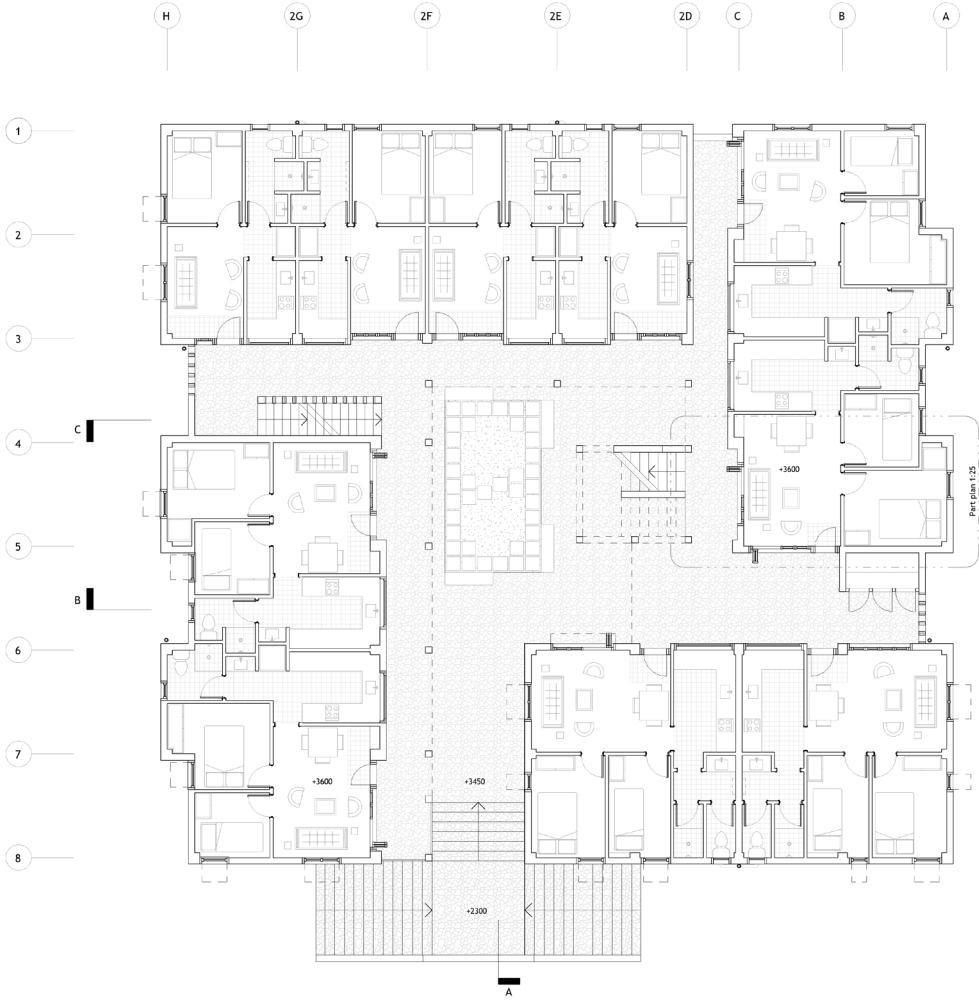
	Size	Count
Unit A	37m ²	14
Unit B	40m ²	9
Unit C	25m ²	18
Total		41
Commercial Units		9
FSI = Total floor area (2490m ²) / Plot size (687m ²) =		3.64
Dwellings per hectare = 10,000 / (685m ² / 41) =		599



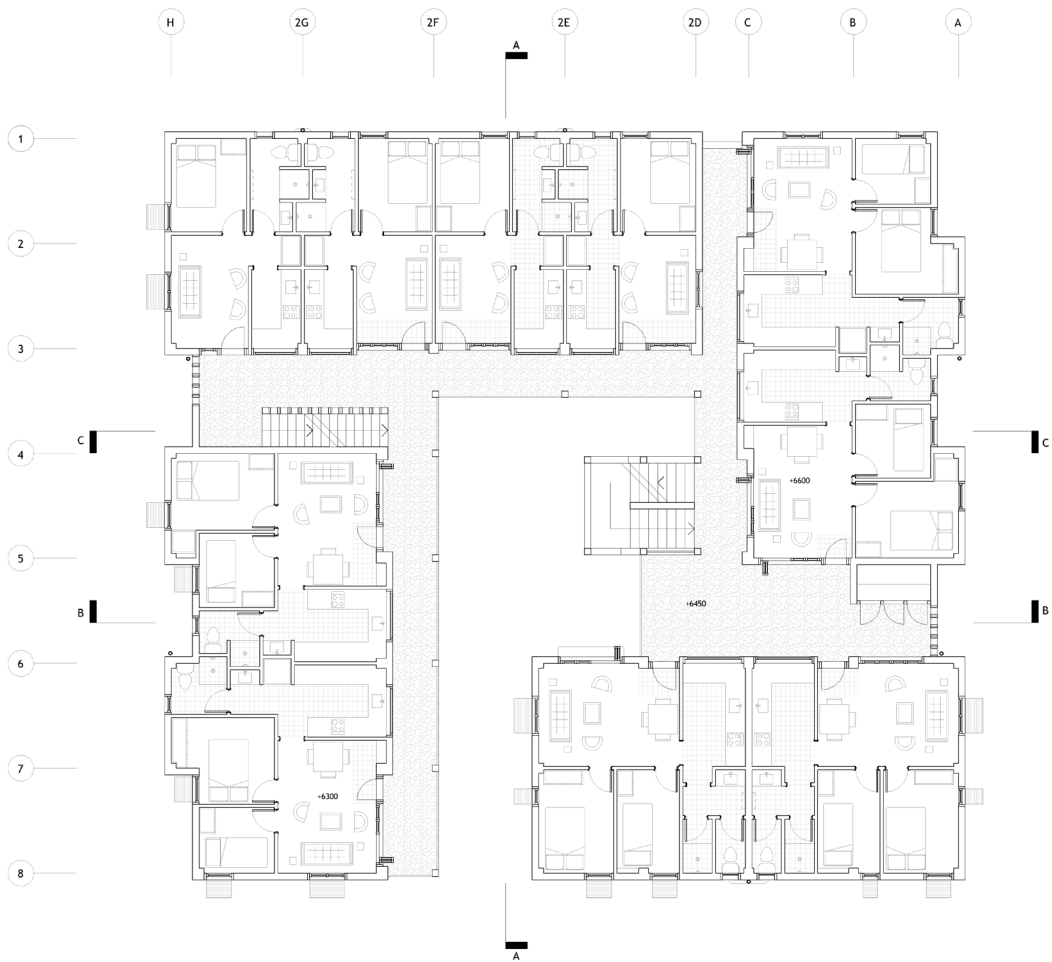
Foundation Plan



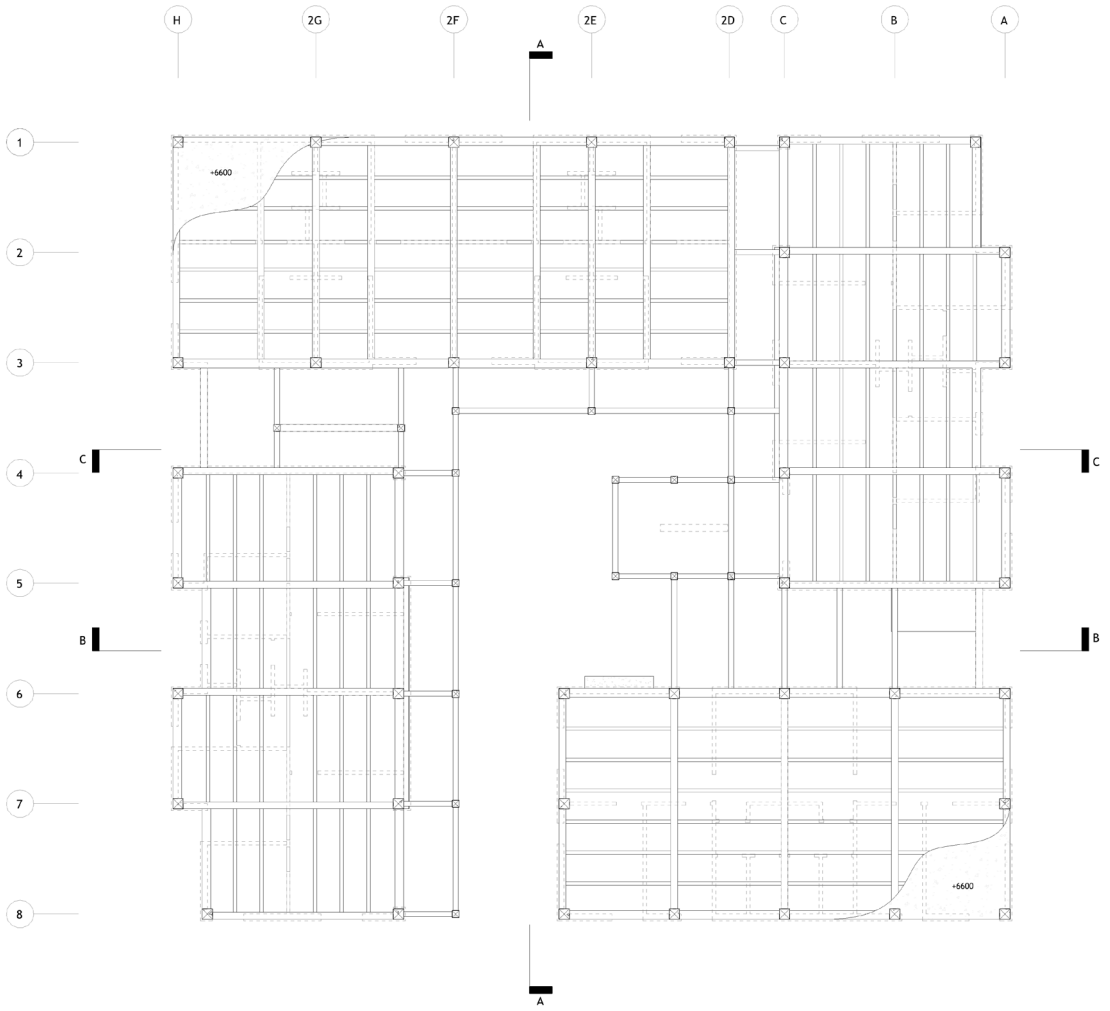
Level 1 - Ground Floor Plan



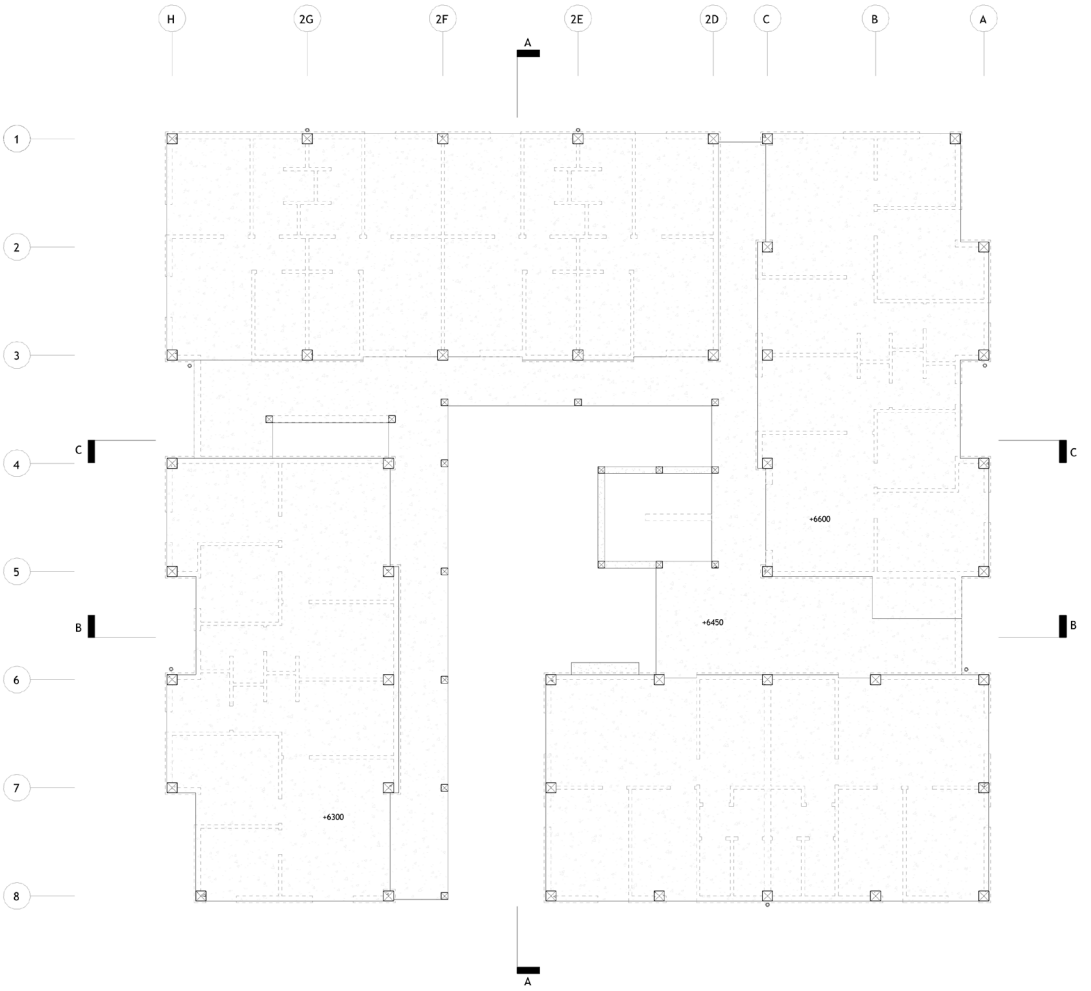
Level 2 - Courtyard Plan



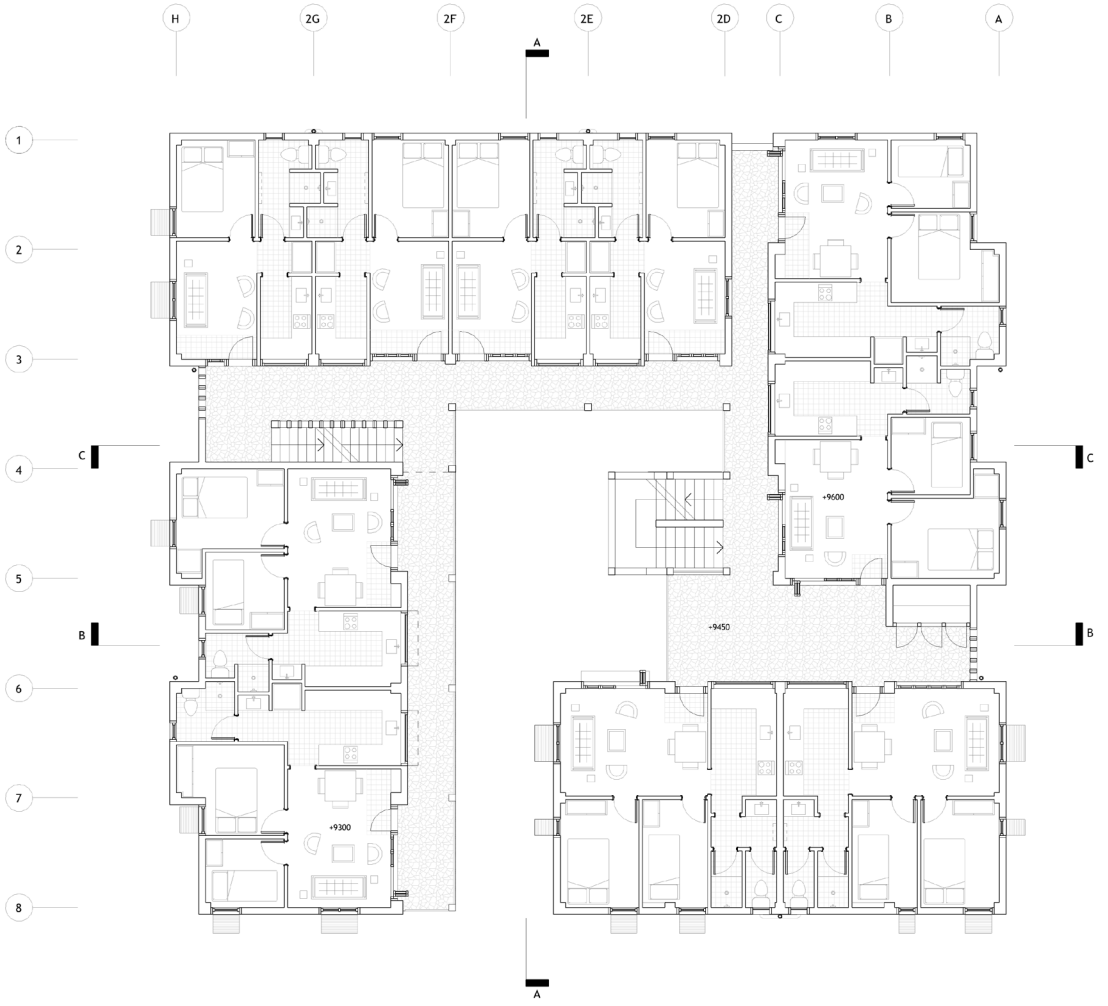
Level 3 - Second Floor Plan



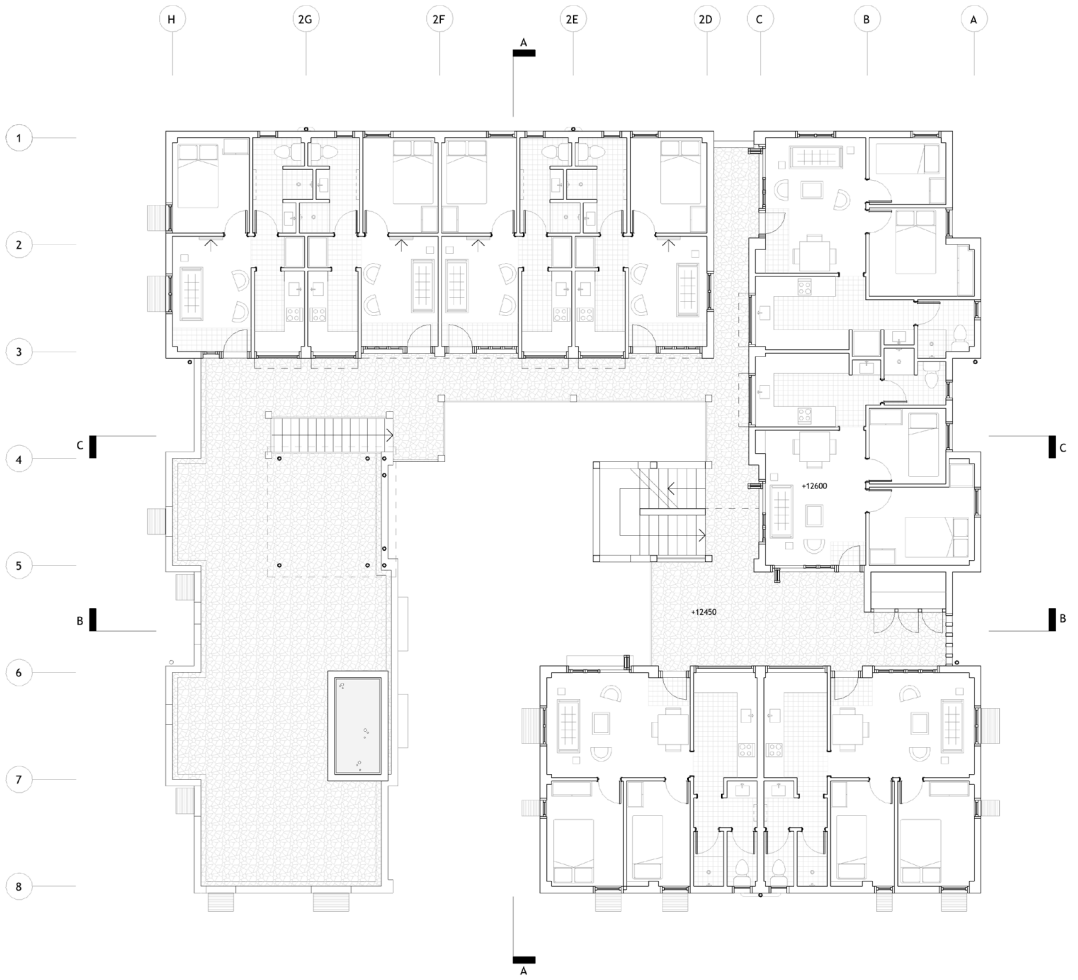
Floor Framing Plan



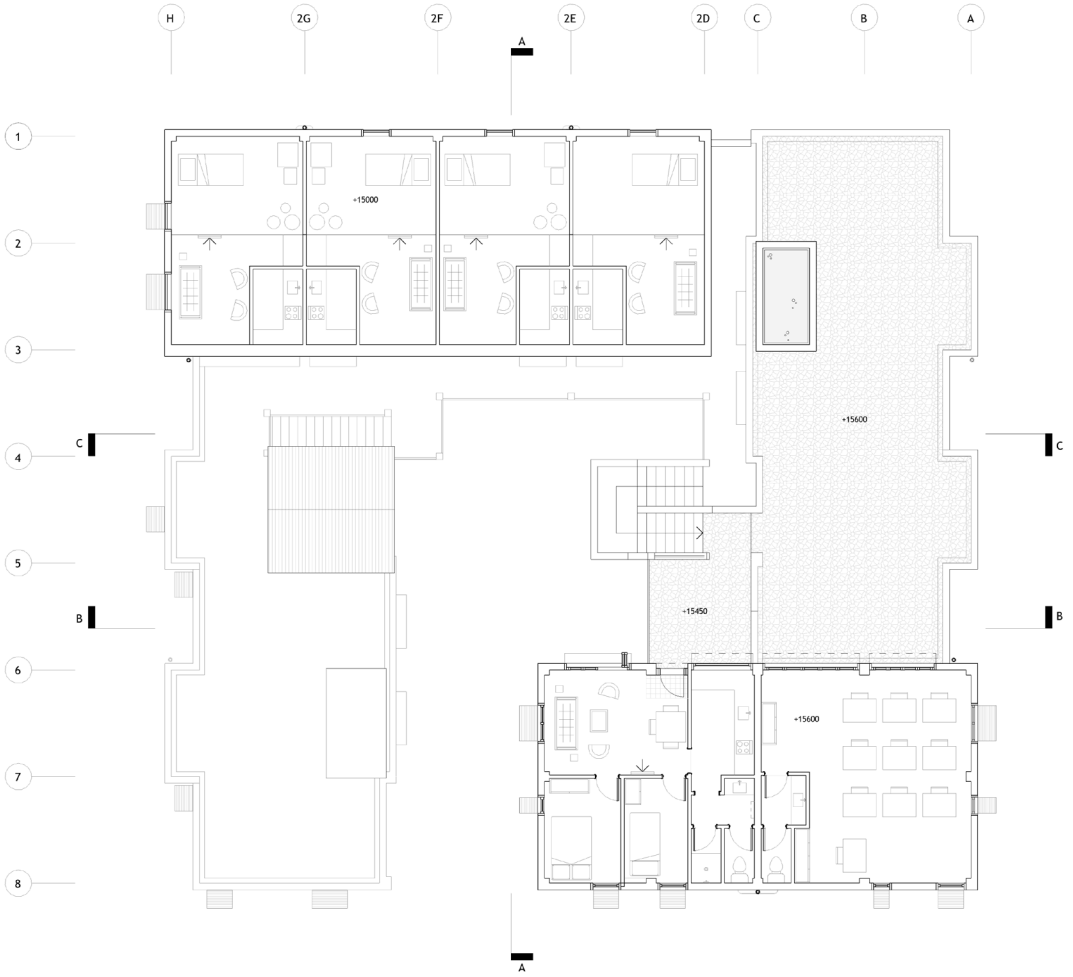
Suspended Floor Slab Plan



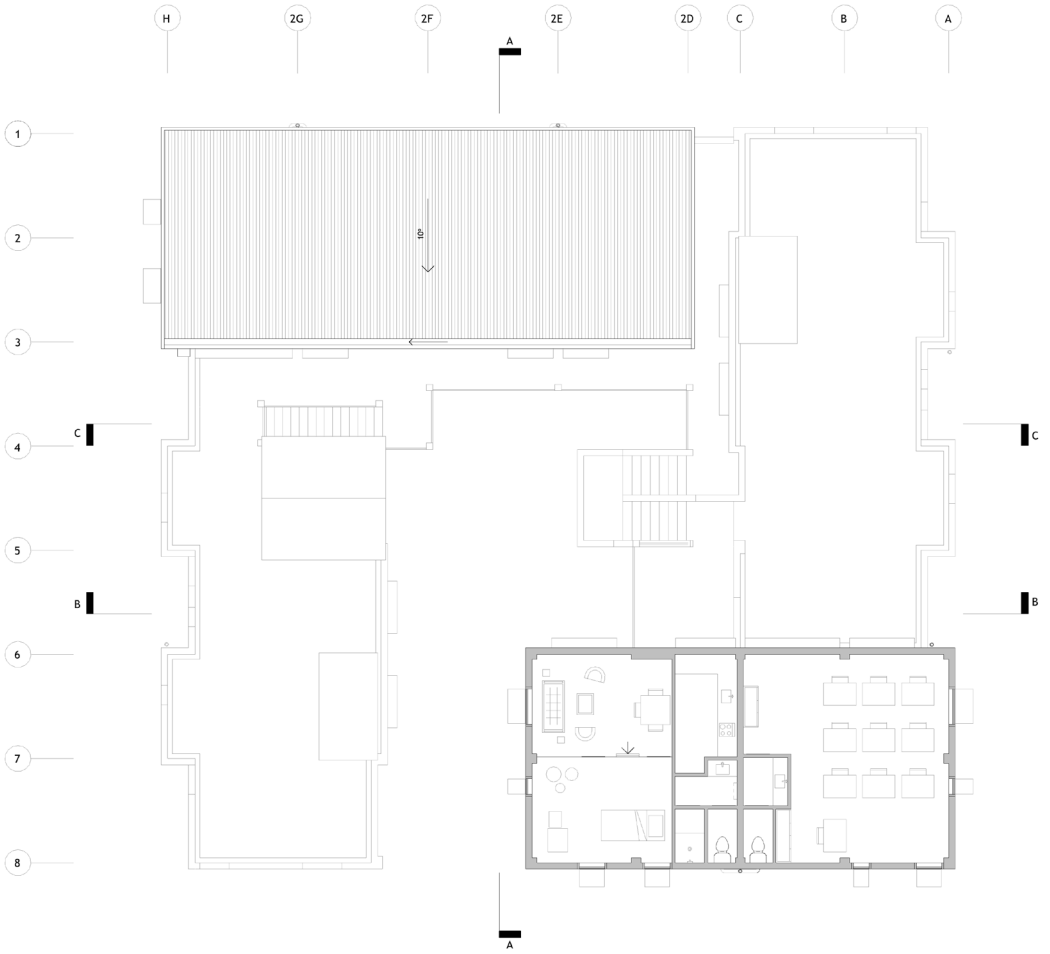
Level 4 - Third Floor Plan



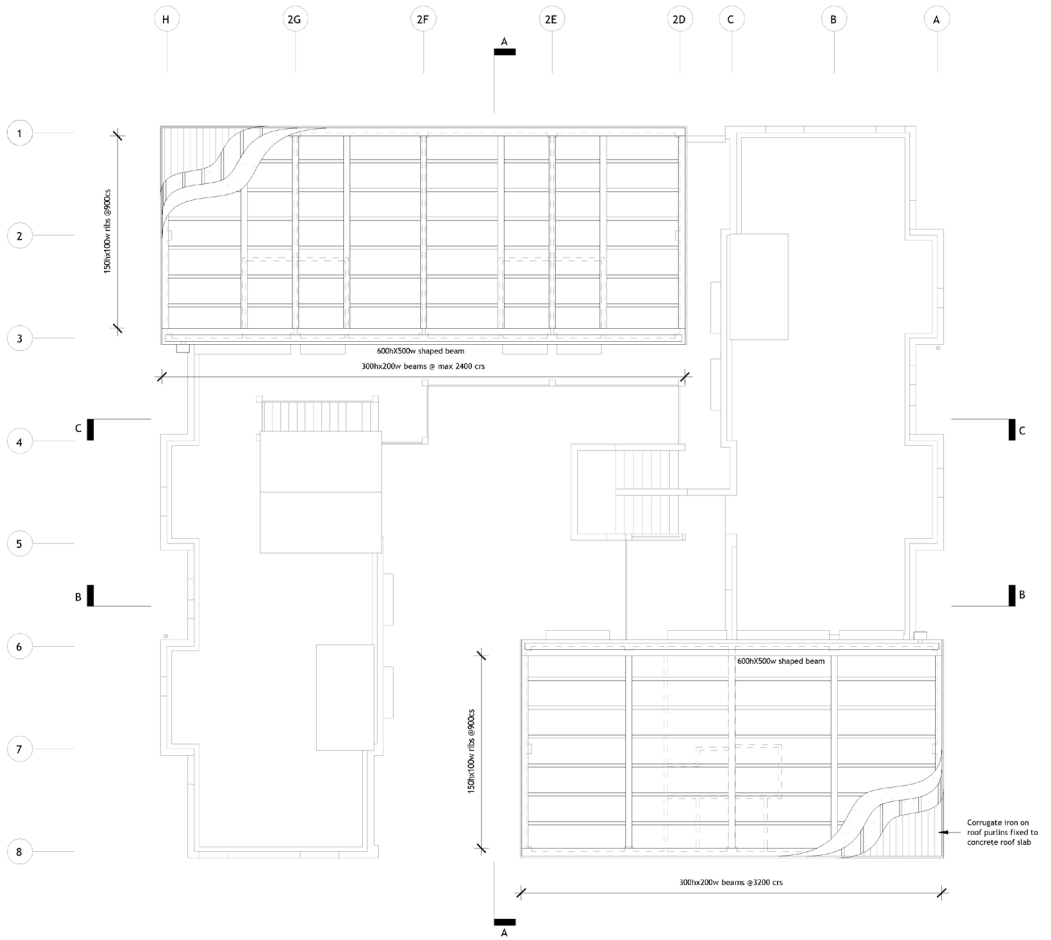
Level 5 - Fourth Floor Plan



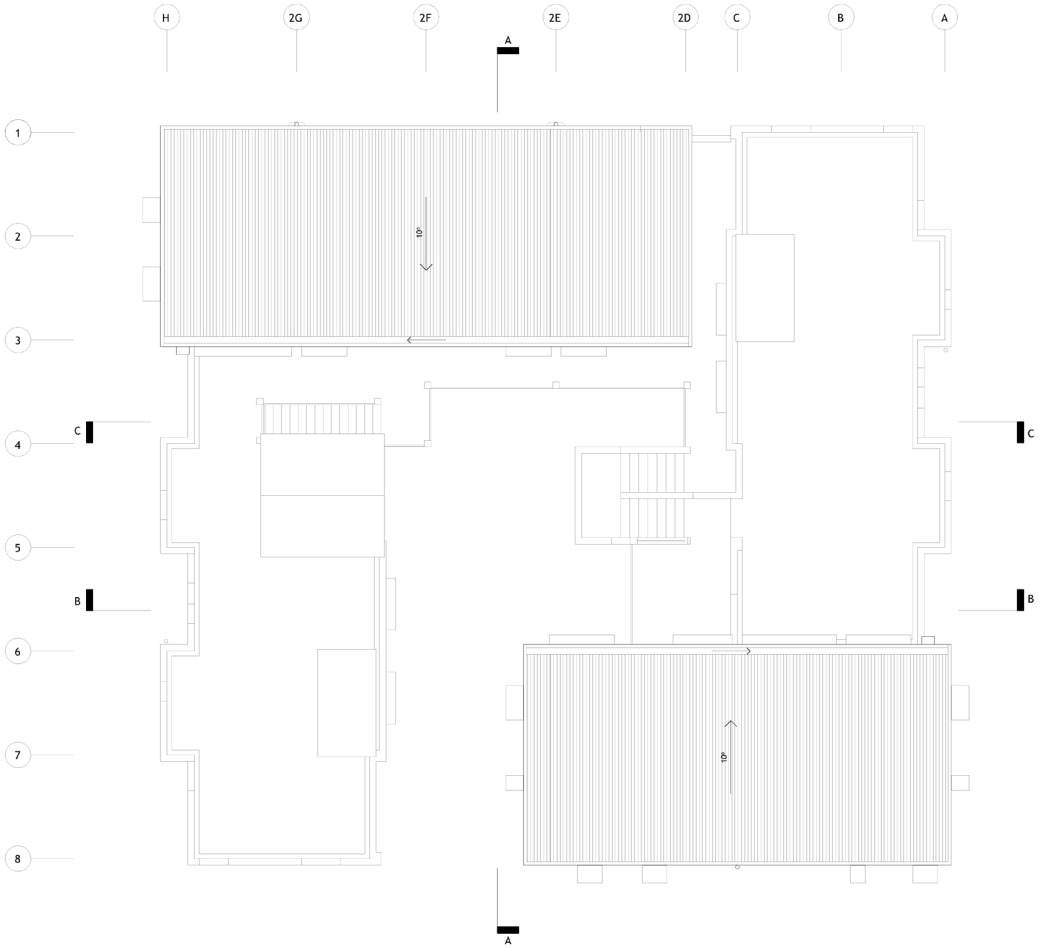
Level 6 - Fifth Floor Plan



Level 6 - Roof Space Plan



Roof Framing Plan



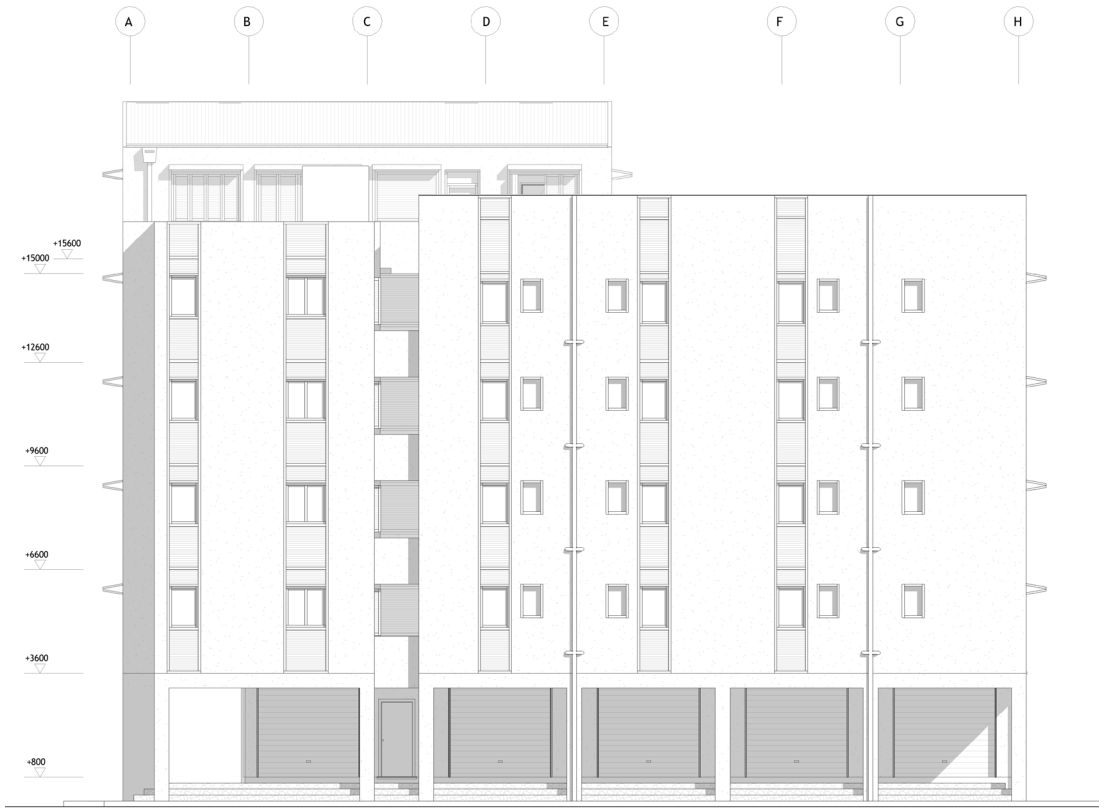
R o o f P l a n



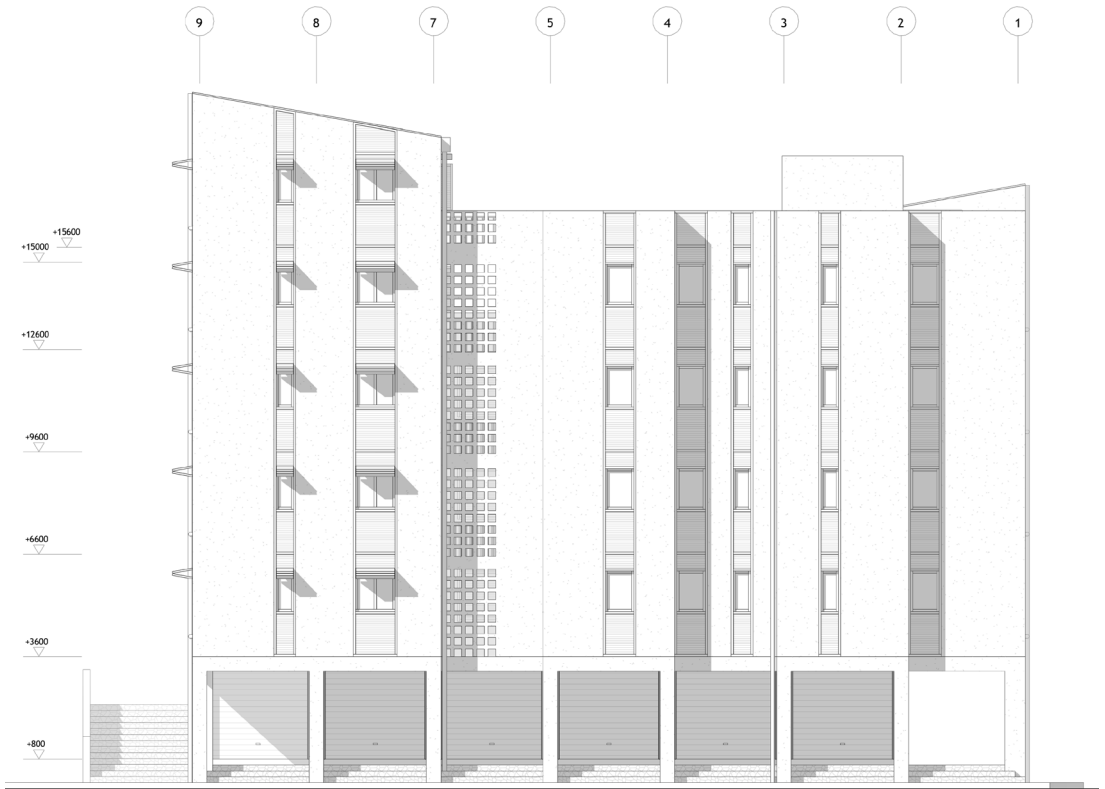
South Elevation



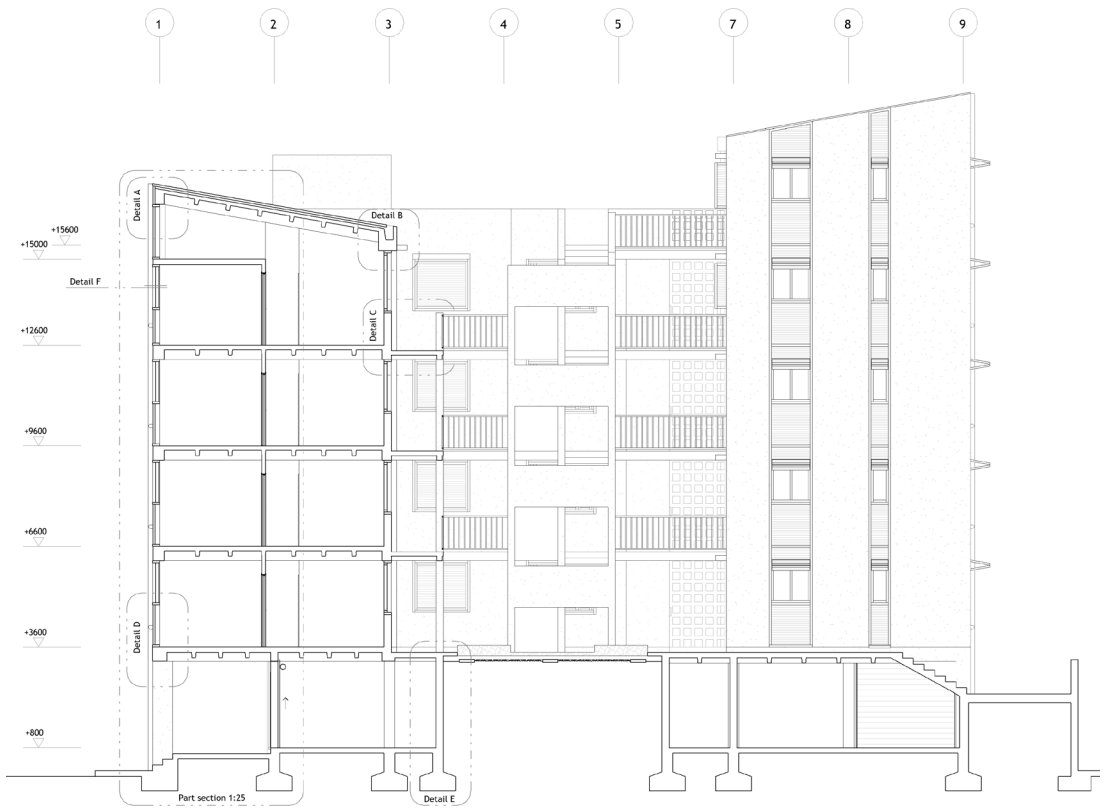
West Elevation



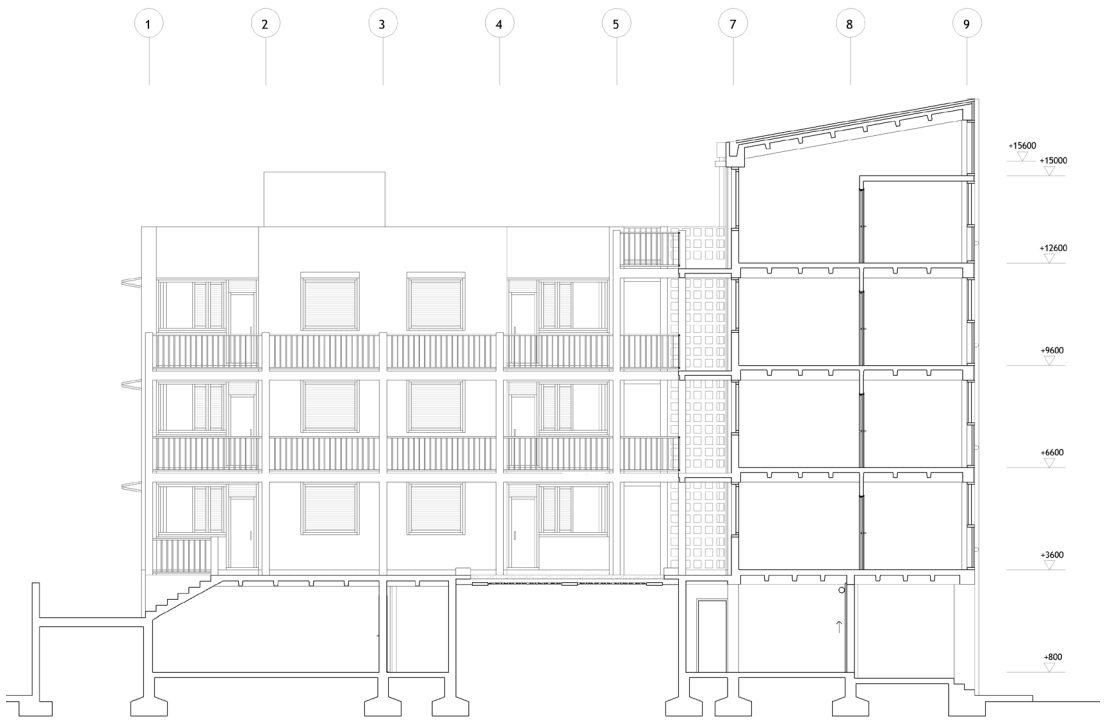
North Elevation



East Elevation



Section A - A East



Section A - A West



Section B - B



Section C - C

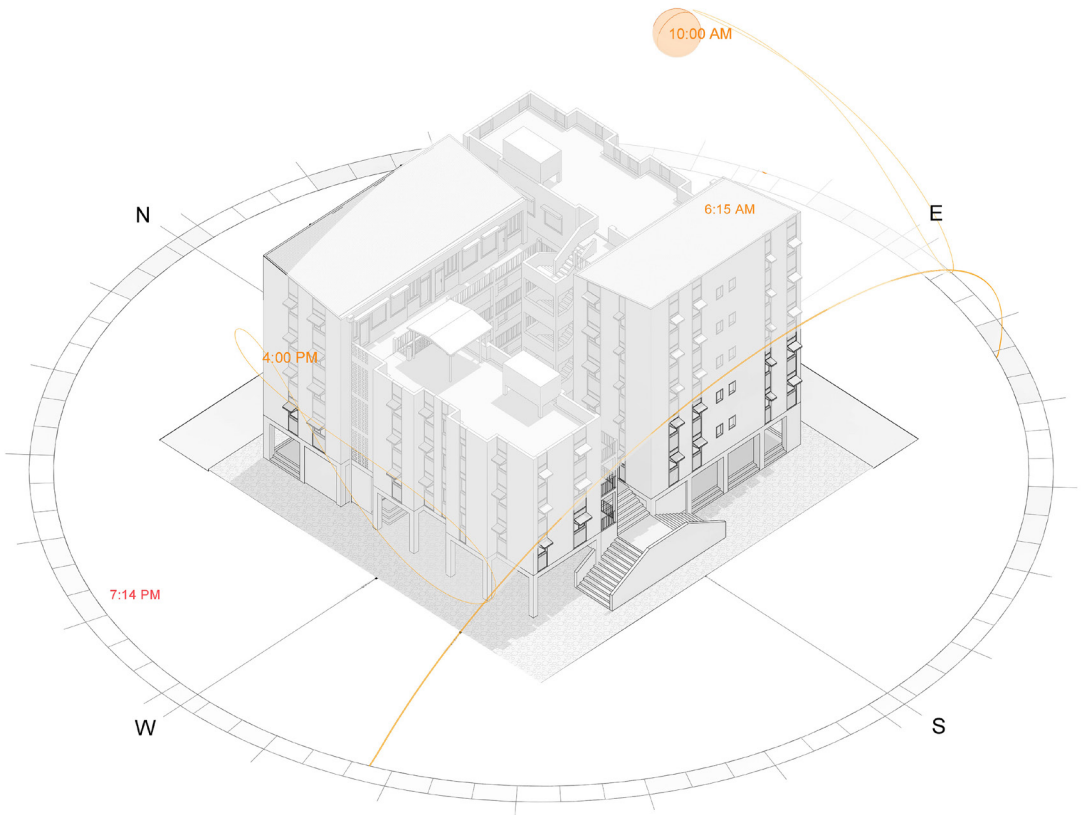


Proposed perspective section of cooperative courtyard.



CLIMATE DESIGN

M u m b a i , I n d i a



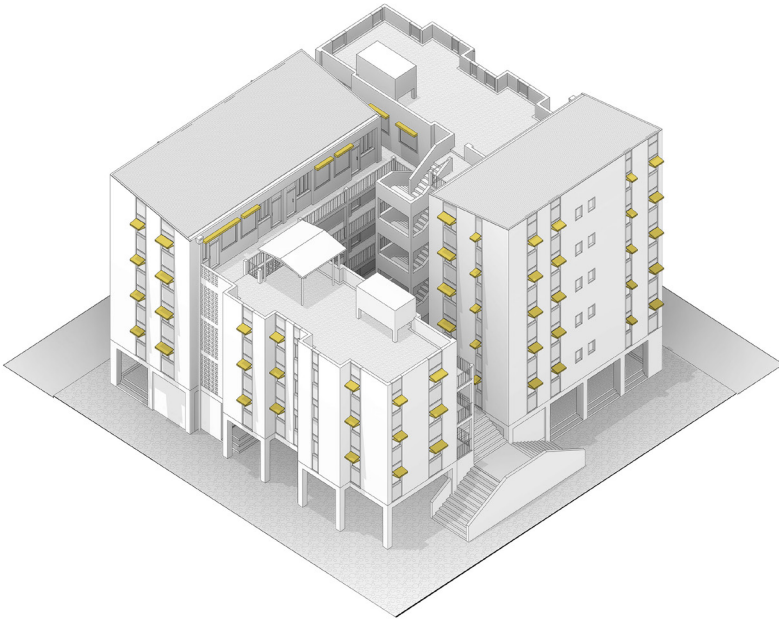
M u m b a i S u n p a t h D i a g r a m

The project is located in Mumbai, India. The Climate here is warm and humid year round. Rain comes mostly all within a few months when the monsoon season often creates major flooding.

The project proposes a building which maximizes passive systems to improve comfort and livability for the residents. Shading devices are provided on the West, South and East Facades. The courtyard and

building massing is oriented to capture sun on the garden courtyard, however the galleries are shaped to allow only indirect daylight into the residences kitchen and lounge. The building provides simple cross-ventilation to all apartments, while the building mass breaks wind to shelter the courtyard.

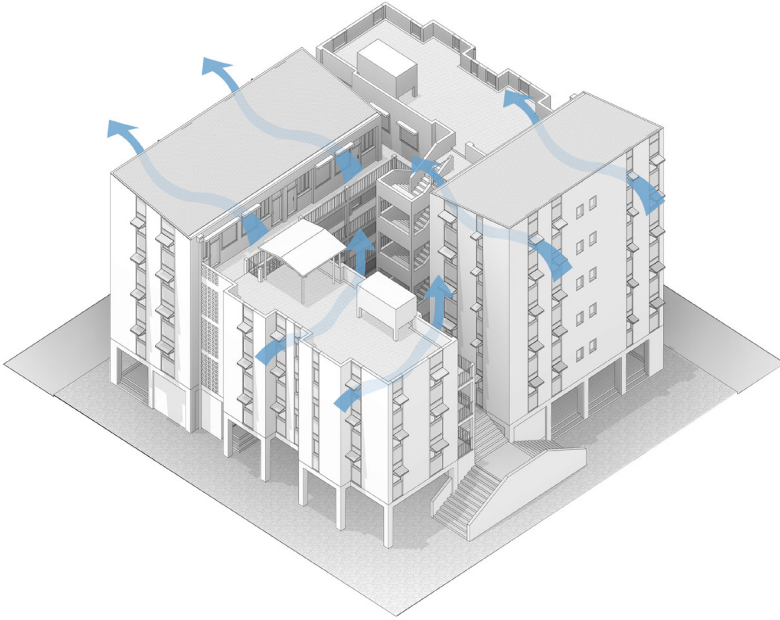
The building roof is oriented for solar access in case solar power generation is feasible for residents.



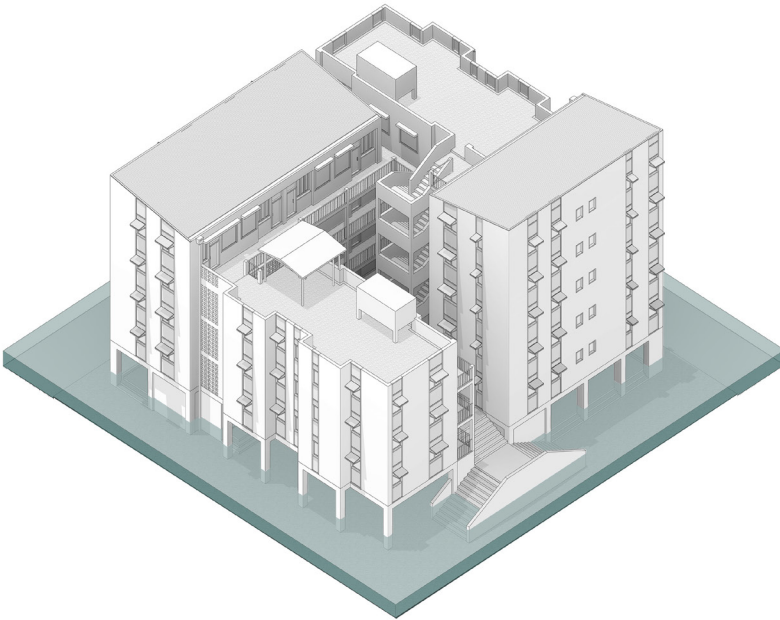
S h a d i n g D e v i c e s



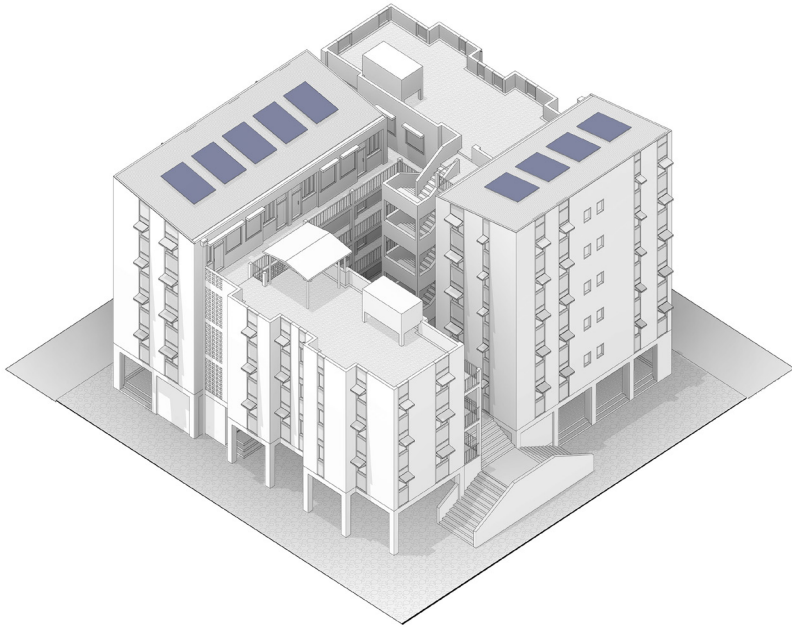
S h e l t e r e d C o u r t y a r d



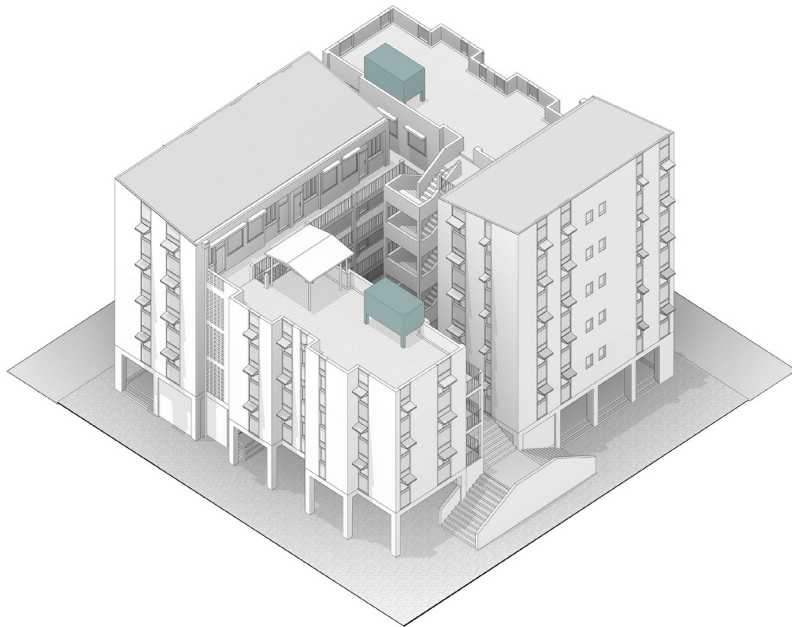
A p a r t m e n t C r o s s V e n t i l a t i o n



M o n s o o n F l o o d P r o t e c t i o n



Solar Power Generation



Water storage

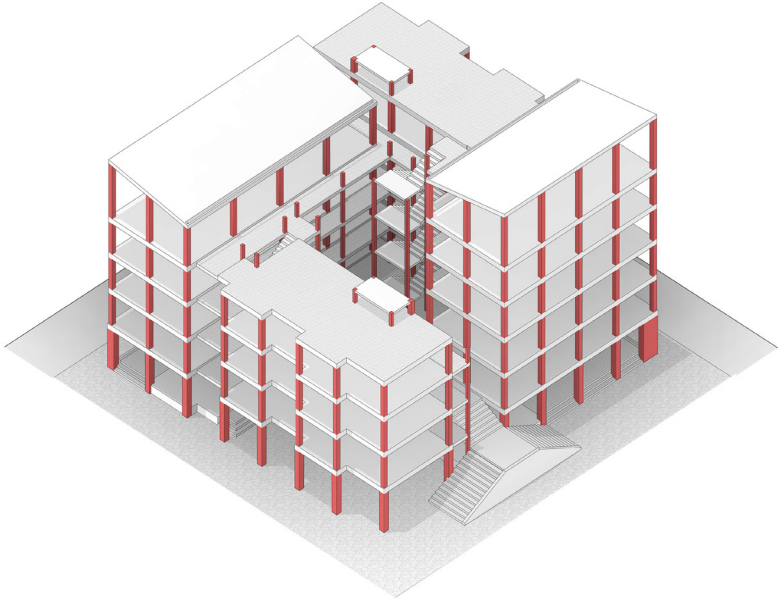
CONSTRUCTION STRATEGY

Detail Design

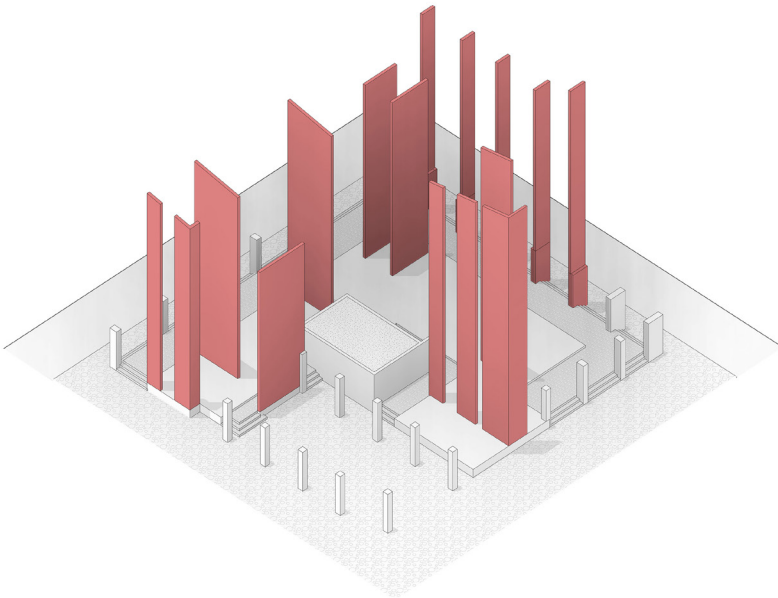


The construction strategy for the cooperative is premised by the theory established in the FUCVAM development model. Construction techniques must be simple so to maximize unskilled labor. Therefore a basic and familiar construction strategy has been developed which is an adaption of the existing construction system present on site (image above). The core construction is in-situ concrete

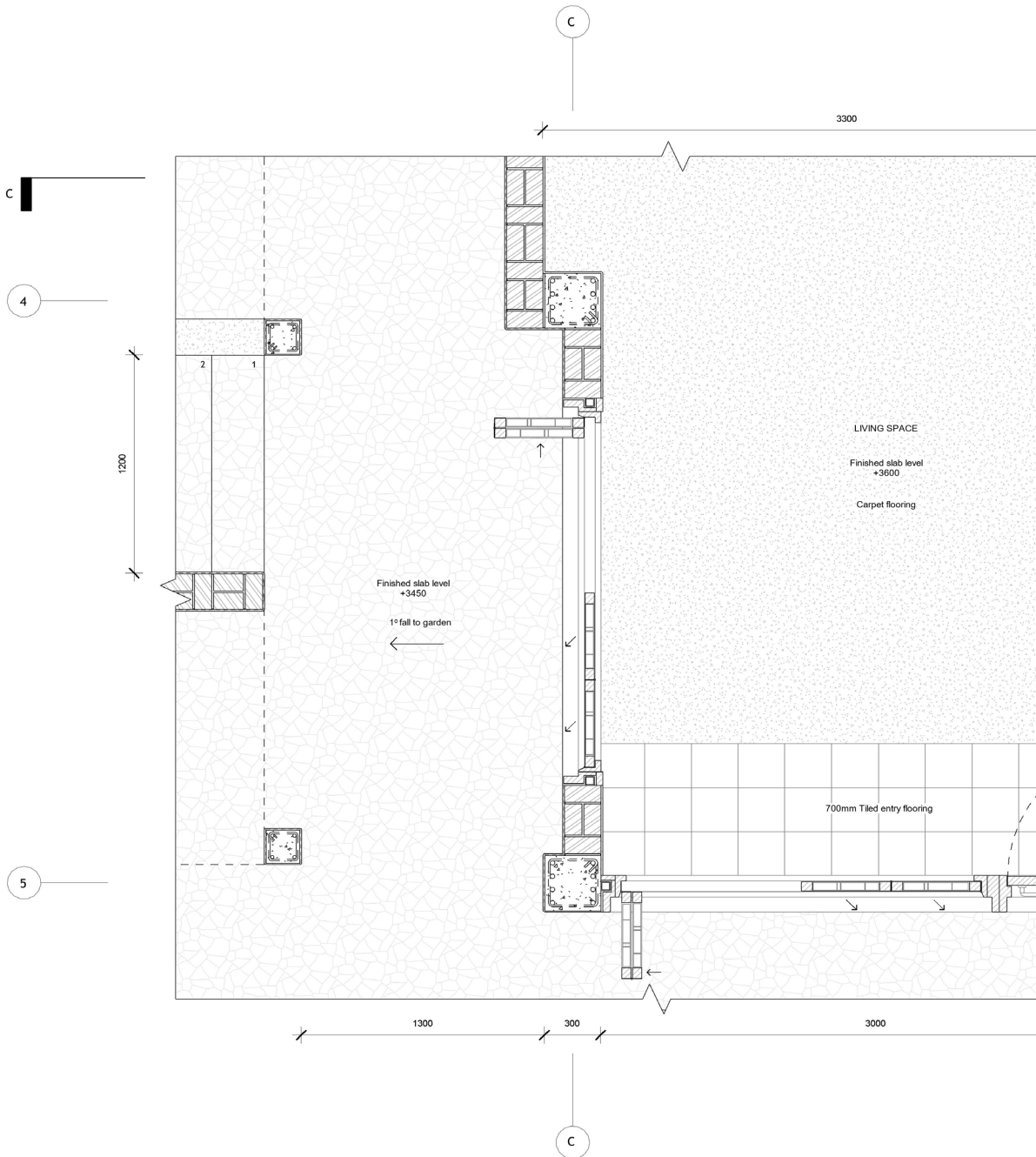
columns, slabs and shear walls (as required). 400x400 and 300x300 columns support vertical loads while a field 200 thick shear walls support required lateral loading in both directions. The slab construction is ribbed to maximize ceiling height and to reduce concrete mass. Non-load-bearing walls are proposed to be brick infill 1 and 2 layers thick.



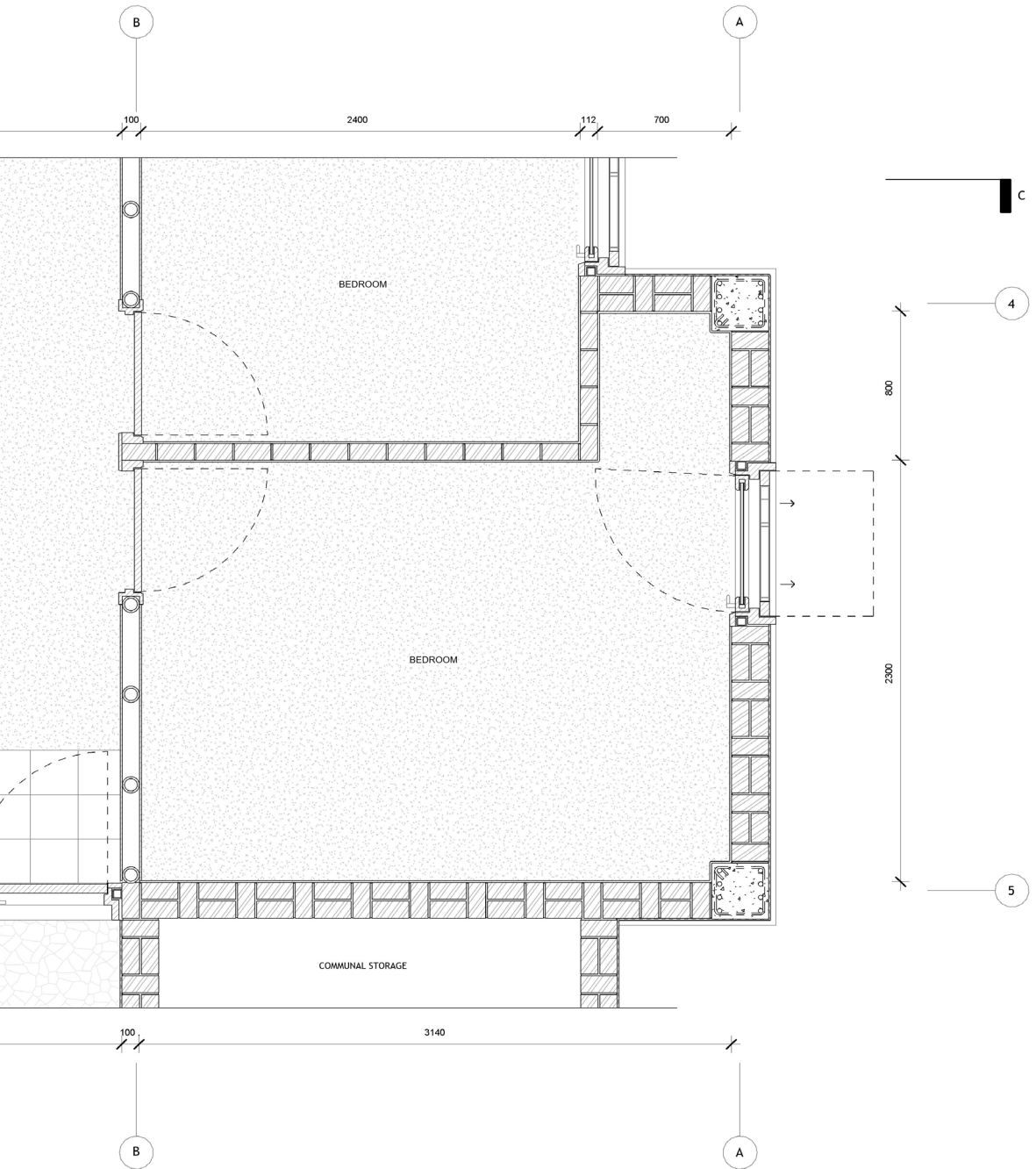
V e r t i c a l L o a d B e a r i n g E l e m e n t s

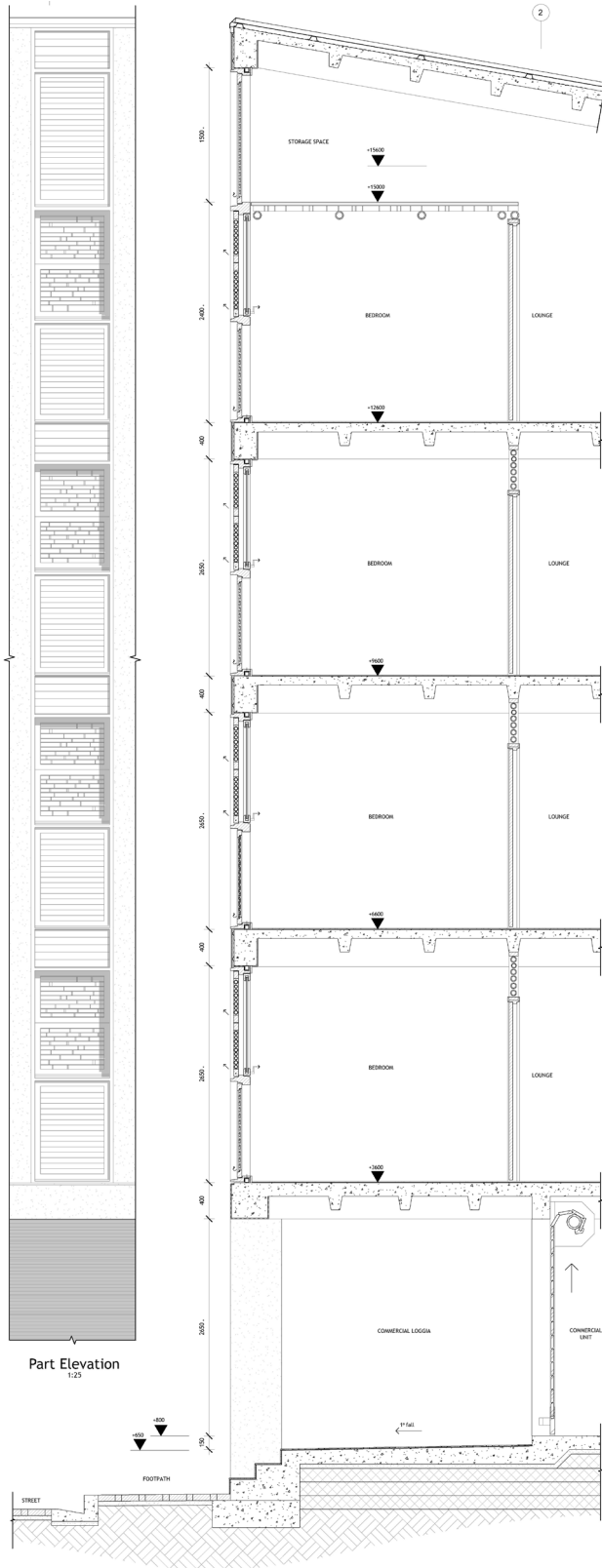


L a t e r a l L o a d B e a r i n g E l e m e n t s



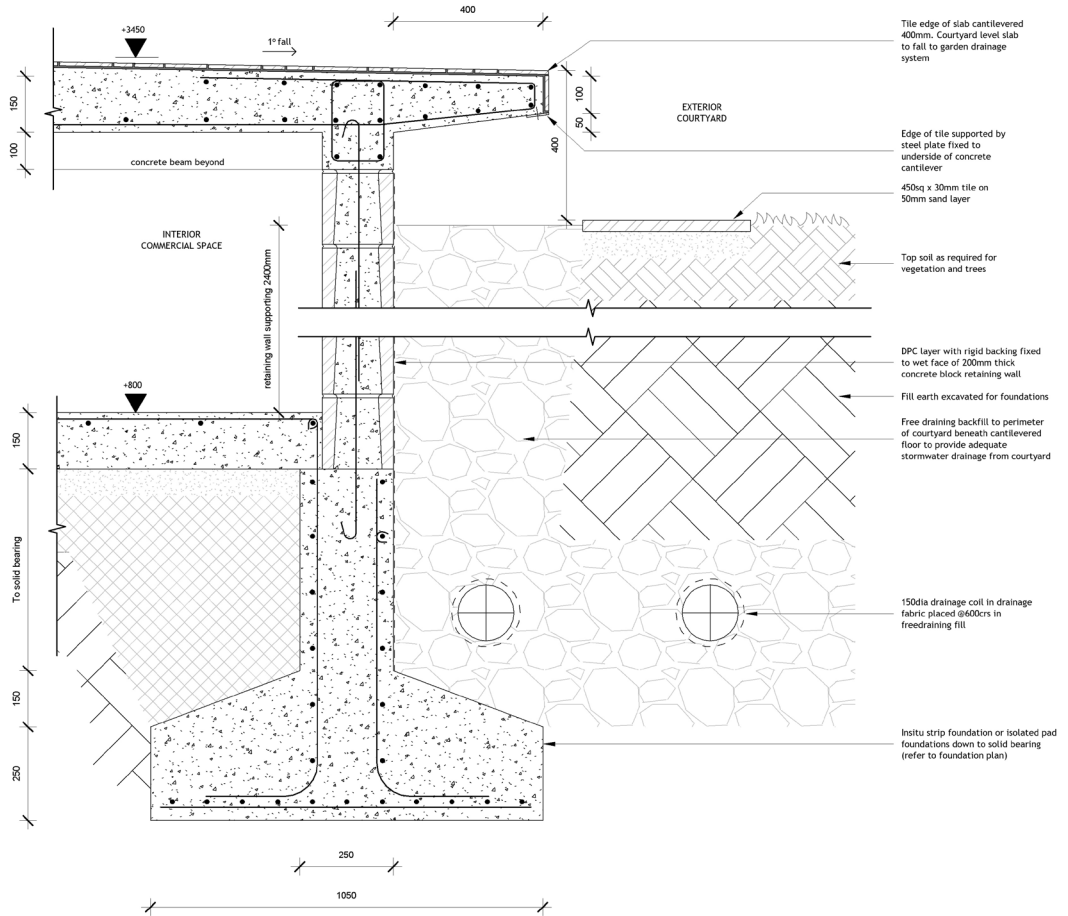
Part courtyard level plan. Drawn at 1:25





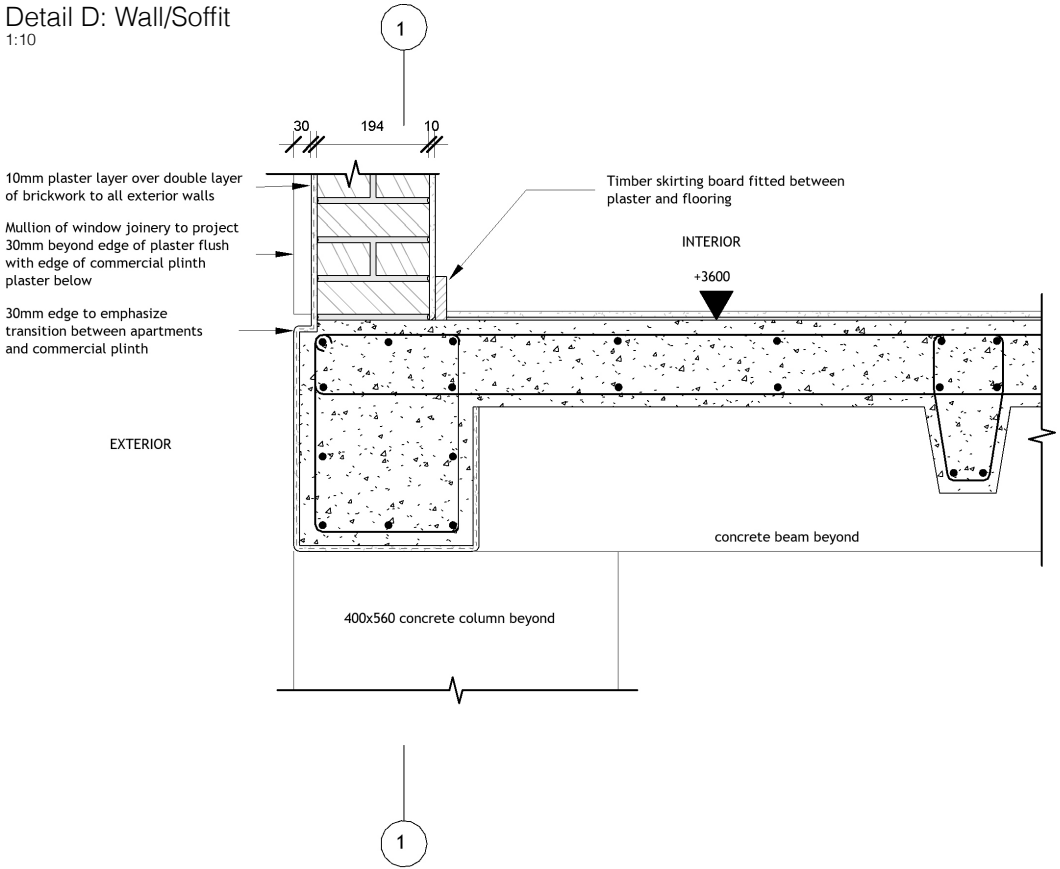
Part section and elevation. Drawn at 1:25

Detail E: Cantilever Slab/Retaining Wall 1:10



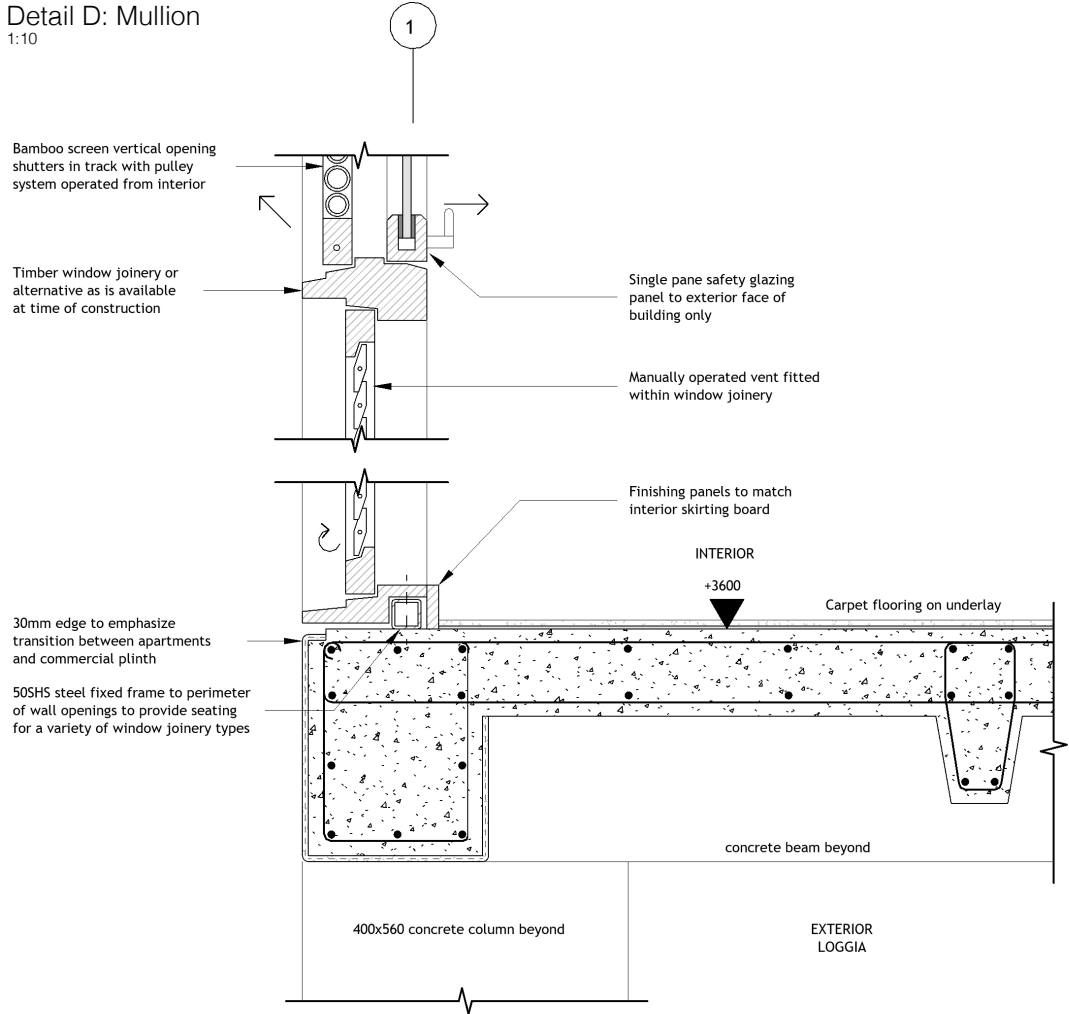
Detail E: Strip Foundation 1:10

Detail D: Wall/Soffit
1:10



Detail D: Mullion

1:10

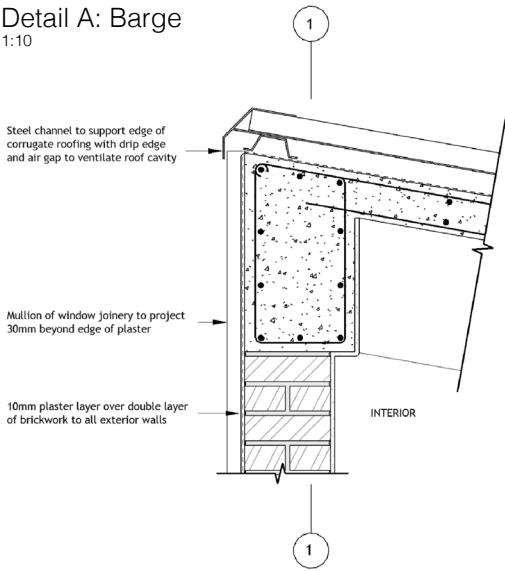


Detail D: Sill/Soffit

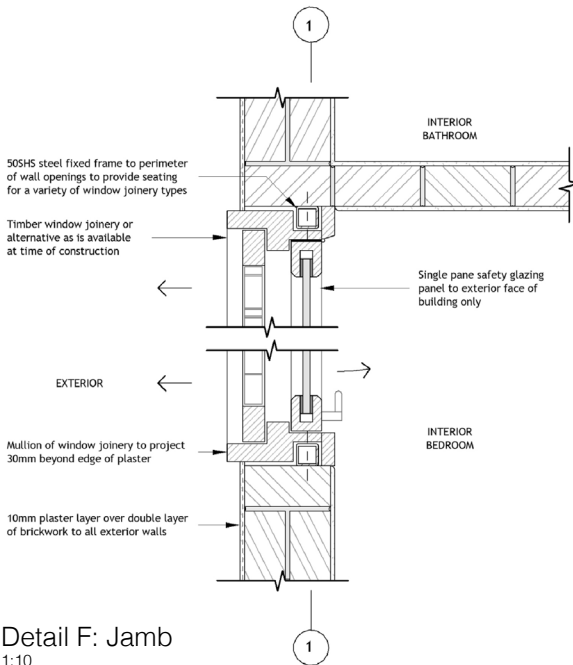
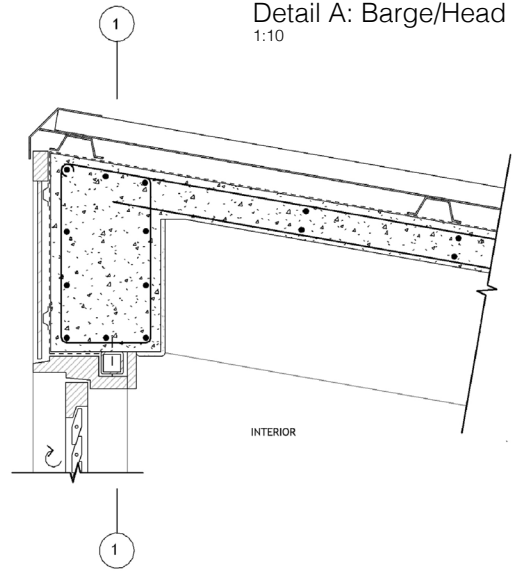
1:10



Detail A: Barge
1:10

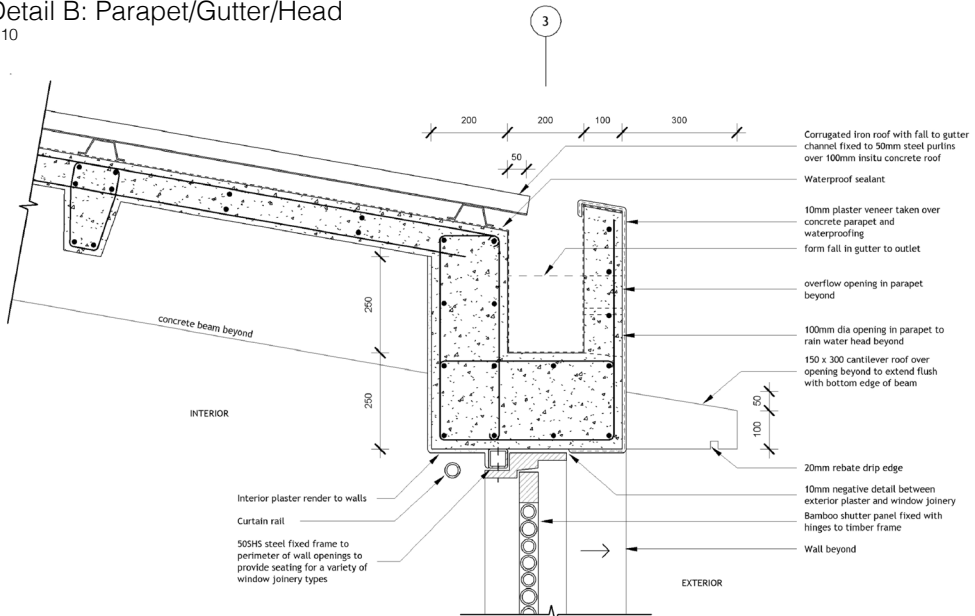


Detail A: Barge/Head
1:10

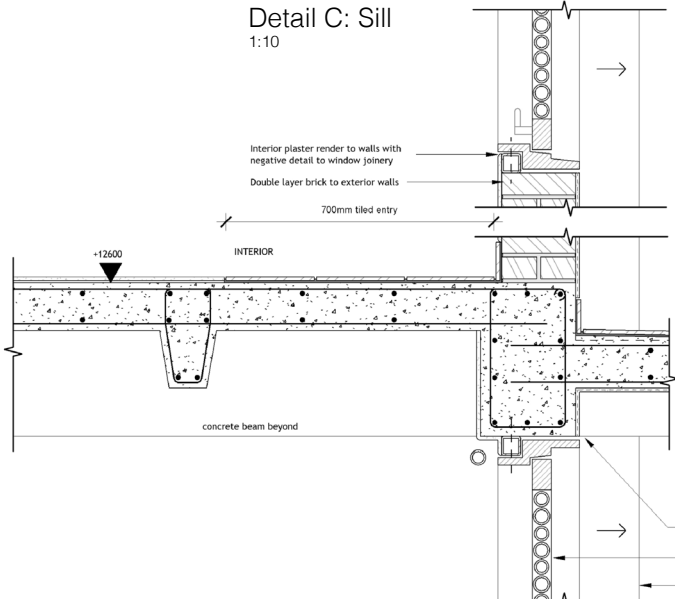


Detail F: Jamb
1:10

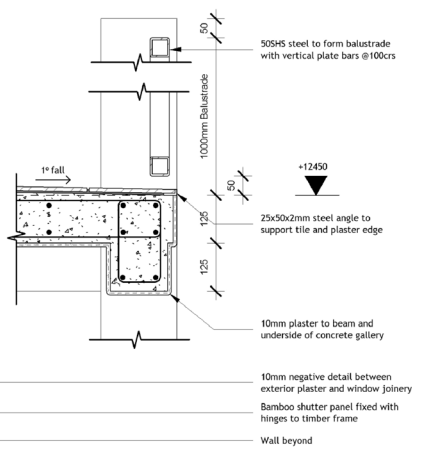
Detail B: Parapet/Gutter/Head
1:10



Detail C: Sill
1:10

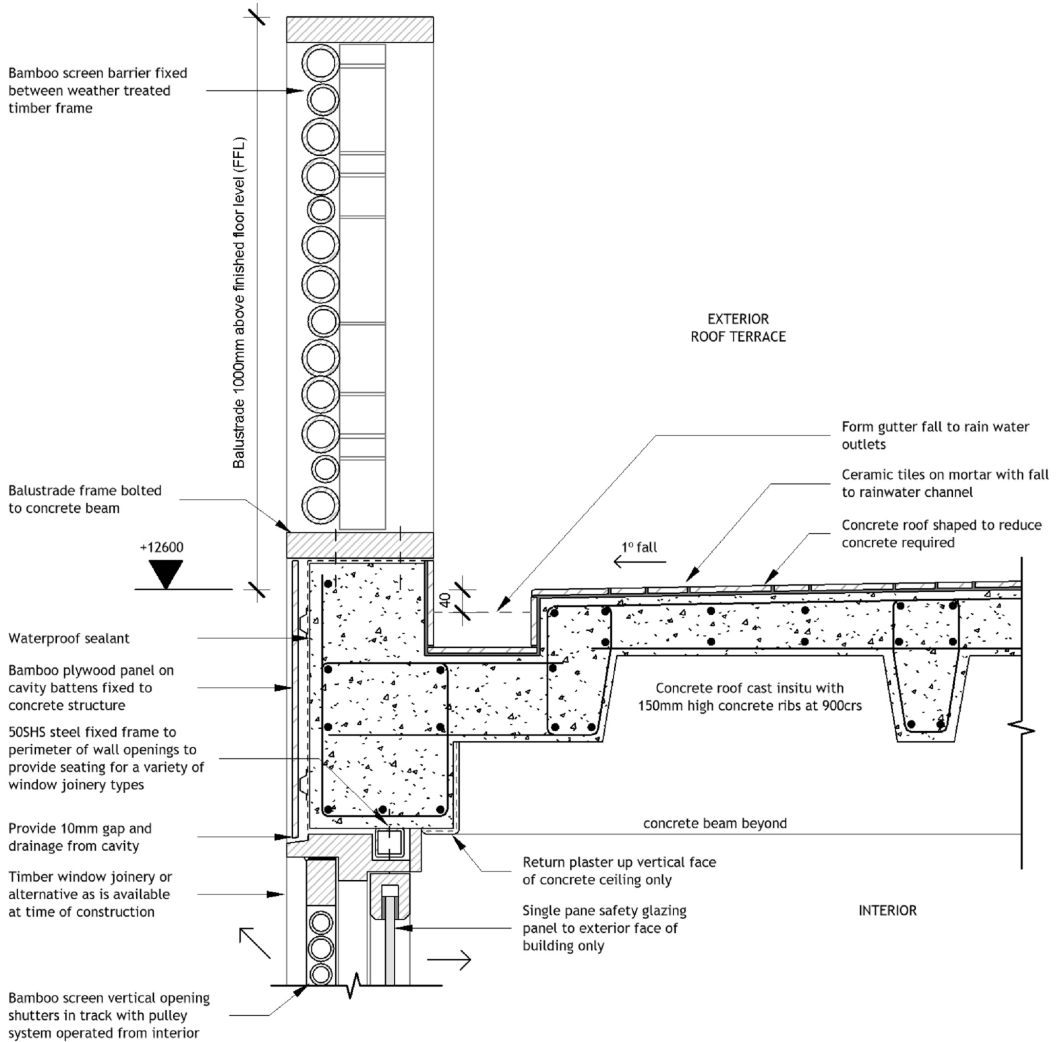


Detail C: Balustrade/Gallery
1:10



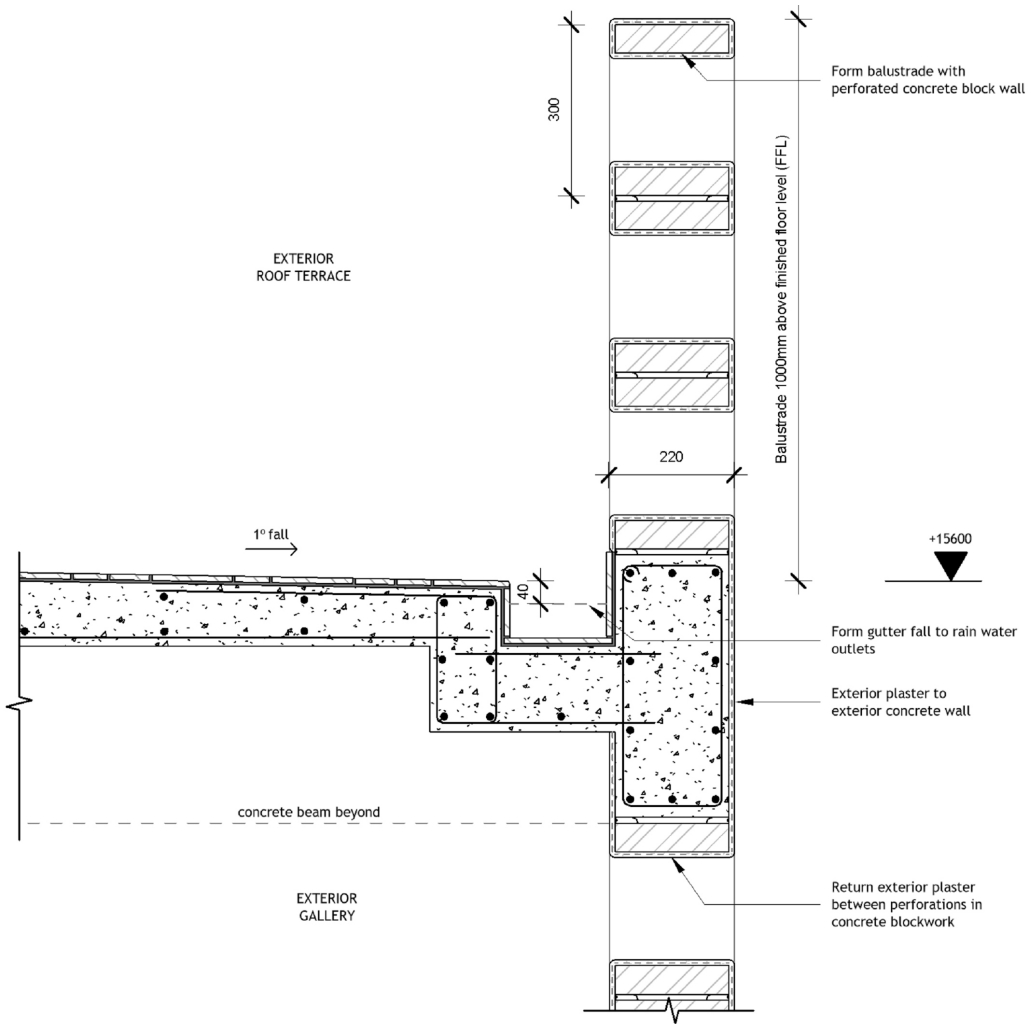
Detail C: Head/Gallery
1:10

3



Detail G: Bamboo Balustrade

1:10



Detail H: Perforated Wall
1:10

REFLECTION

C o n c l u s i o n

Global Housing Studio: Mixing Mumbai

Housing for Community: Re-imagining co-housing in the age of Neo-liberalism
P4 Reflection Essay
Craig M. Trompetter

TU Delft
12/07/2019

Aspect 1: The relationship between Research and Design

The Global housing studio had a clear structure and transition between the research phase and design. For me the transition was smooth. A clearly articulated problem statement and hypothesis at P2 phase led me directly to a design brief through which a concept could begin to develop. The research component which was structured to inform the design phase was highly effective, however my approach to the housing design itself as an effective tool for 'Design as Research' is debatable.

Aspect 2: The Relationship between the graduation (project) topic, the studio topic, your master track, and your master program.

I consider the topic of the studio highly relevant for today's practice and for architectural education. My project engaged the challenges of affordable housing by attempting to understand the affordable housing dilemma on a more international scale. As a student from New Zealand, I was not especially interested in specific Indian issues, rather, I was interested in the similarities and differences between low cost housing globally. Through the research phase, including the trip to India, these curiosities were satiated to some degree.

In terms of the relationship of my graduation project to the theme of the studio, I felt my project filled some requirements but also deviated from some aspects which seem to me to have become a hallmark of the Global housing studio in general. The issue of repeatability, a 'rubber stamp' mentality or the 'kit-set of parts' approach to affordable housing seems to be encouraged, despite the fact that the most well-designed of these (example of the elemental 'Half-house'), often do not proliferate as intended. My project chose to address the issue of mass housing from a different angle, specifically: a repeatable programmatic and managerial strategy which could be scalable based on specific spatial and social contexts.

For me, although the transition from the initial design phase to design was smooth, I have some reservations regarding the topic. Due to the broad 'Meta' nature of the research question, I felt that in some cases the scope of my question was too wide. Therefore, as I approached the P4 presentation, an objective reflection on the current state of my design concept in relation to the original research question essay would elucidate a few discrepancies. Such as the applicability of the housing model when considering contrasting concepts regarding ownership. It could be said that in my desire to understand the crux of the problem, my research question became too political. However, it could also be said that any mass housing scheme is inherently political and to ignore politics is to enter the realm of fantasy.

In terms of my master program, this studio has slotted in perfectly with my intentions for the degree. I have a background in residential housing design and I always intended to broaden my knowledge in housing as a major part of my architectural education. I took MSc1 Dutch housing, the Why Factory: Future Worlds (Big mistake...) and now housing design in a different climate and a more extreme reality. Linking New Zealand with the Netherlands and now India has been very rewarding.

Aspect 3: Elaboration on research method and approach in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.

The initial method of research was through a type of ethnography, or an ethnographic lens. This included multiple site visits, and sketch-based photo analysis. This along-side a more quantitative 'information gathering' approach provided a strong foundation for the second semester. The method of research beyond site analysis was through the design of an alternative management/financing scheme and a building design. My intention was to leverage a comprehensive understanding of the theory of the neoliberal housing crisis, and of existing solutions (primarily the FUCVAM model) to develop a new model of co-housing adapted to the Indian context. Typically, most, if not all, housing co-operatives are either retrofits too, or designs based on, established unit-based housing apartments. I wanted to explore the possibility of a different kind of architecture which is generated from theory focused on how the residents would design, build and live, not how a third party wants to invest. The challenge then is: how can a scheme develop through this thinking without becoming Utopian? i.e. how to satisfy the limitations of housing in Nalasopara?

I believe the design that I have developed is successful at achieving these goals. The single co-housing unit, designed as a replacement to, and on the footprint of, 3 rows of Baithi Chawls is organized to meet all the requirements of a high-density, medium-rise apartment housing in Nala Sopara. The design also achieves the principals outlined by the Latin American FUCVAM model. Where the project has had some issues was the in the schemes repetition. The intension was always that the existing residents should work directly with the architects at the design phase, therefore, the issue for me (as a designer) was following this thought process multiple times with the intention to generate different outcomes. This proved to be more difficult than expected. Unfortunately, I think the only way to test this scheme properly would be to actually have multiple designers working on separate projects.

Aspect 4: Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.

Transferability is a key characteristic of the research project. From before the P2 phase, the design was approached as an example of inner-city high-density low-cost housing manifested through an alternative chemistry. By redefining the key actors, and by empowering those who are most affected by the quality of the project, I believe far better building designs can be generated across a variety of contexts and scales. The developer cares first and foremost about his bottom line and the politician cares more about power and influence, so by prioritizing the interests of the residents (and of well-meaning architects), the central concern becomes quality of living, and no longer profit or influence. My intent was never to create a replicable building, but rather a theory which is targeted not at how people invest, but rather how people live. I believe this graduation project successfully engages directly with the broader issue of affordable housing in the 21st century.

Aspect 5: Discuss the ethical issues and dilemmas you may have encountered in doing the research, elaborating the design and potential applications of the results in practice.

The arrogance of foreign professionals to think they can come into an underprivileged part of the world, raise their high-brow and wave their egotistical wand in attempt to solve crises is a real issue. PK Das (Mumbai architect) even spoke of the issue in a lecture given during the studio, he alluded to the fact that often NGO organizations do more harm than good in Mumbai, and the same goes for architects. For this reason, I was nervous about engaging with specific issues in Mumbai, rather seeking the aspects of the housing crisis which were common with New Zealand – a context in which I could better ground my project.

I believe that there are many potential applications for architectural practice that could be derived from the results of this thesis. The key theme being that better outcomes are generated when people are involved in the design whom have a vested interest in the quality of life of the residents, i.e. the residents. I am aware the project is unlikely to have a life beyond TU Delft in India, but my intension for taking this graduation studio was to generate a methodology which could improve housing design in any context, and on any scale. In that regard, the project conclusions could have a life beyond this thesis.



Mumbai City. View from Kanchanjunga apartment tower.

“The question is whether all who are badly served by the status quo can unite to create a truly humane system, where housing is not real estate but is, instead, home.”

David Madden & Peter Marcuse

CRAIG MICHAEL TROMPETTER

Housing for Community
Graduation Project
TU Delft 2019

