

01

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PORTFOLIO

01

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Selected Works

2015 - 2025

01

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*Urban Theory
Material Research
Architectural Design*

Nandini Mohan

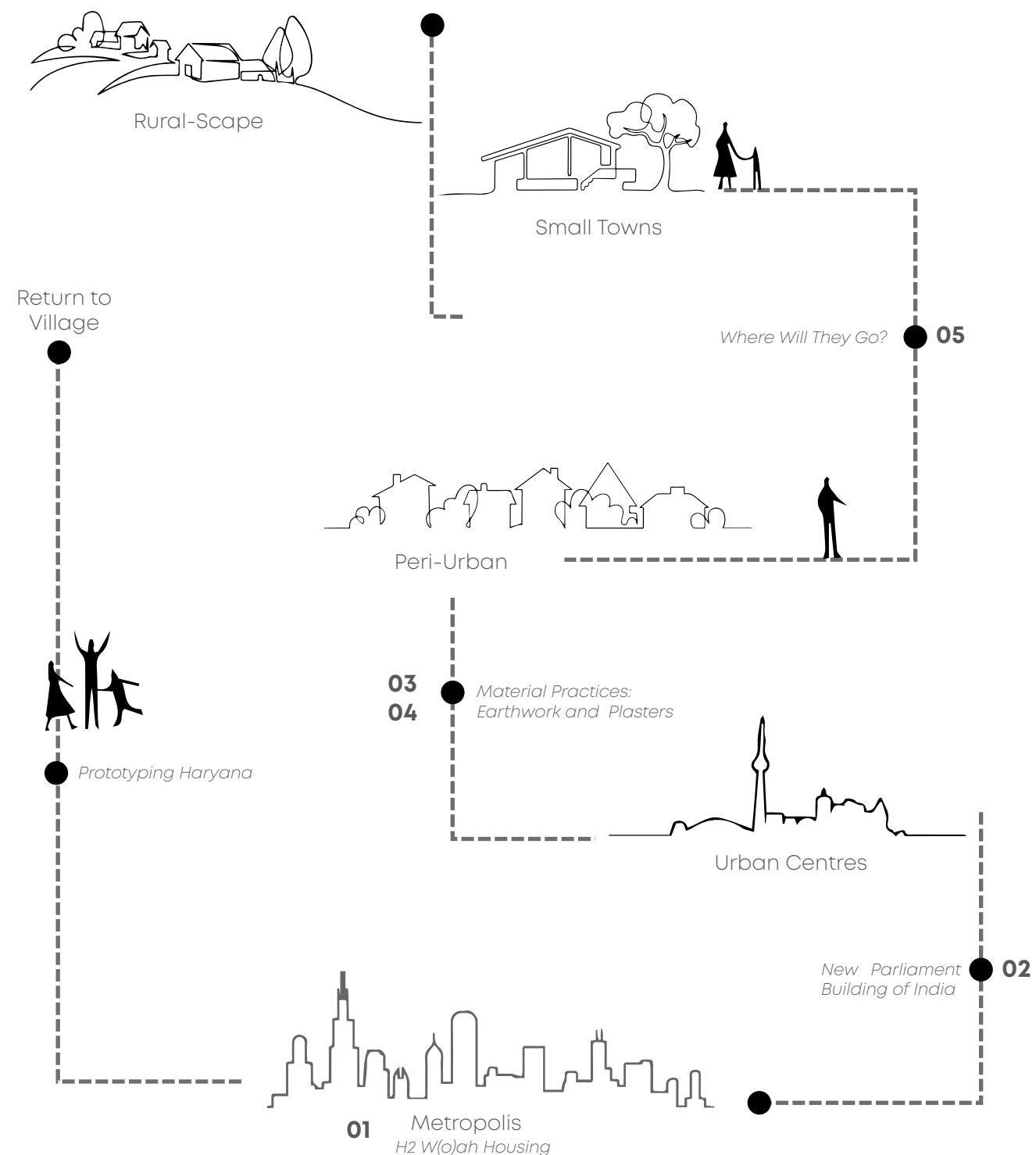
@UnBuilding Earth Lab

01

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04



Concept Model

Migration Theory and
Scalar Understanding of
Projects via Urban-Rural
Landscapes

The future and growth of cities has been a question that has plagued me, and in it lies the genesis of my architectural and urban theory research. Each project explores a different urban/ rural landscape, and questions how to enhance the ecological performance of the built environment through the study of alternative materials, innovative models for future cities and settlements, and environmental performance.

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01 / H2 W(o)AH HOUSING

Revitalizing the City Core: Adaptive Reuse in Manhattan

Could New York Shift Toward Water-Conscious Living?

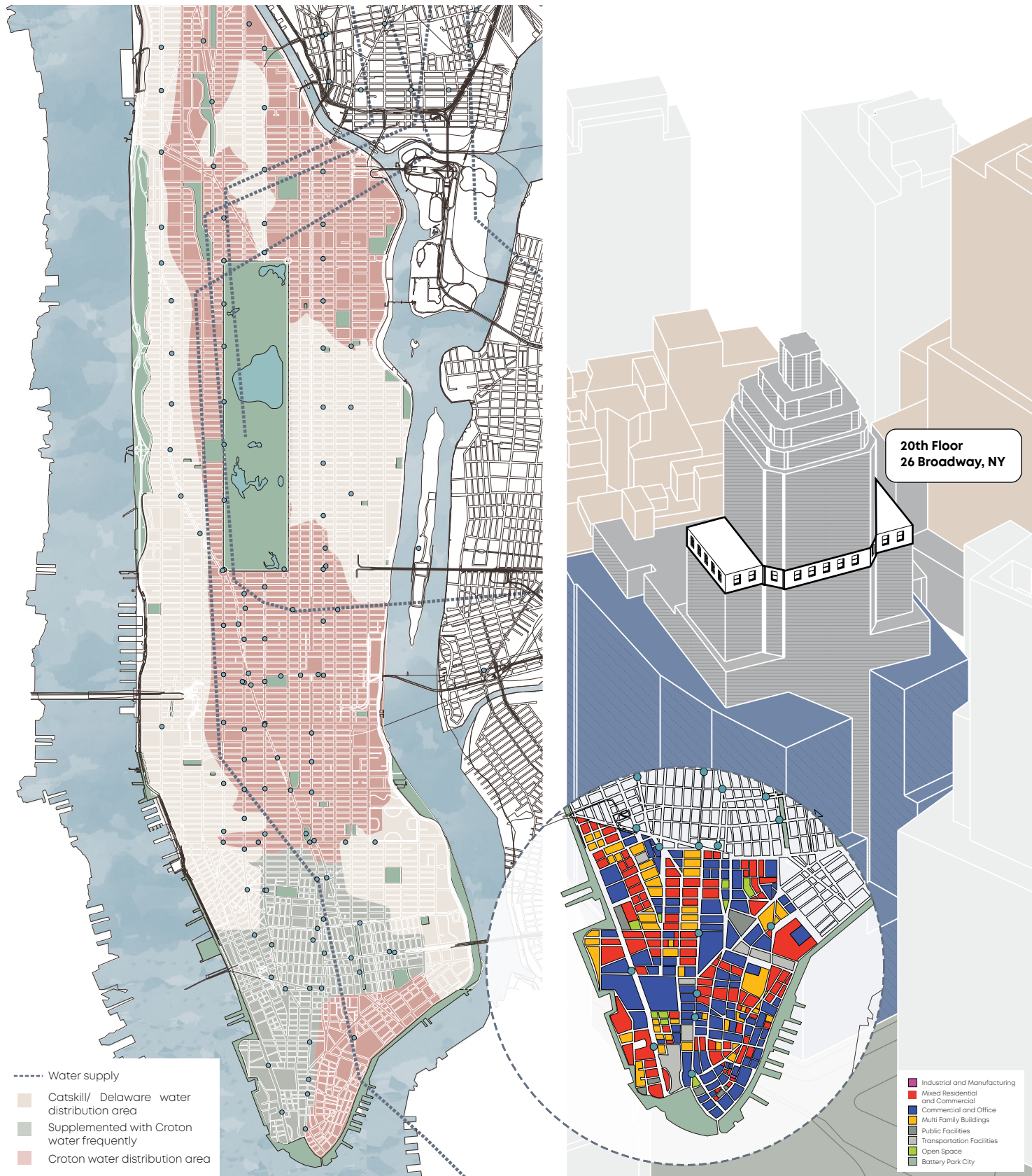
Project Type	Academic - 2023 (ARCH 7111A)
Group	Chang Yu Lin, Suttahathai Niyomwas, Yang Li
Location	26 Broadway, New York
Guides	Daisy Ames
Impact	Water Conscious Modules Design
Role	QGIS, Design, Plan Resolution and Research

Introduction: New York City uses over **1 billion gallons of fresh water daily** just for flushing. This high consumption stems from an abundance of fresh water, the cost of retrofitting plumbing, and the perceived complexity and maintenance of greywater systems. Even though the greywater code was updated in 2021, adoption in skyscrapers has been slow and largely unsuccessful. Adaptive reuse strategies also face obstacles: inconsistent floor ownership, outdated multi-use building laws, and tenants unwilling to invest in plumbing upgrades.

As the Financial District shifts from commercial to residential use, water demand is expected to rise with the move from **12-hour to 24-hour** occupancy, compounding the city's water challenges.

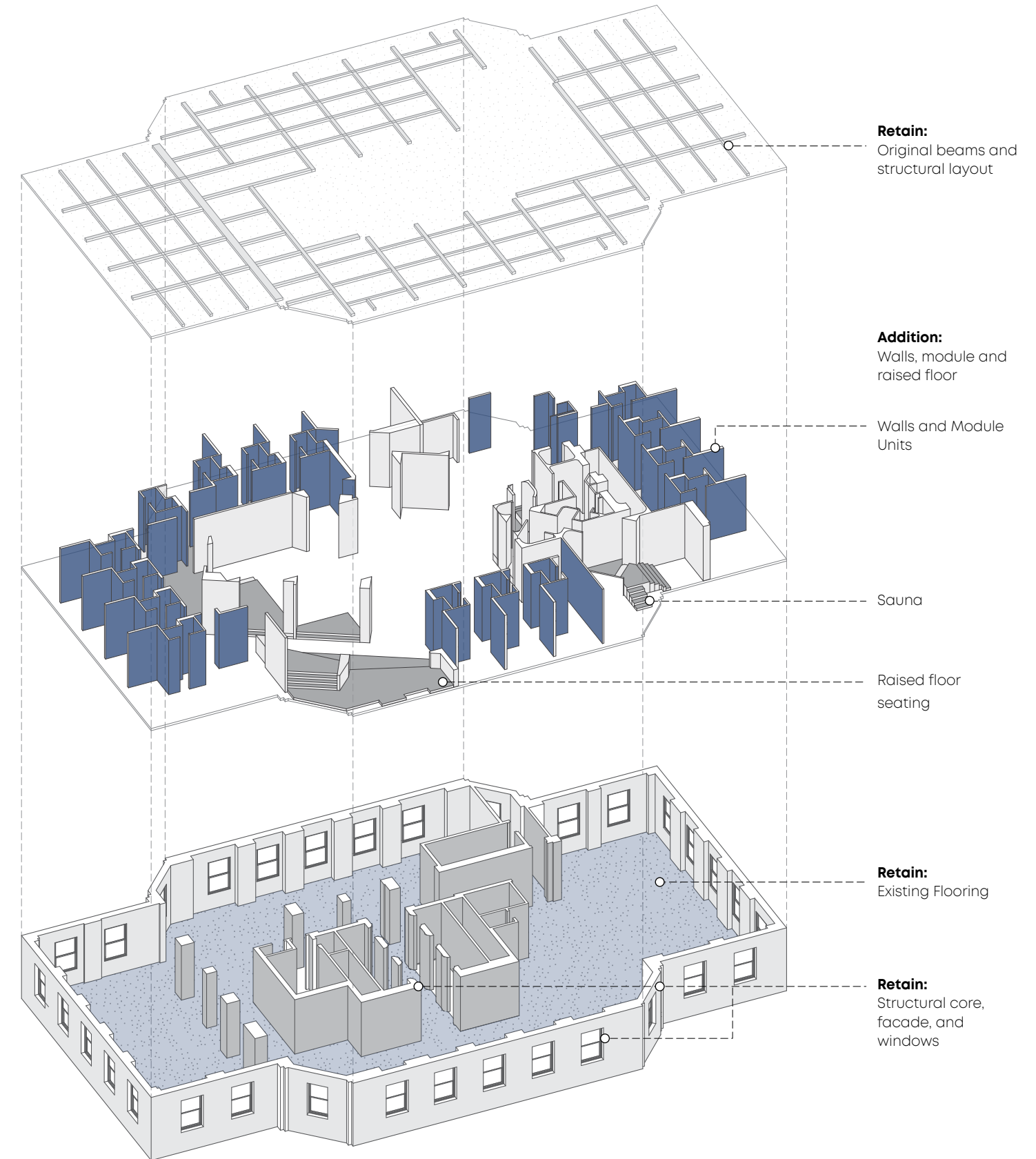
An experimental adaptive reuse project is underway at 26 Broadway, home to Cornell AAP's New York campus. The 20th floor is being converted from a flexible college space into housing for people working in the Financial District.





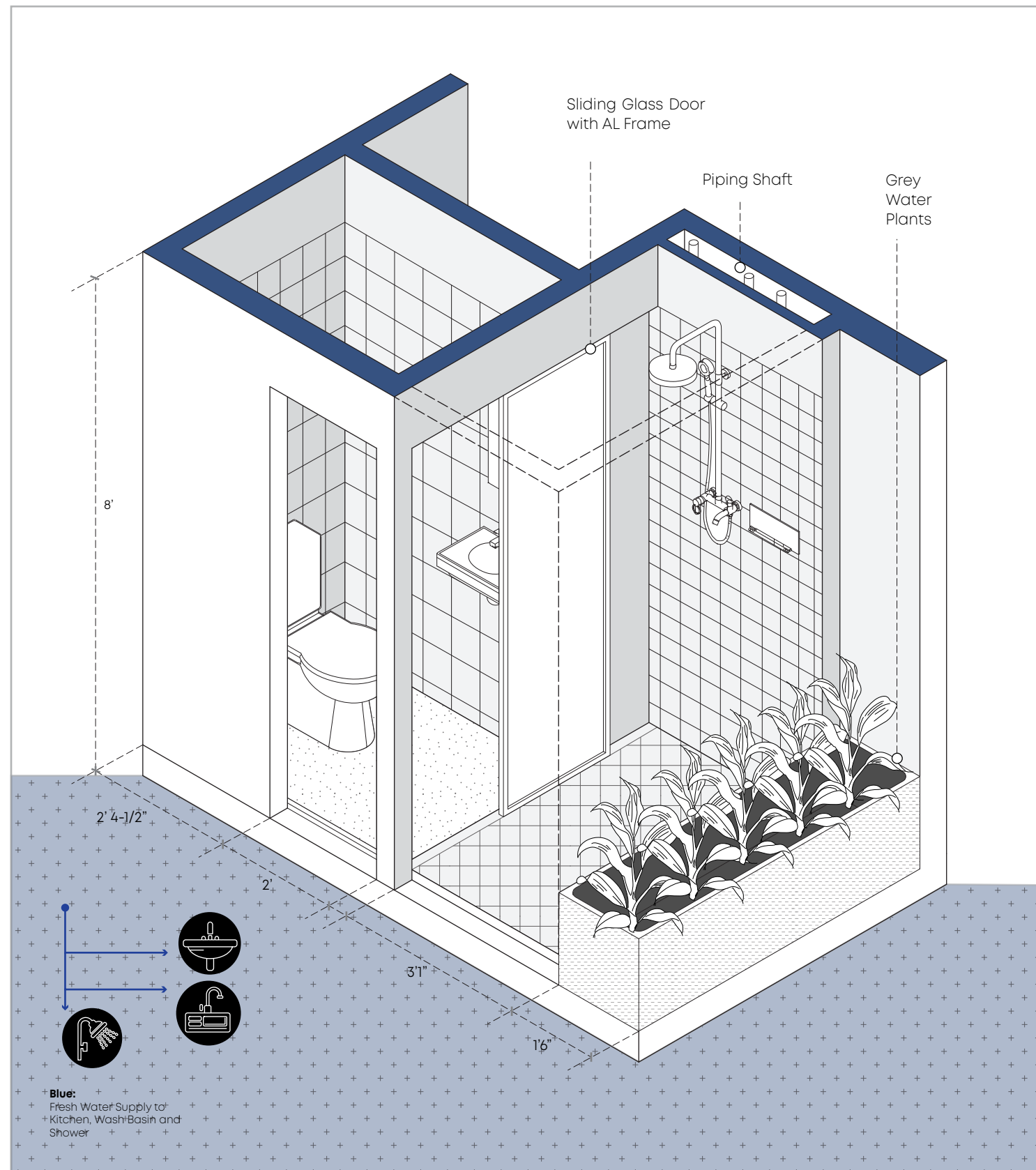
NYC Water Supply System and Change in Land use

The water usage will change from a 12-to-24 hour usage with units converting into residential.



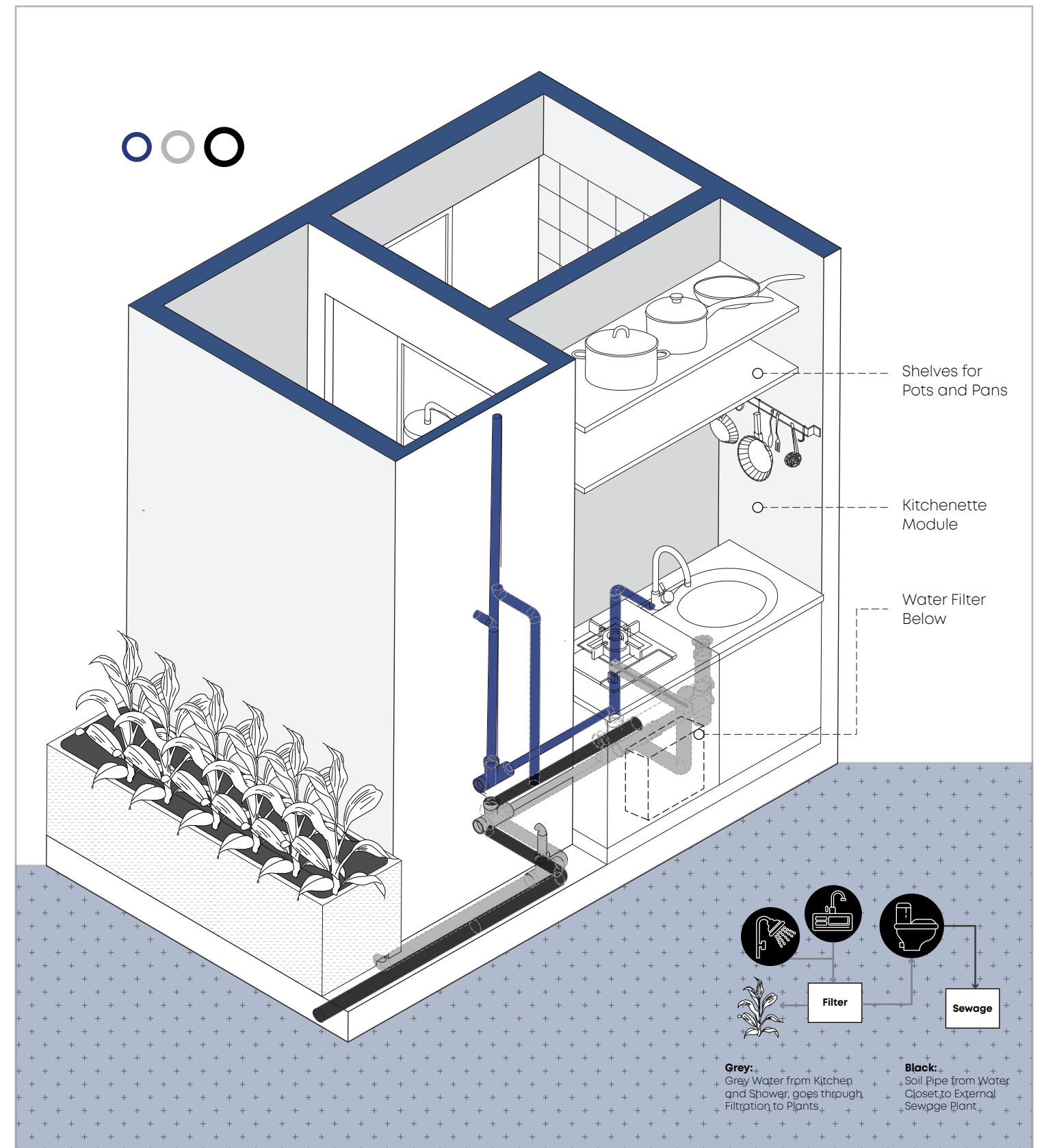
26 Broadway: Proposed Changes

Retaining the structural core, columns, and floor height, and facade due to building codes. The new proposed conversion to housing.



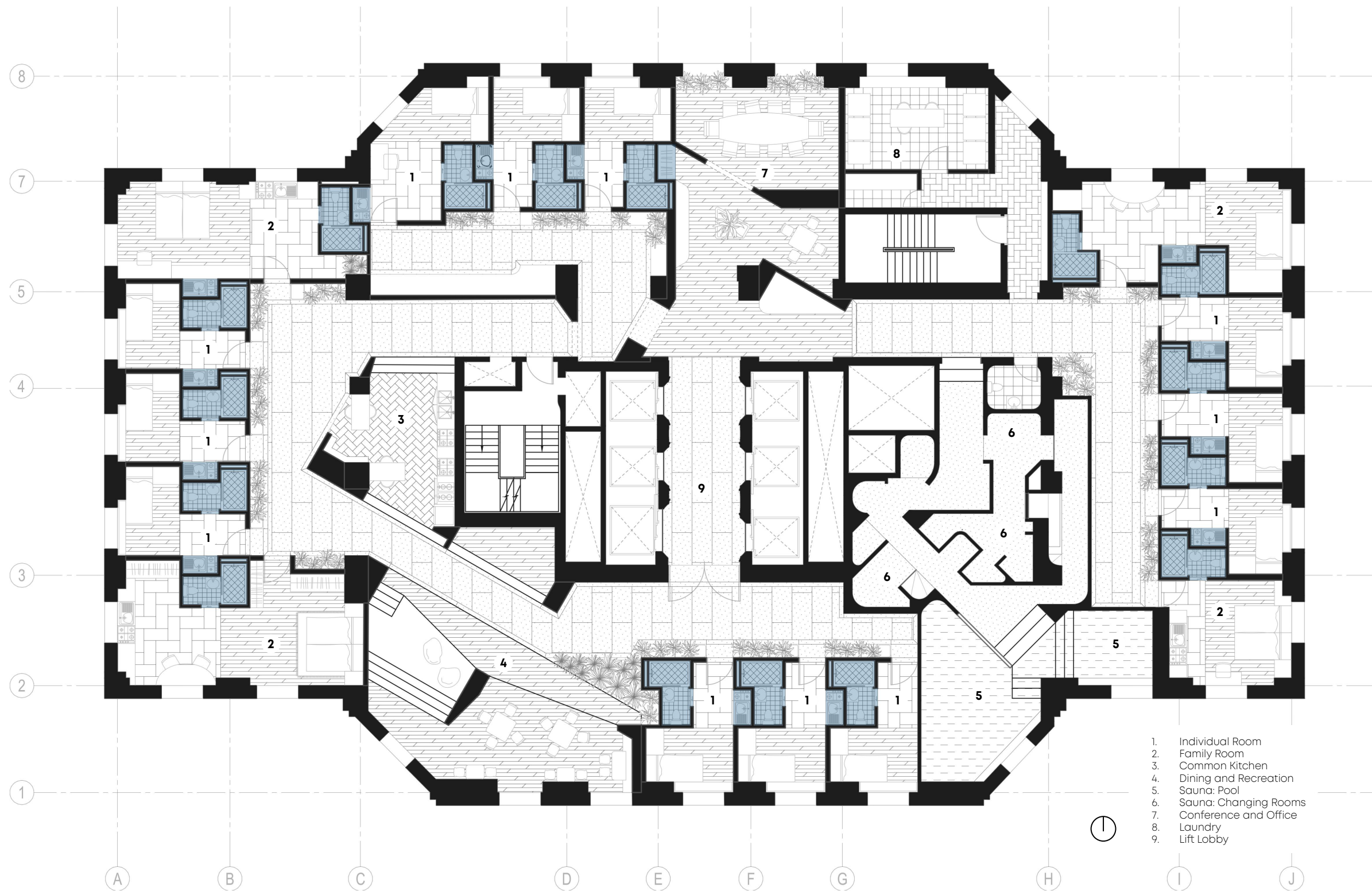
Module: Fresh to Grey Water Recycling Unit

It harnesses greywater from hand wash units in kitchens and bathrooms and efficiently re-purposes this water for flushing toilets. A compact filtration system is integrated into the module, ensuring the reclaimed water's safety and proper storage.



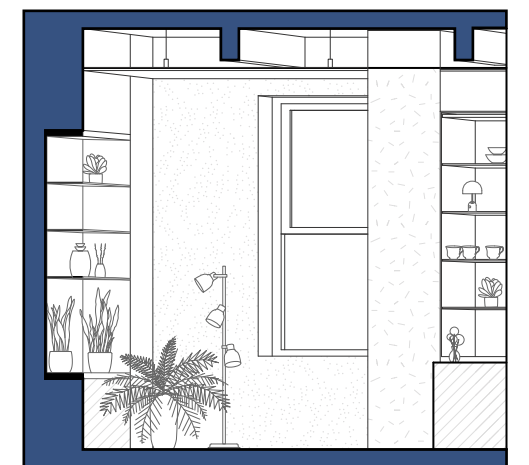
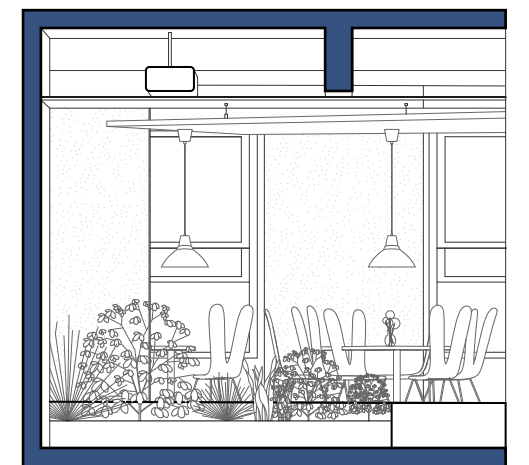
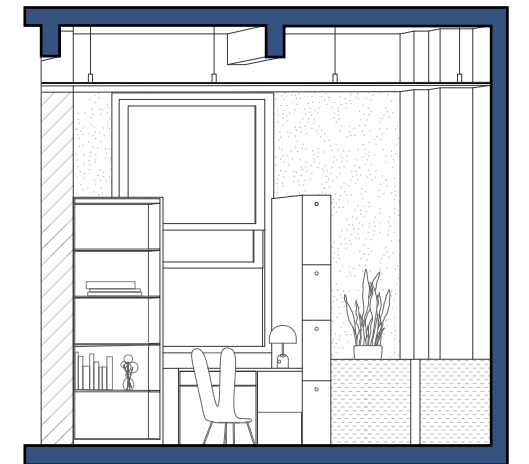
Piping Details

Averaging 1.6 gallons per flush and daily usage of 10-12 gallons per person, the module envisions saving about 300 gallons of fresh water daily on a housing floor-plate.



Incorporation of Module in Floor Plan

The structure of the floor plate is retained, and each room has their private toilet module, and kitchenette.



Section Perspective

Views of the rooms, the living and dining area in the common kitchen and recreational area, and the office/ working space open to the residents.

02 / NEW PARLIAMENT BUILDING OF INDIA

TATA Projects Limited

Detailed Construction Drawings. On-Site Implementation

Project Type	TATA Projects - Professional Work
Team	Harjinder Singh, Nikhil Ram, Anshul Kumar
Location	Sansad Marg, New Delhi, India
Impact	Technical Coordination, Quality Control, Implementation
Role	Coordination, Construction, Drawings Development

Introduction: The New Parliament Building of India is part of the **Central Vista Redevelopment Project** in New Delhi: a project to unify the administrative district for India's governance, ensuring efficiency and coordination.

Inaugurated in 2023, The New Parliament Building, was built to increase the capacity of the existing parliament, of the Lok Sabha, Rajya Sabha and hold joint sessions.

The on-site construction work involved coordination of drawing intent from the architect (HCP consultants) as per the GFC floor plans, detailed drawings, and implementation on site.

My role included the **development of shop drawings** for construction on site, developing prototypes of stonework, woodwork, furniture and finishes with sub-contractors and **coordination** between various **teams and stakeholders:** MEP, Finishes and Civil Works.

Detailed below are the stonework, woodwork and false ceiling drawings developed in coordination with sub contractors, for the Minister's lobby of the Rajya and Lok Sabha Chambers.

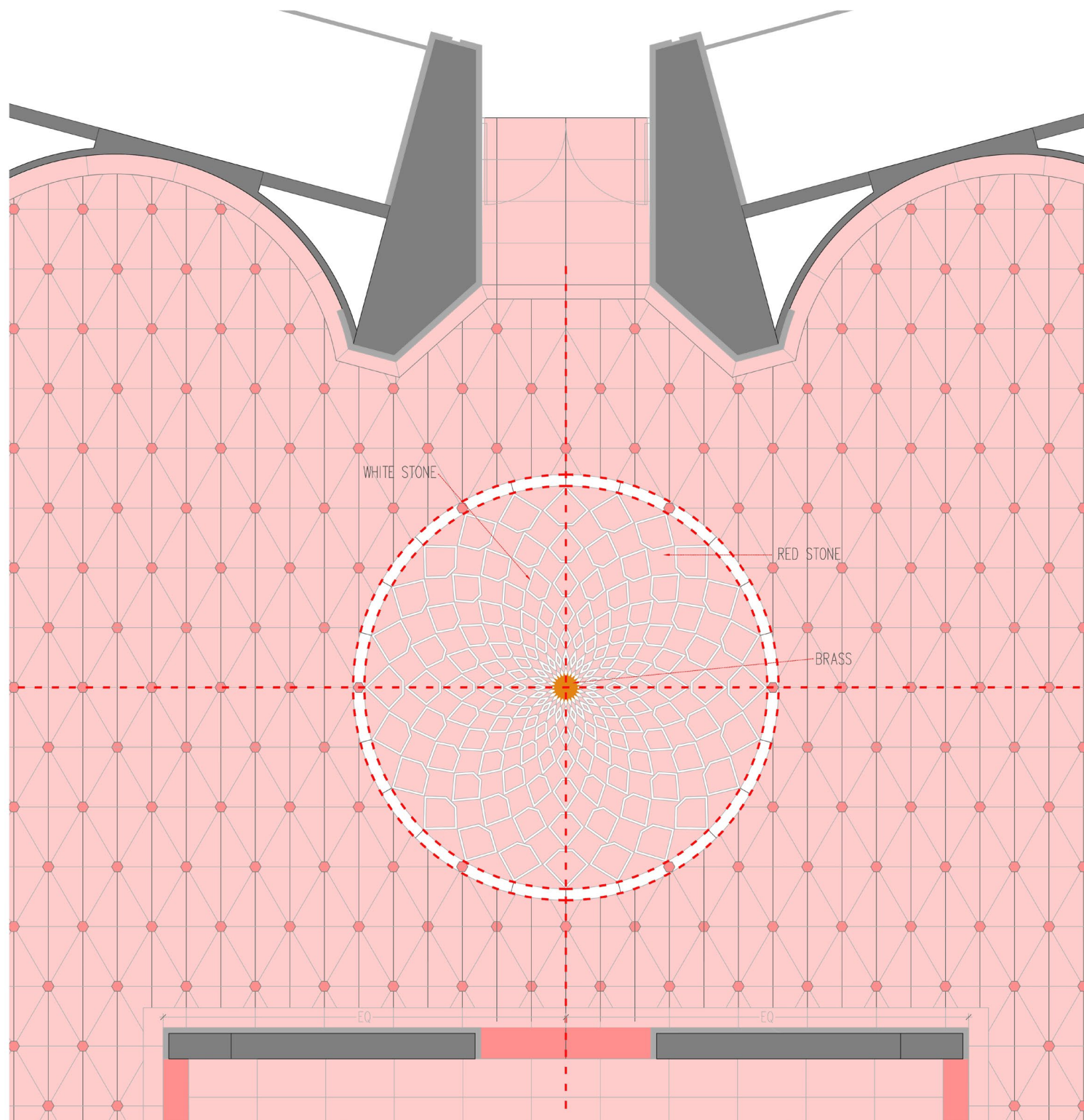


Detail B
False Ceiling Drawing

Detail C
Wooden Wainscoting

Detail A
Stonework Drawing

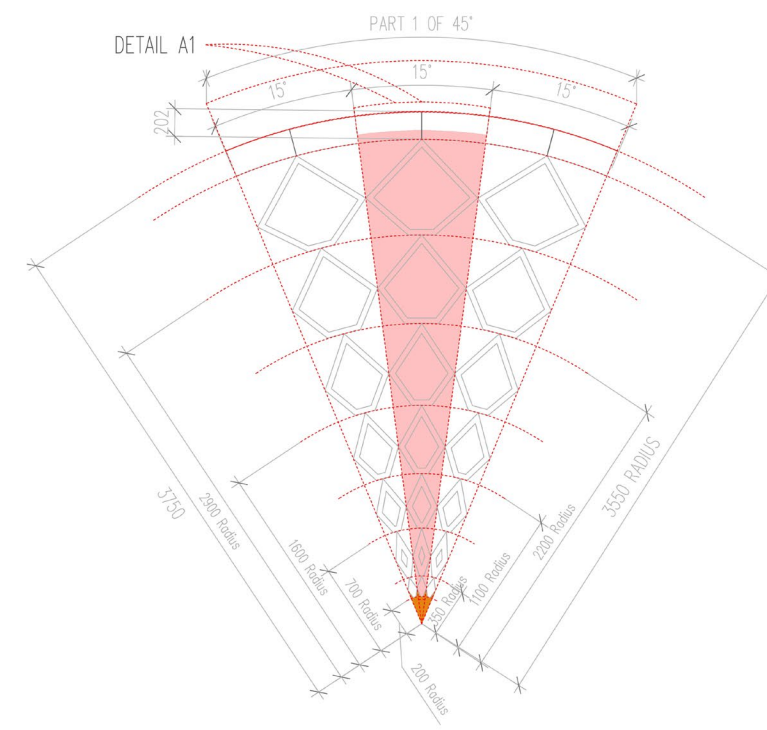
© Image Credit: HCP Architects
Note: Design Intent (HCP Consultants)
This is not the GFC render as the information is classified. These drawings are the intellectual property rights of CPWD, HCP Design Consultants and TATA Projects Limited and may not be reproduced without consent.



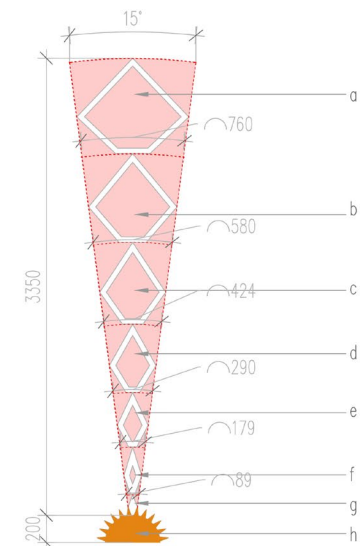
Detail A

Stonework Drawing / Architect's Intent

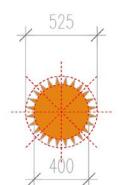
Role: Reworking stone sizes due to on-site construction difference



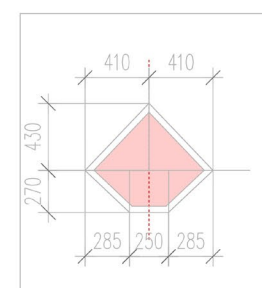
DETAIL A TYPICAL



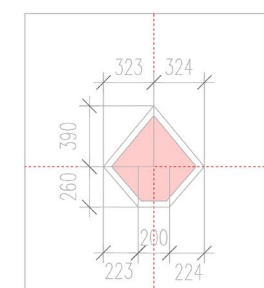
DETAIL A1 TYPICAL



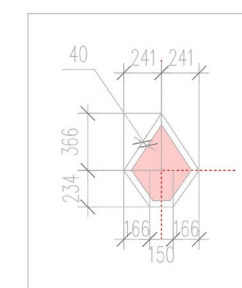
DETAIL A1 (h)



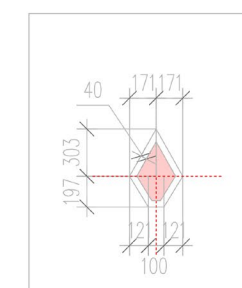
a



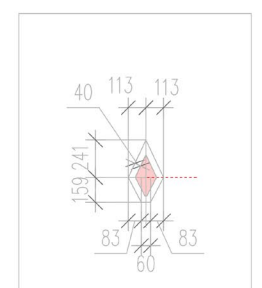
b



c



d

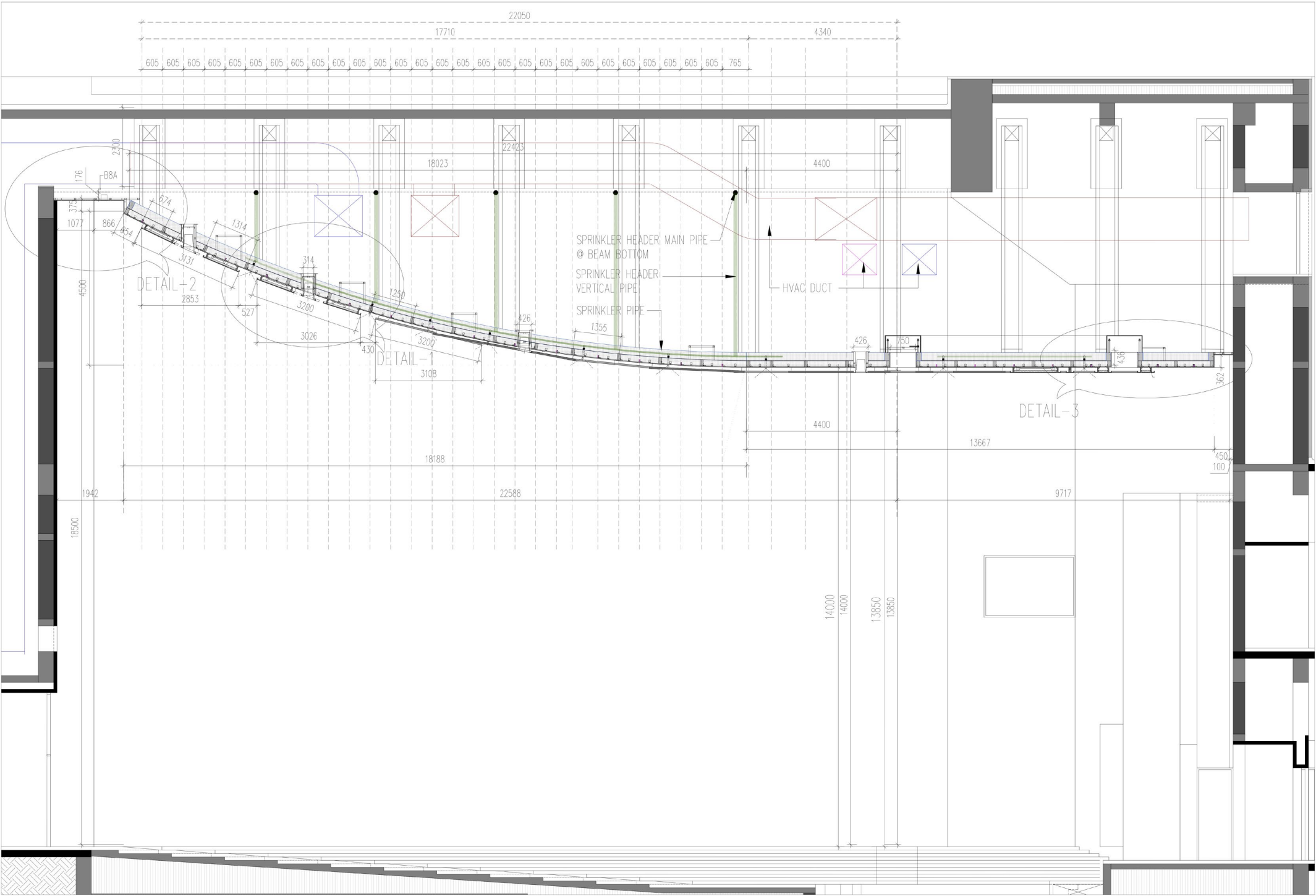


e

REVISION IN STONE SIZES

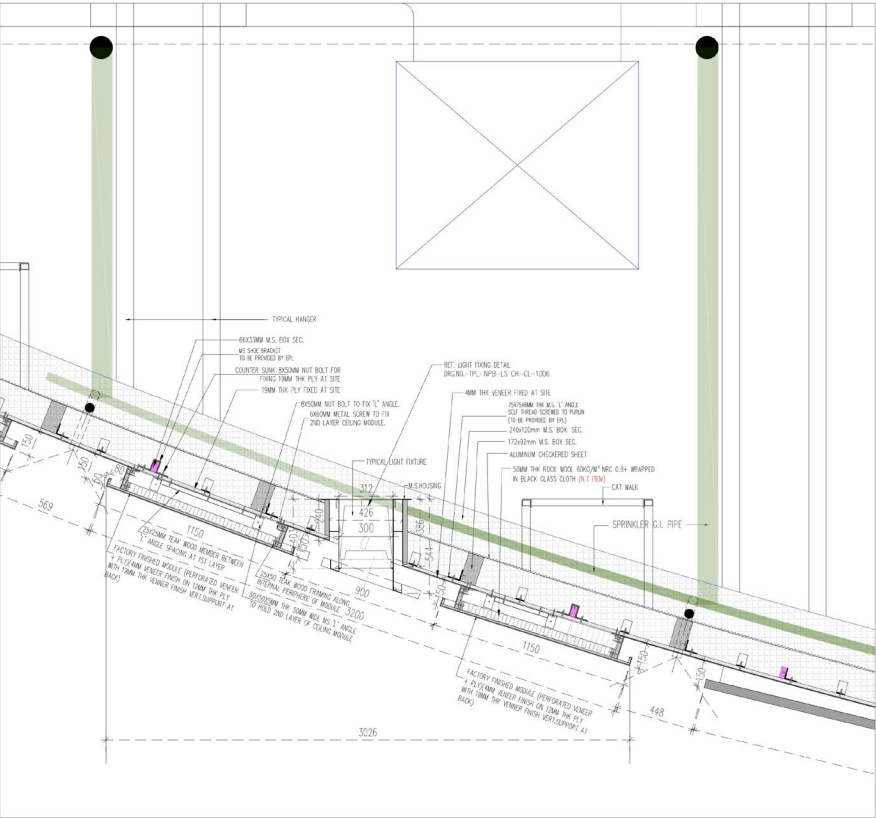


Note: This is not the GFC Drawing as the information is classified. These drawings are the intellectual property rights of CPWD, HCP Design Consultants and TATA Projects Limited and may not be reproduced without consent.

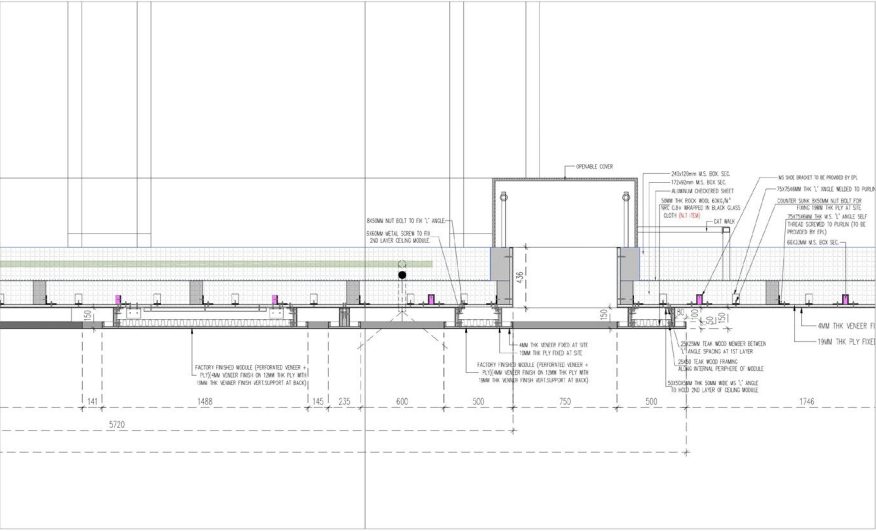


Chamber Lobby Section
1:30

Detail B
False Ceiling Drawing / Architect's Intent
Role: Reworking false ceiling drawing in coordination with MEP, Civil and Finishes consultants



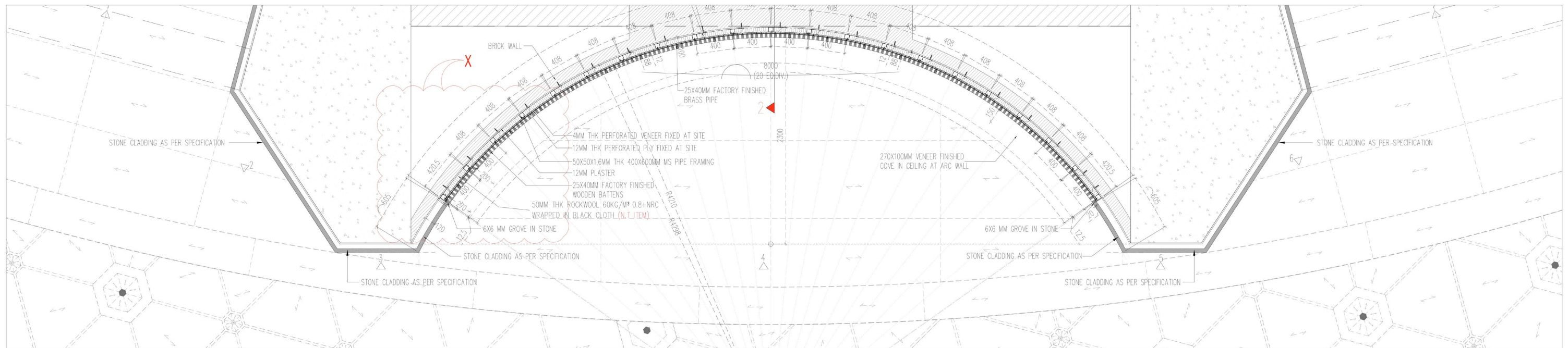
Detail 1: Light Fixing
1:16



Detail 3: Openable Cover
1:16

Note: This is not the GFC Drawing as the information is classified. These drawings are the intellectual property rights of CPWD, HCP Design Consultants and TATA Projects Limited and may not be reproduced without consent.

Arc Wall Elevation
1:30



Arc Wall Plan
1:30

Detail C

Wooden Wainscoting / Architect's Intent

Role: Reworking assembly details of wooden wainscot in coordination with stone thickness and sizes.

(C) *Note: This is not the GFC Drawing as the information is classified. These drawings are the intellectual property rights of CPWD, HCP Design Consultants and TATA Projects Limited and may not be reproduced without consent.*

03 / NATURAL MATERIALS PRACTICE

Made In Earth Collective

Natural Plasters and Earthwork: Research and Practice

Project Type	Professional Work
Leads	Shruti Ramakrishna, Ajinkiya Unhale, Akshar Bafna
Location	Bangalore, India
Impact	Ecological Design Research, Material Prototyping
Role	Construction Drawings, Furniture Detailing, Plaster Testing

Introduction: Made In Earth is a collective of architects, engineers, and artisans dedicated to sustainable architecture. They specialize in building with natural materials like clay, lime, rice husk, and straw, integrating traditional techniques such as rammed earth, adobe, and wattle and daub.

Samvada Baduku College Campus

Location: Kengeri, Bangalore
Client: Samvada Baduku
Date : 2023
Floor area : 1850 m2

Materials & Techniques : Rammed Earth, Stabilised adobe blocks, Natural Lime Plasters, Pigmented concrete, Polished Oxide Flooring (IPS), Filler slab

Contractor/execution : Suryanaraya reddy

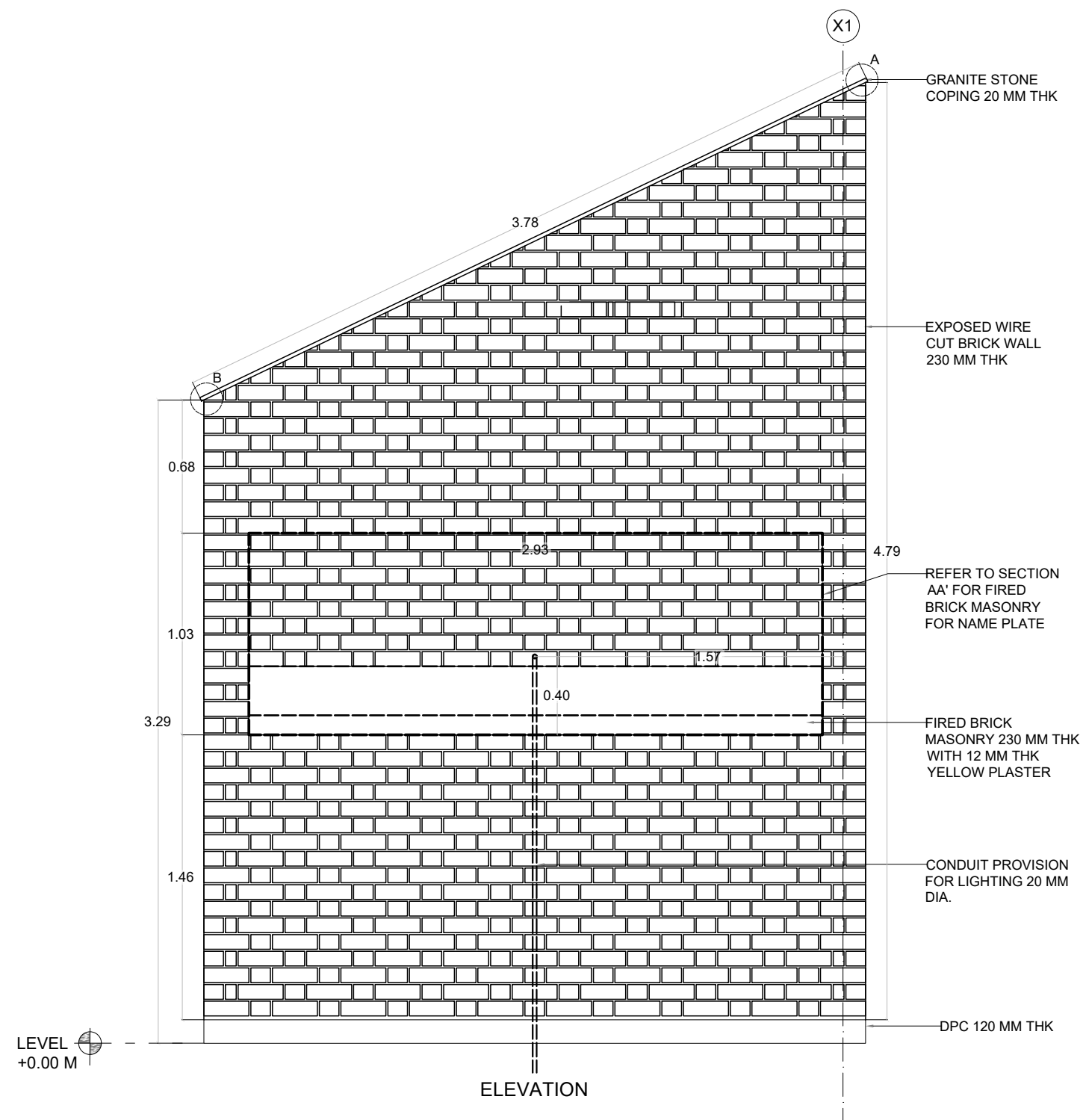
Natural Finishes : Made in Earth Collective & Earthly Yours



Detail A, B
Exposed Brick Wall Pattern
Exposed Brick Wall Elevation

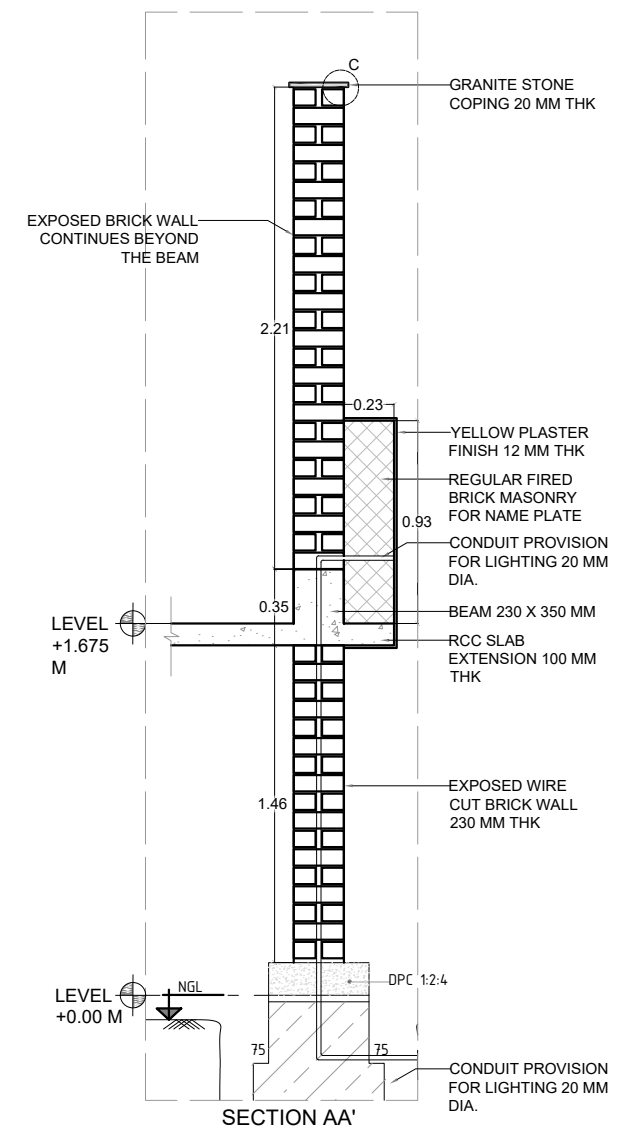
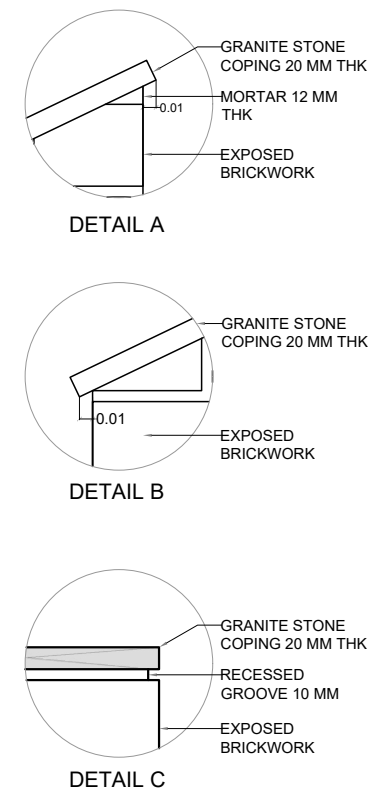
Detail C
BI Arch Elevation

Detail D
Staircase 5: RCC Shuttering



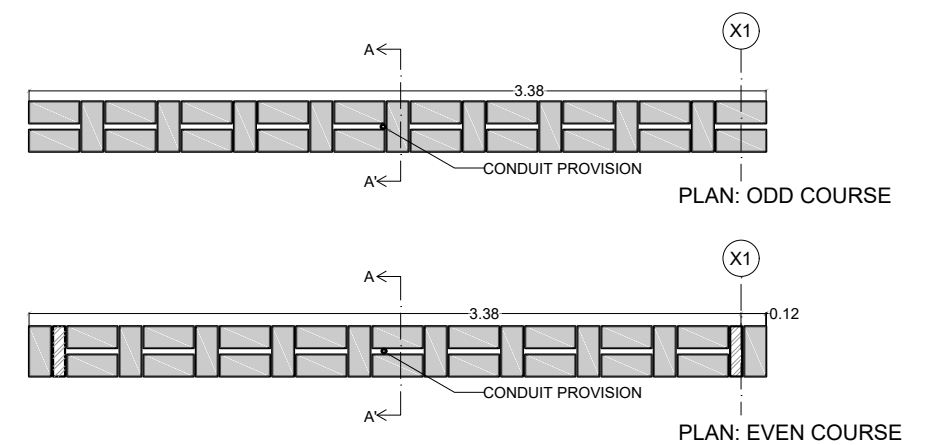
Detail A, B

Exposed Brick Wall Pattern Elevation
Exposed Brick Wall Pattern Section
(Issued to site)

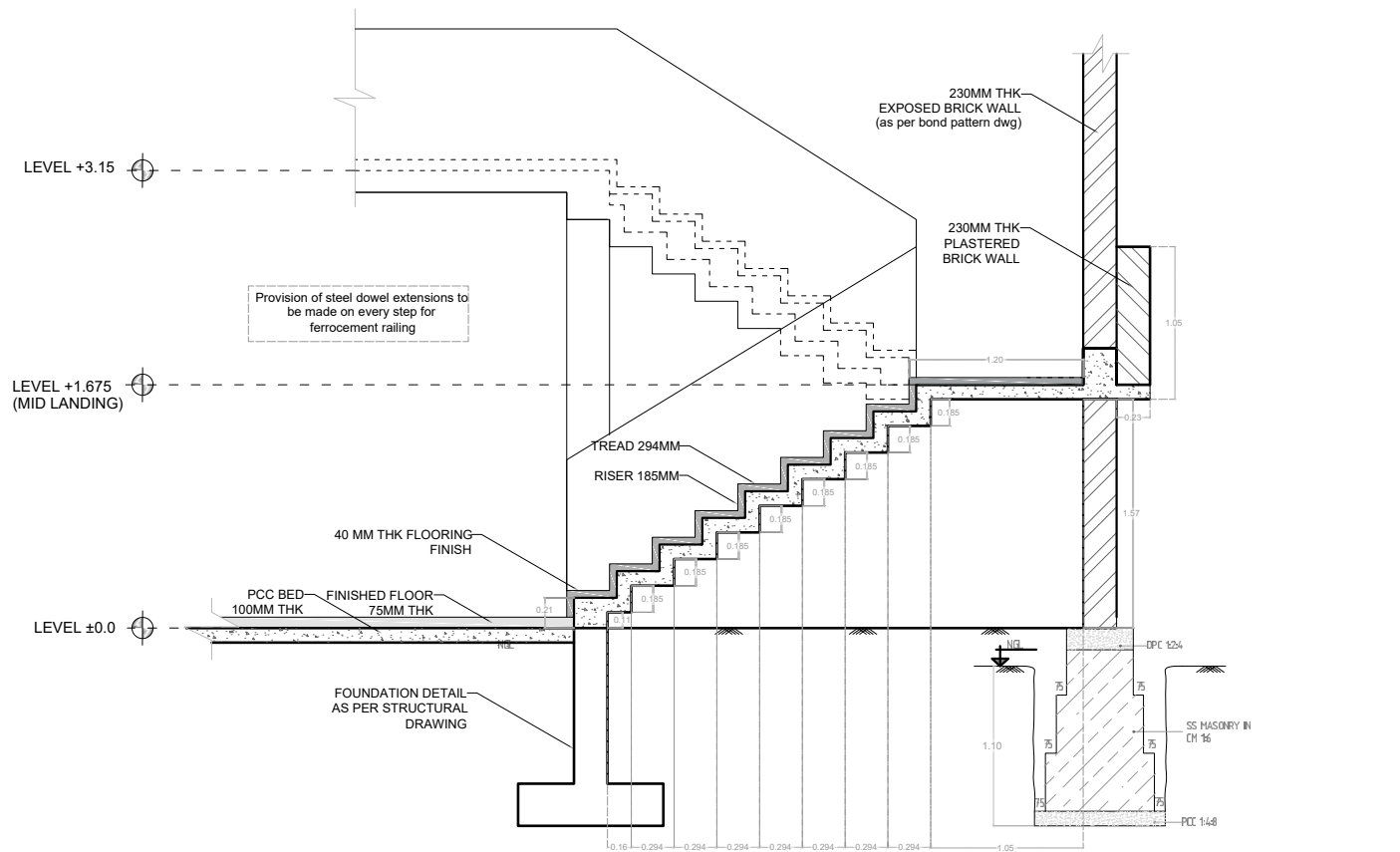


LEGEND

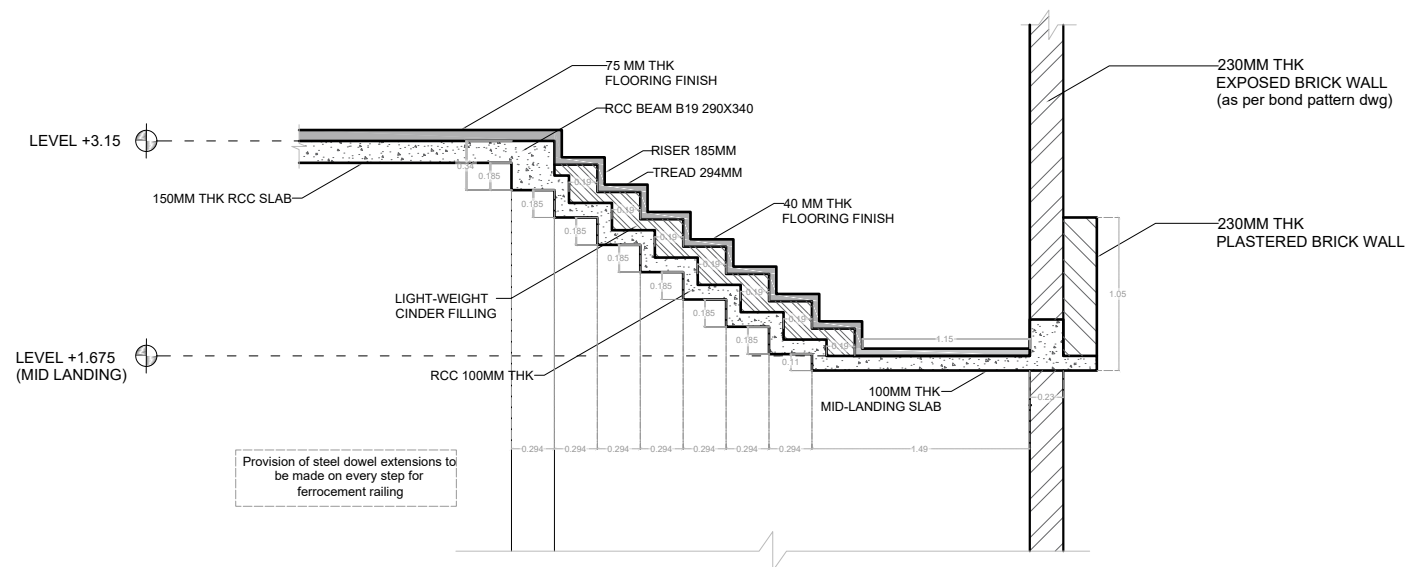
- FULL BRICK
- CUT BRICK (230 x 55 x 75 mm)
- FIRED BRICK WALL - PLASTERED



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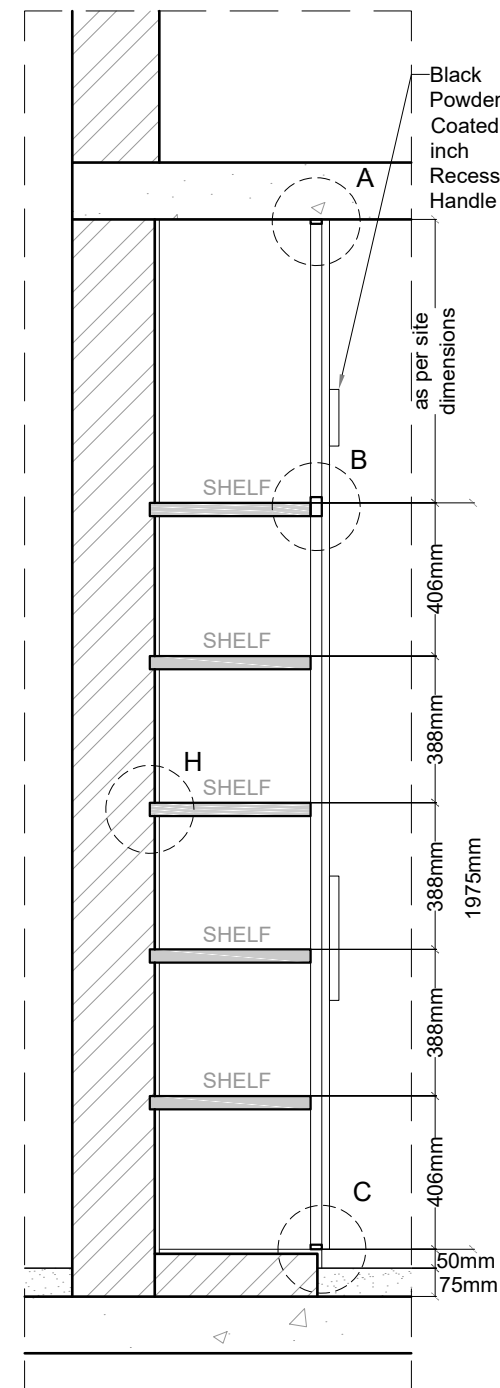
SECTION AA'



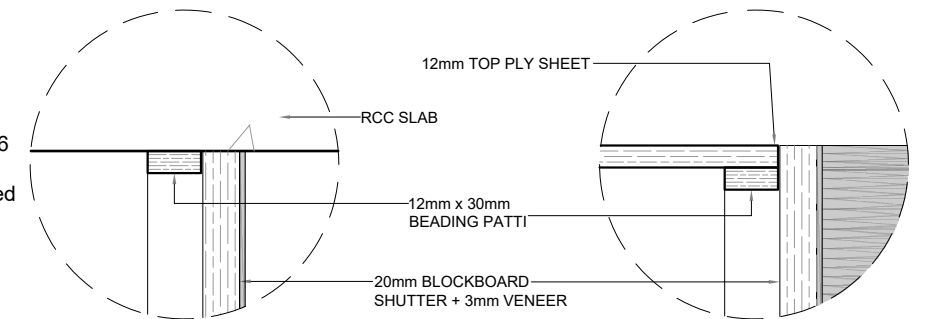
SECTION BB'

Detail C, D

Staircase 5: RCC Shuttering Drawing
Inbuilt Furniture Drawing
(Issued to site)

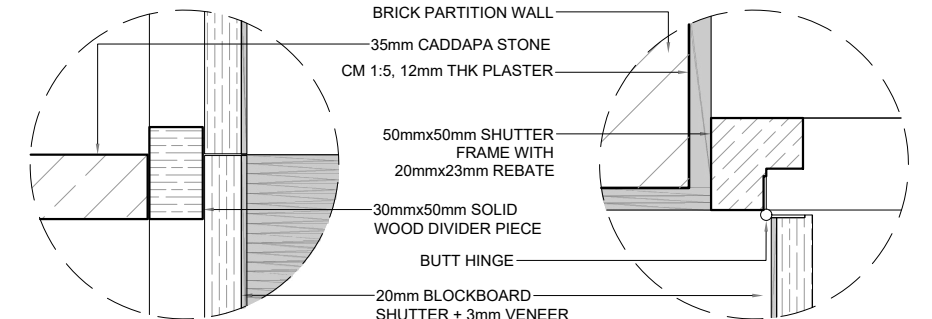


TYPICAL FLOOR TO CEILING STORAGE



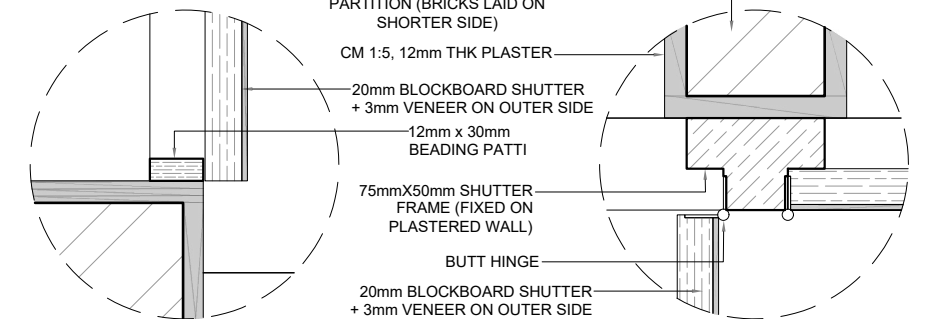
DETAIL A

DETAIL E



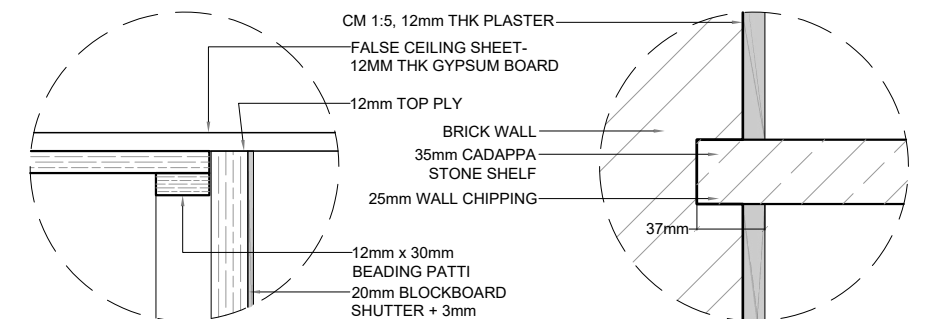
DETAIL B

DETAIL F



DETAIL C

DETAIL G



DETAIL D

DETAIL H



Deshuttering the Rammed Earth Wall

Samvada Baduku: Rammed Earth Construction



Plaster Prototyping

Lime Plaster Prototype for NATURA Experience Center
Tadelkt Plaster for Table Top (Linseed Oil Finish)

04 / NATURAL MATERIAL PRACTICE

Cornell University

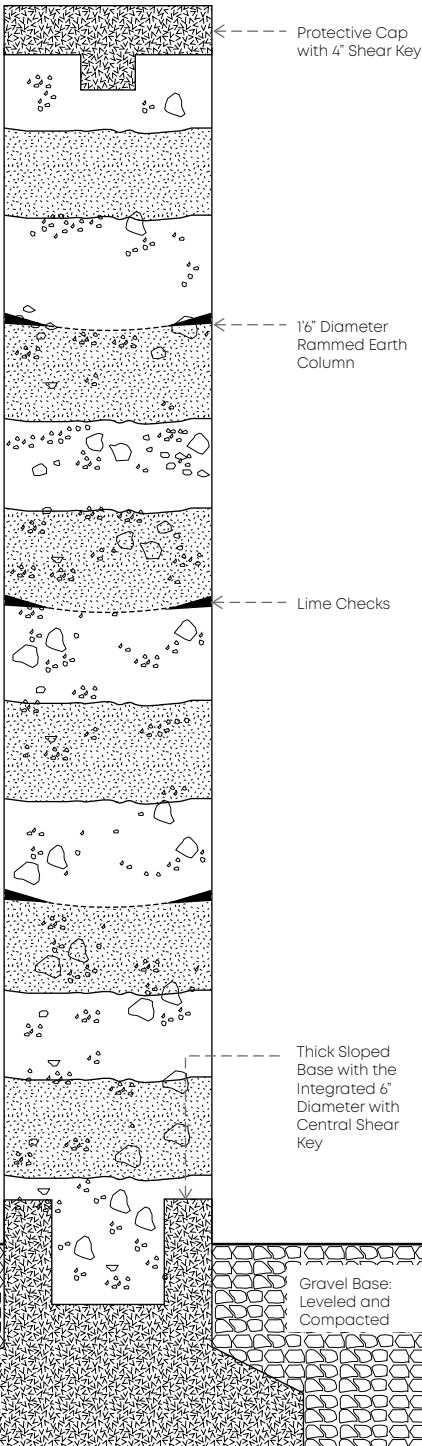
Terra Firma Exhibition

Project Type	Built, On Site
Affiliation	Regenerative Architecture Lab, Cornell University
Team	Maxwell Rodencal*, Julien Helberg, Jesus Mayen
Location	Ithaca, New York
Impact	Prototype Matrix for Rammed Earth and Soil Testing
Role	Column Restoration, Diagrams for Publication

Introduction: Terra Firma: is an installation using the **rammed earth** construction technique to build nine 16” diameter, 8’ tall cylindrical earthen monoliths arranged in a 3x3 matrix.

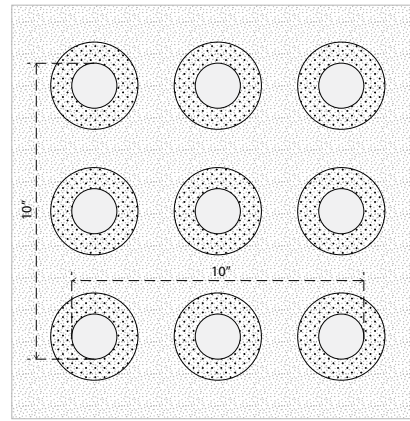
Each cylinder has a slightly different composition of aggregate and lime, depending on its position in the matrix. The installation revisits rammed earth as an **intelligent, ecological building material** and stands as a testament to resilience and a more sustainable, earthen future.

The project was designed, conceptualized, and realized under the leadership of Maxwell Rodencal, in collaboration with students of Cornell AAP in 2023.

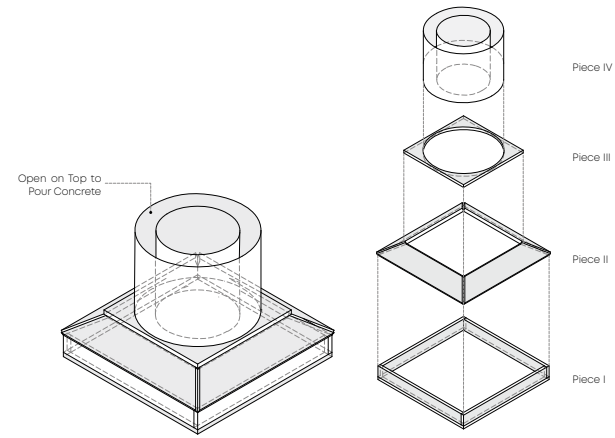


*All images are the intellectual copyright of Regenerative Architecture Lab and (Maxwell Rodencal: Designer) and may not be reproduced or published without consent.

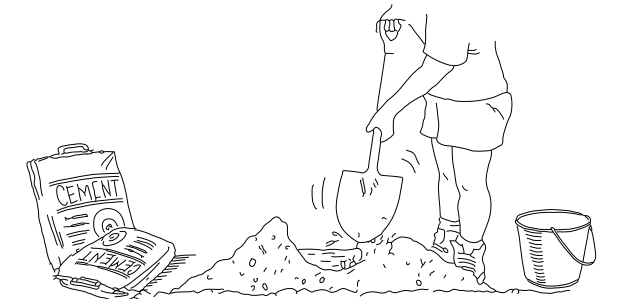




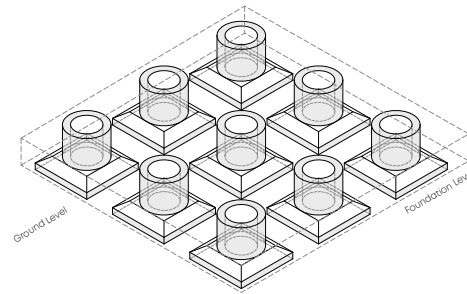
STEP I: Site Setting Out. Marking the Columns



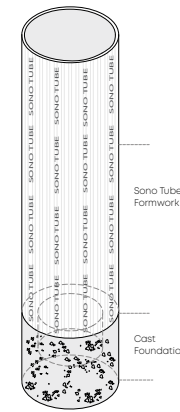
STEP II: Constructing the Formwork for the Foundations



STEP III: Preparing the Cement for Foundation



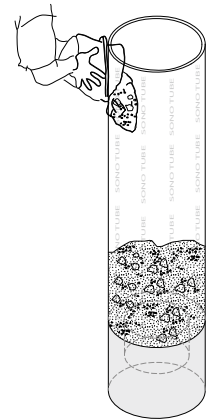
STEP IV: Casting the 9 Foundations



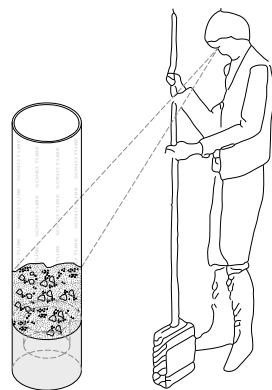
STEP V: Preparing Sono Tube Formwork for Ramming



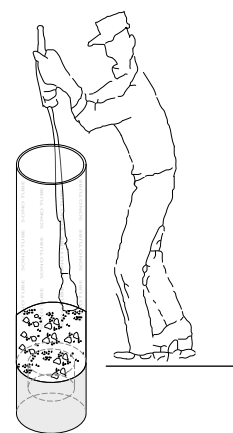
STEP VI: Preparing Soil Mixture



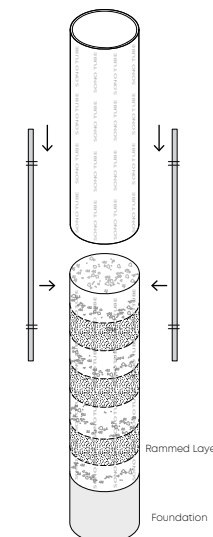
STEP VII: Pouring the Soil Mix (Earth)



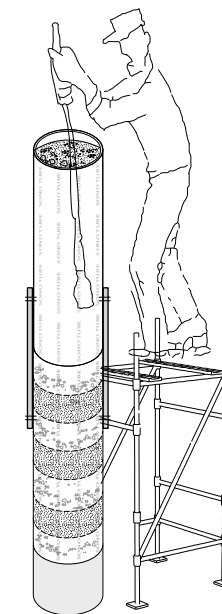
STEP VIII: Leveling and Visually Measuring the Earth



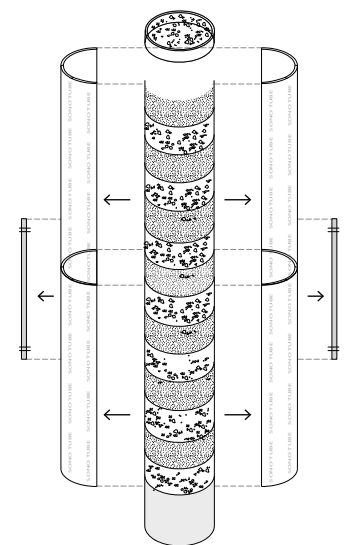
STEP IX: Ramming the Earth



STEP X: Deconstruction of Sono Tube for Part I Ramming and Convert to Part II Ram



STEP XI: Pouring, Leveling and Ramming Part II



STEP XII: Casting of Concrete Cap and De-shuttering

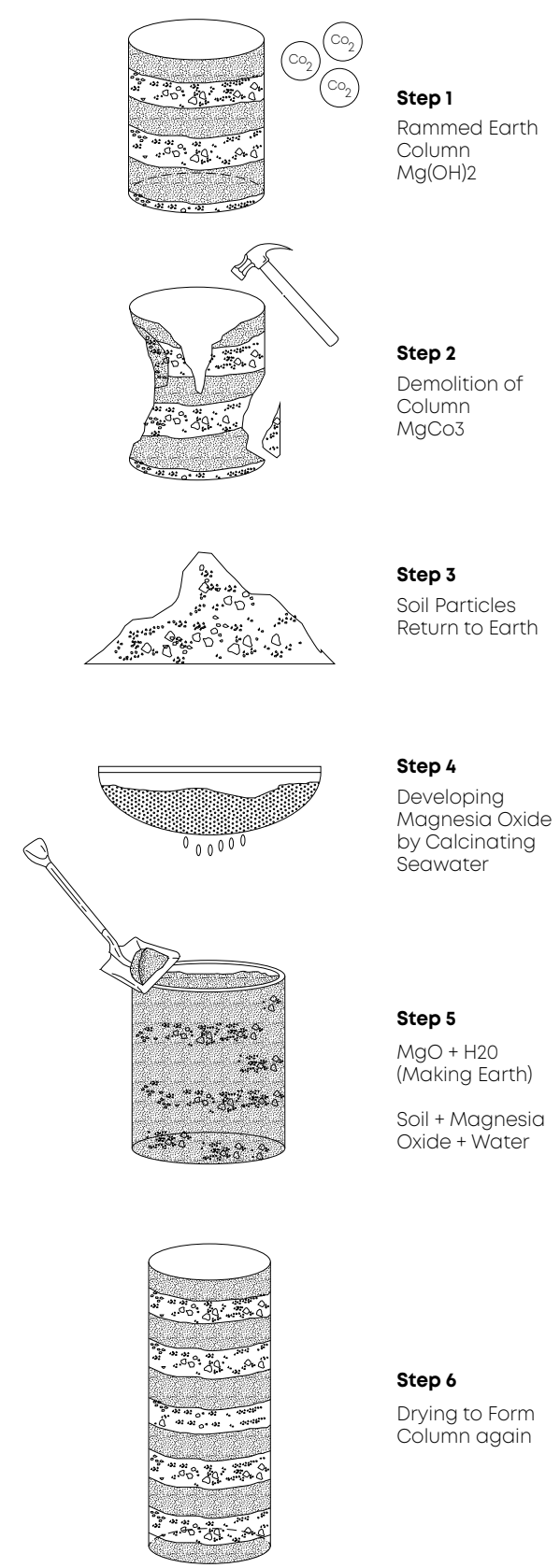
Construction Process of Rammed Earth Columns

Manual ramming process



Repair and Restoration

Weathering of columns due to runoff water
Learning: Always have overhangs in the protective cap



Circularity of Earth

Process of regeneration and continuous circularity of earth

05 / WHERE WILL THEY GO?

Creating Heat Resilient Housing Solutions

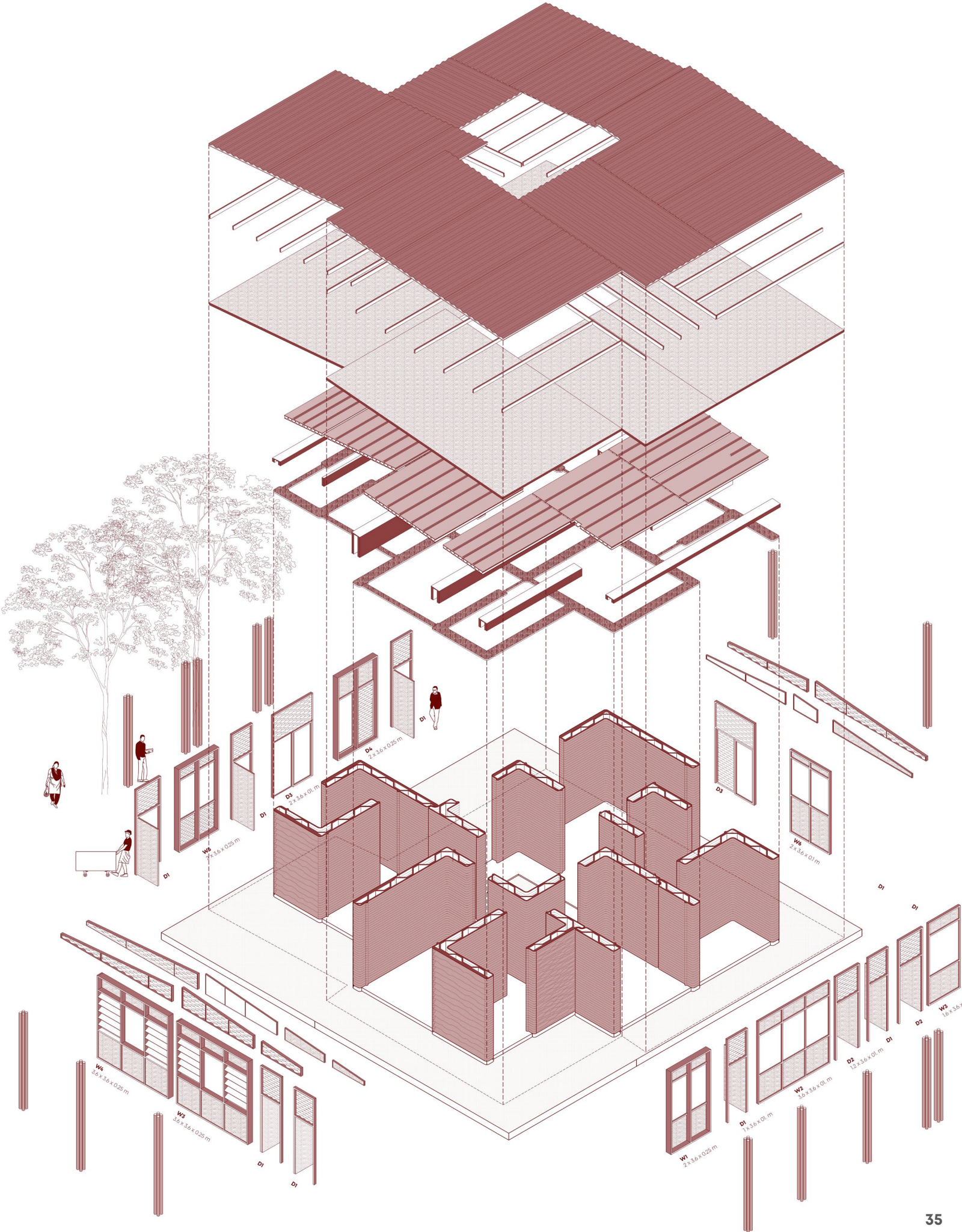
What More Can a Rural Earthen House Do?

Project Type	Academic - 2024
Group	Individual Architectural Design Thesis - ARCH 8907
Location	Bhuj, India
Guides	Andrea Simitch, David Costanza, Marta H. Wisniewska
Impact	Design for Climate Adaptation & Mitigation
Role	Research and Analysis, Theory Development, Design

Introduction: India is expected to experience more than 45 million climate migrants by 2050. Predominantly an agrarian economy, 64% of the country’s population is still dependent on agriculture as the primary source of livelihood. Thus, the worst affected will be the ones least capable of dealing with the infrastructural-economic losses, leading to forced migration into urban agglomerations.

This thesis questions whether a **socio-economic model** enabling **alternative-income** opportunities can be developed via architectural interventions. Contemporizing earth construction via technological integration of **3D printing**, it seeks to design **heat-resilient** structures inspired by traditional Indian vernacular architecture (the Bhunga houses of Kutch) to create new, environmentally and **carbon-conscious** ways of living. Acting as a bridge between the past and the future identity of the material, it seeks to add to the architectural community by mitigating urban-rural identities.

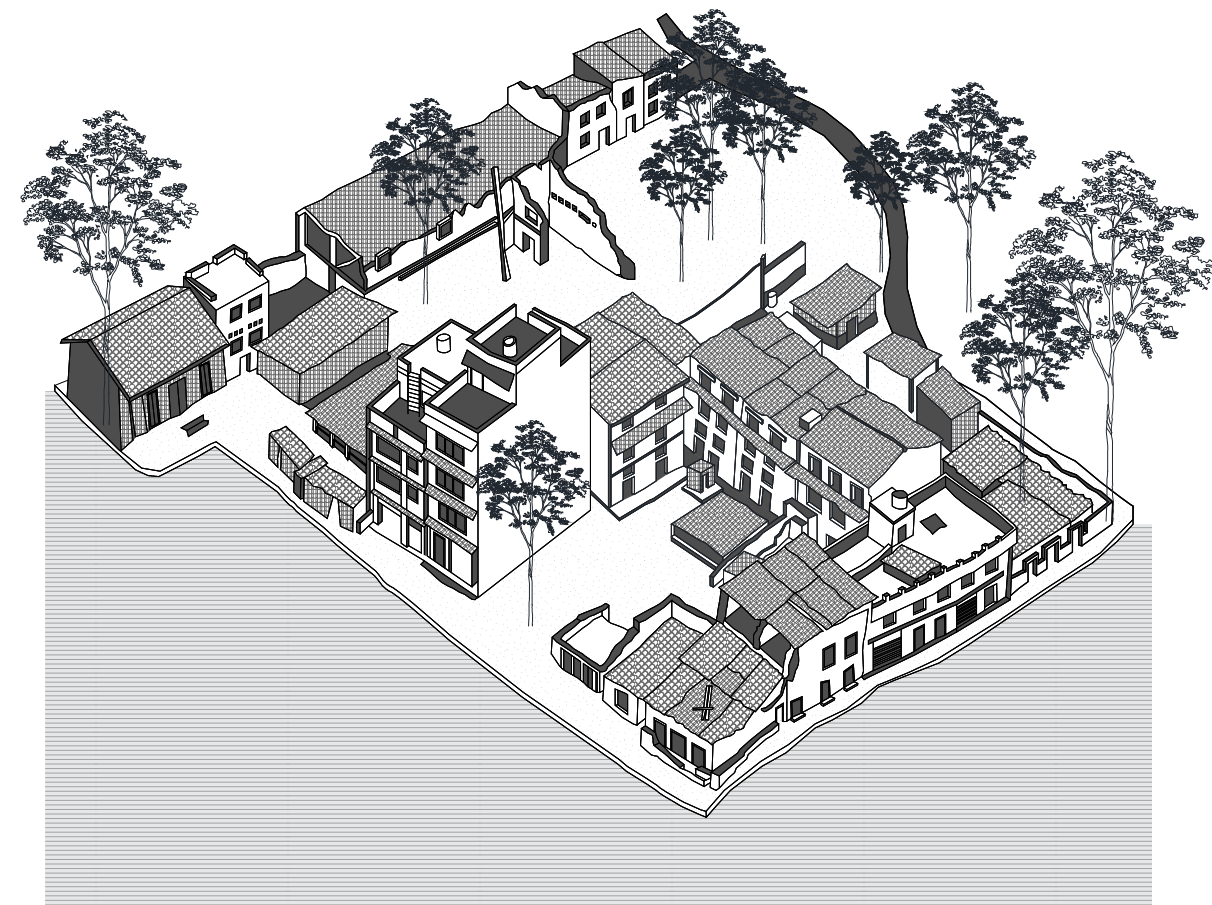
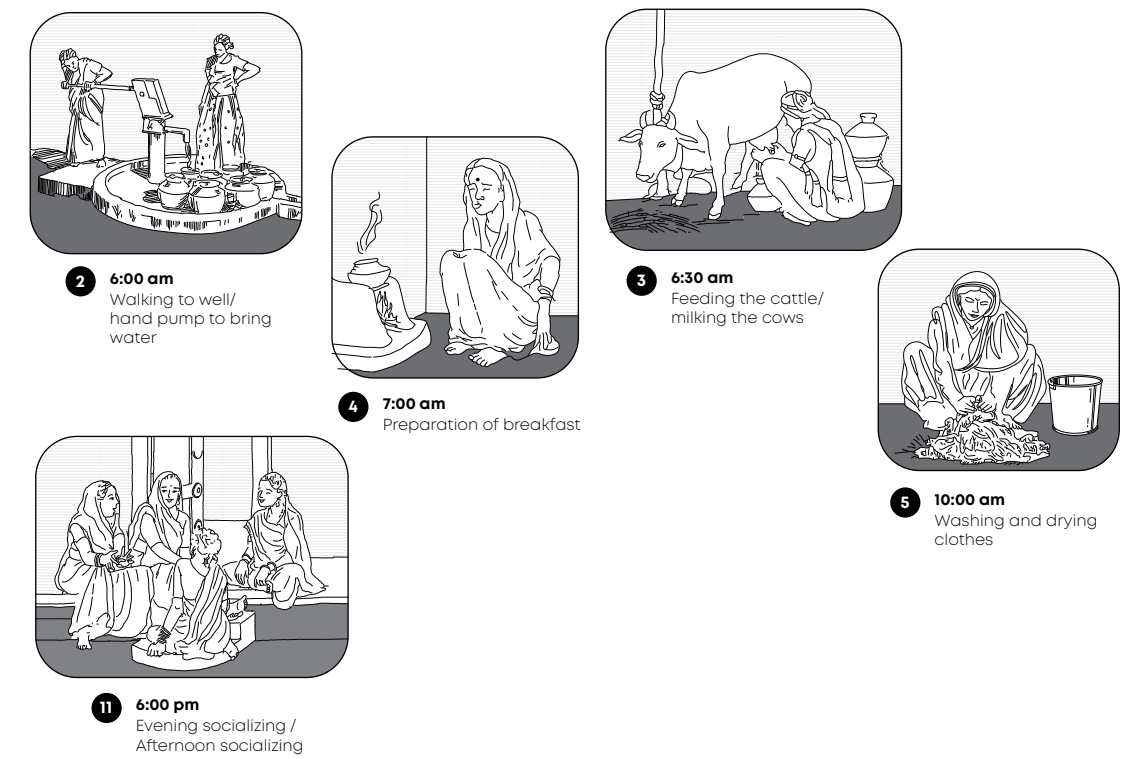
How can we create heat resilient housing utilizing a material approach?





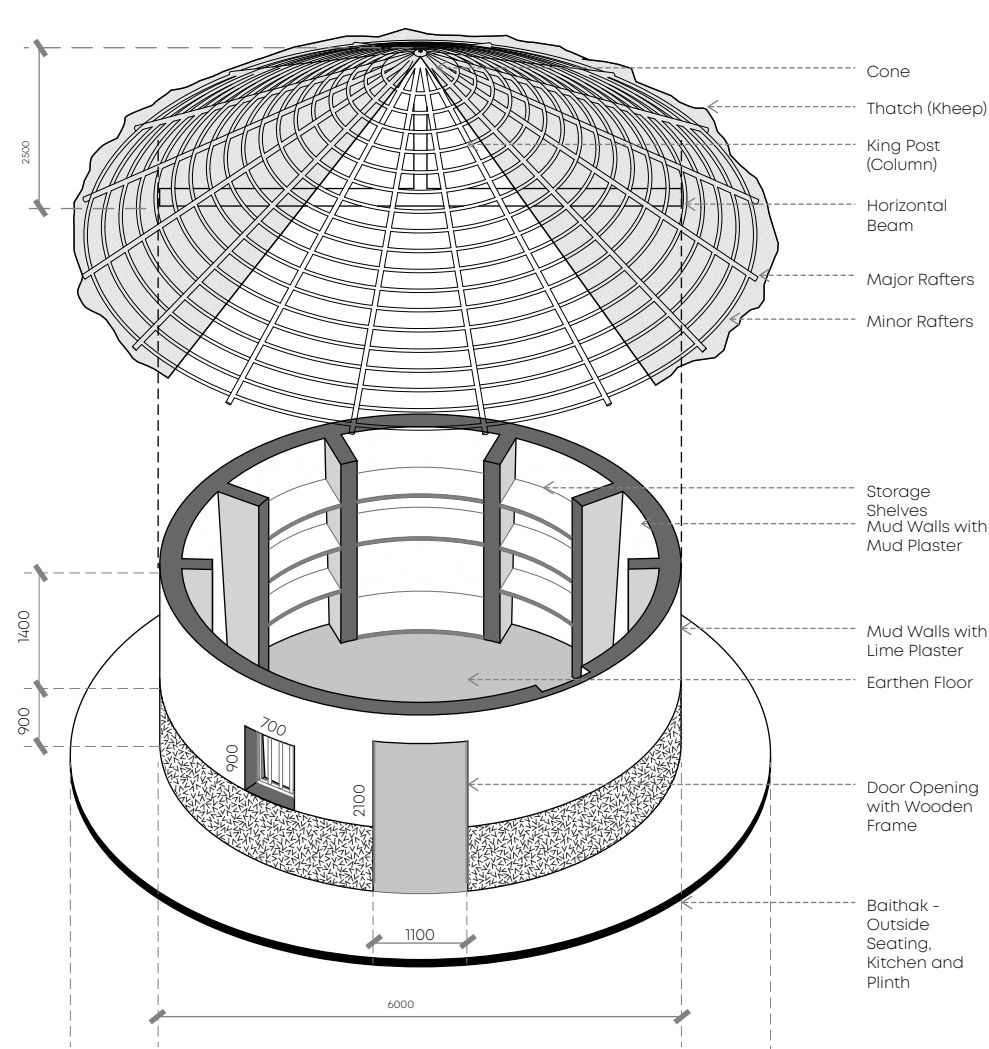
Concept Model for Thesis

Creating a socio-economic model in the village ecosystem to enable alternative employment opportunities, to help reduce indirect climate migration.

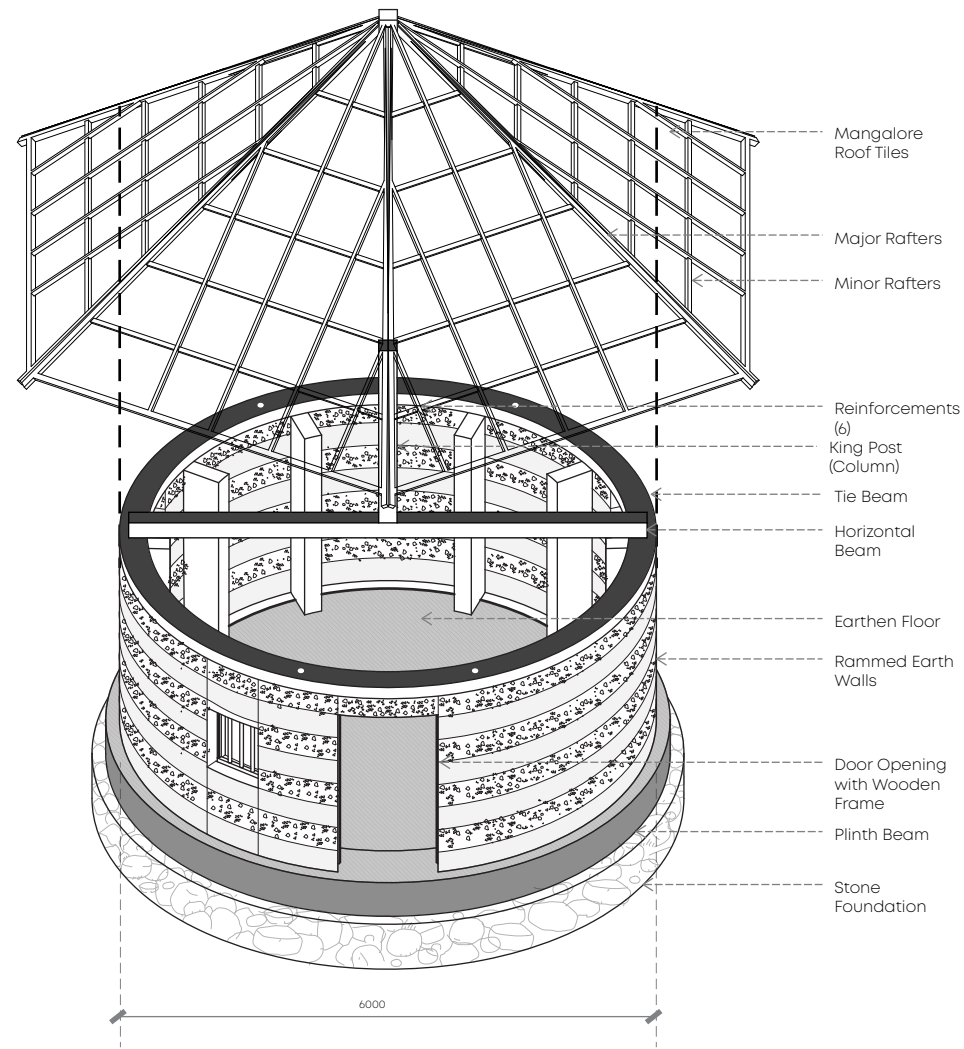


Existing Rural Housing Conditions

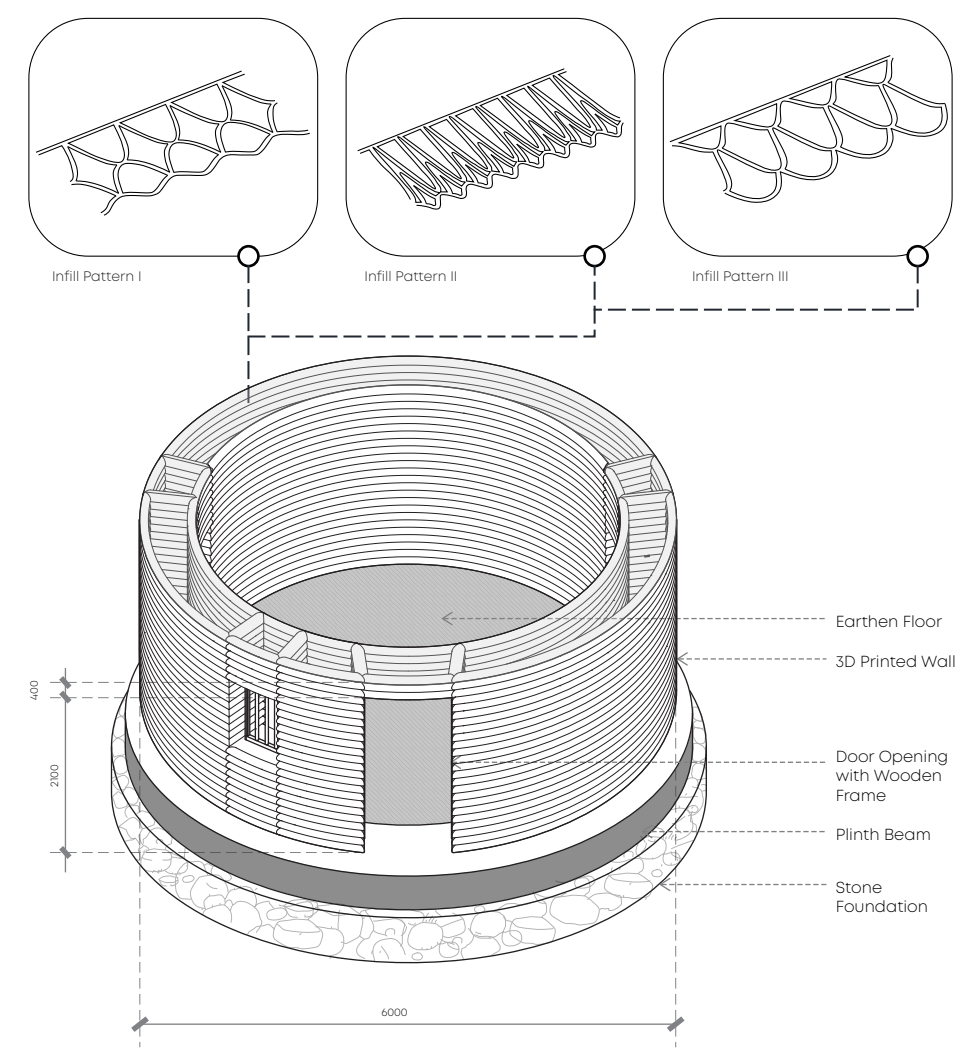
The study showcases that the indoor air temperature for these houses reaches well above 40°C, temperature, making it impossible to live inside during the day, especially while performing chores.



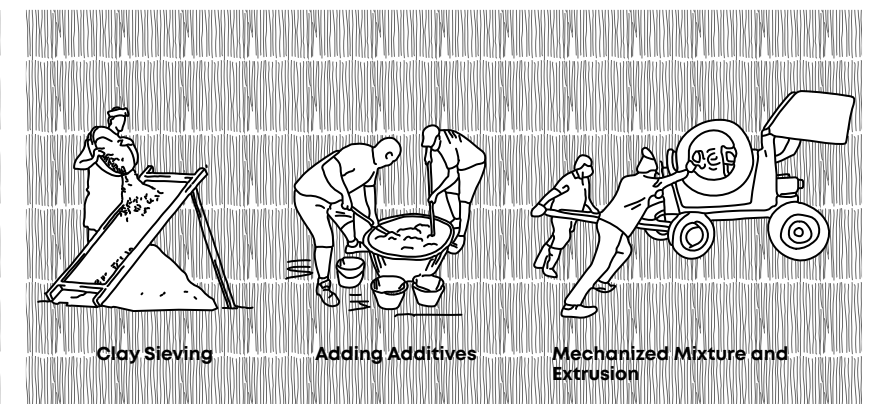
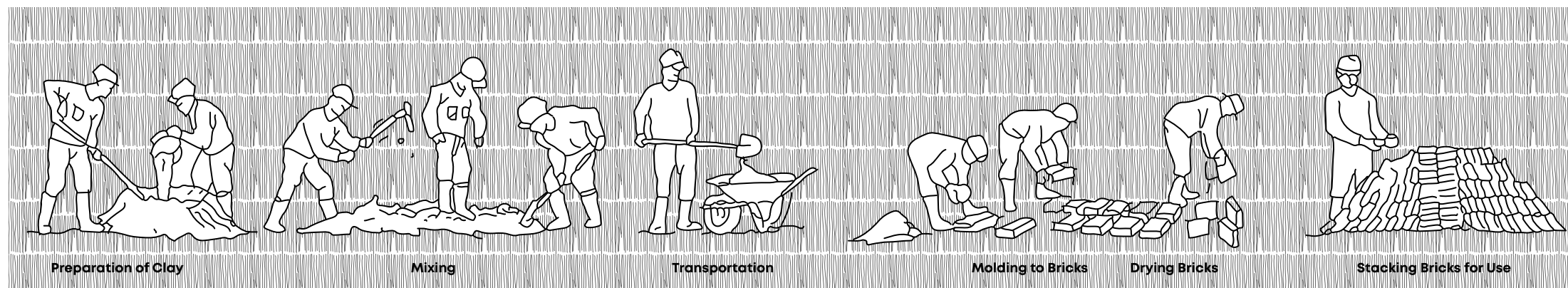
Thatch and Adobe Bhunga



Rammed Earth Bhunga



3D Printed Bhunga

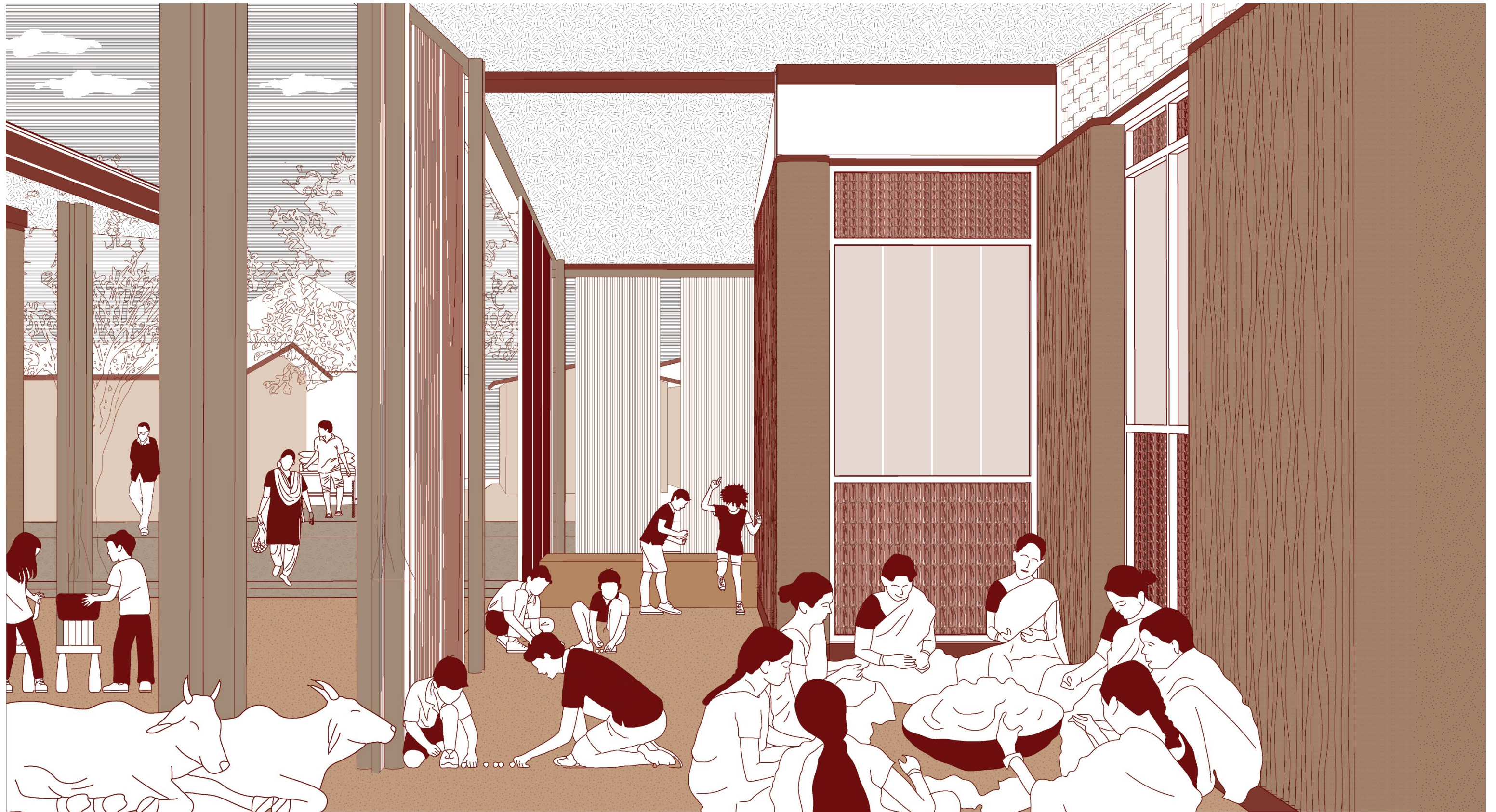


Concept Model: Evolution of Bhunga Typology

Can an integration of technology assist in the image associated with Earth, and help in the re-acceptance of the material?

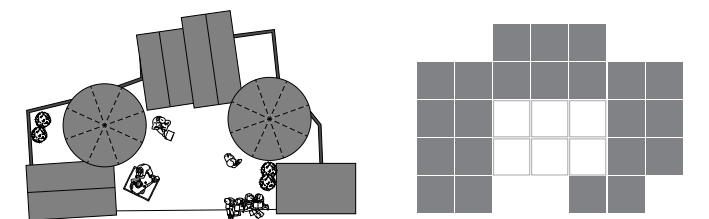
Earth Construction Process

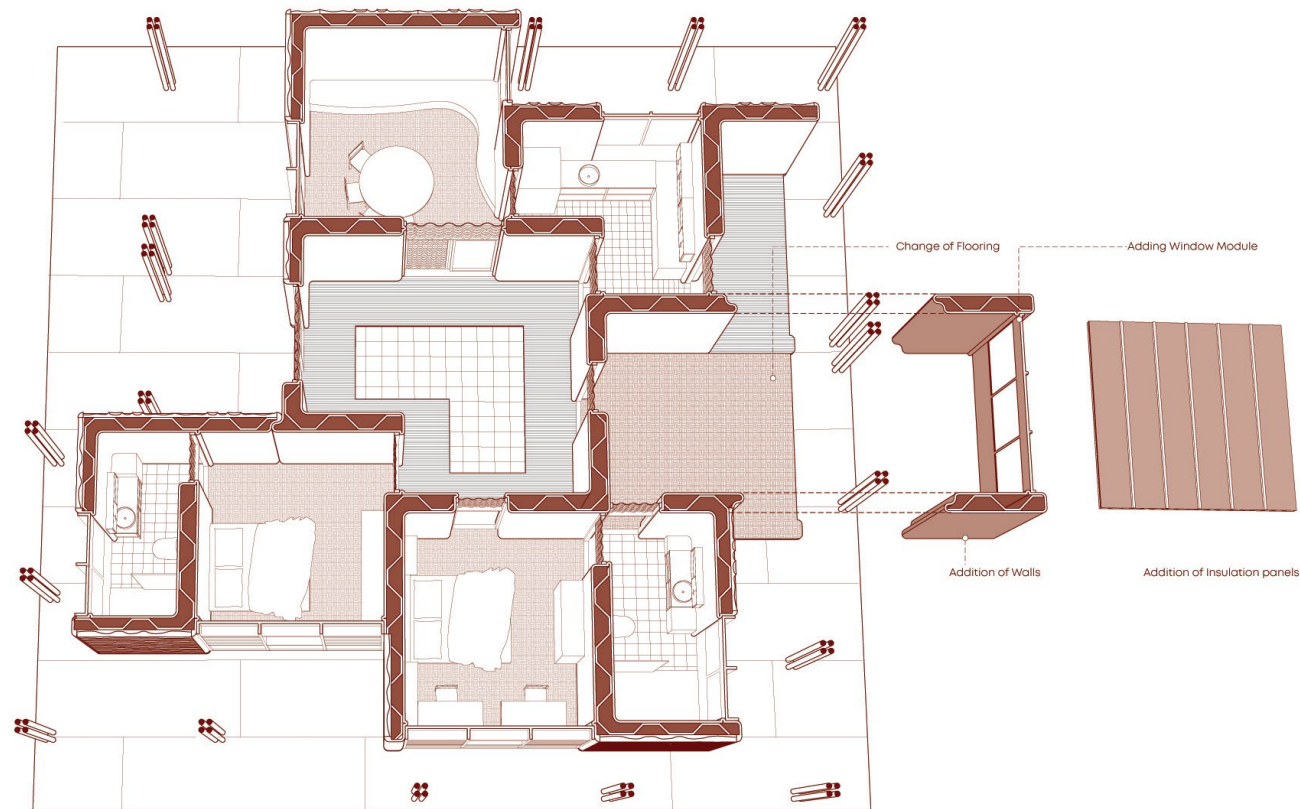
Earth has been extensively used for heat prone zones due to its high thermal capacity, being a natural insulator and keeping indoor temperature regulated.



Focus on the Inbetween Spaces

The centralized courtyard from the original cluster was scaled down, and the functions were positioned around it using a standard module of 2 x 2 m. The focus is on the inbetween space to enable a village ecosystem.





Plan of Module and Views

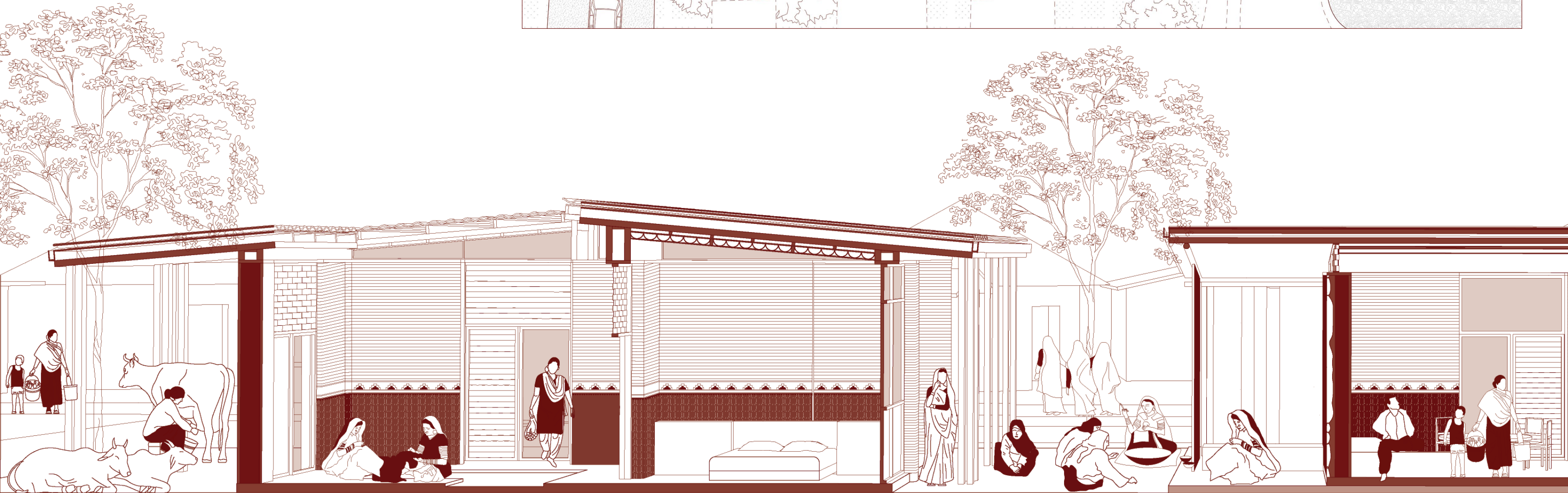
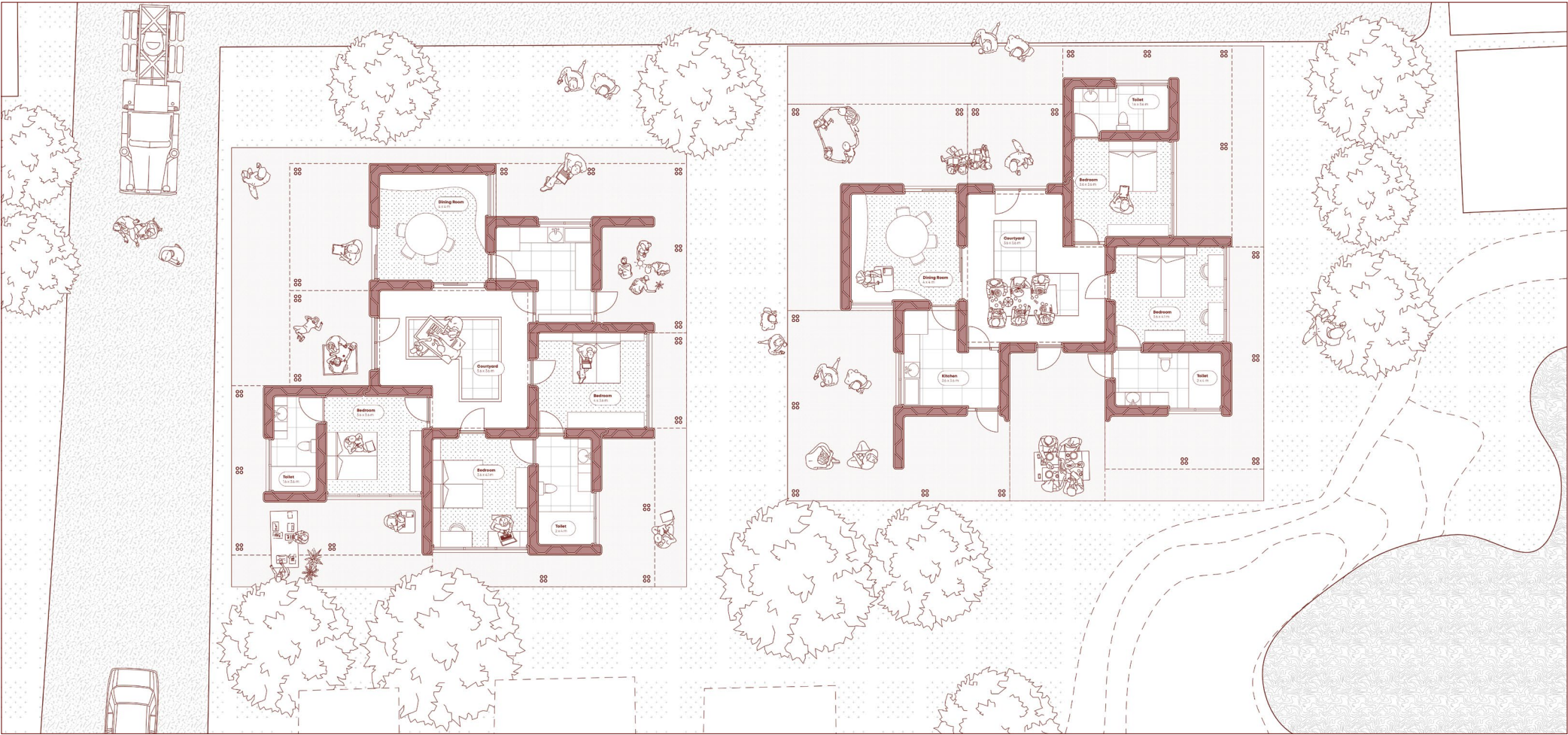
The idea was implemented into a 2 bedroom house, that may expand. To ensure a monopoly isn't created the walls, roof, and windows work on separate principles. The walls are printed on-site, while the windows and roof are made locally and installed.

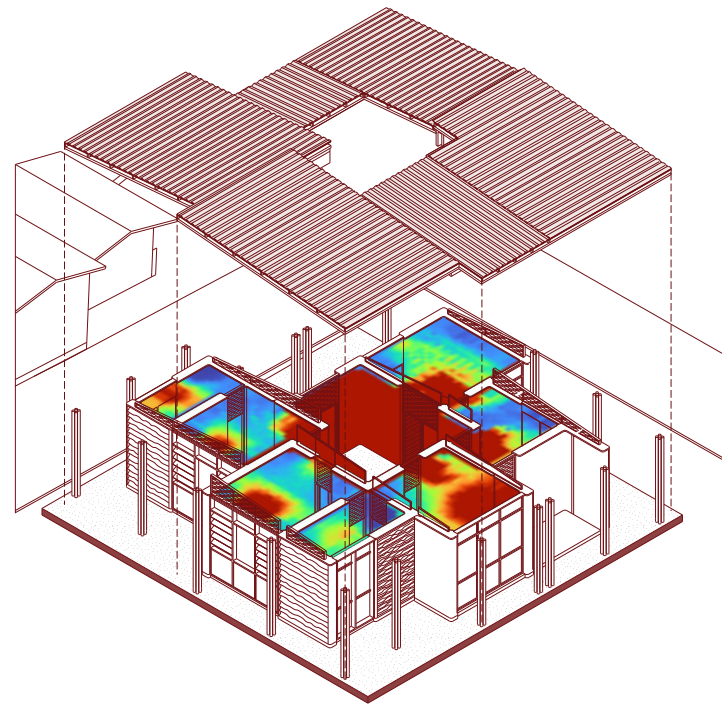


Reflections and Conclusion: The larger learning from trying to create a complex process to reduce climate migration is that the lack of livelihood and employment opportunities will always trump livability conditions. When I started to question an architect's role, I realized I needed to create architecture that could be a catalyst for change, but in a more holistic way.

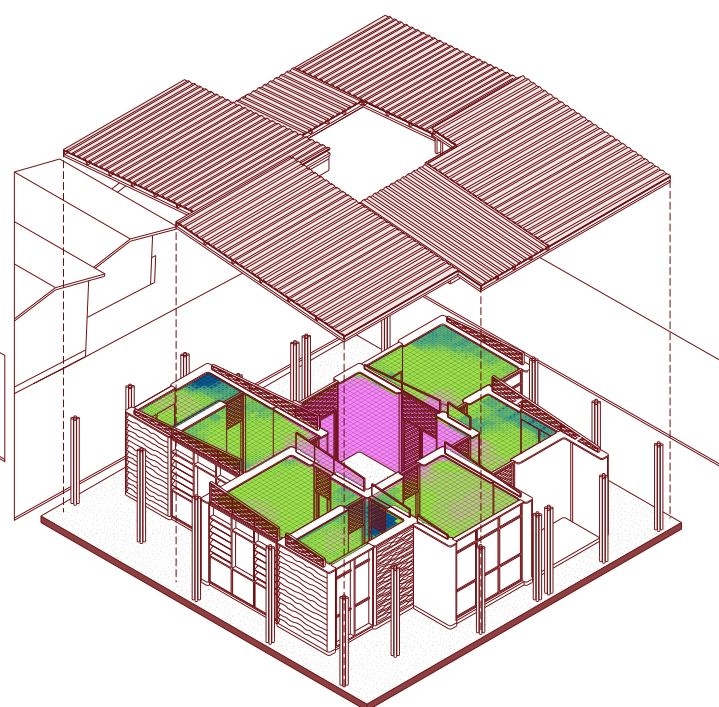
Local employment opportunities and boosting the economy could be created via architecture, while heat-resilient design would be the need of the century. In the end, it was not just about designing a heat-resilient house but questioning:

What More Could a Rural Earthen House do?

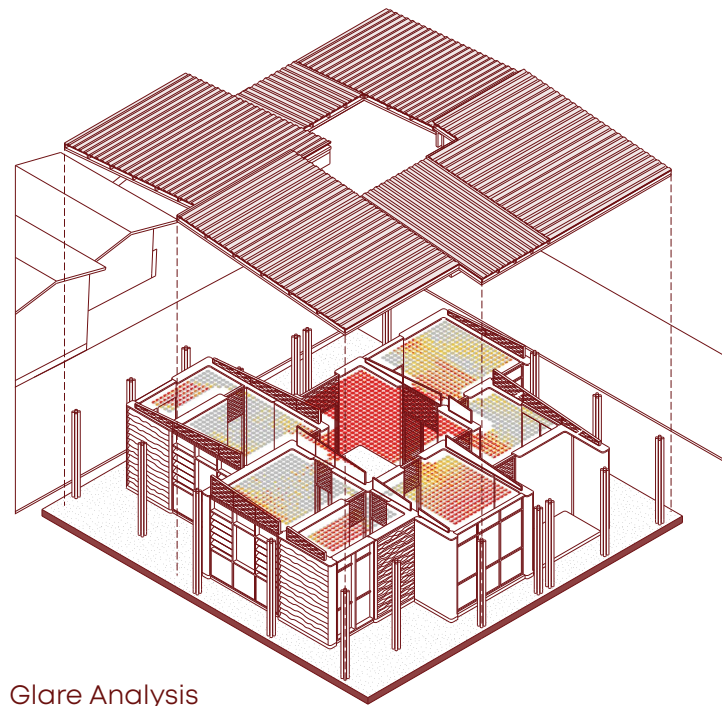




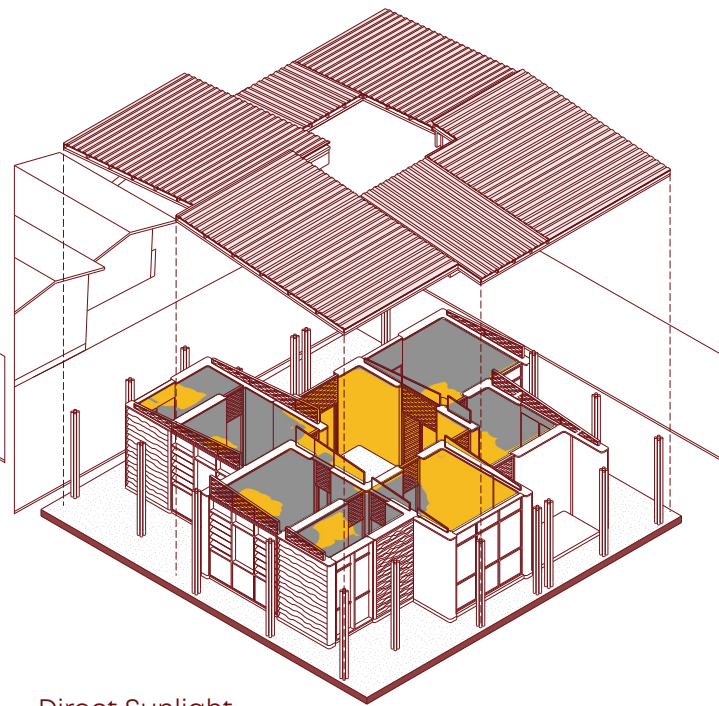
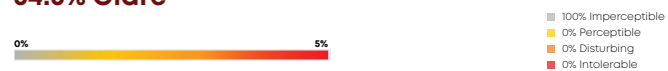
Daylight: Illuminance
7533 Average Lux



Daylight Analysis
87.2%



Glare Analysis
34.5% Glare



Direct Sunlight
Exposure
Percentage: 47%



Environmental Simulations

As each kit of parts is customizable, the house is oriented according to site specific conditions to maximize daylight availability, illuminance, and reduce glare.





Image Credit: Nandini Mehan



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02

03

04

Nandini Mohan

@UnBuilding Earth Lab

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